

THE INDUSTRY'S BIBLE

DISPLAY UNTIL NOV. 29, 1988

# Audio

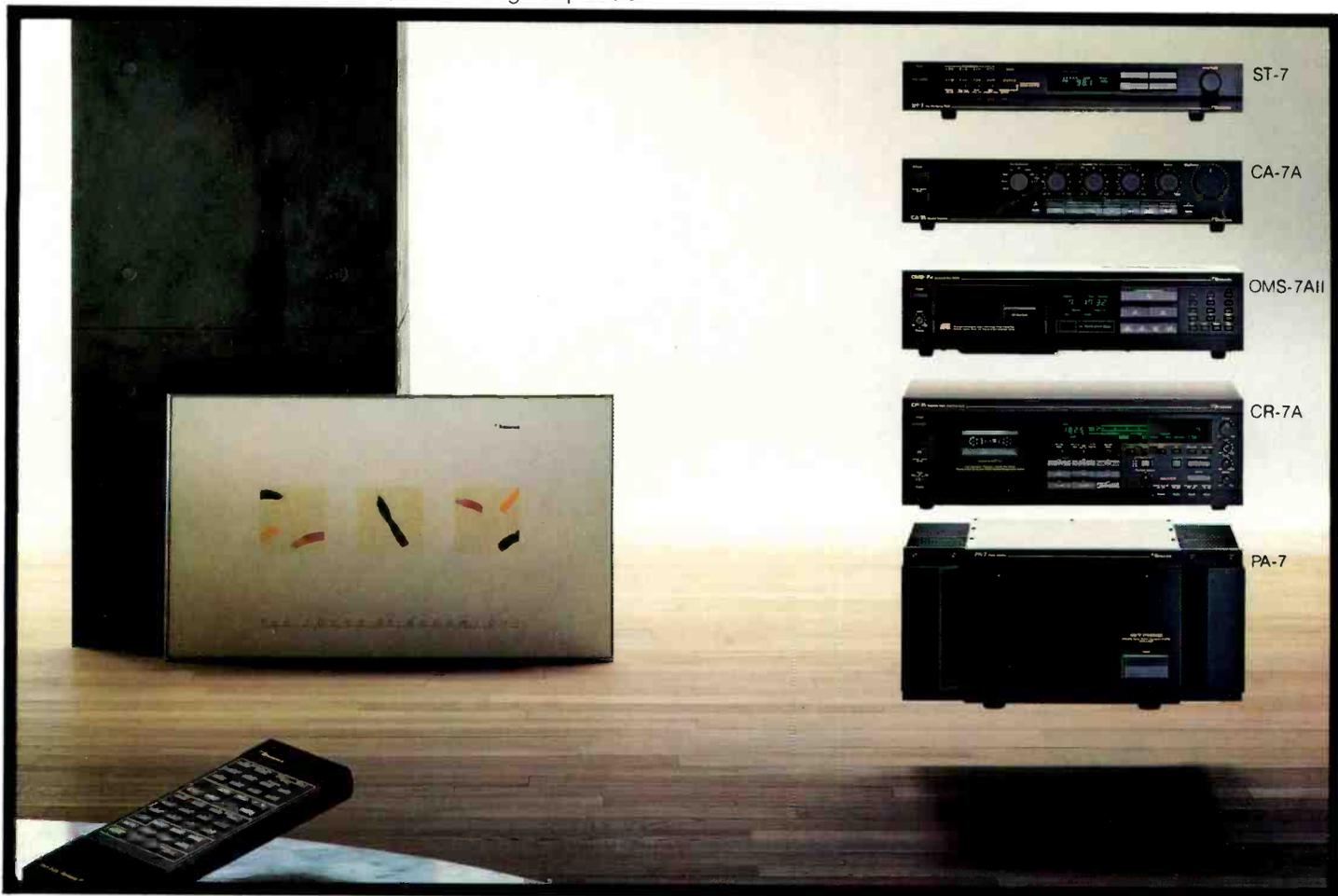
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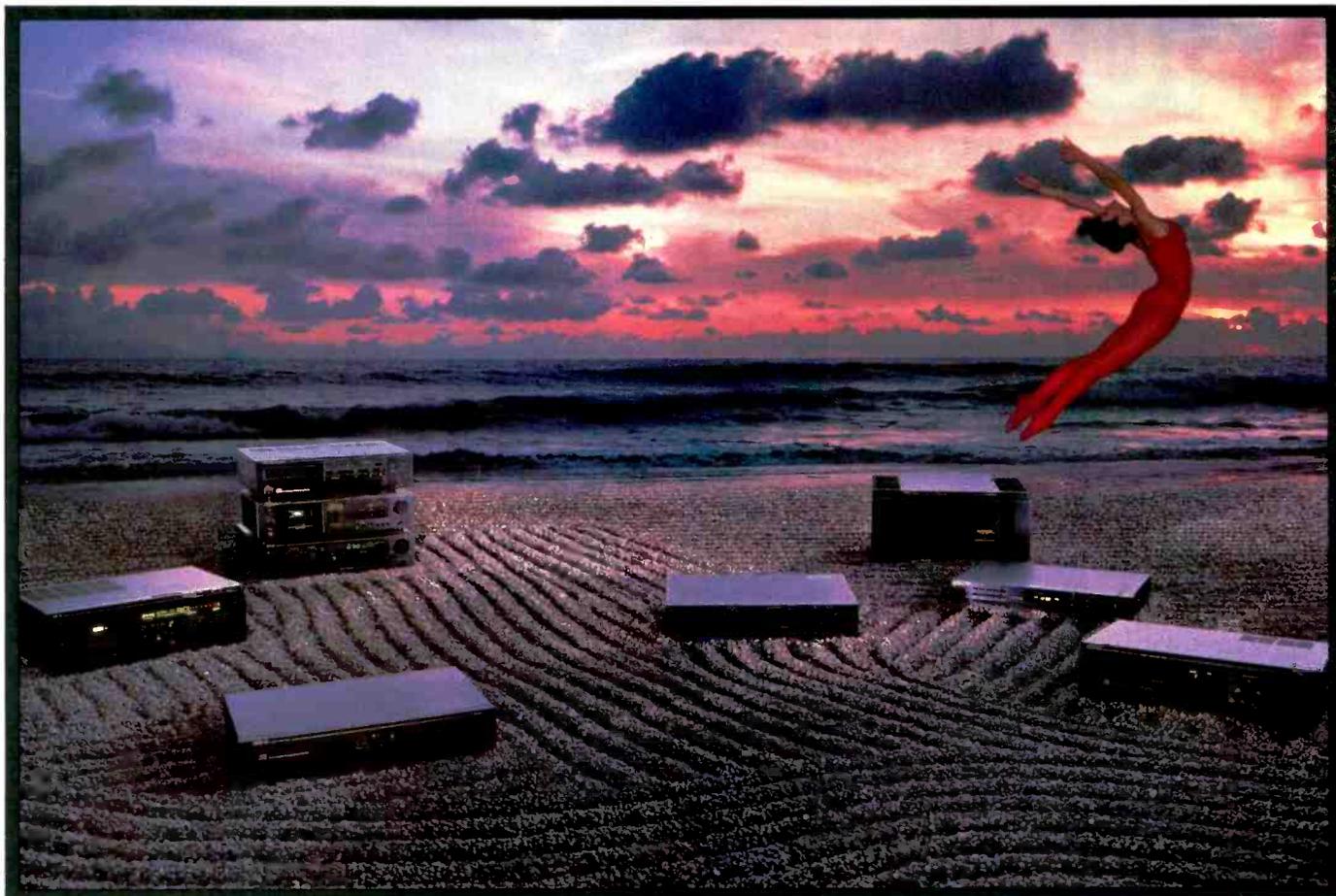
Shown above: PA-7 STASIS Power Amplifier, ST-7 AM/FM Stereo Tuner, CR-7A Discrete Head Cassette Deck, OMS-7AII CD Player, and CA-7A Control Amplifier with System Remote Control.



For the name of your nearest authorized Nakamichi home audio or mobile sound dealer, please call or write:

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Every audio component we engineer is a work of art in its own right. Each one has the integrity of design and technological virtuosity for which we are known.

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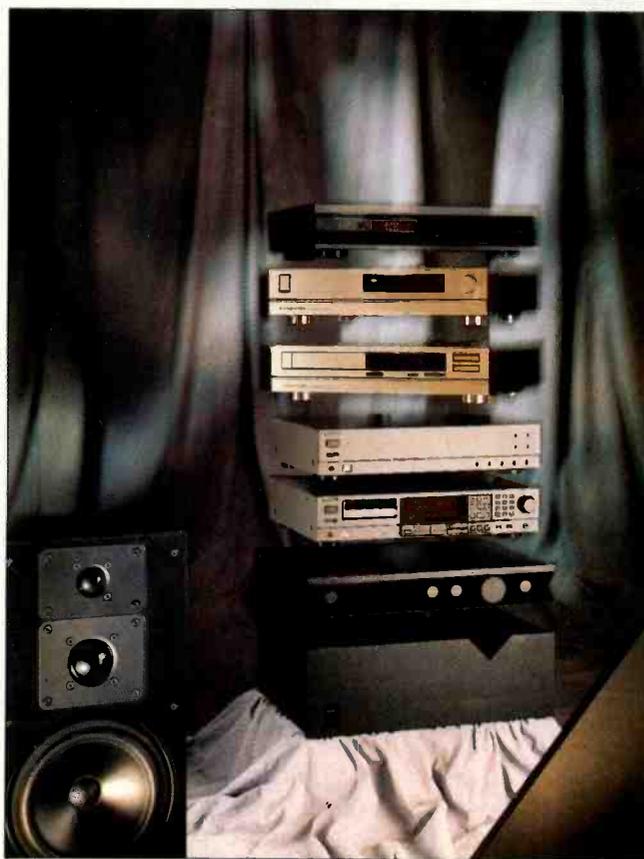
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# Audio

OCTOBER 1988

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The Cover Equipment: Yamaha DSP-3000 digital sound processor, Marantz CDA-94 D/A converter and CD-94 CD player, Sony PCM-2500 DAT recorder, Aragon 24k preamplifier and 4004 amplifier, and a/d/s/ CM7 loudspeakers.  
The Cover Photographer: Robert Lewis.

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Audio Publishing, Editorial, and Advertising Offices,  
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## THE SHAPE OF THINGS TO COME

Products recognized for their ability to reproduce music and to advance our perception of high fidelity emerge from unique companies. The community of individuals dedicated to the production of Mark Levinson components has established an unequalled tradition of excellence and accomplishment, while accepting the responsibility for refining the state of the art in music reproduction within the boundaries technology and imagination allow.

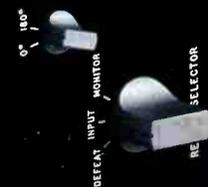
The No. 26 Dual Monaural Preamplifier introduces a new level of performance in audio system control. Until now, the most musically accurate preamplifiers have had limited control flexibility due to the sonic advantages of direct signal paths. The new generation of circuitry developed for the No. 26 provides full control flexibility, for six audio sources with two tape loops, and such refinements as absolute phase selection, all with greater sonic purity than even the minimalist preamps of the past.

The No. 26 offers two optional phono input sections for precise matching with any phonograph cartridge. Either of these circuits can be factory installed at the time of purchase, or added later by your dealer.

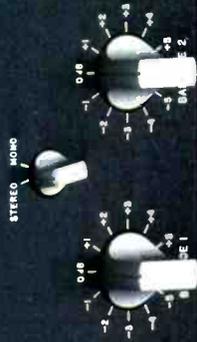
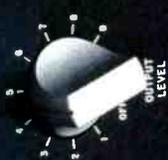
The No. 26 also offers the option of true differential balanced connection to associated equipment. While this superior interconnection technique has been taken advantage of in professional equipment for many years, only recently have domestic products offered it as an option. The No. 26 will allow you to achieve the maximum performance from Mark Levinson amplifiers and other products offering balanced connection capability.

All Mark Levinson products are hand-crafted in limited quantities to ensure their high standards. Visit your Mark Levinson dealer to hear how good music can sound in your home.

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Hostaphan™ diaphragms and Neodyme™ magnets are two more reasons DT 990s have won technical and critical acclaim in Europe and America. They "... delivered a superb sound" and were "... remarkably comfortable to wear" according to *Stereo Review*.

So if you enjoy losing yourself in the music, start by finding the Beyer dealer in your area. Call the reader response number below, or write — Beyerdynamic US, 5-75 Burns Avenue, Hicksville, NY 11801.



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AUDIO (ISSN 0004-752X, Dewey Decimal Number 621.381 or 778.5) is published monthly by DCI, a wholly owned subsidiary of Hachette Publications, Inc. at 1515 Broadway, New York, N.Y. 10036. Printed in U.S.A. at Dyersburg, Tenn. Distributed by Warner Publisher Services Inc. Second class postage paid at New York, N.Y. 10001 and additional mailing offices. Subscriptions in the U.S.: \$19.94 for one year, \$35.94 for two years, \$49.94 for three years; other countries, add \$6.00 per year.

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**polk audio**  
The Speaker Specialists®

## **“Polk Speakers Sound Best.”**

*Matthew Polk's Dedication to Quality  
Brings You Superior Technology, Performance and Value.*

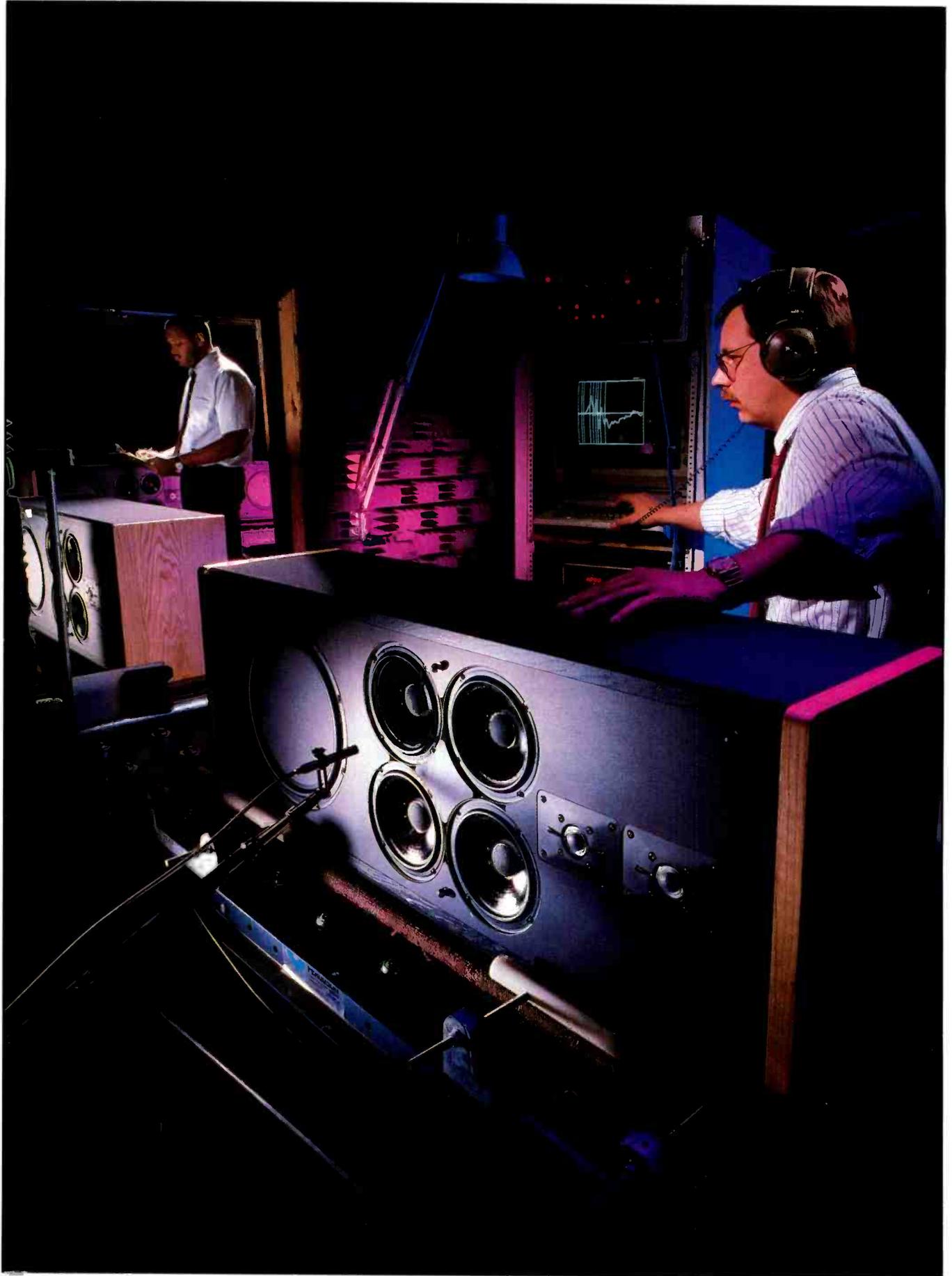


*“Vastly Superior to the Competition.”* Musician Magazine





*Quality Control*



## “Polk’s Quality Assurance Program Guarantees Superior Sound and Total Satisfaction”

*Only One Standard of Quality: The Best*

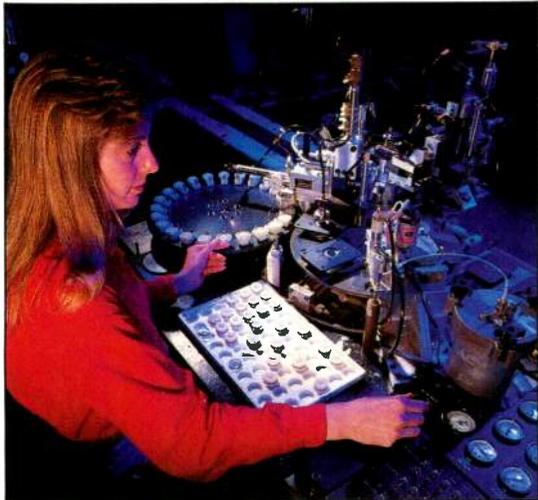
- Advanced production equipment and fine workmanship
- Every component individually computer tested
- Every finished speaker system tested by computer and by ear
- Strict adherence to exacting specifications
- Uniformly high standards of performance and quality maintained throughout the line

These are only a few reasons why Polk Audio customers are so loyal. Should you own Polk loudspeakers? Just ask a friend who does.

### The Quality Challenge

Matthew Polk knows that it is not enough to design the best sounding loudspeakers. He knows that the true test is to bring the sonic perfection of the laboratory prototypes to every single Polk customer.

Polk Audio meets this challenge with an impressive array of technology, facilities, and meticulous craftsmanship. Unlike many speaker brands, Polk Audio operates its own manufacturing facilities. We make drivers, crossovers, and cabinets in our 100,000 square foot facility in Baltimore, Maryland. We even design and build our own high-precision automated production equipment to insure that demanding Polk performance standards are rigorously maintained throughout the entire manufacturing process.



Polk speakers are assembled with exacting precision by sophisticated machinery designed and built by Polk Audio engineers.

### Polk’s 100% Plus Quality Program

In order to guarantee that every Polk loudspeaker performs to the high standards set by Matthew Polk, we make quality the number one concern from beginning to end during the manufacture of every loudspeaker. When parts and raw materials arrive at Polk Audio, every shipment is carefully rechecked for conformance to our specifications. Critical parts, such as capacitors, inductors, and voice-coils, are individually scrutinized for proper value before being approved for use. Next, components such as drivers, crossovers, and sub-bass radiators that are manufactured by Polk Audio, are individually subjected to a battery of computerized and manual tests before they can be approved for assembly into a finished Polk loudspeaker. Last, cosmetic inspections are performed before, during, and after the completion of every loudspeaker.

### The Ultimate Test

Before they are carefully packed for shipment, every single Polk speaker system is tested by sophisticated, custom-designed computer programs, and by the ultimate judge of sonic quality — the human ear. Every Polk speaker must live up to Matthew Polk’s demanding standards of sonic and cosmetic quality before leaving the factory.

### Polk Guarantees Satisfaction

Every Polk home loudspeaker carries a five-year parts and labor limited warranty. In addition, every Polk speaker is backed by our fanatical dedication to your ultimate and enduring satisfaction. In an independent survey of audio retailers, Polk was voted #1 in the product service category, and #1 out of all consumer electronics manufacturers for its superlative customer and dealer relations. All authorized Polk dealers maintain a stock of replacement parts to assure immediate service should a problem develop.

## State-of-the-Art Components



### Polk Isophase Crossover System

A speaker's crossover acts much like the conductor of an orchestra. It tells each driver when and how loud to play. Even the best drivers would sound bad if poorly matched and blended together by an inexpensive crossover. Hidden from view, many manufacturers will skimp on the quality of their crossovers, resulting in poor overall sonic performance. Polk recognizes the vital importance of a system's crossover and spares no effort or expense in designing and building this critical component. Expensive air-core pure copper coils are used to insure wide dynamic range and excellent sound quality at every volume level. Precision resistors and capacitors are also used to maintain perfect driver blending and the lowest possible distortion.

### Polk Fluid-Coupled Subwoofers

Used in most of the Polk home speakers, the fluid-coupled subwoofer system realizes the advantages of both small and large woofers at the same time. Small woofers are faster, have better midrange response, and wider dispersion. Large woofers move more air and thus produce louder, deeper bass. In the Polk system, the low frequencies produced by the small bass/midrange drivers hydraulically and elastically transfer energy to the large, low-resonance sub-woofer below 60 Hz. The result is remarkably deep, powerful, clear, and detailed bass.

## “Polks Builds State-of-the-Art Components For Lifelike Sound, Quality and Reliability.”

*Consistently Superior Technology Results in Better Sound.*

### Exclusive Trilaminare-Polymer Drivers

Polk drivers are unique and superior in performance and reliability. Rather than accepting the sonic compromises of one cone material, we laminate three complimentary cone materials together to achieve a level of performance unmatched by simple paper or plastic cones. The basic lightweight and strong fiber cone is first laminated with a space-age polymer that stiffens the material to prevent distortion; a second polymer is then added to eliminate resonance and coloration through visco-elastic damping. Polk drivers also use costly butyl rubber surrounds for more accurate cone movement and deeper bass response, and to prevent the deterioration over time experienced with foam surrounds. The result is a driver that faithfully reproduces the timbre of every musical instrument and voice while maintaining every subtle detail of the composition. Your Polk speakers will sound great year after year, after year.

### We Build Our Own Component Parts

The sound quality of a loudspeaker is ultimately determined by the quality and consistency of its component parts and the ability of the designer to successfully combine those parts to achieve a coherent, seamless, and balanced musical presentation. A brilliant design concept is easily ruined by the use of inferior parts, and inadequate cabinet construction. Recognizing this, Polk's engineers insist on designing, building, and testing components in our own factories. As an owner of Polk loudspeakers we guarantee that your speakers conform to Matthew Polk's singular vision of musical accuracy, consistency and reliability.

### Polk's SafetyGuard Tweeter Protection Device

This distortion-free circuit instantaneously shuts down the tweeter(s) when the speaker is overdriven. And unlike crude fuses, Polk's SafetyGuard is fast, effective, and automatically resets itself.

### Exclusive Silver-Coil Dome Tweeter

Every detail of Polk's exclusive tweeter design has been critically engineered to insure the listener the ultimate in high-frequency performance. The voice coil is precision wound with high-conductivity coated wire for more extended high frequency response. The ultra light polyamide dome is extremely fast for superior transient response. It allows the listener to perceive even the most subtle detail and texture in the music. This remarkable soft dome also smooths and eliminates annoying resonances and peaks thereby avoiding the shrillness and "metallic" sound of hard-dome designs. The small diameter dome shape and a specially contoured minimum diffraction faceplate provide wide dispersion insuring that you will enjoy full fidelity, well-balanced sound throughout your listening room.



*The SDA SRS Series*



SDA SRS 2.3

*"The sound is superbly balanced and totally effortless."* Stereo Review Magazine

# “Matthew Polk’s SDA-SRS Speakers Bring You the Ultimate Listening Experience”

“Spectacular... it is quite an experience.” Stereo Review Magazine

## The Joy of Owning the Ultimate Dream Speakers

Music lovers who are privileged to own a pair of SRS’s will share in Matthew Polk’s dream every time they sit down and enjoy the spine-tingling excitement of listening to their favorite music. And demonstrating them to admiring friends ultimately increases their pride-of-ownership. “Awesome” is the word most often used to describe the sound of an SRS system. They are capable of playing at live concert levels for long periods of time, with a surprising lack of effort and without producing ear-fatigue.

The bass response can literally move your body any time the music requires it. Yet they perfectly reproduce all of the subtle nuances of a string quartet and are just as enjoyable at a low volume level as when played loud. Music and ambience surround the listener in an almost 300-degree panorama of sonic splendor that is, in the words of High Fidelity magazine, “Mind-boggling... Astounding... Flabbergasting.” But words alone cannot possibly describe the experience of listening to these ultimate speaker systems, you simply must hear them.

SDA SRS 1.2 — \$1495 ea.

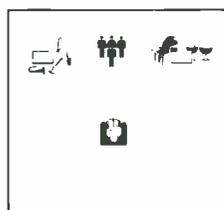
*Two time Audio Video Grand Prix Winner*

The ultimate expression of Polk technology, this limited production flagship model sets the industry standards for imaging, detail, dynamic range, and bass reproduction.

SDA SRS 2.3 — \$1099.95 ea.

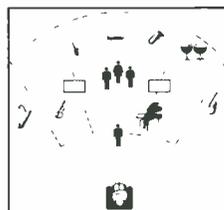
*Audio Video Grand Prix Winner*

This scaled-down version of the SRS 1.2 incorporates all of flagship’s design innovations without significantly compromising its’ awesome performance.



**BENEFITS OF THE POLK SDA LOUSPEAKERS**

Compressed Sound Stage due to Undesired Signals



Accurate Reproduction of the Full Sound Stage by the SDA Loudspeakers

## Polk Audio’s SDA SRS: The Quest for Perfection

The goal of Matthew Polk’s Signature Reference System (SRS) speakers is to bring an unparalleled level of life-like musical reproduction to your home. Perfect musical reproduction, long the dream of every speaker designer, is approached so closely by Matthew Polk’s SDA-SRS’s that it will seem as if the musicians are performing right in your listening room. This stunning achievement combines technology and creative insight to bring you a listening experience that you will never forget.

**1. Patented SDA True Stereo Technology** — The first and only speaker systems to maintain full stereo separation all the way from the source to your ears. SDA-SRS speakers disappear as musical images fill your listening room, immersing you in a fully three-dimensional soundfield of startling realism.

**2. Multiple Driver Arrays** — The use of multiple drivers allows each separate element to work less hard and lowers distortion even at live concert levels. Power handling is increased up to 1,000 watts per channel, providing a seemingly limitless dynamic range.

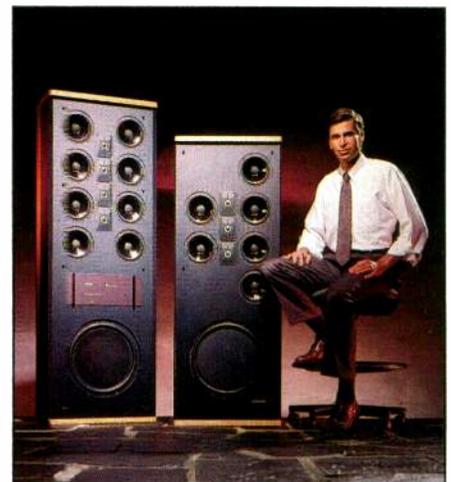
**3. Time-Compensated Driver Alignment** — Time-coherent driver placement insures that the entire spectrum of sounds reaches your ears at the same time. The sound is better focused, balanced, and less fatiguing.

**4. Wavelength Optimized Line-Source** — Vertical driver arrays focus the sound waves into the room in a way which greatly reduces floor and ceiling reflections. Progressive reduction of the acoustical length of the arrays maintains constant vertical dispersion and eliminates “comb” filtering effects that limit other multiple driver systems. The result is extraordinary clarity and detail, great flexibility in room placement, and precise stereo imaging from virtually any place in the room.

**5. Planar 15” subwoofer** — SRS bass performance is breathtaking. The use of small active drivers (eight in the SRS 1.2, six in the SRS 2.3) coupled to a huge sub-bass radiator achieves a bass response that is extraordinarily tight, fast (no boominess), deep, and distortion free. In fact, the distortion at 25 Hz is lower than that of many audiophile-quality tube amplifiers.

**6. Bi-amp Capability** — The optional use of separate amplifiers for the high and low frequencies further improves clarity, lowers distortion, and increases dynamic range.

**7. Hand-Crafted Limited Production** — The one-at-a-time attention that goes into the production of every Polk SDA-SRS speaker system means that your pair will sound and look as good as Matthew Polk’s own.



Matthew Polk with the ultimate expressions of loudspeaker technology: The SDA SRS 1.2 and SDA SRS 2.3.

*The SDA Series*



SDA 2B

*"They have the ability to make your previous favorite speaker sound almost second rate."*

Stereo Review Magazine

# “Polk’s Revolutionary True Stereo SDAs Always Sound Better Than Conventional Speakers”

*“Mindboggling...Astounding...Flabbergasting”* High Fidelity Magazine

SDA 1C — \$849.95 ea.

*Audio Video Grand Prix Winner*

This floor standing model uses SRS vertical line-source technology in an attractively slim, tower configuration, offering tremendous impact and amazing stereo imaging with a minimum use of floor space.

SDA 1C Studio

Same configuration as the SDA 1C but in a vinyl clad cabinet.

SDA 2B — \$599.95 ea.

*Audio Video Grand Prix Winner*

The SDA 2B represents an incredible value which combines spectacular SDA performance with a remarkably affordable price. High Fidelity said listening to the SDA 2B is “an amazing experience.”

SDA 2B Studio

Same configuration as the SDA 2B but in a vinyl clad cabinet.

SDA CRS + — \$424.95

*Audio Video Grand Prix Winner*

The SDA Compact Reference System is the world’s best sounding small speaker and can be either bookshelf or stand mounted. Stereo Review called the CRS “an impressive achievement.” No other small speaker offers such a compact package of high technology and performance.



Polk Audio's Grand Prix Award winning SDA Series speakers. Pictured left to right, SDA 1C, SDA 2B and SDA CRS+.

## A Fundamental Advance in Loudspeaker Design

Polk's patented SDA technology is the most fundamental advance in loudspeaker design in twenty years. High Fidelity magazine said of the SDA design, “Polk reinvents the loudspeaker...startling evidence of the industry’s essential creative vitality.” Rolling Stone Magazine agreed when they wrote, “They truly represent a breakthrough.” The Polk SDA’s are the world’s only “True Stereo” speakers, that is, the only speakers which are specifically designed to realize the full sonic potential of every stereophonic recording.

## The SDA Difference

In order to maximize performance, stereo separation is carefully maintained in all audio components. However, with conventional loudspeakers both ears hear both speakers and the two channels are mixed together before they ever reach your ears. Because stereo separation is not maintained all the way to your ears, much of the sense of spaciousness and sonic realism of the original recording is lost. The soundstage is only as wide as the distance between the speakers, sonic images are rendered flat and small.

Polk SDA speakers are the first true stereo speakers, able to maintain perfect stereo separation all the way from the source to your ears. By acoustically isolating the two stereo channels each of your ears hears only the correct stereo channel; the left ear hears left channel, and the right ear hears right channel. Recordings literally come alive in your listening room. Musical images are reproduced with incredible clarity and pinpoint accuracy. You are surrounded by a stunning three-dimensional sound stage that extends from wall-to-wall, and also wraps around you. Only with Polk Audio SDA loudspeakers can you hear all of the spaciousness and life-like imaging of the original performance.

## How SDA Technology Works

Conventional speakers allow both of your ears to hear both stereo channels at the same time. This is called “Interaural Crosstalk Distortion.” This crosstalk distortion could be prevented by building a wall between your speakers right up to your nose, so that each of your ears would hear only the speaker on one side of the wall. SDA speakers cancel this distortion, but in a much more comfortable, elegant, and highly accurate fashion. Each SDA speaker reproduces a signal that is the exact opposite of the undesirable crosstalk signal. This cancellation signal is timed to arrive at your ear at precisely the same time as the undesirable crosstalk signal. When these two signals combine, they naturally and acoustically cancel each other. What remains is one correct stereo channel delivered to each ear. In this way SDA speakers allow you to hear stereo performances the way they were meant to be heard.

## The SDA Advantage

Only Polk's patented SDA loudspeakers let you hear all of the information and spatial realism that is on the original recording. Conventional speakers restrict what you hear due to their failure to maintain complete stereo separation. Stereo Review magazine said that with SDA speakers: “The result is always better than would be achieved with conventional speakers.” Hear for yourself the SDA advantage.

## “Polk reinvents the loudspeaker”

“The result is always better than would be achieved by conventional speakers...”

Stereo Review Magazine

### SDA SRS 1.2

“Polk’s No Compromise Flagship Loudspeaker”

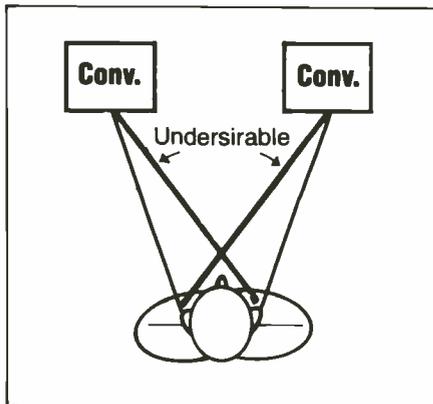
Stereo Review Magazine

“At the CES (Consumer Electronic Show) among the crop of new and often innovative speakers probably the most impressive was the Polk SDA Signature Reference System which shook the walls of the Americana Congress Hotel... Polk’s no-compromise flagship loudspeaker offers new refinements on the Stereo Dimensional Array design... The SDA system works essentially as claimed... the effect can be quite spectacular... as good as the SDA feature is we were even more impressed by the overall quality of the SDA-SRS as a speaker system. The sound is superbly balanced and totally effortless... unusually open and integrated... the composite frequency response was exceptional no matter how you look at it... only at 10,000 Hz where presumably only one driver was in use, did we reach the limits of the speaker and the amplifier at the same time — — 1,265 watts into 5 ohms... almost any amplifier can drive the SRS to the highest listening levels most people would want... the phase compensation of the system was exceptional... we have never measured a low bass distortion level as low as that of the SRS... we found that the passive radiator response varied only a total of 7dB between 12 and 90 Hz. Polk calls the passive radiator a “sub-bass driver” with good reason... it is quite an experience. Furthermore, with the SRS it is not necessary to play the music loud to enjoy the tactild qualities of deep bass... *Spectacular*

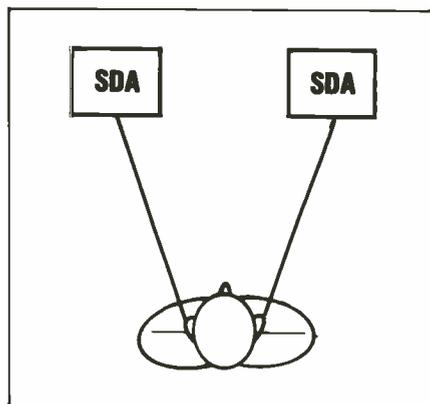


SDA SRS 1.2

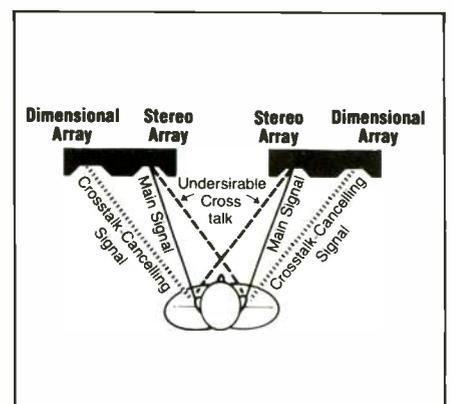
### HOW THE PATENTED SDA TECHNOLOGY WORKS



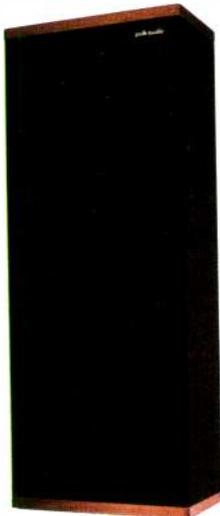
Conventional speakers with compressed sound stage due to interaural crosstalk distortion.



Polk TRUE STEREO SDA Loudspeakers



Accurate reproduction of full sound stage width & depth by the True Stereo SDA loudspeakers.



SDA 1C

**SDA 1C**

*"Mind boggling powers of sonic persuasion"*

**High Fidelity Magazine**

**"Our first, all too brief, audition simply bowled us over. The width, depth and precision of the stereo image are astounding...** after extended listening we were no less astonished mind-boggling powers of sonic persuasion...The SDA-1's strong suit (to put it mildly) is its imaging which ranges from very good to flabbergasting, depending on the material... devastatingly dramatic. With good classical discs, the soundstage seems to open up, presenting a greater sense of depth and enveloping the listener more fully in the recorded ambience... But it's on fancy rock recordings that the system can really strut it's stuff... it really is great good fun. We find ourselves listening to unfamiliar recordings on other speakers and saying to each other, "I wonder what this would sound like on the Polks". Get an audition... It's worth the trouble just for the experience.

*"Literally a new dimension in the sound"*

**Stereo Review Magazine**

**"Hirsch-Houk Lab's tests of the SDA-1 show that it does indeed add a new dimension to stereo sound. The result is always better than would be achieved by conventional speakers...spectacular...** The sound of the Polk SDA-1 is beautifully balanced... The smoothed and averaged frequency response was quite uniform... The bass output was exceptionally strong down to the lowest frequencies... it reaches an octave or so deeper in the bass than many speakers of similar size... The Polk SDA-1 is an unusually sensitive (efficient) speaker, delivering a sound pressure level of 95dB measured at 1 meter... Polk SDA-1 speakers produce a broad, precisely defined soundstage, not only between the speakers, but extending appreciably beyond them laterally as well... It will (and should) be bought primarily for its acoustic properties which are unique and completely without any undesirable side effect... Even the audio purist should not cavil over the means by which this speaker achieves its spatial properties. There is no added active circuitry introduced to the signal path and the speakers sound superb in their own right... the sense of discovery experienced when playing an old favorite stereo record and hearing, quite literally, a new dimension in the sound is a most attractive bonus for the owner of the SDA-1 system."

**SDA CRS +**

*"An Impressive Achievement..."*

**Stereo Review Magazine**

**"It was easy to forget that we were hearing speakers at all. Just the music remained, and it seems to us that this is what hi-fi is all about...** the SDA-CRS is designed to compensate for the fact that in normal stereo playback each ear hears the sound from both speakers, which inevitably affects apparent channel separation and the stereo image... we drove the speakers as hard as our ears would tolerate, with a 350-watt-per-channel amplifier, and they never showed any signs of distress... Our measurements confirm that the Polk SDA-CRS is a very good speaker system — with a host of desirable qualities — when it is judged by the same standards one would apply to conventional speakers. But it is not a conventional system, and it deserves to be examined for the special sonic qualities that are claimed for it.

We recall the impression that the original Polk SDA-1 made on us: The system could provide a dramatic expansion of the soundstage... we found listening to it both intriguing and enjoyable... The new SDA-CRS is capable of doing much the same thing. Dramatic expansion of the soundstage... The SDA system presents the listener with a broad soundstage, which usually extends beyond the space between the speaker cabinets and it also seems to have an added sense of depth. These qualities

were apparent from any part of the listening room... The fact that the SDA-CRS will fit in any room works as well on pedestals as against a wall (we tried them both ways), and costs less than half as much as the revised SDA-1A says something about its intrinsic merits. It is definitely not just another speaker."



SDA CRS +



**SDA 2B**

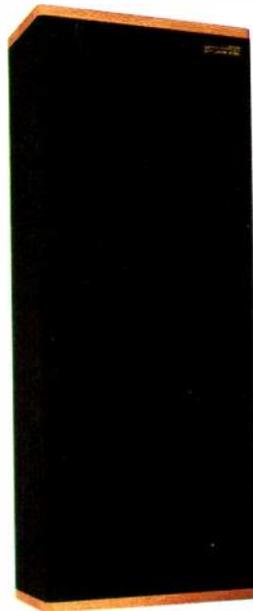
*"Superb...it has the ability to make your previous favorite speaker sound almost second rate"*

**Stereo Review Magazine**

**"It took only a brief exposure to the sound of the SDA-2A to recognize its unique qualities... these speakers always sounded different from conventional speakers — and in our view better — as a result of their SDA design. Continued experimentation has led to design changes that both improve performance and reduce cost, and the result is the SDA-2A... the response was impressively flat and smooth... ranks with the best responses we have measured from a speaker. Our peak power tests of the Polk drivers confirm that they can handle any power that is likely to be supplied in a home speaker... When we listened to recordings having strong left-right separation the sound wrapped around us through an angle of at least 90 degrees, even though the speakers formed an angle of perhaps only 40 to 50 degrees with the listening position. With most stereo programs the speakers effectively disappear as sound sources, and the soundstage was seamless across the width of the room even with relatively close speaker spacing.**

The Polk SDA-2A is right up there at the top of the class in every way. It has the ability to make your previous favorite speaker sound almost second-rate. Listen to it at your own risk!"

**Stereo Review Magazine**



SDA SRS 2.3



SDA 2B



*The RIA Series*



RTA 11i

*"They provide smooth, fast and incredibly well detailed sound."*

## “Polk’s RTA Tower Loudspeakers Combine Legendary Polk Performance with Contemporary Style.”

*Big speaker performance with an efficient use of space.*

### RTA 11t — \$449.95 ea.

The RTA 11t is the finest conventional (non-SDA) speaker that Polk Audio manufactures. Its extremely high power handling (250 watts) and high efficiency (90dB) provide remarkable dynamic range from both large and small amplifiers. The RTA 11t utilizes the same technologically advanced fluid-coupled subwoofer design found in Polk’s flagship model. Dual 8” sub-bass radiators are coupled to two 6½” mid/bass drivers, resulting in a fast, powerful, deep, and ultra-accurate bass response, without the boomy, undetailed sound of large woofer systems.

### RTA 8t — \$289.95 ea.

In a slightly smaller package, the RTA 8t offers the same driver complement as the larger, more expensive RTA 11t, and thus shares its benefits of superior imaging, musicality, and detail.

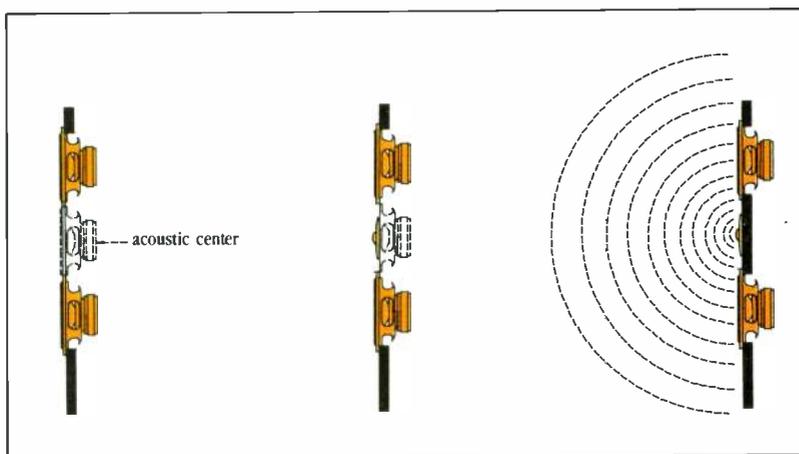
Both Polk RTA series loudspeakers achieve the extremely rare combination of good looks and state-of-the-art performance. The tall, elegantly slender, and deep “tower” design cabinets allow for substantial internal volume for high efficiency and powerful bass, while requiring less than one square foot of floor space. The small baffle surface area around each driver minimizes diffraction (sonic reflections), thereby insuring outstanding imaging and low coloration.

Positioning the 1” silver-coil dome tweeter between the two 6½” trillaminate polymer bass/midrange drivers achieves what is called “coincident radiation.” This means that both the mid- and high-frequencies appear to radiate from the same place on the baffle resulting in perfect blending at the critical crossover point. (See illustration, below).

Polk RTA speakers have an uncanny ability to perfectly reproduce the human voice, pianos, guitars, and every other instrument whose faithful reproduction demands superlative midrange and high-frequency performance. Bass and percussion instruments are accurately reproduced with full visceral power and realism, without the heaviness, boominess, or lack of detail that plague lesser designs.

The discriminating listener who seeks state-of-the-art performance and design will find the quintessential combination of both in Polk’s RTA series loudspeakers.

### THE PRINCIPLES OF COINCIDENT RADIATION



The perceived source of sound of two identical drivers is centered in the area between them.

The benefit of coincident waveform propagation resulting in precise imaging, uniform vertical dispersion and startling midrange accuracy.

In the Polk RTA loudspeaker, the tweeter is positioned at the acoustic center of the drivers.



Polk Audio's RTA 8t and RTA 11t High Performance Tower Speakers

*The Monitor Series*



Monitor 10B

*"The best-high performance speaker value on the market today."* Off The Record

## “Polk’s Remarkable Monitors Redefine Incredible Sound/Affordable Price”

*“At their price, they’re simply a steal”* Audiogram Magazine

### Monitor 10B — \$349.95 ea.

Considered one of the worlds’ best sounding loudspeakers and, in the words of Audiogram magazine, “At the price they are simply a steal.” The Polk 10B utilizes dual trilaminate polymer drivers coupled to a built-in subwoofer for accurate bass response and superior dynamic range. A 1” dome tweeter perfectly complements the other drivers to insure outstanding reproduction of every type of music.

### Monitor 7C — \$274.95 ea.

Basically a smaller, less expensive version of the Monitor 10B. By offering superlative performance whether mounted on a shelf or a speaker stand, the 7C is a highly versatile addition to any audio system. How good does it sound? Audio Alternative magazine said, “It is amazing.”

### Monitor 5B — \$214.95 ea.

Similar in design and performance to the Monitor 7C, however it utilizes an 8” subwoofer (rather than 10”) and is more compact. The 5B represents one of the best values of the entire Monitor Series.

### Monitor 5Jr. + — \$169.95 ea.

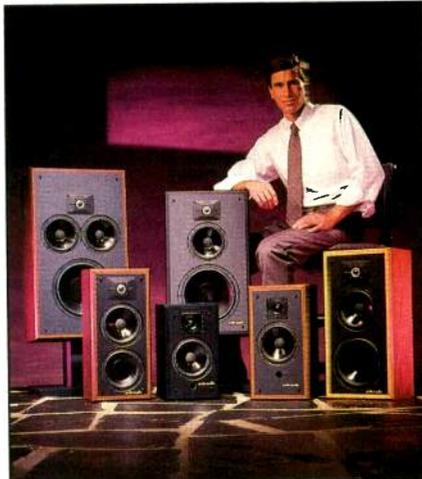
Called the best sounding speaker of its price in the world regardless of size. It achieves life-like three-dimensional imaging which 10 years ago was not available in any bookshelf speaker at any price.

### Monitor 4.5 — \$122.45 ea.

Shares most of the high technology components and rewarding musical performance of the larger Polk speakers at a surprisingly low price. A critically tuned bass duct insures high efficiency and great bass performance despite its convenient compact design.

### Monitor 4A — \$99.95 ea.

Identical to the 4.5 in a smaller cabinet. Audio critic Lawrence Johnson called it, “an all around star of great magnitude.” The 4A’s affordable price means that no matter how small your budget, you can afford the incredible sound of Polk!



Matthew Polk with his incredible sounding/affordably priced Monitor Series loudspeakers. Front row (L to R) Monitor 5Jr. +, Monitor 4A, Monitor 4.5 Back row (L to R) Monitor 10B, Monitor 7C, Monitor 5B

### Matthew Polk’s Vision: Superior Sound for Everyone

Polk Audio is an American company that was founded in 1972 by three Johns Hopkins University graduates who were fanatical audiophiles with a common vision. They believed that it was possible to make speakers that performed as well as the most exotic and expensive systems at a fraction of the price. Starting with only \$200, they began by designing and manufacturing the Monitor Series loudspeakers. The Monitor Series combined the advantages of American high technology and durability with European styling and refinement. Over the years an unending stream of rave reviews, industry awards, and thousands of enthusiastic Polk customers have established the Monitor Series as the choice for those looking for both incredible sound and an affordable price. There is no better value in audio equipment today than a Polk Monitor series loudspeaker.

### Uncompromising Standards at Every Price

A limited budget does not mean a limited ability to appreciate fantastic sounding music. That’s why we put our best engineering efforts and only the finest materials into every Polk product regardless of price.

Every Polk Monitor Series speaker uses the same trilaminate polymer cone technology as the flagship SDA-SRS 1.2. Every Polk Monitor utilizes a 1” polymer dome tweeter, and most use exactly the same tweeter found in the SRS 1.2. All Polk Monitors employ costly multi-component crossover networks and 3/4” thick high density, non-resonant cabinets. Pick up a Polk Monitor 4A, then pick up a comparably priced but larger speaker from a different manufacturer. You’ll notice that the Polk is heavier, more solidly built, and sports a superior fit and finish. Now compare the sound. We are sure you’ll agree with Musician magazine, which said Polk Monitors are: “Vastly superior to the competition.”

### The Thrilling Sound of Polk Monitors

Polk Monitors achieve open, boxless, three-dimensional imaging surpassed only by the SDAs. Their silky smooth frequency response assures natural, non-fatiguing, easy to listen to sound, while their fast transient response results in music that is reproduced with life-like clarity and detail. In addition, dynamic bass performance, ultra-wide dispersion, high efficiency and high power handling are all hallmarks of Monitor Series performance.

### There is a Polk Monitor Perfect for You

Each time you advance through the six Monitor Series models, you’ll immediately hear a remarkable improvement in efficiency, bass response, and output volume. They are designed so that a smaller Polk played in a small room will sound nearly identical to a larger Polk played in a large room. A larger Polk in a small room will, of course, play that much louder with even better bass. No matter what price range fits your budget, there is a spectacular Polk Monitor Series speaker waiting to fulfill your sonic dreams.

# The Monitor Series

## “Vastly Superior to the Competition”

Musician Magazine

*“Other comparably priced speakers simply do not come close”*

Audiogram Magazine

### The Monitor Series

*“Open, uncolored, perfectly imaged sound”*

Musician Magazine

“We at Musician have found the Polk Audio Monitor speakers so vastly superior to the competition in their price range we felt we had to pass the information along... The design produces a remarkably well integrated and coherent sound that adapt itself ideally to all kinds of music... the kind of open, uncolored, perfectly imaged sound we thought began at twice the price and required huge amounts of amplification... will benefit from state-of-the-art electronics, but sound quite magnificent with a good mid powered popular brand receiver... they make the other popular speakers in their price range seem dim, colored, boxy and just plain insufficient. If you're shopping for stereo, our advice is not to buy speakers until you've heard the Polks.”

*“Outstanding... ”*

*highly recommended”*

Complete Buyer's Guide  
to Stereo/Hi Fi Equipment

“Sound beyond what would be expected ... highly recommended... Polk Audio Monitor Series speakers enjoy an enviable reputation among audiophiles who don't have the golden wallet to match their golden ears... designed to appeal to the most critical audiophiles and those audiophiles have embraced them warmly... outstanding loudspeakers... deciding high end sonic characteristics... unusually pure sound. It's clear that Polk came by their excellent reputation honestly.”



Monitor 4.5



Monitor 10B

### Monitor 10B

*“Superior sound”*

Stereo Review Magazine

“Polk offers an uncommon amount of superior sound at a moderate price... Open, boxless, three dimensional quality... We probably would have chosen these adjectives ourselves to describe the sound of the Model 10, but Polk has spared us the chore... the combination of good “sound sense” and a high degree of technical expertise and sophistication has resulted in some truly noteworthy products... It is easy to appreciate the advantages of using a pair of small diameter (but long throw) woofers that can radiate much of the midrange as well as the upper and mid-bass frequencies. Avoiding a crossover in the midrange (the most audibly important part of the musical spectrum) is the best way to eliminate or minimize many of the colorations that have been attributed to crossover networks. The dispersion of the one inch tweeter is exceptional... the transient response of the Model 10 is absolutely first-rate, and the hemispherical dispersion is superb (we cannot recall measuring better dispersion on any forward radiating speaker)... the speaker sensitivity is adequate for use with a 10-watt amplifier, yet it could absorb the full output of a 200-watt amplifier without damage... exceptionally pleasing sonic balance.”

*“At their price, they are simply a steal”*

Audiogram Magazine

“When we heard the Polk Speakers at the CES show we were so impressed we could not believe the prices. The sound coming forth from the Model 10 Monitors is something really special. It is a sound that is open, well defined and very low in coloration. One does not generally expect such low coloration in a modestly priced box speaker, and certainly not anything like the definition exhibited by these speakers. How does Polk do it? We think it is mostly execution. They hear very well and they care... Other comparably priced speakers simply do not come close to the standards set by the Model 10... at their price they are simply a steal.”

**Monitor 7C**  
*"It is amazing"*

**Stereo Buyer's Guide**  
"We have found something very special. The Polk 7. It is amazing... Hundreds of manufacturers build loudspeakers but only a few in this price range really perform. The Polk 7's perform!... The bottom end of the Polk 7's is tight, fast and can actually reproduce a cello without making it sound like an electric bass... It is sturdily built and attractive. Technically the Polk 7 is a superior loudspeaker in its class. Frequency response is exceptionally flat... Horizontal dispersion is so good that you can stand in front of one 7 and hear the other!... Vertical dispersion is also excellent... It is apparent that this speaker is a real find."



**Monitor 7C**



**Monitor 5B**

**Monitor 4A**

*"Star of great magnitude"* **Milwaukee Sentinel**  
"The Polk 4 creates a startling illusion of an elevated stage... the stronger and better quality the signal we fed them the more spectacular the image that blazed up... All of that would be remarkable enough if we were discussing loudspeakers in the \$1000 range. The Polk 4 carries a retail price of under \$200 a pair. In actual use the Polk 4 is an all around star of great magnitude. Not only do high frequency shine to the farthest reaches of hearing, but musical textures and colors in that stratosphere come through finely controlled and proportioned. And don't be misled by Polk's modest claim for bass response... its low register shows ample depth and clarity. At high listening levels, these pixie Polks deliver the massive brass sonorities of Mahler's Third Symphony with incredible energy, textured pliancy and, most significant, transparency. Factors of presence and stereo imaging proved just as amazing. Yet the Model 4 doesn't have to be whipped to excel... Late one night, we sat down to a quiet hour of folk music... and experienced the same thrilling detail and immediacy."



**Monitor 4A**

**Monitor 5B**  
*"We were very impressed"*

**Stereo Buyer's Guide**  
"It's a medium-sized bookshelf unit brimming with the latest in Polk speaker technology... excellent sonic balance and a dynamic capability rarely found in a speaker of this size... Bass was well extended and excellent in terms of sonic quality, while the midrange was clean and very detailed... treble was extended and shimmering... the stereo stage was palpable and extremely defined... the frequency responses (sine wave and pink noise) were very flat... add to this the versatility of the unit with regard to room placement, plus the Polk reputation for reliability and it's hard to beat."



**Monitor 5jr. +**

## The Mobile Monitor Series

# “Polk’s Mobile Monitors Sound Like the Finest Home Speakers”

*“Built Tough to Withstand the Rigors of the Road”*

Now you don't have to compromise your home audio standards when listening to music in your car. Polk Audio's engineers have brought the same amazing quality, technology, and innovation of the Grand Prix Award winning Polk home speakers to your automobile. Not surprisingly, two of the Polk Mobile Monitor designs (the MM 10A and MM 6900) have already won Autosound Grand Prix Speaker of the Year awards.

Polk Mobile Monitor automotive systems sound extraordinary. They are silky smooth and perfectly balanced, with a deep, accurate bass performance that leaves the “boom, crash, tinkle” of typical car speakers in the dust. Even at the loud volume levels so often required on the road, Polk Mobile Monitors are non-fatiguing and easy to listen to. Borrowing the same trilaminare polymer cone and dome tweeter technologies developed for the highly acclaimed Polk home Monitor Series, the Mobile Monitors provide unequalled clarity and the awesome power required to effortlessly resolve every musical detail even over road noise.

### Spectacular SDA Imaging Hits the Road!

Now you can experience the accuracy and excitement of live-sound imaging in you car by installing a Polk SDA Mobile Monitor system. An SDA crossover matrix used in conjunction with 2 pairs of Mobile Monitor speakers (front and rear) literally expands the boundaries of the automotive listening environment.

The SDA Mobile Monitor system solves the acoustic shortcomings of automotive interiors and car stereos. First, by cancelling interaural crosstalk distortion, the SDA system frees you from the feeling that you are listening inside a small box. The sound is open, spacious, and three dimensional, as if you were listening in a concert hall. Second, the sound stage is maintained in front of you as it would be in real life, rather than from behind as with conventional autosound systems. Third, excellent bass response is sustained by means of Polk's exclusive Sub-Bass Drive circuit. Of the Polk SDA Mobile system, Car Stereo Review said, “Polk has triumphed... It's like jumping into hyperspace.”

### A Mobile Monitor System for Every Car

Given the wide variety of vehicles on the road, and the myriad of placement options, Polk Mobile Monitors come in many configurations to suit practically any installation. Your Polk dealer can help you choose the system that's right for your car. Go ahead, push the envelope. Doesn't your car deserve the best?



SDA ACM  
\$249.95



MM 5502  
\$99.90 ea.



MM 6502  
\$114.90 ea.



MM 6902  
\$124.90 ea.





**MM 6900**  
\$99.95 ea.



**MM10a**  
\$84.95 ea.



**MM 4**  
\$109.95 ea.



**MM 3a**  
\$62.45 ea.



**MM 1a**  
\$39.95 ea.

## The Architectural Reference Built-in Loudspeaker

### "The Polk AB-7 ... Designed to be Heard — Not Seen"

Now you can enjoy the incredible sound of Polk speakers in every room of your home without using any floor or shelf space to do so. The new Polk AB-7 flush-mount loudspeaker installs easily into any wall, ceiling, or soffit.

Using the same advanced driver and crossover technology as our finest box speakers, the Polk AB-7 offers the performance of the world's finest bookshelf loudspeaker in an incredibly small, inconspicuous package. In fact, the AB-7 is the smallest speaker of its type that uses a full 6½" woofer. It can be mounted in any material ranging in thickness from ½" to several inches, and can be accommodated in either new or existing construction.

Supplied in an off-white finish, the AB-7's grille can be painted to blend in with any wall. Bring the joys of music to every room in your home with the incredible, inconspicuous Polk AB-7.



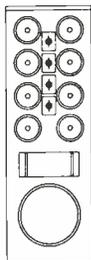
# Specifications

## Your Choice of Many Beautiful Cabinet

### Finishes:

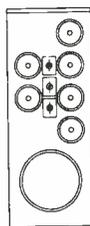
The SDAs are available in a beautiful hand-oiled oak or walnut finish. All other models come standard in furniture grade walnut, oak or black woodgrain vinyl. Polk stands are shown in the photographs and are recommended, but optional.

These specifications are offered to help in comparing the various Polk models with each other. Polk Audio uses many unique testing methods in the design and evaluation of its products. Remember, *there is no accepted standard method for testing loudspeaker systems*. As a result, our published specifications may be more conservative than those published by other speaker manufacturers. Virtually all audio experts agree that no set of measurements can adequately describe the *sound* of any loudspeaker. The best way to choose the speaker that is right for you is to take your favorite recordings to your nearest Polk dealer and hear them for yourself. The rule of thumb is simply to trust your own ears.



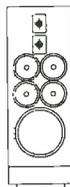
#### SDA-SRS 1.2

Four 1 inch dome tweeters  
Eight 6-1/2 inch drivers  
One 15 inch fluid-coupled subwoofer  
6.5-1/2H x 21W x 13-1/8D  
10Hz-26kHz  
27Hz-20kHz  
50-1000 wats/channel  
6 ohms  
91 dB



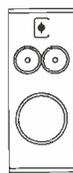
#### SDA-SRS 2.3

Three 1 inch dome tweeters  
Six 6-1/2 inch drivers  
One 15 inch fluid-coupled subwoofer  
5.5H x 20-1/16W x 13-1/8D  
12Hz-26kHz  
30Hz-20kHz  
50-750 wats/channel  
6 ohms  
90 dB



#### SDA-1C

Two 1 inch dome tweeters  
Four 6-1/2 inch drivers  
One 12 inch fluid-coupled subwoofer  
44H x 16-9/16W x 11-1/2D  
15Hz-26kHz  
35Hz-20kHz  
50-500 wats/channel  
6 ohms  
92 dB



#### SDA-2B

One 1 inch dome tweeter  
Two 6-1/2 inch drivers  
One 12 inch fluid-coupled subwoofer  
39-5/8H x 16-9/16W x 11-1/2D  
20Hz-26kHz  
38Hz-20kHz  
30-350 wats/channel  
6 ohms  
89.7 dB

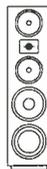
### Driver Complement

Size (Inches)  
Overall Frequency Response  
— 3dB limits  
Rec. Amplification  
Nominal Impedance  
Efficiency



#### SDA-CRS +

One 1 inch dome tweeter  
Two 6-1/2 inch drivers  
One 10 inch fluid-coupled subwoofer  
12-3/4H x 20W x 10-1/8D  
25Hz-26kHz  
42Hz-20kHz  
30-200 wats/channel  
6 ohms  
89.5 dB

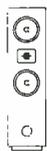


#### RTA 111

One 1 inch dome tweeter  
Two 6-1/2 inch drivers  
Two 8 inch fluid-coupled subwoofers  
39H x 10-1/2W x 14-1/2D  
22Hz-26kHz  
29Hz-20kHz  
30-250 wats/channel  
6 ohms  
90 dB

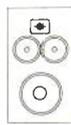
### Driver Complement

Size (Inches)  
Overall Frequency Response  
— 3dB limits  
Rec. Amplification  
Nominal Impedance  
Efficiency



#### RTA 81

One 1 inch dome tweeter  
Two 6-1/2 inch drivers  
13-1/2H x 9W x 11-1/2D  
40Hz-26kHz  
42Hz-20kHz  
20-250 wats/channel  
6 ohms  
89.5 dB



#### Monitor 10B

One 1 inch dome tweeter  
Two 6-1/2 inch drivers  
One 10 inch fluid-coupled subwoofer  
28H x 16W x 11-1/2D  
25Hz-26kHz  
37Hz-20kHz  
20-250 wats/channel  
6 ohms  
89 dB

### Driver Complement

Size (Inches)  
Overall Frequency Response  
— 3dB limits  
Rec. Amplification  
Nominal Impedance  
Efficiency



#### Monitor 7C

One 1 inch dome tweeter  
One 6-1/2 inch driver  
One 10 inch fluid-coupled subwoofer  
24H x 14W x 9-3/4D  
25Hz-26kHz  
40Hz-20kHz  
20-150 wats/channel  
6 ohms  
89 dB



#### Monitor 5B

One 1 inch dome tweeter  
One 6-1/2 inch driver  
One 8 inch fluid-coupled subwoofer  
21-3/4H x 10-9/16W x 9D  
30Hz-26kHz  
43Hz-20kHz  
20-125 wats/channel  
6 ohms  
90 dB

### Driver Complement

Size (Inches)  
Overall Frequency Response  
— 3dB limits  
Rec. Amplification  
Nominal Impedance  
Efficiency



#### Monitor 5jr +

One 1 inch dome tweeter  
One 6-1/2 inch driver  
One 6-1/2 inch fluid-coupled subwoofer  
19-1/2H x 9W x 9D  
30Hz-26kHz  
48Hz-20kHz  
20-125 wats/channel  
6 ohms  
91 dB



#### Monitor 4.5

One 1 inch dome tweeter  
One 6-1/2 inch driver  
17H x 9W x 9D  
30Hz-25kHz  
50Hz-20kHz  
20-100 wats/channel  
6 ohms  
91 dB

### Driver Complement

Size (Inches)  
Overall Frequency Response  
— 3dB limits  
Rec. Amplification  
Nominal Impedance  
Efficiency



#### Monitor 4A

One 1 inch dome tweeter  
One 6-1/2 inch driver  
14-1/4H x 8-1/2W x 7-3/8D  
35Hz-25kHz  
55Hz-20kHz  
20-100 wats/channel  
6 ohms  
91 dB



#### AB-7

One 1 inch dome tweeter  
One 6-1/2 inch driver  
10-5/8H x 7-1/8W  
Cutout size 9-3/4H x 6-1/4 W  
Mounting depth 3 in. minimum  
30Hz-26kHz  
55Hz-20kHz  
10-125 wats/channel  
6 ohms  
90 dB

### Driver Complement

Size (Inches)  
Overall Frequency Response  
— 3dB limits  
Rec. Amplification  
Nominal Impedance  
Efficiency



#### MM 1a

4 inch full range  
3-3/4 Diam  
1-3/8  
80Hz-15,000 Hz  
5-50 wats/channel  
4 Ohms  
94 db



#### MM 4000

Configuration  
Cut Out Dimensions (Inches)  
Mounting Depth (inches)  
Overall Frequency Response  
Rec. Amplification  
Nominal Impedance  
Efficiency  
4 x 6 full range  
5-5/8 x 3-3/4 oval  
2  
75-15,000 Hz  
5-50 wats/channel  
4 ohms  
96 db



#### MM 3a

5-1/4 inch coaxial  
4-7/8 Diam  
2-1/4  
40-20,500 Hz  
5-75 wats/channel  
4 Ohms  
90 db



#### MM 4

Configuration  
Cut Out Dimensions (Inches)  
Mounting Depth (inches)  
Overall Frequency Response  
Rec. Amplification  
Nominal Impedance  
Efficiency  
Plate type with 3/4 inch tweeter and 5-1/4 inch woofer  
4" Diam.  
1-1/2  
40-20,500 Hz  
5-75 wats/channel  
4 ohms  
88 db



#### MM 10b

6-1/2 inch coaxial  
5-3/8 diameter  
2-5/8  
40-20,500 Hz  
5-100 wats/channel  
4 ohms  
94 db



#### MM 6900

Configuration  
Cut Out Dimensions (Inches)  
Mounting Depth (inches)  
Overall Frequency Response  
Rec. Amplification  
Nominal Impedance  
Efficiency  
6 x 9 inch three-way  
8-3/4 x 5-7/8 over  
3-1/8  
34-20,500 Hz  
5-100 wats/channel  
4 ohms  
92 db



#### MM 5502

5-1/4 inch three-way two-piece system  
LF — 8-3/4 x 5-7/8 oval  
MF/HF — 4-1/4 x 2-1/2 (Bush)  
4-5/8 x 2-3/4 (behind panel)  
LF 2-1/4; MF/HF — 1  
40-20,500 Hz  
5-100 wats/channel  
4 ohms  
90 db



#### MM 6502

Configuration  
Cut Out Dimensions (Inches)  
Mounting Depth (inches)  
Overall Frequency Response  
Rec. Amplification  
Nominal Impedance  
Efficiency  
6-1/2 inch three-way two-piece system  
LF — 5-3/8" diam.  
MF/HF — 4-1/4 x 2-1/2 (Bush)  
4-5/8 x 2-3/4 (behind panel)  
LF 2-5/8; MF/HF — 1  
38-20,500 Hz  
5-100 wats/channel  
4 ohms  
92 db



#### MM 6502

6 x 9 inch three-way two-piece system  
LF — 8-3/4 x 5-7/8 oval  
MF/HF — 4-1/4 x 2-1/2 (Bush)  
4-5/8 x 2-3/4 (behind panel)  
LF — 3-1/8; MF/HF — 1  
34-20,500 Hz  
5-100 wats/channel  
4 ohms  
92 db



#### MM 1001

Configuration  
Cut Out Dimensions (Inches)  
Mounting Depth (inches)  
Overall Frequency Response  
Rec. Amplification  
Nominal Impedance  
Efficiency  
1/2 inch tweeter  
2 inch midrange  
4-1/4 x 2-1/2 (flush mount)  
4-5/8 x 2-3/4 (panel mount)  
1 inch  
1500-20,500 Hz  
5-50 wats/channel  
4 ohms  
92 db



#### MM 5501

5-1/4 inch woofer  
5-3/8 Diam.  
2-1/4 inch  
40-1500 Hz—  
5-75 wats/channel  
4 ohms  
90 db



#### MM 6501

6-1/2 inch woofer/subwoofer  
5-3/8 Diam.  
2-5/8 inch  
38-1500 Hz—  
5-100 wats/channel  
4 ohms  
90 db



#### MM 6901

6 x 9 inch woofer/subwoofer  
8-3/4 x 5-7/8 oval  
3-1/8  
34-1500 Hz—  
5-100 wats/channel  
4 ohms  
92 db

#### MM 1001

1/2 inch tweeter, 2 inch midrange, 4-1/4 x 2-1/2 (flush mount), 4-5/8 x 2-3/4 (panel mount), 1 inch, 1500-20,500 Hz, 5-50 wats/channel, 4 ohms, 92 db

# Where to buy Polk Speakers

## AUTHORIZED HOME DEALER LIST

**CANADA** Call Evolution Technology, Toronto for nearest dealer 1-416-335-4422

**AK Anchorage:** Magnum Electronics • Fairbanks: Holt's

**AL Birmingham:** Audition • Dothan: International Audio • Huntsville: Sound Distributors • Mobile: Hi Fi Zone • Montgomery: The Record Shop • Tuscaloosa: Kincaid Stereo & TV

**AR Ft. Smith:** Stereo One • Little Rock: Leisure Electronics • Searcy: Sofmart

**AZ Flagstaff:** Sound Pro • Phoenix/Mesa: Hi Fi Sales • Tucson: Audio Emporium • Yuma: Warehouse Stereo

**CA Bakersfield:** Casa Moore • Campbell: Sound Goods • Canoga Park: Shelly's • Chico: Sounds By Dave • Corona Del Mar: Pacific Coast Audio Video • Davis: World Electronics • Eureka: Eureka Audio Video Hi Fi • Lancaster: California Soundworks • Mountain View: Sound Goods • Napa: Futurvision • Orange: Absolute Audio • Penngrove: California Stereo • Redondo: Systems Design • Sacramento: Good Guys • San Diego: Sound Company • San Francisco & Suburbs: Good Guys, Stereo Store • San Gabriel: Audio Concepts • San Jose: Good Guys • San Luis Obispo: Audio Ecstasy • Santa Barbara: Creative Stereo • Santa Cruz: Sound Wave • Santa Maria: Creative Stereo • Santa Monica: Shelly's Stereo • Sherman Oaks: Systems Design • Stockton: Gluskins • Thousand Oaks: Creative Stereo • Ukiah: Music Hut • Ventura: Creative Stereo • Victorville: Incredible Sounds • Westminster: Videotek Stereo

**CD Boulder:** Soundtrack • Colorado Springs: Sunshine Audio • Denver & Suburbs: Soundtrack • Pueblo: Sunshine Audio • CT Avon: Hi Fi Stereo House • Danbury: Carston's • Fairfield: Audio Design • Greenwich: Al Franklin's • Hartford: Al Franklin's • New Haven: Audio Etc. • Newington: Hi Fi Stereo House • New London: Roberts • Norwalk: Audiotronics • Waterbury: Zanno Music

**DE Wilmington:** Bryn Mawr Stereo • FL Daytona Beach: Stereotypes • Ft. Myers: Stereo Garage • Ft. Lauderdale: Sound Advice • Ft. Pierce: Sound Shack • Ft. Walton Beach: Audio International • Gainesville: Electronics World • Jacksonville: Audio Tech • Key West: Audio International • Lakeland: Sound Factory • Merritt Island: Southern Audio • Miami: Electronic Equipment Co., Sound Advice • Naples: Stereo Garage • Orlando: Audio Spectrum • Panama City: Watsound Stereo • Pensacola: Fidler Hi Fi • Sunrise: Sound Advice • St. Petersburg: Cooper for Stereo, Sound Advice • Tallahassee: Stereo Store • Tampa: Sound Advice • W. Palm Beach: Electronic Connection, Sound Advice

**GA Athens:** Hi Fi Buys • Atlanta & Suburbs: Hi Fi Buys • Augusta: Stereo City • Brunswick: H&H Service Store • Columbus: Merit TV • Macon: Georgia Music • Savannah: Audio Warehouse • Valdosta: Stereo Connection

**HI Honolulu:** Honolulu Audio Video • IA Davenport: Grigg's Music • Des Moines: Audio Labs • Dodge City: Sound World • Dubuque: Reners Iowa City: Hawkeye Audio • Mason City: Sound World • Waterloo: Team ID Boise: Stereo Shoppe • Sandpoint: Electracraft • Twin Falls: Audio Warehouse

**IL Alton:** Reliable Stereo • Aurora: Stereo Systems • Bloomington: Alan's Creative Stereo • Carbondale: Southern Stereo • Champaign: Good Vibes • Chicago & Suburbs: United Audio • Decatur: J.R. Lloyd's • DeKalb: Audio Plus • Highland Park: Columbia • Joliet: Stereo Systems • Kankakee: Barrett's Entertainment • Lansing: Audio Clinic • Naperville: Stereo Systems • Normal: Sundown One • Peoria: Team Electronics • Rockford: Columbia • Springfield: Sundown One • Springfield: Audio Labs • Vernon Hills: Alan's • Villa Park: Hi Fi Hutch • Waukegan: Alan's

**IN Bloomington:** Campus Audio • Bluffton: Eley TV & Appliance • Evansville: Risley's • Ft. Wayne: Classic Stereo • Indianapolis: Ovalton • Lafayette: Good Vibes • Marion: Classic Stereo • Michigan City: Audio Connection • Muncie: Classic Stereo • South Bend: Classic Stereo • Terre Haute: Stereo Craters

**KS Junction City:** Audio Junction • Overland Park: Audio Electronics • Wichita: Audio Visions • Topeka: Nelson's

**KY Bowling Green:** Audio Center • Lexington: Ovalton Audio • Louisville: Audio Video Buy Design • Owensboro, Paducah: Risley's • Pikeville: Mayo Inc.

**LA Lafayette:** Sound Electronics • Metairie & New Orleans: Altman Audio • Opelousas: Sound Electronics • MA Boston: Waltham Camera & Stereo • Fitchburg: Fitchburg Music • N. Dartmouth: Sound II • Pittsfield: H B S. Stereo • Worcester: O'Coins

**ME Bangor:** Sound Source • Camden: Harbor Audio • Portland: New England Music • MD Annapolis: Spaceways • Baltimore: Soundscape • College Park: Spaceways • MI Ann Arbor: Absolute Sound • Birmingham: Almas Hi Fi • Dearborn: Almas Hi Fi • Farmington Hills: Almas Hi Fi • Flint: Stereo Center • Grand Rapids: Classic Stereo • Kalamazoo: Classic Stereo • Petoskey: Kurtz Music • Royal Oak: Absolute Sound, Court St. Listening Room • Traverse City: Kurtz Music

**MN Duluth:** Mel's TV & Audio • Mankato: Audio King • Minneapolis & Suburbs: Audio King • Rochester: Audio King • St. Paul: Audio King • MD Cape Girardeau: Stereo One • Columbia: Johnston Audio • Rolla: End of the Rainbow • St. Louis: Sound Central

**MS Hattisburg:** McLeland TV • Pascagoula: Empress

**MT Billings:** Video Sat & Sound • Bozeman: Thrifty Ear • Great Falls: Rocky Mountain Hi Fi • Missoula: Aspen Sound

**NC Asheville:** Mr. Toad's Stereo Video • Boone: Holtons • Chapel Hill: Stereo Sound • Charlotte: Audio Video Systems • Conover • Tri-City • Greensboro: Stereo Sound • Kinston: Stereo Concepts • Moorehead City: Anderson Audio • New Bern: Anderson Audio • Raleigh: Audio Buys, Stereo Sound • Rocky Mount: Microwave Audio • Wilmington: Atlantic Audio • Wilson: Modern Stereo • Winston-Salem: Stereo Sound

**NH Concord:** Audio of New England • Lacombe: Lakeside Stereo • New London: North Star • Salem: Cuomo's

**NJ East Brunswick:** Atlantic Stereo • Franklin Lakes: Franklin Lakes Stereo • Maple Shade: Bryn Mawr Stereo • Montclair: Perdue Radio • Raritan: AC Audio • Ridgewood: Sounding Board • Shrewsbury: Monmouth Stereo • Toms River: Rands Camera • Wall Twp.: Monmouth Stereo • West Caldwell: Perdue Radio

**NM Alamogordo:** D&K Electronics • Albuquerque: West Coast Sound • Carlsbad: Beason's • Clovis: Towne Crier • Santa Fe: West Coast Sound • NV Las Vegas: Upper Ear • Reno: The Audio Authority

**NY Albany:** Clark Music • Batavia: Unicorn Audio • Buffalo: Speaker Shop • Corning: Chemung • Elmira: Chemung • Fredonia: Studio One • Glens Falls: Audio Genesis • Goshen: Longplayer's Stereo • Ithaca: Chemung • Jamestown: Studio One • Massena: Hi Fi Buys • Newburgh: Audio Expressions • New York City: Wally's Stereo Tape City • Syracuse: Clark Music • Vestal: Hart Electronics

**OH Akron:** Audio Craft • Canton: Belden Audio • Cleveland & Suburbs: Audio Craft • Dayton: Stereo Showcase • Lima: Classic Stereo • Monroe: Radio Outlet • Toledo: Audio Craft

**OK Lawton:** Hi Fi Shop • Shawnee: Rave Sound • Stillwater: Cartunes • Tulsa: Audio Advice

**OR Beaverton:** Car Stereo Superstores • Eugene: University HiFi • Grants Pass: Sheckells • Medford: Sheckells • Pendleton: Royal Kar-Tunes • Portland: Car Stereo Superstores

**PA Allentown:** Bryn Mawr Stereo • Blakely: Hart Electronics • Bryn Mawr: Bryn Mawr Stereo • Camp Hill: Bryn Mawr Stereo • Chambersburg: Sunrise Electronics • Erie: Studio One • Johnstown: Gary's Entertainment • Kingston: Hart Electronics • Lancaster: G'n'T Stereo • Longhorne: Bryn Mawr • Montgomeryville: Bryn Mawr Stereo • Natrona Heights: Stereo Land • Philadelphia & Suburbs: Bryn Mawr Stereo • Pittsburgh: Audio Junction • Quakertown: Bryn Mawr Stereo • Reading: G'n'T Stereo • Selinsgrove: Stereo Shoppe • State College: Paul & Tony's Stereo • Westport: Audio Insight • Williamsport: Robert M. Sides

**PUERTO RICO Rio Piedras:** Precision Audio • RI N. Providence: Eastern Audio • SC Anderson: Music Machine • Charleston: Audio Warehouse • Columbia: Music Machine • Greenville: Mitchell's Stereo, Music Machine • Greenwood: Stereo Shop • Spartansburg: Stereo Shop

**SD Aberdeen:** Engel Music • Rapid City: Team Electronics • Sioux Falls: Audio King • TN Chattanooga: R&R TV • Cookeville: Lindsey Ward • Jackson: New Wave Electronics • Johnson City: Mr. Toad's Stereo Video • Knoxville: Lindsey Ward • McMinnville: Lindsey Ward • Memphis: New Wave Electronics • Nashville: Hi Fi Buys

**TX Amarillo:** Sound Systems Ltd. • Arlington: Longview Audio Techniques • Austin: College Station: Audio Video • Corpus Christi: Tape Town • Dallas: Hillcrest Hi Fidelity • El Paso: Soundquest • Ft. Worth: Sound Idea • Houston: Sheffield Audio • Hurst: Sound Idea • Laredo: Metex International • Longview: Audio Techniques • Lubbock: Electronics Supercenter • San Antonio: Bill Case Sound • San Marcos: Discovery Audio Video • Sherman: Worldwide Stereo • Temple: Audio Tech • Texarkana: Sound Town • Waco: Audio Tech

**UT Logan:** Stokes Brothers • Ogden: Stokes Brothers • Salt Lake City: Broadway Music • St. George: Boulevard Home Furnishings • VA Bristol: Mr. Toad's Stereo Video • Charlottesville: Holdrens • Loudoun: Gary's Stereo • Roanoke: Holdrens • Virginia Beach: Digital Sound

**VT Brattleboro:** Scientific Stereo • Essex Junction: Creative Sound • Rutland: Mountain Music

**WA Bellingham:** QC Stereo • Chehalis: Music Store • Oak Harbor: QC Stereo Center • Richland: Tin Ear Stereo • Spokane: Electracraft (Hals)

**WI Appleton:** Sound World • Eau Claire: EME Audio Systems • Green Bay: Sound World • Lacrosse: Sound World • Madison: Happy Medium • Milwaukee: Audio Emporium • Wausau: Sound World

**WV Barboursville, Beckley, Charleston, Huntington:** Pied Pier • Piedmont: Sound Gallery • Wheeling: Stereo Lab

**WY Cheyenne:** Electronics Unlimited

**Electronic • Salinas:** Monterey Auto Stereo • San Diego: Sound Company • San Francisco: Custom Car Alarms • San Gabriel: Audio Concepts • San Luis: Audio Video Concepts • San Pedro: Carston • Santa Ana: The Perfect Image • Santa Barbara: Creative Stereo • Ukiah: Music Hut • Van Nuys: Car Fidelity • Ventura: Creative Stereo • Westminster: Videotek Stereo

**CD Boulder:** Soundtrack • Colorado Springs: Sunshine Audio • Denver & Suburbs: Soundtrack • Pueblo: Sunshine Audio • CT Avon: Hi Fi Stereo House • Danbury: Carston's • New Haven: Audio Etc. • Newington: Hi Fi Stereo House • Norwalk: Audiotronics

**DE Wilmington:** Bryn Mawr Stereo • FL Daytona Beach: Stereotypes • Ft. Pierce: Sound Shack • Lakeland: Sound Factory • Merritt Island: Southern Audio • Miami: Electronic Equipment Co. • Panama City: Watsound Stereo • Pensacola: Fidler Hi Fi • Tallahassee: Stereo Store • W. Palm Beach: Sound Shack

**GA Athens:** HiFi Buys • Atlanta & Suburbs: HiFi Buys • Augusta: Pro Audio Inc. • Brunswick: H&H Service Store • Gainesville: Audio Dimensions • Martinez: Pro Audio Inc. • Savannah: Audio Warehouse • Valdosta: Stereo Connection

**HI Honolulu:** Audio Audio • IA Des Moines: AudioLabs • Dodge City: Sound World • Dubuque: Reners • Iowa City: Hawkeye Audio • Mason City: Sound World • Waterloo: Team ID Boise: Stereo Shoppe • Sandpoint: Electracraft

**IL Alton:** Reliable • Aurora: Stereo Systems • Bloomington: Alan's Creative Stereo • Carbondale: Southern Stereo • Champaign: Good Vibes • Chicago & Suburbs: United Audio • DeKalb: Audio Plus • Highland Park: Columbia • Joliet: Stereo Systems • Kankakee: Barrett's • Naperville: Stereo Systems • Normal: Sundown One • Peoria: Team Elec. • Rockford: Columbia • Springfield: Sundown One • Vernon Hills: Alan's • Villa Park: HiFi Hutch • Waukegan: Alan's

**IN Bloomington:** Campus Audio • Evansville: Risley's • Ft. Wayne: Classic Stereo • Indianapolis: Ovalton • Lafayette: Good Vibes • Marion: Classic Stereo • Michigan City: Audio Connection • Muncie: Classic Stereo • South Bend: Classic Stereo • Terre Haute: Stereo Craters

**KS Overland Park:** Audio Electronics • Wichita: Audio Visions • Topeka: Nelson's

**KY Lexington:** Ovalton • Louisville: Audio Video by Design • Owensboro, Paducah: Risley's • Pikeville: Mayo Inc.

**LA Lafayette:** Sound Electronics • Lake Charles: ProTech Audio • Metairie & New Orleans: Altman Audio • Opelousas: Sound Electronics

**MA Boston:** Waltham Camera & Stereo • Fitchburg: Fitchburg Music • N. Dartmouth: Sound II • Pittsfield: HBS Stereo

**ME Bangor:** Sound Source • Kittery: Audio Motion

**MD Annapolis:** Spaceways • Baltimore: Soundscape • College Park: Spaceways • Laurel: Mr. Car Stereo

**MI Dearborn:** Radio Frank • Detroit: Birmingham Auto Sound • Grand Rapids: Classic Stereo • Kalamazoo: Classic Stereo • Petoskey & Traverse City: Kurtz Music • Warren: Radio Frank

**MN Duluth:** Mel's TV & Audio • Mankato: Audio King • Minneapolis & Suburbs: Audio King • Rochester: Audio King • St. Paul: Audio King

**MO Columbia:** Johnson Audio • St. Louis: Sound Central

**MS Gulfport:** Empress • Pascagoula: Empress of Gulfport

**MT Billings:** Video Sat & Sound • Bozeman: Thrifty Ear • Great Falls: Rocky Mountain Hi Fi • Missoula: Aspen Sound

**NC Asheville:** Mr. Toad's Stereo Video • Boone: Holtons • Chapel Hill: Stereo Sound • Charlotte, Concord: Carolina Car Stereo • Conover: Tri City • Greensboro: Stereo Sound • Kinston: Stereo Concepts • Moorehead City: Anderson Audio • New Bern: Anderson Audio • Raleigh: Stereo Sound • Rocky Mount: Microwave Audio • Wilmington: Atlantic Audio • Wilson: Modern Stereo • Winston Salem: Custom Car Hi Fi, Stereo Sound

**NH Concord:** Audio of New England • Lacombe: Lakeside Stereo • New London: North Star • Salem: Cuomo's

**NJ East Brunswick:** Atlantic Stereo • Franklin Lakes: Franklin Lakes Stereo • Maple Shade: Bryn Mawr Stereo • Montclair: Perdue Radio • Raritan: AC Audio • Ridgewood: Sounding Board • Shrewsbury: Monmouth Stereo • Toms River: Rands Camera • Wall Twp.: Monmouth Stereo • West Caldwell: Perdue Radio

**NM Alamogordo:** D&K Electronics • Carlsbad: Beason's • Clovis: Towne Crier • NV Las Vegas: Sound Experience

**NY Albany:** Clark Music • Albion: Legend Audio Video • Batavia: Unicorn Audio • Buffalo: Speaker Shop • Corning: Chemung • Fredonia: Studio One • Glens Falls: Audio Genesis • Goshen: Longplayer's Stereo • Ithaca: Chemung • Jamestown: Studio One • Massena: Hi Fi Buys • Newburgh: Audio Expressions • New York City: Wally's Stereo Tape City • Syracuse: Clark Music • Vestal: Hart Electronics

**OH Akron:** Audio Craft • Canton: Belden Audio • Cleveland & Suburbs: Audio Craft • Dayton: Stereo Showcase • Lima: Classic Stereo • Monroe: Radio Outlet • Toledo: Audio Craft

**OK Lawton:** HiFi Shop • Shawnee: Rave Sound • Stillwater: Cartunes • Tulsa: Audio Advice

**OR Beaverton:** Car Stereo Superstores • Eugene: University HiFi • Grants Pass: Sheckells • Medford: Sheckells • Pendleton: Royal Kar-Tunes • Portland: Car Stereo Superstores

**PA Allentown:** Bryn Mawr • Altoona: Russ Carriers • Blakely: Hart Electronics • Bryn Mawr: Bryn Mawr Stereo • Camp Hill: Bryn Mawr Stereo • Chambersburg: Sunrise Electronics • Erie: Studio One • Johnstown: Gary's Entertainment • Kingston: Hart Electronics • Lancaster: GNT Stereo • Longhorne/ Montgomery/Philadelphia & Suburbs: Quakertown: Bryn Mawr Stereo • Reading: King • Westport: Audio Insight • Williamsport: Robert M. Sides

**PUERTO RICO Rio Piedras:** Precision Audio • RI N. Providence: Eastern Audio • SC Charleston: Audio Warehouse • Greenwood/Sparksburg: Stereo Shop • SD Aberdeen: Engel Music • Rapid City: Team Electronics

**TX Amarillo:** Sound Systems Ltd. • Arlington: Longview Audio Techniques • Austin: College Station: Audio Video • Corpus Christi: Tape Town • Dallas: Hillcrest Hi Fidelity • El Paso: Soundquest • Ft. Worth: Sound Idea • Houston: Sheffield Audio • Hurst: Sound Idea • Laredo: Metex International • Longview: Audio Techniques • Lubbock: Electronics Supercenter • San Antonio: Bill Case Sound • San Marcos: Discovery Audio Video • Sherman: Worldwide Stereo • Temple: Audio Tech • Texarkana: Sound Town • Waco: Audio Tech

**UT Logan:** Stokes Brothers • Ogden: Stokes Brothers • Salt Lake City: Broadway Music • St. George: Boulevard Home Furnishings • VA Bristol: Mr. Toad's Stereo Video • Charlottesville: Holdrens • Loudoun: Gary's Stereo • Roanoke: Holdrens • Virginia Beach: Digital Sound

**VT Brattleboro:** Scientific Stereo • Essex Junction: Creative Sound • Rutland: Mountain Music

**WA Bellingham:** QC Stereo • Chehalis: Music Store • Oak Harbor: QC Stereo Center • Richland: Tin Ear Stereo • Spokane: Electracraft (Hals)

**WI Appleton:** Sound World • Eau Claire: EME Audio Systems • Green Bay: Sound World • Lacrosse: Sound World • Madison: Happy Medium • Milwaukee: Audio Emporium • Wausau: Sound World

**WV Barboursville, Beckley, Charleston, Huntington:** Pied Pier • Piedmont: Sound Gallery • Wheeling: Stereo Lab

**WY Cheyenne:** Electronics Unlimited

## AUTHORIZED MOBILE MONITOR DEALER

**AK Fairbanks:** Holt's

**AL Mobile:** Hi Fi Zone • Montgomery: The Record Shop • Pelham: Radio-Active • Selma: Poe Electronics • Tuscaloosa: Kincaid Stereo

**AR Ft. Smith:** Stereo One • Little Rock: Your Car Stereo • Searcy: Sofmart

**AZ Phoenix/Mesa:** Creative Car Stereo, Hi Fi Sales • Prescott: Audio Entertainment Systems • Tucson: Audio Emporium

**CA Bakersfield:** Casa Moore • Campbell: Sound Goods • Canoga Park: Car Fidelity, Shelly's • Costa Mesa: Car Fidelity • Culver City: California Car Sounds • Davis: World Electronics • Encino: Car Fidelity • Escondido: Auto Service & Communication • Goleta: Creative Stereo • Harbor City: Crazy Stereo • Lancaster: California Soundworks • Lawndale: Crazy Stereo • Long Beach: Audio Concepts • Los Angeles: Radioactive • Marina Del Rey: Audio Engineering • Mill Brea: Custom Car Alarms • Monterey: Monterey Auto Stereo • MT View: Sound Goods • Napa: Futurvision • North Hollywood: Car Fidelity • Pennngrove: California Stereo • Redondo: Systems Design Group • Sacramento: World

**Electronic • Salinas:** Monterey Auto Stereo • San Diego: Sound Company • San Francisco: Custom Car Alarms • San Gabriel: Audio Concepts • San Luis: Audio Video Concepts • San Pedro: Carston • Santa Ana: The Perfect Image • Santa Barbara: Creative Stereo • Ukiah: Music Hut • Van Nuys: Car Fidelity • Ventura: Creative Stereo • Westminster: Videotek Stereo

**NM Alamogordo:** D&K Electronics • Carlsbad: Beason's • Clovis: Towne Crier • NV Las Vegas: Sound Experience

**NE Lincoln, Omaha:** Stereo West

**NH Concord:** Audio of New England • Lacombe: Lakeside • Salem: Cuomo's

**NJ East Brunswick:** Atlantic Stereo • Franklin Lakes: Franklin Lakes Stereo • Maple Shade: Bryn Mawr Stereo • Paramus: Leonard Radio • Ramsey: Rolling Tone • Ridgewood: Motering Images • Scotch Plains: Electronics in Motion • Shrewsbury: Monmouth Stereo • Toms River: Rands Camera • Wall Twp.: Monmouth Stereo

**NM Alamogordo:** D&K Electronics • Carlsbad: Beason's • Clovis: Towne Crier • NV Las Vegas: Sound Experience

**NY Albany:** Clark Music • Albion: Legend Audio Video • Batavia: Unicorn Audio • Buffalo: Speaker Shop • Corning: Chemung • Fredonia: Studio One • Glens Falls: Audio Genesis • Goshen: Longplayer's Stereo • Ithaca: Chemung • Jamestown: Studio One • Massena: Hi Fi Buys • Newburgh: Audio Expressions • New York City: Wally's Stereo Tape City • Syracuse: Clark Music • Vestal: Hart Electronics

**OH Akron:** Audio Craft • Canton: Belden Audio • Cleveland & Suburbs: Audio Craft • Dayton: Stereo Showcase • Lima: Classic Stereo • Monroe: Radio Outlet • Toledo: Audio Craft

**OK Lawton:** HiFi Shop • Shawnee: Rave Sound • Stillwater: Cartunes • Tulsa: Audio Advice

**OR Beaverton:** Car Stereo Superstores • Eugene: University HiFi • Grants Pass: Sheckells • Medford: Sheckells • Pendleton: Royal Kar-Tunes • Portland: Car Stereo Superstores

**PA Allentown:** Bryn Mawr • Altoona: Russ Carriers • Blakely: Hart Electronics • Bryn Mawr: Bryn Mawr Stereo • Camp Hill: Bryn Mawr Stereo • Chambersburg: Sunrise Electronics • Erie: Studio One • Johnstown: Gary's Entertainment • Kingston: Hart Electronics • Lancaster: GNT Stereo • Longhorne/ Montgomery/Philadelphia & Suburbs: Quakertown: Bryn Mawr Stereo • Reading: King • Westport: Audio Insight • Williamsport: Robert M. Sides

**PUERTO RICO Rio Piedras:** Precision Audio • RI N. Providence: Eastern Audio • SC Charleston: Audio Warehouse • Greenwood/Sparksburg: Stereo Shop • SD Aberdeen: Engel Music • Rapid City: Team Electronics

**TX Amarillo:** Sound Room, Sound Systems Ltd. • Austin: Audio Dimensions, Audio Video • College Station: Audio Video • Corpus Christi: Tape Town • Dallas: Americell • El Paso: Soundquest • Ft. Worth: Sound Idea • Houston: Sheffield Audio • Hurst: Sound Idea • Houston: Sheffield Audio • Hurst: Sound Idea • Longview: Audio Techniques • Lubbock: Electronics Supercenter • San Antonio: Bill Case Sound • Temple: Audio Tech • Texarkana: Sound Town • Waco: Audio Tech

**UT Logan:** Stokes Brothers • Ogden: Stokes Brothers • Salt Lake City: Broadway Music • St. George: Boulevard Home Furnishings • VA Bristol: Mr. Toad's Stereo Video • Charlottesville: Holdrens • Loudoun: Gary's Stereo • Roanoke: Holdrens • Virginia Beach: Digital Sound

**VT Brattleboro:** Scientific Stereo • Essex Junction: Creative Sound • Rutland: Mountain Music

**WA Bellevue:** Trax Electronics • Centralia: Twin City Auto Sound • Kent: Trax Electronics • Puyallup: System One • Seattle: Cartronics • Silverdale: Car Stereo • Spokane: Electracraft • Tacoma: Music Machine • Wenatchee: Performance Auto Sound

**WI Appleton:** Sound World • Eau Claire: EME Audio Systems • Green Bay: Sound World • Lacrosse: Sound World • Madison: Happy Medium • Milwaukee: Audio Emporium • Wausau: Sound World of Wausau

**WV Barboursville, Beckley, Charleston, Huntington:** Pied Pier • Piedmont: Sound Gallery • Wheeling: Stereo Lab

**WY Cheyenne:** Electronics Unlimited

# TAPE GUIDE

HERMAN BURSTEIN

## Loss of Bias

*Q. I recently acquired an audio system with a double cassette deck. About four weeks later, the recording-only section of the deck began to exhibit serious distortion, particularly on high-frequency material, and excessive sibilance. I tried cleaning the heads, demagnetizing them, and changing tape brands, but with no improvement. Before I take the deck in for service, I would appreciate your suggestions and opinion as to whether the cause might be a bias misadjustment.—Matt Beam, Elgin, Ill.*

*A.* The likely cause of your problem is insufficient bias current to the record head. Bias is a high-frequency current, usually in the vicinity of 100 kHz, which is fed to the record head along with the audio signal. Its purpose is to reduce distortion and to maximize the amount of signal recorded on the tape. Bias, unfortunately, also acts to reduce treble response; this reduction, however, is compensated by treble boost in recording. Thus you can appreciate that a partial or complete loss of bias will result in excessive distortion and in excessive treble response, which produces annoying sibilance.

## A Problem Cassette

*Q. I have a strange problem with just one cassette: It plays back slowly on my deck. Originally, it played correctly, but soon it began to play slow. Stranger still, it plays correctly on another deck that I own and on my brother's deck. (According to tests I have made, when the tape plays slow it requires about an extra two seconds per minute.) What is causing this?—Wade Marshall, Chicago, Ill.*

*A.* Inasmuch as your difficulty occurs only with one cassette, the fault appears to be in the cassette rather than in the deck. There may be a defect in the cassette, such as poor slip sheets, which produces a resistance to tape motion. Your principal tape deck may have less driving power than the other decks you mention, and thus cannot overcome this unusually high resistance to tape motion. I would be inclined to throw away the offending cassette and forget about the problem, unless of course it occurs again with other cassettes. Then, you would need help from a service shop.

## CD Compression

*Q. I am interested in copying CDs onto cassettes for use in my car. I understand that I must use some compression of the signal to get the best results since the original dynamic range is so great. How do I go about doing this?—Marvin Shuster, North Brunswick, N.J.*

*A.* You may need a compressor. A few such units are listed in *Audio's Annual Equipment Directory* (October issue) and *Stereo Review's Buyers Guide*.

Not all CDs require compression, however. Some, particularly those from older analog originals, are based on master tapes that were already compressed to meet the limitations of the LP medium. Furthermore, the program material may have limited dynamic range, obviating the need for compression. Much popular music, particularly rock, has a very limited dynamic range—sometimes as little as 20 or even 10 dB—in contrast to classical music's dynamic range of 50, 60, or 70 dB (or even more on rare occasions).

An alternative to using a compressor is to ride gain while recording a cassette. This assumes intimate familiarity with the program material so that you can judiciously lower or raise the recording level as the program material requires. And it is a tedious process.

## Channel Imbalance

*Q. Is there an intrinsic reason why most of the phonograph albums that I use to make tapes produce consistently higher readings on the left channel than on the right? In recording, should the readings be equal?—Neil Brooks, Kalamazoo, Mich.*

*A.* The higher level of the left channel may be due to an imbalance between the two channels of your magnetic phono pickup or the channels of your preamp. An imbalance in the record section of your tape deck or in the calibration of its record-level meters also could be the source of your channel balance problem.

If the left and right channels appear to have about equal levels in playback, despite unequal readings when recording, leave things as they are. If the left channel comes out louder in playback, set your levels for about equal readings when recording.



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**CRUTCHFIELD**

1 Crutchfield Park, Dept. AU, Charlottesville, VA 22906

An amplifier controls a speaker's motions better when its output impedance is far lower than the speaker's impedance.

#### Coming to Terms with Terms

*Q. What do the terms slew rate, damping factor, and headroom mean?—Allen Polmann, Laurel, Md.*

*A. Slew rate refers to the rapidity with which an amplifier's output can change in response to a very sharp change in the input signal. It is usually*

measured in volts per microsecond. When an amplifier cannot handle the fastest signal changes—particularly high-frequency transients—slew-rate limiting is said to occur. This tends to produce intermodulation distortion, with consequent changes in the character of the sound.

Damping factor applies to power amplifiers and refers to the ability of a power amplifier to "short-circuit" any oscillation that a speaker tends to make on its own. In the absence of damping, an audio signal fed to a speaker might be somewhat blurred by the speaker's tendency to vibrate on its own when excited by the sudden application or removal of a signal. However, a well-designed amplifier has a very low impedance compared with that of most speakers—sometimes less than one-hundredth as much. In this case, the amplifier virtually short-circuits the voltages generated by the speaker's motions, limiting its ability to vibrate on its own. (This may be compared to short-circuiting an electric generator, thereby limiting its ability to turn.)

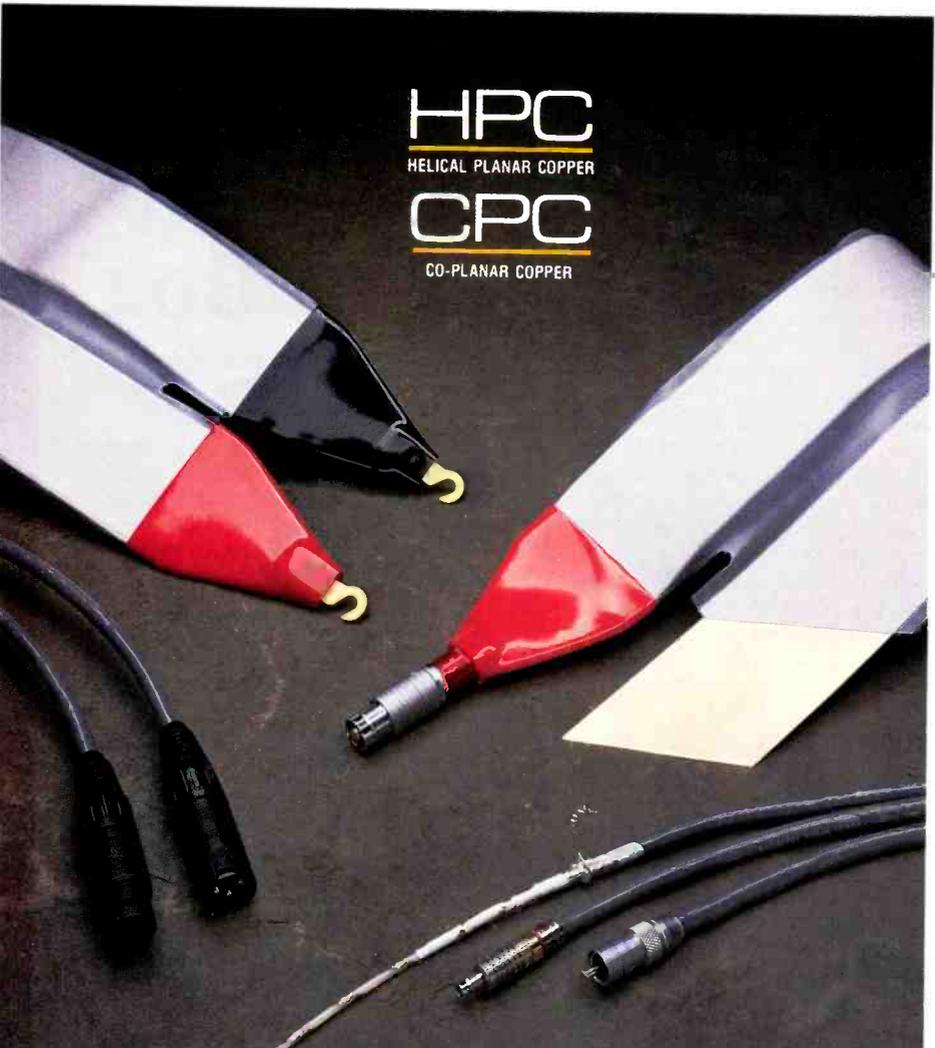
Headroom refers to the ability of a tape system to record high frequencies at a high level without running into distortion and treble loss due to tape saturation. The amount of headroom, or the safety margin against saturation, depends on the deck, the tape, and the noise-reduction system used. Type IV (metal) tape offers more headroom than the other types, Dolby C NR offers more than Dolby B NR, and dbx NR provides more than Dolby C NR. The deck manufacturer's decision on how much bias and record treble boost to use are interrelated with objectives for treble response, distortion, and S/N ratio—all of which affect headroom.

#### Dubbing Strategies

*Q. I have just purchased a second cassette deck. When dubbing from one deck to the other, which should I use to play and which to record?—Phil Brewer, Williamsburg, Ky.*

*A. As a general rule, it is wisest to play on the same deck that was used to record it. If there is a discrepancy in azimuth alignment between the two decks, you are apt to do better by playing a tape on the deck used to record that tape. However, if you are copying a prerecorded cassette, you will have to determine by ear which deck gives you the best playback.*

*If you are dubbing your own old tapes, be sure when playing them to use the same noise-reduction system that was employed in recording. For example, if these tapes were recorded*

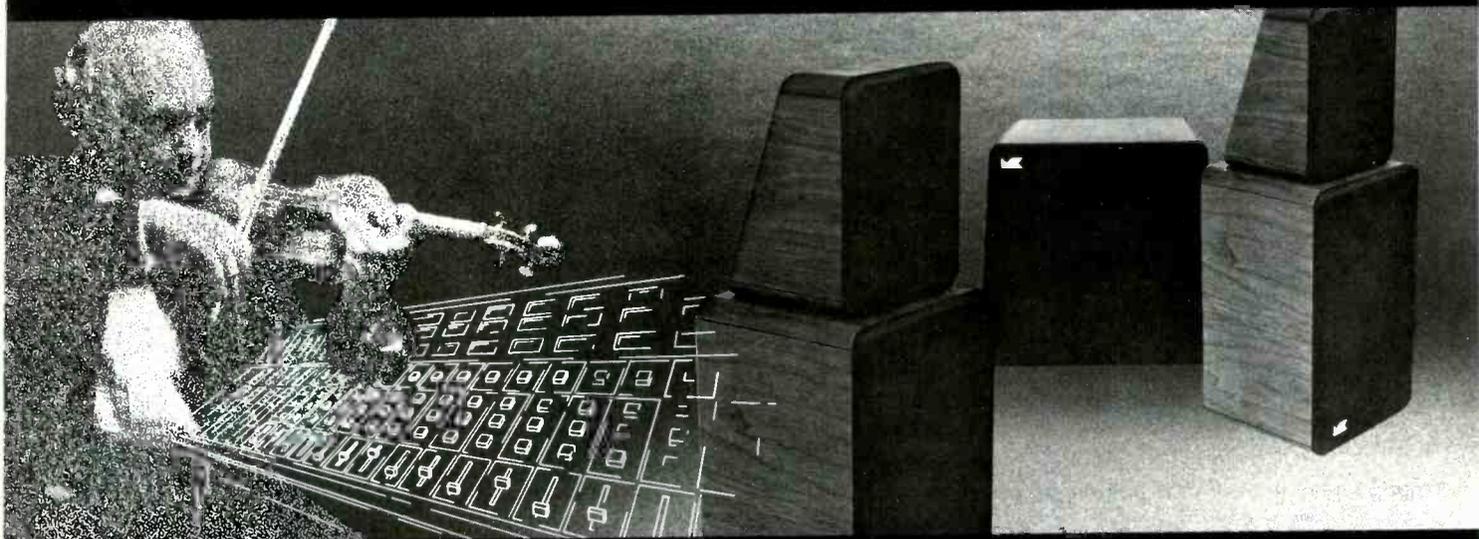


Over two years ago the staff at Madrigal Audio Laboratories began accumulating convincing evidence that solid conductors of rectangular cross-section would do a better job of carrying musical signals. Years of listening and engineering tests making use of ribbons of specially processed, high-purity copper with teflon insulation and the highest quality terminations, have resulted in the new Madrigal HPC and CPC cables.

Visit your Madrigal dealer and hear what these original designs can do to improve your music system.

HPC and CPC cables are designed by, and manufactured exclusively for  
**Madrigal Audio Laboratories**, P.O. Box 781, Middletown, CT 06457 ITT TLX 4942158

# M&K asks: How do other companies know that their speakers will accurately reproduce the sound of live music in your home?



**At M&K, we know why our speakers give you the most realistic reproduction of live music.**

We are the *only* speaker manufacturer constantly referencing the sound of our speakers to live professional musicians in a recording environment. We are the *only* speaker manufacturer that is also a digital recording label — using our recording experience to engineer and perfect our speakers — *in our own recording studio.*

M&K Sound is at the cutting edge in both loudspeaker and recording technology. RealTime Records (and its associated label Perpetua Records) has been a vital part of our company since 1974. We helped pioneer both direct-to-disc and digital recording, and, in 1983, we were the first U.S. label to release digital Compact Discs.

Our superiority is a direct result of this dual heritage. No other speaker manufacturer has musicians on the premises, continually using live music as a speaker engineering tool, thus ensuring the accuracy of both the speakers and the recordings.

## **The M&K Satellite and Powered Subwoofer System**

The lifelike detail, power and clarity of our unique component speaker concept cannot be equalled by conventional speaker designs. The key to our design is the separation of the midrange and high frequency elements from the bass

Virtually all-speakers produce the entire musical spectrum from one cabinet. To produce bass, that cabinet must be large. But a large cabinet compromises the rest of the sound. Tweeter and midrange speakers mounted on large front panels exhibit a coloration of the sound known as diffraction — resulting in the “boxy” sound of virtually every conventional speaker.

M&K systems place the mid and high frequency speakers in two *Satellite* enclosures of optimum size, adding a separate *Powered Subwoofer* to produce just the deepest bass. Listen, and your ears will immediately know the reason why.

# M & K Satellite Speakers

## Why small speakers are better

Do you believe the myth that only large speakers can be good? With M&K's component speaker concept, *smaller is better*. The detail and clarity of M&K Satellites stands in sharp contrast to the "boxy" and "canned" sound of large conventional speakers.

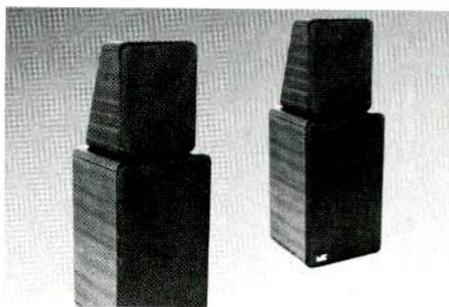
Through some of the audio industry's most sophisticated research and engineering, M&K Satellites have the true capability to reproduce the sharp transients and presence of live musical instruments. Compare an M&K Satellite to other speakers, and you'll immediately recognize the difference.

Close your eyes, and the speakers will seem to disappear. In their place, you'll hear instruments in a wide and deep three-dimensional space, reproduced with a precision that has astounded the most experienced audio reviewers. Above all, *the sound is live*.

## Technical notes

Each Satellite enclosure is optimized for its speaker elements to guarantee minimum diffraction. The physical offset between the midrange/woofer and the tweeter drivers works in conjunction with the unique M&K crossover to achieve overall delay alignment. Sharp sounds produced simultaneously by both drivers reach your ear at the same time — exactly like the sound of a live instrument.

Each M&K crossover uses only precision components, including distortionless air-core inductors and heavy-gauge wiring. The S-1B and S-2B Satellites give you 36 choices of midrange and treble balance through two back-panel switches, affecting presence, depth, brightness, impact, etc. The SX-4 and S-3B Satellites offer four choices of tonal balance.



### ► S-1B

**Tweeters:** Two 1" soft-dome.  
**Mid-woofers:** Two 5" polypropylene cones.  
**Comments:** Top-of-the-line high energy, wide dynamic range monitor. Separate controls for midrange, treble contour. Greatest clarity of sound, lowest distortion.

**Power:** 7½ watts min., 400 watts max.\*  
**Frequency Response:** 75 – 22 KHz ± 3 db  
**Impedance:** 4 ohms  
**Finish:** Oak or Walnut veneer, Black grille  
**Dimensions:** (HxWxD)" 21 x 7½ x 7½  
**Weight:** 18 lbs. each



### ► S-2B

**Tweeter:** One 1" soft-dome.  
**Mid-woofer:** One 6½" polypropylene cone.  
**Comments:** Mellow sound than S-1B. Compact size. Best Satellite without Subwoofer due to 6½" mid-woofer. Separate controls for midrange, treble contour.

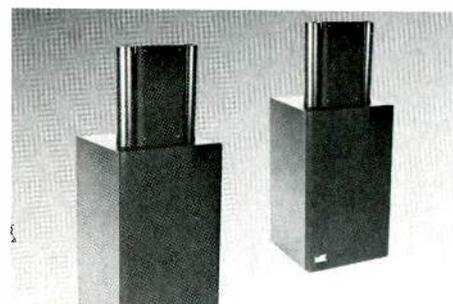
**Power:** 10 watts min., 200 watts max.\*  
**Frequency Response:** 65 – 22 KHz ± 3 db  
**Impedance:** 4 ohms  
**Finish:** Oak or Walnut veneer, Black grille  
**Dimensions:** (HxWxD)" 13 x 9¼ x 8  
**Weight:** 15 lbs. each



### ► S-3B

**Tweeter:** One 1" soft-dome.  
**Mid-woofer:** One 5" polypropylene cone.  
**Comments:** Uses one each of the same elements as top-of-the-line S-1B. Very compact size, perfect for surround sound and bookshelf mounting.

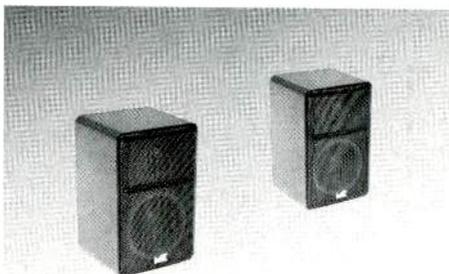
**Power:** 10 watts min., 200 watts max.\*  
**Frequency Response:** 85 – 22 KHz ± 3 db  
**Impedance:** 4 ohms  
**Finish:** Walnut veneer or Black cabinet, Black grille  
**Dimensions:** (HxWxD)" 10½ x 6½ x 7  
**Weight:** 9 lbs. each



### ► SX-4

**Tweeters:** Two 1" soft-domes.  
**Mid-woofer:** Two 5" cones.  
**Comments:** Maximum sound value per dollar. Very high power handling. Produces wide dynamic range. Sound character very similar to S-1B.

**Power:** 7½ watts min., 400 watts max.\*  
**Frequency Response:** 75 – 22 KHz ± 3 db  
**Impedance:** 4 ohms  
**Finish:** Black or Hickory vinyl cabinet, Black grille  
**Dimensions:** (HxWxD)" 19¾ x 7¾ x 7  
**Weight:** 14 lbs. each



### ► SX-7

**Tweeter:** One ¾" soft-dome.  
**Mid-woofer:** One 4" cone.  
**Comments:** Tremendous output for its size. Circuit breaker protection. Angle-mount brackets optional for car or home use. Flat wall-mount brackets provided.

**Power:** 5 watts min., 200 watts max.\*  
**Frequency Response:** 100 – 20 KHz ± 3 db  
**Impedance:** 4 ohms  
**Finish:** Black metal cabinet, Black grille  
**Dimensions:** (HxWxD)" 7½ x 4½ x 4½  
**Weight:** 6 lbs. each

\*Unclipped peaks

# M & K Powered Subwoofers

## Feel the power and impact of live bass in your home

No conventional speaker reproduces bass with the power and detail of a subwoofer. An M&K Powered Subwoofer makes the music come alive, adding much deeper bass response and a greater tactile sense of "punch" and "impact" to the sound. M&K has been the industry's leader in subwoofers since the introduction of our first model in 1974.

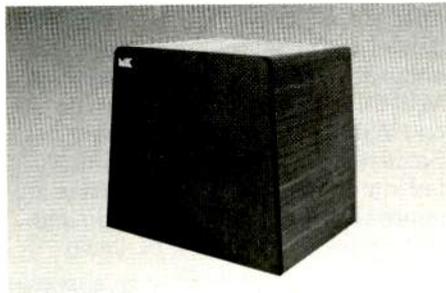
Each M&K Powered Subwoofer delivers the ultimate in bass performance through *its own internal amplifier*, custom-matched to its speaker driver and cabinet. You'll hear thunderous bass, even with a low-powered amp or receiver. An independent volume control lets you set the bass to any level you choose.

You don't have to own M&K Satellites to benefit from an M&K Powered Subwoofer. To improve the sound of virtually any speaker system, add an M&K Powered Subwoofer. You will discover the missing dimension of deep and powerful bass.

Compare an M&K Powered Subwoofer to *any* speaker or subwoofer, regardless of price. Most subwoofers have poor transient response — meaning they cannot start and stop rapidly with sharp changes in the music. Our unique amplified design gives you flatter and deeper bass with *excellent* transient response. Compare subwoofers with the sound of a plucked string bass or a kick drum, not just continuous organ tones. You'll hear (and feel) what low bass is all about.

### Technical Notes

All M&K Powered Subwoofers can be driven by any amplifier's or receiver's output, or by the output of a preamp or crossover (including our LP-1S Special High Pass Filter). A continuously variable adjustment allows you to set the upper rolloff frequency of the Subwoofer between 50 and 125 Hz (90 and 180 Hz for the VX-7), to fine-tune the response of the woofer to match your room and Satellite speakers.

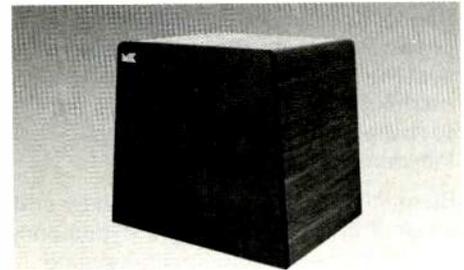


### ► V-1B

**Driver:** Special long-throw 12" polypropylene cone.

**Comments:** Top-of-the-line Subwoofer for best possible sound. Highest power for widest dynamic range and loud playback levels. Extremely tight, detailed sound with very deep bass response.

**Amp Power:** 400 watt peak  
**Frequency Response:** 20 – 125 Hz ± 3 db  
**Impedance:** 600/15K ohms\*  
**Finish:** Oak or Walnut veneer, Black grille  
**Dimensions:** (HxWxD)" 17<sup>3</sup>/<sub>4</sub> x 18<sup>3</sup>/<sub>4</sub> x 16<sup>3</sup>/<sub>4</sub>  
**Weight:** 50 lbs.

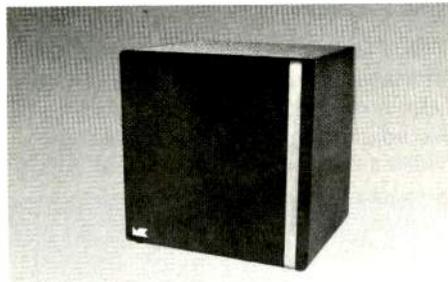


### ► V-2B

**Driver:** Long-throw 12" polypropylene cone.

**Comments:** Our most popular Powered Subwoofer. Extremely tight and dynamic. Blends perfectly with S-1B Satellites. Highly recommended for systems with two Subwoofers.

**Amp Power:** 200 watts peak  
**Frequency Response:** 24 – 125 Hz ± 3 db  
**Impedance:** 600/15K ohms\*  
**Finish:** Oak or Walnut veneer, Black grille  
**Dimensions:** (HxWxD)" 17<sup>3</sup>/<sub>4</sub> x 18<sup>3</sup>/<sub>4</sub> x 16<sup>3</sup>/<sub>4</sub>  
**Weight:** 43 lbs.

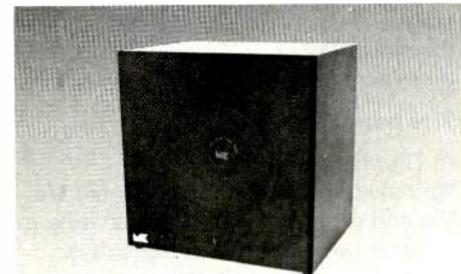


### ► V-3B

**Driver:** Long-throw 12" polypropylene cone.

**Comments:** Highest performance level and best value for the dollar. Uses the same driver as the V-2B for tight and dynamic bass. Flat response to 24 Hz.

**Amp Power:** 100 watt peak  
**Frequency Response:** 24 – 125 Hz ± 3 db  
**Impedance:** 600/15K ohms\*  
**Finish:** Black cabinet, Black grille with optional Oak or Walnut wood strip  
**Dimensions:** (HxWxD)" 17<sup>1</sup>/<sub>2</sub> x 17<sup>1</sup>/<sub>2</sub> x 15<sup>1</sup>/<sub>4</sub>  
**Weight:** 38 lbs.

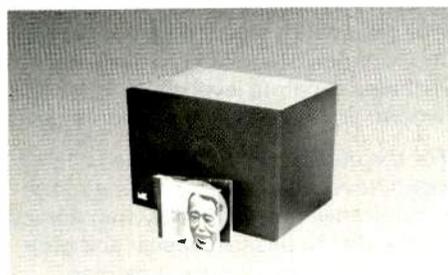


### ► VX-4

**Driver:** Long-throw 12" paper cone.

**Comments:** Extremely versatile with tremendous bass "punch." Superb for use in video systems and for playback of rock music. Popular with a very wide range of satellite and bookshelf speakers.

**Amp Power:** 50 watts  
**Frequency Response:** 35 – 125 Hz ± 3 db  
**Impedance:** 600/15K ohms\*  
**Finish:** Black or Hickory vinyl, Black grille  
**Dimensions:** (HxWxD)" 18 x 18 x 14<sup>1</sup>/<sub>2</sub>  
**Weight:** 33 lbs.



### ► VX-7

**Driver:** Long-throw 8" paper cone.

**Comments:** Amazing bass from a very small cabinet. Very fast transient response. Ideal for small rooms or bookshelf locations, either horizontal or vertical. Deepest bass of any compact subwoofer on the market.

**Amp Power:** 50 watts  
**Frequency Response:** 40 – 180 Hz ± 3 db  
**Impedance:** 600/15K ohms\*  
**Finish:** Black cabinet, Black grille  
**Dimensions:** (HxWxD)" 10 x 13<sup>3</sup>/<sub>4</sub> x 9<sup>1</sup>/<sub>2</sub>  
**Weight:** 21 lbs.

\*Low level (preamp) input impedance

## Using biamplification for better sound

Biamplification is a technique that improves the sound of any good stereo system. Your M&K Satellite and Powered Subwoofer System is designed to make biamplification an easy, inexpensive option for you.

Biamplification uses two amplifiers and an electronic filter dividing the frequency spectrum, sending the midrange and highs to the high frequency amplifier and the bass to the low frequency amplifier and subwoofer. Because an M&K Powered Subwoofer includes its own amplifier, biamplification becomes easier and much less expensive than with ordinary speakers.

*Note:* In order to biamplify, your system must consist of a separate amp and preamp or an amp or receiver that lets you separate its preamp and amplifier stages. If you have any questions about the suitability of your components, contact your M&K specialist or the factory.

### The benefits

#### ► *Greater Dynamic Range:*

Your system will sound even more life-like and exciting, by accommodating a wider variation between the softest and loudest sounds it can reproduce. Transient sounds such as cymbal crashes and acoustic piano notes will come alive with greater impact. You will especially appreciate the improvement when playing Compact Discs.

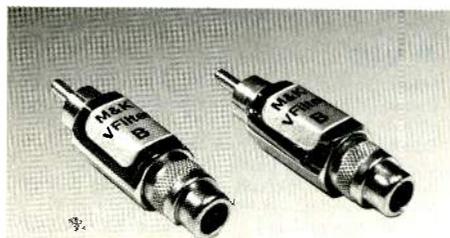
#### ► *Lower Distortion:*

All aspects of the sound, from low to high frequencies, will sound cleaner and more detailed. At any volume level, your system will become much more enjoyable to listen to with no added long-term fatigue.

#### ► *Greater Maximum Output:*

When you want to listen to your music loud, your biamplified system will play even louder.

Biamplification gives you these benefits because it reduces the load on both your amplifier and Satellite speakers. You simply connect an M&K electronic filter to your amp or receiver. That filter divides the sonic spectrum into bass and highs, sending just the bass to your M&K Subwoofer, and just the mids and highs to the amplifier feeding the Satellites. Bass frequencies normally fed into the amplifier and Satellites are removed, lowering the distortion and making additional power available.



### The V-Filter

The V-Filter gives you biamplified sound at the lowest cost. You just plug it into your amplifier's input jack and that's it! No adjustments are necessary. It provides a 6 db per octave slope at 100 Hz.



### The LP-1S High-Pass Filter

The ultimate in biamplification. The LP-1S offers the absolute lowest distortion and greatest dynamic range because of its extremely sharp filter to the Satellites. Includes separate level controls for Subwoofer and for Satellite amp or receiver.

*For the audiophile:* Filter slope is 18 db per octave with careful shaping to preserve transients. Extremely transparent sound due to passive design and ultra high grade components, including audio grade polypropylene capacitors, Resista wire-wound resistors, Randall OFC wire, Wonder solder, conductive plastic pots, and nickel-plated input and output jacks.

## Building a component speaker system

M&K's component speaker concept lets you build your M&K speaker system any way you choose—either one element at a time, or all at once as a complete system. No other speaker system allows you this flexibility.

If your budget is a consideration, you might consider purchasing just the Satellite speakers to start. You'll find that each M&K Satellite performs very well as a full-range loudspeaker. You can then add the Powered Subwoofer at a later date to complete your system. If your existing speakers don't need to be immediately replaced, you can add the Powered Subwoofer first and the Satellites later.

To get the ultimate in bass performance and overall sound, add a second Powered Subwoofer and the LP-1S. This way you can build to our Digital Reference System, the system we actually use in the studio—a pair of S-1Bs, two V-1Bs, and an LP-1S.

By taking advantage of our component speaker concept, you'll get the full value from your original investment and ultimately own the M&K system of your choice—while enjoying a vast improvement in your system today.



### Miller & Kreisel Sound Corporation

10391 Jefferson Boulevard  
Culver City, CA 90232  
(213) 204-2854

Three-head tape decks generally outperform two-head models, though the latter suffer less from azimuth errors.

in Dolby B NR, play them in Dolby B NR. You may copy them in whatever noise-reduction format you wish—Dolby B, Dolby C, or dbx.

#### Three Heads vs. Two

*Q. I have a 1984 three-head deck and a 1976 two-head deck. I plan to retire the older deck and purchase a new one for dubbing. Should I buy a two- or three-head model?—John De Rosa, Mattapan, Mass.*

*A. Generally, three-head decks tend to be of higher quality than two-head models, although there are exceptions. In a three-head deck, the record and playback heads (the erase head makes three) each can be designed to best serve their functions, making for lower distortion in recording and better treble response in playback. A record/playback head (in a two-head deck) must necessarily be a compromise. Still, good engineering and construction can minimize the dis-*

advantages to the point where one might not notice them.

A three-head deck has the further advantage of permitting simultaneous record and play, thereby enabling one to immediately check the quality of a recording, and facilitating adjusting bias level (when the deck permits) for optimum performance.

A two-head deck has an advantage with respect to azimuth alignment, which is orientation of the head gaps so that they are at a right angle to the long dimension of the tape. Any azimuth error in recording is cancelled in playback when the same head is used for both recording and playback. In a three-head deck, however, it is all too easy for there to be a slight difference in azimuth between the record and playback heads, resulting in treble loss in playback. (This problem can be avoided by careful azimuth alignment on the part of the factory or a service agency.)

All in all, I tend to vote for a three-head deck.

#### Making the Right Connections

*Q. Please explain the procedure for transferring open-reel tape recordings to videocassettes via a Hi-Fi VCR. How do you make all the input and output connections for this transfer?—Richard C. Emery, Dearborn, Mich.*

*A. One way to accomplish such a transfer is to feed the open-reel deck's outputs directly into the audio inputs of the VCR. (A Hi-Fi VCR has inputs and outputs for audio as well as video.) Another way is to feed the open-reel deck's audio outputs into the tape inputs of your preamp (or integrated amp or receiver), and to feed the tape outputs of the preamp (etc.) to the audio inputs of the Hi-Fi VCR. (These VCRs have a control for adjusting record level.) Hi-Fi VCR manuals are usually clear on how to make these connections.*

## Five years ago, the PS•10 got great reviews. It still earns them today, in a store near you.

In 1983, *Rolling Stone* said, "...the PS•10 loudspeakers by Design Acoustics could be the last pair you'll ever buy." *High Fidelity* commented, "The overall sound is smooth, clean, and detailed." *Ovation* noted that the PS•10, "...provided a very open and transparent sound with excellent and stable stereo imaging." And *Stereo Review* concluded that,

"...the PS•10s delivered a smooth, balanced sound... (enabling them) to fit almost anywhere both aesthetically and acoustically."

#### A MODERN-DAY CLASSIC

The PS•10 continues to earn thousands of new friends with its unique Point Source™ design. The PS•10 has the smallest possible front face, to eliminate diffraction and reflections that blur the stereo image from ordinary bookshelf speakers. Plus a down-firing 10" woofer that is always exactly coupled to the room, regardless of its location.

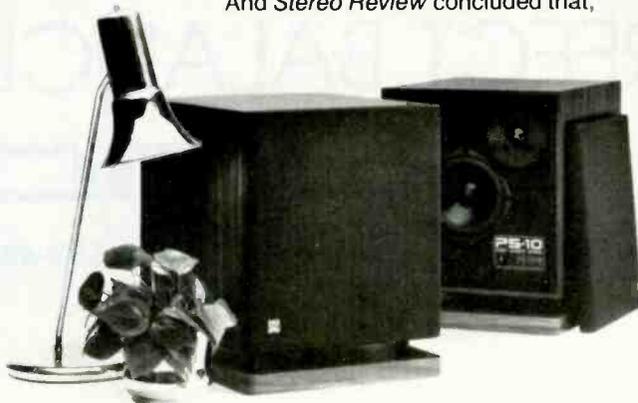
#### MEETS THE DIGITAL CHALLENGE

Over the years, the PS•10 has been constantly refined and improved. Today, it meets the challenge of digital recordings with impressive performance, yet easily fits the smallest room neatly and unobtrusively. Write for dealer list and literature today.

**DA** DESIGN®  
ACOUSTICS

An Audio-Technica Company

225 Commerce Drive, Stow, OH 44224



# I N T R O D U C I N G

**A**URORA. Sumo proudly introduces Aurora, a low profile, slimline tuner that in every respect is the heir to an audiophile legacy. Aurora's predecessor, Charlie, was regarded by many as one of the finest tuners ever introduced, and was placed in a select group that included the Marantz Model 10B, the McIntosh MR 71, and the Sequerra tuner.

Aurora meets or exceeds its predecessor in every important sonic respect, while performing exceedingly better under adverse conditions. Aurora strikes what may be a perfect balance between musicality and specsmanship. Presented with a strong, high quality signal, it rivals the signal source. Yet it performs admirably with weak, over-modulated, and compressed signals - qualities which characterize typical FM.

Sumo brings both convenience and human engineering to Aurora. There is automatic seek up AND down the dial. Fine tuning is accomplished in 50 kHz increments by a rotary knob, providing the look and feel of analog and the stability of digitally synthesized tuning. And there are eight presets for both AM and FM.

Aurora has linear phase IF filters that represent the latest advances in the field, an advanced multiplex decoder, and gold plated output jacks to ensure a long lasting, high quality signal transfer.

Designed by Richard May, Aurora is a tuner that is in every respect a complement to the latest generation of Sumo products. It is a faithful reproducer of music. And it is one of the few tuners designed and manufactured in the United States.

Among those select dealers stocking our products are:

**PRO AUDIO CONSULTANTS**

182 Essex Street  
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## THE PERFECT BALANCE.

# SUMO

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Call 1-800-553-4355



**A**THENA. The preamplifier is in many ways the most telling component in the audio chain. All too often technical absolutism results in sound quality that is sterile, unappealing, or aggressive. Yet bad lab performance almost always indicates poor sonic integrity. With Athena, Sumo demonstrates a new balance. A preamplifier that is both a stunning performer in the areas of quickness, linearity, and freedom from overload. Yet a warm, faithful, and exciting reproducer of music.

Athena represents the culmination of a major effort at Sumo. As such, it sets new standards for dynamic headroom and freedom from overload. Utilizing high voltage power supply rails, passively linearized circuitry, and a high current toroidal transformer, Athena can faithfully reproduce music at levels far in excess of the peak output of signal sources. As a result, compact discs display dynamic range without high end pain. And complex passages come through intact and unstrained.

Sonic purity in Athena is enhanced both by careful component selection and the exclusive use of pure Class A circuitry. Low noise 1% metal film resistors and metalized polypropylene capacitors are used throughout. Components are mounted on a military grade glass epoxy printed circuit board. And all external connections are made via gold plated input and output jacks. Further, a bypass function allows the user to totally remove the high level section of the preamp from the signal path. When selected, this provides both direct line-drive for high level sources (such as a CD player), as well as direct phono out.

At various times and for various products, we hear the words powerful, impactful, detailed, delicate, accurate, transparent, smooth, natural and a variety of other flattering adjectives. But one word is repeated more frequently than all the rest, and it is that for which we have strived above all. Musical. Athena is above all gloriously musical.

As with all Sumo products, Athena is designed and manufactured in the United States. Among those select dealers stocking our products are:

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5079 El Cajon Blvd.  
San Diego, CA 92115  
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# THE NEW BALANCE.

## SUMO

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For More Information



Call 1-800-553-4355



**S**AMSON. Reproduction of music's bottom-most frequencies is often a moving experience. It can also be the difference between passively listening to music and emotional involvement. But the reproduction of sub 50 Hz fundamentals is a difficult proposition. And as a result most speakers are more shadow than substance at these frequencies.

Sumo's Samson is a groundbreaking product. It is a subwoofer whose development reflects a genuine understanding of the question. It is built around a 15 inch woofer and a massive 18½ pound magnet assembly. As a result it has the mechanical driving force to be both hair trigger quick and flat to 25 Hz. It also has vanishingly low distortion - levels, in fact, more typical of fine electronics than speakers. A 100 RMS watt input at 30 Hz, for example, results in less than 1.5% THD.

Music is reproduced with a new authority. Electrostatic panels have thunder to add to their air. And emotion is communicated with an immediacy that is surpassed only by the live experience.

**D**ELILAH. The question becomes one of blend. Of integrating a subwoofer smoothly and unobtrusively into a range of acoustic environments. And of doing so in combination with any number of audio components. To this end Sumo introduces Delilah, a 2-way electronic crossover, and a natural complement to Samson.

Delilah is an expression of both sonic purity and extreme flexibility. It offers a summed mono, as well as stereo bass outputs. It has bridging circuits at each low frequency terminal. And it allows the selection of any of five crossover frequencies.

The result is deep bass without disorientation. More system headroom. Less strain. And the opportunity for emotional involvement in the musical experience.

Sumo products are manufactured in the USA. Among the select group of dealers stocking them are:

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407 894-4434

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Burlingame, CA 94010  
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# A QUESTION OF BALANCE.

# SUMO



## "Single" and Album Sound

*Q. Why do 12-inch "singles" sound so much better than LPs or CDs? Is it because of remixing, re-equalization, the pressing format, or what? Will this same standard become available on CDs?—Guy Martinez, Boca Raton, Fla.*

A. It is difficult to say why "singles" may sound better than albums do. You may have hit upon some of the possible reasons in your question, however.

When 12-inch "singles" first appeared, many were recorded at 45 rpm. This allowed for better high-frequency response, because it made the recorded wavelengths of treble frequencies longer, in relation to the playback stylus' tip radius, than they would be on a disc playing at 33 $\frac{1}{3}$  rpm.

Because there's less music on each disc, the 12-inch single's groove need not extend as far toward the center of the record as an album's groove. Since wavelengths become smaller as groove diameter decreases, this also keeps high-frequency wavelengths longer than the playback stylus' tip radius, allowing the highs to be well recorded, even on 33 $\frac{1}{3}$ -rpm discs.

Having less music on each disc also means that the grooves can be spaced more widely. Heavy bass, which produces wide swings of the cutting stylus, need not be restrained to keep that stylus from cutting into adjacent grooves and spoiling the record.

All of this gives the mastering engineer greater freedom to add both highs and lows to the single. Even when the original album was well recorded, it is sometimes possible to spice up the single version.

There are no similar comparisons possible between CD albums and CD "singles." Unless the engineer equalizes a brighter "single" or one containing more substantial bass than he did for his album, the CD "single" and album will sound exactly alike.

## Hum from a Turntable

*Q. I have been having problems with an old turntable. Most of the time I can hear a low hum during quiet passages or between selections. Because the hum frequency is in the region between 100 and 190 Hz, attempts to remove it by means of an equalizer are not practical, because of the loss of bass which would also occur. I have*

*tried tightening all connections and grounding, and some adjustments to the cartridge connections helped for a short while. What might cause this hum, and how can I stop it?—Ryan Tamares, San Bernardino, Cal.*

A. Hum is usually defined as noise caused by leakage of the a.c. line frequency (or its first harmonic) into the signal. You apparently are not getting 60-Hz line-frequency hum, and 120-Hz hum (which does lie within the frequency band you mention) is usually heard as more of a buzz. So I have to wonder whether this is really hum at all.

One of the most common causes of a.c. hum is poor phono signal or ground connections, which you did say you checked. Considering that some temporary improvement occurred when you worked on the connections to the cartridge, we can't rule out an electrical reason for the hum. Let me briefly mention some areas that usually bear exploring.

First, check the terminals on the cartridge to be sure they are clean and free of oxide. Be sure the lugs which slide over these terminals are tight. If they slide on too easily, tighten them by gently squeezing the lugs with small pliers. Next, spray contact cleaner into the tonearm at the point where the shell makes contact. Clean the contacts on the shell as well. If your arm has a detachable phono cable, make sure its connections are clean and tight. Check the ground lead, which should normally go between your turntable and preamp (but note that in some systems, where ground loops exist, hum will be lower if the ground lead is disconnected).

Finally, check the phono connectors which plug into the audio system. Be sure they are clean and that their skirts are tight, so that they make intimate contact with the grounds on the audio system. If they are loose, squeeze them with pliers just enough that they fit very snugly when reconnected.

In your case, however, it is likely that the hum is not electrical. It may instead be a mechanically produced form of rumble. This may be caused by hardening of the motor shock mounts, in which case the mounts should be replaced. If spare mounts are no longer available for your old turntable, you may be able to find some rubber grom-

mets which can do the job. When you remount your motor, be sure no part of the turntable assembly touches the rest of the turntable base.

If your turntable has an idler pulley interposed between its motor shaft and inner turntable rim, replacing it may cure your problem. Also, use light oil to lubricate the shaft on which the idler rides; this sometimes helps, even if a replacement idler can't be found.

If your turntable shaft rides in a well, place a couple of drops of light oil into the well before replacing the turntable spindle. Some old turntables employed ball-bearing assemblies; lubricate these with light grease. Be sure to take care when disassembling the turntable so that you can put it all back together without losing any of the ball bearings.

Acoustic feedback is another possible cause of your problem. If it is, the hum will disappear when you shut off your speakers and listen through headphones. Possible cures would then include attention to the mounting and location of your turntable and speakers. Often, moving the turntable just a foot or two will alleviate feedback.

One last possibility is that some part of your turntable is mechanically resonating at a harmonic of the line frequency, either 120 or 180 Hz. If so, you'd hear this even when the amplifier was off. To cure such a problem, you'd have to track it through your turntable mechanism to find the source, then tighten or add damping materials to the offending parts.

## CD Players with Three Lasers

*Q. My CD player has three lasers. What does each of them do?—Name withheld, Detroit, Mich.*

A. There is really just one laser, but its light is split into three beams. The center beam reads the data to be decoded. The other two beams read where the laser is in relation to the adjacent tracks. These two outer beams feed information to the servo, which then keeps the central beam on track. A

If you have a problem or question about audio, write to Mr. Joseph Giovanelli at AUDIO Magazine, 1515 Broadway, New York, N.Y. 10036. All letters are answered. Please enclose a stamped, self-addressed envelope.

ELITE

BY PIONEER

# HOME IMPROVEMENT.





## THE ELITE™ PD-91 FULL 18-BIT CD PLAYER.

If you're still not completely satisfied with CD sound, if you have the nagging feeling something's still missing...you're right. 14-bit, 16-bit or even "floating" 18-bit CD players simply can't deliver all the rich potential of compact disc sound.

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Meet the Elite™ Series PD-91. The compact disc player that lets you hear CD sound in its fullest glory.

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To build a player this superior demanded incredible attention to detail. Example: The PD-91's analogue circuitry is pure Class A for lowest distortion and highest musicality. Inside, you'd see four separate power supplies and eleven voltage regulators—to keep critical small-signal audio information free from interference.

To additionally minimize electrical interaction, portions of the PD-91's circuitry are defeat-able—like front panel illumination, headphone amplifier and the analogue output section when digital outputs are being used.

The PD-91 incorporates an outboard power transformer, Pioneer's exclusive copper-plated honeycomb chassis and special ceramic components to combat extraneous vibrations that can destroy signal integrity.

The PD-91's special linear motor delivers the world's fastest track access (1/2-second). You also get flexible seven-way programming, full random play, and, of course, full remote control. Optical as well as coaxial outputs make the PD-91 future-perfect as well.

Want instant Home Improvement in your music system? Then come treat your ears to the PD-91. For your nearest Elite dealer, call 1-800-421-1404.





## THE ELITE LD-S1 LASERVISION PLAYER.

If you want to discover what looking sharp is all about, it's time you took a look at the LD-S1. Because the LD-S1 not only delivers the world's sharpest pictures, it gives you the world's best sound, stunning digital sound simply unavailable from any VCR.

You'll see cleaner, truer pictures—over 420 lines of resolution—due to Pioneer's exclusive Accu-Focus laser pickup and Video Noise Reduction circuit. Together, they yield an unprecedented 48dB video signal-to-noise ratio.

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What's more, our exclusive Full-Floating Disc Drive and Magnetic Disc Clamp isolate and stabilize the disc for remarkably reduced picture jitter—an inherent problem videotape players can't begin to solve.

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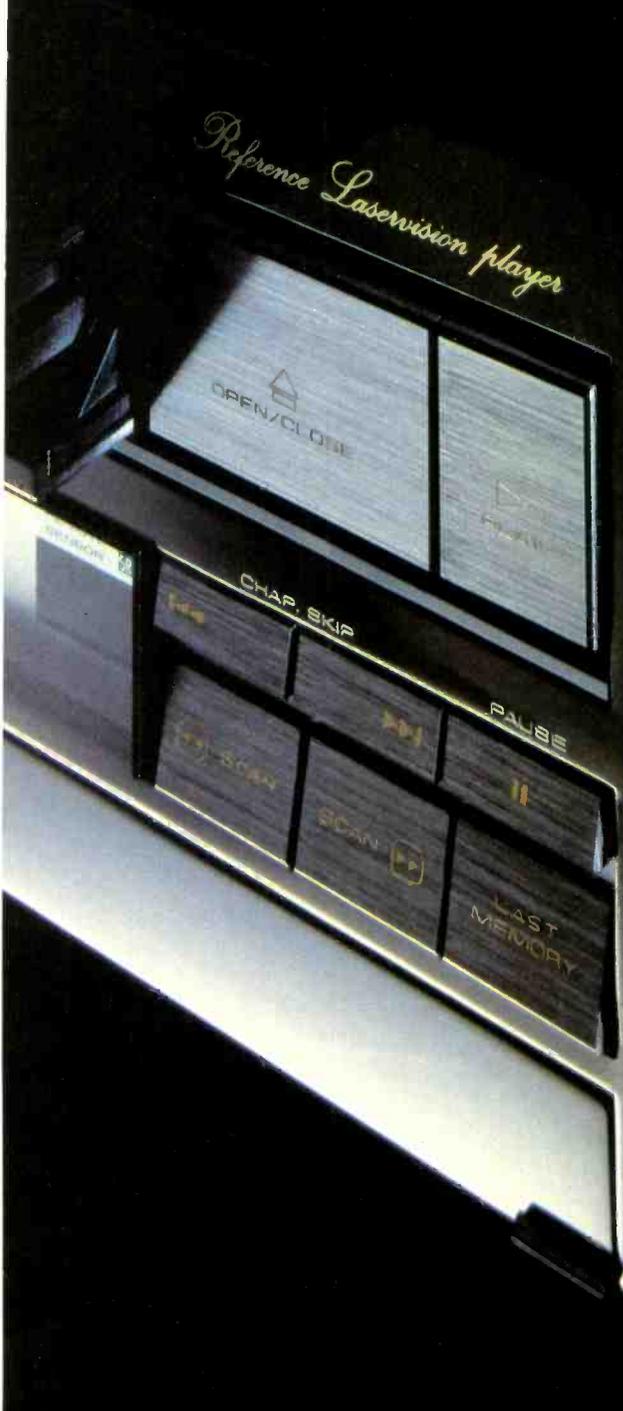
pleasure. You'll get perfect pictures on freeze frame, and new effects like still pictures with sound and strobe motion with sound. And now for the first time, you can enjoy all these special effects while watching movies, opera and concerts on extended-play (CLV) discs.

See the ultimate sight and sound machine at your Elite dealer today. Because in the world of sight and sound, image is everything.

For more information, call 1-800-421-1404.



# UPGRADE YOUR IMAGE.



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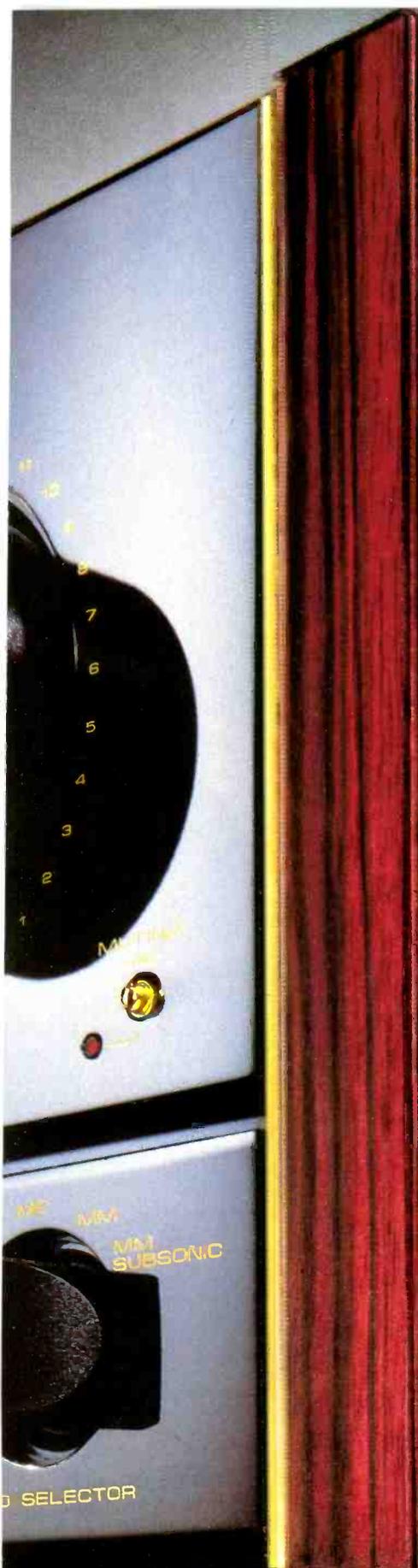
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## THE ELITE A-91D INTEGRATED AMPLIFIER.

Now that the compact disc has taken the world by storm, ordinary amplifiers are failing their driving test. Because ordinary amplifiers simply can't handle the dynamic range and purer signal that digital sound delivers.

Fortunately, the A-91D is far from ordinary. Because the A-91D is built with one thought in mind—to maximize the performance of digital sound.

With 170 watts per channel into 4 ohm speaker loads, and 120 watts into 8 ohms, the A-91D unleashes digital's full dynamic range. Extra-large capacitors and huge finned cast-iron enclosed transformers further contribute to the A-91D's high current capacity and stability into speaker loads as low as 2 ohms.

Along with all this power comes unprecedented purity. You can plug the latest CD players with optical outputs directly into the A-91D, and reap the rewards of independent digital conversion circuitry—with twin, glitch-free D/A converters, a digital filter with four-times oversampling, and an analog lowpass filter made from quality discrete parts. The A-91D also uses Pioneer's exclusive Non-Switching™ Type III amplifier circuit to totally eliminate switching

distortion. What's more, critical signal paths are kept extraordinarily short for less electronic interference and cleaner sound.

When it comes to digital sound, there's no such thing as good vibrations. That's why the A-91D uses a special anti-vibration honeycomb design in the chassis frame. In isolation barriers between electronic sections. Even in all five insulator feet. A large aluminum volume control knob with a specially balanced brass shaft also absorbs distortion-causing vibration, and printed circuit boards are mounted in rubber for the same reason.

The A-91D is not only ready for digital, it's ready for the future. With six digital inputs (2 optical), and three digital outputs (1 optical).

So if you want your digital sound to drive you to new heights, you need to drive your digital components with the Elite A-91D.

For more information, call 1-800-421-1404.

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# THE GARBAGE.



not only controls up to six video components, its video-enhancing circuits actually improve your video image. Now, even rented videotapes take on a whole new look.

But what good is a complete A/V system without remote capabilities? The C-90's "SR"<sup>TM</sup> System Remote gives you complete control, plus a unique Motor-Drive Volume Control that eliminates the noise created by typical electronic volume controls.

Where the C-90 leaves off, the M-90 takes over. With 800 watts/channel into 2 ohm loads, 200 watts into 8 ohms,\*\* and remarkably high current capability (47 amps) for low impedance

driving, the M-90 delivers the kind of performance digital signals demand. And for unprecedented purity, the M-90 even includes its own volume control for direct connection to your CD player.

The Elite M-90 and C-90 working together. There's just no better way to take out the garbage. For more information, call 1-800-421-1404.



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## ONE MORE TIME

*The Jazz Years: Earwitness to an Era* by Leonard Feather. Da Capo Press, 320 pp., hardback, \$25; paperback, \$10.95.

Leonard Feather, now 73 years old, has been a ceaseless force in jazz for more than a half century ("Leonard Feather: A Life in Jazz," September 1988). The mind boggles with the hectic pace of his activities, dating to the early '30s, when he began writing for the *Melody Maker* and other London-based magazines and newspapers. A few years later, he began composing, eventually amassing an amazing catalog—much of it blues-based—of several hundred published tunes recorded by everyone from Benny Carter and Coleman Hawkins to Duke Ellington, Melba Liston, and Dinah Washington, to name just a few.

Feather has produced nearly as many records as his friends Norman Granz and John Hammond, one of his early champions in America. He worked closely with Duke Ellington during a very fruitful period of that band leader's career in the early '40s, for the nightclub Cafe Society, and for far too many newspapers and magazines for me to begin listing, including some he himself may well have forgotten about. Along the way, he has helped bring before the public artists of major stature, such as Sarah Vaughan and George Shearing.

One of the best chapters in this clearly and succinctly written book details the beginning of *Esquire* magazine's involvement in jazz: One evening in 1943, at the Hurricane Club on Broadway, the noted Belgian jazz author, critic, and lawyer Robert Goffin, Feather, and the late Arnold Gingrich, then editor of *Esquire*, were listening to Duke Ellington's band. That night, Goffin and Feather convinced Gingrich that jazz needed a regular outlet in a national magazine—something beyond *Down Beat* and *Metronome*, which were then considered strictly trade or fan magazines. The following year, *Esquire* launched its highly acclaimed jazz yearbooks, published in hardback and softcover editions through 1946. Gingrich left the magazine in 1947. Later that year, for reasons never fully explained, the jazz yearbook was turned over to Eddie

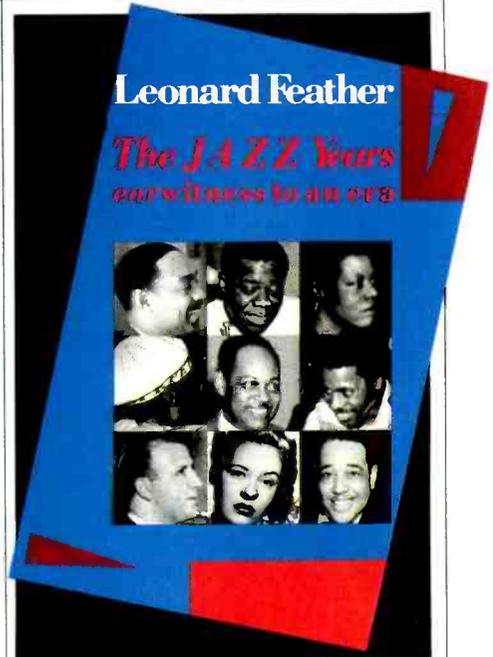
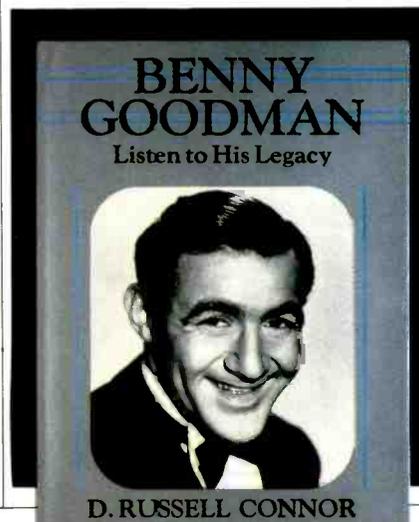
Condon's press agent and manager, who promptly turned the volume into something largely devoted to Condon and his friends. Most of the jazz experts (including Feather) who had helped make the yearbooks important to jazz lovers throughout the world resigned. Thus ended *Esquire's* coverage of jazz.

Feather's stories about the many racial problems in the music world and the opening up of his own awareness are very well told. He is also excellent on the extreme fanaticism engendered when be-bop—a development which he and Barry Ulanov, one of *Metronome's* editors, championed almost singlehandedly—threatened to overthrow the entire jazz establishment. The author has also organized and included in *The Jazz Years* many interesting and previously unpublished photos of recording and jam sessions.

Often a controversial figure, Leonard Feather has made a significant and lasting contribution to jazz through his record and concert productions and his writings (among other books, he is the author of *The Encyclopedia of Jazz*, a standard reference). Now, he adds to his achievements with this very well-written memoir. *Frank Driggs*

*Benny Goodman: Listen to His Legacy* by D. Russell Connor. Scarecrow Press and The Institute of Jazz Studies, 357 pp., hardback, \$50.

It is timely to note the appearance, at long last, of D. Russell Connor's monumental bio-discography of Benny



Goodman's life and recordings. This book, which is now a handsome, coffee-table sized work, is an outgrowth and summation of two previous Connor works which stood for years as the standard references for all serious lovers of Benny Goodman's music.

A retired vice-president of the Federal Reserve Bank of Philadelphia, Connor has devoted many, many years of assiduous research to gathering the material contained in this monumental work. The result is a complete listing of every recording Benny Goodman made, from his 1926 professional debut in Chicago to his death 50 years later. Along with the complete documentation of thousands of commercial records (including recording date, master and catalog numbers, location, band personnel, and arranger credits), are an equal number of air-checks and other privately recorded material, some known only to the most fanatic of Goodman's countless admirers. (Many of these recordings have surfaced one way or another, in spurious and often poorly remastered bootleg productions.) *Benny Goodman: Listen to His Legacy* also offers numerous private insights and stories about many of the sessions, these provided by Goodman and various members of his bands who took the time to share their memories with Connor.

*Remembering Buddy* is the definitive biography of Buddy Holly, as complete a book as there is ever likely to be on the man.

Since Benny Goodman made so many recordings—and a lot of the unknown or unidentified private recordings just now are beginning to be released—this unique work should serve very well any listener who is more than casually interested in his music, life, and times.

Frank Driggs

*Remembering Buddy* by John Goldrosen and John Beecher. Penguin, 204 pp., paperback, \$12.95

Essentially, *Remembering Buddy* is a new and expanded (and yes, improved) edition of John Goldrosen's 1975 book, *Buddy Holly: His Life and*

*Music*, the superb biography that became the foundation for the successful movie *The Buddy Holly Story*.

For the new version of his book, Goldrosen has had the inestimable benefit of information and anecdotes that have surfaced since 1975. He has also benefited from the contributions of John Beecher, who selected the photographs—many previously unpublished—which profusely illustrate the text. In addition, Beecher has assembled remarkably full information about every recording session Holly ever participated in, whether for a solo record or a Crickets record or as a session man. He has also included full U.S. and U.K. discographies and chart placings for both albums and singles, plus full listings of Holly's major international tour itineraries. The total package is very impressive.

Goldrosen's text reads very well. In addition to covering Buddy's life, he addresses the continuing effect of his music; Buddy was not only a songwriter but the leader of one of rock 'n' roll's first self-contained groups—that is, a group that largely wrote its own songs, something that just didn't happen very much before Buddy Holly. In addition, Goldrosen covers what has happened to Holly's music in the past dozen or so years, including the purchase of the publishing rights by Paul McCartney and the making of *The Buddy Holly Story*, which, the author says, played fast and loose with the facts.

*Remembering Buddy* is a fine book, obviously assembled with love and respect. It really is what it purports to be on the cover, "the definitive biography of Buddy Holly." It is as complete a book as there is ever likely to be on the subject.

Michael Tearson

*A Life in Jazz* by Danny Barker. Oxford University Press, 224 pp., hardback, \$24.95.

As a rhythm guitarist, Danny Barker has had few peers. His playing was sought after by leaders as diverse as Benny Carter and Lucky Millinder, Jelly Roll Morton and Cab Calloway. As the most prominent living practitioner of music of the old and famous Barbarin family of New Orleans, Danny Barker has been active as a banjo player, guitarist, historian, bandleader, muse-

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*A Life in Jazz* is a ripe, juicy memoir—a tale of life lived to the fullest in the trenches of the world of jazz.

um director, and husband and father for nearly 60 years.

What makes Barker special, aside from his always outstanding playing, is his ability to stand aside and take note of the foibles and follies of the world around him. Stories told by Danny Barker have the ring of truth because

he has witnessed them, has participated in them, and has taken great pains to preserve them. He is sort of a talking and walking history book of much of the nation's very rich musical heritage.

Nurtured in the hothouse of New Orleans in the '20s, Barker worked in dozens of small bands and went to

Harlem in 1930. Rarely out of work, he watched and witnessed throughout the Depression as careers were made and broken, as jobs came and went. No stranger to adversity, Barker spent time in dime-a-dance units and other obscure groups before connecting with Lucky Millinder and Benny Carter, with whom he began to be noticed. Liked by Roy Eldridge and Chu Berry for his supple rhythm playing, he finally achieved national status and big money by joining Cab Calloway, who had "the highest paid band in the land."

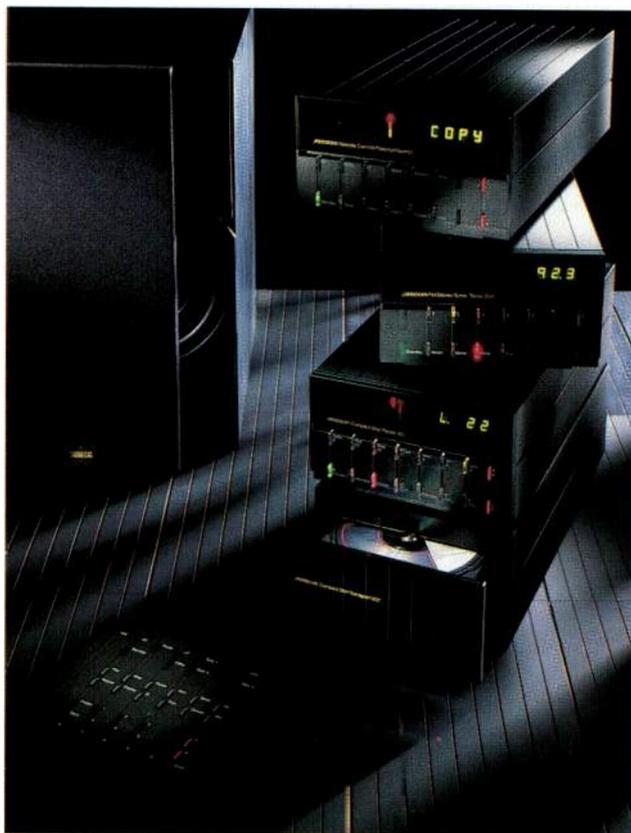
The word "free" is commonly used to describe the music played by avant-gardists like Ornette Coleman, but Barker states that in his experience back in 1920s New Orleans, "all hot jazz bands were . . . playing free. If you couldn't read well you could still master this pattern of playing, jazzing a melody; noodling around the theme, doing many things on your instrument with taste and within reason. Once you learned the pattern and played the routine it was okay. The better you mastered the style the greater you became . . . Who cared if you read music? You were free; free to take liberties, free to express yourself from deep inside." Remember, this is years before so-called "free jazz" became critically important, during the '60s.

Far from endearing himself to many of his contemporaries, Barker is never afraid to be critical. He calls some of his fellow New Orleans musicians feeble players, unduly worshipped by the younger generation. He tells the harsh yet humorous tale of watching five top trumpeters hanging out the window of an after-hours club in Harlem on a freezing winter's day in the early '30s, all stripped to the waist, attempting to sing like Louis Armstrong.

He also has stories of how Tin Pan Alley music publishers and recording directors misappropriated royalties from writers of successful tunes. (I happen to have first-hand knowledge of some of these incidents; they are true as told here.) Other stories tell of the mental anguish that overcame veteran members of Cab Calloway's band who were replaced by younger and, for the most part, better players.

This is a ripe, juicy memoir of life lived to its fullest in the trenches of the world of jazz.

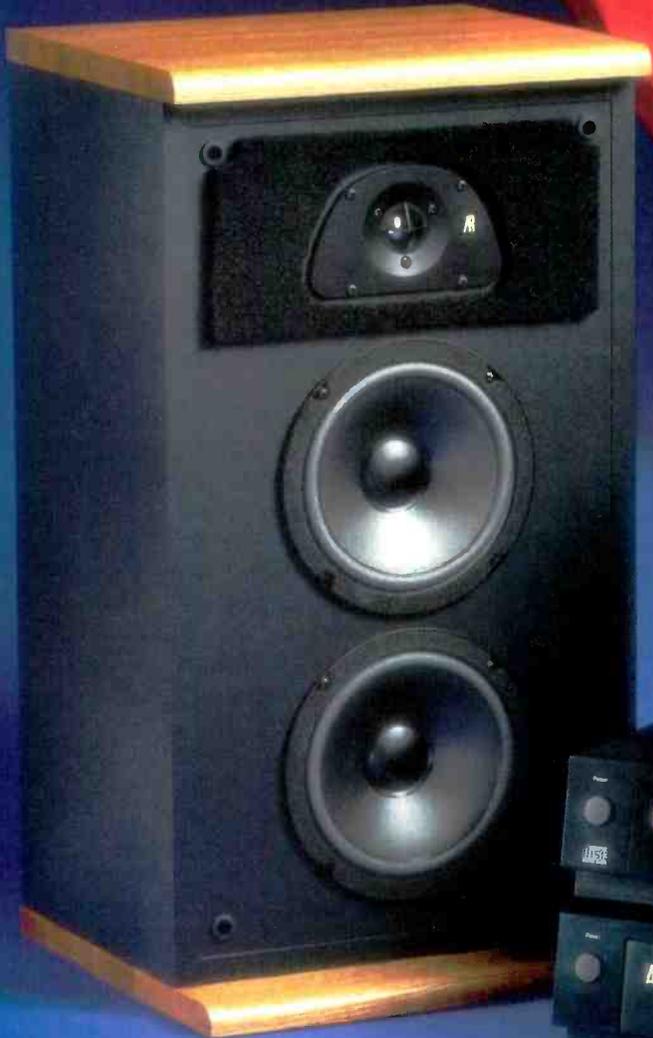
*Frank Driggs*



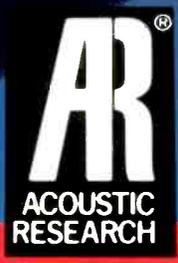
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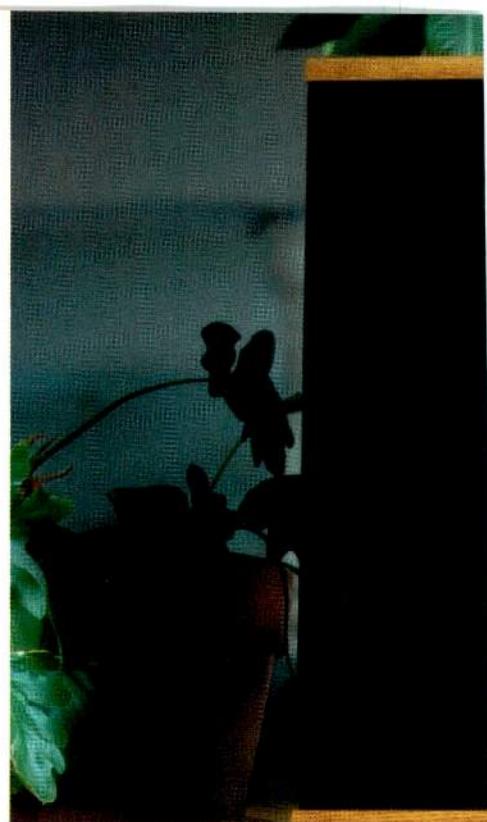


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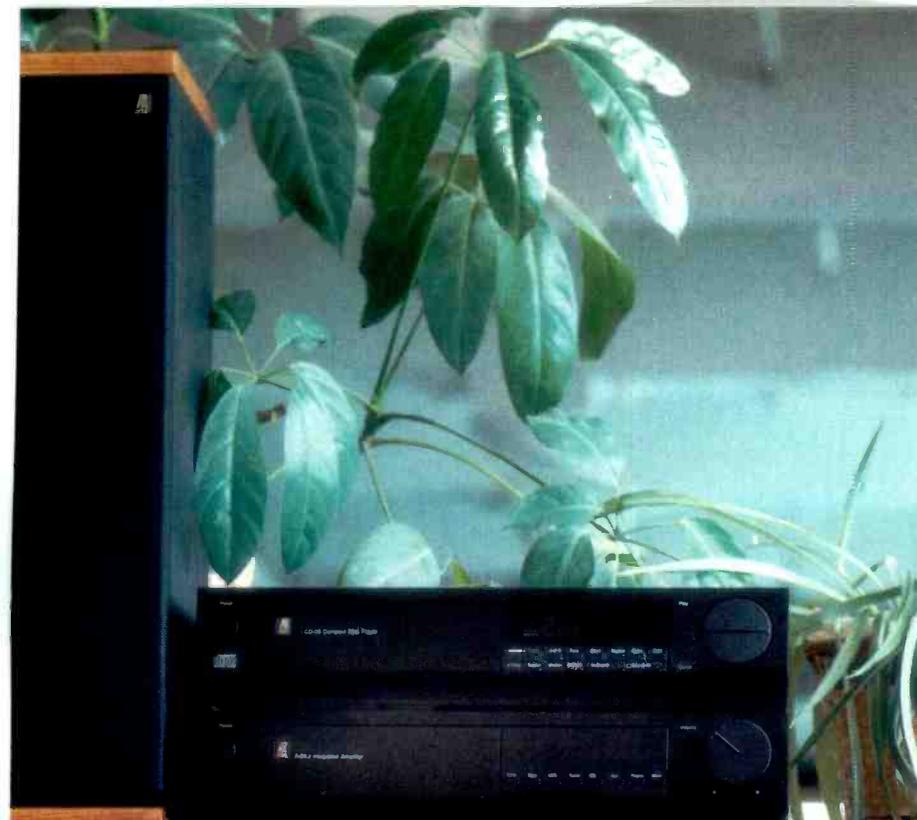
Acoustic Research started American Audio Innovation in 1954 with a bold, new advancement in loudspeaker technology called "Acoustic Suspension." This remarkable advancement in loudspeaker design reduced cabinet size requirements and improved fidelity. "Acoustic Suspension" enabled the production of loudspeakers small enough to come out of the basement and into the living room. The sound improvement in a smaller cabinet was so dramatic that, today, more than 70 different companies have incorporated "Acoustic Suspension" into their loudspeaker designs.



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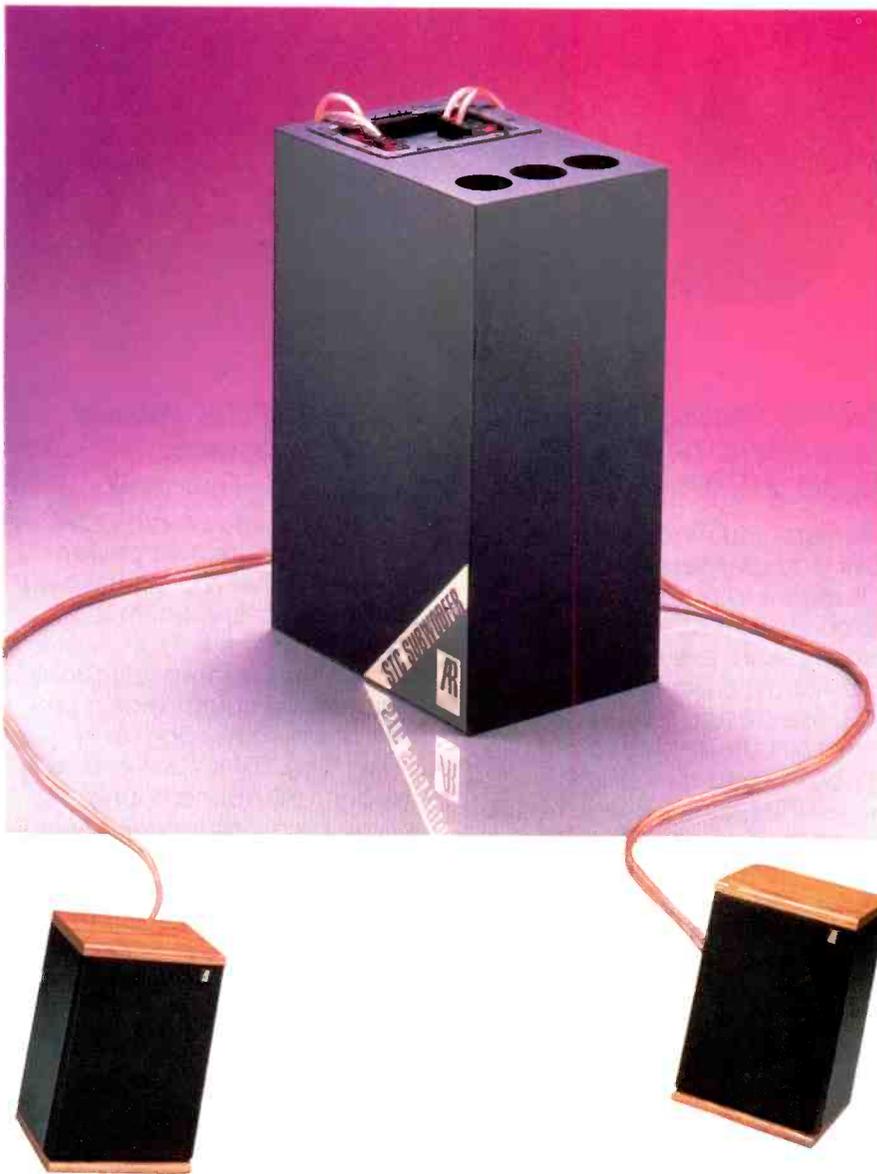
The newest AR innovation, this three-part speaker and subwoofer system gives you a dynamically full range of sound quality in any room without large, unsightly speaker cabinets.

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The Series Tuned Cavity (STC) subwoofer is a newly developed subwoofer that uses two tuned cavities in a series to provide efficient low distortion bass while filtering out unwanted higher frequencies that allow the ear to pinpoint the position of the subwoofer. Compact in size, the STC subwoofer measures just 8½" x 12" x 19". Sturdy construction lets you stack your components on top of the subwoofer. Or, the compact size lets you place it easily out of sight.

## ***The STC 660 Satellite speakers.***

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## Environmental Partners

Environmental Partners are the perfect remote speaker for your stereo system whether they're placed indoors or out. Small enough to hide behind a plant, Environmental Partners are rugged enough to mount on a boat, deck or patio.



## Powered Partners

Plug a pair of Powered Partners into any sound source—a portable tape player, portable disc player, musical keyboard or any other place a pair of stereo headphones will work, and get full stereo sound at home, at the beach... anywhere!



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Choose Party Partners to fill your family room or party area with music. A big 10" woofer pumps out bass while the rock monitor shape allows floor placement for deeper bass response.

## Rock Partners

Powerful Rock Partners have the same triangular shape as other Partners to allow floor or corner placement to boost bass output.



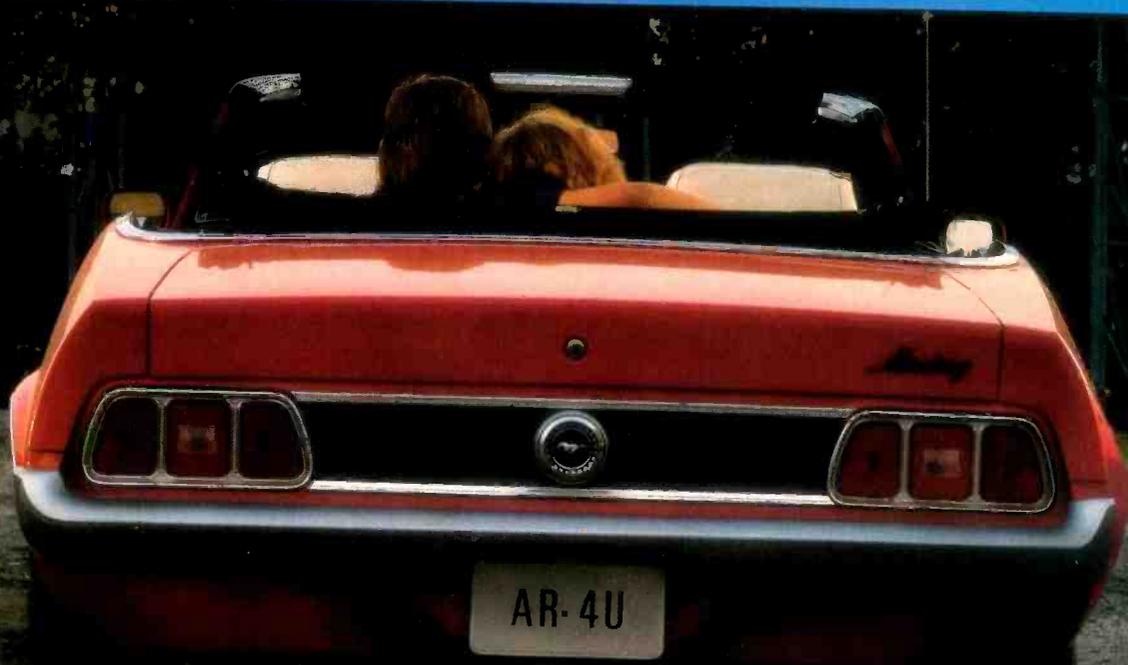
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## IN YOUR EAR

**The Sound of Cushions**

The first stereo headphones were circumaural types, which covered and surrounded the ear and were sealed against the side of the head by cushions. Portable tape players popularized supraaural types, which rested on the outside of the ear. Now, insert earphones, which plug right into the ear, are becoming popular too.

Which of these three types can produce the highest fidelity? A recent letter to the *Journal of the Acoustical Society of America* (Vol 83, No. 4, April 1988) offers some suggestions.

The six authors (Jozef Zwislocki, Barbara Kruger, James D. Miller, Arthur F. Niemoeller, Edgar A. Shaw, and Gerald Studebaker) were actually testing to determine which earphone classes could be recommended as standard for audiometric testing. They point out that for all 'phones, sound pressure at lower frequencies "is essentially the same at all places within the ear as long as the entire system is airtight. At higher frequencies, air leaks are less important, but the sound pressure produced at the ear drum is critically dependent on the wave properties of the earphone and the external ear. The geometry of the cavities coupling the earphone to the ear drum, which is affected by such factors as the positioning of the earphone on the



head of the listener, becomes the most critical issue. These wave effects become important. . . at frequencies above about 2,000 Hz."

Traditional, circumaural phones were less leaky, and therefore more reliable at low frequencies than supraaural phones. They also

minimized noise from both physiological and ambient sources. The authors go on to point out, however, that at high frequencies, wave effects in the ear cavity make sound pressure at the ear drum "critically dependent on the geometry of the earphone and ear and the exact positioning of the earphone."

Supraaural phones are less reliable at low frequencies because the coupling between them and the ear is variable and unstable. This causes unpredictable amounts of loss below about 500 Hz, plus small, variable sound-pressure enhancements between 500 Hz and 1 kHz. As with circumaural types, high-frequency response will vary with positioning.

Insert earphones are the least leaky, and therefore the most reliable at low frequencies. They also minimize some of the high-frequency wave effects, and some physiological noise. (In my experience, they also minimize ambient noise fairly well.) Exact performance, however, will vary considerably with the shape of the individual ear and the insertion depth.

These feelings apply only to types of 'phones. A good model of any given type should outperform a poorer model of another type, and any given model may still perform better on your ears than on someone else's.

**The Wishing Hour**

Now is the time to start thinking about what tomorrow's preamps, with full digital control and signal processing, might be able to do for us. If we air our ideas now, they might influence first-generation designs; wait until later, and designers' ideas might become circumscribed by prematurely accepted conventions. Write and let me know your ideas on the subject, and we'll publish some. Meanwhile, here are a few of my own first thoughts, to get things started.

Digital preamps should have MIDI control interfaces and serial interfaces for control by home computers. A control-program language should be written which all preamps could use, as an aid to users and designers alike. I have no idea what these interfaces will allow us to do, but I'm



sure that other users will think of interesting applications for them.

Tone and EQ controls might be tied in to a graphic display and a light pen, so that one could draw or edit control curves on the screen. (I saw that implemented in Technics' Osaka labs about 10 years ago.) It should

be possible to tie in these control circuits with acoustic analyzers, to set up accurate curves for given rooms and listening positions.

I'd like my digital preamp to have a phono stage with just such advanced EQ facilities. By playing a test record, one could calibrate a basic EQ curve for every cartridge in the house. Then one could modify that curve to personal taste, and call up further modifications to match equalizations used on records made before the RIAA curve became standard. In my system, it would be nice if calling up the 78-rpm curve automatically switched the input to my Dual CS 5000, the one turntable I have which can still play the darned things.

I'll print more such blue-sky ideas when I come up with them—or when you do.



### Reinforcing Prejudices

My prejudice for classical concerts over pop, nowadays, has less to do with my taste in music than with my taste in sound. Pop concerts use sound-reinforcement systems; classical concerts use acoustics.

In a hall with good acoustics, while the sound does change from place to place (e.g.; sharper and better focussed in the front of the orchestra, more resonant and blended in the upper balconies), the basic sound is recognizably the same no matter where you sit. Carnegie Hall is always Carnegie Hall, and never Alice Tully Hall or Philadelphia's Academy of Music. Acoustics color the sound (which is why some halls sound warmer or colder than others, among other things), but the coloration of a decent hall is fairly subtle. Further, acoustic listening is free of distortion, until the sound gets so loud that your ears overload. (If you don't think acoustic instruments can get that loud, listen to an unamplified big jazz band!)

Sound systems, all too often, are expensive ways to simulate bad acoustics. It's hard, perhaps impossible, to create a speaker array that covers a wide frequency range, has smooth and even frequency response, and delivers roughly the same amplitude and frequency response at every seat in a vast area. The people who install and run such systems try to make the sound as intrinsically smooth and natural as possible, then they use equalizers to get it still more natural and smoother. The problem with this approach is that equalizing for perfect response at one point does not make the sound perfect everywhere—or, sometimes, anywhere—else.

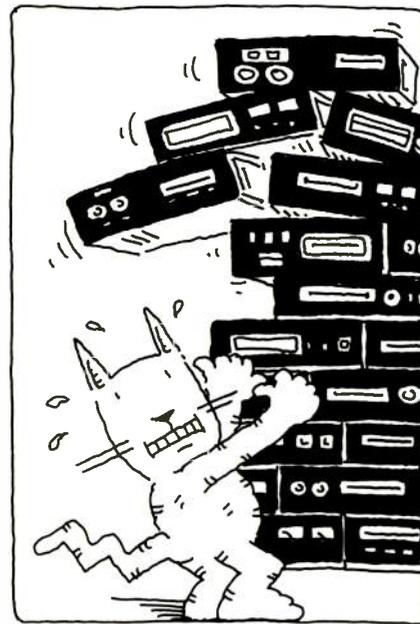
In the past few months, I've run into two examples of this: Linda Ronstadt's appearance at New York's City Center, and Harry Belafonte's appearance at the Garden State Arts Center, in Holmdel, New Jersey. City Center is an auditorium with pretty good acoustics (the New York City Opera used to perform there); Garden State is an amphitheater which seats more than 5,000 under its roof, and can hold about 5,000 more on its sloping green lawn in good weather.

In both cases, the sound in my seats was shrill with a hole in the midrange. Ronstadt's sound man told me the system had been equalized (and it sounded good, indeed, at the sound booth), but he altered the EQ to get more midrange and less treble elsewhere in the hall. At the Belafonte concert, I could see the sound man's real-time analyzer displaying a frequency response which would do any high-end audio system pretty proud. But where I sat, about 30 seats to the left and 30 rows further up, the sound was screechy, and sibilants were overemphasized. I stood by another sound booth, a few rows ahead of me and about 50 seats further left, and the sound was clear and natural.

Alas, these concerts probably could not have existed without sound systems. Ronstadt might have been able to fill City Center without it (other singers have), but I'm sure her tour took her to places where the acoustics weren't as good—and even at City Center, night after night of loud singing wouldn't be good for the voice. (In opera houses, casts or whole operas rotate, so the principal singers can get some rest.) I doubt that any singer could fill Garden State without amps.

### Dampfinger

Trying to protect musical royalties by holding back DAT is a lot like trying to block a rising sea by plugging a leaky dike with one's finger. Proscribing DAT by name won't prevent the arrival of other, equally good digital recording systems. Proscribing digital recording systems per se would prove difficult because such systems are already here, in the form of 8-mm VCRs with digital sound, telephone answering machines that record your outgoing message on a digital chip, and so on. Their quality may be lower than DAT's, but they are still digital. Proscribing the use or sale of recording systems that exceed a given quality level would cause severe public-relations problems for the recording industry.



Illustrations: Kimble Pendleton Mead

### Quotes from Keith

Audio engineers rarely wax poetic, but Keith Johnson did when introducing the speakers he designed for Precise Acoustical Laboratories. I thought these two quotes were worth passing on:

"One starts with the brutality of science, and ends up with art.

"Once you have discovered what's wrong with a driver, you can never listen to it again."

*High fidelity  
in "impossible" places.*



Designer Series Speaker Systems

**Boston** Acoustics

model 350/model 360



*Now high fidelity music reproduction  
can be part of a room's architecture.*

Boston Acoustics' Designer Series speakers bring true high fidelity music reproduction to a variety of architectural spaces. They mount flush in walls and ceilings, or in virtually any flat surface. Installation is quick and positive, whether in existing rooms or new construction.

As main or extension speakers, these units will fit unobtrusively into any room in your home and into

commercial spaces as well. In addition, they are ideal as audio-video surround speakers. And since we've engineered waterproof diaphragms for both woofer and tweeter, you can confidently install them in moisture-laden places like kitchens and bathrooms, even boats. Best of all, no matter where you place them, Boston Designer Series speakers take up absolutely no shelf or floor space.



Boston Designer Series speakers are high performance two-way systems, made in the USA. Their woofers have been specifically designed to provide full bass performance without the need for a special enclosure behind them. The CFT 4 tweeter is of a quality not normally found in built-in speakers. It is a new version of the one-inch copolymer dome tweeter used in our finest home systems.

As a result, these speakers' sonic performance belies their small size and inconspicuous appearance. As with all Boston Acoustics high fidelity speakers,

frequency response is smooth and accurate. Stereo imaging is unusually lifelike.

The clean, contoured grilles and trim are finished in matte white. If desired, they can be painted any color – to match or complement any interior. All hardware required for flush mounting in existing surfaces is included. An optional bracket is available for use in new construction.

The Boston Designer Series. Innovative speakers that bring you high fidelity music wherever you are.



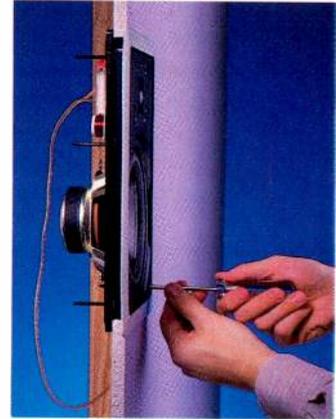
## Simple, easy installation in existing or new construction.

The thinking behind Boston's Designer Series speakers didn't stop with the design and engineering of the speakers themselves. As shown below, installation is quick and positive. The flexible flange of the speaker frame and six mounting screws work together to ensure correct fit even when the wall or ceiling is not perfectly flat. Although vertical installation is shown, 360's and 350's can also be mounted horizontally.

### For existing walls or ceilings



A simple rectangular cutout is all that is required. The entire speaker/bracket assembly is installed from the front.



Tightening six mounting screws secures the speaker frame to walls and ceilings ranging in thickness from 3/8" to 1 1/2" (9.5 - 38mm).

### For new construction

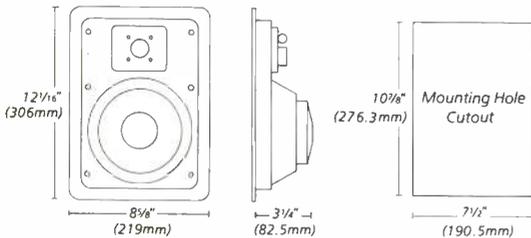


This optional bracket mounts directly to the wall studs, much like an electrical box.

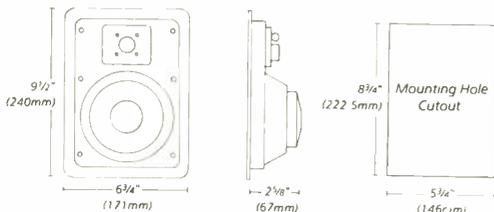


After the walls are installed and finished, the speaker frame is securely attached with the six mounting screws supplied.

360



350



### Specifications

	350	360
<b>Frequency Response (<math>\pm 2</math>dB):</b>	68-20,000 Hz	58-20,000 Hz
<b>Nominal Impedance:</b>	4 ohms	8 ohms
<b>Sensitivity 1 watt (2.83 V) at 1m:</b>	90 dB	89 dB
<b>Woofer Diameter:</b>	5 1/4"	6 1/2"
<b>Tweeter Diameter:</b>	1"	1"
<b>Crossover Frequency:</b>	3500 Hz	3000 Hz
<b>Optional New Construction Bracket:</b>	35B	36B
<b>Recommended Amplifier Power:</b>	5-50 watts	5-60 watts

Specifications are subject to change without notice.

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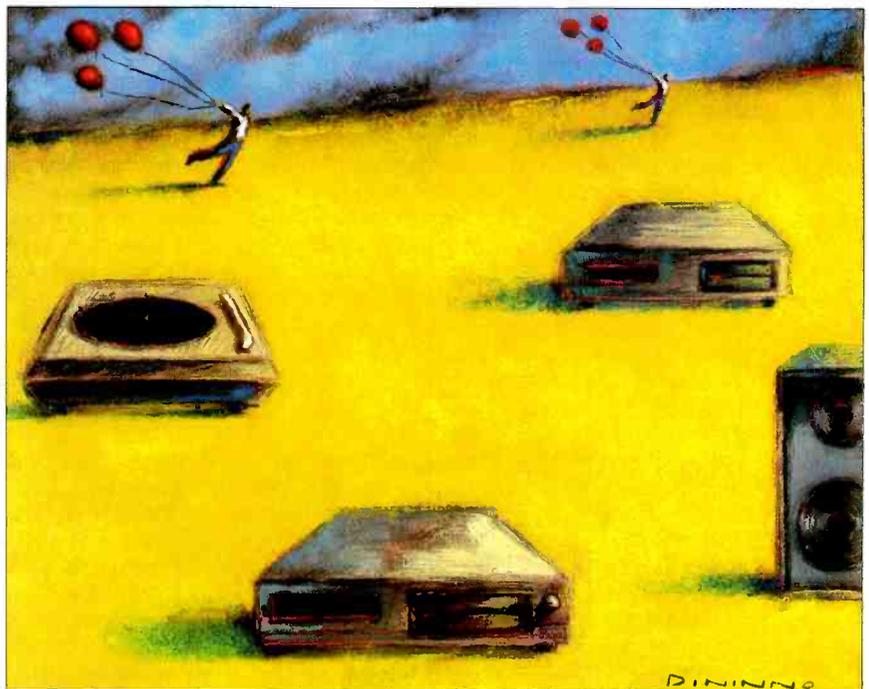
## SOUND OBSERVATIONS

**H**ave you been to an audio show recently? Chances are good that you have if you are interested enough to read this magazine regularly. Audio shows are everywhere. But it is curious that the two largest variants of the basic idea are both outsiders, so to speak, that have found themselves in the audio-show game almost in spite of themselves. They are the twice-a-year, summer and winter, CES (Consumer Electronics Show), basically for dealers, and the annual conventions, east and west in the U.S., of the AES (Audio Engineering Society), aimed at the other sort of audio professionals. Neither of these enormous organizations was remotely in the hi-fi show biz when that peculiar form of sonic display first appeared almost 40 years back.

We must reluctantly recognize, of course, that the most important audio shows, and maybe the biggest, too, are today found elsewhere, from London, Berlin/Düsseldorf, and Paris to Tokyo and Singapore. Are we Americans, even here, becoming just a "service economy"? Yep. And I hate the thought, as should every red-blooded soul hereabouts—not to mention blue-blooded. But what can we do? Well, at least I can turn back to nostalgia. But first, more on how I see things now.

Let us define an audio show as an ostensibly public event, representing more than one manufacturer (and/or his cousins and his aunts), that displays reputable audio equipment from, shall I say, the top down. (How far down is not to be specified too exactly. The top is what matters.) And one more obvious proviso—there shall be audio *sound*, somehow or other. Can you imagine a more contradictory proposition than a silent audio show?

Well, I can. Because that is the way the AES began its once-modest displays of professional audio equipment years ago and, in fact, this is still its worthy aim, if on a hugely greater scale. But time, and life, tend to erode such worthy determinations. (Remember that it is me, and not AES, who is saying that their show includes an audio component today!) The AES people do all the other things professional societies should do, faultlessly year after year. But dear me, there *is* audio sound. Ways and means are found for



this, *de rigueur*. Circumspectly, but oh so definitely once you are inside one of those dozens of private rooms. (When the doors are left open, the audio is a bit less than circumspect, if you ask me.) You also will find audio at some of the professional sessions, which are sonically well-illustrated according to need. AES is hardly a silent organization. Nor, today, can it be.

As for CES, I do not know exactly when that trade show first began, but for years, many of us in high fidelity—rebaptized audio—looked down with scorn on this growing monster of electronic showmanship because it featured the hated "mass-production" cheapie stuff everybody else buys. We felt we were different and definitely on a higher plane. Yet as the impetus and direction of our hi-fi shows faltered and splintered, we had to move in a CES direction. Eventually we joined up, even though at CES there's plenty that is not audio at all. So now my show definition holds: "From the top down." CES qualifies because the top is now there. If you can find it in the melee.

Audience? Trade, public, or professional? "Does it really matter," I ask, "just so there are enough thousands?" The AES is ever-so-specifically learned and professional, yet at the big conventions, I am always astonished at the

hordes of college and high school students who mob the exhibits, often sitting expertly in what we might call the driver's seat, manning the big boards, the synthesizers, the multiplicity of ever-new equipment as veterans to the manner born. This is good—these are the people of the audio future, thrilled to learn hands-on. But you'll have to admit that it tends to blur the distinction between professionals and the so-called general public, at least during convention hours. Far as I can see, the general public, all ages, is freely on hand in many shapes and sizes, except perhaps at the more technical of the primary papers, seminars, and so on. As far as I know, anyone with the will and the necessary cash can partake of AES offerings one way or another, including becoming a member, and this is surely as it should be. And so a big part of these professional conventions is, by my definition, an enormous audio show. What else?

Indeed, the world's audio shows are remarkably alike, whatever their official intent. Just look at the kids in Japan who overwhelm every show. It's a universal phenomenon, a piece of our civilization—for better or worse.

Over at CES, we also have presumed restrictions as to intent, perhaps a bit more so than at AES. The

Vacationing in France, I saw remarkably few audio products from Japan. That takes a national unity and pride we do not share.

genuine "public" is not supposed to be there. This is a mammoth trade show, an everything-electronic show, with audio built in. Though nominally its dealers are being given an advanced look-see, long before the public gets one, I suspect there are plenty of leaks, what with all the daily media around. (Is that 16-year-old over there a dealer? And that benign-looking grandma with the 'phones on her head? Do I hear a gaggle of schoolgirl giggles?) You can't keep these big shows private. It's against present-day nature.

The only place in the "advanced" world that is really different is France, where I've just been visiting, which somehow contrives to set up a Western-type civilization without much reference to anybody else's. In France, this principle applies everywhere, right down to flashlight batteries. This year, for the first time in a half century, I saw a regulation standard D cell for sale in a French supermarket. Since the original Voltaic pile, this country has had its own special battery sizes that fit nobody else's. (I'd hate to be one of the AES technical coordinators when the international AES meetings are held in France!) The French can match us or surpass us at anything when they have a mind to; I'll also have to observe that remarkably few Japanese products were to be seen anywhere. That takes a national unity and pride we do not share over here. Anyhow, I'll bet a hi-fi show in Paris isn't that different from those of the rest of the world, whatever the equipment. Nor do I presume either to praise or to criticize the French way—even if I am for world interchangeability, wherever useful.

The French aren't always rigorously logical, though they always are determined to keep whatever is worthwhile to them—in the very face of logic. That includes the most snail-like red tape you ever could face, and not of the audio variety. Woe to anyone who tries to hasten it! These people have a marvelous ability to do things in a complicated fashion. But the French way also includes the most heavenly vegetables you ever tasted—fruits, as well. (This quite aside from French cooking.) Wow—tomatoes with *taste*, actual flavor and juicy red! You can't hate a nation which provides that kind of product, can you?

Further (I'm full of France at the moment) French cars drive on the right, but all rail traffic, from the Metro to the incredible, super-high-speed TGV trains, keeps strictly to the left. Air France has a standard computer net—it has to. Check in anywhere, and there's your name on the screen. But though French rail stations are jammed with automations and computer-type equipment, you can't check a phone reservation except at the station where you made it. The computers are totally isolated. So you stand in line at the station and pay up, just as you did around 1900.

The last "regular" public hi-fi show I attended was one in Osaka some years back. (As the shows get bigger, I get less tolerant of the shove and push, not to mention the unmentionable sonic mix.) What astonished me about that show was that it was entirely underground, in a series of man-made caverns extending like some disused subway system as far as the eye could see. (And further than I could walk.) Beyond the hi-fi were other exhibits and shows, on and on lengthwise, until I lost my sightseeing nerve for fear I would never recognize my audio home base when I got back to it. A war left-over? Or built especially for conventions? I did not know.

You understand that the audio show biz began life way back, as this "regular" sort, for the general-interest public and anybody else who had business to do. This in contrast to the more specific stated purposes of the biggest shows today, which actually seem to be muscling out the older sort of event simply by their sheer size. Again, officially, these are *not* audio shows. But, as I see it, they have almost taken over the show business.

It is therefore worth recording, I think, that there is really not much difference between one kind of show and another in actual practice. And this applies even to the once-sharp distinction between professional audio and the consumer type. True, AES still displays entirely what is supposed to be professional equipment. But are we now able to make the distinction? In all the shows since the beginning, every sort, the various locations have been assigned not to types of equipment but to named manufacturers. Many of

these now make alternative lines of professional and consumer equipment, often rather closely related. I recall Ampex and the TEAC/Tascam combination as early proponents of this arrangement, straddling the professional gap in their own production. Many other firms have since gone the same way, not only the Japanese (who really cover the field from professional top to consumer bottom!) but also numerous American and European manufacturers. Crown bridged the gap early on and, thereafter, it was never easy to tell which of its worthy products were professional and which high-end consumer. (Crown has since gone to straight pro, which could be a trend.) The crossing of the gap continues strongly, perhaps because of the inherently longer-lasting qualities of IC and chip technology. The basic distinctions, still obvious at the outer fringes of audio equipment, get less and less defined, and the overlap more extensive.

It is easy to see, then, that if such a large and variable overlap between consumer and professional equipment exists, and therefore between the people and firms involved, the hi-fi audio show is bound to be affected since it only reflects what is there. What can the AES or any other show promoters say when the "gray area" so clearly exists in almost every manufacturer's display potential?

Today, if I were to see a full-sized mixing board in somebody's palatial living room, I would not bat either eye. True, it might be one of those new home-based pro studios that *db* magazine is calling the cottage industry of the audio world. (Some cottages!) But, then again, it could just be hobby stuff on an astronomical scale, which is common enough today. After all, if you can sail a 100-foot yacht just for fun, why not pilot a 50-foot audio studio?

This has been a rambling account of today's activities in audio show biz, but behind it are real questions to be thought about. The shows will go on, one way or another, but are we sure which shows are for pros and which are not?

With these thoughts off my mind, and on yours, I'll get back to nostalgia and the first audio show, when the very idea was new. It's quite a story! 

M A T R I X  
**801**

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S E R I E S 2

B&W's Model 801 – the recording industry's Reference Standard Monitor – was the inspiration for innovation. Dramatic developments in technology and enclosure design have lit the fuse. B&W's Matrix 801 Series 2 personifies the state-of-the-art ten years on. This magnificent successor sets the new standard for professional and home user alike. With no commercial compromise. Rich in Matrix technology, 801 Series 2 registers accurately even beyond audibility. Phenomenal sound. Clean and utterly uncoloured. Outstanding imagery with tight unbooming bass. An instrument destined to occupy a special place in world esteem.



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## MATRIX 801 SERIES 2

Lewis Lipnick

Since the introduction of the original B&W 801 monitor loudspeaker in 1980, it has been adopted as a reference by several recording studios around the world. Over the past five years, I have seen 801s present in just about every recording session with which I have been artistically involved. While the original 801 monitor had its strong points, I was never satisfied with the detached and muddysounding bass, discontinuous driver balance, and low sensitivity. Unless this speaker was driven by an enormous solid-state power amplifier, with an elevated high-frequency response, the tubby and slow bass response often obliterated any detail in the two bottom octaves of musical material.

Well, all this has changed. . . for the better. The new 801 Matrix Series 2 is as different from the original 801 as apples are from oranges. For me to say that this is just another excellent loudspeaker would make me guilty of gross understatement. In short, this is the most musically complete and revealing full-range dynamic loudspeaker that I have heard to date, effectively redefining such terms as coherent, dynamic, open, and involving.

### Technical Highlights

The Matrix 801 Monitor is a large loudspeaker, employing a massive, front-vented cabinet housing the low-frequency driver and crossover network, with a separate fibercrete head housing the midrange driver (the tweeter is mounted in free field above) placed directly atop the bass cabinet. The midrange/tweeter head is electrically connected with the lower cabinet via a short umbilical and an XLR connector, and is secured by a very long bolt that runs completely through the head, down into the bass enclosure. There are two sets of

## B&W 801 MATRIX SERIES 2 PROFESSIONAL MONITOR LOUDSPEAKER

Three-way loudspeaker system. Drive units: one 26mm metal-dome tweeter, one 126mm Kevlarcone midrange, one 300mm high-power polymer-cone woofer. Crossover frequencies: 380Hz and 3kHz. Frequency response: 20Hz-20kHz  $\pm$  2dB free-field. Sensitivity: 87dB/W/m. Nominal Impedance: 8 ohms (not falling below 4 ohms). Amplifier requirements: 50-600W. Dimensions: 39 $\frac{1}{16}$ " H by 17" W by 22" D. Weight: 110 lbs. Price \$5,000/pair in black ash or walnut, \$6,000/pair in rosewood. Including external bass-alignment filter. Speaker stands optional, \$200/pair. Approximate number of dealers: 100. Manufacturer: B&W Loudspeakers, Ltd., Meadow Road, Worthing, BN11 2RX, England. U.S. Distributor: B&W Loudspeakers of America, P.O. Box 653, Buffalo, NY 14240. Tel: (416) 751-4520.

speaker terminal connectors on the bottom rear of the bass cabinet, in order to allow the listener to bi-wire the speakers (these connectors are normally internally bridged, so in order to bi-wire, the bottom cover under the bass cabinet must be removed, and two very short jumpers removed. . . a less-than-ideal setup). The cabinet construction is excellent, showing a great deal of attention to assembly and aesthetic detail, except for the quality of the speaker terminal connectors. Rather than utilizing standard five-way binding posts (as B&W does with their less expensive 802 speakers), they have opted for some rather poor-quality, screw-type terminals that just don't belong on a product of this quality. Except for the round port vented on the front of the bass cabinet directly below the woofer, the new 801 Matrix is visibly similar to its predecessor. The casters mounted on the bottom are nice to have when moving these behemoths around the house or studio. But since the speakers really need to be placed on stands in order to operate at full potential, this otherwise practical addition is somewhat useless.

The internal design and components represent a clear departure from the earlier 801. By using their effective Matrix technology of incorporating an internal system of honeycombs within the bass cabinet, the engineers at B&W claim to have reduced low-frequency enclosure resonances and colorations to a significant degree (I agree). Additionally, but using a sixth-order Butterworth alignment through the addition of an outboard equalizer, they have been able to achieve extraordinary low-

frequency response (-6dB at 17.5Hz) without compromising bass attack and clarity. Although the speaker can operate without this optional equalizer (thereby effectively representing a fourth-order Bessel filter with a -9dB point at 19Hz), the addition of this device clearly enhances its overall musical accuracy. The midrange fibercrete head assembly and Kevlar-coned driver remain basically unchanged from the earlier 801. The high-frequency driver (the TS26 tweeter), on the other hand, represents an entirely new design, incorporating a metal-domed diaphragm. This design was arrived at partially through B&W's computer-aided design (CAD), and is a modified version of the metal-dome tweeter used in the less costly Concept 90 series of loudspeakers. B&W claims that this new tweeter "exhibits perfect piston-like behavior to frequencies well beyond audibility." The newly redesigned bass driver has a cone of specially formulated plastic compound, is heavily damped to remove sonic colorations, and employs a 13lb, 13,000 Gauss magnet.

In order to protect the drivers from overload, B&W has upgraded the already existing Audio-Powered Overload Circuit (APOC) by incorporating two such units: one operates on the bass section, the other on the midrange/tweeter, allowing complete protection even when the system is bi-wired.

### Design of a True Monitor: Not Just Another Loudspeaker

While attending last summer's CES in Chicago, I had the pleasure of a lengthy discussion with John Bowers, the driving force behind B&W

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loudspeaker design. His musically intuitive design approach and clearly defined product goals (something too often lacking in high-end audio) gave me the impression that he knew exactly what he wanted to achieve, and how best to do so. When I asked him about the role of monitor speakers *vs* those without such designation, he stated that a true monitor should reproduce exactly what is contained in the recorded material, good or bad, rather than presenting an editorialized picture of what one might want to hear. His point is well taken, since many audiophiles choose their loudspeakers for various sonic attributes that add colorations to effectively create a predetermined spectral balance or acoustic environment. Of course, we all know that such a thing as an accurate loudspeaker does not exist, and even if it did, we would have no way of ascertaining its accuracy unless the recordings were identical to live music. How, then, can anyone claim that they are able to design an accurate loudspeaker? Realizing this problem, Bowers uses panels of musicians who have performed in specific recordings to ascertain musical integrity between originals and facsimiles. If they and the recording engineers involved are satisfied that what they hear through the speakers accurately reproduces what occurred in the sessions, he feels that some of the subjectivity connected with loudspeaker design has been eliminated.

Which brings us back to the 801 Matrix. This is not a speaker for those with preconceived notions of what should be, but for those who wish to hear what *is*. I have yet to hear another speaker that gives me as much musical information as this one, without any of the usual sonic intrusions that remind me that I am listening to music through a mechanical device. The 801 Matrix is a true musician's reference transducer, a point made by several of my colleagues in the National Symphony who have had the opportunity to hear it. Unfortunately, many of the musical attributes that distinguish the new 801 from other products will probably be lost on those audiophiles looking for the latest trends in loudspeaker design, rather than recreation of recorded artistic events.

### Sonic Qualities

Being a musician first, and audiophile second, I subscribe to the thesis that musical validity and accuracy is of foremost importance, and that sonics should be viewed as only one component within the overall musical picture. There are, however, those few products that utilize their sonic strengths as a means to musical integrity, rather than the more common "let's see how we can make our speakers sound different from anyone else's." The 801 Matrix is one such product; here are some of the purely sonic attributes that set it apart from so many other also-rans.

First of all, I don't feel that this speaker has

any significant sonic weaknesses. It is ruthlessly revealing of everything up front (source material, electronics, interconnects, line-cord polarity, etc.), and this is what might ultimately get it into trouble. Many US dealers who will be selling this product are not members of the high-end community, and will probably mate the 801 with greatly inferior electronics. I can tell you that, after living with these speakers for the past two weeks, anything less than the finest electronics and source material can cause serious listening trauma. As an experiment, I connected a representative Japanese receiver (name not important, since they all basically sound alike) to the 801s, and the results were devastating. The sound was thin, grainy, and white, with no depth or bass extension. And although readers might find this amusing, it really is not—many potential buyers will audition this product with similarly mismatched ancillary equipment, and will very likely blame the speaker for the sonic shortcomings. The people at B&W figuratively "shot themselves in the foot" when pricing this speaker. . . it is simply too inexpensive for what it does. While it outperforms other products costing at least twice as much, its requirements for the finest electronics will place B&W dealers in a difficult situation.

While the 801 Matrix works well with both solid-state and tube amplifiers, I definitely prefer the results when using solid-state. Although the manufacturer claims that one can use as little as 50Wpc with the new 801, I would think that at least 100Wpc should be the minimum (especially if you are going to play full orchestral material). Of the three amplifiers that I have tried on these speakers (Conrad-Johnson Premier Five, Mirror Image 1.1S, and Rowland Research Model 5), the Rowland Research came out the clear winner. I still think that, overall, the Model 5 is the most neutral and musically revealing amplifier I've had the opportunity to hear, and the 801 Matrix speaker once more confirmed my findings. While the Premier Five presented itself very well, with beautifully defined midrange and silky high frequencies, low frequencies were slightly muddy and indistinct. The Mirror Image was not even in the running, sounding unrefined, raw, and congested. Although I heard all of the above before through my Martin-Logan Monoliths, the differences between these three amplifiers became much more pronounced with the 801s.

The "optional" 11" stands are quite necessary. With the assistance of two professional musical colleagues (Robert Kraft, bass trombonist with the National Symphony, and Joseph Kainz, visiting flutist from Chicago), the 801s were auditioned on the floor, sitting on the attached casters, on the floor with the supplied spikes, and on the dedicated stands. Both floor-mounted positions resulted in loss of ambience and musical information, along with noticeably slowed low- and midbass response.

When we placed the speakers on the stands, the sound magically blossomed, and the spectral balance became neutral and even. Additionally, the contra octave of bass became tighter, deeper, and noticeably faster.

This all happened before the optional outboard bass-alignment filter (aka equalizer) arrived, or the speakers had been bi-wired. Again, B&W's "option" is a necessity. While I liked the speakers before, the addition of this little black box between preamp and power amp made an enormous difference. . . for the better. This is the first such device I've heard that doesn't adversely affect the midrange and high frequencies. B&W has wisely not included hard-wired interconnects, so the audiophile can still use his favorite brand of wiring. What amazed me was how this gizmo improved the entire sonic picture, not just the very deep bass, as we had expected. The sound became more clear and extended (in both directions), and the soundstage opened up, portraying hall ambience and dimension more effectively. I could more clearly define individual musicians in space, as well as the degree of natural hall resonance *vs* artificially induced reverberation in recordings. Not being an engineer, I won't attempt to speculate on exactly what this "optional" filter does, but one thing is for sure: if you're thinking of auditioning a pair of Matrix 801s, be sure the dealer uses the bass-alignment filter and the stands.

The Matrix 801s should be bi-wired. Although they work quite well in the conventional setup, the balance between the midrange/tweeter and woofer sections is tipped upward toward the former, thereby presenting a slightly lean, hollow quality to the mid-bass that might cause the listener to think these speakers unnaturally bright and aggressive in the upper midrange. When bi-wired (be sure to use the same speaker cable on top and bottom; these speakers are too coherent to tolerate mix and match), everything came into alignment, with all three drivers becoming more transparent and coherent, and any hint of over-brightness completely vanishing. (As an aside, I would like to mention that Straight Wire Music Conductor Speaker Cable appears to sound the best with the 801s in my system.) All of my subsequent critical observations concerning the sonic and musical qualities of the Matrix 801s were made with the inclusion of bass-alignment filter, speaker stands, and bi-wired installation.

The 801 Matrix is spectrally seamless from top to bottom, dynamic, refined, harmonically accurate, open, and, last but certainly not least, revealing. The only other speaker that I have had the opportunity to live with that successfully competes (and I have owned several large speaker systems) is the Martin-Logan Monolith. Whereas the 801 does not always present as large a soundstage as the Monolith, it does appear to present soundstage more accurately. Ensemble and stage size are more

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clearly defined, and what sometimes appears as spatial information through the Monolith is obviously artificially induced reverberation and multi-miked bleed-through with the 801. Perspective is more obvious with the 801: forward, aggressively recorded material can really "come out and grab you by the throat," while the opposite perspective places the musicians well behind the speakers. The 801 is more coherent from top to bottom, more open, more revealing of recording techniques, and much more dynamic. The only area in which the Monolith is the clear winner is transparency: electrostatics just simply do better with dynamic speakers in this category. They are both great loudspeakers (musically exceeding everything else that I've heard, except perhaps for the new Apogee Diva, which I have not yet had the opportunity to extensively audition), each presenting musical information in a valid, but totally different perspective. The Monolith might ultimately be the better speaker for long-term listening, being less analytical, while the 801 gives more of what is really there, albeit possibly a bit intimidating. The 801 is a monitor, and some listeners just might not want to hear everything the 801s will tell them, musical and not.

### Musical Attributes

I was not prepared for what I heard the first time I played the 801s. After finally getting these monsters set up and wired, my colleagues and I sat down to listen to a new compact disc of Vaughan-Williams's *Job* (Vernon Handley, London Philharmonic, EMI Eminence CD; superb performance and recording), having just heard it recently on the Monoliths. We sat silent throughout the entire performance (something that has never happened before), and after it was over, we looked at one another without a word. Finally collecting ourselves, recovering from the initial shock of what we had just heard, someone quietly said, "I've got to have those speakers."

When it comes to audio, musicians are hard to please. Perhaps that's why so many of them have such poor audio systems; if you can't have it all, why even try? The new 801 is a musician's reference; it simply reproduces music with more immediacy and honesty than anything I (or any of my colleagues) have previously heard. It is quite unlike any other speaker, inasmuch as it goes far beyond any previous design in drawing the listener into the performance, almost as if the listener's ears and microphones were one and the same. My first impression of the sound was one of unrestrained openness, along with the sensation that the music was expanding out into the hall acoustically, not being stopped by an artificial barrier such as a loudspeaker. This is something previously experienced by this musician only at live performances, and is one of the things that separates the "life" in live music from the constrictions of electronic reproduction. Whereas

many other speakers have given me the impression of seeing the music through a very clean window, the 801 Matrix not only opens this window, but places me outside, actually becoming involved with the musical picture.

The 801 Matrix outperforms every other loudspeaker I've heard in its ability to recreate the wall-bending visceral weight produced by full symphony orchestra, chorus, and organ. Until I heard the 801s, I was convinced that no loudspeaker could credibly reproduce the dynamic impact that I feel during live performances. For the first time, I can sense the massive wavefronts of sound created by full orchestral climaxes, without any timbral change, constriction, or hardness. And at the same time, this speaker recaptures the finest low-level musical details, allowing the listener to see into, rather than just look at, the performance. All other speakers that I've heard to date (except for the Monoliths and Divas) create a "haze" over the music, effectively separating the listener from the performance. This typically causes loss of clarity and immediacy in quiet passages, as well as constriction and "sonic backup" at higher volume levels.

The 801 Matrix does not discriminate between good and bad... it bares all. The non-musical aspects of performance (background noise, instrumental key noise, turning pages, etc.) can really place the listener into the recording session, something made all too clear to us during a playback of Andrew Litton's recent recording of Mahler's First Symphony. We were listening to Andrew's audition copy of the master tape, when a couple of my colleagues detected a bass-drum roll not in the score. When we ran the tape back, and listened again, that bass-drum roll was clearly a rather loud truck outside the hall... something that infuriated Andrew, especially since the sessions had been monitored with a pair of older B&W 801s. According to him, this was not at all audible during session playbacks (and we were only listening to a cassette dub of the master!).

I am also now discovering new tidbits of musical information in many of my recordings that shed new light on the quality of performance. Several recordings, that I had previously thought were musically flawless, have now become less than perfect. In Frederick Fennell's performance of Holst's First Suite in E flat for Military Band, with the Cleveland Symphonic Winds, I have discovered a very soft, but magically effective suspended cymbal roll during the first movement, used by the composer as a precursor to the following snare drum roll. Having not heard this through previous speakers, and thinking that the 801s were producing some aberration, I checked the score, and sure enough, there was the cymbal roll. Another interesting but heretofore unidentified aspect of Fennell's performance came to light with the euphonium solo (introduction of the second theme), also in the

first movement. Before the 801 Matrix, I thought that I heard a tonally vague, not very well played euphonium. But now, I could detect two euphoniums (the score calls for only one... for some reason Fennell opted to double the solo part), which were neither together nor in tune. While this might not be very important, nor of any interest to the average listener, it serves as an example of the low-level musical detail retrieval capabilities of the 801 Matrix.

This speaker's low- and midbass reproduction are the most accurate I've heard so far. While some other products (such as the Infinity IRS, RS-1b, and KEF R107) probably supply more quantities of bass, the harmonic integrity, texture, and overall quality of low-frequency reproduction is considerably more realistic with the 801 Matrix. Edward Skidmore, another National Symphony colleague (double bass) and member of our musicians' audio listening group, flatly stated that the 801 Matrix was the finest speaker he had heard that reproduces the double bass accurately. He went on to point out that the bass does not sound like a low cello, or any other stringed instrument for that matter. According to Ed, each particular bass has its own unique sonic qualities that, until the new 801, had been lost.

The same must also be said for my instruments, the bassoon and contrabassoon. With this speaker, I can not only determine what manufacture of instrument the musician is playing, but the vintage as well (*ie*, the darker, more open and focused 7000 series *vs* the duller, fatter-sounding 10,000-series Heckel bassoons; the lighter, clearer, but less impactful-sounding prewar Heckel contrabassoons *vs* the fatter-sounding, more resonant postwar models). While many other speakers provide the listener with accurate bass attack, no others, that I have heard, reproduce the decay of low frequencies as well as the 801 Matrix. This important information supplies the listener with the harmonic and textural components of low instrumental tonal propagation. Additionally, this helps to define the space in which the performance is taking place, since decay time of omnidirectional low frequencies is one of the key elements in determining the spatial dimensions of the recording venue.

Transient attack of the 801 Matrix, throughout the entire frequency spectrum, is the most musically accurate and coherent of any speaker I have heard (except for full-range electrostatics). Deep-bass transients are remarkably clear (but not artificially dry), an attribute made evident through the reproduction of the bass drum in the third movement of Frederick Fennell's First Holst Suite (same as above). While many other full-range speakers have provided me with lots of window-rattling bass response, the 801 Matrix was the first to delineate the type of beater the bass-drum player was using. Whereas I had previously

## Advertisement

been aware of unusually sharp bass-drum attacks in this recording. I could now definitely determine that the instrument was being struck with a wooden bass-drum stick wrapped with chamois (a trick sometimes used in order to get more immediate attack), rather than the more usual felt beater.

The qualitative differences in attack speed between cello and double bass, bassoon and contrabassoon, bass and tenor tuba, bass drum and tympani, trumpet and flugelhorn, oboe and English horn, flute and piccolo, and violin and viola, are clearly delineated. I can also detect the amount of energy (weight of bow on the string, and amount of air support behind the tonal attack in woodwinds and brass) being expended by individual musicians within an ensemble. This effectively gives the listener a more immediate, rather than vicarious view of the performance (as one of my colleagues so colorfully stated, "this is like having sex, rather than watching it").

The 801 Matrix also sets new standards for instrumental and vocal harmonic integrity. Differences between American- and German-manufactured Steinway pianos are clearly discernible: the former are more immediate and bright at the two frequency extremes, with a slight suckout in the middle registers; the latter have a more even, resonant, but less brilliant and forward quality. The slight harmonic differences between the bright, forward-sounding trumpets *vs* the darker, more covered cornets in Berlioz's *Symphonie Fantastique* are clearly evident through the 801 Matrix—the first speaker I've heard to successfully make this distinction.

And while I'm on the subject of brass: these instruments played at high volume levels create sonic distortions, caused principally by nonlinear ringing of the actual brass material (especially in the flared bells). Played *en masse*, combinations of french horns, trumpets, trombones, and tubas create "difference tones" and beat frequencies that add brilliance and character to the overall orchestral sound. The same holds true for large pipe organs—beat frequencies created by slight harmonic and atonal discrepancies between the various ranks add interesting coloristic effects to the overall presentation. The 801 Matrix is the first speaker that I've heard that can actually reproduce these harmonic phenomenon, effectively contributing to the overall sensation of reality.

Vocal reproduction, both solo and ensemble, is superb. This speaker will, however, accurately portray voices too closely miked: the excessive sibilance in hotly EQ'd pop selections can drive you out of the room. But when the source material is more neutral, the intensity and hard kernel of vocal resonance is remarkably well reproduced. The specific characteristics of different vocal *tessituras* are, for the first time, as apparent as in live performance. The nasal, forced quality of sound indigenous to the tenor sections of many choral

groups, as well as the usual flat-sounding, unsupported sopranos, are clearly evident. Text in all vocal music is well delineated, without any unnatural sibilant emphasis. The 801 Matrix can even unravel the most complex voice leadings found in multipart contemporary choral works.

String instruments produce very different harmonic tonal structures when played with and without mutes. In live performance, muted massed strings produce a covered but resonant carpet of sound (*ie*, the opening of *Symphonie Fantastique*), and until the 801 Matrix came along, I had not heard this accurately reproduced. Most speakers represent this effect as a hushed "buzz" lacking pitch center and tonal focus. But the 801 Matrix lets all the resonance, tonal warmth, and pitch definition come through.

And speaking of pitch definition, this is where most speakers fail miserably. Instruments and voices have (or should have) tonal centers that are clearly heard in live performance. But so many speakers scramble this, representing tonal pitch centers on either the high or low side of the sound, producing overly bright or dull sonic distortions (overly sharp pitch appears to the ear as brighter; low pitch as duller). And with most speakers, this pitch distortion is not consistent: characteristics change with each separate driver, causing frequency-related colorations (this is one advantage of full-range electrostatics). The 801 Matrix is dead on, giving the listener a completely undistorted view of pitch focus and intonation, regardless of instrumental range or vocal *tessitura*.

The new 801 also allows the listener to follow individual instrumental and vocal lines into and through complex passages. This is not achieved by artificially boosting the upper midrange or high frequencies (as some other products do), since it remains consistent for instruments through the contra octave of bass. Compared with the 801 Matrix in this area of musical reproduction, most other dynamic loudspeakers sound unclear, congested, and amorphous.

Everyone who has heard the 801 Matrix Monitors has unconditionally stated that they hear more music than ever before. Some have felt that they hear too much, and would rather be left a little more in the dark. I don't. But it's interesting to note that, ever since my musical colleagues first heard the 801s, the topic of discussion during rehearsal breaks and concert intermissions at the National Symphony has revolved around "those fantastic new speakers that Lipnick has." I even overheard a few of them muttering something about how they could try to justify buying a \$4500 pair of loudspeakers.

### Shortcomings

As I mentioned earlier, this speaker has no major shortcomings *per se*. However, since it is

so revealing of source material and ancillary electronic weaknesses, the upper midrange and lower high frequencies can become a bit much. Compact discs that suffer from excessive digititis, as well as those electronics that contain enough grain to build a beach, will be unlistenable on these speakers. For those reasons alone, I cannot understand why the B&W engineers have deleted the environmental balance control on the rear of the midrange/tweeter head assembly that was standard with both the earlier 801 and 802 speakers. This control effectively allowed the listener to attenuate or boost the mids and highs according to personal taste, room acoustics, and associated equipment. Although it might be cheating, in some cases a slight degree of lost clarity may be preferable to an ear bleed, and might also make this product more saleable to people with less than perfect ancillary equipment.

My other reservations are strictly practical. The very awkward procedure required to disconnect the bridge inputs for bi-wiring is unnecessary. There must be a better way. And those horrible input connectors really should be replaced with something more consistent with a product of this caliber.

### Conclusion

In my opinion, the B&W 801 Matrix Monitor represents the pinnacle of current full-range dynamic loudspeaker design. It does not have the "see-through" transparency of the best electrostatics, and can sound forward and hard. Because it is so ruthlessly revealing, it may not be the speaker for everyone. But it is the first such product to convince me that it might eventually be possible to accurately reproduce live music. Do not audition this speaker with anything less than the finest source material and electronics—you will be wasting your time. And as good as this speaker is, I am sure that there are plenty of lunatic-tringe audiophiles who will find it unexciting and boring. So be it. But if you are searching for the emotional involvement only live performance can provide, and are willing to live with absolute sonic honesty, then the B&W 801 Series 2 Matrix Monitor is, musically, the end of the road. **S**

M A T R I X  
**801**  
S E R I E S 2

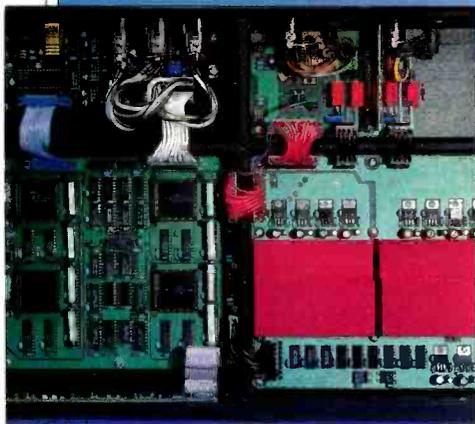
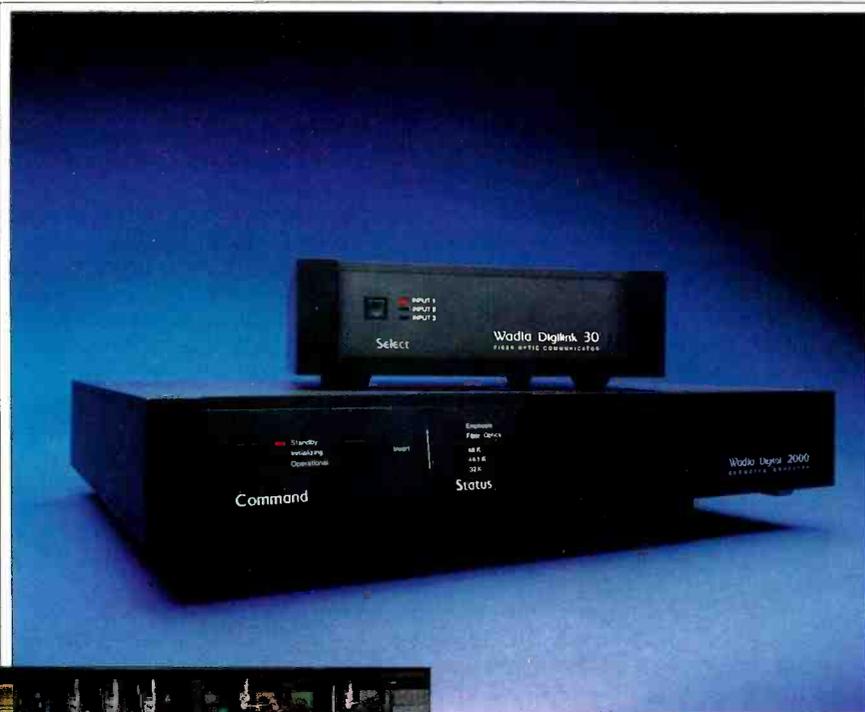
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BERT WHYTE

## PARLEZ-VOUS "FRENCHCURVE"?



**B**y now, five years since the introduction of the Compact Disc format, most audiophiles have become fairly conversant with the arcane world of digital audio. Many have had CD players since their inception, and have become familiar with their idiosyncrasies. They have watched the gradual evolution of CD players from the most basic, straightforward Sony and Philips designs, to the elaborations and advances found in current players.

Audiophiles have become either CD believers or digiphobes who steadfastly continue their love affair with the analog vinyl record. The cause of this schism is the ongoing difference of opinion about the sonic qualities of CD

reproduction. The believers feel that the Compact Disc, with its wide frequency and dynamic range, absence of noise, low distortion, and lack of wear, is a sonically accurate medium for the storage and reproduction of music. They will concede that they can hear differences between various CD players, and that such things as oversampling and digital filters make current players sound better than their predecessors. These believers also feel strongly that the alleged sonic artifacts digiphobes claim to hear are more the consequences of recording techniques than of anything else.

The digiphobes, on the other hand, maintain that CD sound is unmusical, sterile, and clinical; that ambience and reverberation are truncated and attenuated, and that they can hear "digital glare" and high-frequency hash generated by so-called "brick-wall" filtering.

It is not a question of choosing sides in this sort of debate. Too many factors are involved which haven't been addressed. It is a matter of individual aural acuity and perception, as well as acoustic environment, type and quality of equipment, choice of program material, and even psychoacoustic conditioning. It also is a matter of degree: An artifact which makes one listener

cringe may be of little moment to another.

Looking at the issue less emotionally, there are new scientific methodologies which can be implemented in the measurement of digital audio phenomena. In turn, these measurements can be related back to aural perceptions. It now appears that, in CD playback, some sonic artifacts are not illusory, but in fact can be detected and quantified. In various ways, considerable progress has been made in eliminating and suppressing some of these sonic artifacts.

In my Chicago SCES report (September 1988), I noted the debut of the Wadia 2000 Digital Decoding Computer and promised a detailed report. I finally have a production version of this breakthrough device, and as you will learn, it is one of the most technologically sophisticated digital products now on the market.

Unlike most outboard D/A converters, the Wadia 2000 is indeed a digital decoding computer of rather exceptional power. The complete system consists of a separate power supply, an optical interface unit, and the main decoder/computer.

The power supply has independent transformers, rectifiers, filters, and triple-stage regulation for the left and right analog channels. There also are three power supplies for digital circuitry, with such features as linear regulators and proprietary, high-frequency, power-rail filters.

A unique feature of the Wadia 2000 is its DigiLink 30 fiber-optic communicator. This unit accepts 75-ohm digital coaxial outputs from 32-kHz satellite broadcasts (when available), 44.1 kHz from CD, and 48 kHz from R-DAT. The three input formats are switch-selectable on the front panel. Obviously, a CD or R-DAT player must have a coaxial digital output port to be connected to the DigiLink unit. The digital signals from these ports will have undergone CIRC (cross-interleave Reed-Solomon code) error correction, but bypassed the player's D/A converters, filters, and all analog circuitry. In other words, the CD player is basically acting as a turntable. In the DigiLink, the digital signals are converted to optical signals. Then a gallium aluminum arsenide laser (the same as that used in the CD player to

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# B&W LOUDSPEAKERS 500

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The new B&W 500 Series is the latest definition for superlative sound reproduction. Four monitors to anticipate every domestic scenario. To meet every individual preference. From the unobtrusive DM550 and DM560. Discreet, low frequency performers with a shelf mounting facility. Pleasure unconfined for smaller environments. To the formidable DM570 and DM580. Prodigious. Powerful. Custom-built drivers and an all new metal dome tweeter inspired by the incomparable Matrix 801 Series 2. Guiding performance to perfection. And still you'll wonder where it all comes from. Because nothing you have ever known will bring you closer to the live performance.



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The Wadia 2000's digital signal-processing chips generate over 72 million instructions per second. That equals 100 IBM PCs!

track the information pits on the CD), drives the optical signals through a precision lens assembly and into professional-quality, 62.5-micron, glass fiber-optic cable. This cable is used as the transmission medium from the remotely located DigiLink to the decoder/computer. Fifty feet of cable is supplied with each Wadia 2000, although in special applications, up to three kilometers could be used without signal loss! This fiber-optic cable is a high-performance link for data rates up to 50 megabits per second.

In the optical receiver of the decoder, incoming signals pass through another lens and into a PIN photodiode. No provision is made for using the existing optical outputs of CD players for direct connection to the decoder, because plastic fiber is used, driven by weak LEDs, and this could degrade waveform purity. Nor is direct connection of the CD player's coaxial output to the decoder possible, as this would cause about a 15-dB loss in S/N ratio and poorer common-mode rejection.

The decoder/computer enclosure is made of heavy, machine-tooled, black anodized aluminum, with internal machined compartments for various circuit components. The front panel has a mode switch for on/standby and an invert switch for phase inversion in the

digital domain. There are LED indicators for mode, de-emphasis, optical signal reception, and sampling rate (32, 44.1, and 48 kHz). The rear panel has the fiber-optic input, gold-plated Tiffany RCA jacks for unbalanced output, and XLR outputs for balanced operation.

The decoder's optical receiver section, in addition to the photodiode, has a phase-locked loop which locks up to the master clock. Once the sampling rate of the incoming data has been determined to be either 32, 44.1, or 48 kHz, the clock signals are regenerated for these frequencies. The master clock introduces no phase distortion or noise, and jitter has been totally stripped away. The same area in the 2000 has a format decoder which looks for the AES/EBU input format. However, there is provision for interchangeable chips to permit other formats. Another compartment houses the CPU (central processing unit), which really is the heart of this device. The CPU uses four, AT&T, digital signal-processing chips (the fastest DSP chips available) which operate in parallel at 36 MHz. These four chips generate over 72 million instructions per second, which is equivalent to 100 IBM personal computers! Calculations are performed in 36-bit mathematics, and

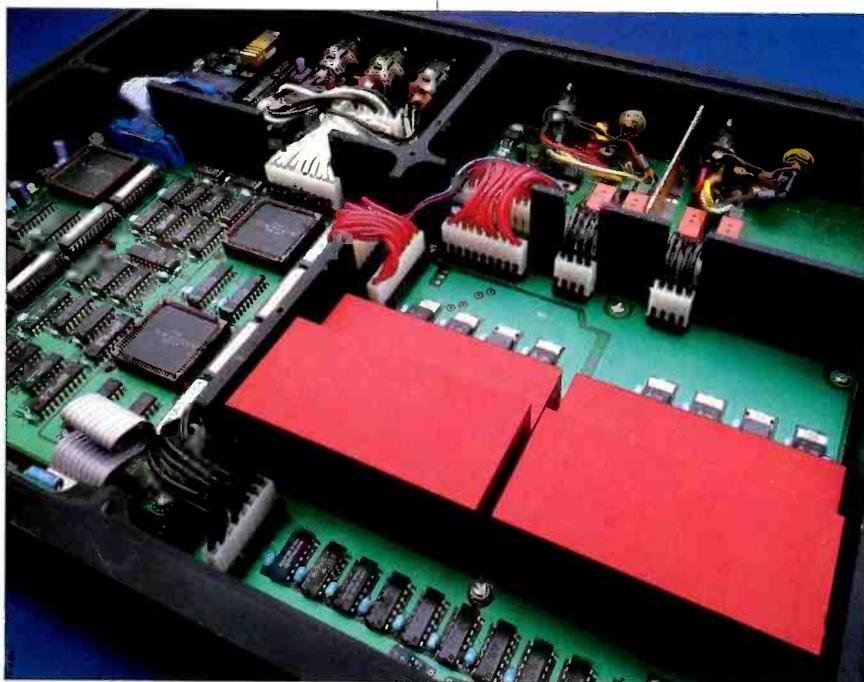


eight high-speed EPROMs (electronically programmable read-only-memory) hold the decoder's software. The EPROMs are used two to a DSP chip—one for low byte, one for high byte—and are mounted in sockets so they may be interchanged with other decoding programs. Each Wadia 2000 is supplied with EPROMs containing the company's proprietary "Frenchcurve" time-domain, curve-matching algorithm. (Now that's quite a mouthful!) The system sounds complex, and it is, but this non-filter approach to digital decoding is the alternative to frequency-domain brick-wall filtering, with its pass-band ripple, overshoot, intertransient ringing, and other artifacts. It is this sophisticated, time-domain software that is largely responsible for the dramatically superior sound of CDs and R-DATs reproduced through the Wadia 2000.

I'm sure you are aware that a number of separate, outboard D/A converters for use with CD or R-DAT machines are on the market, from companies such as Sony, Denon, and Marantz. All of these units, and all CD and R-DAT players, process digital information through analog and digital filters whose characteristics are optimized in the frequency domain.

Now consider this: If one could *ideally* sample an analog signal (observing all aspects of the Nyquist sampling theorem), the original signal could be recovered from the discrete samples by means of an accurate D/A converter and an *ideal* low-pass filter. Unfortunately, achieving ideal sampling and building an ideal low-pass filter are impossible. Thus, the decoder must accept the non-ideal music samples as

*Continued on page 89*



# BRYSTON

## **A Letter from the Chief Engineer of Bryston Ltd.**

When I first joined Bryston, more than 20 years ago, I was introduced to a group of people who had an absorbing commitment to the utmost quality in electronics manufacture, a sort of "old world craftsmanship" approach to building the best possible. I must admit I was fascinated. The company had not entered the audio market yet, that came five years later, but the type of equipment didn't matter. Here was a company made up of people who saw their daily work as a source of pride and satisfaction, who actually had fun building electronic hardware in an almost artistic way.

At the time Bryston was involved in OEM supply of materials to outside contractors, and the company name was almost always hidden on the back of the finished product. I felt that this type of unusual attitude toward building in more than was required would be successful in a larger marketplace, and should be communicated to the world. Within a short time after I joined the company, we started a long-term project to improve the quality of electronic amplification of music.

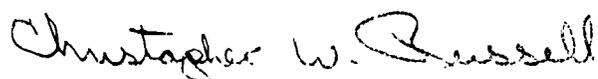
What we discovered then and what we continue to discover to the present day, is that accuracy in expressing the subtleties of recorded music is a challenging and wide-ranging quest. It involves concentrated investigation into every aspect of electronics, from power-supply design to symmetry of amplification, from millisecond-to-millisecond thermal reactions on the transistor chips to the metallurgy of perfect signal transfer in electrical connections.

It involves continuing research into the state-of-the-art of measurement technology, to find and remove ever-smaller deviations from theoretical perfection. The results, however, are gratifying. Bryston audio products are probably among the best-measuring equipment available. More importantly, they have acquired an enviable reputation for being the best-listening equipment as well.

This goes hand-in-hand with the kind of pride that is built-in part of every Bryston product, and this also is reflected in the reliability which I, as Chief Engineer, consider as one of the most important design goals for everything we make. This too, has become a strong part of our reputation, along with our service-after-sale attitude.

My point is that the feeling for a quality-first approach to everything is infectious. Bryston has had this feeling for over 20 years, and it continues, stronger than ever, today. It has become ingrained into the way I design things, and I'm sure it will contribute to the pride of ownership you will feel for your Bryston system.

Sincerely,



Christopher W. Russell  
Vice President, Engineering

# BRYSTON

Continues to define the state-of-the art...



BRYSTON 12B PRE-AMP

## The Bryston Magic

**B**RYSTON believes the purpose of an audio system is to create the three dimensional illusion of a live musical event in your own home.

This **sound stage** involves the placement of instruments, in space, around, behind and in front of the speaker system.

The audio system should present the instruments in their proper size, and the instruments' harmonic structure, image, tonal balance, depth, clarity and dynamic range should all sound believable.

In order to accomplish this three dimensional sound stage a significant amount of effort is required in both theory and practice when designing an audio product.

**T**O this end, Bryston has originated and optimized the circuitry used in all its products to a degree of linearity which approaches theoretical perfection. From steady-state signals, to high, low and mid-frequency transients we understand the mechanisms and

criteria necessary for musical accuracy over the full spectrum.

We have devoted years of research to the elimination of audible problems due to phase shift, differential temperature effects, transient compression, envelope modulation, and the subtle effects group delay can have on **depth** information.

**W**E invite you to experience the Bryston magic - a sound stage in your own home!

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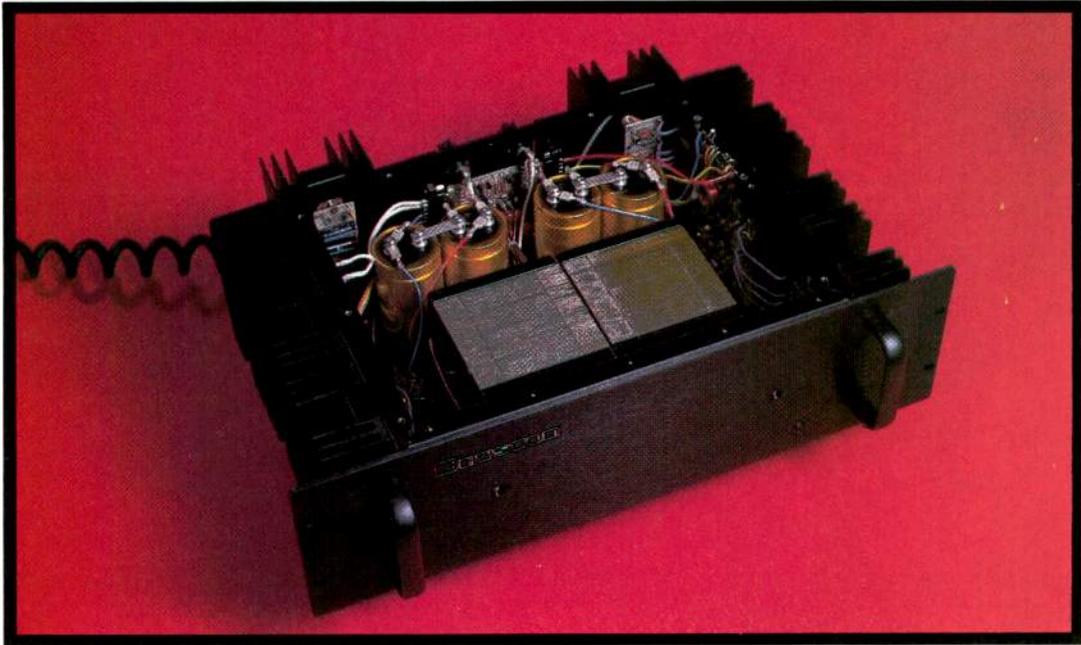
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(802) 223-6159

# BRYSTON

Continues to define the state-of-the-art...



**B**ryston design philosophy incorporates three general concepts.

1. Musical accuracy
2. Long term reliability
3. Product integrity

---

## MUSICAL ACCURACY

---

Musical accuracy is reflected throughout all Bryston power amplifiers and includes the necessity for wide-band transient accuracy, open loop linearity ahead of closed loop specifications, and power supply design as an integral part of the overall sonic and electrical performance of a power amplifier.

We have found that a simple carbon film resistor can contribute more static distortion to a signal than the entire remainder of the amplifiers circuitry combined.

We discovered that some parameters of transistors must be controlled as much as 1000 times more closely before their contribution to audible distortion is rendered negligible.

We discovered that under certain actual conditions of speaker loading amplifiers were incapable of yielding high-power transients without distortion.

Each of the various steps or stages in every Bryston amplifier, from the input section to the output section, without exception, are designed to optimize the musical experience.

---

## STANDARDS OF RELIABILITY

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**W**e consider this criterion to be exceedingly important. We have applied techniques and materials in our everyday construction of electronic equipment more typically utilized in the military and aerospace industries.

The power transistors used in all Bryston amplifiers are 100% tested for safe operating area, both before and after installation in the circuit. They are then taken to a "burn-in" table when they are given a capacitor load, a square-wave

input signal, and set at slightly under clipping for a period of 100 hours. During this time, the input signal is cycled three hours on to one hour off, to exert additional thermal stress.

As may be seen, Bryston takes very seriously the correct functioning and long term reliability of its products.

---

## INTEGRITY

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**B**ryston contends that the term 'best' should apply to the honesty, pride and courage with which we conduct our business, as well as to the performance of our products.

For this reason, you will not find Bryston's products being cosmetically "updated" on a regular basis merely in order to keep the customer's interest in something 'new'. If we make a change in the circuitry, it will be because, and only because, it yields a worthwhile performance or reliability improvement.

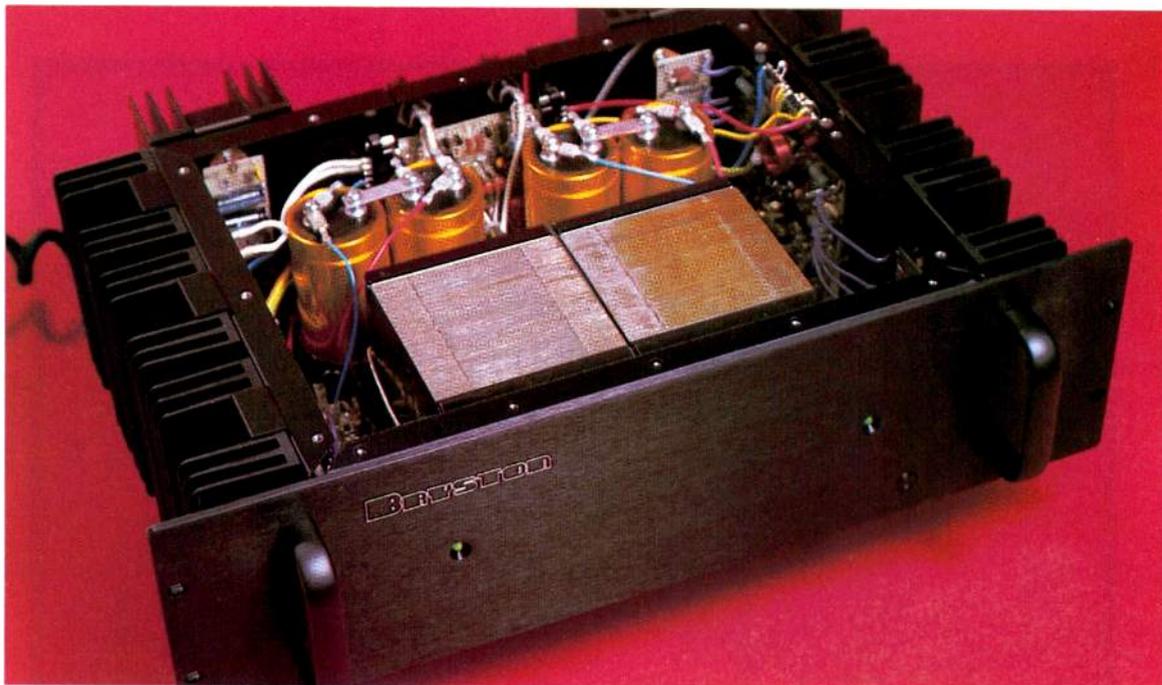
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# BRYSTON



Bryston 4B Power Amplifier

## Bryston's Critical Acclaim

- *"I have heard quite a few preamplifiers costing 3 times as much as this Bryston .5B, and not only would few of them sound better or be more acoustically accurate, but many would suffer by comparison."* **Audio Ideas Guide**
- *"Overall tonal balance of the Bryston .5B preamplifier was beyond reproach, and I was particularly pleased with the clean, smooth reproduction of high frequencies."* **Audio Magazine**
- *"At the incredibly competitive price of the Bryston .5B preamplifier, we can only strongly recommend its purchase!"* **Son-Hi-Fi**
- *"This Bryston .5B is a high-end product in every sense of the word, even in its simplicity, and it deserves to be known as the bargain of the decade in state-of-the-art preamplifiers."* **Audio Ideas Guide**
- *"Speed, huge transient attack, and powerful bass response were our first subjective impressions. This Bryston 4B has dynamic range to burn."* **Audio Magazine**
- *"The new 3B is neutral and self-effacing, with little character."* **Hi-Fi Sound Magazine**
- *"The Bryston TF-1 is superb, in fact the very best transformer we can recall hearing."* **Hi-Fi Sound Magazine**
- *"The Bryston TF-1 is the best MC transformer I have yet heard, and is so well shielded that its signal-to-noise figure matches any other step-up device on the market, and probably exceeds most."* **Audio Ideas Guide**
- *"I would say that the LP playback qualities of the 12B with either moving coil or moving magnet cartridges are state of the art."* **Audio Ideas Guide**

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## Specifications: 2B-LP, 3B, 4B and 6B power amplifiers

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Harmonic:

Less than 0.01% (for 6B 0.02%)  
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power.

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Less than 0.01% from 10 milli-  
watts to full rated power.

Noise:

100 db below full output.

Crosstalk:

Below noise 20 to 20kHz.

SLEWING RATE:

Greater than 60 volts per  
microsecond.

POWER BANDWIDTH:

Less than 1 Hz to over 100kHz.

DAMPING FACTOR:

Over 500 at 20 Hz, ref. 8 ohms.

INPUT SENSITIVITY AND  
IMPEDANCE FOR 2B-LP, 3B,  
4B RESPECTIVELY:

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ohms.

1 volt in for full output, 50k  
ohms.

1.25 volts in for full output,  
50 k ohms.

### FEATURES:

1. Bridging switch.
2. Regulated power supplies.
3. Each channel separated back  
to the linecord.
4. Dual-colour LED pilotlights  
and clipping indicators;  
green changing to red at  
clipping.
5. Will deliver full output to  
any phase angle at 4 ohms  
or higher.
6. Warranty: 5 years parts and  
labour, shipping one way.

## BRYSTON 2B-LP

Basic Stereo Power Amplifier  
50 watts per channel, 8 ohms.  
100 watts per channel, 4 ohms.  
200 watts, bridged, 8 ohms.  
Over 1600 cm<sup>2</sup> of heat-sinking;  
(over 3200 cm<sup>2</sup> with chassis).  
19" x 1.75" x 10", wt. 18 lbs.  
48.25 cm x 4.44 cm x 25.4 cm,  
wt. 8 kg.

## BRYSTON 3B

Basic Stereo Power Amplifier  
100 watts per channel, 8 ohms.  
200 watts per channel, 4 ohms.  
400 watts, bridged, 8 ohms.  
Over 3200 cm<sup>2</sup> of heat-sinking;  
(over 6400 cm<sup>2</sup> with chassis).  
19" x 5.25" x 9", wt. 35 lbs.  
48.25 cm x 13.33 cm x 22.85 cm,  
wt. 16 kg.

## BRYSTON 4B

Basic Stereo Power Amplifier  
250 watts per channel, 8 ohms.  
400 watts per channel, 4 ohms.  
800 watts, bridged, 8 ohms.  
(More than 1 horsepower).  
Over 6400 cm<sup>2</sup> of heat-sinking;  
(over 9600 cm<sup>2</sup> with chassis).  
19" x 5.25" x 13.5", wt. 50 lbs.  
48.25 cm x 13.33 cm x 34.3 cm,  
wt. 23 kg.

## BRYSTON 6B

Basic Mono Power Amplifier  
Rated Distortion: Less than  
.02% I.M. or THD from 20-20  
KHz at rated power or below.  
Rated Power: 500 watts 8 ohms  
800 watts 4 ohms  
500 watts 2 ohms  
800 watts 1 ohm

6400 cm<sup>2</sup> of heat sinking, etc.  
19" x 5.25" x 13.5", wt. 50 lbs.  
48.25 cm x 13.33 cm x 34.3 cm,  
23 kg.

## Specifications: .5B, 11B\* and 12B preamplifiers

### DISTORTION:

(Any Input, to any Output);  
Less than .005%, IM or THD,  
any Frequency from 20-20KHz,  
at rated output or below.

Rated Output:

10 volts RMS minimum, from  
Tape or Main Output.  
(Typically 14 volts RMS  
available).

Rated Noise: (input shorted)

Phono; -80 dBA Referred to  
an input of 5 millivolts RMS @  
1KHz. High Level inputs; -95  
dBA referred to an input level  
of 500 mv at 1 KHz.

RIAA Accuracy:

Within less than  $\pm 50$  mB (.05  
dB) from 20-20KHz inclusive.

Frequency Response:

High Level Section; within less  
than  $\pm 50$  mB from 20-20 KHz  
inclusive.

\*without MC Transformer.

## 12B MC Transformer Section

### DISTORTION:

Less than .005% 20-20 kHz  
with preamplifier driven to full  
rated output.

Noise:

Equivalent to approximately  
1000 ohm metal film resistor  
(Thermal noise greater than  
-85 dB below 0.6 mv input,  
unweighted).

Gain:

16.5 or 22.5 dB (internally  
restrappable).

Frequency Response:

Below 5 Hz to above 30 kHz,  
within less than  $\pm 0.5$  dB.

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To support the technical complexity of its design, the Wadia uses premium parts and highest quality construction practices.

*Continued from page 82*

they were recorded. Any ripple in the filter pass-band directly causes distortion in complex music signals. Of course, if the roll-off is really steep—as in the 90-dB "brick-wall" filters of first-generation CD players—the high-frequency spurious produced will appear in the music signals. In any real-world system, there is simply no getting away from them.

It is important to remember that in the earliest CD players, the notorious brick-wall was an *analog* filter. There wasn't even double oversampling, let alone four-times or the eight-times oversampling of some current players. However, it must be noted that, contrary to the notions of many people, brick-wall filtering still exists. True, many CD players now use linear-phase digital filters, with four- to eight-times oversampling, before the D/A converters; then the analog output filter can be relatively simple, permitting a fairly gentle roll-off slope. Using this arrangement, high-frequency spurious at 24.1 kHz, when viewed on an oscilloscope, are reassuringly almost non-existent. Where, then, is the brick-wall filter?

It is none other than the digital filter. Even though it is linear phase and is four to eight times oversampled, the roll-off is decidedly steep and "brick-wall" in its characteristics. A brick-wall digital filter has excellent frequency-domain specifications when driven by constant-energy sinusoids and white-noise test signals. Unfortunately, the transients and impulses of dynamic music signals cause it to generate overshoot, ripple, and ringing.

If one could employ as high as 64-times oversampling, this would push the noise bands above 2 MHz, where they would clearly be out of the music spectrum. Many technical constraints, however, make it extremely difficult, if not completely impractical, to use such high oversampling with a digital filter. Problems with clock rates and with accuracy abound.

The Wadia 2000 Digital Decoding Computer addresses this problem by eliminating the filter approach altogether. High-rate 64-times oversampling is achieved by a software program that provides the Frenchcurve computer algorithm, which is opti-

mized for the time domain rather than the frequency domain.

The computer takes in either 44,100 or 48,000 samples per second for each channel. The Frenchcurve algorithm then implements a 12th-order, polynomial, mathematical function to fit the contours of 13 original samples at a time. Each set of 13 samples is advanced one at a time, to describe a smooth curve. As each new sample set arrives, the whole curve is redrawn while one of the "old" sample sets is dropped off. The entire sequence yields the equivalent of 64-times oversampling, but without the interpolation errors associated with frequency-domain oversampling methods. This tremendous number crunching is why the Wadia computer must perform 72 million calculations per second. The original waveform, now a mathematical function, is re-sampled 2,822,400 times per second for CD and 3,072,000 times per second for R-DAT (64 times their original sampling rates). The signals then are sent through the D/A converters. And it is here that the truly innovative work comes fully to the foreground.

According to a paper presented at the 1988 Paris AES Convention by Professor Stanley Lipshitz, president-elect of the Audio Engineering Society and an acknowledged expert on digital audio, "The single most important component in determining sound quality is the D/A converter." Which leads us to the rather special D/A converters in the Wadia 2000. They are fairly large modules, each housed in a single machined aluminum block. (As you know, normal D/A converters are small IC chips.) The Wadia D/As, a proprietary design of their own manufacture, are 18-bit linear, transversal, summed-multiport, digital-delay line types and feature a perfectly rectangular impulse response. Operationally, rectangular pulses are run down the delay line; at the ports along the line, these pulses are summed together to accumulate the number of pulses necessary to achieve the desired voltage. These D/As operate at very high speed, since the pulses travel down the delay line at microwave velocity and the multiple ports provide near-instantaneous buildup to the required voltage. They therefore eliminate the need for "de-

Top recording engineers marvelled at how their CDs, played through the Wadia, sounded like what they'd heard in the studio.

glitching" and sample-and-hold circuitry, thereby neatly avoiding the sonic colorations associated with the dielectric memory of capacitor-dependent circuitry.

After D/A conversion, the balanced and unbalanced outputs of the converters are routed directly to the output

connectors without buffering or other intervening analog circuitry (except for automatic passive de-emphasis, which is applied only if the source was recorded with pre-emphasis).

As most readers know, dither signals are applied in digital recording to reduce low-level distortion and to ensure

resolution down to the least significant bit (LSB). Some of the very earliest CDs were made on digital recorders without dither, which caused some attenuation of reverberation and ambience. This artifact was gleefully pounced on by digiphobes, many of whom believe this anomaly still exists in current recordings.

Dither is not generally applicable to CD playback, but in the Wadia 2000, dither is used in rounding off the 36-bit numbers. This minimizes round-off error and LSB bias. In the same 1988 AES paper, the redoubtable Professor Lipshitz had an interesting comment on dither: "Most two- or four-times oversampling digital filters in CD players appear to use simple, numerical two's-complement truncation to re-quantize their internal word lengths to the desired output word length. In fact, although properly digitally dithered rounding is the only way to fully remove quantization artifacts contributed by the filter arithmetic, it appears not to be used in any of the designs so far available, perhaps because of the attendant slight increase in the noise floor. Nevertheless, only by properly dithering such digital operations will the potential for audible quantization distortions be eliminated."

To support the technical complexity of its design, the Wadia 2000 uses premium parts as well as construction practices of the highest quality. For example, included are elaborate, 11-layer Mil-spec p.c. boards. These contain six layers of circuitry, ground planes and massive power planes, which are separated by five glass-epoxy layers of various thicknesses to optimize wide-band trace impedances. As a result, the Wadia occupies a relatively small space for such a powerful computer. Since it is modular in construction, the unit can be upgraded or expanded to accept new technology. For example, if 32-bit digital recording becomes available, the Wadia D/As are readily upgradable.

Obviously, the Wadia 2000 Decoding Computer is a technical tour de force. As always, the question is: How does it perform and how does it benefit CD and R-DAT playback?

I hooked up the 2000 to the 75-ohm coaxial outputs from a Sony CDP-707ESD Compact Disc player and a



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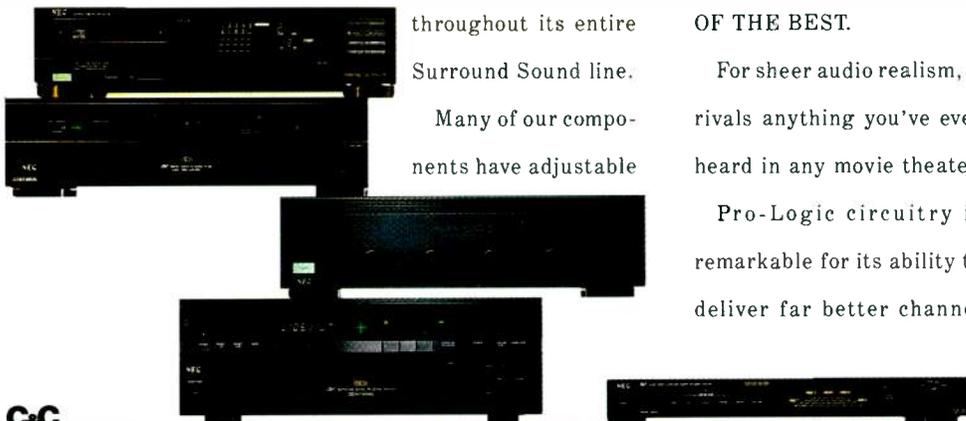
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# NEC

Most remarkable of all was the preservation of hall ambience, reverb, wide soundstage, and enormous depth.

Sony DTC-1000ES R-DAT player. I used the balanced XLR outputs of the 2000 to feed into balanced inputs on the Cello Audio Suite, thence to Cello Performance amplifiers and Duntech Sovereign speakers. I then had quite a few prominent recording engineers, from both the classical and the pop

fields, audition the Wadia 2000 in my home. These fellows listened to CDs they had engineered, and they knew exactly where they had positioned their microphones and how they had made their recordings. All were unanimous in stating that what they heard through the Wadia 2000 was what they had

heard through the microphone inputs! They marvelled at the cleanness and purity of the music signals, the incredible resolution (even in the lowest-level passages), and the extension, solidity, and weight of bass response. They were impressed by the instantaneous transient attack, especially on percussion and piano. Most remarkable of all—and particularly noted by the classical-music engineers—was the presentation and retrieval of hall ambience, the preservation and natural decay of reverberation, and the wide soundstage and huge depth, with layered front-to-back perspectives. I completely concur with their knowledgeable observations.

Again, it is a matter of degree. Prior to using the Wadia 2000, I felt that I was getting really outstanding CD and R-DAT reproduction from the current, state-of-the-art Sony players. With all due respect to the competition, the Wadia 2000 simply revealed musical vistas and all sorts of little nuances and details that had previously gone unnoticed. The Wadia enables you to "see" more deeply into the music; above all, the sense of ambience and the illusion of immersion in a concert hall is emotionally involving.

I've already experienced rabid, anti-digital people who, after listening to CDs played on the Wadia 2000, were rather unnerved and nonplused because the digital artifacts which they loved to rant about simply were not audible. I have no doubt that the Compact Disc will win many converts with the availability of this system.

The Wadia 2000 even has professional applications that bode well for CD and even vinyl records. Because it has the AES/EBU input format, the unit can accept output from any professional digital recorder and then feed its balanced outputs into disc-cutting amplifiers or CD-cutting lasers.

As usual, a product as technically advanced as the Wadia 2000 Digital Decoding Computer is not inexpensive. It will sell for \$6,500 and should be available in select, high-end dealers as you read this. The Wadia 2000 is manufactured in America by Wadia Digital Corp., a division of Medea Ltd. in Minneapolis, Minn., which has an extensive background in many aspects of digital technology. 



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# LUXMAN

# Ultimate



R-117 AM/FM Stereo Remote-Control Receiver.

For over 60 years, Luxman components have earned the highest accolades for their musical warmth and transparency. In the past, however, Luxman's receivers were designed to deliver optimum results with analog source material and conventional loud-speaker designs. Now, the increased popularity of the compact disc format has created a new demand for higher performance.

## *The digital era.*

Compact discs have a dynamic range that far exceeds that of phonograph records and cassette tapes. This requires receivers with greater reserve power to smoothly handle the most intense volume levels.

In addition, the clarity and wider dynamics of CD's have encouraged speaker manufacturers to introduce new designs with improved sonic performance. However, several of these new speaker designs expose receivers to extremely low impedance loads that demand higher current output.

Plus, the CD's remarkable sonic realism has also ignited a whole new interest in listening to music that, in many households, has resulted in multiple speaker arrangements and multiple-room speaker installations. These combined loads pose additional threats to the stability and clarity of a receiver with insufficient reserve power.

## *The new Luxman receivers.*

To ensure the sonic integrity of CD's into a variety of speaker loads, Luxman has incorporated

massive power supplies with high energy reserves to ensure distortion-free transients. High-current, bipolar transistors are then carefully selected in matched pairs to preserve total sonic integrity at high dynamic levels.

This rugged design technique accommodates the highest demands of both digital software and low impedance loads. But high power is only half of the story. . .

## *Ultimate fidelity.*

The heart of a Luxman receiver is still the warm, musical feeling that has resulted from decades of research on how vacuum tube amplifiers reproduce music so faithfully.

To achieve this same type of "tube-like" transparency and naturalness, Luxman receivers employ transistors in a voltage-driven amplification configuration that performs the main current conversion only at the output.

In addition, sophisticated circuit designs, including Duo-Beta circuitry, STAR circuit patterns and LED bias circuitry, are utilized to obtain that extra degree of musical purity that conventional receivers ignore.

## *Ultimate power.*

The best of both worlds. It's the purity and musical warmth of the original source, *plus* high dynamic power output. This combination ensures total sonic integrity at all volume levels. In today's Luxman receivers, we call it "Ultimate Power".

# Power.



R-115 AM/FM Stereo Remote-Control Receiver.



R-113 AM/FM Stereo Receiver.

## "Ultimate Power" Receivers.

The R-117, rated at 160 watts per channel, is capable of supplying up to 600 watts of dynamic power into 4-ohm loads, and 700 dynamic watts into 2-ohms. The amplifier section is backed by a massive triple-shielded high-energy power transformer and fast recovery rectifier diodes to maintain high energy reserves under all load conditions.

Similarly, the R-115, rated at 70 watts, can provide up to 200 dynamic watts into 4 ohms, and 270 watts into 2ohm loads. And, with its heavy, double-shielded power transformer and high efficiency, it provides a full 3dB of dynamic headroom.

Both incorporate a new 5-gang varactor, dual-gate MOSFET FM front end, with automatic hi-blend circuitry, that ensures clean, distortion-free FM performance.

The R-113, the most affordable model in Luxman's new line of receivers, includes a high-speed dynamic amplifier that delivers up to 100 dynamic watts into a 2-ohm load. And a high-efficiency toroidal power transformer is coupled with high energy storage capacitors to provide the dynamics and steady-state reserves necessary for the most demanding musical transients.

All three receivers employ voltage amplification circuitry that ensures the "tube-like" musical warmth of traditional Luxman amplifiers. In addition, CD Straight circuitry routes the input signals past all signal processor and switching functions to

provide optimum accuracy, imaging and impact when listening to compact discs.

Complementing this performance are an array of advanced features that lend versatility and precise control over a wide range of functions. Both the R-117 and R-115 even include a hand-held remote that can operate a complete system of components.



## Technology Perfected, by Luxman

Features	R-113	R-115	R-117
20 AM/FM random access memories	X	X	X
Auto seek tuning	X	X	X
AM/FM memory scan	X	X	X
Cable-ready FM fine-tuning	X	X	X
FM muting	X	X	X
FM IF bandwidth switch		X	X
Multipath detection circuit & indicator			X
CD straight switch	X	X	X
Tone defeat switch		X	X
MC/MM cartridge switch			X
Tape monitor switch	X	X	
Record-out selector switch			X
Three-position loudness switch			X
Multi-function remote control		X	X
Unified remote DIN jacks		X	X
Unified remote serial output jack		X	X
Remote eye connection (DIN)		X	X
Signal processor jacks/switch	X	X	X
Pre-out jacks	1 pair	1 pair	2 pairs
Main-in jacks			1 pair
Speaker terminals accept single banana	3-way	3-way	3-way

# LUXMAN

## "Ultimate Power" Receivers.

Performance Specifications	R-113	R-115	R-117
Rated continuous power output, per channel, (8 ohms, 20Hz-20kHz)	35W	70W	160W
Dynamic power output, per channel (1kHz, 20 ms):			
8 ohms	50W	140W	440W
4 ohms	84W	200W	600W
2 ohms	100W	270W	700W
Dynamic headroom, 8 ohms	1.5 dB	3 dB	4.4 dB
Total harmonic distortion (20Hz-20kHz, rated power)	0.08%	0.03%	0.03%
IM distortion (SMPTE)	0.08%	0.03%	0.03%
Damping factor (50Hz, 8 ohm load)	40	50	80
Input sensitivity/impedance:			
Phono (MC)	N/A	N/A	0.22 mV/100 ohms
Phono (MM)	2.5 mV/47K ohms	2.5 mV/47K ohms	2.5 mV/47K ohms
CD, Tape, Video	150 mV/47K ohms	150 mV/47K ohms	150 mV/47K ohms
Input overload:			
Phono (MC)	N/A	N/A	13.2 mV
Phono (MM)	200 mV	150 mV	150 mV
CD, Tape, Video	9 V	9 V	9 V
Signal-to-noise ratio (IHF-A):			
Phono MC (re 0.5 mV)	N/A	N/A	70 dB
Phono MM (re 5 mV)	88 dB	88 dB	88 dB
CD, Tape, Video (re 0.5 V)	96 dB	98 dB	100 dB
Frequency response:			
Phono, RIAA 20Hz-20kHz	±0.5 dB	±0.5 dB	±0.5 dB
CD, Tape, Video @ -3.0 dB	5Hz-200kHz	5Hz-180kHz	5Hz-180kHz
Total control range:			
Bass	±10 dB at 100Hz	±10 dB at 100Hz	±10 dB at 100Hz
Treble	±10 dB at 10kHz	±10 dB at 10kHz	±10 dB at 10kHz
Subsonic filter:			
Turnover frequency	18Hz	15Hz	15Hz
Slope	6 dB/octave	6 dB/octave	6 dB/octave
Loudness compensation:			
At 100Hz	+6 dB	+6 dB	+3, +6 dB
At 10kHz	+4 dB	+4 dB	+2, +4 dB
<b>FM TUNER SECTION:</b>			
Usable sensitivity (IHF) (mono)	10.8 dBf	10.3 dBf	10.3 dBf
Sensitivity, 50 dB quieting:			
Mono	14.0 dBf	13.2 dBf	13.2 dBf
Stereo	38.0 dBf	36.6 dBf	36.6 dBf
S/N ratio (IHF "A"):			
Mono	80 dB	80 dB	80 dB
Stereo	74 dB	75 dB	75 dB
Total harmonic distortion:			
Mono (1kHz)	0.1%	0.08%	0.08%
Stereo (1kHz)	0.18%	0.10%	0.10%
Stereo separation (1kHz):	45 dB	N/A	N/A
Wide I.F.	N/A	50 dB	50 dB
Narrow I.F.	N/A	35 dB	35 dB
Auto hi-blend threshold (8 dB at 10kHz)	N/A	35 dBf	35 dBf
Adjacent channel selectivity:	60 dB	N/A	N/A
Wide I.F.	N/A	50 dB	50 dB
Narrow I.F.	N/A	75 dB	75 dB
Capture ratio (at 45 dBf)	1.5 dB	1.5 dB	1.5 dB
Image rejection (at 106.1 MHz)	40 dB	100 dB	100 dB
Spurious response rejection	80 dB	100 dB	100 dB
Frequency response (30Hz - 15kHz)	+0.5, -1.0 dB	+0.5, -1.0 dB	+0.5, -1.0 dB
<b>AM TUNER SECTION:</b>			
Usable sensitivity (1000kHz)	350µ V/m	500µ V/m	500µ V/m
S/N ratio (1000kHz, 100 mV)	50 dB	50 dB	50 dB
Total harmonic distortion (30% Mod)	0.2%	0.5%	0.5%
Selectivity (±10kHz)	30 dB	50 dB	50 dB
<b>GENERAL:</b>			
Power supply	120V AC, 60Hz	120V AC, 60Hz	120V AC, 60Hz
Power consumption (no signal)	55 watts	66 watts	66 watts
Dimensions (WxHxD)	17¼" x 4¼" x 13½"	17¼" x 5½" x 16 11/16"	17¼" x 5½" x 16 11/16"
Weight	13.4 lb.		35.2 lb.

# LUXMAN

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**Grateful Readers**

Dear Editor:

I just finished reading Michael Nash's piece, "Grateful Tapers—An Informal History of Recording The Dead," which appeared in the January 1988 issue. Wonderful! Maybe the idea of allowing recording amateurs to tape concerts will spread to all segments of the entertainment industry, including classical concerts (I've got visions of walking into the "tapers' section" of Symphony Hall in Boston with my modified Ampex 350. . .). Well, wherever one's musical tastes may take him, The Grateful Dead should be applauded for their efforts to dispel the notion that allowing concert-goers to tape concerts somehow results in reduced record sales. Keep up the good work!

Bard-Alan Finlan  
San Diego, Cal.

Dear Editor:

Hats off to Michael Nash for his truly unique article on taping The Dead. In this concert age of no tape-recording devices, no flash pictures, and body frisks, it's refreshing to see that at least one musical group still cares enough about its fans to indulge their interests. I hope you commission Mr. Nash to give us a follow-up article in a few years.

Mark Uhryk  
Dillsburg, Pa.

**A Reader's Review**

Dear Editor:

I have been a subscriber to *Audio* for more years than I'll say. I did drop it for several years after CBS took it over, but resubscribed because of the occasional good technical articles and "Audio ETC." I am sorry to say that this is my first letter to you. But about eight years ago, when you first joined the CBS Magazine Group, you asked for letters of comment about the "new" *Audio*, so here is one.

The magazine is much improved! I sat and read a whole issue from cover to cover for the first time in years. It was thoroughly enjoyable.

Thank you for the way in which you rearranged the music reviews. It shows concern for the music rather than the selling formats. I buy them all anyway, and it is always for the music, not the medium.

I also welcome to your pages the views and comments of Anthony H. Cordesman. As with any other reviewer, I do not always agree with him, but I do give some weight to what he says and find his material enjoyable.

Glenn H. Martin  
Sunnyvale, Cal.

**Riled Over Beethoven**

Dear Editor:

I received my March 1988 issue of *Audio* today, and with great anticipation turned directly to the music reviews. To my astonishment and disbelief, you devoted four pages each to "Rock/Pop" and "Jazz and Blues" and nothing to "Classical." Surely, this was a mistake!

I have a collection of more than 600 CDs—90% classical—and have always relied on your classical reviews. I cannot believe that *Audio* has so lowered its standards as to devote all its review pages to rock and jazz. I recently sent in a three-year subscription renewal but am seriously considering a request for a complete refund.

Porte V. Wheeler  
Akron, Ohio

*Editor's Note:* To the best of my knowledge, we never promised that every issue would contain reviews of classical records. We don't even define ourselves as primarily a music review magazine. In my view, we devote an inordinate amount of space to classical music, inasmuch as it accounts for less than 5% of total recording sales and therefore is not the most popular of the music categories we cover.—E.P.

**CD Cost-Cutting**

Dear Editor:

In regard to John Gordon's letter ("Signals & Noise," February 1988), I would like to state that I stand behind him and your magazine 100%. I cannot afford \$6,000 amplifiers either, but I enjoy reading about them. When I do make enough to afford gear in that price range, I'll know from listening and reading *Audio*'s "Equipment Profiles" what pieces I should consider. *Stereo Review* may review cheaper gear and they may sell more issues, but it is quality, not quantity, that is important. This is why I cancelled my subscription with them. Like Mr. Gordon, if I had the

money I would spend \$30,000 on quality audio components. I too might then be broke, but I would be happy.

One note of interest for your readers: I'm sure that many of *Audio*'s subscribers own CD players but feel reluctant to pay \$14 and \$15 for CDs. I felt the same way, and so I joined a Compact Disc club some time ago. I compared my club CDs with store-bought ones by the same artists for sound and quality and could not hear any difference at all. Also, many people believe that you can only join these types of clubs once. This is not true. I have joined more than four times (after completing each preceding membership) and have not been discouraged from doing so. Also, you can receive free CDs for signing up your friends.

Many people don't realize that the clubs offer far more artists than those listed in their ads and monthly catalogs. All you have to do is write them a letter requesting a certain artist and the club will send you a print-out of all the CDs available through the club by that artist. I mostly listen to '80s-style jazz (Klugh, Sanborn, James, G. Howard, etc.), and I was shocked that the club carries all the artists that I am interested in. They also carry an extensive line of classical and pop.

As far as costs are concerned, sure, the club's prices range between \$14.98 and \$15.98, but any sharp business mind would choose the \$15.98 CDs for their "free" or "six for \$1" CDs and buy the \$14.98 ones to fill the contract agreement. My average cost is \$6.98 per disc, which includes the shipping and handling charge. Some readers might be hesitant to join a CD club because of the wait associated with the mailing process, as I used to be, but for someone who's bought more than 75 discs, saving up to \$7 a disc is what I call real savings. Who knows, I may save enough for that \$6,000 amplifier.

I am *not* a club representative and I am *not* a salesman of any type. I just feel that the public is being ripped off with store prices, and, to me, this is the only way that we can fight back.

Continue your fine work with excellent reviews. I look forward to renewing my subscription.

David A. Morton  
Greenville, S.C.

IVAN BERGER

## THEREBY HANGS A TAIL



Merkur Scorpio

## Mr. Berger, Your Car Is Here

To judge by the cars I buy, you'd never know I was in a peripheral branch of the car-stereo business. My first three cars (two Fiats and a Saab 99) had no factory provisions for radio or speaker placement. By the time I set out to choose number four, cars with so few sonic graces had (thank goodness) become almost impossible to find. Nonetheless, when I narrowed my choices to three, I picked the one with the oddest speaker positions.

Of the three contenders, the Ford Taurus had the best speaker positions: High up at the front edge of the front doors, atop the dashboard, and on slant-topped boxes that rose a few inches above the rear parcel shelf. (I did not notice quite *how* high on the doors the midrange drivers were until I rented a Mercury Sable—the Taurus' fraternal twin—with manual window cranks. With the speakers sitting where the cranks would normally be, the cranks were halfway to the floor and I had to bend over to operate them.)

Separating the front midrange and tweeter drivers as the Taurus and Sable do is not the best practice in the world, but the tweeters could be placed right by the midrange drivers for better imaging. Ford itself is doing that, on the JBL/Ford systems that will be available for the '89 Sable and Taurus. And if you needed a handy place to mount a free-air subwoofer (one which uses the trunk as its enclosure), you might be able to use the recess in the parcel shelf which now serves as a glove compartment for the rear seat.

Besides having such excellent spaces for speakers, the Taurus and

Sable can be had with Ford's ergonomically delightful Premium radio (see our test in the May 1988 issue). They are also roomy, comfortable, and fun to drive. Nevertheless, I got something else.

The designers of the Saab 9000 seem to have given at least as much attention to sound systems as the Taurus/Sable's designers had. The speaker complement includes 4-inch midrange drivers and 1½-inch tweeters at each end of the dashboard's upper surface, and in the rear, 6½-inch woofers and 1½-inch dome tweeters. The 9000 is a five-door hatchback rather than a four-door sedan, so the center section of its rear parcel shelf is removable for use (usually with the rear seats folded down) in semi-station-wagon mode. The rear speakers are therefore mounted on the small, outboard sections of the parcel shelf, which stay in place when the shelf's main section is removed.

The Saab's in-dash electronics include a Clarion head unit with anti-theft code protection and easy removability (using simple tools provided with the car), and a removable Clarion equalizer. An optional CD player can be substituted for the equalizer; according to Saab, some dealers may offer a trade-in allowance on the equalizer if the CD player is purchased at the same time as the car. The head unit's ergonomics don't match the Ford's, but they're still good—and the Clarion boasts such extras as automatic station storage when travelling, and automatically selectable AM bandwidth.

The Saab's hatchback versatility was a big plus with me, as I often need to carry large loads, yet still need a covered trunk for city parking. Not only that, but the 9000 combined super handling with cushy comforts, and its turbo version could go like an eagle with its tail on fire. However, I didn't get the 9000, either. That left just one candidate on my list.

Of my three original contenders, only the Merkur Scorpio was left. It, too, is a five-door hatchback. Its creature comforts border on decadence. (I mean . . . power recliners for the *back* seats? Aw,



Saab 9000

c'mon!) Its ride and handling are about as slick as they come. Its styling has that touch of quirkiness that my old Saab had and the 9000 lacks. And, best of all, I found a gently used one for about the price of a new Taurus.

So I got it, and I love it. Its provisions for stereo equipment begin with a console that has two DIN-sized slots—one for the head unit, one for the amp. (There's also space for cassettes in the center armrest.)

The factory system has every feature and control I really want, except Dolby C NR, but some of those controls are just a bit unconventional. For example, the volume control is at the far right of the head unit's front panel, rather than at the left where the tuning controls are—obviously a sop to buyers in England, where they drive on the other side of the road. (The Scorpio and its less-posh twin, the Grenada, are quite popular there.) It's equally obvious that the balance and fader controls have been placed on the amplifier rather than the head unit in order to keep the latter's panel relatively uncluttered. My biggest complaint is that the system uses the heated rear window as its sole antenna, lest a conventional pole sully its swoopy lines and clean aerodynamics. I'll fix that, shortly; in fact, I'll have to add *two* new antennas, so I can test radios with diversity tuning.

The speaker positions are a *little* bit odd, done back in the days when Ford of Europe was just beginning to get enlightened about that sort of thing. The front speakers include a midrange driver in each door and two

tweeters on the dash. Theoretically, the midranges are too far from the tweeters for good imaging, and most of the middles should be blocked by the driver's and passenger's knees; in practice, the imaging is not half bad, and the sound doesn't change much when people get in or out of the front passenger seat. Not much can be done about the midrange position without butchering the door; there's a nice molded lip around the midrange hole, and it's hemmed in by the dashboard, the map pocket, and the armrest-mounted window switches. I'll try simply replacing the factory speakers with better ones (a standard first step in upgrading an OEM stereo system), but I'll also look for ways to move the tweeters into the doors.

The rear speakers are round coaxials, about 6½ inches in diameter. They are mounted, like the 9000's, on the fixed, outboard shelflets that flank the removable rear parcel shelf. There's not much chance of moving them or of enlarging the holes, because the portions of the shelf that hold the speakers are quite small. What's quirky here is that the speakers do not fire straight up, as rear-deck speakers usually do. Instead, they're angled outward, aimed toward the curved, rear side windows. And the speakers are mounted deep below the deck surface, firing up through short tubes. Again, it all looks shocking, but doesn't sound half bad.

For a first attempt, I'll try replacing these coaxials with better ones. Then I'll try using separates, with the tweeter mounted up on the rear pillar or the headlining. Then, if the structure of my back doors permits, I'll try mounting my rear speakers at the front edge of those doors, just below the ash trays.

For now, I'm not taking so much as a screwdriver to the Scorpio. Instead, I'm measuring, plotting, scheming, and dreaming. My goals remain just what they were when I first outlined them in my March column: Good response on the road, reasonable security against theft, and good reliability, all in an inconspicuous package that's easy to use. Plus a few experimental, state-of-the-art touches, naturally.

### A Wheel Advance

One of the ways car makers have been fighting off independent car stereo suppliers is by building subsidiary stereo controls into the car. The Acura Legend coupe, for example, has a subpanel with a few major controls (volume, station change, etc.) on its control pod, where the driver can reach it without taking a hand off the steering wheel. Pontiac and Mitsubishi have actually placed stereo controls in the wheel hub. That leaves room for more controls than Acura's subpanel does, but places them a bit less handily.

It hasn't taken the independents long to start fighting back. Blaupunkt has joined forces with Rinspeed, a Swiss company which rebuilds high-performance cars, to produce a steering-wheel control system that can be used with almost any car. The Rinspeed Intelligent Steering Wheel is basically an Italian Momo wheel with

24 pushbuttons added. The buttons can be custom-configured to control various Blaupunkt AM/FM cassette receivers, their Model CDP 05 CD player, and their MT 9000 cellular phone. To avoid wire tangles, the wheel sends infrared impulses to a dash-mounted pickup. The wheel is \$995; installation and the sound system are extra.



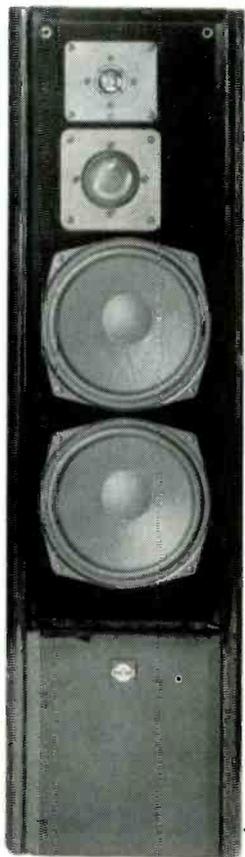
### Whip Your Antenna into Shape

If you suspect your car's antenna isn't bringing in signals as well as it used to, you can check it out yourself, using an ohmmeter. First, disconnect the antenna cable from the back of your sound system's head unit. Then, check the antenna's grounding by measuring the resistance between the outer shield of the cable plug and a good ground point on your car's body. If the resistance is more than an ohm or two, your antenna is not grounded properly—check the underside of the antenna's base to be sure that its attachment prongs are making good electrical contact with the inside of the body panel. Check also to see that the cable shield isn't broken, corroded, or disconnected from the base. If the antenna base prongs aren't making good contact with the sheet metal, scrape away any dirt, rust, or paint that is in the way. (To minimize the risk of rust, do not scratch off too much paint.)

Check the continuity of the cable's inner conductor, too, from the tip of

the plug that goes into your radio to the top of the fully extended antenna. If the reading is more than an ohm or two, check the cable carefully, especially at the plug end, the antenna end, and any place it's routed past hot engine parts or moving parts.

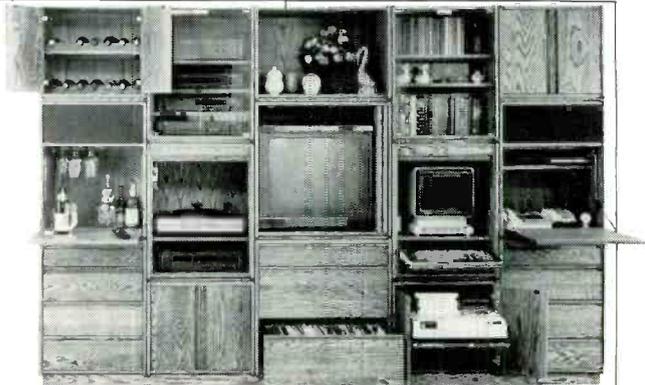
If your antenna is the sectional, telescoping type, check resistance from the top to the bottom of the fully extended mast. It should be just about unmeasurable. If it's not, it's probably time to clean the mast sections. (In fact, according to a service bulletin from the Delco Product's division of GM, you should do that every few months anyway.) The cleaning process is simple: First extend the mast and wipe it with a cloth dampened in a petroleum-based solvent such as naphtha or mineral spirits. Then dampen a cloth with light oil and wipe the antenna again. Retract and extend the antenna a few times, then wipe it dry. Don't leave excess oil, which would collect dirt.



### MB Quart Loudspeaker

Taking up under 1 square foot of floor space, the MB 980S stands 40 inches tall and includes two 8-inch woofers plus a dome midrange and tweeter. Frequency response is rated as 34 Hz to 32 kHz, and power handling is specified as 160 watts, continuous. Sensitivity is 88 dB SPL for 1 watt at 1 meter. The speaker is available in wood finishes of walnut or oak or in lacquered finishes of white, black, or gray. Five additional wood finishes, plus white or black piano lacquer, are available at extra cost. Price (in standard finishes): \$2,499 per pair.

For literature, circle No. 140



### CWD Drawer System

Drawers and slide-out shelves with full-width fronts are now available for Custom Woodwork & Design's audio and video cabinets. These new Flexdrawer products are available for openings 22½ and 29 inches wide, and the drawers are available in three depths. Small drawers, 4¾ inches deep, can be equipped with dividers for DAT, cassette,

or 8-mm videotapes. Medium (7¾-inch) drawers can hold dividers for CDs and Beta or VHS videocassettes. The large (11⅞-inch) drawers come with file-hanger supports for home/office use. Prices vary with size and finish. For literature, circle No. 143



### Harman/Kardon Citation Preamp

Most of the controls visible on the Citation twenty-five preamp are duplicated on a supplied wireless remote which also has a mute button. A swing-away subpanel hides such additional controls as bass and treble with switchable turnover, tone-control defeat, a high-cut filter, and a phase-corrected loudness control. Signal switching and routing facilities include one

audio/video input, two audio/video VCR/tape monitor circuits, and such audio-only connections as MM and MC phono inputs. The circuit, says the manufacturer, attains ultrawide bandwidth with low negative feedback. Price: \$849.

For literature, circle No. 141

### Parsec FM Antenna

The Parsec FM Dish uses a three-step amplification process to boost FM signal strength. By using a gallium arsenide FET amplifier, gain is boosted approximately 32 to 40 dB. By focussing the circular element of the dish, the signal strength can be boosted another 3 dB. Price: \$219.95.

For literature, circle No. 142

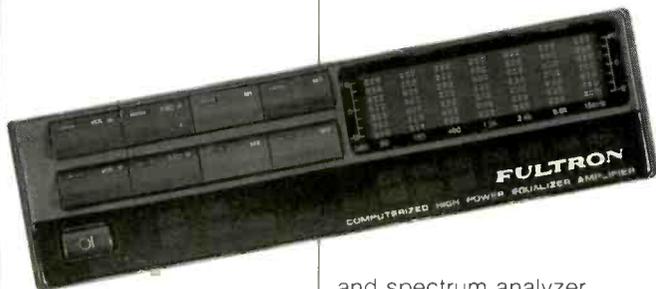




### Phase Linear Graphite Car Subwoofer

Using graphite cones for an improved and more transient response, the PL-S1000 is a 10-inch car subwoofer with a peak

power-handling capacity of 450 watts and continuous power handling of 150 watts. Frequency response is 20 Hz to 3.5 kHz. Installation options include use in "infinite baffle," sealed or ported systems. The subwoofers can be installed separately or in pairs, in rear decks or in custom-built enclosures. An 8-inch version (PL-S800) is also available. Price: \$100. For literature, circle No. 144

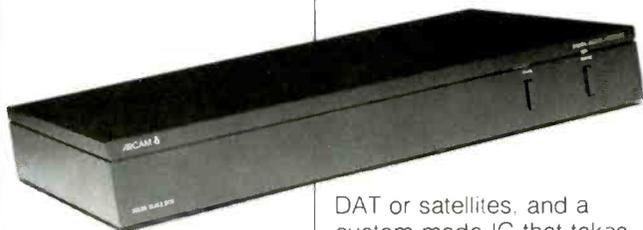


### Fultron Car Equalizer/Analyzer/Amp

Setting an equalizer for proper sound balance isn't easy, and grows harder as the number of frequency bands increases. With Fultron's Model 15-0739 seven-band equalizer, you can check on a car system's response, and the car's acoustics, using a built-in pink-noise generator

and spectrum analyzer, and the microphone supplied. The analyzer display shows the effects of any equalization settings you make. Four EQ curves can be programmed into memory by the user. The unit has both preamp and amp outputs, the latter delivering four channels of 15 watts apiece. Price: \$219.95.

For literature, circle No. 145



### Arcam D/A Converter

Designed to enhance the sound of CD players for comparatively modest cost, the Arcam Delta Black Box has only two controls (on/off and signal polarity), no provisions for decoding

DAT or satellites, and a custom-made IC that takes the place of 25 standard chips. The lower IC count, Arcam says, not only lowers cost but reduces power consumption and radiated digital noise, and improves reliability. Price: \$649.95.

For literature, circle No. 146



### Studer CD Player

The A730 professional CD player is designed for fast and creative on-air play at radio stations. Features include direct access to track and index; to minutes, seconds, and frames, and to elapsed or remaining

track time. An "Autocue" feature determines and stores both start and end of modulation, while the player's disc-recognition memory has dynamic nonvolatile storage for up to 100 CDs. Price: \$3,495. For literature, circle No. 148

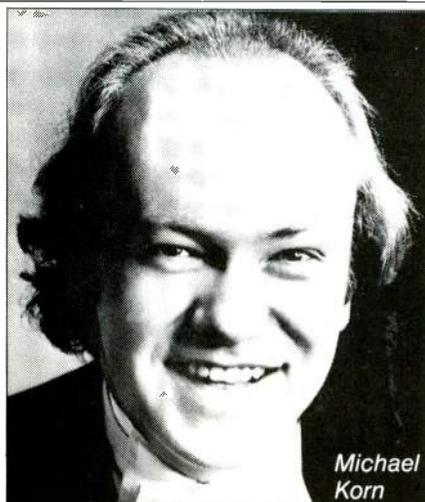
### Thiel Loudspeakers

The CS1.2 Coherent Source loudspeaker is a two-driver system using a 25-mm metal dome tweeter and a 17-cm polypropylene woofer with a long voice-coil to increase bass output and reduce distortion. The baffle is sloped for proper time alignment of the drivers. Stereo imaging is improved due to a grille board designed to eliminate diffraction of the tweeter's energy at the cabinet edges. Additionally, the CS1.2 uses a first-order crossover network designed for uniform amplitude, phase, and power response. Claimed frequency response of the CS1.2 is 52 Hz to 18 kHz,  $\pm 2$  dB. Sensitivity is 87 dB SPL for 1 watt at 1 meter, while phase response is specified as  $\pm 10^\circ$ . The cabinet is available in teak, walnut, oak, and rosewood veneers, or black laminate. Price: \$1,090 per pair.

For literature, circle No. 147



## HANDEL WITH CARE



Michael  
Korn

**Handel: Roman Vespers.** Concerto Soloists Chamber Orchestra of Philadelphia; Philadelphia Singers; Michael Korn.

**RCA RCD2 7182**, two CDs.

How astonishing are the workings of genius, first class! I gulped when I saw this title: In a long life of musical experience with Handel, I had never heard of it. Not surprising. Its first modern performance, after centuries, was in 1985. The rather loose cycle of works, set to Catholic Latin texts mostly familiar—"Salve Regina" and the like—was composed in Rome by Handel in 1706 at age 22, at the bidding of a brace of affluent and music-loving cardinals of the Church, on whose behalf he had been imported from North Germany.

Twenty-two! A raw youth, perhaps? Instead, we hear a giant and highly polished oratorio, done marvellously in the prevailing "Baroque" style of the Italians but otherwise, as is instantly apparent from the first note, on a par with this composer's greatest works of later years. Like early Bach of this period (they were born in the same year), there are daring, startling experiments here, bold ventures into unheard-of dramatic effects not common either in the Bach or Handel of later years. One such example is the hideously spiteful repetition of a single syllable by the chorus, "Sa, sa, sa, sa, sa," reminding us of Bach's "Crucify, crucify, crucify!" in his "St. John Passion." And yet the overall shaping is concise and incredibly masterful, as well as extremely difficult in the florid vocal and choral parts.

In other words, a work of total maturity and genius—youth or no. You will find it a heady combination of Handel, ever so clearly, and the best of such as Bach and Vivaldi.

This Philadelphia performance is outstanding in the instrumental part, wonderfully paced and rhythmically by a master of eurythmic subtlety and contrast, Michael Korn. *Roman Vespers* is enthusiastically rowdy in the choruses but always accurate, if unblended, in the best American, professional choral tradition (a passel of opera singers right out of "Aida"! ). And, most important, it is good to excellent in the ever-present pair of solo sopranos, of which decidedly the best is Judith Blegen. As

pression of the dynamic range in order to keep things under control. I still tend to wince, by sheer habit, when a sudden loud chorus with big orchestra follows a moderate instrumental segment—but the CD can handle it. These moments are loud all right, but the medium itself can take on the complex, high-power signal with no strain. Again and again I am caught in surprise by such passages, after so many years with 78s and LPs.

Even more gratifying is the utterly secure pitch and the genuine silence, as of the performing place itself, with absolutely nothing added. Handel is always a master of the use of sudden pauses for drama, and they abound in this big piece! In each and every one, I heard the technical beauty of Compact Disc recording. If *this* is the digital sound, I am all for it.

*Edward Tatnall Canby*



Maureen  
Forrester

for the contralto, Maureen Forrester, she is, as always, a profoundly moving and expressive personality, with only a few short but telling moments, some of the finest in this music. Luckily, there is not much for the tenor and bass soloists, except in the ensemble segments. Jon Garrison and John Cheek are both young in their trade, but Garrison sounds strangled and out of tune and Cheek rumbles his "ha-ha-ha-ha" rapid notes gustily, as they did 50 years ago.

What an enormous improvement is the Compact Disc format for huge works like this one on two CDs. As everyone knows, large music with lots of voices, solo and chorus, leads to distortion all too easily in the loud passages and, on LP, a too-frequent com-

**Vaughan Williams: Symphony No. 2, "London"; The Lark Ascending (Romance for Violin & Orchestra).** Royal Philharmonic Orchestra, André Previn. **Telarc CD-80138**, CD.

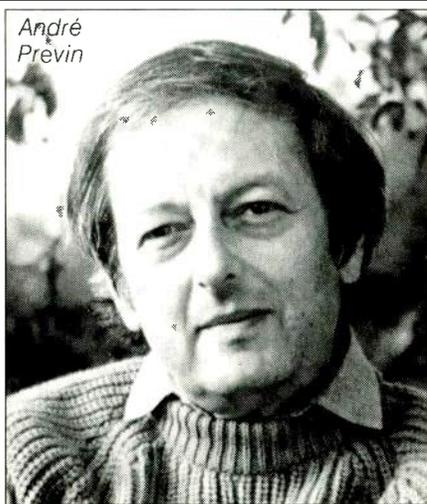
The music of Ralph Vaughan Williams has had little representation on CD. This is especially true of his symphonies, so this splendid new digital recording of his Symphony No. 2 is particularly welcome.

I have a special affection for this work. A recording of this piece, with Sir Adrian Boult conducting the London Philharmonic, was among the first I



Judith  
Blegen

André  
Prévin



evaluated when I began my reviewing activities 35 years ago.

Years ago, Leopold Stokowski told me that he thought Fairfield Hall in Croydon, England, was a great recording venue. Here Telarc engineer Jack Renner has used this hall with striking results. A moderately spacious ambience, along with hall construction and diffusion, gives a lovely, natural perspective with particularly solid bass. The recording is finely detailed, and dynamic expression is especially vivid and powerful.

André Prévin has always had an affinity for British music and has furnished compelling readings of Walton and Elgar, as well as Vaughan Williams. His view of the "London" symphony is richly atmospheric, the scherzo properly spirited, the finale immense and sonorous, and the typical Vaughan Williams epilogue quite introspective. A must for devotees of Vaughan Williams. *Bert Whyte*

**Thomas Stevens, Trumpet.**  
**Crystal Records CD665, CD.**

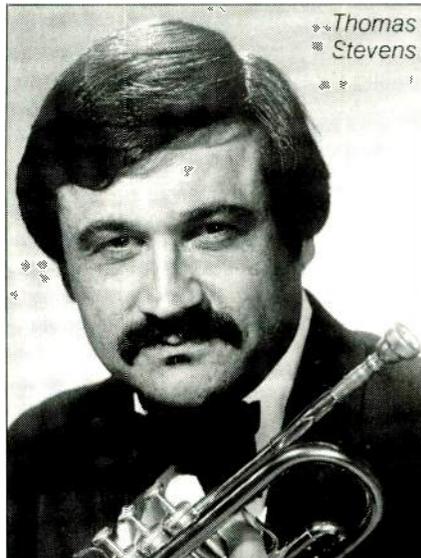
Sound: B — Performance: A —

Thomas Stevens, principal trumpet of the Los Angeles Philharmonic, has put together a collection of 11 short, 20th-century works, most of which enter the ear rather easily. His own "Triangles" is recorded with three trumpeters placed in three different triangles (large equilateral, isosceles, small equilateral), one for each movement. It's an intriguing effect. More than a mere experimental etude, "Triangles"

further sustains interest in the dialog among its components, exquisitely played by Thomas and colleagues from the Philharmonic's brass section.

Thornier fare includes Charles Dodge's "Extensions for Trumpet & Tape," and Hans Werner Henze's "Sonatina" for solo trumpet. The former, which sounds like a product of the cerebral '60s but was written in 1973, features long cascades of poorly recorded computer-generated sounds, first in solo and later as a seemingly unrelated backdrop to the more lyrical trumpet part. The Henze work gives Thomas a chance to show his considerable stuff, particularly in the spiky last movement.

Thomas  
Stevens



Lurking somewhere between contemporary serious music and jazz are Jacques Ibert's "Impromptu" and Thomas Stevens' "Variations on Clifford Intervals," derived from the improvisations of the late jazz trumpeter Clifford Brown. Thomas is joined on the latter by bass player Barry Lieberman and vibraphonist Charlie Shoemaker; all three are as facile in the jazz idiom as in the contemporary classical.

"Variations" calls for a fair amount of improvising and eventually lands squarely in the arena of straight-ahead, engagingly rhythmic jazz. One complaint: The recording's directionality—vibes left, trumpet center, bass right—is more than a little distracting.

Other compositional highlights include Leonard Bernstein's frolicsome,

lopsided "Rondo for Lifye" (named after Judy Holliday's Skye Terrier); Stevens' "A New Carnival of Venice"; Peter Maxwell Davies' early "Sonata," and George Antheil's "Sonata," alternately sounky and lyrical, but always charming.

Thomas clearly is an exemplary player and has chosen his colleagues carefully. There are three participating pianists credited and three trumpeters, but nowhere is it indicated specifically who plays what and where.

For the most part, the trumpet gets plenty of resonant headroom. Piano sound, however, is substandard and single-dimensional. This is a compilation disc, and some of the tracks are remastered from analog sources. Ironically, the piano sounds best on Meyer Kupferman's "Three Ideas," an analog original. *Susan Elliott*

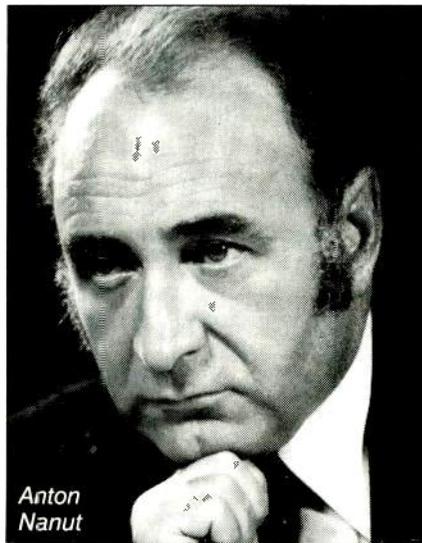
**Berlioz: Symphonie Fantastique.** Ljubljana Symphony Orchestra, Anton Nanut.

**Stradivari SCD 6021, CD.**

**Schubert: Symphony No. 8, "Unfinished"; Beethoven: Symphony No. 5.** Ljubljana Symphony Orchestra, Anton Nanut.

**Stradivari SCD 6004, CD.** (Available from Special Music Co., 87 Essex St., Hackensack, N.J. 07601.)

When the first of this new series slithered in the usual slippery CD fashion onto my work table, I groaned. What, still *another* try at the same old stan-



Anton  
Nanut

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*Welcome Every Guest* is a collection of songs that invite the cup, running the gamut of moods and celebrating the gods.

dard concert pieces, every one recorded a thousand times already? Well, this time there *is* a difference. These are all-digital—recorded on a Sony PCM-1600—which slightly narrows the field. (Think about the hundreds of earlier versions of these compositions, going back to 78-rpm albums!) Still. . . . And at that point I put one into the player.

Astonishing. Here you have what is, to most U.S. citizens, an unheard-of small-town orchestra (unpronounceable even), a conductor with one of those anonymous names you see on records these days, and the freshest, most convincing, and lively performances I have heard for many long years. Infectious enthusiasm is the old-fashioned term. I was bowled over.

No, this is not like the merely enthusiastic (but sometimes inaccurate) recordings from minor-league orchestras in out-of-the-way places. These renditions are beautifully rehearsed and prepared, precisely accurate in every detail, as polished, to my ear, as anything out of Chicago or L.A. or Berlin. Moreover, the sound is lovely, ideally balanced, warm and communicative. What more can I say? The best of everything, out of, er, Ljubljana. *You* pronounce it.

I merely remind you that in spite of the linguistics, the present territory of Yugoslavia boasts one of the oldest continuous cultures of our Western civilization, going back to the Romans and Greeks and covering everything in between. Should we *really* be surprised? We are after all—whether Chicago, L.A., or wherever—the brash, unseasoned newcomers to this European art, whereas the Yugoslavs have been within the cultural purview of the Austrian capital these last several hundred years and more. And France lurked close by as recently as both of the Napoleons, between which we find Hector Berlioz in all his glory. History is *not* bunk. It is with us and alive on CD.

*Edward Tatnall Canby*

**Welcome Every Guest—Songs from John Blow's *Amphion Anglicus*: The Consort of Musick.**  
**Nonesuch 71956-1, LP.**

John Blow, so clearly English in name, is an early composer who has

yet to be "rediscovered," his very large output of music notwithstanding. The reasons are clear. Born in 1649, he lived and worked under a sort of shadow—his great pupil, 10 years his junior, was Henry Purcell. Blow's music comes from a particularly difficult time, in terms of modern performance, when literary and philosophical styles were utterly unlike ours today. His musical technique, too, was stylized into remarkable virtuosity of a sort—notably in the voice—which is still close to impossible for modern soloists and choruses to perform. Not loud, not commanding, but rather of incredible precision, rolling off notes at unbelievable speed like the most rapid of modern instruments.

Yet Dr. Blow (all the big musicians had the title Doctor in those days!) was clearly a jolly soul as well as intense in his expression. According to the liner notes, Blow wrote 110 church anthems, and in 1700 published the collection of songs sampled here. These songs run the gamut of moods and sing of gods and goddesses both Greek and Roman. They are songs that invite the cup, as one of that era might have said. All in all, plenty of interest and variety, if you can adjust to the highly stylized way of singing, not to mention the high-styled texts.

In the manner of the time, these were accompanied merely by a one-line continuo, to be filled out at will at the keyboard. Anthony Rooley, the prime mover here, has "orchestrated" each work with instruments of the day, an entirely proper approach which I believe would not have bothered Dr. Blow in the slightest.

There is one problem: The two solo singers, soprano and bass, are both good musicians but utterly inadequate for this special music. Emma Kirkby lets loose the typical modern blast of sound on every high note—basically a 19th-century technique, standard today—and David Thomas rumbles and erupts like a genial bull among all these china-like musical designs, smearing together the fast notes as certainly they were not in Blow's time. Technique aside, both these singers are intelligent and engaging and good in their pitch. The instruments are far truer to the style and come through well. So maybe you will want to make

....remarkable!



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**Brigitte Fassbaender: Lieder von Gustav Mahler, Alban Berg, und Claus Ogermann.** John Wustman, piano.

Acanta 43579, CD. (Available from Koch Import Service, 95 Eads St., West Babylon, N.Y. 11704.)

If you want to know what the European tradition of solo singing is all about, try this accomplished artist, German trained out of Berlin. What we in America still do not understand is the extraordinary range of vocal effects, some of them almost grotesque, that enable one singer to express such wide human emotions in musical sound. We think of the voice as an instrument. It is much more than that.

In her picture on the cover of the CD, Fassbaender looks young and delicate—yet her voice is not only enormous but even portentous. She can sing tones that are those of a little girl, or bellow in a near-baritone. Many of the sounds might be called ugly—the better for expression. The contrasts are almost startling. The pitch is absorbed often into an enormous vibrato—you must “read” it, so to speak. And yet pitch is there, out of a superbly musical ear and mind.

In a few words, here is the prize example of the voice most people hate in classical song! But this one conveys music, and profoundly. She is worth studying. And she has an American pianist, John Wustman, who does every justice to the often complex accompaniments written by these three “modern” composers.

The selection is surprising, because the three are so clearly of a same tradition, though Mahler wrote his child like “Des Knaben Wunderhorn” (the songs familiar in his later symphonies) back around 1883, Alban Berg his intensely tragic “Vier Lieder” in 1908 and 1909, and Claus Ogermann his “Tagore-Lieder” surprisingly in 1975. Ogermann's lieder go perfectly with the Berg and Mahler.

Not an easy record, but a powerful recital full of profound musical expression of the sort that grows, and stays with you.

Edward Tatnall Canby

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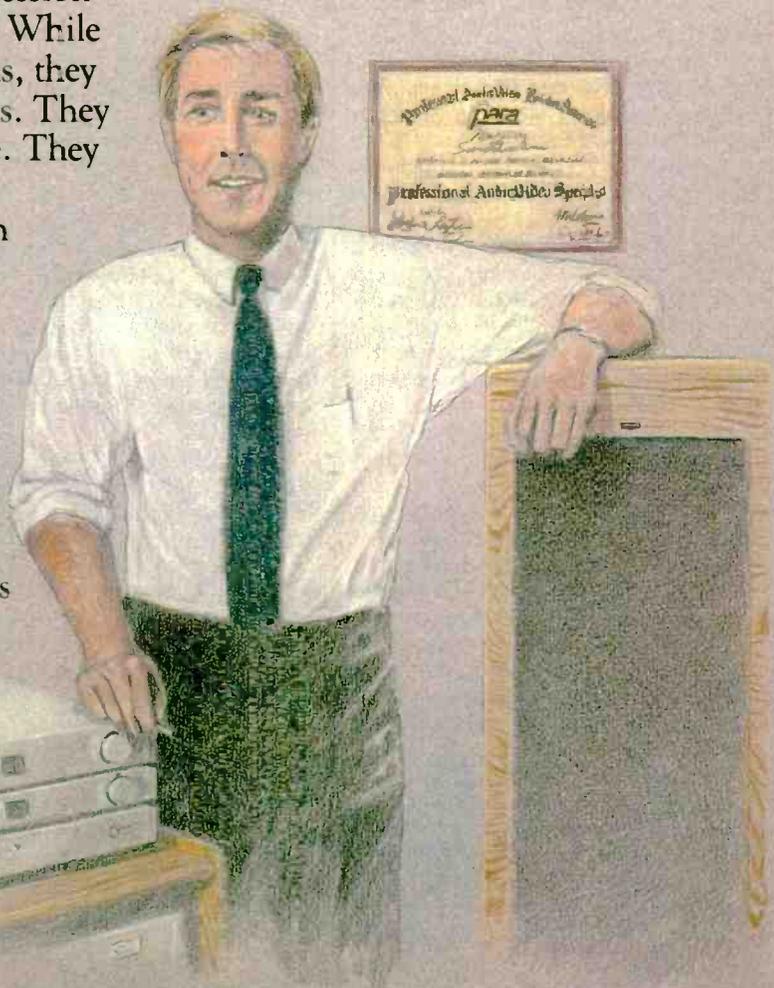
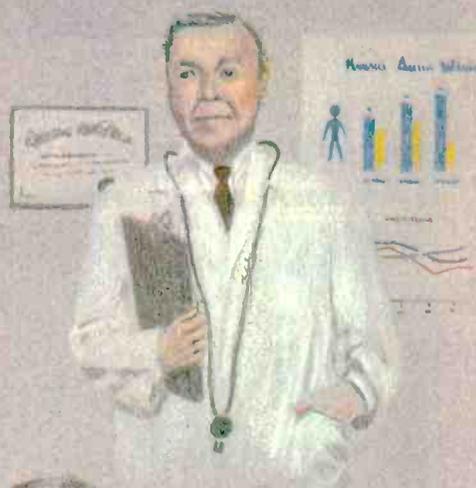
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## CELTIC ROCK



**Irish Heartbeat:** Van Morrison & The Chieftains

**Mercury 834 496-2, CD.**

Sound: A — Performance: A

In its best form, collaboration brings out aspects of all the participants that they are unable or unwilling to generate on their own. Each pushes the other further than he would ordinarily go. This is exactly what has taken place on *Irish Heartbeat*.

In the '80s, Van Morrison, the bard of Belfast, has taken an extremely introspective turn with his music. So much so that, at times, I can't help feeling like an intruder while listening to him. His later work often has a churning serenity that I find hard to pierce and a challenging intensity that, however I try, I cannot find returned in my listening response.

The Chieftains have been premier exponents of traditional Irish music for well over 20 years. Though I have nothing but the highest regard and respect for them, I usually find them too austere and bloodless in execution to get my fullest involvement. Thus, the fervor and passion on everyone's behalf firing *Irish Heartbeat* is a most delicious discovery.

Every selection on this CD is a delight. From the opening "Star of the Country Down" to the closing "Marie's Wedding," there is a crackling electricity about the performances. Van's sing-

ing has not been so free and abandoned in many years. There are several times when he seems to give himself completely over to the music, to become a human instrument that doesn't use or need words for self-expression. Van sings pure sound, as if in a trance. Yet you never feel that he is in anything but complete command as he pulls every vocal trick out of his musical bag. For example, in the ghost-story song, "She Moved Through the Fair," Van drops to an eerie, raspy whisper for the final spectral verse, and for the end of the song he mimics the long, slowly decaying sound of a violin. Toward the end of "My Lagan Love" he transforms himself into a human sitar, taking raga-like liberties to riveting effect.

In the livelier songs, Van is animated in a way that has been all too rarely heard in the past decade. It would seem impossible not to let "Marie's Wedding" coax smiles of warm joy as his voice mixes with those of Mary Black, Maura O'Connell, and June Boyce. In "Raglan Road," Van commands The Chieftains as if they were a soul band with a punctuating "All right" after the verses. The tension throughout the song is exhilarating, never more so than when, with a "Shhhhh," he brings it way down for the fourth verse and does so again one line later, still singing all around the words and melody like some quiet dervish.

The Chieftains are full and equal partners here. They play at their glorious best, but with a passion and abandon such as they, too, all too rarely display. The sounds and textures created by this group convey mystery, joy, sorrow, and love, all with an ageless feel that the filter of hundreds of years of tradition makes possible. For the most part, The Chieftains play traditional instruments: Leader Paddy Moloney on uilleann pipes, Derek Bell on harp, tiompan, and keyboards, Kevin Conneff on bodhran (Irish drum) and occasional co-lead vocals, Matt Molloy on flute, Martin Fay on fiddle and bones, and Sean Keane on fiddle. Morrison adds guitar on some selections and on others, surprisingly, he plays a full drum kit. Ciarán Ó Braonáin adds upright bass to several tunes as well. And, of course, there are the lovely female voices mentioned above. There is not a flaw to be found in the performances, not an extraneous or gratuitous note. Everything is essential.

The selections, too, are an inspired group. Two are Morrison originals, "Irish Heartbeat" and "Celtic Ray." Each of these was previously recorded, but here they take on much more vitality with the help of The Chieftains. The other eight are traditional songs. "She Moved Through the Fair" and "Carrickfergus" are each very well known tragic ballads. ("Carrickfergus" is probably better known in America in its derivative form, "The Water Is Wide.") "My Lagan Love" is another tragic ballad that I had not heard before, but I know its melody and some of its lyrics as the late Richard Farina's "Quiet Joys of Brotherhood." It is one of the most haunting songs ever sung. I first heard the glorious "I'll Tell Me Ma" as "The Boys Won't Leave the Girls Alone" over 20 years ago by The Clancy Brothers and Tommy Makem.

Even the sequencing is most thoughtfully done. The deepest, most mystical songs are followed by joyous release (as when "My Lagan Love" is followed by "Marie's Wedding," an unabashedly delirious paean to matrimony and the next generation). Following the exhausting intensity of "Lagan," it is made more joyous by comparison.

I can't recommend *Irish Heartbeat* enough. It is art of the highest form and an album I don't ever expect to tire of.

Beautifully performed and produced, end to end it is a work of pure love. I can only hope that Van and Paddy's boys will get together again sometime soon. In the meantime, however long it is, we have *Irish Heartbeat* to treasure.

Michael Tearson

**Reason to Believe (The Best of):** Tim Hardin

**Polydor 833 954-2, CD**

Tim Hardin is best remembered through the legacy of material he wrote and recorded during the "Golden Age" of '60s folk rock. While he never received the acclaim awarded some of his contemporaries, his songs nonetheless were recorded by such mainstream pop performers as the superlative Bobby Darin (on two outstanding albums for Atlantic Records) and the commensurate Four Tops, who scored a hit in England with "If I Were a Carpenter." Tim Hardin's best-known composition.

Few singers of the era had a voice more poignant and graceful than Tim Hardin. Fractured and worn maybe, it evoked the same kind of world-weary eloquence one associates with an artist like Billie Holiday. Indeed, Hardin possessed that same ability to transform mere singing into a transcendent experience.

There is an unsettled, almost poetic beauty to the 15 songs presented here. Culled mostly from *Tim Hardin* and *Tim Hardin II*, these are overtly romantic and essentially autobiographical; they represent a mandala of heartache and suppliant yearning.

Hardin was evidently a driven man. A high-school dropout, later a Marine, and then would-be actor, he tragically succumbed to a heroin overdose in late December, 1980. The underlying pain in Hardin's voice and lyrics exonerates the sensibilities as he sings of the endeavors and disappointments of love, and of unfulfilled promises and broken dreams: "Don't Make Promises You Can't Keep," "How Can We Hang On to a Dream?," "You Upset the Grace of Living When You Lie," "It'll Never Happen Again."

*Reason to Believe* contains at least half a dozen gems; flawed in some instances, perhaps, but they retain a dark brilliance still. Besides those men-

tioned, "If I Were a Carpenter," "The Lady Came from Baltimore," and "Misty Roses" are outstanding. Erik Jacobsen's production implements Hardin's guitar playing with a small string section, and on occasion, vibes, piano, percussion, and flute. The sound is sparse and understated. Although the CD's sound is perhaps lacking by today's standards, and some cuts sound more brilliant than others, it does not evidence any great analog tape hiss, and is clear enough that one can hear Hardin tapping his foot to keep time.

Regrettably, I suspect that this Tim Hardin CD may go unrecognized by all but aficionados of '60s music culture. Too bad—it should be highly recommended.

Michael Aldred

**Conscience:** Womack & Womack  
**Island 90915-2, CD**

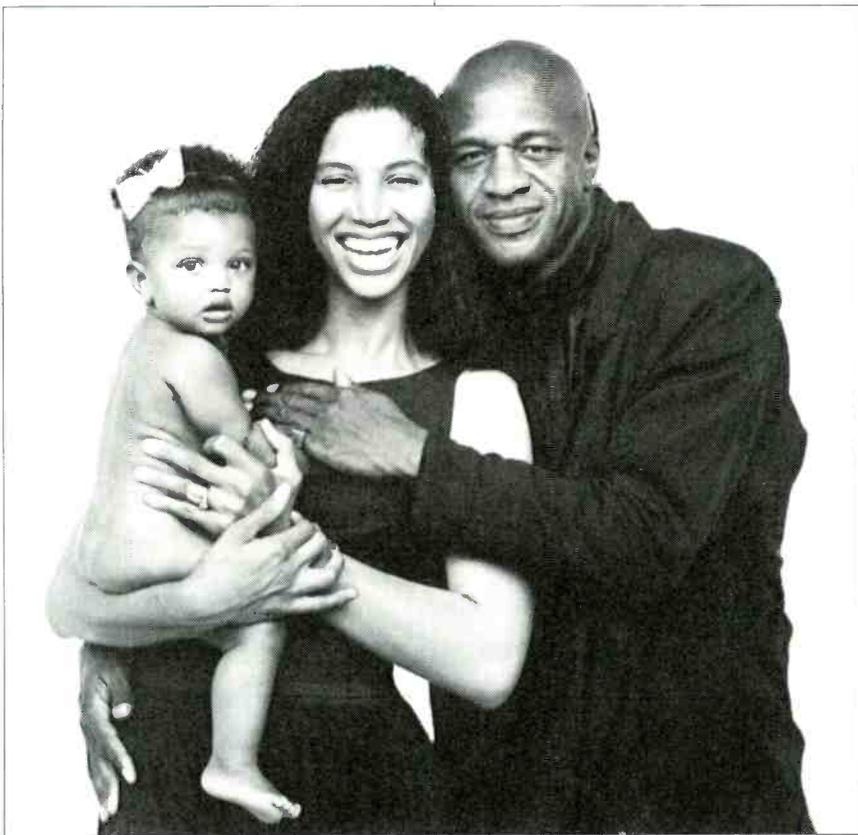
Sound: A

Performance: A

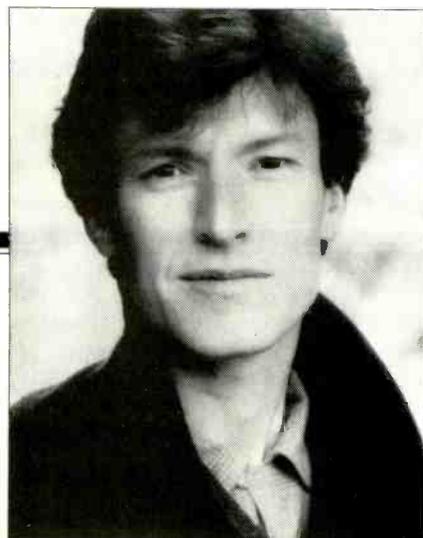
Womack & Womack is the fusion of two of America's premier musical families: He is Cecil Womack, brother of Bobby (son of Friendly), and she is

Linda Womack, daughter of Sam Cooke. It looks like these families will be ruling the musical world for generations to come—these two are married (and have plenty of kids, some of whom participated in the making of this record), and Cecil's talented brother, Bobby, married Linda's mother. If the next generation of Womack/Cooke's do as good a job as carrying on the rock/soul tradition as Sam and Friendly's progeny have done, there's plenty of reason for optimism. Let's not beat around the bush, this is one of the best records released in any year. The Womacks have cut away the sweetening and made a done-to-earth album that should be a classic against which other albums are measured.

Only one song on the album is less than outstanding in its own right ("Life Is Just a Ballgame"); every other track here could easily be released as a single and rise to the top. Personal favorites are the Southern soul of "Good Man Monologue," Linda's shining moments on "Teardrops," and "I Am Love."



Steve Winwood, this time around, failed to write an entire album's worth of songs that could stand on their own.



*Conscience* is a record that works best when listened to in its entirety. It was intended as a concept album in a wide sense—it is loosely woven around themes of the "common man" cowritten by the Womacks and the Virginia coalminers that Friendly had sung with. The result is a collection of

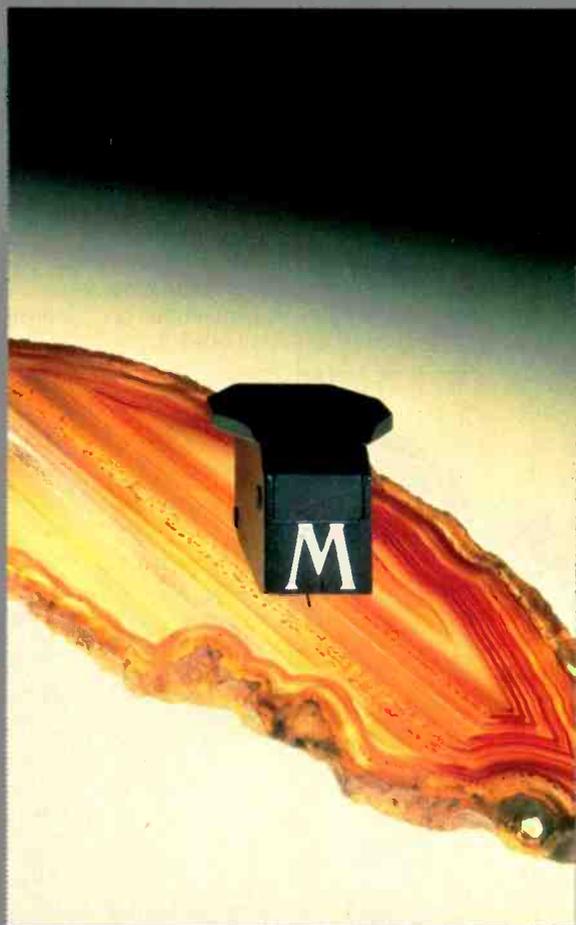
obviously heartfelt honest songs, the likes of which haven't made it onto a record anytime recently. Those who are more familiar with the other members of these families will find this work reminiscent. The trademark Bobby Womack vocal approach is shared by Cecil (check out "Conscious of My

*Conscience*" or "Good Man Monologue") and Linda Womack's tone recalls her father's time and again, particularly on "Slave." Although the Womacks are well respected as songwriters and producers, this album should establish them as two of the finest singers on the planet.

They don't go for vocal gymnastics—Bobby is technically much more of a singer than his brother—but the feeling that Cecil brings with his voice is strictly one of a kind. Linda sings with an emotion, spirit, and purity which puts her in a class all her own. For those who doubted that Chris Blackwell could still produce records (nice one, Chris), or that the current musical climate was too conservative to breed a work of genius such as this, *Conscience* is ample evidence that the true R&B spirit is alive and well in the coal mines of Virginia—and in record stores all over the world.

Jon & Sally Tiven

WHEN ONE IS NOT ENOUGH



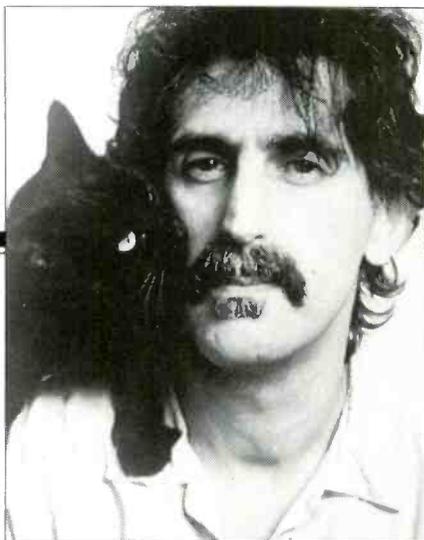
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**Roll with It:** Steve Winwood  
Virgin 90946-1, LP.

Sound: B- Performance: B

Duplicating the success of his enormously popular, multi-platinum album, *Back in the High Life* was not going to be an easy job for Steve Winwood. More of the same would never have been good enough—and, realistically, just how many more great songs could he have written in that style, anyway? So Winwood, clever as always, releases (on his new Virgin label) a single—"Roll with It"—completely different in attitude and style from the high-tech gloss of *High Life*. In truth, a step back into the future. The song begins with an early Motown-type drum intro and then settles into an early Atlantic Records R&B groove, complete with a tenor horn solo. The tenor then resolves into the chorus in a manner



Frank Zappa's new release is more the live album of his career than an opus that's laden with his most lascivious moments.

**You Can't Do That On Stage Anymore Vol. 1: Frank Zappa**  
**Rykodisc RCD 10081/10082, two CDs**

Sound: A Performance: B+

Being wary of expectations is always wise with a Frank Zappa record, and

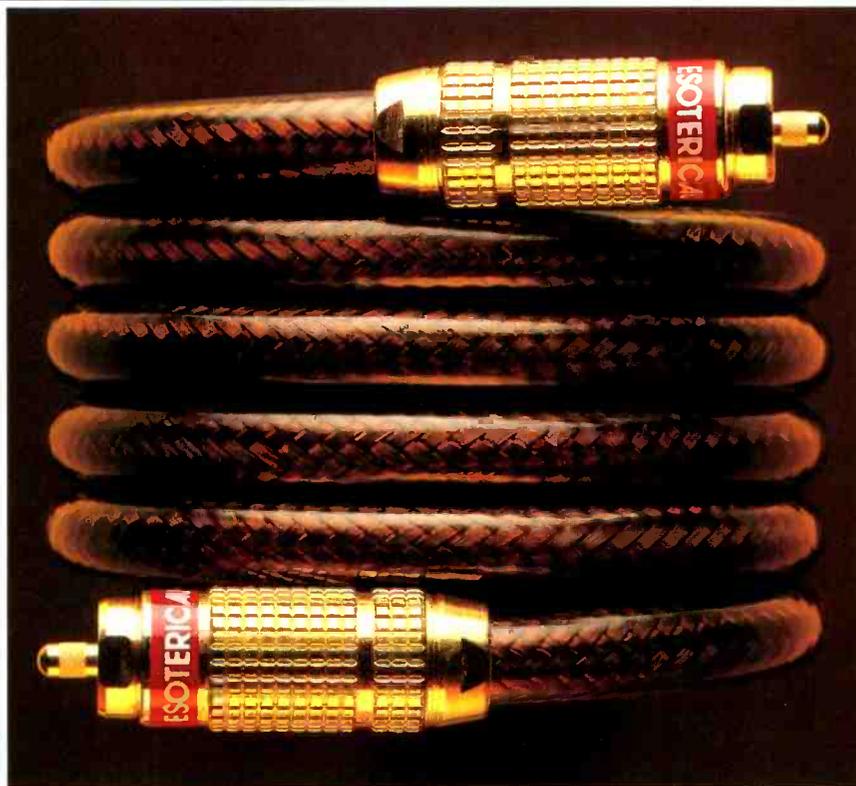
*You Can't Do That On Stage Anymore Vol. 1* is no exception. You might think this would be an opus laden with Zappa's most lascivious and scatological moments, but in fact, while some gross materia is included, this is more the live album of his career rather than a challenge to the P.M.R.C.

reminiscent of Aretha's "Respect" (compliments of Andrew Love of the Memphis Horns, who appear on the album). "Roll with It" gives you pause to think: "Hey, is this The Spencer Davis Group reincarnated?"

The *Roll with It* album keeps the groove flowing with similar songs—"Holding On" and "Hearts on Fire," the latter cowritten with Winwood's former Traffic-mate, Jim Capaldi, and even, to a minor extent, with the commercially regurgitated "Don't You Know What the Night Can Do?" However, the remaining songs fail to keep that groove. They are lyrically underdeveloped. Verses seem almost an excuse to get to the chorus/hook. The outstanding song development so predominant on *Back in the High Life* is missing here. So is the clean production sheen and up-front vocal mix which it now seems evident was producer Russ Titelman's contribution to that album. Winwood probably wanted less gloss on this release, to keep the production consistent with the song style, but he failed to write an entire album's worth of songs that could stand on their own. The title track makes a promise most of the remaining songs can't keep.

All of the above said, it's very difficult to dislike anything Steve Winwood does. He's a great and dedicated musician whose voice alone can often sell a song. Plus, he is one of the few players who has enough sensitivity to take the time to properly integrate electronics and acoustics—drum machines and acoustic drums, electronic percussion and acoustic percussion, etc.—to create a smooth-flowing musical partnership. So while *Roll with It* may be inconsistent, its highlights are brighter than those most albums have to offer. This proves that when Winwood delivers, the roof comes off; when he doesn't, the house still shakes a little.

Hector G. La Torre



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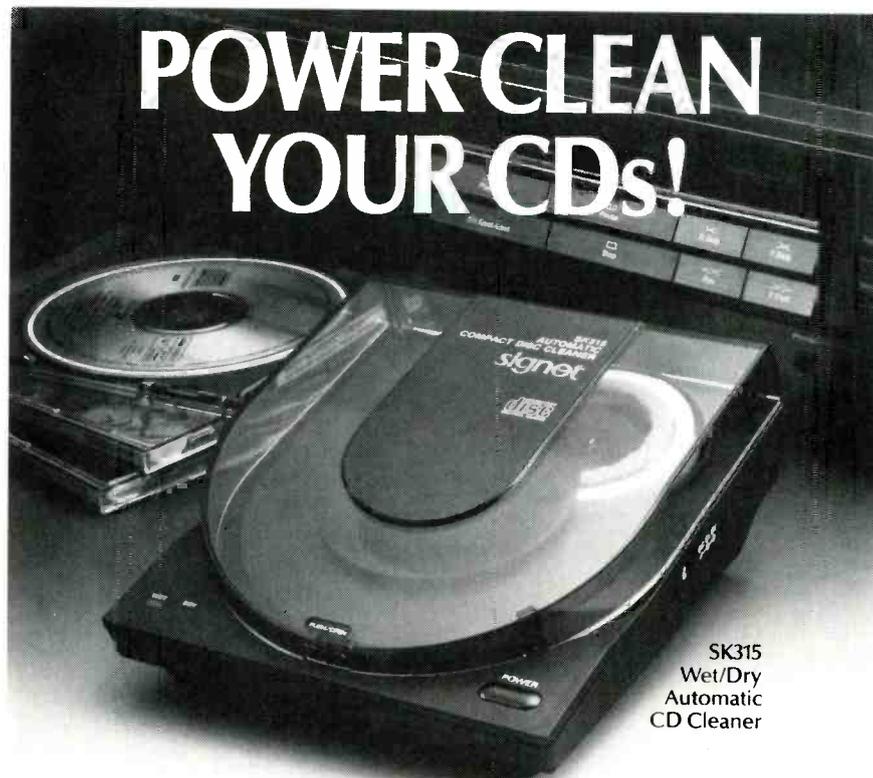
**ESOTERIC  
AUDIOUSA**

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The songs on Iggy Pop's *Instinct* are ordinary and flat, with little lyrical inspiration.

Nonchronologically collecting performances ranging from 1968 to 1988, Zappa has opened up his vast archives, recorded on everything from 7½-ips analog two-track to 24-track digital. Selections cover just about all aspects of his musical interests, including dada-opera ("Don't Eat the

Yellow Snow"), guitar instrumentals ("The Mammy Anthem," with Steve Vai), jazz instrumentals ("Big Swifty"), rare Mothers of Invention ("Oh No," with a 1969, pre-Little Feat appearance by Lowell George), gospel satire of evangelists ("Heavenly Bank Account"), and nostalgic doo-wop ("Bab-



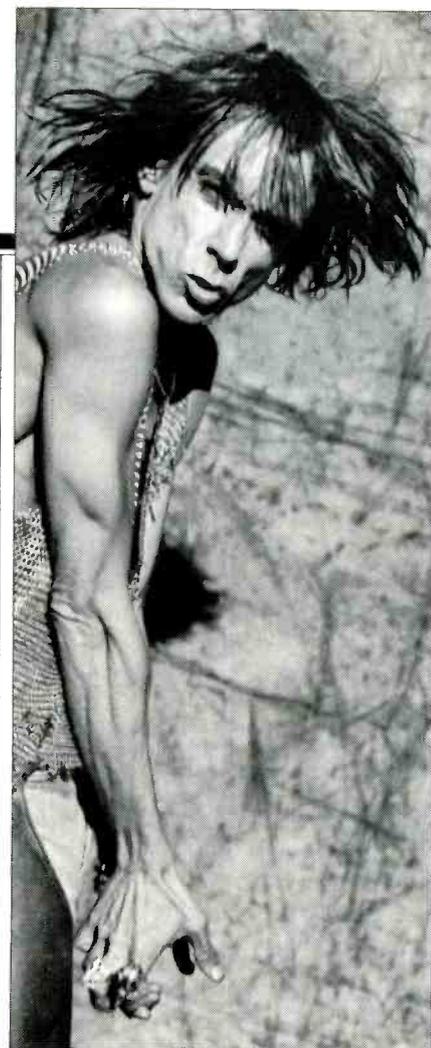
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bette"). Program notes (with commentaries by Zappa) are extensive and include technical information.

Despite the varied sources, remarkable attention was given to sonic consistency during the sequencing, so while you'll notice differences (especially in older concerts), the overall quality is quite good. Some cuts feature edits from different performances, but it would take an obsessive effort to identify them.

*You Can't Do That On Stage Anymore Vol. 1*—the first of a projected 13-hour, 6-volume series—is an excellent sampler of Frank Zappa's music and a good documentation of his live achievements. *Michael Wright*

**Instinct:** Iggy Pop  
**A&M CD 5198, CD.**

Sound: B Performance: B-

Punk deity James "Iggy Pop" Osterberg specializes in comebacks. Unfortunately, his newest album, *Instinct*, sets up his next one, rather than being his current one. Pop's last record, *Blah Blah Blah*, was an exciting combination of rock rhythms, techno-power-

Treat Her Right's music is an unaffected, gutsy rock reminiscent of the Sixties era when folk turned into pop.

pop, and his offbeat humor; none of these elements are at play on *Instinct*. The songs are ordinary and flat, with little lyrical inspiration (save for "Squarehead"), resembling put-together tracks, not works of feeling.

Producer Bill Laswell has had some fun with former Sex Pistol Johnny "Rotten" Lydon (an Iggy protégé) in the past, but his method is neither futuristic enough nor sufficiently primitive to generate excitement. Even collaborator Steve Jones (also of the Sex Pistols) maintains an uncharacteristically dull guitar tone, opting for a standard heavy-metal setting rather than his trademark chorus-plus-distortion approach. Perhaps this is what somebody dreamed would get them on the radio, but even if it does, it is dubious that this will fly with the public.

Pop's made plenty of records far worse than this, and his career is never a closed chapter. Get whatever enjoyment you can out of this "product," and wait for his next recording.

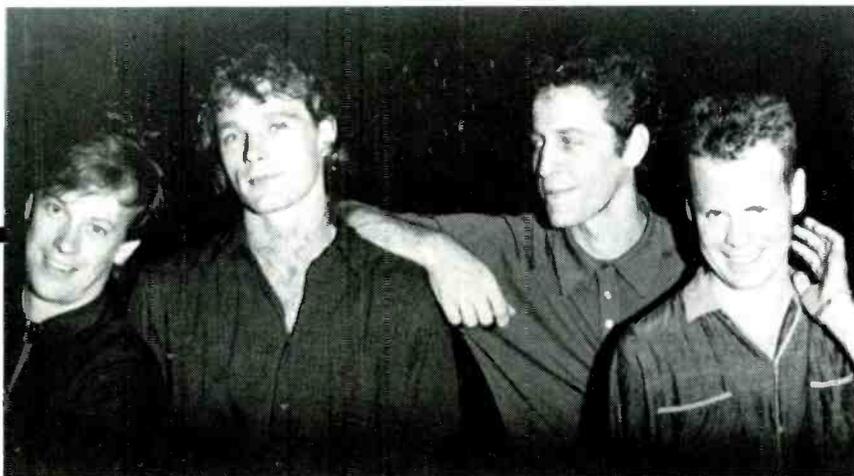
*Jon & Sally Tiven*

**Melissa Etheridge**  
Island 90875-2, CD.

Sound: B+ Performance: B

Melissa Etheridge's debut album reveals a strong-willed singer/songwriter whose songs, here, are about the pain and aftermath of a relationship falling apart. As tortured as her tunes and vocals are, though, she is ingenious enough not to cross over into pathos.

The best here are the haunting opener, "Similar Features," the furious "Bring Me Some Water," the softer "Precious Pain," and the album's longest, most ambitious piece, "The Late September Dogs." The foundation is Melissa's 12-string guitar, along with her drummer, Craig Kampf and bassist Kevin McCormick. In fact, Kampf and McCormick have earned coproducer credits with Etheridge and crack engineer Niko Bolas, who is responsible for the sizzle in the sound. Wisely, the arrangements have been left on the lean side to emphasize Etheridge. Most of the songs were performed live, but the few overdubs are smartly deployed, involving guitarists Waddy Wachtel and Johnny Lee Schell, keyboardist Wally Badarou, and additional percussion by Kampf. Thus, the lead instru-



ment, much of the time, is McCormick's bass.

Etheridge possesses real charisma which shines through the pain in her songs. The biggest dilemma she faces is finding a wider subject for her songs. But as debuts go, this is a very promising one. *Michael Tearson*

**Treat Her Right**  
RCA 6884-1-R8, LP.

Sound: B+ Performance: B+

Less can be more, as you'll hear on Treat Her Right's self-titled debut. These minimalist roots-rockers from Boston have a simple formula: Lay down snarly vocals over two guitars, harmonica, and "cocktail drums," and stick to solid blues-based songs. Although they avoid the revivalist trap and sport a thoroughly modern sensibility, Treat Her Right's music is an unaffected, gut-level rock reminiscent of the music that emerged when folk transmogrified into pop in the '60s. Hot tracks include "I Think She Likes Me," a humorous bar pickup song; "Trail of

Tears," a protest of injustice; "Jesus Everyday," a satire on religious bigotry, and "An Honest Job," a commentary on economics.

Relying on straightforward instrumentation without layers of overdubs, *Treat Her Right* achieves an unsophisticated, "live" feel. However, if you listen closely, you'll notice that the instruments are nicely defined and well separated in the mix, giving the record a crisp, contemporary sound that enhances its apparent simplicity.

*Treat Her Right* is good-time roots music with a sense of humor and a sociopolitical consciousness—not a bad combination. *Michael Wright*

**Just Before the Bullets Fly: The Gregg Allman Band**  
Epic EK 44033, CD.

Sound: B+ Performance: A-

From the cover photos to the music, confidence oozes from this new Gregg Allman album. His singing and his band are focussed to a sharp edge and eager to please, and they've got a swell batch of songs to do it with.

"Demons" opens with a little guitar shuffle that sets the beat, and things get furious in a hurry when the band kicks in. "Before the Bullets Fly" is vintage Gregg Allman, cut from the same cloth as "One Way Out." "Can't Get Over You" has "hit" written all over it. The band does a spirited cover of the great Clarence Carter song "Slip Away" and a fine take of "Every Hungry Woman," which debuted on the first Allman Brothers Band album.

The sound is full bodied, with lots of punch and sass. Producer/engineer/mixer Rodney Mills has seen to that.

Gregg Allman is back and in great shape. He has never sung better or with more conviction than here—even on those great, early Allman Brothers Band discs. *Just Before the Bullets Fly* is an album of glorious, full-blooded rock 'n' roll. *Michael Tearson*



## NEW AGE SCAT

**Tears of Joy:** Tuck & Patti  
**Windham Hill Jazz WD-0111, CD;**  
**WH-0111, LP.**

Sound: A Performance: A-

The debut album of this husband/wife, guitar/vocalist team may, at first blush, seem deceptively bare and simplistic, without the expected horns, synths, and backup choirs often used to launch a new act. However, the simplicity here packs a wallop. As Windham Hill, owner Will Ackerman said when he signed the duo to his new sub-label, "We figure you guys know how to do what you do best. Just do it."

Patti Cathcart provides the wide-ranging vocals while Tuck Andress confines himself to skillfully using his single, hollow-body electric guitar to replace the entire rhythm section one would expect. Both performers have studied classical music and also have plenty of past experience playing in jazz, rock, and pop groups. In fact, they met while working in a Las Vegas show band.

Patti's pipes are rich and full, with seemingly equal contributions from the worlds of jazz, pop, and gospel. She shows an almost operatic vocal control that sometimes raises goosebumps. The primary interest here, if one had to pin it down, would be the way this duo pushes the boundaries of what can be done with just one female voice and one guitar.

Tuck is a guitarist of amazing talent; he made as great an impression on this listener as Stanley Jordan did on first hearing. His classical guitar studies must surely contribute to the rapid and complex riffing behind Patti. Tuck not so much accompanies her as he dances through their songs. At concerts, with his hair constantly bouncing like springer spaniel ears, he plays like he's just had a dinner of Mexican jumping beans. The rock and jazz patterns contribute the feeling of both rhythm guitar and string bass, and

somehow he is able to magically insert a barrage of percussive sounds on the strings and body of the guitar to fulfill drum functions, as well. There's only one guitar solo on *Tears of Joy*, a dense tribute to Tuck's hero, the late Wes Montgomery, titled "Up and At It"; and Tuck is.

The crystal clarity of Tuck & Patti's sonics, both on this album and live, can be attributed to their audiophile sensibilities. KEF, B & K, and two local

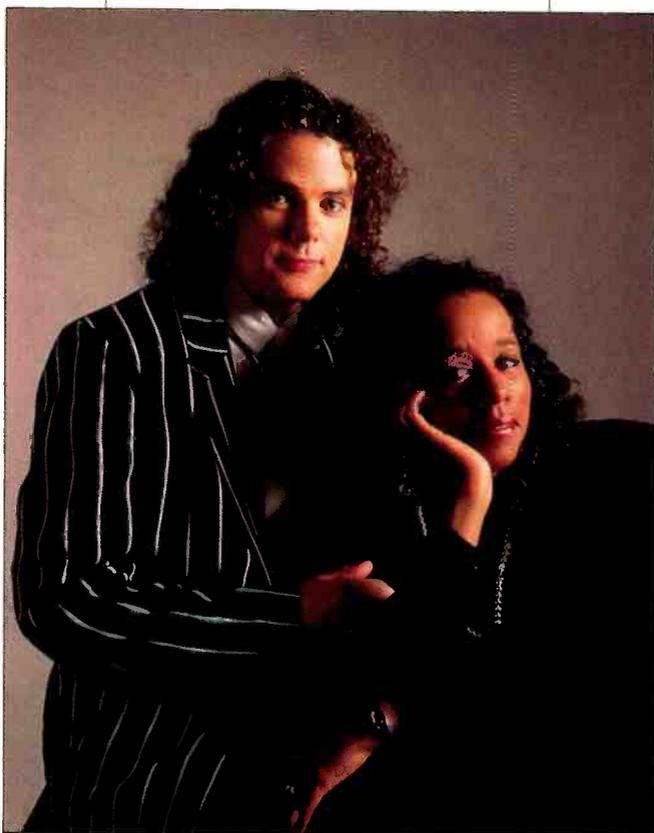
to avoid feedback and distortion problems from on-stage monitor speakers. (This means they also have to mix in a feed of the audience sounds to know how they're coming across.) For recording this album in their own home studio, they used the dbx 700 Digital Recorder, and constantly checked out their labors, track by track, on their local audio dealer's best systems. It's nice to know that in these days of mountains of arcane electronics, with number-crunchers filling the pro studios, it's still possible to do it *simply*, and as a result perhaps even better sonically.

Windham Hill is giving special attention to the album single, "Takes My Breath Away." This cut failed to take mine away, though, and struck me as overlong, but most of the rest are winners. The title tune is a great opener, starting with Tuck's rhythmic backing followed by an ascending series of phrases for Patti that will have you on the edge of your seat. She hits the highest one with the same turbo-charged power and accurate intonation as the lowest. My favorites were a pair from Bob Dorough's repertory, "I've Got Just About Everything," and "Better than Anything." These hip and good-humored tunes balance some heavier material like Tuck & Patti's original (one of three on the album) "Everything's

Gonna Be All Right," and the Wendy Waldman ode to mental instability, "Mad Mad Me." The Rodgers and Hart standard "My Romance" gets a fresh treatment by Patti, and fits in smoothly with the flow of more contemporary songs. There are a total of 10 cuts on *Tears of Joy*, including Tuck's solo.

The combination of intimacy and power in Patti's voice is indeed something special, and with the frenetic but subtle collaboration of Tuck and the exemplary sonics, every nuance is allowed to come through on this CD—surely the first of many from this dynamic duo.

John Sunier



Photograph: Fred Stimson

(San Francisco) high-end dealers are thanked on the album credits. The duo is definitely concerned about good sound. They don't deafen their concert audiences as many jazz and rock groups do today. Tuck uses a hollow-body Gibson for a classical guitar sound; he rewired the instrument internally with Mogami cable and uses special Bartolini pickups. The extreme low end often sounds like a bass guitar, though clean and very tight; the high end is extended, but natural rather than steely, and without too much reverb.

During live appearances, Tuck & Patti employ tiny in-ear stereo monitors

**Siesta:** Miles Davis and Marcus Miller  
Warner Bros. 1-25655, LP.

Sound: B+ Performance: B+

*Siesta* is the music I thought Miles Davis might make when he came out of retirement seven years ago. Rumors were rife that he had lost his chops and couldn't play trumpet anymore. But I couldn't see why that would impede his music making, because Miles is a sound shaper, tailoring and contouring his notes with cool precision. Synthesizers, with their ability to manipulate sound, seemed like the perfect direction for him to go.

Fortunately, Miles didn't lose his chops and is playing more trumpet than ever, but he has started using synthesizers extensively, albeit naively and with little skill. At concerts, I've often seen Miles' sidemen coming over and showing him how to get a sound happening, after which Miles would lay down sheets of sustained chords. It's taken his former bass player (now producer and synthesist) Marcus Miller to realize Miles' electronic dreams—first on the album *Tutu*, and now on the soundtrack album, *Siesta*. Miller composed the music and plays all the instruments except trumpet, some guitar, percussion, and flutes on this moody score.

Using synthesizers and samplers, Miller creates backdrops of textural sound and rhythms that move from subliminal to martial, all forming a backdrop for Miles' trumpet. The album is dedicated to arranger/composer Gil Evans, who orchestrated many of Miles' recordings, including *Kind of Blue* (1959) and *Sketches of Spain* (1960). The tribute is appropriate, since Miller creates similar arrangements, especially in the voicings of reeds and brass. He surrounds the music with atmosphere without burying the sound in it.

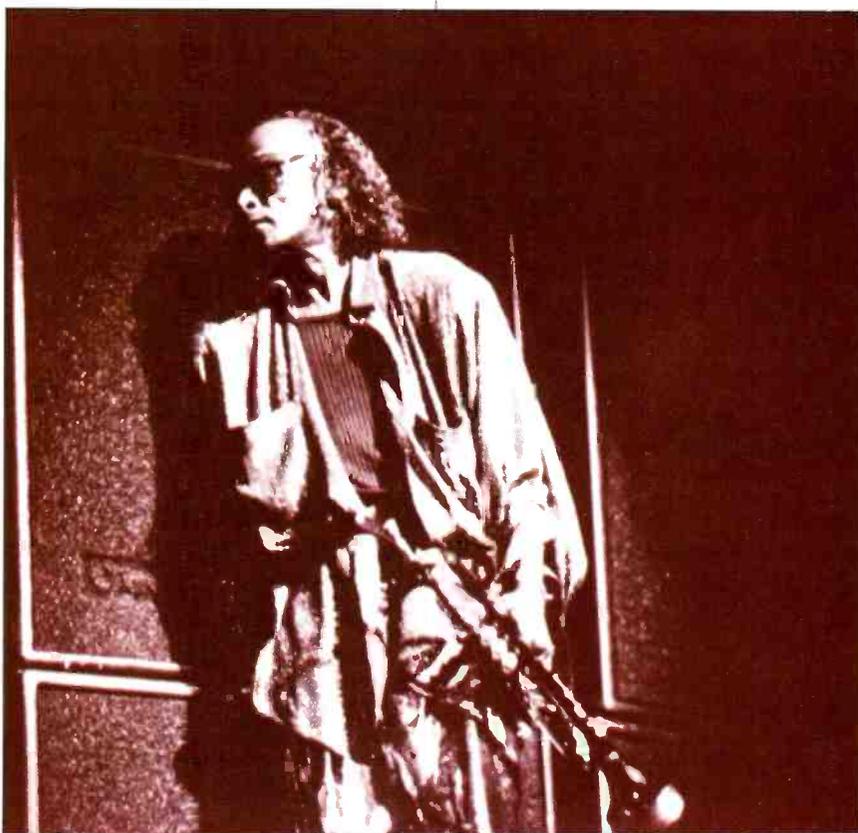
It's a wonderful showcase for Miles, especially his ballad playing on "Theme for Augustine," the only track he co-composed. Against an Indian rhythm, Miles alternates between muted and open trumpet, in a duet with Miller on bass clarinet. As this interplay continues, digital choirs and effects slide through the background.

Miller gets to step out as well on "Conchita." It's an incongruous, hyp-

notic, Indian tango with Miller playing snaky bass clarinet and electric bass solos.

If I have a quailm about *Siesta*, it's with Miller's reliance on stock sounds, like the sampled choirs, strings, etc. Despite the skill with which he deploys them, sophisticated listeners will recognize them for the canned sounds that they are. And Gil Evans would never have been accused of that.

John Diliberto



**Getting There:** John Abercrombie  
ECM 1321, LP.

Sound: B Performance: B+

John Abercrombie is a man between worlds. He's playing electric guitar with rock technology, but his sensibilities take him toward a cooler, cerebral jazz style. It's when these concepts come together that he makes his most exciting music, and *Getting There* is one of his most energized albums in years.

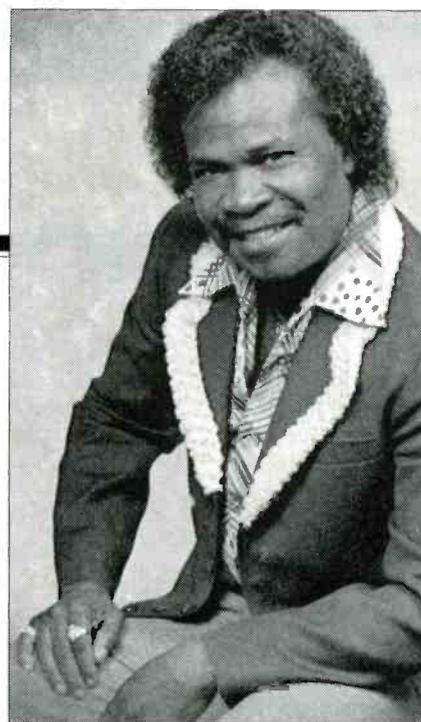
Playing with ECM's newest in-house rhythm section—bassist Marc Johnson and drummer Peter Erskine—Abercrombie has stretched his composi-

tional muscles beyond the cool jazz vamps of previous albums. So often, Abercrombie's playing becomes claustrophobic and insular, with endless runs of nana-notes circling like a trapped fly. But given the right compositions or rhythm sections, as here, Abercrombie turns loose.

This happens several times on *Getting There*, including the opening track, "Sidekicks." It begins as an almost plodding rocker, Erskine's drums

thudding through a delicate ostinato background. But as soon as Abercrombie enters with guitar synthesizer, playing lines that slice like a scimitar in slow motion, the piece lifts off. Erskine expands and stretches out the rhythm as saxophonist Michael Brecker, a longtime Abercrombie cohort, comes in with a bluesy rollick. On the title track, Abercrombie's sinewy guitar cuts a swath across the droning, Middle Eastern backdrop of rolling drums and desert caravan guitar. He seems more poetic with this modal rhythm, sculpting a heroic solo against a panoramic scene that builds relentlessly

This album by veteran blues drummer Casey Jones is surprisingly conservative, not straying from songs he's played since the '50s.



Even though it's on vinyl, *Getting There* merges Abercrombie's electric textures with acoustic in a well-rounded recording full of the patented ECM depth of sound. Producer Lee Townsend has found the balance between Abercrombie's cutting edge and a more enveloping sound environment.

*Getting There* isn't a ground-breaking album, because Abercrombie isn't that kind of musician. He's a skilled craftsman, and this is one of his better artifacts.

John Diliberto

**Solid Blue:** Casey Jones  
**Rooster Blues R7612**, LP. (Available from Rooster Blues, 226 Sunflower Ave., Clarksdale, Miss. 38614.)

Sound: B- Performance: B-

Whenever a crackerjack blues drummer is required, the word goes out for Casey Jones. Considering his six-year tenure as a member of Albert Collins' band, plus his session work behind some of Chicago's most progressive bluesmen, *Solid Blue* is a surprisingly retrogressive album with few bows to the amalgam of contemporary trends favored by today's performers. *Solid Blue* is conservative, even by the standards of a decade ago.

Jones makes no secret of his influences, listing several of them in the lyrics of "Tribute to the Boogie Men," while up-and-coming sideman Maurice John Vaughn intentionally quotes guitarist Otis Rush in the background. The material doesn't stray far from songs that Jones has played since the '50s. He's a competent vocalist who gets a chance to shine on "News Is Bad," a

over its 7½ minutes. "Furs On Ice," written by Johnson, is the most straight-ahead jazz track on the record, and Michael Brecker takes a forceful solo, interspersing guttural honks with his lyrical line.

Abercrombie still loves ballads, as he proves with "Once Upon a Time,"

where his electric guitar plays against his overdubbed acoustic, and "Chance," with its pretty atmospheres. "Thalia" features layers of guitar synthesizers, plying violinish washes, a vibes-like cyclical octave run, and a solo line that sounds like a tuned elephant cry.

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Lou Ann Barton's charms lie in her near throwaway readings of the lyrics, which would be lost behind a wall of sound.

ity. The stripped-down arrangements keep the focus squarely on her deceptively casual singing. Although these tracks are too cleanly recorded to have been cut live, they might as well have been: There's no gratuitous overdubbing for this vocalist. The band is rounded out by Jimmie Vaughan of

The Fabulous Thunderbirds, and "Speechless," by Reesha Field (who?), heads a list of unfamiliar but first-rate material.

*Forbidden Tones* is the album that should have been Barton's debut. With luck, it may earn her another shot at the majors. Roy Greenberg

minor-key blues cut fleshed out with horns. Whether you find *Solid Blue* timeless or tired will probably depend on your degree of familiarity with Jones' sources Roy Greenberg

**Forbidden Tones:** Lou Ann Barton  
**Spindletop SPT 107, LP.** (Available from Spindletop Records, 4015A Magnolia Blvd., Burbank, Cal. 91505.)

Sound: B Performance: B+

Singer Lou Ann Barton has an uncanny knack for being in the right place at the wrong time. She parted with Double Trouble just before their lead guitarist gained fame touring under his own name—Stevie Ray Vaughan. In a match made in heaven, she sang with Roomful of Blues just long enough to do an exciting tour, leaving the band scant days before it was scheduled to record. Perhaps recognizing that she had already missed several opportunities, Barton tried too hard on her 1982 Elektra/Asylum debut, *Old Enough*, and failed to realize her promise. All things considered, there was little reason to suspect that the self-produced *Forbidden Tones*, on independent Spindletop Records, would represent a breakthrough. Yet while other performers may sing with more power and different bands boast greater virtuosity, *Forbidden Tones* has rarely been far from my turntable. Barton demonstrates once again that not every vocalist shines when confronted with lavish instrumentation and busy arrangements. This Southerner's simple charms lie in her subtle inflections and her almost (but not quite) throwaway readings of the lyrics—the very sort of nuances, incidentally, that get lost behind a wall of sound.

*Forbidden Tones* is styled after guitar-dominated '60s girl-group rock, as filtered through Barton's R&B sensibili-

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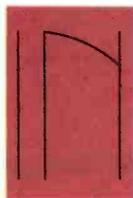


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# ELLA ROME



*Ella in Rome* is more than a sweet souvenir from a perennial jazz favorite. It compares favorably with other live albums from this incredible singer.

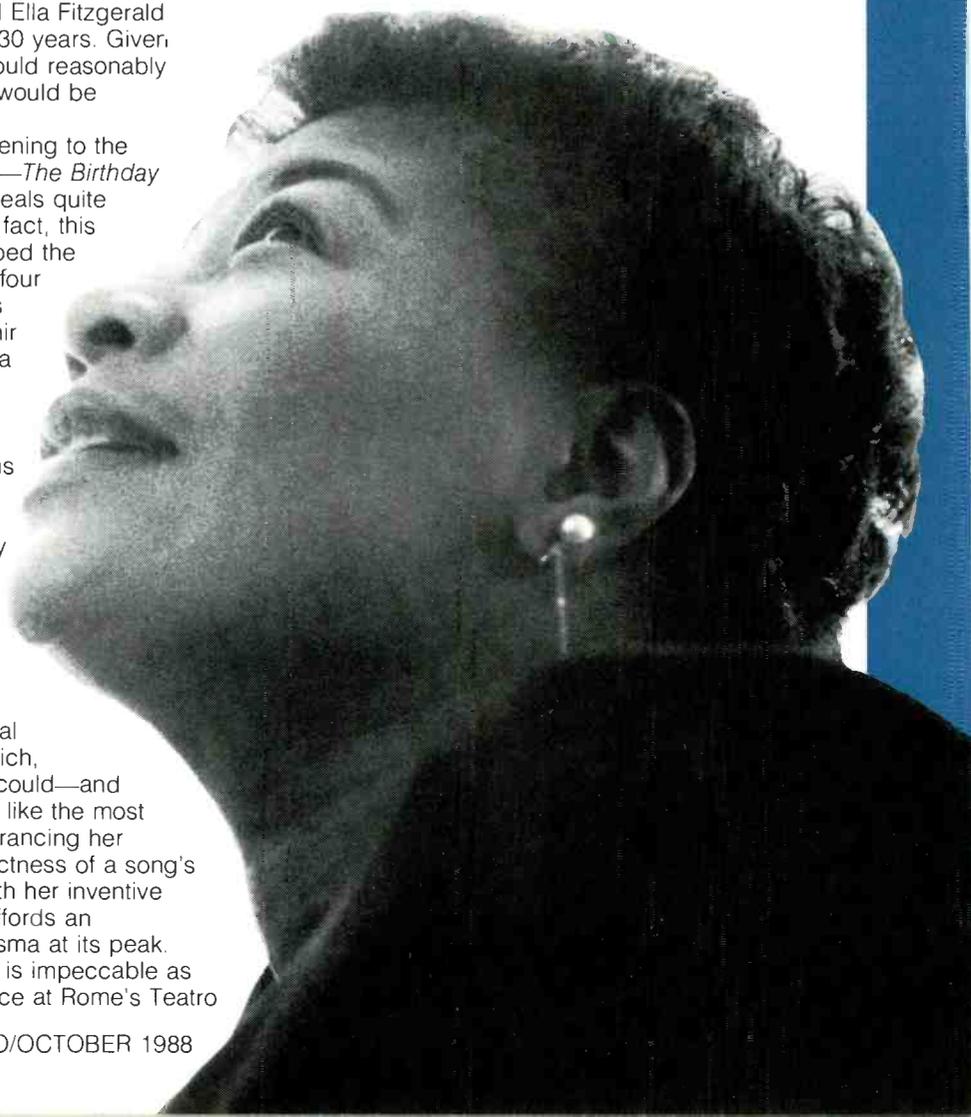
## MICHAEL ALDRED

A treasure was recently discovered in Polygram's tape vaults when an entire album's worth of previously unreleased Ella Fitzgerald music was found after almost 30 years. Given the age of these tapes, one could reasonably assume that the sonic quality would be substandard.

However, a few minutes' listening to the Compact Disc of *Ella in Rome—The Birthday Concert* (Verve 835 454-2) reveals quite the contrary. At this writing, in fact, this musical tour de force has topped the *Billboard* jazz album chart for four weeks straight. *Ella in Rome* is more than just a sweet souvenir from an enjoyable soiree with a perennial jazz favorite. Taped in concert on the great lady's 40th birthday, it compares favorably with other live albums from this incredible artist's long career.

By the time of Ella's birthday concert on April 25, 1958, she had become acclaimed as "The First Lady of Song" under the cognizant guidance of her manager and record producer, Norman Granz. She was an international concert attraction, a status which, at 70, she still maintains. Ella could—and still can—make singing sound like the most natural ability in the world, entrancing her audiences with the sweet directness of a song's reading and amazing them with her inventive vocal scating. *Ella in Rome* affords an opportunity to recall this charisma at its peak.

Ella's concert program here is impeccable as ever, with the 1958 performance at Rome's Teatro



Sistina drawn from a legacy of works by great American composers. It features material composed by Harold Arlen and Johnny Mercer, George and Ira Gershwin, Rodgers and Hart, W. C. Handy, Duke Ellington, and Cole Porter, among others. The credits alone read like a compendium of America's greatest songwriters, and many of the tunes are recognized standards. Accompaniments are provided with assiduous finesse by Ella's regular trio of the period: Lou Levy on piano, Max Bennett on bass, and Gus Johnson on drums.

The concert opens with a six-minute version of "St. Louis Blues," which she quickly assumes as something distinctively "Ella." Her voice then floats into a lovely, understated rendition of "These Foolish Things (Remind Me of You)," complete with a rarely heard verse. Then come "Just Squeeze Me" and a pensive "Angel Eyes," until the tempo lifts with "That Old Black Magic" and "Just One of Those Things." "I Loves You Porgy" is a definite highlight, with Ella an ardent and tender Bess. "It's All Right with Me" is snappy, and "I Can't Give You Anything But Love" gives Ella a chance to have a little fun.

"When You're Smiling" kicks off the second half of the concert on CD, and the remaining program is comprised of the Gershwins' "A Foggy Day."

Johnny Mercer and Francis J. Burke's slightly mysterious "Midnight Sun," an exuberant "The Lady Is a Tramp," and two of Duke Ellington's best-known compositions, "Sophisticated Lady" and "Caravan." For the last number, "Stompin' at the Savoy," Ella is joined on stage by Oscar Peterson on piano (replacing Levy), Herb Ellis on guitar, and Ray Brown on bass (instead of Bennett). They evidently have a romp, as Ella and the fellas swing out, giving Peterson the opportunity to take a solo and Ella a chance to cut loose.

The show originally was taped on three-track equipment and has been mixed for stereo. Thanks to Polygram's tape wizard, Dennis Drake, the recording has been artfully restored and digitally replicated, with no sign of deterioration, and only an occasional, almost imperceptible vocal distortion, which probably shouldn't even be mentioned.

It is so easy to take an artist like Ella Fitzgerald for granted, to dismiss her music as belonging to another era, but this would be a mistake.

Listen to *Ella in Rome* on LP or CD.

It provides a very pleasant hour's relaxation, and an opportunity to hear one of jazz's all-time greats at her all-time best. **A**



Photographs: Michael Ochs Archives

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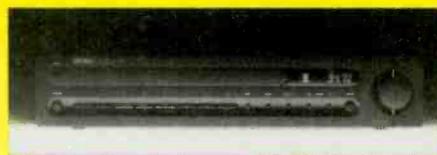
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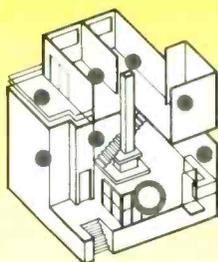
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ease of use. Use any one System 1 component and be assured of a virtuoso performance. Or combine them to create the ultimate system.

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The C•1 provides exceptional musicality, versatility and control. Fully discrete audio circuitry assures sonic integrity. Left and right circuits on separate double copper-plated glass epoxy mil-spec circuit boards maximize channel separation, assure low noise, superior shielding, high current handling capability. Volume control is motorized, can be

adjusted from front panel or remote control. Extensive source selection for up to 8 audio/video components. Separate record and listen circuitry permits simultaneous recording and listening or viewing. Optional dual mono phono cards to meet any need.

### **A logical extension.**

Universal infrared transmitter comes standard with C•1 A/V Preamplifier, provides unmatched control. Easily programmable for simple command of up to 11 video and audio components of virtually any brand. Logically grouped buttons assure easy operation. Functions of other remote controls are simply learned with one-button programming. 8K byte memory directs operation of all components, including phono, tuner, compact disc player, 2 audio tape decks, 2 VCR's, videodisc player, and

surround sound processor. The R•1's 350 controllable functions include individual component and master power on/off, and 4-way balance for surround sound. Plus 6 additional unassigned, user-selectable functions for each component—to choose remote speakers, home security system, any other future function. High power, multi-directional beam allows usage virtually anywhere in the room. Lithium back-up battery prevents memory loss.

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Conservatively rated at 400 watts (200 watts RMS continuous per channel). High current dual monoaural design supplies exceptional output-current of up to 90 amps. Superior frequency response, noise, distortion and channel separation. Fully discrete transistor circuitry features a conservative

design, eliminates need for current limiting. DA•1 taps massive power supplies to drive even highly complex loudspeakers with extraordinary musicality. Dual front-panel overload indicators. Optional remote speaker selection.

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# Irving Berlin

# THE MELODIES LINGER ON

by Donald Spoto



"Irving Berlin has no place in American music," Jerome Kern once wrote. "He is American music." With the tributes, concerts, recitals, fresh recordings, accolades, and awards heaped on the composer in this centenary of his birth, we might have expected some reissues, a few old collections dusted off, some remastering. But a sampling *this good* was beyond my expectation.

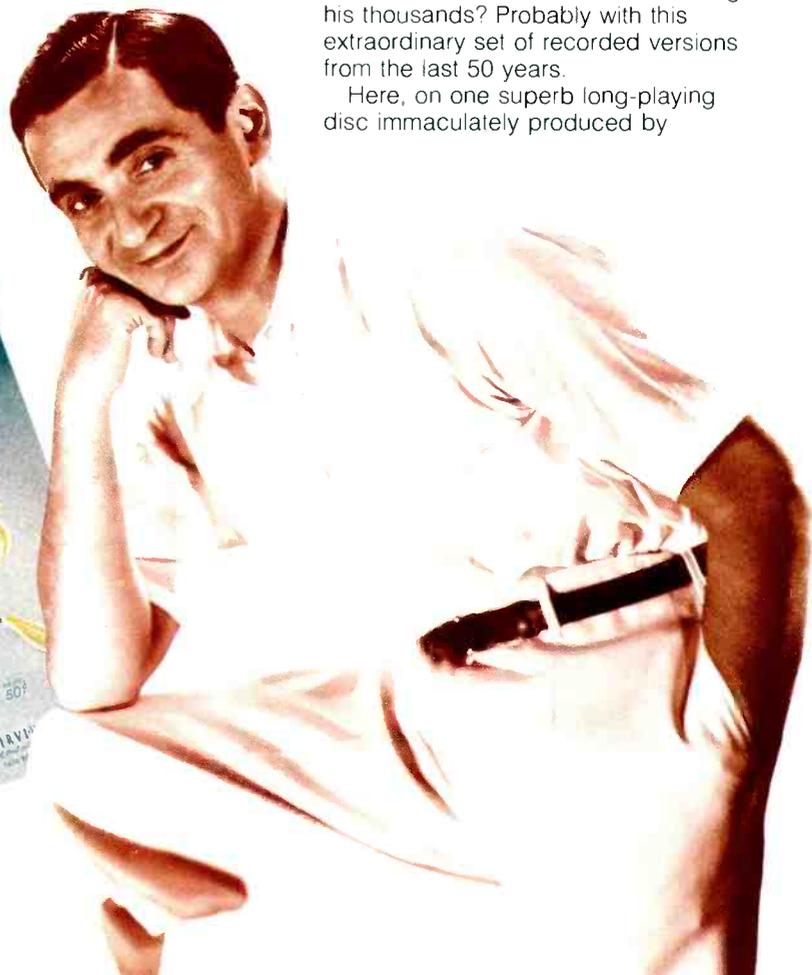
Here we have an extraordinary trio of discs; in fact it's virtually a synthesis of American music, of American cabaret and nightclub and band music, of the

theater, and of just how much we owe to Berlin, who is now beginning his second century of life.

Born in Russia (as Israel Baline), he began his musical career as a singing waiter on Manhattan's Lower East Side. After an apprenticeship as a lyricist and a self-taught composer

(it's well known that he never learned to read music, much less orchestrate tunes), Berlin introduced ragtime into the Broadway theater with his score for "Watch Your Step" (1914), from which "Play a Simple Melody" survives as one of his earliest standards. But how do we begin to list the Berlin "standards" from among his thousands? Probably with this extraordinary set of recorded versions from the last 50 years.

Here, on one superb long-playing disc immaculately produced by





Michael Ochs Archives

**ROSEMARY CLOONEY**  
"You're Just in Love"



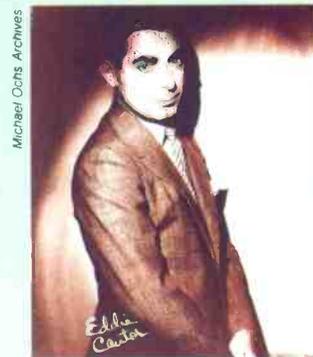
Frank Driggs Collection

**BING CROSBY**  
"Havin' a Heat Wave"



Michael Ochs Archives

**BILLIE HOLIDAY**  
"Remember"



Michael Ochs Archives

**EDDIE CANTOR**  
"Mandy"

Donald Elfman (*Irving Berlin: Always*, Verve 835 450-1, LP) are Louis Armstrong's confident rasp ("Top Hat, White Tie and Tails"), his smile beaming out and the rhythms all bouncy and unjaded. "I'm stepping out, my dear . . . I trust that you'll excuse my dust when I step on the gas," he boasts. Has *anyone* ever merely attempted the notes as boldly as Satchmo and yet so evidently caught a melody's spirit as he?

Sarah Vaughan's twilight, buttery voice then takes us, drifting, through the measures of Hal Mooney's lush orchestrations for "They Say It's Wonderful." And here's Bing Crosby's lucid, unselfconscious croon on Berlin's deceptively easy, lightly erotic melodic line in "Havin' a Heat Wave." Billy Eckstine's crystalline glissandi (in "The Girl that I Marry" and, with Vaughan, "Easter Parade" and "Always") are totally sui generis—you just couldn't confuse him with anyone. Dinah Washington's youthful exuberance, her voice thinner than Fitzgerald's or Vaughan's but appealingly clear for "Say It Isn't So," is like a fresh-nipped bud. Billie Holiday's late recording of "Remember" is full of dreamy nostalgia and more memories than she can pour into one bittersweet melody, especially since we know her usual recording condition.

Ella Fitzgerald's leap of octaves in "White Christmas" is a breath-catching surprise—in fact, I found this old holiday chestnut genuinely moving for the first time in decades. And Fred Astaire's rendition of "Puttin' on the Ritz" is backed by a dozen top jazzmen, for a recording session Astaire called "spontaneous combustion with no rehearsals and no written arrangements."

For anyone who doesn't know of Elisabeth Welch (and I confess I did not), here is a revelation! *Elisabeth Welch: The Irving Berlin Songbook* (Verve 835 491-1, LP; 835 491-2, CD) will be an epiphany. This wondrous



**ELLA FITZGERALD**  
"White Christmas"

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ELISABETH WELCH  
"What'll I Do"



Frank Driggs Collection

BILLY ECKSTINE  
"The Girl that I Marry"



Michael Ochs Archives

CONNIE BOSWELL  
"Say It Isn't So"



Frank Driggs Collection

artist, now in her 70s (incredible when you hear the voice), has been in London for years, singing, acting, glorifying composers with her astonishing sound, and at last she's given us a Berlin songbook. Either on the 12-inch or the even-more-glorious Compact Disc, it must be on your Christmas list—or your anytime list—first for yourself and then for everyone who loves the art of song.

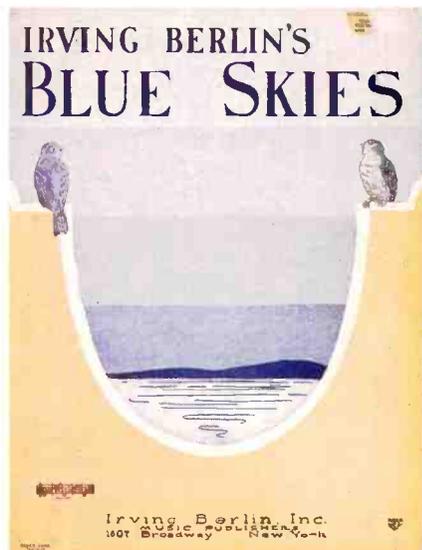
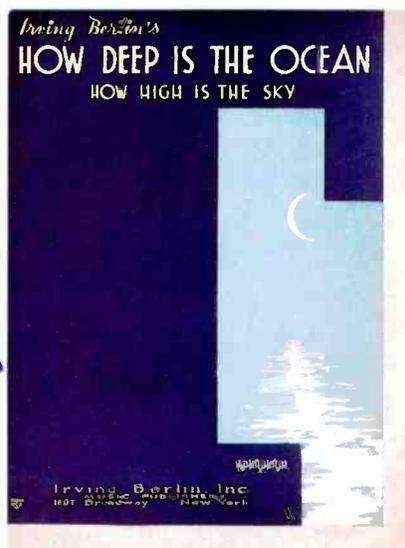
Her slight vibrato (in "How Deep is the Ocean"), her youthfulness ("Let's Face the Music and Dance"), her reedy *spinto* and her sense of understatement (in the heartbreaking "What'll I Do" and "When I Lost You"), the limpid appeal (in "I Got

Lost in His Arms" and "Supper Time")—how to do these justice with mere words? I sat and listened at least eight times to Welch's cuts of "Remember" and "The Song Is Ended," and I thought I was hearing them for the first time. Then I shifted moods, with her rambunctious "Shaking the Blues Away." Such fun, such gravity—and such understatement—such a confident humanity and such pellucid comprehension are the marks of a very great vocal artist indeed.

One can only imagine what kind of grand, serene emotional maturity envelopes a woman like this. Gordon Langford has arranged the music and

### IRVING BERLIN & GINGER ROGERS





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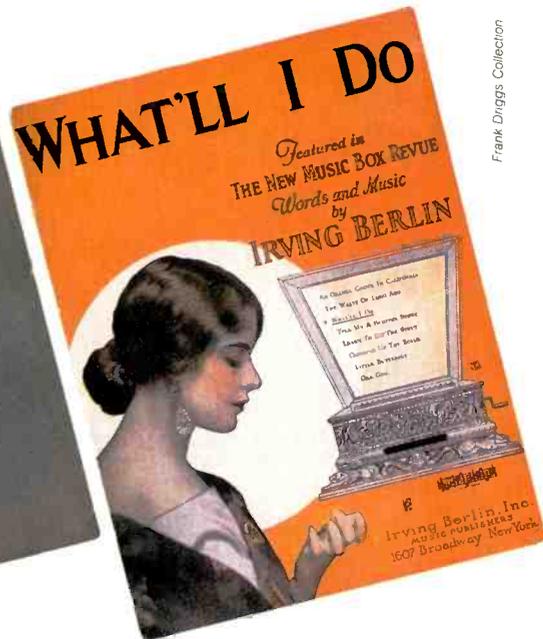
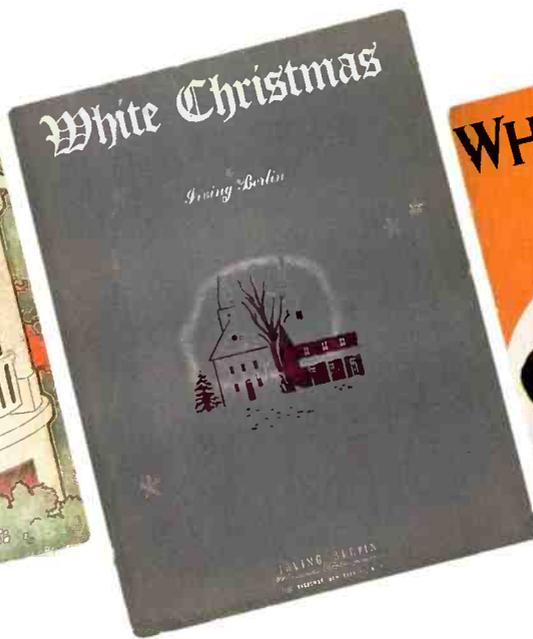
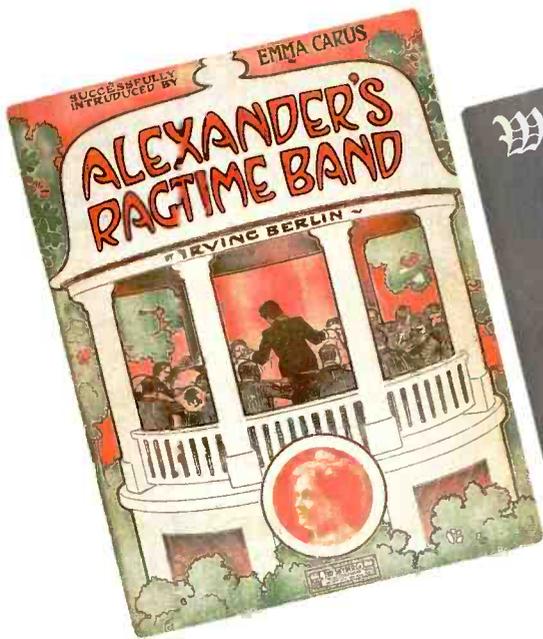
wondrously conducted (usually just piano, sometimes a small orchestra). John Yap has produced for Verve one of the finest Compact Discs of the decade—not a whoosh, not a hiss. And for Welch's glorious voice, that is only simple justice. Her sensitivity, her control, her uncanny phrasing—you'd better order several copies, one each for the living room, the den, the bedroom, the car, the dining room, the kitchen . . . maybe even the nursery.

Columbia (bless them!) has also given us a stunning compilation of 21 great Berlin renditions (*Irving Berlin: A Hundred Years*, CGK 40035, CD), with witty and informative notes by the disc's producer, Michael Brooks. "Let Me Sing and I'm Happy," right from the 1930 soundtrack with Ben Selvin's orchestra and the Dorsey brothers, demonstrates why Berlin's music often makes us smile. You can see dancing couples in a nightclub; you tap your toes during the clarinet solo. Connie Boswell's 1932 recording of "Say It Isn't So" features her sassy earthiness and explains Berlin's personal preference for her delivery of his music. Jan Garber's 1930 version of "Puttin' on the Ritz" transports us to the world of gray chiffon, of silk scarves and of Pierce

FRED ASTAIRE  
"Puttin' on the Ritz"

"Irving Berlin: A Hundred Years" greatly moved me. It is American music history, and maybe your lives and mine, too, on one disc.





Frank Driggs Collection

Arrows and tiaras. In a "Face the Music" medley, Bing Crosby (whose style, Brooks writes, "suggests some heavy partying the night before") reveals another, perhaps darker side to Mr. Nice Guy.

Eddie Cantor's perky charm has never been livelier than here, in his 1934 recording of "Mandy," and no rendition of "Let Yourself Go" has ever been more amply joyous than as done by Bunny Berigan in 1936.

**LOUIS ARMSTRONG**  
"Top Hat, White Tie and Tails"



Peggy Lee (with Benny Goodman and his orchestra) in a 1941 version of "How Deep Is the Ocean" lets us peer into a more complex land of romantic obsession than most other singers, but that is part of Miss Peggy Lee's art, after all.

But there's so much more! Ethel Waters recorded "Harlem on My Mind" in 1933, and it's still as

this is vitality incarnate. And won't the warm, funny, generous spirit of the late Judy Holliday forever help us get through the blue days with her historic singing of "What'll I Do"?

These are grandly rhetorical, but I am that moved by this album. American music history is here, on one convenient disc; maybe your lives and mine are there, too, if we're sensitive to the interlacing of popular culture with the fabric of our years.

What careful restoration in this trio of releases, what superb engineering. This is American music at its greatest, sung by our greatest exponents, and produced according to the highest standards of modern hi-tech recording. I am in awe of all the accomplishments—of Berlin's talent primarily, but also that of every unnamed vocalist, every second trombonist, every vigilant engineer. ▽

Michael Uchis Archives

marvellously blithe, as rich and warm and scary now as then. Won't Rosemary Clooney love them forever for this reissue of her stunning "You're Just in Love"? Do you remember Dinah Shore was one of the great pop artists of the 1940s and 1950s? If not, listen to "Doin' What Comes Natur'ly," from the great "Annie Get Your Gun";

**What careful restoration in this trio of releases, what superb engineering! This is American music at its finest.**



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WHO ALREADY  
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CD PLAYER,**

**OUR CONDOLENCES.**

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# ACCULINEAR 18-BIT TEC

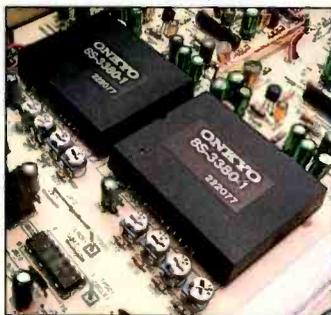


## ENTER THE NEW

Everything has limitations. Including conventional CD players.

That's because 16-bit digital processing simply isn't accurate enough to retrieve all the data that's on a disc. So some of the music is lost.

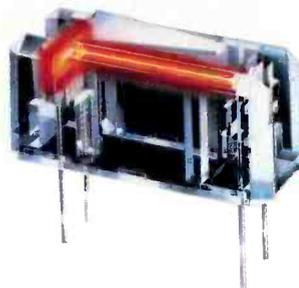
Onkyo's linear 18-bit technology, on the other hand, assures you that all the musical information gets processed. So you don't lose anything. Even the subtle clues that tell you about the space the music was recorded in. And how well the engineer chose the microphones.



Dual Acculinear D/A Converters with calibrated accuracy to the 4th Significant Bit.

But getting all the data off the disc is only the first step. Getting it to your ears is at least as important.

That's why Onkyo developed the Acculinear D/A Converter. And individually calibrates each one to minimize crossover distortion. This unprecedented accuracy means you'll be able to listen to music, even at low levels, and still hear the delicate harmonic structures that distinguish a Gibson guitar from a Martin.



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Dual transformers in the DX-7500 thoroughly isolate digital and analog stages.

In addition, the critical D/A converters benefit from Opto-Drive, a new Onkyo technology that uses LED/phototransistor arrays for the ultimate in current stability and operating accuracy. Which

means that any sonic variations you hear will be in the music, not in the disc player.

And the best part? We didn't reserve these technical innovations for one outrageously expensive flagship model. All the musical benefits are affordable.

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## Technical White Paper

### Theory and Application of Linear 18-bit D/A Converters in Digital Audio Products

Onkyo was the first manufacturer to show a Compact Disc player employing linear 18-bit digital-to-analog converters. This is indicative of Onkyo's contention that the use of such converters significantly improves both the measured and sonic quality of digital audio products. The use of 18-bit converters clearly makes obsolete earlier 14- and 16-bit architectures. Moreover, unlike designs in which 16-bit converters are switched to yield pseudo 18-bit resolution, linear 18-bit conversion does not introduce subtle conversion artifacts. Onkyo believes that linear 18-bit conversion will become the industry norm in high quality digital audio products, and we take pleasure in presenting this White Paper.

### The Compact Disc Format—Some General Notes

The Compact Disc (CD) standard specifies a 16-bit word length and 44.1 kHz sampling rate. Together they yield audio fidelity with a flat frequency response exceeding 20 kHz and a Signal-to-Noise (S/N) ratio greater than 96 dB. Recently, manufacturers have introduced 18-bit CD players of various designs. Although discs themselves will maintain a 16-bit format, 18-bit players will provide greater playback fidelity for the 16-bit recordings. The reason for this lies in flaws inherent in digital-to-analog (D/A) converters. **Except in theory, 16-bit converters cannot fully decode a 16-bit signal without a degree of error.**

When eighteen bits are derived from the disc data and converted through 18-bit conversion, errors can be reduced and reproduction specifications improved. In order to realize the full potential of audio fidelity for the end user, the signal digitization and processing steps must have a greater dynamic range than the final recording.<sup>1</sup> However, there are several ways of performing 18-bit conversion, some better (and more expensive) than others. Onkyo firmly supports true, linear 18-bit conversion in which 18-bit converter chips are employed.

### The Compact Disc Sampling Rate

The Compact Disc specifies a 44.1 kHz sampling rate. Some critics have suggested that the CD's sampling rate be increased from 44.1 kHz to 100 kHz or so. This higher sampling rate would provide a higher frequency response. For example, the CD's flat frequency response would be extended from 20 kHz to 50 kHz. Unfortunately, the extended frequency response is beyond the range of human hearing. The only advantage to a higher sampling rate is the decrease in demands on the anti-aliasing filter preceding a digital audio system, and the anti-imaging filter following it. The need to sharply limit audio energy at frequencies higher than half the sampling frequency dictates the use of brickwall filters to preserve a 20 kHz audio bandwidth with a 44.1 sampling rate. And analog brickwall filters introduce phase nonlinearities.<sup>2</sup>

However CD players can easily avoid the problem by using digital oversampling anti-imaging filters; their phase nonlinearities are negligible. And even the problem of brickwall filters on the input of professional recorders are eased with the development of oversampling anti-aliasing filters. An increased sampling rate per se does not offer an improvement in CD technology.

# The Compact Disc Quantization Word Length

Quantization assigns a numerical value to an audio sample; it is that value which is stored on disc. The conversion of the waveform to a binary value, and back again, is the function of the analog-to-digital (A/D) and digital-to-analog (D/A) converters respectively. The number of bits in the binary word determines the accuracy of the assigned value. The number of bits thus ultimately determines the S/N ratio of the system.

The choice of 16-bit words for the CD standard was determined primarily on the availability of 16-bit digital-to-analog converters and the fact that longer word lengths would diminish the playing time of discs. However affordable 18-bit converters have been developed and they offer a chance to improve the playback of discs. **While no technology can yield more than 16 bits of music from a 16-bit CD, the use of 18-bit conversion provides better utilization of the 16 bits from the disc.** Specifically, 18-bit conversion technology overcomes problems in 16-bit converters that limit their decoding of the information coming from a disc. When correctly done, 18-bit conversion thus improves the amplitude resolution of the player by ensuring a fully linear conversion of the disc's 16-bit signal, yielding faithful reproduction of the signal encoded on the disc. If 16-bit conversion is a dirty window, then 18-bit conversion is a clean window.

## Why 16-Bit Conversion Isn't Enough

As we have seen, a Compact Disc stores 16-bit audio data words. Logically, most CD players employ one or more 16-bit digital-to-analog converters. However, D/As present a weak link in the signal chain; they are not always good at generating the analog voltages which represent the digital words read from the disc. **In particular, low amplitude distortion is sometimes introduced because, simply, 16-bit converters are not ideal for reliably converting 16-bit data.**

The difficulty is understandable. A 16-bit D/A must determine which of the 65,536 output analog voltages corresponds to the input digital word within the 20-microsecond sampling period. Several problems can interfere with the decision. For example the distance between steps may not be exactly equidistant; that would lead to nonlinearity in the conversion. One solution is a D/A converter with more bits' worth of conversion. An 18-bit D/A, for example, has 262,144 increments, exactly four times as many output levels as a 16-bit converter. Nonlinearities are correspondingly smaller, and the sound from the CD player theoretically better.

**The intent of 18-bit D/A conversion technology is not to somehow improve the data from the disc, but rather to make better use of that data.** In other words, 18-bit technology attempts to overcome problems in 16-bit converters which may limit their decoding of the information coming from the disc. An analogy may be made to oversampling: Increasing the sampling rate does not create new information, it simply allows better use of what existed already.

**In other words, an 18-bit converter gives better 16-bit conversion.** In fact, the two extra bits of a linear 18-bit converter would not even have to be connected to yield improved 16-bit performance.<sup>3</sup>

## Justification of Increase in Word Length

As noted, a 16-bit word can represent 65,535 amplitude increments; an 18-bit word represents 262,143 increments. Increasing the quantization word length by two bits at the conversion stage results, primarily, in an increase in S/N ratio. Simultaneously, any quantization artifacts are diminished. A properly dithered 16-bit system has an excellent S/N ratio, and quantization artifacts are handled such that resolution may be obtained at levels even less than that of the least significant bit.<sup>4</sup> When the CD was standardized, 18-bit A/D and D/A converters were very costly; so, there seemed little sense in increasing the word length. Thus the Compact Disc standard was set at 16 bits.

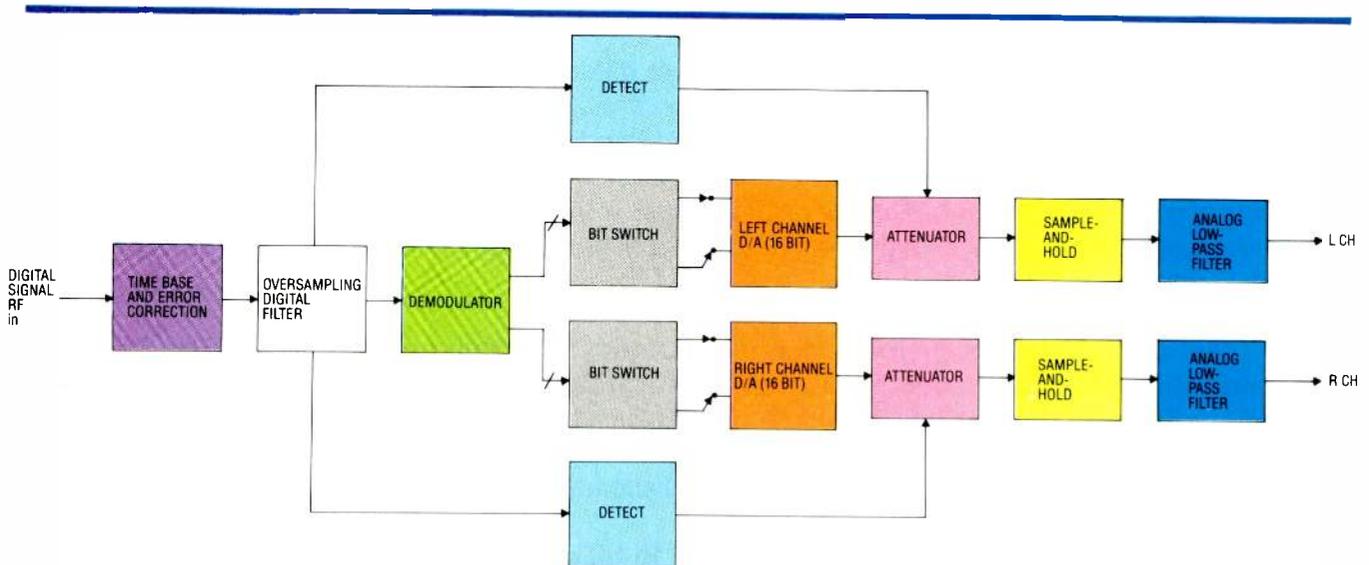
Oversampling makes 18-bit conversion possible. It solves the obvious dilemma of coming up with 18 bits, when the output from the disc is only 16. When the 44.1 kHz, 16-bit signal from the CD is oversampled, both the sampling frequency and number of bits are increased—the former because of oversampling, and the latter because of the multiplication which must take place. For example, the output of an oversampling filter may be 176.4 kHz and 28 bits. Normally, only the 16 most significant bits are used, for conversion through a 16-bit D/A converter, and the rest are discarded (in some designs they are used for noise shaping).

A linear 18-bit system uses 18 of the bits from the output of an oversampling circuit, instead of just 16. When proper oversampling techniques are used, those two extra bits do indeed convey useful amplitude information, albeit at levels below the first 16 bits.

## A Pseudo 18-Bit Conversion Method

**A linear 18-bit D/A converter chip is an expensive part. Some manufacturers are unwilling to incorporate that cost into their designs. An alternative is so-called pseudo 18-bit methods, in which an 18-bit D/A converter is not used at all. Rather, a 16-bit converter is “floated” to operate on 18 bits.**

The 18-bits from the oversampling filter's output are wired through switches to the inputs of a 16-bit D/A converter. When all 16 bits are being used to convey a signal (as in the case of a high amplitude), the upper 16 bits are applied to the 16 bit converter, as usual. However, when the two upper bits from the oversampling filter are not being used to convey a signal (a lower amplitude signal), the 18 bits are shifted downward, so that the unused bits are ignored, and the 16 lower bits are utilized instead, as shown in Figure 1. Through bit shifting, a 16-bit converter may thus handle an 18-bit input.



**Figure 1. Floating 18-bit conversion using 16-bit D/As, bit switching and attenuation.**

However, bit switching multiplication upsets the weighted values of the binary word. Consequently overall system gain must be constantly shifted as well. Specifically, whenever the two lower bits are shifted in, the word's value has been effectively multiplied by four, thus the gain of the signal must be reduced by one-fourth to compensate. An analog gain block downstream of the D/A performs this function. A one-fourth reduction is required as follows: In the decimal system, when a digit is shifted to the left one place, the result is ten times larger. In the binary system, a shift results in a doubling of value. A shift of two places (two bits) quadruples the value. Thus when the lower bits are shifted up, the amplitude is four times too big; therefore the output must be attenuated by 1/4. Similarly, a one-bit shift would require a gain reduction of 1/2.

This adaptive 18-bit conversion may be considered as a dynamic noise reduction scheme in that the signal is being expanded at the D/A converter. The benefits result from the fact that the residual noise of the converter, as well as its conversion nonlinearities, will be proportionally reduced. Looked at another way, a four-times higher analog output has been achieved without increasing the D/A's residual noise and conversion error. When the gain is reduced by 1/4, the noise and conversion errors are reduced by 1/4. There is an increase in S/N of 12 dB and distortion is reduced by 1/4.<sup>5</sup> **However, this method often produces unwanted conversion artifacts which are discussed on page 6.**

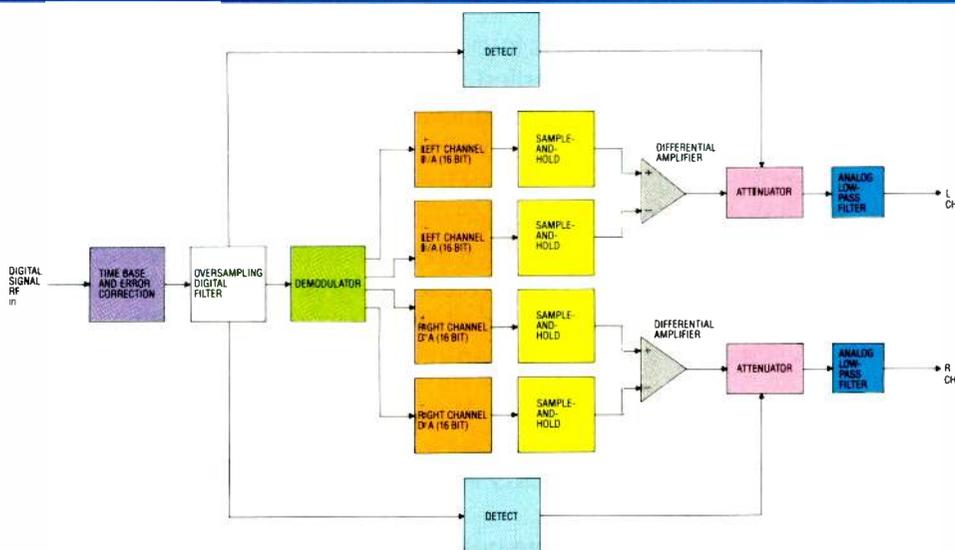
## Another Pseudo 18-Bit Conversion Method

Some CD player conversion systems employ 4 D/A converters. This, too, is intended to provide a cleaner conversion of a CD's 16-bit output than any single 16-bit converter alone could provide.

An oversampling digital filter and 16-bit D/As are employed, as well as bit shifting. However in this design, two D/As are used per channel—one for the positive half and one for the negative half of the output bipolar analog waveform. Again, the reason is to improve low amplitude resolution. In this case, the design specifically addresses a problem known as crossover distortion.

Crossover distortion occurs at the zero cross point between the positive and negative voltage swing of the waveform. The converter must switch all of its digits (from 0111111111111111 to 1000000000000000) as polarity changes. Crossover distortion can be alleviated by providing a D/A for each waveform polarity. In that way, the total switching of digits never occurs. Of course, the digital signal must be split between the two D/As, but an upstream processor chip handles this switching digitally. Theoretically, this can be glitch-free, if properly implemented.

The circuit's signal flow is shown in the following block diagram.



**Figure 2. Floating 18-bit conversion using bi-polar 16-bit D/As, bit switching and attenuation.**

An oversampling filter outputs 18-bit words to the demodulator. It directs the appropriate portion of the waveform to the correct D/A. The two waveform halves are joined at the output by a differential amplifier. An attenuator compensates for the gain change caused by shifting.

When the signal is of high amplitude, greater low amplitude resolution is not required so there is no bit shifting, and straight 16-bit conversion takes place. Both polarity D/A converters reproduce both halves of the waveform, and they are combined in a differential push-pull mode.

However when the signal drops below  $-12$  dB, the circuit reads the most significant bit (MSB) and observes that when the bit is high, the word has positive polarity, and thus must be directed to the positive polarity D/A converter. Likewise, when the MSB is low, the negative half D/A gets the word. Also, when the signal is below  $-12$  dB, the second most significant bit ceases to change, and in fact it is always low when the MSB is high, and it is high when the MSB is low. The word sent to the 16-bit D/As may be shifted down two bits. The D/As thus receive bits 3 through 18. Since the gain of the signal increases when bits are shifted, the attenuators must be switched in, to proportionally reduce gain.

The 17th and 18th bits from the oversampling filter have been utilized in reproducing the waveform, instead of being truncated and discarded. Moreover, because dual D/As are used to convert the bipolar waveform, crossover distortion has been avoided. This can benefit reproduction of low level audio signals. **However, again, artifacts may intrude.**

## Disadvantages of Pseudo 18-Bit Conversion

**Although pseudo 18-bit conversion methods such as those described above offer advantages, they may also promote problems such as switching noise and subtle gain matching errors, an inherent flaw in any arrangement when bits are switched.** In fact, in analyzing the performance of one pseudo 18-bit CD player, two researchers concluded, "... 16-bit precision gain matching is surely out of the question and so (possibly inaudible) conversion errors will occur whenever bit shifting is invoked."<sup>6</sup> **Thus "floating" conversion systems can introduce errors in the output signal** because one must compensate for the resulting shifts in amplitude caused by shifting bits.

**It isn't possible to get all the benefits of an 18-bit converter with a 16-bit converter, no matter how a 16-bit converter is manipulated.** This is the problem: When the bits are shifted, it is difficult to immediately and simultaneously shift the gain of the analog output to compensate. Furthermore, any static offset will become apparent when the switching takes place.

Until the first 14 bits are occupied, the output is four-times its nominal amplitude, so the  $1/4$  attenuator is used to compensate. When all 14 bits are occupied, the output voltage is maximum. When the 15th bit turns on, the bits are shifted, and the attenuator is removed. The output increases at normal gain until full 16-bit voltage is reached. The difficulty is that the attenuator could introduce a static error, owing to component tolerances. It would not be significant over the first 14 bits, affecting only attenuation ratio. But when switched off (or later, on), the difference between the attenuator's error and the absolute value of the output would create a glitch in the waveform where the attenuated and non-attenuated signals are joined. The glitch would always be present at  $-12$  dB regardless of signal frequency. The question of course, is whether the increase in S/N ratio outweighs the possibility of switching distortion. **At any rate, pseudo 18-bit conversion will always run the risk of introducing error into the analog output signal.**

## Linear 18-Bit Conversion And Its Advantages

Until recently, affordable 18-bit converters were not available. However recent advances have resulted in a practical 18-bit D/A converter. This integrated circuit is the only true 18-bit D/A currently in mass production and is employed in several of the newest Onkyo designs. **The chip provides a harmonic distortion specification of 0.0008% for a 1 kHz sinewave: This is an unprecedented accomplishment.**

**Some specifications of the new 18-bit D/A chips exceed the ability of test equipment to measure them.** For example, the D/A contains a test circuit to monitor settling time of the current source. This minimizes glitches to the extent that resultant **distortion** is below measurement levels and **can be analyzed only through computer modelling.**

Although a conventional binary-weighted architecture is employed, several special design considerations were instituted to attain the desired accuracy. The most significant three bits are made up of seven individual current sources; this reduces thermal errors. Bits four through sixteen are made up of unit-valued current sources which feed the R-2R ladder network of the digital filter, as shown in Figure 3. Currents for bits seventeen and eighteen are derived from the unit-valued source. The relative gain of the three upper bits can be adjusted against the total weight of the fifteen lower R-2R bits by trimming the scale-down network.<sup>1</sup>

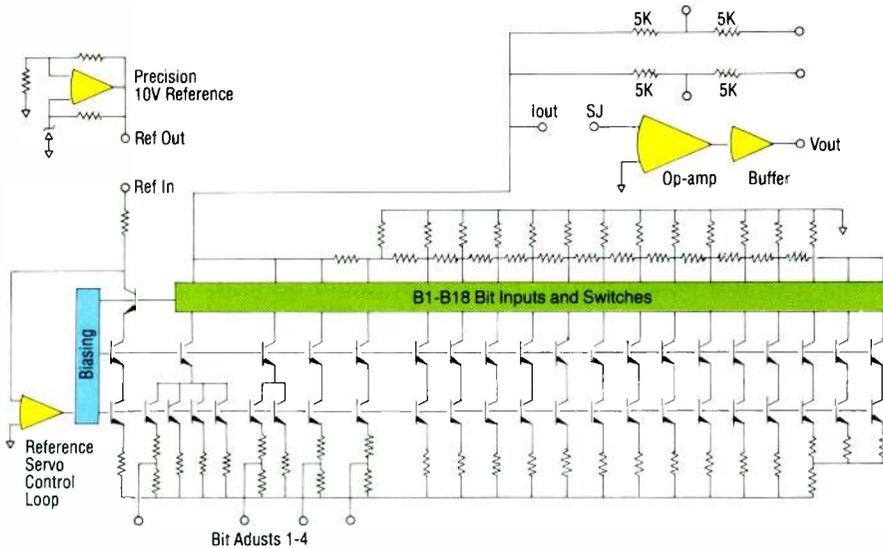


Figure 3. Complete Hybrid 18-bit D/A [1]

The chip itself is a forty-pin hybrid with a special divided layout to provide full control over laser trimming of the upper and lower bits. Supporting circuitry is located outside the chip to help maintain the chip's thermal balance, a critical concern in D/A design. Accuracy to the least significant bit requires precision equivalent to four parts per million.

Onkyo CD players with 18-bit conversion make use of these new D/A converters. The architecture of this design, as shown in Figure 4, is markedly simpler than pseudo 18-bit conversion schemes. **Intuitively, one may correctly surmise that the simpler signal path promotes better performance. Simply put, the less manipulation of the analog signal, the better the fidelity.**

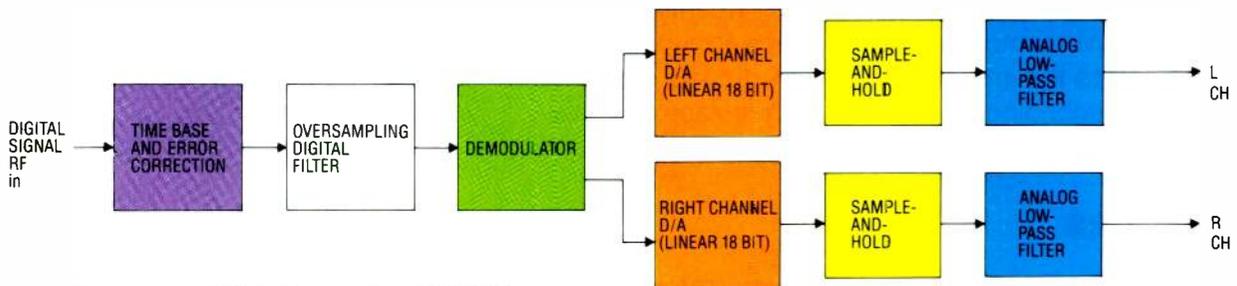


Figure 4. True Linear 18-bit Conversion (ONKYO)

## Other Onkyo Advances

In addition, Onkyo CD players utilizing 18-bit conversion employ dual converter chips, one for each audio channel. This ensures perfect phase linearity between channels. In some other players in which one D/A converter must service both channels, interchannel phase distortion is inevitable as the data from one channel must wait while the other channel's data is being converted. In addition, the practice of alternating channel data through one converter may introduce switching noise. By using dual 18-bit D/A converters, each converter is responsible only for its channel's data, and interchannel phase distortion and noise are eliminated.

The use of 18-bit D/A chips results in player specifications clearly superior to 16-bit designs. As described above, an 18-bit converter has four times greater resolution than a 16-bit converter. In other words, **18-bit conversion** of a 16-bit signal **provides for a 12 dB increase in S/N ratio** while processing the data. **This improvement is clearly measurable in a CD player with 18-bit conversion. Of course, there is no risk of gain matching errors as with pseudo conversion methods.**

In summary, these chips set a new standard for digital signal conversion. In fact, the primary sonic limitation in a CD player using linear 18-bit converters is the quality of the equipment used to make the master recording itself.

## Oversampling Output Filtering

To maximize the performance potential of 18-bit converters, Onkyo employs oversampling output filtering. In an oversampling filter, audio samples from the disc are subjected to computation which implements digital filtering of the audio signal. Additional audio samples are generated between the original samples; hence, the output sampling rate is increased. This additional data creates a more linear waveform and shifts unwanted modulation noise to an extreme supersonic frequency, where it can be removed without audible effect.

Eighteen-bit Onkyo CD players employ either four-times or eight-times oversampling circuits. **The latter circuit is particularly significant and generally found only in the most costly players.** In an eight-times oversampling circuit, seven new audio samples are computed for each input sample. In other words, the output sampling rate is raised to 352.8 kHz. The accuracy of this filter is precise, yielding pass band ripple on the order of 0.00001 dB. In addition, the stop band suppression is greater than 120 dB. Few filters have ever achieved these results. In addition, modulation artifacts are shifted to a band centered at 352.8 kHz where they are easily removed with an analog low-pass filter. Finally, the multiplication algorithms in the oversampling filter provide amplitude resolution in excess of 16 bits, thus providing 18-bit words with fully meaningful data for the output 18-bit D/A converters.

## Conclusion

Onkyo is firmly committed to linear 18-bit D/A conversion in its digital audio products wherever costs permit the inclusion of these devices. This design approach offers clear advantages to both existing 16-bit and pseudo 18-bit conversion methods. The introduction of 18-bit conversion, coupled with carefully implemented oversampling filtering, perhaps represents the single greatest advance in digital audio technology since the introduction of the Compact Disc in 1982. Onkyo is proud to have been the first to introduce this technology to the U.S. marketplace.

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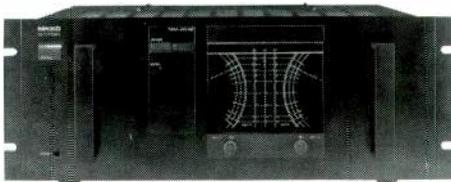
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# ANNUAL EQUIPMENT DIRECTORY

One of our Editors tells me that this year's Annual Equipment Directory is our 31st and her 10th. When she first began doing these tables in 1979, there were only 13 categories; it is easier to list those that came along later, which include CD players, blank tape, signal processors, cross-overs, ambience and surround sound processors, Hi-Fi VCRs, and digital recorders and processors. (That's really only seven new categories.)



Over this decade, most every category has grown, some even doubling, if you use as your measuring stick the number of companies making units in the category or the number of models covered. The total number of models listed has grown from just over 2,700 to about 4,550, and the biggest increase has been in loudspeaker systems, with companies going from 147 to 257, models from 834 to 1,376. Other large increases came in amps, with 145 makers now versus 77 then, and 509 models for 1988 versus 291 models in 1979. Preamps were similarly dramatic in growth: 73 firms going to 131, and 137 models to 286. With the growth of these separates, there has been some trimming of the receiver ranks, as essentially the same number of firms sell such



# DAT RECORDERS



Esoteric R-1



Marantz DT-84



Harman/Kardon Citation 26



Sony ES PCM-601ESD Processor



CompuSonics DSP 1000

MANUFACTURER	Model (RI) = Remote Included, (RD) = Remote Optional	Playback Sampling Rates: 48 kHz = A, 44.1 kHz = B, 32 kHz = C	Frequency Response, Hz to kHz, $\pm$ dB	Dynamic Range, dB	THD $\leq$ 1 kHz, % at Maximum (0-dB) Record Level	Input Digital Only = D, Analog Only = A	Output Digital Only = D, Analog Only = A	Decoding System: Number of Bits—Oversampling Rate	Inputs: M=C, L=Line=L, Direct Digital=D, Fiber Optic=F	Outputs: L=Line=L, Resonance=H, Headphone with Level Control=HL, Direct Digital=D, Fiber Optic=F	Start ID Encoding: M=C, A=Analog=M, Repeatable=R, Slip ID=S	Repeat Functions: Entire Track=B, Program=C, Tape=A	Multiple Fast Search?	Program Search?	Notes	
COMPUSONICS	DSP 1500/44(RD)	B	20-20 $\pm$ 1	88	0.007	C	C	16	L	L	A/R/S	A/B/C	No	Yes	5995.00	Magnetic storage.
	DSP 1500(RD)	B	20-15 $\pm$ 1	88	0.007	C	C	16	L	L	A/R/S	A/B/C	No	Yes	5995.00	As above.
	DSP 1000	B	20-20 $\pm$ 1	88	0.007	A	A	16	L/D	L/HL/D	A/R/S	A/B/C	No	Yes	14,995.	Optical storage.
ESOTERIC	R-1(RI)	A/B/C	1-22	90	0.005	A	A	16-2X	L/D/F	L/HL/D/F	A/M/R/S	A/B	Yes	Yes	5995.00	Dual D/A converters, dual A/D converters.
HARMAN/ KARDON	Citation 26(RI)	A/B/C	5-22 $\pm$ 1	92	0.015	A	A	16-4X	L/D/F	L/HL/D/F	A/M/R/S	A/B/C	Yes	Yes	2199.00	
MARANTZ	DT-84(RI)	A/B/C	2-22	95	0.003	A	A	16-4X	M/L/D/F	L/H/D/F	A/R	A/B/C	Yes	Yes	1500.00	
ONKYO	DT-7700(RI)	A/B/C	2-22	90	0.005	A	A	16	M/L/D/F	L/HL/D/F	A/M/R/S		Yes	Yes		
SONY	PCM-2500(RI)	A/B/C	2-20 $\pm$ 0.5	90	0.005	A	B	16-4X	L/D	L/HL/D	A/M/R/S		Yes	Yes	5000.00	Professional DAT master recorder.
SONY ES	PCM-601ESD	B	10-20 $\pm$ 0.5	90	0.005	C	C	16-1X, 14-1X	L/D	L/H/D	N.A.	N.A.	N.A.	N.A.	1600.00	EIAJ-format PCM processor; requires VCR.
TOSHIBA	XC-1000DT(RI)	A/B/C	5-22 $\pm$ 0.5	90	0.005	A	A	16-4X	L/D/F	L/H/D/F	A/R/S	A/B/C	Yes	Yes	2100.00	

# DENON

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DCD-1520



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ES

After inventing  
the Digital  
Compact Disc  
we weren't about  
to entrust its  
reproduction to  
anyone else.

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As the inventor of the Compact Disc format, Sony continues to expand the limits of digital reproduction. Yet, while proudly leading this revolution, the Sony ES engineers have been equally conscientious about designing analog components that fully realize the potential of the digital era. This uncompromising commitment defines the entire ES Series.



**The CDP-707ESD:**  
Simply stated...“the reference against which to judge” others.—*Len Feldman, Audio Magazine.*

Historically, Sony ES Compact Disc players have been the benchmark for advancing the state-of-the-art. The CDP-707ESD is no exception. As the world's first CD player to incorporate dual 18 bit linear D/A converters, along with a proprietary 8X oversampling digital filter, it brings the listener closer to the theoretical limits of Compact Disc performance. This advanced technology provides greater low level signal resolution and improved linearity, for more faithful reproduction of musical depth and detail.

And there's more to the ES Series than the CDP-707ESD, and its host of sophisticated features. You'll find our advanced 8X oversampling filter technology in the less costly CDP-507ESD, as well as the CDP-C15ESD, which combines 18 bit linear D/A converter performance with 10-disc changer convenience for the very first time.



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Traditionally, few receivers have offered the performance necessary to meet the demands of digital sources. These demands on receiver technology come at a time when the requirements for total audio and video integration have created more compromises than ever before.

To avoid those compromises, Sony created the STR-GX10ES, with 150 watts-per-channel. It, along with our

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Yet the STR-GX10ES also brings you the convenience of total integration with a supplied Remote Commander™ unit that allows for control of virtually any infrared audio or video component, regardless of brand. And with its special high resolution S-Video circuitry, the STR-GX10ES is compatible with components you might buy in the future.



**The TC-WR11ES:**  
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The Sony ES Series is a skillfully crafted line that not only includes the finest Compact Disc players, but superb analog components as well, all doing full justice to the ES engineers' exceedingly high standards. Further expression of this excellence is reflected in the 3 year limited warranty that backs each and every model (see your authorized Sony ES dealer for details).

For more information on where you can audition the full line of Sony ES components, call 201-930-7156.



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THE LEADER IN DIGITAL AUDIO™



# CD PLAYERS & D/A CONVERTERS

MANUFACTURER	Model (RI) = Remote Included (RO) = Remote Optional	Loading: Single Disc = A, Multi-Disc = C	Decoding System	Number of Bits	Digital Filter: A = Single-Disc Magazine = B, Digital Only = B, Analog Only = C	Line Outputs: Fixed = F, Variable = V, Both = B	Other Outputs: Analog Plus Digital = A, Headphone with Level Control = H, Subcode Only = S, Digital = D, Five-Opic = F	Frequency Response: Hz to kHz, ±dB	S/N Ratio: A = Wid. = dB	THD: %	Elapsed Time Display: From Disc Start = D, From Track Start = T, Both = B			Number of Programmable Selections	Repeat Functions: Entire Disc = D, Track = T, A = Phrase = P, Entire Program = E	Weight, Lbs.	Price, \$	Notes
											D	T	B					
ACCPHASE	DP80/DC81(RI)	A	16-2X	A	B	F	4-20 ± 0.3	106	0.002	D	D	0	D/T	89%	8750.00	Balanced outputs; two chassis.		
	DP70(RI)	A	16-4X	A	B	F	4-20 ± 0.3	115	0.002	D	D	0	D/T	57½	6000.00	Balanced outputs.		
ADCOM	GCD-575(RI)	A	16-4X	B	B	HL/D	5-20 + 0.1, -0.5	105	.0025	B	B	24	D/T/P/E	12	599.95	Absolute polarity switch; Class-A analog section.		
A/D/S/	CD3(RO)	A	16-2X	A	B	HL	5-20 ± 0.5	102	0.004	T	D	30	D/T/P/E	22	1200.00			
	CD4(RO)	A	16-2X	A	F	HL	5-20 ± 0.5	102	0.004	T	D	16	D/T/P/E	22	1000.00			
AKAI	CD-22-B(RI)	A	16-2X	A	F	HL/D	5-20 ± 0.5	98	0.005	B	B	20	D/T/E	9.3	279.00			
	CD-32-B(RI)	A	16-2X	A	F	HL/D	5-20 ± 0.5	98	0.005	B	B	16	D/T/E	9.5	329.00			
	CD-52-B(RI)	A	16-4X	A	F	HL/D	4-20 ± 0.5	98	0.004	B	B	20	D/T/P/E	10.5	379.00			
	CD-73-B(RI)	A	18-4X	A	F	HL/D/F	2-20 ± 0.3	106	.0025	B	B	20	D/T/P/E	16.6	799.00			
	CD-93-B(RI)	A	18-4X	A	F	HL/D/F	2-20 ± 0.3	106	.0025	B	B	20	D/T/P/E	30	1099.00			
ANALOGIC DESIGN GROUP	FET Hybrid(RO)	A	16-4X	C	F	H	5-19 ± 0.5	99	0.01	T		22	D/T	11	895.00	With remote. \$995.00; Class-A FET output; d.c. servo.		
	Vacuum Tube Hybrid(RI)	A	16-4X	C	F	H	10-19 ± 1	95	0.09	T		22	D/T	15	1495.00	Hybrid output circuitry.		
ANALOG RESEARCH	Segue(RI)	A	16-4X	A	F	H	20-20 + 0, -1	110	0.01	T		99	D/T/E	10	800.00	J-FET output; direct coupled; servo controlled.		
AR	CD-06(RI)	A	16-4X	A	B	D	4-20 ± 0.5	105	0.007	B	B	20	D/T/P/E	15	700.00	Remote has volume control.		
ARCAM	Delta Black Box	A	16-4X	A	F	HL/D	20-20 ± 0.3	110	0.01	T		20	D/E	8	649.95	D/A converter.		
	Delta 70(RO)	A	16-4X	A	B	HL/D	20-20 ± 0.6	105	0.008	T		20	D/E	10	1199.95			
AUDIO CONCEPTS	MSB472(RI)	A	16-4X	B	F		2-20 ± 0.02	101	0.003	B		20	D/P/E	7	749.00	Modifications available for Philips and Magnavox units.		
AUDIO DYNAMICS	CD-1000E(RO)	A	16-1X	C	F	None	20-20 ± 0.5	96	0.005	T	D	16	D/T/E	10½	249.00			
	CD-2000E(RO)	A	16-4X	A	F	None	10-20 ± 0.5	96	0.005	T	D	16	D/T/E	8¼	399.00			
A.V.A.	FET 3(RO)	A	16-4X	A	F		5-20 ± 0.02	101	0.002	T		20	D/T/E	10	295.00			
	FET 3 Plus(RO)	A	16-4X	A	F		3-20 ± 0.02	103	0.001	T		20	D/T/E	10	495.00			
	Transcendence(RO)	A	16-4X	A	F		2-20 ± 0.01	105	0.001	T		20	D/T/E	11	895.00			
BANG & OLUFSEN	CD3300(RO)	A	16-4X	A	F	D	3-20 ± 0.3	100	0.003	T	D	20	D	10.8	775.00			
	CD5500(RO)	A	16-4X	A	F	D	3-20 ± 0.3	110	0.003	T	D	20	E	14.1	1100.00			
	CDX	A	14-4X	A	F		3-20 ± 0.3	100	0.003	B	D	20	E	13.4	775.00			
MARK BRASFIELD	MS 1(RI)	A	16-4X	A	F		20-20 ± 0.02	101	.0025	B	B	20	D/T	16	750.00	Modified Magnavox 472; modifications available on Magnavox units. \$500.00.		
	MS2(RI)	A	16-4X	A	F		20-20 ± 0.3	105	0.003	B	B	20	D/T	16	850.00	Modified Magnavox 473; Favorite Track Selection.		
	MS3(RI)	A	16-4X	A	F		2-20 ± 0.3	101	.0025	B	B	20	D/T	16	750.00	Modified Magnavox 582.		
	MS4(RI)	C	16-4X	A	F		2-20 ± 0.5	95	0.02	B	B	30	D/T	16	800.00	Modified Magnavox 586 CD changer; Favorite Track Selection.		
	Gold	A	16-4X	A	F		2-20 ± 0.3	105	0.003	B	B	20	D/T	16	2000.00	Custom modification.		
CALIFORNIA AUDIO LABS	Tempest II(RI)	A	16-4X	A	F	None	20-20 ± 0.05	103	0.01	T		20	D/E	34	2995.00	Two chassis; tube analog stage.		
	Aria(RI)	A	16-4X	A	F	None	20-20 ± 0.1	103	0.01	T		20	D/E	13	1595.00	Hybrid analog stage.		
	Terce(RI)	A	16-4X	A	F	None	20-20 ± 0.1	100	0.005	T		20	D/E	13	995.00			
CAMBRIDGE AUDIO	DAC 2		16-16X	B	V	HL									1098.00	D/A converter with two CD and two DAT inputs; inverts polarity; Class-A headphone amp.		
	CD 2(RI)	A	16-16X	B	F	D		110	.0025	T		0	T		1698.00			
	CD 2S(RI)	A	16-16X	B	F	HL		110	.0025	T		16	T		2498.00			
CARVER	CD 1 Series II		32-16X	B	F	HL		110	0.025	T		16	T		3998.00			
	DTL-200mkII(RI)	A	16-4X	A	F		5-20 ± 0.1	100	0.007	B	B	16	E	13	720.00	Digital Time Lens time-domain correction circuitry.		
CITIZEN	CBM 3000(RO)	A	16-2X	A	F	HL	20-20 + 0.5, -1.5	92	0.07	B	B	16	D/T/P/E	¾	329.00	Portable; rechargeable.		
	CBM 2000	A	16-2X	A	F	HL	20-20 + 0.5, -1.5	92	0.07	B	B	16	D/T/P/E	1	229.00	As above.		
	CBM 777	A	16-2X	A	F	HL	20-20 + 1, -3	90	0.08	B	No	0	D/T	1¼	169.00	Portable.		

# CD PLAYERS & D/A CONVERTERS



MANUFACTURER	Model (RI) = Remote Included, (RD) = Remote Optional	Loading Single Disc = A, Multi-Disc = C		Decoding System: Number of Bits		Digital Filter: Analog Plus Digital = A, Digital Only = B		Line Outputs: Fixed = F, Variable = V, Both = B		Digital Outputs: Headphone = H, Headphone with Level Control = HL, Subzone Only = S, Dual = D, Fiber Optic = F		Frequency Response: Hz to KHz = dB		S/N Ratio: A = Wtd. = dB		THD: %		Eject/Time Display: From Disc Start = D, From Track Start = B		Repeat/Time Display: From Disc Start = D, From Track Start = B		Number of Programmable Selections		Repeat Functions: Entire Disc = D, Track = T, A-B Phrase = P		Weight: Lbs.	Price: \$	Notes
		A	C	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B					
CDNRAD-JOHNSON	DF 1(RI)	A		14-4X	A	F						5-15 ± 0.25				T							D/T/E	14	1385.00			
DBX	DX5(RI)	A		16-4X	A	F	HL					20-20 ± 0.2	96	0.003	B	B							D/T/P/E	12	399.00			
DENDN	DCD-3300(RI) DCD-910(RI) DCD-810(RI) DCD-610(RI) DCM-555(RI)	A A A A C		16-4X 16-8X 16-4X 16-4X 16-4X	A A A A A	B B F F F	HL D F HL D HL H HL	2-20 2-20 2-20 2-20 4-20	106 102 100 97 98	.0025 0.004 0.004 0.005 0.004	B B B B B	B T T T T	20 20 20 20 32	T/P D/T/P D/P D/P E	31 12 8 13	1700.00 499.00 399.00 300.00 550.00	Dual D/A converters. As above.											
DIMENSIA	MCD245(RD)	A		16-1X	A	F						20-20 ± 1	95	0.005	T								D/E	6 <sup>7</sup> / <sub>8</sub>	299.00			
DISTECH	LS I MKII(RI) LS I MKIV(RI) LS I MKV(RI)	A A A		16-4X 16-4X 16-4X	A A A	B B F		0-20 ± 0.1 0-20 ± 0.1 0-20 ± 0.1	105 110 120	0.004 0.004 0.001	B B B	B B B	20 20 20	D/T/P/E D/T/P/E D/T/P/E	10 12 20	1195.00 1495.00 3500.00	External power supply. Two external power supplies.											
DUAL	CD5070(RI)	A		16-2X	A	F	HL					5-20 ± 1	94	0.006	B	B							D/T/E	10 <sup>1</sup> / <sub>2</sub>	450.00			
EMERSON	CD165 CD175R(RI) CDD200R(RI)	A A †		16 16 16	A A A	F F F		10-20 ± 1.5 10-20 ± 1.5 5-20 ± 1.5	85 85 95	0.03 0.03 0.03	T T B		15 15 32	D/P D/P D/P/E	8 <sup>1</sup> / <sub>2</sub> 8 <sup>1</sup> / <sub>2</sub> 11	299.95 349.95 399.95	†Two disc trays.											
ESDTERIC	P-1/D-1(RI)	A		18-4X	A	B	D/F					0-20 ± 0.5	100	.0015									D/T/P/E	50 <sup>1</sup> / <sub>2</sub>	5995.00	Dual D/A converters.		
EUPHONIC TECHNOLOGY	ET650PXMII(RI) ET460PXMII	A A		16-4X 16-4X	A A	F F	D D					20-20 ± 0.01 20-20 ± 0.02	110 105	0.002 0.002	T T	D D							D/T/P/E D/T/E	12 <sup>1</sup> / <sub>2</sub> 11	1295.00 950.00	Independent power supplies for analog and digital sections. As above.		
FISHER	AD-724AB(RI) AD-728VB(RI) DAC-197B(RI)	A A C		16-2X 16-2X 16-2X	A A A	F F F	HL HL HL	20-20 ± 0.5 20-20 ± 0.5 20-20 ± 0.5	90 90 90	0.07 0.07 0.07	T T T	D B D	20 20 32	D/T/P D/T/P/E D/T/E	7 <sup>1</sup> / <sub>4</sub> 8 11	299.95 349.95 399.95												
GOLDSTAR	GCD-646R(RI) GCD-626R(RI) GCD-613	A A A		16-2X 16-2X 16-2X	A A A	F F F	HL HL HL	5-20 ± 1.5 5-20 ± 1.5 5-20 ± 1.5	90 90 85	0.005 0.05 0.03	T T T		20 15 9	D/E D/E D/E	8.3 8.3 6.2	349.95 299.95 249.95												
HARMAN/KARDON	HD200 HD400(RI) HD800(RI)	A A A		16-2X 16-2X 16-4X	A A A	F F V	H H H	4-20 ± 0.8 4-20 ± 0.8 4-20 ± 0.1	103 103 110	0.03 0.03 0.01	T T T		36 36 36	D/T/P D/T/P D/T/P	8 <sup>1</sup> / <sub>2</sub> 8 <sup>1</sup> / <sub>2</sub> 8 <sup>1</sup> / <sub>2</sub>	329.00 399.00 529.00												
HITACHI	DA7000 DA8200SW(RI) DA009(RI) DA-C70SW(RI)	A A A C†		16 16-2X 16-2X 16-2X	C A A A	F F F V	None None HL HL	5-20 5-20 5-20 5-20	90 93 95 93	0.005 0.005 0.003 0.005	D B B D		24 24 24 32	D/T/P/E D/T/P/E D/T/P/E D/T/E	5 <sup>1</sup> / <sub>2</sub> 7 <sup>1</sup> / <sub>2</sub> 8 10	199.95 249.95 349.95 449.95	Random play. †Twelve-disc changer; holds two six-disc magazines.											
JVC	XLZ555BK(RI) XLZ444BK(RI) XLV222BK XLM300BK XLM600BK(RI) XLM400BK(RI)	A A A C C C		16-4X 15-4X 15-2X 16-2X 16-2X 16-2X	A A C C C C	B F F H F F	HL D F HL H H HL H	2-20 5-20 5-20 5-20 5-20 5-20	100 100 98 98 98 98	.0035 0.004 0.004 0.004 0.004 0.004	B B B B D D	D D D D D D	32 32 32 30 32 32	D/T/P/E D/T/P/E D/T/E D/T/E D/T/E D/T/E	8.8 8.8 12.8 6.8 5.8	490.00 330.00 255.00 380.00 560.00 430.00												
KENWOOD	DP-3300D(RI) DP-990SG(RI) DP-880SG(RI) DP-87(RI) DP-57(RD) DP-M107(RI) DP-M97(RI)	A A A A A A/C† C		16-4X 16-4X 16-4X 16-2X 16-2X 16-2X 16-2X	A A A A A A A	F B B F H H F	HL/D/F HL/D/F HL/D H H H H	4-20 4-20 ± 0.5 4-20 ± 0.5 20-20 ± 1 20-20 ± 1 20-20 ± 1 20-20 ± 1	105 106 100 92 92 93 90	0.003 .0015 0.003 0.007 0.007 0.009 0.02	B B B B B B B	B B B B B B B	20 20 20 20 20 32 32	D/T/P/E D/T/P/E D/T/P/E D/T/P D/P D/P D/P	25 23 <sup>3</sup> / <sub>4</sub> 13 8 <sup>1</sup> / <sub>2</sub> 8 <sup>1</sup> / <sub>2</sub> 13 12	885.00 685.00 445.00 269.00 229.00 399.00 349.00	Remote-controllable by receiver remote. †Six-disc magazine and one-disc drawer.											
KINERGETICS	KCD-20 KCD-30(RI)	A A		14-4X 16-4X	A A	V V	D D	2-20 ± 0.5 2-20 ± 0.5	100 110	0.003 0.003	T B	No No	20 226	E D/T/P/E	25 27	995.00 1495.00												
KYOCERA	DA-910(RI) DA-710CX(RI) DA-510CX(RI) DA-610CX(RI) DA-410CX(RI) DA-310CX	A A A A A A		16-4X 16-4X 16-4X 16-2X 16-2X 16-2X	A A A A A A	V F F F F F	HL HL S HL S HL HL HL	5-20 ± 0.5 5-20 ± 0.5 5-20 ± 0.5 5-20 ± 0.5 5-20 ± 0.5 5-20 ± 1.0	95 95 95 95 95 94	0.005 0.005 0.005 0.005 0.005 0.006	T T T T T T	D B B B B D	24 24 24 16 16 16	D D/T/P/E D/T/P/E D/T/E D/T/E D/T/E	21 14 <sup>1</sup> / <sub>2</sub> 4 11 <sup>1</sup> / <sub>4</sub> 11 <sup>1</sup> / <sub>4</sub> 10 <sup>1</sup> / <sub>2</sub>	1600.00 850.00 700.00 550.00 540.00 375.00												
LUXMAN	D-111(RI) D-112(RI) D-113D(RI) D-117(RI) D-109(RI)	A A A A A		16-2X 16-2X 16-4X 16-2X	A A A A	F F B B	H HL/D D/F HL D/F HL/S/D	5-20 ± 0.5 5-20 ± 0.5 5-20 ± 0.3 5-20 ± 0.3	106 95 98 100	0.06 0.007 0.004 0.003	T T T B B	D D D B B	16 16 16 16 20	D/E D/E D/E D/T/P/E D/T/P/E	9.3 9.3 9.7 11.5 27.5	350.00 500.00 550.00 1000.00 1500.00	Digital outputs only.											



# CD PLAYERS & D/A CONVERTERS

MANUFACTURER	Model (RI) - Remote Included (RD) - Remote Optional	Loading: Single Disc = A, Single Disc Magazine = B, Multi-Disc = C		Decoding System: Number of Bits		Output: Filtration: Analog Plus Digital = A, Digital Only = B, Analog Only = C		Line Outputs: Fixed = F, Variable = V, Both = B		Other Outputs: Headphone = H, Subline = S, Digital = D		Frequency Response: Hz to kHz, ±dB		S/N Ratio: "A" Wid. - dB	THD: %	Elapsed Time Display: From Disc Start = D, From Track Start = T, Both = B		Remaining Time Display: To Disc End = D, To Track End = T, Both = B		Number of Programmable Selections		Repeat Functions: Entire Disc = D, Track = T, A/B Phrase = P, Entire Program = E		Weight: Lbs.	Price: \$	Notes
		A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B			
MAGNAVDX	CDV474(RI)	A	16-4X	A								3-20 ± 0.5	97	0.003											799.00	CD videodisc combi player. Favorite Track Selection; remote has volume control. †Six-disc magazine. Optional one-disc magazine; optional six-disc magazine for 3-inch discs.
	CDB473(RI)	A	16-4X	A		HL D						2-20 ± 0.3	100	0.003											399.99	
	CDB486(RI)	C†	16-4X	A		H						2-20 ± 0.5	90	0.02				30							369.99	
	CDB482(RI) CDB480(RD)	A A	16-4X 16-4X	A A		H						2-20 2-20	90 90	0.02 0.02				20 20			D/T/E D/T/E					
MARANTZ	CDC-320(RI)	C†	16	C	F							5-20	90	0.01	B		15			D/E	11.2			369.95	†Six-disc magazine. †1600 with Favorite Track Selection. D/A converter with switchable sampling frequencies and fiber-optic inputs.	
	CD-60(RI)	A	16-2X	A	F							5-20	90	0.07	T		16			D/E	7.7			299.95		
	CD-40	A	16-2X	A	F							5-20	90	0.07	T		16			D/E	7.7			249.95		
	CD-94(RI)	A	16-4X	A	B	H/D/F						4-20	96	0.003	B	B	†			D/T/P/E	28			1800.00		
CDA-94		16-4X	A	B	H/D/F						2-20	101	0.003								25			1800.00		
McINTOSH	MCD7005(RI)	A	16-4X	A	B	HL/D						2-20 ± 0.3	96	0.003	B	D	20		D/T/P/E	20				1599.00		
MEITNER AUDIO	CD-3(RI)	A	16-4X	A	F	D						20-20 ± 0.1	96	0.1	B	D	20		D/T/P/E					2395.00	External power supply.	
MELOS AUDIO	CD-T(RI)	A	16-4X	A	F							20-20 ± 0.2	85	0.07	T		20		D/T	15				1095.00	Tube analog section; separate power supply. External analog tube section; with line preamp. Model CD-T Preamp, \$1895.00. External analog tube section.	
	CD-T II(RI)	A	16-4X	A	F							20-20 ± 0.2	90	0.07	B		20		D/T	27				1495.00		
	CD-T 8(RI)	A	18-8X	A	F							20-20 ± 0.2	90	0.07	B		20		D/T	30				2200.00		
MERIDIAN	207MKII(RD)	A	16-4X	A	B	D							90	0.004	B	B	30		D/T/E	18				1990.00	Full preamp functions.	
MICRO SEIKI	CD-M2(RI)	A	16-4X	A	F	D/F						2-20 ± 0.1	110	0.001	C	D	16		D/T/P	50				4995.00	Balanced outputs.	
MISSION	PCM 7000(RI)	A	16-4X	A	V	S						20-20	96	0.003	B	B	20		D/T/E	11				999.00		
	PCM II(RI)	A	16-4X	A	V	H/S						20-20	96	0.003	B	B	20		D/T/P/E	13				1500.00		
MITSUBISHI	M-C5100(RI)	A	18-8X	A	F	HL D/F						4-20 ± 0.5	105	0.004	T	D	20		D/T/P/E	17				600.00		
	M-C4100(RI)	C	16-2X	A	F	HL						5-20 ± 1	99	0.004	T		20		D/T/E	14				400.00		
	DP-311R(RI)	A	16-4X	A	F	H						4-20 ± 0.3	105	0.003	T	B	36		D/T/P/E	14				699.00		
	DP-212R(RI)	A	16-2X	A	F	H						4-20 ± 1	98	0.004	T	D	36		D/T/E	11				250.00		
THE MOD SQUAD	Prism(RI)	A	16-4X	A	F	HL D						1-20 ± 0.1	100	0.01	T	T	20		D/T/E	14				1300.00	Dual power supplies; d.c. coupled; servo-controlled output.	
	Focus(RI)	A	16-4X	A	F	H						20-20 ± 0.1	100	0.01	T	T	20		D/T/E	13				650.00		
MUSICAL CONCEPTS	CD4-3T(RI)	A	16-4X	A	V	HL D						5-20 ± 0.05	101	0.003	B		20		D/T/E	9				1059.00	Remote has volume control; multi-disc memory. As above.	
	CD4-3(RI)	A	16-4X	A	V	HL D						5-20 ± 0.05	101	0.003	B		20		D/T/E	7.5				889.00		
	CD4-2T(RI)	A	16-4X	A	F	H						5-20 ± 0.05	101	0.003	B		20		D/T/E	7.2				999.00		
	CD1B-1	A	16-4X	A	F	H						5-20 ± 0.05	101	0.003	B		20		D/T/E	7				549.00		
NAD	5220	A	16	C	F							5-20 ± 0.5	98	0.005	B	B	16		D/T/E	8				348.00	Remote has volume control. As above; MSB line-tuned by hand. †Six-disc magazine and one-disc drawer. As above. As above; ambience circuit.	
	5240(RI)	A	16	C	B							5-20 ± 0.5	98	0.005	B	B	16		D/T/E	8				448.00		
	5100(RI)	A	16-4X	A	B	HL						5-20 + 0.0-0.2	106	0.004	B	B	29		D/T/E	10¾				598.00		
	5170(RI)	A C†	16-4X	A	B	HL D						5-20 ± 0.3	100	0.003	B	B	32		D/T/E	13				748.00		
5300(RI)	A	16-4X	A	B	H/D						5-20 + 0.0-0.5	111	0.002	B	B	29		D/T/E	11				898.00			
NAKAMICHI	DMS-7AII(RI)	A	16-4X	A	F	HL						5-20 ± 0.5	104	.0025	B	D	24		D/E	16¼				1995.00	Remote-controllable through CA-7A preamp.	
	DMS-5AII	A	16-4X	A	F	HL						5-20 ± 0.5	104	.0025	B	D	24		D/E	16				1650.00		
	DMS-4A(RI)	A	16-2X	A	F	HL						5-20 ± 0.5	100	0.004	B	D	15		D/E	15½				995.00		
	DMS-3A(RI)	A	16-2X	A	F	HL						5-20 ± 0.5	97	0.006	B	D	15		D/E	14½				850.00		
	CDP-2A(RI)	A	16-4X	A	F	HL						5-20 + 0.5, -1	96	0.006	B	D	24		D/E	8¼				529.00		
	DMS-1A(RI)	A	16-2X	A	F	HL						5-20 + 0.5, -1	96	0.006	T	D	15		D/E	8¼				329.00		
NEC	CD-420(RI)	A	16-2X	C	F	HL						5-20 ± 0.5	90	0.007	B	B	20		D/T/P/E	9.3				299.00		
	CD-520(RI)	A	16-2X	C	F	HL						5-20 ± 0.5	96	0.005	B	B	24		D/T/P/E	9.5				359.00		
	CD-620(RI)	A	16-4X	A	F	HL						5-20 + 0.1, -0.3	105	.0025	B	B	24		D/T/P/E	10.1				479.00		
	CD-720(RI)	A	16-4X	A	B	HL						5-20 + 0.1, -0.3	105	.0025	B	B	24		D/T/P/E	12.3				579.00		
NIKKO	CD-500(RI)	A	16-2X	A	F	HL						4-20 + 0.5, -1	100	0.009	T	T	12		D/T/P	10½				499.00		
	CD-300(RI)	A	16-2X	A	F	HL						5-20 + 0.5, -1	90	0.07	T	T	16		D/T/P					299.00		

AUDIO CASSETTE.  
FIRST.

LASER OPTICAL VIDEODISC.  
FIRST.

COMPACT DISC.  
FIRST.

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AMERICA.  
AT LAST.

# PHILIPS. SECOND TO NONE.

Americans are generally more aware of our inventions than they are of our name.

Yet those "Firsts"—from the ubiquitous audio cassette to the flawless sound of the compact disc player—are just a few of the breakthroughs Philips is known for.

Philips of the Netherlands is one of the leading electronics companies in the world. With our vast research and development facilities, we have long had a commitment to leadership in consumer electronics that few, if any, can match.

Now Philips is here. Not Philips technology under someone else's name. But the real thing from Philips.

As a preview to our full line of electronics, we've selected four of our most exciting audio products: the CD960 Compact Disc Player; FR980 Audio/Video Receiver; FA960 Integrated Amplifier; and the DAC960 Digital-to-Analogue Converter.

In the next few pages you'll be reading about the equipment that set the standards for audio technology around the world.

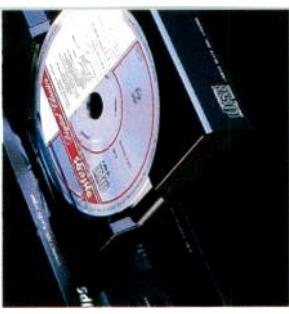
And now it's here in America. At last.

For more information, and for your nearest Philips dealer, call 1-800-223-7772.

WORLD-CLASS TECHNOLOGY. EUROPEAN EXCELLENCE.



**PHILIPS**



- PHILIPS 16-BIT 4X OVERSAMPLING
- SPECIALLY SELECTED PHILIPS D/A CONVERTER AND DIGITAL FILTER
- CDM-1: CAST ALUMINUM PROFESSIONAL DISC DRIVE
- NON-RESONANT DIE-CAST CHASSIS
- 4 SEPARATE POWER SUPPLIES
- HIGHLY REFINED CLOSE TOLERANCE ANALOG ELECTRONICS



# PHILIPS

PHILIPS CD960  
Compact Disc Player





# PHILIPS

World-Class technology,  
European Excellence

Philips, the most respected name in European audio and video, brings that world-class, state-of-the-art technology and design to America in the new Philips CD960 compact disc player. The CD960 is truly Philips' Reference Standard CD player. It's a serious audio-ophile component of outstanding mechanical construction with excellent analog and digital engineering. The 960 reflects an understated, yet elegant design which will complement the finest ancillary electronics. It's designed as a *total system*, by engineers who have the "inside" depth of knowledge that comes only from Philips, "The Creators of Compact Disc."

Superior Digital-to-Analogue Conversion. The 960 features a select high-resolution version of Philips' acclaimed TDA1541 dual 16-bit D/A converter chip. The chip is created for Philips Reference Standard CD players by a special selection process, producing a chip with superior low-level

linearity and improved signal-to-noise. Close tolerance high-grade polystyrene capacitors are used with the D/A converter to insure the most accurate conversion. It delivers the maximum information available from the 16 bit CD format.

The Philips T541 is known for its unique chip architecture featuring "Diode-Transistor Bit Switching," requiring no sonically degrading "de-gitcher" circuits common in other "high-end" players. This Philips breakthrough design places separate left and right channel converters on a single chip for maximum channel separation (105 dB+), excellent phase linearity ( $\pm 0.2^\circ$ ) and accurate clock sync over the life of the chip.

Superior Digital Filtering. The 960's select D/A converter is mated to a Philips 4X oversampling digital filter, also specially selected for superior performance. Philips pioneered 4X oversampling and has included it in its players since the birth of CD; our knowledge of digital filters is unequalled in the industry. Philips digital filtering provides

extremely effective elimination of unwanted ultrasonic noise generated in digital circuits by pushing the digital clock frequencies further from the audio band (from 44.1 Khz to 176.4 Khz). The select Philips 7220 dual digital filter used in the 960 is a new design yielding improvements in distortion, dynamic range and signal-to-noise, with a dramatic improvement in low-level linearity.

Superior Analogue Electronics. The Philips digital filter and D/A converter include "response compensation" which allows the use of a "gentle" third-order "Bessel" analogue filter. This is known to provide less phase shift, better transient response and a flatter frequency response than typical "steep" analogue filters used in other designs. The quality of the analogue filter is a key to sonic excellence. As you'd expect, the analogue filter in the 960 uses only audiophile-grade components such as "Elna Cerafine" ceramic powder capacitors.

Four separate power supplies are used. Each is optimized to a specific function and designed for

maximum isolation between the analog, digital, servo and display sections. Circuit board design is computer optimized for superior analogue/digital isolation with strategically selected grounding points enhanced by copper plated screws for improved grounding and lower noise.

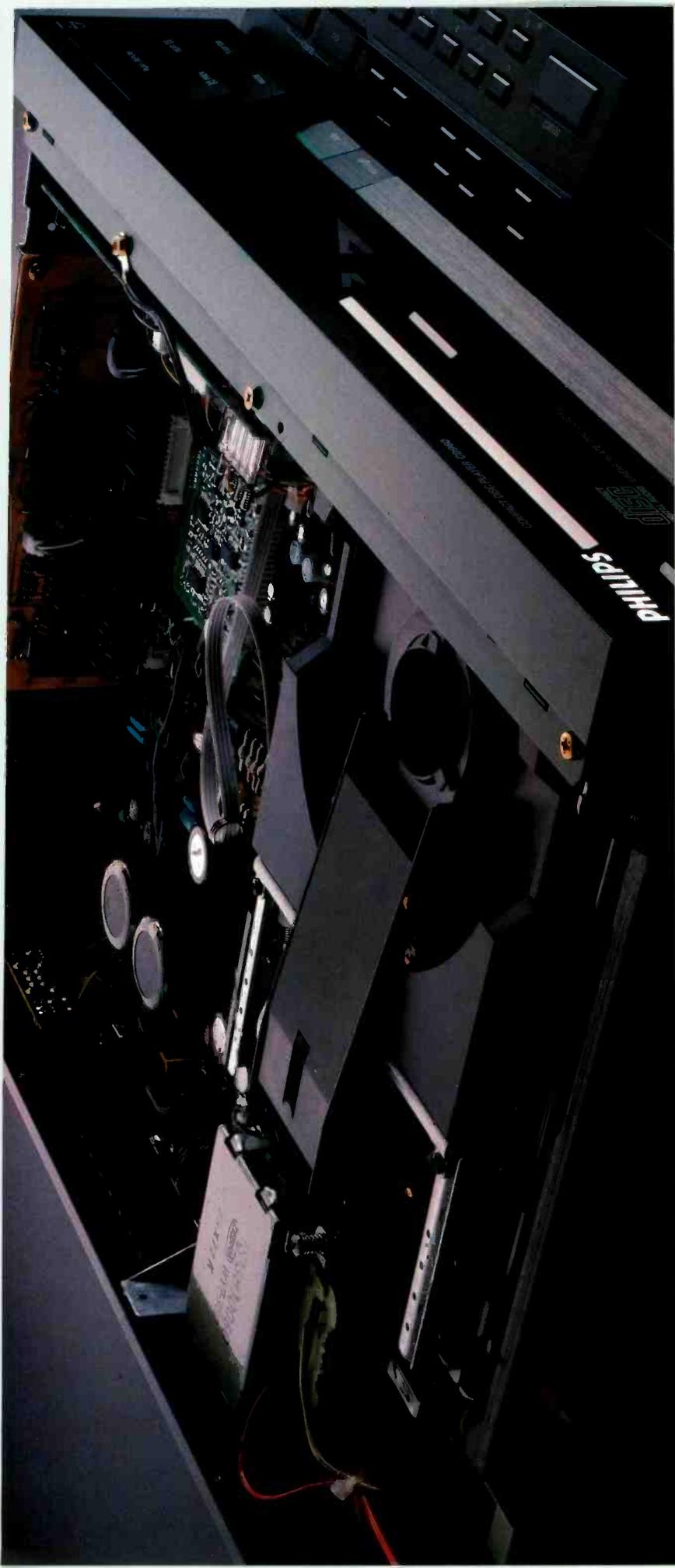
Philips Single-Beam Laser Assembly. A Philips single-beam laser assembly is used which provides lightning quick access and superior disc trackability due to the lower inherent mass of the radial arm system.

Maximum-Strategy Error Correction. This exclusive Philips single-chip decoder uses "Adaptive Error Correction" which has 60 strategies of error correction to correct up to 15 frames of information. Large burst errors up to 8 digital samples long, are concealed by Philips "8 Sample Interpolation."

But perhaps the most important feature of all is the Philips name itself. World-class technology...European excellence...now available in America.



The disc drive is a Philips CDM-1 die-cast aluminum drive used in Philips pro-players.



**Excellent Mechanical Construction.** The CD90's mechanical construction not only makes a long-lasting product, but offers performance benefits as well. The chassis is a 4.4 pound die-cast structure that is non-resonant, non-magnetic and provides a solid foundation to mount all key components.

The disc drive is a Philips CDM-1 die-cast aluminum drive used in Philips pro-players. This non-resonant design is mounted on massive tuned rubber

dampers, with the result being reduced playback errors and lower distortion.

The disc tray is a heavy-duty all-metal design with magnetic clamping for better rotational stability. Two motors are used, one for the tray movement and one for disc positioning. Finally, details such as the acoustically damped top cover and the chimney style heat sink make any remaining resonances insignificant.



## CD 960 FEATURES INCLUDE:

- Dual, 16 bit D/A converter with 4x oversampling
- Favorite Track Selection (FTS), exclusive CD programming system
- Die-Cast Aluminum nonmagnetic main- and sub-chassis
- Fast track access averaging just 1 second
- Copy Pause automatically inserts 4-second intervals for cassette recordings
- New all-integrated digital electronics with single beam pickup
- Touch-to-close 2 motor front loading drawer with anti-jamming protection
- 10 key pad selection of tracks, indexes or times
- Direct key random access programming of up to 20 tracks
- Infrared full function remote control
- High quality headphone amplifier with volume control
- Player status display shows full information about player conditions at all times
- Play/Repeat, Pause, Previous and Next keys for easy access to favorite tracks
- Search Forward and Reverse keys with 3-speed search keys
- Repeat key to repeat the entire disc or specific portion
- Scan key to play the beginning of each track on the disc
- Maximum strategy decoding and error correction
- Optical coupler for digital out as well as electrical digital out

- Large capacity ceramic powder capacitors for top audio performance
- Four separate power supplies drive digital, servo, display and analog circuits
- Dedicated servo module with 2 high precision servos integrated to higher degrees than ever
- Copper heat sinks for best heat conduction
- Extensive acoustic damping throughout

## CD 960 SPECIFICATIONS

- Playback System : Compact Disc Digital Audio
- Typical Audio Performance (20-20,000Hz unless stated otherwise)
  - Frequency Range : 2 Hz-20,000 Hz
  - Amplitude Linearity :  $\pm 0.1$  dB
  - Phase Linearity :  $\pm 2^\circ$
  - Signal-to-Noise Ratio :  $> 105$  dB
  - Dynamic Range :  $> 96$  dB
  - Channel Separation :  $> 105$  dB
  - THD (Total Harmonic Distortion incl. noise) :  $> 0.0015\%$  (1kHz)
  - Intermodulation :  $-90$ dB (at max. output level)
  - Outband rejection (24.1 kHz) :  $> 60$ dB
  - Wow and Flutter : Unmeasurable
- Optical Readout System
  - Laser Type : Semiconductor Al Ga As
  - Numerical Aperture : .456
  - Wave Length : 780 nm

- Connections
  - Line Out : 2x RCA, gold plated
  - Maximum Output Level (at MSB) : 2 v RMS, typical
  - Min. load impedance : 10K ohms
  - Digital Out : 1x RCA, gold plated
  - Max. Output Level : .5v p-p
  - Load Impedance : 75 ohms
  - Optical Output : 1x Toslink
  - Remote Control : RC-5 system
  - Headphone : 8-2,000 ohms
- Headphone Amplifier Performance (20-20,000 Hz unless stated otherwise)
  - Analog Output (L/R) : max. 5.6 v RMS  $\pm 0.5$ dB (continuous variable)
  - Output Impedance : 150 ohms
  - Load Impedance Range : 8-2K ohms
  - Output Power : 35 mW at 32 ohms  
30 mW at 600 ohms
  - Frequency Range : 20-20,000 Hz  $\pm 1$  dB
  - Channel Unbalance :  $\pm .5$  dB
  - Signal-to-Noise Ratio :  $> 93$  dB
  - Dynamic Range :  $> 90$  dB
  - THD (Total Harmonic Distortion incl. noise) :  $< .003\%$  at 600 ohms
  - Intermodulation :  $< .003\%$  at 600 ohms
  - Channel Separation :  $> 75$  dB
- Voltage : 120 v AC
- Power Consumption : 30 W Approx.
- Cabinet/General
  - Material/Finish : Metal/aluminum/polystyrene lacquered
  - Dimensions (HxWxD) : 4.0 x 16.8 x 15.3
  - Weight : 21.1 lbs.

- BUILT-IN DOLBY® SURROUND DECODING AND AMPLIFICATION
- HIGH CURRENT/LOW IMPEDANCE DRIVE CAPABILITY FTC RATED 125/15 WATTS AT 8 OHMS
- 7 BAND GRAPHIC EQUALIZER WITH ACOUSTIC MEMORY
- MOTORIZED MAIN VOLUME CONTROL
- 50-KEY UNIVERSAL REMOTE CAN CONTROL 10 SOURCES AND LEARN CODES FROM OTHER REMOTES
- "RECORD OUT" SWITCH-PARALLEL RECORDING
- VIDEO SPLIT SCREEN WITH VIDEO ENHANCEMENT SWITCH



# PHILIPS

PHILIPS FR 980  
Audio/Video Receiver



- Built-in Dolby Surround decoding and amplification for true home theater enjoyment. There's no more thrilling home entertainment experience than watching a Hollywood hit that's encoded with Dolby Surround. The powerful FR 980 can decode those signals and has a built-in amplifier to drive the rear-channel speakers (15 watts, FTC rated). The media room truly becomes a personal movie theater. Philips engineers have also added their own improvement to the FR 980's equalization circuits to enhance the Dolby Surround to create Music and Movie modes. This state-of-the-art receiver also has surround mode and ambience control switches to vary tonal quality depending on source material to add more depth and reality as well as individual spatial, matrix, stereo and mono functions. The FR 980 is a true A/V centerpiece for the demanding consumer who wants top quality audio performance to complement the latest video breakthroughs.

- High current/low impedance drive capability. This powerful receiver can effectively drive the most complex 8 and 4 ohm speakers at 125 watts (FTC) and 200 watts (DIN) respectively. More importantly, the FR 980 can deliver the extra power required for those demanding musical passages that only last an instant yet highlight the difference between merely good audio equipment and the best. Philips engineers have developed a superior receiver that offers the cleanest sound under the most demanding conditions.
- 7 band graphic equalizer with acoustic memory customizes sound for individual rooms. Graphic equalizers can exactly tailor the output of your components to the acoustic conditions of your listening room. Philips' 7 band graphic equalizer uses push-button electronic controls for precision adjustments. The FR 980 has acoustic memory that features 4 factory programmed graphic EQ curves as well as offering the user 5 adjustable memory presets.

- Motorized main volume control for precise adjustments. The motor-driven volume potentiometer of the FR 980 offers superior signal-to-noise ratios at all volume levels. Because of the wide dynamic range of digital technology, exact volume control adjustment is more critical than ever. Philips engineers have incorporated the technology of professional sound equipment into this full-functioned receiver.

- 50-key universal remote can control 10 sources and learn codes from other remotes. Only Philips technology can offer a remote like the one supplied with the FR 980. Of the 50 keys available, 37 are programmable while 5 master keys offer an additional 50 commands. The remote can balance the surround sound system from the listening position. As a "smart" remote, it can learn the commands of remotes from other manufacturers' components. A large, clear LCD readout keeps the user completely informed regarding all conditions. Ten sources can be handled by this smart remote including amp, CD, Tape, TV, tuner, DAI, CDA, VCR 1 and VCR 2 plus Teletext decoder. Philips state-of-the-art technology at its best.

- "Record Out" switch allows for parallel recording from 4 sources. This versatile feature allows the consumer to make recordings from any of 4 inputs (Tuner, phono, CD, CDA) while listening to any source. This convenience, found on only the best audiophile components, effectively doubles the uses for the FR 980.

- Video split screen with video enhancement switch to sharpen image. Since the FR 980 was designed with optimum video quality as one of its mandates, the latest enhancement circuits have been built in. With the Video Split Screen, the viewer can watch the video source and determine exactly what the video enhancement has done to the image.

### FR 980 FEATURES INCLUDE:

- Powerful A/V receiver for the demanding audio- and videophile
- Built-in Dolby Surround decoding and amplification
- Front channels rated 125 watts, 15 watts rear channels (FTC rated)
- Dynamic Power of 180 watts 8 ohms, 290 watts 4 ohms, 200 watts 2 ohms (front)
- Surround mode switch featuring matrix, spatial, stereo, mono as well as Dolby Surround
- 7 band graphic equalizer with acoustic memory to customize settings for individual room environments
- 50-key universal audio/video remote with LCD display
- Motor driven rotary volume control for front and rear channels
- Digitally synthesized AM/FM tuner with 19 presets
- Video split screen incorporating video noise reduction to sharpen image
- Record Selector allows for parallel recording from any source
- Bright, clear display of all major functions
- 2 Phono settings available (MM/MC)
- VCR and Tape Copy buttons for easier dubbing
- Scanning function for AM/FM tuner
- Ambience control switch for Jazz, Rock, Movie and Orchestra modes
- Full complement of 9 audio inputs, 4 audio outputs, 4 video inputs and 3 video outputs plus 4 AC outlets
- AM and FM antennas supplied
- Headphone outlet on front for easy monitoring of sound sources
- Normal Cable antenna selector
- FM noise reduction
- Display illumination level control
- Pre-out Main-in connections
- Dolby Surround calibration control

### FR 980 SPECIFICATIONS

#### Amplifier

- Power Output (both channels simultaneously driven)
  - at 8 ohms : 125 watts Front channel
  - (40-20,000 Hz, D = .5%) : 15 watts Rear channel
- Output Power (FTC Rated)
  - at 4 ohms 200 watts/channel

### Dynamic Power Ratings

- at 8 ohms : 180 watts
- at 4 ohms : 290 watts
- at 2 ohms : 380 watts

### Signal-to-Noise Ratio

- Phono : 75 dB
- Linear : 93 dB

### Tuner/FM Section

- Signal-to-Noise Ratio (Mono Stereo) : 83.75 dB

### THD (Total Harmonic Distortion)

- : 1% / .2%
- : 13.5 dB / 1.3  $\mu$ V
- : 50 dB
- Stereo Separation (1 kHz) : 75 dB
- Image Rejection (98 mHz) : 87.5-108 mHz

### Tuner/AM Section

- : 50 dB
- Signal-to-Noise Ratio
- THD (Total Harmonic Distortion) 1 kHz, 30% mod.) : 5%
- Sensitivity : 20  $\mu$ V
- Frequency Range : 520-1610 kHz

### Dolby Surround Section

- Signal-to-Noise Ratio : (90 dB)
- Delay Time : 20 mV
- Input Sensitivity : 150 mV / 25K ohms

### Video Section

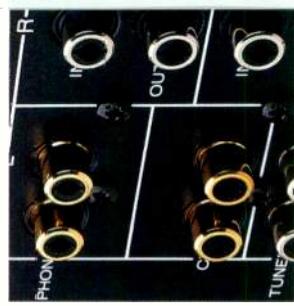
- Input Sensitivity : 1 v p-p 75 ohms
- Output Level : 1 v p-p 75 ohms

### Equalizer Section

- Frequencies : 64, 150, 300, 1K, 2.5K, 6.3K, 15K
- Equalizer Level : + or - 12 dB
- Voltage : 120 v AC

### Cabinet/General

- Cabinet Material : Metal
- Dimensions (WxHxD) : 16.8 x 5.8 x 15.2 inches
- Weight : 35 pounds



- HIGH CURRENT/LOW IMPEDANCE DRIVE
- CAPABILITY...FTC RATED 100 WATTS AT 8 OHMS, 125 WATTS AT 4 OHMS
- SEPARATE POWER SUPPLIES/HEAT SINKS ...FOR MAXIMUM CHANNEL SEPARATION
- PRECISION 4 SECTION VOLUME CONTROL...FOR OPTIMUM SIGNAL-TO-NOISE RATIOS AT ALL LEVELS
- "CD DIRECT" FUNCTION FOR PRISTINE DIGITAL SOUND
- "RECORD SELECTOR" ALLOWS FOR PARALLEL RECORDING



# PHILIPS

**PHILIPS FA 960**  
Integrated Amplifier





# PHILIPS

## World-Class technology, European Excellence

Philips, the most respected name in European reference standard audio components brings European state-of-the-art technology and design to America in the new Philips FA 960 Integrated Amplifier.

This is Philips most powerful integrated amplifier and it can efficiently drive the most complex 8 and 4 ohm speakers at 100 watts and 125 watts respectively (FTC rated). More importantly, the FA 960 can deliver the extra power required for those demanding musical crescendos that only last an instant yet show the difference between good audio equipment and the best. (Dynamic Power ratings are 120 watts/8 ohms, 180 watts/4 ohms, 250 watts/2 ohms.) Philips engineers, by improving drive capability of the power stages and overload recovery time, have developed an amplifier that offers the cleanest sound under the most demanding conditions.

The FA 960 has separate power supplies for pre amp and amplifier sections as well as for left and right power amp sections. By incorporating separate rectifiers and extra large storage capacitors for each channel output stage, dynamic crosstalk is effectively suppressed. Also by eliminating the thermal coupling between the left and right power transistors, one output stage is not heated up by the other and total heat can be effectively dispersed. Both of these factors add up to the maximum separation required for accurate compact disc reproduction.

By using a 4 section potentiometer (2 sections per channel), the FA 960 offers the best signal-to-noise ratios at all volume levels. Because of the wide dynamic range of the compact disc, volume control circuits are extremely important and Philips engineers have incorporated the technology of professional sound equipment into this powerful integrated amplifier. Crosstalk has been noticeably reduced compared to conventional controls.

Through gold-plated inputs on the FA 960, it is possible to hear the pristine sound of compact disc technology in all its glory. By using CD Direct, the signal travels directly to the pre-amp which is set to a flat response. Balance, volume and loudness are the only operative controls and no other circuitry gets in the way of the digital input. And with CD Direct, the FA 960 achieves a signal-to-noise ratio of 106 dB. This top-of-the-line integrated amplifier also features inputs for additional components that will please the most demanding audiophile.

The Record Selector versatile feature allows the user to make recordings from any of six inputs (CD, Phono, TX, Aux 1 and Video/Aux 2) while listening to any source. This convenience, found only on the best audiophile components, effectively doubles the number of uses for the FA 960.

But perhaps the most important feature of all is the Philips name itself. World-class technology... European excellence... now available in America.

### FA 960 FEATURES INCLUDE:

- High Current, Low Impedance Drive capability
- FTC rated at 100 watts (8 ohms), 125 watts (4 ohms)
- Dynamic Power ratings of 120 watts/8 ohms, 225 watts/4 ohms, 250 watts/2 ohms
- Separate power supplies and heat sinks for each channel
- CD Direct function and 6 other inputs
- Record Selector for parallel recording
- Tone Defeat key to bypass bass and treble controls
- Gold plated terminals for CD Direct and Phono inputs
- High accuracy phono amplifier for either MC or MM cartridges
- Equalization curve to IEC standard, better than RIAA
- Active tone control
- Parallel, selectable loudspeaker outputs for each channel
- Muting/protection circuit/guards amps and speakers from overload
- Large screw-down speaker terminals accept large diameter cables
- Source and tape selected display. Compact disc (logo) lights on CD Direct
- All metal cabinet for full shielding
- Headphone output on front of cabinet
- Gold plated speaker relays
- Loudness and mono switches
- Tape Monitor keys monitor signal recorded on Tape 1 and Tape 2
- Tape copy keys ease dubbing from 2 tape (or cassette) decks
- Precision slide balance control
- Bipolar push-pull output stages

### FA 960 SPECIFICATIONS

Power output (both channels simultaneously driven)

- (20-20,000 Hz; D ≤ 0.03% 100 watts at 4 ohms
- (20-20,000 Hz; D ≤ 0.05% 125 watts at 8 ohms

Dynamic Power Ratings

- at 8 ohms 120 watts
- at 4 ohms 225 watts
- at 2 ohms 250 watts

Distortion

- THD (Total Harmonic Distortion) .008% at 100 watts at 8 ohms (1 kHz)

- Intermodulation .03% at 100 watts at 8 ohms
- Power Bandwidth (D ≤ .03%) 10-30,000 Hz at -3dB

### Frequency Response

- Line Inputs 18-20,000 Hz, ± 1.0 dB
- Phono Input 40-20,000 Hz, ± .5 dB

### Signal-to-Noise Ratio

- Line Inputs (CD Direct) 106 dB
- Phono Input 85 dB (MM Phono)
- 75 dB (MC Phono)
- 75 dB at 1 kHz
- 60 dB at 250-10,000 Hz
- 150mV for MM Phono
- 20 mV for MC Phono

### Stereo Separation (CD Direct)

- 180
- Phono Overload 150mV for MM Phono
- (at 1kHz; D = 1.0%) 20 mV for MC Phono
- Damping factor 180

### Controls

- Bass +10 to -10 at 100 Hz
- Treble +10 to -10 dB at 10 kHz
- Loudness +6 at 100 Hz, +4 dB at 10 kHz
- Balance Control 0-50 dB

### Inputs (with sensitivity for rated output)

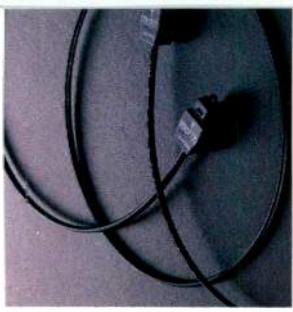
- Phono MC .25 mV at 100 ohms
- Phono MM 2.5 mV at 47K ohms
- Compact Disc 150 mV at 25K ohms
- Tuner 150 mV at 25K ohms
- TV/Aux 1 150 mV at 25K ohms
- Video/Aux 2 150 mV at 25K ohms
- Tape 1 150 mV at 25K ohms
- Tape 2 150 mV at 25K ohms

### Outputs

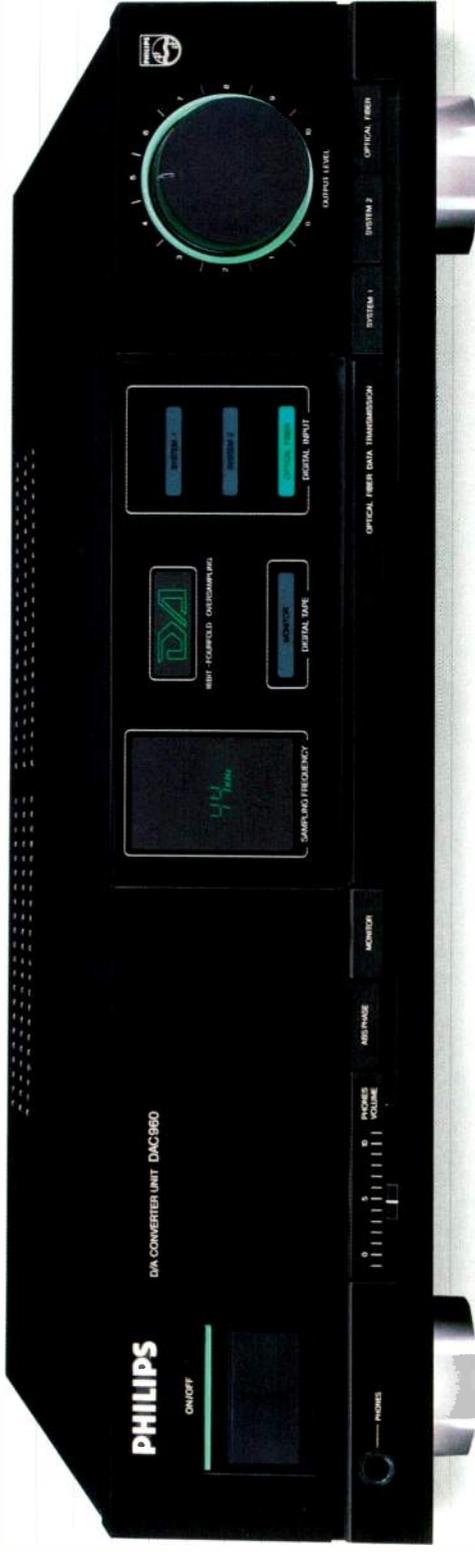
- Tape 1 and 2 150 mV at 220 ohms
- Speakers 1 and 2 2-4-8 ohms
- Headphone 8-1,000 ohms
- Power Supply 120 volts AC
- Power Consumption 360W

### Cabinet/General

- Material Metal
- Dimensions (WxHxD) 16 1/2" x 5 1/4" x 13 3/4"



- **ULTRA HIGH FIDELITY, DUAL 16-BIT D/A CONVERTERS FOR SUPERB DIGITAL SOUND**
- **3 SEPARATE POWER SUPPLIES WITH 3 INDIVIDUAL TRANSFORMERS**
- **DAT READY. AUTOMATICALLY HANDLES 3 (32, 44.1 AND 48 KHZ) SAMPLING FREQUENCIES**
- **OPTICAL DIGITAL INPUT FOR PUREST, NOISE-FREE DIGITAL SOUND**
- **BALANCED, DIRECT AND VARIABLE OUTPUTS IMPROVE DETAIL FOR TOP PERFORMANCE**



# PHILIPS

**PHILIPS DAC 960**  
**Digital-to-Analog**  
**Converter**





- Ultra high fidelity, dual 16-bit D/A converters. Philips engineers have aimed for the ultimate in digital conversion and have achieved it with the DAC 960. By using their reference standard dual, 16-bit chip plus opto-coupling between the digital filter and converter, the DAC 960 achieves almost pristine signal clarity. Three opto-couplers link the specially selected digital filter to the D/A converter for absolutely noise-free digital signal transfer. Precision engineered 3rd order analog filters provide meticulous final grooming for the output signal. Signal-to-noise ratio has been improved to >101 dB along with complete suppression of passband ripple. The DAC 960 can be used to upgrade an older CD player to the finest Philips quality, expanding a system needing more inputs, or as an audiophile quality digital pre amplifier. More than a digital-to-analog converter, this is a reference standard DAC for the truly discerning consumer.
- Three separate power supplies with 3 individual transformers. Philips has taken state-of-the-art technology from the sound studio and incorporated it into the DAC 960. Three completely separate power supplies, each with its own magnetically screened transformer, drive the digital input/output circuitry, the D/A converter and the analog circuits. Each system is isolated, eliminating any interference or crosstalk between circuits. In addition, the analog circuits, which are sensitive to power supply changes, use a very efficient, heavy duty toroidal transformer. Maximum separation is ensured for the very best digital reproduction.
- DAT Ready. Automatically handles three sampling frequencies. Whether it's from a compact disc or digital audio tape, the DAC 960 features an automatic sampling frequency autolock for either 32, 44.1 or 48 kHz. No matter which source is used, the DAC 960 automatically locks onto the proper sampling frequency for absolute accuracy. No need for manual adjustment and the frequency used is clearly displayed on the front of the unit. The signal then travels to reference standard dual, 16-bit DAC with 4x oversampling, guaranteeing the finest digital sound.
- Optical digital input for purest, noise-free digital sound. Along with optocoupling between the digital filter and converter chip, the DAC 960 features a Direct Optical input. The supplied fiber optic cable is compatible with Philips CD players and most other digital optical sources. For those who demand the best, the DAC 960's optical digital input provides a truly pure signal with no possibility of interference from electromagnetic or electrostatic sources. A pure, noise-free digital signal is routed to the converter input, analog filters and pre amplifier. The Direct Optical Input allows the consumer to be ready for the next generation of digital peripherals including CD-I and CD-ROM.
- Balanced, direct and variable outputs for top performance. Philips brings even more technology from the sound studio into the DAC 960 by using the same output transformers found on Philips professional CD players for the balanced outputs. The unit's direct output eliminates all possible noise at the analog amplifier input. The variable output makes it possible to set the exact level required at the power amp, enabling the DAC 960 to act as a futuristic pre-amp for the digital audio systems of the 1990s.

### DAC 960 FEATURES INCLUDE:

- Ultra high fidelity D/A converters optically coupled to Philips state of the art digital filters
- 3 Separate power supplies with 3 individual transformers
- DAT Ready. (Handles 3 multisampling frequencies) from any digital source (CD, DAT)
- Optical digital input, with supplied fiber optic cable
- 2 electronic digital gold-plated inputs also available
- Absolute phase inverter control ensure proper imaging with any source
- Balanced, direct and variable outputs with 2-stage muting
- Output transformers are those used in Philips professional CD players
- Direct outputs eliminate all possible noise at analog amplifier input
- Variable Output allows exact setting at power amplifier enabling DAC 960 to act as audiophile pre-amp
- Heavy duty, die cast chassis weighing over 4 pounds
- Solid, shock absorbing feet to eliminate vibration and resonance
- All components selected for their audiophile characteristics
- Copper Heat sinks ensure proper heat conduction
- Large capacity ceramic powder capacitors for top audio performance
- High quality headphone amplifier with volume control

### DAC 960 SPECIFICATIONS

- Typical Audio Performance (20-20,000 Hz unless stated otherwise)
  - Frequency Range, fixed and variable : 2-20,000 Hz
  - Frequency Range, balanced : 20-20,000 Hz
  - Amplitude Linearity :  $\pm 0.1$  dB
  - Phase Linearity :  $\pm 2^\circ$
  - Signal-to-Noise Ratio : >101 dB
  - Dynamic Range : >96 dB
  - Channel Separation : >100 dB (1 kHz)
  - THD (Total Harmonic Distortion incl. noise) : <.0015% (1 kHz)
  - Intermodulation : -90 dB (at max. output level)
- Ultrasonic Noise Reduction (>24.1 kHz) : >60 dB

### Inputs

- System 1, 1 x RCA : 5 v p-p, 75 ohms
- System 2, 1 x RCA : 5 v p-p, 75 ohms
- Optical System, 1 x Tos-Link
- Monitor In, 1 x RCA : 5 v p-p, 75 ohms

### Outputs

- Fixed, 2 x RCA : 2 v RMS at 100 ohms
- Load Impedance : >10K ohms
- Variable, 2 x RCA : 4 v RMS at 100 ohms
- Load Impedance : >10K ohms
- Balanced Output, 2 x XLR : 2 v RMS at 100 ohms
- Load Impedance (Balanced) : 600 ohms
- Load Impedance (Unbalanced) : 600-50K ohms
- Headphone : 8-1,000 ohms
- Monitor Out, 1 x RCA : 5 v p-p, 75 ohms
- Headphone Amplifier Performance (20-20,000 Hz unless stated otherwise)
  - Output Impedance : 220 ohms
  - Load Impedance : 8-1K ohms
  - Output Power : 30 mW at 32 ohms
  - 50 mW at 600 ohms
  - Frequency Range : 20-20,000 Hz  $\pm 1$  dB
  - Channel Balance :  $\pm .5$  dB
  - Signal-to-Noise Ratio : >93 dB
  - Dynamic Range : >90 dB
  - THD (Total Harmonic Distortion incl. noise at 600 ohms) : <.003%
  - Intermodulation at 600 ohms : <.003%
  - Channel Separation at 600 ohms : 75 dB
- Power Supply : 120 v AC
- Voltage : 35 W
- Power Consumption : 35 W
- Cabinet/General : Metal/semi-matte black lacquered
- Material/Finish : 16.8 x 3.44 x 13.28 inches
- Dimensions (WxHxD) : 18.7 pounds
- Weight : 18.7 pounds



# the *Soundcraftsmen* STORY

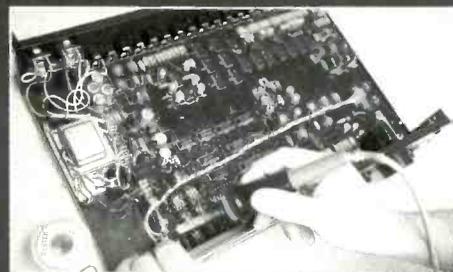


## SECTION OF PRODUCTION AREA IN MAIN PLANT



One hundred percent quality control is seen on EVERY unit manufactured. EVERY completed unit is electronically tested for specification accuracy and then EVERY unit is connected to a high fidelity system and listened to—just like you would at home. If your unit meets or exceeds the critical standards set forth on these tests, it is then packaged for shipment.

## INDIVIDUAL CERTIFICATE OF PERFORMANCE WITH EVERY AMPLIFIER



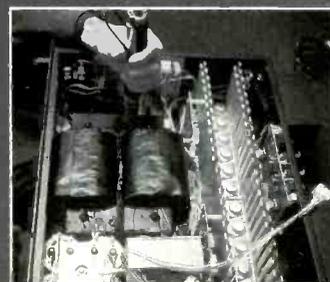
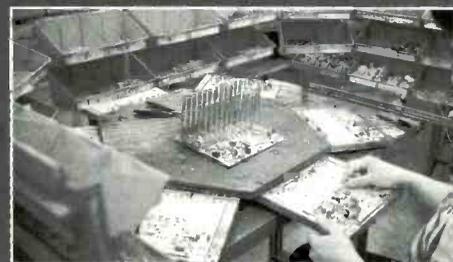
Soundcraftsmen celebrates its 20th year of manufacturing audio components for the discriminating audiophile.

Soundcraftsmen engineers are highly respected in audio design circles as being very forward thinking, yet practical, when engineering new products, by using proven design principles from the past with tomorrow's technology.



From the finest equalizers, the most accurate analyzers, to the unique preamps, to the revolutionary Class H and Power MOSFET amplifiers, you cannot purchase finer audio components.

The next few pages will answer many of your questions. If you have more, our customer service department will be pleased to assist you by telephone or letter. We invite your questions and appreciate your interest.



Soundcraftsmen

# Pro-CD750

Soundcraftsmen's new Compact Disc player provides not only the superb sound reproduction to be expected from a high quality Compact Disc player, but also all of the most-wanted features. We have, in addition, engineered and designed it to conform to the extremely high standards required by Professional users and Commercial installers, where not only the finest quality musical performance, but also full-sized rugged construction with anti-resonant metal chassis and full-floating transport are of primary importance.

We have also designed this new Compact Disc player to be "user-friendly," with selectable and controllable functions that are designed for practical application and simplicity of operation. Our engineering department's development and design of our exclusive **Differential/Companer** circuitry, plus the enhancement provided by our **Spectral Gradient** circuitry, are perfectly suited and are specifically designed for optimum performance from virtually any type or quality of recorded materials. The CD750 features a Professional rack-mount front panel with optional hardwood side panels.

Our **Differential/Companer** is newly developed circuitry designed and made in the U.S.A. by Soundcraftsmen to provide the utmost flexibility for the Compact Disc format...high Dynamic Range for serious listening pleasure...or optional closely-focused dynamic range for casual listening, for recording cassettes for playback on limited-capability systems such as car stereos, portable stereos, etc....In fact, especially with Classical selections, you will find that the **Differential/Companer** is indispensable for background music.

The **Spectral Gradient** is extremely subtle in its operation. This variable circuit enhances the listenability of CD's with

hard or harsh high frequency characteristics, an unusual phenomenon that has been attributed to several different causes, such as imperfect mastering or deficiencies in recording acoustics. The **Spectral Gradient** circuit was designed specifically to soften that harshness without affecting the overall sonic reproduction of the musical passages and is by-passed when not needed.

**SPECIFICATIONS—CD750: FREQUENCY RESPONSE: 5Hz–20kHz, ±1dB...DYNAMIC RANGE: 95dB (IHF-A)...S/N RATIO: 99dB (IHF-A)...HARMONIC DISTORTION: 0.005%, 1kHz...SEPARATION: 86dB...WOW & FLUTTER: Not measurable...OUTPUT VOLTAGE: 2 volts...SAMPLING FREQUENCY: 88.2kHz...QUANTIZATION NUMBER: 16 bit linear...POWER CONSUMPTION: 12 watts...SIZE: 19" x 3½" x 12"...WEIGHT: 16 lbs.**

## Pro-Tuner Four

The new Soundcraftsmen tuner's advanced technology incorporates sophisticated Frequency Synthesized Tuning with a highly stable Quartz Crystal Oscillator that locks onto the broadcast signal and makes station selections precise and drift-free. A Microcomputer Memory System, coupled with Automatic Scanning, provides incredibly simple pre-programming and station selection. Scan to the desired station, then simply push "Memory" and push any station recall button. Your favorite FM and AM stations can be easily pre-set through the Microcomputer System for 16-station

(8-AM, 8-FM) memory programming. Super AM Broad Band Selector expands the normal AM frequency range to provide a "super-broad" frequency response. Program Maintenance Circuitry to hold preset stations in memory. Automatic Scanning: Scans forward or reverse to stop at next usable station. "Scan Manual": Scans forward or reverse to next station frequency. In the Scan Manual mode the tuner will stop at even or odd megahertz to facilitate cable reception. Signal-strength liquid crystal metering indicators. "Stereo" indicator shows usable stereo station signal. "AM" and "FM" mode LED indicators. "Mono" mode selector. "Auto Mute" for inter-station noise-free tuning. 5-digit read-out in 50kHz steps, for possible future U.S. station spacing requirements and worldwide operations. Phase-Locked Loop automatic optimum-tuning circuitry. Digital Quartz PLL Synthesizer circuitry. Deemphasis convertible from 75 to 50 micro seconds for worldwide use. 300 ohm/75 ohm antenna connectors. Professional rack-mount front panel...optional hardwood side panels.

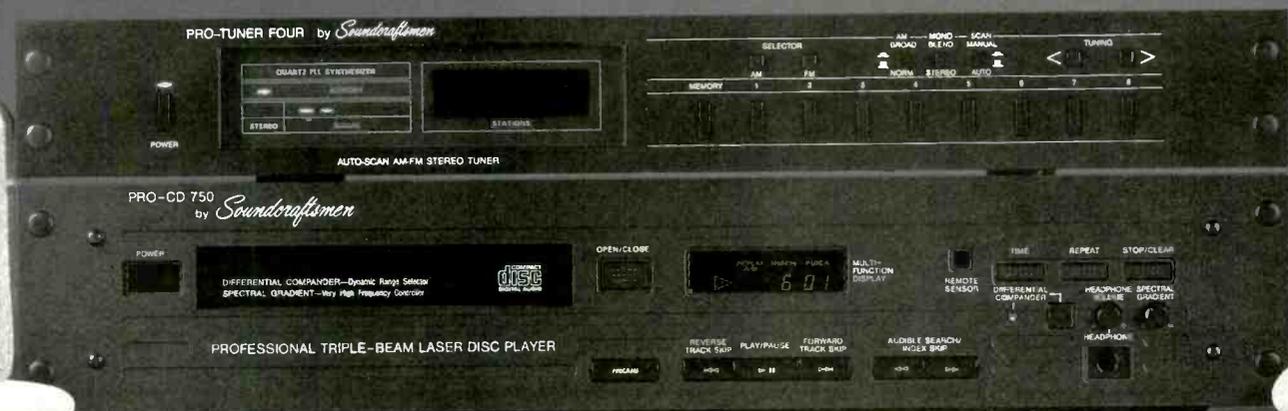
### SPECIFICATIONS PRO-TUNER FOUR: FM SECTION:

FM SENSITIVITY: 9.8dBf usable 1.7 microvolt IHF...QUIETING: 36dBf for 50dB stereo. 12dBf for 50dB mono... SIGNAL TO NOISE: 75dB stereo (IHF)...THD: 0.08%...IF REJECTION: 90dB...IMAGE REJECTION: 86dB... CAPTURE RATIO: 1.0dB...STEREO SEPARATION: 50dB...FREQUENCY RESPONSE: +0.5dB, -1.5dB, 25Hz–15kHz.

### AM SECTION:

USABLE SENSITIVITY: 25 microvolts... SELECTIVITY: 40dB...ANTENNA: Adjustable ferrite loop... 19"Wx2¼"Hx12"D...10 pounds.

Enter No. 30 on Reader Service Card





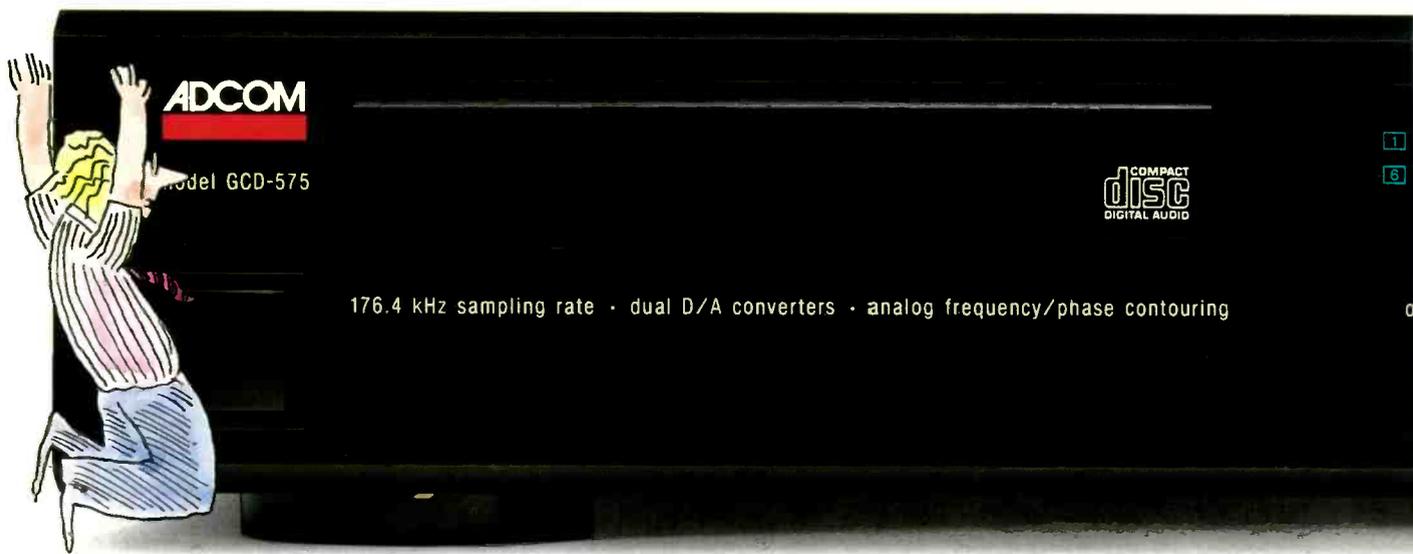
# CD PLAYERS & D/A CONVERTERS

MANUFACTURER	Model (RI) = Remote Included, (RO) = Remote Optional	Loading: Single Disc = A, Single-Disc Magazine = B, Multi-Disc = C	Decoding System: Number of Bits	Digital Filtration: Analog Plus Digital = A, Digital Only = B, Analog Only = C	Line Outputs: Fixed = F, Variable = V, Both = B	Other Outputs: Headphone = H, Headphone with Level Control = HL, Subwoofer Only = S, Digital = D, Fiber Optic = F	Frequency Response, Hz to kHz, ±dB	S/N Ratio, ... Wtd. ... dB	THD, %	Engaged Tone Display: Top Disc = 0, From Track Start = 1, Last = 2, Remaining Time Display: To Disc End = 0, To Track End = 1, Last = 2	Number of Programmable Selections	Repeat Functions: Entire Disc = D, Track = T, A/B Phrase = P, Entire Program = E	Weight, Lbs.	Price, \$	Notes	
																A
SCOTT	DA952 DA963(RI) DA1000(RI) DA990(RI)	A A C A	16-1X 16-1X 16-1X 16-2X	A A A A	F F F F	HL HL	4-20 ± 0.5	96	0.03 0.03 0.03 0.01	T T T T	T T T T	15 15 30 30	D/T/P D/T/P D/T/P D/T/P	10.8 11 13 11	199.95 299.95 349.95 399.95	
SHARP	DX-650 DX-660 DX-750(RI) DX-780(RI) DX-C5000	A A A A C†	16-2X 16-2X 16-2X 16-2X 16-2X	C C C C A	F F F F F		5-20 5-20 5-20 5-20 5-20	90 90 90 90 90	0.05 0.05 0.05 0.05 0.05	B B B B B	B B B B B	20 20 20 20 32	T T T T D/T	7.3 7.3 9.7 7.7 14.3	209.95 229.95 289.95 289.95 399.95	†Six-disc changer. Memory backup.
SONOGRAPHE	SD-1Beta (RO)	A	14-4X	A	F	H	5-15 ± 0.25						D/T/E	8½	795.00	
SONY	CDP-370(RI)	A	16-4X	A	F	HL	2-20 ± 1	100	0.05	T	B	20	D/T/E	7¾	225.00	Dual D/A converters; shuffle play.
	CDP-570(RI)	A	16-4X	A	F	HL	2-20 ± 1	100	0.05	T	B	20	D/T/P/E	7¾	240.00	
	CDP-750(RI)	A	16-4X	A	F	HL	2-20 ± 0.3	102	0.003	T	B	20	D/T/P/E	10	370.00	
	CDP-950(RI)	A	16-4X	A	B	HL	2-20 ± 0.3	104	0.003	T	B	20	D/T/P/E	12½	450.00	Custom File. †Five-disc carousel/ changer.
	CDP-C20	C†	16-2X	A	F	HL	2-20 +1,-2	100	0.05	T	B	32	D/T/E	12¾	320.00	
	COP-C30(RI)	C	16-2X	A	F	HL	2-20 +1,-2	100	0.05	T	B	32	D/T/E	12¾	350.00	
	CDP-C50(RI)	C	16-4X	A	F	HL	2-20 ± 0.5	100	0.05	T	B	32	D/T/E	12¾	380.00	Custom File. †Ten-disc magazine compatible with Sony car DiscJockey. ††19 selections per disc for 900 discs.
	CDP-C70(RI)	C	16-4X	A	B	HL	2-20 ± 0.3	100	0.05	T	B	32	D/T/E	12¾	450.00	
	CDP-C100(RI)	C†	16-4X	A	B	HL	2-20 ± 0.3	102	0.003	T	B	††	D/T/E	14½	620.00	
	MDP-200(RI)	A	16-4X	A	F	HL/S/O	5-20 ± 0.5	100	0.003	B	B	16	D/T	22¾	950.00	CD/CO-V/videdisc combi player. Portable.
	D-4(RO)	A	16-2X	A	B	HL	20-20 ± 0.5	85	0.008	T	O	16	D/T/P/E	1½	260.00	As above; includes AM/FM tuner.
	O-T4(RO)	A	16-2X	A	B	HL	20-20 ± 0.5	85	0.008	T	D	16	D/T/P/E	1½	320.00	As above; includes AM/FM tuner.
D-15(RO)	A	16-2X	A	B	HL	20-20 ± 0.5	85	0.008	T	D	22	D/T/P/E	1	360.00	Portable.	
D-T10(RO)	A	16-2X	A	B	HL	20-20 ± 0.5	85	0.008	T	D	21	D/T/P/E	1¼	460.00	As above; includes AM/FM tuner with station presets.	
D-88(RO)	A	16-2X	A	B	HL	20-20 ± 0.5	85	0.008					¾	360.00	For car or home use.	
D-160(RO)	A	16-2X	A	B	HL	20-20 ± 0.5	85	0.008					1¼	260.00		
SONY ES	CDP-207ESD(RI)	A	16-4X	A	F	HL/D	2-20 ± 0.3	102	0.003	T	B	20	D/T/P/E	10½	370.00	
	CDP-307ESD(RI)	A	16-4X	A	B	HL/D	2-20 ± 0.3	104	0.003	T	B	20	D/T/P/E	12½	475.00	
	CDP-507ESD(RI)	A	18-8X	A	B	HL/D/F	2-20 ± 0.3	110	.0025	T	B	20	D/T/P/E	15¼	600.00	Custom File. Four staggered D/A converters.
	CDP-707ESD(RI)	A	18-8X	A	B	HL/D/F	2-20 ± 0.3	115	.0015	T	B	20	D/T/P/E	40	1800.00	
	CDP-R1(RI)	A	18-8X	A	B	HL/D/F	2-20 ± 0.3	115	.0015	T	B	20	D/T/P/E	37½	8000.00	Includes D/A converter below.
	OAS-R1(RI)		18-8X	A			10-20 + 0.5	110	0.003					37½		D/A converter included with above model; twin optical link †Five-disc carousel/ changer.
	CDP-C7ESD(RI)	C†	16-4X	A	B	HL/O	2-20 ± 1	100	0.05	T	B	32	D/T/E	12¾	480.00	†Ten-disc magazine compatible with Sony car DiscJockey. ††19 selections per disc for 900 discs.
	CDP-C15ESD(RI)	C†	18-8X	A	B	HL/D/F	2-20 ± 0.3	115	.0015	T	B	††	D/T/E	14¾	800.00	
SOUND-CRAFTSMEN	CD750(RI)	A		A	F	HL	5-20 ± 0.5	100	0.005	T		15	D/T/P/E	16	599.00	Includes compander.
SOUND ENGINEERING	PFM-1(RO)	A	16-4X	A	F	O	0-20 + 0,-2	104	0.003	T		20	D/T/E	16	1100.00	With remote, Model PFM-1R, \$1250.00.
SPECTRAL	SDR-1000(RO)	A	16-4X	A†	B		5-20 ± 0.1	106	0.003	B	B			42	5995.00	†Selectable. Combination CD player/ preamp; dual D/A converters.
STAX	CDP Quattro II(RI)	A	18-8X	B	B	HL	0-20 ± 0.1	118	.0015	B	B	20	D/T/P/E	23	3499.00	Includes separate power supplies.
SYLVANIA	CD1480(RO) CD1470	A A	16-4X 16-4X	A A			2-20 ± 0.5 2-20 ± 0.3	85 90	0.02 0.003			20 20			220.00 220.00	
SYMPHONIC	CD 3000(RI)	C†	16-1X	C			20-20 ± 1	90	0.008	T		32	D/T	11	399.00	†Six-disc magazine.
TANDBERG	TCP-3015A(RO)	A	16-4X	A	F	HL	20-20 ± 0.3	96	0.005	B	B	20	D/T/P/E	12½	2500.00	No negative feedback.
TEAC	PD-155	A	16-2X	A	F		5-20 ± 1	92	0.005			15	D/T/E	7¾	229.95	
	PD-160	A	16-2X	A			5-20	92	0.005			15	D/T/E	8¾	249.95	
	PD-425(RI)	A	16-2X		F	H	5-20 ± 1	92	0.005			15	D/T/E	8¾	279.95	
	PD-430(RI)	A	16-2X		F	H	5-20 ± 1	92	0.005			15	D/T/E	8¾	289.95	
	PD-470(RI)	A	16-4X		F	H/O	2-20 ± 0.5	95	0.005	T	B	20	D/T/E	8¾	399.95	
	PD-500M(RI) ZD-880(RI)	C C	16-2X 16-2X	A A	F F	H/O	20-20 ± 1 0-20	90 96	0.01 0.003	T T	B B	32 32	D/T/E D/T/P/E	11½ 15¾	399.95 685.00	

All good things come to those who wait.



# Finally. A that reproduces not just bits a



**A**dcom's new GCD-575 Compact Disc Player has been worth waiting for. Now there's a CD player with analog audio circuits as technically advanced as its digital stages.

Since the human ear can only appreciate musical sounds in their analog format, Adcom began with the objective of producing the first affordable CD player whose direct-coupled audio output would deliver the long anticipated technical benefits of digital sound.

#### Class "A" Makes A Difference

Designers and engineers usually use Class "A" audio circuits where price is no object. In its purest form, Class "A" offers a highly sophisticated level of audio amplification, often demanded by those who can distinguish outstanding sonic performance from the merely average. Adcom's GCD-575 employs a no-compromise, Class "A" analog audio amplifier section which provides superior resolution by more clearly defining low-level information.

# CD player all of the music, and bytes of it.



This higher resolution makes an audibly dramatic difference in the musicality of CD reproduction. To achieve this result, the analog audio circuits in the GCD-575 were based on the same proprietary high speed linear amplifiers used in Adcom's GFP-555 preamplifier, universally recognized for its outstanding musical integrity.

No other CD player at any price uses these superb audio components.

## Digital Sound At Its Best

Adcom's selectable analog frequency/phase contour circuit enhances the musicality of CD's which have been poorly mixed, or digitally over equalized. Subtly contoured by the AFPC, many of these CDs become more listenable, with much of the fatiguing harshness and "glare" reduced. In addition, the stereo image and sound stage becomes more focused allowing for a more natural sonic presentation.

*(Over please)*

# The Adcom GCD-575

## Details You Can Hear

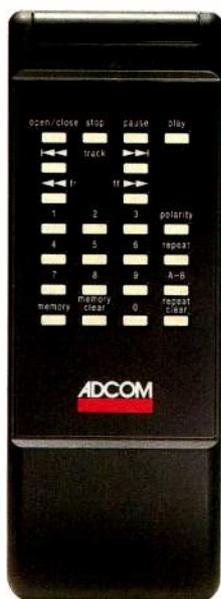
Importantly, Adcom's CD player is designed with a low output impedance (100 Ohms) so that it can operate up to its maximum capability with a wide variety of associated equipment. It is not only compatible with virtually all input stages of amplifiers, preamplifiers, tuner/preamplifiers, etc., but also permits the use of longer interconnecting audio cables, when required, with minimal signal deterioration.

Additionally the GCD-575 is supplied with a high quality, low-loss audio cable to prevent the sonic smear that conventional audio cables tend to cause. The use of this special cable and the 100 Ohm output impedance permits the GCD-575 to be used with Adcom's SLC-505 passive straight line controller. If no other source equipment will be used, the variable output (front panel controlled) can be used directly into your power amplifier, bypassing the preamplifier circuits normally required by other CD players.

A multi-winding power transformer, connected to three separate tightly regulated power supplies for the audio, digital and display circuitry, insures isolation of the different functions and optimal operation of each without interference.

The four special heavy feet installed on the GCD-575 are reversible metal castings. On one side, the flat surface insures a wide contact area. The reverse side is cast with built-in "Iso-points" which, when used in a three-foot configuration, operates as a "tripod" support system.

A special polarity-inverting switch permits you to reverse the normal positive polarity to negative (inverted) polarity. This corrects playback of CDs in which the polarity was incorrectly recorded (inverted), or for use in systems in which one of the components causes a reversal of correct polarity.



Full Function Remote Control

## Specifications

**Frequency Response:** 5Hz - 20kHz,  
+0.1, -0.5dB

**Signal-to-noise Ratio:** 105dB

**Dynamic Range:** 98dB

**THD:** 0.0025%

**IMD (70Hz difference):** @ 5kHz  
0.00018%

**Channel Separation (1kHz):** 95dB

**Interchannel Phase Shift:**  
@ 20kHz Less than 1.8°

**Output Impedance:** Fixed 100Ω/  
Variable 100Ω/Digital 75Ω

**Output Level:** Fixed 2.5V RMS  
Variable Greater Than 4.5V RMS  
Digital 0.5V peak-to-peak

**Sampling Rate:** 176.4kHz

**Quantized Bits:** 16-bit linear

**Power:** 120VAC/60Hz  
(Available in 220/240V, 50Hz)

**Dimensions:** 17" (430mm)W ×  
11-1/4" (285mm)D ×  
3-7/16" (87mm)H

**Weight:** 12 lbs. (5.5 kg.)

**Optional:** Model RM-3 rack mount  
adaptors. Available with white front  
panel.

*Specifications subject to change  
without notice.*

## More Features For Better Value

Other features include a full function remote-control system with random access track capability; low group-delay digital and analog filters; triple-beam laser format; a direct digital output; playback of 3-inch discs without an adaptor; and a very-high-quality headphone output.

The GCD-575's advanced facilities include:

- Programming of up to 24 tracks
- Programming of any phrase
- Audible fast forward and reverse
- Adjustable introscan
- Auto space

Display functions include:

- Elapsed time on track or disc
- Time remaining on track or disc
- Programmed tracks
- Track being played
- Number of tracks up to 20

## Why Should You Listen To Us?

Over the years, Adcom has earned a reputation for delivering superb performance at a modest price. The GCD-575 keeps faith with this tradition.

Once again, Adcom clears an innovative path through the jungle of confusing claims about "digital" sound, and provides a logical and direct path to musical purity.

If you've been waiting for a CD player which faithfully reproduces all of the music, not just bits and bytes of it, you'll want to visit your nearest authorized Adcom dealer right now... because while it may be true that all good things come to those who wait, you've waited long enough for a CD player this good.

**ADCOM**<sup>®</sup>  
fine stereo components

11 Elkins Road, East Brunswick, NJ 08816  
U.S.A. (201) 390-1130

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Pointe Claire, Quebec H9R 4X5

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Enter No. 4 on Reader Service Card

# CD PLAYERS & D/A CONVERTERS



MANUFACTURER	Model (RI) = Remote Included, (RO) = Remote Optional		Loading: Single Disc = A, Single Disc Magazine = B, Multi Disc = C		Disc/Single System: Number of Bits = A, Oversampling Rate = B		Output Filterings: Analog Plus Digital = A, Digital Only = B, Analog Only = C		Line Outputs: Fixed = F, Variable = V, Both = B		Other Outputs: Headphones = H, Headphones with Left Control = HL, Successor Disc = S, Digital = D, Fiber Optic = F		Frequency Response: Hz to kHz, = dB		S/N Ratio: "A" = dB		THD: %		Elapsed Time: Display From Disc Start = D, From Tracks Start = T, Both = B		Remaining Time Display: To Disc End = D, To Track End = T, Both = B		Number of Programmable Selections		Repeat Functions: Entire Disc = D, Track = T, A-B Phrase = P, Entire Program = E		Weight, Lbs.		Price, \$		Notes								
	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B									
TECHNICS	SL-P1300(RI)	A	18-8X	A	F	HL D/F	2-20 ± 0.2	112	0.003	B	B	20	D/T/P/E	35	2000.00															Balanced outputs; wired remote; pitch control; search dial; rocker switch; audible pause.									
	SL-P1200(RI)	A	16-2X	A	F	HL S	4-20 ± 0.1	106	.0025	B	B	20	D/T/P/E	32	1775.00															For pro use; balanced outputs; auto cueing; search dial; rocker switch.									
	SL-P990(RI)	A	18-4X	A	F	HL D/F	2-20 ± 0.2	113	.0025	B	B	32	D/T/P/E	17.9	900.00															Four D/A converters; auto cueing; search dial; audible pause. As above.									
	SL-P770(RI)	A	18-4X	A	F	HL/D/F	2-20 ± 0.3	112	0.003	B	B	32	D/T/P/E	14.3	680.00																								
	SL-P550(RI)	A	18-4X	A	F	HL/D	2-20 ± 0.3	105	0.004	B	B	32	D/T/P/E	10.6	520.00																								
	SL-P350(RI)	A	18-4X	A	F	HL/D	2-20 ± 0.3	103	0.005	B	B	32	D/T/P/E	8.1	420.00																								
	SL-P250(RI)	A	16-4X	A	F	HL	2-20 ± 0.5	96	0.006	B	B	20	D/T/E	6.8	370.00																								
	SL-P230(RI)	A	16-4X	A	F	HL	2-20 ± 0.5	96	0.006	B	B	20	D/T/E	6.8	340.00																								
	SL-P200	A	16-4X	A	F	HL	2-20 ± 0.5	96	0.006	B	B	20	D/T/E	6.8	300.00																								
	SL-P150	A	16-4X	A	F	HL	2-20 ± 0.5	96	0.006	B	B	20	D/T/E	6.8	290.00																								
SL-P600C(RI)	C†	16-2X	A	F	HL/S	5-20	96	0.006	B	B	36	D-E	12.8	550.00																	†Six-disc magazine. As above.								
SL-P400C(RI)	C†	16-4X	A	F	HL	2-20 ± 0.5	96	0.006	B	B	32	D/E	12.8	500.00																									
SL-XP5	C†	16-2X	A	F	HL	4-20 ± 0.5	90	0.006	B	B	18	D/T/E	1.1	460.00																									
SL-XP6	A	18-4X	A	F	HL	4-20 ± 0.5	94	0.006	B	B	20	D/T/E	1	349.00																									
SL-P300C	C†	16-4X	A	F	HL	4-20 ± 0.5	96	0.006	B	B	36	D/T/E	1	299.00																									
THETA DIGITAL	Data(RD)	A				D							D/P/E	12	795.00																				CD reader; digital output only.				
	DS Pre		16-8X	A	B	D	0-20 +0,-0.1	104	0.002					28	3995.00																				Preamp with D/A conversion; see "Preamplifiers."				
	DS Pro		16-8X	A	F		0-20 +0,-0.1	104	0.002					26	2995.00																					D/A converter.			
TOSHIBA	XR-9018	A	16-2X	A	F	HL	5-20 ± 0.5	97	0.004	T	D	16	D/T/E	7	300.00																								
	XR-9028(RI)	A	16-2X	A	F	HL	5-20 ± 0.5	97	0.004	T	D	16	D/T/E	7	340.00																								
	XR-9037(RI)	A	16-2X	A	B	HL	5-20 ± 0.5	98	0.003	T	B	20	D/T/P/E	9.7	470.00																								
	XR-9057(RI)	A/C†	16-2X	A	B	HL	5-20 ± 0.5	98	0.003	T	B	32	D/T/P/E	13.1	495.00																								
	XR-9058(RI)	A/C†	16-2X	A	B	HL	5-20 ± 0.5	98	0.003	T	B	32	D/T/P/E	13.1	510.00																								
	XR-9437	A	15-2X	C	F	HL	5-20 +0.5,-1.5	84	0.01	T	D	16	D/T/E	1.8	400.00																								
XR-9458(RI)	A	16-2X	A	F	HL	5-20 +0.5,-1.5	84	0.01	T	D	16	D/T/E	1	450.00																									
VECTRA RESEARCH	VCD-400(RI)	A	16-2X	A	F	HL	20-20 ± 0.75	95	0.05	T	T	15	D/T/E	8½	259.95																								
	VCD-900(RI)	A	16-2X	A	B	HL	5-20 ± 0.5	100	.0005	T	T	15	D/P/E	15	399.95																								
	VCD-500C(RI)	C	16-2X	A	F	H	20-20 ± 0.75	96	0.01	B	B	32	D/T/E	11¼	449.95																								
	VCD-600R(RI)	C	16-2X	A	F	H	20-20 ± 0.5	96	0.009	B	B	32	D/T/E	13	449.95																								
	VCD-650CX(RI)	C	16-2X	A	F	H	20-20 ± 0.5	96	0.009	B	B	32	D/T/E	13	599.95																								
VTL	Series 500(RI)	A	14-4X	A	V	H							D/T/P/E	10	1190.00																								
WADIA DIGITAL	2000 Decoding Computer		18-64X	†	F		†	†	†					32	6500.00																								
W.E.S.T.	The Granite(RI)	A	16-2X	A	F	HL	5-20 ± 0.5	90	0.004	B	B	24	D/T/P/E	44	2795.00																								
YAMAHA	CDX-10000(RI)	A	18-4X	A	V	H/D	0-20 ± 0.3	115	0.002	B	B	24	D/T/P/E	56	3000.00																								
	CDX-5000(RI)	A	18-4X	A	V	H/D	2-20 ± 0.3	115	0.002	B	B	24	D/T/P/E	46¼	2200.00																								
	CDX-1110U(RI)	A	18-8X	†	V	H/D/F	2-20 ± 0.3	118	0.002	B	B	24	D/T/P/E	31¼	1199.00																								
	CDX-910U(RI)	A	18-8X	†	V	H/D/F	2-20 ± 0.3	118	0.003	B	B	24	D/T/P/E	16½	699.00																								
	CDX-810U(RI)	A	16-8X	†	F	HL/D	2-20 ± 0.3	106	0.003	B	B	24	D/T/P/E	12	549.00																								
	CDX-510U(RI)	A	16-4X	A	F	HL	2-20 ± 0.3	100	0.008	B	B	24	D/T/E	10½	329.00																								
	CDX-410U	A	16-2X	A	F	H	2-20 ± 0.3	100	0.008	B	B	24	D/T/E	10½	279.00																								
	CDX-610U(RI)	A	16-4X	A	F	HL	5-20 ± 0.5	100	0.008	B	B	36	D/T/E	15½	599.00																								
	CDV-S100	A	16-2X	A	F	H	5-20 +0.5,-1	97	0.004	B	B	15	D/T/P/E	11	499.00																								
	CDV-1000	A	16-2X	A	F	H	5-20 ± 0.5	100	0.003	B	B	15	D/T/P/E	17½	799.00																								

# The Brains.

*Carver's new CT-Seven Remote Control  
Preamplifier/Tuner with Asymmetrical  
Charge Coupled FM Detection and  
Sonic Holography.<sup>®</sup>*

# The Brawn.

*Your choice of four high power advanced  
Magnetic Field amplifier designs.*



*Powerful*

Distributed in Canada by: **evolution technology**

Power and finesse. They've always been important factors in a serious listening system. Now there's a new way to achieve both without overpowering your budget.

Our new CT-Seven preamplifier/tuner combines a Sonic Holography® preamplifier and Asymmetrical Charge-Coupled FM Detection tuner into one convenient component.

It makes beautiful music with our whole line of Magnetic Field Power amplifiers. Including the new M-4.0t with the same transfer function and power output as Bob Carver's \$17,500-pr. ultra-esoteric Silver Seven monoblock amplifiers.

**The CT-Seven as an audiophile preamplifier:** Like Carver's fine separate preamplifiers, the CT-Seven is designed as a "straight wire with gain," capable of perfectly passing input signals without adding or subtracting any musical nuances.

It includes a meticulously engineered, ultra-low noise phono stage that flawlessly duplicates the theoretical RIAA equalization curve.

**The CT-Seven as a complete sound control center:** From the comfort of your listening chair you can choose from six sound sources including dual tape monitors, CD input and video/auxiliary inputs (suitable for video sound or DAT). Unlike most remote volume adjustments which use distortion-inducing electronics, the CT-Seven employs a motorized volume control for smooth control and smoother sound quality. Also included are useful 3-band tone controls, mono switch, loudness equalization and a studio-quality headphone amplifier.



**The CT-Seven as your passport to musical reality:** The CT's Sonic Holography® Generator is capable of redefining your perception of music by recreating the sound stage and 3-dimensional spatial characteristics of a live performance. According to some of America's top reviewers, Sonic Holography® "... seems to open a curtain and reveal a deployment of musical forces extending behind, between and beyond the speakers. The effect strains credibility."

And you can create it from any stereo record, tape CD or even FM broadcast. With your existing speakers. At the touch of a remote button.

**The CT-Seven as a high performance quartz synthesized FM tuner:** You've simply never heard FM until you've heard it through the Carver Asymmetrical Charge-Coupled FM Detector circuit. Multipath distortion, interference and distant station noise are dramatically reduced. Weak stations emerge into dramatic clarity. Yet stereo separation, space, depth, and ambience were not only retained, but seemingly enhanced by the lack of background noise.

Choose 8 FM and 8 AM presets by remote control. Scan the broadcast band automatically or manually. With the CT-Seven's ACCD circuit on, you'll discover "new" stations which were previously unlistenable!

**The CT-Seven's power partners:** Only Carver gives you four high power amplifier choices from 140 watts to 375 watts per channel. Each is perfectly matched to the CT-Seven. And each uses Carver's cool-running Magnetic Field Technology which dispenses with bulky power supplies and power-wasting external heat sinks... yet which is so rugged it's used in the world's largest touring professional sound systems.

Choose from the new "modestly-powered" M-0.5t (140 watts per channel RMS 20-20kHz both channels driven into 8 ohms with less than 0.1% THD), the M-1.0t (200 watts/ch. per channel RMS 20-20kHz both channels driven into 8 ohms with less than 0.15% THD), M-500t (250 watts per channel RMS 20-20kHz both channels driven into 8 ohms with less than 0.15% THD), or the new M-4.0t (375 watts per channel RMS 20-20kHz both channels driven into 8 ohms with less than 0.5% THD).

**Hear brains and brawn together at your Carver dealer.** Switch the CT-Seven and the most expensive tuner in the room to hear Asymmetrical Charge-Coupled FM Detection work its magic. Put on your favorite CD, press the CT-Seven's Sonic Holography® remote button and feel the sound room "disappear." Turn up the volume to live performance levels and discover the impact of true dynamic headroom.

And then get ready for another pleasant experience when you discover what a super value the CT-Seven and Carver power amplifiers are.

# CARVER

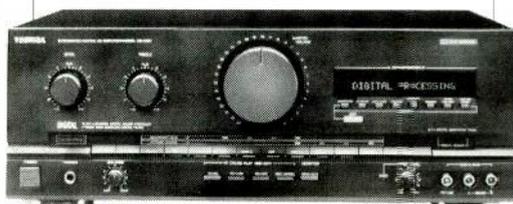
# AMPLIFIERS



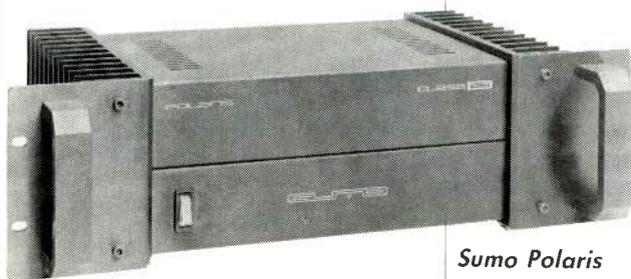
Classic Audio CA260



Threshold SA/1



Toshiba XB-1000



Sumo Polaris



Forté Audio 3

MANUFACTURER	Model	Type	Remote Inclusion		Rated THD, %	Balanced Inputs?	Rated Slow Rate, V/μS	High-Level Sensitivity, mV		Does Unit Invert Polarity?	Cont. Avg. Watts/Channel into 8 Ohms	Cont. Avg. Watts/Channel into 4 Ohms	Rated Power Bandwidth, Hz to kHz	Class of Output Operation		Dynamic Headroom, dB		MM Phono S/N, -dB, "A" Wtd. re: 5 mV	MM Phono Sensitivity, mV	Moving Coil Input?	Weight, Lbs.	Price, \$	Notes
			(RI) = Remote Included, (RD) = remote Optional	Type Integrated = I, Base = B, Hybrid = H, Mono = M				Yes	No					250	420	20-20	AB						
ACCUHASE	M-1000	B/M	0.01	Yes			No	†	††	20-20	AB								121	6000.00	†1000 watts, ††1800 watts. Digital output meters. Output meters. As above.		
	P-500	B	0.02	Yes			No	250	420	20-20	AB								88	6000.00			
	P-300V	B	0.01	Yes			No	180	280	20-20	AB								29.3	4250.00			
	P-102	B	0.02	Yes			No	50	80	20-20	A								26.5	3250.00			
	E-305	I	0.02	Yes	113		No	130	180	20-20	AB									53.9	3750.00		
	E-302	I	0.02	No	113		No	120	180	20-20	AB									44.2	2750.00		
E-205	I	0.02	No			No	80	110	20-20	AB									38.8	1700.00			
ACOUSTIC ELECTRONICS	Photon 3000	B	0.002	No	85	1.3V	No	120	210	20-20	A/AB	3	2						45	2995.00	Light driven.		
	Photon 6000	B/M	0.002	No	170	1.3V	No	350	500	20-20	A/AB	3	2						45	2995.00	As above.		
ADCOM	GFA-555	B	0.09	No			No	200	325		AB	2.3	†						34	749.95	†Less than 1 ohm. Bridgeable; distortion indicators.		
	GFA-545	B	0.09	No			No	100	150		AB	2.6	†						27	499.95	Distortion indicators.		
	GFA-535	B	0.09	No			No	60	100		AB	3.0	†					22	299.95	Switching for two pairs of speakers.			
A/D/S/	PA4(RD)	B	0.02		70	91	No	150	150	20-20	A/B	1.3							22	1200.00	Bridgeable; switching for two pairs of speakers; remote control of power and speaker switching.		
	A2	I	0.05		30	35	Var.	80	100	20-20	A/B	2.0							21	699.00			
AKAI	AM-32-B	I	0.005	No	150	No	50	70	20-20	AB				82	2	160	Yes	24.7	349.00				
	AM-52-B	I	0.005	No	150	No	70	70	20-20	AB				84	2	160	Yes	25.1	399.00				
	AM-73-B	I	0.008	No	150	No	100	100	20-20	AB				85	2.5	200	No	37.4	799.00				
	AM-93-B	I	0.008	No	150	No	120	120	20-20	AB				85	2.5	200	Yes	44.1	1099.00				



## Mastery. Reliability. Convenience.

*A new hybrid from Audio Research leads the way in amplifier technology.*

### The Hybrid Lineage

Audio Research has been a leader in developing innovative hybrid audio circuits combining the linearity and harmonic accuracy of vacuum tubes with the low noise and long service life of field-effect transistors.

You'll hear that lineage in the D125's ability to produce musical dynamics with palpable authority, and low-level information with a transparency and lack of grain that mimics reality. Given a first-class program source, the D125 brings to the soundstage a three-dimensionality and precision unique in this price range.

### Unparalleled Convenience and Reliability

The D125 was also designed to provide day-to-day reliability and convenience.

Sophisticated protection circuitry assures that potentially damaging input signals won't stress the eight 6550 output tubes.

Routine maintenance couldn't be easier. Tube balancing is controlled automatically, while Plate Current Controls allow the owner to keep performance optimized as tubes age. Even when output tubes are replaced, the D125 won't need to be returned to the dealer for rebiasing.



The D125 Stereo Amplifier

By occasionally checking the Low Current Monitor LEDs on the back of the main circuit board, the owner can determine whether individual tubes need replacing, and do it himself. Quickly, economically.

The D125 allows a wider range of installation options, too. Music lovers who are looking to reduce the visual impact of their amplification can tuck the D125 out of sight in a cabinet or closet, thanks to its moderate dimensions and quietly efficient fans.

### 20 Years of Quality

Of course, the quality of components and construction is as you would expect in a component from Audio Research. And D125 owners can rest assured their amplifier will have parts and service support for as long as they own it. That's a commitment to customers Audio Research has upheld for 20 years.

Audition the D125 at your Audio Research dealer soon.

HIGH DEFINITION® MUSIC REPRODUCTION



# THE D125 STEREO AMPLIFIER



All FET-based input stage, with the output stage comprised of two "quad" banks of 6550 power output tubes.

Output balance is monitored and servo-controlled by internal circuitry.

Low Current Monitors on rear of main circuit board light when current draw of individual tubes drops below 20% of normal rating.

"Tube Saver" circuit protects amplifier from abnormal conditions or input overloads which could damage tubes or other components.

Two quietly efficient fans blow upward over output tube banks to help control operating temperature.

Rear-panel view of D125 chassis shows audiophile-grade input jacks, mute/operate switch for control of input signal and heavy-duty output barrier terminals for 4-8-16 ohm speakers. Selection of proper terminals for a particular speaker type should be determined empirically for best results.



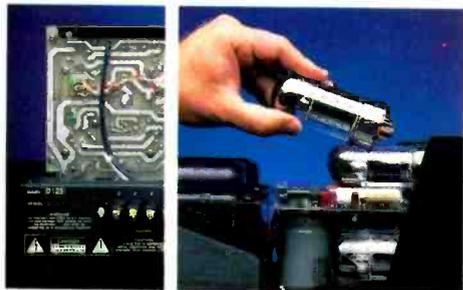
## Owner-Optimized Performance

The D125 can be maintained at peak levels even as output tubes age, thanks to a Plate Current Control and indicator light for each channel. Simply rotate each control until the corresponding LED lights, once the amplifier has stabilized after turn-on.



## Easy Tube Replacement

A glowing Low Current Monitor LED on the back of the main circuit board indicates a particular tube should be replaced. This can be done using instructions provided in the D125 owner's manual. High-quality, pretested replacement vacuum tubes from Audio Research are the best way to restore original performance.



## D125 Specifications

**POWER OUTPUT:** 110 watts per channel minimum continuous (both channels operating) at 16 ohms from 20Hz to 20kHz with less than .4% total harmonic distortion (typically below .005% at 1 watt)

Approximate actual power available per channel at "clipping" (both channels operation, 1kHz): 115 watts. (Note that actual power output is dependent upon both line voltage and "condition" i.e., if power line has high distortion, maximum power will be slightly reduced.)

**POWER BANDWIDTH:** (-3dB Points) 10Hz to 80kHz

**INPUT SENSITIVITY:** 0.7V RMS for rated outputs

**INPUT IMPEDANCE:** 100K ohms, nominal

**OUTPUT REGULATION:** Approximately 0.4dB, 16 ohm load to open circuit (Damping factor approximately 20)

**NEGATIVE FEEDBACK:** 21dB

**SLEW RATE:** 20 volts/microsecond

**RISE TIME:** 3 microseconds

**HUM & NOISE:** 90dB below rated output — less than 2mV RMS — (Broad-bandwidth unweighted, inputs muted)

**POWER SUPPLY ENERGY STORAGE:** Approximately 280 joules

**POWER REQUIREMENTS:** 105-125VAC 60Hz (210-250VAC 50Hz) 1000 watts maximum

**DIMENSIONS:** 19" (48 cm) W (standard rack panel) x 8 3/4" (22.2 cm) H x 16 5/8" (42 cm) D (front panel back). Handles extend 1 1/2" (4.1 cm) forward of the front panel.

**WEIGHT:** 84 lbs. (38 kg) Net; 95 lbs. (45.5 kg) Shipping

**TUBES REQUIRED:** 4 - Matched Pair 6550 (low gas) Power Output

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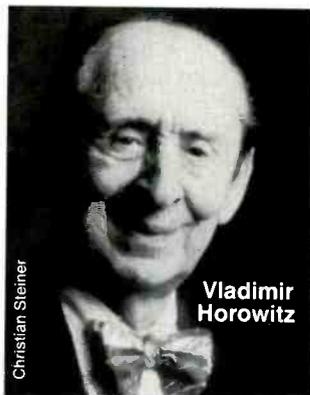
**Horowitz Plays Mozart** Piano Concerto No. 23; Sonata No. 13. La Scala Opera Orchestra/Giulini. DG DIGITAL 115436

**Handel, Water Music** The English Concert/Pinnock. "Quite the best performance...now on the market."—Gramophone Archiv DIGITAL 115306

**Holst, The Planets** Montreal Symphony Orchestra/Dutoit. "[A] stunning performance...The best available on both LP and CD."—Gramophone London DIGITAL 115448

**Andrew Lloyd Webber, Variations; more** Julian Lloyd Webber, cello. London Philharmonic Orchestra/Maazel. Philips DIGITAL 115473

**Tchaikovsky, 1812 Overture; Romeo & Juliet; Nutcracker Suite** Chicago Symphony Orchestra/Solti. A Digital Audio Perfect 10! London DIGITAL 125179



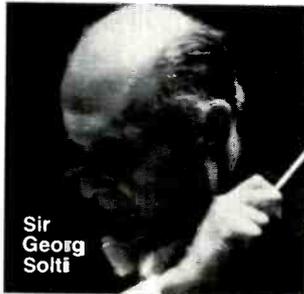
Christian Steiner

Vladimir Horowitz

**Handel, Messiah (Highlights)** Musica Sacra/Westenburg. Hallelujah Chorus, I Know That My Redeemer Liveth, more. RCA DIGITAL 153586

**Jascha Heifetz: Tchaikovsky & Mendelssohn, Violin Concertos** Chicago Symphony/Reiner. Cello 1 Symphony/Munch. RCA 104833

**Ravel, Daphnis et Chloé (Complete)** Montreal Symphony/Dutoit. "An absolute dream performance."—Stereo Review London DIGITAL 115520



Sir Georg Solti

**Mozart, Overtures** Academy of St. Martin-in-the-Fields/Marriner. Don Giovanni, Marriage Of Figaro, 7 more. Angel DIGITAL 134267

**Brahms, Cello Sonatas** Yo-Yo Ma, cello; Emanuel Ax, piano. "Distinguished...handsomely recorded."—Stereo Review RCA DIGITAL 154044

**Kronos Quartet: White Man Sleeps** Music of Ives, Volans, Hassell, Coleman, Johnston & Bartók. Nonesuch DIGITAL 140256

**Mozart, Requiem** Leipzig Radio Choir; Dresden State Orchestra/Schreier. "Exceptionally satisfying."—High Fidelity Philips DIGITAL 115039

**Slatkin Conducts Russian Showpieces** Pictures At An Exhibition. Classical Symphony, 3 more. RCA DIGITAL 154358

**Pops In Love** The Boston Pops/Williams. Clair de lune, Gymnopédies Nos. 1 & 2, Albinoni Adagio, Fantasia On Greensleeves, Pachelbel Canon, more. Philips DIGITAL 125230

**Michael Feinstein: Isn't It Romantic** Title song, How About You, My Favorite Year, A Fine Romance, 7 more. Elektra 172393

**Horowitz In Moscow** The historic return! Music by Scarlatti, Mozart, Rachmaninov, Liszt, Chopin, Scriabin, Schumann, others. DG DIGITAL 125264

**Mozart, The Piano Quartets** Beaux Arts Trio; Bruno Giuranna, viola. "Absolutely indispensable."—Stereo Review Philips DIGITAL 115271

**Copland, Billy The Kid & Rodeo (Complete Ballets)** Saint Louis Symphony Orchestra/Slatkin. Angel DIGITAL 141491

**The Canadian Brass: High, Bright, Light & Clear** Air On The G String, Masterpiece Theatre Theme, others. RCA DIGITAL 144529

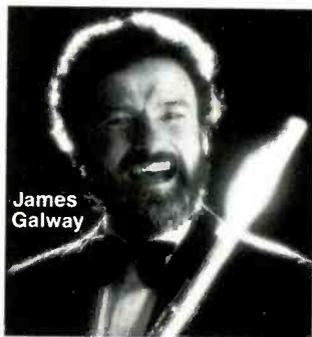
**Pops In Space** John Williams leads The Boston Pops in music from Star Wars, Close Encounters, Superman, more. Philips DIGITAL 105392

**Pachelbel, Canon in D** Also includes other works by Pachelbel & Fasch. Maurice André, trumpet; Pailard Chamber Orchestra. RCA 133877

**Gershwin, Rhapsody in Blue; An American In Paris; Concerto** Pittsburgh Symphony/Previn (pianist & conductor). Philips DIGITAL 115437

**Vivaldi, The Four Seasons** The English Concert/Pinnock. "The finest recording of [it] I've heard."—High Fidelity Archiv DIGITAL 115356

**Sousa, Stars & Stripes Forever** Philip Jones Ensemble. Plus Semper Fidelis. Washington Post, more. London DIGITAL 115051



James Galway

**James Galway—Greatest Hits** Memory, Angel Of Music, Perhaps Love, Clair de lune, The Pink Panther, Sabre Dance, Danny Boy, 13 more. RCA 173233

**Dvořák, Symphony No. 9 (From The New World)** Chicago Symphony Orchestra/Solti. London DIGITAL 115168

**Teresa Stratas Sings Kurt Weill** Havanna-Lied, Foolish Heart, Lonely House, Surabaya-Johnny, One Life To Live, more. Nonesuch 124748

**Beethoven, Symphony No. 6 (Pastorale)** Plus Egmont Overture. Royal Philharmonic Orch./Previn. RCA DIGITAL 143612

**Rossini, Overtures** Orpheus Chamber Orchestra. The Barber Of Seville, The Turk In Italy, Tancredi, 5 others. DG DIGITAL 115527

**Gregorian Chant** Schola of the Hofburgkapelle, Vienna. 10 Propers from Graduale Romanum; more. Philips DIGITAL 115434

**Alicia de Larrocha: Falla, Nights In The Gardens Of Spain** Plus rhapsodies by Albéniz & Turina. London DIGITAL 115410

**Tomita: The Mind Of The Universe (Live At Linz, 1984)** Ode To Joy, Also Sprach Zarathustra (opening), more. RCA 173829



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**Eine kleine Nachtmusik; Pachelbel Canon; Toy Symphony; more** Academy of St. Martin-in-the-Fields/Marriner. Philips DIGITAL 115530

**Pavarotti: Anniversary** Che gelida manina, E lucevan le stelle, Vesti la giubba, Cielo e mar, Addio alla madre, 11 more. London 115344

**Andrés Segovia Plays Bach** Chaconne, Suite No. 3 (solo cello), Three Pieces For Lute, Gavotte en Rondeau, more. MCA 163600

**Kathleen Battle Sings Mozart** Grammy Award winner! Exsultate, Jubilate plus 6 arias. Angel DIGITAL 144625

**Mendelssohn, A Midsummer Night's Dream** Ambrosian Singers. Philharmonia Orchestra/Marriner. Philips DIGITAL 115546

**Artur Rubinstein: Chopin, 14 Waltzes** "[His] playing is relaxed, assured, and wonderfully controlled."—*American Record Guide* RCA 101987

**Perlman: French Violin Showpieces** Introduction & Rondo Capriccioso, Havanaise, Tzigane, Poème, more. DG DIGITAL 115457



Itzhak Perlman

Christian Steiner

**Strike Up The Band—The Canadian Brass Plays George Gershwin** Title song, The Man I Love, Porgy & Bess Suite, 3 Preludes, more. RCA DIGITAL 160640

**Into The Woods** Bernadette Peters & original cast. Title song, No One Is Alone, Last Midnight, Agony, more. RCA DIGITAL 161656

**Tchaikovsky, Symphony No. 4** Chicago Symphony Orchestra/Solti. "Eminently successful: powerful, fluent and virtuosic."—*Ovation* London DIGITAL 125038

**Mozart, Symphony No. 41 (Jupiter); more** Orchestra of the 18th Century/Bruggen. Philips DIGITAL 115297

**Beethoven, Symphonies Nos. 4 & 5** Academy of Ancient Music conducted by Christopher Hogwood. L'Oiseau-Lyre DIGITAL 115009

**Stravinsky, Petrouchka; more** Montreal Symphony Orchestra/Dutoit. London DIGITAL 115331

**Debussy, La Mer; Nocturnes** Boston Symphony Orchestra/Davis. "The BSO is in tip-top form throughout."—*Ovation* Philips DIGITAL 115068

**Bach, Organ Works** Daniel Chorzempa plays the Toccata & Fugue in D Minor; the Prelude, Largo & Fugue in C more. Philips DIGITAL 115193

**Plácido Domingo Sings Tangos** Mi Buenos Aires Querido, Alma de Bohemio, Nostalgias, El Día Que Me Quieras, 6 more. DG 105302

**Kiri te Kanawa: Ave Maria** Jesu, Joy Of Man's Desiring; Let The Bright Seraphim; O Divine Redeemer; more. Philips DIGITAL 115213

**Perlman: Mozart, Violin Concertos Nos. 3 & 5** Vienna Philharmonic/Levine. "Radiantly sumptuous."—*High Fidelity* DG DIGITAL 115146

**Rachmaninov, Piano Concertos Nos. 2 & 4** Vladimir Ashkenazy, piano. Concertgebouw Orchestra, Amsterdam/Haitink. London DIGITAL 125074

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# AMPLIFIERS

MANUFACTURER	Model (RI) = Remote Included (RO) = Remote Optional	Type: Integrated = I, Basic = B, Tube = H, Hybrid = H, Mono = M	Rated THD, %	Balanced Inputs?	Rated Slow Rate, V/μS	High-Level Sensitivity, mV	Does Unit Invert Polarity?	Cont. Avg. Watts/Channel into 8 Ohms	Cont. Avg. Watts/Channel into 4 Ohms	Rated Power Bandwidth, Hz to kHz	Class of Output Operation	POWER AMP			PREAMP			Notes						
												Dynamic Headroom, dB	MM Phono S.N. - db	MM Phono Load Impedance, Ohms	MM Phono Sensitivity, mV	MM Phono Sensitivity, mV	MM Phono Sensitivity, mV		MM Phono Sensitivity, mV	MM Phono Sensitivity, mV				
DAVID BERNING CO.	EA-2100	B/H	2	No	15	1V	No	100	100	20-40	AB	2	.65								40	2695.00	Strappable.	
BGW SYSTEMS	85	B	0.1	Opt.		840	No	35	45	15-50	AB/B	1.3	4								14	519.00	For twin mono subwoofers; one-band parametric EQ; 600 watts into 2 ohms, †250 watts x 3, ††400 watts x 3. Built-in triamp crossover; EQ as above.	
	150	B	0.1	Opt.		1V	No	50	75	15-50	AB/B	1.2	4								18	799.00		
	250D	B	0.1	Opt.		1.4V	No	100	150	15-50	AB/B	1.3	2								33	999.00		
	250E	B	0.1	Opt.		1.4V	No	100	150	15-50	AB/B	1.3	2								33	1099.00		
	750F	B	0.03	Yes	40	1.5V	No	280	400	10-50	AB/B	1.5	2									54		
	750G	B	0.03	Yes	40	1.5V	No	280	400	10-50	AB/B	1.5	2									54		
	7500	B	0.10	Opt.		1.2V	No	200	300	10-50	AB/B	1.0	4									36		999.00
	7500T	B	0.10	No		1.2V	No	200	300	10-50	AB/B	1.0	4									36		699.00
	SPA1	B	0.10	Yes		1.2V	No	250	400	10-50	AB/B	1.5	2									41		1949.00
	SPA3	B/M	0.10	Yes		1.2V	No	†	††	10-50	AB/B	1.5	4									43		2499.00
GTA	B	0.10	Yes	40	1.5V	No	350	600	10-50	AB/B	0.8	2									72	1799.00		
GTB	B	0.10	Yes	40	1.5V	No	275	400	10-50	AB/B		2									50	1399.00		
BIAMP SYSTEMS	XA 100	B	0.05	Yes	30	1.4V	No	35	50	20-20	AB		4								13½	529.00	Turn-on delay. As above. Output transformer taps for 4 and 8 ohms, 25 and 70 V. Turn-on/turn-off delay and remote.	
	XA 300	B	0.07	Yes	30	940	No	100	150	20-20	AB		4								21	749.00		
	XA 600	B	0.07	Yes	30	1.3V	No	200	300	20-20	AB		4								24	899.00		
	XA 1000	B	0.10	Yes	30	1.3V	No	300	500	20-20	AB		4								35	1249.00		
	T500	B	0.07	Yes	30	140	No	150	240	20-20	AB		2								35	1299.00		
	T1000	B	0.07	Yes	40	200	No	310	480	20-20	AB		2									48		1699.00
	D60	B/M	0.1	Yes		Sel.	No	35	60	20-20	AB		2									20		399.00
	E300	B	0.1	No			No	100	150	20-20	AB		4									21		899.00
B & K	ST-140	B	0.09	No	11		No	105	105	5-45	AB	1.4	4								25	498.00	Dual mono. As above. O.C. coupled.	
	ST-202	B	0.09	No	11		No	150	220	2-45	AB	1.5	3								30	648.00		
	ST-202 + EX-442	B	0.09	No	12		No	200	300	2-45	AB	1.6	4								32	698.00		
	PRO-600	B	0.09	No	14		No	200	350	1-45	AB	1.8	2								35	898.00		
	M-200	B	0.09	No	24		No	250	400	1-100	AB	1.1	0.5								38	1298.00		
		B/M	0.09	Opt.	25		No	200	350	1-100	AB	1.3	.75									38		898.00
BOULDER AMPLIFIERS	500	B	0.005	Yes	35	1.8V	No	150	250	20-100	AB										51	3295.00	Bridges to 500 watts; gain control; LED level and protection indicators; with selectable line voltage, Model 500 International, \$3595.	
	500AE	B	0.005	Yes	35	1.8V	No	150	250	20-100	AB										48	2795.00	Bridges to 500 watts; with selectable line voltage, Model 500AE International, \$3095.	
BRITISH FIDELITY	A-1	I						20			A									Yes	15	395.00	Monoblock.	
	A-100	I						50			A									Yes	19	895.00		
	B-200	I						70			A/B									Yes	17	595.00		
	MA-50	B/M						50			A										15	595.00		
	P-140	B						70			A/B										22	595.00		
	P-170	B						90			A/B										27	795.00		
	P-270	B						150			A/B										56	2000.00		
	A-370	B						200			A										90	4000.00		
BRYSTON	2B-LP	B		Opt.	60		No	50	100	20-20	AB		2								20	575.00	Bridgeable. As above. As above.	
	3B	B		Opt.	60		No	100	200	20-20	AB		2								38	995.00		
	4B	B		Opt.	60		No	250	400	20-20	AB		2								55	1595.00		
	6B	B/M		Opt.	60		No	500	800	20-20	AB		1								55	1800.00		
CAMBRIDGE AUDIO	P 40	I	0.05	No			No	40			AB		2								3	498.00	Bridges to 150 watts. Dual mono power supplies.	
	P 55	I	0.05	No			No	70			AB		2								4.5	698.00		
	A 50	B	0.05	No			No	60			AB		2								2	578.00		
	A 75	B	0.05	No			No	75			AB		2								2	798.00		
	A 250	B/M	0.05	No			No	250			AB		2											
CARVER	Silver Seven	B T/M	0.5					375	500	20-20			1.0									17,500.00	Bridgeable. As above; Magnetic Field Amp. As above. Magnetic Field Amp. As above. As above.	
	M-4.0t	B	0.5				No	375	500	20-20	AB										20	799.00		
	M-1.0t	B	0.1				No	200	400	20-20	AB										20	610.00		
	M-500t	B	0.15				Yes	250	350	20-20	AB										23	650.00		
	M-400t	B	0.5				Yes	201	300	20-20	AB										9	560.00		
	M-05t	B	0.1				Yes	140	220	20-20	AB										20	549.00		
M-200t	B	0.1				Yes	120	200	20-20	AB											10¼	450.00		
CARVIN	FET 400	B	0.007	Yes	30	1V	No	100	200	20-20	AB		4								28	449.00	Bridgeable; compressor; filters. As above; 450 watts into 2 ohms.	
	FET 900	B	0.007	Yes	40	1V	No	200	300	20-20	AB		2								35	599.00		
CELLO	Performance	B/M		Yes																		13,125.00	Specs available on request.	
CITIZEN	PAF-330	I	1	No		150		25													7.8	165.00	Two-inputs; bass-boost switch.	

# "McIntosh . . . no other transistor amplifier is capable of reproducing as well."

"All the sounds, even those different one from another, remain separated and distinctive. There results a sensation of contrast, precision, and uncommon clarity.

. . . A close analysis of different frequencies reveals an extremely deep bass, very rich in spatial detail . . . The upper bass region is very linear testifying to an extraordinary richness of information. The very structured mid-range contributes enormously to listening pleasure.

The feeling of power is never refuted and instead of stunning the listener, the 7270 recreates an audio environment of a majesty that *no other transistor amplifier is capable of reproducing as well.*" Need we say more?

—REVUE DU SON, foremost French stereo magazine.

For a copy of the REVUE DU SON and information on the McIntosh MC 7270 Amplifier and other McIntosh products write:

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**“It is so clearly superior to past amplifiers in the low- to mid-priced range—not to mention most amplifiers two to three times its price—that I can unhesitatingly recommend it for even the most demanding high end system.”**

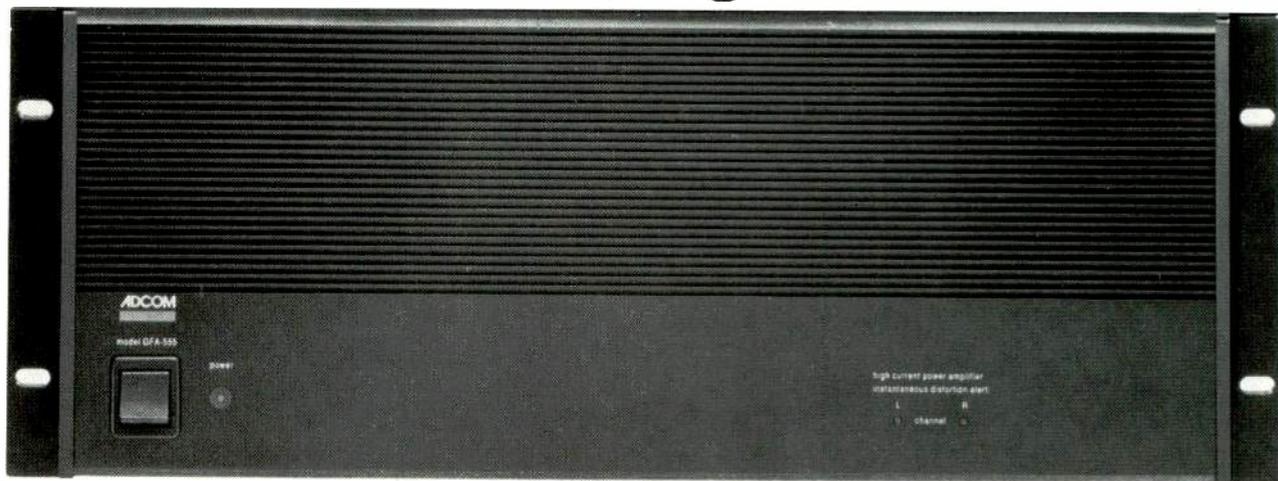
*Anthony Cordesman*

**stereophile**

volume 8, no. 4

# ADCOM GFA-555

High Power, High Current.



## The complete review:

### A BEST-BUY BREAKTHROUGH OR THE START OF A NEW WAVE?

I am reluctant to call any given transistor power amp a "best buy" or breakthrough. From my talks with designers and other audiophiles, it is clear that the state of the art in power amplifiers is about to change. From where I stand, the Adcom GFA-555 is the first sample of this new wave. It is so clearly superior to past amplifiers in the low- to mid-priced range—not to mention most amplifiers two to three times its price—that I can unhesitatingly recommend it for even the most demanding high end system.

The GFA-555 does everything well, and most things exceptionally well. It provides superb, well-controlled bass with far better speaker load tolerance than most amps. Its midrange and treble are remarkably low in coloration. There is no hint of hardness, and none of the loss of inner detail common to transistor amplifiers.

### "The Adcom's soundstage is sufficiently superior that even those who claim all power amplifiers sound alike might hear the difference."

With the exception of the Krells, I have never heard a more detailed, natural, and extended upper four octaves in a transistor amp. The Adcom may even be a legitimate rival to the Krell; it's brighter and more dynamic, and somewhat more open. And, like the Krell, it gives the impression, on really good material, that the amplifier simply isn't there, on really good material. Nor is the Adcom romantic or sweet, like New York Audio's new Moscodes. Rather, it offers natural upper octave detail that the latter miss. Other amplifiers have similar upper octave performance, but I unhesitatingly recommend the Adcom over the very stiff competition from Tandberg and Threshold.

The Adcoms' soundstage is sufficiently superior that even those who claim all power amplifiers sound alike might hear the difference. It comes very close to the better tube power amplifiers in providing detailed, stable, realistic imaging with natural depth. It is not an Audio Research D-250, but is extraordinarily holographic—I suspect almost embarrassingly so. This kind of soundstage has previously cost at least \$2000.

I am also highly impressed with this amplifier's dynamics. Once again, it is not going to survive a one-on-one with the Audio Research D-250 or Conrad Johnson Premier Fives, but it rivals any transistor power amplifier in its power class that I have heard—including high-powered receivers or amps with trick power supplies—at any price. It provides these dynamics into virtually any load without bloat, restriction of sound, or change in timbre. For all the nonsense published by most manufacturers about driving complex loads, this amplifier actually delivers.

The Adcom does not lose sweetness and detail as its power goes up. I am normally leery of transistor amplifiers rated much above 100 watts; they too often blur detail and harmonic information, and this sonic price tag is far more costly than the added power is worth. This does not happen with the Adcom unless the distortion lights are blinking, and they only blink when the amp is delivering well over its rated 200 watts per channel (8 ohms) or 325 watts (4 ohms). By comparison, once-outstanding high power amplifiers like the Hafler DH-500 now sound annoyingly veiled.

With a minor dealer modification, you can even drive 1 ohm loads like the Scintilla. I can't measure whether the Adcom delivers its rated 800 watts per channel into 2 ohms, or 20 amps peak, but I can tell you that it does a superb job of driving this superb speaker. Anything in its price range (or even close) generally changes timbre and degenerates when driving the Scintilla at 1 ohm.

### "For all the nonsense published by most manufacturers about driving complex loads, this amplifier actually delivers."

I'm going to have to say a few words about its technology before I give Adcom a swelled head. You'll be happy to note that the manufacturer claims for the GFA-555 a simple gain path, a 700 watt toroidal transformer, a well-regulated high current power supply, new ultra-stable bias circuitry, direct coupling, no current limiting, and no output inductor. More substantively, its harmonic shape mixes suitable yinyang while avoiding the curse of pyramidology. This, of course, means that it weighs 34 pounds, has simple rack-mount black styling, pilot lights, warning lights (to indicate distortion levels above 1%), and measures exactly 7 $\frac{1}{16}$ " by 12 $\frac{1}{4}$ " by 19".

More pragmatically, the technical specifications are significant in that they represent reasonable bandwidth (4-150,000 Hz), damping (150-200), gain (27 dB), and noise (-106 dB). Of these, only the noise specification is outstanding. No attempt is made to beat distortion records: .09% THD at rated power into 8 ohms, and .25% into 4. I have heard so many power amplifiers with infinitely (well, an order of magnitude) better specifications sound so much worse; this may be the amplifier whose sound could convince *Stereo Review*, *High Fidelity*, etc. that their present measurements are virtually worthless.

I suspect that the Adcom is going to force many designers in the \$1000-1500 range to either make radical improvements in their products over the next six months, or look at the possibility of retiring from competition. This is a "must" amplifier to audition before you spring for anything close in

### "I suspect that the Adcom is going to force many designers in the \$1000-1500 range to either make radical improvements in their products...or look at the possibility of retiring from competition!"

price. If the Adcom is simply the first of a whole wave of good amplifiers, it will help revitalize the high end for the average audiophile, and force most manufacturers into more reasonable pricing. Now, Adcom, if you can only come up with a preamp as good!

AHC

# ADCOM®

fine stereo components

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#### Manufacturer's note: Approximate retail prices listed in order of mention in review:

Adcom GFA-555	\$ 750
Krell	2300-7500
N.Y. Audio Moscode	900-1600
Tandberg	1000-2000
Threshold	1490-3150
Audio Research D-250 (MK II)	6000
Conrad Johnson Premier 5 (pair)	6000
"high powered receivers"	?
"amps with trick power supplies"	?
Hafler DH-500	850

# AMPLIFIERS

MANUFACTURER	Model	Type	Rated THD, %	Balanced Inputs?	Rated Slow Rate, V/μs	High-Level Sensitivity, mv	Does Unit Invert Polarity?	Cont. Avg. Watts/Channel, mv	Cont. Avg. Watts/Channel into 8 Ohms Hz to kHz	Class of Output Operation	POWER AMP				PREAMP				Price, \$	Notes	
											MM Phone S.N. - Ohms	MM Phone Load Impedance, Ohms	MM Phone Sensitivity, mv	Moving Coil Input?	Weight, Lbs.	Dynamic Headroom, db	MM Phone S.N. - Ohms	MM Phone Load Impedance, Ohms			MM Phone Sensitivity, mv
CLASSE AUDIO	DR-3B	B	0.01		800	No	25	50	20-20	A	7	0.1							72	2995.00	Bridges to 200 watts into 4 ohms.
	DR-9	B	0.01	Yes	1V	No	100	200	20-20	AB	6	1.0						64	3495.00	Bridges to 800 watts into 4 ohms.	
	DR-3-VHC	B	0.01		800	No	45	90	20-20	A	5	0.1						102	4250.00	Bridges to 300 watts into 4 ohms.	
CLASSIC AUDIO	CA260	B/H	0.1	No	750	No	50	50	17-100	AB	1.5	2						56	1665.00	Dual mono.	
DON J. COCHRAN	Delta Mode	B/H/M	0.07	Yes	65	1.6V	No	200	200	0.5-50		0.4	2.0					58 Pair	10,000.00 Pair	Differential signal path; balanced bridge output.	
CONRAD-JOHNSON	Premier Five	B/T/M						200		30-15	AB								3750.00		
	Premier One-B	B/T						150		30-15	AB								2950.00		
	MV100	B/T						90		30-15	AB								1685.00		
	MV50	B/T					45		30-15	AB									5750.00		
COUNTERPOINT	SA-12	B/H	0.8		No		85	140	5-100	AB	3	4						28	1045.00	Bridgeable.	
	SA-20	B/H	0.5		No		220	420	1.2-200	AB		1						72	2095.00		
	SA-20/20	B/H/M	0.5		No		600	700	1.2-200	AB		1						72	4190.00		
	SA-4	B/T/M	0.2		No		140	96	1-100	AB Var.		4						60	5495.00 Pair		
CREEK	4040S/2	I	0.01	Yes	150	250	No	40	50	20-20	AB	1		75	2.5	350	No	10	425.00	100-μV sensitivity and 1-kilohm loading for MC input. Bridges to 100 watts.	
	4140S/2	I	0.01	Yes	150	250	No	45	75	20-20	AB	1		75	2.5	500	Yes	11	525.00		
	5050	I	0.01	Yes	150	250	No	60	100	20-20	AB	1		75	2.0	2V	Yes	18	950.00		
CREST AUDIO	8001	B	0.006	Yes	35	1.8V	No	750	†	20-20	AB	3	2					82	2989.00	†1200 watts. Bridgeable.	
	7001	B	0.006	Yes	35	1.4V	No	550	810	20-20	AB	3	2					51	2589.00	As above.	
	4000	B	0.003	Yes	70	Sel.	No	325	550	1-50	AB	1.5	2					58	2189.00	As above; LED meters.	
	4001	B	0.003	Yes	70	Sel.	No	325	550	1-50	AB	1.5	2					58	2389.00	Bridgeable.	
	3000	B	0.003	Yes	60	Sel.	No	240	430	1-50	AB	1.5	2					46	1789.00	As above; LED meters.	
	3001	B	0.003	Yes	60	Sel.	No	240	430	1-50	AB	1.5	2					46	1589.00	Bridgeable.	
	2501A	B	0.005	Yes	40	1V	No	200	360	20-20	AB	1.5	2					38	1279.00	As above.	
	2001A	B	0.005	Yes	33	790	No	125	200	20-20	AB	1.5	2					32	1059.00	As above.	
	1501A	B	0.005	Yes	25	610	No	80	130	20-20	AB	1.5	4					17	839.00	As above.	
	1001A	B	0.005	Yes	20	420	No	40	75	20-20	AB	1.5	4					17	679.00	As above.	
	PL400	B	0.01	Yes	70	1.2V	No	290	450	20-20	AB	1.5	4					38	1239.00	As above.	
	PL300	B	0.01	Yes	40	1V	No	220	325	20-20	AB	1.5	4					32	939.00	As above.	
	FA800	B	0.01	Yes	40	1V	No	240	400	20-20	AB	1.5	4					31	839.00	As above.	
	CROWN INTERNATIONAL	Delta-Omega 2000	B/M	0.05	Yes	32	Sel.	No	730	†	0-45	AB/B		2					92	3395.00	†1300 watts.
		Macro-Tech 10K	B/M		Yes			No	†	††		AB/B		0.5					130	9995.00	†1000 watts. ††1850 watts. 5800 watts into 0.5 ohm.
PSA-2DX		B	0.002	No	30	2.1V	No	265	380	20-20	AB/B		2					57	1995.00	Bridged or parallel mono operation; accessory card slot. As above.	
PSA-2X		B	0.002	No	30	2.1V	No	265	380	20-20	AB/B		2					57	1759.00		
Macro-Tech 2400		B	0.1	Yes	13	Sel.	No	515	710	20-20	AB/B		2					51 3/4	1899.00		
Macro-Tech 1200		B	0.1	Yes	13	Sel.	No	295	400	20-20	AB/B		2					44 1/4	1449.00		
PS-400		B	0.001	Dpt.	16	1.8V	No	165	260	20-20	AB/B		2					55	1259.00		
Micro-Tech 1200		B	0.1	Yes	13	Sel.	No	295	400	20-20	AB/B		2					44 1/4	1199.00		
Macro-Tech 600		B	0.1	Yes	13	Sel.	No	220	275	20-20	AB/B		2					39 1/4	1199.00		
DC-300A-II		B	0.001	No	8	1.8V	No	155	250	20-20	AB/B		2					45	1049.00		
Power Base 2	B	0.1	Yes	13	Sel.	No	320	400	20-20	AB/B		2					32	1049.00			
Micro-Tech 600	B	0.1	Yes	13	Sel.	No	220	275	20-20	AB/B		2					39 1/4	949.00			
PS-200	B	0.001	Dpt.	16	1.3V	No	95	135	20-20	AB/B		2					25	819.00			
Power Base 1	B	0.1	Yes	13	Sel.	No	200		20-20	AB/B		2					30	769.00			
D-150A-II	B	0.001	No	6	1.2V	No	75		20-20	AB/B		2					24	749.00			
D-75	B	0.001	No	6	812	No	35	40	20-20	AB/B		2					10	524.00			
DB SYSTEMS	DB-6A	B	0.003	No	15	1V	No	40	70	20-20	AB	3	1					18	795.00	Three-times power-supply capacitance optional.	
	DB-6A-M	B/M	0.008	No	30	1V	No	140	225	20-40	AB	3	2					18	795.00	Per pair, \$1550.00.	
DBX	DX1	B	0.06	No	200	1V	No	400	700	20-20	A/B	1.5	0.1					85	3770.00	Two-, three-, or four-channel operation; load-invariant response; 70 amps, peak.	
DENON	PDA-6600	B/M	0.002	Yes	500	1V	No	250	450	5-80	A		†					34	750.00	†Less than 1 ohm.	
	PDA-4400	B/M	0.002	Yes	500	1V	No	150	250	5-80	A		†					23	500.00	†As above.	
	PDA-2400	B	0.002			1V	No	200	300	5-80	A		†					39	750.00	†Less than 2 ohms.	
	PMA-1520	I	0.003			1V	No	130		5-50	A		†	95	2.5	160	Yes	29	1000.00	†As above. Direct digital inputs; four D/A converters.	

**Advertisement  
SHEER ARAGONS**

**Mondial's contract-built Aragon amplifiers have shattered the high-end price barrier. Ken Kessler wonders: are they the bargains of the decade?**

THE ARAGON 4004 amplifier is the result of what Mondial's management call the Aragon Audio Project Team. By delegating aspects of the products' design to outside specialists, the company has produced two amplifiers and a preamp which meet a set of very tight standards.

First, Mondial pegged the goods to sell at above mid-fi levels but way below the lunacy point. Then, the stuff had to have the kind of finish and appearance which wouldn't drive away non-tweaks (see the Primare review in March for further thoughts on this approach). It had to be reliable. It had to sound amazing. And it had to be made in the USA.

Despite such seemingly opposed goals—good sound *and* good looks? Street cred *and* reliability? — Mondial accomplished all of the above by using hired guns. The key player is Krell's Dan D'Agostino, who designed the circuits, specified the parts and established the quality-control programme. When word leaked out about his involvement, the Aragons were dubbed instantly as 'poor man's Krells'. This causes problems for neither, for Mondial admits that the Aragon amplifiers are not surrogate Krells, selling as they do for a much lower tariff. As for Dan D, he is quite happy making his cost-no-object beauties; his consultancy simply proved that he can cook up a storm even with price constraints.

Having decided that all Aragon units must fit into a space no deeper than 14in and no wider than 19in to ensure that domestic acceptability would not be an issue, Mondial enlisted Robbii Wessen to provide the aesthetics. Wessen, cover artist for *The Absolute Sound*, is one of those rare individuals who can marry visual style with hi-fi purpose, a far better choice than, say, a pure industrial designer or a mere hi-fi nut. Wessen added class to what is basically a box by keeping it absolutely simple, yet incorporating touches like the chamfering around the on/off switch, subtle badging and the 'signature' V-groove in the top of the case. Jokes aside (a built-in notch filter, a holder for your Watts Preener), this is not merely a styling conceit, it's a ventilation port. Although this is a Class AB design — one of the primary differences between an Aragon and a Krell — the 4004 runs warm. The groove means that customers who insist on placing something on top of it won't be cutting off all avenues of ventilation.

Yes, the vent, coupled with 'flow-through' openings below, does work. I ran the 4004 for eight hours a day into a 3 ohm load in a big room, the unit suffering only 1.5in of clearance between its top and the shelf above, and it never misbehaved, shut down, or blew up.

To complete the project, Mondial subcontracted the construction to a company specialising in military and medical equipment. Rather than buying and setting up a plant, training staff and suffering a learning curve, Mondial was able to initiate production through an up-and-running concern. This automatically guaranteed price control through the economies of scale, and quality control because of an existing regimen. This in itself is not a new idea; what's unusual is that Mondial stayed in the USA rather than seek help from the Far East.

D'Agostino has designed what is effectively a Krell without the Class A operation or the overkill power supplies. The power supply in the 200W/channel 4004 consists of two massive toroidals, one per channel, specified to fit when stacked into the 6.5in high case and to work from a US 15 amp AC line without tripping every circuit breaker in the house. There's no drama when switching on, no lights dimming. (The 100W/ch 2004 uses a single dual-wound toroidal and fewer active devices, but is otherwise identical.) While Mondial doesn't suggest running the 4004 into the Apogee Scintilla's sub-1 ohm load, the amp is judged as able to play with nastier systems; neither the WATs nor the Divas caused problems.

There are no capacitors in the Aragon's signal path; but the Aragon does incorporate a digital protection circuit to prevent DC from the output and other unpleasantnesses. Whether an Aragon is as bomb-proof as a Krell I don't know, but I'd rather trust my home and speakers to this than to a couple of UK-made powerhouses I could name.

Nosey types who take the lids off amplifiers to see what makes them tick are going to find what look suspiciously like ICs in the driver stage, but they aren't — or so I gather. They're transistors installed in IC cases and are supposed to be more compact, easier to trim and much easier to match than conventional semi-conductors. Manufactured by Sprague, they're described as Quad Transistor Arrays, and Mondial points out that the tolerances are far tighter than bulk-purchase, garden variety transistors which have to be tailored for a circuit with heavy negative feedback or feed-forward tweaking.

As long as you've got the lid off, you may as well note the superb construction and componentry, including military grade, glass-epoxy boards, 1% film resistors, gold-plated Teflon-insulated input connectors (sounds like a phrase from a rap record), fastidious cable routing and even the modular construction.

Externally, the piece is gorgeous, belying its price tag. The fascia, finished in a handsome charcoal colour, is machined from a 3/8in thick metal slab. The front sports only the on/off switch and a green indicator lamp. The back is fitted with Monster Cable's superb five-way binding posts (which accept industry-standard spaced bananas) and gold-plated Tiffany phono sockets. Another nice touch is that the legends on the back are printed both right-side-up and upside-down for people like me who lean over amplifiers when we're connecting the leads. Mains reaches the unit through an IEC three-pin connection. The fuse holder resides just above the mains input.

Using the Aragon exclusively for a couple of months, I've had it share signals with Primare, Sumo, Vacuum State and Rose preamplifiers, the Alphason Sonata-Ortofon combo and the AR Legend/Grado, Nakamichi CR-3E and CR-4E cassette decks, Yamaha and Sony CD players, and a load of speakers. Most of my heavy sessions involved the

Apogee Divas, but adaptability was measured through periods with the WATs, the new Monitor Audio R300s, AR's exotic cousins, the Rowens, Celestion SL600s and Myriad JBLs. Wires consisted of Lieder leads throughout, as well as some Sony ES cable, stretches of Monitor PC and some of that cheapo cable I refuse to identify. As for warm-up, I found the unit to reach optimum performance after a few hours, but cold listening isn't as bad as I've found in other designs.

Look, gang, this amp is a revelation. Mondial's Aragon 4004 is simply the biggest bargain in high-end audio, even if — when it's finally imported — the price suffers through tariffs. Though I wanted to get melodramatic and save the price for the very closing, I have to tell you that this retails for a truly approachable \$1495 in the USA. I want you to know this so that whoever grabs the agency doesn't kill it by trying to get £2000 for it over here. Even with the usual formula of \$1 = £1 (which at today's exchange rate of around \$1.80 = £1 *definitely* covers shipping, handling, duty, VAT, distributor's margin and retailer's margin), it's still a bargain relative to what else is on offer at £1500 in the UK.

With the possible exception of the Scirtilla, this amplifier seems capable of driving any speakers to which it's attached. Hammering the hell out of it into the Divas and in a 7.1x7.4m room, I heard little that even remotely sounded like clipping, squashing or compression of dynamics, or lack of 'steam.' While this is not a match for the Krells I've used — even those rated at 100W rather than 200W — you're unlikely to need more oomph, and I value my ears too much for that. On a most basic level, that of sheer drive capability, the 4004 should deal with all but the most spacious of installations, filled with the hungriest of speakers and operated by masochists.

Sonically, whew, this is a real sweetheart. Run side by side with the lovely Nestorovic valve amps, I was knocked out by the 4004's tube-like grace and freedom from minor nasties. It's a characteristic D'Agostino trait, and one of the reasons why tube fanatics find little difficulty in moving to Krell designs. The warmth in itself is not the whole story — there are plenty of solid-state designs these days which can mimic the lushness and bloom of valve gear; rather, it's the civility which is evident regardless of the complexity, speed or dynamic demands of the material. At no point did the Aragon sound confused or reach its limitations, either in terms of dynamics or its ability to deal with subtle details amidst a near chaotic performance.

The most impressive aspect of its performance, again keeping price in mind, is its lower registers. Both the Divas and the Rowens plumb the depths, and I've some recordings like the recent Willy DeVille 12in mix of 'Assassin Of Love' which will stretch any system in a downward direction. Extension? About the only thing lower is a TV evangelist. There's absolute control, superb transients without too much aggression, and a richness that's going to have you reaching for a copy of the Kodo drummers' CD. I know, some prefer things even tighter, but for that I prescribe alum root. Or a shrink.

The 4004's midrange skill is something to behold, with transparency that I've heard bettered only by designs costing two or three times the price, *e.g.* the Krells. Crystal-clear portrayal, virtually grain-free textures (and silences) — you will not believe how real a voice can sound, especially at this price point. The Juice Newton track on the Technics/EMI/HFN/RR CD compilation is a favourite test (for transients as well as vocals) because it hovers on a fine edge between acceptability and teeth-jarring sibilance. The Aragon resolved all that the cut can offer, and its freedom from additives kept Newton's 'T's and 'S's from spraying imaginary saliva against the grilles.

The smoothness extends all the way to the top, and I don't recall any time during my sessions where the upper frequencies manifested signs of traditional solid-state nastiness. Despite this seemingly forgiving nature, it was ruthlessly revealing of failings in recording technique and pressing quality, a trait some reviewers believe to be a fatal demerit. As I'm not of the school that says certain products can make bad recordings sound good (which sounds like a *Tomorrow's World* justification for graphic equalisers), I judge this as part of the cost of living with high-end gear.

If this sounds like I'm presenting a case for the demise of all amplifiers costing above, say £1500 or £2000, let me point out that there are areas in which the 4004 is bettered. Having examined my judgements around recordings of my own making, I know what some products are capable of doing when it comes to resolving the sense of space, of the actual venue in which live recordings are produced. I'd be the last to say that spatial considerations are as important as the tonal/sonic aspects of sound reproduction, but they are an integral by-product of accuracy. While the Aragon could reassemble a convincing soundstage in all three planes, its scale was level dependent and less precise than most of its once-removed cousins, the Audio Research amplifiers I've used, and a host of other much dearer units. At its price point, though, I can name *nothing* which even comes close. Within that soundstage are rock-solid, three-dimensional images, which more than makes up for any vagueness at the stage extremities.

I know the maths for US imports, and I know what this *should* sell for over here. Unfortunately, I also know that the Aragon performs so well that — had I not splattered its US price over these pages — you'd be excused for thinking that it's a steal at £2500. Assuming that the distributor selected by Mondial is a *mensch*, you've just read about the best-value, smartest-looking, best-constructed, finest-sounding amplifier to the south of a Krell. And that, my friends, is a gift from hi-fi heaven.

To order your Aragon, write or call Mondial designs LTD, 2 Elm Street, Ardsley, New York 10502, USA. Tel. (914) 693-8008.

# AMPLIFIERS

MANUFACTURER	Model (RI) = Remote Included. (RO) = Remote Optional	Type: Integrated = I, Basic = B, Hybrid = H, Mono = M	Rated THD, %	Balanced Inputs?	Rated Slow Rate, V/μS	High-Level Sensitivity, mV	Cont. Avg. Invert Polarity?	Cont. Avg. Warts/Channel into 8 Ohms	Rated Power, Warts/Channel into 8 Ohms Hz to kHz	- POWER AMP				PREAMP				Notes		
										Class of Output Operation	Dynamic Headroom, dB	MM Phono S.N. - dB	MM Phono Impedance, Ohms	MM Phono Sensitivity, mV	Moving Coil Input?	Weight, Lbs.	Price, \$			
DENON (Continued)	PMA-920 PMA-720 PMA-520 PMA-250	I I I I	0.004 0.007 0.008 0.05		150 150 150 150	115 90 70 30		5-50 5-40 5-40 10-40	A A A AB	† † † 4	94 88 88 72	2.5 2.5 2.5 2.5	160 160 160 160	Yes Yes Yes Yes	24 17 16 11	600.00 450.00 350.00 250.00	†Less than 2 ohms. †As above. †As above.			
DIMENSIA	MPA100 MPA120	B B	0.015 0.015	No No	93 93	No No	100 120	20-20 20-20	AB AB	1.5 1.5					17¾ 17¾	299.00 349.00	Peak level meters.			
DIMENSIONAL OPTICS	Silicon Laser Matrix 2A Silicon Laser Matrix 3A Silicon Laser Matrix 4A	B B B/M	0.05 0.05 0.05		100 100 100	700 700 700	No No No	150 200 250	300 400 500	5-100 5-100 5-100	A A A	3 3 3	1.0 1.0 1.0		30 48 44	2500.00 3000.00 4500.00 Pair	Optical output devices. As above. As above.			
DISTECH	LS II LS III	B B	0.05 0.01	No No	45 65	120 120	No No	125 125	250 250	3-100 3-100	AB AB	3.2 5			25 35	950.00 2500.00	Dual mono.			
DOLAN	PM-A	B	0.02	No	200	700	No	100	200	1-100	AB	1.5	1		40	2395.00	MOS-FET; three external power supplies.			
DUAL	PA5030 PA5060	I I	0.03 0.01	No No	30 30	500 500	No No	30 60		6-90 6-90	AB AB	1.5 1.0	2.0 2.0	80 80	2.5 2.5	200 200	Yes Yes	280.00 380.00	21 amps, peak. 15 amps, peak.	
ELECTRO-COMPANET	AW 65 AW 100 AW 250 EC-100	B B B I	0.2 0.2 0.2 0.2	No No No No			No No No No	75 100 250 100	135 180 380 135		AB AB AB AB		0.5 1.0	84	1.5		No	33 39 65 35	1495.00 2195.00 3995.00 1395.00	
ESSENCE	150 Mk. II	B	0.01	Yes			No	200	300		AB	2						2985.00		
EXPOSURE	X VIII  VIII Super IV IV Single IV Dual IV Dual Regulated	I B  B B B B B					No No	35 50		20-20 20-20	AB AB						†	18 15	1195.00 895.00	†Optional. Includes preamp power supply. As above.
FENTON AUDIO	Stereobate	B/M	0.025		500	500	No	300	600	20-100	AB +	1.0			66	2300.00 Pair	MOS-FET; water-cooled.			
FORTÉ AUDIO	1a  3	B  B	0.05  0.05	No  No	40  40	  No	50  200	80  350	7-100  7-100	A  AB		4  4			36  36	995.00  995.00	75-kilohm input impedance; 0.02-ohm output impedance; 300-μV noise; 30-amp maximum current. As above.			
FOSGATE-AUDIOIONICS	M-60 M-100 S-100 T-100	B/M B/M B B	0.10 0.03 0.03 0.03	No No No No	16 12 12 12	500 750 750 750	No No No No	40 60 60 60	60 100 100 100	50-20 20-20 20-20 20-20	AB AB AB AB	1.5 1.5 1.5 1.5	4 2 2 2		5 15 16 17	179.00 269.00 429.00 599.00	Three channels.			
GEMINI SOUND PRODUCTS	A-990	B	0.05	Yes	92	700	No			20-20	AB	2.2			22	499.00				
GOLMUND	Mimesis 3(RO)  Mimesis 6 Goldcube(RO)	B  B B/M	0.01  0.01	No  No	100  100	155  155	No  No	100  80 120		0-850  0-500					34  27½	5690.00  2690.00 10,000.	A.C. polarity switch; star ground configuration. Fits directly into Goldmund Apologue speaker.			
HAFLE	DH-120  XL-280  XL-600 DH-500	B  B B B	0.009  0.05  0.05 0.025	No  No No No	30  75  100 40	145  133  133 145	No  No No No	62  145  305 255	75  200  450 400	20-20  20-20  20-20 20-20	AB  AB  AB AB	1.8  1.4  1.4 1.5	3  1  1 2		18  27  51 49	425.00  650.00  1195.00 900.00	Bridgeable; kit, \$375.00. Bridgeable; kit, \$575.00. Bridgeable. Kit, \$775.00.			
HARMAN/KARDON	Citation 22 Citation 24 PM640Vxi PM645Vxi PM655Vxi PM665Vxi	B B I I I I	0.08 0.08 0.09 0.09 0.08 0.08	No No No No No No	160 160 90 90 180 180	1V 1V 135 135 135 135	No No No No No No	200 200 45 45 60 90 150	200 200 45 45 60 90 150	20-20 20-20 20-20 20-20 20-20 20-20 20-20	AB AB AB AB AB AB AB	1.8 1.5 1.9 2.2 1.3 1.3	2 2 2 2 2 2	80 80 80 80	2.2 2.2 2.2 2.2	120 130 220 220	No Yes Yes Yes	45 33 13.5 14.4 22.4 33	1099.00 699.00 329.00 479.00 699.00 999.00	Video switching. As above. As above.
HEYBROOK	P-2	B	0.05				No	80		20-20	AB	1			30	1299.95	Toroidal transformer.			
HITACHI	HA007SW  HMA120AVSW	I  B	0.05  0.08				No  No	65  120		20-20  20-20	B  B			86	2.8	No	18½  17½	399.95  249.95	Front-panel video input.	
HM ELECTRONICS	PA120 MX56	B B	0.01 0.03	No No	150 350		60 60	100 100		20-50 15-30			2		13 18	476.00 860.00	Bridgeable.			

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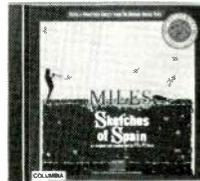
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											Class of Output Operation	Dynamic Headroom, dB	MM Phono s.n. - db	MM Phono Load Impedance, Ohms	MM Phono Sensitivity, mV	Moving Coil Input?	Weight, Lbs.	Price, \$					
INDUYE	SPA-100	B	0.02	No		No	100	200		AB	3.0	2.0							42	1900.00	Dual mono; true d.c. non-servo. True d.c.		
	MPA-200	B/M	0.02	No		No	200	400		AB	10	0.1							65	6600.00 Pair			
JADIS	JA200	B/T/M		No		No	150			A										17,500.	Pair 11,500. Pair 5750.00 Pair 5500.00		
	JA80	B T/M		No		No	60			A													
	JA30	B T/M		No		No	30			A													
	DA100	B T		No		No	100			A													
JRM	Power Tower	B/M	0.02		100	†	No	††	†††	0.6-75	AB		2.0	1.0						70	2500.00	†(2)2.0 and (2)1.1 V. ††(2)180 and (2)160 watts. †††(2)600 and (2)200 watts into 2 ohms. All-cascade design.	
	Power Tower/B Pro	B/M	0.02		100	†	No	††	†††	0.6-75	AB		1.5	2.0						90	3100.00		
JVC	AX2911BK(RI)	I	0.003		400		100		20-20	A	Sup. A									44.1	1100.00		
	AX1100BK	I	0.003		200		120		20-20											33.1	720.00		
KENWOOD	KA-770	I	0.055		150		80		10-45											20	370.00	Surround-sound circuitry; video dubbing. Dual D/A converters with 4X oversampling; fiber-optic input.	
	KA-127(RI)	I	0.05		150		125		10-100											18	369.00		
	KA-87	I	0.05		150		100		10-100											16	269.00		
	KA-V1000R	I	0.02		150		80		5-45											30	875.00		
KENWOOD	KA-33000	I	0.004	Yes	150		150		5-50											40	1250.00		
	Basic-M2A Basic-M1D KA-880D	B B I	0.004 0.008 0.008	Yes Yes	150		220 125 100	350	5-100 10-75 10-45											34 22 22	695.00 445.00 450.00		
KINERGETICS	KBA-75	B	0.02	No	65	1.5V	No	75	110	3-300	A	3	0.5							55	1295.00		
	KBA-202	B/M	0.05	No	90	1.5V	No	200	300	3-200	AB	3	0.2							70	1995.00 Pair		
KLIMO	Kent	B T/M	0.3	No			No	35	35		AB									19	2550.00	Output transformerless.	
	DK-OPTL	B T/M	0.25	No			No	115	80		AB									42	6550.00 Pair		
KLYNE AUDIO ARTS	SKX 120	B	0.1	Yes			No	125	250	0.1-200	A/AB											Balanced design.	
KRELL	KSA 80	B	0.05	No	500	680	No	80	160	0-500	A	3	0.1							75	3700.00	Bridges to 160 watts. Bridges to 400 watts.	
	KSA 200	B	0.05	No	500	1V	No	200	400	0-500	A	3	0.1							115	5500.00		
	KMA 160	B/M	0.05	Yes	700	1V	No	160	320	0-500	A	3	0.1							75	6400.00 Pair		
	KMA 400	B/M	0.05	Yes	700	1.3V	No	400	800	0-500	A	3	0.1							115	11,000. Pair		
	KRS 100	B/M	0.05	Yes	800	1V	No	100	200	0-800	A	3	0.1							150	12,000. Pair		
KYOCERA	B-910	B	0.02	Yes	350		No	150	200	5-100	AB	1.0	0.2							59½	2000.00		
	A-910	I	0.03	Yes	90	250	No	150	200	10-100	AB	1.2								50¾	1500.00		
LAZARUS	200/200	B/H		No		1V	Var.	200	350	5-80	A/B	3	2							35	1750.00	†Class A. 50 watts into 8 ohms; Class A/B. 200 watts into 8 ohms and 375 watts into 4 ohms.	
	H-1 200M	B/H/M		Yes		600	Yes	†	†	5-80	†	6	0.7							35	3200.00 Pair		
LAZARUS	H-1 50-50	B/H		No	600	Yes	50	100	5-80	A	6	0.7								35	1599.00		
	JH-50	B-T	0.3	No			No	50	50	13-95	AB									62	3850.00		
LEGACY	Power Amplifier	B	0.05	Yes	50	120	No	250	400	20-20	AB	2.0	1.0							60	996.00	Bridges to 750 watts.	
MARK LEVINSON	No. 20	B/M	0.4	Yes			Sei.	100	200	20-20	A		0.1							90	10,800.		
	No. 23	B	0.3	Yes			Sei.	200	400	20-20	AB		0.1							83	4700.00		
	ML-11	B	0.5	No				50	100	20-20	AB		1							36	2100.00		
LINN HI-FI	LK280	B						80	160	20-20										20	1495.00		
LSR&D	The LEACH Amp	B	0.05	No	70	1.8V	No	160	300	0.4-220	AB	2.2	2							36	970.00	Twin toroidal power supply; kit, \$580.00. As above.	
	The LEACH Super-Amp	B/M	0.05	No	80	2.4V	No	300	500	0.3-200	AB	2.2	2							36	970.00		

# TAKE AIM AT NEW AUDIO TECHNOLOGY

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**INDIANA**  
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**NEBRASKA**  
STEREO WEST, LINCOLN, OMAHA

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**UTAH**  
STANDARD AUDIO, SALT LAKE CITY

**VIRGINIA**  
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DEFINITIVE AUDIO, SEATTLE—HUPPINS HI FI, SPOKANE—MAGNOLIA HI FI & VIDEO, BELLEVUE, LYNNWOOD, SEATTLE, TACOMA

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HI FI HEAVEN, GREEN BAY—SOUND STAGE, MILWAUKEE



## UPDATE: CD TECHNOLOGY

- 18 BITS—IS IT REALLY BETTER?
- OVERSAMPLING—HOW MUCH IS NECESSARY?
- VIBRATION—CAN IT AFFECT CD PERFORMANCE?
- LINEAR MOTORS—FASTER AND MORE ACCURATE TRACKING

# the *Soundcraftsmen* STORY

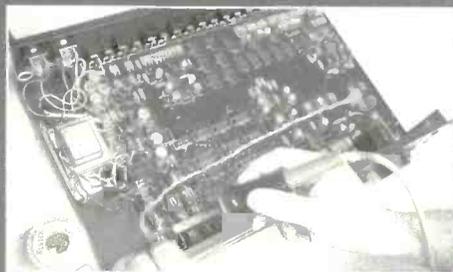
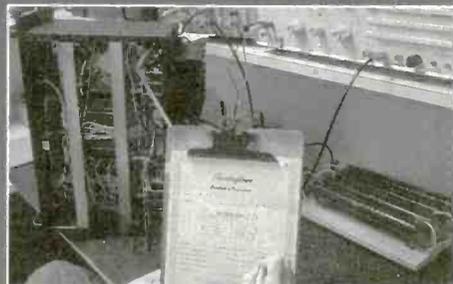


## SECTION OF PRODUCTION AREA IN MAIN PLANT



One hundred percent quality control is seen on EVERY unit manufactured. EVERY completed unit is electronically tested for specification accuracy and then EVERY unit is connected to a high fidelity system and listened to—just like you would at home. If your unit meets or exceeds the critical standards set forth on these tests, it is then packaged for shipment.

## INDIVIDUAL CERTIFICATE OF PERFORMANCE WITH EVERY AMPLIFIER



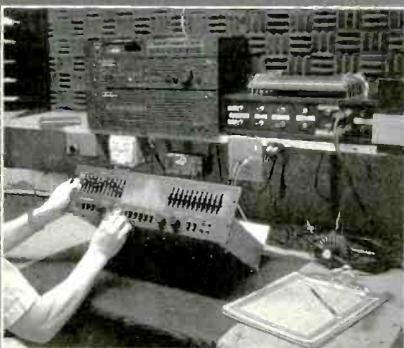
Soundcraftsmen celebrates its 20th year of manufacturing audio components for the discriminating audiophile.

Soundcraftsmen engineers are highly respected in audio design circles as being very forward thinking, yet practical, when engineering new products, by using proven design principles from the past with tomorrow's technology.



From the finest equalizers, the most accurate analyzers, to the unique preamps, to the revolutionary Class H and Power MOSFET amplifiers, you cannot purchase finer audio components.

The next few pages will answer many of your questions. If you have more, our customer service department will be pleased to assist you by telephone or letter. We invite your questions and appreciate your interest.



# Pro-Power Ten 2/3/4 Channel

The New Soundcraftsmen PRO-POWER TEN 2/3/4 channel Power Amplifier stands alone, in a class by itself, in power amplifier circles. Designed and manufactured in the USA using State-of-the-Art MOSFET power output stages and our ultra-smart phase control power supply, the PRO-POWER TEN is your best buy in a power amplifier. The MOSFET amplification stages provide superior sonic purity, compared by many to that of vacuum tube amplifiers. Unlike most other supply designs whose supply voltage drops (and hence the amplifier's output capability) when operating at high volume levels

containing dynamic peaks of more than a few milliseconds duration, our smart phase control power supply adjusts its supply voltage to match the demands of the loudspeaker. Helping to maintain this constant supply voltage are ultra high storage capacity filter capacitors and two independent power transformers.

The PRO-POWER TEN front panel features four independent 12-segment LED power output meters (0-800 watts at 8 ohms) and True Clipping indicators for each channel. As in most all Soundcraftsmen components, the new PRO-POWER TEN features a Professional rack-mount front panel with optional hardwood side panels.

## SPECIFICATIONS

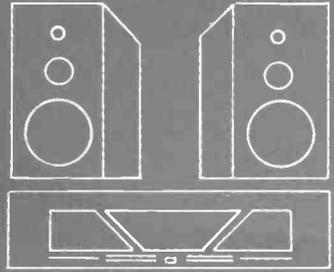
**POWER:** 205 watts per channel (4-channel) @ 8 ohms, 20Hz-20kHz, at less than 0.05% THD...300 watts per channel (4-channel) @ 4 ohms, 600 watts per channel (2-channel) at 8 ohms...1M Distortion: less than 0.05%...Frequency Response: 20Hz-20kHz, ±0.1dB...Signal to Noise Ratio: -105dB...Slew Rate: 50 volts/microsecond...Dimensions: 19" Wx5½" Hx12"D...Weight: 55 pounds

Enter No. 30 on Reader Service Card

## TWO-CHANNEL MODE

600 WATTS PER CHANNEL INTO 8 OHMS.

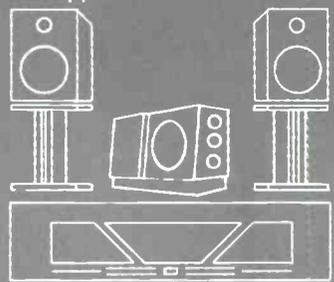
When the PRO-POWER TEN is used in this mode it is transformed into the ultimate in high power amplifiers...If your loudspeakers and/or environment require a lot of power, the PRO-POWER TEN is right for you.



Ultra High Power Systems

## THREE-CHANNEL MODE

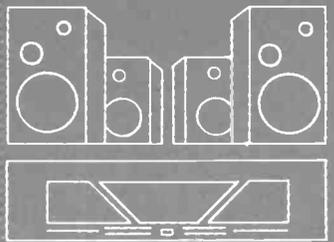
Many of the more modern loudspeaker systems have been designed primarily with the total living environment and/or integrated audio-video systems in mind. These systems incorporate a stereo pair of satellite speakers for reproducing the midrange and high frequencies. Since the very low frequencies are non-directional, and hence non-critical to proper stereo imaging, they are reproduced by a single, large sub-woofer. The PRO-POWER TEN in the Three-Channel mode is ideally suited to these applications.



Sub-Woofers/Satellite Systems

## FOUR-CHANNEL MODE

The ultimate in audio/video systems is the Surround Sound system, where the theatre environment is re-created in the home by utilizing front and rear speakers. The PRO-POWER TEN in the Four-Channel mode is the perfect match for these systems. Some higher quality loudspeakers benefit from bi-amplification, i.e. having separate amplifiers for their low frequency and high frequency components. The PRO-POWER TEN in the Four-Channel mode is equally well suited for these types of systems.



Surround Sound Systems



Soundcraftsmen

PRO-POWER TEN

2/3/4 CHANNEL MOSFET POWER AMPLIFIER

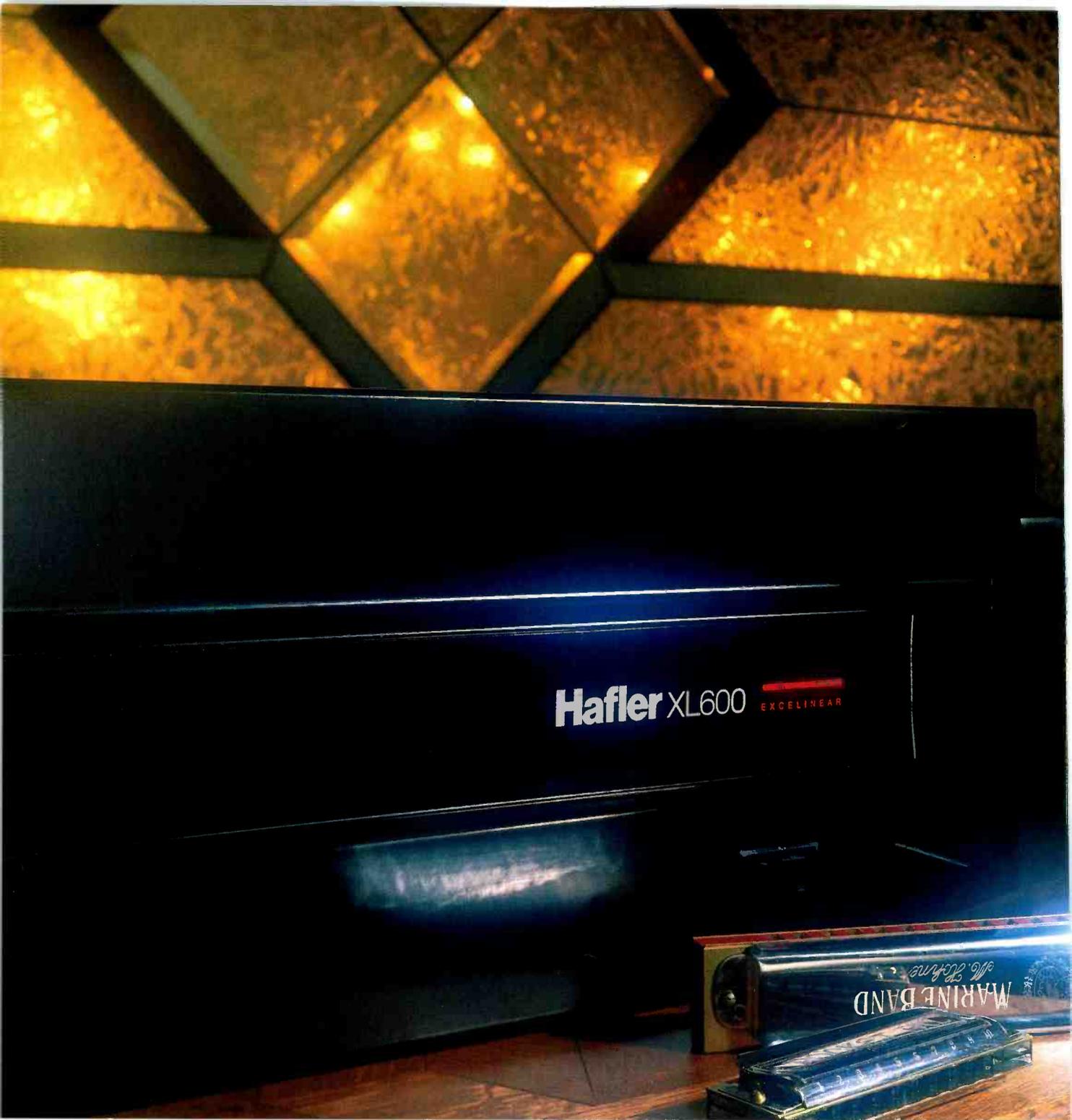
STEREO MODE: 600 WATTS X 2

POWER OUTPUT @ 8 OHMS	CLIP
15 30 45 60 75 90 105 120 135 150 165 180 195 210 225 240 255 270 285 300	0 1 2 3 4 5 6 7 8 9 10 11 12

POWER OUTPUT @ 8 OHMS	CLIP
15 30 45 60 75 90 105 120 135 150 165 180 195 210 225 240 255 270 285 300	0 1 2 3 4 5 6 7 8 9 10 11 12

4-CHANNEL MODE: 205 WATTS X 4

Enter No. 30 on Reader Service Card



**The beginning  
of a new era**

The Hafler XL-600 amplifier adds a host of refinements to the tradition of Hafler expertise.

The excelinear concept, first introduced in the XL-280, has near zero phase-shift circuitry. The XL-600 employs a double differential J-FET push-pull cascoded input and current mirroring second stage driving 16 lateral MOSFET outputs.

From its gold plated input and output jacks to its relay-protected output, which exceeds 900 watts a channel into 1 ohm, the XL-600 establishes a new era in affordable high-powered accuracy.



**Hafler**  
THE TRADITION CONTINUES

# AMPLIFIERS

MANUFACTURER	Model (R) = Remote Included, (RO) = Remote Optional	Type: Integrated = I, Basic = B, Tube = T, Hybrid = H, Mono = M	Rated THD, %	Balanced Inputs?	Rated Inputs?	High-Level Sensitivity, V/μS	Does Unit Invert Polarity?	Cont. Avg. Watts Channel into 8 Ohms	Cont. Avg. Watts Channel into 4 Ohms	POWER AMP				PREAMP				Notes				
										Rated Power, W	Rated Channel into 8 Ohms, Hz to kHz	Class of Output Operation	Dynamic Headroom, dB	MM Photo S.N. - dB	MM Photo Impedance, Ohms	MM Photo Sensitivity, mV	Moving Coil Input?		Weight, Lbs.	Price, \$		
LUXMAN	LV-111	I	0.05	No	15	150	No	40		20-20	AB	1.8	2	82	2.5	140	No	14 3/8	350.00	Optical and coaxial direct digital inputs; includes video amp and switching. Includes video amp and switching. As above; optical and coaxial direct digital inputs. Coaxial direct digital inputs; includes video amp and switching. Bridges to 700 watts.		
	LV-112	I	0.05	No	20	150	No	55		20-20	AB	1.6	2	84	2.5	140	No	19 7/8	550.00			
	LV-113	I	0.05	No	20	150	No	65		20-20	AB	1.4	2	84	2.5	140	No	21 5/8	750.00			
	LV-105u	I/H	0.25	No	12	150	No	80		20-20	AB		4	90	2.0	160	Yes	25 3/8	1000.00			
	LV-117	I	0.05	No	40	150	No	110		20-20	AB	1.6	2						34 1/2		1200.00	
	LV-109	I	0.09	No	25	150	No	150		20-20	AB	1.6	2						45		1500.00	
MADISON FIELDING	M-113	B	0.03	No	15	1V	No	50		20-20	AB	3.0	2						18 3/4	500.00		
	M-117	B	0.03	No	20	1V	No	200		20-20	AB	1.8	2						52	1100.00		
MADISON FIELDING	PA900	B	0.01	No	20	100	No	150	220	20-20	AB	1.5	2						29	1250.00	Includes two-channel, seven-band EQ; multi-room remote system. Includes four-channel, three-band EQ; multi-room remote system.	
	CA700(RO)	I	0.01	No	20	100	No	60	180	20-20	AB	1.5	2						18	1400.00		
MARANTZ	CA300(RO)	I	0.015	No	15	100	No	40	60	20-20	AB	1.5	4						20	1500.00		
	PM-25	I	0.1	No				30	30	20-20	AB									299.95		
	PM-65AV	I	0.03	No				65	80	20-20	AB									499.95		
	PM-74D	I	0.03	No				105	110	20-20	†									699.95		
	PM-94	I	0.02	No	70			140	200	20-20	†									2900.00		
PM-84D	I	0.03	No	30			105	125	20-20	†	1.1	0.9					Yes	51	1700.00			
McINTOSH	MA6200	I	0.02	No	15	250	No	75	100	20-20	AB	1.3	4	80	2.0	95	No	30	1795.00	Bridgeable. As above.		
	MC2500	B	0.02	No	35	Var.	No	500	500	20-20	AB	1.3	1								3495.00	
	MC7270	B	0.02	No	17	Var.	No	270	270	20-20	AB	1.6	1								2295.00	
	MC2002	B	0.01	No	25	Var. Sel.	No	200	300	20-20	AB	1.7	4								1850.00	
MEITNER AUDIO	STR-55	B	0.25	No	75		No	50	95	0.1-100	AB		2						18	1595.00	Floating charge power supply.	
	MTR-101	B/M	0.25	No	75		No	100	200	0.1-100	AB		2						21	3400.00		
MELOS AUDIO	TM-90ST MKII	B T	0.5				No	80	80	20-20	AB	3							50	1395.00	Toroidal output transformer.	
	TBA-2	B T/M	0.2				No	225	225	20-20	AB	3	3						46	2895.00		
MERIDIAN	205	B/M	0.1	No			No	100	170		AA								11	850.00	Signal-sense power switching.	
MFA SYSTEMS	M-75B	B T/M	0.4	No	25	900	No	75	75	16-80	A AB	1.2	2						35	1660.00	Input impedance, 500 kilohms. As above. As above.	
	M-120A	B T/M	0.15	No	35	950	No	120	120	18-60	A/AB	1.2	2						60	2960.00		
	M-200B	B T/M	0.5	No	35	1V	No	180	200	12-50	A/AB	1.2	2						80	4950.00		
MIRROR IMAGE	1.1S	B		No			No	200	400	1-400	AB		2						49	2750.00	D.C. coupled. As above.	
	1.1SB	B		Yes			No	200	400	1-400	AB		2						49	3450.00		
MISSION	Cyrus I	I/T	0.003		65		No	30	40	20-20	A/B	1.4		82	0.40		Yes	15	499.00	Add-on power supply, Model Cyrus PSX, \$549.00.		
	Cyrus II	I/T	0.003		50		No	60	80	20-20	A/B	1.4		84	0.30		Yes	15	799.00			
MOTIF	MS100	B	1.0					100		20-20	AB									3250.00		
	MS50	B	1.0					50		20-20	AB									2350.00		
MUSICAL DESIGN	D-140	B	0.02	No	30	750	No	140	225	10-100	AB		2.0						27	995.00	Dual mono toroidal power supply.	
MUSIC REFERENCE	RM-9	B/T	0.2	No		Var.	No	100	100	20-40	A AB	1.5	2						55	2450.00	Variable feedback; set-up indicators; 2-, 4-, and 8-ohm taps.	
NAD	2240PE	B	0.03	No	15	160	No	40		20-20	AB	6	2						16 1/2	328.00	Bridgeable. As above; input level controls. As above. As above. Preamp out, main in. As above; bass EQ. As above; bridgeable.	
	2200PE	B	0.03	No	35	120	No	100		20-20	AB	6	2						27 5/8	628.00		
	2100	B	0.03	No	35	120	No	50		20-20	AB	6.6	2							398.00		
	2400	B	0.03	No	35	120	No	100		20-20	AB	6.2	2							598.00		
	2600A	B	0.03	No	35	120	No	150		20-20	AB	4	2							798.00		
	3225PE	I	0.03	No	15	200	No	25		20-20	AB	4	2							12		248.00
	3240PE	I	0.03	No	15	160	No	40		20-20	AB	6	2	75	0.55	200	No		15	398.00		
	3400(RO)	I	0.03	No	35	100	No	100		20-20	AB	6.2	2	77	0.35	200	Yes			15		798.00
NAIM AUDIO	NAIT 2	I	0.1	No	75		No	18	25	5-20	B				2.5	120	No	11	795.00	Can be adapted for use as preamp. Includes 24-V power supply for NAIM preamps. As above.		
	NAP 90	B	0.1	No		700	No	30	45	5-40	B								12		725.00	
	NAP 140	B	0.1	No		700	No	45	70	5-40	B								14		1145.00	
	NAP 250	B	0.1	No		900	No	70	125	5-40	B								30		2795.00	
NAP 135	B/M	0.1	No		900	No	75	135	5-40	B									33	2795.00		

# AMPLIFIERS

MANUFACTURER	Model = Remote Included. (RI) = Remote Optional	Type: Integrated = I; Balc = B; Tape = T; Hybrid = H; Mono = M	Rated THD, %	Balanced Inputs?	Rated Slew Rate, V/μs	High-Level Sensitivity, mV	Does Unit Invert Polarity?	Cont. Avg. Watts/Channel into 8 Ohms	Cont. Avg. Watts/Channel into 4 Ohms	Class of Output Operation	POWER AMP				PREAMP				Notes		
											Dynamic Headroom, dB	MM Phono S.N. Impedance, Ohms	MM Phono Impedance, Ohms	MM Phono Sensitivity, mV	Moving Coil Input?	Weight, Lbs.	Price, \$				
NAKAMICHI	PA-7 PA-5	B B	0.1 0.1	No No			No No	200 100	330 160	20-20 20-20	Stasis Stasis	1.7 1.7	2 2						59½ 35¼	1850.00 1195.00	
NEC	A-610(RI)	I	0.006	No	100	150	No	60	80	20-20	AB	2.0	4	90	2.5	150	Yes	26½	469.00	†Five-channel operation, 30 watts x 4 and 60 watts x 1; three channels, 60 watts x 3. ‡Five-channel operation, 40 watts x 4 and 80 watts x 1; three channels, 80 watts x 3 (balanced transformer-less).	
	A-910(RI)	I	0.006	No	100	150	No	100	130	20-20	AB	2.0	4	90	2.5	220	Yes	36¾	649.00		
	Renaissance M-50	B/M	0.004	No	100	150 Sel.	No	50	100	20-20	AB	2.0	4					18½	375.00		
	AVA-505	I	0.5	No	100	Sel.	No	†	††	50-20								20¾	449.00		
NESTOROVIC LABS	NA-1	B T/M	0.5	Yes		2V	Var.	150	150	20-20	AB								65	2375.00	Variable feedback.
NIKKO	Alpha 2000	B	0.001	Yes	50	1V	Yes	330	360	5-40	AB	1.8							57¼	1799.00	Bridges to 650 watts. Meters. As above. CD direct input. As above.
	Alpha 800	B	0.005	No	50	1V	Yes	250	420	5-80	AB	1.2						50¾	1299.00		
	Alpha 600	B	0.004	No	50	1V	Yes	180	260	5-80	AB	1.5						30¾	759.00		
	Alpha 400	B	0.002	No	50	1V	Yes	120	135	5-80	AB	1.0						28½	549.00		
	IA-600	I	0.03	No	50		Yes	120	210	10-60	AB	1.5		94	2.5	150	Yes	22	659.00		
IA-400	I	0.03	No	50		Yes	80	160	10-70	AB	1.8		94	2.5	150	Yes	28½	529.00			
OCTAVE RESEARCH	OR-1	B	0.9	No			No	85	170	20-20	A-AB		1						67	3650.00	Bridgeable; no feedback.
ONIX AUDIO	OA21	I	0.01	Yes	150	250	No	50	70	20-20	AB	1.3		75	2.0	500	†	11	775.00	†Optional. Add-on power supply, Model S.O.A.P., \$400.00.	
	OA20	I	0.01	Yes	100	250	No	35	60	20-20	AB	1.0		75	1.80	220		9	375.00		
	OA601 OA401	B B	0.1 0.1	Yes Yes		900 700	No No	60 40	120 70	5-40 5-40	B B								1595.00 1050.00		
ONKYO	M-510	B	0.005	Yes			No	300	500	20-20	A/B		1						160	4500.00	Meters. As above. As above. 18-bit D/A converter; optical drive. CD direct input. As above; selective tone controls. Rack-mountable. 18-bit D/A converter.
	M-508	B	0.003	Yes			No	200	350	20-20	B		1						55	1200.00	
	M-504	B	0.003	Yes			No	165	280	20-20	B		2					50	830.00		
	M-502	B	0.005	Yes			No	140	220	20-20	B		2					44	650.00		
	A-8800	I	0.008	Yes			No	100	150	20-20	B		2	94	2.5		Yes	47	800.00		
	A-8190	I	0.008	Yes			No	100	150	20-20	B		2	94	2.5		Yes	29	530.00		
	A-8170	I	0.008	Yes			No	80	120	20-20	B		2	93	2.5		Yes	25	420.00		
	A-8150	I	0.06	Yes			No	60	90	20-20	B		2	83	2.5		Yes	15½	280.00		
M-5160	B	0.09	Yes			No	150	200	20-20	B		2					20	360.00			
A-G10(RI)	I	0.008	Yes			No	150	220	20-20	B		2	95	2.5		Yes	70¾	3000.00			
PARASOUND	D/AS-1000II	B	0.05		110	250	No	140	210	20-20	AB	5	2						35	725.00	Bridges to 1250 watts; phone input jacks; level controls. Bridges to 260 watts; jacks and controls as above. Jacks and controls as above.
	HCA-800II	B	0.05		110	250	No	90	140	20-20	AB	1.5	2						19	365.00	
	HCA-500	B	0.25		63	250	No	50	75	20-20	AB	1.2	2						15	265.00	
PERREAU	PMF5500	B	0.03			1.5V		500		20-20	A-AB								115	6500.00	30 amps continuous current output. MOS-FET; 10 amps continuous current output.
	PMF3150	B	0.03	0.03		1.5V		300		20-20	A-AB								51	3000.00	
	PMF2350	B	0.01			1.5V		200		20-20	A-AB								34	2500.00	
PHILIPS	FA960	I	0.03	No	150		No	100	125	20-20	AB		2	85	2.5	150	Yes	30	549.00	CD direct input. As above.	
	FA860	I	0.03	No	150		No	65	80	20-20	AB		2	85	2.5	150	Yes	22	439.00		
PIONEER	A-717	I	0.003					100	135	20-20				88	2.5	150	Yes	41¾	750.00	Nonswitching. As above. As above.	
	VSA-910	I	0.005					100		20-20				83	2.5	140	Yes	24¼	830.00		
	A-91D	I	0.003					120		20-20				95	2.5	200	Yes	65¾	1600.00		
PROTON	D1200	B	0.02	No				100	160	20-20		6							33	699.00	Dual mono.
	AA-1150	B	0.02	No				50	80	20-20		7							25¾	499.00	
	D540	I	0.01	No	150			40	75	20-20		6		92	2.5	250	Yes	19¼	319.00		
	AM-300(RD)	I	0.01	No	150			30	50	20-20		6		90	2.5	165	Yes	15¾	289.00		
	AM-200	I	0.015	No	150			20	34	20-20		5		90	2.5	280	Yes	11½	249.00		
PS AUDIO	PS 200CX	B	0.01	No	300		No	200	400	20-20	AB	1	2						69.9	1950.00	
	PS 100C	B	0.01	No	300		No	128	200	20-20	AB	1	2						35	1195.00	
PSE	Studio IV Studio IV Mono	B B/M	0.01 0.01	No	100 100	125 125	No No	100 110	195 200	0-100 0-100	A/AB A-AB								27 26	850.00 710.00	High-current version with 380 watts into 2 ohms, \$900.00.
QED	A240CD MKII	I	0.1	No	300			40	65	5-30	AB		4	72	3		No	12	585.00		
	A240SA MKII	I	0.1	No	300			40	65	5-30	AB		4	72	3		Yes	12	750.00		

**A Unique Approach to  
Realizing the Full  
Potential of Your  
Audio/Video System...**

**EXCELLERATOR CABLE**®

Custom Length Audio-Video Interconnects



Audio  Authority®

Dealer Inquiries Welcome

## **The Interconnects that Came With Your Components Are Probably Worth About What You Paid For Them... Not Very Much!**

The "give-away quality" interconnect cables that come with most audio and video components are adequate signal transmission lines for only the most basic equipment, or the least critical listener/viewer. Really good interconnects cost more than most electronics manufacturers are willing to include with their products. Besides, consumer awareness of and demand for high performance interconnects is a relatively recent phenomenon.



Inexpensive "patch cords" provide only minimal signal transmission capability, restricting system performance. Needless lengths of cabling only compound the problem.

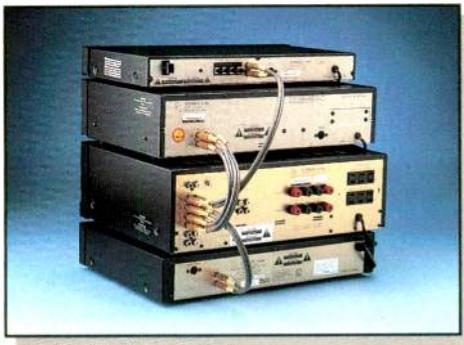
## **For Only a Fraction of the Cost of Even One Component, Excellerator Cable Can Reveal The Full Potential of Your System.**

Interconnects are the conduit through which electronic signals pass from one component to another in your system. If they are restrictive or inadequate, your system's performance will be diminished. But, rewiring your system with Excellerator Cable assures that all the performance designed into your components reaches your senses, instead of being lost in the reproduction process.

## Excellerator Cable's Performance Advantage Is Based On A Concept Often Neglected In Hi-Performance Electronics – Common Sense!

Traditional thinking toward increasing interconnect performance has centered around using increasingly exotic (read expensive) materials and manufacturing processes. Unfortunately, the resulting performance gains have been only incremental, offering diminishing returns for their increased cost.

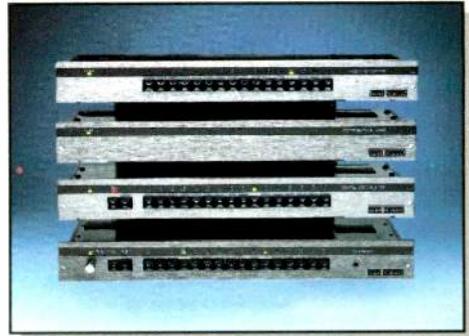
In contrast, Excellerator Cable's performance advantage is based on a simple, irrefutable, and previously overlooked idea – regardless of how good a cable is, the less of it used, the better. Instead of commercially packaged, predetermined length cables, Excellerator Cable with its solderless, screw-on, gold connectors, offers a practical way to configure premium grade interconnects to the exact length required – whether a few inches between a CD player and amplifier, or hundreds of feet in a multi-room, custom installation. This also means that your cables can be reconfigured at any time should your system requirements change.



Your system wired with Excellerator Cable benefits not only from the use of premium grade materials and technology, but also from being able to keep the length of cable between connections to the absolute minimum.

## Developed for the Most Demanding Application Imagineable

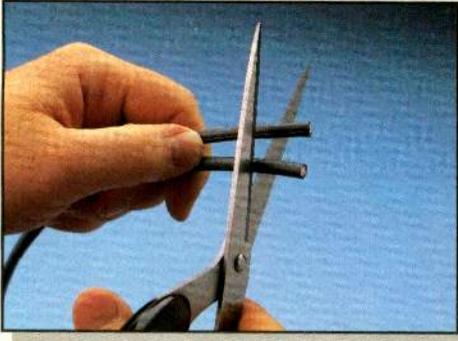
We originally developed the Excellerator Cable system to preserve signal integrity (and our reputation) in our commercial switching and demonstration systems, where scores of electronic products are interconnected, with cable runs sometimes exceeding 100 feet. In this tortuous environment, Excellerator Cable provides optimum performance with no hint of the incredible length of the interconnects involved. This is due in part to its extremely low capacitance (less than 15pF per foot) which avoids unwanted attenuation at higher frequencies.



Audio Authority's commercial switching and demonstration systems are known the world over for their high degree of signal integrity. Excellerator Cable is an important part of preserving that level of performance.

Within the audio/video band (DC to 6MHz), Excellerator Cable has linear response with minimal signal loss or alteration. It offers the optimum balance between performance and cost, resulting in an immediately discernable improvement over conventional interconnects. For example, Excellerator Cable's 95 ohm impedance specification, while not significant for audio signals, was chosen because it produces increased detail and resolution over traditional 75 ohm cables for composite video signals, in a typical installation.

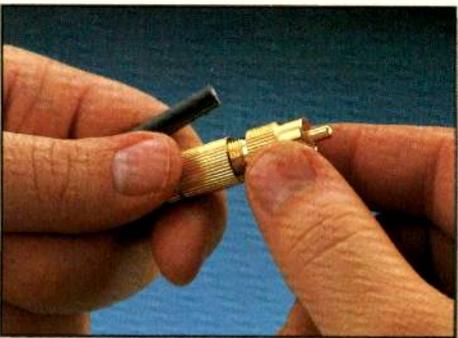
**With Excellerator Cable, You Can Quickly Make Premium Grade, Custom Length Interconnects Without Special Tools or Soldering.**



**Step 1** – Cut the required length of Excellerator Cable with sharp scissors or a razor knife, preserving its roundness.



**Step 2** – Insert the cable through the rear half of the connector until it extends about 1/8 inch.



**Step 3** – While holding the rear half of the connector and the cable, screw on the other half.

Excellerator Cable's screw-on connectors make it the product of choice for custom home or autosound installations. Just pull the required length of cable, then install the connectors.

**Specifications:**

**Available Configurations:**

2-channel (stereo audio)

3-channel (video & stereo audio)

**Length:**

continuous up to 500 feet

**Center Conductor:**

26 gauge (7 strands/34 gauge) pure electrolytic grade copper

**Braided Shield:**

36 gauge pure copper, ~95% coverage

**Dielectric:**

cellular foam polyethylene with minimal pigment contamination

**Jacket:**

gray, non-contaminating, flame retardant PVC

**Capacitance:**

minimal, less than 15pF per foot

**Bandwidth:**

DC to 50 MHz

**Impedance** (pertinent to video)

95 ohms (improved detail over 75 ohm cables)

**Transient Response:**

< 1.25 nanoseconds/foot rise time

**Attenuation:**

.0151 dB/foot @ 6MHz

**Audio  Authority®**

1720-B Fortune Court

Lexington, Kentucky 40505, U.S.A.

Phone 606/293-0578 Fax 606/299-2167

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# AMPLIFIERS

MANUFACTURER	Model (RI) = Remote Included. (RO) = Remote Optional	Type Integrated Type 1, Photo = P, Mono = M	Rated THD, %	Balanced Inputs?	Rated Slew Rate, V/μs	High-Level Sensitivity, mV	Does Unit Invert Polarity?	Cont. Avg. Watts/Channel, mV	Cont. Avg. Watts/Channel into 8 Ohms	Cont. Avg. Watts/Channel into 4 Ohms	POWER AMP						PREAMP			Notes
											Class of Output Operation	Dynamic Headroom, dB	Minimum Load Impedance, Ω	MM Photo S.N. - 8Ω	MM Photo Sensitivity, Ohms	MM Photo Sensitivity, mV	Moving Coil Input?	Weight, Lbs.	Price, \$	
QUAD	306	B	0.01	No	375	Yes	70	100	20-20	†	2	††							695.00	†Current Dumping.
	606	B	0.01	No	500	Yes	180	300	20-20	†	2	††						1295.00	††Less than 1 ohm.	
	520	B	0.01	Opt.	500	Yes	100	150	20-20	†	2	††						995.00	Rack-mountable.	
QUICKSILVER AUDIO	Mono Amp K188	B/T/M		No		No	60	60	13-55	AB		0.5						30	747.50	
		B/T/M		No		No	60	60	13-55	AB		0.5						30	897.50	
RADFORD	STA-25 MKIV	B/T	0.07	No	500		25	40	12-23	AB1		0.5						36	1800.00	6 amps, peak to peak; LED bias setup.
	Renaissance	B/T	0.07	No	707		35	52	8-25	AB1		0.5						38½	2495.00	8 amps, peak to peak; LED bias setup.
	MA-75	B/T/M	0.07	No	707		75	100	10-28	AB1		0.5						36	1995.00	15 amps, peak to peak; LED bias setup.
RANE	MA6	B	0.1	Yes	20	750	No	100	150	20-20	AB	1.5	4					44	1349.00	100 watts x 6.
REVOX	8242	B	0.01	Yes	80	Adj.	No	200	300	20-20	AB	3	2					37½	3000.00	Bridgeable.
	8250-S(RO)	I	0.015	No	250	No	No	100	150	20-20	AB	2.8	2	80	2.5			33	2500.00	†Optional.
	8150(RO)	I	0.015	No	250	No	No	60	90	20-20	AB	2.8	2	80	2.5			28	1575.00	
ROCKFORD FOSGATE	RF-2000	B	0.05	Yes	40	650	Sel.	200	300	20-20	AB		2					35	1500.00	Bridgeable; MOS-FET.
ROTEL	RB-890	B	0.03	No	150	No	160		20-20	A/B		4						27	749.00	Bridgeable.
	RB-870BX	B	0.03	No	150	No	100		20-20	A/B		4						20	549.00	As above.
	RB-850	B	0.03	No	150	No	50		20-20	A/B		4						19	299.00	As above.
	RA-870BX	I	0.03	No	150	No	80		20-20	A/B		4		80	2.8	180	Yes	19	649.00	
	RA-840BX3	I	0.03	No	150	No	50		20-20	A/B		4		80	2.8	180	Yes	17	399.00	
	RA-820BX2	I	0.03	No	150	No	30		20-20	A/B		4		80	2.8	180	No	13	279.00	
JEFF ROWLAND DESIGN GROUP	3	B/M	0.08	Yes	45	136	No	100	200	0.2-175	A/AB							46	4550.00	Adjustable input impedance; differential and single-ended inputs.
	5 Differential Mode	B	0.075	Yes	75	136	No	150	300	0.2-250	A/AB							103	5500.00	As above.
	7 Differential Mode	B/M	0.06	Yes	50	136	No	350	700	0.2-160	A/AB							135	9800.00	As above.
SAE	I102	I	0.02	No	150	No	60	90	20-20	AB	1.0	2	82				Yes	26	499.00	Programmable tone memories.
	A202	B	0.02	No		No	100	150	20-20	AB	1.2	2						31	499.00	Switching for two pairs of speakers; LED power meter.
	A502	B	0.02	No		No	200	300	20-20	AB	1.2	2						48	799.00	Bridges to 600 watts.
	X10A	B	0.01	No		No	100	150	20-20	A	1.5	1						35	900.00	Bridges to 350 watts.
	P50	B	0.017	Yes	25		No	70	115	20-20	AB	3.0	2					21	600.00	
P500	B	0.02	Yes	25		No	500	750	20-20	AB	1.0	1					80	1700.00		
SANSUI	Vintage AU-X901	I	0.005	Yes	200			130		20-20	A			88	2		Yes	39.9	1000.00	
	Vintage AU-X701	I	0.005	Yes	180			100		20-20	A			88	2.5		Yes	37.7	700.00	
	Vintage AU-X501	I	0.005					80		20-20	A			83	2.5		Yes	23.8	400.00	
	Vintage AU-X301	I	0.05					65		20-20	A			80	3.5		Yes	20.9	300.00	
	AU-G99X	I	0.003					160		20-20				88	2.5		Yes	38	1000.00	
	Lifestyle B-3000	B	0.05					120		20-20									260.00	
	Lifestyle B-1000	B	0.05					75		20-20									210.00	
SESCOM	SH-1 MK-II	B	0.1	No	250	No	10		20-20			1						10	264.00	Rack-mountable.
	PO-3	B	0.2	No	250	No	2		30-15			2						1	64.90	Requires PO-1 power supply.
	PO-4	B/M	0.2	Yes	500	No	4		30-15			2		70	2	200	No	1	47.30	As above.
PO-5	I	0.2	No	250	No	2		30-15			2						1	108.90	As above.	
SHERWOOD	AM7040	B	0.025	Yes				200	290	20-20	A/B								949.95	Dual mono power supply; fixed and variable inputs.
	AI-1110	I	0.03	Yes				50		40-20	A/B			75		150			219.95	Surround-sound circuitry.
	AI-1210R(RI)	I	0.025	Yes				100		20-20	A/B			79		190			449.95	As above.
SHURE HTS	HTS50SPA	B	0.1	No	1V	No	100		20-20	AB	1.5	4						27	1650.00	Bridgeable; includes processing for Shure HTS speakers.
SIMA ELECTRONICS	W-2003	B	0.05	No	60	1.5V	No	225	400	20-20	AB		2					45	1395.00	Dual mono; bridges to 850 watts.
	W-2002	B	0.05	No	60	1V	No	125	200	20-20	AB		2					25	850.00	Bridges to 400 watts.
	W-3050	B	0.05	No	60	500	No	50	100	20-20	A/AB		2					32	995.00	Dual mono; bridges to 200 watts; high-current design.
	PW-3000	I	0.09	No	50	200	No	50	85	20-20	AB		3	75	2.8	160	Yes	16	695.00	
SDNANCE	VCA-1(RI)	I/T	0.05	No	20	500	No	50	80	20-20	AB	1.1	2.0					30	995.00	Includes subwoofer (see "Speakers"); remote control of volume and power; three channels.

# AMPLIFIERS

MANUFACTURER	Model (R) = Remote Included, (RD) = Remote Optional	Type: Integrated = Basic, B; Tube = T; Hybrid = H; Mono = M	Rated THD, %	Balanced Inputs?	Rated Slew Rate, V/μs	High-Level Sensitivity, mv	Does Unit Invert Polarity?	Cont. Avg. Watts Channel into 8 Ohms	Cont. Avg. Watts Channel into 4 Ohms	POWER AMP										PREAMP		Notes												
										Rated Power Bandwidth, Hz to KHz	Class of Output Operation	Dynamic Headroom, dB	Minimum Load Impedance, Ohms	MM Phono S.N., -dB, *A, *W, *S, *V	MM Phono Sensitivity, mv	Moving Coil Input?	Weight, Lbs.	Price, \$																
SONOGRAPHE	SA120	B	1.0					120	20-20	AB														895.00										
SONY ES	TA-F500ES	I	0.006		125	150	No	80	100	10-100	AB	1.2	2												500.00	Source direct input. As above. Bridges to 580 watts.								
	TA-F700ES	I	0.004		125	150	No	105	140	10-100	AB	2	2												700.00									
	TA-N77ES	B	0.004		150		No	200	270	10-100	AB	1.8	2												1200.00									
SOUND-CRAFTSMEN	Pro-Power Ten	B	0.05		40	120	No	†	††	20-20	AB	1.5	1												1099.00	†200 watts x 4 or 600 watts x 2. ††300 watts x 4 or 900 watts x 2. MOS-FET; LED power meters. MOS-FET. As above; LED power meters. LED power meters; clip indicators. Clip indicators. 450 watts into 2 ohms.								
	Pro-Power Four	B	0.05		50	120	No	205	300	20-20	AB	1.7	1												799.00									
	Pro-Power Three	B	0.05		50	120	No	205	300	20-20	AB	1.7	1												699.00									
	Pro-Reference Two	B	0.05		50	120	No	100	190	20-20	AB	3.0	1												699.00									
	A5002	B	0.05		50	120	No	250	375	20-20	H	2.1	2												949.00									
	A5001	B	0.05		50	120	No	250	375	20-20	H	2.1	2														799.00							
PM840	B	0.05		40	120	No	205	300	20-20	AB	1.5	1													549.00									
PCR800	B	0.05		40	120	No	205	300	20-20	AB	1.5	4													499.00									
SOUND ENGINEERING	PFM-3	B	0.1	Yes	100	1.8V	No	150	300	1-100	A/AB	0.5	0.5												55	1500.00								
THE SOUND-SMITHS	Vulcan 240	B/T	0.15	Yes			Var.	90	150	20-20	AB1														95	5750.00								
SOUNDSTREAM	DA-1	B	0.05	No	35	1V	No	200	300	20-20	AB	1.8	0.5													1195.00	Bridgeable; optional infrared speaker selector.							
SPECTRAL	DMA-200	B	0.01	Yes	1V	200	No	200	380	0-2M	A	2													87	5995.00	D.C. coupled. As above. Bridgeable.							
	DMA-100	B	0.01	Yes	1V	200	No	100	200	0-2M	A	3													66	3995.00								
	DMA-50	B	0.01	Yes	1V	200	No	80	160	0-2M	AB	6													19	2495.00								
SPECTRASCAN	BPA-101B	B	0.07	No	40	1V	No	100	175	2-120	AB	†	2												40	1695.00	†Regulated power supply. Bridges to 350 watts.							
STRELIOFF	DC1 400/400	B	0.25	No	45	1.7V	No	420	730	10-30	AB	1.5	2												62	2000.00	Special order. As above. †1150 watts. ††1500 watts. As above.							
	AM1	B/M	0.10	No	25	1.7V	No	115	150	10-30	AB	1.5	2												22	850.00								
	SC1 1000	B/M	0.10	No	65	1.7V	No	†	††	10-30	AB	1.5	2												87	2500.00								
J. E. SUGDEN	A25	I	0.035	Yes	4.8	150	No	29		20-20	A/B		4													12	495.00	Bridges to 95 watts. Bridges to 108 watts. Bridges to 100 watts.						
	A28II	I	0.05	Yes	8	150	No	44		20-20	A/B		4														775.00							
	A48III	I	0.04	Yes	8	150	No	52		20-20	A/B		4														875.00							
	P28	B	0.03	Yes	7		No	47		20-20	A/B		4														595.00							
	P128	B/M	0.02	Yes	8	600	No	160	212	20-20	A/B		4																2495.00					
	AV51	B	0.09		48		No	70	138	20-20	B		2																					
SUMO	Polaris	B	0.05	No	40		No	100	175	20-20	AB	1.5	1													29	699.00	MOS-FET.						
	Andromeda	B	0.05	No	20		No	200	375	20-20	AB	1.5	1													35	1099.00							
	Nine	B	0.25	No	15		No	60	120	20-20	A	1	4													35	799.00							
	Nine Plus	B	0.10	No	15		No	65	120	20-20	A	1	1													35	1099.00							
SUPERPHON	DM 220	B				No	100	170	20-20																		899.00							
SYMETRIX	A-220	B	0.05	Yes		500	No	20	20	20-20	B	2.5														9	315.00	Bridges to 40 watts.						
TANDBERG	TPA-3016A	B	0.02	No	300	100		220	320	20-20	B	0.5	2.0													62	4000.00	No negative feedback. As above. As above.						
	TPA-3026A	B	0.02	No	300	100		150	210	20-20	B	0.5	2.0													31½	2500.00							
	TPA-3036A	B	0.05	No	200	100		100	120	20-20	B	0.5	2.0													23½	1350.00							
TECHNICS	SE-A5MK2	B	0.002	No		90		150		20-20	New A	1.5															79	0.25	150	Yes	40% 29	1235.00	Optical and direct digital inputs; four D/A converters with 18-bit, 4X oversampling.	
	SU-V90D	I	0.003	No				100	125	20-20	AA																					1300.00		
	SU-V10X	I	0.003	No		15		120		20-20	New A																					970.00		
	SU-V7X	I	0.003	No		15		100		20-20	New A																					750.00		
	SU-V650	I	0.007	No				90		20-20	AA																					590.00		
	SU-V450	I	0.007	No				50		20-20	AA																					420.00		
	SE-A100	B	0.007	No		75		170	240	20-20	AA	1.0																				2290.00		
SE-A3MK2	B	0.002	No		55		300		20-20	New A	1.0																				2900.00			
THRESHOLD	SA 12	B/M	0.05	Yes	100		No	300		0-100	Stasis, Class A																					130	6000.00	Balanced input impedance, 600 ohms; unbalanced input impedance, 75 kilohms; 0.03-ohm output impedance; 200 amps, peak. 75-kilohm input impedance; 0.03-ohm output impedance; 150 amps, peak. As above but 100 amps, peak.
	SA 1	B/M	0.05	No	50		No	160		7-100	Stasis, Class A																					79	4250.00	
	SA 2	B/M	0.05	No	50		No	100		7-100	Stasis, Class A																					56	2900.00	

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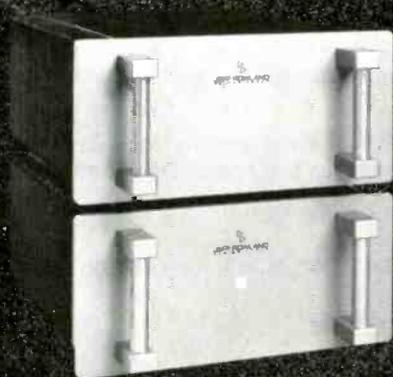
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Model 7 Differential Mode™  
Mono Power Amplifier

# FUNDAMENTAL



## THE NEW 800 SERIES...

The result of over a decade of experience designing and producing products with only one single minded goal...*MUSICAL EXCELLENCE.*

With the genius of John Bedini and his professional staff the criterion to design and produce the 800 Series world class products has been met.

Rather than lengthy adjectives and specifications, it is our purpose to provide the audiophile with fundamental system components of high sonic integrity and flexibility.

**AMPLIFIERS:** BA-801/BA-802/BA-803 conservatively rated at 70/150/200 watts per channel respectively operate in class "A" mode. Perhaps more importantly, when attached to a real world load (loudspeakers) they maintain Class "A" operation across a broad impedance range. Bedini uses quasi-complementary output configurations in all its amplifiers, resulting in sonic characteristics that are uniform.

**PREAMPLIFIERS:** BC-800/BC-866 use Class "A" circuit topology in conjunction with fully regulated power supplies. Special attention has been paid to ground planes and trace routing to ensure noise free operation. Both may be operated as a line drive or with gain.

Unique to the Model BC-800, new proprietary enhancement circuitry (Pat. Pend.) developed by John Bedini over a span of 8 years is employed. When activated, this processor enables the listener to increase the soundstage in all dimensions without loss of resolution. *This must be experienced to be believed!*

We at Bedini feel that the new 800 Series products excel in sonic and construction quality representing an uncompromising value.

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# EXCELLENCE



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Long ago, the special properties of the vacuum tube were discovered. It was the first electronic means of amplifying sound. Today, it's still the best.

No modern-day compromises even come close. Which is why Counterpoint focused on tube technology and, since 1977, have designed amplifiers and preamps capable of reawakening recorded music's lifelike qualities.

Today, Counterpoint preamps and amplifiers are more musical than ever. From our affordable but exacting SA-7 preamp to our no-holds-barred SA-II control center, music's natural texture and liquid qualities are preserved for you to enjoy.



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SA-II with remote



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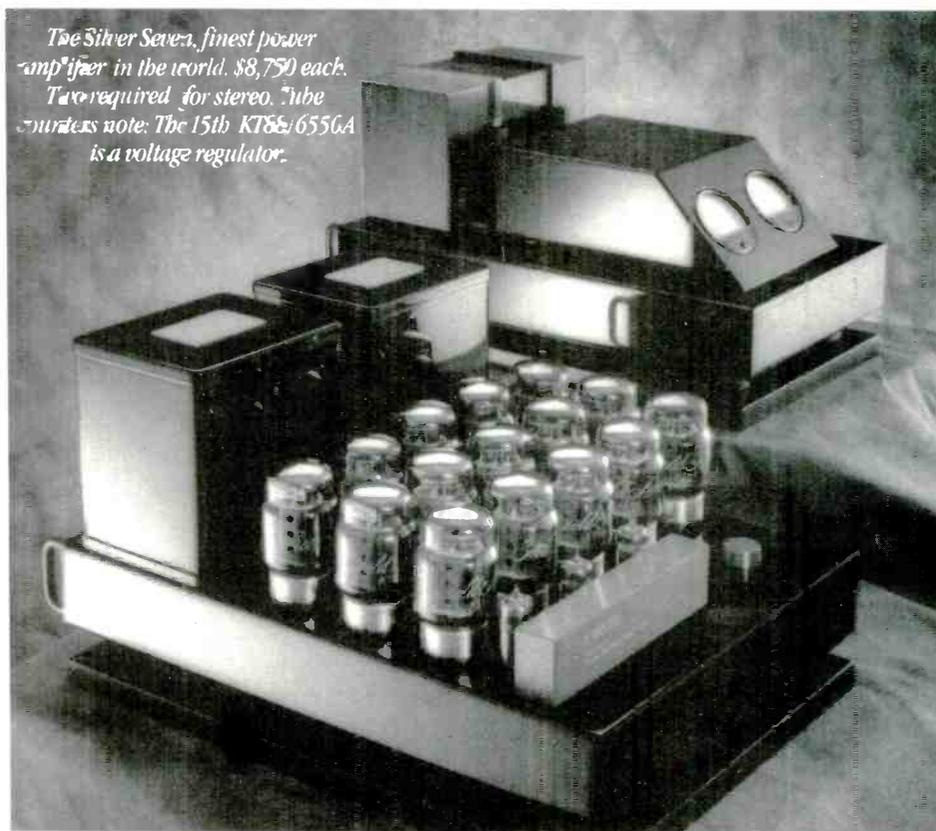
1988 Counterpoint, Inc., 2610 Commerce Dr., Vista, CA 92083

# AMPLIFIERS

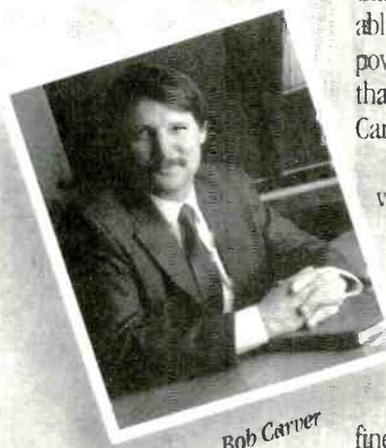
MANUFACTURER	Model (RI) = Remote Included; (RO) = Remote Optional	Type: Integrate = I, Basic = B, Type = T, Hybrid = H, Mono = M	Rated THD, %	Balanced Inputs?	Rated Stew Rate, V, $\mu$ S	High-Level Sensitivity, mV	Does Unit Invert Polarity?	Cont. Avg. Watts/Channel into 8 Ohms	Cont. Avg. Watts/Channel into 4 Ohms	Rated Power Bandwidth, Hz to kHz	POWER AMP						PREAMP		Notes	
											Class of Output Operation	Dynamic Headroom, dB	Minimum Load Impedance, Ohms	MM Phono S.N. - dB	MM Phono Sensitivity, mV	Moving Coil Input, mV	Weight, Lbs.	Price, \$		
THRESHOLD (Continued)	SA 3	B	0.05	No	50	No	50	7-100	Stasis, Class A								56	2900.00	As above but 80 amps. peak. Balanced input impedance, 600 ohms; unbalanced input impedance, 75 kilohms; 0.03-ohm output impedance; 200 amps. peak. 75-kilohm input impedance, 0.03-ohm output impedance; 100 amps. peak. As above.	
	S/1600	B/M	0.1	Yes	100	No	800	0-100	Stasis, Class A AB								130	6000.00		
	S 500	B	0.1	No	50	No	250	7-100	Stasis, Class A AB								78	3950.00		
	S/300	B	0.1	No	50	No	150	7-100	Stasis, Class A AB								56	2900.00		
	S/200	B	0.1	No	50	No	100	7-100	Stasis, Class A AB								44	1950.00		
TOSHIBA	XB-1000(RI)	I	0.009	Yes	150		†	7-70								150	No	23.1	999.00	†50 watts x 4; bridges to 120 watts x 2. Direct digital inputs and outputs; dual D/A converters; video inputs and outputs; see also "Ambience & Surround Sound Processors."
TRUE IMAGE RESEARCH	CM2500 TIP-1500	B B/M	0.01 0.01	No No	110 110	1.2V 1.2V	No No	125 150	250 300	10-50 10-50	AB A							74 85	1950.00 4900.00	MOS-FET. As above.
VECTOR RESEARCH	VA-1400 VA-1450	I B	0.03 0.03	No No	150 150	No Sel.	60 60	100 100	20-20 20-20	AB AB	2.5 2.5	80 2.5			Yes			20 20	349.95 349.95	Bridgeable.
VTL	45/45 Stereo	B T			660	No	45											37	1300.00	Switchable triode, Tri-Tet, or tetrode operation. As above.
	75 75 Stereo	B T			660	No	75											48	1950.00	
	50W Monoblocks	B T/M			660	No	50											35	1750.00	
	65W Monoblocks	B T/M			660	No	65											35	1850.00	
	Compact 100W Monoblocks	B T/M			660	No	100											42	2650.00	
	120W de Luxe Monoblocks	B T/M			660	No	120											56	3300.00	
	200W de Luxe Monoblocks	B T/M			660	No	200											52	4200.00	
	300W de Luxe Monoblocks	B T/M			660	No	300											75	4900.00	
500W de Luxe Monoblocks	B T/M			660	No	500											192	8000.00		
T35M Monoblocks	B/T/M			660	No	35											37	1850.00	Triode operation.	
WINGATE AUDIO	2000A	B	0.5	No	100	120	No	100	200	0.1-250	A							67	3900.00	No negative feedback; dual mono; 64 amps per channel, peak to peak.
	4000M	B/M	0.5	No	100	120	No	250	500	0.1-250	A							70	4500.00	No negative feedback; monoblock; 128 amps per channel, peak to peak.
YAMAHA	MX-1000U	B	0.003	No	1.6V	No	260	295	20-20	A	2.4	4						45	1199.00	Remote on/off with CX-10000 preamp. †40 watts x 2 or 20 watts x 4.
	MX-800U	B	0.003	No	1.3V	No	170	195	20-20	A	2.0	4						32	849.00	
	MX-600U	B	0.003	No	1.1V	No	135	160	20-20	A	2.1	4						28½	529.00	
	MX-10000	B	.0005	No	1.5V	No	250	300	20-20	A	1.5	4						94½	7000.00	
	M-35B	B	0.008	No	940	No	†		20-20	A/B	1.5	6						11	299.00	
	AX-900U	I	0.005	No	150	No	130		20-20	A B	1.4	6	93	2.5	160	Yes	37½	749.00		
	AX-700U	I	0.005	No	150	No	110		20-20	A B	1.4	6	92	2.5	160	Yes	26½	599.00		
	AX-500U	I	0.01	No	150	No	85		20-20	A B	2.2	6	92	2.5	160	Yes	17	399.00		
	AX-400U	I	0.015	No	150	No	55		20-20	A B	2.7	6	91	2.5	155	Yes	13½	289.00		
	AVX-100U(RI)	I	0.01	No	150	Yes	†		20-20	A B	1.2	6	86	2.5	100	No	22	699.00		
AVC-50U(RI)		I	0.05	No	150	No	45		20-20	A B	2.1	6	88	2.5	100	No	15	549.00	†Four-channel operation. 65 watts x 2 and 14 watts x 2; three channels, 65 watts x 2 and 28 watts x 1.	
	AVC-30U(RI)	I	0.05	No	150	No	†		20-20	A B	1.0	6	80	2.5	100	No	22½	449.00		
YBA	YBA1	B	0.09	No		No	85	170	20-20	A	2.2	0.5						47	6000.00	Dual mono.
	YBA2	B	0.09	No		No	70	140	20-20	A	2.0	1.0						27	3000.00	As above.

“Because I wanted to have the world’s finest amplifier and the world’s greatest transfer function, I built the astonishing Silver Seven.”

*The Silver Seven, finest power amplifier in the world. \$8,750 each. Tax required for stereo. Tube numbers note: The 15th KT88/6550A is a voltage regulator.*



*Before you meet the new M-4.0t, Bob Carver wants you to meet its inspiration, the money-is-no-object Silver Seven.*



*Bob Carver*

“One of my important design precepts is that power amplifiers should be easily affordable but last year, when I began designing a powerful new amplifier, I temporarily set aside that precept of affordability. The result is the Carver Silver Seven Mono Power Amplifier.”

Destined to redefine ultra-high-end values forever, the Silver Seven is truly a “money-is-no-object” design. In fact, just a single pair of its fourteen KT88/6550A Beam Power output tubes cost more than some budget amplifiers.

The Silver Seven employs classic, fully balanced circuit topology and the finest components in existence.

A-450 Ultra Linear output transformers with oxygen-free primary leads and pure silver secondaries.

- *Wonder Cap capacitors throughout.*
- *Interconnects are Van den Hul Silver.*
- *Internal wiring is pure silver.*
- *Wonder Solder throughout.*
- *Gold input connectors and high current gold output connectors.*

The Silver Seven’s polished granite anti-vibration base floats on four Simm’s vibration dampers. The separate power supply’s power transformer end-bells are machined from a solid block of high-density aluminum.

Capable of an astonishing 390 joules energy storage, the Silver Seven delivers **a conservatively rated 375 watts into 8 ohms from 20Hz to 20kHz with no more than 0.5% distortion.** On the 1-ohm tap, peak current is in excess of 35 amps!

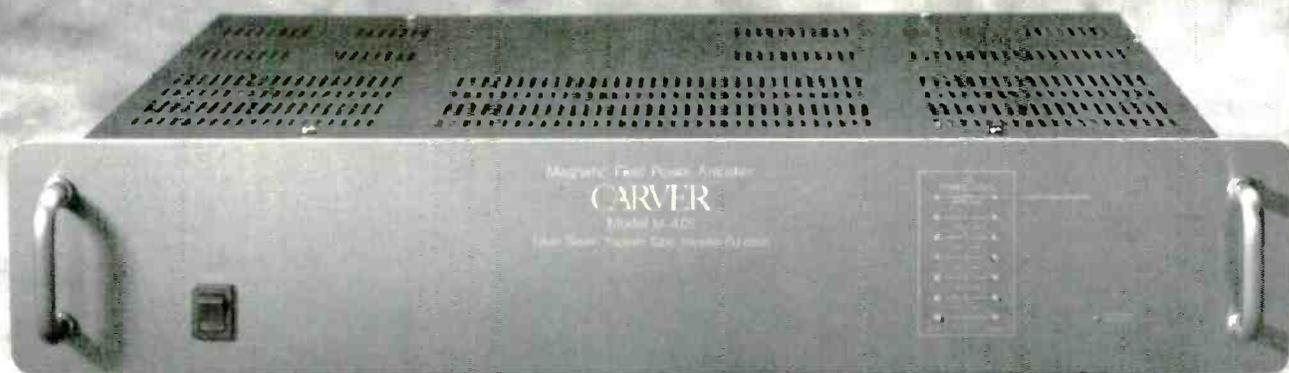
Sonically, a pair (for stereo) of the flawless Silver Sevens almost defies description.

*Powerful*

Distributed in Canada by: **evolution technology**

# "Because I wanted to share its magnificent sound with you we built the new Carver M-4.0t."

The M-4.0t, identical transfer function and 375 watts rms/ch. at 8 ohms 20-20kHz with no more than 0.5% thd. Total maximum output current is 60 amperes.



Superlatives are insufficient.

*What does this have to do with the new M-4.0t?*

Everything. Because the M-4.0t precisely duplicates the transfer function of the Silver Seven.

Ever wondered why two amplifiers of identical wattage can sound different? Or why two designs with different output ratings can sound much the same? In many cases, it's because each power amplifier exhibits a unique relationship between its input and output signals. Like human fingerprints, this *transfer function* is subtly distinct, defining much of the sonic character of the design. Bob has not only perfected the art of measuring an amplifier's transfer function, but is able to duplicate it in a completely dissimilar amplifier design! That's how he invested his solid state M-1.0t with the

transfer function of a set of \$5000 esoteric tube amps several years ago.

This time he's gone one better. Or two.

He's used this powerful scientific method to duplicate the transfer function of the Silver Seven in the new M-4.0t (now you know what the "t" signifies). Mind you, we are not saying the M-4.0t is *identical* to a pair of Silver Sevens. An M-4.0t weighs 23 pounds versus the Silver Seven at 300 pounds a pair. The Silver Seven stores 390 joules of energy while the M-4.0t stores none. As a Magnetic Field Power Amplifier the M-4.0t instantly draws the power it needs directly from the AC line.

Though in choosing the M-4.0t you may miss the warm glow of the Silver Seven's silver tipped vacuum tubes reflecting in polished black lacquer, be assured both amplifiers are the most musical, effortless, and open sounding you have

ever heard. Bass is full and tight, midrange is detailed, treble is pure and transparent.

Each can float a full symphony orchestra across the hemisphere of your living room with striking realism.

Bob Carver developed this incredible design for one reason: to bring you the best the world has to offer and the best amplifier value ever, and he has succeeded handsomely.

Listen to the new, incredibly affordable M-4.0t at your nearest Carver dealer. Or write us for more information. We'll even send you data on the Silver Seven. After all, if you ever want to move up from the M-4.0t, there's only one possible alternative.

## CARVER

Accurate

Musical

Enter No. 35 on Reader Service Card

P.O. Box 1237, Lynnwood, WA 98046

# PREAMPLIFIERS

MANUFACTURER	Model (R) = Remote Included, (RO) = Remote Optional	Type: T = T, H = Mono = M, Moving Coil Stage Only = MC, Phono Stage Only = P	Frequency Response, Hz to kHz, ± dB	Maximum Output, V	THD, %	Balanced Outputs?	High-Level Outputs?	Number of Outputs	Number of Tape & Processor Loops	Does Unit Invert Polarity?	MM Phono Sensitivity, mV, (at 0.5 V Output at 1 kHz)	MM Phono Overload, mV	MM Phono Input Capacitance, pF	MC Phono S/N, -dB, :1 Moving Coil Input?	Price, \$	Notes				
																	MM Phono 3 kΩ - dB, :1 MC Phono 5 kΩ - dB, :1	MM Phono 5 kΩ - dB, :1 MC Phono 10 kΩ - dB, :1		
ACCUHPHASE	C-280L C-270 C-200V C-202		1-700 +0,-3 1-500 1-500 +0,-3 1-500 +0,-3	10 10 8 10	0.005 0.005 0.005 0.005	Yes Yes Yes Yes	126 126 126 200	2 2 3 2	0 0 4 0	No No No No	0.5 0.5 1.0	300	47k 47k 47k	86 85 85	76 83	Yes No No Yes	9250.00 6200.00 4250.00 3250.00	Balanced input. As above. As above. No phono stage; balanced CD inputs with separate volume control.		
	C-17	MC	20-20 +0,-0.2		0.005									76	Yes	2650.00				
ADCOM	GFP-555		1-100 ±0.1	10	0.005	No	40	3	2	No	0.4	140	Var.	47k	85	70	Yes	499.95	Two main outputs; defeatable tone controls; tape dubbing switch. Tuner/preamp; see also "Tuners"; defeatable tone controls. Passive; seven line-level inputs.	
	GTP-500(RI)		20-20 ±0.1	8	0.01	No	40	2	2		0.4			47k	82		No	599.95		
	SLC-505							4	0	No								159.95		
A/D/S/	CC4(RO)		5-100 +0,-1.0	7	0.03		75	2	3	Var.	1.1	150	200	47k	80	77	Yes	1000.00	Tuner/preamp; see also "Tuners"; microprocessor- based digital controls; RS232 port.	
AMBER ELECTRONICS	FF17		2-150 +0,-3	9	0.005			3	2			250	Sel.	47k	90	70	Yes	695.00	Buffered tape loops with dubbing control; d.c. coupled; defeatable tone controls.	
	TP7	T	2-100 +0,-3		0.01			1				300	Sel.	47k			Yes	600.00		
ANALOGIC DESIGN GROUP	Line-X Precept	H H	10-75 ±0.5 19-60 ±0.75	19 17	0.08 0.1	No No	175 155	1 1	0 0	Yes Yes	1.2	400	200	47k	88		No	925.00 975.00		
	AR		20-20 +0,-0.5	5	0.004	No	50	2	3	No	0.8	180	Sel.	47k	83	72	Yes	399.00		
ARAGON	24K				0.06	No		2	0	No		250		47k	110	75	Yes	995.00		
AUDIBLE ILLUSIONS	Modulus 3	T	10-100 ±1	80	0.02	No	50	1		Yes	0.5	1.2V	40	47k	75			945.00	Dual mono; external power supply. As above.	
	Saturn 1	H	10-200 ±1	100	0.02	Yes	50	2		Sel.	1	400	60	Sel.	90	85	Yes	3500.00		
AUDIO DESIGN ASSOCIATES	OSP-8(RO) CPC-8(RI) DCA-40P ADP-8		5-30 ±3 5-30 ±3 5-30 ±3 20-20 ±0.25	7.5 5 12	0.007 0.007 0.007 0.05	No No No No		4 3 4 1	3 3 3 2	No No No No								1395.00 14,431. 850.00 995.00	Presetable source turn-on. 8 x 8 multi-room switcher. Eight source inputs, two main outputs.	
	DSP-48		20-20	10	0.05	No		1	2	No								2495.00		
AUDIO DYNAMICS	C-200		20-20 ±0.15	8	0.01	No	80	3	2	No	1			47k	82	64	Yes	599.00	Four-channel capability; Dolby Surround.	
AUDIO INNOVATIONS	1000 PRE	T	5-600 +0,-3	150	0.05	No		1	0	No	1.5	900	270	47k	86	86	Yes	2500.00	No feedback.	
AUDIDLAB	8000C		20-20 ±0.5	7.8	0.01	No	100	2	2	No	2.0	175	85	47k	79	75	Yes	595.00	Class A; defeatable tone controls; built-in head- phone amp.	
AUDIO RESEARCH	SP11MKII SP9 SP7 MCP33	H H T/MC	0.1-200 +0,-3 1-200 +0,-3 0.1-400 +0,-3 10-250 +0,-3	80 50 14 10	0.002 0.005 0.002 0.005	Yes No No No	18 50 25	2 2 1	0 0 0	Sel. No No No	0.088 0.25 0.5	350 200 500	150 100 30	47k 47k 50k	90 92 74	70 72 65	Yes Yes No Yes	4995.00 1695.00 1495.00 1395.00	Auto and manual muting. Selectable MC gain and impedance.	
	Andante		5-100 +0,-0.2	12	0.005	No	100	2	2	†	1.00	175	220	47k	90	80	Yes	1750.00		
	Diffet 2		5-100 +0,-0.25	15	0.005	No	100	2		†	1.00	250	100	47k	86	72	Yes	855.00		
	Legato		5-100 +0,-0.25	10	0.005	No	100	2		No	1.00	150	180	47k	75		No	440.00		
A.V.A.	FET3 FET3 Plus Super PAS3 Trans- scendence FET Valve	T H	15-30 ±0.2 12-40 ±0.2 20-25 ±0.2 10-45 ±0.2 10-40 ±0.1	10 12 8 12 15	0.005 0.004 0.02 0.002 0.001	No No No No No	50 50 50 50 50	1 3 1 3 3	2 4 0 4 4	No No No No No	0.7 0.7 0.6 0.7 0.7	150 200 200 350 400	10 10 20 10 10	47k 47k 47k 47k 47k	75 78 72 80 82		No No No No No	340.00 595.00 595.00 795.00 1195.00		
	BC-800 BA-866		1-110 +0,-3 1-110 +0,-3		0.15 0.15	No No		2 1	2 2	No No			Sel. 100	47k 47k			No No	1495.00 695.00		
	50		20-20 ±0.1	9.0	0.05	No	1.8V	2	0	No	1.0	100		47k	86		No	895.00		
	TF-12(RI)	H	4-50 ±1	5	0.05	No	32	1	0	No	0.38	200		47k	74	54	Yes	2950.00		
	PRO-5 PRO-10 PRO-10MC MC-101		1-100 ±1 1-100 ±1 1-100 ±1 1-150 +0,-0.5	7 7 7 9	0.03 0.01 0.01 0.02	No No No Opt.	53 45 45 45	2 1 1 2	2 0 0 2	No No No No	0.56 0.5 0.5 0.8	100 100 100 150	75 75 75 Sel.	47k 47k 47k Sel.	84 86 86 80		No No Yes Yes	398.00 598.00 648.00 898.00	Tape dubbing switch; defeatable tone controls. High-level section can be used passively. As above. As above.	



**NOW:**

## Even greater purity and performance from Audio Research electronics.

You invested in Audio Research electronics because you heard the difference in accuracy, detail and dynamics. Music simply sounded less reproduced, more real. Now you can extract even more of the performance you paid for: with new LitzLink™ interconnects and LitzLine™ speaker wire from Audio Research.

LitzLink and LitzLine both incorporate the same oxygen-free copper Litz wire used for critical point-to-point internal wiring in Audio Research preamplifiers and power amplifiers. Winding configuration and conductor size are the outcome of methodical experimentation and careful listening tests by the people who know Audio Research electronics best.

The greater tonal neutrality, transparency to low-level detail, ambient richness and sheer dynamic expressiveness you'll hear with new LitzLink and LitzLine aren't due to arcane wire theory or marketing hype. They're simply the result of painstaking attention to detail and high-quality component materials—like all Audio Research equipment.



Assembly procedures, solder formulation and termination connectors were all researched to insure exceptional performance as well as reliability. LitzLine, for example, is terminated with proprietary lugs featuring heavy gold plating over a machined oxygen-free copper base designed to allow easier hookup as well as greater sonic purity. You won't find them on any other speaker wire.

In short, every detail of new LitzLink and LitzLine is the outcome of careful listening to music—not preconceived notions about wire design. The result is a difference you'll not only hear, but enjoy. And while LitzLink and LitzLine were developed expressly for Audio Research electronics, other high-quality electronics may benefit as well.

Ask your authorized Audio Research dealer for an audition of new LitzLink and LitzLine. Let your ears do the rest.

HIGH DEFINITION® MUSIC REPRODUCTION



# Quality components assembled with intelligence and care.

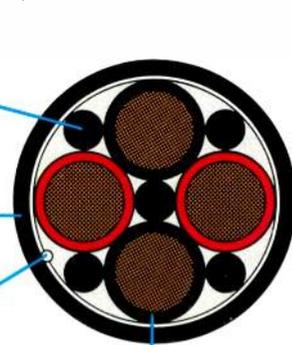
## Four-conductor LitzLink™ interconnect

Conductive Litz bundles are made up of individually insulated strands of oxygen-free copper. Strand thickness, count and winding geometry were evaluated and specified for maximum sonic purity and articulation at all frequencies.

Spacers keep conductive bundles at uniform distance from one another and help preserve overall geometric integrity under flex.

Tough PVC outer jacket wraps all inner elements tightly, yet provides adequate flexibility for easy system connections.

RF-shielded version has metallized boundary layer with drain wire connected to plug ground.



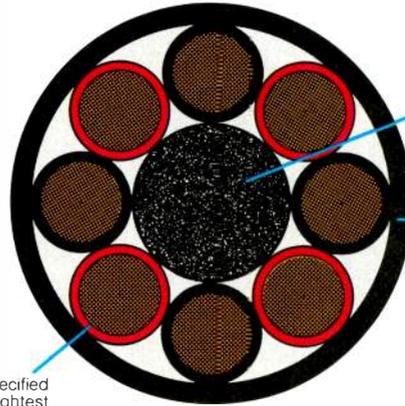
Extruded polypropylene jacket of specified thickness around each Litz bundle yields tightest possible "wrap," holding each strand firmly in position for minimum magnetic field distortion.

## Eight-conductor LitzLine™ speaker wire

Eight conductive Litz bundles are used to provide maximum signal transmission and purity, yet with reasonable size and flexibility for in-home use.

Fibrous center spacer helps hold all conductive bundles firmly in place against inner spacer, preserving overall geometry for best sonics.

Thick PVC outer jacket holds conductive bundles in place against inner spacer. PVC is flexible and highly resistant to deterioration from abrasion, chemicals or ultraviolet components of sunlight.



## New RCA plugs and speaker lugs

LitzLink RCA plugs were developed expressly for Audio Research by a leading manufacturer of audiophile-grade electronic parts. Conductive surfaces are heavily gold plated for best sonic performance with good resistance to abrasion and oxidation.

LitzLink speaker lugs were designed by, and are manufactured exclusively for, Audio Research Corporation. Solid, oxygen-free copper (selected for sonic purity) is first machined to the right-angle shape which allows easier connection of LitzLine to amplifier and loud-speaker terminals. The design allows secure tightening of connections for maximum signal transmission. Heavy gold plating assures resistance to oxidation.

## LitzLink Shielded vs. Unshielded

A radio-frequency shielded version of LitzLink is available at a small additional cost for those applications where radio-frequency interference is a problem, or where maximum protection of low-level phono



LitzLine termination lugs are perfectly compatible with popular banana-plug adaptors.

signals is desired (e.g. from turntable to preamp). Signal levels of high-level sources such as a CD player are generally high enough to allow Unshielded LitzLink in most installations. Beyond three meters in length, LitzLink Shielded will yield slightly less overall resolution than the Unshielded version.

## Recommended lengths

Your authorized Audio Research dealer can order LitzLink or LitzLine in a wide variety of recommended lengths. For best sonic performance, the following maximum lengths should be observed for each product:

LitzLink Unshielded — 9 meters

LitzLink Shielded — 3 meters

LitzLine — 9 meters

Beyond these lengths, incremental capacitive/inductive effects and other modes of signal loss may occur. For special applications, see your authorized dealer, or contact the Audio Research Customer Service Department (612) 566-7570.

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Minneapolis, Minnesota 55430  
Area Code 612/566-7570  
Telex: 290-583





## DR-9 STEREO POWER AMPLIFIER

- Rated at 100W (150 typical), 200W, and 400W/ch. into 8, 4, and 2 ohms respectively.
- Also bridgeable (400W mono into 8 ohms).
- Balanced and regular (single-ended) inputs included.
- The DR-9 features circuitry derived from our Pure Class A models, with power to spare.

## DR-7 REFERENCE PREAMPLIFIER

- User selectable settings for MC/MM gain, impedance, and capacitance.
- CD filters.
- Balanced and regular outputs included.
- Volume and Balance or Dual Volume controls (shown) available.
- Auto-muting.
- An unparalleled combination of sonics and user flexibility.



## NEW THIS FALL: DR-5 PREAMPLIFIER

- Much of the DR-7 circuit topology is retained in this single chassis preamp, such as MC high gain (adjustable), balanced and regular outputs.
- Also features a Bypass switch for Phono, and Phase inversion.

# PREAMPLIFIERS

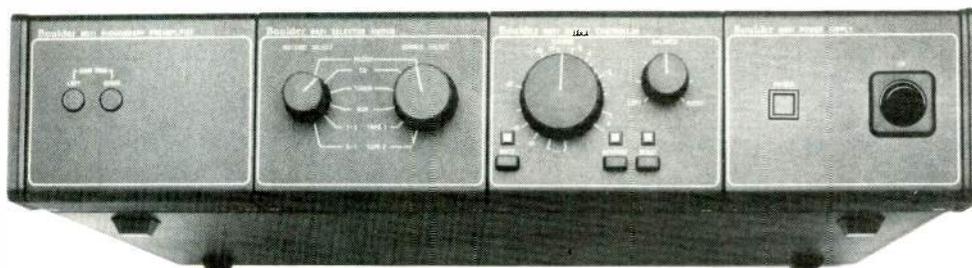
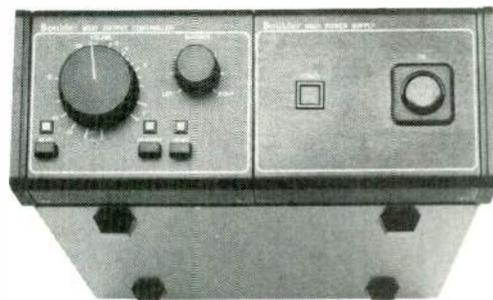
MANUFACTURER	Model (R) = Remote Included, (RO) = Remote Optional	Type: T = T, Hybrid = H, Mono = M, Moving Coil Stage Only = MC, Phono Stage Only = P	Frequency Response, Hz to kHz, ±dB	Maximum Output, V	THD, %	Balanced Outputs?	High-Level Outputs?	Number of Tape & Processor Loops	Does Unit Invert Polarity?	MM Phono Sensitivity, mV, for 0.5 V Output at 1 kHz	MM Phono Overload, mV	MM Phono Input Capacitance, pF	MM Phono S.N. - dB, *k' Wtd. re: 5 mV	Moving Coil Input?	Price, \$	Notes				
																	20-20 ±0.04	9	.0008	No
DB SYSTEMS	DB-1B/2A DBR-15B/2A	MC	20-20 ±0.04	9	.0008	No	120	1	0	0.9	150	100	47k	77	No	700.00	Without oak cabinet, \$985.00. Model DB-2A power supply or DBP-1 cable required.			
	DB-1A 2A DB-4B		20-20 ±0.04	9	.0008	No	120	1	0	0.9	150	100	47k	77	80	No		495.00		
	DB-1B- HL 2A		10-100 ±0.1	2	.0008	No	120	1	0	Var.						No		205.00		
			10-50 ±0.1	9	.0008	No	120	1	0	Var.					No	580.00				
DBX	CX1		20-20 ±0.09	9	0.01	No	63	4	2	No	1.25	150	Sel.	47k	87	79	Yes	2500.00	Dolby Pro-Logic and digital ambience delay circuits; video inputs and outputs; see also "Ambience & Surround Sound Processors."	
DENNESEN	Sirius JC-80	M			0.01 0.005	No	125 100	2 2	0 0	No Yes	2 2	200 500			80 100	No Yes	489.00 4500.00 Pair	External power supply.		
DENON	DAP-5500		1-300 +0,-3	30	0.002	Yes	150	2	0								1500.00	Three digital inputs; four D/A converters; balanced inputs.		
	PRA-1200		1-300 +0.2,-3	10	0.003		150	2	2		2.5	160		47k	96	79	Yes	475.00		
DIMENSIA	MPT200(RI)		20-20 +0,-0.8		0.04	No	75	2	2	No	1.25	150	100	47k	72		No	369.00	Tuner/preamp; see also "Tuners."	
DISTECH	LS IV LS VI LS VI A LS VI B		1-150	7	0.005	No	63	1	0	No	0.7	120	75	47.5k	86		No	950.00	Line level only.	
			0-100	8	0.001	No		1	0	No							No	1800.00		
			0-100	8	0.001	No		1	0	No			350	100	47k	100		No		2400.00
			0-100	8	0.001	No		1	0	No			350	100	47k	100	94	Yes		3000.00
DOLAN	PM-1		1-500	12	0.02	No	100	1	0	No	1	180	Var.	Var.	80†	72†	Yes	2395.00	†Unweighted.	
EIDOLON RESEARCH	Julia	T	0.1-200 +0,-1.5	85	0.01	No	Sel.	2	0	Var.	1.45	500	Adj.	Adj.	79	65	Yes	3600.00	Oual mono.	
	Mental	T	0.5-150 +0,-1.5	85	0.01	No	Sel.	2	0	Var.	1.45	500	Adj.	Adj.	78	65	Yes	2400.00	External power supply.	
	Salesia	T	0.5-150 +0,-1.5	70	0.01	No	Sel.	2	0	Yes	1.45	500	Adj.	Adj.	78		No	1200.00	Passive and active RIAA.	
ELECTRO-COMPANIE	MC 2	MC	0-100	15	.0015	No	100	2		1.5	200	150	47k	84	85	Yes	450.00	†Inverts polarity in phono stage only.		
	EC 1		50-100		.0004	No			Yes							2095.00				
	EC 1A		50-100		.0004	No			Yes							1850.00				
EXPOSURE	VII Single							1	0	No							Yes	925.00	External power supply required.	
	VII Dual							1	0	No							Yes	1175.00	As above.	
FORTÉ AUDIO	2		1-100 +0,-3	3	0.02	No		1	0	No			Sel.	47k			Yes	850.00	Selectable gain.	
GEMINI SOUND PRODUCTS	Triton PA-301	T/M	20-150	10	0.005	Yes	150	2	3	Sel.	1.75	150	250	47k	72	68	Yes	349.00		
GOLDMUND	Mimesis 2 (RO)		0-850 ±3	40	0.01	Yes	100	2	0	Sel.							Yes	7690.00	Without Model PH01 phono module, \$5990.00; a.c. polarity switch; star ground configuration.	
	Mimesis 7		0-650 ±3	35	0.01	Yes	100	2	0	Sel.							Yes	3490.00	Without phono stage, \$2990.00.	
GORDON INSTRUMENTS	Gordon(RI)																	2400.00	Custom-designed.	
HAFLER	DH-100 Series 2 DH-110 DH-112 Iris(RI)	MC	20-20 ±0.25	8	0.005	No		1	2	No	1.2	180	130	47k	84		No	275.00	Kit, \$225.00.	
			20-20 +0,-0.1	12	0.001	No	50	3	2	No	1.25	300	Adj.	47k	87		Opt. Yes	500.00	Kit, \$425.00.	
			20-20 ±0.1	3	0.01	No												Yes	75.00	
			20-20 ±0.1	7	0.005	No	200	3	0	No	0.35	70	Adj.	47k	92		83	Yes	800.00	Without remote, \$650.00.
HARMAN/KARDON	Citation 25 (RI)		0.25-250 +0,-3	6	0.002	No	135	4	2	No	2.2	180	Sel.	47k	83	78	Yes	849.00	Video switching.	
	Citation 21		0.25-250 +0,-3	6	0.001	No	135	2	2	No	2.2	160	125	47k	83	78	Yes	599.00		
HEYBROOK	C-2		20-50	10	0.05	No		2	0	No			250	47k	78	70	Yes	899.95	Toroidal transformer.	
HITACHI	HPT120- AVSW(RI)	H	20-20	7	0.005			2	5	No	2.7	150		47k	72			349.95		
HM ELECTRONICS	MX55 MX77 MX99 MX1 MX81 MX10		15-30 ±3	1.5	0.03		350	1	0					47k	80		No	384.00	Preamp/four-channel mixer. As above but with EQ.	
			15-30 ±3	2	0.03		350	1	3						47k	80		No		494.00
			15-30 ±3	2	0.03		350	1	3						47k	80		No		534.00
			15-30 ±3	1.5	0.03		350	1	5						47k	80		No		749.00
			15-30 ±3	1.5	0.03		350	1	7						47k	80		No		899.00
			30-30 ±3	1.5	0.03		350	1	2						47k	80		No		950.00



# PREAMPLIFIERS

MANUFACTURER	Model (RI) = Remote Included (RO) = Remote Optional	Type: T = Tape; T+H = H. Head; H = H. Head; MC = Moving Coil Stage Only; MC + M = MC + M. Phono Stage Only; P = Phono Stage	Frequency Response: Hz to kHz, ±dB	THD, %	Maximum Output, V	Balanced Outputs?	High-Level Sensitivity, mv	Number of Tape & Processor Loops	Number of Tone Controls	Does Unit Invert Polarity?	PHONO STAGE										Notes
											MM Phono Sensitivity, mv, for 0.5 V Output at 1 kHz	MM Phono Overload, mv	MM Phono Input Capacitance, pF	MM Phono Input Impedance, Ohms	MM Phono S.N. -88 - A; Wtd. re. 5 mv	MM Phono S.N. -88 - A; Wtd. re. 0.5 mv	Moving Coil Input?	Price, \$			
INDUYE	DMP-20		0-100 ± 0.05	10	0.01	No	100	0	0	Sel.	0.50	1V	Adj.	47k	100	98	Yes	4800.00	Three chassis: auto mute.		
JADIS	JP80	T				No		1	0	No							No	9750.00			
JANIS	CPA 100A PPA 202	MC	1-200 + 0.3 0.05-1.5M + 0.3	12 1	0.01 0.01		98	1		Sel. No	2.5	300	40	44k	75	73	Opt. Yes	1995.00 300.00	Plug-in for above model.		
JRM	Preamp		0-50 + 0.1	12	0.01		Sel.	2	Opt.	No	1.25		Sel.	Sel.	81	78	Yes	450.00	Includes 10-watt channel headphone amp; video inputs; infrasonic filter.		
KENWOOD	Basic-C2 Basic-C1		1-350 + 0.3 1-250 + 0.3	1 1	0.001 0.004	No No	150 150	2 1	2 2		2.5 2.5	200 200		Sel. 47k	94 93		Yes Yes	330.00 255.00			
KINERGETICS	KPA-1 KPC-1		1-300 + 0.3	7.5	0.05	No No	150	2 0	0 0	Sel. No	0.3	20	Var.	Var.	77	73	Yes	795.00 495.00	Passive: volume-control bypass switch; video inputs.		
KLIMD	Argo	T MC	10-450 + 0.3	10	0.2					Yes						75	Yes	1350.00	External power supply; adjustable input impedance.		
	Merlin	T	3-450 + 0.3	25	0.07			1	0	No	1.0	600	20	47k	76		No	3500.00			
KLYNE AUDID ARTS	SK-2A	MC		7						No							Yes	750.00	Switchable MC input impedance and high-frequency contour.		
	SK-4A			10		Yes		0		No	5.0		Sel.	Sel.			Yes	2450.00	Buffered output; no line amp stage; with line amp, \$2695.00.		
	SK-5A SK-6			10 10		Yes No		1 2		Sel. No	5.0 6.7		Sel. Sel.	Sel. Sel.			Yes Yes	3250.00 1950.00	Dual mono. Without phono stage, \$1450.00.		
KRELL	PAM-7 KRS-2 KRS	M	1-500 1-500 1-500	10 10 20	0.001 0.001 0.001	No No Yes	100 100 100	1 2 2	0 0 0	No No No		300 500 800	100 100 100	47k 47k 47k	110 110 120	80 80 90	Yes Yes Yes	1950.00 4500.00 10,000.00	Fully balanced, input to output.		
	Balanced																		Pair		
LAZARUS	CB	T	20-20 + 0.1	50		No	100	1	0	Yes	1.1	150	25	47k	84		No	650.00	Adjustable MC input impedance.		
	CC	T	20-20 + 0.1	50		No	100	4	0	Yes	0.9	150	25	47k	84		No	950.00			
	DLX	H	20-20 + 0.1	50		No	100	4	0	No	0.2	50	25	47k	92	72	No	1200.00			
	MC-1	T MC	10-80 + 0.1	15		No	100	4	0	Yes			Adj.	47k	72	72	Yes	650.00			
LEGACY	Preamplifier		1-100 ± 1	7.5	0.01		450	2	2	No	0.5	100	75	47k	89		No	496.00	Defeatable tone controls.		
MARK LEVINSON	No. 26		20-20 + 0.02	6	0.003	Yes		2		Sel.	Sel.		Sel.	47k			Yes	4750.00	Optional balanced inputs; without phono stage, \$3990.00.		
	ML-6B	M	20-20 + 0.02	6	0.003	Yes		1		No	Sel.		Sel.	47k			Yes	8250.00	Without phono stage, \$6580.00 per pair.		
	ML-7A		20-20 + 0.02	6	0.003	Yes		2		No	Sel.		Sel.	47k			Yes	6420.00	Without phono stage, \$5725.00.		
	ML-10A ML-12A		20-20 + 0.02 20-20 ± 0.3		0.003 0.006	Yes Yes		1 1		No No	Sel. Sel.		Sel. Sel.	47k 47k			Yes Yes	3325.00 1600.00	Powered by PLS-124 supply, \$455.00, or by ML-11 amp.		
LINN HI-FI	LK1(RO)					200	4	0	Yes	5			47k			Yes	1050.00	Microprocessor controlled.			
LOGAN LABS	PA-10B HLE-1010T	T/P T/MC	1-3M ± 3 1-1M ± 3	160 50	0.2 0.2	No No				Yes Yes	4	1V	50	49.9k	70	70	No Yes	6495.00 3495.00			
LSR&D	The LEACH Pre-Preamp	MC	0.2-200 + 0.3	4	0.005	No				No						88	Yes	170.00	Kit, \$100.00; selectable input impedance.		
LUXMAN	LE-109	P	20-20 ± 0.3	2	0.005	No				No	2.5	250	100	47k	101	88	Yes	500.00			
MADISON FIELDING	CA700P(RO)		20-50	5	0.005	No	100		7	No								1275.00	Part of multi-room system.		
MAVRICK AUDIO	Spatial- essence Reference		2-200 ± 0.5	10					0	No		300		47k	100		No	7000.00	Dual mono; external power supply.		
McINTOSH	C34V		20-20 + 0.05	10	0.01	No	250	5	5	No	0.4	91	65	47k	84		No	2195.00	Optional video switcher, Model MVS-1, \$299.00.		
	C31V(RI)		20-20 + 0.05	10	0.007	No	200	4	5	No	0.6	91	65	47k	84		No	1895.00	As above.		
MEITNER AUDIO	PA-6I(RI)		1-100 + 0.3	8	0.01	No	500	1	0	Sel.	Sel.		Sel.	Sel.	Var.	Var.	Yes	†	†With infrared remote, \$2495.00; with wired remote, \$2395.00.		
MELOD AUDIO	GK-1 + 1	T H	2-300 ± 1	50	0.07	No	250	1	0	Yes	1.0	500	180	47k	80	70	Yes	1395.00	External power supply. As above.		
	MA 222		2-300 ± 1	50	0.07	No	250	2	0	Sel.	1.00	500	180	47k	87	75	Yes	2895.00			
	GK-2		2-300 ± 1	50	0.07	No	250	1	0	Yes	1.00	500	180	47k	82	72	Yes	1895.00			

# Introducing the first Modular Preamplifier available in Small, Medium or Large.



One-size-fits-all preamplifiers are often too big or too small. Because people have different listening needs, our preamplifiers come in different sizes.

Some listeners are devout record collectors. Some like the convenience of CDs. Yet others want all kinds of sources in their system. How do you find a preamplifier that fits everyone?

Only Boulder Amplifiers has the answer. The Modular Preamplifier comes in Small, Medium, or Large, and everywhere in between.

Boulder has separated the audio functions and put them into attractive individual modules which can be configured at your dealer or in your home.

You can get started on your preamplifier in a small way and grow into larger sizes. When you invest in a Boulder Preamplifier, you won't wind up with a closet full of preamps. You get the size you *need*, instead of the usual *one-size-fits-none*.

A complete Boulder Modular Preamplifier is typically \$2,800. The Boulder 500 Power Amplifier lists for \$3,295.

## Boulder AMPLIFIERS

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Telex: 6503085376 MCI UW

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# PREAMPLIFIERS

MANUFACTURER	Model (RI) = Remote Included, (RO) = Remote Optional	Type: J=J, T=Hybrid, H=Mono, M=MC, Phono Stage Only=P	Frequency Response, Hz to kHz, ±dB	Maximum Output, V	THD, %	Balanced Outputs?		High-Level Sensitivity, mV	Number of Taps & Processor Loops	Does Unit Invert Polarity?	MM Phono Sensitivity, mV, for 0.5 V Output at 1 kHz		MM Phono Overload, mV	MM Phono Input Capacitance, pF		MC Phono S.N. — 00 - A - wid. re: 5 mV	Moving Coil Input?	Price, \$	Notes
						1	2				1	2		1	2				
MERIDIAN	201(RO)			0.01	No	150	2	0	No	1.5						Yes	990.00	With optional board, sends different sources to two rooms with independent remote control.	
MFA SYSTEMS	Magus A-2 Mantra Lumin- escence A-4	T T T	3-100 ±1 3-150 ±1 3-200 ±1	48 65 70	0.03 0.02 0.015	No No No	50 50 50	1 1 1	0 0 0	Yes No No	0.16 0.11 0.13	300 380 400	200 200 200	47k 47k 47k	82 88 90	62 68 70	Yes Yes Yes	895.00 1995.00 3400.00	
MIRROR IMAGE	.2P		1-1M			No		2	0	Sel.								1500.00	Optional phono stage, \$600.00.
THE MOD SQUAD	Line Drive Oeluxe Line Drive Phono Drive		0-1M 0-1M 5-100 +0.3		0.01		2 2	0 0	No No									500.00 900.00 1000.00	Passive line level only. Front-panel MC impedance adjustment.
MORRISON AUDIO	Pre-2		0-400 +0.3	12	0.05	No	Var.	2	0	No	Adj.	Adj.	180	Adj.			Yes	2395.00	D.C. coupled; external power supply; passive RIAA.
MOTIF	MC7 MC8 MC9		5-100 +0.1 5-100 +0.1 50-100 +0.1	10 10 10	0.1 0.1 0.1			1 2 2	0 0 0			150 150					Yes Yes Yes	3500.00 2250.00 1295.00	Line level only.
MUSIC REFERENCE	RM-1 MKII RM-4C RM-5 MKII RM-7 RM-8	T T/MC T H/P	0.01-200 +0.1 2-200 +0.1 2-100 +0.1 0-1M	30 20 30 30 50	0.005 0.01 0.01 0.01	No No No No	25 25	2 2	0 0	No Yes No No	0.12 0.25 0.10	1V 1V 1V	200 Adj.	47k Adj.	80 81 90	60 64 80	Yes Yes Yes Yes	4000.00 750.00 1150.00 950.00 650.00	External power supply; auto mute and off; adjustable line and phono gain. Auto mute; adjustable MC gain and impedance. Auto mute; adjustable gain. As above. Passive line level only.
NAD	1240 1300 1700(RI)		20-20 ±0.5 20-20 ±0.3 20-20 ±0.3	8 12 12	0.01 0.01 0.04	No No No	90 80 80	1 3 3	2 2 2	No No Yes	1.4 1.3 1.4	180 200 180	Sel. Sel.	47k 47k	76 80 76	76 78	Yes Yes Yes	248.00 498.00 798.00	Bass EQ. As above; defeatable tone controls. Tuner/preamp; see also "Tuners."
NAIM AUDIO	NAC 62 NAC 32-5		20-20 ±0.5 20-20 ±0.5	7.5 7.5	0.1 0.1	No No	75 75	1 2	0 0	No No	2 2	200 200		47k 47k			Yes Yes	795.00 1145.00	Phono input can be ordered as MM, MC, or high level. Two phono inputs as above.
NAKAMICHI	CA-7A(RI) CA-5AII		1-100 +0.3 1-100 +0.3	7 7	0.002 0.002	No No		3 2	0 2	No No	0.625 0.63	320 270	Sel. Sel.	50k 50k	88 88	87 87	Yes Yes	2595.00 1095.00	Full remote for Nakamichi units.
NIKKO	Beta 600 Beta 400		10-200 +0.3 10-100 +0.3	15 15	0.001 0.001	No No	150 150	5 4	2† 2	Yes Yes	2.5 2.5	150 150	100 100	47k 47k	94 93	81 77	Yes Yes	599.00 439.00	†Parametric EQ. Two record-out selectors. CD direct.
NOVA ELECTRO-ACOUSTICS	CPA-100A PPA-202	MC	1-200 +0.3 0.05-1.5M +0.3	12 1	0.01 0.01	No No	98	1	0	Sel. No	2.5	250	40	44k	75	73	Opt. Yes	1995.00 300.00	Selectable gain. Plug-in for above model.
ONIX AUDIO	OA24(RI)		20-20 ±0.5	7.5	0.1	Yes	75	2	0	No	2.0	200		47k			Yes	1245.00	Powered by S.O.A.P. 2 supply, \$825.00, or by OA401 amp.
ONKYO	P-308 P-304 P-3160(RI)		0.8-170 +0.3 0.8-170 +0.3 15-30 ±1	3 3 5	.0005 .0005 0.009	Yes Yes Yes	150 150 150	2 2 1	3 2 3	No No No	2.5 2.5 2.5	210 210 120		47k 47k 50k	92 92 83	81 81	Yes Yes No	660.00 530.00 270.00	Two outputs. CD direct; motorized volume control; selective tone controls.
PAC	Pro-Reference Ia Pro-Reference Ib C.P.R. III C.P.R. II C.P.R. I	T H	10-100 +0.1 10-100 0-100 +0.01 0-100 +0.01 0-100 +0.01	28 10 10 10 10	0.01 0.01 0.01 0.01	No No No No	30 30 30 30 30	1 1 1 1 1	0 0 0 0	No No No No	0.3 0.3 0.3 0.3	350 350 300 300	100 100 75 100	47k 47k 47k			Yes Yes Yes No	3895.00 3995.00 1955.00 1600.00 1200.00	Selectable MC gain and impedance. Line level only.
PARASOUND	P-FET-900		8-100 +0.3	10	0.005		150	2	2	No	2.5	230	175	47k	80		No	395.00	FET; variable loudness control.
PERREAUX	SM3 SA33		20-50 ±0.25 20-50 ±0.25		0.008 0.009		Sel. Sel.	1 1	0 2	No	1.8 2.8						Yes Yes	2200.00 1750.00	
PLEXUS AUDIO SYSTEMS	Phonon Photon	MC	20-250 ±3 20-185 ±3	10 1.3	0.01		1.5V	1	0	No No		140	50	47k	90	94	No Yes	795.00 195.00	

# SMART COMPANY

Stan Curtis loves to explore. Genial founder and prime force behind Cambridge Audio, it's in his nature to seek out inventive new solutions to seemingly insoluble problems.

Fortunately for all of us, Stan's relentless desire to improve the status quo in audio is plainly evident in the simple elegance and uncompromising quality of Cambridge components.

Starting on the road to high innovation with the world's first high performance solid state integrated amplifier (P40), Cambridge has quickly evolved into a full line manufacturer with products characterized by intelligent design, superlative performance and high mechanical integrity.

Of course, this comes as no great surprise to those who've experienced the extraordinary Cambridge CD-1 compact disc player. Reveling in its unheard of 32 bit resolution, the CD-1 is generally acknowledged as the world's finest player. The more affordable CD-2 boasts incredible 16 x oversampling for transparent audio reproduction.

In keeping with Stan's thinking, Cambridge's intelligent power amplifiers, preamps, integrators and tuners are characterized by high current output and discrete circuitry to meet the challenges of digital program material.

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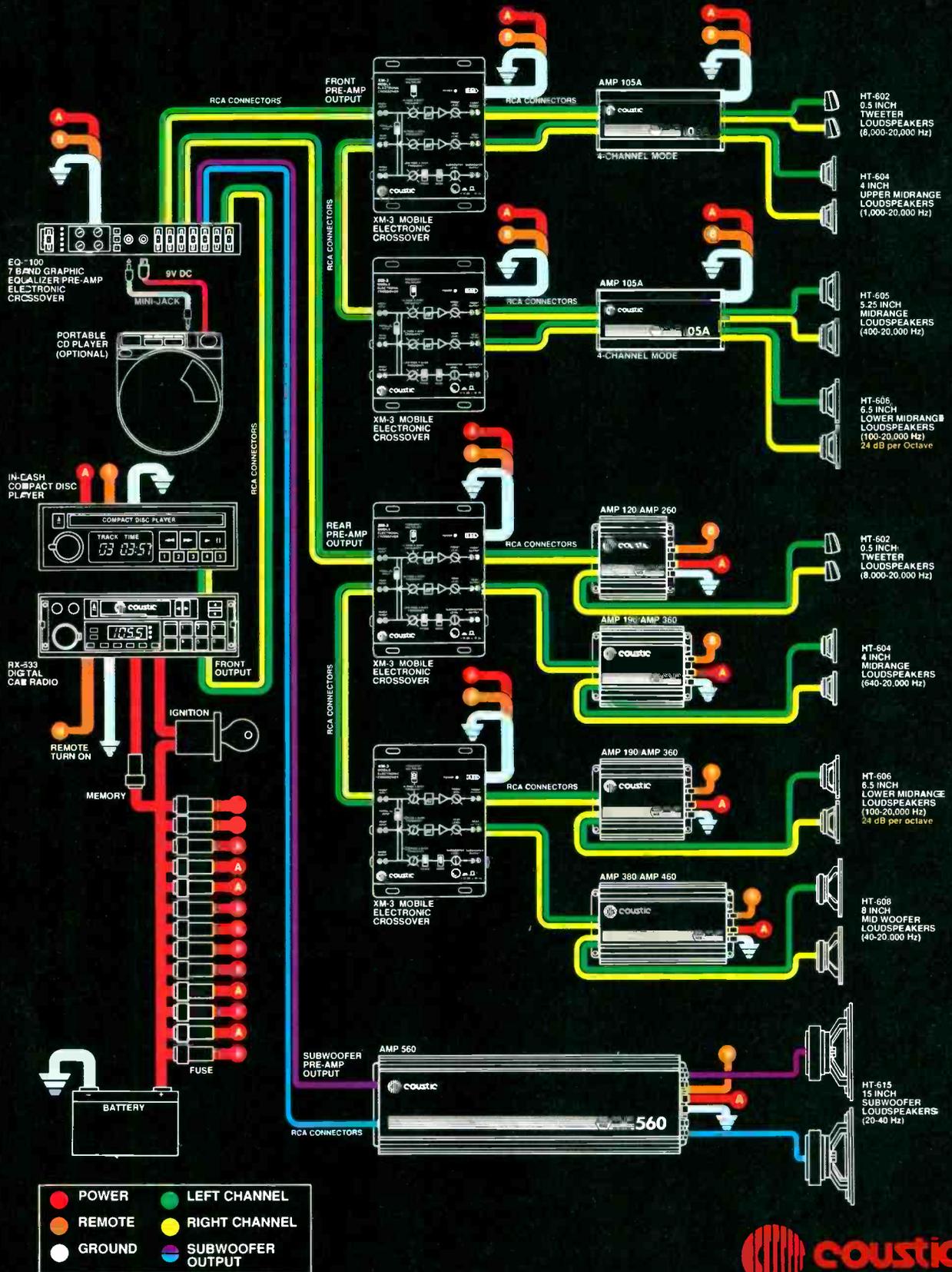
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# PREAMPLIFIERS

MANUFACTURER	Model (RI) = Remote Included. (RD) = Remote Optional	Type: Tube = T, Hybrid = H, Mono = M, Moving Coil Stage Only = MC, Phono Stage Only = P	Frequency Response, Hz to kHz, ± dB	Maximum Output, V	THD, %	Balanced Outputs?	High-Level Outputs?	Number of Tape & Processor Loops	Does Unit Invert Polarity?	MM Phono Sensitivity, mV, for 0.5 V Output at 1 kHz	MM Phono Overload, mV	PHONO STAGE					Price, \$	Notes	
												Number of Tone Controls	MM Phono Input Impedance, Ω	MC Phono S.N., -dB, *X Wire, re: 5 mV	Moving Coil Input?	Price, \$			
PROTON	1000		20-20 ± 0.2	21	0.003	No	150	2	3		2.5	250	Sel.	47k	91	70	Yes	399.00	Includes crossover for subwoofers. As above.
	1100		20-20 ± 2	18	0.003	No	150	2	2		2.5	290	Sel.	47k	94	79	Yes	259.00	
PSE	Studio SL		5-100 +0,-0.05	12	0.005	No	250	1	0	Sel.		200	120	47k	80	78	Yes	680.00	
QUAD	34 44		20-20 ± 0.3	0.5	0.05	No	300	1	4	No								795.00	†Modular inputs.
			20-20 ± 0.3	5	0.05	No	†	2	4	No								995.00	
QUICKSILVER AUDIO	Preamp M.C. Transformer	T	1-1M	65	0.001	No		1	0	No	12	1.2V		47k			No	1075.00	12.5-ohm output impedance. 23-dB fixed gain; for cartridges of 0.5 to 40 ohms.
		MC	1-100	2.8						No							Yes	295.00	
RADFORD	ZD-22 SC-25		20-32 ± 0.25	10	0.01	No	100	2	2		2.0	500		47k	83		No	649.00	Separate gain and volume controls. As above; tape dubbing switch.
			5-80 ± 0.25	17	0.02	No	100	1			0.25	600		47k	88			1750.00	
RANE	MP24		15-30 +0,-3	10	0.01	Yes	100	2	4	No	1.5	100	220	47.5k	90		No	1099.00	Preamp/mixer; four stereo mixing channels.
REVOX	B252(RD)		20-20 +0,-0.2	15	0.01	No	160	2	2	No	Adj.	23	Adj.	47k	75	75	Dpt.	1600.00	
ROCKFORD FOSGATE	RF-200		20-100 +0,-0.5	10	0.005	No	200	2	2	No	4.8	85	150	47k	78		No	500.00	Includes variable crossover.
ROTEL	RC-870BX RC-850 RTC-850(RI)		20-20 ± 0.2		0.004	No	150	2	0	No	2.5	180		47k	80	70	Yes	449.00	Tuner/preamp.
			20-20 ± 0.2		0.004	No	150	2	2	No	2.5	180		47k	80	70	Yes	249.00	
			20-20 ± 0.2		0.004	No	150	2	2	No	2.5	180		47k	80	70	Yes	549.00	
JEFF ROWLAND DESIGN GROUP	Coherence One		0.2-500 +0,-3	15	0.015	Yes	125	1	0	Sel.	5	200	Sel.	Sel.	87	85	Yes	3950.00	External power supply.
SAE	P102 X1P		20-20 +0,-0.5	7.5	0.01	No	150	3	2	No	1.3	120	200	47k	82	75	Yes	449.00	Two pairs of main outputs; three digital, programmable tone memories. External power supply.
			20-20 +0,-0.2	17	0.008	No	230	1	0	No	0.07	250	Sel.	Sel.	80	80	Yes	1200.00	
SANSUI	Lifestyle C-1000		5-100	10	0.03		150	4	2		2.5	120		47k	75			190.00	
SESCOM	PO-11	P	20-20 ± 1	1.2	0.1	No				No	2.0	150	200	47k	70	60	Yes	57.20	Requires PO-1 power supply.
SHERWOOD	AP-7020(RI)		3-250 +0,-3		0.005	Yes		3	4		2.5	280		47k	83	73	Yes	479.95	Two main outputs; includes three-way crossover.
SHURE	M64A	P	40-15 ± 2	6	1					No	9.4	100	160	50k	65†		No	102.00	†Unweighted. Equalization for tape head or mike.
SIMA ELECTRONICS	P-2001 MKII	H	20-50	11	0.01	No	200	2	0	No	1	110	100	47k	80	67	Yes	695.00	
SONOGRAPHE	SC-1			7.5	0.25				0			150						649.00	
SONTEC	PPP-102		1-400 ± 1	15	0.003			0	0	No	Var.	150	Var.	Var.	88	68	Yes	825.00	Input stage gain-adjustable to match MM or MC cartridges.
SONY ES	TA-E77ESD (RI)		3-300 ± 0.2	1.5	0.001	No	150	3	2		2.5	150	200	50k	95	83	Yes	1200.00	Direct digital inputs; dual D/A converters; S-video inputs.
SOUND-CRAFTSMEN	Pro-Control Four Pro-Control Three DX4200 DX4000 DX3000		5-100 ± 0.25	10	0.005		125	7	2	No	2.5	200	100	47k	97		No	699.00	Bridging outputs.
			5-100 ± 0.25	10	0.005		125	3	2	No	2.5	200	100	47k	97		No	499.00	As above.
			5-100 ± 0.25	10	0.01		90	4	†	No	Adj.	300	Adj.	47k	97	97	Yes	699.00	†10-band passive EQ. As above.
			5-100 ± 0.25 5-60 +0,-1	10 7	0.01 0.01		90 90	5 3	0 2	No No	2.8	200 150	100 100	47k 47k	97 85	No No	439.00 329.00	As above.	
SOUND ENGINEERING	PFM-2 PFM-0	MC	1-50 +0,-0.5 5-100 +0,-0.1	17 3	0.01 0.06	Yes No	Sel.	1	0	Sel. No	Sel.	450	100	47k	90		No Yes	1250.00 675.00	
SOUNDSTREAM	C-1(RI)		5-75 ± 0.3	8.5	0.05		75	4	2	No								1495.00	Three optional phono cards; direct video switching; optional multi-room switching.
SPECTRAL	DMC-10 Series Delta DMC-6 Series II		0-1M ± 0.1	40	0.01		100	1		No	1.5	1.2V	Sel.	Sel.	95	78	Yes	3495.00	External power supply.
			0-1M ± 0.1	40	0.01		100	1		No	1.5	1.2V	Sel.	Sel.	95	76	Yes	2495.00	As above.

# Double Scoop

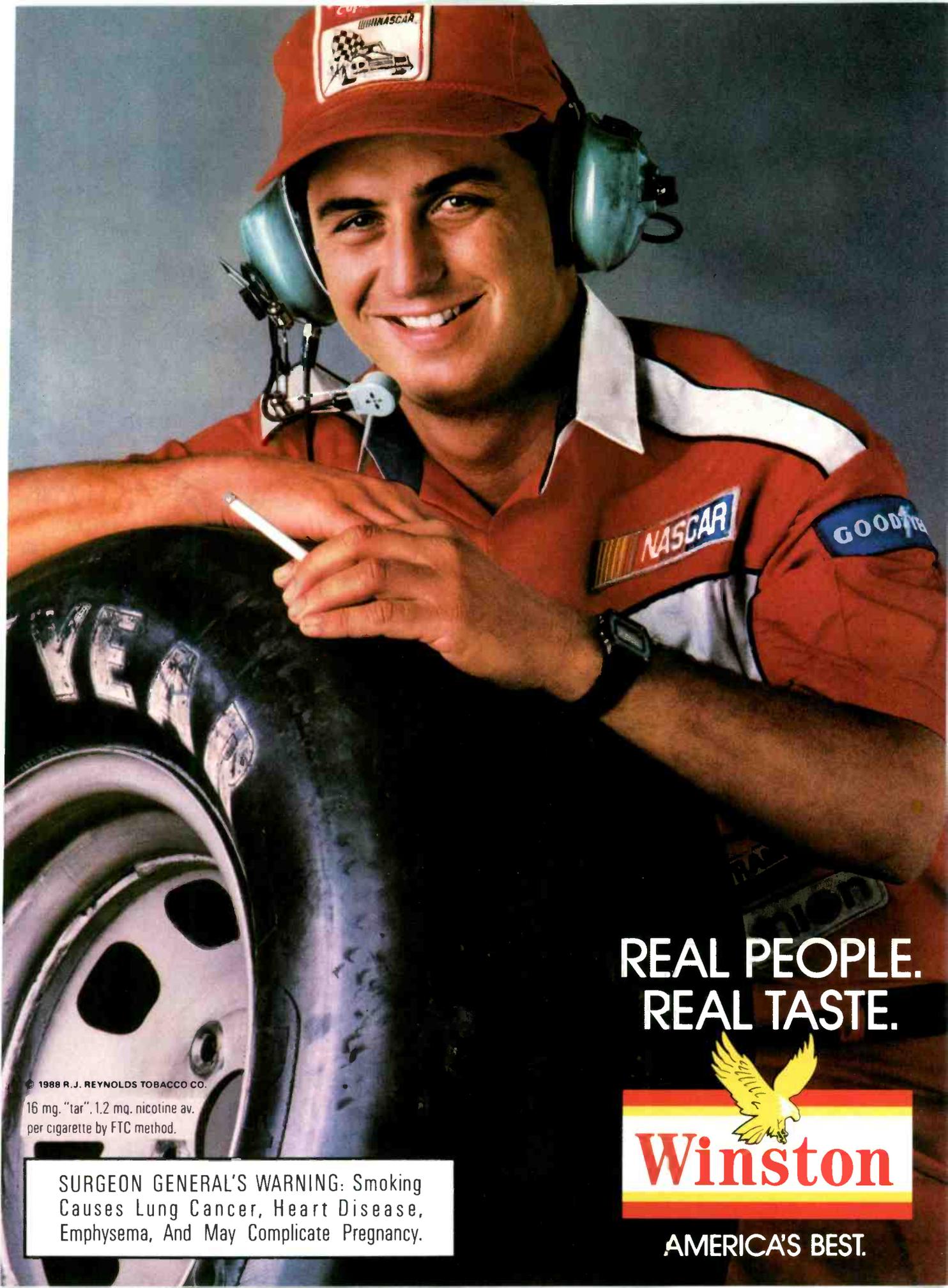
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# PREAMPLIFIERS

MANUFACTURER	Model (RI) = Remote Included, (RD) = Remote Optional	Tape: tape = 1, Hybrid = H, Mono MC, Moving Coil = MC, Phono Stage Only = P	Frequency Response, Hz to kHz, ± dB	Maximum Output, V	THD, %	Balanced Outputs?	High-Level Sensitivity, mV	Number of Tape & Processor Loops	Does Unit Invert Polarity?	MM Phono Sensitivity, mV, for 0.5 V Output at 1 kHz	MM Phono Overload, mV	MM Phono Input Capacitance, pF	MC Phono S.N. - dB, *k' Wtd. re: 5 mV	MC Phono S.N. - dB, *k' Wtd. re: 0.5 mV	Moving Coil Input?	Price, \$	Notes	PHONO STAGE			
																		100	2	0	No
SPECTRASCAN	LCA-10 MC		3-250 +0,-3	15	0.05	No	100	2	0	No	1.0	300	Var.	47k	85	78	Yes	1495.00	Without MC stage, \$1250.		
STANTON	310B	P	20-20	15	0.05						0.5	120	Adj.	47k	74		No	280.00			
STRELIOFF	PA RS II PB I		10-60 ± 1.5 10-60 ± 1.5	25 25	0.01 0.01	No No	100 100	3 3	0 0	No No	1.0	250	100	Sel.	97	90	Yes	2000.00 850.00	Dual mono; special order. Line level only; special order.		
J. E. SUGDEN	C28 C128 AUS1C/ AUS1P		20-20 +0,-0.7 15-25 +0,-1.0 10-30 +0,-0.5	15 13 15	0.002 0.003 0.001	Yes Yes Yes	215 Sel. Sel.	3 3 3	0 0 0	No No No	2.0 2.0 2.0	200 200 225		47k 47k 47k	72 72 80	65 65 74	Yes Yes Yes	650.00 1690.00 3250.00	Includes external power supply. As above.		
SUMO	Athena		1.5-500 +0,-1.5	20	0.001	No	300	2	0	No	0.37	160	100	47k	85	80	Yes	699.00	High-level bypass; Class A; high-current design.		
SUPERPHON	Revelation II C.O. Maxx			5 3						No No		150		47k			No	699.00 329.00			
TANDBERG	TCA-3018A (RD) TCA-3038A (RD)		20-150 +0,-3 1.6-150 +0,-3	10 6	0.006 0.04	No No	80 70	2 2	0 2		1 0.5	290 70	120 120	47k 47k	78 75	74 70	Yes Yes	2500.00 1350.00	No negative feedback; dual power supply. No negative feedback.		
TECHNICS	SU-A6MK2 SU-A200 SU-A4MK2		0.5-200 +0,-3 0.5-180 +0,-3 0-100 +0,-3	8 8 8	0.002 0.001 0.006		36 36 150	3 4 2	4 0 4		0.63 0.63 1.0	150 150		47k 47k 47k	80 80 92	77 77 82	Yes Yes Yes	1035.00 1520.00 1425.00	Video switching. As above; Class AA.		
THETA DIGITAL	DS Pre  Analog Extension Module		0-20 +0,-0.1  0-20 +0,-0.1	9 9	0.002 0.002			1	0	Sel.								3995.00 995.00	Preamp with D/A conversion (see "CD Players and D/A Converters"); includes switching, volume control, and other preamp functions; phono stage optional. Active analog switcher for DS Pre and other preamps; optional phono card, \$295.00.		
THRESHOLD	FET ten/pc  FET ten/hl  FET nine	P		20 20 20	0.01 0.01 0.02	No No No				No			Sel. Sel.	Sel. Sel.			Yes Yes Yes	1200.00 2200.00 1900.00	40-, 50-, or 60-dB selectable gain; 420-ohm output impedance; noise floor, 1 nVA/Hz. 20-dB gain; 25-kilohm input impedance; 100-ohm output impedance; noise, -110 dBA at 1 V in. As above but -100 dBA noise.		
TRUE IMAGE RESEARCH	TIP-2  CM-1A		10-100 +0,-0.5 1-100 ± 0.2	10 10	0.01 0.003	No No	150 150	2 2	0 2	No No	1.5 2.5	150 300	150 100	47k 47k	75 82	70	Yes No	1950.00 2950.00	Dual mono. As above; includes external power supply.		
VENDETTA RESEARCH	SCP-1 SCP-2	MC MC	0.1-1M 0.1-1M	0.3 3	0.01 0.01	No No				Yes Yes						90 90	Yes Yes	950.00 1895.00	Variable MC impedance. As above.		
VTL	Minimal Minimax de Luxe  Super de Luxe Ultimate	T T T T						0 0 0 0	0 0 0 0	No No No No		150 150 150 150	47k 47k 47k 47k				No No † †	550.00 775.00 1050.00 1950.00 3050.00	†Optional MC input, \$300.00.		
WADIA DIGITAL	Wadia-4		0.01-2M ± 3	14	0.001	No		1	0	Sel.						88	Yes	6000.00	Optional direct digital.		
WINGATE AUDIO	550 660 990(RI) 1000(RI)		0.1-250 +0,-3 0.1-250 +0,-3 0.1-250 +0,-3 0.1-250 +0,-3	20 20 20 30	0.05 0.05 0.05 0.02	No No No No	120 120 120 120	2 2 2 2	0 0 0 0	No No No Sel.	1 1 1 1	400 400 400 600	100 100 100 100	Sel. Sel. Sel. Sel.	100 100 100 105	80 80 80 85	Yes Yes Yes Yes	1395.00 1695.00 1995.00 2900.00	All FET; no negative feedback. As above; video switching. As above. As above; dual mono; two chassis.		
YAMAHA	CX-10000  CX-1000U CX-800U CX-600U HX-10000		15-100  20-20 +0,-0.2 20-20 +0,-0.2 20-20 ± 0.2	3  5	0.003  0.001 0.001 0.002 0.002	No  No No No	150  50 50 50	6  5 4 3	3  3 2 3	No  No Yes No		0.83 0.83 0.83 2.5	180 180 170 120	Sel. Sel. Sel. Sel.	47k 47k 47k 47k	95 95 94 99	91 90 84 94	Yes Yes Yes Yes	7500.00 1199.00 699.00 449.00 2500.00	Direct digital inputs; digital parametric EQ; video inputs; digital surround.	
YBA	YBA1 Pre YBA2 Pre		5-400 ± 0.2 5-400 ± 2	6 6	0.05 0.05	No No	150 150	1 1	0 0	Sel. No	2.0 2.0	2.2V 2.2V	250 250	47k 47k	90 90	90 90	Yes Opt.	6000.00	Dual mono. As above.		



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# THE SILENT TREATMENT.

## WHY BOB CARVER'S MINIATURE RADIO STATION LEFT THE AUDIO PRESS SPEECHLESS AND HOW IT LED TO THE MOST COMPLETE STEREO TUNER EVER OFFERED.

The new Carver TX-11a Stereo AM-FM Tuner is a technical tour-de-force which further distances Bob Carver's unique products from traditional electronic components — and which can vastly enhance your musical enjoyment.

### TWO TECHNOLOGICAL INNOVATIONS.

The performance of the legendary TX-11 Asymmetrical Charge Coupled FM Stereo Detector Tuner is increased by the addition of Ultra High Frequency Wide Band AM Stereo circuitry. With the new TX-11a, AM stereo sounds as good as FM.

Yes, contrary to popular belief, most AM stereo stations have frequency response (20Hz-15kHz), separation (35dB) and signal-to-noise ratios (70dB) audibly indistinguishable from FM stations of equal strength. It's just that **only** Carver offers the technology to appreciate this hidden performance.

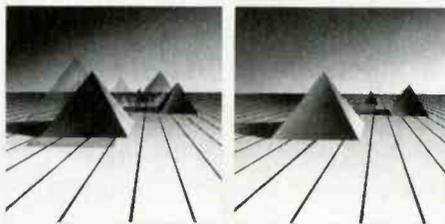
As for FM stereo, the TX-11a virtually eliminates multipath and distant station noise while providing fully-separated stereo reception with space, depth and ambience!

Bob Carver's Asymmetrical Charge Coupled FM Stereo Detector removes (without affecting stereo imaging, frequency response or dynamic range) the hiss, clicks, pops, "picket fencing" and the myriad other unpredictable noises which all too often disturb FM listening.

(Still interested in the story of the miniature radio station and how it impressed hard-to-impress audio critics? Read on. We'll get to it

after we explain why the quartz-synthesized TX-11a Stereo AM-FM Tuner will impress you in your own listening environment).

### A CLEANER, WIDER FM WINDOW ON THE WORLD.



Because of the TX-11a's Charge-Coupling and Leading Edge Detection technology, ownership may very well change your listening habits. Right now, you probably confine your FM listening to those stations which are strong and relatively interference-free, avoiding weak stations and those filled with distortion. Your options are therefore limited. The TX-11a can significantly expand your choices by recovering stations previously buried in hiss or prone to sudden tantrums of noise.

**Ovation Magazine** observed that the circuit, "... may well mean the difference between marginal reception of the station signals you've been yearning to hear and truly noise-free reception of those same signals, permitting you to enjoy the music and forget about noise and distortion."

In **Audio Magazine**, Len Feldman said "The significance of its design can only be fully appreciated by setting up the unit, tuning to the weakest, most unacceptable stereo signals you can find, then pushing those two magic buttons."

"Separation was still there; only the background noise had been diminished, and with it, much of the sibilance and hissy edginess so characteristic of multi-path interference."

### WHY THE ASYMMETRICAL CHARGE-COUPLED FM STEREO DETECTOR GIVES NOISE THE SILENT TREATMENT.

Thirty years ago, the FCC turned clear mono FM into a substandard stereo medium (with fifteen times poorer signal-to-noise ratio) by approving a broadcast system that is extraordinarily prone to multipath and distant-station-noise.

This system separates stereo into two different bands. Unfortunately, the bands aren't pure Left and Right. Instead, one band is comprised of those parts of a stereo signal that are common to both channels, (L+R, or mono). The other signal, far more fragile and prone to interference, is the difference between the left and right signal (L-R). It bounces off buildings, hills and other objects, and wreaks havoc when



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recombined with the strong mono signal.

Bob Carver's Charge-Coupling circuit takes advantage of the fact that almost all noise and distortion is exactly 180 degrees out of phase with the signal it's part of. The TX-11a Stereo AM-FM Tuner cancels these "dirty mirror" images before they can reach your ears. That eliminates up to 85% of the potential noise found in distant or noisy stations.

But Bob wasn't satisfied and knew you wouldn't be either. So another circuit, the Leading Edge Detector, goes a step further by taking advantage of a little-appreciated FM phenomenon: Just 5% of the L-R signal actually contributes to the stereo experience. The rest simply gets in the way of skyscrapers and mountains.

The Carver leading Edge Detector operates only on this critical 5% of the L-R signal, filtering out noise and restoring just that part of the signal needed by our ears and brain to construct stereo imaging.

Blended back into the mono (L+R) signal matrix, a net reduction of 93% — or better than 20dB of noise reduction — is achieved. All ambient and localizing information is recovered. Only hiss and distortion are left behind. Or, as **High Fidelity Magazine** put it, "... clean, noise-free sound out of weak or multi-path-ridden signals that would have you lunging for the mono switch on any other tuner."



### THE LITTLEST AM RADIO STATION.

Before we describe the remarkable attributes of the TX-11a, we owe you the story that proves just how far performance can be extended when a component comes from Carver.

At a recent press conference, Bob Carver unveiled a small antenna connected to a very low powered AM stereo broadcast transmitter (C-QUAM format). Dubbed "Station CRVR," it sat next to a Carver Compact Disc Player and the same TX-11a that's on your dealer's shelves right now.

Bob Carver routed the Compact Disc's signal to the antenna for reception by the TX-11a, and also directly to a preamplifier.

In front of America's top stereo writers, Bob switched back and forth between the transmitted signal (as received by the TX-11a) and the direct CD signal. All listeners had difficulty distinguishing between the outputs of the CD player and the TX-11a Stereo AM-FM Tuner!

Most could tell no difference at all!

### HOW AM STEREO GETS THE SILENT TREATMENT WITH THE TX-11a.

- \* Unique de-emphasis curve
- \* Whistle Stop cancelling circuit
- \* Pilot Signal cancelling circuit
- \* Ultra-low noise balanced station detector
- \* Very wide band, minimum phase intermediate frequency amplifiers.

Think of it. Compact Disc frequency response and freedom from noise with AM stereo and the TX-11a. Only Carver could pull it off. But then only Carver could do the same for FM, too.

### HUMAN-ENGINEERED FEATURES AND CONVENIENCE.

Many tuners with far less exclusive circuitry than the TX-11a have far more complicated exteriors. Bob Carver wanted to make tuning stations easy, not impress you with flashing lights or complex programming.

So thirteen presets, wide/narrow band selectors, automatic/manual scanning and the buttons which activate the remarkable Charge-Coupled circuits (Multipath and Noise Reduction) are all tastefully inset into the burnished anthracite metal face. Full instrumentation including digital station frequency readout, 6-step 10dB-interval signal strength LED's and other monitor functions is recessed behind a panel, visible but not garish.

The result is performance without theatricality. Access without complication.

A tuner **High Fidelity Magazine** called, "By far the best tuner we have tested..."

### CLEAR THE AIR BY VISITING YOUR NEAREST CARVER DEALER.

Ask to hear the most expensive tuner they sell. (It won't be the Carver TX-11a). Now tune a multi-path-ravaged, hiss-filled FM station. Tune the same station on the TX-11a Stereo AM-FM Tuner and press the Multipath and Noise Reduction buttons. You'll see why no other FM tuner can approach it. And why no other AM stereo tuner this good exists anywhere!



MUSICAL

ACCURATE

# TUNERS

MANUFACTURER	Model (RI) = Remote Included, (RO) = Remote Optional		FM Only = F	No	Digitally Synthesized = D	AM Stereo Capable?	IHF (Usable) Sensitivity, dBf, Mono/Stereo	Signal Strength for 50-dB Quieting, dBf, Mono/Stereo	Capture Ratio, dB, Mono/Stereo	AM Suppression, dB	Alternate Channel Selectivity, dB, Wide/Narrow	Total Number of Station Presets	Separation at 1 kHz, dB	THD at 1 kHz, % Mono/Stereo, 100% Modulation	THD at 6 kHz, % Mono/Stereo, 100% Modulation	Maximum S/N, -dB, Mono/Stereo	Weight, Lbs.	Price, \$
	D	No																
ACCUPHASE	T-106	D	No	11/29	17/37	1.5/	80	70/100	12	50	0.04/0.04	0.04/0.04	0.04/0.08	83/79	28.6	2000.00		
	T-107	F/D	No	11/29	17/37	1.5/	80	70/100	12	50	0.04/0.04	0.04/0.04	0.04/0.08	90/85	21.6	1350.00		
ADCOM	GFT-555 GTP-500(RI) Tuner/Preamp	D	No	9.5/	12.5/36.5	1.5	70	80	16	52	/0.05	/0.09	85/75	14	299.95			
		D	No	9.5/	12.5/36.5	1.5	65	80	16	52	/0.09	/0.09	85/75	15	599.95			
A/D/S/	CC4(RO) Tuner/Preamp T2	D	No	11/26	16/35	1.5	55	65	30	47	0.1/0.15	0.1/0.2	75/70	22	1000.00			
		D	No	11/26	16/35	1.8	55	75	16	38	0.15/0.2	0.2/0.3	70/65	15	539.00			
AKAI	AT-52-B AT-93-B	D	No	11.2/	16.2/37.2	1.5/	60	60/90	16	50	0.08/0.2	0.02/0.07	75/65	8.8	249.00			
		D	No	11.2/	17.2/38.2	1.3/	65	60/90	20	62	0.08/0.2	0.02/0.07	90/86	13.9	599.00			
AMBER ELECTRONICS	M7	D	No	11.2/	15.2/37.2	1.0	58	60	12	48	0.08/0.2	0.2/0.3	73/75	8½	425.00			
AR	T-02(RI)	D	No	11.2/	14.6/37.2	1.0	58	60	16	48	0.08/0.2	0.08/0.3	80/75	15½	499.00			
ARAGON	.4	D	No	/30	/37	1.0	80	75	16	50	/0.1	/0.2	/75					
ARCAM	Delta 80 Alpha	No	No	14.2/	29/49	1.5	50	60	12	40	0.25/0.20	0.25/0.20	74/70	6.6	599.95			
		No	No	14.2/	29/49	1.5	50	60	0	40	0.25/0.20	0.25/0.20	70/68	4.4	299.95			
AUDIO DESIGN ASSOCIATES	FM-600	F	No	8/14.5	13/34	1.4	55	80	6	47	0.15/0.2		74/69	12	2395.00			
AUDIO DYNAMICS	T-2000E(RO) T-2000	D	No	11.2/22	16.2/40	1.5	55	67	20	43	0.1/	0.06/0.07	0.2/0.3	75/70	7	349.00		
		D	No	9/	11/38	1.5	70	65	8	45	0.1/	0.06/0.07	0.2/0.3	85/79	7	429.00		
AUDIOLAB	8000T	D																
A.V.A.	FET 3 FET 3 Plus Transcendence	F/D	No	11.3/	17.7/37.5	1.5	60	80	5	45	0.1/0.17		72/68	10	525.00			
		F/D	No	11.3/	17.7/37.5	1.5	60	80	5	48	0.09/0.12		75/71	10	625.00			
		F/D	No	11.3/	17.7/37.5	1.5	60	80	5	52	0.07/0.1		79/74	11	825.00			
CAMBRIDGE AUDIO	T 40 T 75		Yes						0						598.00			
			Yes						8						798.00			
CARVER	TX-11a TX-2	Yes	No	11.3/16.3		/1.0	75	35/110	13	45	/0.05		/82	11	720.00			
		Yes	No	16.1/23.5		1.6	72	58	8	42	/0.2		/74	9	450.00			
CREEK	T40	F	No	10/17.0	9.0/32	0.4/3.0	50	30/100		35	0.2/0.3	0.3/0.4	80/70	4	425.00			
DAVIDSON ROTH	Day Sequerra FM Broadcast Monitor	F	No	5.0/15.0	12.0/34.0	0.75	80	100		55	0.08/0.1	0.15/0.19	75/75	45	8500.00			
DBX	TX-1	D	No	9/	11/38	1.5	70	65	6	50	0.06/0.07		85/79	7	700.00			
DENON	TU-800 TU-600 TU-550 TU-450	D		10.2/	15.3/37.2	1.2/	70	50/80	30	60	0.02/0.04		96/88	9	500.00			
		D		10.2/	15.3/37.2	1.5/	65	50/70	20	55	0.03/0.04		92/86	7	400.00			
		D		10.2/	15.3/37.7	1.2/	50	50/80	20	45	0.08/0.15		84/78	7	300.00			
		D		11.2/	15.9/38.5	1.5	50	60	16	40	0.08/0.15		80/76	7	225.00			
DIMENSIA	MPT200(RI) Tuner/Preamp	D	No	12.2/	21/38.7	1.5	50	60	20	40	0.13/0.4		73/69	8¾	369.00			
DUAL	CT5040	D	No	11.0/	/36.1	2.0	45	65	40	45	/0.5	/0.5	76/72		220.00			
ELECTRO-COMPANET	The Tuner	F	No						8						699.00			
GOLDMUND	Mimesis 4(RO)	F							6						3990.00			
HAFLER	DH-330	F/D	No	11.3/	15.3/36.5	1.5		60	5	45	0.1/0.18		72/68	9	425.00; Kit, 375.00			
HARMAN/KARDON	TU909 TU911 TU920 Citation 23	No	No	11.2/	/38.2	1.5	45	70	18	45	0.1/0.12		80/72	10	229.00			
		No	No	10.8/	/37	1.3	45	50	16	40	0.2/0.3		82/74	10	299.00			
		No	No	10.8/	/37	1.3/2.0	45	60/75	16	50	0.1/0.15		82/74	10	399.00			
		No	No	10.8/	/36.5	0.75/1.75	45	65/75	16	55	0.06/0.08		84/75	15	649.00			
HITACHI	FT007SW	D	No	10.8/	18.2/36.2	1.0/	65	35/80	16	65	0.03/0.02	0.05/0.05	88/82	7½	349.95			
JVC	FX1100BK FX555BK	D	No	10.31/	14.8/38.1	1.2/	65	25/75	40	60	0.009/0.02	0.09/0.02	94/88	8.2	470.00			
		D	No	10.81/	18.3/38.3	1.5	60	60	40	40	0.009/0.02	0.09/0.02	82/75	7.5	240.00			
KENWOOD	KT-3300D KT-880D KT-990D KT-87	F	No	10.8/	16.2/38.8	1.0/2.5	70	70/100	16	70	0.004/0.008	0.009/0.04	92/86	14	570.00			
		No	No	10.8/	16.2/38.8	1.0/2.5	76	60/90	20	55	0.04/0.06	0.1/0.12	88/83	8	280.00			
		No	No	10.8/	16.2/38.8	1.0/2.5	76	60/90	20	65	0.007/0.009	0.02/0.05	92/86	9	375.00			
		No	No	10.8/	14.7/39	1.2	70	50	20	40	0.3/0.3	0.5/0.7	78/75	6	189.00			
KINERGETICS	KBT-1	D	No	9.0/11.2	13.5/36.0	1.5/1.5	60	50/70	10	40	0.2/0.05	0.02/0.05	75/73	13½	795.00			
KLIMD	Ertanax (Tube Unit)	F									0.2/0.3		23	9500.00				
KYOCERA	T-910	D	No	9.8/	14.8/35	1.0/		40/85	16	58	0.06/0.07		84/81	26½	590.00			
LUXMAN	T-111(RO) T-117(RO)	D	No	10.8/	19/38	1.3	68	60	20	50	0.15/0.20	0.20/0.25	75/70	5.1	300.00			
		D	No	8.8/	16/36	1.3/	70	45/80	24	55	0.05/0.06	0.09/0.10	88/78	9.9	600.00			
MADISON FIELDING	DT100(RO)	F/D	No	10.2/11.2	13.2/34.0	1.5/1.5	60	50/83	8	60	0.10/0.20	0.10/0.20	75/73	10	990.00			
MAGNUM/DYNALAB	FT-11 FT-101	F		12.1/	35.3	1.5/1.5	70	50/	3	50	0.13/0.30		/70	12	449.00			
		F		10.3/11.2	13.2/34.0	1.5/1.5	75	55/75	0	60	0.10/0.18		/75	14	679.00			



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# TUNERS

MANUFACTURER	Model (RO) = Remote Included, (RD) = Remote Optional		FM Only = F, Digitally Synthesized = D	AM Stereo Capable?	IHF (Usable) Sensitivity, dbi, Mono/Stereo	Signal Strength for 50-dB Quieting, dbi, Mono/Stereo	Capture Ratio, db, Mono/Stereo	AM Suppression, db	Alternate Channel Selectivity, db, Wide/Narrow	Total Number of Station Presets	Separation at 1 kHz, db	THD at 1 kHz, % Mono/Stereo, 100% Modulation	THD at 6 kHz, % Mono/Stereo, 100% Modulation	Maximum S/N, -db, Mono/Stereo	Weight, Lbs.	Price, \$
	D	No														
MARANTZ	ST-54		D	No	10.8/	38.3	1.0	75	24		.0.1			7.3	319.95	
	ST-35		D	No	12.1/	39.2	1.5	60	24		.0.5			6.6	239.95	
McINTOSH	MR7082(RO)		D	Syn	13/13	18/36	1.5	60	55	14	50	0.08/0.08	0.08/0.12	15	1499.00	
	MR510(RO)		F/D	No	13/13	18/36	1.5	60	70	6	55	0.08/0.12	0.08/0.20	18	1699.00	
MERIDIAN	204(RO)		F/D	No			1.5	55		18				6.6	990.00	
NAD	4225		D	No	10.8/	14.4/37	1.5	60	58	14	45	0.1/0.1		80/74	248.00	
	4300		D	No	9/	12/34	1.5/2.5	70	80/100	16	40		0.15/0.20	85/80	578.00	
	1700(RI)		D	No	10.3/	13/35	1.5/	65	80/90	14	50	0.08/0.08		80/75	798.00	
	Tuner/Preamp													10 1/2		
NAIM AUDIO	NAT 01		F	No						0				24	2995.00	
	NAT 101		F	No						0				9	1195.00	
NAKAMICHI	ST-7			No	10/17	14/28	1.9	60	60	16	55	0.06/0.08		80/76	750.00	
	(With Schotz NR)													10 3/8		
NEC	T-610(RO)		D	No	13.2/18.8	15.8/38.3	1.4	55	60	16	40	0.15/0.3	0.15/0.3	75/70	229.00	
	T-710(RO)		D	No	10.8/17.4	15.9/36.8	1.4/	60	50/85	16	55	0.05/0.05	0.1/0.1	85/78	299.00	
NIKKO	Gamma 400		D	No	9.2/32	13.5/38.2	1.0/2.0	70	/80	20	75	0.007/0.015	/0.2	86/79	439.00	
	T-400		D	No	9.2/32	13.5/38.2	1.0/2.0	70	/80	20	75	0.007/0.015	/0.2	86/79	419.00	
ONIX AUDIO	BWD 1		F	No	7.5/	9.1/32.3	0.5/2.9	65	30/100		70	0.03/0.04	0.03/0.1	96/91	885.00	
ONKYO	T-9090II(RI)		F/D		10.3/17.2	15.8/37.2	1.0	60	95	20	55	0.009/0.02		95/85	750.00	
	T-4087		D	No	10.3/17.2	16/36	1.0	55	80	20	45	0.03/0.07		85/77	420.00	
	T-4150		D	No	10.3/17.2	16.1/36.1	1.3	55	80	20	45	0.1/0.2		75/73	320.00	
	T-4120		D	No	11.2/17.2	16.1/36.1	1.5	55	50	20	40	0.1/0.2		73/66	210.00	
	T-G10(RI)		F/D		10.3/17.2	15.8/37.2	1.0	60	95	20	55	0.009/0.02		95/85	850.00	
PARASOUND	T/DQ-260		D	No	10.8/	/37.7	1.2	65	66	16	50	0.05/0.1	0.07/0.12	78/72	285.00	
PERREAU	TU3		F/D		35.8		1.5					/0.14		/68	1100.00	
PHILIPS	FT565		D	No	13.5/27.2	16.8/39.2	1.5	55	60	24	45	0.15/0.35	0.3/0.6	79/71	259.00	
PIONEER	F-717				10.8/	14.2/35.9	1.0	65	56	16	60	0.05/0.08	0.05/	86/81	325.00	
	F-551				11.2/	/36.2	1.5	65	65	24	40	/0.4		75/72	170.00	
	F-91				9.8/	12.8/34.8	0.8	70	85	24	65	0.009/0.02	0.02/0.07	95/87	600.00	
PROTON	AT-300(RO)		D	No			1.5	65	37	10	50	0.6/0.1		82/75	229.00	
	AT-200		D	No		15.1/40	1.5	65	65	12	45			83/74	209.00	
	440		D	No	10.3/	15.3/33.2	1.5	60		12	45	/0.2		75/70	269.00	
PSE	Studio III		F	No		17/40	1	70		6	55	0.1/0.2		75/70	595.00	
QED	T260		F	No		10/29	1.5	60	53	4	40	0.15/0.15		76/70	650.00	
QUAD	FM4		F	No		10/29	1.5	60	53	7		0.15/0.15	0.15/0.15	76/70	695.00	
REVOX	B260-S(RO)		F	No	10.8/	13.2/34.8			50/100	30	43	/0.07		/80	2500.00	
	B160(RO)		F	No	10.8/	13.2/34.8			50/100	60	43	/0.07		/80	1575.00	
ROTEL	RT-850		D	No	10.8/	24/32	1.0	58	65	16	40	0.07/		80/75	299.00	
	RT-830		D	No	10.8/	16/39	1.5	55	60	0	40	0.08/		80/73	199.00	
	RTC-850(RI)													6	549.00	
	Tuner/Preamp															
SAE	T102		D	No	10.3/17.0	14.0/34.0	1.5/	55	30/80	16	45	0.10/0.15	0.15/0.20	75/70	349.00	
	T101		D	No	10.3/17.0	14.0/35.3	1.2/2.2	60	40/100	16	55	0.05/0.08	0.10/0.15	75/70	650.00	
SANSUI	TU-X701		D	No	10.8/	16.2/37.0	1.0/		60/75	30	60	0.009/0.02		98/91	500.00	
	TU-X301		D	No	10.8/	16.0/36.0	1.0		70	12	40	0.08/0.12		78/72	210.00	
	T-1000		D	No	10.8/	16.5/	1.5		55	16	40	0.2/		75/	145.00	
SHERWOOD	TD1120		D	No		19.2/39.2	2		60	24	45	0.2/0.4		75/68	169.95	
	TD7010R(RO)		D	No		19.2/36.1	1.5		70	30	50	0.15/0.25		80/75	319.95	
SONY ES	ST-S730ES		D	No	10.3/	16.8/37.9	1/	65	70/65	20	70	0.004/0.0075		100/92	550.00	
	ST-S500ES		D	No	10.3/	16.8/37.9	1	65	90	10	60	0.06/0.08		88/84	300.00	
SOUNDCRAFTSMEN	Pro-Tuner Four		D	No	9.5/30	12/36	1.0/1.0	65	70/	16	50	0.08/0.1		80/75	349.00	
SOUNDSTREAM	T-1(RO)		D	No	11.2/17.2	14.7/31.2	1.5	60	65	16	50	0.1/0.1	0.12/0.1	81/79	795.00	
J. E. SUGDEN	DTFM		F	No			2.5/3	50	60/90	5	40				695.00	
SUMD	Aurora		D	No	11/17	16/34	1.0/1.0	60	75/100	8	50	0.04/0.05	0.05/0.08	85/82	649.00	
TANDBERG	TPT-3001A		F	No	6.8/	10.3/32.1	0.4/3	70	30/90	8	60	0.06/0.05	0.055/0.25	95/82	2000.00	
	TPT-3031A(RO)		F/D	No	11.2/	17.2/37.2	0.9	70	100	16	45	0.09/0.2	0.1/0.3	78/75	1200.00	
TECHNICS	ST-G450		D	No	10.8/	18.1/	1.0	55	60	29	60	/0.18		/73	320.00	
	ST-G70		D	No	10.8/	18.1/38.1	1.0/	55	30/55	34	60	0.015/0.02		/80	450.00	
TOSHIBA	ST5528		D	No	10.8/17.2	14.7/39.0	1.2/	70	50/80	16	40	0.3/0.3	0.5/0.7	77/74	199.00	
VECTOR RESEARCH	VU-1500		D	No	11.2/	14.6/37	1.0	58	60	16	50	0.08/0.2	0.2/0.3	75/73	199.95	
YAMAHA	TX-1000U(RO)		D	No	9.3/	15.3/37.2	1/	70	/90	24	68	0.02/0.03		98/90	549.00	
	TX-900U(RO)		D	No	9.3/	15.1/37.7	1/	70	/85	20	60	0.02/0.03		96/90	399.00	
	TX-500U(RO)		D	No	9.3/	15.1/37.7	1.5/	55	/85	20	50	0.05/0.07		82/76	319.00	
	TX-400U(RO)		D	No	9.3/	15.3/37.7	1.5/	55	/85	16	40	0.1/0.2		82/76	249.00	

# the *Soundcraftsmen* STORY

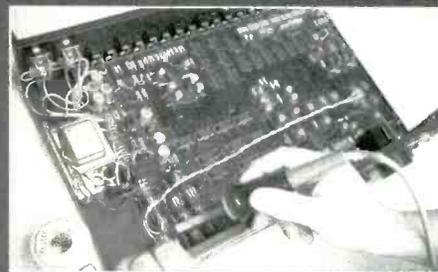
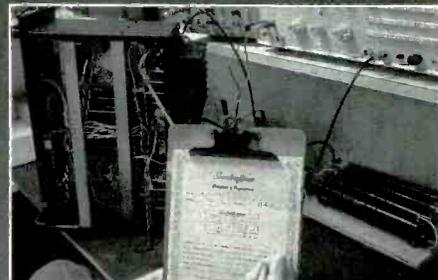


## SECTION OF PRODUCTION AREA IN MAIN PLANT



One hundred percent quality control is seen on EVERY unit manufactured. EVERY completed unit is electronically tested for specification accuracy and then EVERY unit is connected to a high fidelity system and listened to—just like you would at home. If your unit meets or exceeds the critical standards set forth on these tests, it is then packaged for shipment.

## INDIVIDUAL CERTIFICATE OF PERFORMANCE WITH EVERY AMPLIFIER

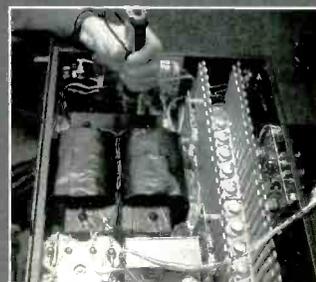


Soundcraftsmen celebrates its 20th year of manufacturing audio components for the discriminating audiophile.

Soundcraftsmen engineers are highly respected in audio design circles as being very forward thinking, yet practical, when engineering new products, by using proven design principles from the past with tomorrow's technology.

From the finest equalizers, the most accurate analyzers, to the unique preamps, to the revolutionary Class H and Power MOSFET amplifiers, you cannot purchase finer audio components.

The next few pages will answer many of your questions. If you have more, our customer service department will be pleased to assist you by telephone or letter. We invite your questions and appreciate your interest.



Soundcraftsmen

# Pro-AmpTuner 5-R

The new Soundcraftsmen Pro-Amp Tuner 5-R is a combination Tuner, Preamplifier and Amplifier, three separate components on one compact chassis. After twenty years of designing and manufacturing the finest audiophile quality separate components, we proudly present the PAT5-R. It features many of the innovative design features found in our separate Preamplifiers, Amplifiers and Tuner, all in one chassis. Features like Digital CMOS switching, High Current, High

Speed Discrete output stages, separate Listen and Record selectors with LED function indicators, speaker switching for two pairs of speakers, external Signal Processor Loop, Direct Mode bypassing all unnecessary circuitry, 16 station presets (8 FM & 8 AM), two-way Tape Dubbing. Other outstanding features include FULL FUNCTION WIRELESS REMOTE CONTROL with direct access to tuner presets, motor-driven analog volume control, Variable Loudness Control, Sub-Sonic Filter, High Filter, preamp output and main amp input jacks for connecting any of our higher powered amplifiers. Professional rack-mount front panel with optional hardwood side panels.

## SPECIFICATIONS:

TUNER...IHF Sensitivity—9.8dBf... Signal Strength for 50dB Quieting—15.8dBf... Capture Ratio—1.2dB... THD—0.15%... AMPLIFIER...100 watts per channel typical, 90 watts per channel, continuous RMS @ 8 ohms, 20Hz–20kHz @ less than 0.05% THD...115 watts per channel, continuous RMS @ 4 ohms, 20Hz–20kHz @ less than 0.05% THD...IM Distortion less than 0.05%...Frequency Response—20Hz–20kHz, ±1 dB...Signal to Noise Ratio— -95dB. PREAMPLIFIER...Phono Signal to Ncise Ratio—88dB...Phono Overload—220Mv...Output level—0.775 volts...Tone Control Range: Bass—±10dB @ 85 Hz, Treble—±3dB @ 12KHz...Dimensions—19" W x 5 1/4" H x 11 1/4" D... Weight—30 pounds.



# Soundcraftsmen

## EQUALIZATION EVALUATION KIT

# FREE!

Write to: Soundcraftsmen, 2200 South Ritchey, Santa Ana, CA 92705. Or call (714) 556-6191 and ask for Mr. Adams. Or circle the number below on this magazine's Reader Service card, and we'll also send you details on our **FREE \$19.95 12" LP TEST RECORD** offer.

**Soundcraftsmen Room Equalization Instructions**  
How Typical Room Problems are Eliminated By Equalization  
Your stereo system is capable of even better sound... if your room can be made to let it alone!

**Soundcraftsmen Computone Charts for Instant-Programming**  
Special Equalization curves may be established quickly, then reset easily, by marking the chart after equalization has been done. Using the charts, follow instructions on the chart to set up the equalizer. A list of all program settings is included.

**INSTRUCTIONAL TEST RECORD FOR SOUND-CRAFTSMEN AUDIO FREQUENCY EQUALIZERS**  
ITR-6791 33 1/3 RPM  
BAND 1 - INTRODUCTION  
BAND 2 - TEST TONES

**SPECIAL INFORMATION**  
SPECIAL INFORMATION

# RECEIVERS

MANUFACTURER	Model (RI) = Remote Included (RO) = Remote Optional	FM Only - F. Digital Synthesized - D. Auto Stereo Capable - A	AMPLIFIER SECTION											TUNER SECTION											
			Average Watts Per Channel		THD, %	Digital Connections: Input = I, Output = O		Rated Power Bandwidth, Hz to kHz	MM Phono S.N. - dB: "A" - 100, "B" - 80, "C" - 60		Dynamic Headroom, mV	Video Inputs?	Surround/Delay/Ambience Circuitry*		Mono Infr (Ucable) Sensitivity, dbi	Signal Strength (w/ 50-ohm Impedance), dbi: Mono Stereo		Capture Ratio, dB	TMO at 1 kHz, %: Mono Stereo, Frequency Modulation		Alternate Channel Selectivity, db	Maximum S.N., -db, Mono Stereo	Separation at 1 kHz, db	Weight, Lbs.	Price, \$
			65/65	0.03		20-20	80		150	1.3			No	No		30	11		16/35	1.5					
AKAI	AA-V235-B(RI)	D	60/120	0.05	No	20-20	65	135		No	No	20	11.2	16.2/37.2	1.5	0.1/0.3	60	75/65	45	22.2	449.00				
	AA-V335-B(RI)	D	100/180	0.05	No	20-20	70	135		Yes	No	20	11.2	16.2/37.2	1.5	0.1/0.3	60	75/65	45	26	549.00				
	AA-V435-B(RI)	D	125/220	0.05	No	20-20	70	135		Yes	Yes	20	11.2	16.2/37.2	1.5	0.1/0.3	60	75/65	45	28.2	649.00				
AR	X-07(RI)	D	70/110	0.03		10-150	80	200	1.75	Yes	No	16	11.2	15.2/35.2	1.5	0.1/0.3	70	80/76	50	28.6	749.00				
BANG & OLUFSEN	BM 5500(RI)	D	50/25	0.009		20-20	78	110	1.5	No	No	20	14	19/40	1.7	0.16/0.2	70	75/70	45	19.2	2150.00				
	BM 3300(RI)	D	50/25	0.1		20-20	75	50	1.6	No	No	5	17	23/43	1.7	0.3/0.35	60	72/67	36	15.4	880.00				
CARVER	AVR-100(RI)	D	150/150	0.15		20-20	85	100		Yes	Yes	6	10.3		1.0	0.09/0.2		78	45	35	1199.00				
	R-150	D	150/150	0.05		20-20	85	100		Yes	No	6	10.3		1.0	0.09/0.2		76	60	29	749.00				
	6250(RI)	D	125/100	0.05		20-20	85	90		Yes	No	6	10.3		1.5	0.09/0.2		78	46	35	899.00				
	6200(RI)	D	100/100	0.05		20-20	85	90		Yes	No	6	10.3		1.5	0.1/0.2		74	46	35	699.00				
DENON	DRA-1025(RI)	D	125/90	0.006		5-40	92	150		Yes	Yes	16	10.3	14.8/37.3	1.2	0.04/0.07	75	86/82	55	26	950.00				
	DRA-825(RI)	D	90/65	0.006		5-40	92	150		Yes	Yes	16	10.3	14.8/37.3	1.2	0.04/0.07	75	86/82	55	23	800.00				
	DRA-625(RI)	D	65/50	0.01		5-40	88	120		Yes	Yes	16	10.3	15.3/38.5	1.2	0.08/0.15	55	82/78	40	21	550.00				
	DRA-425(RI)	D	50/40	0.01		5-40	88	120		Yes	Yes	16	10.3	15.3/38.5	1.2	0.10/0.20	55	82/78	40	20	450.00				
	DRA-35V	D	40/30	0.03		5-40	86	150		Yes	Yes	16	9.3	16.4/38.5	1.2	0.10/0.20	55	82/78	40	12	375.00				
DRA-25	D	30/30	0.04		10-40	78	150			Yes	Yes	16	10.3	15.3/38.5	1.5	0.10/0.20	55	82/78	40	12	300.00				
DIMENSIA	MSR250(RI)	D	50/	0.08		20-20	72	150		No	No	20	12.2	21/38.7	1.5	0.13/0.4	60	73/69	40	13 1/4	429.00				
FISHER	RS605	D	40/60	0.09	No	20-20	65	150		Yes	No	24	14.7	19.2/42.1	1.5	0.3/0.4	55	70/65	35	12.8	299.95				
	RS615(RI)	D	60/120	0.09	No	20-20	65	150		Yes	No	24	14.7	19.2/42.1	1.5	0.3/0.4	55	70/65	35	15	349.95				
	RS625(RI)	D	120/120	0.09	No	20-20	65	150		Yes	No	24	14.7	19.2/42.1	1.5	0.3/0.4	55	70/65	40	21.1	449.95				
HARMAN/KARDON	hk330Vi	D	25/30	0.09		20-20	78	100	1.4	Yes	No	18	11.2	/38.2	1.5	0.1/0.12	45	80/72	45	12.5	319.00				
	hk440Vxi	D	30/45	0.09		20-20	78	100	1.75	Yes	No	18	11.2	/37	1.0	0.07/0.12	45	82/74	50	13.9	389.00				
	hk550Vxi	D	45/60	0.09		20-20	78	100	1.9	Yes	No	18	11.2	/37	1.0	0.07/0.12	45	82/74	50	15.4	529.00				
	hk880Vxi(RI)	D	60/90	0.08		20-20	78	120	2.2	Yes	No	18	10.8	/36	1.0	0.07/0.12	45	82/74	50	22	749.00				
	hk990Vxi(RI)	D	90/120	0.08		20-20	78	120	1.25	Yes	No	18	10.8	/36	1.0	0.07/0.12	45	82/74	50	28	1099.00				
JVC	RX1001VBK(RI)	D	120/80	0.007		20-20	80			Yes	Yes	40	10.3	14.8/38.3	1.5	0.08/0.08	70	84/78	50	30	1200.00				
	RX999VBK(RI)	D	100/80	0.007		20-20	78			Yes	Yes	40	10.3	14.8/38.3	1.5	0.08/0.08	70	84/78	50	27.6	840.00				
	RX777VBK(RI)	D	80/80	0.007		20-20	78			Yes	Yes	40	10.8	16.3/38.3	1.5	0.15/0.2	60	82/73	40	19.9	630.00				
	RX777V58K(RI)	D	80/80	0.007		20-20	78			Yes	Yes	40	10.8	16.3/38.3	1.5	0.15/0.2	60	82/73	40	19.9	570.00				
	RX555BK(RI)	D	60/45	0.007		20-20	78			No	No	40	10.8	16.3/38.3	1.5	0.15/0.2	60	82/73	40	16.8	420.00				
	RX333BK(RI)	D	45/35	0.08		40-20	78			No	No	40	10.8	16.3/38.3	1.5	0.15/0.3	60	80/73	40	10.6	320.00				
	RX222BK(RI)	D	35/25	0.08		40-20	78			No	No	40	10.8	16.3/38.3	1.5	0.15/0.3	60	80/73	40	10.1	280.00				
RX150BK	D	25/25	0.5		40-20	70			No	No	16	10.8	16.3/38.3	1.5	0.15/0.3	60	80/73	40	8.4	200.00					
KENWOOD	KR-V127R(RI)	D	130/100	0.008			82			3	Yes	20	10.8	14.2/37.2	1.0	0.07/0.1	55	80/74	50	25	699.00				
	KR-V107R(RI)	D	100/80	0.008			82			3	Yes	20	10.8	14.2/37.2	1.0	0.07/0.1	55	80/74	50	23	599.00				
	KR-V87R(RI)	D	70/70	0.008			73			2	Yes	20	10.8	14.2/37.2	1.2	0.2/0.3	53	78/72	40	18	499.00				
	KR-V77R(RI)	D	80/70	0.03			73			2	Yes	20	10.8	14.2/37.2	1.2	0.2/0.3	53	78/72	40	18	399.00				
	KR-V57R(RI)	D	55/40	0.08			73			No	Yes	20	11.2	17.2/38.2	1.2	0.2/0.3	53	76/72	40	12	329.00				
	KR-V47	D	40/40	0.09			72			No	Yes	16	11.2	17.2/38.2	1.2	0.2/0.3	53	76/72	40	10	239.00				
	KYOCERA	R-861	D	100/180	0.02		10-60	88	150	1.0	No	No	14	9.8	14.8/35.8	1.0	0.06/0.07	81	82/76	58	27	1200.00			
R-661		D	70/110	0.02		10-60	82	150	1.0	No	No	14	10.1	15.5/36.5	1.0	0.07/0.10	75	80/74	55	25	900.00				
R-461		D	50/110	0.02		10-60	80	150	2.1	No	No	12	10.3	17.0/37.2	1.2	0.08/0.12	55	77/72	48	18	650.00				
R-261		D	30/60	0.05		10-60	80	150	2.1	No	No	12	10.3	17.0/37.2	1.2	0.08/0.12	55	77/72	48	16	450.00				
LUXMAN		R-113	D	35/70	0.08		20-20	88	200	1.5	Yes	No	20	10.8	14/38	1.5	0.1/0.18	60	80/74	45	13.4	450.00			
	R-115(RI)	D	70/70	0.03		20-20	88	150	3.0	No	No	20	10.3	13.2/36.6	1.5	0.08/0.10	50/75	80/75	50	25.5	800.00				
	R-117(RI)	D	160/75	0.03		20-20	88	150	4.4	Yes	No	20	10.3	13.2/36.6	1.5	0.08/0.10	50/75	80/75	50	35.2	1200.00				
MARANTZ	SR3600(RI)	D	120/110	0.03		20-20				Yes	Yes	20	10.8								879.95				
	SR3500(RI)	D	110/60	0.03		20-20				Yes	No	20	10.8								749.95				
	SR3300(RI)	D	60/35	0.05		20-20				Yes	No	16	10.8								499.95				
	SR3200	D	35/45	0.09		20-20				No	No	16	11.2								329.95				
	SR560	D	45/25	0.15		40-20				Yes	No	16	11.2							14.1	249.95				
	SR360	D	25/25	0.25		40-20				No	No	16	11.2							11.9	199.95				
McINTOSH	MAC4300V(RI)	D	100/100	0.02		20-20	80	100	1.3	Yes	No	12	13	18/36	1.5	0.08/0.08	55	78/73	50	41	2995.00				
	MAC4275(RO)	D	75/100	0.03		20-20	80	80	1.3	No	No	10	11.25	15.2/27	1.5	0.1/0.1	50	80/75	45	25	1798.00				
MITSUBISHI	M-AV1(RI)	D	125/80	0.05		20-20	72			Yes	Yes	16	10.8	16.2/37.2	1.0	0.06/0.2	60	80/75	50	26 1/2	999.00				
	M-AV2(RI)	D	80/80	0.05		20-20	72			Yes	Yes	16	10.8	16.2/37.2	1.0	0.06/0.2	60	80/75	50	22 1/4	799.00				
	M-AV3(RI)	D	80/80	0.05		20-20	72			Yes	Yes	16	10.8	16.2/37.2	1.0	0.06/0.2	60	80/75	50	21	599.00				
NAD	7020e	D	20/25	0.02		20-20	75	200	2.5	Yes	No	10	10.8	14.4/37	1.5	0.1/0.1	58	80/74	45	12	278.00				
	7225PE	D	25/40	0.03		20-20	75	200	4	Yes	No	10	10.8	14.4/37	1.5	0.1/0.1	58	80/74	45	13	348.00				
	7																								

# JVC

Super Digifine  
Hi-Fi Components

## SUPER DIGIFINE

JVC's line of new-generation digital-ready audio components  
is opening a new age in super-high fidelity.

# The JVC Super Digifine Series — More accurate digital sound and more digital applications.

As super-fidelity digital becomes more and more established in the audio market, we find ourselves entering a new phase of the digital revolution — one in which the quality of sound is determined by much more than just the program source.

At JVC our leading-edge expertise in digital technology has helped us to develop newer, more diverse applications in which digital techniques have enhanced sound reproduction. We call the components that embody these new radical digital applications "Super Digifine." They are the successors to our original "Digifine" series of components that ushered in the first phase of the digital age.

Our "Super Digifine" series includes components from amplifiers to speaker systems, and even features a revolutionary digital acoustics processor designed to recreate a live performance ambience at home.

Enter the new age of digital with JVC.

**SX-911WD**  
3-Way Speaker  
System



**XP-A1000BK**  
Digital Acoustics Processor



**AX-Z911BK**  
Digital Pure-A  
Integrated Amplifier



# SUPER DIGIFINE

JVC's line of new-generation digital-ready audio components is opening a new age in super-high fidelity.



**XL-Z555BK**  
Compact Disc Player



**TD-V711BK**  
Discrete 3-Head  
Cassette Deck



**RX-1001VBK**  
Programmable  
Remote/Computer-Controlled  
Receiver

# Digital Applications for Higher Sense of Power and Presence

## AX-Z911BK Amplifier — Digital Pure-A for pure and powerful sound



JVC's innovative Digital Pure-A Circuit provides both true class-A operation and a high power of 100 watts\*, thanks to the newly developed digital "signal prediction" circuit. As you may know, class-A amps have long been the serious audiophile's dream because, unlike common class-B amps, they don't allow output transistors to switch on and off, hence pure, low-distortion sound is possible. But because of their high cost, they have been out of reach of most music lovers until now.

\* Per channel, min. RMS, both channels driven into 8 ohms, from 20Hz to 20kHz with no more than 0.003% total harmonic distortion

### High-power class-A operation — that's Digital Pure-A

The new Digital Pure-A Circuit is a class-A amplifier combining pure sound, high power, high efficiency, and compact size. It takes advantage of the fact that digital signals can be stored in memory temporarily, without degrading phase response or frequency response.

During operation, our made-for-digital circuit takes digital signals direct from the output (optical or coaxial) of a CD player, and splits them into two: the main and the "prediction" signals. The main signal is sent to a time base processor where it's stored in memory for about 150msec. before it goes to the D/A converter. The other, the prediction signal, is sent to a prediction circuit where the level of the upcoming main signal is measured, and a prediction output signal is generated by analyzing the level of the D/A-converted main signal and the amplifier's output signal. Based on this prediction, the power-supply voltage control circuit adjusts the voltage supplied to the power amp.

### Programmable power supply for high efficiency

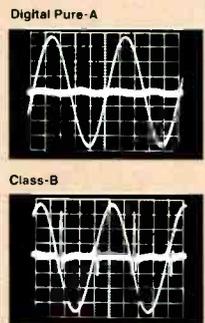
Most of the time, our Digital Pure-A Circuit provides the power amp with low power-supply voltage. But when the "predicted" power output exceeds the threshold of 20 watts, the circuit increases the power-supply voltage to provide higher power — no less than 100 watts.

Switching the power-supply voltage occurs approximately 120msec. before the temporarily stored main signal is read out of memory. In this way, signal prediction gives the power supply time enough for it to switch from low to high before the musical signal reaches the power amplifier.

Thus the power amplifier operates in low-distortion class-A most of the time, but without creating excessive heat. The result: both delicate and dynamic sounds are reproduced with

clarity and an extra sense of power.

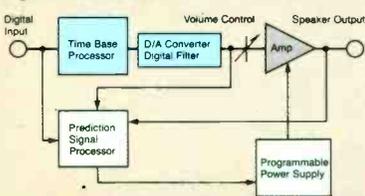
Distortion Waveforms: Digital Pure-A and Class-B Operation



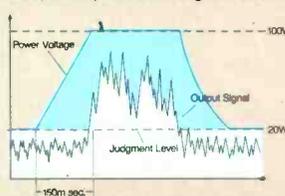
### Customized for digital reproduction

The AX-Z911BK is custom designed for superb digital reproduction. It's complete with a D/A converter featuring a 4X oversampling digital filter. There are terminals for direct connection of digital equipment: an optical input, a coaxial input and an in/output for DAT. A "D/A CONVERTER DIRECT" circuit directly connects the D/A converter to the power amp. And the digital and analog circuitry are completely separated to reduce digital noise.

Digital Pure-A Circuit



Conceptual Operation of Digital Pure-A Circuit



If the level of the output signal is predicted to go beyond the judgment level 150 msec. later, the power voltage is automatically increased to a high level to prevent the signal from clipping.

## AX-Z911BK Digital Pure-A Integrated Amplifier

- 100 watts per channel, min. RMS, both channels driven into 8 ohms, from 20Hz to 20kHz with no more than 0.003% total harmonic distortion
- Digital Pure-A Circuit for class-A operation to provide low-distortion digital sound (For digital signal)
- Dynamic Super-A with Gm Driver for better in-use performance (For analog signal)
- "D/A CONVERTER DIRECT" for direct D/A converter-to-amp connection
- Built-in D/A converter with quadruple oversampling digital filter
- 3 digital connections: one for optical, one for electrical (coaxial) and an in/output for DAT
- Separate layout for digital and analog circuits for reduced interference
- Circuit layout for shortest signal path to ensure "pure" signal transmission
- High-gain phono equalizer for MM/MC cartridges
- Low-noise motor driven volume control
- Bass response control
- Gold-plated terminals
- "Dimensional" multi-function display
- Wireless remote control

## XP-A1000BK Digital Acoustics Processor — life- like ambience



No matter how faithfully your stereo system reproduces music, there is one thing missing from the sound it plays back: that sensation of "being there." The acoustics of a hall produce certain reverberations that just can't be realistically reproduced with a standard stereo system. The new JVC Digital Acoustics Processor gives you a digital way to simulate the acoustics of a live performance, recreating a realistic "sound field" right in your own listening room. It's a revolutionary engineering concept that gives you all the pleasure of live music.

### The sound field — what makes the sound come alive

A sound field is simply the ambient characteristics of a live music environment. When a sound is generated it disperses in all directions. First you hear the direct sound from the source. That's followed by the early reflections — a group of sounds that are reflected by the walls and

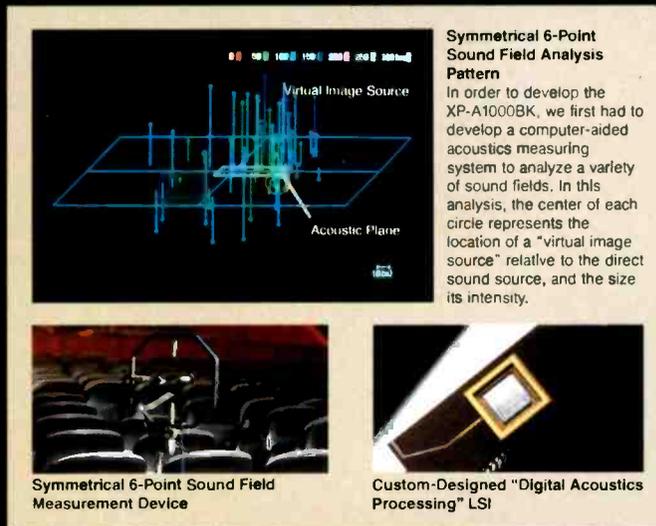
ceiling. Finally, you hear reverberations from random directions over a relatively extended period. Each live music space has its own individual sound field, or pattern of reflections and reverberations. And it's basically this pattern that gives you a clue to the size of a space.

### JVC's Digital Acoustics Processor

Our Digital Acoustics Processor simulates the sound field where live music is performed, by accurately replicating directions and levels of reflections and reverberations in the digital way. To make it possible, JVC even developed the computerized way to measure live music environments: the "symmetrical 6-point sound field analysis method." The processor contains a ROM (Read-Only Memory) where the vast amount of data from actual measurements is stored. A newly-developed digital acoustics processing LSI synthesizes the early reflections with proper direction, timing and reverberation, according to data stored in the ROM. Digital processing is performed in 16-bit quantization at sampling rate of 48kHz, combining a 4X oversampling D/A converter and a 64X oversampling A/D converter. The entire process operates channel by channel, to ensure accurate recreation of sound fields.

### XP-A1000BK Digital Acoustics Processor

- Newly-developed LSI for digital signal processing
- Digital processing using 16-bit quantization and 48kHz sampling
- 4X oversampling D/A converter and 64X oversampling A/D converter
- 20 programmed sound field patterns in ROM and 20 user-programmable sound field patterns
- Adjustable acoustic parameters: Sound field size, liveness, frequency response, etc.
- Accurate compensation for ambience of listening room and source program
- Direct digital inputs and outputs: optical and coaxial
- 4/6-channel system configuration selectable
- 6-ganged motor-driven remote-controlled volume control
- Programmable fluorescent display



Symmetrical 6-Point Sound Field Measurement Device

Custom-Designed "Digital Acoustics Processing" LSI

### Symmetrical 6-Point Sound Field Analysis Pattern

In order to develop the XP-A1000BK, we first had to develop a computer-aided acoustics measuring system to analyze a variety of sound fields. In this analysis, the center of each circle represents the location of a "virtual image source" relative to the direct sound source, and the size its intensity.

### Accurate sound field pattern generation in any environment

Each recording site has its own sound field, and so does your listening room. To accurately reproduce a desired sound field in your room for a particular type of recording, therefore, ambience of the listening room must be "neutralized" when a program is played back. Otherwise, there may be excessive reflections and reverberations, which can totally ruin the sense of realism. Our Digital Acoustics Processor lets you adjust not only the parameters for the source program (size, liveness, etc.) but also those for the listening room and the recording site. As a result, our processor can recreate the ambience of any musical environment in any listening

room and from any kind of musical program — a feat no other similar processor can duplicate.

### 20 memory-resident and 20 user-programmable sound field patterns

Our Digital Acoustics Processor has 20 programmed sound field patterns in memory — patterns for concert hall, recital hall, church, jazz club, stadium, and so forth — so that you can choose the one that best suits the type of music you select. Moreover, you can create and store in memory twenty of your own sound field patterns, the patterns that are customized to the acoustic conditions of your listening room and to your listening habits.

### 20 Preset Sound Field Patterns

NO.	PROGRAM NAME	TYPE	NO.	PROGRAM NAME	TYPE
1	SYMPHONY HALL 1	SHOEBOX TYPE	11	LIVE CLUB 1	JAZZ CLUB
2	SYMPHONY HALL 2	SHOEBOX TYPE	12	LIVE CLUB 2	DISCOTHEQUE
3	SYMPHONY HALL 3	SHOEBOX TYPE	13	PAVILION	LIVE CONCERT
4	SYMPHONY HALL 4	VINEYARD TYPE	14	GYMNASIUM	HARD-FLOORED HALL
5	SYMPHONY HALL 5	VINEYARD TYPE	15	STADIUM	OUTDOOR LIVE CONCERT
6	SYMPHONY HALL 6	VINEYARD TYPE	16	MOVIE THEATER 1	SMALL SPACE
7	RECITAL HALL	SMALL MUSICAL SPACE	17	MOVIE THEATER 2	MEDIUM-SIZED SPACE
8	OPERA HOUSE	WITH TIERED SEATING	18	MOVIE THEATER 3	LARGE SPACE
9	CATHEDRAL	GOthic SYTL	19	MOVIE THEATER 4	EXTRA LARGE SPACE
10	CHURCH	HIGH-CEILINGED SPACE	20	MOVIE THEATER 5	STANDARD

### Adjustable Parameters

PARAMETER	ADJUSTABLE RANGE	PARAMETER	ADJUSTABLE RANGE
1 ROOM SIZE	0.5-2	7 REAR DELAY	15-30 ms
2 LIVENESS	0.5-2	8 SPREAD/POINT	SPREAD/POINT
3 LOW PASS FILTER	1-16kHz THRU	9 LISTENING ROOM REVERB	0.2-0.6 ms
4 REVERB LEVEL	0-2	10 LISTENING ROOM SIZE	10m <sup>2</sup> or less, 10-16m <sup>2</sup> , 16m <sup>2</sup> or more
5 HIGH-FREQUENCY REVERB	0.1-1	11 SOURCE REVERB	0-5 sec
6 OFFSET DELAY	0-200 ms		

## **XL-Z555BK CD Player — high-tech features for better digital sound**

Some people seem to think that today's CD players have reached the limits of digital technology: after all, they say, digital is digital — so there's no difference in sound quality between players. We've found, however, that there is a difference between models, and it is intimately related with the digital and analog technologies built into the players. With our advanced engineering in audio behind, JVC has come up with a series of technologies to provide even better digital sound. And the XL-Z555BK is proof.

### **New high-precision 3-beam laser pickup design**

Our newly designed pickup combines high sensitivity, precision, stability and immunity to resonance and vibration.



New High-Precision 3-Beam Laser Pickup

### **XL-Z555BK Compact Disc Player**

- Quadruple oversampling digital filter for smooth, precise response
- Twin high-speed D/A converters for precise imaging
- JVC high-precision 3-beam laser pickup
- New Y Servo System for superior tracking ability
- JVC "Opticalink" system for low digital noise
- Digital outputs: one optical and one coaxial
- Double-floating Independent

Stability and resistance to vibration and resonance are improved thanks to a new suspended actuator. The pickup is also compact and lightweight, improving tracking accuracy and reducing "servo noise."

### **4X oversampling digital filter**

Our 4X oversampling digital filter uses a sampling frequency that's four times higher than normal (176.4kHz instead of 44.1kHz). Used in combination with a gentle-attenuation quality analog filter, it reduces noise and phase distortion to give you clear, well-defined digital sound.

### **"New Y Servo System" for superior tracking ability**

Our new servo system uses two special tracking beams — one leading and one trailing the main beam. The difference between the two signals is compensated for, and they are compared so as to cancel each other out. The result: The pickup remains locked on the correct track, even when the disc is dirty or scratched.

### **Disc/track indication and multi-disc editing**

Two special features make the XL-Z555BK easier to use. You can give a name up to 10 characters long to a disc or a track, and store as many as 512 of them in memory for display on playback. And you can program up to 48 tracks chosen from six different discs so you can easily transfer them to tape.

### **Suspension System**

- Disc/track title indication to name tracks and discs
- Remote control with volume control and numeric keypad
- Ready to play 3-inch (8cm) "CD singles"
- Random access programming of up to 32 tracks
- Auto/multi-disc editing key for cassette recording
- Random play, intro-scan, 5-way repeat, index play

## **RX-1001VBK Receiver — exquisite ease of use with computer control**

The JVC RX-1001VBK is a supreme example of how computers make your life easier. From remote operation to graphic equalizer, a computer takes charge to provide you with the exceptional operating versatility and flexibility that simply defy your imagination.

### **"Programmable" A/V remote control**

Our "programmable" A/V remote control means that you can operate not only the receiver itself but also other JVC audio components and video components from a single remote. What's more, it has capacities to learn more functions of any audio and video component, whatever its make. And the RX-1001VBK's remote even comes equipped with a touch-panel LCD (Liquid Crystal Display) that serves as a multi-page menu and convenient touch panel.



To Program, Place Our Remote End-to-End with Other Remote.

### **JVC's Digital Acoustics Processor** The receiver features the Digital

### **RX-1001VBK Programmable Remote/Computer-Controlled Receiver**

- 4-channel amplifier for front/rear speaker operation
- 120 watts per channel, min. RMS, both channels driven into 8 ohms, from 20Hz to 20kHz with no more than 0.007% total harmonic distortion (2-channel operation)
- "Programmable" remote control with touch-panel LCD
- Digital Acoustics Processor for precise sound field control
- Digital delay Dolby Surround with adjustable delay
- Ready to control 3 video inputs, with dubbing and "Sound Selector"
- Computer-controlled 7-band S.E.A. graphic equalizer with 5 user-created and 5 "namable" programmed preset equalizations
- Computer-controlled digital synthesizer tuner, with 40 FM/AM presets, auto memory, more
- Dynamic Super-A with Gm Driver
- Interactive CCS (COMPU LINK Communications System)

## TD-V711BK Cassette Deck — wider dynamic range, flatter response and purer sound

With extremely wide dynamic range and low distortion, digital sound has been a single program source that conventional cassette decks cannot compete in terms of specifications. The TD-V711BK, however, is the cassette deck expressly designed for recording digital sounds whole and complete.

### Closed-loop dual-capstan drive

With a sophisticated closed-loop dual-capstan drive, the portion of tape that runs across the heads is constantly held taut, pinched by two capstans/rollers. This



Discrete 3-Head Design Featuring SA Head and Amorphous Head



Two-Motor Full-Logic "Silent" Mechanism

### TD-V711BK Discrete 3-Head Cassette Deck

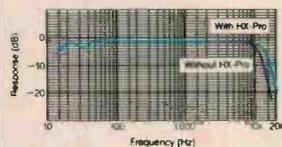
- Monitor-capable 3-head configuration: SA head for record and amorphous head for play
- Computer-controlled two-motor full-logic mechanism
- Closed-loop dual-capstan drive with direct-drive motor
- 2 "DIRECT" inputs for direct connection with CD players, etc.
- PCOCC coil and lead wired in heads, and OFC plating on circuit boards for higher purity
- Straightforward circuit layout for clean signal transmission
- Separate circuit construction for low interference
- Low-impedance voltage-tracking regulated power supply
- High-rigidity chassis and large insulators for low resonance and vibration
- Dolby HX-Pro and double-Dolby B/C noise reduction

design improves the head-to-tape contact for better response, and also shuts out external disturbances from vibrating the tape. This results in reduced intermodulation noise. It's thanks to our solid tape drive (and the 3-head design) that you can enjoy pure and clean taped sound.

### Designs for purer sound

Another way we've ensured higher sonic purity is using a direct and straightforward circuit design, to reduce the chance of noise and distortion pickup. That's why input selector switches and the volume potentiometer are located at the back of the chassis, and operated by "remote shafts." For the same purpose, we also use PCOCC (copper of highest purity) wire and OFC (Oxygen-Free Copper) in the heads and in the circuit board, and provide two direct inputs to accept outputs from source programs like a CD player. Dolby HX-Pro contributes to purer sound, too, by expanding the high-frequency dynamic range.

Frequency Responses With and Without Dolby HX-Pro



The Dolby HX-Pro circuit improves the tape's MOL (Maximum Output Level) at high frequencies. It lets you enjoy wider dynamic range at high frequencies as well as at others.

## SX-911WD Speaker System — designed for high purity and transparency

JVC has designed the SX-911WD from the ground up, with the sole purpose of making a speaker system matched with digital programs in every way. Now you can enjoy pure, clean and transparent sound, completely stripped of any trace of muddiness and fuzziness of conventional systems.

### Cloth carbon woofer and midrange

Light weight, high rigidity, high speed of sound and optimized internal loss — our new cloth carbon diaphragm for the woofer combines the most ideal properties demanded of a diaphragm material. The result is the bass sound that's extended, crisp and rich. The midrange uses a similar material called "fine" cloth carbon to provide clear and natural mids.



Rigid Pure-Aluminum Frame for SX-911WD Woofer

### Amorphous-diamond coated tweeter

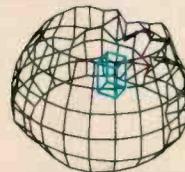
Much of the reason for high

transparency of the SX-911WD lies in the high-tech tweeter design. It uses a dome diaphragm with a titanium base on which a thin layer of amorphous diamond is coated by chemical vapor deposition. Featuring uniform thickness, high purity and smooth surface, this coating increases the diaphragm's speed of sound to almost that of natural diamond. So the transient response is dramatically improved, as are purity and transparency.

### Unresonating, solid frames and enclosure

Every speaker unit is housed inside a solid, unresonating die-cast aluminum frame cylindrical in shape to disperse vibrations efficiently. The enclosure is constructed by solid 1-inch (25mm) particle boards. The panels are conifer-based to provide superb musical sonority. Front and rear baffles are mounted with additional cleats to increase the rigidity of the cabinet and make it resistant to resonance and vibration. And the front baffle has rounded corners to reduce diffraction and provide better definition.

Sound Radiation Response of the SX-911WD



### SX-911WD 3-Way Speaker System

- 12-3/8-inch (31.5cm) cloth carbon woofer for the bass sound that's crisp, extended and rich
- 5-inch (12cm) "fine" cloth carbon midrange for rich and natural midrange sound
- 1-3/16-inch (3cm) amorphous-diamond coated tweeter — transparency and superior transient response
- Low-resonance/vibration die-cast aluminum speaker frames
- High-density conifer-based particleboard enclosure for musical sonority
- Round-cornered front baffle to provide razor-sharp definition
- 3-part crossover network to prevent interference
- Computer-optimized speaker layout for natural sound field reproduction and clear sonic imaging
- High power handling capacity: 150 watts/300 watts (music)

# SPECIFICATIONS

## AX-Z911BK Digital Pure-A Integrated Amplifier

<b>OVERALL CHARACTERISTICS</b>	
Output Power	<b>100 watts per channel, min. RMS, both channels driven into 8 ohms from 20Hz to 20kHz, with no more than 0.003% total harmonic distortion</b> 105 watts per channel, min. RMS, into 8 ohms at 1kHz, with no more than 0.0005%* total harmonic distortion
Total Harmonic Distortion AUX to SP OUT	0.003% at 100 watt output, 8 ohms, 20Hz to 20kHz 0.0005%* at 105 watt output, 8 ohms, 1kHz
PHONO to SP OUT	0.007% at 100 watt output, 8 ohms, 20Hz to 20kHz, -20dB volume
Power Bandwidth	7Hz to 60kHz (IHF, both channels driven, 8 ohms, 0.02% total harmonic distortion)
Frequency Response (8 ohms)	TUNER/AUX/CD/TAPE DC to 200kHz +0dB, -3dB
REC Output Level/Impedance	400mV/400 ohms (ANALOG) 2.0V/550 ohms (DIGITAL)
Input Sensitivity/Impedance (1kHz)	PHONO MM 2.5mV/47k ohms (+5dB) PHONO MC 200µV/470 ohms (+6dB) TUNER/AUX/CD/TAPE 400mV/30k ohms
Signal-to-Noise Ratio ('66 IHF/78IHF)	PHONO MM 90dB/80dB (REC OUT) PHONO MC 74dB (250µV input/73dB (REC OUT) TUNER/AUX/CD/TAPE 112dB/85dB
<b>PHONO EQUALIZER SECTION</b>	
Phono Overload (1kHz): MM	100mV (0.007% total harmonic distortion)
MC	7mV (0.007% total harmonic distortion)
RMA Phono Equalization: MM	±0.2dB (20Hz to 20kHz)
MC	±0.2dB (20Hz to 20kHz)
<b>D/A CONVERTER SECTION</b>	
Sampling Frequencies (Auto Selection)	32k, 44.1k, 48kHz
Total Harmonic Distortion	0.0035% (1kHz)
Dynamic Range (1kHz)	97dB
Signal-to-Noise Ratio	102dB
Dimensions (W×H×D)	18-3/4×6-9/16×17-7/16 inches 475×166×442mm
Weight	44.1 lbs. (20kg)

\* Measured by JVC Audio Analysis System.

## XP-A1000BK Digital Acoustics Processor

Level/Impedance: Input	2V/47k ohms
Output	2V/500 ohms
Total Harmonic Distortion:	
MAIN OUT	0.002% (1kHz, 2V output)
D.A.P. OUT	0.005% (1kHz, 2V output)
Frequency Response:	
MAIN OUT	5Hz — 100kHz (+0, -3dB)
D.A.P. OUT	5Hz — 20kHz (±0.5dB)
Dynamic Range: MAIN OUT	110dB
D.A.P. OUT	94dB
Signal-to-Noise Ratio:	
MAIN OUT	110dB
D.A.P. OUT	94dB
Dimensions (W×H×D)	18-3/4×4×14-3/16 inches 475×101×360mm

## RX-1001VBK Programmable Remote/Computer-Controlled Receiver

<b>AMPLIFIER SECTION</b>	
Output Power:	2-Channel Operation
	<b>120 watts per channel, min. RMS, both channels driven into 8 ohms from 20Hz to 20kHz, with no more than 0.007% total harmonic distortion</b> (Front Channels)
	<b>110 watts per channel, min. RMS, both channels driven into 8 ohms from 20Hz to 20kHz, with no more than 0.007% total harmonic distortion</b> (Rear Channels)
	15 watts per channel, min. RMS, into 8 ohms at 1kHz, with no more than 0.07%* total harmonic distortion
	4-Channel Operation
Total Harmonic Distortion (8 ohms, 1kHz)	0.003%* at 125 watt output
Input Sensitivity/Impedance	
PHONO MM	2.5mV/47k ohms
PHONO MC	250µV/100 ohms
VIDEO SOUND/AUX/CD/TAPE	230mV/47k ohms
Signal-to-Noise Ratio ('66 IHF/78 IHF)	
PHONO	80dB/80dB (REC OUT)
VIDEO SOUND/AUX/CD/TAPE	100dB/85dB
Frequency Response	
PHONO	20Hz — 20kHz (±0.5dB)
VIDEO SOUND/AUX/CD/TAPE	5Hz — 50kHz (+0, -1dB)
<b>S.E.A. SECTION</b>	
Center Frequencies	63, 160, 400, 1k, 2.5k, 6.3k, 16kHz ±10dB
Control Range	
FM TUNER SECTION (IHF)	
Usable Sensitivity	10.3dBf (0.9µV/75 ohms)
50dB Quieting Sensitivity:	
MONO	14.8dBf (1.5µV/75 ohms)
STEREO	38.3dBf (22.5µV/75 ohms)
Distortion (1kHz)	
MONO/STEREO	0.08%/0.08%
Signal-to-Noise Ratio (IHF-A Weighted)	
MONO/STEREO	84dB/78dB
(at 85dBf)	
Selectivity (±400kHz)	70dB
Capture Ratio	1.5dB (10mV/300 ohms)
Frequency Response	30Hz — 15kHz (+0.5, -0.8dB)
<b>AM TUNER SECTION</b>	
Usable Sensitivity	250µV/m (Loop antenna) 30µV (External antenna)
Signal-to-Noise Ratio (100mV/m)	50dB
Selectivity (±10kHz)	38dB
VIDEO INPUTS/OUTPUTS	
Output Signal Level	1Vp-p (at 1Vp-p input)
Impedance	75 ohms unbalanced
Synchronization	Negative
Signal-to-Noise Ratio	45dB
Crosstalk	45dB (3.58MHz)
Dimensions (W×H×D)	18-3/4×6-3/16×15-1/8 inches 475×156×383mm
Weight	29.8 lbs. (13.5kg)

\* Measured by JVC Audio Analysis System.

## XL-Z555BK Compact Disc Player

Frequency Response	2Hz — 20kHz
Total Harmonic Distortion (1kHz)	0.0035%
Dynamic Range (1kHz)	97dB
Signal-to-Noise Ratio	100dB
Channel Separation (1kHz)	92dB
Wow and Flutter	Unmeasurable
Output Level	2.0V RMS
Dimensions (W×H×D)	18-3/4×4-9/16×11-1/2 inches 475×115×291mm
Weight	12.6 lbs. (5.7kg)

## TD-V711BK Discrete Three-Head Cassette Deck

<b>Frequency Response (at -20 VU)</b>	
Metal Tape	10 — 22,000Hz (15 — 20,000Hz ± 3dB)
SA/Chrome Tape	10 — 20,000Hz (15 — 18,000Hz ± 3dB)
Normal Tape	10 — 20,000Hz (15 — 18,000Hz ± 3dB)
Signal-to-Noise Ratio	59dB (Metal)
Wow and Flutter	0.022% (WRMS)
Crosstalk (1kHz)	65dB
Channel Separation (1kHz)	40dB
Harmonic Distortion	
Total (0VU, 1kHz)	1.0% (Metal)
K3 (0VU, 1kHz)	0.5% (Metal)
Input Sensitivity/Impedance	
Line Input×2	80mV/50k ohms
Output Level/Impedance	
Line Output×2	300mV/600 ohms
Headphones	0 — 1mV/8 ohms (Matching impedance: 8 — 1k ohms)
Dimensions (W×H×D)	18-3/4×5-1/4×13-1/4 inches 475×132×336mm
Weight	18.3 lbs. (8.3kg)

● Measured from peak level, weighted, without NR. The S/N is improved by about 15dB at 500Hz and by about 20dB above 1kHz with Dolby-C NR on, and by 5dB at 1kHz and by 10dB above 5kHz with ANRS/Dolby-B NR on.

## SX-911WD 3-Way Speaker System

Type	3-way, acoustic suspension
Speakers:	
Woofer	12" (30.5cm), cloth carbon cone
Midrange	4-1/2" (11.5cm), cloth carbon cone
Tweeter	1" (2.5cm), amorphous-diamond coated dome
Power Handling Capacity	150 watts 300 watts (Music)
Impedance	6 ohms
Sensitivity (1m on axis)	91dB/W · m
Frequency Range	40 — 50,000Hz
Crossover Frequencies	500Hz, 4kHz
Dimensions (W×H×D)	15×26-3/16×13-7/8 inches 380×665×351mm
Weight	62.8 lbs. (28.5kg)



JVC presents the best of international jazz festivals.

Newport Jazz Festival is a registered service mark of George Wein and Festival Productions.



# JVC

JVC COMPANY OF AMERICA

DIVISION OF US JVC CORP.

41 Slater Drive, Elmwood Park, N.J. 07407

# RECEIVERS

Continued from page 228

MANUFACTURER	AMPLIFIER SECTION										TUNER SECTION										
	Model (RI) = Remote Included, (RD) = Remote Optional	FM Only = F, Digital Synthesizer = D, AM Stereo Capable = A	Average Watts per Channel, @ Ohms & Ohms	THD, %	Digital Connections: Input = I, Output = O	Rated Power Bandwidth, Hz to KHz	MM Phono Svt., -db, A - Wd. re: 5 mV	MM Phono Overload, mV	Video Inputs?	Surround/Delay/Amplifier Circuits?	Total Number of Station Presets	Mono I/Fr. (Usable) Sensitivity, dbf	Signal Strength for Mono/Stereo	Capture Ratio, db	Tap at 1 KHz, % Mono/Stereo, 10% Modulation	Alternate Channel Selectivity, db	Maximum S/N, -db, Mono/Stereo	Separation at 1 KHz, db	Weight, Lbs.	Price, \$	
NIKKO	AVR-65(RI)	D	65/	0.05																899.00	
	NR-1050(RI)	D	105/	0.03																599.00	
	NR-850(RI)	D	65/	0.03																519.00	
	R-550	D	55/62	0.01		10-100														449.00	
	R-400	D	40/50	0.01		10-100														349.00	
	R-25	D	25/	0.08																229.00	
DNKYD	TX-SV7M(RI)	D	100/140	0.04		20-20	85	120												1050.00	
	TX-108(RI)	D	100/150	0.02		20-20	85	120												900.00	
	TX-88(RI)	D	80/120	0.025		20-20	85	120												730.00	
	TX-850(RI)	D	68/100	0.04		20-20	85	120												500.00	
	TX-850(M)(RI)	D	68/100	0.04		20-20	85	120												550.00	
	TX-830(RI)	D	58/85	0.08		20-20	85	120												400.00	
	TX-830(M)(RI)	D	58/85	0.08		20-20	85	120												450.00	
	TX-810	D	45/70	0.1		20-20	85	120	No	No	20	12.4	18.2/38.2	1.5	0.15/0.3	50	70/65	40	15.4	310.00	
	TX-80	D	33/42	0.1		20-20	85	150	No	No	8	12.4	18.2/38.2	1.5	0.15/0.3	50	70/65	40	12.6	250.00	
PARASOUND	R/H/D-900R(RI)	D	90/115	0.09		20-20	78	220												585.00	
	R/H/D-600	D	60/75	0.09		20-20	78	220												400.00	
	R/H/D-300	D	30/40	0.09		20-20	78	220												300.00	
PHILIPS	FR980	D	125/200	0.01		20-20	80													999.00	
	FR880	D	75/125	0.01		20-20	80													649.00	
PIONEER	VSX-9300S		125/	0.005		20-20	82	150												935.00	
	VSX-7300		125/	0.005		20-20	82	150												760.00	
	VSX-5300		100/	0.005		20-20	82	130												635.00	
	VSX-3300		80/	0.05		20-20	73	130												395.00	
	VSX-3300S		80/	0.05		20-20	73	130												445.00	
	SX-2300		60/	0.07		20-20	72	130												250.00	
PROTON	D940	D	40/80	0.02		20-20	92	220	6	Yes	No	16	10.3	15.3/33.2	1.5	0.5/0.1	83/75	45	18.7	489.00	
	AV-300(RD)	D	30/62	0.01		20-20	90	165	6	Yes	No	10		1.5	0.6/0.1	82/75	50	15.4	459.00		
REALISTIC	AV-900	D	35/	0.3		20-20	84	150												600.00	
	STA2700	D	100/	0.05		20-20	84													500.00	
	STA2380	D	100/	0.05		20-20	84													400.00	
	STA2150	D	100/	0.3		20-20	84													350.00	
	STA785	D	50/	0.5		40-20	56													200.00	
REVDX	B285(RD)	D	70/90	0.03		20-20	80	50	3	No	No	29	12.8	15.2/36.8	2	0.15/0.3	84/80	43	33 1/2	2995.00	
ROTEL	RX-875	D	70/	0.03		20-20	70	300												649.00	
	RX-855	D	50/	0.05		20-20	70	300												549.00	
	RX-850A	D	30/	0.05		20-20	80	300												449.00	
	RX-830	D	20/	0.08		20-20	80	90												249.00	
SAE	R102	D	50/75	0.025		20-20	82	150	1.0	No	No	16	11.2	14.4/35.8	1.5	0.10/0.15	45	75/70	50	26	499.00
SANSUI	S-X1200	D	120/	0.018		20-20	73													1000.00	
	S-X900	D	80/	0.025		20-20	73													725.00	
	RZ-7000	D	70/	0.02		20-20														600.00	
	RZ-5000	D	60/	0.02		20-20														460.00	
	RZ-3000	D	50/	0.09		20-20														370.00	
	RZ-1000	D	32/	0.09		20-20														280.00	
SCOTT	RS-30	D	25/	0.9																149.95	
	RS-50(RI)	D	50/	0.5																249.95	
	STA1010(RI)	D	110/	0.05			70													449.95	
	STA1510(RI)	D	150/	0.009			70							0.4/		70/	40	34	599.95		
SHARP	SA-X35	D	35/	0.5		40-20														199.95	
	SA-X50	D	50/	0.5		40-20														249.95	
SHERWOOD	RA-1140	D	25/	0.3		40-20	75	150												189.95	
	RA-1240R(RI)	D	70/	0.05		20-20	75	150												489.95	
	RV-1340R(RI)	D	100/	0.04		20-20	79	150												649.95	
SONY	STR-AV200	D	40/	0.8			74	150												210.00	
	STR-AV300(RI)	D	40/	0.8			74	150												270.00	
	STR-AV500(RI)	D	55/	0.3			74	150	2	Yes	20	11.2	18.3/38.3	1.2	0.1/0.2	60	76/70	45	13 1/2	340.00	
	STR-AV700(RI)	D	70/	0.08			74	150	2	Yes	99	11.2	18.3/38.3	1.2	0.1/0.2	60	82/76	45	15	400.00	
	STR-AV900(RI)	D	100/	0.03			74	150	2	Yes	99	11.2	18.3/38.3	1.2	0.1/0.2	60	82/76	45	16	480.00	
	STR-AV1000(RI)	D	120/	0.008			74	150	3	Yes	99	11.2	18.3/38.3	1.2	0.1/0.2	60	82/76	45	18	700.00	
	SONY ES	STR-GX5ES(RI)	D	80/	0.08		5-60	74	150	1.85	1	No	20	11.2	18.3/38.3	1.2	0.1/0.2	65	82/76	50	17 1/2
STR-GX6ES(RI)		D	100/	0.03		5-60	74	150	1.85	2	No	20	11.2	18.3/38.3	1.2	0.1/0.2	65	82/76	50	15 3/4	600.00
STR-GX7ES(RI)		D	120/	0.008		5-60	74	150	2	3	No	20	11.2	18.3/38.3	1.2	0.1/0.2	65	82/76	50	18	750.00
STR-GX9ES(RI)		D	130/	0.007		5-60	90	150	2	3	No	20	10.3	16.8/37.9	1	0.06/0.08	90	88/84	60	37 1/2	1000.00
STR-GX10ES(RI)		D	150/	0.007		5-60	90	150	2	3	No	20	10.3	16.8/37.9	1	0.06/0.08	90	88/84	60	38 1/2	1200.00
SOUND-CRAFTSMEN		Pro-Amp/Tuner 5R(RI)	D	100/150	0.03		20-20	88	200	2											699.00
TANDBERG	TPR-3080(RD)	F/D	80/	0.09		5-100	72	70	0.5	Yes	No	16	11.2	17.2/45.4	0.9	0.09/0.2	100	78/75	45	26	2500.00





- MEER
- |                                       |                                   |                                   |
|---------------------------------------|-----------------------------------|-----------------------------------|
| <input type="checkbox"/> Extra Cheese | <input type="checkbox"/> Olives   | <input type="checkbox"/> Onions   |
| <input type="checkbox"/> Peppercorn   | <input type="checkbox"/> Mushroom | <input type="checkbox"/> Peppers  |
| <input type="checkbox"/> Sausage      | <input type="checkbox"/> Combo    | <input type="checkbox"/> Anchovis |

**Front Row Center.** No crowds. No traffic. No standing in line. Tonight and every night, the best seats in the house are right here. In front of the Pioneer CLD-3030 combination CD/CDV/LaserDisc™ player.

Simply put, LaserDisc players deliver the best picture and sound you can get. The CLD-3030 plays both audio CD's and video laser discs, in all sizes. It also offers you eight different modes to produce spectacular digital video special effects. And choose from a catalog of laser discs ranging from movies to jazz to operas to encyclopedias. All backed by 18 years spent perfecting LaserDisc technology.

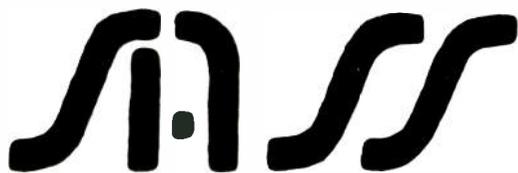
Whether it's audio, video or both, the new line of Pioneer LaserDisc players is the only home entertainment source worth staying home for.



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We Bring The Revolution Home.™

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AUDIO  
SOUND  
SYSTEMS

BH-30

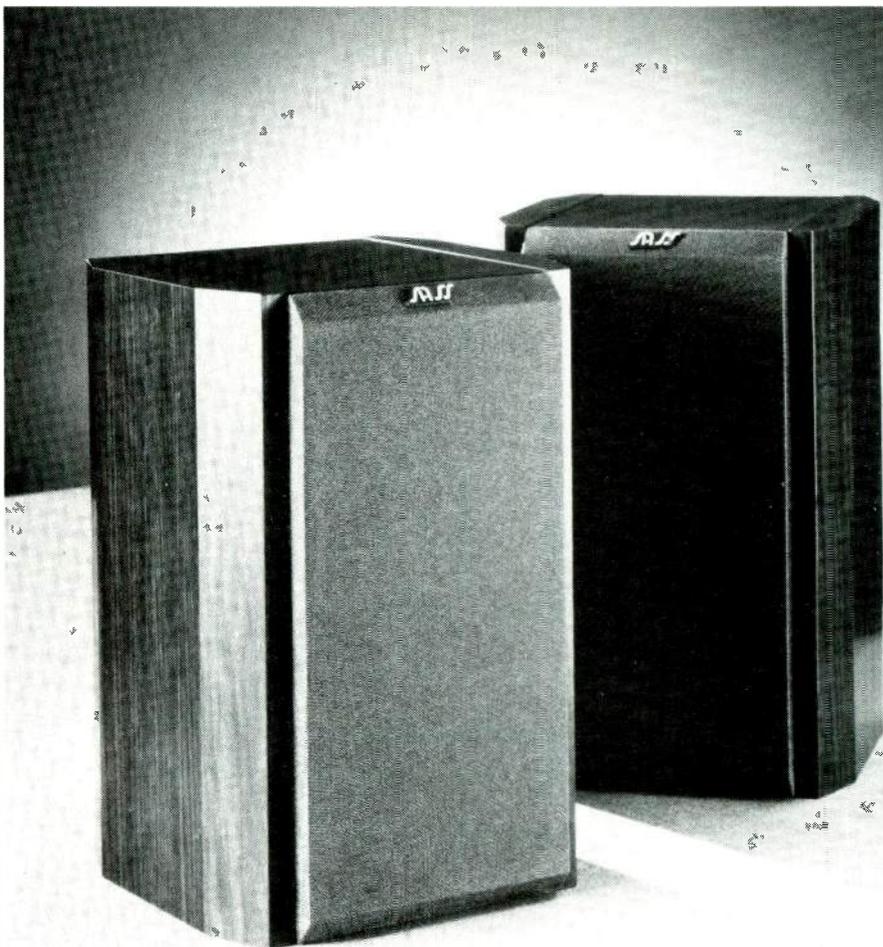
Loudspeaker System

(Dim.: 15" H x 10" W x 10" D)

for further information  
call or write

47-07 30th Place  
L.I. City, NY 11101  
(718) 482-STAR

Enter No. 109 on Reader Service Card



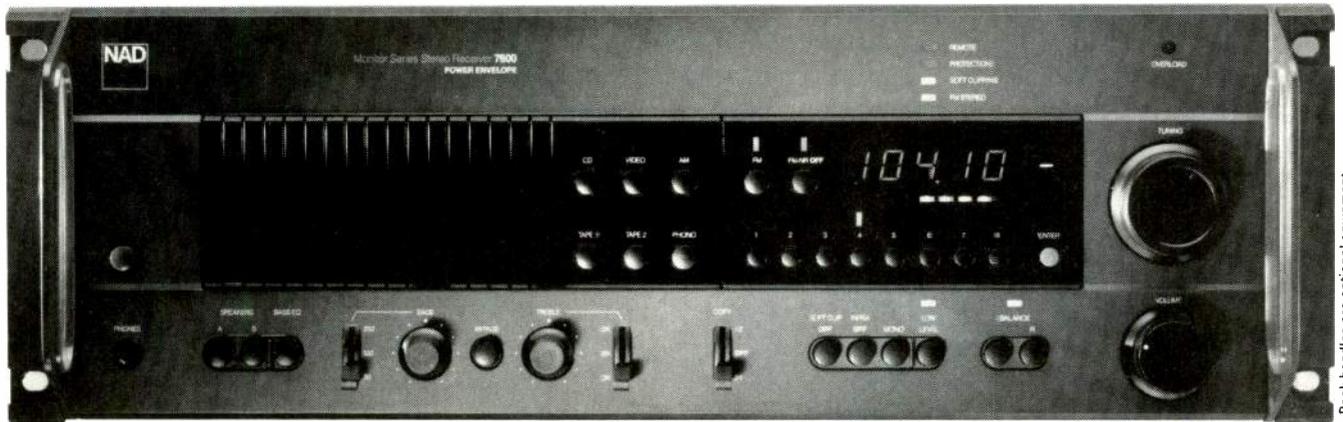
RECEIVERS

MANUFACTURER	Model (R) = Remote Included (RD) = Remote Optional	FM Div = F, Digitally Synthesized = D, AM Stereo Capable = A	AMPLIFIER SECTION										TUNER SECTION								
			Average Watts per Channel, 8 Ohms & Ohms		Digital Connections: Input = I, Output = O	Rated Power Bandwidth, Hz to kHz	MM Phono S/N, dB "A" Wtd. ref. 5 mV	MM Phono Overload, mV	Dynamic Headroom, dB	Video Inputs?	Surround Delay/Ambience Circuit?	Total Number of Station Presets	Mono BPF (Doubles) Sensitivity, dB	Signal Strength for 50-dB Quieting, dBf, Mono/Stereo	Capture Ratio, dB	THD at 1 kHz, % -100% Modulation	Alternate Channel Selectivity, dB	Maximum S/N, dB, Mono/Stereo	Separation at 1 kHz, dB	Weight, Lbs.	Price, \$
			THD, %	THD, %																	
TEAC	AG-35		35/	0.9	20-20									0.25/0.5			35	13 1/4	199.95		
	AG-55(RI)		55/	0.5	20-20									0.25/0.5			40	15 3/8	299.95		
TECHNICS	SA-R530(RI)	D	100/	0.007	20-20				Yes	Yes	24	11.2	20.2/40.2	1.0	0.15/0.2	65	75/71	40	19.8	850.00	
	SA-R430(RI)	D	100/	0.067	20-20	70	150	1.2	Yes	Yes	24	11.2	20.2/40.2	1.0	0.15/0.2	65	75/71	40	19.8	650.00	
	SA-R330(RI)	D	70/	0.008	20-20	70	150	1.2	Yes	Yes	24	11.2	20.2/40.2	1.0	0.2/0.3	65	75/71	40	14.1	420.00	
	SA-R230(RI)	D	50/	0.05	20-20	70	150	1.2	Yes	Yes	24	11.2	20.2/40.2	1.0	0.2/0.3	65	75/71	40	13.2	350.00	
	SA-160	D	40/	0.3	40-20	68	150	1.2	Yes	Yes	24	11.2	20.2/40.2	1.0	0.2/0.3	65	75/71	40	11.2	270.00	
	SA-180	D	35/	0.5	40-20	74	150	1.2	Yes	Yes	16	11.2	20.2/40.2	1.0	0.2/0.3	65	75/71	40	10	245.00	
VECTOR RESEARCH	VR-2300		25/30	0.15	40-20	70	130	1.75	No	No	20	17.2	25.5/41.5	2.0	0.3/0.5	50	72/65	42	12 1/2	149.95	
	VRX-2700	D	30/33	0.09	20-20	78	190	1.85	Yes	No	20	11.2	17.2/38.7	1.5	0.25/0.5	58	72/68	40	13	199.95	
	VRX-3600R(RI)	D	40/45	0.08	20-20	78	190	1.85	Yes	Yes	20	11.2	15.6/37.6	1.5	0.2/0.4	58	72/68	42	17	319.95	
	VRX-5200R(RI)	D	50/60	0.07	20-20	80	190	1.90	Yes	Yes	20	11.2	15.6/37.6	1.3	0.17/0.35	60	74/70	42	15	369.95	
	VRX-6200R(RI)	D	65/75	0.05	20-20	82	190	2.0	Yes	Yes	16	10.2	14.6/36.2	1.2	0.12/0.25	60	75/70	45	20	449.00	
	VRX-8200R(RI)	D	110/125	0.03	20-20	83	200	2.0	Yes	Yes	20	10.2	14.6/35.5	1	0.1/0.2	65	76/71	48	24	659.00	
VRX-9200R(RI)	D	120/135	0.03	20-20	83	200	2.0	Yes	Yes	20	10.2	14.6/35.5	1	0.1/0.2	65	76/71	48	26	849.00		
YAMAHA	RX-1100U	D	125/	0.015	20-20	92	160	1.58	Yes	No	16	8.8	14.8/37.3	1.2	0.05/0.07	85	85/81	54	26 1/2	999.00	
	RX-900U	D	85/	0.015	20-20	92	160	1.84	Yes	No	16	8.8	14.8/37.3	1.2	0.05/0.07	85	85/81	54	24 1/4	799.00	
	RX-700U	D	65/	0.015	20-20	92	160	1.8	Yes	No	16	9.3	15.1/37.1	1.3	0.07/0.07	85	81/76	52	13 3/4	599.00	
	RX-500U	D	50/	0.015	20-20	88	160	2.1	No	No	16	9.3	15.1/37.1	1.5	0.1/0.2	85	81/76	50	12 1/4	399.00	
	RX-300U	D	37/	0.04	20-20	88	160	2.3	No	No	16	9.3	15.1/37.1	1.5	0.1/0.2	85	81/76	50	11 1/2	299.00	

# The Monitor Series

*Designed not to a price, but to a standard.*

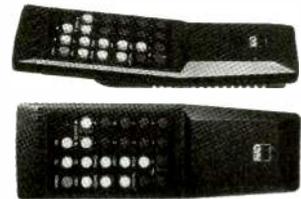
## NAD 7600 Remote Control Receiver



Rack handles are optional equipment.

**"In sum, we have no hesitation in calling the 7600 an outstanding receiver and, ultimately, a logical candidate for the status of a classic model."**

*High Fidelity*  
April, 1988



### The Monitor Series

- Preamplifiers
- Preamplifier Tuners
- Power Amplifiers
- Integrated Amplifiers
- Tuners
- Compact Disc Players
- Cassette Decks
- Receivers

**"The NAD 7600 must be used to be appreciated fully. Its features and performance make it not only the most powerful receiver on the market, but one of the very best you can buy at any price. If any compromises were made in its design, we didn't find them."**

*Stereo Review*  
November, 1987

**NAD.** A name that has stood for unparalleled technical prowess and integrity in audio components since 1979, when the company stunned audio dealers with blind demonstrations of the legendary 3020 Amplifier, which was rated at 20 watts, yet performed like an amplifier rated at 100.

A company that tolerates no design compromises whatsoever in areas which directly affect performance in real-use conditions. A company whose product philosophy has always been to design and build no-nonsense components that deliver the highest possible audio performance for the lowest possible cost.

**The Monitor Series.** A growing line of professional quality audio components, employing advanced technology and ergonomics, that has, in one short year, garnered accolades from the audio press, customers, and dealers worldwide. Each member of the Monitor Series establishes new standards in its category.

**Why?** The music. Pure and simple.

**The 7600 Remote Control Receiver,** shown above, is undoubtedly one of the world's most powerful, most sensitive and most flexible stereo receivers. The 7600 combines NAD's three finest Monitor Series Components within a single chassis: The 2600A Power Amplifier, the 1300 Preamplifier, and the 4300 Tuner.

Regarding power and fidelity, the amplifier section incorporates NAD's Power Envelope circuitry, which virtually redefines the concept of dynamic headroom (up to 800 watts per channel), providing all the power that you are ever likely to need. It is a rare speaker that will exceed the 7600's ability. The delicacy and purity of low-level musical information is retained, as well as the crescendos, providing an extraordinary richness of music quality.

One spin of the tuning control knob will convince you that this is no ordinary receiver. Accord-

ing to *Stereo Review*, "The control is nearly frictionless, and a single spin will turn the knob for up to ten seconds, time enough for the tuner to scan the radio band from end to end." This unique tuning system combines the precision and stability of digital tuning with the natural, intuitive feel of analog knob tuning.

Similarly, the infinitely adjustable volume control is an "analog" knob, which is actually motor driven by the remote, accomplishing a control that, unlike a digital IC, adds no noise or distortion whatsoever.

These are merely a few examples of NAD's design philosophy applied: Each and every decision is made with direct reference to a perceivable enhancement of performance and sound quality. You will feel the difference. You will see the difference. You will hear the difference.

The place to do that is your selected NAD dealer. You don't have to know the difference between a watt and a decibel to distinguish NAD from the competition. Nor is extended study of the user's manual required. Simply ask for a comparative demonstration. Be forewarned, however. You will like what you'll hear.

Call us at (617) 762-0202 for your nearest dealer, or send the coupon for detailed product literature, to: NAD(USA), Inc., 575 University Avenue, Norwood, Massachusetts 02062.

Please send 7600 Receiver information and dealer locations to:

Name \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_

State \_\_\_\_\_ Zip \_\_\_\_\_

HF 123456789 SR 123456789 A 123456789



**For the music, pure and simple.**

# TURNTABLES



Sonographe SG3

SOTA Cosmos

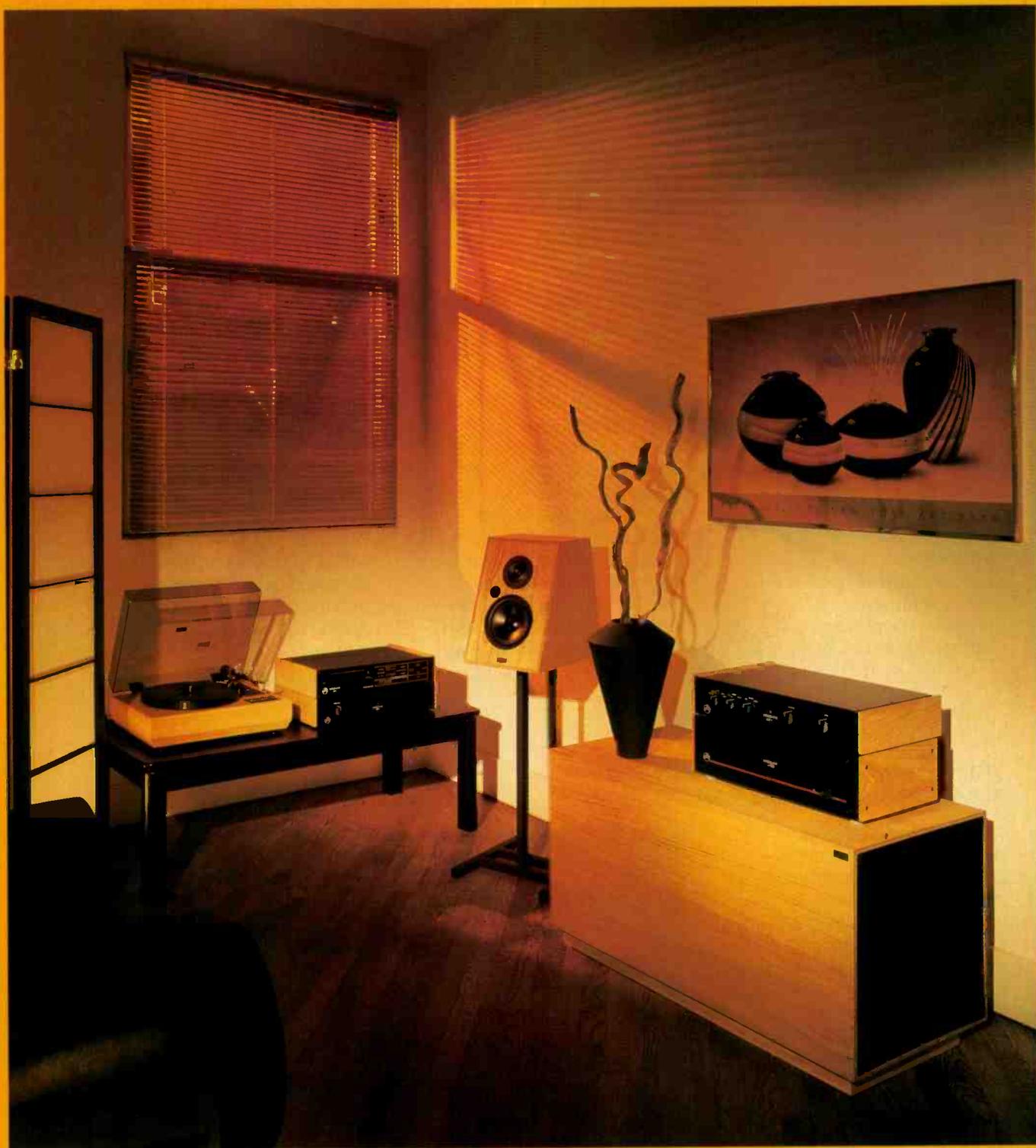


Oracle Alexandria MK III



VPI HW-19 MKIII

MANUFACTURER	Model (RO) = Remote Included, (RO) = Remote Optional	Speeds—See Code	Wow & Flutter, % DIN 45-597	Rumble, -dB, DIN 45-598-b	Drive System	Speed Inaccuracy, ±%	Speed Adjustment Range, ±%	Controls Outside Dustcover?	Multi-play? Number of Discs	Type: P=Piezo, L=Linear, S=Servo, A=Air-bearing	Pivot-Stylus Distance, inches	Auto Cue = C, Auto Return = R, Programmable Play = P	Recommended Tracking Force Range, Grams	Anti-Skating Adjustment?	Cartridge Weight	TONEARM			Price, \$
																Total Cable Weight	Range, Grams	Cart. Mount: F=Fixed, R=Removable shell=W	
ADC	LT-60 LT-34 RC-1	B B B			Belt Belt Belt		Yes Yes Yes	No No 4	L L P		C/R C/R C/R					P P P	14 x 19 x 4 13 x 13 x 4 15 x 17 x 5	150.00 120.00 110.00	
A/D/S/	P4(RO)	B	0.035	77	Direct	0.05	3	Yes	No	P	8 3/4	C/R	0-2	Yes	4-11	150	R	17 1/2 x 4 1/2 x 14 1/8	700.00
ALPHASON	Sonata	B	0.03	75	Belt	0.1		Yes	No										1500.00
AR	EB-101 ES-1	B B	0.05 0.04	72 78	Belt Belt			No No	No No	P P	8.4 8.4			Yes Yes	3-9 3-9	200 200	R F	17 1/2 x 14 1/2 x 6 1/2 18 x 15 1/4 x 7	500.00 550.00; w/Arm, 725.00
ARISTON ACOUSTICS	"Q" Deck w/Ortofon OM-10 Cart. Icon w/Ortofon OM-20 Cart. Superieur (RD-90)	B B B	0.08 0.08 0.055	75 75 80	Belt Belt Belt			No No Yes		P P		C C	1.25-3.0 1.25-3.0	Yes Yes	4-8 4-8		F F	16.3 x 13.2 x 5.1 16.3 x 13.2 x 5.1 17.9 x 14.1 x 6.7	319.00 450.00 1200.00
AUDIOMECA	J1 J4	B B			Belt Belt			No No										19 3/8 x 17 3/4 x 7 1/8 22 x 22 x 7 1/8	3200.00 4200.00
BANG & OLUFSEN	Beogram 5500 Beogram 3300 Beogram 9000	B B B	0.03 0.03 0.03	80 80 80	Belt Belt Belt	0.2 0.2 0.2		Yes Yes Yes		L/S L/S L/S	4 3/4 4 3/4 4 3/4	C/R C/R C/R	1-1.5 1-1.5 1-1.5			100 100 100	F F F	16 1/2 x 3 x 12 3/4 16 1/2 x 3 x 12 3/4 16 1/2 x 3 x 12 3/4	499.00 439.00 450.00
(Continued)																			



Photography by Ken Wyner

## SONOGRAPHE™ SYSTEMS: For Those Whose Discriminating Taste Exceeds Their Means

Whether your preference is for the warm glow of a string quartet, or the driving rhythm of hard rock, SONOGRAPHE will recreate the mood of live performance. Conceived and engineered by conrad-johnson design to achieve sonic excellence far exceeding their moderate prices, each SONOGRAPHE component offers commendable performance in systems of the highest quality. Together, they constitute a complete system of near reference quality at an affordable price—less than \$3000 for cd player, preamplifier, amplifier and monitor speakers.

the conrad-johnson group  
2800R Dorr Ave • Fairfax, VA 22031 • 703-698-8581



### The SG3 Turntable:

This award winning design utilizes space-age materials to minimize vibration and dampen resonances. The SG3 is a finely balanced system resting on a tuned three-point suspension housed in an elegant solid-oak frame. The SG3 with its companion SONOGRAPHE LMT tonearm constitutes a sensibly priced phono-play-back system capable of preserving the purity of recorded music on disc.



### The SD1 Compact Disc Player:

This remarkable cd player has acquired an international reputation for excellence at an affordable price. Critics have uniformly concluded that its musical performance demands comparison with machines which sell at more than twice (and up to ten times) the price. It features fet analogue filters, and discrete regulated power supplies. The SD1 offers the most useful convenience features, with infra-red remote available as an option.



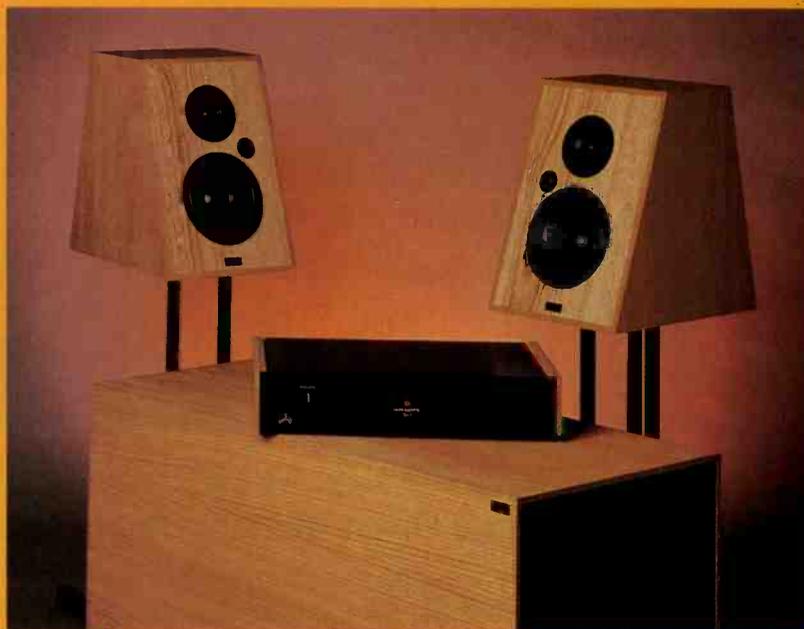
### The SCI Preamplifier and SA120 Amplifier:

These instruments incorporate circuits derived from conrad-johnson's highly regarded Motif® components. The SCI is a flexible all-fet preamplifier with facilities for a full range of inputs, including low-output (mc) cartridges. Its companion, the SA120, is a high current 120 watt\* MOSFET power amplifier, designed to deliver its power into the reactive loads presented by most loudspeaker systems.

\*SA120 is rated at 120 watts per channel with less than 1% THD or IMD from 20Hz to 20kHz both channels driven into 8 ohm loads.

### THE SL21 Monitors, SW1000 and SW500 Sub-Woofers, and SX1 crossover:

A time-aligned two-way system, optimally tuned for tight, extended bass, the SL21 is a satisfying full-range speaker system. Its high efficiency design yields startling dynamics and allows excellent results even with low power amplifiers. For those who wish to extend the musicality of the system to the bottom octave, there is the SW1000 stereo subwoofer (two channels in one segmented cabinet). The SW1000 is tuned for fast, accurate bass response down to 25 Hz, adding power, weight, and visceral impact. The SW500 is a monoaural version of the same design. The SONOGRAPHE SX1 electronic crossover is available pre-configured for the SL21/SW1000 system, or may be special ordered with custom designed crossover frequencies and slopes.



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# TURNTABLES

MANUFACTURER	Model (RO) = Remote Included, (R) = Remote Optional	Speeds - See Code	Wow & Flutter, DIN 45-501	Rumble, - dB, DIN 45-539-B	Drive System	Speed Inaccuracy, ±%	Speed Adjustment Range, ±%	Controls Outside Dustcover?	Multi-Play? Number of Discs	Type: Project = P, Linear = L, Servo = S, Air-Bearing = A	Pivot Stylus Distance, Inches	Auto Cue = C, Auto Return = R, Programmable Play = P	Recommended Tracking Force Range, Grams	Anti-Skating Adjustment?	Cartridge Weight Range, Grams	Total Cable Capacitance, pF	Car. Mount: Fixed = F, Removable Slew = R, P-Mount = P, Changeable Base = W	Dimensions, Inches, Including Dustcover	Price, \$
BANG & OLUFSEN (Continued)	Beogram TX-2	B	0.03	80	Belt	0.2		Yes		L/S	4 3/4	C/R	1-1.5		100	F	16 1/2 x 3 x 12 3/4	359.00	
	Beogram RX-2	B	0.035	75	Belt	0.2		Yes		P	9 1/4	C/R	1-1.5	Yes	100	F	16 1/2 x 2 1/2 x 12 7/8	249.00	
BROADCAST ELECTRONICS	12C	C	0.1 NAB	38 NAB	Rim	+1, -0		Yes	No	P	8.28		1	Yes	5-8	R	15 x 15 1/2 x 5	415.00	
	16C	C	0.1 NAB	38 NAB	Rim	+1, -0		Yes	No	P	8.28		1	Yes	5-8	R	15 x 15 1/2 x 5	795.00	
	12C2	B	0.1 NAB	38 NAB	Rim	+1, -0		Yes	No	P	8.28		1	Yes	5-8	R	15 x 15 1/2 x 5	415.00	
DENDON	DP-59L	B	0.006	82	Direct	0.002	9.9			P/S	9 5/8	C/R	0-3	Yes	3-14	R	19 1/4 x 8 5/8 x 16 1/8	695.00	
	DP-47F	B	0.01	78	Direct	0.002		Yes		P/S	8 5/8	C/R	0-3	Yes	3-12	R	17 x 7 x 16 1/8	450.00	
	DP-35B	B	0.012	78	Direct	0.002		Yes		P/S	8 5/8	C/R	0-3	Yes	4-9	R	17 x 5 3/8 x 16 1/4	325.00	
	DP-23F	B	0.02	75	Direct	0.002		Yes		P/S	8 5/8	C/R	0-3	Yes	4-9	R	17 x 4 1/8 x 14 1/4	275.00	
	DP-7F	B	0.018	75	Direct	0.01		Yes		P/S	8 5/8	C/R	1.25	Yes	6	P	14 3/8 x 3 3/4 x 14 1/4	200.00	
DIMENSIA	MTT230(RO)	B	0.06 JIS	65	Belt			Yes	No	L	3 3/4	P	2.0	No		300	F	14 5/8 x 3 1/2 x 14 1/4	249.00
DUAL	CS-7000	C	0.025	80	Belt			No	No	P		C	1-4	Yes	2-12	150	R	17 1/2 x 5 1/4 x 15 1/4	750.00
	CS-5000	C	0.025	80	Belt			No	No	P		C	1-4	Yes	2-12	150	R	17 1/2 x 5 1/4 x 15 1/4	500.00
	CS-505-3	B	0.06	75	Belt		6	No	No	P		R	1-4	Yes	2-10	150	R		350.00
	CS-2215	B	0.07	70	Belt		6	Yes	No	P		R	1-4	Yes	2-10	125	R		300.00
	CS-503-1	B	0.07	70	Belt			No	No	P		R	1-4	Yes	2-10	150	R		250.00
	CS-2110A	B	0.09	68	Belt			Yes	No	P		R	1-4	Yes	2-9	150	R		180.00
EMT	938	C	0.075	70	Direct	0.01	10	Yes	No	P	9 3/4		2.0-9.0	Yes			R	19 1/2 x 17 1/2 x 7 1/2	3700.00
ENTECH	Granite II (w/Air-Bearing Suspension)	B		80	Direct	0.01	5	Yes	No									38 x 23 x 23	15,000.
ESOTERIC SOUND	Vintage	C	0.045	70	Belt		6	Yes	No	P	9 1/8	R	1.25-3.5	No	6		P	17 x 3 1/2 x 14 1/2	225.00
GEMINI SOUND PRODUCTS	DJQ1100	B	0.2	50	Belt	0.5	8	Yes		P	8.25	R	2.5-5.0	Yes	2.5-3.5	200	R	16 x 3 x 14	159.00
	DJQ1200	B	0.15	55	Direct	0.2	5	Yes		P	8.25	R	2.5-5.0	Yes	2.5-3.5	200	R	16 x 3 x 14	249.00
	DJQ1300	B	0.15	55	Direct	0.2	5	Yes		P	8.25	R	2.5-5.0	Yes	2.5-3.5	200	R	16 x 3 x 14	289.00
	DJQ1500	B	0.15	55	Direct	0.2	5	No		P	8.25	R	2.5-5.0	Yes	2.5-3.5	200	R	17 1/2 x 5 3/4 x 13 3/4	479.00
	DJQ1800	B	0.15	55	Direct	0.02	5	No		P	8.25	R	2.5-5.0	Yes	2.5-3.5	200	R	17 1/2 x 5 3/4 x 13 3/4	699.00
GOLDMUND	Studietto ST4	B	0.02		Direct			Yes		L/S							R	20 x 20 x 8 3/4	2195.00
		B	0.02		Direct			Yes					1.25-3.00		4.4-25			20 x 20 x 8 3/4	4990.00
	Studio Reference (RO)	B	0.02		Direct		4	Yes										23 x 21 x 29	3390.00
HEYBROOK	TT-2	B	0.05	78	Belt	0.01	0	No	No									17 1/2 x 14 1/2 x 7	599.95
HITACHI	HTMD46(RO)	B	0.045		Belt			Yes	No	L	5 1/2	C/R	2	No			R	14 1/2 x 14 1/8 x 3 1/2	179.95
JVC	ALFQ555BK	B	0.045	76	Direct	0.005		No	No	P	8 5/8	C/R	1.25	Yes		P		17 1/4 x 4 1/4 x 14 1/4	240.00
	ALF353BK	B	0.055	69	Belt			No	No	P	8 5/8	C/R	1.25	Yes		P		17 1/4 x 4 1/4 x 14 1/4	175.00
	ALA151BK	B		65	Belt			No	No	P	8 5/8	C/R	1.25	No		P		17 1/4 x 4 1/4 x 14 1/4	100.00
KENWOOD	KD-77FC	B	0.05	70	Direct			Yes		L/S		C/R/P				F		16 3/4 x 4 x 14 1/8	249.00
	KD-67F	B	0.05	70	Direct			Yes		L/S		C/R				P		16 3/4 x 4 x 14 1/8	209.00
	KD-47F	B	0.07	70	Belt			Yes		P	8 3/4	C/R				P		16 3/4 x 4 x 14 1/8	119.00
	KO-37R	B	0.07	70	Belt			Yes		P	8 3/4	R				P		16 3/4 x 4 x 14 1/8	79.00
KYOCERA	PL-910	B	0.025		Belt		3	No	1									18 x 7 1/2 x 15 1/2	2000.00
LINN HI-FI	Linn Sondek LP12	A	0.04	75	Belt			No	No									17 1/2 x 14 x 5 1/2	1165.00
	Linn Axis	B	0.05	75	Belt	0.1		No	No	P	9		0.75-3.00	Yes	2-10	100	F	17 1/2 x 13 3/4 x 5 1/2	740.00
LUXMAN	P-102	B	0.04	72	Belt		3	Yes	No	L		C/R	1.25	No			P	16 3/8 x 4 1/2 x 14 1/8	450.00
MAPLENOLL	Athena Mark II	B	0.06	88	Belt	0.003		Yes	No	A	7	C (Opt.)	1.0-4.0		2.5-12		R	17 3/4 x 19 3/8 x 5 1/8	795.00
	Artemis	B	0.05	88	Belt	0.003		Yes	No	A	6	C	1.0-4.0		2.5-14		R	25 3/8 x 17 1/8 x 5 3/4	1395.00
	Apollo	B	0.04	90	Belt	0.003		Yes	No	A	6	C	1.0-4.0		2.5-14		R	25 3/8 x 17 1/8 x 5 3/4	2695.00
MARANTZ	TT285	B	0.08	65	Belt			Yes		L		C/R				F		16 3/8 x 4 x 13 1/4	279.95
	TT275	B	0.06	65	Direct			Yes		P		C/R				P		16 3/8 x 4 x 13 1/4	199.95
	TT185	B	0.06	65	Belt			Yes		P		C/R				P		16 1/2 x 3 7/8 x 13 1/2	139.95
	TT170	B	0.08	55	Belt			Yes		P		R				P		16 1/2 x 4 3/8 x 13 3/4	99.95
MEITNER AUDIO	AT-2	C			Belt		6	Yes		P			1-4	Yes	2.5-13		W	13 1/4 x 13 1/4 x 8 1/2	1850.00
MERRILL AUDIO	Heirloom w/Remote Power Supply	B	0.02	78	Belt	0.05		Opt. Yes										19 x 15 x 8	990.00
		B	0.02	78	Belt	0.05												19 x 15 x 8	1470.00

# TURNTABLES

MANUFACTURER	Model (RI) = Remote Included, (RO) = Remote Optional	Speeds—See Code	Wow & Flutter, % DIN 45-5307	Rumble, —dB, DIN 45-539-8	Drive System	TONEARM										Price, \$				
						Speed Inaccuracy, ±%	Speed Adjustment Range, ±%	Controls Outside Dustcover?	Multi-play? Number of Discs	Type: P=Piezo, P=Linear, S=Stylus, Air Bearing = A	Pivot-Stylus Distance, Inches	Angle Cue = C, Auto Return = R, Programmable Play = P	Recommended Tracking Force Range, Grams	Anti-Skating Adjustment?	Cartridge Weight Range, Grams		Total Cable Capacitance, pF	Cap. Mount: F=Fixed, Removable Shell = R, S=Mount = P, Changeable Wind = W	Dimensions, Inches, Including Dustcover	
J. A. MICHELL	Synco w/Rego RB-250 Arm	B	0.05	76	Belt	0.1	0	No	No	P	9%	No	0-3.5	Yes	3-8		F	17 1/4 x 14 3/4 x 5 1/4	750.00	
	GyroDec MkII	B	0.04	78	Belt	0.1	0	No	No									21 1/4 x 16 3/4 x 7 1/2	1295.00	
	GyroDec LE MkII	B	0.04	78	Belt	0.1	0	No	No									21 1/4 x 16 3/4 x 7 1/2	1495.00	
		B	0.05	76	Belt	0.1	0	No	No										925.00	
MICRO SEIKI	BL-10X	B	0.025	75	Belt	0.02	3	No	No	P	8 3/4		0-2	Yes	4-9		W	17 3/4 x 13 7/8 x 6 3/8	995.00	
	BL-99V	B	0.025	75	Belt	0.02	3	No	No	P	9%		0-2.5	Yes	9-17		R	21 1/2 x 17 1/2 x 7 1/2	1895.00	
	BL-99VW	B	0.025	75	Belt	0.02	3	No	No	P	9%		0-2.5	Yes	9-17		R	21 1/2 x 17 1/2 x 7 1/2	2295.00	
	SX-555FVW	B	0.025	78	Belt	0.02	3	No	No	P								21 1/2 x 17 1/2 x 7 1/2	2995.00	
	SX-111FV	B	0.025	84	Belt	0.02	3	No	No	P								21 1/2 x 16 x 9	3995.00	
	DDX-1500	B	0.03	60	Direct	0.02	3	No	No									13 x 13 x 5 1/2	995.00	
	RX-1500	B	0.03	65	Belt	0.02	3	No	No									13 x 13 x 5 1/2	1495.00	
	Basic																			
	RX-1500 VG	B	0.025	78	Belt	0.02	3	No	No									13 x 13 x 5 1/2	2995.00	
	RX-1500 FVG	B	0.025	84	Belt	0.02	3	No	No									13 x 13 x 5 1/2	3995.00	
	SX-5000MKII	B	0.025	84	Belt	0.02	3	No	No									12 1/2 x 12 1/2 x 6	11,000.	
	SX-8000MKII	B	0.025	84	Belt	0.02	3	No	No									12 1/2 x 12 1/2 x 5 1/2	14,000.	
	SZ-1TVG	B	0.023	88	Belt	0.02	3	No	No									19 1/2 x 17 1/2 x 7 3/4	14,000.	
	SZ-1TS/S	B	0.023	88	Belt	0.02	3	No	No									19 1/2 x 17 1/2 x 7 3/4	16,000.	
SZ-1T Ultimate	B	0.023	88	Belt	0.02	3	No	No									19 1/2 x 17 1/2 x 7 3/4	20,000.		
MOTH MARKETING	Moth	B			Belt			No		P	9%			Yes	3-18		F		699.95	
NIKKO	P-5	B	0.055	70	Direct		3	Yes		P/S		C/R	0-2.5	Yes			P	16 x 14 x 4 1/2	219.00	
	P-3	B	0.008	83	Belt			Yes		P/S		R	1.25-2.5	Yes			P	16 1/4 x 13 x 3 1/2	110.00	
ONKYO	CP-1057F	B	0.023		Direct			Yes		P		R		Yes			R	17 3/8 x 6 1/4 x 16 1/8	360.00	
	CP-1046	B	0.025		Direct			Yes		P		R		Yes			R	16 1/2 x 5 1/4 x 14 3/4	240.00	
	CP-1036	B	0.025		Direct			Yes		P		R		Yes			R	16 1/2 x 5 1/4 x 14 3/4	190.00	
	CP-1116	B	0.045		Belt			Yes		P		R		Yes			R	16 1/2 x 5 1/4 x 14 3/4	120.00	
ORACLE	Alexandria MK III	B			Belt		5	No										19 1/4 x 14 5/8 x 5 5/8	From 850.00	
	Delphi MK III	B			Belt		5	Yes										19 x 14 1/2 x 6	From 1395.00	
	Premiere MK III	B			Belt		5	Yes										20 x 15 x 6 1/2	From 2350.00	
PARASOUND	T/FS-880	B	0.03	72	Belt	0.1	3	Yes		P	8 3/4	R	0.6-2.5	Yes	2-10	250	P	17 1/4 x 14 x 4	200.00	
	Tb720 PST-1200	B	0.05 0.025	65 70	Belt Direct	0.1 0.03	3 8	Yes No		P P	8 1/2 9	R R	1-4 1-6	Yes	2-12	270 280	P R	16 x 13 x 4 18 x 14 x 4 1/2	110.00 300.00	
PIONEER	PL-910	B	0.06		Belt					L	3 3/4	R/P	1.0-1.5				F	16 5/8 x 4 1/8 x 13 3/4	400.00	
	PL-L550	B	0.025		Direct					L	8 3/4	R					P	16 5/8 x 4 1/4 x 14 3/8	270.00	
	PL-670	B	0.025		Direct					L	8 3/4	R		Yes			P	16 5/8 x 4 5/8 x 14 3/8	175.00	
	PL-590	B	0.06		Belt					P	8 3/4	R	2.0-3.0	Yes			R	16 5/8 x 3 3/4 x 14	135.00	
PL-90	B	0.018		Direct					P	11 1/8	R		Yes	2.4-12			23 1/2 x 8 1/2 x 17 1/8			
REALISTIC	LAB 2200	B	0.06	62	Direct		3	Yes	1	L		C/R					P	4 x 13 1/2 x 13 3/4	150.00	
	LAB 450	B	0.05	65	Direct			Yes	No	P		C/R					R	4 1/2 x 15 x 14 3/8	130.00	
REGA RESEARCH	Planar 2	B			Belt			No	No	P	9%		0.5-3.0	Yes	3-18	200	F	17 1/2 x 14 3/8 x 4 7/8	450.00	
	Planar 3	B			Belt			No	No	P	9%		0.5-3.0	Yes	3-18	200	F	17 1/2 x 14 3/8 x 4 7/8	595.00	
	Planar 78	f			Belt			No	No	P	9%		0.5-3.0	Yes	3-18	200	F	17 1/2 x 14 3/8 x 4 7/8	450.00; f78 rpm only	
REVOLVER	Revolver w/Revolver Arm	B	0.08	65	Belt	0.02		No	No	P	9		0.75-3.0	Yes	2.0-10	45	F	16 1/2 x 14 1/2 x 4 1/4	From 525.00	
	Revolver w/Revolver Super Arm	B	0.08	65	Belt	0.02		No	No	P	9		0.75-3.0	Yes	2.0-12	45	F	16 1/2 x 14 1/2 x 4 1/4	From 775.00	
	Revolver Rebel w/Arm & Audio-Technica AT-91 Cart.	B	0.08	65	Belt	0.02		No	No	P	9		0.75-3.0	Yes	2.0-10	45	F	16 1/2 x 14 1/2 x 4 1/4	379.00	
REVOX	B291(RO)	B	0.05	72	Direct	0.01	9.9	Yes	No	L'S	1 1/2	C/R	0.8-2.0		2.5-10	220	F/P	17 3/4 x 5 1/2 x 15 1/2		
ROKSAN	Xerxes	B	0.03	83	Belt		0.5	Yes	No									15 x 6 x 19	1650.00	
SANSUI	P-1000 P-900E	B	0.1		Belt			Yes	Yes			C/R						16 1/2 x 4 5/8 x 13 1/2	145.00 90.00	
SCOTT	PS-59	B		55	Belt			Yes		P		R					P	17 x 13 1/2 x 3 3/4	99.95	
	PS-70B	B		62	Belt			Yes		P		R					P	16 1/2 x 13 1/2 x 4 3/4	119.95	
	PS4004D	B		62	Belt	0.01		Yes		L		C/R					P	17 x 14 3/4 x 5	169.95	
SHERWOOD	PF-1170R (RO)	B	0.06		Direct			Yes				C/R							179.95	
	PM-1270	B	0.06		Belt			Yes				R							169.95	



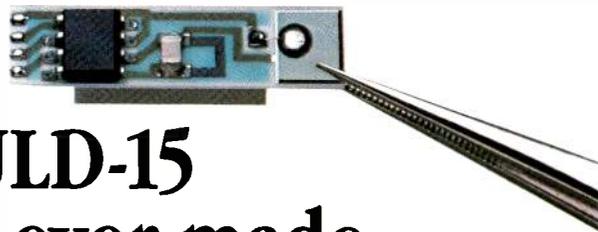
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# This little device makes Velodyne's ULD-15 the best subwoofer ever made.



It's called an accelerometer. And you'll find one attached to the voice coil of every Velodyne™ ULD-15™ Subwoofer System. Velodyne's patented High Gain Servo (HGS) technology uses the accelerometer to make the ULD-15's bass reproduction superior to any product on the market.

Bass is by far the most difficult music to reproduce. It puts the heaviest demands on your speakers and amplifier. In fact, most woofers can't play the lowest frequencies. Or can't play them clearly. And no conventional loudspeaker can play bass loudly without breaking up. Or without massive distortion.

HGS technology ends these problems forever.

## **Motional feedback makes the difference.**

HGS is based on motional feedback, a process in which cone motion is monitored and, when necessary, corrected. As the woofer cone moves, the accelerometer reports the motion to our Power Servo Controller. There, it's compared to the input signal – some 3500 times per second. If the woofer cone's out of step with the input, it's instantly corrected. The result? A subwoofer that's flat to below 20 Hz. And virtually distortion-free bass that can't become boomy, muddy or out of control, especially at louder listening levels.

**More muscle.** Accurate bass requires large drivers and lots of amplifier power. So the ULD-15 matches a 96 oz. magnet structure, 3-inch voice coil (with a full 3/4-inch peak-to-peak travel) to 400 watts of dedicated bass power. That's muscle enough to reproduce even the most demanding deep bass passages – effortlessly.

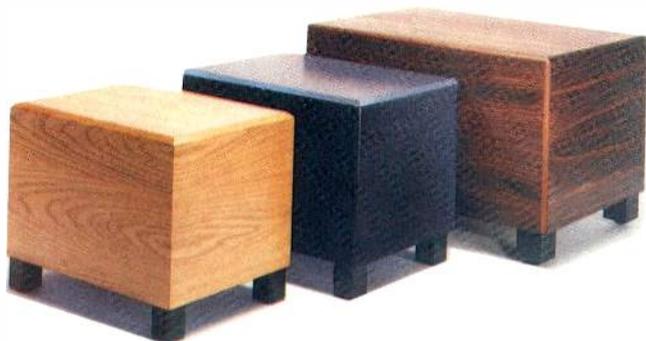


*Cross-section of ULD-15 driver with accelerometer in housing (red) mounted on voice coil (blue). Circuit board contains associated HGS electronics.*

**Better mids and highs.** Beyond adding bass power to your system, our Power Servo Controller incorporates an electronic crossover that frees your main speakers and amplifier from the burden of bass reproduction. This lets them do what they do best – play the mids and highs. And your system's output capability is virtually doubled.

**Listening is believing.** You owe it to yourself to audition a Velodyne ULD-15 Subwoofer System. Listen to its tightness on drumbeats. Its penetration on deep bass passages. Its overall clarity and punch. You'll agree it's the best subwoofer ever made.

Call **800-VELODYNE** (408-436-0688 in California) for the Velodyne dealer nearest you.



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## Velodyne

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<b>COLORADO</b> Boulder Denver	Listen Up Audio Listen Up Audio	<b>KENTUCKY</b> Lexington	Custom Electronics	<b>OHIO</b> Akron Cincinnati Columbus Conway Dayton Dublin Toledo	Golden Gramophone Audio Vision Custom Stereo The Sound Resort Carlin Audio Audio Encounters Paragon Sound
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# TURNTABLES

MANUFACTURER	Model (R) = Remote Included (RO) = Remote Optional	B	Speeds—See Code	Wow & Flutter, DIN 45-507	Rumble, — dB, DIN 45-509-B	Drive System	Speed Inaccuracy, ±%	Speed Adjustment Range, ±%	Controls Outside Dustcover?	Multi-Play? Number of Discs	Type: Phono = F, Linear = L, Sero = S, Air-bearing = A	PIWD-Stylus Distance, Inches	Auto Cue = C, Auto Return = R, Programmable Play = P	Recommended Tracking Force Range, Grams	Anti-Scaling Adjustment?	Cartridge Weight Range, Grams	Total Cable Capacitance, pF	C <sub>1</sub> = Mount, F, Removable Shell = R, C <sub>2</sub> = Mount, F, Changeable Wad = W	Dimensions, Inches, Including Dustcover	Price, \$	
																					SPEED CODE A—33 1/2 B—33 1/2, 45 C—33 1/2, 45, 78 D—Continuously Variable
SIMPLYPHYSICS	Dark Star	B		85	Belt															795.00; w/Stand, 900.00 1500.00 w/Floor Stand	
	Dark Star Phono System	B		85	Belt					L/A	4 1/2		1-3		4-10	F					
SONOGRAPHE	SG3A SG3	B B	0.1 0.1	65 65	Belt Belt					P	9 1/4			Yes		F			18 x 14 x 7 18 x 14 x 7	695.00 495.00	
SDNY	PS-FL7II	B	0.03	75	Direct	0.03		Yes	No	L	3	C/R	1.5	No		P			17 x 15 1/8 x 3 7/8	350.00	
	PS-LX520	B	0.035	75	Direct	0.03		Yes	No	L	3	C/R	1.5	No		P			17 x 14 3/8 x 3 3/4	270.00	
	PS-LX430	B	0.045	70	Belt			Yes	No	P	8 1/2	C/R	1.75	Yes		P			17 x 14 x 4 3/8	180.00	
SDTA	Deluxe Sapphire III	C	0.03	88.2	Belt	0.02	5	No	No										20 1/4 x 16 1/2 x 7 1/2	1195.00 w/Clamp & Supermat 1600.00 w/Vacuum Hold- Down 3500.00 w/Clamp, Vacuum, & Electronic Flywheel	
	Vacuum Star III	C	0.03	88.2	Belt	0.02	5	No	No										20 1/4 x 16 1/2 x 7 1/2		
	Cosmos	C	0.03	88.2	Belt	0.02	5	No	No										20 1/4 x 16 1/2 x 7 1/2		
SDURCE/ DDYSSY	Source	B			Belt			Yes											19 3/4 x 15 1/2 x 7	2450.00	
TECHNICS	SP-15	C	0.025	78	Direct		9.9	No	No										13 3/4 x 4 x 14 1/2	1150.00	
	SP-25	B	0.025	78	Direct		6	No	No										13 3/4 x 3 1/4 x 14 3/8	700.00	
	SL-1200MK2	B	0.025	78	Direct		8	No	No	P	9 1/4		0.2-5	Yes	3-9.5	R			17 7/8 x 6 1/4 x 14 1/4	680.00	
	SL-M3	B	0.008	82	Direct	0.002	6	No	No	L	4 1/4	C/R	1.25			P			20 3/4 x 8 1/8 x 15 3/4	820.00	
	SL-M2	B	0.031	82	Direct	0.002	6	Yes	No	P	9 1/4		0.2	Yes	6	P			17 7/8 x 6 3/4 x 16 1/8	620.00	
	SL-MA1	B	0.025	81	Direct	0.002	6	Yes	No	P/S	9 1/4	C/R	1.25	Yes	6	P			17 7/8 x 6 3/4 x 16 1/8	540.00	
	SL-J33K(RO)	B	0.025	78	Direct	0.002	6	Yes	No	L/S	4 1/4	C/R/P	1.25	No	6	P			12 3/8 x 3 1/2 x 12 3/8	320.00	
	SL-OD33K (RO)	B	0.025	78	Direct		6	Yes	No	P/S	9 1/4		1.0-1.5	No	6	P			17 x 3 3/8 x 14 3/4	250.00	
	SL-OD22	B	0.025	78	Direct		6	Yes	No	P	9 1/4	R	1.0-1.5	No	6	P			17 x 3 3/8 x 14 3/4	225.00	
	SL-DD33	B	0.025	78	Direct		6	Yes	No	P	9 1/4	C	1.0-1.5	No	6	P			17 x 4 x 14 3/4	210.00	
	SL-DD22	B	0.025	78	Direct		6	Yes	No	P	9 1/4	R	1.0-1.5	No	6	P			17 x 4 x 14 3/4	195.00	
	SL-L20K	B	0.045	70	Belt		6	Yes	No	P	4 1/4	C	1.0-1.5	No	6	P			17 x 3 3/4 x 13 3/4	240.00	
	SL-BD22K	B	0.045	70	Belt		6	Yes	No	P	9 1/4	R	1.25	No	6	P			17 x 3 3/8 x 14 3/4	160.00	
	SL-BD20A	B	0.045	70	Belt		6	Yes	No	P	9 1/4	R	1.25	No	6	P			17 x 3 3/8 x 14 3/4	155.00	
	SL-BD1K	B	0.045	70	Belt		6	Yes	No	P	9 1/4	R	1.25	No	6	P			17 x 3 3/8 x 14 3/4	165.00	
	SP-10MK3	C	0.015	92	Direct	0.001	9.9	Yes	No				1.25	No	6	P			14 1/2 x 4 x 14 1/2	3385.00	
	SP-10MK2A	C	0.025	78	Direct		9.9	No	No				1.25	No	6	P			14 1/2 x 4 x 14 1/2	1850.00	
	THORENS	TD280	B	0.045	70	Belt	0.2		No	No	P	9 1/4	C	1-3	Yes	3-8	150	F		17 3/8 x 14 x 5 3/8	275.00
		TD316	B	0.04	70	Belt	0.2		No	No	P	9 1/4	C	1-3	Yes	3-8	150	F		17 3/8 x 13 3/4 x 6 3/4	350.00
TD318		B	0.04	70	Belt	0.2		No	No	P	9 1/4	C	1-3	Yes	3-8	150	F		17 3/8 x 13 3/4 x 6 3/4	450.00	
TD320		B	0.035	72	Belt	0.2		No	No	P	9 1/4	C	1-3	Yes	3-8	100	F		17 3/8 x 13 3/4 x 6 3/4	600.00	
TD520		C	0.035	72	Belt	0.1	6	No	No	P	9 3/4	C	1-3	Yes	3-8	140	F		21 3/4 x 16 3/8 x 7	1100.00	
TD321		B	0.035	72	Belt	0.2		No	No				1-3	Yes	3-8	140	F		17 3/8 x 13 3/4 x 6 3/4	500.00	
TD521		C	0.035	72	Belt	0.1	6	No	No				1-3	Yes	3-8	140	F		21 3/4 x 16 3/8 x 7	1000.00	
TOSHIBA	SR5638	B	0.05	70	Belt	0.03	0	Yes	No	S		C/R	1.25- 4.50	Yes	2.5-9	300	P		16 5/8 x 4 3/8 x 13 1/2	149.00	
TOWNSHEND	The Rock	B	0.08	55 Un- wid.	Belt	0.1				P									12 3/4 x 15 1/2 x 5	900.00	
VECTOR RESEARCH	VT-155	B	0.07	65	Belt		3	Yes	No	P	8	R	1.25-3.0	No	2.5-5	P				99.95	
	VT-185	B	0.05	68	Belt		3	Yes	No	P	8 3/4	R	1.25-3.0	Yes	2.5-5	R				149.95	
VOYD TURNABLES	Voyd Valdi	B B	0.004 0.005	80 78	Belt Belt	0.001 0.001	0 0	Yes Yes											20 x 16 1/2 x 6 1/2 18 x 14 x 6	2000.00 1400.00	
	VPI	HW-19 Jr.	B	0.03	79	Belt	0.05													21 1/4 x 16 1/2 x 6	600.00
HW-19 MK.III		B	0.03	79	Belt	0.05													21 1/4 x 16 1/2 x 7	1280.00	
T.N.T. Reference		D	0.02	81	Belt	0.01													25 x 19 x 8	3000.00	
WELL TEMPERED LAB	Well Tempered Table	B			Belt			No	1	P	9			Yes		F			19 x 15 x 8	1695.00	
WIN RESEARCH	SEC-10	B	0.05	85	Direct	0.001	5	Yes	No										21 x 16 x 7 1/2	4000.00	
	SW-10	B	0.05	85	Direct	0.05	5	Yes	No										21 x 16 x 7 1/2	1150.00; w/Arm, 1495.00	
YAMAHA	PF-800B	B	0.028	80	Belt		6	No	No	P	8 3/4	C/R	0.5-3.5	Yes	2-11	110	R		18 1/2 x 6 x 15	599.00	
	TT-500U	B	0.03	78	Direct			No	No	P	9 1/4	R	1-3	Yes	4-9	R			17 x 4 1/4 x 14 3/4	269.00	
	TT-400U	B	0.045	70	Belt			Yes	No	P	9 1/4	C/R	1-3	Yes	4-9	R			17 x 4 1/4 x 14 3/4	199.00	
	TT-300U	B	0.045	70	Belt			Yes	No	P	9 1/4	R	1-3	Yes	4-9	R			17 x 4 1/4 x 14 3/4	159.00	

ORIGINAL MASTER RECORDINGS™

# ULTRADISC™

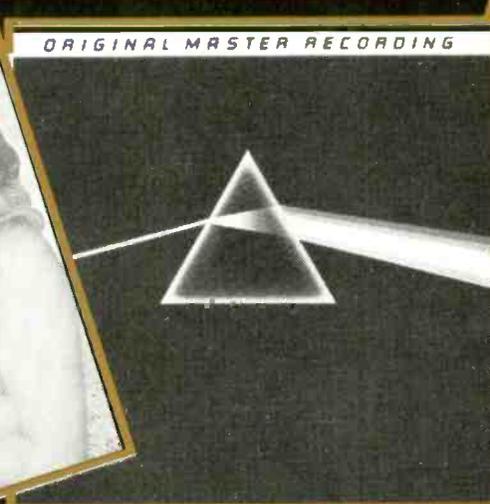
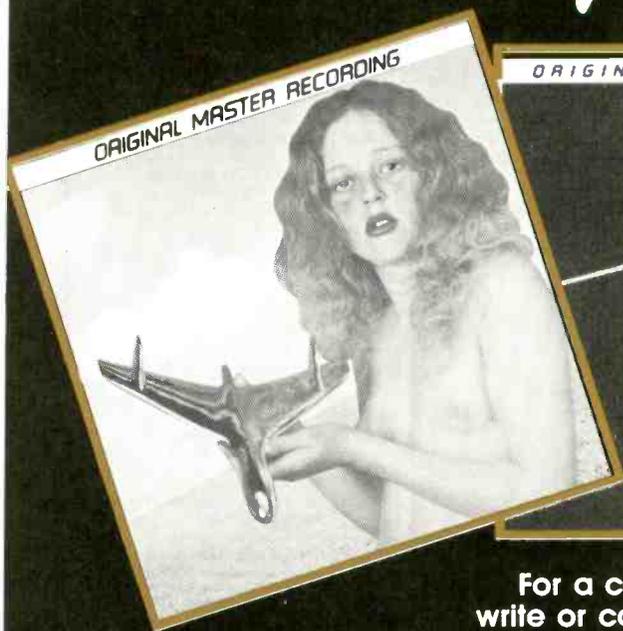
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# TONEARMS

MANUFACTURER	Model	Type: Air Bearing = A, Riveted = P, Linear = L, Servo = S		Cartridge Mount: Fixed = F, Removable Shell = R, P-Mount = P, Changeable Wand = W		Cueing?	Anti-Skating Adjustment?	Adjustable Vertical Tracking Angle?	Pivot Stylus Distance, Inches	Overall Length, Inches	Maximum Tracking Error, Degrees per Inch Range, Grams	Recommended Tracking Force Range, Grams	Cartridge Weight Range, Grams	Total Cable Capacitance, pF	Mounting Hole Diameter, Inches	Price, \$	Notes
		A	L	F	W												
AIR TANGENT	Tone Arm System	A	L		W	Yes		Yes			0.5-3.0	5-14				3200.00	Includes air pump.
ALPHASON	HR100S MCS	P		F		Yes	Yes	Yes	8 3/8	11 3/4	0-3	3-20	90	1 1/4		1000.00	
	HR100S	P		F		Yes	Yes	Yes	8 3/8	11 3/4	0-3	3-20	90	1 1/4		950.00	
	Xenon MCS	P		F		Yes	Yes	Yes	9	11 3/4	0-3	3-20	90	1 1/4		650.00	
	Xenon	P		F		Yes	Yes	Yes	9	11 3/4	0-3	3-20	90	1 1/4		600.00	
	Delta	P		F		Yes	Yes	Yes	9	11 3/4	3	3-20	90	1 1/4		450.00	
	Opal	P		F		Yes	Yes	Yes	9	11 3/4	3	3-20	90	1 1/4		375.00	
AUDIOMECA	SL5	L		F		Yes	Yes	Yes								2600.00	
AUDIOQUEST	AQ PT-5	P		F		Yes	Yes	Yes	8.7	12	0-3	3-12		1 1/4		375.00	
AUDIO-TECHNICA	ATP-12T	P		R		No	No	No	10 5/8	14 1/8	1.0	1.0-5.0	3-23	60	7/8	275.00	
BROADCAST ELECTRONICS	S-320	P		R		Yes	Yes	Yes	8 1/4	12 1/4	1	1	4-12	120	1	175.00	
	S-260	P		R		Yes	Yes	Yes	11 1/8	15 3/4	1	1	4-12	120	1	195.00	
DECCA	International	P		R		Opt.	Yes	Yes	9 1/2	12	0-3.5	3-13	100	1 1/8		295.00	Optional viscous damping; magnetic float and bias.
DENNESEN	ABLT-1	A		W		Yes		Yes	Adj.	12	0	Adj.	Any	100		2000.00	
EMINENT TECHNOLOGY	Two	A	L		W	Yes		†	7 3/8	10 3/4	0	0-5	0-16	22		950.00	†Calibrated VTA adjustment. Decoupled counterweight; includes air pump.
GOLDMUND	T5	L	S		R	Yes		Yes			1.25-3.0	4-20				2195.00	
	T3F	L	S		R	Yes		Yes			1.25-3.0	4-25				4750.00	Fully automatic; computer controlled; optional remote control.
GRACE	G747	P		R		Yes	Yes	Yes	9 3/8	11 3/4	0.3	0-3	4-10	86	3/4	200.00	
GRAHAM ENGINEERING	1	P		W		Yes	Yes	†	9 1/4	10 3/4	0.2	0-3.0	4-15		1 1/2	1875.00	†Continuously adjustable VTA. Fluid-damped unipivot design; silver wire; SME-compatible mount.
HELIUS DESIGNS	Scorpio III	P		F		Yes	Yes	Yes	9 1/4	11 1/4	1.25	0.75-2.5	5-12	90	3/4	350.00	
	Aureus 2	P		F		Yes	Yes	Yes	8 3/4	11 1/4	1.25	0.75-2.5	5-15	70	3/4	600.00	
	Orion	P		F		Yes	Yes	Yes	10	12 5/8	0.9	0.50-3.5	4-25	62	2 x 3/4	1200.00	
	Cyalene	P		F		Yes	Yes	Yes	9 3/4	11 5/8	0.7	0.50-3.5	5-20	50	2 x 3/4	2000.00	
HEYBROOK	The Heybrook Arm	P		F		Yes	Yes	Yes	9 3/4	11 7/8	1.5	0.75-3	4-12	300	1 1/4	498.00	Magnesium armtube.
LINN HI-FI	Ittok LV II	P		F		Yes	Yes	Yes	9	11 1/4	0.75-3.0	3-9	100	1 1/4		965.00	
	Basik Plus	P		F		Yes	Yes	Yes	9	11 1/4	0.75-3.0	2-10	100	1 1/4		295.00	
MAYWARE	Formula V	P		F/R		Yes	Yes	Yes	9	11 1/2	0.45-3.0	3-11	100	3/4		145.00	Viscous damping.
MERRILL AUDIO	Panacea	P	L		F	Yes	Yes	†								2890.00	†Hydraulic VTA adjustment. Micro azimuth adjustment.
MICRO SEIKI	MA-500	P		F		Yes	Yes	Yes	9.3	12.4	1.5	0.75-2.5	4-12	1.4		195.00	
	CF-1	P		F		Yes	Yes	Yes	9.3	12.4	1.5	0.75-2.5	4-12	1.4		395.00	
	MA-505III	P		R/W		Yes	Yes	Yes	9.3	12.7	1.5	0.75-2.5	4-12	1.4		395.00	
	MAX 237	P		R/W		Yes	Yes	Yes	9.3	12.7	1.5	0.75-2.5	4-12	1.7		1100.00	
	MAX 282	P		R/W		Yes	Yes	Yes	15	11.1	1.5	0.75-2.5	4-12	1.7		1200.00	
MISSION	Mechanic	P		F		Yes	Yes	Yes	8.33	9.5			4-14	220		2000.00	
MØRCH	UP-4	P		W		Yes	Yes	Yes	9 1/8	11 3/4	0.75-3	3-15	128	7/8		†	†With copper wire, \$650.00; with silver wire, \$650.00. Choice of four armtubes; unipivot; viscous damping. Armtube choice and damping as above; dual bearings.
	DP-6	P		W		Yes	Yes	Yes	9 1/8	11 3/4	0.75-3	3-15	128	7/8		960.00	
ORACLE	Alpha	P		F		Yes	Yes	Yes	9	11 1/2		4-9		1 1/8		295.00	
	Bela	P		F		Yes	Yes	Yes	9	11 1/2		4-9		1 1/8		395.00	
	Kuzma	P		F		Yes	Yes	Yes	9	11		4-9		1 1/4		895.00	Viscous damping. Van den Hul cables and connectors; azimuth adjustable.
PREMIER	FT-3	P		F		Yes	Yes	Yes	9 1/2	12	0.2	0-3	4-14			475.00	Azimuth adjustable; damped tube; LCOFC wiring; VTA lift base; RCA connectors on interface box.
	FT-3 K MMT	P		F		Yes	Yes	Yes	9 1/2	12	0.2	0-3	4-14	86	3/4	395.00	As above but without VTA lift base. Azimuth adjustable.
		P		R		Yes	Yes	Yes	9 1/2	12	0.2	0-3	4-14		3/4	290.00	
REGA RESEARCH	RB300	P		F		Yes	Yes	No	9 3/8	11 3/8	1.5	0.5-3.0	3-18	200	1	300.00	Cast armtube; dynamically balanced; 9-gram effective mass.
REVOLVER	Revolver	P		F		Yes	Yes	Yes	9	11.2	0.75-3.0	2.0-10.0	45	1.2		200.00	
	Revolver Super	P		F		Yes	Yes	Yes	9	11.2	0.75-3.5	1.0-12.0	45	1.2		450.00	

# RECORD & CD CLEANING MACHINES

OPTIONAL ACCESSORY KEY														
A - soft dust cover B - acrylic dust cover C - 45/78 adapter														
Manufacturer	Model	Vacuum	Operation	Motorized Rotation	Fluid Injection	Slides per Cleaning	Clean Time per Disc	Cleaning Fluid Included	Quantity of Fluid	Cabinet Material	Dimensions L x H x D	Weight in lbs	Price	NOTES
NITTY GRITTY	1.0	Yes	Manual	No	No	1	2 min	Pure 2	4 oz	Vinyl Veneer	14" x 10" x 10"	13	\$259	A, B, C
	2.0	Yes	Manual	No	No	1	2 min	Pure 2	4 oz	Solid Oak	14" x 10" x 10"	13	329	A, B, C
	1.5	Yes	Semi Manual	Yes	No	1	1½ min	Pure 2	4 oz	Vinyl Veneer	14" x 10" x 10"	15	359	A, B, C
	2.5	Yes	Semi Manual	Yes	No	1	1½ min	Pure 2	4 oz	Solid Oak	14" x 10" x 10"	15	429	A, B, C
	1.5Fi	Yes	Semi Auto	Yes	Yes	1	1½ min	Pure 2	16 oz	Vinyl Veneer	17" x 10" x 10"	19	429	B, C
	2.5Fi	Yes	Semi Auto	Yes	Yes	1	1½ min	Pure 2	16 oz	Solid Oak	17" x 10" x 10"	19	499	B, C
	Mini Pro 1	Yes	Automatic	Yes	Yes	2	½ min	Pure 2	16 oz	Vinyl Veneer	17" x 10" x 10"	21	629	B
	Mini Pro 2	Yes	Automatic	Yes	Yes	2	½ min	Pure 2	16 oz	Solid Oak	17" x 10" x 10"	21	699	B
	Hybrid 1	Yes	Semi Auto	Yes	Yes	1	1½ min	Pure 2	16 oz	Vinyl Veneer	17" x 10" x 10"	22	529	B, C, D
	Hybrid 2	Yes	Semi Auto	Yes	Yes	1	1½ min	Pure 2	16 oz	Solid Oak	17" x 10" x 10"	22	599	B, C, D
	CD-1	No	Semi Manual	Yes	No	1	½ min	Pure CD	2 oz	Vinyl Veneer	10" x 5" x 6"	8	169	E
	CD-2	No	Semi Manual	Yes	No	1	½ min	Pure CD	2 oz	Solid Oak	10" x 5" x 6"	8	239	E

## NITTY GRITTY

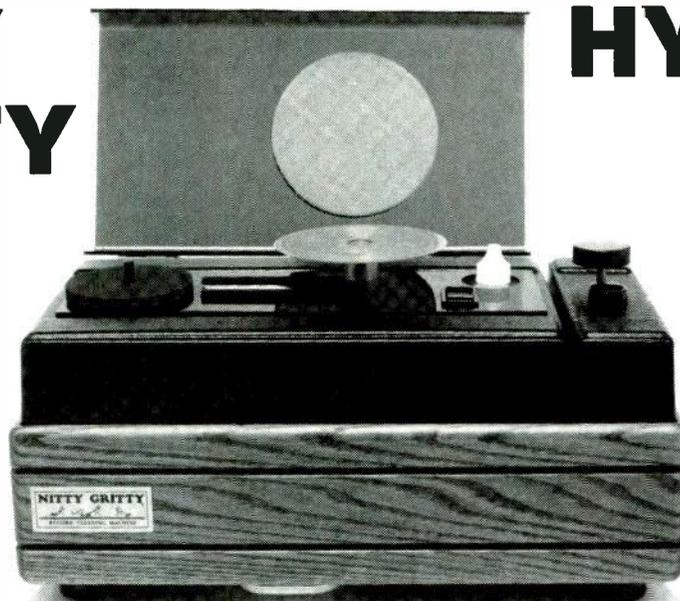
Now it is possible to achieve perfect record cleaning and state-of-the-art compact disc cleaning in one convenient and affordable unit. Nitty Gritty has just combined its .5Fi design with its CD cleaner to come up with the **HYBRID**.

The Hybrid incorporates all the features of the .5Fi series: the velvet-lined hemicylindrical lip; capstan drive; fluid injection; 16 ounce fluid reservoir; powerful vacuum motor; and slide-out waste fluid tray. All the features that have made it the most popular series of record cleaning machines in the world.

Added to that in the Hybrid are all the unique features of Nitty Gritty's CD cleaning machine: orbital cleaning motion, motorized disc rotation, and built-in dust cover.

What is not built in is the price and size of two separate cleaners; a dramatic savings in both categories. The **HYBRID**: it's for audiophiles who want the best of *both* worlds.

Send your name and address for an immediate packet of ear-opening information on all of Nitty Gritty's record and CD cleaning machines.



## HYBRID

The first cleaning machine for both records and compact discs.

### NITTY GRITTY

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**LiveWire Black** prevents these problems by using 6 surface-only conductors. These technically sophisticated conductors have a single layer of .254mm OFHC copper stranded around a polypropylene core.

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# TO NEARMS

MANUFACTURER	Model	Type of Bearing - A. Pivoted = P. Linear = L. Sp-rod = S		Cartridge Mount: Fixed = F. Removable Shell = R. P-Mount = P. Changeable Wand = W		Cushion?	Anti-Skating	Adjustable Adjustment?	Pivot-Stylus Vertical Tracking Angle?	Overall Length, Inches	Maximum Tracking Range, Grams	Recommended Tracking Force Range, Grams	Cartridge Weight Range, Grams	Total Cable Capacitance, pF	Mounting Hole Diameter, Inches	Price, \$	Notes	
		Yes	No	Yes	No													
SAEC	WE-308N	P	R	Yes	Yes	Yes	9 1/4	13 3/8	0-2	7.3-13.3	1.1	395.00						
	WE-308L	P	R	Yes	Yes	Yes	10 1/2	14 3/4	0-2	7.8-14.8	1.1	495.00						
	WE-317S	P	R	Yes	Yes	Yes	8 3/4	12 3/4	0-2.5	9.5-15.5	1.1	595.00						
	WE-407/23	P	R	Yes	Yes	Yes	8 3/4	12 3/4	0-2.5	5.5-15.5	1.1	795.00						
	WE-308SX	P	R	Yes	Yes	Yes	9 1/4	13 3/4	0-2	5.5-15.5	1.1	795.00						
	WE-506/30	P	R	Yes	Yes	Yes	11 1/4	16 1/2	0-2	5.5-15.5	1.4	1500.00						
	WE-8000ST	P	R	Yes	Yes	Yes	11 1/2	16 3/4	0-2	8-16.5	1.1	1500.00						
SIGNET	XK35	P	F	Yes	Yes	Yes	9 1/2	11 1/2	1.0	0-2.0	2-9	75	3/4	299.95				
SIMPLYPHYSICS	Aviator	A L	F	Yes		Yes	4 1/2	4 1/2	0	1-3	4-10		1/4	650.00			Van den Hul mono-crystal silver wiring; includes air pump and reservoir.	
SME	Series V	P	F	Yes	Yes	Yes	9 1/4	11 3/8	0.2	0-3	4-18	140	1 1/8 x 2 3/4	1995.00			Damped magnesium casting; ABEC-7 bearings; van den Hul silver wiring; adjustable dynamic and static tracking; fluid damping; VTA lift. Casting as above; ABEC-3 bearings; LCOFC wiring; adjustable static tracking; optional fluid damping and VTA lift, \$275.00.	
	Series IV	P	F	Yes	Yes	Yes	9 3/8	11 3/8	0.2	0-3	4-18	140	1 1/8 x 2 3/4	1200.00				
SOURCE/ODYSSEY	RP1xg	P	F	Yes	Yes	Yes					2-12		1 1/4	1600.00				
SOUTHER ENGINEERING	Junior Tri-Quartz TQ-1 1989	L	W	Yes		Yes	2.0	10	0	0.5-3.0	1-20		(2) 1/4	595.00				
		L	W	Yes		Yes	2.0	10	0	0.5-3.0	1-20		(2) 1/4	995.00				
		L	W	Yes		Yes	2.0	10	0	0.5-3.0	1-20		(2) 1/4	1995.00				
TECHNICS	EPA-250	P	R W	Yes	Yes	Yes	10	12 1/2	2	0-2	3-12.5	41.2	2 1/2	870.00				
TOWNSHEND	Excalibur	P	F		Yes		9			0.5-3	5-30	50		900.00				
WELL TEMPERED LAB	Well Tempered Arm	P	F		Yes	Yes	9	11 3/8					1/2	720.00			Variable viscous damping.	
WHEATON MUSIC	Tri-Planar II	P	F	Yes	Yes	Yes	9 3/4	12	0.03	0-4	4-25			1795.00			Azimuth adjustable; van den Hul mono-crystal wiring.	
WIN RESEARCH	Pentograph	P	F	Yes	Yes	Yes	12	14	0	1-5	0-12	80		1850.00				
ZETA	Std. VdH	P	F	Yes	Yes	Yes	9	11 1/2		0.75-4	4-12	90	1 1/4	925.00				
		P	F	Yes	Yes	Yes	9	11 1/2		0.75-4	4-12	90	1 1/4	1180.00			Silver linear-crystal internal wiring; van den Hul arm cable with Tiffany connectors.	

# PHONO CARTRIDGES

MANUFACTURER	Model	Frequency Response, kHz to kHz, ±dB	Principle: Moving Iron = MI, Indirect Magnets = IM, Moving Coil = MC, Rewind Magnets = MM	Individual Response Curve Supplied?	Channel Separation, 1 kHz, dB	Channel Separation, 10 kHz, dB	Output, mV, 1 kHz, 5 cm/sec, rms Lateral Velocity	Recommended Tracking Force Range, Grams	Recommended Load Capacitance, pF	Stylus Type—See Code	Stylus Radius (Radius), Mils	Dynamic Compliance, Vertical/Lateral, μm/mNm	Stylus Replacement: User = U, Factory = F	Mounting: Integral Shell = I, P-Mount = P, Standard = S	Weight, Grams	Price, \$	Replacement Stylus Price, \$
ADCOM	HC-E II	20-20 +2.5,-1	MC	No	22	22	2.3	1.6-2.0		E	0.3 x 0.7	F	S	4.7	160.00	88.00	
	HP-E II	20-20 +2.5,-1	MC	No	22	22	2.3	1.25		E	0.3 x 0.7	F	P		160.00	88.00	
	HC-vdH II	20-20 +2.5,-1	MC	No	22	22	2.3	1.6-2.0		V	0.2 x 2.8	F	S	4.7	250.00	138.00	
	XC-LT II	20-20 ±1.0	MC	No	25	25	2.3	1.6-2.0		X	0.15 x 1.5	F	S	4.7	290.00	160.00	
	XC-MR II	20-20 ±1.0	MC	No	25	25	2.3	1.6-2.0		M	0.15 x 3.0	F	S	4.7	360.00	198.00	
	SXC-vdH	20-20 +3,-1	MC	No	25	25	2.3	1.8		V	0.15 x 3.3	F	S	4.7	500.00	275.00	
AKG	P-4	20-20	MI	No	20	15	1	1-2	470	E	0.3 x 0.7	15/	U	S	5.5	60.00	25.00
	P-4DP	20-20	MI	No	20	15	1	1-2	470	E	0.3 x 0.7	15/	U	P	6	65.00	25.00
	P-5ED	20-20	MI	No	25	15	1.65	1.25-2	470	E	0.3 x 0.7	20/20	U	S	4.8	80.00	40.00
	P-8ES	10-28	MI	Yes	30	25	0.95	1.2-1.6	470	V	0.3 x 0.7	30/30	U	S	4.8	450.00	270.00
	Super Nova																
	P-10S	20-20	MI	Yes	25	15	1.65	1.25-2	470	E	0.3 x 0.7	20/20	U	S	4.8	125.00	60.00
	P-10 Studio	20-20	MI	No	25	15	1.3	1.5-4	470	E	0.3 x 0.7	20/20	U	S	4.8	130.00	60.00
	P-15S	10-25	MI	Yes	30	22	0.95	1.2-1.6	470	E	0.3 x 0.7	25/25	U	S	4.8	175.00	82.50
	P-25S	10-28	MI	Yes	30	25	0.95	1.2-1.6	470	X	0.2 x 0.7	2/28	U	S	4.8	250.00	150.00
	P100E		MI		30	25		1.35	475	V			F	S	3.5	1000.00	
	P100E VDH		MI		30	25		1.35	475	V			F	S		1000.00	

# PHONO CARTRIDGES

MANUFACTURER	Model	Frequency Response Hz to kHz, ± dB	Principal Moving Iron Induced Magnet Moving Magnet	MI MM MM	Moving Coil = MC	Individual Response Curve Supplied?	Channel Separation, 1 kHz, dB	Channel Separation, 10 kHz, dB	Duport, rms, 1 kHz 5 cm Sec. rms Lateral Velocity	Recommended Tracking Force Range, Grams	Recommended Load Capacitance, pF	Stylus Type—See Code	Stylus Radius (Radius), Mills	Dynamic Compliance, µm/mk Vertical/Lateral	Stylus Replacement User = U, Factory = F	Mounting: Integral Shell = I, P-Mount = P, Standard = S	Weight, Grams	Price, \$	Replacement Stylus Price, \$
ANDANTE	HSP	18-25	MM	No	27	22	6.0	1.8	100	E	0.2 x 0.7	18/18	U	S	6	39.00	24.95		
	H	18-25	MM	No	27	22	5.5	2.0	100	S	0.5	15/15	U	S	6	29.00	14.95		
	S	18-27	MM	No	27	22	4.0	1.8	100	C	0.5	15/15	U	S	6	49.00	29.95		
	P-76	8-45	MM	No	30	25	2.5	1.5	100	X		18/18	U	P	5.9	70.00	38.95		
	P-38	10-35	MM	No	28	23	2.5	1.5	100	E	0.3 x 0.8	20/20	U	P	5.9	60.00	33.95		
ARCAM	C77Mg	20-20 ± 3	MM	No	20	15	4	1.6-2.2	200-400	S	0.6	20/20	U	S	6.2	79.95	24.95		
	E77Mg	20-20 ± 2.5	MM	No	20	15	4	1.6-2.0	200-400	E	0.3 x 0.7	20/20	U	S	6.2	119.95	59.95		
	P77Mg	20-20 ± 2.5	MM	No	20	15	4	1.6-2.2	200-400	X	0.3 x 2.0	20/20	U	S	6.2	149.95	89.95		
ARGENT	Diamond	10-50	MC	Yes	30	25	0.2	1.8-2.2	100	X	0.3 x 0.6	8/8	F	S	8	1200.00	600.00		
	MC-110	10-50	MC	Yes	30	25	0.2	1.8-2.2	100	X	0.3 x 0.6	8/8	F	S	8	300.00	120.00		
	MC-300	10-40	MC	Yes	25	20	0.1	1.8-2.2	100	X	0.3 x 0.6	8/8	F	S	7	150.00	60.00		
	MC-310	10-40	MC	Yes	25	20	0.1	1.8-2.2	100	E	0.3 x 0.7	8/8	F	S	7	100.00	40.00		
	MC-500H	10-40	MC	Yes	25	20	1.9	1.8-2.2	100	X	0.3 x 0.6	8/8	F	S	7	200.00	100.00		
	MC-500HS	10-50	MC	Yes	25	20	1.9	1.8-2.2	100	X	0.3 x 0.6	8/8	F	S	7	260.00	130.00		
	MC-500HR	10-50	MC	Yes	25	20	1.9	1.8-2.2	100	X	0.3 x 0.6	8/8	F	S	7	300.00	150.00		
AUDIOQUEST	AQ M-1	15-30	IM	No	25	20	3.0	1.5		E	0.3 x 0.7	15/15	U	S		95.00	40.00		
	AQ MC-3	15-35	MC	No	25	20	2.5	2.0		E	0.3 x 0.7	8/8	U	S		150.00	90.00		
	AQ MC-4	10-40	MC	No	25	20	2.5	1.8		E	0.3 x 0.7	10/10	F	S		245.00	160.00		
	AQ MC-5	10-40	MC	No	30	25	1.4	1.8		X	0.3 x 1.6	10/10	F	S		295.00	185.00		
	AQ 4041-L	10-50	MC	Yes	30	25	0.5	1.8		X	0.3 x 1.6	10/10	F	S		495.00	325.00		
	AQ 4041-MH	10-50	MC	Yes	30	25	1.4	1.8		X	0.3 x 1.6	10/10	F	S		495.00	325.00		
	AQ B-200L	10-50	MC	Yes	30	25	0.5	1.8		X	0.3 x 1.6	10/10	F	S		795.00	520.00		
	AQ B-200MH	10-50	MC	Yes	30	25	1.4	1.8		X	0.3 x 1.6	10/10	F	S		795.00	520.00		
AUDIO-TECHNICA	AT120E T	15-25 ± 1	MM	No	29	20	5.0	1.0-1.8	100-200	E	0.3 x 0.7		U	S	6.4	95.00	50.00		
	AT125LC T	10-28 ± 1	MM	No	29	20	5.0	1.0-1.8	100-200	X			U	S	6.4	150.00	65.00		
	AT130E/T	10-30 ± 1	MM	No	30	20	5.0	0.8-1.8	100-200	E	0.2 x 0.7		U	S	6.4	135.00	55.00		
	AT140ML	5-32 ± 1	MM	No	30	20	5.0	0.8-1.6	100-200	M			U	S	6.5	195.00	85.00		
	AT160ML	5-35 ± 1	MM	Yes	31	21	5.0	0.8-1.8	100-200	M			U	S	8.1	295.00	140.00		
	AT105	20-20 ± 1	MM	No	26	16	4.5	1.5-2.5	100-200	S	0.6		U	S	7	55.00	30.00		
	AT110E	20-22 ± 1	MM	No	26	17	4.5	1.0-2.0	100-200	E	0.4 x 0.7		U	S	7	70.00	35.00		
	AT132EP	10-30 ± 1	MM	No	30	20	5.0	0.8-1.8	100-200	E	0.2 x 0.7		U	P/S	6	150.00	55.00		
	AT152MLP	5-35 ± 1	MM	No	31	21	5.0	0.8-1.8	100-200	M			U	P/S	6	250.00	120.00		
	AT201P	20-22 ± 1	MM	No	26	16	5.0	1.0-1.5	100-200	S	0.6		U	P/S	6	55.00	25.00		
	AT201EP	20-25 ± 1	MM	No	26	17	5.0	1.0-1.5	100-200	E	0.4 x 0.7		U	P/S	6	65.00	30.00		
	AT211EP	15-25 ± 1	MM	No	29	18	5.0	1.0-1.5	100-200	E	0.4 x 0.7		U	P/S	6	75.00	35.00		
	AT216EP	15-27 ± 1	MM	No	29	20	5.0	1.0-1.5	100-200	E	0.3 x 0.7		U	P/S	6	100.00	50.00		
	AT221EP	10-28 ± 1	MM	No	31	20	5.0	1.0-1.5	100-200	E	0.2 x 0.7		U	P/S	6	135.00	70.00		
AT231LP	10-30 ± 1	MM	No	31	21	5.0	1.0-1.5	100-200	X			U	P/S	6	145.00	75.00			
A.V.A.	Longhorn	10-60 ± 1.5	IM	No	35	30	5	1.5-2.0		E	0.2 x 0.5		U/F	S	8	99.00	45.00		
AZDEN	GM-P5L	10-60	MC	Yes	30	4.0	0.2	1.0-1.5	100-300	X			F	P/S	5.9	250.00	125.00		
	YM-P50VL	10-24	MM	No	30	4.0	1.0-1.5	1.0-1.5	100-300	X			U	P/S	5.9	150.00	75.00		
	YM-P50E	10-22	MM	No	28	4.0	1.0-1.5	1.0-1.5	100-300	E	0.3 x 0.7		U	P/S	5.9	90.00	40.00		
	YM-P20E	10-22	MM	No	24	4.0	1.0-1.5	1.0-1.5	100-300	E	0.3 x 0.7		U	P/S	5.9	70.00	35.00		
	YM-P50C	10-22	MM	No	28	4.0	1.0-1.5	1.0-1.5	100-300	C	0.65		U	P/S	5.9	60.00	30.00		
BANG & OLUFSEN	MMC 1	20-20 ± 1	MI	Yes	30	22	2.12	1	200-400	X	0.1 x 0.1		No	I	1.6	490.00			
	MMC 2	20-20 ± 1.5	MI	Yes	25	20	2.12	1.2	200-400	X	0.12 x 0.12		I	1.6	325.00	215.00			
	MMC 3	20-20 ± 2	MI	Yes	25	20	2.12	1.2	200-400	E	0.15 x 0.15		I	1.6	215.00	130.00			
	MMC 4	20-20 ± 2.5	MI	Yes	22	17	2.12	1.2	200-400	E	0.2 x 0.2		I	1.6	125.00	80.00			
	MMC 5	20-20 ± 3	MI	Yes	20	15	2.12	1.5	200-400	E	0.25 x 0.25		I	1.6	70.00				
BENZ-MICRO	MC-1 High Output		MC	Yes			2.0			M			F	S	7.5	895.00	400.00		
	MC-1 Low Output		MC	Yes			0.4			M			F	S	7.5	949.00	400.00		
	MC-1 Super		MC	Yes			0.9			M			F	S	7.5	1099.00	400.00		
	MC-2		MC	Yes			0.3			M			F	S	7.5	1299.00	400.00		
CELLO	Chorale		MC	No					X			F	S		850.00				
CHADWICK MODIFICATIONS	F-3 Super	18-21	IM	No	28	24	3.8	2		E	0.3 x 0.6	23/23	F	S	5	95.00	60.00		
	X-5 Super	15-45	MC	No	30	30	2	2		M		20/18	F	S	4.8	350.00	175.00		
CLEARAUDIO	Gamma Veritas	10-50	MC	Yes	28	28	0.6	1.8-2.2		X	0.07 x 0.4	15/15	F	S	4.5	450.00	225.00		
	Integrated Veritas	10-60	MC	Yes	35	35	0.6	1.8-2.2		X	0.07 x 0.4	15/15	F	I	17	850.00	450.00		
	Standard Delta	10-60	MC	Yes	35	35	0.6	1.8-2.2		X	0.07 x 0.4	15/15	F	S	4.5	800.00	400.00		
	Accurate	10-60	MC	Yes	30	30	0.6	1.8-2.2		X	0.07 x 0.4	15/15	F	S	4.5	650.00	325.00		
	Prädikate	10-110	MC	Yes	40	40	0.7	1.8-2.2		X	0.07 x 0.4	15/15	F	S	10	1995.00	995.00		
	Signature	10-70	MC	Yes	40	40	0.6	1.8-2.2		X	0.07 x 0.4	15/15	F	S	5.5	1400.00	700.00		
			MC	Yes	40	40	0.6	1.8-2.2		X	0.07 x 0.4	15/15	F	S	9	995.00	500.00		
DECCA	Super Gold vdH	20-20	MI	No	25	25	5	1.5-2.25	220	V		5/12	F	S	6.7	495.00	300.00		
		20-20	MI	No	25	25	5	1.5-2.25	220	V		7.5/15	F	S	6.8	995.00	550.00		
DENON	DL-1000	20-110	MC		30		0.12	0.7-0.9		E	0.06	50/50	F	S	6	859.00			
	DL-305	20-75	MC		28		0.20	1.0-1.4		E	0.05 x 0.10	35/35	F	S	5.8	559.00			
	DL-304	20-75	MC		28		0.18	1.0-1.4		E	0.05 x 0.10	14/14	F	S	7	395.00			
	DL-302	20-70	MC		28		0.25	1.2-1.6		E	0.06 x 0.12	14/14	F	S	6	260.00			
	DL-301	20-60	MC		28		0.30	1.2-1.6		E	0.06 x 0.14	35/35	F	S	4.7	160.00			
	DL-160	20-50	MC		28		1.60	1.3-1.9		E	0.07 x 0.14	10/10	F	S	4.8	115.00			
	DL-110	20-45	MC		25		1.60	1.5-2.1		E	0.10 x 0.20	8/8	F	S	4.8	85.00			
DIGITRAC	300 SE	20-30 ± 3	MI		24		4	1.0-1.5	200-500	X		35/35	U	P/S	6	200.00	75.00		
	200 NE	20-25 ± 3	MI		22		4	1.25-1.75	200-500	E		30/30	U	P/S	6	140.00	45.00		
	100 E	20-20 ± 3	MI		20		4	1.25-1.75	200-500	E		25/25	U	P/S	6	100.00	35.00		
	190 S	20-18 ± 3	MI		20		4	1											

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# PHONO CARTRIDGES

MANUFACTURER	Model	Frequency Response, Hz to kHz, ±dB	Stylus Type	Principle Moving Iron = MC, Magneto = Magnet = MM, Moving Coil = MC	Individual Response Curve Supplied?	Channel Separation, 1 kHz, dB	Channel Separation, 10 kHz, dB	Output, mV, 1 kHz, 5 cm/sec, rms Lateral Velocity	Recommended Tracking Force	Recommended Load Capacitance, pf	Stylus Type—See Code	Stylus Radius (Radius), Mils	Dynamic Compliance, µm/mN, Vertical/Lateral	Stylus Replacement, Laser = L, Factory = F	Mounting: Integral Shell = I, P-Mount = P, Standard = S	Weight, Grams	Price, \$	Replacement Stylus Price, \$
EPOCH	HZ9S	10-30	MM	Yes	35	22	4.0	0.75-1.5	275	X	0.3 x 2.8	25/	U	U	S	4	250.00	90.00
	LZ9S	10-50	MM	Yes	35	22	0.2	0.75-1.5		X	0.3 x 2.8	25/	U	U	S	3.8	250.00	90.00
	LZ8S	10-40	MM	No	35	22	0.2	0.75-1.5		X	0.3 x 2.8	20/	U	U	S	3.8	190.00	75.00
	HZ8S	10-30	MM	No	35	22	4.0	0.75-1.5	275	X	0.3 x 2.8	20/	U	U	S	4	190.00	75.00
	HZ7S	10-25	MM	No	32	20	4.0	0.75-1.5	275	X	0.3 x 2.8	17/	U	U	S	4	120.00	50.00
	HZ6E	10-22	MM	No	32	15	4.0	0.75-1.5	275	E	0.2 x 0.7	15/	U	U	S	4	95.00	40.00
GARROTT	K-1	20-20 ± 2	MM	No	30	25	5.6	1.0-1.5	200	X	0.5		U	U	S	5.8	150.00	120.00
	K-2	20-20 ± 2	MM	No	30	25	5.6	1.0-1.5	200	X	0.3 x 0.7		U	U	S	5.8	175.00	150.00
	K-3	20-20 ± 2	MM	No	30	25	5.6	1.6-1.8	200	X	0.2 x 2.0		U	U	S	5.8	200.00	180.00
	P-66	20-20 ± 2	MM	No	30	25	5.6	1.6-1.8	200	X	0.25 x 2.5		U	U	S	5.8	250.00	220.00
	P-77	20-20 ± 2	MM	No	30	25	5.6	1.6-1.8	200	X	0.20 x 2.0		U	U	S	5.8	350.00	300.00
	P-87	20-20 ± 1.5	MC	No	30	25	0.24	1.5-1.7		X	0.22 x 2.8		F	F	S	8.5	2600.00	650.00
	P-88	20-20 ± 1.5	MC	No	30	25	0.24	1.5-1.7		X	0.25 x 2.5		F	F	S	8.5	3200.00	850.00
	GOLDMUND	Goldmund/Clearaudio		MC					2-2.2		X			F	S	4.4	1095.00	657.00
Goldmund Gold/Clearaudio			MC					2-2.2		X			F	S	6.6	1795.00	1077.00	
GOLDRING	Elan	20-18 ± 3	MM	No	20		5.5	1.25-1.75		E		16/16	U	S		50.00	30.00	
	Epic II	20-20 ± 2	MM	No	25		5.5	1.5-2.5		E	0.3 x 0.7	24/24	U	S		80.00	45.00	
	G-1010	20-20 ± 2	MM	No	25		6.5	1.5-2.5		E	2.5	24/24	U	S		110.00	60.00	
	G-1010 78rpm	20-20 ± 2	MM	No	25		6.5	1.5-2.5		E	2.5	24/24	U	S		110.00	60.00	
	G-1020	20-20 ± 2	MM	No	25		6.5	1.5-2.5	200	V	VDH II	16/24	U	S		150.00	80.00	
	G-1040	20-22 ± 2	MM	No	25		6.5	1.5-2.5	200	V	VDH I	16/24	U	S		220.00	120.00	
	Eroica	20-22 ± 3	MC	Yes	25		2.5	1.5-2.0	100-500	V	VDH II	18/18	F	S		260.00	175.00	
	Eroica L	20-22 ± 3	MC	Yes	25		0.25	1.5-2.0	200-1000	V	VDH II	18/18	F	S		260.00	175.00	
	Electro II	20-22 ± 3	MC	Yes	25		2.5	1.6-2.2	100-500	V	VDH I	18/18	F	S		440.00	295.00	
	Electro IIA	20-22 ± 3	MC	Yes	25		0.25	1.6-2.2	100-500	V	VDH I	18/18	F	S		440.00	295.00	
Gerard Louis	20-22 ± 3	MC	Yes	25		0.25	1.6-2.2	100-500	V	VDH I	18/18	F	S		1000.00	600.00		
GRACE	F-9 Ruby	10-50 ± 2	MM	No	30	25	2.6	1.3-1.7	400	E		20/20	U	S	6	395.00	250.00	
	F-9E Super	10-47 ± 2	MM	No	30	25	3.75	1.4-1.8	400	E		20/20	U	S	6	250.00	125.00	
	F-9L	10-40	MM	No	30	25	5.5	1.6-2.0	350	X		18/18	U	S	6	225.00	120.00	
	F-8L	20-20	MM	No	25	20	5.5	1.6-2.0	100	X		18/18	U	S	6	200.00	110.00	
GRADO	Z2+	10-60	MI	No	25	2.2	1.5	1.5					U	P/S	5.5	265.00	110.00	
	Z1+	10-60	MI	No	25	5.5	1.5	1.5					U	P/S	5.5	180.00	75.00	
	Z+	10-60	MI	No	25	5.5	1.5	1.5					U	P/S	5.5	130.00	55.00	
	ZF1+	10-55	MI	No	25	5.5	1.5	1.5					U	P/S	5.5	110.00	45.00	
	ZF2+	10-55	MI	No	25	5.5	1.5	1.5					U	P/S	5.5	86.00	36.00	
	ZF3E+	10-55	MI	No	25	5.5	1.5	1.5					U	P/S	5.5	69.00	33.00	
	ZCE+1	10-50	MI	No	20	5.5	1.5	1.5					U	P/S	5.5	55.00	30.00	
	ZTE+1	10-50	MI	No	20	5.5	1.5	1.5					U	P/S	5.5	25.00	17.00	
	ZCE+	10-50	MI	No	20	5.5	1.5-2.25	1.5					U	P/S	5.5	45.00	28.00	
	JOSEPH GRADO SIGNATURE	8MZ		Flux Bridge	No	35	20	5	1.5			0.2 x 0.2		U	S	5	200.00	100.00
MCZ			Flux Bridge	No	35	20	2.2	1.5			0.2 x 0.2		U	S	5	300.00	150.00	
TLZ			Flux Bridge	No	35	20	2.2	1.5			0.15 x 0.9		U	S	5	500.00	250.00	
XTL			Flux Bridge	No	35	20	2.2	1.5			0.15 x 0.9		U	S	5	750.00	375.00	
HIGHPHONIC	MC-A2e	20-20 ± 1.5	MC	Yes	30	25	0.12	0.9-1.1		X	0.1 x 1.2	17/	F	S	6½	295.00	200.00	
	MC-A3	10-70 ± 1.5	MC	Yes	30	25	0.12	0.9-1.1		X	0.1 x 1.2	17/	F	S	6½	395.00	280.00	
	MC-A4	10-50 ± 1.5	MC	Yes	30	25	0.25	1.5-1.9		X	0.25 x 1.2	8/	F	S	7½	495.00	315.00	
	MC-R5	10-70 ± 1.5	MC	Yes	30	25	0.12	0.9-1.1		X	0.1 x 1.2	18/	F	S	6½	595.00	440.00	
	MC-A6	10-75 ± 1.5	MC	Yes	30	25	0.12	0.9-1.1		X	0.1 x 1.2	18/	F	S	6½	795.00	555.00	
	Signature	10-80 ± 1.5	MC	Yes	30	25	0.13	1.1-1.3		X	0.1 x 1.2	15/	F	S	6½	1250.00	880.00	
	MC-D10	10-80 ± 1.5	MC	Yes	30	25	0.25	1.5-1.9		X	0.1 x 1.2	6/	F	S	7½	1250.00	1000.00	
	MC-D12	10-85 ± 1.5	MC	Yes	35	30	0.12	0.9-1.1		X	0.1 x 1.2	18/	F	S	6½	1500.00	1200.00	
	MC-D15	10-85 ± 1.5	MC	Yes	35	30	0.12	0.9-1.1		X	0.1 x 1.2	18/	F	S	6½	1995.00	1595.00	
	Signature	10-85 ± 1.5	MC	Yes	35	30	0.12	0.9-1.1		X	0.1 x 1.2	18/	F	S	6½	1995.00	1595.00	
KISEKI	Lapis Lazuli	20-50	MC	Yes	30	25	0.4	2.0		X	0.14 x 0.6	8/8	F	S	11	560.00	310.00	
	Agate Ruby	20-50	MC	Yes	30	25	0.4	2.0		X	0.14 x 0.6	8/8	F	S	11	1250.00	850.00	
	Purple Heart	20-50	MC	Yes	30	25	0.4	2.0		X	0.14 x 0.6	8/8	F	S	7.5	975.00	680.00	
	Sapphire	20-50	MC	Yes	30	25	0.4	2.0		X	0.3 x 0.7	10/10	F	S	11	600.00	360.00	
KOETSU	Rosewood	20-20 ± 1	MC	No	30		0.5	1.7-2		E	0.275 x 1.57	20/			11.5	1200.00		
	Rosewood Signature	20-20 ± 1	MC	No	30		0.3	1.7-2		E	0.275 x 1.57	20/			11.5	1500.00		
	Black	20-20 ± 1	MC	No	25		0.5	1.7-2		E	0.275 x 1.57	20/			12.5	800.00		
LINN HI-FI	Troika	20-20 ± 1.0	MC	No	30			1.7		E	0.2 x 0.8		F	S	6	1575.00	1050.00	
	Karma	20-20 ± 1.0	MC	No	30			1.7		E	0.2 x 0.8		F	S	6	1125.00	750.00	
	Asaka	20-20 ± 1.0	MC	No	25			1.7		E	0.2 x 0.8		F	S	6	725.00	483.33	
	K-9	20-20 ± 2.0	MC	No	25			1.7		E	0.2 x 0.8		F	S	5.5	275.00	165.00	
	K-5	20-20 ± 2.0	MC	No	25			1.7		E	0.2 x 0.8		U	S	5.5	150.00	90.00	
Basik	20-20 ± 2.0	MC	No	25			1.8		E	0.2 x 0.8		U	S	5.5	75.00			
LDTUS	One	20-20	MC	No	25		0.2	0.8-1.5		V			F	S	5.5	650.00	300.00	
MADRIGAL	Carnegie Two		MC	Yes	35	25	0.35	1.6-2.0		M		15/	F	S	9	850.00	750.00	
JOHN MAROVSKIS	JMAS MIT-1	10-10 ± 1.0	MC	No	25	20	0.25	2.25-2.5	500	V	0.2 x Line	/16	F	S	5.5	550.00	275.00	
MAYWARE	MC-2V	10-50 ± 1.5	MC	Yes	29		0.25	1.9		X			F	S	6.9	79.00		
	MC-3L 2	10-50 ± 1.5	MC	Yes	29		2.5	1.9		X			F	S	6.9	79.00		
	MC-7V-3	10-50 ± 1	MC	Yes	30		0.25	1.8		X			F	S	4.8	145.00		
	MC-7V-3	10-50 ± 1	MC	Yes	30		2.5	1.8		X			F	S	4.8	145.00		

# the *Soundcraftsmen* STORY



## SECTION OF PRODUCTION AREA IN MAIN PLANT



One hundred percent quality control is seen on EVERY unit manufactured. EVERY completed unit is electronically tested for specification accuracy and then EVERY unit is connected to a high fidelity system and listened to—just like you would at home. If your unit meets or exceeds the critical standards set forth on these tests, it is then packaged for shipment.

## INDIVIDUAL CERTIFICATE OF PERFORMANCE WITH EVERY AMPLIFIER



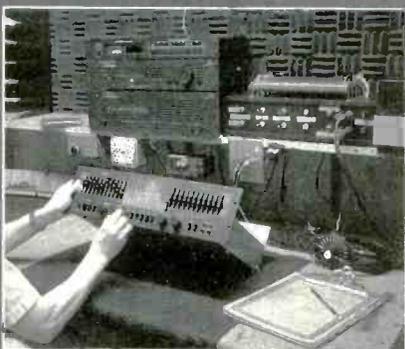
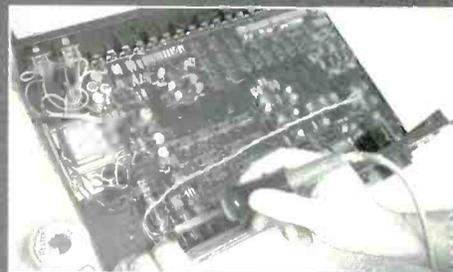
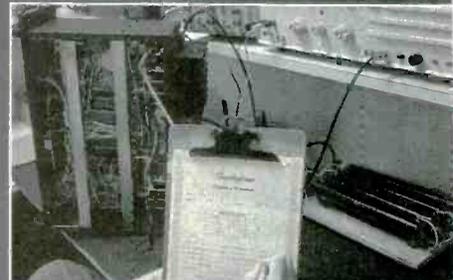
Soundcraftsmen celebrates its 20th year of manufacturing audio components for the discriminating audiophile.

Soundcraftsmen engineers are highly respected in audio design circles as being very forward thinking, yet practical, when engineering new products, by using proven design principles from the past with tomorrow's technology.



From the finest equalizers, the most accurate analyzers, to the unique preamps, to the revolutionary Class H and Power MOSFET amplifiers, you cannot purchase finer audio components.

The next few pages will answer many of your questions. If you have more, our customer service department will be pleased to assist you by telephone or letter. We invite your questions and appreciate your interest.





Soundcraftsmen

# A5002 Amplifier

**DESCRIPTION:** Soundcraftsmen's exclusive CLASS H amplifier circuitry establishes a new standard for high-power stereo amplifier technology. Several internal design elements make up CLASS H: the Vari-Portional® dual signal-tracking power supply, Auto-Buffer® and Auto-Crowbar. Here is a brief explanation of CLASS H and its benefits.

**VARI-PORCIONAL® SYSTEM:** Conventional amplifiers utilize a single power supply which supplies whatever level of voltage necessary at any given moment to produce the required power output, up to the supply's maximum. This design is inherently inefficient since most of the time the supply is operating at only a small percentage of its potential. This operating

condition causes high heat buildup with its related increase in distortion, as well as high wear and tear on amplifier components. The Soundcraftsmen Vari-Portional® system utilizes a low-power supply which operates very efficiently continuously, and a second, "signal-tracking" supply which operates only when actually needed, and only to the degree needed. In this design, no power is wasted in heat dissipation. The amplifier runs cool, distortion is reduced to almost unmeasurable levels, and reliability is dramatically improved.

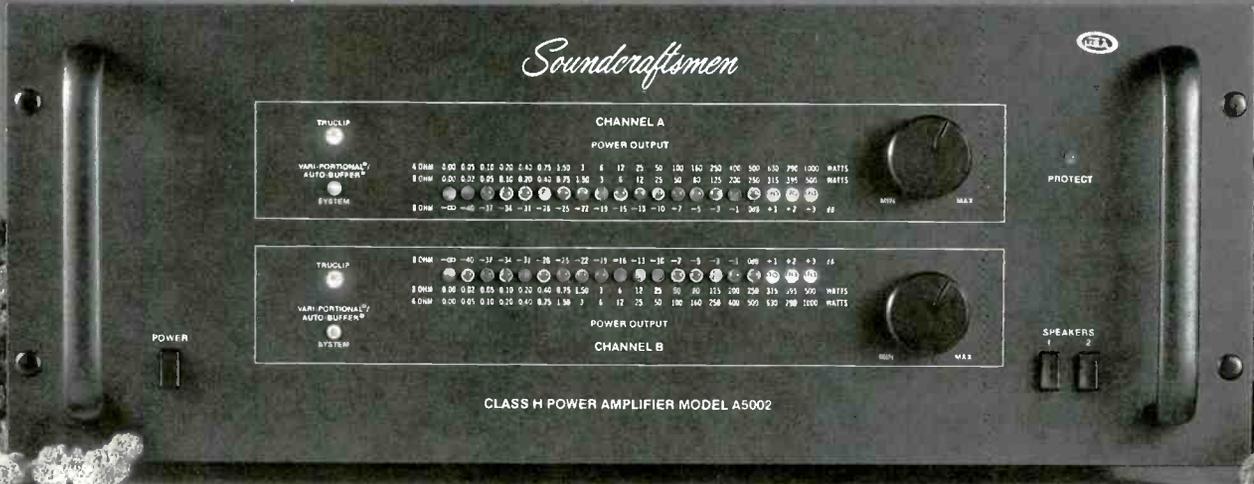
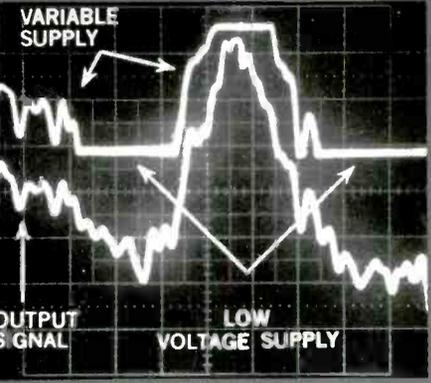
**AUTO-CROWBAR:** The Soundcraftsmen Auto-Crowbar protection circuit is unique among amplifiers. It uses no fuses, relays or circuit breakers. Auto-Crowbar detects any condition which might be harmful to the amplifier and instantly disconnects all A.C. power to the amplifier. Every few seconds Auto-Crowbar samples the output. If the problem which triggered the Auto-Crowbar has been resolved, the amplifier resumes its normal operation. Conventional current-limiting is *not* used as part of the protective circuitry, as it is in most amplifiers, because current limiting can seriously degrade sound and even damage loudspeakers.

**AUTO-BUFFER® SYSTEM:** Provides automatic sensing and control of low impedance (2+ ohms) operation. Enables

continuous *non-current-limited-output*, without switches or protection-circuit turn off, when driving paralleled speakers and/or low-impedance loads.

**FEATURES:** CALIBRATED 20-LED POWER OUTPUT METERS...INPUT LEVEL CONTROLS...TRUE CLIPPING INDICATORS Indicate actual onset of waveform distortion...POWER TURN-ON SURGE DELAY Eliminates loudspeaker turn-on "thump" 16-gauge triple-braced steel chassis...TEST DATA CERTIFICATE Individually serialized, signed by final inspector...Professional rack-mount front panel...optional hardwood side panels.

**SPECIFICATIONS:** CONTINUOUS POWER OUTPUT: 250 watts per channel @ 8 ohms, 20Hz-20kHz, 375 watts per channel @ 4 ohms, 20Hz-20kHz...DISTORTION: THD—0.05% at rated power, 20Hz-20kHz, IMD—less than 0.05%...FREQUENCY RESPONSE: 20Hz-20kHz, ±0.1dB... SIGNAL TO NOISE RATIO: Minus 110dB... SLEW RATE: 50 volts/microsecond... 19"Wx7"Hx13"D, 50 pounds.



CLASS H POWER AMPLIFIER MODEL A5002

# PHONO CARTRIDGES

MANUFACTURER	Model	Frequency Response, Hz to kHz, ±dB	Pencil: Moving Iron = M, Moving Magnet = MM, Moving Coil = MC	Individual Response Curve Supplied?	Channel Separation: 1 kHz, dB	Output, mV, 1 kHz, 5 cm/sec rms Lateral Velocity	Recommended Tracking Force, Grams	Recommended Load Capacitance, pF	Stylus Type—See Code	Stylus Radius (Radii), Mils	Dynamic Compliance, µm/mN, Vertical/Lateral	Stylus Replacement: User = U, Factory = F	Mounting: Integral Shell = I, P, Mount = P, Standard = S	Weight, Grams	Price, \$	Replacement Stylus Price, \$	
																	Stylus Type
MISSION	Solitaire Rose	30-20 ±2 30-20 ±1	MM MC	No Yes	25 32	3 0.26	1.8 2.5	100 100	E M	0.3 x 0.8		U F	S S	5.7 7.9	99.00 599.00		
MONSTER CABLE	Alpha 2 HD	20-20 ±1	MC	Yes	25	1.5	1.8		M	0.03 x 0.8	15/25	F	S	6.8	650.00	360.00	
	Alpha Genesis 1000	20-20 ±1	MC	No	30	0.2	1.8		M	0.03 x 0.6	12/15	F	S	4.2	800.00	450.00	
	Alpha Genesis 500	20-20 ±1	MC	No	30	0.2	1.8		M	0.06 x 0.35	12/15	F	S	4.2	650.00	360.00	
MUSIC HALL	AT-OC9	15-50	MC	No	29	0.4	1.25-1.75		E		9/10	F	I	7.8	900.00	600.00	
	AT-F5	15-50	MC	No	27	0.3	1.25-1.75		E		9/10	F	I	5	325.00	225.00	
ORTOFON	MC3000	5-55 +3,-1	MC	Yes	25	22	0.1	1.7-2.2	X		13/13	F	S	9	1000.00	500.00	
	MC30 Super	10-55 +3,-1	MC	No	25	20	0.25	1.7-2.2	X		16/16	F	S	9	450.00	300.00	
	MC20 Super	10-50 +3,-1	MC	No	25	20	0.25	1.5-1.9	V		17/17	F	S	9	300.00	175.00	
	MC10 Super	10-30 +5,-1	MC	No	25	20	0.3	1.3-1.8	V		14/14	F	S	7	150.00	75.00	
	540	18-27 +3,-1	MM	No	25	20	3.0	1.25-1.5	X		30/30	U	S	5	300.00	150.00	
	540 P	18-27 +3,-1	MM	No	25	20	3.0	1.25-1.5	X		30/30	U	P	6	300.00	150.00	
	530	20-25 +3,-1	MM	No	25	20	3.0	1.25-1.5	X		25/25	U	S	5	225.00	110.00	
	530 P	20-25 +3,-1	MM	No	25	20	3.0	1.25-1.5	X		25/25	U	P	6	225.00	110.00	
	520	20-23 +3,-1	MM	No	22	20	3.0	1.25-1.5	E		23/23	U	S	5	150.00	75.00	
	520 P	20-23 +3,-1	MM	No	22	20	3.0	1.25-1.5	E		23/23	U	P	6	150.00	75.00	
	X5-MC	15-35 +4,-1	MC	No	25	2.0	2.0	1.7-2.2	X		12/12	F	S	5	300.00	150.00	
	X5-MCP	15-35 +4,-1	MC	No	25	2.0	2.0	1.7-2.2	X		12/12	F	P	6.25	300.00	150.00	
	X3-MC	20-40 +3,-1	MC	No	25	2.0	2.0	1.8-2.2	X		13/13	F	S	4.1	200.00	100.00	
	X3-MCP	20-40 +3,-1	MC	No	25	2.0	2.0	1.8-2.2	X		13/13	F	P	6.25	200.00	100.00	
	X1-MC	20-30 +3,-1	MC	No	22	2.0	2.0	1.8-2.2	E		13/13	F	S	4.1	100.00	50.00	
	X1-MCP	20-30 +3,-1	MC	No	22	2.0	2.0	1.8-2.2	E		13/13	F	P	6.25	100.00	50.00	
	OM-40	20-29 +3,-1	Var. Mag. Shunt	Yes	25	3.5	3.5	1.0-1.5	200-500	V		45/45	U	S	2.5	300.00	150.00
	OM-30	20-27 +3,-1	VMS	No	25	3.5	3.5	1.0-1.5	200-500	X		40/40	U	S	2.5	225.00	120.00
	OMP-30	20-27 +3,-1	VMS	No	25	3.5	3.5	1.0-1.5	200-500	X		40/40	U	P	6	225.00	120.00
	OM-20	20-22 +3,-1	VMS	No	25	4.0	4.0	1.0-1.5	200-500	E		35/35	U	S	2.5	175.00	75.00
	OMP-20	20-22 +3,-1	VMS	No	25	4.0	4.0	1.0-1.5	200-500	E		35/35	U	P	6	175.00	75.00
	OM-10	20-22 +3,-1.5	VMS	No	22	4.0	4.0	1.25-1.75	200-500	E		30/30	U	S	2.5	95.00	40.00
	OMP-10	20-22 +3,-1.5	VMS	No	22	4.0	4.0	1.25-1.75	200-500	E		30/30	U	P	6	95.00	40.00
OM-5	20-20 +3,-1.5	VMS	No	22	4.0	4.0	1.25-1.5	200-500	E		25/25	U	S	2.5	65.00	30.00	
OMP-5	20-20 +3,-1.5	VMS	No	22	4.0	4.0	1.25-1.5	200-500	E		25/25	U	P	6	65.00	30.00	
FF15XEMKII	20-20 +3,-1	VMS	No	20	6.0	6.0	1.5-3.0	400	E		20/20	U	S	5	50.00	24.00	
Concorde	20-20 +3,-1	VMS	No	20	5.0	5.0	3.0-5.0	400	S		7/7	U	I	16	110.00	30.00	
OM-Pro Kit	20-18 +3,-1	VMS	No	20	5.0	5.0	3.0-5.0	400	E		10/8	U	S	5	95.00	30.00	
PICKERING	XLZ 7500S	10-50	MM	No	35	0.33	0.75-1.5		X	0.3 x 2.8	30/	U	S	5	275.00	90.00	
	XSV 5000	10-50	MM	No	35	3.8	0.75-1.5	275	X	0.3 x 2.8		U	S	5.6	275.00	80.00	
	XSV 4000	10-36	MM	No	35	3.8	0.75-1.5	275	X	0.3 x 2.8	30/	U	S	5.6	200.00	56.00	
	XSV 3000	10-30	MM	No	35	3.8	0.75-1.5	275	X	0.3 x 2.8	30/	U	S	5.6	130.00	49.95	
	TLZ 7500S	10-50	MM	No	35	0.33	0.75-1.5	275	X	0.3 x 2.8		U	S	5.9	275.00	90.00	
	XSP 4004	10-36	MM	No	35	3.8	0.75-1.5	275	X	0.3 x 2.8	30/30	U	P/S	5.9	200.00	56.00	
	ASP 3003	10-30	MM	No	35	5.0	0.75-1.5	275	X	0.3 x 2.8	30/30	U	P/S	5.9	130.00	49.95	
	TL-4 Super	10-25	IM	No	35	4.4	0.75-1.5	275	X	0.3 x 2.8	15/15	U	P/S	5.9	170.00	45.00	
	TL-3S	10-22	IM	No	35	4.4	0.75-1.5	275	X	0.3 x 2.8		U	P/S	5.9	140.00	40.00	
	TL-2S	10-22	IM	No	35	4.4	0.75-1.5	275	X	0.3 x 2.8		U	P/S	5.9	110.00	36.00	
	TL-1	10-20	IM	No	32	4.4	0.75-1.5	275	E	0.3 x 0.7		U	P/S	5.9	95.00	29.50	
	TLE-Type 2	10-20	MM	No	28	3.0	1-1.5	275	E	0.3 x 0.7		U	P/S	6	85.00	24.50	
	TLE	10-20	MM	No	28	4.4	1-1.5	275	E	0.3 x 0.7		U	P/S	6	60.00	22.50	
	XV-15/625E	10-25	IM	No	35	4.4	0.75-1.5	275	E	0.3 x 0.7		U	P/S	6	55.00	20.00	
	XV-15/400E	10-25	IM	No	35	4.4	0.75-1.5	275	E	0.3 x 0.7		U	S	6.3	110.00	30.00	
	V-15 11E	10-18	IM	No	35	4.4	1-2	275	E	0.4 x 0.7		U	S	6.3	95.00	28.50	
	TL 625 DJ	20-20	MM	No	30	3.5	1-2	275	E	0.3 x 0.7		U	S	5.5	50.00	16.50	
	V-15 DJ	20-20	MM	No	30	4.4	3.5-4	275	E	0.4 x 0.7		U	P/S	8.5	82.00	30.00	
	V-15 DJ-P	20-20	MM	No	28	4.4	3-7	275	S	0.7		U	S	5.5	43.00	12.85	
	XV-15/625DJ	20-20	IM	No	30	4.4	3-7	275	S	0.7		U	S	5.5	86.00	81.00	
															tor 3	30.00	
PIONEER	PC-300T														80.00	30.00	
	PC-295T														80.00	35.00	
	PC-290T														70.00	30.00	
	PC-250T														50.00	20.00	
	PC-5MC														54.00	32.00	
RATA	RP20	20-20 ±3	MM	No	25	4.5	1.5-1.75	150	E		16/16	U	S	7.1	60.00	50.00	
	RP40	20-20 ±3	MM	No	26	4.5	1.5-1.75	150	E		16/16	U	S	7.1	125.00	100.00	
	RP70 VdH	20-20 ±3	MM	No	28	4.5	1.5-1.75	150	V		16/16	U	S	7.1	350.00	275.00	
	RF500	20-22 ±3	MC	No	25	0.25	1.5-1.75	100	V		16/16	F	S	9	700.00	350.00	
	RF501	20-22 ±3	MC	No	25	2.5	1.5-1.75	100	V		16/16	F	S	9	700.00	350.00	
REALISTIC	Shure V15 Type RS	5-30	MM		30		1.25-1.75					S			79.95		
	Shure RXT6	5-30	MM		25		1.25-1.75					S			49.95		
REGA RESEARCH	Bias Elys		MM	No	30	6.5	1.75		E			F	S	4	99.00	60.00	
			MM	No	30	6.5	1.75		E			F	S	4.5	225.00	135.00	
JEFF ROWLAND DESIGN GROUP	Complement	10-45 ±1.5	MC	No	27	0.2	2.3-2.7		X		6/	S	17	2500.00			
SAEC	C-1	10-50	MC	No	30	0.4	1.25-1.75		X		10/	F	S	9	495.00	396.00	
	C-2	10-30	MC	No	25	2.5	1.55-2.05		X		8/	F	S	9.5	395.00	315.00	
	C-102	20-30	MC	No	25	0.6	1.45-1.95		X		10/	F	S	7	250.00	200.00	
SHINON	Black Magnet		MM												199.00		
	Titan		MC												239.00		
	MV 2.5		MC												359.00		
	Saphic		MC												499.00		
	Red Boron		MC												719.00		
Red Signature		MC												999.00			

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Re-1340R

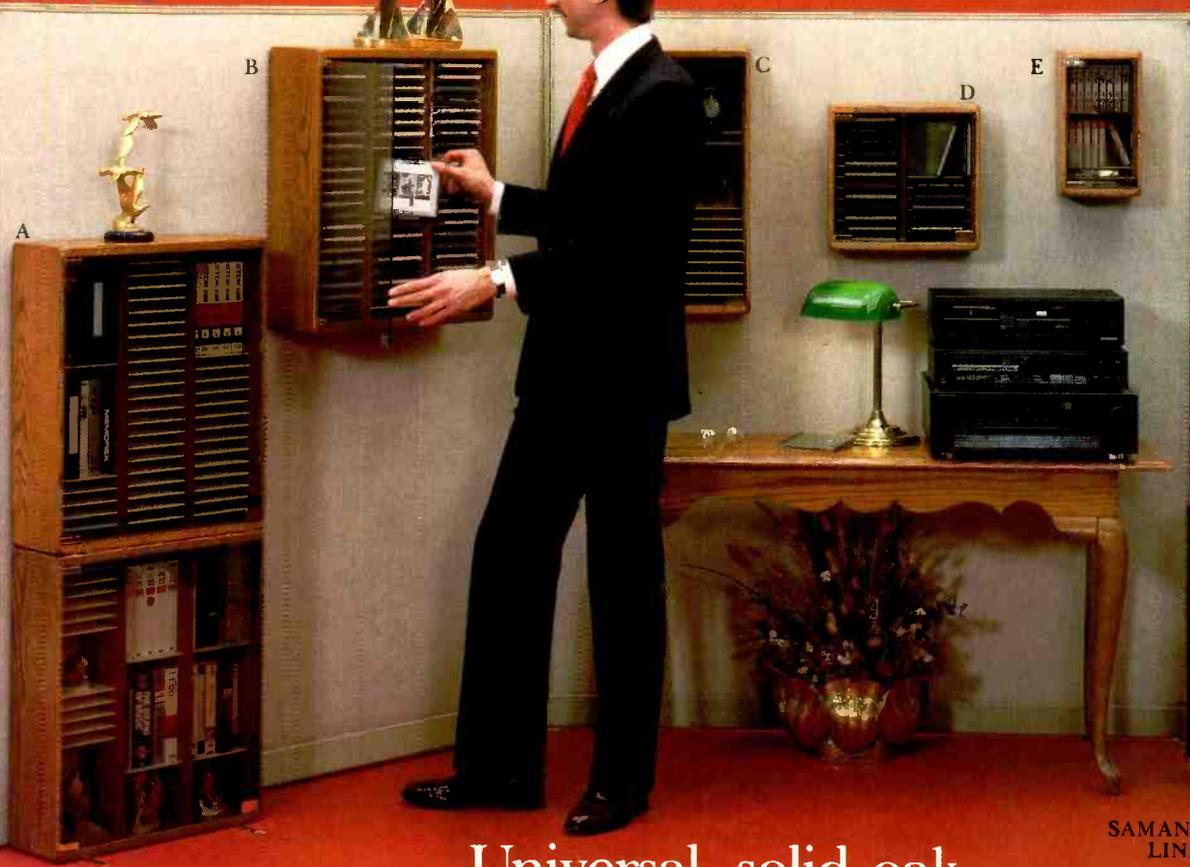
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- B. Holds 154 Jewels vertically, 138 stored horizontally measures 6¾" x 20¼" x 24" \$149<sup>000</sup>
- C. Holds 102 Jewels vertically, 90 stored horizontally measures 6¾" x 13¾" x 24" \$119<sup>000</sup>
- D. Holds 52 Jewels vertically, 46 stored horizontally measures 6¾" x 13¾" x 13¼" \$69<sup>000</sup>
- E. Holds 24 Jewels vertically, 22 stored horizontally measures 6¾" x 7¼" x 13¼" \$39<sup>000</sup>

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# PHONO CARTRIDGES

MANUFACTURER	Model	Frequency Response, Hz to kHz, ±dB	Stylus Type	Individual Response Curve Supplied?	Channel Separation, 1 kHz, dB	Output, mV, 1 kHz, 5 cm/sec. rms Lateral Velocity	Recommended Tracking Force Range, Grams	Recommended Load Capacitance, pF	Stylus Type—See Code	Stylus Radius (Radius), Mils	Dynamic Compliance, Vertical/Lateral	Stylus Replacement: User = U, Factory = F	Mounting: P-Mount = P, Standard = S	Weight, Grams	Price, \$	Replacement Stylus Price, \$	
																	Principle: Moving Iron = MI, Moving Magnet = MM, Moving Coil = MC
SHURE	Ultra 500	10-35 ± 0.5	MM	No	27	20	3.2	1.2	M	0.15 x 3.0		U	S	9.3	400.00	145.00	
	Ultra 400	10-30 ± 0.5	MM	No	27	17	4.0	1.2	M	0.15 x 3.0		U	S	4.5	250.00	110.00	
	Ultra 300	10-22 ± 0.5	MM	No	25	17	4.0	1.2	M	0.15 x 3.0		U	S	4.5	160.00	84.00	
	VST V	10-35	MM	No	25	15	3.2	1.0-1.5	M	0.15 x 3.0		U	S	6.4	170.00	100.00	
	VST III	20-20	MM	No	25	13	3.0	1.0-1.5	X	0.2 x 1.5		U	S	6.6	100.00	50.00	
	VST III-P	20-20	MM	No	25	13	3.0	1.25	X	0.2 x 1.5		U	P	S	5.9	90.00	45.00
	V15 Type V-MR	20-28 ± 0.75	MM	Yes	25	18	3.2	1.0-1.25	M	0.15 x 3.0		U	S	6.6	297.00	136.00	
	V15 Type V-B	20-28 ± 0.75	MM	Yes	25	18	3.2	1.0-1.25	X	0.2 x 1.5		U	S	6.6	237.50	120.00	
	V15 Type V-P	20-28 ± 0.75	MM	Yes	25	18	3.2	1.25	X	0.2 x 1.5		U	P	S	5.9	221.50	109.00
	ML140HE	20-22	MM	No	25	15	4.0	1.0-1.25	X	0.2 x 1.5		U	S	4.5	204.95	108.95	
	ML120HE	20-20	MM	No	25	15	4.0	1.0-1.25	X	0.2 x 1.5		U	S	4.5	166.95	83.95	
	M111HE	20-20	MM	No	25	4.0	1.25	250	X	0.2 x 1.5		U	P/S	6.8	145.95	63.95	
	M110HE	20-20	MM	No	25	4.0	1.25	250	X	0.2 x 1.5		U	P/S	5.9	118.95	53.95	
	M105E	20-20	MM	No	25	4.7	1.25	250	E	0.2 x 0.7		U	P/S	6.4	107.95	44.95	
	M104E	20-20	MM	No	20	5.0	1.25	250	E	0.2 x 0.7		U	P/S	5.9	75.95	34.95	
	M99E	20-20	MM	No	20	5.0	1.25	250	E	0.2 x 0.7		U	P/S	5.9	53.95	24.95	
	M92E	20-18	MM	No	20	5.0	1.25	250	E	0.4 x 0.7		U	P/S	5.9	32.95	19.95	
	M55E	20-20	MM	No	20	6.2	0.75-2	450	E	0.2 x 0.7		U	S	6.7	70.95	29.95	
	M44E	20-20	MM	No	20	9.5	1.75-4.0	450	E	0.4 x 0.7		U	S	6.7	61.95	27.95	
	M44C	20-20	MM	No	20	9.5	3.0-5.0	450	S	0.7		U	S	6.7	54.95	24.95	
	M44G	20-20	MM	No	20	6.2	0.75-1.5	450	S	0.6		U	S	6.7	56.95	25.95	
	M44-7	20-20	MM	No	20	9.5	1.5-3	450	S	0.7		U	S	6.7	54.95	24.95	
	ME97HE	20-20	MM	No	25	4.0	0.75-1.50	250	X	0.2 x 1.5		U	S	6.6	99.95	39.95	
	ME95ED	20-20	MM	No	25	4.7	0.75-1.50	250	E	0.2 x 0.7		U	S	5.8	69.95	28.95	
	ME75ED	20-20	MM	No	25	6.0	0.75-1.50	250	E	0.2 x 0.7		U	S	6.1	59.95	34.95	
	ME75EJ	20-20	MM	No	20	6.0	1.5-3.0	250	E	0.4 x 0.7		U	S	6.1	49.95	31.95	
	ME70B	20-20	MM	No	20	5.0	1.25	250	E	0.6		U	S	6.5	29.95	16.95	
	ME96P	20-20	MM	No	20	5.0	1.25	250	E	0.2 x 0.7		U	P	S	5.9	59.95	34.95
	ME94P	20-20	MM	No	20	5.0	1.25	250	E	0.2 x 0.7		U	P	S	5.9	44.95	24.95
	ME75P	20-20	MM	No	20	5.0	1.25	250	E	0.4 x 0.7		U	P	S	5.9	29.95	19.95
	SC35C	20-20	MM	No	20	5.0	4.5	450	S	0.5		U	S	6.2	48.50	18.50	
	SC39B	20-20	MM	No	20	4.0	1.5-3.0	250	S	0.7		U	S	6.3	68.00	27.80	
	SC39EJ	20-20	MM	No	20	4.0	1.5-3	250	S	0.4 x 0.7		U	S	6.3	76.00	34.90	
	DC40	20-20	MM	No	20	5.0	2.5-3.5	450	E	0.6		U	S	5.5	76.00	17.00	
	DC50	20-20	MM	No	20	5.0	1.0-1.5	450	E	0.4 x 0.7		U	P	S	5.5	106.00	24.00
	DC60	20-20	MM	No	20	5.0	1.0-1.5	450	E	0.4 x 0.7		U	S	5.5	106.00	24.00	
	BC70	20-20	MM	No	20	5.0	2.5-3.5	450	E	0.6		U	S	5.5	90.00	20.50	
	BC80	20-20	MM	No	20	5.0	1.0-1.5	450	E	0.4 x 0.7		U	S	5.5	126.00	28.50	
	BC90	20-20	MM	No	20	5.0	1.0-1.5	450	E	0.4 x 0.7		U	S	5.5	126.00	28.50	
	SIGNET	MK55e	20-28	MC	No	28	18	0.5	1.2-1.8	E	0.3 x 0.7		F	S	4.2		
		MK120He	15-30	MC	No	29	20	2.0	1.2-1.8	E	0.2 x 0.7		F	S	5		
		MK220e	5-50	MC	No	30	20	0.4	1.0-2.0	E	0.2 x 0.7		F	S	4.8		
		K440ml	5-50	MC	Yes	33	25	0.1	1.0-1.6	M			F	S	7		
		TK2Ep	15-25	MM	No	26	17	5	1.0-1.5	E	0.4 x 0.7		U	P	6		
		TK4Ep	15-28	MM	No	28	19	5	1.0-1.5	E	0.3 x 0.7		U	P/S	6		
TK6Ep		10-30	MM	No	29	20	5	1.0-1.5	E	0.2 x 0.7		U	P/S	6			
TK8Lcpl		5-35	MM	No	33	23	5	1.0-1.5	X			U	P	6			
TK10ml Series II		6-35	MM	Yes	35	26	2.2	1-1.5	M			U	S	7.5			
100		20-22	MM	No	22	15	4.2	1.5-2.5	E	0.4 x 0.7		U	S	6			
101		20-20	MM	No	24	15	5.0	1.0-1.5	C	0.7		U	P/S	6			
103		15-25	MM	No	25	17	5.0	1.0-1.5	E	0.4 x 0.7		U	P/S	6			
105		15-27	MM	No	29	18	5.0	1.0-1.5	E	0.3 x 0.7		U	P/S	6			
107		10-30	MM	No	31	21	5.0	1.0-1.5	X			U	P/S	6			
MRS. 0 Basic		15-25	MM	No	27	15	5.0	1.3-2.3	E	0.4 x 0.7		U	S	6			
MRS. 0e		10-30	MM	No	29	19	5.0	0.9-1.9	E	0.3 x 0.7		U	S	6			
MRS. 0me		5-30	MM	No	30	20	5.0	0.8-1.6	E	0.2 x 0.7		U	S	6			
MRS. 01c		5-35	MM	No	33	23	5.0	0.8-1.6	100-200	X		U	S	6			
MRS. 0ml	5-37	MM	No	33	25	5.0	0.8-1.6	100-200	M		U	S	6				
SONUS	CG-12	10-30	MI	No	30	25	4	1-1.5	X			U	S	5.5	165.00	87.00	
	CS-22	10-38	MI	No	30	25	5	1-1.5	X			U	S	5.5	100.00	50.00	
	CS-23	20-22	MI	No	30	25	5	1-1.5	E			U	S	5.5	95.00	45.00	
	CB-23	20-22	MI	No	30	25	5	1.5-2.0	X			U	S	5.5	80.00	40.00	
	SB-202	10-20	MI	No	30	25	5	1.5-2.5	X			U	S	5.5	60.00	25.00	
	SPM-4	10-20	MI	No	30	25	4	1.25	E			U	P	5.5	135.00	30.00	
	SPM-3	20-20	MI	No	30	25	4	1.25	E			U	P	5.5	125.00	25.00	
	SPM-2	20-20	MI	No	30	25	4	1.25	E			U	P	5.5	95.00	20.00	
	SPM-1	20-20	MI	No	30	25	4	1.25	E			U	P	5.5	75.00	17.50	
	SPECTRAL	Moving-Coil Reference	10-20 ± 0.5	MC			35	0.2	1.5-1.8	X			F	S	9.1		995.00
	STANTON	981LZ MKHS	10-50	MM	Yes	35	25	0.3	0.75-1.5	X	0.3 x 2.8	30/	U	S	5.5	250.00	90.00
981HZ MKHS		10-50	MM	Yes	35	25	3.5	0.75-1.5	X	0.3 x 2.8	30/	U	S	5.5	250.00	90.00	
881 MKHS		10-25	MM	Yes	35	3.5	0.75-1.5	275	X	0.3 x 2.8	30/	U	S	5.5	180.00	75.00	
681EEE MKHS		10-22	IM	Yes	35	3.5	0.75-1.5	275	X	0.3 x 2.8	25/	U	S	6.3	120.00	45.00	
L847S		10-36	MM	No	35	2.5	0.75-1.5	275	X	0.3 x 2.8		U	P/S	5.9	198.00	60.00	
L837S		10-30	MM	No	35	3.0	0.75-1.5	275	X	0.3 x 2.8		U	P/S	5.9	155.00	55.00	
L747S		10-25	MM	No	35	4.4	0.75-1.5	275	X	0.3 x 2.8		U	P/S	5.7	138.00	40.00	
L737S		10-22	MM	No	35	4.4	0.75-1.5	275	X	0.3 x 2.8		U	P/S	5.7	110.00	36.00	
L737E		10-22	MM	No	35	4.4	0.75-1.5	275	E	0.3 x 0.7		U	P/S	5.7	93.00	29.50	
L727E		10-20	MM	No	32	4.4	0.75-1.5	275	E	0.3 x 0.7		U	P/S	5.7	83.00	24.50	
L725E		10-22	MM	No	28	3.0	0.75-1.5	275	E	0.4 x 0.7		U	P/S	5.7	60.00	22.00	
L720EE		10-20	MM	No	28	3.2	0.75-1.5	275	E	0.4 x 0.7		U	P/S	5.7	55.00	20.00	
L680EL		20-18	IM	No	28	4.5	3.5-4	275	X	0.4 x 0.7		U	P/S	8.4	106.00	30.00	
680EL		20-18	IM	No	28	4.5	2-5	275	E	0.4 x 0.7	13.5/	U	S	5.5	106.00	30.00	

# PHONO CARTRIDGES

MANUFACTURER	Model	Frequency Response, Hz to kHz, ± db	Stylus Type	Principal Moving Iron, MI Induced Magnet, IM, Moving Coil, MC	Individual Response	Channel Separation, 1 kHz, db	Channel Separation, 10 kHz, db	Output, mV, 1 kHz, 5 cm/sec rms Lateral Velocity Range, Grams	Recommended Tracking Force	Stylus Type—See Code	Stylus Radius (Radii), Mills	Dynamic Compliance Vertical/Lateral	Stylus Replacement: User = U, Factory = F	Mounting: Integral Stylus = I, P-Mount = P, Standard = S	Weight, Grams	Price, \$	Replacement Stylus Price, \$
SUPEX	SDX-3300 Boron	10-30 ± 1	MC	Yes	32	25	0.2	1.6-2.0		E	0.3 x 0.7	14 14	F	S	5.3	850.00	500.00
	SD-901 IV	10-42 ± 2	MC	Yes	30	25	1.7	1.6-2.0		E	0.3 x 0.8	15 15	F	S	9.1	380.00	225.00
	SD-900 IV	10-50 ± 2	MC	Yes	30	25	0.2	1.6-2.0		E	0.3 x 0.8	15 15	F	S	8.3	360.00	215.00
	SD-900 E + Super	10-50 ± 2	MC	Yes	30	25		1.6-2.0		E	0.3 x 0.8	20 20	F	S	8	295.00	180.00
TALISMAN	AT	20-40	MC	Yes	25	22	0.20	1.5-2.1		E	0.3 x 0.7	15 15	F	S	6.3	225.00	135.00
	BvdH	10-50	MC	Yes	30	30	0.26	1.5-2.1		V	0.1 x 3.0	15 15	F	S	6.3	325.00	195.00
	SvdH	10-60	MC	Yes	30	30	0.26	1.8-2.2		V	0.1 x 3.0	18 18	F	S	6.3	395.00	235.00
	Alchemist IAT	20-40	MC	Yes	25	22	1.8	1.5-2.1		E	0.3 x 0.7	15 15	F	S	6.7	300.00	180.00
	Alchemist IISvdH	10-60	MC	Yes	30	30	1.8	1.8-2.2		V	0.1 x 3.0	18 18	F	S	6.7	495.00	300.00
	Alchemist IIBvdH	15-32 + 2, -0.5	MC	Yes	35	30	1.8	1.8-2.2		V	0.1 x 3.0	15 15	F	S	6.7	475.00	285.00
	Virtuoso	15-32 + 2, -0.5	MC	Yes	35	30	1.8	1.8-2.2		V	0.1 x 3.0	15 15	F	S	7.5	850.00	510.00
	Boron	15-32 + 2, -0.5	MC	Yes	35	30	1.8	1.8-2.2		V	0.1 x 3.0	15 15	F	S	7.5	1200.00	720.00
	Virtuoso DTi	15-32 + 2, -0.5	MC	Yes	35	30	1.8	1.8-2.2		V	0.1 x 3.0	15 15	F	S	7.5	1200.00	720.00
TECHNICS	EPC-P550	20-35 ± 3	MM	No	25		2.5	1.25		E	0.3 x 0.7		U	P	6	150.00	
	EPC-P540	20-35 ± 3	MM	No	25		2.5	1.25		E	0.3 x 0.7		U	P	6	115.00	
	EPC-P530	20-35 ± 3	MM	No	25		2.5	1.25		E	0.3 x 0.7		U	P	6	100.00	
	EPC-205CMK4	20-15 ± 0.5	MM	Yes	25	20	2.5	1.0-1.5		E	0.2 x 0.7		U	S		320.00	
	EPC-P205CMK4	20-15 ± 0.5	MM	Yes	25	20	2.5	1.25		E	0.2 x 0.7		U	P		280.00	
	EPC-P310MC2	20-15 ± 0.5	MC	Yes	25	20	0.22	1.25		E	0.2 x 0.7		U	F	6	230.00	
	EPC-305MC2	5-100	MC													350.00	
VAN DEN HUL	MC-10	20-20 ± 0.75	MC	Yes	40	40	0.4	1.5		V			F	S	7	775.00	387.50
	MC-10-47K		MC							V						875.00	
	MC-One	20-20 ± 0.75	MC	Yes	40	40	0.5	1.5		V			F	S	7	1075.00	537.50
	MC-One-47K		MC							V						1175.00	
	MC-2	20-20 ± 0.75	MC	Yes	40	40	2	1.5		V			F	S	7	2700.00	537.50
Grasshopper	20-20 ± 0.75	MC	Yes	60	60	0.6	1.5		V			F	S	7	2700.00	750.00	
WIN RESEARCH	FET-10 & Source Module	0-50 ± 1	FET	Yes	35	28	1V	1.5		X		20 20	F	S	6	2250.00	350.00
YAMAHA	MC-100	10-20 ± 1.5	MC	No	28		0.2	1.2-1.6		E	0.3 x 1.6	12 14	F	S	9.5	300.00	
	MC-505	10-20 ± 1.5	MC	No	28		0.35	1.2-1.8		E	0.3 x 1.6	14 16	F	S	3.4	200.00	
	MC-501	10-20 ± 1.5	MC	No	28		0.35	1.2-1.8		E	0.3 x 1.6	11 13	F	S	3.4	150.00	
	MC-10	10-20 ± 1.5	MC	No	28		0.3	1.4-2.0		E	0.3 x 0.8	8 10	F	S	5.4	120.00	
	MC-21	10-20 ± 1.5	MC	No	28		2.0	1.5-2.1		E	0.3 x 0.8	8 10	F	S	2.8	70.00	

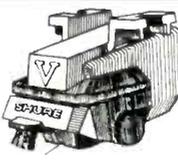
**twx**
**stanton**
**ortofon**
**SHURE**



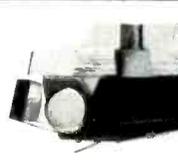
**ORTOFON X5-MC**  
Std. Mount High Output M.C. 20-45k Hz response. FG II stylus tip. Highly detailed, transparent sound.



**ORTOFON OM-40**  
Std. Mount Moving Magnet 20-29k Hz response. VdH II stylus tip. Silky smooth sound with good channel separation.



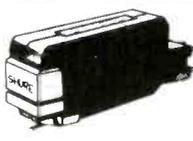
**SHURE V15 V-MR**  
Std. Mount Moving Magnet 20-28k Hz response Micro-Ridge stylus tip. Budget reference cartridge with excellent trackability.



**AUDIO TECH. AT160ML**  
Std. Mount Moving Magnet 5-35k Hz response. Microline stylus tip. Low distortion with reduced record & stylus wear.



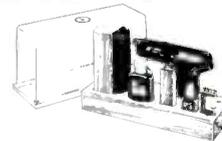
**AUDIO TECH. AT152MLP**  
P-Mount Moving Magnet 5-35k Hz response MicroLine stylus tip. Top rated P-Mnt cartridge.



**SHURE V15HR-P**  
P-Mnt Moving Magnet 15-27k Hz response. Hyper-Ridge stylus tip. Lowest price V15 P-Mnt cartridge.



**PICKERING V15 625 DJDP**  
Std. Mount Pro D.J. Cartridge 20-20k Hz response. Includes extra stylus.



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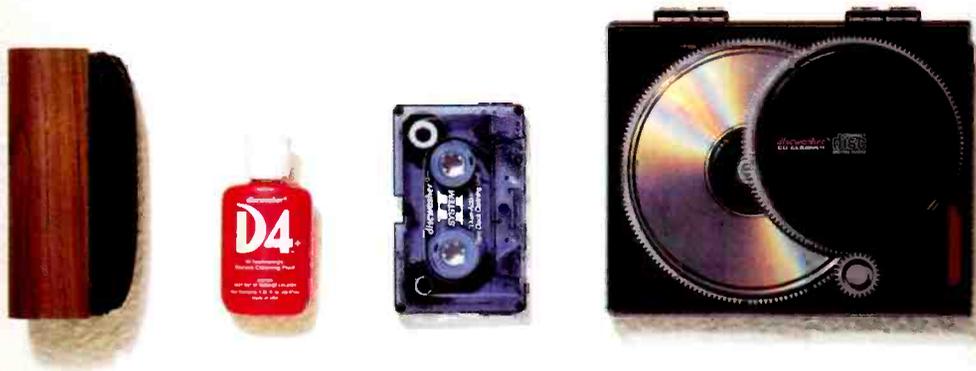
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## Rising Star

For six years, our imaginative designs and cost-effective manufacturing have earned critical acclaim from the experts at *Stereophile*, *The New York Times*, *Audio*, *Sensible Sound*, *Stereo Review*, and *High Fidelity*. And smart dealers who know quality – and respect your budget – are recommending Parasound.

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P/FET-900 Class A FET preamp: 66 discrete transistors, electronic switching, gold jacks, separate record selector.  
T/DQ-260 FM/AM Quartz reference tuner: 50dB separation, tuning accurate to 0.000025%, 16 station presets.



D/AS-1000II Digital/Analog Servo amp: 60MHz outputs, 80,000 mfd special caps, over 1KW power envelope.

◀ R/HD-600 High Current 60 watt x 2 receiver: The middle of 3 models. All use the same tuner as the T/DQ-260, electronic switching, discrete outputs, enormous power supplies.



D/VF-900 Variable Focus CD Player: "That player is a joy – it makes the nastiest CDs sound human."  
Hans Fintel of *The New York Times*



D/HX-600 Dolby HX Pro cassette deck: Sendust alloy head, Play Trim, gold jacks. *Audio* measured a 79dB S/N ratio.



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# CASSETTE DECKS

MANUFACTURER	Model (RI) = Remote Included, (RO) = Remote Optional	Frequency Response (Type II), Hz to kHz, ± dB	Monitoring During Recording?	Wow & Flutter, Wtd. Tape	S/N without Noise Reduction	S/N with Noise Reduction, %	Noise-Reduction Circuit: Dolby C = C, bas-D, RX Pro-H, other = O	Bias Adjustment: Auto=A, Manual=M	Number of Preset Bias/EQ Positions	Program Search?	Program Scan?	Level Indicators: Average=A, Peak=P, Peak-Hold=PH	Counter Indications: Number of Tapes=T, Elapsed Time=E, Remaining Time=R	Auto Reverse?	Number of Mike Inputs	Dual Weights?	Weight, Lbs.	Price, \$	Notes	
																				Model
LUXMAN	K-111(RO)	30-17 ± 3	No	0.06	55	70	B/C/H			3	No	No	P	T	No	2	No	7.7	350.00	
	K-112(RO)	20-20 ± 3	Yes	0.05	55	72	B/C/H	M		3	No	No	P	T	No	0	No	9.5	550.00	
	K-105(RO)	20-16 ± 3	No	0.05	55	90	B/C/D			3	Yes	Yes	P	T	Yes	0	No	9.9	600.00	
MARANTZ	SO565	35-16.5	No	0.12	55	72	B/C			3	Yes	No	P	T	Yes	1	Yes	11.9	469.95	
	SD385	35-15	No	0.3	52	68	B/C			3	Yes	No	P	T	Yes	0	Yes	8.8	299.95	
	SD285	35-15	No	0.3	52	68	B/C			3	Yes	No	P	T	No	0	Yes	8.8	279.95	
	SD162	40-14	No	0.8	54	64	B			3	No	No	P	T	No	0	Yes	10.4	169.95	
MITSUBISHI	M-T5100 (RI)	30-15 ± 3	No	0.08	57	77	B/C			3	Yes	Yes	P	T	Yes	0	Yes	13.4	450.00	
	DT-160	30-16	No	0.12	58	68	B			3	Yes	No		T	Yes	0	Yes	18.5	329.00	Seven-cassette changer.
NAD	6240	30-19 ± 3	No	0.06	59	77	B/C/O	M		3	No	No	A	T	No	0	No	8½	298.00	Dyneq; "Playtrim" adjustment.
	6100(RI)	30-19 ± 3	No	0.06	56	76	B/C/H/O	M		3	No	No	P	T	No	0	No		498.00	As above; compressor circuit.
	6300(RI)	30-19 ± 3	Yes	0.03	59	78	B/C/H/O	M		3	No	No	P	T/E	No	0	No	15	898.00	As above.
NAKAMICHI	Dragon (RO)	20-22 ± 3	Yes	0.04	72	72	B/C	M		3	No	No	P	T	Yes	0	No	21	2195.00	Auto azimuth correction.
	CR-7A(RI)	18-21 ± 3	Yes	0.048	72	72	B/C	A		3	No	No	P/PH	T/E/R	No	0	No	19¼	1595.00	Manual playback azimuth adjustment.
	CR-5A(RO)	20-20 ± 3	Yes	0.048	72	72	B/C	M		3	No	No	P	T	No	0	No	18¼	1095.00	
	CR-4A(RO)	20-21 ± 3	Yes	0.048	72	72	B/C	M		3	No	No	P	T	No	0	No	13	995.00	
	CR-3A(RO)	20-20 ± 3	Yes	0.06	72	72	B/C	M		3	No	No	P	T	No	0	No	12¾	795.00	
	CR-2A(RO)	20-20	No	0.11	70	70	B/C	M		3	No	No	P	T	No	0	No	11½	475.00	
	CR-1A	20-20	No	0.11	70	70	B/C	M		3	No	No	P	T	No	0	No	11½	349.00	
	RX-505(RO)	20-20 ± 3	Yes	0.08	70	70	B/C	M		3	Yes	No	P	T	Yes	0	No	22	1395.00	
RX-202(RD)	20-20	No	0.11	68	68	B/C	M		3	No	No	P	T	Yes	0	No	19¾	750.00		
NEC	K-510	30-16	Yes	0.06	58	75	B/C			3	No	No	P	T	No	2	Yes	11¼	249.00	
	K-710(RO)	20-17	Yes	0.06	56	75	B/C			3	Yes	Yes	P	T	No	2	Yes	11½	399.00	
NIKKO	D-100III(RO)	20-20 ± 3	Yes	0.03	60	92	B/C/D	A/M		3	Yes	Yes	P	T/E/R	No	2	No		499.00	
	D-80II	20-18 ± 3	Yes	0.05	59	90	B/C/D	M		3	Yes	Yes	P	T/E/R	Yes	2	No		399.00	
	D-60W	25-20 ± 3	Yes	0.03	59	78	B/C			3	Yes	Yes	P	T	No	2	Yes		329.00	
	D-30W	30-17	Yes	0.06	55	70	B/C			3	Yes	Yes	P	T	No	2	Yes		199.00	
ONKYO	TA-2090	20-20	Yes	0.02	60	80	B/C/D/H	A		5	Yes	Yes	A/PH	E/R	No	0	No	19.8	950.00	
	TA-2800(RI)	20-19	Yes	0.035	58	78	B/C/H	A		5	Yes	Yes	A/PH	E/R	No	0	No	13.7	650.00	
	TA-2600	20-19	Yes	0.045	58	78	B/C/H	M		5	Yes	Yes	A/PH	E/R	No	0	No	12.8	480.00	
	TA-R260	20-16	No	0.07	58	78	B/C/H	M		5	Yes	Yes	A/P	E/R	Yes	2	No	9.3	370.00	
	TA-R240	20-16	No	0.07	58	78	B/C	M		5	Yes	Yes	A/P	T	Yes	2	No	9.3	270.00	
	TA-2140	20-16	No	0.07	58	78	B/C/H	M		5	Yes	Yes	A/P	E/R	No	2	No	9.1	330.00	
	TA-2130	20-16	No	0.07	58	78	B/C	M		5	Yes	Yes	A/P	T	No	2	No	9.1	260.00	
	TA-2120	20-16	No	0.07	58	78	B/C	M		5	No	No	A/P	T	No	0	No	8.2	220.00	
	TA-RW490	20-16	No	0.06	58	78	B/C/H	M		5	Yes	Yes	A/P	E/R	Yes	1	Yes	13.6	630.00	
	TA-RW470	20-16	No	0.06	58	78	B/C	M		5	Yes	Yes	A/P	E/R	Yes	1	Yes	13.2	500.00	
	TA-W450	20-16	No	0.07	58	78	B/C	M		5	Yes	Yes	A/P	T	No	1	Yes	10.1	330.00	
	TA-RW44	20-16	No	0.07	58	63	B	M		5	No	No	A/P	T	Yes	0	Yes	11.7	275.00	
PARASOUND	D/HX-600	30-15.5 ± 2		0.06	52	72	B/C/H			3			PH	T	No	0	No	15	360.00	"Playtrim" adjustment.
PHILIPS	FC567	30-18 ± 3	No	0.04	60	80	B/C			3	Yes	No	P	T	Yes	1	Yes	12	479.00	
	FC566	30-18 ± 3	No	0.04	60	80	B/C			3	Yes	Yes	P	T	Yes	2	No	10	379.00	
PIONEER	CT-W900R	18-18		0.055	58	68	B/C/H						P/PH	T	Yes	0	Yes	13¼	650.00	
	CT-W700R	25-17		0.055	57	67	B/C						P	T	Yes	0	Yes	11¼	435.00	
	CT-W500	25-16		0.06	56	66	B/C						A	T	Yes	0	Yes	11	310.00	
	CT-W300	35-16		0.13	56	66	B/C			2			A	T	Yes	0	Yes	8½	225.00	
	CT-S800	20-21	Yes	0.024	60	70	B/C/H	M		2			A/PH	T/E/R	Yes	0	Yes	21¼	750.00	
	CT-S600	25-17		0.055	58	68	B/C/H	M		2			A	T	Yes	0	Yes	11	375.00	
	CT-1080R	30-16.5		0.07	58	68	B/C			2			A	T	Yes	0	Yes	7½	360.00	
	CT-1280WR																			
PROTON	AD-300	40-16 ± 3	Yes	0.05	49	68	B/C	A		3	Yes	No	P	T	†	0	No	10.6	319.00	†Auto reverse play and record.
	AD-200	40-15 ± 3	Yes	0.05	49	68	B/C	M		3	No	No	P	T	†	0	No	8.8	229.00	
	740	25-16	Yes	0.05	49	68	B/C	A		3	Yes	No	A/P	T/E	Yes	2	No	11.3	349.00	
REALISTIC	SCT-84	20-15 ± 3	No	0.06 wrms		70	B/C	M		3				T	Yes		Yes		259.95	Synchro start.
	SCT-83	30-16 ± 3	No	0.06 wrms		70	B/C			3				T	Yes	2	No		219.95	
	SCT-74	60-12.5 ± 3	No	0.12 wrms		70	B/C			3				T		2	Yes		179.95	As above; high-speed dubbing.
	SCT-46	30-15 ± 3	No	0.1 wrms		66	B/C			3				T		2	Yes		149.95	As above.
	SCT-45	40-13 ± 3	No	0.15 wrms	50	60	B			3				T		2	Yes		129.95	Synchro start.
	SCP-32						B								Yes				99.95	Playback only.
SCT-35	40-13 ± 3	No	0.09 wrms		64	B			3			P	T		2			89.95		
REVOX	B215(RO)	30-20 + 2, -3	Yes	0.1	58	72	B/C/H	A		6	Yes	No	P	E	No	0	No	20¼	2300.00	Auto EQ adjust; pivoting headblock.
ROTEL	RO-870	30-19 ± 3	No	0.035	55	73	B/C/H	M		3	No	No	P	E	No	0	No	11½	499.00	
	RO-855																		379.00	
	RO-835																		249.00	



# CASSETTE DECKS

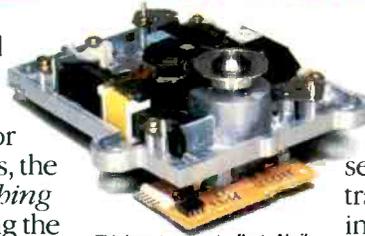
MANUFACTURER	Model (RI) = Remote Included (RO) = Remote Optional	Frequency Response with CrO <sub>2</sub> Tape (Type II), Hz to KHz, ±dB	Monitoring During Recording?	Wow & Flutter, Wtd. Peak, %	S/N without Noise Reduction	S/N with Noise Reduction	Noise Reduction, Dolby B=C, Dbs=0, Hz	Bias Adjustment, A=M, Manual=M	Number of Preset Biases/EQ Positions	Program Search?	Program Scan?	Level Indicators, Average=A, Peak=P, Pch-Hold=PH	Counter Indicators, Number of Tones=T, Elapsed Time=E, Remaining Time=R	Auto Reverse?	Number of Mike Inputs	Dual Wells?	Weight, Lbs.	Price, \$	Notes
SAE	C102	20-20 ±3	No	0.04	55	74	B/C	A	3	Yes	No	A/PH	T/E/R	No	0	No	20	499.00	
SANSUI	Vintage D-X701	20-21		0.035	60	74	B/C	A	3	Yes	Yes	P	T	No	0	No	13.2	650.00	
	Vintage D-X501	20-19		0.045	58	72	B/C	A	3	Yes	Yes	P	T	No	0	No	10.8	450.00	
	D-X301R	20-19		0.05	55	72	B/C/H	A/M	3	Yes	Yes	P	T	Yes	0	No	10	380.00	
	D-W11	20-18		0.05	57	73	B/C	A	3	Yes	Yes	P	T	Yes	0	Yes	13.4	650.00	
	D-3000WR	20-17		0.09	54	72	B/C	A	3	Yes	Yes	P	T	Yes	0	Yes	9.9	375.00	
	D-1000W	20-17		0.09	54	72	B/C	A	3	Yes	Yes	P	T	No	0	Yes	9.7	300.00	
SANYO	RDS29	40-14	Yes	0.1	54	62	B	M	3	No	No	A	T	No	1	No	6.7		
	RDW41A	60-13	Yes	0.08	55	66	B	M	3	No	No	A	T	No	0	Yes	7.3		
	RDW59	40-15	Yes	0.08	55	66	B	M	3	No	No	A	T	No	0	Yes	10	159.99	
	RDW89	40-16	Yes	0.1	57	65	B	M	3	No	No	A	T	Yes	0	Yes	10.6	229.99	
SCOTT	DD656	40-15	No	0.15	62	70	B	A	2	No	No	A	T	No	0	Yes	9	149.50	
	DD688		No	0.15	60	70	B/C	A	3	Yes	No	A	T	No	0	Yes	9	229.95	
	DD696(RI)		No	0.06	80	80	B/C/D	M	3	Yes	No	A	T	Yes	0	Yes	15	549.95	
SHARP	RT-W800	30-16 ±3	Yes	0.08	56		B			Yes	Yes	P	T	Yes	0	Yes	8.6	229.95	
	RT-W500	30-15 ±3	Yes	0.12	52		B			No	No	P	T	No	0	Yes	7.3	129.95	
SHERWOOD	DD1130		No	0.2		73	B/C		3	No	No	A/P	T	No		Yes		199.95	
	DD1230R (RO)		No	0.12		75	B/C		3	Yes		A/P	E/R	Yes		Yes		359.95	
	DS1630R (RO)		No	0.09		75	B/C/H		3	Yes		A/P	T	Yes	2	No		329.95	Two line inputs with cross fader. As above.
	DS7000R (RO)		Yes	0.05		75	B/C/H	M	3			A/PH	E/R	No	2	No		659.95	
SONY	TC-FX150	30-13 ±3	No	0.12	58	71	B/C		3	No	No	P	T	Yes	2		6 1/2	120.00	
	TC-RX400 (RO)	30-14 ±3	No	0.09	58	71	B/C		3	No	Yes	P	T	Yes			8 3/4	240.00	
	TC-W300	30-13 ±3	No	0.12	58	71	B/C		3	No	No	P	T	Yes		Yes	7 3/4	210.00	
	TC-WR500	30-13 ±3	No	0.12	58	71	B/C		3	No	No	P	T	Yes		Yes	8 3/4	280.00	
	TC-W600 (RO)	30-14 ±3	No	0.09	58	71	B/C		3	Yes	No	P	T	Yes		Yes	9 3/4	320.00	
	TC-WR800	30-14 ±3	No	0.09	58	71	B/C		3	Yes	No	P	T	Yes		Yes	9 3/4	350.00	
	TC-WR900	30-17 ±3	No	0.05	59	72	B/C		3	Yes	No	P	E/R	Yes		Yes	12 1/2	700.00	
SONY ES	TC-RX50ES (RO)	20-18 ±3		0.09	58	71	B/C		3			P	E/R	Yes	2		8 1/2	300.00	
	TC-RX60ES (RO)	20-18 ±3		0.09	58	71	B/C/H		3			P	E/R	Yes			10 1/2	450.00	
	TC-RX80ES (RO)	20-18 ±3		0.05	59	72	B/C/H	M	3	Yes	Yes	P	E/R	Yes			10 1/4	600.00	Dolby calibration tone.
	TC-K700ES (RO)	20-18 ±3	Yes	0.025	60	73	B/C	M	3			PH	E/R	No			18 1/2	700.00	As above; dual capstan.
	TC-W7ES (RO)	20-18 ±3		0.09	59	72	B/C		3			P	E/R	No		Yes	9 3/4	360.00	
	TC-WR9ES (RO)	20-18 ±3		0.09	58	71	B/C		3			P	E/R	Yes		Yes	9 3/4	400.00	
	TC-WR11ES (RI)	20-18 ±3		0.05	58	71	B/C		3	Yes	Yes	PH	E/R	Yes		Yes	13	800.00	
TANBERG	TCD-3014A (RO)	18-20 ±1.5	Yes	0.06	55	74	B/C	A	3	No	No	P	T/E	No	0	No	21.6	2500.00	
TEAC	V-250	30-15	No	0.095	55	65	B		3	No	No	P	T	No	0	No	6 3/8	119.95	
	V-270C	30-15	No	0.095	55	70	B/C	M	3	No	No	P	T	No	0	No	6 3/8	139.95	
	V-285CHX	30-15	No	0.095	55	70	B/C/H	M	3	No	No	P	T	No	0	No	6 3/8	149.95	
	V-570	20-18	No	0.06	59	74	B/C/H	M	3	No	No	P	T/E	No	0	No	11	349.95	
	V-670	20-20	Yes	0.06	60	80	B/C/H	M	3	No	No	P	T/E	No	0	No	11	449.95	
	V-970X(RI)	25-19 ±3	Yes	0.025	60	92	B/C/D/H	M	3	Yes	Yes	P	T/E	No	0	No	13	799.95	Three motors.
	R-445	30-17	No	0.06	55	70	B/C		3			P	T	Yes	0	No	6 5/8	209.95	
	R-455CHX	30-17	No	0.06	55	70	B/C/H		3			P	T	Yes	0	No	6 5/8	219.95	Output level control.
	R-616X	20-18 ±3	No	0.05	59	90	B/C/D/H	M	3	Yes	Yes	P	T/E	Yes	0	No	11	499.95	
	R-919X(RI)	25-19 ±3	Yes	0.03	60	92	B/C/D/H	M	3	Yes	Yes	P	T/E	Yes	0	No	13	829.95	Three motors.
	W-350	30-15	No	0.095	55	65	B		3			P	T	No	0	Yes	7	169.95	
	W-370C	30-15	No	0.095	55	70	B/C	M	3			P	T	No	0	Yes	7	199.95	
	W-450R	30-17	No	0.06	55	70	B/C/H		3	Yes	No	P	T	Yes	2	Yes	10	289.95	
	W-990RX(RI)	30-18 ±3	No	0.05	59	91	B/C/D		3	Yes	Yes	P	T	Yes	0	Yes	12 3/4	799.95	Three motors per well; CD player/cassette deck.
AD-4(RI)	25-16	No	0.05	59	78	B/C		3	Yes	No	P	T	Yes	0		12 3/8	599.95	CD player/cassette deck.	
AD-5	25-19	No	0.05	59	78	B/C		3	Yes	Yes	P	E	Yes	0		16	799.95	As above.	
AD-7(RI)	25-19	No	0.05	59	90	B/C/D		3	Yes	Yes	P	E	Yes	0		16	979.95	As above.	
TECHNICS	RS-B905	30-19 ±3	Yes	0.04	57	92	B/C/D/H	A/M	3	Yes	No	PH	E/R				11	790.00	
	RS-B605	20-18 ±3		0.06	56	92	B/C/D/H	A	3	Yes	No	PH	T				9.5	470.00	
	RS-B105	20-15		0.08	56	66	B	A	3	No	No	P	T		2	Yes	6.6	200.00	
	RS-T130	20-15		0.1	56	66	B	A	3	No	No	P	T			Yes	8.4	230.00	
	RS-T230	20-15		0.1	56	74	B/C	A	3	No	No	P	T			Yes	9.9	280.00	
	RS-T330R	20-16		0.1	56	74	B/C	A	3	No	No	P	T			Yes	9.9	400.00	
	RS-T55R	20-16		0.07	56	92	B/C/D	A	3	Yes	No	P	T	Yes		Yes	11.5	520.00	
	RS-T80R	30-17		0.08	57	92	B/C/D	A	3	Yes	No	PH	T	Yes		Yes	11.7	750.00	

# The road to perfection has no shortcuts.

Most CD marketing has turned into a numbers and gimmicks race, with many manufacturers suggesting that one single feature leads to superior sound. Instead of looking for shortcuts, the Akai engineers have focused on *everything* connected with reading and processing the digital signal accurately.

The result? The CD-93-B Reference Master CD Player. The moment a CD is inserted, disc rotation is stabilized by an oversized, die-cast disc clamper. Its die-cast anti-resonant disc tray further reduces unwanted vibrations, as do the player's entire aluminum honeycomb monocoque chassis and high-frequency absorbing ceramic pedestals.

The CD-93-B's die-cast 3-beam laser pick-up with "A" servo system further ensures that the disc is read with unsurpassed accuracy. By effectively minimizing playback errors, Akai engineers have reduced the distortion generated by error concealment.



This laser transport reflects Akai's 35 years of building tape transports.



Akai's disc clamper: because more stable rotation means fewer playback errors.

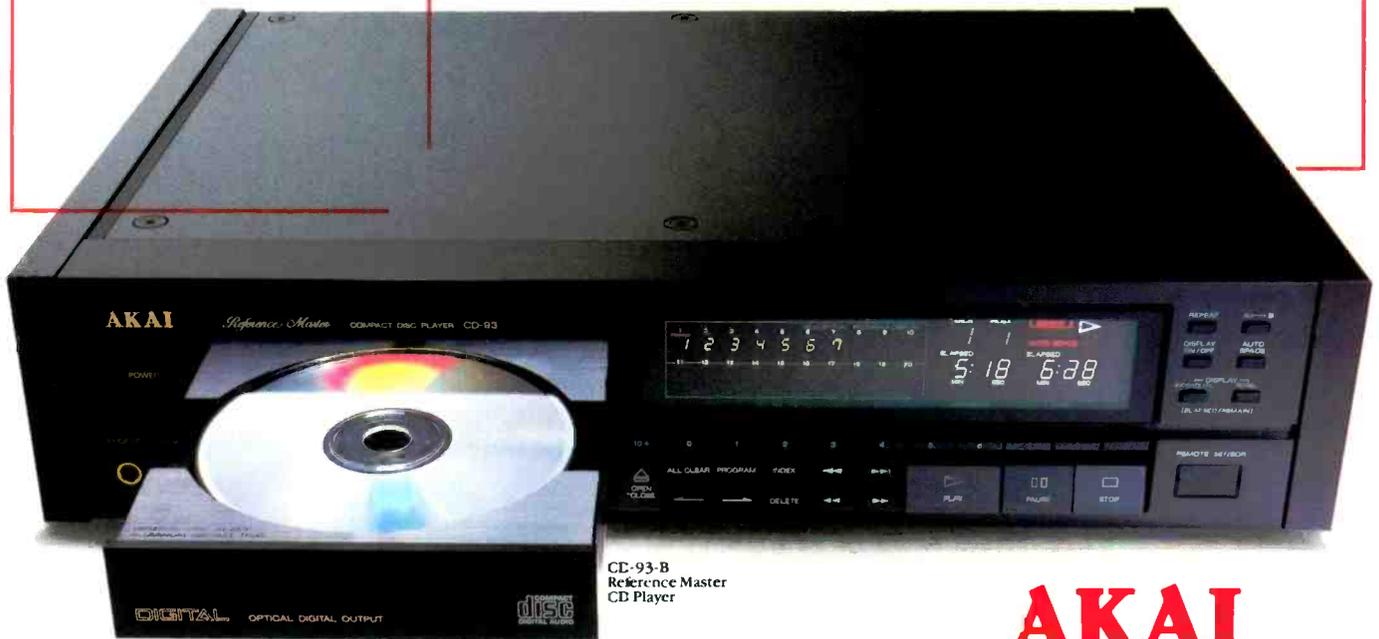
The CD-93-B's excellence in design naturally extends to its circuitry, which features completely separate and shielded digital and analog sections. Independent and isolated power transformers prevent digital noise from interfering with the analog signal. Six stages of internal fiber optic coupling as well as optical outputs ensure that no signal degradation occurs. For optimum decoding of the digital signal, the CD-93-B uses an 18-bit digital filter, dual glitchless D/A converters and a highly linear 3rd order Butterworth GIC analog filter.

Akai's extra attention to engineering, design and construction quality is proven out by *Stereo Review's* recent lab tests.\* The CD-93-B had one of the flattest frequency responses and the best low-level linearity they ever measured.

Let the other manufacturers search for the one thing that will make their players sound better. At Akai, that one thing is everything.



With the Honeycomb Monocoque chassis, Akai puts digital audio on the firmest foundation.



CD-93-B Reference Master CD Player

**AKAI**  
Where audio and video are one.



# The Quietspeakers

Revox speakers play to the civilized ear. And they speak most distinctly where the civilized ear does its listening.

We make speakers that make beautiful music—absolutely clear, richly detailed music. At low listening levels, where other speakers are at a loss, the sound from Revox speakers is always precise, focused, vividly present. These speakers impress with their fineness, their ability to reveal music's quiet subtleties, its lucid stillness.

If you never listen loud, you need to be listening to the Quietspeakers.

From Revox of Switzerland. At your audio specialist in the USA.

**STUDER REVOX**

STUDER REVOX AMERICA, INC.  
1425 Elm Hill Pike, Nashville, TN 37210  
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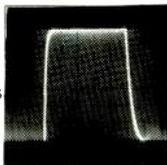
# CASSETTE DECKS

MANUFACTURER	Model (RO) = Remote Included, (R) = Remote Optional	Frequency Response with CrO <sub>2</sub> Tape (Type II), Hz to kHz, ±dB	Monitoring During Recording?	Wow & Flutter, Wtd. Peak, %	S/N without Noise Reduction	S/N with Noise Reduction	Noise Reduction Circuit: Dolby B, C, X, Y, S, H, Other = O	Bias Adjustment: Auto = A, Manual = M	Number of Preset Bias/ED Positions	Program Search?	Program Scan?	Legal Indications: Average A, Peak = P, Peak-Hold = PH	Counter Indications: Number of Turns = T, Elapsed Time = E, Remaining Time = R	Auto Reverse?	Number of Mike Inputs	Dual Wells?	Weight, Lbs.	Price, \$	Notes
TOSHIBA	PC5858(RO)	30-15 ± 3	No	0.08	57	72	B/C	A	3	Yes	Yes	A/P	E	†	0	Yes	11.9	400.00	†Auto reverse play and record in both wells.
UHER	CR 160AV (RO)	30-16 ± 1	Yes	0.2	55	64	B/C	M	4	No	No	P	T	No	1	No	7	999.00	Automatic level control.
	CR 1600(RO)	30-16 ± 1	Yes	0.3	52	60	B	M	4	No	No	P	T	Yes	1	No	7	1799.00	As above; voice-activated; two speeds.
	CR 1601(RO)	20-19 ± 1	Yes	0.2	50			M	4	No	No	P	T	Yes	1	No	7	1799.00	Voice-activated; two speeds.
VECTOR RESEARCH	VXC-325	40-14 ± 3	No	0.08	52	63	B	No	3	No	No	P	T	No	2	Yes	10	149.95	CD changer/cassette deck; see "CD Players."
	VXC-345	40-16 ± 3	No	0.06	55	73	B/C	No	3	No	No	P	T	Yes	2	Yes	9	249.95	
	VXC-450	30-18 ± 3	No	0.04	56	75	B/C	No	3	Yes	Yes	P	T	Yes	2	No	16	399.95	
	VCD-650CX (RI)	40-16 ± 3	No	0.06	55	73	B/C	No	3	Yes	No	P	T	Yes	0	No		599.95	
YAMAHA	KX-1200U (RI)	20-22 ± 3	Yes	0.06	61	95	B/C/D/H	M	3	Yes	Yes	P	T/E/R	No	0	No	17½	749.00	Two speeds.
	KX-800U(RI)	20-20 ± 3	Yes	0.08	61	90	B/C/D/H	M	3	Yes	Yes	P	T/E/R	No	0	No	10½	569.00	As above.
	KX-R700U (RI)	20-19 ± 3	No	0.08	60	90	B/C/D/H	A	3	Yes	Yes	P	T/E/R	Yes	0	No	12¾	579.00	Electronic output level control.
	K-640B(RO)	20-19 ± 3	No	0.08	59	75	B/C/H	A	3	Yes	Yes	P	T/E/R	Yes	2	No	11½	449.00	Random play; two repeat modes.
	KX-500U(RI)	20-19 ± 3	No	0.08	60	76	B/C/H	M	3	Yes	Yes	P	T/E/R	No	0	No	10	399.00	
	KX-400U (RO)	20-18 ± 3	No	0.10	58	74	B/C/H	A	3	Yes	Yes	P	T	Yes	0	No	9½	329.00	Two repeat modes.
	KX-300U(RI)	20-19 ± 3	No	0.08	60	76	B/C/H	M	3	Yes	Yes	P	T	No	0	No	9¼	299.00	As above.
	KX-200U (RO)	20-16 ± 3	No	0.15	58	74	B/C	A	3	Yes	Yes	P	T	No	0	No	9¼	229.00	As above.
	KX-W900U (RI)	20-19 ± 3	No	0.05	58	74	B/C/H	A	3	Yes	Yes	P	T/E/R	Yes	0	Yes	15½	699.00	True twin decks.
	KX-W302U (RO)	20-18 ± 3	No	0.15	58	74	B/C	A	3	Yes	No	P	T	Yes	0	Yes	10¼	449.00	Timer start.
	KX-W202U (RO)	20-17 ± 3	No	0.15	58	74	B/C/H	A	3	Yes	No	P	T	No	0	Yes	9¾	349.00	As above.

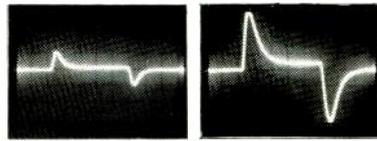
## CABLE CHALLENGE

You can hear the improvement  
STRAIGHT WIRE makes  
and **MEASURE IT!**

A short duration pulse is fed through the test cable with oscilloscope probes attached to each end. The scope subtracts the output from the input to display the differential waveform.



Photos below show the slowing down of high frequencies (phase shift) and signal loss of 20 ft. speaker cables THE STRAIGHTER THE LINE - THE LOWER THE PHASE SHIFT.



**Straight Wire TMC** Comparably priced major brand Source-SUMO Polaris Amp; Load - 4 Ω non-inductive Test Signal - 10µs wide pulse; 4 Volts peak

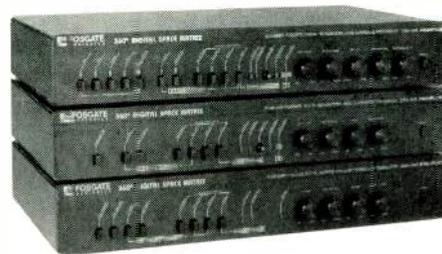
The preceding 'scope photos correlate to the greater focus and harmonic purity you hear with Straight Wire. Additional tests of **SPEAKER & INTERCONNECT CABLES** are documented in "THE WHITE PAPER ON CABLES" and our new color literature available from your local dealer. If competing cable manufacturers cannot furnish logical proof of performance, perhaps you should ask them **WHY NOT?**

**STRAIGHT WIRE**

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Audition FOSGATE'S **PRO+PLUS™** series. You will understand why there is much more to designing a successful surround audio processor than simply adding digital circuitry to the time delay or signal path and a multitude of seldom-used control settings.

**PRO+PLUS™** is a collaborative design effort by Peter Scheiber and Jim Fosgate - innovators in the field of surround audio processing.

**FOSGATE DELIVERS THE BEST OF BOTH WORLDS:** Pure Class 'A' Signal Paths and Digital Steering Logic. Complex program material can cause the steering logic in other surround processors to momentarily go into electronic gridlock. The result: Audible collapse of the soundfield and loss of three-dimensionality. But not with FOSGATE **PRO+PLUS™**!

Proprietary high-speed digital steering logic analyzes the audio signal on a real-time basis and instantly changes the time constants over an almost infinite range to maintain maximum possible separation at all times. The result: The digital steering logic and Pure Class A analogue signal paths deliver a natural and incredibly spacious soundfield that extends beyond the confines of your listening room. The walls seem to disappear.

**FOSGATE IS YOUR TICKET TO SPACE.**

Stereo surround processing is not an afterthought. Fosgate surround processors accurately restage conventional stereo into a 360° soundfield which captures the acoustical space of the original performance from any source - audio, video or films.

**FOSGATE PRO+PLUS™.**

**Nothing Else Even Comes Close!**

**FOSGATE**

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# OPEN-REEL TAPE DECKS

MANUFACTURER	Model (R) = Remote Included, (RO) = Remote Optional	Speeds - See Letter Code	Maximum Reel Size - Inches	Number of Heads	Number of Tracks	Number of Channels, Record/Play	Drive to Cassette	Frequency Response, Hz to kHz, ±dB, With Best Tape at Highest Machine Speed	Wow & Flutter, Wtd. Peak, %	S/N, "A" Wtd., -dB	Output Level at 0 VU, mV	Mike Mixing?	Mike Input Impedance, Ohms, Balanced = B	Record Level Indicator(s), Number and Type	EE Tape Capable?	Dimensions, Inches	Weight, Lbs.	Price, \$	Notes	
																				SPEED CODE A-7½, 3¾ B-7½, 3¾, 1⅞ C-7½, 3¾ 1⅞, 15/16 D-15, 7½ E-15, 7½, 3¾
FDSTEX	20	D	7	3	2	2	3	Belt	30-22 ±3	0.06	70	300	No		Yes	14 x 13½ x 8½	29	1550.00		
	E2	D	10½	3	2	2	3	Direct	30-26 ±3	0.05	69	300	No	2 Peak LEDs & 1 Cue LED	Yes	17 x 17½ x 9¼	66	3750.00		
REVOX	877 MKII	†	10½	3	2/4	2	3	Direct	30-22 +2,-3	0.06	67	775	Yes	22k, 110k	2 Mtrs. & 2 Peak LEDs	No	16½ x 17¾ x 8¼	37½	2450.00	†Any two adjacent speeds from 15/16 to 15 ips.
TASCAM	22-2	D	7	3	2	2	3		40-22 ±3	0.04	68		200	VU Mtr. & Peak LEDs		16¾ x 16½ x 9½	30¾	1099.00		
	32	D	10½	3	2	2	3		40-20 ±3	0.05	68		200	VU Mtr. & Peak LEDs		16¾ x 18¾ x 10½	44	1749.00		
	42B	D	10½	3	2	2	3		30-20 ±2	0.05	70		150B	VU Mtr. & Peak LEDs		17 x 19¾ x 10¾	70½	2999.00		
TEAC	X-2000M(RO)	D	10½	4	†	†	3	Belt	40-40	0.02	66		Yes	2 VU Mtrs.	Yes	17 x 18 x 10½	46¼	2235.00	†½ track record/play, ¼ track play. Spooling mode; dbx Type I NR. Spooling and NR as above.	
	X-2000(RD)	A	10½	3	2/4	2/4	3	Belt	40-33 ±3	0.03	66		Yes	2 VU Mtrs.	Yes	17 x 18 x 10½	46¼	1950.00		
	X-2000R(RO)	A	10½	6	2/4	2/4	3	Belt	40-33 ±3	0.03	65		Yes	2 VU Mtrs.	Yes	17 x 17 x 10½	46¼	2055.00	NR as above; in black, Model X-2000RBL, \$2069.00.	
	X-300	A	7	3	2/4	2/4	3	Belt	40-30 ±3	0.04	65		Yes	2 VU Mtrs.	Yes	16 x 13 x 9	30¾	1145.00		
	X-300R	A	7	3	2/4	2/4	3	Belt	40-30 ±3	0.04	65		Yes	2 VU Mtrs.	Yes	16 x 13 x 9	33	1280.00		
UHER	4000(RO)	C	5	3	2	1	1	Belt	20-25 ±2	0.2	64	775	Yes	200	1 VU Mtr.	Yes	11 x 3½ x 9	8	1699.00	
	4200(RO)	C	5	3	2	1	1	Belt	20-25 ±2	0.2	64	775	Yes	200B	2 VU Mtrs.	Yes	11 x 3½ x 9	8	1799.00	
	4400(RO)	C	5	3	4	2	1	Belt	20-25 ±2	0.2	62	775	Yes	200B	2 VU Mtrs.	Yes	11 x 3½ x 9	8	1799.00	
	6000(RO)	†	5	3	2	1	3	Belt	20-22 ±2	0.2	62	775	Yes	200	1 VU Mtr.	Yes	11 x 3½ x 9	8	2150.00	†"C" speeds plus 15/32 ips.
	1200(RO)	A	5	3	1	1	1	Belt	40-16 ±2	0.15	62	600	Yes	200	1 VU Mtr.	Yes	11 x 3½ x 9	8	5049.00	

# BLANK TAPE

MANUFACTURER	Brand	Tape Type - See Code	ANALOG CASSETTES						OPEN-REEL				DAT CASSETTES				Notes									
			C-30		C-45 or C-46		C-60		C-90		C-120		1200 Feet		1800 Feet			2400 Feet		3600 Feet						
BASF	Ferro Extra I	I			1.49	1.69																				
	Ferro Super I	I			1.94	2.54																				
	Chrome Extra II	II			2.69	2.99																				
	Chrome Maxima II	II			3.29	4.29																				
	Metal Maxima IV	IV							6.49																	
CERTRON	High Density	I	1.19	1.29	1.39	1.79	2.49																			
	UX	I			2.99†	3.99†																				
	Low Noise	I			1.99†	2.99†																				Three-packs: C-60, \$3.99; C-90, \$4.99. †Two-pack. †Three-pack.
DENON	HDM	IV			4.50	5.50																				
	HD8	II			3.75	4.75																				
	HD7	II			3.00	4.00																				
	HD6	II			2.50	3.25																				
	DX4	I			3.00	4.00																				
	DX1	I			1.75	2.25																				
FUJI	DR	I			1.49	1.99																				
	FR-II	II			3.49	3.99																				
	FR-II Super	II			4.49	4.99																				
	FR-Metal	IV		4.99	5.49	5.99																				
	DAT																									
GOLDSTAR	MTX-9011	IV				4.99																				
	CRX-9011	II				2.49																				
	AHZ-9011	I				1.99																				
	AHR-9011	I				1.29																				
	AHP-9011	I				1.19																				
	AHD-9011	I				.99																				
GREENCORP	XDS	I	.62	.70	.80	.90	1.40																			
	XII+	I	.66	.78	.88	1.08	1.50																			
	CR	II	.76	.92	1.06	1.30	1.99																			



# BLANK TAPE

ANALOG CASSETTE TAPE TYPE CODE I — Normal Ferric II — Chrome/Chrome Equivalent IV — Metal Particle		ANALOG CASSETTES								OPEN-REEL				DAT CASSETTES				Notes
		Brand	Tape Type—See Code	C-30	C-45 or C-46	C-60	C-90	C-120	1200 Feet	1800 Feet	2400 Feet	3600 Feet	R-30	R-60	R-90	R-120		
MANUFACTURER																		
LORAN	ESQ High Bias DAT	II II		2.99	3.49	4.99 3.99							14.99	16.99	19.99	R-46, \$12.99.		
3M	Audio Mastering 250 226  227 806  807 808 809 275  AVX Scotch DAT						12.34 12.22 10.74 10.90	18.98 14.38† 14.74	17.92† 17.36† 14.70† 15.14†	32.72 23.84 24.62						†2500 feet. 5000 feet, \$136.28 †2500 feet. 5000 feet, \$132.26.  †2500 feet. 5000 feet, \$404.05. †1700 feet. 900 feet, \$9.26. †2500 feet. 600 feet, \$7.08.  4800 feet, \$112.80; 7200 feet, \$190.46; 9600 feet, \$253.04.		
MAXELL	UR UR-F UDS-I UDS-II XLII XLI-S XLI-S MX UD35-90 UD35-180 XLI35-90B XLI35-180B DAT	I I I II II I II IV		1.49	1.49 4.99†	1.79 5.99†	2.79		9.19 12.79	28.39 35.79		10.99	12.99	14.99	R-46, \$9.00.  †Three-pack.  C-100, \$4.39.			
MEMOREX	dB5 MRX-I HBS-II HBX-II CDX-II	I II II II	1.39	1.49 2.19 2.29 2.59	1.79 2.69 2.79 3.49 4.49	2.29										R-46, \$8.99.		
NAKAMICHI	ZX SXII SX EXII	IV II II I		7.25 6.50 4.50 4.25	10.00 8.90 6.50 6.00													
REALISTIC	Premium Formula Metal Type II High Definition Extended Range Low Noise Premium Premium Low Noise	IV II II I I	1.99	2.59	5.99 4.89 3.49 2.79 2.59	6.99 5.69 4.29 3.79 3.59	4.99 4.39	5.99	6.99 5.99	6.99	12.99 7.99							
RECOTON	XR-10 SX-2	I I		3.99†	13.99† 4.49†											†Ten-pack. †Three-pack.		
SKC	GX AX QX CD ZX DAT	I I II II IV	1.29 1.99 2.29 3.59	1.39 2.09 2.39 2.99 4.09	1.59 2.49 2.79 3.99 5.59	2.39						7.00	8.00	9.50		C-100, \$4.99.		
SONY	HF HF-S UX UX-S UX-ES UX-Pro Metal-ES	I I II II II II IV	1.49	1.79 1.99 2.49 2.99 3.99 5.99	2.29 2.69 3.29 3.99 5.49 7.99 9.99	2.99												
SSANGYONG	Ferro Super 1 Ferro Super 2 Ferro Super Chrome 3	I II II		.99 1.29 1.89	1.29 1.59 2.19													
SWIRE MAGNETICS	Laser XL Laser UHD Laser UHD	I I II	1.49	1.59 2.19	1.99 2.79 2.79													
TDK	D AD AD-X SD SA Limited Edition SA SA-X SA-XG MA MA-X MA-XG DA	I I I II II II II II IV IV IV	1.50 1.60	1.75 2.25 2.50 2.25 2.50 3.00 7.00 3.50 4.25 7.00	2.00 2.50 3.00 2.50 4.99 3.00 3.50 9.25 4.00 5.00 9.25							10.00	12.00	14.00		C-76, \$5.79. C-76, \$5.39; C-102, \$5.99; Type II metal-particle tape.  Type II metal-particle tape.		
TRIAD	CD-IV CD-II  MG-X EM-X F-X	IV II  IV II I		4.99	5.99 4.99 3.99											†C-70, \$1.25.		
UNIVERSAL SECURITY INSTRUMENTS	US 1	I		†	1.50													



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At Marantz, we believe quality equipment should not become obsolete every six months. Which separates the Century Series of audio products from every other line on the market. Quite simply, our back is your system's future.

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The Century SR3600 is a receiver so in tune with today's needs, you can build your entire entertainment system around it. It links the classic Marantz legacy of quality construction and unmatched audio purity with the futuristic world of advanced high-current electronics.

Imagine. Processor loops that can be inserted before or after the volume control. FM cable input, bridgeable power supplies, 20 AM/FM presets, even a Dolby Surround Sound processor. All in a powerful, 120 watt per channel receiver. With other models ranging from 110 to 35 watts.

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# MICROPHONES

MANUFACTURER	Model	Directional Pattern Plus Channels: Stereo = XZ, Quad = XA, M-S = M-S	Operating Principle	Case Material	Most Common Use	Actual Impedance - Balanced - Ω	Operating Range - 1 kHz, Ohms	Open-Circuit Sensitivity - 1 kHz, - dB, re. 1 Volt/1 μbar	Mike Connector Type	Cable Length, Feet	Connector Type on Equipment End of Cable	Weight, Ounces	Wind Screen = W, Rain Cap Switch = S, Switched Low or Proximity Filter = F	Price, \$	Notes
AKG	D-58E	Card.	Dynamic	Nckl./Brass	Noisy Envrn. Record	240B	70-12	83	XLR			1 1/2		115.00	Noise cancelling.
	D-70M	Card.	Dynamic	Plastic	Record	600	50-18	77		15	Phone	6 3/4		75.00	
	D-70ME	Card.	Dynamic	Plastic	Record	620B	50-18	77	XLR			6 3/4		85.00	
	D-80	Card.	Dynamic	Brass	Record	210B	60-15	76	XLR	15	Phone	7 3/8	S	135.00	
	D-80E	Card.	Dynamic	Brass	Record	210B	60-15	76	XLR			7 3/8	S	140.00	
	D-109	Omni	Dynamic	Brass	Voice	240B	70-12	79		30	None	5 3/8		125.00	Lavalier.
	O-112	Card.	Dynamic	Plastic	Bass	200B	20-17	75	XLR			13 3/8		220.00	
	D-125E	Card.	Dynamic	Zinc Alloy	Instr.	210B	100-18	74	XLR			8		170.00	
	D-130E	Omni	Dynamic	Zinc Alloy	ENG	220B	50-13	75	XLR			9		135.00	
	D-130NR	Omni	Dynamic	Zinc Alloy	ENG	220B	50-13	75	XLR			9		150.00	
	D-190E	Card.	Dynamic	Zinc Alloy	General	280B	30-15	73	XLR			6 1/2	S	135.00	
	D-190ES	Card.	Dynamic	Zinc Alloy	General	280B	30-15	73	XLR			6 1/2	S	155.00	
	D-202E1	Card.	Dynamic	Zinc Alloy	Strings	300B	20-20	76	XLR			12	F	425.00	Two-way system.
	D-222EB	Card.	Dynamic	Zinc/Plastic	Podium	320B	20-16	77	XLR			9	F	350.00	
	D-224E	Card.	Dynamic	Zinc Alloy	Acoust. Instr.	260B	20-20	78	XLR			10	F	600.00	
	D-310	Card.	Dynamic	Zinc Alloy	Vocal	270B	80-18	78	XLR			9		160.00	
	D-310NR	Card.	Dynamic	Zinc Alloy	Vocal	270B	80-18	78	XLR			9		165.00	
	D-310S	Card.	Dynamic	Zinc Alloy	Instr./Vocal	270B	80-18	78	XLR			9	S	175.00	
	D-321	Hyper Card.	Dynamic	Zinc Alloy	Vocal	300B	40-20	77	XLR			13 3/8		210.00	
	D-321S	Hyper Card.	Dynamic	Zinc Alloy	Vocal	300B	40-20	77	XLR			11 1/2	S	225.00	
	D-330BT	Hyper Card.	Dynamic	Zinc Alloy	Vocal	370B	50-20	78	XLR			12	F	250.00	
	D-330NR	Hyper Card.	Dynamic	Zinc Alloy	Vocal	370B	50-20	78	XLR			12	F	265.00	
	D-510B	Omni	Dynamic	Nckl./Brass	Voice	230B	79	Attached	3 3/4	None	11 1/2			140.00	Gooseneck.
	D-541	Card.	Dynamic	Plastic	Vocal	720B	120-16	73	Attached	3 3/4	None	12 1/2		115.00	As above.
	D-558B	Card.	Dynamic	Nckl./Brass	Voice	200B	70-15	83	Attached	3 3/4	None	11 1/2		160.00	
	D-590	Card.	Dynamic	Nckl./Brass	Vocal	230B	150-17	78	Attached	3 3/4	None	10		170.00	As above.
	D900E	Super Card.	Dynamic	Brass Lacq.	ENG	240B	60-12	70	XLR			18	F	430.00	Long shotgun.
	D1200E	Card.	Dynamic	Nickel Alloy	General	200B	25-17	73	XLR		None	8 1/2	F	250.00	
	C-34	Multiple x2	Condenser	Zinc Alloy	Orch.	200B	20-20	67	12-Pin	60	XLR	10	W	2295.00	Remote pattern control.
	C-422	Multiple x2	Condenser	Zinc Alloy	Drch.	200B	20-20	65	12-Pin	60	XLR	15	W	2995.00	As above.
	AKG Tube	Multiple	Condenser	Zinc Alloy	Studio	200B	20-20	60	12-Pin	60	XLR	24	W	2295.00	As above.
	C-414B/ULS	Multiple	Condenser	Zinc Alloy	Studio	200B	20-20	58	XLR			11	WF	995.00	Transformerless version, Model C-414B TL, \$1195.00. Modular system.
	C-451E	Card.	Condenser	Zinc Alloy	Studio	200B	20-20	60.5	XLR			3 3/8		400.00	
	C-451EB	Card.	Condenser	Zinc Alloy	Studio	200B	20-20	60.5	XLR			3 3/4	F	495.00	As above.
	C-460B/CK-61ULS	Card.	Condenser	Zinc Alloy	Studio	500B	20-20	62	XLR			5 1/2	F	550.00	As above.
	C-460B/CK-62ULS	Omni	Condenser	Zinc Alloy	Studio	500B	20-20	62	XLR			5 1/2	F	550.00	As above.
	C-460B/CK-63ULS	Hyper Card.	Condenser	Zinc Alloy	Studio	500B	20-20	62	XLR			5 1/2	F	550.00	As above.
	C-460B/CK-1X	Card.	Condenser	Zinc Alloy	Studio	500B	20-20	62	LEMO	10	XLR	5 1/2	F	775.00	As above.
	C-451EB/CK-9	Super Card.	Condenser	Zinc Alloy	Studio	200B	20-20	59	XLR			4	F	1100.00	Long shotgun.
	C-451EB Preamp		Condenser	Zinc Alloy	Studio	200B	20-20		XLR			3	F	335.00	Modular preamp.
	C-460B Preamp		Condenser	Zinc Alloy	Studio	500B	20-20		XLR			4 1/2	F	420.00	As above.
	CK-1	Card.	Condenser	Zinc Alloy	Studio		20-20	60				1		145.00	
	CK-1X	Card.	Condenser	Zinc Alloy	Studio		20-20	62	LEMO	10		1 1/8		200.00	
	CK-2X	Omni	Condenser	Zinc Alloy	Studio		20-20	62	LEMO	10		1 1/8		200.00	
	CK-3	Hyper Card.	Condenser	Zinc Alloy	Studio		20-20	61				1		145.00	
CK-3X	Hyper Card.	Condenser	Zinc Alloy	Studio		20-20	61	LEMO	10		1 1/8		200.00		
CK-5	Card.	Condenser	Zinc Alloy	Studio		20-20	60				4		275.00		
CK-8	Super Card.	Condenser	Zinc Alloy	Studio		20-20	54				2 1/2	W	260.00	Short shotgun.	
CK-8X	Super Card.	Condenser	Zinc Alloy	ENG		30-18	59	LEMO	10	XLR	4 1/4	W	365.00	As above.	
CK-9	Super Card.	Condenser	Zinc Alloy	Studio		20-20	59				12	W	320.00	Long shotgun.	
(Continued)	CK-22	Omni	Condenser	Zinc Alloy	Studio		20-20	62			1 1/2		145.00		



# MICROPHONES

MANUFACTURER	Model	Directional Pattern Plus Channels: Stereo = x2, Quad = x4, M-S = M-S	Operating Principle	Case Material	Most Common Use	Actual Impedance Balanced = $\Omega$	Operating Range, 1 kHz, Ohms	Open-Circuit Sensitivity, 1 kHz, -dB, re: 1 Volt, 1 $\mu$ bar	Mike Connector Type	Cable Length, Feet	Connector Type on Equipment	Weight, Ounces	Wind Screen - W, Coil Switch = S, Switched Low or Proximity Filter = F	Price, \$	Notes
AKG (Continued)	CK-61ULS	Card.	Condenser	Zinc Alloy	Studio	20-20	62				1		170.00		
	CK-62ULS	Omni	Condenser	Zinc Alloy	Studio	20-20	62				1		170.00		
	CK-63ULS	Hyper Card.	Condenser	Zinc Alloy	Studio	20-20	62				5½	F	170.00		
	C-410	Card.	Electret	Zinc Alloy	Vocal	300	20-20	70.5	XLR	11¾		4½		215.00	
	C-522	Card. x2	Electret	Zinc Alloy	Stereo	300B	20-20	60	5-Pin XLR	6	3-Pin XLR	10	W	995.00	
	C-535EB	Card.	Electret	Zinc Alloy	Vocal	200B	20-20	61	XLR			10	F	350.00	
	C-562	Hemi.	Electret	Zinc Alloy	General	600B	20-20	54	XLR	10		33½	W	435.00	
	C-567E	Omni	Electret	Zinc Alloy	Voice	200	20-20	64	XLR	9		3½	W	275.00	
	CK-67/3	Omni	Electret	Zinc Alloy	Voice			55				¾		155.00	Lavalier.
	C-568EB	Super Card.	Electret	Zinc Alloy	ENG	200B	20-20	62	XLR			6	WF	350.00	Shotgun.
	D-12E	Card.	Dynamic	Zinc Alloy	Bass Drum	290B	30-15	73	XLR			17		390.00	
	C-535WL	Card.	Electret	Zinc Alloy	Vocal		40-20	63		0		13½		295.00	Wireless mike head.
	CK-67WL	Omni	Electret	Zinc Alloy	Vocal		40-20	64		0				175.00	Lavalier; with tie-tac and tie-bar; wireless.
	D-321WL	Hyper Card.	Dynamic	Zinc Alloy	Vocal		40-20	77		0		13½		180.00	Wireless mike head.
	O-330WL	Hyper Card.	Dynamic	Zinc Alloy	Vocal		50-20	77		0		13½		180.00	As above.
	A-85 Module D95S	Hyper Card.	Dynamic	Zinc Alloy	General	300B	70-18	†	XLR				S	70.00	Allows use of any dynamic mike.
	D90S	Card.	Dynamic	Zinc Alloy	General	300B	70-18	†	XLR				S	160.00	†1.3 mV/Pa.
	Q580	Super Card.	Electret	Metal & Plastic	P.A.	1k, B	100-15	69	XLR	3¾		3½		150.00	†As above.
	CK620F	Omni	Condenser	Zinc Alloy											15¼-inch gooseneck.
	C410P/B9	Card.	Electret	Zinc Alloy	Vocal	300	20-20	70.5	Mini			4½		260.00	
	C401	Figure 8	Condenser	Plastic	Strings	200B	10-10	†	Mini/XLR					85.00	Two inputs, one output.
	C402	Card.	Condenser	Plastic	Strings	200B	2.5k-20k	†	Mini/XLR					95.00	†13 mV/Pa. As above.
	C408B	Hyper Card.	Condenser	Plastic	Perc.	200B	80-20	†	Mini/XLR					165.00	†5 mV/Pa. As above.
C409B	Hyper Card.	Condenser	Plastic	Wind Instr.	200B	20-20	†	Mini/XLR					165.00	†10 mV/Pa. As above.	
C747	Hyper Card.	Condenser	Metal	Instr. Vocal	400B	30-18	†	XLR					400.00	†10 mV/Pa.	
C1000S	Card.	Condenser	Metal	Vocal	200B	50-20	†	XLR				S		†6 mV/Pa.	
AMBICO	V-0623	Card.	Electret	Alum.	P.A./Video	75	40-18	150	Mini	0	Mini	6	SF	99.00	Wireless; hand-held.
	V-0625	Card.	Electret	Plastic	P.A./Video	75	40-15	150	Mini	0	Mini	4	S	89.00	Wireless; lavalier.
	V-0620	Card.	Electret	Alum.	Video	600	20-18	160	Mini	3	Mini	6	WSF	99.00	Shoe-mounted shotgun.
ASTATIC	988	Card.	Dynamic	Zinc	Vocal	150B	40-16	75	Swcft. A3F	0	None	10	WS	118.00	Shock mount.
	986	Card.	Dynamic	Zinc	Rcnd./Podium	150B	40-16	75	Swcft. A3F			8½	WS	106.00	As above.
	983	Card.	Dynamic	Zinc	Vocal	150B	50-16	74	Swcft. A3F			9½	WS	95.00	
	981	Card.	Dynamic	Zinc	Rcnd./Podium	150B	40-15	74	Swcft. A3F			9	WS	79.00	
	978	Card.	Dynamic	Zinc	Vocal	150B	60-14	78	Swcft. A3F			†	WS	59.00	†9½ pounds.
	976	Card.	Dynamic	Zinc	A V	150B	60-14	78	Swcft. A3F			†	WS	49.50	†8¾ pounds.
	970	Omni	Dynamic	Zinc	A/V	150B	50-15	82	Swcft. A3F			†	WS	98.00	†7½ pounds. Shock mount.
AUDIO-TECHNICA	ATR20	Card.	Dynamic	Plastic	Vocal	500	80-12	64	Attached	10	†	4.7	WS	22.95	†Mini with adaptor included.
	ATR25	Card. x2	Condenser	Plastic	Music/Record	600	70-18	60	Mini	10	Mini/Phone	2.8	S	59.95	Single-point stereo.
	ATR30	Card.	Dynamic	Metal	Vocal/Instr.	500	60-15	58	XLR	20		8	WS	49.95	
	ATR35 ATR55	Omni Card./ Super Card.	Condenser Condenser	Metal Metal	Vocal Video	1k 600/2.5k	50-18 70-18	54 50/40	Attached Attached	20 3	† †	0.2 4	W WS	33.95 89.95	Subminiature lavalier. Shotgun.
AUDIX	UD50	Card.	Dynamic	Zinc Alloy	Vocal	500B	80-15	80	XLR			9	S	89.00	
	UD300	Card.	Dynamic	Zinc Alloy	Vocal	200B	50-18	76.5	XLR			10		165.00	With switch, Model UD360.
	OM-1	Hyper Card.	Dynamic	Alloy Brass	Vocal/Instr.	200B	50-18	78.5	XLR			10½		239.00	Optional probe cap for recording instruments.
	OM-2	Hyper Card.	Dynamic	Zinc Alloy	Vocal	200B	40-20	78.5	XLR			9½		215.00	
ML-10	Omni	Electret	Alum.	Vocal	1k, B	30-15	68	XLR	10	Mini XLR	1	WS	95.00	Lavalier.	

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# MICROPHONES

MANUFACTURER	Model	Directional Pattern Plus Channels: Stereo = 2, Quad = 4, M-S = M-S	Operating Principle	Case Material	Most Common Use	Actual Impedance, Balanced = B	Operating Range, Hz to kHz	Open-Circuit Sensitivity, kHz - 00, i.e., Volt/1 $\mu$ bar	Mike Connector Type	Cable Length, Feet	Connector Type on Equipment End of Cable	Weight, Ounces	Wind Screen = W, On/Off Switch = S, Switched Low or Proximity Filter = F	Price, \$	Notes	
AZDEN	DX580	Uni x2	Dynamic	Alum.	Music/ Vocal	600	50-15	76	Cannon	20	Phone	WS	69.95			
	DX750	Uni x2	Dynamic	Plastic	Vocal	600	70-12	76		15	Phone	WS	39.95			
	DX431	Uni x2	Dynamic	Plastic	Vocal	600	100-12	76		15	Phone †	WS	29.95	†Mini with phone adaptor.		
BEYERDYNAMIC	M58	Omni	Dynamic	Alum.	ENG/ EFP	200B	40-20	149	A3M			9	W	199.00		
	M300	Card.	Dynamic	Alum.	Vocal	250B	50-15	150	A3M			8.6		179.00		
	M300S	Card.	Dynamic	Alum.	Vocal	250B	50-15	150	A3M			8.6	S	189.00		
	M400	Super Card.	Dynamic	Alum.	Vocal	250B	40-16	146	A3M			9		225.00		
	M400S	Super Card.	Dynamic	Alum.	Vocal	200B	40-16	146	A3M			9	S	245.00		
	M500	Ribbon	Dynamic	Alum.	Vocal	200B	40-18	150	A3M			8.5		300.00		
	M500S	Hyper Card.	Ribbon	Dynamic	Alum.	Vocal	200B	40-18	150	A3M			8.5	S	300.00	
	M600	Hyper Card.	Dynamic	Alum.	Vocal	250B	40-16	149	A3M			8.2		335.00		
	M600S	Hyper Card.	Dynamic	Alum.	Vocal	250B	40-16	149	A3M			8.2	SF	355.00		
	M700	Hyper Card.	Dynamic	Alum.	Vocal	250B	40-16	149	A3M			9.2		275.00		
	M700S	Hyper Card.	Dynamic	Alum.	Vocal	250B	40-16	149	A3M			9.2	S	295.00		
	MCE80	Super Card.	Electret Condenser	Brass	Vocal	190B	50-18			A3M			8	S	459.00	4.5-V battery or 12 to 48-V phantom powered.
	MCE81	Card.	Condenser	Brass	Vocal	190B	50-18			A3M			9.2		299.00	12 to 48-V phantom powered.
	M69	Hyper Card.	Dynamic	Brass	Instr.	200B	50-16	145	A3M			11.3		209.00		
	M88	Hyper Card.	Dynamic	Brass	Instr.	200B	30-20	145	A3M			11.3		385.00		
	M101	Omni	Dynamic	Brass	Instr.	200B	40-20	149	A3M			5.6	W	230.00		
	M130	Figure 8	Dual	Brass	Instr.	200B	40-18	152	A3M			5.3		500.00		
	M160	Hyper Card.	Ribbon	Brass	Instr.	200B	40-18	152	A3M			5.5		460.00		
	M201	Hyper Card.	Ribbon	Brass	Instr.	200B	40-18	150	A3M			7.8		260.00		
	M260	Hyper Card.	Ribbon	Brass	Instr.	200B	50-18	150	A3M			10.6	S	270.00		
	M260S	Hyper Card.	Ribbon	Brass	Instr.	200B	50-18	150	A3M			10.6		285.00		
	M380	Figure 8	Dynamic	Zinc	Instr.	600B	15-20			A3M		13		280.00		
	M420	Hyper Card.	Dynamic	Brass	Instr.	200B	100-12	150	A3M			5.2		199.00		
	M422	Super Card.	Dynamic	Alum.	Instr.	200B	100-12	152	A3M			2.5		135.00		
	M260N.80	Hyper Card.	Ribbon	Brass	P.A.	200B	100-18	150	A3M			8		250.00		
	M640	Card.	Dynamic	Zinc	P.A.	200B	100-12	152	A3M	3-Pin DIN		4	S	115.00		
	M680S	Card.	Dynamic	Zinc	P.A.	200B	100-12	152	A3M		19	None		200.00	19 1/2-inch gooseneck.	
	M682	Card.	Dynamic	Zinc	P.A.	200B	100-12	152	A3M		19	None		195.00	11 3/4-inch gooseneck.	
	M682N(C)	Card.	Dynamic	Zinc	P.A.	200B	100-12	152	A3M					200.00	As above.	
	CV710P48	Preamp	Dynamic	Brass	Studio	200B	40-20	152	A3M					290.00	Modular preamp for use with "CK" models; 48-V phantom powered.	
	CV720PV	Preamp	Dynamic	Brass	Studio	200B	40-20		A3M					340.00	As above but 8 to 52-V phantom powered.	
	AC/CV750	Preamp	Dynamic	Brass	Studio	150B	40-20		A3M			6	F	390.00	Remotable preamp for use with "CK" models; operates via MVK750 cable; 48-V phantom powered.	
	CK701	Omni	Condenser	Brass	Studio		40-20							255.00		
	CK702	Omni	Condenser	Brass	Studio		40-20						W	315.00	Built-in suspension.	
	CK703	Card.	Condenser	Brass	Studio		40-20							315.00		
	CK704	Card.	Condenser	Brass	Studio		40-20						W	330.00	As above.	
	CK706	Card./Lobe	Condenser	Brass	Studio		40-20							540.00		
	CK707	Lobe	Condenser	Brass	Studio		40-20							650.00		
	CK708	Figure 8	Condenser	Brass	Studio		40-20							600.00		
	MC734P48	Card.	Condenser	Alum.	Vocal	150B	20-18	138	A3M			9.5		785.00	48-V phantom powered.	
	MC734PA	Card.	Condenser	Alum.	Vocal	150B	20-18	138	A3M			9.5	F	800.00	Higher SPL version of model above.	
	MC736P48	Card./Lobe	Condenser	Alum.	Studio	150B	40-20	30	A3M			8.8	F	900.00		
	MC736PV	Card./Lobe	Condenser	Alum.	ENG/ EFP	150B	40-20	33	A3M			7	F	875.00		
	MC737P48	Lobe	Condenser	Alum.	Studio	150B	40-20	30	A3M			15.6	F	950.00		
	MC737PV	Lobe	Condenser	Alum.	ENG/ EFP	150B	40-20	33	A3M			9	F	950.00		
	MC740	5-Pattern	Condenser	Alum.	Studio	150B	40-20	133	A3M			13.8	F	1325.00		
	MC740N (C/5)	5-Pattern	Condenser	Alum.	Studio	150B	40-20	133	A5M			13.8	F	1400.00	Optional remote pattern switcher, Model MSG740, \$675.00.	
MCE5	Omni	Electret Condenser	Brass	Brdcst.	800B	20-20	141			4	6-Pin DIN	0.25	W	195.00	Lavalier; for mike line level, MES5VN(C), \$175.00.	
MCE5-3M	Omni	Electret Condenser	Brass	Brdcst.	800B	20-20	141			10	6-Pin DIN	0.25	W	200.00	As above.	
MCE5.1	Omni	Electret Condenser	Brass	Brdcst.	200	20-20	129			10	Phone	0.25	WS	295.00	Lavalier.	
MCE5.9	Omni	Electret Condenser	Brass	Brdcst.		20-20	129			10	None	0.25	W	180.00	As above; for wireless system.	
MCE5.11	Omni	Electret Condenser	Brass	Brdcst.	200B	20-20	129			10	A3M	0.25	WS	375.00	Lavalier; battery or phantom powered.	
MCE6	Omni	Electret Condenser	Brass	Instr.	800B	20-20	111			4	6-Pin DIN	0.25	W	195.00	Lavalier; for mike line level, MES5VN(C).	
MCE6.1	Omni	Electret Condenser	Brass	Instr.	200	20-20	99			10	Phone	0.25	WS	295.00	Lavalier.	
MCE6.9	Omni	Electret Condenser	Brass	Instr.		20-20	99			10	None	0.25	W	180.00	As above; for wireless system.	
MCE6.11	Omni	Electret Condenser	Brass	Instr.	200B	20-10	99			10	A3M	0.25	WS	375.00	Lavalier; battery or phantom powered.	
MCE10	Hyper Card.	Electret Condenser	Brass	Brdcst.	700B	40-20	42			4	6-Pin DIN	0.5	W	295.00	Lavalier; for mike line level, MES5VN(C).	
MCE10.1	Hyper Card.	Electret Condenser	Brass	Brdcst.	200	40-20	42			10	Phone	0.5	WS	395.00	Lavalier.	
(Continued)	MCE10.9	Hyper Card.	Electret Condenser	Brass	Brdcst.		42			10	None	0.5	W	250.00	As above; for wireless systems.	

# T H E B A S I C S



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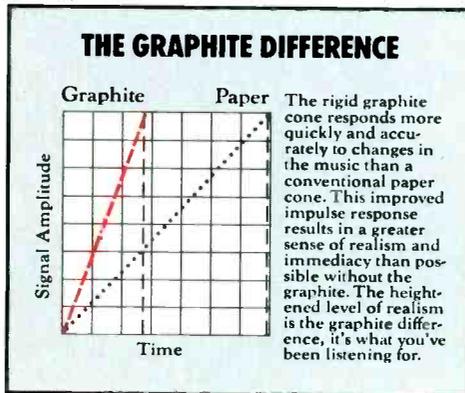
It's that section of your volume control where most car speakers begin to lose their composure. And some come completely unglued. We call it Phase Linear territory—and for good reason.



Once you reach a certain volume level, the cones of ordinary car speakers start to "break up," causing distortion of your music (a generally unpleasant experience). It's a situation that can make you want to avoid the upper reaches of your car stereo system at all costs. Fortunately, Phase Linear has a simple (yet sophisticated) solution.

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tion. A speaker so rich and responsive, so true to the original source material that we might have copied the design ourselves—if we hadn't invented it!

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We know that many of today's top-of-the-line car systems possess incredible amounts of power. So we build speakers with an appetite for wattage that's *equally* enormous! Right here in the U.S.A. Our 6" x 9" speaker, for example, delivers 250 watts of peak power handling. And other Phase Linear speakers have comparably high ratings. Add to that mix polycarbonate midranges, ferrofluid-filled tweeters and long-throw woofers—and you've got all the power-handling ability you'll ever need.



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Phase Linear carries this high level of excellence right down to our sleek and handsome appearance, too. No matter what kind of car you drive, our equipment will look, fit and sound top-notch. And we have models that can upgrade the sound of any dashboard, door or deck, too!

So, before you decide to travel with a pair of ordinary car speakers, climb up to Phase Linear territory. You'll discover music like you've never heard it before.

At any level.

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# MICROPHONES

MANUFACTURER	Model	Directional Pattern Plus Channels: Stereo = 2, Quad = 4, MS = M-S	Operating Principle	Case Material	Most Common Use	Actual Impedance, Balanced = $\Omega$	Operating Range, Hz to kHz	Open-Circuit Sensitivity, 1 kHz, -dB, re: 1 Volt, 1 $\mu$ bar	Mike Connector Type	Cable Length, Feet	Connector Type on End of Cable	Weight, Ounces	Wind Screen = W, Output Switch = S, Switched Low or Proximity Filter = F	Price, \$	Notes	
BEYERDYNAMIC (Continued)	MCE10.11	Hyper Card.	Electret Condenser	Brass	Brdcst.	200B	40-20	42		10	A3M	0.5	WS	395.00	Lavalier; battery or phantom powered.	
	MPC40	Hemi.	Condenser	Brass	Reinf.	1k	25-20			10	3-Pin	3	S	295.00	Includes MES40VN(C).1 power supply. Includes CV750 preamp. Battery or phantom powered. As above.	
	MPS40.02	Hemi.	Condenser	Brass	Reinf.	150B	25-20			10	3-Pin	3	S	539.00		
	MPC50	Hemi.	Condenser	Dak	Reinf.	200B	20-20		A3M			3	F	795.00		
MPC60/1	Hemi.	Condenser	Dak	Reinf.	200B	20-20		A3M			26	S	695.00			
	MPC60/3	Half Card.	Condenser	Dak	Reinf.	200B	20-20		A3M			26	S	895.00	995.00	
CARVIN	CM90E	Card.	Condenser	Alum.	Studio	250B	30-20		XLR	20	XLR			139.00	Battery or phantom powered.	
	CM67	Card.	Dynamic	Alum.	Instr. Vocal	250B	40-15		XLR	20	XLR			99.00		
	CM68	Card.	Dynamic	Alum.	Instr. Vocal	250B	40-15		XLR	20	XLR			99.00		
CROWN INTERNATIONAL	PZM-6FS	Hemi.	Electret Condenser	Alum.	Record	240	20-15	67		15	XLR	5	W	349.00	Pressure Zone Mike.	
	PZM-6R	Hemi.	Electret Condenser	Alum.	Record	240	20-15	65		15	XLR	5	W	349.00	As above.	
	PZM-30FS	Hemi.	Electret Condenser	Alum.	Record	240	20-15	67	XLR			6½	W	349.00	As above.	
	PZM-30R	Hemi.	Electret Condenser	Alum.	Record	240	20-15	65	XLR			6½	W	349.00	As above.	
	PZM-20RG	Hemi.	Electret Condenser	Alum.	Conf.	240	20-15	65	Screw			8		319.00	As above.	
	PZM-180	Hemi.	Electret Condenser	Plastic	Record	150	50-18	70	XLR			2	W	189.00	As above.	
	Sound Grabber	Hemi.	Electret Condenser	Plastic	Conf.	1.6k	50-15	55		8	Mini/Phone	2	W	99.00	As above.	
	CM-310	Diff. Card.	Electret Condenser	Alum./Steel	Stage/Vocal	200	60-17	77	XLR			7	W	259.00	High gain before feedback.	
	CM-200	Card.	Electret Condenser	Alum./Steel	Stage/Vocal	200	80-15	73	XLR			7	W	259.00		
	CM-100	Dmni	Electret Condenser	Alum./Steel	Vocal/Stage	240	20-20	72	XLR			8	W	189.00	Pressure Zone Mike.	
	PCC-160	Half Super Card.	Electret Condenser	Steel	Stage	150	50-18	53	Swcft. TA3M	15	XLR	11½	WF	275.00	Boundary mike.	
	GLM-200/D	Hyper Card.	Electret Condenser	PVC/Steel	News	100	100-18	68.5		5	XLR	1¼		429.00	Dual lavalier.	
	GLM-100/D	Dmni	Electret Condenser	PVC/Steel	News	240	50-18	73.5		5	XLR	1¼		379.00	As above.	
	GLM-200	Hyper Card.	Electret Condenser	PVC/Steel	P.A./Record	100	60-20	69		8	XLR	1	W	229.00	Miniature.	
	GLM-100	Dmni	Electret Condenser	PVC/Steel	P.A./Record	240	20-20	71.5		8	XLR	1	W	199.00	As above.	
	GLM-200/EQ	Dmni	Electret Condenser	Steel	PVC	400	100-18	75		4	None	1	W	119.00	Lavalier; for wireless transmitter. As above.	
	GLM-100/E	Dmni	Electret Condenser	PVC												
GLM-100/ENG	Dmni	Electret Condenser	PVC/Steel	ENG	240	80-20	71.5		5	XLR	1	W	239.00	Lavalier.		
LM-200	Super Card.	Electret Condenser	Steel		100	80-15	68		8	Screw	10¼	W	289.00	†Lectern.		
ELECTRO-VOICE	N/D 757	Super Card.	Dynamic	Steel & Alum.	Vocal	150B	25-22	50†	A3M			7.7	WF	297.00	†0 dB = 1 mW/Pa.	
	N/D 457	Hyper Card.	Dynamic	Steel & Alum.	Vocal	150B	25-21	50†	A3M			7.1	W	222.00		
	N/D 357	Super Card.	Dynamic	Steel & Alum.	Vocal	150B	25-20	53†	A3M			7.1	W	174.00		
	N/D 257	Card.	Dynamic	Steel & Alum.	Vocal	150B	35-19	53†	A3M			7.1	W	126.00		
	N/D 408	Super Card.	Dynamic	Steel & Alum.	Instr.	150B	30-22	50†	A3M			6.7	W	228.00	Positionable yoke mount.	
	N/D 308	Card.	Dynamic	Steel & Alum.	Instr.	150B	40-20	53†	A3M			6.7	W	186.00	As above.	
	RE20	Card.	Dynamic	Steel	Music/Vocal	50B/150B/250B	40-18	57†	A3M	15	None	26	WF	545.00	Variable-D.	
	RE18	Super Card.	Dynamic	Steel	Music/Vocal	150B	80-15	57†	A3M	15	None	8	W	308.00	As above; integral shock mount.	
	RE16	Super Card.	Dynamic	Steel	Vocal	150B	80-15	56†	A3M	15	None	8	W	296.00	Variable-D.	
	RE15	Super Card.	Dynamic	Steel	Vocal	150B	80-15	56†	A3M	15	None	6	W	286.00	As above.	
	RE11	Super Card.	Dynamic	Steel	Vocal	150B	90-13	56†	A3M	15	None	6	W	201.00	As above.	
	RE10	Super Card.	Dynamic	Steel	Vocal	150B	90-13	56†	A3M	15	None	6	W	189.00	As above.	
	RE98	Dmni	Condenser	Brass & Alum.	Music/Vocal	150B	80-15	45†		10	A3M	††	W	218.00	††0.7 ounce for capsule only. Battery or phantom powered.	
	RE50	Dmni	Dynamic	Alum.	Vocal	150B	80-13	55†	A3M	15	None	9.5	W	165.00	Integral shock mount.	
	RE55	Dmni	Dynamic	Steel	Music/Vocal	150B	40-20	57†	A3M	15	None	8.5	W	274.00		
	RE45N/D	Hyper Card.	Dynamic	Alum.	ENG	60B	150-15	50†	A3M	15	None	7.5	WF	375.00	Short shotgun.	
	DS35	Card.	Dynamic	Steel	Music/Vocal	150B	60-17	60†	A3M	15	None	9.2	W	176.00	Integral shock mount.	
DD54	Dmni	Dynamic	Steel	Music/Vocal	150B	50-18	58†	A3M	15	None	6.5	W	164.00			
DD56	Dmni	Dynamic	Steel & Alum.	Music/Vocal	150B	80-18	61†	A3M	15	None	6.5	W	137.00	As above; with longer handle, Model DD56L, \$156.00.		
CD15P	Dmni	Condenser	Steel	Music/Vocal	150B	20-18	49†	A3M	15	None	7.5	W	315.00			
CD90	Dmni	Condenser	Brass & Alum.	Music/Vocal	150B	40-15	57†	Threaded	6	None	0.7	W	159.00	Lavalier; battery powered.		
PL80	Super Card.	Dynamic	Zinc & Alum.	Vocal	150B	60-17	56†	A3M	0	None	12.3	W	219.00			
(Continued)	PL88H	Card.	Dynamic	Zinc	Vocal	25k, B	60-13	57†	A3M	0	None	10.4	WS	95.00		



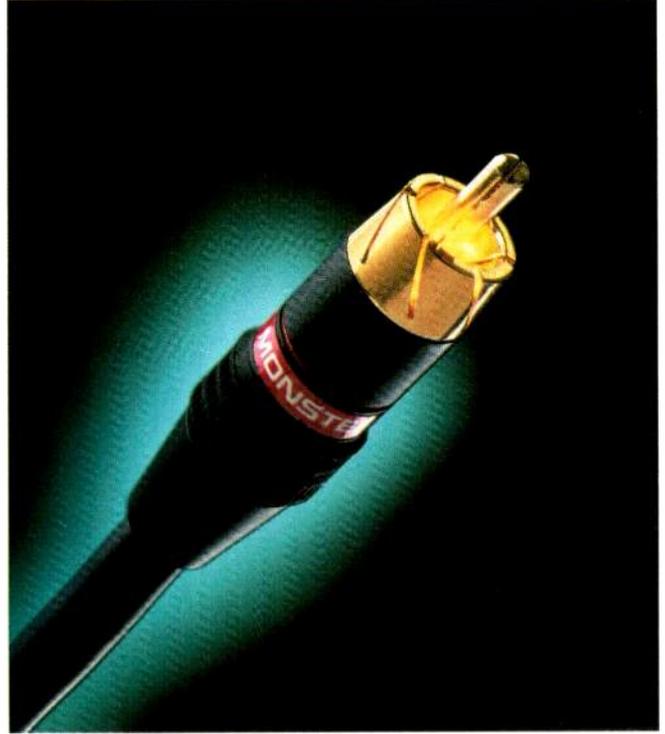


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# MICROPHONES

MANUFACTURER	Model	Directional Pattern Plus Channels: Stereo = X, Quad = X4, M-S = M-S	Operating Principle	Case Material	Most Common Use	Actual Impedance, 1 kHz, Ohms: Balanced = B	Operating Range, 1 kHz, Ohms:	Open Circuit Sensitivity, 1 kHz, -dB, re. 1 Volt 1 u-bar	Mike Connector Type	Cable Length, Feet	Connector Type on Equipment End of Cable	Weight, Ounces	Wind Screen = W, On or Switch = S, Switched Low or Proximity Filter = F	Price, \$	Notes
NEUMANN	KM83	Omni	Condenser	Brass		200B	40-20	†	A3M		3	W	435.00	†7 mV/Pa. (1 Pa = 94 dB SPL.)	
	KM84	Card.	Condenser	Brass		200B	40-20	†	A3M		3	W	435.00	†10 mV/Pa.	
	KM85	Card.	Condenser	Brass		200B	40-20	†	A3M		3	W	435.00	†9 mV/Pa.	
	KMS84	Card.	Condenser	Brass	Vocal/ Perf. Studio	150B	40-18	†	A3M	25	A3M	7½	WF	1140.00	†5 mV/Pa.
	U87A	Omni/Card./ Figure 8	Condenser	Brass	Studio	200B	40-16	†	A3M	25	A3M	17½	WF	1875.00	†20 mV/Pa.
	U89	5-Pattern	Condenser	Brass	Studio	150B	40-18	†	A3M	25	A3M	14	WF	1700.00	†8 mV/Pa.
	TLM170	5-Pattern	Condenser	Brass	Studio	100B	40-18	†	A3M	25	A3M	22	WF	1750.00	†8 mV/Pa.
	KUB1	Binaural	Condenser	Rubber		150B	40-16	†	A3M	25	A3M	95		3990.00	†10 mV/Pa. "Dummy" head included.
	KMF4	Card.	Condenser	Brass	Film/ Brdcst.	150B	40-20	†	A3M	25	A3M	¾	W	925.00	†12 mV/Pa.
	KMR81	Lobe	Condenser	Brass	Film/ Brdcst.	150B	40-18	†	A3M	25	A3M	5	WF	975.00	†18 mV/Pa. Short shotgun.
	KMR82	Lobe	Condenser	Brass	Film/ Brdcst.	150B	40-20	†	A3M	25	A3M	8¾	WF	1080.00	†21 mV/Pa. Shotgun.
	RSM190	M-S	Condenser	Brass	Film/ Brdcst.	50B	40-18	†	Spez.	16½	A3M	10½	W	2445.00	†23 mV/Pa. Stereo shotgun, mono compatible.
	SM69fet	M-S/X-Y	Condenser	Brass	Concert Hall	200B	40-16	†	Spez.	33	A3M	16½		3840.00	†19 mV/Pa.
USM69	M-S/X-Y	Condenser	Brass	Studio	150B	40-16	†	A5M	25	A3M	18		3490.00	†10 mV/Pa.	
PASO SOUND	M-800M	Card.	Dynamic	Zinc	Vocal/ Instr.	250B	40-18		Swcft. A3M	15	Opt.	28	W	160.00	Hand-held.
	M-701M	Card.	Dynamic	Zinc	Vocal/ Instr.	250B	40-15		Swcft. A3M	15	Opt.	28	WS	134.00	As above.
	M-601M	Card.	Dynamic	Zinc	Vocal/ Instr.	250B	50-15		Swcft. A3M	15	Opt.	23	WS	104.00	As above.
	M-501M	Card.	Dynamic	Zinc	Vocal	250B	50-15		Attached	15	Opt.	23	WS	84.00	As above.
	M-27	Omni	Electret Condenser	Alum.	Vocal	250B	50-15		Attached	6	3-Pin Mini	3		110.00	Tie-clasp lavalier.
PIONEER	DM-61										14½		130.00		
	DM-51										11		100.00		
	DM-21										13		30.00		
REALISTIC	Highball Super Omni- directional Dual Pattern	x2		Alum. Alum.	P.A. Vocal		80-15 50-15			16 16	Phone Phone		WSF WSF	58.00 45.00	
				Alum.	Large Group	600	30-15			10	Mini		WSF	39.00	Normal or wide pattern.
SCHOEPS SCHALLTECHNIK	CMC 52U	Omni	Condenser	Nickel	Orch. Studio	35B	20-20		XLR-3M		¾		930.00	†For digital sampling.	
	CMC 54U	Card.	Condenser	Nickel	Studio	35B	40-20		XLR-3M		¾		890.00		
	CMC 521U	Sub Card.	Condenser	Nickel	Studio	35B	30-20		XLR-3M		¾		950.00		
	CMC 541U	Hyper Card.	Condenser	Nickel	Film TV	35B	40-20		XLR-3M		¾		1040.00		
	CMC 55U	Card./Omni	Condenser	Nickel	†	35B	40-20		XLR-3M		¾		1210.00		
	CMC 56U	Card./Omni/ Figure 8	Condenser	Nickel	Studio	35B	40-16		XLR-3M		¾		1520.00		
	CMC 58U	Figure 8	Condenser	Nickel	M-S	35B	40-16		XLR-3M		¾		1130.00		
	BLM 53	Boundary Layer	Condenser	Alum.	Concert	35B	20-20		XLR-3M		25		1160.00		
CMH 541CU	Hyper Card.	Condenser	Nickel	Vocal	35B	80-20		XLR-3M		7		1215.00			
SENNHEISER	MD 518	Card.	Dynamic	Black Nickel	Stage/ Vocal	200B	50-15	†	A3M	0			219.00	†1.3 mV/Pa.	
	MD 409	Card.	Dynamic		Perc.	200B	50-15	†	A3M	0	6½		269.00	†1.2 mV/Pa.	
	MD 421	Card.	Dynamic	Plastic	Perc.	200B	30-17	†	A3M	0	13¾	F	399.00	†2 mV/Pa.	
	MD 431	Super Card.	Dynamic	Alum.	Stage/ Vocal	200B	40-16	†	A3M	0	8¾	S	429.00	†1.4 mV/Pa.	
	MD 441	Super Card.	Dynamic	Nckl./ Vinyl	Record	200B	30-20	†	A3M	0	16	F	559.00	†1.8 mV/Pa.	
	MKH 20	Omni	R.F. Condenser	Black Nickel	Record	150B	20-20	†	A3M	0	3½	F	925.00	†25 mV/Pa.	
	MKH 30	Figure 8	R.F. Condenser	Black Nickel	Record	150B	40-20	†	A3M	0	4	F	989.00	†As above.	
	MKH 40	Card.	R.F. Condenser	Black Nickel	Record	150B	40-20	†	A3M	0	3½	F	925.00	†As above.	
	MKE 48	Card.	Electret Condenser		Stage/ Vocal	150B	40-20	†	A3M	0	1		399.00	†5 mV/Pa.	
	ME 20/K3U	Omni	Electret Condenser	Nickel	Film/ Video	130B	50-15	†	A3M	0	4¾	SF	322.00	†3 mV/Pa.	
	ME 40/K3U	Card.	Electret Condenser	Nickel	Film/ Video	130B	50-15	†	A3M	0	4¾	SF	375.00	†As above.	
	ME 80/K3U	Shotgun	Electret Condenser	Nickel	Film/ Video	130B	50-15	†	A3M	0	5¾	SF	449.00	†5 mV/Pa.	
	VHF 2H	Super Card.	R.F. Condenser	Black Nickel	Stage/ Vocal	200B	40-20		A3M	0	9¼	F	3330.00	Hand-held; wireless.	
	VHF 2B	Omni	R.F. Condenser	Black Alum.	Reinf.	200B	20-20		A3M	0	7	F	3905.00	Lavalier; wireless.	
	UHF 2H	Super Card.	R.F. Condenser	Black Nickel	Stage/ Vocal	200B	40-20		A3M	0	9¼	F	6430.00	Hand-held; wireless.	
	UHF 2B	Omni	R.F. Condenser	Black Alum.	Reinf.	200B	20-20		A3M	0	7	F	7105.00	Lavalier; wireless.	
	MKE 4032	Super Card.	Electret Condenser	Black Nickel	Stage/ Vocal	140B	70-20	†	A3M	0	7½	F	595.00	†5 mV/Pa.	
	MKE 2/K3U	Omni	Electret Condenser	Black Plastic	Reinf.	130B	20-20	†	A3M	10	A3M	¼	SF	409.00	†As above. Lavalier.





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# MICROPHONES

MANUFACTURER	Model	Directional Pattern Plus Channels: Stereo = X2, Quad = X4, M/S = M-S	Operating Principle	Case Material	Most Common Use	Actual Impedance: Balanced = Ω	Operating Range: Hz to KHz	Open-Circuit Sensitivity: 1 KHz, -dB, re: 1 Volt/1 μbar	Mike Connector Type	Cable Length, Feet	Connector Type on Equipment End of Cable	Weight, Ounces	Wind Screen = W, On Off Switch = S, Switched Low or Priority Filter = F	Price, \$	Notes
SHURE	SM7	Card.	Dynamic	Alum. & Steel	Vocal/Record	150B	40-16	79.0	A3M		27	F	542.00	Four-way response switching.	
	SM11	Omni	Dynamic	Alum.	Vocal	200B	50-15	85.0	4	A3M	0.28		98.00	Lavalier.	
	SM17	Omni	Dynamic	Alum.	Strings	200B	50-15	84.5	10	A3M	0.28		103.00	Includes multiple instrument mounts.	
	SM18	Hemi. Card.	Dynamic	Foam & Plastic	Vocal	180B	150-10	73.0	9	A3M	3.9		92.00		
	SM48	Card.	Dynamic	Die-Cast	Vocal	270B	55-14	77.5	A3M		13.1		126.00		
	SM57-CN	Card.	Dynamic	Die-Cast	Instr.	310B	40-15	75.5	A3M	25	A3M	10		156.00	
	SM57-LC	Card.	Dynamic	Die-Cast	Instr.	310B	40-15	75.5	A3M		10		134.00		
	SM58-CN	Card.	Dynamic	Die-Cast	Vocal	310B	50-15	75.5	A3M	25	A3M	10.5		196.00	
	SM58-LC	Card.	Dynamic	Die-Cast	Vocal	310B	50-15	75.5	A3M		10.5		173.00		
	SM59	Card.	Dynamic	Zinc & Steel	Vocal/Instr.	150B	50-15	83.0	A3M		7.6		199.00		
	SM61	Omni	Dynamic	Alum.	Voice	175B	50-14	82.0	A3M		5.2		128.75		
	SM62	Card.	Dynamic	Alum. & Steel	Voice	180B	100-10	82.0	A3M		4		144.25		
	SM63	Omni	Dynamic	Alum.	Speech	270B	50-20	76.0	A3M		3.5		120.00		
	SM63L	Omni	Dynamic	Alum.	Speech	270B	50-20	76.0	A3M		4.3	W	140.00		
	SM77EB	Card.	Dynamic	Alum.	Instr.	250B	50-15	79.0	A3M		6		111.00		
	SM78EB	Card.	Dynamic	Alum.	Vocal	250B	50-15	79.0	A3M		7.2		136.25		
	SM80	Omni	Condenser	Steel	Instr./Studio	85B	20-20	65	A3M		8	WF	367.00	Switchable -10 dB pad.	
	SM81	Card.	Condenser	Steel	Studio	85B	20-20	65	A3M		8	WF	367.00	As above.	
	SM82	Card.	Condenser	Steel	Remote Brcdst.	250B	40-15	23	A3M		14.4	W	392.00	Line level; includes limiter; battery or phantom powered.	
	SM83	Omni	Condenser	Brass	Vocal	90B	80-20	69.0		10/10	A3M	1.58	W	217.00	Lavalier, includes preamp; battery or phantom powered.
	SM84	Super Card.	Condenser	Brass	Vocal	90B	80-20	72.0		10/10	A3M	1.58	W	300.00	As above.
	SM85	Card.	Condenser	Alum.	Vocal	85B	50-15	74	A3M		6.3		275.00		
	SM87	Super Card.	Condenser	Alum.	Vocal	85B	50-18	74	A3M		6.3		329.00		
	SM89	Hyper Card.	Condenser	Alum.		100B	60-20	53	A3M		6.9	WS	900.00	Shotgun.	
	SM90	Omni	Condenser	Die-Cast & Steel	†	90B	20-20	66.0	Tiny QG	25	A3M	9.9	F	300.00	†Surface mount. Boundary mike, includes preamp; battery or phantom powered.
	SM91	Hemi. Card.	Condenser	Die-Cast & Steel	†	90B	20-20	69.0	Tiny QG	25	A3M	9.3	F	300.00	All as above.
	SM94	Card.	Condenser	Steel & Brass	Instr.	200B	40-16	69	A3M		8.8		250.00	Optimized for sampling.	
	SM96	Card.	Condenser	Steel & Alum.	Vocal	200B	70-16	74	A3M		9.2		250.00		
	SM98	Card.	Condenser	Brass	Instr.	90B	40-20	80.0	Tiny QG	15	A3M	0.4	WF	250.00	Optional A98SPM super-cardioid pattern modifier.
	SM99	Super Card.	Condenser	Steel & Brass	Podium	90B	80-20	73.0	A3M		5.8	W	240.00	Gooseneck miniature.	
	Prologue 8L	Card.	Dynamic	Die-Cast	Home Record	600	80-10	76.5	Attached	15	Mini	9.7	S	53.75	Includes phone adaptor.
	Prologue 10H	Card.	Dynamic	Die-Cast	Home Record	Hi-Z	80-10	59.5	A3M		9.1	S	46.75		
	Prologue 10L	Card.	Dynamic	Die-Cast	Home Record	600B	80-10	76.5	A3M		9.1	S	41.25		
	Prologue 12H	Card.	Dynamic	Die-Cast	Home Record	Hi-Z	80-10	59.5	A3M		9.7	S	62.75		
	Prologue 12L	Card.	Dynamic	Die-Cast	Home Record	600B	80-10	76.5	A3M		9.7	S	57.25		
	Prologue 14H	Card.	Dynamic	Die-Cast	Home Record		40-13	59.5	A3M		10	S	75.50		
	Prologue 14L	Card.	Dynamic	Die-Cast	Home Record	600B	40-13	76.5	A3M		10	S	70.00		
	Prologue 16L	Card.	Condenser	Alum.	Instr./Record	600B	50-15	69.5	A3M		4.7	S	113.50		
	515SB-G18	Card.	Dynamic	Die-Cast	Voice	170B	80-13	82.0		4	None	29	S	66.75	18-inch gooseneck.
	515SD	Card.	Dynamic	Die-Cast	Voice/Music	170B/Hi-Z	80-13	†	A3M		9	S	47.25	†At lo-Z, -82.5 dB; at hi-Z, -59.0 dB.	
	520D	Omni	Contrld. Magnetic	Die-Cast	Harmonica	160B/Hi-Z	100-5	†		20	None	22		96.00	†As above but -73.0 and -56.0 dB. "Green Bullet."
	545D	Card.	Dynamic	Die-Cast	Voice/Instr.	275B/Hi-Z	50-15	†	A3M		9	S	106.50	†As above but -78.0 and -55.0 dB.	
	545L	Card.	Dynamic	Die-Cast	Voice	250B	50-15	77.5		20	None	12.5		109.75	Lavalier.
	545SD-LC	Card.	Dynamic	Die-Cast	Instr.	275B/Hi-Z	50-15	†	A3M		9	S	109.50	†At lo-Z, -78.0 dB; at hi-Z, -55.0 dB.	
	545SD-CN	Card.	Dynamic	Die-Cast	Instr.	275B/Hi-Z	50-15	†	A3M	20	A3M	9	S	131.25	†As above.
	565D	Card.	Dynamic	Die-Cast	Vocal	250B/Hi-Z	50-15	†	A3M		10.5	S	118.50	†As above but -76.0 and -54.0 dB.	
	565SD-LC	Card.	Dynamic	Die-Cast	Vocal	250B/Hi-Z	50-15	†	A3M		10.5	S	121.50	†As above.	
	565SD-CN	Card.	Dynamic	Die-Cast	Vocal	250B/Hi-Z	50-15	†	A3M	20	A3M	10.5	S	143.25	†As above.
	570S	Omni	Dynamic	Steel	Voice	180B	50-12	81.5		30	None	4	S	145.25	Lavalier.
	575SB	Omni	Dynamic	Alloy	Vocal	200	40-15	79.0		7	None	5	S	51.00	As above.
579SB	Omni	Dynamic	Alum.	Vocal	200B	50-14	78.5	A3M		5.5	S	86.00	Lockable switchplate.		
587SB	Card.	Dynamic	Die-Cast	Vocal	270B	55-14	77.5	A3M		13.1	S	94.50	As above.		

(Continued)

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AUDIO (0888)

# MICROPHONES

MANUFACTURER	Model	Directional Pattern Plus Channels: Stereo = x2, Omni = x4, M-S = M-S	Operating Principle	Case Material	Most Common Use	Actual Impedance, Ω	Operating Range, kHz, Omnis:	Open-Circuit Sensitivity, 1 kHz, -dB, re: 1 Volt/1 μbar	Mike Connector Type	Cable Length, Feet	Connector Type on Equipment End of Cable	Weight, Ounces	Price, \$	Notes	
SHURE (Continued)	588SD	Card.	Dynamic	Die-Cast	Vocal	180B/Hi-Z	80-13	†	A3M		10	S	57.75	†At lo-Z, -82.0 dB; at hi-Z, -59.5 dB. As above.	
	809	Omni	Condenser	Die-Cast & Steel	†	600B	50-20	68.0	Tiny QG	25/10	A3M	9.9	200.00	†Surface mount. Boundary effect; includes preamp. All as above.	
	819	Hemi. Card.	Condenser	Die-Cast & Steel	†	600B	60-20	71.0	Tiny QG	25/10	A3M	9.3	200.00		
	839	Omni	Condenser	Brass	Vocal	600B	80-20	70.0		5/10	A3M	0.21	127.00	Lavalier; battery or phantom powered. Powering as above.	
	849	Card.	Condenser	Steel & Alum.	Instr.	600B	40-16	70.0	A3M			8.8	S	168.00	
	869	Card.	Condenser	Steel & Alum.	Vocal	600B	70-16	76.0	A3M			9.2	S	168.00	Battery or phantom powered.
	PE10D	Card.	Dynamic	Zinc	Instr.	Lo/Hi-Z	80-13	†	A3M			11	S	68.00	†At lo-Z, -82.5 dB; at hi-Z, -59.0 dB.
	PE15D	Card.	Dynamic	Zinc	Vocal	Lo/Hi-Z	80-13	†	A3M			12	S	88.00	†As above but -82.0 and -59.5 dB.
	PE65L	Card.	Dynamic	Zinc	Instr.	150B	50-15	77.5	A3M			9	S	136.00	
	PE66L	Card.	Dynamic	Zinc	Instr.	150B	40-15	75.5	A3M			9	S	136.00	
	PE85L	Card.	Dynamic	Zinc	Vocal	150B	50-15	77.5	A3M			10.5	S	156.00	
	PE86L	Card.	Dynamic	Zinc	Vocal	150B	50-15	75.5	A3M			10.5	S	156.00	
	W15HT/58	Card.	Dynamic	Alloy	Vocal		50-15					14.5	S	750.00	Wireless; available as diversity or non-diversity system.
W15HT/87	Super Card.	Condenser	Alloy	Vocal		50-18					8.5	S	900.00	As above.	
WL83	Omni	Condenser	Brass	Vocal	1.2k	50-16	65.5		4	4-Pin Mini	0.21	W	165.00	As above; lavalier.	
WL84	Super Card.	Condenser	Brass	Vocal	1.2k	50-16	68		4	4-Pin Mini	0.21	W	190.00	As above.	
WM98	Card.	Condenser	Brass	Instr.	1.2k	40-20	74.0		2.7	4-Pin Mini	0.4	W	165.00	Wireless; available as diversity or non-diversity system.	
SIGNET	RK101	Card.	Dynamic	Metal	Vocal/Instr.	600	50-14.5	60	Attached	13	Phone	14	S	69.95	
	RK201	Card.	Electret Condenser	Metal	Vocal/Instr.	600	45-17.5	52	Attached	16½	Phone	6½	S	99.95	
SOUND-CRAFTSMEN	SAM-II	Omni	Electret Condenser	Alum.	†	600	20-15.5	††		15	Phone	3½		69.00	†Real-time analyzer. ††65 dBm.
SPEIBEN	SF-12	Fig. 8 x2	Ribbon	Iron		200B	30-15	77	5-Pin Neutrik	18	(2)XLR	12		850.00	
TECHNICS	RP-V340	Card.	Dynamic	Alum.	Vocal/Music/General		100-10					9	W	50.00	
	RP-V370	Card.	Dynamic	Alum.			40-12					12	W	70.00	
TECT	LEM-1	Omni	Electret Condenser	Alum.	Vocal	2.2k	80-12	66	Attached	10		3	W	49.00	Lavalier.
	UEM-81C	Card.	Electret Condenser	Alum. Alloy	Vocal/Instr.	600B	50-18	62	XLR	20	XLR	4½	WSF	119.00	
	UEM-81S	Super Card.	Electret Condenser	Alum. Alloy	Vocal	600B	30-20	65	XLR	20	XLR	8½	WSF	325.00	A V shotgun.
	UEM-801	Card.	Electret Condenser	Alum.	Vocal/Instr.	1k	50-18	64	XLR	20	Phone	4	WS	119.00	For multi-track.
	UEM-621	Card.	Electret Condenser	Alum.	Vocal/Instr.	1k, B	40-20	65	XLR			4½	WS	189.00	Battery or phantom powered.
	UEM-83R	Super Card.	Electret Condenser	Alum.	Vocal/Instr.	600	50-16	64	Attached	1	Mini/Phone	8	W	119.00	For A V.
	UEM-311	Card. x2	Electret Condenser	Alum.	Vocal/Instr.	1k	40-20	64	Attached	20	Phone	9	WS	119.00	Dne-point stereo.
	UEM-312	Card. x2	Electret Condenser	Plastic	Vocal/Instr.	1k	40-20	64	Attached	20	Phone	6	WS	55.00	As above.
	UEM-320	Card. x2	Electret Condenser	Alum.	Vocal/Instr.	1.7k	80-20	64	Attached	2	Stereo Mini	4	W	129.00	For Walkman or camera.
	UEM-85	Super Card.	Electret Condenser	Alum.	Video	2k	50-15	58	Attached	1	Mini	3	W	65.00	
	UEM-87	Super Card.	Electret Condenser	Alum.	Video	2k	50-15	62	Attached	1	Mini	3	W	65.00	
UEM-88	Super Card.	Electret Condenser	Plastic	†	2k	200-15	64	Attached			4	WS	89.00	†For bird watching. Includes earphones and camera mount for binoculars.	

# A Benchmark Improved.

The STAX SR-Lambda Professional earspeaker system is an anomaly on today's novelty-chasing audio scene. Instantly acclaimed upon its introduction six years ago, its preeminence has never been challenged — except by STAX itself. Everyone has conceded the Lambda Pro benchmark status. Its successor, then, offers the rare opportunity to witness a benchmark improved.

Remarkable as the Lambda Pro's performance seems, the new SR-Lambda Signature (so named because president Naotake Hayashi originally designed it for his personal use) improves on it in important respects. The transducing diaphragms have been reduced by one-third, to one micron in thickness; this means that they can reproduce the leading and trailing edges of each waveform even more accurately. And when musical tones are not allowed to blur into the spaces between them, previously unheard details — even entire instrumental lines — assert themselves.

Obviously the Signature could not reach new heights without a standard-setting amplifier. The SRM-T1 can be driven from a preamp, or directly by any line-level source. Its two stages combine dual FET's and twin 6FQ7/6CG7 triode output tubes, uniting virtues once considered incompatible — transient speed with depth of image, low-end weight with treble naturalness.

The SRD-7 Pro energizing adaptor attracts two distinct groups — the practical and the utterly uncompromising. First, it attaches to the output of a power amplifier, permitting Signature operation with whatever equipment you now own. And if your commitment to the most sophisticated (and costly) preamps and amps has advanced beyond the theoretical, you may prefer driving the Signature in this manner.

For convenient listening, a five-meter extension cord, the SRE-Signature, is also available; it is constructed of the same PC-OCC cable used in the earspeaker's manufacture.

Citing the best STAX earspeakers' reputation as unrivaled instruments for unmasking the subtleties in recorded sound is justified. Consider the music you know best. The Lambda Signature will help you to enjoy it truly — to hear it for the first time.



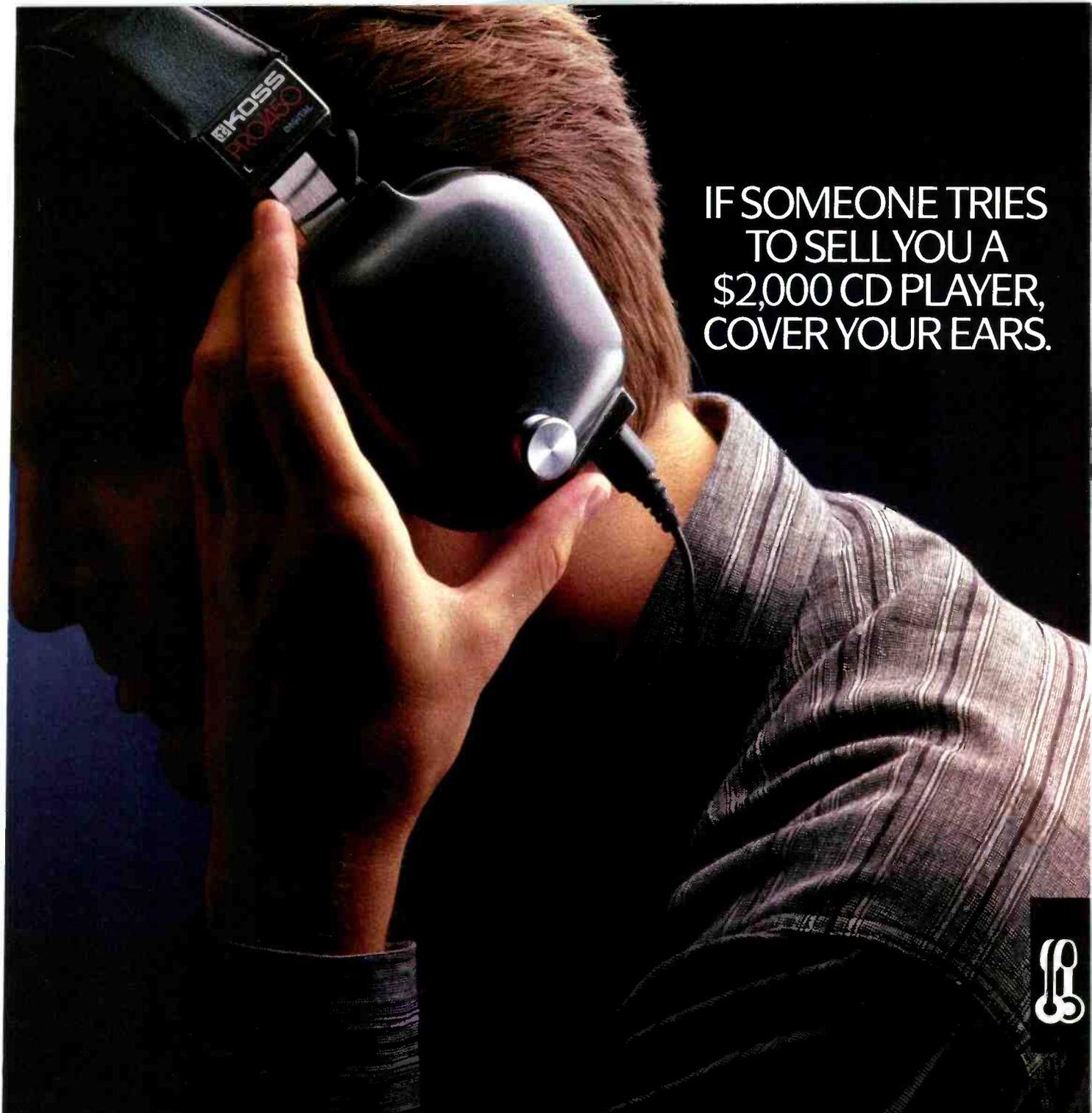
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# HEADPHONES

MANUFACTURER	Model	Operating Principle	Frequency Range, Hz to kHz	Impedance - Ohms	Sensitivity, dB SPL for 1 mW Input	Maximum Input, mV	THD at 95 db SPL, %	Cord Length, Feet	Cord Style: Flat = F, Coiled = C	Plug Type: 3.5-mm Mini = M, 1/8" Phone = P, Adaptor Incl. = A	Individual Volume Controls?	Construction: Supra-Aural = S, Open-Air Design = O	Headband: No (Flat) = N, Adjustable = A, Folding = F, N.	Cover Material on Ear Cup	Weight, Ounces	Price, \$	Notes
AKG	K-2	Dynamic	30-18	200	92	6.3V	0.9	8	F	M/A	No	S	A	Plastic	3.2	45.00	
	K-45	Dynamic	30-18	200	92.5	6.3V	0.9	10	F	P	No	S	A	Plastic	4.5	60.00	
	K-130	Dynamic	20-20	200	93.5	9V	0.7	9	F	P	No	S	A	Plastic	4.4	70.00	
	K-135S	Dynamic	25-18	150	92	8.9V	0.7	10	F	P	No	S	A	Plastic	5.6	80.00	
	K-141S	Dynamic	20-20	600	97.5	11V	0.5	10	F	P	No	S	A	Metal & Plastic	6.9	85.00	
	K-145S	ES Dyn.	20-24	200	89	8.9V	0.5	10	F	P	No	S	A	Metal & Plastic	6	110.00	
	K-240M	Dynamic	15-20	600	88	11V	0.3	10	F	P	No	C	A	Metal & Plastic	8.5	120.00	
	K-240DF	Dynamic	15-20	600	88	11V	0.3	8.5	F	P	No	C	A	Metal & Plastic	8.5	150.00	
	K-260	Dynamic	10-20	600	88	11V	0.2	10	F	P	No	C	A	Plastic	9.2	170.00	
	K-340	ES Dyn.	15-25	400	88	10V	0.1	10	C	P	No	C	A	Metal & Plastic	13.5	235.00	
	K-280	Dynamic	20-20	75	94	4V	0.2	10	F	P	No	C	A	Metal & Plastic	9.6	195.00	
	K-55	Dynamic	25-18	150	92	5.5V	0.9	10	F	M/P	No	S	A	Metal & Plastic	3.2	50.00	
K-21TV	Dynamic	25-17.5	150	92	5.5V	0.9	20	F	M/P	No	S	A	Metal & Plastic	3.2	60.00		
K-270	Dynamic	20-20	75	92	4V	0.2	10	F	P	Yes	C	A	Metal & Plastic	9.6			
AUDIO-TECHNICA	AP1200	Dynamic	20-20	42	95	150mW		6	F	M/A	No	O	A	Foam	3.4	39.95	
	AP1300	Dynamic	20-20	38	110	150mW		10	F	P	No	S	A	Vinyl	5	49.95	
	AP1400	Dynamic	20-20	42	104	150mW		10	F	P	No	S	A	Cloth	5.4	59.95	
AZDEN	DM90	Dynamic	4-26	32	105	800		10	F	M/A	No	S	A	Vinyl		100.00	
	DSR50	Dynamic	15-24	40	101	200		8	F	M/A	No	S	A	Cloth		80.00	
	DSR18	Dynamic	15-22	60	103	200		10	C	M/A	No	S	A	Plastic		70.00	
	DSR12	Dynamic	20-20	200	105	100		8	F	P	No	S	A	Cloth		60.00	
	DSR48	Dynamic	15-24	40	97	100		8	F	M/A	No	O	A	Foam		70.00	
	DSR42	Dynamic	20-20	50	102	100		7	F	M	No	S	A	Plastic	4	40.00	
	OSR88	Dynamic	18-22	16	104	100		3	F	M/A	No	S	N	Foam		50.00	
BANG & OLUFSEN	Form 1	Dynamic	20-20	35	94			10	C	M/A	No	O	A	Foam	6	120.00	
	Form 2	Dynamic	40-20	30	94			10	F	M/A	No	O	A	Foam	2 1/2	60.00	
BEYERDYNAMIC	DT 48A	Dynamic	16-20	5		1V		10	F		No	S	A	Rubber	14	320.00	
	DT 48K	Dynamic	16-20	†		4.4V		10	F	P	No	C	A	Vinyl	14	300.00	†Available with 8, 25, or 200 ohms.
	DT 48WK	Dynamic	16-20	‡		4.4V		5	C	P	No	C	A	Vinyl	14	315.00	
	DT 96AK	Dynamic	30-17	50		12V		10	F	P	No	C	A	Vinyl	4 1/2	140.00	
	DT 96AWK	Dynamic	3-17	50		12V		5	C	P	No	C	A	Vinyl	4 1/2	150.00	
	DT 100K	Dynamic	30-20	††		20V		10	F	P	No	C	A	Vinyl	12 1/2	165.00	††Available with 8, 50, 100, 200, 400, 600, or 800 ohms or with 2 or 6 kilohms.
	DT 100WK	Dynamic	30-20	††		20V		5	C	P	No	C	A	Vinyl	12 1/2	172.00	
	DT 102K	Dynamic	30-20	††		20V		10	F	P	No	C	A	Vinyl	9	115.00	
	DT 102WK	Dynamic	30-20	††		20V		5	C	P	No	C	A	Vinyl	9	122.00	
	DT 880	Dynamic	5-25	600	94	7.75V	0.5	8	C	P	No	C/D	A	Soft	7	159.00	
	DT 880ST	Dynamic	5-35	600	94	7.75V	0.5	8	C	P	No	C/O	A	Vinyl	7	219.00	
	DT 990	Dynamic	5-35	600	96	7.75V	0.5	8	C	P	No	C/O	A	Terry Fabric	8	199.00	Equalized to the diffuse sound field. As above.
	DT 770	Dynamic	5-35	600	96	7.75V	0.5	8	C	P	No	C	A	Soft	9	179.00	
	DT 550	Dynamic	10-22	600	95	7.75V	1.0	8	C	P	No	C/O	A	Soft	7	139.00	
DT 220	Dynamic	20-20	400	102	6.4V	1	8	C	P	No	C	A	Soft	9	129.00		
DT 330MKII	Dynamic	15-18	40	85	2V	1	8	F	M/A	No	C/O	A	Soft	7	89.00		
DT 320MKII	Dynamic	20-20	40	88	7.75V	1	6	F	M/A	No	C/O	A	Soft	4	75.00		
DT 325	Dynamic	20-20	40	88	7.75V	1	3	F	M/A	No	C/O	A	Vinyl Foam	4	65.00		
DENON	AH-D6	Dynamic	10-25	32	100	300mW		8	F	M/P/A	No	O	A	Foam	4.2	100.00	
	AH-D4	Dynamic	15-25	32	98	300mW		8	F	M/P/A	No	O	A	Foam	4.2	80.00	
	AH-D3	Dynamic	17-22	40	100	200mW		8	F	M/P/A	No	D	A	Foam	3	60.00	
	AH-D1	Dynamic	20-22	40	103	200mW		8	F	M/P/A	No	D	A	Foam	2.6	50.00	
FDSTEX	T10	Ribbon	20-25	50	91	200mW		12	F	P	No	C	A	Vinyl		65.00	
	T20	Ribbon	20-30	50	96	200mW		12	F	P	No	C	A	Vinyl		89.00	
GC-THORSEN	90-102	Dynamic	30-18	8	90	2V		10	F	M/P	No	C	A	Vinyl	12	15.99	
	90-115	Dynamic	20-20	32	95	1.3V		3 1/2	F	M/P	No	O	N	Foam	0.17	7.89	
	90-125	Dynamic	20-20	32	98	2.0V		6	F	M/P	No	O	A	Plastic	1.13	11.79	
	90-130	Dynamic	50-18	32	90	2.0V		6	F	M/P	No	D	A	Foam	1.7	5.29	
	90-135	Dynamic	20-20	32	98	2.0V		6	F	M/P	No	O	A	Foam	1.7	7.99	
	90-150	Dynamic	20-25	100	100	5.5V		6	F	M/P	No	C	A	Leather	4.6	26.99	
JECKLIN	JJ One	Dynamic	35-20	200				10	F	P	No	O	F	Plastic	14	99.00	
	JJ Two	Dynamic	30-20	200				10	F	P	No	O	F	Plastic	14	169.00	
	ESC	ES	20-20	4 1/6				10	F	P	No	O	F	Plastic	21	650.00	
JVC	HASU7	Dynamic	20-18	40	100	100mW		16.4	F	M/P/A	No	S	A	Vinyl	6	90.00	
	HAD990	Dynamic	5-27	65	106	100mW		9.8	F	P	No	C	A	Vinyl	8.5	149.95	
	HAD770	Dynamic	5-25	16	100	100mW		9.8	F	P	No	S	A	Vinyl	7.4	119.95	
	HAD550	Dynamic	5-25	32	97	100mW		9.8	F	P	No	S	A	Vinyl	4.2	44.95	
	HAD330	Dynamic	20-20	32	97	100mW		9.8	F	P	No	O	A	Foam	4.4	34.95	
	HAD110	Dynamic	20-20	32	97	100mW		9.8	F	P	No	O	A	Foam	2.7	24.95	
	HAC05	Dynamic	15-22	32	102	100mW		9.8	F	M/P/A	No	O	A	Foam	2.1	40.00	



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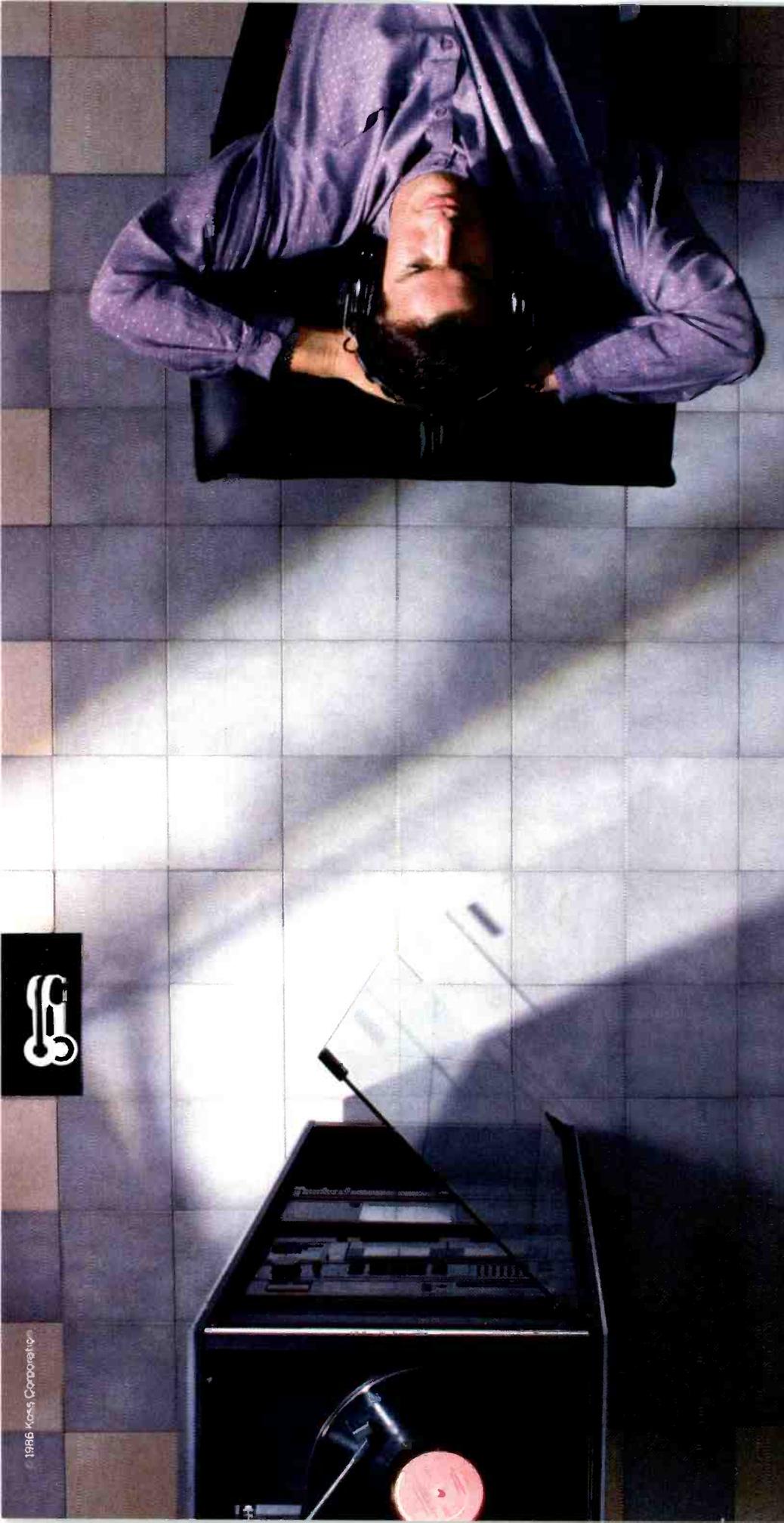


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The new Koss Pro/450™ Stereophones deliver ultra-smooth, distortion-free sound and provide an excellent way of determining whether a high-priced audio component is really worth its high-price. It's all possible thanks to Koss' new dual-element design. Each earcup contains a neodymium element for crisp mids and highs, plus a low-frequency poly-driver for extraordinary bass response. Everything else about the Pro/450 is first-class, too. From the oxygen-

free copper wiring and two detachable cords, to the unique earcup spider assembly and genuine leather headband that make it as comfortable to wear as it is to listen to. So if high-end sound is what you're after, audition the new flagship of our professional stereophone line. You'll find that the Koss Pro/450 has the high-end covered. • 4129 N. Port Washington Road, Milwaukee, WI 53212. Koss Limited: Burlington, Ontario. Koss Europe: Stabio-Switzerland. For more information call 1-800-USA-KOSS. **KOSS®** stereophones



Still don't see it? That's the whole idea behind Koss' revolutionary infrared stereophone system. The Koss Kordless™ Stereophone. Now, you can enjoy all the benefits of stereophone listening with no strings attached. And while the cord may be missing, the great Sound of Koss isn't. The Kordless system is so advanced it provides a full 20-20KHz frequency response at less than 1% distortion. Plus enough signal to fill a large room. Yet it's as easy to use as conventional stereophones. Just plug the Kordless transmitter into virtually any receiver or amplifier and turn it

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on. Roam around the room listening to a record. Dance to a CD. Enjoy stereo or mono TV broadcasts and videos in bed. Or whatever else moves you. Sound impressive? You bet it does. And the best way to appreciate this major advance in technology is to visit your nearest Koss Kordless™ Stereophone dealer. One listen, and you'll never sit still for ordinary headphones again.

• Koss Stereophones, 4129 N. Port Washington Rd., Milwaukee, WI 53212. Koss Limited, 4112 S. Service Rd., Burlington, Ontario L7L4X5. Koss-Europe: CH-6855, Stabio-Switzerland.

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# HEADPHONES

MANUFACTURER	Model	Operating Principle	Frequency Range, Hz to kHz	Impedance, Ohms	Sensitivity, dB SPL for 1 mW Input	Maximum Input, mW	THD at 95 dB SPL, %	Cord Length, Feet	Cord Style: Flat = F, Coiled = C	Plug Type: 3.5-mm Min = M, 1/4" Phone = P, Adapter Incl. = A	Individual Volume Controls?	Circumference, C, Range-Max = S, General Design = G	Headband Nose Pads in Ear? = N, Adjustable = A, Folding = F	Cover Material on Ear Cup	Weight, Ounces	Price, \$	Notes	
KOSS	SS110	Dynamic	10-30	67	96.5		0.20†	10	C	P	No	C	A	Vinyl	7	119.95	†At 100 dB.  Infrared, cordless.	
	SS17	Dynamic	15-30	60	94.5		0.20†	10	C	P	Yes	S/O	A	Vinyl	5	69.95		
	SS16	Dynamic	15-20	60	91.5		0.20†	10	C	P	Yes	S/O	A	Foam	4.5	59.95		
	SS15	Dynamic	20-20	60	93.5		0.20†	10	F	P	No	S	A	Vinyl	3	41.95		
	SS14	Dynamic	20-20	35	94		0.55†	10	F	P	No	S/O	A	Foam	2	31.95		
	Porta Pro	Dynamic	15-25	60	97		0.2†	6	F	M/A	No	S/O	A F	Foam	2.3	49.95		
	Porta Pro Jr.	Dynamic	15-25	60	97		0.20†	6	F	M/A	No	S/O	A F	Foam	2.3	39.95		
	JCK 200	Dynamic	20-20					0				Yes	C	A	Vinyl	10		159.95
	Pro/450	Dynamic	10-30	100	102		0.5†	25	C	P	No	C	A	Vinyl	15	174.95		
	Pro/4AA	Dynamic	10-22	230	94		0.5†	10	C	P	No	C	A	Vinyl	22	99.95		
	Pro 4X Plus	Dynamic	10-40	100	102		0.5†	10	C	P	No	C	A	Vinyl	8.3	90.00		
	Pro 4AAA Plus	Dynamic	10-22	100	102		0.75†	10	C	P	No	C	A	Vinyl	13	70.00		
	HV1A Plus	Dynamic	15-35	140	95		0.75†	10	C	P	No	S	A	Foam	9.3	49.95		
	K40LC Plus	Dynamic	10-22	100	104		1.0†	10	C	P	Yes	C	A	Vinyl	6.7	39.95		
	K 6X Plus	Dynamic	10-22	100	104		1.0†	10	C	P	No	C	A	Vinyl	6.3	31.95		
	KPL4	Dynamic	18-20	100	92		0.75†	8	F	M/A	No	S/D	A	Foam	3.5	24.99		
	KPL3	Dynamic	20-17	35	92		0.75†	6.6	F	M/A	Yes	S	A	Foam	3	19.99		
	KPL2	Dynamic	20-17	35	92		0.75†	6.6	F	M/A	No	S	A	Foam	2.5	14.99		
	KPL1	Dynamic	40-12	35	96		1.25†	3.5	F	M/A	No	S	A	Foam	2.5	9.99		
	KFF/300	Dynamic	20-20	35	90		1.0†	4	F	M/A	Yes	S/O	A	Foam	3	19.99		
	KFF/200	Dynamic	20-20	35	90		1.0†	4	F	M/A	No	S/O	A	Foam	2.5	15.99		
	KFF/100	Dynamic	40-16	35	92		1.5†	4	F	M/A	No	S/O	A	Foam	2	9.99		
	KMP/800	Dynamic	20-20	32	102		1†	3	F	M/A	No	D	N/A	Foam	0.75	19.99		
	KMP/600	Dynamic	20-20	32	100		1†	3	F	M/A	No	D	N/A	Foam	0.75	14.99		
KMP/400	Dynamic	20-20	32	100		1†	3	F	M/A	No	D	N	Foam	0.5	11.99			
MB QUART ELECTRONICS	QuartPhone 15	Dynamic	20-20	100	98	100mW		10	F	P/A		C	A	Vinyl	2			
	QuartPhone 30	Dynamic	10-22	240	94	100mW		10	F	P		C	A	Vinyl	8 1/2			
	QuartPhone 50	Dynamic	10-22	240	96	100mW		10	C	P		C	A	Vinyl	8 3/4			
	QuartPhone 70	Dynamic	5-22	240	96	100mW		10	C	P		C	A	Vinyl	8 3/4			
	QuartPhone 85	Dynamic	10-22	600	92	100mW		10	C	P		D	A	Vinyl, Foam	9 7/8			
MEMOREX	SL-40	Dynamic	50-60	32	80	50		3 3/4	F	M/A	No	C	A	Foam	1 1/2	4.99		
	SL-60	Dynamic	50-18	32	92	100		3 3/4	F	M/A	No	C	A	Foam	1 3/4	9.99		
	SL-90	Dynamic	20-20	32	100	100		4	F	M/A	No	C	A	Foam	2	14.99		
	SL-88	Dynamic	20-20	16	106	30		3 3/4	F	M/A	No	C	N	Foam	1	14.99		
	SL-92	Dynamic	20-20	16	103	30		3 3/4	F	M/A	No	C	N	Plastic	1 1/2	19.99		
	SL-98	Dynamic	100-20	17	103	4		3 3/4	F	M/A	No	C	N	Plastic	1	19.99		
	DL-100	Dynamic	18-22	32	102	100		5	F	M/A	No	C	C	Foam	2	24.99		
DL-102	Dynamic	18-25	28	106	50		4	F	M/A	No	C	C	Foam	1 7/8	49.99			
NADY SYSTEMS	IR-230	Dynamic	50-15						M/A	Yes	S	A	Plastic	7.1	199.00	Infrared, cordless headset.		
NAKAMICHI	SP-7	Dynamic	20-20	45	100			10	F	P	No	O	A	Foam		80.00		
ONKYO	OP-L2X							10	F	P/A	Yes	O	A		1.37	44.00		
	OP-L1X							10	F	P/A	No	O	A		1.12	40.00		
ORA ELECTRONICS	Studio Spec GH16RP		20-22	32	105	40mW		4	F	M	No	C	N	Foam	0.4	4.99		
	Studio Spec GHT100		12-24	32	105	40mW		4	F	M	No	C	N	Foam	0.4	9.99		
	Studio Spec GH111		40-20	32				4	F	P	No	C	A	Foam	1.5	5.99		
PANASONIC	EAH-X250	Dynamic	2-30	550	106	1V		9.9	F	P	No	C	A	Plastic	10.5	189.95	Two-way rotation; LC-OFC wire.	
	EAH-X80	Dynamic	8-30	450	105	500		9.9	F	M/A	No	C	A	Plastic	3.9	50.00	Wire as above.	
	EAH-X120	Dynamic	8-33	450	107	1V		9.9	F	M/A	No	C	A	Plastic	5.4	100.00	Wire as above.	
EAH-X150	Dynamic	5-35	630	107	1V		9.9	F	M/A	No	C	A	Plastic	5.6	120.00	Wire as above.		
PICKERING	CD-6	Dynamic	20-20	72	110	100mW	0.5†	7 1/2	F	M/P	No	O	A	Foam	3	98.00	†At 110 dB. †At 105 dB. †At 112 dB. †At 105 dB. †At 105 dB. Mono/stereo switch. †At 100 dB. †At 100 dB.	
	CD-4	Dynamic	20-20	32	105	100mW	0.5†	7 1/2	F	P	No	O	A	Vinyl	3	66.00		
	CD-2	Dynamic	20-20	32	112	100mW	0.5†	7	F	P	No	O	A	Vinyl	5	50.00		
	CD-1	Dynamic	20-20	32	105	100mW	0.5†	7	F	M/A	No	O	A	Foam	2.5	35.00		
	F108	Dynamic	20-20	18	105	50mW	0.5†	5	F	P/A	Yes	O	N	Foam	0.5	45.00		
	F104	Dynamic	20-20	32	98	50mW	0.5†	4	F	P	No	O	A	Foam	0.5	30.00		
	F102	Dynamic	20-20	32	92	50mW	0.5†	5	F	P/A	No	O	A	Foam	1.1	25.00		
	OA-99P	Dynamic	20-20	18	105	50mW	0.5	5	F	M/P	No	O	N	Foam	1.1	30.00		
	OA-88	Dynamic	20-20	32	98	50mW	0.5	4	F	M	No	D	A	Foam	0.5	25.00		
	OA-66P	Dynamic	20-20	32	92	100mW	0.5	5	F	M/P	No	D	A	Foam	1.1	15.00		
	PC2 + 2	Dynamic	10-25	35	106	50mW		4	F	M/P	No	O	N	Foam	0.60	60.00		
	PC100	Dynamic	20-18	35	100	50mW		4	F	M/P	No	O	N	Foam	0.25	20.00		
	PIONEER	SE-M90		3-50	32		1W		16 1/2	F	A		C	A		9		125.00
SE-M70			3-50	32		1W		16 1/2	F	A		C	A		9	100.00		
SE-M50			3-50	32		1W		16 1/2	F	A		C	A		8 1/8	70.00		
SE-50D			3-50	32		1W		8 1/8	F	A		O	A		3 1/4	70.00		
SE-30D			10-25	40		100mW		8 1/8	F	A		O	A		2 1/2	35.00		
SE-205			20-20	10		500mW		8 1/8	F	P		O	A		1	45.00		
REALISTIC	Pro 60		15-30				0.5	10	C	P	No		A	Plastic		50.00		
	Nova 55		20-20					10	C	P	No		A	Plastic		30.00		
RECOTON	ST60-2	Dynamic	20-20	38	98	300mW		4	F	M	No	S	N	Foam	0.53	8.99		
	ST108	Dynamic	20-20	32	90	400mW		3	F	M	No	S	N	Foam		9.99		
	ST82	Dynamic	20-20	32	90	100mW		3	F	A	No	O	A	Foam	1.41	6.99		
	ST93	Dynamic	20-20	32	98	300mW		5	F	A	No	O	A F	Foam		12.99		

# HEADPHONES

MANUFACTURER	Model	Operating Principle	Frequency Range, Hz to KHz	Impedance, Ohms	Sensitivity, dB SPL for 1 mW Input	Maximum Input, mW	THD at 95 dB SPL, %	Cord Length, Feet	Cord Style: Flat = F, Coiled = C	Plug Type: 3.5 mm Mini = M, 1/4" Phone = P, Adaptor = A	Individual Volume Controls?	Chromatized = C, Super-Natural = S, Open-Air = O, Headphone = H	Cover Material on Ear Cup	Weight, Ounces	Price, \$	Notes	
RECOTON (Continued)	ST103	Dynamic	30-20	32	98	100mW		4	F	A	No	O	A	Foam	0.97	14.99	
	ST105	Dynamic	20-20	32	100	300mW		4	F	A	No	O	A	Foam	1.5	22.99	
	ST97	Dynamic	20-20	32	100	300mW		6	F	A	No	C	A	Foam		37.99	
	ST101	Dynamic	20-20	32	98	100mW		6	F	A	Yes	O	A	Foam	1.25	22.99	
	ST102	Dynamic	50-20	32	109	300mW		4	F	A	No	S	A	Plastic	0.53	20.99	
	ST100	Dynamic	20-20	38	98	300mW		4	F	M	No	S	N	Foam	0.53	20.99	
	ST104	Dynamic	20-22	32	98	100mW		25	F	A	Yes	O	A	Foam	1.5	26.99	
	ST107	Dynamic	20-23	40	102	300mW		6	F	A	No	C	A	Foam	3.88	39.99	
SENNHEISER	HD 30	Dynamic	30-17	32	96		1.3	4	F	M/P/A	No	O	A	Foam	1.5	39.00	
	PD 100	Dynamic	20-18	42	94		1.0	4	F	M/P/A	No	O	A	Foam	1.4	59.00	
	HD 50	Dynamic	20-20	42	94		1.0	4	F	M/P/A	No	O	A	Foam	1.4	79.00	
	HD 450	Dynamic	20-20	70	94		1.0	10	F	M/P/A	No	O	A	Foam	4.8	79.00	
	HD 480	Dynamic	18-22	70	94		1.0	10	F	M/P/A	No	O	A	Foam	4.8	99.00	
	HD 430	Dynamic	16-20	600	94		0.5	10	F	P	No	O	A	Foam/Vinyl	6.8	159.00	
	HD 540	Dynamic	16-25	600	94		0.4	10	F	P	No	O	A	Foam/Vinyl	8.8	199.00	
	HD 250	Dynamic	10-25	600	94		0.2	10	F	P	No	C	A	Foam/Vinyl	8.8	199.00	
	SI/HDI 234	Dynamic	20-20				1			Yes	C	A	Foam/Vinyl	13.5	570.00	Infrared, wireless.	
	SI/HDI 2	Dynamic	30-12				1			Yes		N	Latex/Foam	2.8	338.00		
SIGNET	EP100	Dynamic	20-20	32	105			6	F	M/P/A	No	O	A	Cloth	1.7	35.00	
	EP300	Dynamic	20-22	40	112			10	F	P	No	S	A	Cloth	6	75.00	
	EP400	Dynamic	20-22	40	100			10	F	P	No	S	A	Cloth	7.4	100.00	
	EP500	Dynamic	20-22	32	100			10	F	P	No	C	A	Vinyl	7.2	125.00	
	EP700	Dynamic	20-23	32	100			10	F	P	No	C	A	Cloth	7.4	150.00	
	TK44	ES	10-25		98		0.3†	10½	F	P	No	C	A	Vinyl	7.9	300.00	†At 110 dB.
SONY	MDR-CD6	Dynamic	2-25	45	110	100mW		10	F	M/P	No	S	A	Foam	3½	119.95	
	MDR-M66	Dynamic	15-25	45	104	100mW		10	F	M/P	No	S	A	Foam	4¼	94.95	
	MDR-M33A	Dynamic	15-24	25	102	100mW		10	F	M/P	No	O	A	Foam	1½	59.95	
	MDR-V6A	Dynamic	5-30	63	106	300mW		8	C	M/P	No	C	A	Foam	8½	99.95	
	MDR-V4	Dynamic	5-25	63	106	100mW		8	C	M/P	No	C	A	Foam	5¼	79.95	
	MDR-S505	Dynamic	15-24	25	104	400mW			F	M/P	Yes	C	A	Foam	2½	69.95	
	MDR-S303	Dynamic	15-22	25	104	400mW			F	M/P	No	C	A	Foam	1½	49.95	
	MDR-E484	Dynamic	10-30	13.5	108	100mW		3¼	F	M/P	No	O	N	Foam	¼	79.95	
	MDR-E464	Dynamic	10-25	13.5	104	300mW		3¼	F	M/P	No	O	O	Foam	¼	39.95	
	MDR-A60	Dynamic	10-25	18	108	300mW		4	F	M/P	No	O	N	Plastic	¼	69.95	
STANTON	SRS-265	Dynamic	5-22	100	96	100mW	0.5	10	F	P	No						
	SRS-245	Dynamic	10-22	100	94	100mW	0.5	10	F	P	No						
	SRS-225	Dynamic	10-22	100	94	100mW	0.5	10	F	P	No						
	SRS-215	Dynamic	20-20	50	98	100mW	0.5	10	F	M/P	No						
	ST-Pro	Dynamic	20-20	100	100	250mW	0.25	7	F	P	No						
	ST-4	Dynamic	20-20	60	96	250mW	0.25	7	F	P	No						
	ST-3	Dynamic	20-20	32	112	100mW	0.5	7.5	F	M/P	No						
	ST-2	Dynamic	20-20	32	100	100mW	0.5	7.5	F	M/P	No						
	ST-1	Dynamic	25-20	32	110	100mW	0.5	7.5	F	M/P	No						
	LS-Turbo	Dynamic	20-20	32	105			5	F	M	No						
	LS-2	Dynamic	20-20	32	100			5	F	M	No						
	LS-1	Dynamic	20-20	32	92			5	F	M	No						
	30M/SR	Dynamic	20-22	100	110	250mW	0.25	10	C	P	No						
35M/HB	Dynamic	20-22	100	110	250mW	0.25	12	C	P	No							
STAX	SR-34	ES	20-25	8	95		0.02	7	F	A	No	C/O	A	Vinyl	8	159.95	Includes Model SRD-4 adaptor.
	SR-84	ES	20-25	8	95		0.02	7	F	A	No	C/O	A	Vinyl	7.5	229.95	As above.
	SR-5NB	ES	15-25	8	97		0.05	7	F	A	No	C/O	A	Vinyl	13	299.95	Includes Model SRD-6sb adaptor.
	SR-Gamma	ES	10-35	8	97		0.05	7	F	A	No	C/O	A	Vinyl	7.5	399.95	As above.
	SR-Lambda	ES	8-35	8	102		0.05	7	F	A	No	C/O	A	Vinyl	15.1	499.95	As above.
	SR-Lambda Pro #1	ES	8-35	8	108		0.005	7	F	A	No	C/O	A	Vinyl	15.1	749.95	Includes Model SRD-7 Pro adaptor.
	SR-Lambda Pro #2	ES	8-35	12.5k	108		0.005	7	F	A	Yes	C/O	A	Vinyl	15.1	799.95	Includes Model SRD-P portable adaptor.
	SR-Lambda Pro #3	ES	8-35	50k	108		0.005	7	F	A	Yes	C/O	A	Vinyl	15.1	1199.95	Includes Model SRM-1Mk2 Pro Class-A amp.
Signature	ES	8-35	50k	108		0.001	7	F	A	Yes	C/O	A	Vinyl	15.2	1899.95	Includes Model SRM-T1 tube amp.	
STERLING STEREOPHONES	Te400	Dynamic	20-30	40				10	C	P	Yes	C	A	Vinyl	8	70.00	Titanium element.
	Te200	Dynamic	20-20	40				10	C	P	Yes	O	A	Cloth	7	60.00	As above.
	Te100	Dynamic	15-18	40				10	C	P	No	C	A	Vinyl	7	50.00	As above.
TECHNICS	EAH-T6	Dynamic	20-20	40	98	100		4½	F	M/A	No	O	A	Foam	1¼	40.00	
	EAH-X15	Dynamic	15-20	40	105	400	0.01	6½	F	M/A	No	S	A	Foam		140.00	
YAMAHA	YHD-1	Orthodyn.	20-20	125	100	1W		8	F	P/A	No	O	A/F	Screen	5.9	80.00	
	YHD-2	Orthodyn.	20-20	125	97	700mW		8	F	P/A	No	O	A/F	Screen	5.5	60.00	
	YHD-3	Orthodyn.	20-20	125	98	500mW		8	F	P/A	No	O	A	Screen	5	30.00	





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# EQUALIZERS

MANUFACTURER	Model (RI) = Remote Included, (RO) = Remote Optional	Number of Channels	Number of Bands per Channel	Bandwidth, Octaves	Switched	Unity Gain EQ?	Rated Output?	THD at Rated Output, rms V	S/N, -dB, at Rated Output, %	Variable Center Frequencies?	Boost/Cut Range, ±dB	Real-Time or Spectrum Analyzer?	Test Generator? (Yes/No) P, W, Wave Tone = w	With Calibrated Meters?	Number of Tapes	Number of Memories	Subsonic Filter?	Video Inputs?	Price, \$	Notes	
ACCUPHASE	G-18	2	33	1/3	No	No	2	0.002	110	No	No	No	No	No	0	0	No	No	3850.00	Balanced input and output; constant Q.	
AOC	SS-117EX	2	10	1	Yes	Yes	5	0.1	95	No	Yes	15	Yes	Yes	Yes	4	2	No	250.00	Includes spatial expander. With remote and auto room/speaker EQ, Model SS-525X, \$600.00.	
	SS-412X	2	10	1	Yes	Yes	5	0.1	95	No	Yes	15	Yes	Yes	Yes	2	2	Yes	430.00		
	SS-425X	2	12	1, 2/3	Yes	Yes	5	0.1	95	No	Yes	12	Yes	Yes	Yes	2	2	Yes	500.00		
AUDIO CONTROL	SS-100SL	2	10	1	Yes	Yes	5	0.1	100	No	Yes	15	Yes	No	No	1	Yes	Yes	200.00		
	SS-300SL	2	10	1	Yes	Yes	2	0.1	95	No	Yes	15	Yes	Yes	2	2	Yes	No	240.00		
	SS-325X	2	12	1, 2/3	Yes	Yes	2	0.1	95	No	Yes	12	Yes	Yes	Yes	5	2	Yes	400.00		
AUDIO CONTROL	Octave	2	10	1	Yes		7.5	0.008	118	No	No	12	No	No	0	1	Yes	No	149.00	Infinite-sweep warble generator. Stepped warble generator; 0-dB indicator. SPL display; rumble reducer. Includes 24-dB/octave crossover and bridging adaptor.	
	Octave Plus	2	10	1	Yes		7.5	0.005	120	No	No	12	No	W	Yes	0	1	Yes	239.00		
	Ten Ten Plus	2	10	1	Yes		7.5	0.005	120	No	No	15	No	W	Yes	0	1	Yes	329.00		
AUDIO CONTROL	C-101	2	10	1	Yes		7.0	0.009	116	No	No	15	Yes	P	Yes	0	1	Yes	429.00		
	Richter Scale III	2	6	1/2	Yes		8.0	0.005	120	No	No	12	Yes	W	Yes	0	1	Yes	349.00		
AUDIO DESIGN ASSOCIATES	EQ5	2	5	1 2/3	No	Yes	5	0.05	85	No	No	30	No	No	No	0	0	No	650.00	Center frequencies at 37, 109, and 675 Hz and 1.3 and 15.9 kHz; switchable bypass.	
AUDIOSOURCE	EQ Eight/II	2	10	1/3	Yes	Yes	4	0.03	80	No	No	12	Yes	No	No	0	1	Yes	159.95		
	EQ Nine	2	12	1/3	Yes	Yes	1	0.008	99.7	No	No	12	Yes	No	No	4	2	Yes	299.95		
	EQ Ten(RI)	2	12	1/3	Yes	Yes	1	0.008	99.7	No	No	12	Yes	Yes	Yes	4	2	Yes	399.95		
AZDEN	GX45	2	10		Yes	Yes	6	0.005	90	No	No	15	Yes		Yes	2			225.00		
	GX50	2	10		Yes	Yes	6	0.005	90	No	No	12	Yes			1			299.00		
	GX500	1	33	1/3	No	Yes	6	0.005	106	No	No	15		P/W	Yes	0			395.00		
BIAMP SYSTEMS	EQ 140	1	4	Var.	No	Yes	9	0.005	105	Yes	Yes	16	No	No	No	0	0	No	499.00		
	EQ 220	2	10	1	No	Yes	9	0.005	108	Yes	Yes	15	No	No	No	0	1	No	399.00		
	EQ 230	2	15	2/3	Yes	Yes	9	0.005	108	Yes	No	12	No	No	No	0	0	No	599.00		
	EQ 290	1	29	1/3	No	Yes	9	0.005	108	Yes	No	12	No	No	No	0	0	Yes	599.00		
CARVIN	EQ2029	1	29	1/3	No	Yes	8	0.008	104	No	No	15	No	No	No		Yes	No	299.00	Peak LED; ultrasonic filter; XLR and phone jacks.	
CELLO	Audio Palette	2	6	1		Yes				No	No		No	No	0	0	No	No	8900.00	Separate power supply; specs available on request.	
CERWIN-VEGA	DB-10B	2	1				2	0.025				10				1	Yes		59.95	Operates at 30 Hz with subsonic filter below 20 Hz.	
DB SYSTEMS	DB-5	2	6				4	.0008	108	Yes		15							380.00	Model DB-2A power supply or DBP-1 cable required.	
DBX	14/10	2	14	1/2, 1	Yes	No	2	0.03	103	No	No	12	Yes	(2) P	Yes	10	1	Yes	No	1300.00	Automatic room/speaker EQ with constant Q.
DENON	DE-70B	2	12	1/3	Yes	Yes	1	0.003				12				0	2		500.00	Built-in dynamic processor.	
DIMENSIA	MGE26D	2	10	1	No	No	1	0.005	104	No	No	10	Yes	No	No	0	0	No	No	249.00	
OISTECH	EQ-1	2			No	No	5	0.001	110	No	No	6	No	No	No	0	Yes	No	1000.00	Designed for B & W 801 Matrix speaker.	
ESOTERIC SOUND	Re-Equalizer	2	2	10	No	No	3.5	0.02	85	No	No	16	No	No	No	36	0	No	No	225.00	For replay of early LPs, 78s, and transcriptions.
FISHER	EQ620B	2	7		Yes	No	2	0.02	100	No	No	12	No	No	No			No	No	149.95	
FOSTEX	3030	2	10										No	No	No	0	0		No		
GEMINI SOUND PRODUCTS	EQ3000	2	10	1/3	Yes	Yes	5	0.05	85	Yes	Yes	12	Yes	No	No	0	1	No	No	219.00	
	EQ2010	2	10	1/3	Yes	Yes	3	0.5	80	Yes	Yes	12	No	No	No	0	0	No	Yes	179.00	
	EQ2001	2	10	1/3	Yes	Yes	3	0.5	80	Yes	Yes	12	No	No	No	0	0	No	Yes	139.00	
HARMAN/KARDON	EQ8	2	10	1	Yes	Yes	2	0.02	105	Yes	No	12	No	No	No	0	1	Yes	No	319.00	
HITACHI	HGE77SW	2	10	1/3	Yes	No	0.5	0.05	96	No	No	10	Yes	No	No	0	1	No	No	199.95	
JRM	Remote Unit	2	6	1	Yes	Yes	7	0.01	112	No	No	8						Yes	Yes	350.00	JRM preamp or 3BPB crossover required; continuously variable loudness.
JVC	SEAM770BK (RI)	2	7	1 1/3	Yes	Yes	1	0.008	100	No	No	12	Yes	No	No	12	1	No	No	100.00	
	SEA12BK	2	7	1 1/3	Yes	Yes	1	0.03	110	No	No	10	No	No	No	0	1	No	No	400.00	
KLARK-TEKNIK (Continued)	DN 301	1	30	1/3	No	Yes	10	0.01	112	No	No	-12	No	No	No	0	0	†	No	1050.00	†Variable bandpass filters.
	DN 300	1	30	1/3	No	Yes	10	0.01	112	No	No	-12	No	No	No	0	0	†	No	1050.00	

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# EQUALIZERS

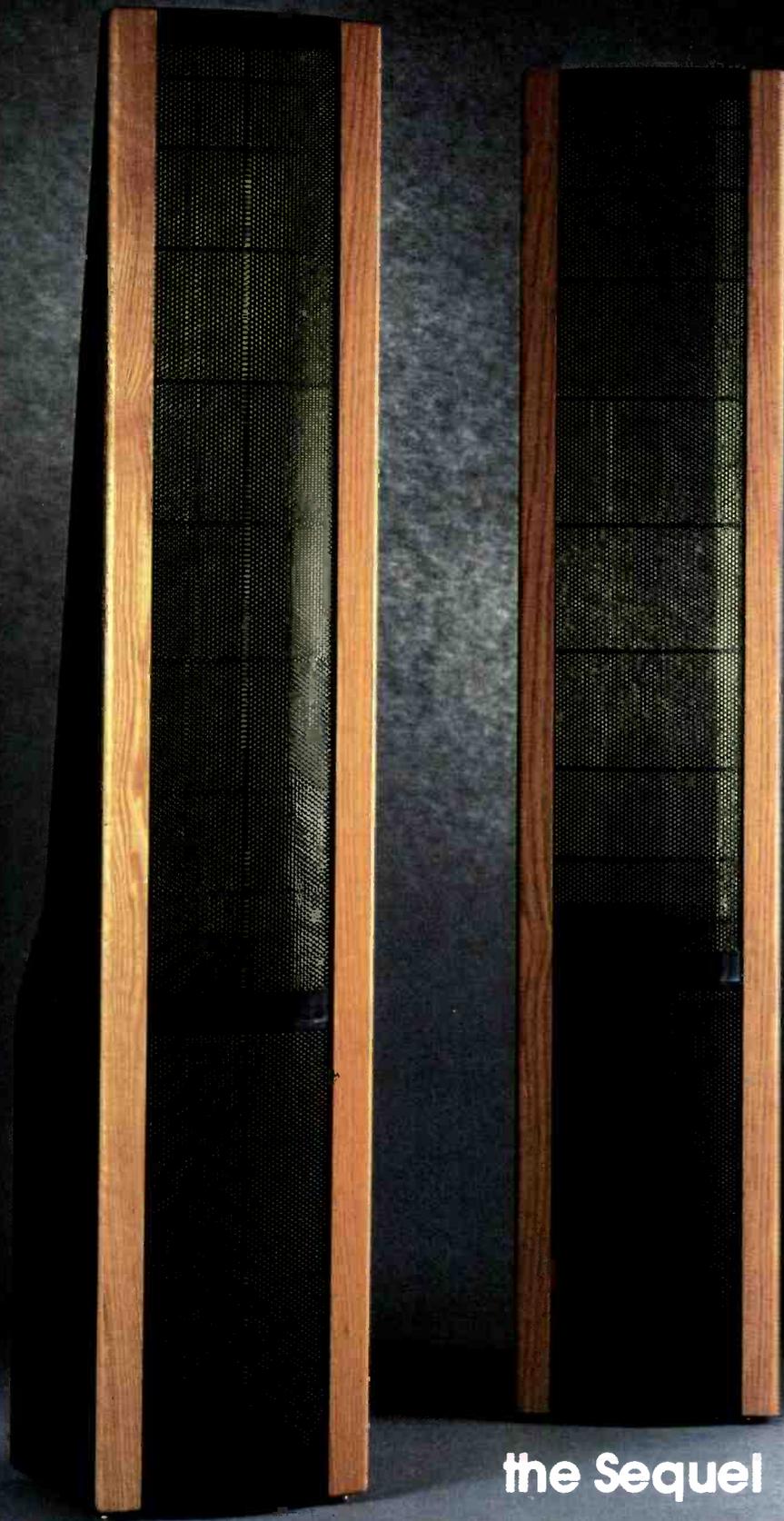
MANUFACTURER	Model (R) = Remote Included, (RO) = Remote Optional	Number of Channels	Number of Bands per Channel	Bandwidth, Octaves	Switched Tape EQ?	Unity Gain Control?	Rated Output, rms V	THD at Rated Output, %	S/N, - dB, at Rated Output, "A" Wtd.	Variable Center Frequencies?	Variable Filter "Q"?	Boost/Cut Range, ±dB	Real Time or Spectrum Analyzer?	Test Generator?	Pin Noise?	With Calibrated Meters?	Number of Memories	Subsonic Filter?	Video Inputs?	Price, \$	Notes
KLARK-TEKNIK (Continued)	DN 332	2	16	2/3	No	Yes	10	0.01	112	No	No	12	No	No	No	0	0	0	0	1095.00	
	DN 360	2	30	1/3	No	Yes	10	0.01	112	No	No	6, 12	No	No	No	0	0	0	0	1695.00	
	DN 405 Parametric	1	5	0.8-2	No	Yes	10	0.01	112	Yes	Yes	+15, -25	No	No	No	0	0	0	0	695.00	
	DN 410 Parametric	2	5	0.8-2	No	Yes	10	0.01	112	Yes	Yes	+15, -25	No	No	No	0	0	0	0	995.00	
LUXMAN	G-111	2	10	1	Yes	No	2	.0035	112	No	No	12.5	Yes	No	No	0	2	No	No	250.00	
MARANTZ	EQ 551	2	10	1	No	No		0.005	80	No	No	10	Yes	P	Yes	0	1	No	No	249.95	
	EQ 130	2	10	1	No	No		0.005	110	No	No	12	Yes	P	Yes	0	1	No	No	129.95	
McINTOSH	MQ107	2	7	1/3, 1	No	Yes	2.5	0.02	95	Yes	Yes	12, 15	No	No	No	0	0	Yes	No	650.00	
NIKKO	EQ-30	1	30	1/3	Yes	Yes	5	0.004	110	No	No	12					1	No	No	349.00	
	EQ-25	2	10	1/2	Yes	Yes	5	0.004	110	No	No	12					1	No	No	299.00	
	EQ-950	2	10	1/2	Yes	Yes	5	0.004	110	No	No	12	Yes	P	Yes		1	No	No	329.00	
	EQ-540	2	6	1/2	Yes	Yes	5	0.01	100	No	No	12					1	No	No	199.00	
ONKYO	EQ-540	2	12		Yes	Yes		0.01	100			12, 6	No	P	Yes		1			400.00	
	EQ-35	2	12		Yes	Yes		0.01	106			12, 6	No	W	No		1			330.00	
	EQ-240	2	7		Yes	No		0.01	100			12	Yes	No	No		1			240.00	
	EQ-140	2	7		Yes	No		0.01	100			12	No	No	No		1			150.00	
PAC	C.P.R EQ-1	2			No	No	10	0.01		No	No	+7						Yes		895.00	Low-frequency alignment filter for B & W 801 Matrix speaker.
PIONEER	GR-777	2	10			Yes		0.02	110				Yes			5	1			370.00	
	GR-555	2	7			Yes		0.03	104				Yes				1			225.00	
	GR-470	2	7			Yes		0.03	106								1			120.00	
PLEXUS AUDIO SYSTEMS	ABE-2	2			Yes		4	0.02	90		12					1	Yes	No	150.00	Active EQ for Plexus SWS-1 subwoofer or other speakers.	
RANE	GE30	1	30	1/3	No	Yes	.775	0.1	94	No	No	+12, -15	No	No	No	0	0	Yes	No	749.00	Switchable cut-only or boost/cut mode.
	GE27	1	27	1/3	No	Yes	.775	0.009	91	No	No	+12, -15	No	No	No	0	0	Yes	No	499.00	
	GE14	2	14	2/3	No	Yes	.775	0.009	89	No	No	+12, -15	No	No	No	0	0	Yes	No	499.00	
	ME30	1	30	1/3	No	Yes	.775	0.009	92	No	No	12, 6	No	No	No	0	0	Yes	No	359.00	
	ME15	2	15	2/3	No	Yes	.775	0.009	92	No	No	12, 6	No	No	No	0	0	Yes	No	369.00	
PE15	1	5	Var.	No	Yes	.775	0.02	92	Yes	Yes	+15, -20	No	No	No	0	0	Yes	No	399.00	Parametric EQ.	
SAE	E101	2	2	1/3	Yes	Yes	2.5	0.02	100	Yes	Yes	16	No	No	No	20	1	Yes	No	650.00	Parametric EQ.
SANSUI	SE-3000	2	10		Yes	Yes		0.008	110	No	No	12	Yes	No	No		1	No	No	290.00	
	SE-1000	2	7		Yes	Yes		0.03	75	No	No	12	No	No	No		1	No	No	90.00	
SCOTT	EQ 400	2	10	1	Yes	No		0.009		No	No	10	Yes	No	No	0	2	No	No	179.95	
SESCOM	PO-40	1	5	1/2	No	No	1	0.1	80	No	No	12	No	No	No	0	0	No	No	64.90	Requires PO-1 power supply.
SONY ES	SEQ-333ES (RI)	2	10	1/3	Yes	Yes	7.75	.0015	116	Yes	No	12	Yes	P	Yes	4	2	No	No	600.00	
SOUNDCRAFTSMEN	AE2000	2	10	1	Yes	Yes	10	0.01	114	No	No	15	Yes	P	Yes	0	1	No	No	799.00	Differential comparator system; auto-scan.
	DC4415	2	21	1/3-2/3	Yes	Yes	10	0.01	114	No	No	15	No		No	0	1	Yes	No	599.00	Differential comparator system; with test record.
	QC2215	2	10	1	Yes	Yes	10	0.01	114	No	No	15	No		No	0	1	No	No	449.00	As above.
	DC2214	2	10	1	Yes	Yes	10	0.01	106	No	No	12	No		No	0	0	No	No	299.00	As above.
SYMETRIX	SX201	1	3	.05-3.3		Yes	†	0.02	101	Yes	Yes	+15, -30					No	No	239.00	† +24 dBm into 600 ohms. Additional preamp input with 20-dB gain.	
TEAC	EQA-3	2	10	1	Yes	No		0.03	70	No	No	12	No	No	No	0	1	No	No	99.95	
	EQA-6	2	10	1	Yes	No		0.03	70	No	No	12	No	No	No	0	1	No	No	119.95	
	EQA-20	2	10	1	Yes	Yes		0.01	90	No	No	12	Yes	No	No	0	2	No	No	169.95	
	EQA-22	2	10	1	Yes	No		0.01	90	No	No	12	Yes	No	No	0	2	No	No	169.95	
	EQA-30	2	10	1	Yes	Yes		0.01	104	No	No	15	Yes	P	Yes	0	2	Yes	No	299.95	
TECHNICS	SH-8046K	2	7	1 1/3	Yes	No	1	0.003	107	No	No	12	No	No	No	4	1	No	No	400.00	
	SH-8058	2	7	1 1/3	Yes	No	1	0.003	107	No	No	12	Yes	No	No	6	1	No	No	295.00	
	SH-8038	2	7	1 1/3	Yes	No	1	0.005	107	No	No	12	No	No	No	0	1	No	No	125.00	
	SH-8065	2	33	1/3	Yes	No	1	0.002	110	No	No	3, 12	No	No	No	0	1	No	No	865.00	Switchable output, 0.15/1 V.
	SH-8066	2	12	1	Yes	No	1	0.003	107	No	No	12	Yes	P	Yes	8	2	No	No	760.00	
VECTOR RESEARCH	VQ-115	2	10	1	Yes	Yes	1	0.009	109	No	No	12	No	No	No		1	No	No	129.95	
	VQ-125	2	10	1	Yes	Yes	1	0.009	109	No	No	12	Yes	Yes	No	Opt.	2	Yes	No	249.95	
YAMAHA	EQ-1100U(RI)	2	10	1	Yes	No	1	0.006	107	No	No	12	Yes	P	Yes	†	2	Yes	Yes	599.00	† Three curves factory-set, four curves user-set. Digital, automatic room EQ.
	EQ-500U	2	10	1	Yes	Yes	1	0.005	105	No	No	12	Yes	P	Yes	0	1	Yes	No	399.00	
	EQ-32	2	10	1	Yes	Yes	1	0.005	105	No	No	12	Yes	No	No	0	1	Yes	No	299.00	
	GE-30B	2	10	1	Yes	No	1	0.005	105	No	No	12	No	No	No	0	1	No	No	169.00	
	GE-20B	2	10	1	Yes	No	1	0.005	105	No	No	12	No	No	No	0	1	No	No	149.00	



# AMBIENCE & SURROUND SOUND PROCESSORS

MANUFACTURER	Model (RI) = Remote Included (RD) = Remote Optional	UNIT TYPE					DELAY FUNCTIONS										Price, \$	Notes
		Matrix—See Code	Time Manipulation: Delay = D, Reverb = R	Other Manipulation Techniques: Equalizer = E, Phase Shifting = P, Frequency Manipulation = F, Other = O	Number and Use of Outputs—See Code	Delay Time, ms	Number of Hall/Room Simulations	Hall/Room Adjustments: Volume = V, Shape Manipulation = S	Continuous Amp Power, Watts	THD, %	S/N Ratio, "A" Wtd., -dB	Channel Separation, dB	Stereo Simulation?	Number of Tape Monitors	Video Inputs?			
ARCHER	15-1279	D/O		F/P	3F			5 x 4	1.0			Yes	2	Yes	130.00	Amp bridges to 10 watts x 2; with speakers, \$199.95.		
AUDIOSOURCE	SS One/II SS Two(RI)	D/O D/O	D D	F/P F/P	2F, 2B 2F, 2B	10-30 10-30		30 x 2 30 x 2	0.01 0.01	85 85		Yes	1	No	199.95 249.95	With two LS One speakers, \$299.95.		
OBX	CX1	DP/O	D	P/O	3F, 2B	14-33			0.01	100	80		4	Yes	2500.00	Video outputs; see also "Preamplifiers."		
DIMENSIA	MSP400(RI)	D	D		3F, 2B	Sel.		†	3	80	60	Yes	1	No	349.00	†30 watts on rear only.		
FISHER	CAV-875(RI)	D	D		2F, 2B	10-50	4	30 x 2	0.5	85		Yes	1	5	399.95	Includes two speakers.		
FOSGATE-AUDIONICS	DSM 3603 DSM 3606 Pro Plus DSM 3608 Pro Plus(RI) DSM 3610 Pro Plus(RI)	A/D/O A/D/O A/D/O A/D/O		F/P/O F/P/O F/P/O F/P/O	3F, 2B, SW 3F, 2B, SW 3F, 2B, SW 3F, 2B, SW		4 4 4 4	40 x 2 40 x 2 40 x 2	0.15 0.15 0.15 0.05	85 87 90 90	35 35 35	Yes Yes Yes Yes	1 1 1 1	No No No 4	549.00 629.00 999.00 1429.00	Logic steering. As above. As above.		
JVC	XPA1000(RI)	O	D/R	F/C	2F, 2B, 2S	0-45	40	V/S		0.005	94	Yes	1	No		Digital delay.		
KENWOOD	SS-97(RI) SS-77	D D	D/R D/R		2B	10-30 10-30		15 x 2 10 x 2					1	3	359.00 249.00			
LEXICON	CP-1(RI)	DP/O	D/R	F/P/O	3F, 2B, 2S, SW	1-120	18	V/S		0.05	85	†	Yes	1	No	1200.00	†30 to 65 dB. Reverb time, 0.32 to 14 S.	
LUXMAN	F-105(RI)	D/O	D	O	3F, 2B	10-35		25 x 2	0.05	80		Yes	2	Yes	600.00	Serves as system remote and switching center.		
MARANTZ	RV351	D	D	P	3F, 2B	15-30		22	0.25			Yes	1	No	249.95			
NEC	AV-350(RI) Renaissance AVD-700(RI) AVR-710(RI) AVR-1010(RI) AV-260(RI) AV-330(RI) Renaissance PLA-610(RI) AV-360(RI) PLD-310(RI) Renaissance PLD-910(RI)	D/O D/O D/O D/O D D DP/O D/O DP DP/O	D D D D D D D/R D/R D D/R D/R	F/P F/P F/P F/P F/P F/P F/P F/P F/P F/P	3F, 2B, SW 3F, 2B, SW 2F, 2B 2F, 2B 3F, 2B, SW 3F, 2B, SW 3F, 2B, SW 2F, 2B, SW 3F, 2B, SW 3F, 2B, SW 2S, SW	15-30 1-92 20 20 20 15-30 15-30 15-30 20 1-94		30 x 4 70 x 2, 35 x 2, 100 x 2, 50 x 2, 30 x 2 30 x 2, 15 x 2, 30 x 2 30 x 4	0.045 0.005 0.05 0.05 0.3 0.3 0.03 0.045 0.01 0.005	100 100 90 90 90 90 90 90 100 100	60 60 60 60 60 60 60 60 60 60	Yes No No No 1 Yes No Yes No No	1 1 1 1 1 1 1 1 No No	Yes Yes Yes Yes Yes Yes Yes Yes No No	579.00 729.00 699.00 899.00 349.00 499.00 599.00 649.00 449.00 999.00	Two subwoofer outputs; amp bridges to 60 watts x 2.		
OPTONICA	SM-A75(RI)	A/D/O	D/R		2F, 2B	1-92	14	V/S	35 x 2, 25 x 4	0.8	89	50	Yes	5	689.95	Three user-programmable modes; two tape monitor outputs; simulcast mode; dubbing selector.		
PIONEER	VSP-555(RI)	D/O						30 x 2	0.05	90		Yes		Yes	375.00	Dolby, stadium, and simulated surround.		
SANSUI	DS-77 RA-1000	QS	D D/R		3F 2F		3 0	10 x 3	0.09 0.025			Yes		Yes	400.00 300.00	†Mike mixing input delay, 30 to 200 mS. Reverb time, 0 to 4.5 S.		
SANYO	SAV200	D/O	D		2F, 2B	15-30		20 x 2	0.9	80		Yes		No	249.99			
SHURE HTS	HTS5300(RI) HTS5200(RI)	DP DP	D D	O O	3F, 2B, SW 3F, 2B, SW	16-36 16-36			0.1 0.1	90 90	65 65	Yes Yes	1 1	No No	1250.00 1000.00	Logic steering; digital delay. As above; digital enhancement; extra remote sensor option; with wired remote, Model HTS5000, \$749.00.		
SONY ES	SDP-777ES (RI)	DP/O	D	O	3F, 2B, SW	0.1-80	4		0.008	90		Yes	1	4	850.00	Three memory presets; S-video input and output.		
SOUND CONCEPTS	SSD550	O	D/R	F	2F, 2B	5-100			0.1	90		No	1	No	789.00	Film surround decoding.		
SSI SURROUND SOUND	System 1000 SSI 360II System 4000(RI)	D D D/O	D D D	P/O C/P P/O	3F, 2B, SW 3F, 2B, SW 3F, 2B, SW	10-30 10-30 10-30		20 45 45	0.05 0.05 0.03	85 90 95	51 51 70	Yes Yes Yes	0 1 1	No No 4	249.00 379.95 599.95	With speakers, SSI Cinema 500, \$299.00. Dubbing capability; four audio inputs. Logic steering; amp switchable for surround, center, or both.		

**OUTPUT CODE**  
 2F—Left & Right Front  
 3F—Left, Center, & Right Front  
 2B—Left & Right Back  
 3B—Left, Center, & Right Back  
 2S—Left & Right Sides  
 SW—Subwoofer



## the Sequel

MARTIN-LOGAN, LTD.  
the electrostatic loudspeaker technology

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# AMBIENCE & SURROUND SOUND PROCESSORS

MANUFACTURER	UNIT TYPE										DELAY FUNCTIONS					OUTPUT CODE 2F—Left & Right Front 3F—Left, Center, & Right Front 2B—Left & Right Back 3B—Left, Center, & Right Back 2S—Left & Right Sides SW—Subwoofer
	Model (RI) = Remote Included, (RO) = Remote Optional	Matrix—See Code	Time Manipulation: Delay = D, Reverb = R	Other Manipulation Techniques: Frequency Shaping = F, Comb Filter = C, Phase Manipulation = P, Other = O	Number and Use of Outputs—See Code	Delay Time, ms	Number of Hall/Room Simulations	Hall/Room Mix/Reverb Volume = V, Shape (Height/Width Ratio) = S	Continuous Amp Power, Watts	THD, %	S/N Ratio, "A" Wtd., -dB	Channel Separation, dB	Stereo Simulation?	Number of Tape Monitors	Video Inputs?	
SYNERGEX	ESP-7R(RI)	D			†				0.25	84	††	No	1	4	675.00	†Four front, two back, and two subwoofer outputs. ††20 to 50 dB. Logic steering; video inputs optional.
TECHNICS	SH-AV40	D/D	D/R	P	2B				0.8	90		Yes	1	3	280.00	Digital delay.
	SH-AV44	D/O	D/R	P	3F, 2B	15-30	4	20	0.3	90		Yes	1	4	350.00	
	SU-AV55(RI)	D/O	D/R	P	3F, 2B	1-50	4	25 x 2, 55 x 2, 15 x 2	0.2	90		No	1	4	950.00	
TOSHIBA	XB-1000(RI)	D/O	D/R	F	2F, 2B	1-99	7	50 x 4						4	999.00	Amp bridges to 120 watts x 2; includes dual D/A converters; see also "Amplifiers."
VECTOR RESEARCH	VRX-9200R	D	D	C/P	3F, 2B, SW	20	1	120 x 2, 40 x 4	0.03	85	60	No	1	Yes	849.99	
YAMAHA	DSP-1(RI)	D/O	D/R	F/C/P	3F, 2B, SW	†	16	V/S	0.006			Yes	1	No	999.00	†5 ms to 9.9 S. Two additional unprocessed front outputs; 16 user programs. Master volume control.
	DSP-100 Pro(RI)	DP	D		3F, 2B, SW	20-30			0.003			Yes	1	No	599.00	
	DSP-3000(RI)	D/O	D/R	F/C/P	3F, 3B, 2S	†	35	V/S	0.003	94		Yes	1	Yes	1899.00	†5 ms to 10 S. Two additional unprocessed front outputs; digital inputs; 20 user programs; on-screen TV display.
	SR-50	D/O	D	C/P	2B	10-30		25 x 2	0.03	103	60	Yes	1	No	349.00	

# SIGNAL PROCESSORS

MANUFACTURER	Model (RI) = Remote Included, (RO) = Remote Optional	Type of Processing	Function: Closed Loop = C, Open Loop = O, Transient = T			Application: Tape Rec = R, Photo = P, FM = F, Video = V, Universal = U			Simultaneous Encode/Decode?	Degree of Noise Reduction, dB @ Hz	Record = R, Play = P, Both = RP	THD, %	Frequency Response, Hz to kHz, ±dB	Price, \$	Notes
			R/P/F	No	†	R	P	U							
ACE AUDIO	4000	Infrasonic Filter		R/P/F	No	†				RP	0.002	20-20 +0, -3	98.50	†18 dB/octave slope below 20 Hz. †Low, 18 dB/octave slope; high, 12 dB/octave.	
	4100	Infra/Ultrasonic Filter		R/P/F	No	†				RP	0.002	20-20 +0, -3	108.50		
	4000-X24	Infrasonic Filter		R/P/F	No	†				RP	0.002	20-20 +0, -3	132.00		
	4100-X24	Infra/Ultrasonic Filter		R/P/F	No	†				RP	0.002	20-20 +0, -3	142.00	†Low, 24 dB/octave slope; high, 12 dB/octave.	
AUDIO CONTROL	Phase Coupled Activator	Proprietary	O	U						RP	0.005	25-20 ± 0.5	259.00	Restores lower frequencies.	
B&E SOUND	1002	†		U	Yes		85 @ 1k			RP	0.05	20-20 ± 1	189.00	†High-frequency detail enhancement.	
DB SYSTEMS	DB-7	Phase Inverter & Bandpass Filter	O	U							0.003	20-20	280.00	Bridging outputs.	
PACKBURN	323 A	Transient, Dynamic NR	O/T	U	No		Varies			RP	0.05	Sel.	2650.00	Mono/stereo; has three NR processors.	
SOUND CONCEPTS	IR2100	Image Enhancer	O	U						P	0.03	20-20 ± 0.2	289.00	Kit, Model KIR-1, \$95.00. Kit, Model KVSP-1, \$90.00.	
	IR2200	Image Enhancer	O	U						P	0.03	20-20 ± 0.5	169.00		
	VSP-1	Stereo Synthesizer	O	U						P	0.03	20-20 ± 0.5	159.00		
	SX-80	CX Decoder	C	P/V	No		15			P	0.01	20-20 ± 0.01	129.00		
SYMETRIX	528 Voice Processor	†		U						RP	0.035	20-20 +0, -1	649.00	†De-esser, limiter/compressor, expander/gate, and parametric EQ. Mono; built-in mike preamp.	
	511 A	Single-Ended NR	O	R/V			30 dB Max.			RP	0.025	20-20 +0, -1	629.00	†Limiter/compressor with expander/gate. Variable-ratio, soft-knee, and rms-detecting compression; peak limiter with absolute threshold; mono. Four independent channels in single rack space.	
	525	†	O	R/V					RP	0.035	20-20 +0, -1	495.00			
	501	Limiter/Compressor	O	R/V						RP	0.035	20-20 +0, -1	339.00		
544	Downward Expander/Noise Gate	O	R/V						RP	0.035	20-20 +0, -1	629.00			
SYNERGEX	SBS-1	Sub-Bass Synthesizer	D	U							0.05	15-80 Hz	299.95	Adds program-dependent subharmonics.	



## Now available in a home model.

Introducing the Toshiba Digital A/V Processor Controller. The first of its kind to house a digital processor, an A/V controller for up to 15 components, and amplifiers all in one unit.

Which means it gives you the same A/V control for simultaneous cross play and cross record as a sound studio.

Its digital sound processing ability lets it create twelve different environments. And as a digital amplifier, it has the power to shake the walls. Delivering 125 watts\* per channel in stereo.

Or 50 watts\* per channel when switched into 4-channel Dolby® Surround™ Sound.

We've even equipped it to co-op with DAT technology when it comes out.

Toshiba's Digital A/V Processor Controller. Because when you want total control of your A/V system, there's no place like home.

In Touch with Tomorrow  
**TOSHIBA**



Dolby® Surround™ is a trademark of Dolby Labs

\*125 watts per stereo channel, min. RMS, into 8 ohms from 20 Hz to 20 KHz with no more than .009%THD

Toshiba America, Inc. 82 Totowa Road, Wayne, NJ 07470

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# Signal Processors

## AE2000 ScanAlyzer

Soundcraftsmen's State-of-the-Art, AE2000 Auto-ScanAlyzer represents a landmark in professional quality analysis/equalization equipment incorporated into one compact chassis. Both a Real-Time Spectrum Analyzer, utilizing Soundcraftsmen's revolutionary Differential-Comparator circuitry (Patent-Pending) with an astounding read-out accuracy of 0.1dB, AND an Octave Equalizer of unparalleled performance. The analyzer's automatic octave-scanning mode makes incredibly fast, accurate analysis of room acoustics possible and the 100-LED full-frequency spectrum bargraph display constantly shows real-time frequency response. The precision-tuned passive, Wire-Wound Coil Filter circuits (no synthetic IC's) of the equalizer eliminate unwanted noise, hiss, and distortion common to inexpensive equalizers, while Soundcraftsmen's True Zero-Gain circuitry perfectly matches input and output voltages, crucial to the undistorted reproduction of the new wide-dynamic-range Compact Discs and Digital Tapes. The AE2000 is amazingly versatile and is designed to satisfy the most demanding audiophile and professional user alike. The AE2000 features a Professional Rack-Mount front panel with optional hardwood side panels.

— On Test —



...This unit is very versatile and therefore, very useful. It'll help set up an Eq curve for taping, compensating for monitors, recorders, tape, or all three. It can be used to check and troubleshoot individual components, check entire systems, analyze speakers and their crossover networks. With the addition of a parametric (it has an Aux Eq send and receive loop), it'll handle just about any stage feedback problem.

...Don't get me wrong. As always, spectrum analysis/equalizers are not the final word in eliminating acoustic problems by any means. For tough Eq problems (narrow band peaks and dips), you'll also need a parametric. Yet the Soundcraftsmen AE2000 solves the problems of RTA readout, noise source accuracy, and user inadequacies and can accurately analyze and Eq a room in a matter of minutes. With a price of \$699.00, this review is a rave.

Mike Shea

**SPECIFICATIONS AE2000:** HARMONIC DISTORTION: Less than .01% @ 2V...IM DISTORTION: Less than .01% @ 2V... SIGNAL-TO-NOISE RATIO: 114dB @ max. output...OCTAVE CONTROLS: ±22dB boost or cut—each octave (all other octaves set at maximum). ±15dB boost or cut—each octave (all other octaves set at "0")... FILTER TYPE: Precision-tuned passive wire-wound coil inductors... DIFFERENTIAL/COMPARATOR: Measurement accuracy 0.1dB...MIC PREAMP: Input impedance 2K ohms, Gain: 80dB max., Frequency response: ±0.1dB 20Hz to 20kHz...PINK NOISE SOURCE: Internal generator. SELECTABILITY: Manual or Auto-Scanning with adjustable scan rate, Electronic switching of Display and Analyzer filters... 19"Wx5¼"Hx11¼"D...20 pounds.

**SPECIFICATIONS DC4415:** HARMONIC DISTORTION: .01% @ 2V RMS...IM DISTORTION: .01% @ 2V RMS...SIGNAL-TO-NOISE: 114dB-10V RMS output, -100dB-2V RMS output...INPUT CAPABILITY: Maximum 10V RMS...OUTPUT CAPABILITY: 10V RMS...INPUT IMPEDANCE: 47K ohms... OUTPUT IMPEDANCE: 300 ohms...BOOST/CUT INDIVIDUAL CONTROLS: ±22dB (all other controls at max): ±15dB (all other controls set at zero)...UNITY GAIN CONTROLS: +12dB, -6dB... FILTER TYPE: Precision-tuned passive, wire-wound inductors and op-amp synthesized inductors...19" w x 5¼" h x 11" d...18 pounds.





Soundcraftsmen

# Equalizers

## DC4415 Third-Octave DC2215 Equalizer

The Soundcraftsmen DC4415 is a two-channel Graphic Equalizer designed especially for advanced applications in the field of music reproduction. Each of its channels is completely independent of the other and can be used as two monophonic equalizers for Studio or Pro applications. The channels are divided in 1/3-Octave center frequencies from 40Hz through 16kHz. From 1kHz through 16kHz center frequencies are at 2/3-Octave intervals. All center frequencies correspond with Standard ISO Center Frequencies. This 1/3-2/3-Octave arrangement provides maximum flexibility in the critical low and mid frequencies while permitting reductions in both size and cost in the less critical higher frequencies. Soundcraftsmen's exclusive 0.1 dB Differential Comparator Unity-Gain circuitry, combined with Dual Balancing LED's on the front panel, make balancing of input to output voltages fast and exceptionally accurate to within 0.1 dB, thus assuring maximum dynamic range, minimum noise and freedom from overload no matter what the desired EQ curve.

The DC4415 features a Professional Rack-Mount front panel with optional hardwood side panels.

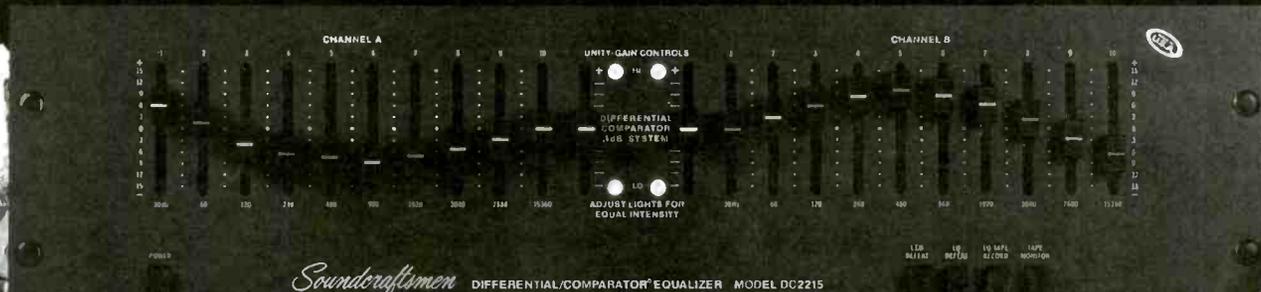
The Soundcraftsmen DC2215 is the finest high-fidelity graphic equalizer available today. Twenty years of designing and manufacturing have given us significant performance advantages over other manufacturers, with revolutionary technology like the Differential/Comparator® 0.1dB True Unity Gain circuitry, essential for reproduction of the new Digital Audio Tapes and Compact Discs without severe limitation of needed "head-room," and for ultra-low noise and distortion.

When both top and bottom Differential/Comparator® LED's have been balanced for equal intensity, there is "True Unity Gain" through the equalizer. Unity-Gain means that the equalized output voltage (or musical signal) is exactly the same as the unequalized input voltage. When True Unity Gain is established, the equalizer's full dynamic range is available for undistorted reproduction of wide-dynamic-range recordings. Our Wire-Wound Coil Filter circuitry makes possible 15dB boost or cut on each individual octave and an incredible Signal-to-Noise Ratio of 114dB! The DC2215 features separate tape monitor circuitry with tape and line equalization capability. Computone Charts are included for easy recording of various equalization curves. The DC2215 features a Professional rack-mount front panel with optional hardwood side panels.

**SPECIFICATIONS DC2215: INPUT MONITORING:** Differential/Comparator® Circuit with LED's for 0.1dB accuracy...**HARMONIC DISTORTION:** Less than 0.1% at 2V...**IM DISTORTION:** Less than .01% at 2V...**SIGNAL-TO-NOISE:** 114dB at 10V output, 100dB at 2V output...**OCTAVE CONTROLS:** ±22dB boost or cut—each octave (all other octaves set at maximum), ±15dB boost or cut—each octave (all other octaves set at zero)...**GAIN/CUT CAPABILITY:** +32dB/-38dB—all controls maximum...**UNITY GAIN CONTROLS:** 18dB range...**FILTER TYPE:** Precision tuned passive wire-wound coil inductors...19"Wx5¼"Hx11¼"D... 21 pounds.

## DC2214 Equalizer

The DC2214 sets new high standards in its price range with many of the features of the DC2215. The Soundcraftsmen Differential/Comparator® True Unity Gain controls with LED displays are identical to the DC2215, assuring full headroom for Digital Audio Tapes and Compact Discs, with minimum distortion and an outstanding Signal-to-Noise Ratio of 106dB. The DC2214 features separate tape monitor circuitry and tape with tape and line equalization capability. Computone Charts are included for easy recording of various equalization curves. The DC2214 features a Professional rack-mount front panel with optional hardwood side panels. 19"Wx3½"Hx8¾"D... 14 pounds.



# SONIC HOLOGRAPHY:

## LIGHT YEARS CLOSER TO REALITY.

### SONIC HOLOGRAPHY TRANSFORMS EXCITING NEW PROGRAM SOURCES AS WELL AS FAMILIAR OLD ONES INTO TRULY LIFELIKE EXPERIENCES.

When Bob Carver set out to redefine the stereo listening experience through Sonic Holography, he was really rebelling against the limitations of the stereo phonograph record. At the time his remarkable invention first started astounding audio critics and music lovers, vinyl discs were the musical standard.

If Sonic Holography can breathe life into even your oldest records, imagine what it will do for CD's, VHS Hi-Fi and other exciting new stereo sources.

Now there are at least five major audio/video breakthroughs which further expand Sonic Holography's potential to bring more excitement and realism into your life.

These innovations include the Compact Audio Disc, noise-free stereo FM, AM Stereo, Stereo television broadcasts and stereo Hi-Fi video formats.

Each provides the Sonic Hologram Generator in selected Carver preamplifiers and receivers with a chance to redefine the width, breadth and depth of the traditional stereo sound field — while using your existing speakers.

### WHAT SONIC HOLOGRAPHY DOES.

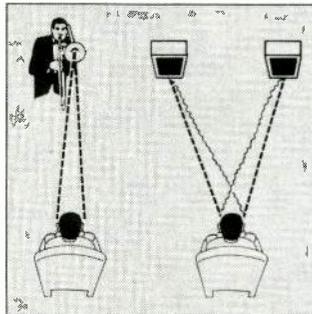
Watch a 13" black and white TV. Now see a movie in 70 millimeter.

Listen to your favorite musicians on a transistor radio. Now sit three rows back from the stage of a live concert.

These are not exaggerations of how much more dimensional and realistic Sonic Holography is than conventional stereo. The most experienced and knowledgeable experts in the audio industry have concurred. Julian Hirsch wrote in *Stereo Review*. "The effect strains credibility—had I not experienced it, I probably would not believe it." *High Fidelity* magazine noted that "...it seems to open a curtain and reveal a deployment of musical forces extending behind, between and beyond the speakers." According to Larry Klein of *Stereo Review*, "It brings the listener substantially closer to that elusive sonic illusion of being in the presence of a live performance."

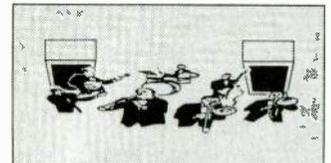
### HOW SONIC HOLOGRAPHY WORKS.

When a musician plays a note, the sound occurrence arrives separately at your left and right ears. Your brain analyzes the difference in these sound arrivals and tells you exactly where the sound is.

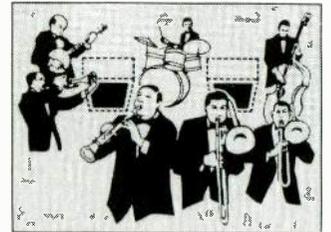


- L. Real-life sonic event results in two sound arrivals: one at your left ear, one at your right ear.  
 R. Stereo playback of that sonic event results in four sound arrivals. Two per speaker per ear = four.

Conventional stereo tries to duplicate this process by using two speakers to send a different version of the same sound occurrence to each ear. In theory, this should "trick" your brain's psychoacoustic center into placing the musician on a limited sound stage between your speakers. If — and only if — each speaker can be only heard by one ear.



Conventional stereo: The sound is heard, more or less, on a flat curtain of sound between the two speakers. Volume differences only. The timing cues are gone.



Sonic Holography: With SONIC HOLOGRAPHY, the sound is reproduced much like that of a concert performance, complete with timing, phase and amplitude cues. Three dimensional!

The problem is, these different versions of the same sound also cross in the middle of your listening room, so left and right ears get both left and right sound arrivals a split second apart. Stereo imaging and separation are reduced because both speakers are heard by both ears, confusing your spatial perception.

The Sonic Hologram Generator in the Carver 4000t, C-9, C-1 and Carver Receiver 2000

solve this muddling of sound arrivals by actually creating another "sound." This special impulse cancels the objectionable second sound arrival, leaving only the original sound from each loudspeaker.

The result is a vast sound field extending not only wider than your speakers, but higher than your speakers as well. Sounds will occasionally even seem to come from behind you! It is as if a dense fog has lifted and you suddenly find yourself in the midst of the musical experience. Or, as the Senior Editor of a major electronics magazine put it, "When the lights were turned out, we could almost have sworn we were in the presence of a live orchestra."

**CARVER CD AND TUNER INNOVATIONS EXTEND THE POSSIBILITIES.**

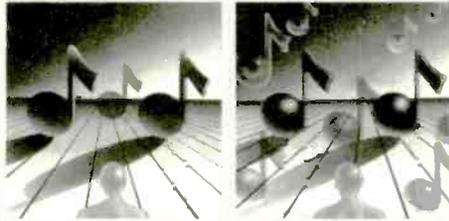
Any stereo source can be transformed from monochromatic flatness into vibrant three-dimensional reality with Sonic Holography.

Compact discs afford vastly increased dynamics, frequency response and freedom from background noise. Yet their potential is trapped in the 2-dimensionality of conventional stereo. Sonic Holography can surround you with the drama and impact of digital. (And the Carver Compact Disc Player with Digital Time Lens sound correction circuitry can enhance your listening experience even further).

Thanks to the Carver Asymmetrical Charge-Coupled FM Stereo Detector, FM stereo broadcasts can be received with vastly increased fidelity. Hiss and interference-free, any signal, from chamber music to live rock concerts,

can take on an astonishing presence and dimension through Sonic Holography.

The new Carver TX-11a AM/FM tuner delivers AM stereo broadcasts with the same dynamics and fidelity as FM. A perfect source for the Sonic Hologram Generator. Think of it: AM can actually become a three-dimensional phenomenon through Carver Technology!



**SONIC HOLOGRAPHY PUTS YOU INSIDE THE VIDEO EXPERIENCE.**

More and more people are discovering what theaters discovered some time ago: Audio makes a huge contribution to the realism of video. Still, it has taken the incredible, near-digital quality of VHS and Beta Hi-Fi to make the marriage of audio and video truly rewarding. Now even rental movies fairly explode with wide frequency range, dynamic impact and conventional stereo imaging.

Add the steady emergence of stereo TV broadcasts by all three major networks of prime time programming and special broadcasts, and you have fertile ground for the added realism that only Sonic Holography can deliver.

Unlike so-called "surround sound" a Sonic Hologram Generator puts you into the middle of any stereo soundtrack, (stereo, Hi-Fi stereo, broadcast stereo or even simulcasts). It psychoacoustically expands the visual experience with life-like sound that envelops you in the action.

Once you've heard Sonic Holography with a good video tape or LaserDisc, you'll never go back to mere stereo again.

**ENHANCE YOUR SPACIAL AWARENESS WITH FOUR CARVER COMPONENTS.**

The patented Carver Sonic Hologram generator circuit is available on two preamplifiers, our largest receiver and as an add-on component. Each can transcend the limits of your listening (and viewing) room. Each can add the breathtaking, spine-fingling excitement that comes from being transported directly into the midst of the musical experience.

Before you purchase any component, consider just how much more Carver can enrich your audio and video enjoyment. And then visit your nearest Carver dealer soon.



*The Carver Sonic Holography quartet. Pictured from left to right is the 4000t Preamplifier, the C-9 sonic Hologram Generator, the Receiver 2000 with remote control and the C-1 Preamplifier.*

**CARVER**

POWERFUL

MUSICAL

ACCURATE

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# CROSSOVERS

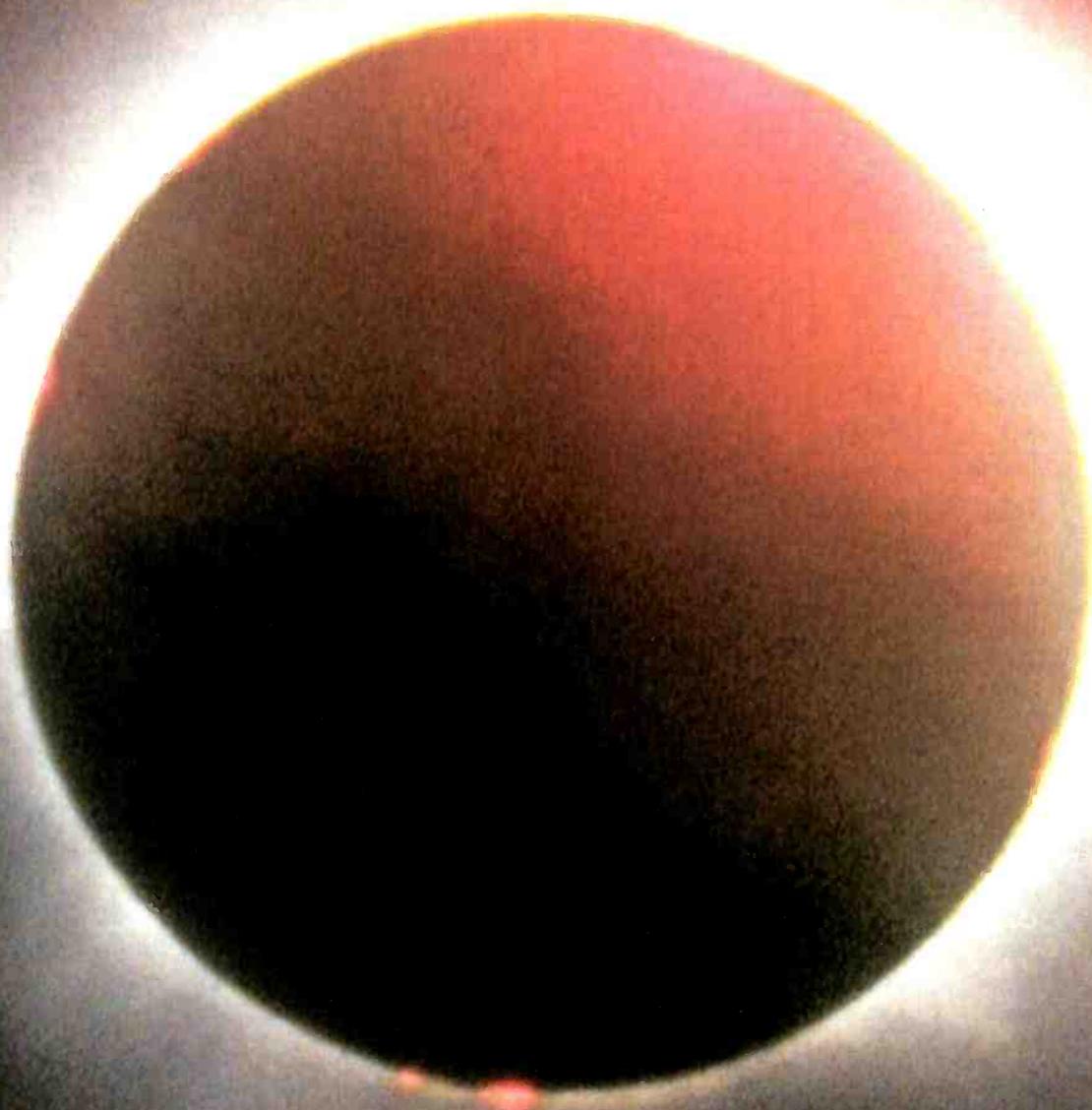
MANUFACTURER	Model	Type: Active = P, Passive = P. Controlled Active = C, Passive = C. Mono = M, Stereo = S. Stereo with Mono Subwoofer Output = X			Number of Frequency Bands per Channel	Crossover Frequencies, Hz	Independent High- and Low-Pass Frequency Selection?		Switchable Outputs: Stereo = S, Mono = M. Inverted for Mono Bridging = B	Level Controls: High-Pass = H, Midrange = M, Low-Pass = L (for dual number of controls)	S/N Ratio, -dB	Distortion, %	Nominal Input Level, V	Input Impedance, Ohms	Output Impedance, Ohms	Price, \$	Notes
		Yes	No	Yes			No										
ACCUPHASE	F-15L	A	S	3	Custom	Yes	P	S	H/M/L	100	0.003	†	20k	100	3400.00	†8 V maximum. Balanced and unbalanced inputs and outputs (specs shown are unbalanced); optional custom frequency modules.	
ACE AUDIO	6500-DSB	A	S/X	2	30-200	No	P	S/M	H or L	90	0.002	1.0	100k	100	171.00	Optional subsonic filter. \$25.00.	
	6000	A	S	2	201-18k	No	P	S/M	H or L	90	0.002	1.0	100k	100	171.00	As above.	
	6000-6	A	S	2	30-18k	No	P	S/M	H or L	90	0.002	1.0	100k	100	190.00	As above; transient-perfect filter.	
APOGEE ACOUSTICS	DAX	A	S	2	330	No	F	No	M/L	100	0.003	1	47k	6	3250.00	For Apogee Diva and Duetta.	
ATC	3-Way Active	A	S	3	Custom	Yes	P	No	H/L			1.0	10k	47k	2500.00	Balanced inputs and outputs; adjustable delay on low and high bands; switchable mid-band phase inversion; adjustable gain limiting.	
ATHENA	DF-10	A	S	2	15-15k	No	V	S	H/L	90	0.01	1.0	100k	560	1800.00	Phase-coherent, derived filter.	
AUDIO CONCEPTS	Shadow L.E.	A	S/X	2	50-10k	No	F	S/M	L						359.00	Three-band version with low and midrange level controls. \$459.00.	
AUDIO CONTROL	Phase Coupled Activator Richter Scale III	A	S	2	20-20k		P	S	L	118	0.005	1.0	100k	150	259.00	Proprietary bass restoration circuits; subsonic filter.	
		A	S	2	20-20k		P	S/M/B	L	120	0.005	1.0	100k	150	349.00	Linkwitz-Riley alignment; 1/2-octave bass EQ and analyzer.	
AUDIO RESEARCH	EC21	C	X	2	50-5k	Yes	F	M	L	90	0.01	0.75	50k	500	995.00	Optional frequency-changing kits.	
BGW SYSTEMS	20	A	M X	†	10-19k	Yes	S/P	M	5	91	0.02	0.1	15k	22	829.00	†Usable as stereo 3-way or mono 4-way. Balanced line; 10-Hz filter.	
	Xover 1	A	M	2	100-8k	No	S	M	No	100	0.02	1.0	15k	100	99.00	Board; fits into amps; requires ± 16 to ± 100 V.	
BIAMP SYSTEMS	SX 23	A	M/S	†	100-10k	No	V		H/M/L	103	0.005	1.25	10k	150	499.00	†Usable as stereo 2-way or mono 3-way.	
	SX 35	A	M/S	†	50-5k, 200-20k	No	V		H/M/L	103	0.005	1.25	10k	150	699.00	†Usable as stereo 3-way or mono 5-way.	
BRYSTON	10B	A	M/S	†		Yes	S		L							†Usable as stereo 2-way, mono 3-way, or mono 2-way.	
CARVIN	XC1000	A	M/S	†	100-1.6k, 1k-16k	No	V		H/L	112	0.01	.775	22k	47	299.00	†Usable as stereo 2-way or mono 3-way. Balanced inputs and outputs.	
CSI	LE-1	A	M/O	1	30-200	Yes	S/P	M	L	92	0.02	0.50	300k	1k	490.00	ELF system; low-pass only.	
	HLE-1	A	M/O	2	30-200	Yes	S/P	M/B	6	92	0.02	0.50	10k	600	890.00	ELF system.	
	HLE-2	A	S/O	2	30-200	Yes	S/P	S/B	12	92	0.02	0.50	10k	600	1290.00	As above.	
DB SYSTEMS	DB-3-18	A	S/X	2, 3	Optional	Yes	F	S/M/B	H/M/L	100	0.0008	1	90k	1.4k	From 400.00	18-dB/octave slope; 6 or 12 dB available.	
	DB-3-24	A	S/X	2	Optional	Yes	F	S/M/B	H/L	100	0.003	1	90k	1.4k	575.00	Linkwitz-Riley alignment.	
	DB-3-36	A	S/X	2	Optional	Yes	F	S/M/B	H/L	100	0.003	1	90k	1.4k	650.00	36-dB/octave slope.	
DeCOURSEY	120-B4	A	S	2	Custom	Yes	F	S	Opt.	90	0.002	2.5	100k	100	167.50	Optional rack and panel. \$17.50; optional summing circuit and subsonic filters.	
	120-T8	A	S	3	Custom	Yes	F	S	Opt.	90	0.002	2.5	100k	100	262.50	As above.	
	120-Q8	A	S	4	Custom	Yes	F	S	Opt.	90	0.002	2.5	100k	100	352.50	As above.	
EXPOSURE	V-2	A	S	2	2.7k or Custom		F		H/L						975.00	Requires power supply.	
	V-3	A	S	3	200, 2.7k, or Custom		F		H/M/L						975.00	As above.	
GOLD SOUND	GS224	A	S	2	40-4.2k	No	V	S	6	102	0.02	0.75	20k	300	324.00	24-dB/octave slope.	
	GS224EQ	A	S	2	40-4.2k	No	V	S/M	6	102	0.02	0.75	20k	300	384.00	As above; fixed bass EQ and subsonic filter.	
	GS424	A	S/O	†	40-9k	No	V	S	12	102	0.02	0.75	20k	300	424.00	†Usable as stereo 2-way or four channel 2-way. With fixed bass EQ and subsonic filter. Model GS424EQ, \$484.00.	



# CROSSOVERS

MANUFACTURER	Model	Type: Active = A, Passive = P, Combined Active & Passive = C, Mono = M, Stereo = S, Stereo with Mono Subwoofer Output = X, Other = O				Number of Frequency Bands per Channel	Crossover Frequencies, Hz	Independent High- and Low-Pass Frequency Sections?				Frequency Setting Variable = V, Fixed = F, Switchable = S, Inherent for Mono Bridging = P		Subwoofer Output: Stereo = S, Mono = M, Level Controls: High-Pass = H, Midrange = M, Low-Pass = L (for Total Number of Controls)		S/N Ratio, -dB	Distortion, %	Nominal Input Level, V	Input Impedance, Ohms	Output Impedance, Ohms	Price, \$	Notes
		1	2	3	4			Yes	No	Yes	No	Yes	No									
JANIS	Interphase 1A	A	X		2	100	No	F	M	L	98	0.01	0.60	200k	100	675.00						Integral 100-watt bass amp. †Included with Model 3/A subwoofer. As above but 50 watts.
	Interphase 3/A	A	X		2	100	No	F	M	L	96	0.02	0.60	200k	100	†						
JRM	3BPB/X4	A	O		4	10-2k, 100-5k, 1k-50k	Yes	P	S/M/B	8†	110	0.01	Sel.	20k	100	750.00						†0.5-dB steps. Stereo and bridging outputs for all sections; infrasonic and ultrasonic filters; low-frequency EQ optional, \$25.00 per section. †As above. Cascaded 18-dB/octave filters.
	3BPB/X2	A	O		2	10-50k	Yes	P	S/M/B	4†	110	0.01	Sel.	20k	100	450.00						
KINETIC AUDIO	Three-Point	P	M		†	60/90/180	Yes	S	M	H/M	95	0.01		8	Var.	150.00						†High-pass only. †Low-pass only.
	Four-Point	P	M		†	60/90/180/350	Yes	S	M	M	95	0.01		8	Var.	150.00						
KRELL	KRX II	A	S		3	50-730, 430-5k	Yes	V	S	H/M/L	120	0.001	0.5	100k	10	3000.00						Variable slopes.
LEGACY	Signature	A	S		2	20-5k	No	V	S	H/L	98	0.01	0.75	50k	100	796.00						24-dB/octave slope; Linkwitz-Riley alignment; digital frequency display.
MARK LEVINSON	LNC-2	A	M/S		†		Yes	P	S	H/M/L	102	0.002		10k		3500.00						†Usable as stereo 2-way or mono 3-way.
LINN HI-FI	Aktiv	A	S		3	200, 2k	No	F		H/M/L		0.1	1.0	2k	200	1875.00						For Linn DMS.
MADISOUND	24CX-2	A	M/S		†	60-7k	No	V	S/M	H/L	108	0.01	1.95	20k	300	425.00						†Usable as stereo 2-way or mono 3-way. Linkwitz-Riley alignment. †Usable as stereo 3-way, mono 5-way, or four channel 2-way. Alignment as above.
	24CX-4	A	M/S		†	60-700, 600-7k	No	V	S/M	H/M/L	108	0.01	1.95	20k	300	525.00						
M & K	LP-1S	P	S		†	100	No	F	S	H/L						325.00						†High-pass only, to match low-pass filter in M & K subwoofers. Line level.
MUSIC REFERENCE	RM-3	A	S		2	20-20k	Yes	P	S	H/L	100	0.001	0.5	100k	600	1200.00						Selectable filter slopes.
NAIM AUDIO	NAX03-6	A	S		3	Custom	Yes	F		H/M/L	90	0.1	1	20k	47	995.00						Requires power supply. As above. For NAIM SBL.
	NAXD2-4	A	S		2	Custom	Yes	F		H/L	90	0.1	1	20k	47	995.00						
NAPX0		A	S		2	Custom	No	F		H/L	90	0.1	1	20k	6	235.00						
NELSON-REED	AC-1204	A	M/S		2	62	No	F	S/M	L	118	0.007	†	33k	600	570.00						†Maximum, 20 V peak to peak. For Nelson-Reed 1204 subwoofer.
NESTOROVIC LABS	NL12A	A	S		2	200	No	F	S	H/L	90	0.01	1	50k	100	750.00						
NIKKO	CO-23	A	M/S		2	125-12.5k	Yes	S	S/B		110	0.001		47k	1k	699.00						Selectable slope.
RANE	AC22	A	M/S		2	75-3.6k	No	V	S	H/L	92	0.02	.775	20k	100	389.00						24-dB/octave slope; Linkwitz-Riley alignment. As above.
	AC23	A	M/S		3	70-1k, 450-7k	No	V	S	H/M/L	92	0.02	.775	20k	100	499.00						
SESCOM	PO-51	A	M		3	20-200, 200-2k, 2k-20k	Yes	S		No	80	0.1	0.75	10k	100	121.00						Requires PO-1 power supply.
SONOGRAPHE	SX-1	A	S		2	110	No	P	S/M	L			0.75			495.00						Alternate modules, \$149.00 each.
SOUND CONCEPTS	SCO-1	A	S		2	100	No	F	S	L	90	0.01	1.0	30k	100	159.00						
SUMO	Delilah	A	S/X		2	50, 63, 80, 100, 125	Yes	S	S/B	L	95	0.007	2	50k	100	549.00						
THRESHOLD	PCX	A	X		2	75-1.6k	No	P	S/M/B	H/L		0.01		20k	1.5k	1500.00						
	PCX/X10	A	X		2	750-16k	No	P	S/M/B	H/L		0.01		20k	1.5k	1500.00						
VANDERSTEEN AUDIO	WX-4	C	S		2	80	Yes	F	S	L	90	0.01	0.75	100k	400	450.00						For Vandersteen Model 4A.

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# HI-FI VCRs

MANUFACTURER	Model	Format	Standard Audio Tracks: Mono=M, Stereo=S, Stereo with Dolby W=D	Frequency Response, Hz to kHz, ±dB	Audio S/N Ratio, -dB, re 0 dB	THD, %	Separation, dB, at 1 kHz	Simulcast Recording?	Dynamic Range, dB	Wow & Flutter, W/F, Peak, %	Signal To Noise Ratio (S/N) Capability, dB, re 1 kHz	Programmability: Number of Days/Number of Events	Phone Jack?	Volume Control on Phone Jack?	Number of Tape Speeds, Record/Play	Price, \$
AKAI	VS-7SU-B	VHS HQ	M	20-20	90	65	Yes	90	0.005	B	365/8	No	No	2/3	679.00	
	VS-M930U-B VS-A77U-B (With Dolby Surround Sound)	VHS HQ VHS HQ	M M	20-20 20-20	90 90	65 65	Yes Yes	90 90	0.005 0.005	B B	365/6 365/8	No No	No No	2/3 2/3	749.00 779.00	
CANON	VR-MF20	VHS HQ	M	20-20			Yes	90	0.005	B	30/8	No	Yes	Yes	3/3	999.00

Soundcraftsmen



## Pro-Control Pre-Amplifiers

The new **PRO-CONTROL** preamplifiers from Soundcraftsmen provide **C-MOS** digital-control electronic switching for noise-free and distortion-free recording and listening enjoyment. All signal routing is accomplished with Soundcraftsmen's new **MOS-TROL**® high-performance electronic circuitry. This method allows all Signal Paths to be optimized and located near the input and output pc-board mounted jacks, which measurably lowers noise and cross-talk. The integration of buffered inputs with **C-MOS** and proprietary circuitry completely eliminates the distortion and degradation caused by other presently available, but now outmoded, electronic switching techniques.

### Control Four

The **PRO-CONTROL FOUR** has the capability for handling up to **EIGHT** input sources: CD/DAT, Phono, Tuner, Tape 1, Tape 2, Vid/Aud 1, Vid/Aud 2 and Vid/Aud 3. The sources selected for Line Out or Tape Out (or both) are indicated by

sequentially selected LED illumination. Automatic muting insures elimination of noise and transients during source selection and all operational switching.

Totally **independent** Line and Tape sections allow for the ultimate in **Control-Center flexibility**—for example, a user can record a Phono source to any or all Tape and Vid/Aud outputs while at the same time be listening to the CD input.

**EIGHT** outputs are available: Normal A & B Line Outputs, "**AUTO BRIDGE**" circuitry that electronically inverts A & B Line Outputs for tripling the power by bridging, an independently amplified Headphone Output, and 5 Tape Outputs: Tape 1, Tape 2, Vid/Aud 1, 2, and 3. Two additional inputs and outputs—External Loops—are provided for processing of either Line or Tape signals, plus Switchable Sub-sonic Filters for both Line and Tape signals, as well as Bass and Treble Controls.

There is also a "**DIRECT MODE**" (**STRAIGHT LINE**) to bypass the External Loops, Sub-sonic Filter, and Tone Controls, creating the ultimate pure signal path, a true "**straight wire with gain**." The "**DIRECT MODE**" selection eliminates all signal processing and unnecessary signal paths to allow for the utilization of the full capabilities of CD players.

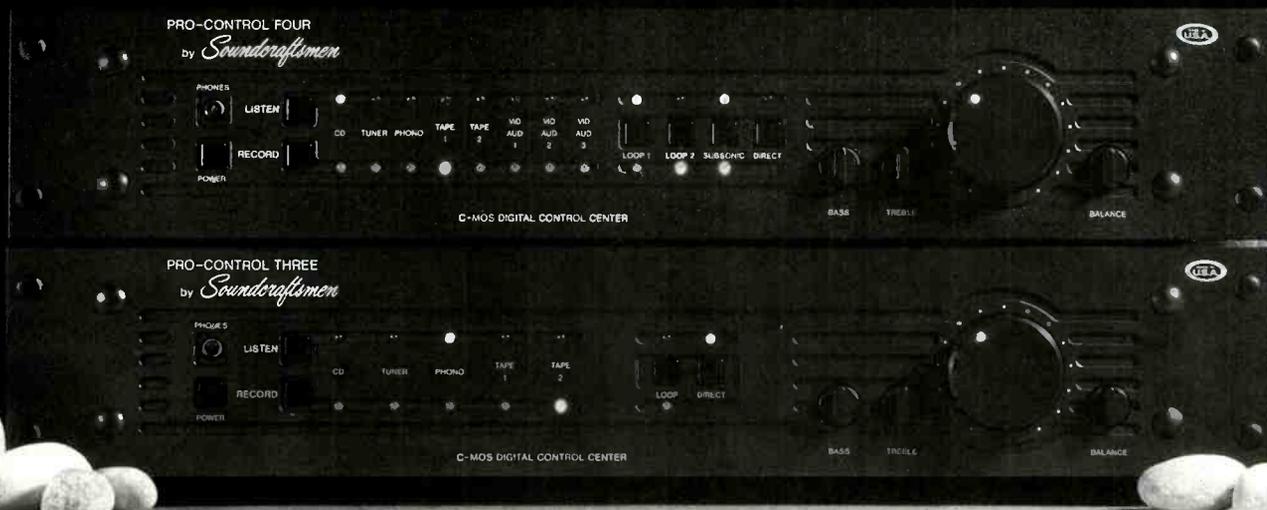
Soundcraftsmen's **DISCRETE** Phono Pre-amps provide the ideal means for superb LP reproduction.

### Control Three

**PRO-CONTROL THREE:** Provides most of the versatility and quality as the **PRO-CONTROL FOUR**, but with only two tape monitors and one signal processor loop.

**FEATURES:** **AUTO-BRIDGE** circuit triples amplifier power...Illuminated volume control pointer...Sub-Sonic filter...**DIRECT** mode for straight-wire performance...Independent recording and listening circuits...Discrete phono preamps...Stereo headphone jack...Professional rack-mount front panel...Optional hardwood side panels.

**SPECIFICATIONS:** **FREQUENCY RESPONSE:** High Level—5Hz-100kHz, ±0.25dB. Phono Input—20Hz-20kHz, ±0.5dB...**THD:** Less than 0.005%...**IM DISTORTION:** Less than 0.005%...**SIGNAL TO NOISE RATIO:** Phono—97dB, High Level—116dB...**INPUT SENSITIVITY:** Phono—2.5 millivolts, High Level—125 millivolts...**MAXIMUM OUTPUT:** 10 volts...**TONE CONTROLS:** Bass—10dB @ 100Hz, Treble—10dB @ 10kHz... 19" W x 3 1/2" H x 10 1/2" D... 15 pounds.



# DX Series Pre-Amplifiers

## DX4200

**DESCRIPTION:** The DX4200 Preamp/Equalizer is the most versatile preamplifier available. It was designed for the most demanding audiophile who takes a "hands-on" approach to his or her music system. The preamp section includes specially-designed "overload-proof" inputs for the latest CD players, with their potential for unsurpassed wide dynamic range. The phono preamp utilizes fully-discrete circuitry instead of the more common IC "chips," eliminating coloration and making it exceptionally quiet. It accommodates almost all moving-coil cartridges and even permits adjustment in capacitance loading from 50 picofarads to 800 picofarads, in 50 picofarad steps, for exact matching of virtually any phono cartridge. Soundcraftsmen's exclusive AutoBridge® circuitry permits the user to start with one stereo amplifier, and then to add a matching amplifier at a later date, operating both amplifiers in "bridged mono mode," thereby TRIPLING per-channel power output with no loss in performance. Ideal for meeting the power demands of digital

audio. Only the finest available parts, are used in Soundcraftsmen preamps. Three-way tape dubbing and two external signal-processor loops add to the DX4200's versatility.

The equalizer section of the DX4200 is the finest high-fidelity graphic equalizer available today. Twenty years of designing and manufacturing equalizers have given us significant performance advantages over other manufacturers, with revolutionary technology like the **Differential/Comparator® 0.1dB True Unity Gain** circuitry, essential for reproduction of the new digital audio disc and wide-dynamic-range recordings without severe limitation of needed "headroom," and for ultra-low noise and distortion. Our Wire-Wound Coil Filter circuitry makes possible 15dB boost or cut on each **individual** octave and an incredible Signal-to-Noise Ratio of **114dB!**

## DX4000

The DX4000 is a straight-line version of the DX4200 incorporating most of the features of the DX4200. See the Features section and picture below.

**FEATURES: DX4200** Dual 10-Band<sup>o</sup> ±15dB Equalizer...Dual discrete phono stages...Variable phone cartridge loading with input level adjustment...Moving Coil cartridge input...Auto/Bridge circuit...Sub-Sonic filter...CD player inputs...Three-way tape dubbing...Front panel tape inputs and outputs...Two Signal Processor Loops...Professional rack-mount front panel with optional hardwood side panels. **DX4000** is the same excluding equalizer, cartridge loading and moving coil input.

**SPECIFICATIONS: FREQUENCY RESPONSE:** Hi-level ± ¼ dB, 5 Hz to 100 kHz. Phono— ± ½ dB, 20Hz to 20kHz...**TOTAL HARMONIC DISTORTION:** .01% at 1 Volt...**IM DISTORTION:** Less than .01% at 1 Volt...**PHONO IMPEDANCE:** 47K or 100 Ohms (DX4200)...**PHONO SIGNAL-TO-NOISE:** 97 dB...**PHONO SENSITIVITY:** DX4200 (adjustable)—.28 millivolts minimum, DX4000—2.8 millivolts...**HIGH LEVEL SENSITIVITY:** 90 millivolts...**MAXIMUM OUTPUT:** 10 volts...**PHYSICAL:** DX4200—19"Wx5¼"Hx11"D, 20 pounds, DX4000—19"Wx3½"Hx11"D, 15 pounds.

Soundcraftsmen PREAMPLIFIER MODEL DX4000



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Soundcraftsmen, 2200 So. Ritchey, Santa Ana, CA USA. Prices and specifications subject to change without notice.

# LOUDSPEAKERS

MANUFACTURER	Model	Design Principle	Enclosure or System Type			Woofer Diameter, Inches	Midrange Diameter, Inches	Midrange Type	Tweeter Diameter, Inches	Tweeter Type	Separate Level Controls	Woofer = W, Midrange = M, Tweeter = T	SPL, 1 Watt/1 Meter, dB	Recommended Min. Amp. Power, Watts	Crossover Frequencies, Hz	Impedance, Ohms: Nominal/Minimum	Dimensions, Inches (To Nearest Inch)	Finish	Grille Color and Material	Weight, Lbs.	Price, \$
			Woofer	Midrange	Tweeter																
ACDUSTAT	Spectra 22	ES										30-20 ±3	100		4/3	66 x 22 x 2	Opt.	Opt.	165 Pair	1850.00 Pair	
	Spectra 33	ES										30-20 ±2	100		4/3	66 x 33 x 2	Opt.	Opt.	205 Pair	2250.00 Pair	
	SP Woofer	Vented Subwoof.	(4)6½										100	100			Opt.	Opt.	55 Pair		
	One	ES Sat. & Subwoof.	10						T			30-18 ±3	75	160	4/3	Three Pieces	Opt.	Opt.	180 Sys.	1299.00 Sys.	
	One + One	ES							T			30-20 ±2	70		4/3	94 x 11 x 4	Opt.	Opt.	144 Pair	1750.00 Pair	
	Two + Two	ES							T			28-20 ±2	50		4/3	94 x 20 x 4	Opt.	Opt.	200 Pair	2599.00 Pair	
	Six	ES							T			26-20 ±2			6/3	94 x 28 x 4	Opt.	Opt.	340 Pair	4500.00 Pair	
	Eight	ES							T			24-20 ±2			6/3	94 x 36 x 4	Opt.	Opt.	440 Pair	5500.00 Pair	
ACOUSTIC INTERFACE	Angstrom	Ac. Sus.	6½			1	Dome					78-20 ±2.5	90	15	5k	8/6	13 x 7 x 6	Black Enam.	Black Cloth	10	125.00
	Tremor	Vented Subwoof.	2(12)					M, T				29-200 ±2.5	95	15	100	8/6	62 X 26 X 16	Oiled Wal.	Black Cloth	150	1090.00
	Shadow	Ac. Sus.	8			1	Dome					69-20 ±2.5	91	15	5k	8/6	25 x 9 x 9	Black Cloth	Black Cloth	18	190.00
	Intimate	Ac. Sus.	10			1	Dome	T				49-20 ±2.5	93	15	5k	8/6	19 x 12 x 12	Oiled Wal.	Black Cloth	29	290.00
	Transcendant	Vented	12	¼	Dome	¼	Dome	M, T				38-20 ±2.5	94	15	1.9k	8/6	24 x 16 x 14	Oiled Wal.	Black Cloth	51	490.00
	Professional Series II	Vented	12	2	Dome	1	Dome	M, T				29-20 ±2.5	95	15	800, 6.6k	8/6	36 x 16 x 19	Oiled Wal.	Black Cloth	80	890.00
	Studio Reference	Vented	12	4x15	Horn	2x5½	Horn	M, T				22-20 ±2.5	98	15	880, 5k	8/6	48 x 16 x 19	Oiled Wal.	Black Cloth	102	1590.00
	Sound Portal	Horn	24x32	7x19	Horn	5x6	Horn	M, T				15-20 ±2.5	101	15	800, 5k	8/6	72 x 26 x 24	Oiled Wal.	None	175	5000.00
	Sound Prism	Triamped, Horn	24x52	13x22	Horn	3x7¼	Horn	M, T				10-20 ±1	105	100, 300, 1.5k Inc.	8/6	80 x 27 x 36	Oiled Wal.	None	1000 Pair	30,000.00 Pair	
A/D/S/	B7	Ac. Sus.	7¾			1	Dome					46-22 ±3	86	15	2.4k	4/4	17 x 10 x 9	Opt., Vinyl	Cloth	19	420.00
	B8	Ac. Sus.	8½			1	Dome					44-22 ±3	88	15	2k	4/4	20 x 11 x 10	Opt., Vinyl	Cloth	25	500.00
	M15	Closed Box	(2)10	5	Cone	1	Dome	No				30-22 ±3	89	15	200, 2k	8/4	47 x 12 x 16	Opt.	Black Steel	105	3000.00
	M12	Closed Box	(2)8	5	Cone	1	Dome	No				36-22 ±3	88	15	200, 2k	8/4	43 x 11 x 14	Opt.	Black Steel	85	1900.00
	M9	Closed Box	8½	1½	Dome	1	Dome	No				38-22 ±3	88	15	700, 6k	8/4	31 x 10 x 11	Opt.	Black Steel	40	1300.00
	CM7	Closed Box	7	1½	Dome	1	Dome	No				40-22 ±3	87	15	700, 2k	4/3	17 x 9 x 11	Opt.	Black Steel	38	1400.00
	CM6	Closed Box	6			1	Dome	No				50-22 ±3	87	15	2k	4/3	13 x 7 x 9	Opt.	Steel	22	900.00
	CMS	Closed Box	5			1	Dome	No				65-22 ±3	86	15	2k	4/3	10 x 6 x 7	Opt.	Steel	14	650.00
	L990	Closed Box	10	1½	Dome	¾	Dome	No				40-25 ±3	88	15	700, 3k	8/	35 x 11 x 11	Opt.	Black Steel	65	975.00
	L690	Closed Box	8			1	Dome	No				45-20 ±3	88	15	2k	8/	31 x 10 x 10	Opt.	Black Steel	45	590.00
	L300CC	Closed Box	5¼			1	Dome	No				68-20 ±3	90	5	2.5k	4/3.2	9 x 6 x 7	Text. Black	Black Steel	7	410.00
	L200CC	Ac. Sus.	4			1	Dome					85-20 ±3	88	10	2.5k	4/3	7 x 4 x 5	Black Plast.	Black Steel	9 Pair	320.00 Pair
ADVANCED ELECTRO-DYNAMIC SYSTEMS	Cybele OLS-73	Inf. Bal.	12			2x6	Cyl.	No				30-20 ±3	87	40	2k	8/7	15 x 10 x 44	Cloth	Opt., Knit	60	1750.00
ADVANCED SOUND	7	Ported	10	4½	Cone	4	Dome	No				32-20 ±3	91	30	1k, 6k	8/6	39 x 16 x 15	Oiled Wal.	Brown Knit	145	700.00
	5	Ported	(2)8	4½	Cone	4	Dome	No				38-20 ±3	94	20	1k, 6k	4/3.5	37 x 13 x 13	Oiled Wal.	Brown Knit	48	550.00
ADVENT	Mini Advent	Bass Ref.	5¼			½	Dome					110-21 ±3	88		4.5k	6/4	11 x 6 x 5	Oiled Pecan	Brown Knit	10	199.95
	Mini Advent Subwoofer	Ported Subwoof.	(2)5¼									60-220 ±3	91		220	6/4	7 x 12 x 7	Black Vinyl	Knit	11	179.95
	Baby II	Bass Ref.	6½			½	Dome					60-21 ±3	89		4.5k	6/4	17 x 11 x 6	Black Vinyl	Brown Knit	13	249.95
	Prodigy Tower	Bass Ref.	8			¾	Dome					45-23 ±3	89		3k	6/4	28 x 10 x 8	Oiled Pecan	Brown Knit	25¼	349.95
	Legacy	Bass Ref.	10			1	Dome					42-23 ±3	88		2k	8/6	28 x 16 x 10	Oiled Pecan	Brown Knit	46½	449.95
Maestro	Bass Ref.	10	2	Dome	1	Dome					42-23 ±3	90		900, 4.5k	6/4	33 x 16 x 10	Black/Pecan	Brown Knit	50	699.95	
ALLISON ACOUSTICS	IC-20 (With remote control)	Ac. Sus.	(2)10	(4)3½	Inv. Cones	(2)1	Inv. Cones	M, T					87	30	350, 3.75k	8/5.5	48 x 21 x 12	Opt., Wood	Black Cloth	100	4900.00
	CO 9	Ac. Sus.	10	3½	Inv. Cone	1	Inv. Cone	M, T					87	30	350, 3.75k	4/3.5	37 x 13 x 11	Opt., Wood	Opt., Plast.	55½	650.00
	CO 8	Ac. Sus.	8	3½	Inv. Cone	1	Inv. Cone	M, T					87	30	450, 3.75k	4/3.5	29 x 11 x 11	Opt., Wood	Opt., Plast.	35½	475.00

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# LOUDSPEAKERS

MANUFACTURER	Model	Design Principle, Enclosure or System Type	Woofer Diameter, Inches		Midrange Diameter, Inches		Tweeter Diameter, Inches		SPL, 1 Watt/1 Meter, dB	Recommended Min. Amp Power, Watts	Crossover Frequencies, Hz	Impedance, Ohms:		Dimensions Inches (To Nearest Inch)		Grille Color and Material		Weight, Lbs.	Price, \$
												Nominal	Minimum						
ALLISON (Continued)	CD 7	Ac. Sus.	8			1	Inv. Cone		87	15	2k	4/3.5	28 x 10 x 10	Dpt., Wood	Opt., Plast.	22	300.00		
	CD 6	Ac. Sus.	8			1	Inv. Cone		87	15	2k	4/3.5	11 x 11 x 11	Dpt., Wood	Opt., Plast.	17	230.00		
	LC 110	Ac. Sus.	8			1	Inv. Cone		87	15	2k	4/3.5	18 x 12 x 8	Dpt., Vinyl	Black Cloth	16½	145.00		
	LC 120	Ac. Sus.	8			1	Inv. Cone		87	15	2k	4/3.5	22 x 14 x 8	Dpt., Vinyl	Black Cloth	21¼	175.00		
	LC 145	Ac. Sus.	8			1	Inv. Cone		87	15	2k	4/3.5	25 x 16 x 8	Dpt., Vinyl	Black Cloth	25	210.00		
	Mini 2	Ac. Sus.	4			1	Inv. Cone		87	10	2k	6/4.5	7 x 5 x 4	Black Enam.	Mesh	5	198.00		
	Mini 2SW	Ac. Sus. Subwoof.	8						87	10	150	4/3.5	11 x 11 x 11	Black Enam.	Black Mesh	16½	289.00		
	Mini 2/SW	Ac. Sus. Sat. & Subwoof. Powered Ac. Sus.	8	(2)4	Cones	(2)1	Domes		87	10	150,2k	4/3.5	Three Pieces	Black Enam.	Black Mesh	26½ Sys.	459.00 Sys.		
Mini 2P	Ac. Sus.	4			1	Dome		Inc.	2k			7 x 5 x 4	Black Enam.	Black Mesh	13 Pair	359.00 Pair			
ALTA	Altamate	Ported	6½			1	Dome	40-22 ±3	90	20	3.8k	4/3.6	9 Dia. x 20	Opt.	Opt., Cloth	12	498.00 Pair		
	7	Ported	8			1	Dome	35-22 ±2	92	30	2.8k	4/3.2	12 Dia. x 50	Opt.	Opt., Cloth	24	850.00 Pair		
	6	Ported	8	4½	Cone	1¼	Dome	32-26 ±2	90	40	240,6.8k	4/3.2	12 Dia. x 58	Opt.	Opt., Cloth	27	1198.00 Pair		
	5	Ported	(2)8	(2)4½	Cones	1¼	Dome	28-26 ±2	91	50	240,6.8k	4/3.2	14 Dia. x 91	Opt.	Opt., Cloth	53	1898.00 Pair		
	Entré FS2	Ported	8			¾	Dome	42-20 ±3	89	20	3.3k	4/3.6	12 x 12 x 46	Black	Black Cloth		450.00 Pair		
	Entré C2	Ported	6½			¾	Dome	48-20 ±3	89	20	4.2k	4/3.6	9 Dia. x 27	Black	Black Cloth		358.00 Pair		
	Entré DSW	Ported Subwoof.	8					30-150 ±3	88	40	90	8/6.5	12 x 12 x 40	Opt.	Opt.		339.00 Pair		
ALTEC LANSING	550 (With remote control) PSW10	Powered Inf. Baf.	8, (2)10	6½,2	Domes	1	Dome	(2)W, (2)M, T W	20-22 ±2	90	Inc.	80,450, 1.5k,4.5k	22k	71 x 19 x 24	Oiled Wal.	Black Knit	400	12,000.00 Pair	
		Powered Inf. Baf. Subwoof.	10						20-150 ±5	Inc.	50-150 Adj.		17 x 17 x 17	Oiled Wal.		60	800.00		
	55	Inf. Baf.	4			¾	Dome	No	95-22 ±3	85	10	2.8k	4/3	7 x 9 x 6	Black ABS	Black Metal	5	125.00	
	508	Inf. Baf.	(2)8	2	Dome	1	Dome	No	40-20 ±3	90.5	10	750,3.5k	4/3	11 x 40 x 11	Oiled Wal.	Black Knit	62	500.00	
	101	Inf. Baf.	6½			1	Dome	No	40-22 ±3	91	10	2.5k	6/4	17 x 10 x 9	Oiled Wal.	Black Knit	39 Pair	170.00	
	201	Inf. Baf.	8			1	Dome	No	33-22 ±3	91	10	2.5k	6/4	22 x 12 x 9	Oiled Wal.	Black Knit	43	250.00	
	301	Inf. Baf.	10	2	Dome	1	Dome	No	30-22 ±3	93	10	550,3.5k	8/6	27 x 15 x 12	Oiled Wal.	Black Knit	47	375.00	
	401	Inf. Baf.	12	2	Dome	1	Dome	No	25-22 ±3	93	10	550,3.5k	8/5	32 x 17 x 12	Oiled Wal.	Black Knit	60	480.00	
501	Inf. Baf.	(2)10	2	Dome	1	Dome	No	28-22 ±3	93	10	550,3.5k	4/3	46 x 12 x 14	Oiled Wal.	Black Knit	72	750.00		
AMBRIA	System 2000	Inf. Baf. Sat. & Subwoof.	(6)5¼	4	Cone	¾	Dome		30-20 ±3	92	20	120,3k	8/6	Five Pieces	Opt., Lacq.	Opt.	68 Sys.	1930.00 Sys.	
	System 1000	Inf. Baf. Sat. & Subwoof.	4	4	Cone	¾	Dome		35-20 ±3	92	20	120,3k	8/6	Three Pieces	Opt., Lacq.	Opt.	40 Sys.	990.00 Sys.	
	S-150	Inf. Baf.	4			¾	Dome		85-20 ±3	90	20	3k	8/6	7 x 5 x 7	Opt.	Opt.	18 Pair	525.00 Pair	
	S-100	Inf. Baf.	4			¾	Dome		110-20 ±3	90	20	3k	8/6	7 x 5 x 3	Opt.	Opt.	6 Pair	365.00 Pair	
AMERICAN ACOUSTICS	D2550		6½				Dome		65-22	91.5	3k	4/8	13 x 10 x 7	Opt., Wood	Opt., Knit	12	99.50 Pair		
	D3550		8				Dome		60-22	94.5	3k	4/8	18 x 11 x 8	Opt., Wood	Opt., Knit	19	119.95		
	D4550		10	5	Cone		Dome		45-22	95.5	2.7k,6k	4/8	24 x 15 x 10	Opt., Wood	Opt., Knit	34	169.95		
	D5550		12	5	Cone	1,3	Dome, Cone		43-22	96.5	1.7k,6k	4/8	27 x 15 x 10	Opt., Wood	Opt., Knit	40	229.95		
	D8550		15	5	Cone		Dome		37-22	98.5	700,5k	4/8	31 x 18 x 14	Opt., Wood	Opt., Knit	62	349.95		
	D9550		12	(2)5	Cones	1,3	Dome, Cone		32-22	99.5	1.7k,6k		41 x 16 x 15	Opt., Wood	Opt., Knit	76	399.95		
AMRITA AUDIO	Mini-Monitor	Pas. Rad.	8			1	Dome	No	35-32 ±3	92	30	6k	4/3	11 x 11 x 17	Opt.	Opt.	36	875.00 Pair	
	Mini-Tower	Pas. Rad.	8			1	Dome	No	35-32 ±3	92	30	6k	4/3	11 x 11 x 35	Opt.	Opt.	50	975.00 Pair	
	Heartland Tower	Pas. Rad.	(2)8			1	Dome	No	31-32 ±3	96	30	6k	4/2	12 x 17 x 35	Opt.	Opt.	78	1275.00 Pair	
	Summit Tower	Pas. Rad.	10	6½	Cone	1	Dome	No	29-32 ±3	92	50	1k,2.5k	4/3	13 x 13 x 42	Opt.	Opt.	82	1675.00 Pair	
	Reference Standard	Tuned Port	12	(2)6½	Cones	1	Dome	No	28-32 ±3	92	100	150,6k	4/2	14 x 19 x 49	Opt.	Opt.	100	2875.00 Pair	
	Reference Standard Tower	Tuned Port	12	(2)6½	Cones	1	Dome	No	28-32 ±3	92	100	150,6k	4/2	14 x 15 x 61	Opt.	Opt.	108	2875.00 Pair	





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# After four years at Hewlett-Packard, we w

In 1983, Dr. Godehard Guenther, President of a/d/s/, issued an injunction to our engineers and designers. "Guys," he said, "somebody's got to come up with a new loudspeaker standard. Let's make sure it's us."

Understand: he wasn't suggesting our existing loudspeakers weren't good. Rather, he was challenging us to address the shortcomings present even in the very best speakers, ours included. Shortcomings made all the more apparent by the sonic demands of the compact disc.

What we sought to build were speakers that didn't sound like a set of drivers stuffed in a box. Our goal was to create speakers characterized by a stable sound stage, pinpoint imaging and sound that seemed to emanate from free space.

It was a tall order. But the technology that has resulted—Unison™ . . . of one voice—is the kind other speaker makers will be emulating for years to come.



At a/d/s/, we make our own drivers. Our high definition woofers feature new cones, magnets, baskets and voice coil assemblies—painstakingly crafted to eliminate coloration.

**We finally had the tools to be as critical as we were inclined to be.**

Our first task was to take a long, hard look at the limitations inherent in loudspeaker drivers. That required a powerful "microscope." And, fortunately, we had one—a high-resolution, super-fast computer from Hewlett-Packard, supported by a sophisticated mathematical program of our own devise.

Housed in a specially designed a/d/s/ acoustics laboratory, the computer gave us the ability to generate and analyze driver performance data with an accuracy, thoroughness and detail never attainable before.

High technology enclosure materials enable us to make the new CM7 (left) and CM5 extremely compact without sacrificing interior volume. How compact? Consider that the CM5 measures a mere 9<sup>5</sup>/<sub>8</sub>" x 5<sup>3</sup>/<sub>4</sub>" x 6<sup>7</sup>/<sub>8</sub>".

Unison is a trademark of Analog and Digital Systems, Inc

In this veritable mountain of information, acoustic truths resided.



The CM7's 4th-order, 24dB/octave crossover network. Complex, sophisticated and expensive to manufacture, it's a major reason why the speaker produces such a stable image.

**If the drivers aren't flawless, no amount of camouflaging will hide the flaws.**

One fact was obvious: the traditional materials used to construct woofers, tweeters and midranges—polypropylene, metal, cellulose compounds—were simply inadequate. So we set about to discover new ones ideally suited at the molecular level to the jobs they're required to do.

For the domes of our tweeters, we selected a proprietary copolymer that's exceedingly rigid, yet has superb internal damping and freedom from ringing. For the voice coil formers in our midranges, we adopted stainless

# The keyboard of a are ready for a Steinway.

steel. Strong and non-magnetic, it enabled us to produce a motor quick enough to resolve the finest detail, even at the highest volume level. And so our research went, until our drivers were as perfect as the laws of physics allow.

**The crossover network. You don't see it. You shouldn't hear it, either.**

When most speaker makers design crossover networks, their primary concern is the interaction of the drivers. We were more ambitious. We sought crossovers that optimize the relationship between the drivers and their

enclosure, even with the room in which the system is played.

And we had an advantage: the excellence of our drivers allowed us to use *ideal* crossover points. Using these points, all the fundamental tones of the human voice can be reproduced by a single driver. With the computer, we evaluated countless prototypes of crossovers. A 4th-order network of the Linkwitz-Riley type proved the most appropriate. This type alone yields the response that satisfied our requirements for neutrality and realistic imaging. On a frequency response plot, the crossover points aren't even detectable.

**How good it ultimately sounds depends on the box you put it in.**

That's why we employed a polymer material filled with an



With its stainless steel coil former and copolymer cone, the Unisōn midrange does something a cone midrange has never done before: span the fundamental range of the human voice—from 200 to 2,000 Hz.



Our tweeters' domes are made of yet another proprietary copolymer, giving them the unique ability to provide smooth, detailed, high frequency response at even the highest levels.

extremely high mass compound to produce the rigid, aurally "invisible" enclosures of our Compact Monitor Series. You'll be amazed by the weight of these little beauties—they're heavy. You'll be floored by the sound.

To our ears, our new speakers—the M Series and compact CM Series—offer convincing proof that Unisōn technology does indeed define a new era in speaker performance.

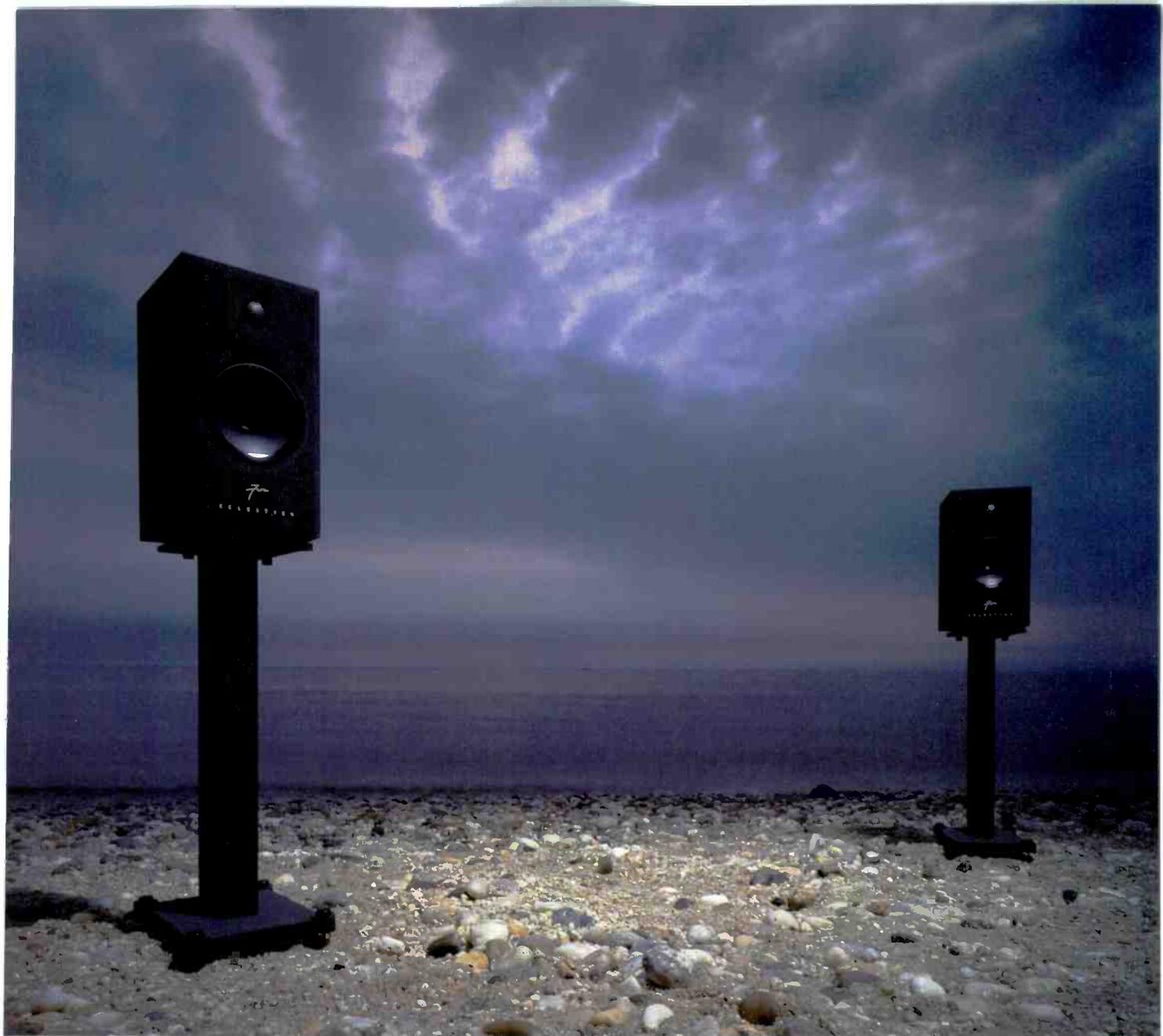


The M12 is the instrument on the right.

a/d/s/

# LOUDSPEAKERS

MANUFACTURER	Model	Design Principle, Enclosure or System Type	Woofer Diameter, Inches			Midrange Diameter, Inches			Tweeter Diameter, Inches		Separate Level Crossover Weights		SPL, 1 Watt/1 Meter, dB	Recommended Min. Amp Power, Watts	Crossover Frequencies, Hz	Impedance, Ohms: Nominal/Minimum	Dimensions, Inches (To Nearest Inch)	Finish	Grille Color and Material	Weight, Lbs.	Price, \$
			Woofer	Midrange	Tweeter	Woofer	Midrange	Tweeter	Midrange	Tweeter	Midrange	Tweeter									
ATC	SCM50	Ported	9	3	Dome	1	Dome		30-20	85	50	400,4k	8/6	28 x 16 x 12	Opt.	Black Knit	85	6000.00			
	SCM100	Ported	12	3	Dome	1	Dome		25-20	88	50	350,4k	8/6	33 x 19 x 16	Opt.	Black Knit	115	8000.00			
	SCM50A	Triamped	9	3	Dome	1	Dome		30-20		350 Inc.	380,3.8k	10k	28 x 16 x 12	Opt.	Black Knit	95	9000.00			
	SCM100A	Triamped	12	3	Dome	1	Dome		25-20		350 Inc.	380,3.8k	10k	33 x 19 x 16	Opt.	Black Knit	125	11,000.00			
	SCM200	Triamped, Ported	(2)12	3	Dome	1/4	Dome		20-20	91	1k	Adj.		33 x 39 x 16	Opt.	Black Knit Opt.	300	7000.00			
	SCM400	Triamped, Ported	(4)12	3	Dome	1/4	Dome		20-20	94	1.6k	Adj.		67 x 39 x 16	Opt.	Opt.	450	w/Xover 9000.00			
	SCM500	Triamped, Ported	(2)15	3	Dome	1/4	Dome		20-20	94	1.2k	Adj.		54 x 35 x 22	Opt.	Opt.	400	w/Xover 8000.00			
AUDIO CONCEPTS	C2	Sealed	8			1	Dome		48-20 ± 3	90	30	3k	16/8	19 x 12 x 11	Oiled Wood	Opt., Knit	40	239.90			
	Laser	Sealed	(2)8			1	Dome		48-20 ± 3	93	20	3k	4/3	35 x 10 x 13	Oiled Oak	Black	60	379.90			
	G2	Aperiodic	10	4 1/2	Cone	1	Dome		36-20 ± 3	89	40	800,5k	8/6	28 x 14 x 13	Oiled Wood	Opt., Knit	53	429.90			
	Compact Monitor	Aperiodic	7			1	Dome		43-20 ± 3	87	40	2k	8/6	16 x 10 x 8	Oiled Wood	Opt., Knit	22	399.90			
	Sapphire	Aperiodic	7			1	Inv. Dome		65-20 ± 3	90	50	2k	6/4	36 x 13 x 13	Oiled Wood	Opt., Knit	68	669.90			
	Super Titan	Aperiodic	(2)12	7	Cone	1	Dome		30-20 ± 3	92	50	275,4.5k	4/3	38 x 17 x 17	Oiled Wood	Opt., Knit	110	899.90			
	Pulse	Aperiodic Compound Subwoof.	(2)10						34-400	87	75		4/3	18 x 15 x 17	Oiled Wood	Opt., Knit	60	415.90			
Saturn	Aperiodic Compound Subwoof.	(2)12						22-200	88	75		4/3	44 x 13 x 13	Oiled Wood	Opt., Knit	85	579.90				
AUDIO PRO	B1-45	Powered Subwoof.	10						30-200 ± 1.5	102	Inc.	Var.		20 x 15 x 15	Opt.		48	985.00			
	B2-70	Powered Subwoof.	(2)8						20-200 ± 1.5	103	Inc.	Var.		24 x 22 x 18	Opt.	Black Cloth	90	1450.00			
	A2-2	Powered	4 1/4			3/4	Dome		50-20 ± 2	99	Inc.			8 x 5 x 4	Opt.	Black Foam	20	1850.00			
	A4-14 MKII	Powered	(2)5	4 1/2	Cone	1	Dome		30-20 ± 1.5	113	Inc.	300,2.5k		20 x 12 x 10	Opt.	Black Foam	82	1950.00			
AUDIOSOURCE	LS One	Inf. Baf.	4			1	Dome		80-20	87	10	2.5k	4/3	7 x 5 x 5	Black Metal	Black Metal	5 1/4	179.95			
	LS One W/T	Inf. Baf.	4			1	Dome		80-20	87	10	2.5k	4/3	7 x 5 x 5	Gray Steel	Gray Steel	5 1/2	199.95			
	LS One Oak/Walnut	Inf. Baf.	4			1	Dome		80-20	87	10	2.5k	4/3	8 x 5 x 5	Opt., Wood	Black Metal	5 1/4	219.95			
	LS Eleven	Inf. Baf.	(2)4			1	Dome		60-20	89	10	600,3k	4/3	15 x 5 x 6	Opt., Wood	Black Metal	8 3/4	259.95			
	LS Twelve	Inf. Baf.	6 1/2			1	Dome		40-20	93	10	3k	4/3	23 x 9 x 8	Opt., Wood	Black Metal	17 1/2	379.95			
AUDIRE	Image I	Planar Ribbon							30-20 ± 3	92	50		2/2	72 x 36 x 3	Oiled Wal.	Black Knit	150	6500.00			
	Image II	Planar Ribbon							35-20	90	75		3/3	72 x 32 x 3	Oiled Wal.	Black Knit	125	4500.00			
	Image III	Planar Ribbon							40-20	88	75		8/8	60 x 24 x 2	Oiled Oak	Brown Knit	60	2700.00			
	Image IV	Planar Ribbon							50-20 ± 3	86	75		4/4	24 x 60 x 2	Oiled Wal.	Black Knit	50	1500.00			
AVALON ACOUSTICS	Ascent	Inf. Baf.	11	2	Dome	1	Dome	No	36-24 ± 2	90	50		6/5.5	13 x 18 x 45	Rswd.	Black Knit	220	11,800.00			
AXIOM AUDIO	AX 1.5 Bookshelf	Bass Ref.	6 1/2			3/8	Dome		50-22 ± 2	89	15	3.2k	8/6	15 x 8 x 8	Opt.	Black Knit	10	299.00			
	AX 1.5	Bass Ref.	6 1/2			3/8	Dome		45-22 ± 2	89	15	3.2k	8/6	20 x 8 x 8	Opt., Oak	Black Knit	14	339.00			
	AX 2 Bookshelf	Bass Ref.	8			1	Dome		42-22 ± 2	89	15	3k	8/6	20 x 10 x 9	Opt., Oak	Black Knit	19	429.00			
	AX 2	Bass Ref.	8			1	Dome		40-22 ± 2	89	15	3k	8/6	24 x 10 x 9	Opt., Oak	Black Knit	25	559.00			
	AX 3	Bass Ref.	8	4 1/2		1	Dome		35-22 ± 2	87	30	180,2.8k	6/5	30 x 10 x 9	Opt., Oak	Black Knit	34	849.00			
	AX 1.5 Reference	Bass Ref.	6 1/2			3/8	Dome		45-22 ± 2	89	15	3.2k	8/6	20 x 8 x 8	Opt., Oak	Black Knit	14	439.00			
	AX 2 Reference	Bass Ref.	8			1	Dome		40-22 ± 2	89	15	3k	8/6	24 x 10 x 9	Opt., Oak	Black Knit	25	749.00			
	AX 3 Reference	Bass Ref.	8	4 1/2		1	Dome		35-22 ± 2	87	30	180,2.8k	6/5	30 x 10 x 9	Opt., Oak	Black Knit	34	1149.00			
	AX 5 Reference	Bass Ref.	10	4 1/2		1	Dome		32-22 ± 2	87	40	180,2.8k	6/4	30 x 12 x 11	Opt., Oak	Black Knit	41	1549.00			
	AX SUB	Subwoof.	10						29-250 ± 3	87	40	Sel.	4/4	18 x 30 x 16	Opt., Oak	Black Knit	81	1099.00			
	AX SUB Centre Channel	Sat. & Subwoof.	10	4 1/2		1	Dome		29-22 ± 3	87	40	Sel., 2.8k	4/4	Two Pieces	Opt., Oak	Black Knit	88	1449.00			
AX 1	Bass Ref.	4 1/2			1	Dome		70-22 ± 2	87	30	2.8k	6/4	12 x 7 x 6	Opt., Oak	Black Knit	9	599.00				



# What Is The Meaning Of Life?

Many have pondered this weighty question, no one has found an answer that satisfies all.

At best, life is synonymous with what we know to be *real*, i.e. genuine, unaffected and natural. As life grows denser and more technologically complex, simplicity becomes more appealing.

The same applies to hifi. High end audio systems are now dedicated to

the transparent reproduction of authentic, lifelike sound.

Unfortunately, too many of us remain impressed with massive speakers that produce a brutish and exaggerated "larger-than-life" sound.

But truly lifelike sound is always more thrilling, simply by the sheer impact of its total fidelity. That's why it's universally acclaimed as "the real thing." Those who know the truth

when they hear it can't be satisfied by any substitutes or illusions of reality.

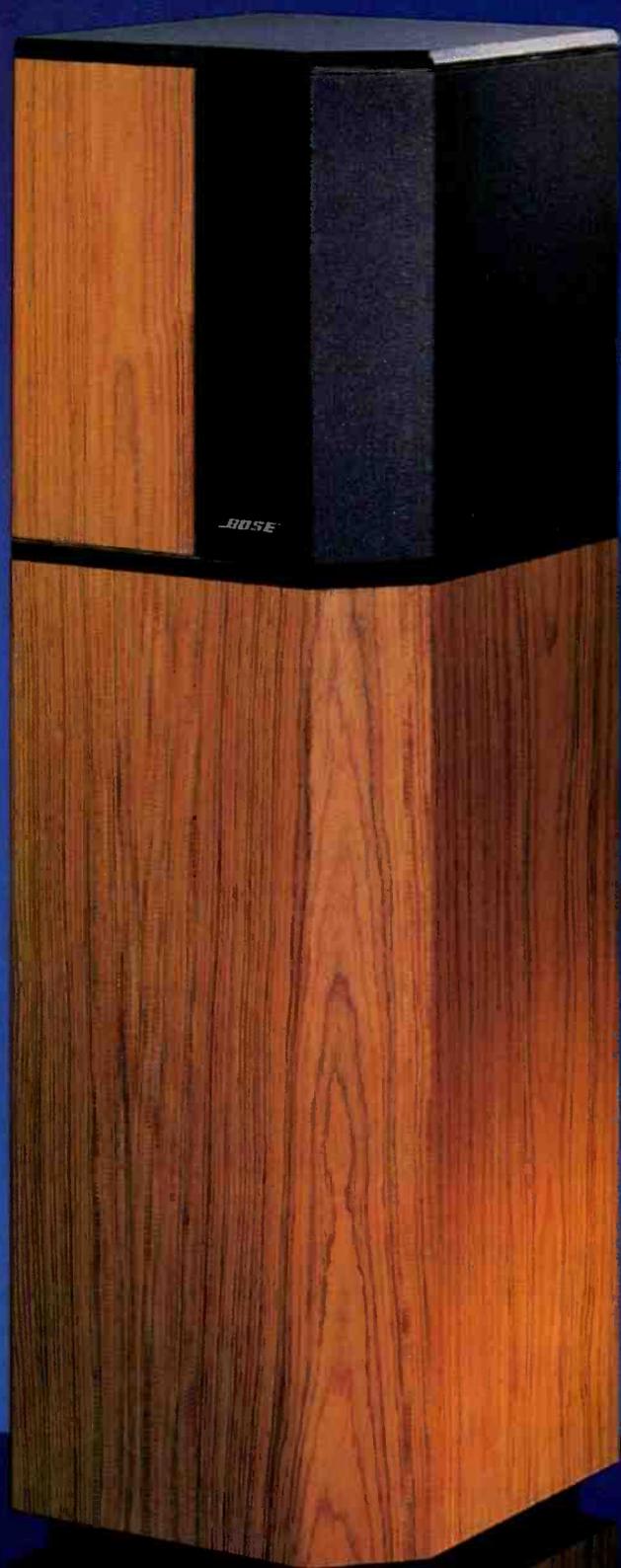
For them, we offer Celestion loudspeakers. A range of subtle and elegant components that deliver "lifelike" sound.

If you've had enough surreal sound to last a lifetime, we've been building the world's most honest loudspeakers for you. Discover the meaning of life at your qualified Celestion component dealer.

**CELESTION**

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89 Doug Brown Way, Holliston, MA 01746 (617) 429-6706



# Introducing the most powerful expression of a new technology:

## The Bose® 10.2™ Series II Direct/Reflecting® system with Acoustimass® speaker technology.

### Inside and out, it's a speaker unlike any other.

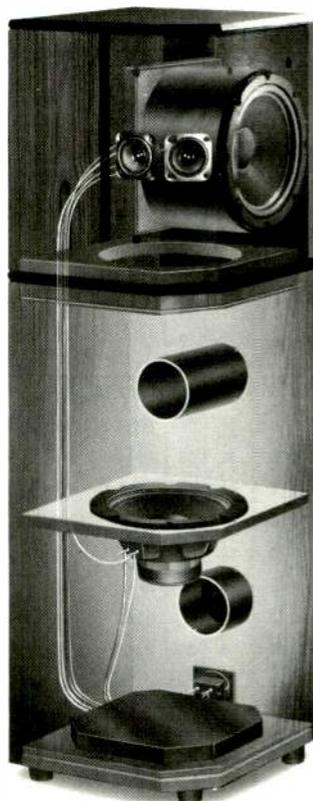
The new Bose 10.2 Series II speaker successfully harnesses a series of audio technologies to take the listener one step closer toward the goal of all speakers: the realism of live music. The 10.2 Series II speaker combines the most powerful version of Acoustimass speaker design available for the home with the proven, critically-acclaimed benefits of a Bose Direct/Reflecting® system. The result: a musical listening system with *no* compromises—one that's at home in any environment.

### Technology in harmony with home aesthetics.

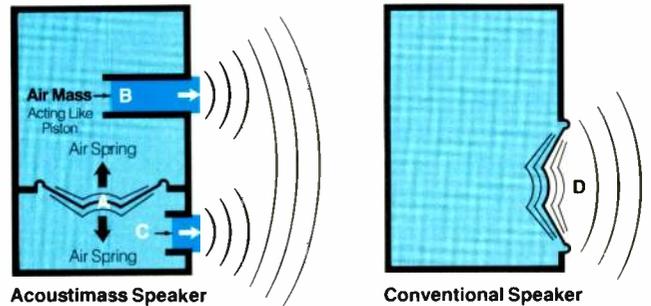
Moreover, the 10.2 Series II system brings lifelike sound into the living environment without overwhelming it. Each speaker's genuine wood veneer, hand-crafted Acoustimass enclosure produces the bass necessary to make even the most demanding music come to life, yet requires just *one square foot* of floor space. The system's Stereo Targeting® arrays precisely shape and control sound, providing listeners—regardless of where they stand or sit—with full, balanced stereo sound from both speakers. Where the speakers look best is also where they *sound* best.

### Greater musical realism with any sound source.

Like all Bose Direct/Reflecting® speakers, the 10.2 Series II system is designed to accurately reproduce much of the clarity and spaciousness of live music. This strict attention to sonic detail is carried through to the lowest notes, where Acoustimass speaker technology provides much of the realism and impact normally experienced *only* in the concert hall. The system's purer sound provides the dynamic range and high power capability required for optimum results with any audio or video system and software—especially digital.



## How an Acoustimass® speaker works.



Improving speaker performance means first reducing distortion. The design of an Acoustimass® speaker *substantially* reduces distortion (see diagrams and graph). The benefits of this patented speaker technology are *purier* sound and an increase in the *dynamic range* of bass performance.

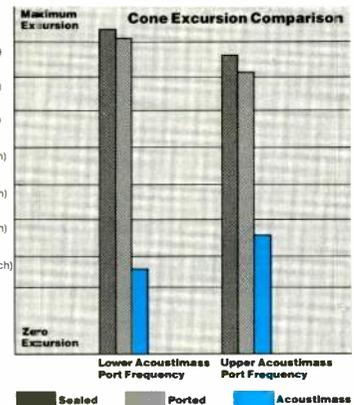
**Left:** An Acoustimass speaker *launches* sound into the room using two masses of air working like pistons (B&C, darker blue), rather than by a surface vibrating directly into the room. *The sound launched into the room by the Acoustimass speaker's air pistons is the purest sound that can be produced by present technology.*

**Right:** A vibrating cone radiating directly into the room (D) produces unfiltered sound.

## Cone Excursion Comparison.

(lower excursion means lower distortion)

**Graph:** The distortion produced by any speaker rises dramatically with its cone motion, or *excursion*. At port-tuned frequencies, a typical Acoustimass speaker's cone has less than 1/16 the maximum excursion\* of sealed and ported cones. Inside an Acoustimass speaker, the interaction of the air springs with the air masses in the ports produces a very high pressure at the surface of the cone. This greatly reduces the cone's excursion, and therefore reduces distortion. The air springs act with their respective masses to form low-pass filters, removing any small distortion components generated by the cone.



\*based on cone travel measurements at 128 watt's input

## Judge for yourself.

Ask your authorized Bose dealer to demonstrate the new Bose 10.2 system with Acoustimass speaker technology against any other speaker—and hear the difference for yourself. For more information, call Bose Corporation toll-free at 1-800-444-2673 between 9 a.m. and 5 p.m. EST.

**BOSE**  
Better sound through research.

# LOUDSPEAKERS

MANUFACTURER	Model	Design Principle	Enclosure or System Type				Woofer Diameter, Inches	Midrange Diameter, Inches	Midrange Type	Tweeter Diameter, Inches	Tweeter Type	Sensitivity Level (1 Watt/1 Meter = W)	Impedance	Frequency Response	SPL, 1 Watt/1 Meter, dB	Recommended Min. Amp Power, Watts	Crossover Frequencies, Hz	Impedance, Ohms: Minimum/Maximum	Dimensions, inches (To Nearest Inch)	Finish	Grille Color and Material	Weight, Lbs.	Price, \$
			Woofer	Midrange	Tweeter	Surround																	
BANG & OLUFSEN	Beolab Penta	Powered Bass Ref.	(4)5	(4)3 1/4	Cones	1	Dome	W	40-20	92	Inc.	700,5k	15k	(5)5 x 65H	Steel	Black	53	3295.00	Pair				
	RL140	Bass Ref.	(2)6 1/2	5	Cone	1	Dome	No	40-20	93	10	800,3k	8/	28 x 20 x 9	Gray	Gray	43	990.00	Pair				
	RL60.2	Bass Ref.	(2)5			1	Dome	No	42-20	93	10	2.5k	8/	21 x 16 x 7	Gray	Gray	24	550.00	Pair				
	RL35	Bass Ref.	5			3/4	Dome	No	48-20	92	10	3.5k	8/	16 x 13 x 5	Gray	Gray	7 3/4	380.00	Pair				
	Beovox S80.2	Ac. Sus.	8			1	Dome	No	50-22	92	20	700,2.5k	6/	4 x 12 x 8	Rswd.	Black	24	770.00	Pair				
	Beovox CX100	Ac. Sus.	(2)4			1	Dome	No	50-20	89	20	2.5k	6/	4 x 12 x 8	Opt.	Opt.	13 1/2	380.00	Pair				
	Beovox CX50	Ac. Sus.	4			1	Dome	No	80-20	89	20	2.5k	6/	4 x 8 x 8	Opt.	Opt.	8	280.00	Pair				
IWS 100	Ac. Sus.	(2)4			1	Dome	No	50-20	89	20	2.5k	6/	21 x 8 x 4	Black	White Metal	13		Pair					
BGR	BGR-80	Ac. Sus. Sat. & Subwoof.	12	6 1/2	Cone	1	Dome		38-20 ± 3	90	25	150,2.5k	8/6	Three Pieces	Oak	Black Knit	82 Sys.	999.00	Sys.				
	BGR-10A	Ac. Sus.	6 1/2			1	Dome		50-20	89	15	2.5k	8/6	12 x 8 x 7	Wal.	Black Knit	12	289.00	Pair				
	BGR-25A	Bass Ref.	8			1	Dome		45-20	90	15	2.5k	8/6	16 x 10 x 8	Wal.	Brown Knit	14	319.00	Pair				
	BGR-30A	Bass Ref.	8			1	Dome		40-20 ± 3	90	15	2.5k	8/6	19 x 12 x 11	Wal.	Black Knit	27	429.00	Pair				
	BGR-55A	Bass Ref.	12	2	Dome	1	Dome		40-20 ± 3	91	15	700,3k	8/6	25 x 14 x 12	Opt., Wood	Brown Knit	42	719.00	Pair				
	BGR-60A	Bass Ref.	10	2	Dome	1	Dome		38-20 ± 3	90	15	700,3k	8/5	25 x 14 x 12	Opt., Wood	Black Knit	40	699.00	Pair				
BIB	Point-4		4			2 1/2	Cone	W			50	4k	4/	8 x 5 x 5	Black Alum.	Gray Mesh	5 3/4	129.00	Pair				
BLACK ACOUSTICS	Black Bag 1.7	Ac. Sus.	6			1	Dome		50-20 + 2, -5	87	50	1.5k	4/	9 x 8 x 15	Black Vinyl	Black Knit	33	349.95	Pair				
BOSE	901 VI	Ac. Matrix	(9)4 1/2								10		8/	21 x 13 x 13	Wal.	Brown Knit	17 1/2	1500.00	Pair w/EQ				
	601 III	Ported	(2)8			(4)3	Cones				87	10	1.5k-2.5k	8/	12 x 12 x 30	Wal.	Brown Knit	45	1026.00	Pair			
	501 IV	Ported	10			(2)3	Cones				20	1.5k-2.5k	8/	16 x 14 x 25	Teak Vinyl	Brown Knit	20	750.00	Pair				
	401	Ported	(2)6 1/2			2	Cone				10	2.2k	4/	12 x 12 x 30	Teak Vinyl	Brown Knit	31	598.00	Pair				
	301 II	Ported	8			(2)3	Cones				10	1.5k-2.5k	8/	10 x 17 x 10	Wal. Vinyl	Brown Knit	19	422.00	Pair				
	201 II	Ported	6			3	Cone				5	1.5k-2.5k	8/	15 x 18 x 19	Rswd. Vinyl	Brown Knit	10	278.00	Pair				
	101 Music Monitor	Ported									89	10		8/	6 x 9 x 5	Opt.	Opt.	10	239.00	Pair			
	RoomMate II	Powered									102	Inc.			7 x 10 x 7	Black Metal	Black Knit	10 1/2	279.00	Pair			
	Video RoomMate	Powered	4 1/2								100	Inc.			6 x 9 x 5	Gray	Black Silv.	11 7/8	279.00	Pair			
	Acoustimass System AM-5	Acoustimass	(2)6 1/2	(4)2 1/2	Cones									8/	Three Pieces	Black	Black Knit	33 Sys.	699.00	Sys.			
	10.2 II	Acoustimass	8	(2)2	Cones						88	10	140,1.6k	8/	39 x 12 x 12	Teak Ven. Black	Brown Cloth	46	1299.00	Pair			
	SE-5	Acoustimass	(2)6 1/2	(4)2 1/2	Cones									6/	Three Pieces	Black	Black	33 Sys.	699.00	Sys.			
	6.2	Ported	8	(2)3	Cones						10	1k-3.2k, 6k	4/	20 x 10 x 10	Waxed Teak	Brown Knit	19 1/2	599.00	Pair				
4.2	Ported	8	2 1/2	Cone						10		8/	18 x 10 x 9	Teak Vinyl	Brown Knit	15	419.00	Pair					
2.2	Ported	6	2	Cone						10		8/	10 x 15 x 8	Teak Vinyl	Brown Knit	12	299.00	Pair					
BOSTON ACOUSTICS	T1000 Series II	Ac. Sus.	8	6 1/2	Cone	1	Dome		38-20 ± 3	90	15	250,2.5k	4/4	43 x 10 x 12	Opt.	Opt., Cloth	65	1200.00	Pair				
	T930	Ac. Sus.	10	6 1/2	Cone	1	Dome		42-20 ± 3	90	15	250,2.5k	8/6	37 x 11 x 12	Opt.	Opt., Cloth	50	800.00	Pair				
	T830	Ac. Sus.	8	3 1/2	Cone	1	Dome		45-20 ± 3	88	15	800,4k	8/6	33 x 10 x 10	Opt.	Opt., Cloth	40	500.00	Pair				
	A150 Series III	Ac. Sus.	10	3 1/2	Cone	1	Dome		39-20 ± 3	90	15	550,3.5k	8/5	33 x 16 x 8	Opt.	Opt., Cloth	47	700.00	Pair				
	A100 Series III	Ac. Sus.	10			1	Dome		39-20 ± 3	90	15	2k	8/5	33 x 16 x 18	Wood Vinyl	Gray Cloth	44	420.00	Pair				
	A70 Series III	Ac. Sus.	8			1	Dome		45-20 ± 3	90	15	2.5k	8/5	23 x 13 x 9	Wood Vinyl	Gray Cloth	24	320.00	Pair				
	A60 Series II	Ac. Sus.	8			1	Dome		52-20 ± 3	90	10	3k	8/6	18 x 11 x 8	Opt. Vinyl	Opt., Cloth	16	230.00	Pair				
	A40 Series II	Ac. Sus.	6 1/2		3/4	Cone				65-20 ± 3	89	5	3.5k	8/5	14 x 8 x 7	Opt.	Opt., Cloth	9	170.00	Pair			
	A40V Series II	Ac. Sus.	6 1/2		3/4	Cone				65-20 ± 3	90	5	3.5k	8/5	14 x 8 x 7	Matte Black	Black Cloth	9	190.00	Pair			
										58-18 ± 3	88	20	3k	8/7	19 x 10 x 11	Black	Black	28	595.00	Pair			
										53-18 ± 3	87	20	3k	8/7	23 x 11 x 13	Black	Black	41	995.00	Pair			
BRITISH FIDELITY	MC-2	Ducted Port	8 1/4			1	Dome							19 x 10 x 11	Black	Black	28	595.00	Pair				
	MC-4	Ducted Port	9			1	Dome							23 x 11 x 13	Black	Black	41	995.00	Pair				



# STATEMENT OF THE ART

Creating a truly musical loudspeaker is indeed an art—  
as much a product of mind, hands and heart as a painting  
or a piano sonata.

And, as in painting, there are different styles to this art. For  
example, there are Impressionistic speakers, where detail and  
focus are subordinated to a pursuit of atmosphere. Speakers  
that impose their vision of what we ought to hear through  
psycho-acoustic tricks can be thought of as Expressionistic.

We at Dahlquist confess to being realists.

Realism is what the new DQ-20 Phased Array™ is all about.  
We believe that the ultimate realization of the loudspeaker  
art must not express or suppress, only reveal—easily,

naturally and transparently—the music that flows  
through it.

Realism means music that retains its substance and form  
—with precise, stable imaging and open, airy, in-depth  
presentation of each individual instrument. It means  
human voices that are natural, with no artificial colorations  
to get in the way of true communication of content or  
emotion. The DQ-20 leaves music free—to touch and to  
move the listener.

Please take the opportunity soon to audition a pair of DQ-20  
loudspeakers and hear for yourself that, at Dahlquist, the  
state-of-the-art is art that lets music make the statement.

## DAHLQUIST

601 Old Willets Path, Hauppauge, N.Y. 11788

Enter No. 50 on Reader Service Card

# "If I Had It To Do All C This Is H

"The technology for a new generation of loudspeaker systems was already here," says Henry Kloss. I was just the first one to put it together right."

"Right," in this case, meaning a stereo system that allows the integration of speakers into a room in a way that's never before been possible.

## Ensemble.

### The last loudspeaker of Henry Kloss.

Ensemble combines two bass units, two mid- to high-frequency units and something you won't find in any hi-fi store on earth.

Your living room. Which now, because of Ensemble's unique "system" design—becomes a seamlessly integrated part of the sound propagation process.

The result is a system that gives you perfectly balanced energy throughout the full ten octaves of music. And one which, at the same time, can be virtually invisible in your living room.

### The first speaker system that doesn't cheat you out of either bass or space.

The fundamental octaves that so much of music is built on...

The almost sub-audible but palpable sounds generated by the big pipes of the organ, the bottom of the acoustic or electric bass, the low notes of the synth...

The frequencies completely ignored in the so-called "mini-speakers" now in vogue...

Ensemble provides them. With two dedicated, acoustic-suspension loudspeakers whose jobs are solely to reproduce the bottom two octaves of musical significance.

It is by design, not afterthought, that Ensemble comes with two, not one, bass units.

Because the human ear can't easily localize bass sound below about 150 Hz,

there is no need in a home music system for the bass to emanate from the same source as the higher frequencies. (And many acoustical reasons why it shouldn't.)

So to take advantage of this basic but vastly overlooked fact, the bass units are built small enough to be placed where they'll produce the best sound, without visually overpowering your room.

They are a compact 12" × 21" × 4.5". Yet they generate the low-frequency energy that would ordinarily require either a pair of very large conventional loudspeakers, or adding on a massive "subwoofer." Moreover, using two separate easily placed bass units dramatically reduces the creation of standing waves—the bane of pure hi-fi reproduction.

Without detriment to the sound, Ensemble's bass units can be placed beneath the couch, on top of the bookshelf, or under the potted plant.

And the result is a happy coincidence: Where the units sound the best is likely where they'll look the best. Even if that means not being able to see them at all.

*There is a wager you can make, if you don't mind taking money from house guests.*

*Place Ensemble's satellites where they're visible.*

*Then hide one of the bass units under the sofa, and put the other on the floor with a plant on it. When your friends arrive, bet them to point out where the bass is coming from. They'll point to the satellites. Every time.*

### As for the other 8 octaves of music.

The rest of the sound spectrum, from a nominal crossover of 140 Hz, is reproduced by a stereo pair of two-way satellite units. Each incorporates a low-frequency driver, crossing over at 2,700 Hz to a direct-radiator tweeter that goes beyond audibility.

They are small enough (4" × 5" × 8" high) to set the sound stage (or so-called "imaging") wherever you want it.

Finished in scratch-proof, gunmetal grey Nextel, they will look good for a lifetime.



### What Henry Kloss tells his friends:

Every time I came out with a new speaker at AR, KLH, or Advent, my friends would ask me, "Henry, is it worth the extra money for me to trade up?" And every time I would answer, "No, what you've already got is still good enough!"

But today, with the introduction of Ensemble, I tell them, "Perhaps now is the time to give your old speakers to the children!"

### Overcoming the fear of paying too little.

This is more difficult than it may sound. Because the Ensemble System sells for an introductory price of only \$499.

And it can be jarring to accept the notion that a product actually outperforms others costing several times more. But think back on Henry Kloss' track record with AR, KLH, and Advent, the best selling high-performance speakers of their decades... Our commercial success will come not from excessive prices

# Never Again... And I Do... I'd Do It."

*Henry Kloss. Member of the Audio Hall of Fame. The creator of Acoustic Research in the 1950's, KLH in the 1960's, and Advent in the 1970's—the dominant speakers of their decades—now brings you Ensemble: the best-sounding speaker system of this era.*

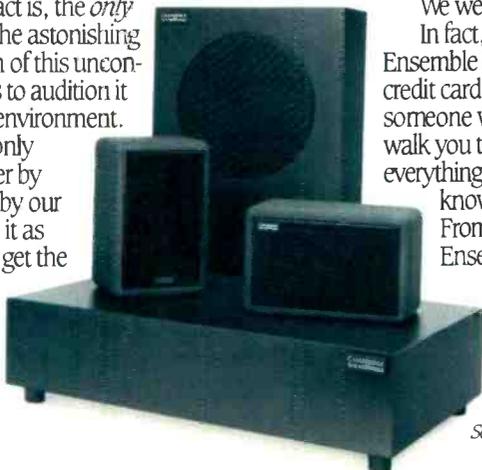


on a small number of sales, but from selling a lot of systems to a lot of people. You, perhaps, among them.

The second thing you must overcome is the misdirected notion that you must go to a dealer showroom and listen to the speakers.

Because the fact is, the *only* way to appreciate the astonishing sound reproduction of this unconventional system is to audition it in your own room environment. Therefore, we sell only factory-direct. Either by phone, by mail, or by our front door, to make it as easy as possible to get the speakers to your front door.

They come with a straightforward 30-day money-back return policy.



*The Ensemble Stereo System: 2 bass units, 2 satellites, 100 feet of wire, mounting units, intelligent documentation, and a warm body. (Your Cambridge SoundWorks audio expert.)*

## Speaking directly to the people who make the speaker.

To our knowledge, no other hi-fi manufacturer invites you to call, talk about, and buy the system. ("Hello, Mr. Sony?" Try that.)

We welcome you.

In fact, the easiest way to buy Ensemble is to call us with your credit card in hand, and speak with someone who will be happy to walk you through, talk you through, everything you might ever want to know about the system.

From why or why not to buy Ensemble, to questions about installation, room

placement and other related audio equipment.

To get literature, to chat—or to order—the toll-free number is 1-800-252-4434, Mon.–Thurs., 9–9, Fri. and Sat., 9–6 Eastern Time. (In Canada, 1-800-525-4434.) Fax # (617) 332-9229.

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MA residents add 5% sales tax.

\*Plus freight. Call and ask.

Suite #104

# LOUDSPEAKERS

MANUFACTURER	Model	Design Principle, Enclosure or System Type										Woofer Diameter, Inches		Midrange Diameter, Inches		Tweeter Diameter, Inches		Separate Level Controls Midrange = M, Tweeter = T, Subwoofer = ST	Anchoic Frequency Response, Hz to kHz, ± dB	SPL, 1 Watt/1 Meter, dB	Recommended Min. Amp. Power, Watts	Crossover Frequencies, Hz		Impedance, Ohms: Nominal/Minimum		Dimensions, Inches (To Nearest Inch)		Finish	Grille Color and Material	Weight, Lbs.	Price, \$
		Woofer	Midrange	Midrange	Tweeter	Tweeter	Woofer	Midrange	Tweeter	Woofer	Midrange	Woofer	Midrange	Woofer	Midrange	Woofer	Midrange					Woofer	Midrange	Woofer	Midrange	Woofer	Midrange				
BSM	Series 1	Ac. Sus.	8			2	Cone			50-20 ±2	90	15	2k	8/4	24 x 11 x 8	Black Vinyl	Black Knit	14	200.00												
	Series 3 MK V	Ac. Sus.	8	3	Cone	2	Cone			48-20 ±2	92	15	2k,6k	8/4	24 x 11 x 9	Black Vinyl	Black Knit	15	250.00												
	Series 4 MK V	Ac. Sus.	10	3	Cone	2	Cone			40-20 ±2	93	15	2k,6k	8/4	24 x 14 x 11	Black Vinyl	Black Knit	18	275.00												
	Series 7 MK V	Ac. Sus.	12	4	Cone	2	Cone			30-20 ±2	94	15	2k,6k	8/4	27 x 15 x 13	Black Vinyl	Black Knit	27	300.00												
	Series 12 MK II	Pas. Rad.	12	4	Cone	2	Cone			30-20 ±2	94	15	2k,6k	8/4	41 x 15 x 13	Black Vinyl	Black Knit	39	450.00												
B & W	DM550	Inf. Baf.	6			1	Dome			70-20 ±2.5	87	30	3k	8/4	14 x 9 x 10	Opt., Wood	Black Knit	12	400.00												
	DM560	Vented	8			1	Dome			65-20 ±2.5	90	30	3k	8/4	19 x 9 x 12	Opt., Wood	Black Knit	18¾	550.00												
	DM570	Vented	8			1	Dome			55-20 ±2.5	91	30	3k	8/4	25 x 9 x 12	Opt., Wood	Black Knit	23¾	650.00												
	DM580	Vented	(2)8			1	Dome			50-20 ±2.5	91	30	3k	8/4	35 x 9 x 16	Opt., Wood	Black Knit	40¾	900.00												
	Matrix 1	Inf. Baf.	6			1	Dome			80-25 ±2	86	50	3k	8/4	16 x 9 x 13	Opt.	Black Knit	22	1200.00												
	Matrix 2	Vented	8			1	Dome			60-25 ±2	88	50	3k	8/4	24 x 10 x 13	Opt.	Black Knit	35¼	1600.00												
	Matrix 2	Inf. Baf.	(2)8			1	Dome			51-25 ±2	90	50	3k	8/4	36 x 10 x 16	Opt.	Black Knit	64	2500.00												
	Matrix 3	Inf. Baf.	(2)8			1	Dome			90-20 ±1.5	85	50	3k	8/4	10 x 6 x 9	Opt.	Black Mesh	11	750.00												
	Series 2	Inf. Baf.	4½			1	Dome			48-20 ±1.5	87	50	150,3k	8/4	39 x 6 x 9	Opt.	Black Mesh	35	1750.00												
	CM1	Vented	(2)4½	4½	Cone	1	Dome			70-20 ±2	89	30	3k	8/4	19 x 9 x 12	Opt.	Black Knit	20	900.00												
	CM2	Vented	8			1	Dome			65-20 ±2	90	30	3k	8/4	25 x 9 x 12	Opt.	Black Knit	25	1200.00												
	DM1600	Vented	8			1	Dome			20-20 ±2	88	100	400,3.5k	8/4	40 x 17 x 22	Opt., Wood	Black Knit	110	5000.00												
DM1800	Vented	8			1	Dome			30-20 ±2	91	100	400,3k	8/4	37 x 17 x 22	Opt., Wood	Black Knit	180	8000.00													
801 Matrix	Vented	12	4½	Cone	1	Dome																									
Series 2	Vented	(2)12	(2)4½	Cones	2	Dome	M, T																								
808	Vented	(2)12	(2)4½	Cones	2	Dome	M, T																								
CABASSE	Galiote		6¾			1	Dome	No		70-20 ±4	93.5		4k	8/	12 x 8 x 8	Wal.	Brown Knit	13	495.00												
	Corvette		6¾	2	Cone	1	Dome	No		65-20 ±3	92		700,5k	8/	19 x 10 x 10	Wal.	Brown Knit	22	700.00												
	Sloop		11½	4¾	Cone	1	Dome	No		60-20 ±3	94		900,6.5k	8/	25 x 14 x 13	Wal.	Brown Knit	44	770.00												
	Clipper II		11½	2¼	Cone	1,2	Domes	No		55-22 ±3	94		100,5k	8/	29 x 14 x 13	Wal.	Brown Knit	48	825.00												
	Galion IV		12	6¾	Dome	1,2	Domes	No		50-20 ±3	94			8/	39 x 14 x 13	Wal.	Brown Knit	73	1595.00												
	Brigantin VI		14	6¾	Dome	1,2	Domes	No		40-20 ±3	94		180,1k, 5.5k	8/	57 x 18 x 18	Wal.	Brown Knit	167	3080.00												
CADAWAS ACOUSTICS	TC-1	Auto Damping	8,10	5¼	Cone	1,2	Dome, Cone	M, T			87	25	250,3.5k, 8k	8/6.5	24 x 15 x 11	Oiled Wal.	Brown Cloth	44	1195.00												
	Mobile Monitor One	Auto Damping	(2)5¼			1	Dome	T			87	15	2.5k	8/	14 x 8 x 8	Oiled Wal.	Brown Cloth	15	595.00												
	TC-2	Auto Damping Subwoof.	8,10					W		20-125	87	25	125	8/	24 x 15 x 11	Oiled Wal.	Brown Cloth	40	650.00												
CAMBER ACOUSTICS	.5	Ported	6½			¾	Dome			55-20 ±3	90	10	3.5k		14 x 8 x 11	Opt., Vinyl	Black Knit	18	249.00												
	1.5	Ported	6½			¾	Dome			55-20 ±2	89	10	3.5k		16 x 10 x 11	Opt., Vinyl	Black Knit	19	339.00												
	2.5	Ported	6½			1	Dome			45-20 ±2	90	10	3k		24 x 10 x 11	Opt., Vinyl	Black Knit	25	449.00												
	3.5	Ported	8			1	Dome			43-20 ±2	91	15	3k		24 x 10 x 13	Opt., Vinyl	Black Knit	30	669.00												
	4.5	Ported	8			1	Dome			40-20 ±2	90	15	3k		23 x 10 x 12	Opt., Vinyl	Black Knit	32	1098.00												
	Studio-Pro	Ported	(2)8	7½	Cone	1	Dome			30-20 ±2	92	25	200,3.5k		41 x 11 x 15	Opt., Wood	Black Knit	100	1999.00												
CAMBRIDGE SOUNDWORKS	Ensemble	Ac. Sus. Sat. & Subwoof.	(2)8, 4			¾, 1¾	Dome, Cone	No			85	25	140,2.7k	6/	Four Pieces	Gray Nxtl. Sat., Black Lam. Sub.	Black Metal	52 Sys.	499.00 Sys.												
CANTON	Plus S	Ac. Sus.	4¾			1	Dome			45-30	87.2		2.2k	4/	8 x 5 x 4	Opt.	Opt., Mesh	11 Pair	340.00 Pair												
	GL 260	Ac. Sus.	6¾			1	Dome			42-30	87.3		1.7k	4/	10 x 7 x 5	Opt.	Opt., Mesh	15 Pair	490.00 Pair												
	GL 300F	Ac. Sus.	6¾			1	Dome			48-30	87.3		1.7k	4/	13 x 9 x 3	Opt.	Opt., Mesh	18 Pair	500.00 Pair												
	Plus C	Ac. Sus. Subwoof.	12							20-120	89.7		120	4/	14 x 14 x 13	Opt.	Opt., Mesh	18 Pair	575.00 Pair												
	Plus Beta	Powered Ac. Sus. Subwoof.	12							20-140		Inc.	70,90,140		15 x 15 x 14	Opt.	Opt., Mesh	47	2000.00												
(Continued)	Karat 20	Ac. Sus.	7½			1	Dome			36-30			2.5k	4/	13 x 9 x 8	Opt.	Opt.	14	690.00 Pair												

# The McIntosh XRT 22 Loudspeaker System delivers

The McIntosh XRT 22 is the purest expression of the loudspeakers scientist's endeavors. It is the one *right combination* of component parts that has eluded the diligent searcher for the loudspeaker bridge to the dominion of reproduced musical reality. The high-frequency radiator column is an illustration of the *right combination*. The 23 tweeter elements can reproduce 300 watts sine wave input power at 20 kHz, with the lowest measured intermodulation distortion. Because each tweeter mechanism handles a small quantity of the total power, extremely low quantities of distortion are developed. The total column radiates the energy in a half cylindrical time co-ordinated sound field. The low distortion, transparency of sound, coherence of sound images, definition of musical instruments, and musical balance is simply a revelation that you must experience.

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# LOUDSPEAKERS

MANUFACTURER	Model	Design Principle, Enclosure or System Type					Midrange Diameter, Inches	Midrange Type	Tweeter Diameter, Inches	Tweeter Type	Separable Level Control? Woofer = W, Tweeter = T, Superwoofer = ST	Anchoic. Frequency Response, Hz to kHz, ±dB	SPL, 1 Watt/1 Meter, dB	Recommended Min. Amp Power, Watts	Crossover Frequencies, Hz	Impedance, Ohms: Nominal/Minimum	Dimensions, Inches (To Nearest Inch)	Finish	Grille Color and Material	Weight, Lbs.	Price, \$
		Woofer Diameter, Inches	Midrange Diameter, Inches	Midrange Type	Tweeter Diameter, Inches	Tweeter Type															
CANTON (Continued)	Karat 30	Ac. Sus.	8½			1	Dome				30-30			2.5k	4/	17 x 11 x 11	Opt.	Opt.	26	890.00 Pair	
	Karat 40	Ac. Sus.	8½	4¾	Cone	1	Dome				24-30			450,4k	4/	20 x 11 x 11	Opt.	Opt.	32	1290.00 Pair	
	Karat 60	Ac. Sus.	10	4¾	Cone	1	Dome				22-30			450,4k	4/	23 x 12 x 12	Opt.	Opt.	44	1590.00 Pair	
	CT 80	Ac. Sus.	8½	4¾	Cone	1	Dome				22-30			450,4k	4/	32 x 11 x 12	Opt.	Opt.	49	1650.00 Pair	
	CT 90	Vented	10	4¾	Cone	1	Dome				20-30			450,4k	4/	35 x 12 x 13	Opt.	Opt.	71	2400.00 Pair	
	CT 100	Vented	6¾, 10¼	1½	Dome	1	Dome				18-30			250,1.1k, 4.6k	4/	41 x 13 x 14	Opt.	Opt., Cloth	88	3500.00 Pair	
	CT 120	Vented	7¾, 12¼	1½	Dome	1	Dome				18-30			250,1.1k, 4.6k	4/	47 x 14 x 16	Opt.	Opt., Cloth	128	5000.00 Pair	
	CA 15	Powered	10¼	4¾	Cone	1	Dome	W, M, T			20-30		Inc.	350,3.5k		35 x 12 x 13	Opt.	Opt., Cloth		6500.00 Pair	
	CA 20	Powered	10¼	7½, 1½	Cone, Dome	1	Dome	W, M, T, ST			20-30		Inc.	220,1.6k, 4.5k		13 x 48 x 16	Opt.	Opt., Cloth	181	11,000. Pair	
CA 30	Powered	10¼	7½, 1½	Cone, Dome	1	Dome	W, M, T, ST			20-30		Inc.	220,1.6k, 4.5k		15 x 67 x 17	Opt.	Opt., Cloth	280	16,500. Pair		
CASCADE	SPS-215 AD	Vented	5¼			1	Dome	T		65-20 ±4.5	87	25	1.41k	8/3	12 x 8 x 7	Oak	Black Knit	20	738.00 Pair		
	SPS-320 AD	Vented	8	3	Dome	1	Dome	M, T		38-20 ±4.5	89	30	640,2.1k	8/3	20 x 12 x 10	Oak	Black Knit	41	1178.00 Pair		
CASTLE	Trent	Bass Ref.	5			1	Cone	No		70-22	89	10		8/6	13 x 7 x 8	Wood Ven.	Black Foam	17 Pair	300.00 Pair		
	Clyde	Bass Ref.	5			1	Cone	No		65-22	89	10		8/6	15 x 9 x 9	Wood Ven.	Black Foam	22 Pair	350.00 Pair		
	Tyne	Bass Ref.	6			1	Cone	No		55-22	89	10		8/6	17 x 10 x 9	Wood Ven.	Black Foam	34 Pair	450.00 Pair		
	Durham	Bass Ref.	6			1	Cone	No		60-22	88	15		8/6	16 x 9 x 9	Wood Ven.	Black Foam	33 Pair	575.00 Pair		
	Pembroke II	Bass Ref.	8			1	Cone	No		48-22	88	15		8/6	22 x 10 x 12	Wood Ven.	Black Foam	62 Pair	750.00 Pair		
	Stirling	Bass Ref.	(2)6			1	Cone	No		48-22	88	15		8/6	22 x 10 x 13	Wood Ven.	Black Knit Foam	66 Pair	1300.00 Pair		
COE	Mini Monitor IV	Inf. Baf.		5½	Cone	1	Dome			50-20	91	50	1.5k	/4	7 x 11 x 9	Lacq. Teak	Black Knit	12	550.00 Pair		
	Mini Monitor V	Inf. Baf.		5½	Cone	1	Dome			50-32	91	50	1.5k	/4	15 x 6 x 9	Lacq. Teak	Black Knit	14	850.00 Pair		
	Tower I	Pas. Rad.	8		Cone	1	Dome			40-20	91	75	200,1.5k	/8	8 x 37 x 12	Lacq. Teak	Black Knit	43	1900.00 Pair		
	Mini Tower & Double Subwoofer	Inf. Baf. Sat. & Ported Subwoofer.	8	5½	Cone	1	Dome			22-32	91	200	150,1.5k	/4, 16/	Four Pieces	Lacq. Teak	Black Knit	172 Sys.	3800.00 Sys.		
	Colossus Tower & Subwoofer Avantgarde	Inf. Baf. Sat. & Ported Subwoofer.	(2)8, (6)10 (2)10	6½	Cone	1	Dome			15-32	91	200	65,300, 1.5k	16/ 12/	Four Pieces	Lacq. Teak	Black Knit	1100 Sys.	30,000. Sys.		
CELESTION	SL 12 Si	Ac. Sus.	(2)6			1¼	Dome			70-20 ±3	86	35	500,2.8k	8/	8 x 11 x 21	Opt.	Black Knit	29	1499.00 Pair		
	SL 600 Si	Ac. Sus.	6			1¼	Dome			75-20 ±3	82	35	2.3k	8/	8 x 9 x 14	Gray Nxtl.	Black Knit	11	1999.00 Pair		
	SL 700	Ac. Sus.	6			1¼	Dome			75-20 ±3	82	35	3k	8/	8 x 9 x 15	Gray Nxtl.	Black Knit	14	2999.00 Pair		
	System 6000	Double Dipole Subwoof.	(2)12					W		20-120		50	120	8/	18 x 15 x 32	Gray Nxtl.	Black Knit	76	2699.00 Pair w/ Xover, EQ & Stands		
	DL 4 II	Ac. Sus.	6			1	Dome			70-20 ±3	89	25	3k	8/	8 x 8 x 15	Opt., Vinyl	Black Knit	10	328.00 Pair		
	DL 6 II	Ac. Sus.	8			1	Dome			60-20 ±3	89	25	3.5k	8/	10 x 10 x 18	Opt., Vinyl	Black Knit	15	438.00 Pair		
	DL 8 II	Ac. Sus.	8			1	Dome			50-20 ±3	89	25	3.5k	8/	11 x 10 x 19	Opt., Vinyl	Black Knit	22	548.00 Pair		
	DL 10 II	Bass Ref.	10	4	Cone	1¼	Dome			48-20 ±3	89	25	530,3.8k	8/	14 x 12 x 29	Opt., Vinyl	Black Knit	43	928.00 Pair		
	SL 6 Si	Ac. Sus.	6			1¼	Dome			75-20 ±3	84	35	2.8k	8/	8 x 11 x 15	Opt.	Black Knit	18	949.00 Pair		
CELLO	Amati	Ac. Sus.	12	(4)2	Domes	(4)¾	Domes	No			87	50		4/	27 x 10 x 20	Opt.	Opt.	85	5000.00 Pair		
ERWIN-VEGA	D-1	Ported	8			1	Horn			30-20 ±4	92	5	3k	8/5	20 x 11 x 10	Vinyl	Brown Knit	25	170.00		
	D-2	Ported	10			1	Horn			30-20 ±4	94	5	3k	8/5	24 x 14 x 10	Vinyl	Brown Knit	35½	220.00		
	D-3	Ported	10	6	Cone	1	Horn	T		30-20 ±4	94	5	700,3.5k	8/5	27 x 14 x 11	Vinyl	Brown Knit	39	290.00		
	D-5	Ported	12	6	Cone	1	Horn	T		32-20 ±4	96	5	700,3.5k	8/5	28 x 16 x 11	Vinyl	Brown Knit	44	330.00		
	D-7	Ported	12	(2)6	Cones	1	Horn	M, T		25-20 ±4	98	5	500,3.5k	8/5	28 x 16 x 11	Vinyl	Brown Knit	70	435.00		
	D-9	Ported	15	(2)6	Cones	1	Horn	M, T		29-20 ±4	101	5	500,3.5k	4/4	36 x 18 x 18	Vinyl	Brown Knit	85	525.00		

(Continued)



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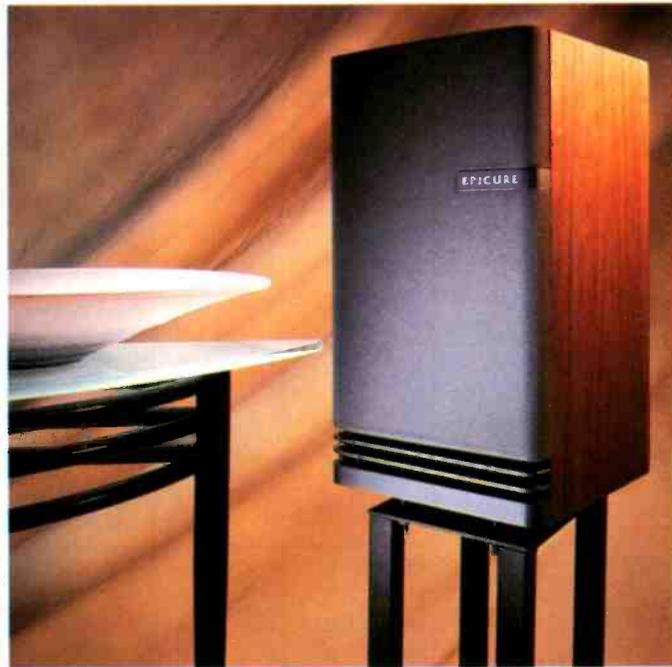
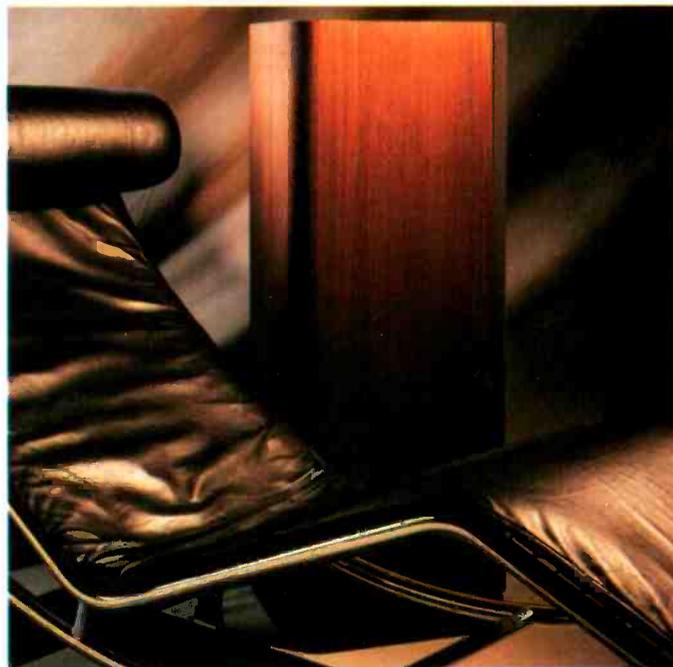
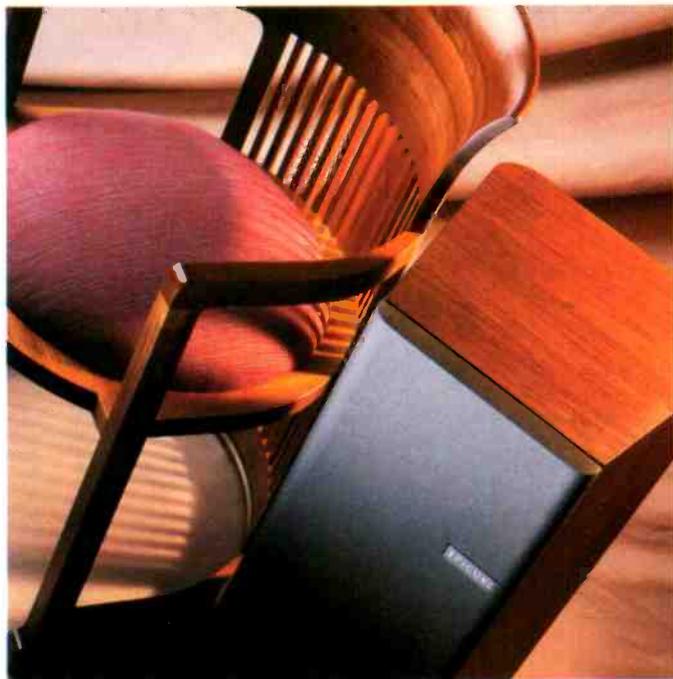
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# LOUDSPEAKERS

MANUFACTURER	Model	Design Principle, Enclosure or System Type	Woofer Diameter, Inches			Midrange Diameter, Inches			Tweeter Diameter, Inches		Tweeter Type		Separate Level Controls? Woofer = W, Midrange = M, Tweeter = T, Supertweeter = ST	Amplitude Frequency Response, Hz to kHz, ±dB		SPL, 1 Watt/1 Meter, dB	Recommended Min. Amp Power, Watts	Crossover Frequencies, Hz		Impedance, Ohms: Nominal/Minimum	Dimensions, Inches (To Nearest Inch)	Finish	Grille Color and Material	Weight, Lbs.	Price, \$
CERWIN-VEGA (Continued)	SW12B	Ported Subwoof. Ported	12										29-110	92	5	110	8/6	13 x 26 x 16	Wood Vinyl		48	320.00			
	200SE	Ported	8			1		Dhorn					32-20 ±3	93	5	3k	6/4	22 x 11 x 12	Black Knit	Black	32	205.00			
	240SE	Ported	10			1		Dhorn					32-20 ±3	95	5	3k	6/4	25 x 13 x 12	Black Knit	Black	36	235.00			
	250SE	Ported	10	6	Cone	1		Dhorn	M, T				32-20 ±3	95	5	550,3.5k	6/4	28 x 13 x 12	Black Knit	Black	41	300.00			
	280SE	Ported	12	6	Cone	1		Dhorn	M, T				32-20 ±3	96	5	550,3.5k	6/4	26 x 15 x 12	Black Knit	Black	44	345.00			
	300SE	Ported	12	7	Cone	1		Dhorn	M, T				25-20 ±3	98	5	250,3.5k	6/4	32 x 15 x 16	Black Knit	Black	65	450.00			
	380SE	Ported	15	(2)7	Cones	1		Dhorn	M, T				29-20 ±3	102	5	250,3.5k	4/4	36 x 18 x 19	Black Knit	Black	90	540.00			
	AT-8	Ported	8			5		Dome					38-22 ±3	94	5	3k	6/4	21 x 12 x 10	Vinyl Knit	Black	26	205.00			
	AT-10	Ported	10	5	Cone	5		Dome	M, T				30-22 ±3	95	5	400,3k	6/4	29 x 14 x 14	Wood Knit	Black	40	310.00			
	AT-12	Ported	12	5	Cone	5		Dome	M, T				28-28 ±3	97	5	400,3k	6/4	30 x 16 x 14	Wood Knit	Black	55	345.00			
AT-15	Ported	15	(2)5	Cones	5		Dome	M, T				28-28 ±3	102	5	400,3k	4/4	37 x 19 x 19	Wood Vinyl	Black Knit	90	540.00				
CHAPMAN SOUND	T-4	Air Sus.	8			1		Dome					40-20 ±3	88	25	3k	4/3	23 x 11 x 8	Oiled Oak	Black Knit	35	760.00			
	T-7	Trans. Line	10	5	Cone	1		Dome					32-20 ±3	88	50	200,3k	4/3	42 x 13 x 10	Oiled Oak	Black Knit	75	1495.00			
	T-9	Trans. Line	(2)10	6½,5	Cones	1		Dome					25-20 ±3	89	50	150,1k,3k	2/1.5	45 x 22 x 14	Oiled Oak	Black Knit	150	3300.00			
CITIZEN	SSP 303A	Powered	3										100-20		2.5 Inc. 1 Inc.		4/	7 x 4 x 4	Black	Black	3	75.00			
	ASP 777	Powered	3										100-20		1 Inc.		4/	7 x 5 x 3			2.8	59.95			
CLEMENS	RT-7	Compr. Line	8			7		Ribbon					23-40 ±3	87	45	3k	7/	48 x 10 x 19	Opt.	Black Foam	60	1900.00			
	RB-8.0	Compr. Line	8			7		Ribbon					32-40 ±3	88	45	1.575k	6.5/	26 x 13 x 12	Opt.	Knit	45	1500.00			
	RB-6.5	Compr. Line	6½			7		Ribbon					38-40 ±3	87	40	1.575k	6.5/	24 x 12 x 10	Opt.	Knit	40	1100.00			
	Little D	Compr. Line	5¼			5		Ribbon					42-40 ±3	86	25	2.4k	6/	16 x 7 x 10	Opt.	Black	18	850.00			
COMMUNITY LIGHT & SOUND	CSV70	Bass Ref.	(4)12	(2)2	Compr.	(3)1		PZT	M				40-18 ±4	105	200	700,4k	4/4	27 x 34 x 18	Oak Lam.	Brown Knit	135	999.00			
	CSV52	Bass Ref.	15	6½	Cone	1		PZT					40-18 ±4	98	200	500,5k	4/4	34 x 18 x 18	Oak Lam.	Brown Knit	90	635.00			
	CSV35	Bass Ref.	15			1		PZT					60-18	99	150	2.5k	8/6	24 x 17 x 14	Oak Lam.	Brown Knit	43	369.00			
	CSV25	Bass Ref.	12			1		PZT					70-18	97	100	3k	8/6	18 x 15 x 14	Oak Lam.	Brown Knit	32	309.00			
CSI	MDM-4	Ported	(2)6½			3½		Cone					60-17 ±3	89	15	1.5k	8/5	19 x 13 x 10	Rswd. Lam.	Brown Cloth	50	990.00			
	MDM-TA2	Time Align	6½			¾		Dome	T				60-20 ±3	87	15	2.5k	8/5	16 x 12 x 9	Rswd. Lam.	Alum.	40	1090.00			
	MDM-TA3	Time Align	(2)6½	3½	Cone	¾		Dome	M, T				45-20 ±3	91	15	1.8k,7k	8/4	19 x 16 x 12	Rswd. Lam.	None	70	1390.00			
	BB/70	ELF Subwoof.	8										30-70 ±1	91	100	70		16 x 19 x 12	Black Lam.	Black Cloth	60	690.00			
	E8/70	Powered ELF Subwoof.	8										30-70 ±1	91	Inc.	70		16 x 19 x 12	Black Lam.	Black Cloth	100	2490.00			
DAHLQUIST	DQ-20	Inf. Baf.	10	5	Cone	¾		Dome					20-20 ±4.5	86	50	400,3.5k	6/4	42 x 21 x 12	Oak	Opt.	60	1800.00			
	M909	Tuned Port	(2)8	5	Cone	1		Dome					30-24	92	20	125,400, 3.5k	8/4	39 x 14 x 11	Opt., Wood	Black	53	1400.00			
	M907	Ac. Sus.	10	5	Cone	1		Dome					30-24	88	40	400,3.5k	8/6	27 x 14 x 11	Opt., Wood	Black	40	940.00			
	M905	Tuned Port	8			1		Dome					40-24	91	20	2.5k	8/6	24 x 14 x 12	Opt., Wood	Black	35	590.00			
	M903	Tuned Port	6½			1		Dome					48-24	90	20	2.8k	8/6	17 x 9 x 10	Opt., Lam.	Black	16	450.00			
dB PLUS	440	Bass Ref.	6½			1		Dome					45-22 ±3	94	10	3k	8/4	10 x 16 x 9	Wal. Vinyl	Black Knit	16	350.00			
	880	Bass Ref.	10			1		Dome					35-22 ±3	96	10	2.2k	8/4	12 x 24 x 12	Wal. Vinyl	Black Knit	29	450.00			
	990	Pas. Rad.	10			1		Dome					30-22 ±3	98	10	2.2k	8/4	12 x 33 x 11	Wal. Vinyl	Black Knit	37	550.00			
	1010	Bass Ref.	(2)10			1		Dome					25-22 ±3	100	10	2k	8/4	12 x 37 x 11	Wal. Vinyl	Black Knit	45	750.00			
	1212	Bass Ref.	(2)12	6½	Cone	1		Dome					23-22 ±3	103	10	300,2k	8/4	43 x 15 x 16	Wal. Vinyl	Black Knit	54	1000.00			
DBX	Soundfield 50	Vented	10	6½,4	Cones	(3)½		Domes					34-20 ±2.5	91	30	200,800, 3.15k	4/2.5	21 x 16 x 49	Opt.	Opt.	80	2000.00			
	Soundfield 150	Vented	10	4	Cone	(3)½		Domes					39-20 ±3	91	25	450,3.15k	4/2.5	21 x 16 x 40	Opt.	Opt.	60	1500.00			
	Soundfield 1500	Vented	8	4	Cone	(2)½		Domes					44-20 ±3	92	25	450,3.15k	4/2.5	16 x 14 x 33	Opt.	Opt.	35	1000.00			
	Soundfield 2500	Vented	6½	2½	Cone	(2)½		Domes					49-20 ±3	90	20	1.6k,4.5k	6/4	12 x 8 x 29	Opt.	Opt.	21	600.00			

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# LOUDSPEAKERS

MANUFACTURER	Model	Design Principle, Enclosure or System Type	Woofer Diameter, Inches		Midrange Diameter, Inches		Tweeter Diameter, Inches		Separate Level Controls? Woofer, W. Midrange, M, Tweeter, T, Super Tweeter, ST		Amplifier Frequency Response, Hz to Hz, ± dB		SPL, 1 Watt/1 Meter, dB		Recommended Min. Amp Power, Watts		Crossover Frequencies, Hz		Impedance, Ohms: Nominal/Minimum		Dimensions, Inches (To Nearest Inch)		Finish		Grille Color and Material		Weight, Lbs.		Price, \$	
			Trans. Line	8	4	Cone	3/4	Dome		26-20	91	20		8/4	49 x 19 x 8	Dark Oak	Brown Knit	49	From 999.00	Pair										
DCM	Time Frame TF-1000	Trans. Line	8	4	Cone	3/4	Dome		29-20	90	20		8/4	45 x 18 x 7	Dark Oak	Brown Knit	42	From 799.00	Pair											
	Time Frame TF-700	Trans. Line	6 1/2			3/4	Dome		31-20	89	10	2.5k	8/4	41 x 17 x 7	Dark Oak	Brown Knit	44	From 699.00	Pair											
	Time Frame TF-500	Trans. Line	6 1/2			3/4	Dome		35-20	89	10	2.5k	8/4	37 x 15 x 7	Dark Oak	Brown Knit	31	From 449.00	Pair											
	Time Frame TF-350	Trans. Line	6 1/2			3/4	Dome		42-20	89	10	3k		34 x 13 x 6	Dark Oak	Brown Knit	21	From 299.00	Pair											
	Time Frame TF-250	Hybrid Trans. Line	8	6 1/2	Cone	(2)3/4	Domes	M, T	25-20	90	15			39 x 16 x 12	Dark Oak	Brown Knit	45	From 1399.00	Pair											
	Time Window 3	Trans. Line	(2)6 1/2			(2)3/4	Domes		30-20	91	10	2.8k		36 x 15 x 12	Dark Oak	Brown Knit	32	From 899.00	Pair											
	Time Window 1A	Hybrid Trans. Line	6 1/2			3/4	Dome		60-20	91	10	2.5k	8/4	17 x 8 x 8	Dark Oak	Brown Knit	18	From 239.00	Pair											
Time Piece	Trans. Line																													
DELAC	S10	Sealed Box	(2)4 1/2			3/4	Dome		60-20 ± 3	86	15	4.5k	4/3	5 x 3 x 40	Opt.	Foam		499.00	Pair w/EQ											
DENNESEN	Bravura	ES Hybrid	8	5	Cone	(5)15 Sq. In.	ES		40-30 ± 2	94	25	125,4.5k	8/5	12 x 14 x 51	Wal.	Black Foam	55	1650.00	Pair											
DESIGN ACOUSTICS	PS-6	Ac. Sus.	6			3/4	Dome		55-22	88	10	3k	8/	8 x 12 x 11	Oak Vinyl	Black Knit	12	129.95												
	PS-6V	Ac. Sus.	6			3/4	Dome		55-22	88	10	3k	8/	8 x 12 x 11	Black Vinyl	Black Knit	12	139.95												
	PS-8B	Ac. Sus.	8			1	Dome		50-20	90	15	2k	8/	9 x 14 x 12	Oak Vinyl	Black Knit	15	184.95												
	PS-10	Ac. Sus.	10	5	Cone	1	Dome	T	47-22	90	15	200,2k	8/	11 x 14 x 14	Oak Vinyl	Black Knit	25	259.95												
	PS-5	Ac. Sus.	5			1	Dome	T	70-22	90	15	2.4k	8/	11 x 7 x 5	Oiled Wal.	Brown Knit	9	179.95												
	PS-LF	Ac. Sus. Subwoof.	12						40-200	90	15	140	8/	22 x 16 x 16	Oiled Wal.	Brown Knit	55	375.00												
	PS-30	Ac. Sus. Sat. & Subwoof.	12	5	Cone	1	Dome	T	40-22	90	15	140,2.4k	8/	Three Pieces	Oiled Wal.	Brown Knit	73 Sys.	729.00	Sys.											
	PS-103	Ac. Sus.	10	6	Cone	3/4	Dome	T	38-20	88	30	100,3k	8/	38 x 14 x 14	Oiled Wal.	Black Knit	55	475.00												
DESKTOP LOUDSPEAKER SYSTEMS	DLS-1A	Sat. & Subwoof.	6	3	Cone	1	Dome		50-18 ± 3	87	20			Three Pieces	Opt.	Black Knit	26 Sys.	649.00	Sys.											
	OLS-2	Sat. & Subwoof.	6	3	Cone	1	Dome		39-19 ± 3	87	20			Four Pieces	Wal.	Black Knit	33 Sys.	899.00	Sys.											
	DLS-3X	Sat. & Subwoof.	(4)6	3	Cone	1	Dome		22-40 ± 4	88	20			Four Pieces	Black	Black Knit	55 Sys.	1999.00	Sys.											
DIGITAL DESIGNS	161	Ac. Sus.	6 1/2			1	Dome	W	55-20 ± 3	90	10	3.5k	4/	14 x 9 x 11	Opt.	Black Cloth	32 Pair	359.00	Pair											
	261	Ac. Sus.	(2)6 1/2			1	Dome	W	50-20 ± 3	90	10	3.5k	8/	18 x 10 x 12	Opt.	Black Cloth	58 Pair	479.00	Pair											
DIMENSIA	SPK 050	Vented	4						200-10	88	5		8/6	8 x 7 x 7	Black	Black Knit	4.1	149.00	Pair											
	SPK 250	Inf. Baf.	8			1	Dome		75-20	89	10	2.5k	8/6	9 x 16 x 9	Oak	Mesh Brown Knit	11.7	269.00	Pair											
	SPK 400	Inf. Baf.	12	4	Cone	1	Dome		50-20	91	10	1.2k,6k	8/6	14 x 25 x 13	Opt., Wood	Opt., Knit	28	399.00	Pair											
	SPK 500	Vented	10 1/2	4	Cone	1	Dome		40-20	90	15	700,4k	8/6	13 x 36 x 13	Opt., Wood	Opt., Knit	40.8	549.00	Pair											
DUNTECH	Sovereign 2001	Closed Box	(2)7, (2)12	(2)2	Domes	3/4	Dome	No	27-20 ± 2	90	50	300,2k, 6k	4/4	74 x 14 x 32	Rswd.	Black Knit	375	14,000.00	Pair											
	Princess PCL-1100	Closed Box	(2)10	(2)4 3/4	Cones	3/4	Dome	No	38-20 ± 2	90	50	500,5k	4/4	71 x 12 x 17	Rswd.	Black Knit	160	8075.00	Pair											
	Crown Princess PCL-1000	Closed Box	(2)10	(2)4 3/4	Cones	3/4	Dome	No	38-20 ± 2	90	50	500,5k	4/4	71 x 12 x 15	Rswd.	Black Knit	121	6825.00	Pair											
	Marquis PCL-500	Closed Box	(2)8	(2)4 3/4	Cones	3/4	Dome	No	42-20 ± 2	93	50	500,5k	4/4	60 x 10 x 15	Oak	Black Knit	150	5150.00	Pair											
	Dutchess PCL-15	Closed Box	7			1	Dome	No	50-20	83	50	500	6/6	9 x 13 x 8	Black Oak	Black Knit	14	1025.00	Pair											
	Vicount PCL-200	Closed Box	(2)8			1	Dome	No	45-20	93	50	500	4/4	48 x 10 x 14	Oak	Black Knit	85	2400.00	Pair											
EBONY ACOUSTICS	D6	Pressure Release	6			2	Cone		60-18 ± 3	90	25	2k	8/7	10 x 8 x 16	Opt., Wood	Black Knit	25 Pair	500.00	Pair											
	D9	Pressure Release	9			1	Dome		35-22 ± 3	91	25	2k	8/7	11 x 16 x 27	Opt., Wood	Black Knit	50	1000.00	Pair											
	S9	Trans. Line Subwoof.	9						22-85 ± 3	92	30	85	8/7	12 x 10 x 50	Wood	Black Knit		800.00	Pair											

# The AR Expert

**Name:** Alex Barsotti

**Occupation:** Teledyne Acoustic Research's  
National Service Manager

**Years with Teledyne Acoustic Research:** 21

**Objective:** To service the customer

(Editor's note: We interviewed Alex to find out how Teledyne Acoustic Research excels at serving their customers)

**Q. Alex, what is your position at AR really about?**

A. Customer satisfaction. I do everything I can to keep dealers and customers satisfied with AR products.

**Q. You mean repairing speakers, electronics?**

A. Yes, but there's more. It goes beyond the typical Service Department framework.

**Q. Explain "goes beyond".**

A. Actually, my day encompasses much more than the "fix-it" problems. I usually spend most of my time answering questions.

**Q. Questions — what kind?**

A. I think the most common questions asked by consumers are what amplifier should I use or how much power do I need or what speaker is best suited for my own listening.

**Q. So what do you tell them?**

A. What we try to do is to get a feel from the customer as to what kind of music he or she prefers, what kind of room environment the product will be used in, what kind of listening habits. And from that we try to give a guideline on how to choose an amplifier, what to look for in an amplifier according to what the listening habits are. Often they will call and ask which speaker should I buy. That's not an easy question to answer because there are so many different factors involved in choosing a loudspeaker.

**Q. So you help the customer think about the things he has to consider before he can make a decision?**

A. That's correct. We really try not to suggest a specific amp or a specific loudspeaker, but give them options so that when they go into a store they know what they should look at. For instance, a floor model versus a bookshelf. Most customers have no idea that a loudspeaker designed to be on a bookshelf might not be suited to being on the floor and vice versa. We try to find out their listening habits — do they like mellow sound or more contemporary music? Do they listen at high volumes or background levels? From this information we can give accurate advice. Other questions asked are what the difference is between loudspeakers, not only within our own current line

of loudspeakers, but also the difference between AR and some other company. You can look at specs and you can detail features of a product, but I think the bottom line is that you have to listen to it. We try to advise the customer to listen to a few types — two or three models. A loudspeaker is like anything else: you have to choose the one suited for your own listening criteria. We recommend how they should listen. If they have a favorite recording, to take it with them, something they are familiar with and use that to audition the different models of loudspeakers with the same recording.

**Q. Aside from answering these questions, what is the most important thing you think you do for your customers?**

A. Provide service — fast and easy. When you own a product and something goes wrong with it, you want it repaired not only quickly, but easily. No hassles. No long waits. That's what part of my job is all about.

**Q. How would you describe Acoustic Research's philosophy toward its customers?**

A. From the first day I started working I think one thing that was stressed to us in the Service Department is that the customer's needs are our primary objec-

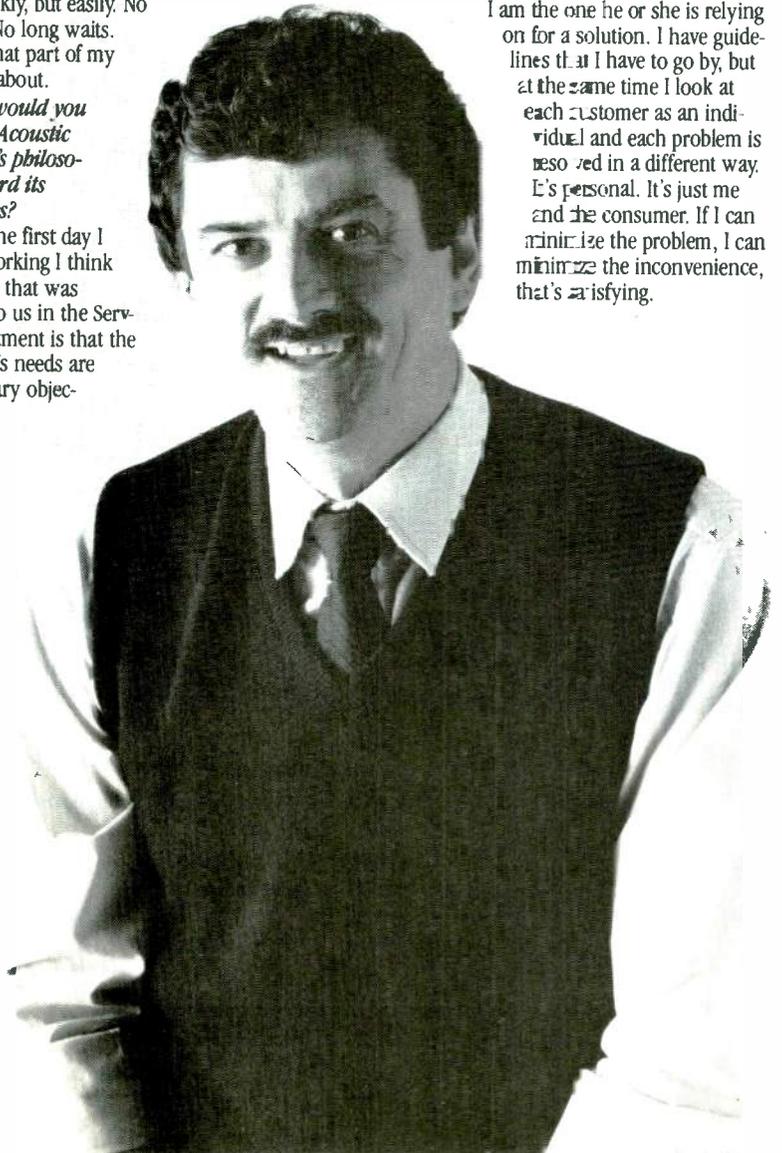
tives. In fact, Acoustic Research was the first company to give a 5-year "full" warranty on performance.

**Q. What does the AR warranty cover?**

A. The AR warranty for loudspeakers is a 5-year full warranty. Full warranty means that for 5 years from date of purchase, we not only guarantee our product will not fail, but will perform within  $\pm 1$  dB of the original specs.

**Q. Alex, would you summarize what are the most satisfying parts of being Service Manager for Teledyne Acoustic Research?**

A. In the morning, when I arrive at work, I never know what to expect. I have to deal with different problems; I have to deal with different situations. I think the most gratifying thing is when someone comes to me with a problem, I am able to solve that problem. Because when the customer gets in touch with me, I am the one he or she is relying on for a solution. I have guidelines that I have to go by, but at the same time I look at each customer as an individual and each problem is resolved in a different way. It's personal. It's just me and the consumer. If I can minimize the problem, I can minimize the inconvenience, that's satisfying.



TELEDYNE  
ACOUSTIC RESEARCH

330 Turnpike Street • Canton, MA 02021 • (617) 821-2300

Enter No. 3 on Reader Service Card

# Amazing.



## *How it works.*

### *A brief conversation with Bob Carver.*

*Q. How can The Amazing Loudspeaker put out so much powerful, extended bass?*

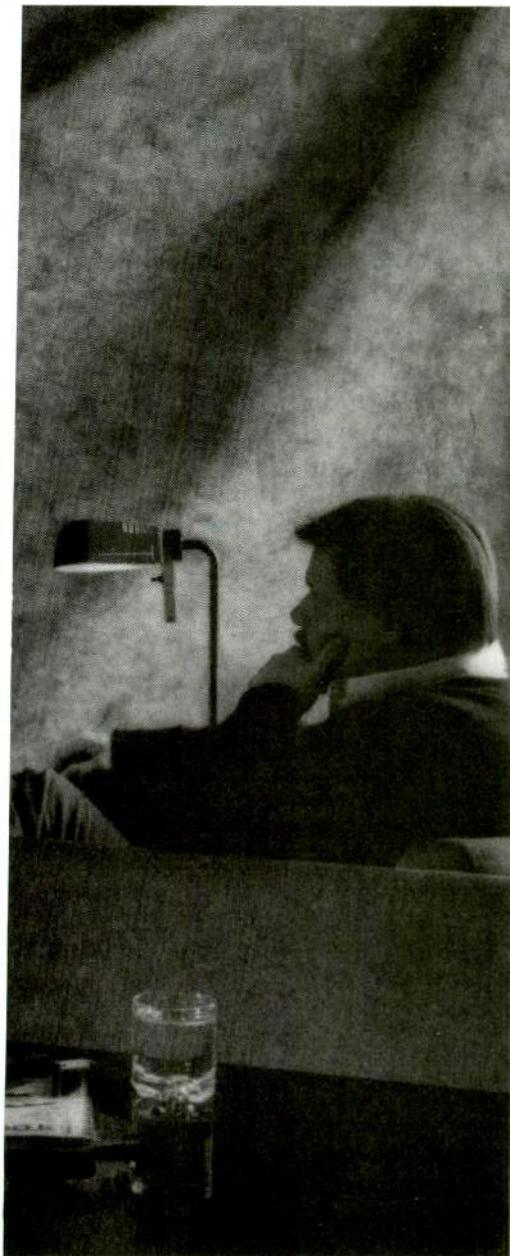
*A. Brute force. A total of 8 subwoofers, each with 4 times the excursion of regular bass drivers for a total displacement (area times excursion) of almost 2000 cubic inches. The low frequency 3dB point is 18Hz!*

*Q. Why use a ribbon driver?*

*A. Because the sound of a ribbon is nothing short of glorious! Free of individual driver anomalies and crossover problems, the Amazing Loudspeaker's extended line source driver delivers a majestic sonic image that literally floats in 3-dimensional acoustic space. Simultaneously, it reproduces an amazing amount of musical detail that's simply unmatched by any point source driver.*

POWERFUL

Distributed in Canada by: **evolution**  
**technology**



*This is not a typical speaker ad. Because The Amazing Loudspeaker is anything but a typical speaker.*

This isn't even a typical *Carver* ad.

True, the Amazing Loudspeaker breaks so many conventional speaker rules — and succeeds so spectacularly at it — that we're tempted to fill this ad with a litany of hertz, watts and exotic buzz words the way our competitors' ads do.

*"Its overall sound is spectacular, its bass performance surpasses that of almost any other speaker one might name."*

STEREO REVIEW

Because there's bound to be quite a story behind a speaker that's 5½ feet tall and yet just 1½ inches thick. Especially when Bob Carver has a hand (or rather two hands, both feet and a year or so of lab time) in its creation.

But ingenious design is only our means to an end. The beginning of a dramatic awakening that will re-define for you the very essence of music.

*"The image is as wide, deep and multi-layered as I have ever heard. Only Infinity's \$35,000 Reference Standard impressed me more."*

Henry Hunt  
Hi Fidelity Editor  
HOT STON POST

The Amazing Loudspeaker can etch a sonic image so detailed you can almost see rosin drift from a bow onto the polished surface of a violin.

It can brighten your listening room with the sheen of a #4A drumstick on a Zildjian hi-hat cymbal. Or darken it with the smokey midnight growl of a battered baritone sax.

*"It solves certain design problems and achieves certain sonic results with a simplicity and flair that can only be called, well, amazing."*

Peter Aczel  
THE AUDIO CRITIC

It can stun your senses and rearrange your furniture with thunderous salvos of tight, perfectly controlled low bass.

It can meticulously separate every instrument and vocal on a dense, multi-track mix and project each in sharp relief at precise points across the sound field.

In short, the Carver Amazing Loudspeaker restores what time and reading too many speaker ads often takes away.

Sheer wonder.

We have merely touched on the highlights of this truly amazing loudspeaker. We'd be happy to send you more information including reprints of several great reviews.

*"Its price is ridiculously low for what it does and... what comparable products cost."*

Julian Hirsch  
STEREO REVIEW

However, if your immediate interest is the sensation of a listening room melting away to reveal the crystalline clarity of pure music, you need only visit your nearest Carver dealer.

Your amazement will begin when you discover just how affordable the Carver Amazing Loudspeaker really is.

**Q. But aren't ribbon drivers inefficient?**

**A.** Not when designed with enough magnetic field strength. Each Amazing Loudspeaker ribbon uses 30 feet of high energy magnets in a special focused field gap. At 82dB efficiency, that's almost twice as efficient as any other ribbon that goes down to 100Hz. Our M-1.04 power amplifier yields peak SPLs exceeding 106dB; up to 110dB with an M-1.51. More than ample to deliver a symphonic orchestra's sonic power, fifth row center.

**CARVER**

ACCURATE

MUSICAL

# LOUDSPEAKERS

MANUFACTURER	Model	Design Principle, Enclosure or System Type	Woofer Diameter, Inches			Midrange Diameter, Inches			Tweeter Diameter, Inches			Separate Level Contour Woofer-W. Midrange-M. Tweeter-T. Superwoofer=ST			Analogic Frequency Response, SPL, 1 Watt/1 Meter, dB			Crossover Frequencies, Hz			Impedance, Ohms: Nominal/Minimum			Dimensions, Inches (To Nearest Inch)			Finish			Grille Color and Material			Weight, Lbs.			Price, \$				
			Loaded Port	8	5	Cone	3/4	Dome	M, T	45-20	89	50	600,4k	6/4.5	16 x 16 x 40	Black Lacq.	Black Mesh	70																						
ELECTRO-COMPAINET	Prisma SBB-1	Loaded Port Loaded Port	(2)5			1	Dome	No	80-20 ±2.5	90	25	3.5k		15 x 6 x 9	Black Lacq.	Black Mesh	20																							
ELECTRO-VOICE	Sentry 100A Monitor	B4 Vented	8			1 1/2	Dome	T	45-18 ±3	91		2k	6/4.5	17 x 12 x 11	Black Vinyl	Gray Knit	28	255.00																						
	Sentry 100EL Monitor	Powered B4 Vented	8			1 1/2	Dome	T	45-18 ±3		Inc.	2k	30k/10k	17 x 12 x 12	Black Vinyl	Gray Knit	33	524.00																						
	Sentry 500 Monitor	B4 Vented	12			1 1/2	Dome	T	40-18 ±3	96		1.5k	8/6	24 x 27 x 13	Black Vinyl	Gray Knit	70	499.00																						
	Sentry 505 Monitor	B4 Vented	12			1 1/2	Dome	T	40-18 ±3	96		1.5k	8/6	19 x 26 x 19	Black Vinyl	Gray Knit	60	499.00																						
EMERALD PHYSICS	Siren	Aperiodic	(4)7			1	Dome	No	35-22 ±3	90	50		6/4	9 x 15 x 22	Opt., Wood	Black Metal	150 Pair	5000.00 Pair																						
EMINENT TECHNOLOGY	LFT-III	Planar Mag.	441 Sq. in.	126 Sq. in.	Planar Mag.	21 Sq. in.	Planar Mag.	M, T	35-20 ±4	83	100	400,7k	4/3.7	59 x 27 x 12	Oiled Oak	Black Knit	95	2700.00 Pair																						
	LFT-IV	Planar Mag.	214 Sq. in.	63 Sq. in.	Planar Mag.	21 Sq. in.	Planar Mag.	T	45-20 ±4	80	100	400,7k	8/7	61 x 18 x 12	Oiled Oak	Black Knit	60	1850.00 Pair																						
ENERGY	22 Reference Designer Series	Bass Ref.	7			1 1/2	Dome		28-45 ±3	86	20	1.5k	8/4	25 x 11 x 12	Oak Ven.	Black Knit	34	1300.00 Pair																						
	22 Pro Monitor	Bass Ref.	7			1 1/2	Dome		28-45 ±3	86	20	1.5k	8/4	25 x 11 x 12	Wal. Vinyl	Black	34	870.00 Pair w/ Stands																						
	22 Reference	Bass Ref.	7			1 1/2	Dome		28-45 ±3	86	20	1.5k	8/4	25 x 11 x 12	Opt.	Black	34	1150.00 Pair w/ Stands																						
	22 Reference Connoisseur	Bass Ref.	7			1 1/2	Dome		25-45 ±2	86	20	1.5k	8/4	35 x 11 x 14	Opt., Ven.	Opt.	80	1600.00 Pair																						
ENTEC	L-110	Powered Servo Subwoof.	10					W	18-100 ±2			Inc.		24 x 12 x 16	Opt.	Black Foam	65	1995.00																						
	L-120	Powered Servo Subwoof.	(2)10					W	15-100 ±2			Inc.		24 x 12 x 24	Opt.	Black Foam	85	2495.00																						
	L-130	Powered Servo Subwoof.	(3)10					W	12-100 ±2			Inc.		36 x 12 x 24	Opt.	Black Foam	140	6495.00 Pair																						
	L-1120	Powered Servo Subwoof.	(12)10					W	12-100 ±2			Inc.		78 x 18 x 24	Opt.	Black Foam	400	20,000.00 Pair																						
	L-fx	Powered Servo Subwoof.	10					W	20-100 ±4			Inc.		16 x 16 x 18	Gran. Text.		45	995.00																						
EPI	1	Vented, Sixth Order	(2)8	(2)4	Cones	1	Dome		32-20 ±3	90	20	160,500, 2.5k	6/4	43 x 13 x 12	Mahog Ven.	Gray Knit	57	1400.00 Pair w/EQ																						
	2	Vented	(2)8	4	Cone	1	Dome		38-20 ±3	90	10	190,500, 2.5k	6/4	35 x 13 x 12	Mahog Ven.	Gray Knit	44	450.00																						
	3	Vented	8	4	Cone	1	Dome		42-20 ±3	90	10	500,2.5k	6/4	30 x 13 x 12	Mahog Ven.	Gray Knit	36	350.00																						
	4	Vented	8			1	Dome		48-20 ±3	90	10	2k	8/5	20 x 12 x 12	Mahog Ven.	Gray Knit	21	225.00																						
	5	Vented	6			1	Dome		55-20 ±3	89	10	2k	8/5	16 x 10 x 10	Mahog Ven.	Gray Knit	16	175.00																						
	5(V)	Vented	6			1	Dome		55-20 ±3	89	10	2k	8/5	16 x 10 x 10	Opt., Vinyl	Gray Knit	16	150.00																						
EPIK AUDIO	LSM	Vented	(2)8	(2)4	Cones	1	Dome		35-22 ±2	90	60	550,2.5k	4/3	12 x 17 x 48	Opt., Wood	Opt., Knit	190 Pair	1695.00 Pair																						
	Tower Monitor 210C	Aperiodic	8	3	Dome	1	Dome		100-22 ±1	92	40	500,4k	5/3	20 x 20 x 60	Opt., Wood	Brown Knit	450 Pair	3495.00 Pair																						
	410	Trans. Line Subwoof.	(2)10						22-100 ±3	89	75	100	4/3	17 x 17 x 60	Opt., Wood	Opt., Knit	115	1345.00 Pair																						
	810	Trans. Line Subwoof. Inf. Baf. Subwoof.	(2)10						16-75 ±2	93	100		4/4	22 x 22 x 72	Opt., Wood	Brown Knit	650 Pair	1995.00 Pair																						
EPOS	ES 14	Inf. Baf.	8			1	Dome		36-20 ±3	86	35		8/7	20 x 9 x 12	Opt., Wood	None	25	1100.00 Pair																						
	ESM-4	Bass Ref.	6 1/2			3/4	Dome		60-20 ±3	88	10	2.7k	8/4	9 x 13 x 9	Opt., Vinyl	Black Knit	11	230.00 Pair																						
ESM/ENERGY	ESM-2S	Bass Ref.	8			1	Dome		40-22 ±3	86	12	2k	8/4	23 x 11 x 11	Opt.	Black	24	400.00 Pair																						
	ESM-3	Bass Ref.	8			1	Dome		45-22 ±3	86	10	2k	8/4	20 x 10 x 9	Opt.	Black	20	300.00 Pair																						
	ESM-1S	Bass Ref.	8			1	Dome		30-22 ±3	86	15	2k	8/4	24 x 11 x 11	Opt.	Black Knit	35	450.00 Pair																						
ESSENCE	Amethyst 30	Trans. Line	6			1	Dome		32-21 ±3	90	30	2k	8/6	33 x 10 x 14	Opt., Wood	Opt., Cloth	80	1995.00 Pair																						
	Amethyst 10a	Trans. Line	8	{2}6, 3	Cones	1.0.7	Domes		26-23 ±3	90	60	80,200, 2k, 6.5k Adj.	8/6	51 x 15 x 25	Opt., Wood	Opt., Cloth	220	9985.00 Pair																						
	Topaz Subwoofer	Trans. Line Subwoof.	6						28-300 ±2	90	50		8/6	33 x 10 x 14	Opt., Wood	Opt., Cloth	80	2185.00 Pair																						

# LINN'S NEXUS LINKS EXPERIENCE AND ENGINEERING.

“... by far and away the best loudspeaker I have ever heard.” — Popular Hi-Fi on the Linn DMS

“... for seekers of the truth, the new design from Linn is one of the best speakers available under \$2,000.” — Andrew Marshall's Audio Ideas Guide on the Linn Nexus

“I felt I was getting much closer to the music than I had before. . . The Nexus is punchy, lively, dynamic and informative.” — Hi-Fi Review on the Linn Nexus

“In short, there is more a sense of listening to music. . . than there was of listening to hi-fi.” — Hi-Fi Review on the Linn Index

These quotes about Linn loudspeakers come from highly respected reviewers. We could literally fill this entire page with similar quotes (but then, so could any other manufacturer). Fortunately for us, it takes a lot more than a rave review to make a good speaker. It takes solid engineering.

Take the Linn Nexus, which was selected as “one of the most innovative consumer electronics products of 1988” by the Design and Engineering



“Exhibition in Chicago. In the Nexus we didn't bend the laws of physics to fit some pet theory. We simply applied fifteen years of engineering experience in mechanics, acoustics, material science, electronics, and computer programming to produce a speaker that really works.

The front baffle is molded from expanded structural foam which is

acoustically superior to wood. It is then bonded to the critically braced MDF cabinet using ultra-strong adhesives developed for aircraft and Formula One racing cars.

The cone of the bass driver is manufactured from an exceptionally light and rigid carbon-loaded polypropylene material.

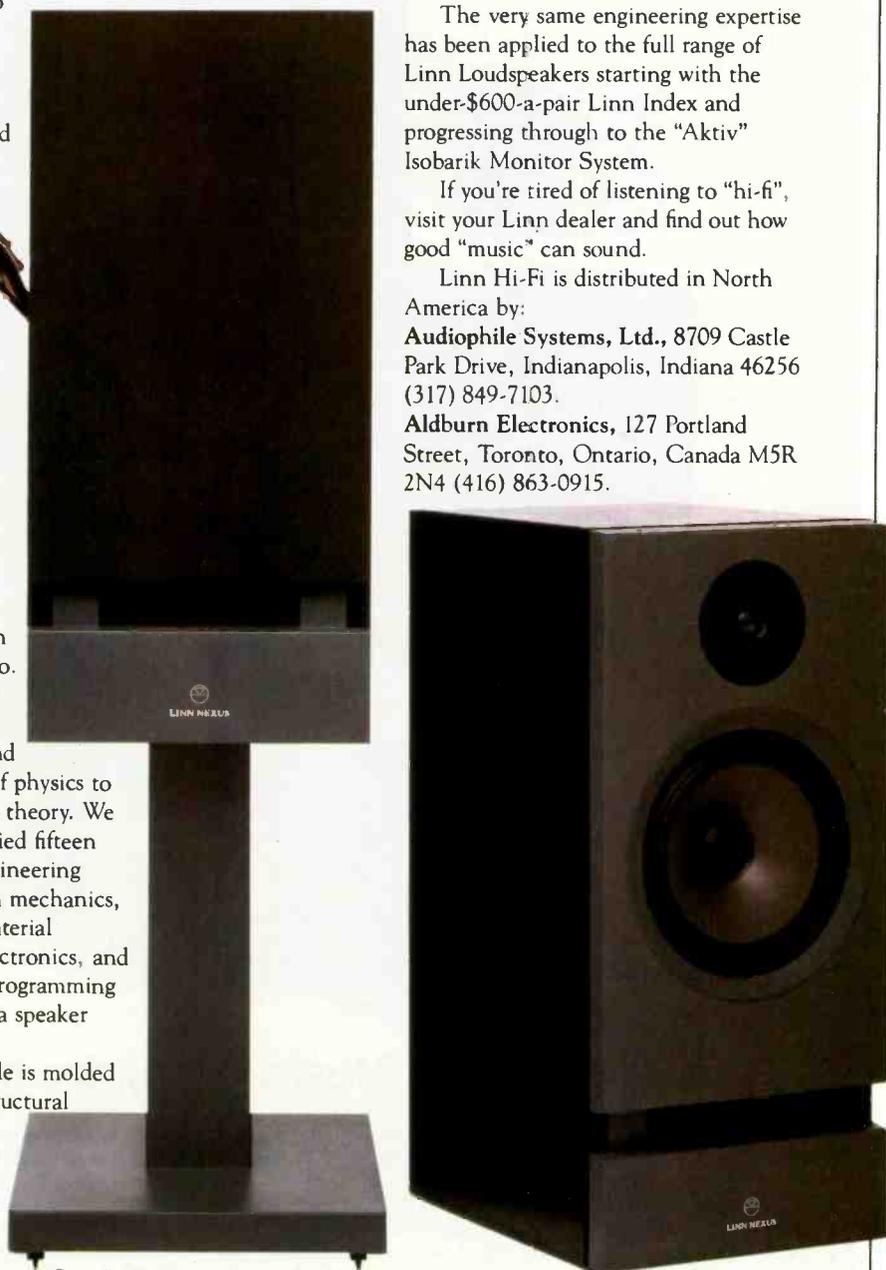
The crossover is a fourth-order (24dB per octave) Linkwitz-Reilly phase coherent system based on research we did during the development of our standard-setting “Aktiv” electronic crossover. It is even housed in a separate, sealed enclosure to avoid microphonic distortions.

The very same engineering expertise has been applied to the full range of Linn Loudspeakers starting with the under-\$600-a-pair Linn Index and progressing through to the “Aktiv” Isobarik Monitor System.

If you're tired of listening to “hi-fi”, visit your Linn dealer and find out how good “music” can sound.

Linn Hi-Fi is distributed in North America by:  
**Audiophile Systems, Ltd.**, 8709 Castle Park Drive, Indianapolis, Indiana 46256 (317) 849-7103.

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# LOUDSPEAKERS

MANUFACTURER	Model	Design Principle	Enclosure or System Type			Woofer Diameter, Inches	Midrange Diameter, Inches	Midrange Type	Tweeter Diameter, Inches	Tweeter Type	Special Low Cutoff? Woofer = W, Tweeter = T, Super Tweeter = ST			Anechoic Frequency Response, Hz to kHz, ±dB		SPL, 1 Watt/1 Meter, dB	Recommended Min. Amp Power, Watts	Crossover Frequencies, Hz		Impedance, Ohms		Dimensions, Inches (To Nearest Inch)	Finish	Grille Color and Material	Weight, Lbs.	Price, \$
			Woofer	Midrange	Tweeter						Hz	kHz	Hz	kHz	Nominal			Minimum								
ESS LABORATORY	PS 820	Pas. Rad.	6					10½ Sq. in.	Heil	No			42-23 ±1	89	5	2k	6/4	10 x 10 x 18	Black Vinyl	Black Knit	34 Pair	129.00	Pair			
	PS 920	Pas. Rad.	8					10½ Sq. in.	Heil	T			38-23 ±1	91	5	2k	6/4	12 x 11 x 22	Black Vinyl	Black Knit	30 Pair	159.00	Pair			
	PS 1020	Pas. Rad.	10					10½ Sq. in.	Heil	T			32-23 ±1	92	10	1.6k	6/4	14 x 13 x 25	Black Vinyl	Black Knit	37 Pair	184.00	Pair			
	PS 1220	Pas. Rad.	12	4	Cone			10½ Sq. in.	Heil	M,T			28-23 ±1	93	10	380,2k	6/4	14 x 12 x 34	Black Vinyl	Black Knit	48 Pair	214.00	Pair			
	AMT Monitor	Pas. Rad.	12					21½ Sq. in.	Heil	M,ST			35-23 ±3	91	35	800	6/3	12 x 19 x 41	Vinyl Diled Wal.	Black Knit	82 Pair	649.00	Pair			
	AMT 1D	Pas. Rad.	10					21½ Sq. in.	Heil	M,ST			35-23 ±3	91	35	800	6/3	16 x 16 x 35	Diled Wal.	Black Knit	170 Pair	599.00	Pair			
	AMT II	Pas. Rad.	12					21½ Sq. in.	Heil	ST			38-23 ±3	91	30	900	6/3	15 x 15 x 34	Diled Wal.	Black Knit	130 Pair	449.95	Pair			
	620 Mini Monitor	Pas. Rad.	5¼					1½ Sq. in.	AMT Dome				60-20 ±5	86.5	10	2.5k	8/3	8 x 7 x 12	Diled Wal.	Black Knit	17 Pair	89.95	Pair			
	EURDSTAT	Mondrian	Tuned Port	8	2	Dome	1	Dome					36-22	92	45	800,5k	8/7	13 x 14 x 28	Pearl	Dpt.	42	3800.00	Pair			
FANFARE	Prelude	QB3 Vented	6			1	Dome					60-22 ±3	88	20	3k	8/5	15 x 10 x 10	Lacq. Oak	Black Knit	16	189.00	Pair				
	Prelude Tower	B3 Vented	6			1	Dome					40-22 ±3	89	20	3k	8/5	38 x 10 x 8	Lacq. Oak	Black Knit	39	295.00	Pair				
	Tempo Tower	B3 Vented	(2)6	6	Cone	1	Dome					40-22 ±2	91	20	200,3k	8/5	44 x 13 x 10	Lacq. Oak	Black Knit	64	459.00	Pair				
FIDELUS	903FL	Slot Loaded Port	9	5	Cone	1¼	Dome	No				30-22 ±3	89	50	250,6.5k	8/5	13 x 14 x 48	Diled Oak	Dpt.	80	1495.00	Pair				
	Contra-Bass	Slot Loaded Port Subwoof.	12									16-100 ±3	90	50	Ext.	8/4	22 x 22 x 48	Diled Oak	None	175	990.00	Pair				
FOCUS	.5 Series II	Tuned Port	8			1	Dome					45-20 ±2	90	30	2.5k	8/6.4	12 x 12 x 19	Lacq. Oak	Black Foam	55 Pair	750.00	Pair				
	.7 Series II	Tuned Port	8			1	Dome					37-20 ±2	90	30	2.5k	8/6.4	12 x 12 x 28	Lacq. Oak	Black Foam	38	995.00	Pair				
	High Definition Monitor	Tuned Port	8			1¼	Dome					34-20 ±2	87	30	2k	8/6.4	12 x 12 x 47	Lacq. Oak	Black Foam	66	1450.00	Pair				
	Tower	Trans. Line	(2)8			1¼	Dome					30-20 ±2	92	30	1k	4/3.2	14 x 17 x 60	Lacq. Oak	Black Foam	110	2950.00	Pair				
FOSTEX	RP6001	Ribbon	12		Ribbon		Ribbon					30-45	91	35	1k,7k	8/3		Rswd.	Brown Knit	80	2000.00	Pair				
	RP7001	Ribbon	(2)12		Ribbon		Ribbon					30-45	93	50	1k,7k	8/3		Rswd.	Brown Knit	100	3500.00	Pair				
	The Auditor	Biamp Ribbon	(2)12		Ribbon		Ribbon					30-45	91		800,1.5k,7k	8/3		Rswd.	Brown Knit		10,000.00	Pair				
FRAZIER	CAT60/F1690	Horn Loaded	(2)12			1	Horn					40-15 ±3	96	250		8/	25 x 25 x 17	Dpt.	Black Knit	128	From 1482.00	Pair				
	F1450	Horn Loaded	12	8	Horn	2x6	Horn					40-17 ±3	93	250		8/	Two Pieces Per Side	Black Knit	Black Knit	93	798.00	Pair				
	CAT33/F1300	Time Align Coaxial	8			1	Coax Dome					70-17 ±3	94	50		8/	19 x 12 x 10	Dpt.	Black Knit	25	From 187.00	Pair				
	CAT38/F1330	Time Align Coaxial	8			1	Coax Dome					70-18 ±3	88	50		8/	18 x 11 x 9	Dpt.	Black Knit	25	From 264.00	Pair				
	CAT10/F1140	Tuned Port	4									90-14 ±5	90			8/8	12 x 8 x 5	Black Wood	Black Mesh	6½	92.00	Pair				
	CAT30/F1380	Tuned Port	8			1	Dome					70-20 ±3	94			8/8	11 x 11 x 12	Black Wood	Black Mesh	19	157.00	Pair				
	CAT35/F1350	Tuned Port	8			1	Dome					70-20 ±3	94			8/8	18 x 11 x 9	Black Wood	Black Mesh	19	157.00	Pair				
	CAT40/F1480	Tuned Port	8			1, 2x6	Dome, Horn					65-17 ±3	93			8/8	18 x 18 x 9	Black Wood	Black Mesh	33	330.00	Pair				
	Surround F0860	Bass Ref.	8			1, 2x6	Dome, Horn					70-17 ±4.5	93			8/8	19 x 10 x 12	Black Wood	Black Mesh	50 Pair	374.00	Pair				
FRIED PRODUCTS	R/4	Trans. Line & Line Tun.	10	5	Cone	1	Dome	T				38-18 ±3	90	25	250,3k	8/5	32 x 12 x 13	Wal.	Black Cloth	35	995.00	Pair				
	D/2	Dual Trans. Line	8	6	Cone	¾	Dome	T				28-20 ±3	90	25	99,2.7k	8/6.3	49 x 11 x 16	Wal.	Black Foam	100	4000.00	Pair; Kit, 1080.00				
	C/3L	Trans. Line	6½			¾	Dome					50-22 ±3	91	20	2.7k	8/6.3	11 x 14 x 15	Dpt.	Black Foam	35	1500.00	Pair; Kit, 430.00				
	G/3	Trans. Line	10	6½	Cone	¾	Dome					23-22 ±3	91	20	99,2.7k	8/6.3	18 x 16 x 44	Wal.	Black Foam	100	2500.00	Pair				
	Beta	Pressure Release Line Tun.	6½			2½	Cone/Dome					60-20 ±3	87	20	2k	8/6	8 x 8 x 14	Dpt., Vinyl	Black Knit	30 Pair	325.00	Pair				
	Q/3	Line Tun.	8			1	Dome	T				45-18 ±3	89	20	2k	8/6	11 x 9 x 20	Dpt., Vinyl	Black Knit	40 Pair	440.00	Pair				
	A/3	Line Tun.	8			1	Dome	T				40-18 ±3	90	20	2k	8/6	13 x 10 x 23	Diled Wal.	Black Knit	35	650.00	Pair				
The Subwoofer	Line Tun. Subwoof.	10									32-90 ±3	89	20	90	8/6	15 x 12 x 24	Dpt., Vinyl	Black Knit	55	330.00	Pair					

(Continued)

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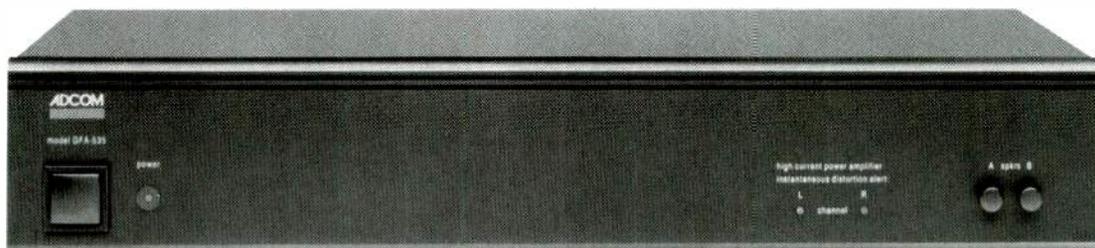
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# "In its price category, the Adcom GFA-535 is not only an excellent choice; it's the only choice."

Sam Tellig, The Audio Cheap skate

**stereophile**

Vol. 10 No. November 1987



## Adcom GFA-535 power amplifier.

### The complete report:

Sometimes products are too cheap for their own good, and people don't take them seriously: the Superphon Revelation Basic Dual Mono preamp, Rega RB300 arm, AR ES-1 turntable, Shure V15-V MR cartridge, and the B&K ST-140 power amp. They can't be any good because they cost so little, right?

Wrong, of course.

Adcom appears to be having the same problem with their \$299.95 GFA-535 amp. Credibility.

Now if this amplifier were imported from England and sold for \$599.95, then maybe it would be taken seriously. And highly praised, no doubt.

For the baby Adcom is one of the finest solid-state amps I have heard. No, not the best; I'm not sure what *is* the best. But it's an amplifier that is so good for so little money as to be practically a gift.

Actually, when Rob Ain from Adcom called, I was about as enthusiastic about the GFA-535 as you were before you finish reading this piece. But Rob insisted, "You've gotta hear this amp."

He brought it over the next day, along with the GFP-555 preamp (\$499.95), and we put both pieces into the rest of the system: a Shure Ultra 500 in a Rega RB300 arm on an AR ES-1 table, with Quad ESL-63 speakers on Arcici stands. Then we chatted for a half hour or so while the electronics warmed up.

And then, simultaneously, the two of us decided to shut up and listen.

"I've never heard the Quad ESL-63 sound better," Rob said. Of course, he was hardly an impartial observer, but the sound was extraordinarily clean, detailed, and musical. If it wasn't the best sound I have ever heard from Quads, it was pretty close.

This humble \$300 amplifier was driving a pair of very revealing \$3000 speakers and giving a very good account of itself. (We listened first to some Goran Sollscher classical guitar.)

"So how come this product isn't flying off the dealers' shelves?" I asked Rob.

"I don't know. Everyone wants the GFA-555 with 200 watts per channel. Including people who don't need it."

"Does the GFA-555 sound any better?" I asked.

"It's our aim to have all our amps sound pretty much the same. You pay more money, you get more power."

Rob pointed out that while the GFA-535 is rated at 60Wpc, it puts out more like 80. And while I did not do any measurements, my experience with other amps tells me Rob's right. I suppose Adcom doesn't want to steal sales from its GFA-545, rated at 100Wpc and selling for \$200 more.

After a couple of hours, Rob left, grinning from ear to ear, and I later sat down to listen alone. True, when I tried certain Telarc and pushed hard I could get the amplifier to clip—two LEDs quickly light up (very useful). But the Quads were running out of the ability to use the power anyway. My first impressions

were confirmed: the GFA-535 is one of the best amplifiers around for driving Quads. Spendor SP-1s, too.

Suddenly, it hit me what this meant. Conventional wisdom had been dealt a severe blow. You know, the old saw that you should never power a good pair of speakers with a

**“The GFA-535 reminds me of... amplifiers that sell... for about three and five times the price.”**

cheap amplifier. Here was a cheap amp—one of the cheapest on the market—that sounded good with Quads, Spondors, later Vandersteens. Probably Thiels, too—at least the CS1. What it means is you can stretch your speaker budget a bit and get the speakers you really want, then economize by buying an Adcom GFA-535 for \$299.95. True, you may be a little power shy, but probably not much. And to say the least, the GFA-535 would make a decent interim amp.

What does the GFA-535 sound like? (You thought I'd forget that part, right?) Well, this is one of the most neutral amps I've heard.

**“...the baby Adcom is one of the finest solid-state amps I have heard... so good for so little money as to be practically a gift.”**

While it doesn't sound particularly tubelike, it avoids the typical transistor nasties through the midrange and into the treble. I wouldn't call it sweet—there's no euphonic coloring—but it isn't cold or sterile. What it is, is smooth. And detailed. Far more detailed than I would ever imagine a \$300 amplifier could be. The GFA-535 reminds me of the Eagle 2A and PS Audio 200C, amplifiers that sell, respectively, for about three and five times the price. Of course, they have more power. And they *are* more detailed. The point is, the Adcom comes close. Very close.

The bass, like everything else, is neutral, certainly not fat and overdone. But it's here where

you notice that this amp is not a powerhouse. You just don't get the solidity and extension you get with a very powerful (and expensive) solid-state amp. Nor do you get the breadth and depth of soundstage that you often find with a very powerful amp. The Adcom GFA-535 sounds a wee bit small, which it is.

My only criticism, and it's more of a quibble, is that the speaker connectors are non-standard and unique (so far as I know). You insert bared speaker wire into a hole and twist the connector tight a quarter turn. Most speaker cables will fit, but some will not. Certainly MIT won't. Neither will the best Kimber, the kind with eight clumps of strands. The less costly four-clump Kimber will, and proved an excellent choice. My sample amp was quiet—

**“This amplifier is so good and so cheap that I think any CD owner who buys an integrated amp is nuts.”**

no hum—and ran cool. There are selectors for two sets of speakers. And the 535 looks nice.

And talk about economy: If you're not into LPs anymore, you could buy a Mod Squad, dbx, or Old Colony line-level switching box—or possibly a B&K Pro 5 preamp, with its switchable line amp section (only \$350), or the Adcom SLC-505 passive preamp (\$150)—and run it with a CD player. In fact, if you are into CD only (no tape, no tuner, no phono), you could buy a CD player with a variable volume output and run it directly into the Adcom. This amplifier is so good and so cheap that I think any CD owner who buys an integrated amp is nuts.

In its price category, the Adcom GFA-535 is not only an excellent choice; it's the only choice. The real question is whether you should buy one even if \$299.95 is much *less* than you planned to spend for an amp—*ie*, whether you should put the money into a better CD player or pair of speakers instead.

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# the *Soundcraftsmen* STORY

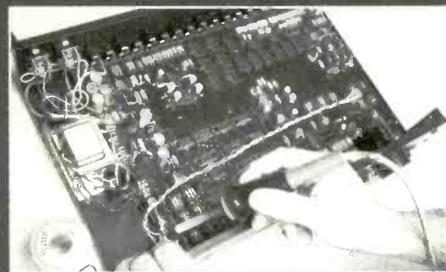
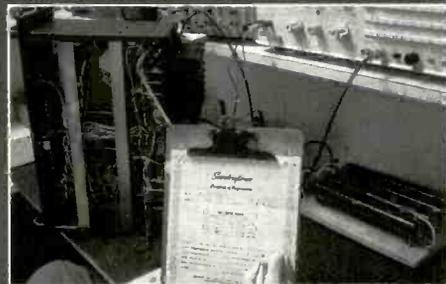


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# Mosfet Power Amplifiers

## Pro-Power Four

**DESCRIPTION:** The New PRO-POWER amplifiers are especially designed for the extended Dynamic Range requirements of today's Compact Disc players and Hi Fi VCRs. The ULTRA HIGH CURRENT design offers you incredibly high power without sacrificing distortion-free performance, superb reliability, and the utmost in sonic purity. These new amplifiers operate flawlessly under all operating conditions. It is well known that most of today's highly regarded loudspeakers exhibit impedance curves which drop to 1 or 2 ohms at some frequencies, and in conventional amplifiers this results in severe clipping and the triggering of protective circuitry. However, our new PRO-POWER Phase Control amplifiers continue to operate even under those extremely low impedance conditions. Current limiting had been eliminated entirely by the use of the latest POWER MOSFET technology, thus avoiding the sonic degradation typically found when limiting circuitry is employed.

**FEATURES:** MOSFET amplification stages provide the utmost in sonic purity, rivaling that of vacuum tube amplifiers...Precision-Calibrated LED power meters (0-400 watts at 8 ohms)...Speaker switching for two pair of stereo speakers...True clipping indicators for each channel...Ultra high storage capacity filter capacitors, as witnessed by True Clip lights remaining on for up to several minutes after turning AC power off...Professional rack-mount front panel...optional hardwood side panels.

**SPECIFICATIONS:** CONTINUOUS RMS POWER: 205 watts per channel @ 8 ohms, 20Hz-20kHz, 300 watts per channel @ 4 ohms, 20Hz-20kHz, 450 watts per channel @ 2 ohms, 1kHz...**DISTORTION:** THD—0.05% at rated power, 20Hz-20kHz, IMD—less than 0.05%...**FREQUENCY RESPONSE:** 20Hz-20kHz, ±0.1dB...**SIGNAL-TO-NOISE RATIO:** Minus 105dB...**SLEW RATE:** 50 volts/microsecond...**DAMPING FACTOR:** Greater than 200...**PHYSICAL:** 19" Wx5¼" Hx12"D, 30 pounds...**PRO-POWER ONE**—8½" Wx5" Hx14"D, 20 pounds.

## Pro-Power Three

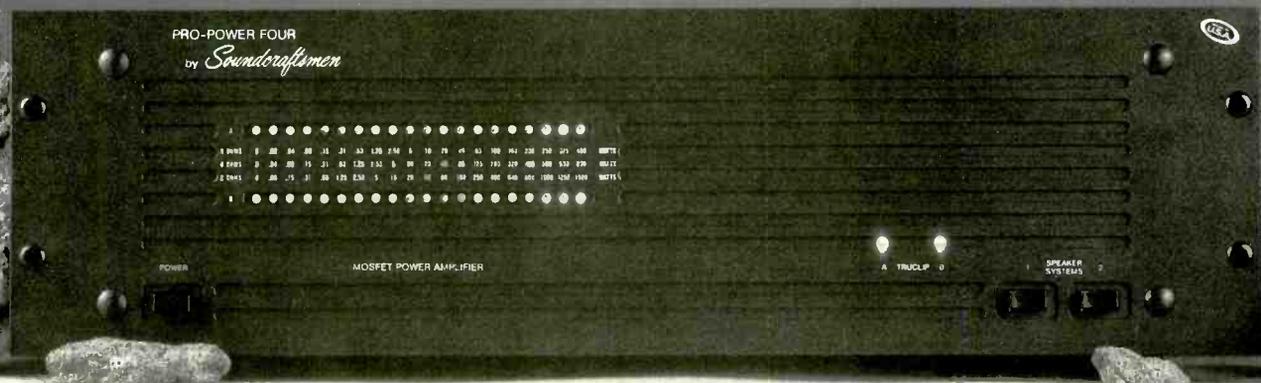
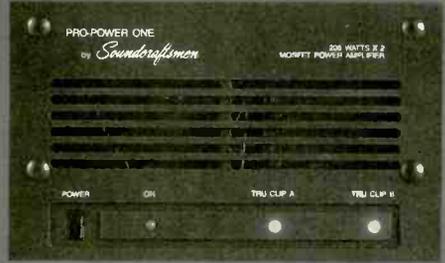
**PRO-POWER THREE:** If you desire all of the performance features of the highly acclaimed Pro-Power Four (see review highlights on page 3) without the LED power meters, select the Pro-Power Three.

## PCR800

The PCR800 amplifier is similar to the PRO-POWER ONE, rated at 205 watts per channel @ 8 ohms, but with plain overlay front panel.

## Pro-Power One

**PRO-POWER ONE:** The NEW PRO-POWER ONE amplifier provides all of the performance features of the PRO-POWER FOUR (see review highlights on page 3) in a smaller, non-rack-mountable chassis.



# LOUDSPEAKERS

MANUFACTURER	Model	Design Principle, Enclosure or System Type	Woofer Diameter, Inches		Midrange Diameter, Inches		Tweeter Diameter, Inches		Tweeter Type	Separate Level Controls? Woofer, W. M. Superwoofer = ST	Range, Hz	SPL, 1 Watt/1 Meter, dB	Recommended Min. Amp Power, Watts	Crossover Frequencies, Hz	Impedance, Ohms: Nominal/Minimum	Dimensions, Inches (To Nearest Inch)	Finish	Grille Color and Material	Weight, Lbs.	Price, \$
			Woofer	Midrange	Midrange	Tweeter														
GOLD SOUND (Continued)	#14	Vented	18	8	Cone			M, T	28-21 ±3	95	5	200, 1.2k, 5k	8/	46 x 29 x 19	Opt.	Brown Knit	392 Pair	Kit, 1988.00		
	Kit #.6	Sealed	6½			1	Dome		58-20 ±3	92	5	3k	4/	16 x 10 x 8	Opt.	Opt.	24 Pair	Kit, 198.00		
	Kit #1	Vented	10			1¼	Dome		45-20 ±3	93	5	2k	4/	25 x 14 x 11	Opt.	Opt.	58 Pair	Kit, 359.00		
	Kit #2	Vented	8	4	Cone	½	Dome		45-30 ±3	91	5	90, 300, 8k	4/	19 x 12 x 10	Opt.	Opt.	36 Pair	Kit, 329.00		
	Kit #3	Vented	12	5¼	Cone	1	Dome		38-30 ±3	92	5	80, 200, 3k	4/	25 x 14 x 11	Opt.	Opt.	69 Pair	Kit, 489.00		
	Kit #4	Vented	12	6	Cone	1¼, ½	Domes		36-30 ±3	93	5	70, 250, 3k, 8k	4/	37 x 14 x 11	Opt.	Opt.	128 Pair	Kit, 699.00		
	Kit #5	Vented	15	7	Cone	3x7	Horn	M	28-30 ±3	95	5	60, 250, 3k	4/	44 x 18 x 14	Opt.	Opt.	158 Pair	Kit, 919.00		
	Kit #7	Vented	(2)12	7	Cone	1¼, 2x3	Dome, Ribbon	M, T	28-35 ±3	95	5	50, 300, 3k, 8k	4/	44 x 18 x 17	Opt.	Opt.	232 Pair	Kit, 1239.00		
	Kit #11	Vented	15	7	Cone	5x5	Horn	M, T	28-21 ±3	93	5	300, 5k	8/	44 x 18 x 17	Opt.	Opt.	218 Pair	Kit, 1488.00		
	Kit 2005	Vented	15	8, 4	Cones	1	Dome	M, T	28-27 ±3	96	5	400, 1.4k, 5k	8/	44 x 18 x 17	Opt.	Opt.	245 Pair	Kit, 1685.00		
	Pro 12 Kit	Sealed	12			3x7	Horn	T	55-21 ±3	100	5	3k	8/	20 x 16 x 15	Opt.	Black Metal	59 Pair	Kit, 249.00		
	Pro 15 Kit	Vented	15	7	Cone	4	Horn	M, T	42-21 ±3	98	5	400, 5k	8/	30 x 24 x 13	Opt.	Black Metal	74 Pair	Kit, 939.00		
	Pro Double 15 Kit	Vented	(2)15	7	Cone	4	Horn	M, T	38-21 ±3	100	5	400, 5k	4/	46 x 24 x 21	Opt.	Black Metal	129 Pair	Kit, 1357.00		
	GS12 Kit	Subwoof.	12						36-150 ±3	92	5	150	4, 8	18 x 18 x 16	Opt.	Opt.	18	Kit, 308.00		
	GS12(2) Kit	Subwoof.	(2)12						32-150 ±3	95	5	150	4, 8	30 x 18 x 16	Opt.	Opt.	36 Pair	w/Xover Kit, 578.00		
	GS12(4) Kit	Subwoof.	(4)12						29-150 ±3	98	5	150	4, 8	Two Pieces per Side	Opt.	Opt.	72/ Side	w/Xover Kit, 1057.00		
	GS15 Kit	Subwoof.	15						32-150 ±3	94	5	150	4, 8	44 x 18 x 17	Opt.	Opt.	20	w/Xover Kit, 458.00		
	GS15(2) Kit	Subwoof.	(2)15						29-150 ±3	97	5	150	4, 8	44 x 18 x 17	Opt.	Opt.	40	w/Xover Kit, 922.00		
	GS15(4) Kit	Subwoof.	(4)15						27-150 ±3	100	5	150	4, 8	Two Pieces per Side	Opt.	Opt.	80/ Side	w/Xover Kit, 1812.00		
	GS18 Kit	Subwoof.	18						30-150 ±3	95	5	150	4, 8		Opt.	Opt.	18	w/Xover Kit, 599.00		
	GS18(2) Kit	Subwoof.	(2)18						27-150 ±3	98	5	150	4, 8		Opt.	Opt.	36	w/Xover Kit, 1119.00		
	GS18(4) Kit	Subwoof.	(4)18						26-150 ±3	101	5	150	4, 8	Four Pieces	Opt.	Opt.	288 Sys.	w/Xover Kit, 1879.00		
	JBL15 Kit	Subwoof.	15						28-150 ±3	96	5	150	8/	44 x 18 x 17	Opt.	Opt.	25	w/Xover Kit, 549.00		
	JBL15(2) Kit	Subwoof.	(2)15						27-150 ±3	99	5	150	8/	44 x 18 x 17	Opt.	Opt.	50	w/Xover Kit, 998.00		
	JBL15(4) Kit	Subwoof.	(4)15						25-150 ±3	102	5	150	8/	Four Pieces	Opt.	Opt.	400 Sys.	w/Xover Kit, 1908.00		
	JBL18 Kit	Subwoof.	18						28-150 ±3	95	5	150	8/		Opt.	Opt.	33	w/Xover Kit, 788.00		
	JBL18(2) Kit	Subwoof.	(2)18						26-150 ±3	98	5	150	8/		Opt.	Opt.	66	w/Xover Kit, 1478.00		
	JBL18(4) Kit	Subwoof.	(4)18						24-150 ±3	101	5	150	8/	Four Pieces	Opt.	Opt.	528 Sys.	w/Xover Kit, 2798.00		

# Not For Sale

Years ago, I was working my way through med school and bought my first system. The only place I splurged was on speakers. I bought a pair of KLIPSCH® HERESYs,® but to save money I got them in unfinished wood cabinets.

Now I'm a doctor and, frankly, making some bucks. So I recently went back to the same dealer and dropped a bundle for all new electronics and a different brand of speakers.

When I set up the new equipment, I wanted to hear the improvement, so I hooked up the old HERESYs next to the new speakers.

I was quickly disappointed. The old HERESYs sounded a lot better than the new speakers. They just had more life and clarity. I felt like I had wasted my money on speakers.

My dealer was great about it. He let me exchange those speakers for a beautiful new pair of KLIPSCHORNs.® They have the biggest, most lifelike sound I've ever heard.

The old HERESYs? I'm not sure what to do with them but they're definitely not for sale. Neither are the KLIPSCHORNs.

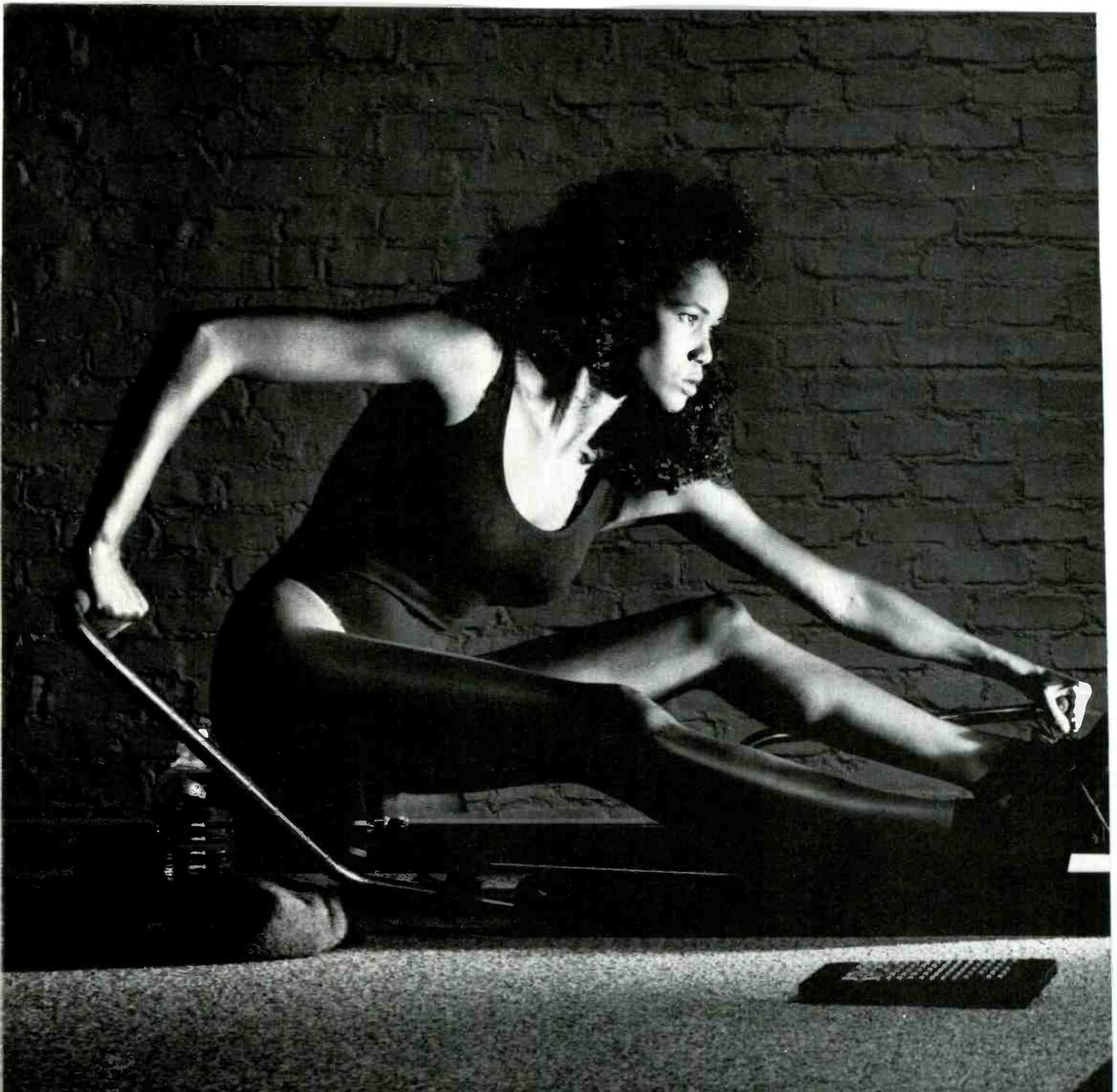
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*For your nearest KLIPSCH dealer, look in the Yellow Pages or call toll free, 1-800-223-3527.*

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It actually improves the performance of all your components. The VSX-9300S features the latest innovation from Dolby Labs, Dolby Pro-Logic™. This surround sound experience rivals even the most sophisticated movie theaters. There is also a split-screen video enhancer that sharpens and focuses every video image. And a "Smart Remote"™ control that turns your existing components into a unified A/V system.

Pioneer's VSX-9300S audio/video receiver. There is simply no better way to get it all out of your system.



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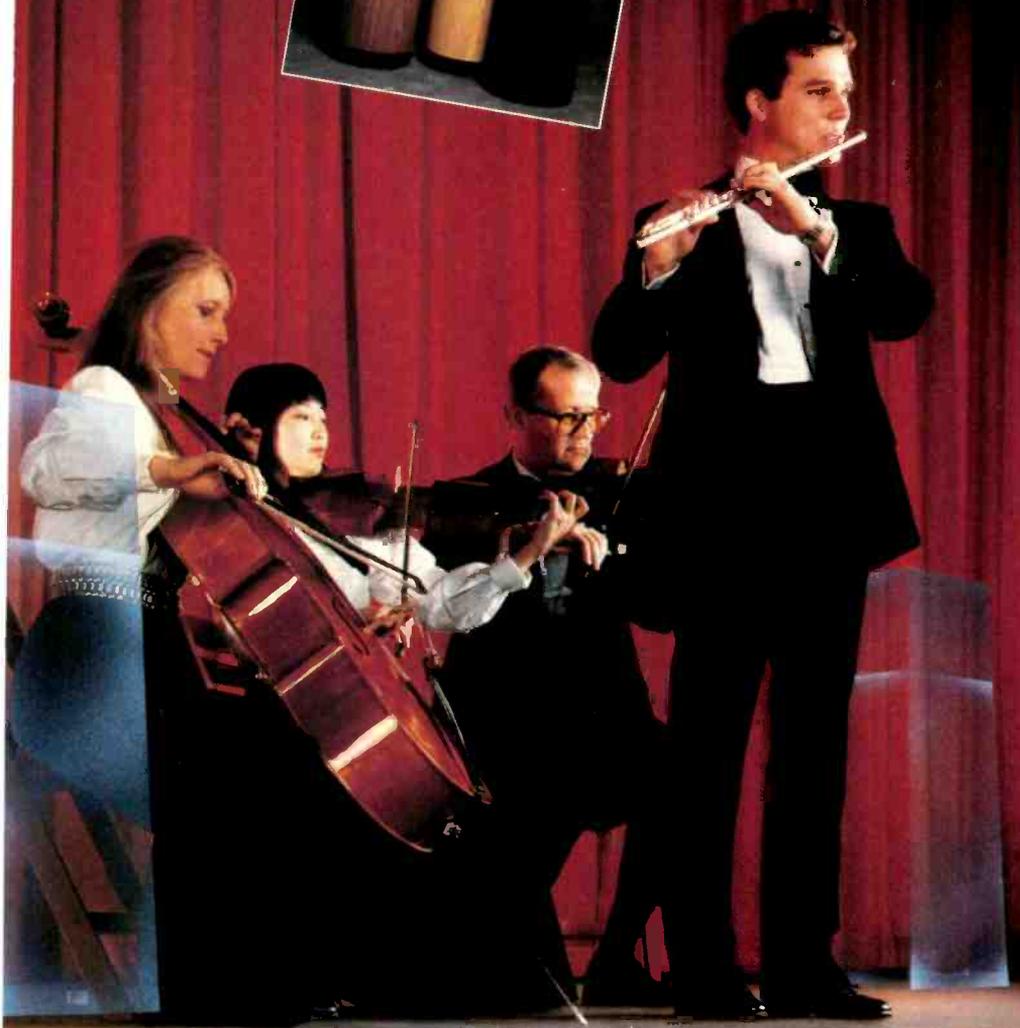
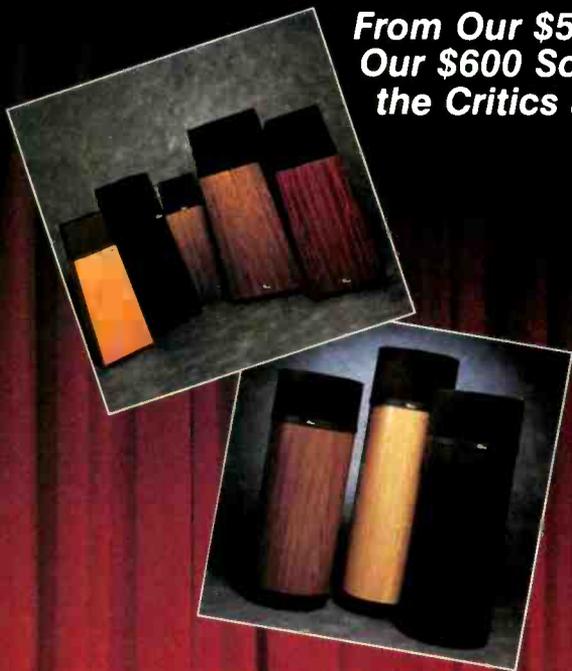
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# LOUDSPEAKERS

MANUFACTURER	Model	Design Principle	Enclosure or System Type		Woofer Diameter, Inches	Midrange Diameter, Inches	Midrange Type	Tweeter Diameter, Inches	Tweeter Type	Separate Level Controls? Woofer, W. Midrange, M. Tweeter, T. Super-tweeter = ST	Analogic Frequency Response, Hz to kHz, ± dB	SPL, -1 Watt/1 Meter, dB	Recommended Min. Amp Power, Watts	Crossover Frequencies, Hz	Impedance, Ohms: Nominal/Minimum	Dimensions, Inches (To Nearest Inch)	Finish	Grille Color and Material	Weight, Lbs.	Price, \$
			Woofer	Midrange																
GOODMANS	The Maxim	Bass Ref.	5				3/4	Dome		60-20	86	15		8/	10 x 7 x 7	Opt., Wood	Black Knit	122.50		
	The Maxamp	Powered Bass Ref.	5				3/4	Dome		65-20	97	Inc.		8/	10 x 7 x 7	Opt., Wood	Black Knit	162.50		
	Sterling Point 1	Ac. Sus.	6 1/2				3/4	Dome		60-20	89	15		8/	15 x 9 x 8	Opt., Wood	Black Knit	95.00		
	Sterling Point 3	Ac. Sus.	8				3/4	Dome		50-20	89	15		8/	18 x 10 x 9	Opt., Wood	Black Knit	120.00		
	Sterling Point 5	Ac. Sus.	8	3 1/2	Cone		3/4	Dome		45-20	89	15		8/	22 x 12 x 11	Opt., Wood	Black Knit	170.00		
	Sterling Point 7	Ac. Sus.	10	3 1/2	Cone		3/4	Dome		35-20	89	15		8/	27 x 13 x 11	Opt., Wood	Black Knit	295.00		
	Sterling Point 9	Ac. Sus.	(2)10	3 1/2	Cone		3/4	Dome		30-20	89	15		8/	37 x 13 x 12	Opt., Wood	Black Knit	370.00		
GOTT LABS	Studio	Ac. Sus.	5			1	Dome	T		85-20 ± 3	87	20	2.7k	8/5	8 x 6 x 10	Wal.	Brown Cloth	15	149.00	
REUBEN GUSS	Custom Monitor System 1	Sat. & Inf. Bat.	(24)15	(48)5	Domes	(32)1, (100)3	Domes, Piezos	M, T		10-30 ± 3	98	100	475,650, 950,3.5k	4/3	Eight Pieces	Opt.	Black Knit	2200 Sys.	100,000. Sys.	
	Monitor System 2	Sat. & Inf. Bat.	(12)15	(24)5	Domes	(16)1, (50)3	Domes, Piezos	M, T		15-30 ± 3	98	50	475,650, 950,3.5k	8/6	Four Pieces	Opt.	Black Knit	1100 Sys.	50,000. Sys.	
	Symphony System 3	Sat. & Inf. Bat.	(4)15	(6)5	Domes	(4)1, (12)3	Domes, Piezos	M, T		20-30 ± 3	96	50	475,650, 950,3.5k	4/3	Four Pieces	Oiled Wal.	Black Knit	355 Sys.	15,000. Sys.	
	Concerto System 4	Sat. & Inf. Bat.	(4)12	(6)5	Domes	(4)1, (8)3	Domes, Piezos	M, T		30-30 ± 3	92	50	475,650, 950,3.5k	4/3	Four Pieces	Oiled Wal.	Black Knit	350 Sys.	9000.00 Sys.	
	Sonata	Sat. & Inf. Bat.	(2)12	(2)5	Domes	(2)1, (6)3	Domes, Piezos	M, T		30-30 ± 4	88	50	600,3.5k	8/6	Four Pieces	Oiled Wal.	Black Knit	140 Sys.	4000.00 Sys.	
HAFLER	300	Tuned Trans. Line	(2)6 1/2			1	Dome			35-20	91	20	2.5k	8/6	10 x 12 x 36	Oiled Oak	Black Knit	45	750.00 Pair	
HARTLEY PRODUCTS	Reference Mini-Tower SPL-1	Air Col.	(2)6 1/2			1	Dome	No		32-25 ± 3	93	5	3.1k	5/4	33 x 12 x 12	Oiled Oak	Black Knit	50	650.00 Pair	
	SW-10	Air Col.	10	3	Cone	(4)3/4	Phsrs.	No		25-25 ± 3	95	15	3.8k	8/6	Four Pieces	Oiled Wal.	Black Knit	200 Sys.	1699.95 Sys.	
	ST-4	Air Col. Subwoof. Phasor Sat.	10			(4)3/4	Phsrs.	No		25-3.8 ± 3	93	15		8/6	18 x 18 x 24	Oiled Wal.	Black Knit	70	525.00	
	Concertmaster	Inf. Bat.	18	10	Cone	(2)7	Cones	No		3.8k-25k ± 2	96	15	3.8k	8/7	5 x 5 x 12	Oiled Wal.	Black Knit	15	190.00	
	Reference	Inf. Bat.	24	10	Cone	(2)7	Cones	No		16-25 ± 3	92.5	25	125,3k,8k	8/5	29 x 18 x 42	Oiled Wal.	Black Knit	350 Pair	3995.00 Pair	
	SW-18	Inf. Bat. Subwoof.	18					No		16-25 ± 3	93	25	125,3k,8k	8/5	36 x 24 x 50	Oiled Wal.	Black Knit	600 Pair	5195.00 Pair	
	SW-24	Inf. Bat. Subwoof.	24					No		16-350 ± 4	92.5	25		5/4	29 x 18 x 42	Oiled Wal.	Black Knit	150	990.00	
HECO	SAT 6000	Sat.	4 1/8			1	Dome			80-32 ± 3	87	60	2.2k	4/	8 x 6 x 5	Black	Black Mesh	5 1/2	150.00	
	O-6300	Sat.	4 1/8			1	Dome			80-32 ± 3	87	50	2k	4/	4 x 8 x 5	Black Metal	Black Mesh	7 1/4	115.00	
	SUB 6000	Powered Subwoof. & Sat. Amp	10					W		25-120		90, 60 Inc.	120		11 x 11 x 12	Black	Black Mesh	22	665.00	
	SUB 9000	Powered Subwoof.	12					W		20-150		110 Inc.	50-150 Adj.		17 x 14 x 14	Black	Black Mesh	27 1/2	520.00	
HEYBROOK	Point Five	Inf. Bat.	6 1/2			3/4	Dome			55-20 ± 3	88	15	3k	8/6	9 x 9 x 14	Black Vinyl	Black Knit	16	299.95 Pair	
	Point Seven	Inf. Bat.	6 1/2			3/4	Dome			45-20 ± 3	89	15	3k	8/6	9 x 9 x 16	Black Vinyl	Black Knit	18	399.95 Pair	
	HB-100	Inf. Bat.	8			1	Dome			40-20 ± 3	91	15	2.5k	8/6	11 x 11 x 20	Opt., Vinyl	Black Knit	20	599.95 Pair	
	HB-150	Ported	6 1/2			1	Dome			36-20 ± 3	89	15	2.5k	8/6	9 x 9 x 16	Vinyl Wood Ven.	Black Knit	20	799.95 Pair	
	HB-200	Ported	6 1/2			1	Dome			34-20 ± 3	89	15	2.5k	8/6	9 x 9 x 18	Vinyl Wood Ven.	Black Knit	26	999.95 Pair	
	HB-3	Inf. Bat.	10	4 1/2	Cone	3/4	Dome			32-20 ± 3	90	15	800,3k	8/6	10 x 12 x 24	Vinyl Wood Ven.	Black Knit Foam	48	1599.95 Pair	
HITACHI	HSW30	Ac. Sus.	6 1/2			3/4	Dome			60-20	90	50	6k	8/	9 x 10 x 15	Black Vinyl	Black Knit	13	199.95 Pair	
	HSW50	Ac. Sus.	8	5	Cone	3/4	Dome			45-20	90	70	2k,6k	8/	10 x 10 x 30	Black Vinyl	Black Knit	20	399.95 Pair	
IMAGE	Reference .5	Ported	6 1/2			3/4	Dome			45-20 ± 3.5	87	20	2.5k	6/4	16 x 10 x 9	Hick. Vinyl	Black	15	220.00 Pair	
	Reference One	Ported	8			3/4	Dome			40-20 ± 3	89	20	2.2k	6/4	19 x 10 x 9	Hick. Vinyl	Black	20	260.00 Pair	
	Reference Two	Ported	8			1	Dome			35-20 ± 3	88	20	2.2k	6/4	24 x 11 x 12	Hick. Vinyl	Black	31	370.00 Pair	
	Concept 100	Ported	6 1/2			3/4	Dome			45-23 ± 2	87	35	2.1k	6/4	16 x 9 x 11	Opt.	Black Knit	23	600.00 Pair	
	Concept 200	Ported	(2)6 1/2			3/4	Dome			35-23 ± 2	87	35	2.1k	6/4	43 x 10 x 15	Opt.	Black Knit	66	900.00 Pair	

# Ohm CLS Drivers Make Your Speakers Disappear

From Our \$5000 Walsh 5 to  
Our \$600 Sound Cylinders  
the Critics are Impressed.



## *Stereophile* 8-88

"...The Walsh 5 is a full-range speaker that is quite clean and images well...a Great American Speaker...one of the few dynamic speakers that my jaded electrostatic taste buds could live with...a clear Class B choice"--the highest rating any speaker has yet received.<sup>1</sup>

## *Audio* 6-88

"The Walsh 5 is one of the cleanest speakers available...I perceived remarkable depth and spaciousness to music well recorded in a concert hall. This spaciousness did not result in a vague mass of sound: image location is sharply defined and accurately placed...They are a masterpiece of the speaker designer's art."<sup>2</sup>

## *Stereo Review* 1-88

"The sound of the Ohm Sound Cylinders was smooth, balanced and thoroughly enjoyable, well beyond what anyone would expect from such a small, light speaker. Its dispersion was subjectively complete, and we were never aware of the speakers as distinct sound sources, no matter how much we moved around the room...these speakers certainly offer impressive value for their price and size."<sup>3</sup>

## *New York Times* 3-88

"...the various frequencies emerge in their natural phase relationship--more than in conventional designs. To what extent this accounts for the speakers fine sound may be debatable, yet there is no question that the Ohm Sound Cylinders represent an excellent bargain, with a clarity and richness of sound rarely found in a speaker of this size and price."<sup>4</sup>

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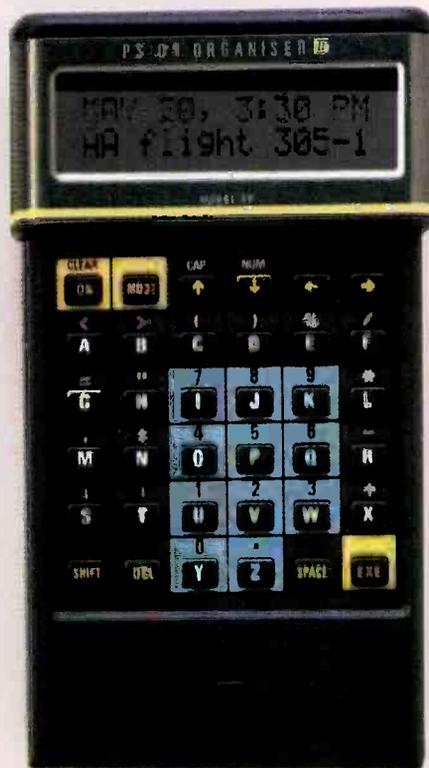
Psion will go where you go to record, remind, store, find, calculate, evaluate.

# or

It's a daily diary with built-in alarm, appointment book, phone book, address book, calendar, calculator, expense log, sales journal and event reminder. It also computes. Just like that big machine at the office.

Right now, a Psion Organiser II is looking after someone near you. (You can tell by their relaxed smile.) More to the point, it's on sale at a store near you. So you too can get organised, for less than \$180.00.

For more information (or the name of the Psion dealer near you), call 1-800-548-4535. (Maybe you should write that down so you don't forget it.)



Psion Organiser II. Life Simplified.

# LOUDSPEAKERS

MANUFACTURER	Model	Design Principle, Enclosure or System Type	Woofer Diameter, inches		Midrange Diameter, inches		Tweeter Diameter, inches		Separate Low Midrange = W Highrange = H, Tweeter = T, Superwoofer = ST	Ancholic Frequency Response, Hz to kHz, ±dB	SPL, 1 Watt/1 Meter, dB	Recommended Min. Amp Power, Watts	Crossover Frequencies, Hz	Impedance Ohms Nominal/Minimum	Dimensions, inches (To Nearest Inch)	Finish	Grille Color and Material	Weight, Lbs.	Price, \$
IMPULSE	I	Ported	10			46L	Ribbon	T	30-20 ±2	83	100	175	5/2	Two Pieces per Side	Oiled Wal. Oak	Metal	200	5000.00	
	II LeF	Ported	12			(4)2	Cones		28-22 ±2	88	100	175	4/3	Two Pieces per Side	Metal	80	2500.00		
	III LeF	Ported	8			2	Cone		46-22 ±2	88	100	175	4/3	10 x 8 x 14	Oak	Metal	26	2000.00 Pair	
INFINITY	RS 6 Kappa	Sealed Box	10	3	Dome	3/4x1 3/4	EMIT	M, T	39-45 ±3	88	30	800, 4.5k	6/4	25 x 15 x 11	Opt.	Black Knit	42	499.00	
	RS 7 Kappa	Sealed Box	12	3	Dome	3/4x1 3/4	EMIT	M, T	37-45 ±3	88	40	800, 4.5k	6/4	37 x 17 x 12	Opt.	Black Knit	69	699.00	
	RS 8 Kappa	Sealed Box	12	3	Dome	3/4x1 3/4	EMIT	(2)M, T	33-45 ±3	89	50	80, 800, 4.5k	6/3	48 x 21 x 8	Opt.	Black Knit	90	999.00	
	RS 9 Kappa	Sealed Box	(2)12	3	Dome	3/4x1 3/4	EMIT	(2)M, T, ST	29-45 ±3	89	60	80, 800, 4.5k	6/3	60 x 22 x 8	Opt.	Black Knit	120	1449.00	
	RS1000	Sealed Box	4 1/2			1 3/4	Dome		72-22 ±3	89	8	5.5k	6/4	13 x 8 x 7	Opt.	Black Knit	9	85.00	
	RS2000	Sealed Box	6 1/2			1 3/4	Dome		57-22 ±3	89	15	4.5k	6/4	14 x 9 x 8	Opt.	Black Knit	14	115.00	
	RS3000	Sealed Box	8			1	Dome		45-22	89	20	4k	6/4	20 x 12 x 10	Opt.	Black Knit	28	179.00	
	RS4000	Sealed Box	8	3 1/2	Cone	3/4x1 3/4	EMIT	T	44-44 ±3	89	20	500, 5k	6/4	22 x 12 x 10	Opt.	Black Knit	30	249.00	
	RS5000	Sealed Box	10	3 1/2	Cone	3/4x1 3/4	EMIT	T	42-44 ±3	89	20	500, 5k	6/4	24 x 15 x 12	Opt.	Black Knit	34	319.00	
	RS6000	Sealed Box	(2)10	1 1/2	Dome	3/4x1 3/4	EMIT	M, T		89	20		6/4		Opt.	Black Knit		469.00	
	IRS Series V	Servo	(12)12	(24) 4x6	EMIMs	(72) 1/2x2	EMITs	M, T, ST	16-44 ±2	87	100	70, 5k	4/3	Four Pieces	Santos	Brown Cloth	1550 Sys.	50,000. Sys.	
	IRS Beta	Servo	(8)12	(4) 16x8, (2) 4x6	L- EMIMs, EMIMs	(4) 1/2x2, (2) 1/2x1	EMITs, SEMITs	M, T, ST	25-44 ±2	87	75	70, 700, 4k, 8k	4/3	Four Pieces	Santos	Black Cloth		10,500. Sys.	
	IRS Gamma	Servo	(4)12	(2) 16x8, (2) 4x6	L- EMIMs, EMIMs	(4) 1/2x2, (2) 1/2x1	EMITs, SEMITs	M, T, ST	25-44 ±2	86	60	70, 700, 4k, 8k	4/3	22 x 15 x 62	Santos	Black Cloth		6950.00 Pair w/Xover	
	IRS Delta	Sealed Box	(4)12	(2) 16x8, (2) 4x6	L- EMIMs, EMIMs	(4) 1/2x2, (2) 1/2x1	EMITs, SEMITs	M, T, ST	29-44 ±2	86	60	70, 700, 4k, 8k	4/3	22 x 15 x 62	Santos	Black Cloth		5500.00 Pair	
	SM 100	Tuned Port	10			1	Dome	T	35-27	98	10	2.5k	8/6	30 x 14 x 12	Opt.	Black Knit	53	279.00	
SM 120	Tuned Port	12	4 1/2	Cone	1	Dome	M, T	32-27	98	10	750, 5.5k	8/6	33 x 16 x 12	Opt.	Black Knit	64	399.00		
SM 150	Tuned Port	15	(2)4 1/2	Cones	1	Dome	M, T	29-27	101	10	500, 5.5k	8/6	40 x 19 x 12	Opt.	Black Knit	80	559.00		
SM 80	Tuned Port	8			1	Dome		45-27	98	10	3k	8/6	11 x 11 x 18	Opt.	Black Knit	47	219.00		
INDUVE	Modus 1	Int. Baf.	4 1/2			1 1/2	Dome		70-20 ±2	85	25	2.5k	8/8	9 x 8 x 12	Opt.	Opt.	59 Pair	995.00 Pair w/ Stands	
	Modus 1 Subwoofer System	Active Subwoof.	(2)8					W	20-200 ±3		150 Inc.	40-200 Adj.		21 x 21 x 22	Opt.	Opt.	68	1295.00 w/Amp & Xover	
	Modus 10	Vented	(6)8			(3)1 1/2	Domes		28-20 ±3	89	50	2.5k	4/3	15 x 11 x 78	Black Lacq.	Black Knit	258 Pair	6000.00 Pair	
JAMO	Concert II	Bass Ref.	6 1/2			1	Dome		40-20 ±3	91	80	2k	8/	16 x 10 x 10	Opt., Wood	Cloth	20	798.00 Pair	
	Concert V	Bass Ref.	6 1/2	6 1/2	Cone	1	Oome		30-22 ±3	93	110	150, 3.5k	6/	32 x 14 x 11	Opt., Wood	Cloth	42	1396.00 Pair	
	Art	Bass Ref.	5			1	Dome		40-20 ±3	88	60	3k	8/	14 x 16 x 4	Opt., Lacq.	Opt., Cloth, Metal	10 3/4 Sys.	400.00 Pair	
	SW1	Push-Pull Sat. & Subwoof.	(2)8	4	Cone	2	Oome		35-20	90	80	200, 4.5k	8/	Three Pieces	Black	Opt., Metal	28 3/4 Sys.	449.00 Sys.	
	SW-50	Powered Subwoof.	10						25-150		55 Inc.	65-150 Var., 3.5k	47k	16 x 13 x 13	Opt., Lacq.	Opt., Lacq.	26 1/2 Sys.	499.95	
SW-50/ Monitor One	Sat. & Powered Subwoof.	10	5	Cone	1	Oome		25-20		55 Inc.			Three Pieces	Opt., Lacq.	Opt., Lacq.	48 1/2 Sys.	819.95 Sys.		
JANIS	W1	Slot Loaded Subwoof.	15						30-100 ±1	87	60	100	8/7	18 x 22 x 22	Oiled Wal.	Wood	100	795.00	
	W3	Slot Loaded Subwoof.	12						30-100 ±1	85	50	100	8/7	18 x 18 x 18	Oiled Wal.	Wood	67	550.00	
	System 3/A	Powered Slot Loaded Subwoof.	12						30-100 ±1	85	50 Inc.	100	8/7	18 x 18 x 18	Oiled Wal.	Wood	87	850.00	
JBL	L20T/L20TBQ	Bass Ref.	6 1/2			1	Dome		45-27	87	10	3k	8/6	15 x 10 x 9	Opt.	Black Knit	41 Pair	From 235.00	
	L60T/L60TBQ	Bass Ref.	8			1	Dome		35-27	88	10	2.5k	8/6	31 x 12 x 10	Opt.	Black Knit	42	From 345.00	
	L80T/L80TBQ	Bass Ref.	10	5	Cone	1	Dome		35-27	90	10	800, 4.5k	8/6	34 x 14 x 12	Opt.	Black Knit	60	From 465.00	
	L100T/ L100TQX Cascade	Bass Ref.	12	5	Cone	1	Dome		35-27	91	10	800, 4.5k	8/6	37 x 16 x 13	Opt.	Black Knit	77	From 625.00	
(Continued)				(4)3	Domes	1	Dome		24-24	89	10		8/6	58 x 22 x 12	Oiled Oak	Black Knit		2395.00	

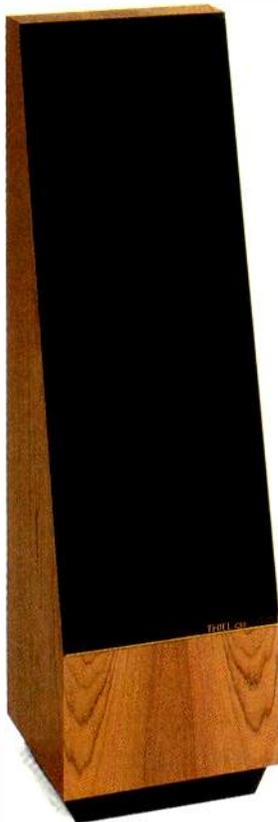
# fi·del'ə·tī

1. **Tonal fidelity** ensures the faithful reproduction of the exact timbre of each specific musical sound.
2. **Spatial fidelity** ensures the accurate recreation of the positions and "feel" of instruments in three dimensional space.
3. **Transient fidelity** ensures the clarity of subtle musical details necessary for a sense of reality.
4. **Dynamic fidelity** ensures the preservation of musical contrasts that are crucial to musical enjoyment.

**THIEL** *Coherent Source™* loudspeakers preserve the time and phase information of music, providing more complete musical performance than conventional speakers. This time and phase accuracy along with cabinets designed to greatly reduce diffraction and enclosure resonances provide unsurpassed spatial fidelity. Instruments are correctly placed in their originally recorded positions; the sound stage is wide, extending even beyond the speakers, and remains stable in space regardless of listener position.

Accurate imaging, along with the extreme tonal accuracy provided by very uniform frequency response, and the exceptional clarity achieved by very rigid cabinets, sophisticated drivers and high quality electrical components together provide loudspeakers that deliver complete musical fidelity. We invite you to audition them with the music you love most.

## NEW CS 1.2

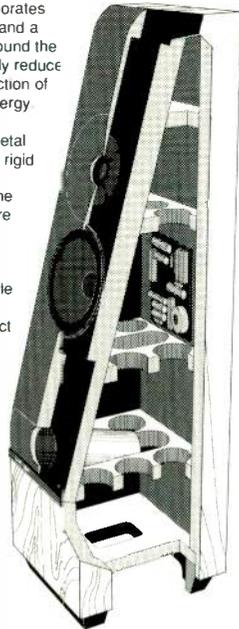


The grille incorporates rounded edges and a shallow flare around the tweeter to greatly reduce unwanted diffraction of the tweeter's energy.

The tweeter's metal diaphragm is so rigid and light that resonances in the audible range are completely eliminated.

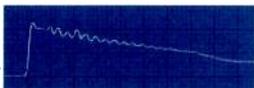
The sloping baffle positions the drivers for correct time alignment.

Heavy internal bracing and very thick cabinet walls greatly reduce unwanted vibrations.



This frequency response graph demonstrates how closely the CS1.2's tonal balance approaches the ideal of being uniform at all frequencies.

The step response of the CS1.2 demonstrates its very unusual ability to preserve all the time and phase relationships of the musical signal.



"The CS3.5 is the finest, most accurate loudspeaker I've had the pleasure of reviewing ...one amazing loudspeaker."  
—Bruce Bartlett, *High Performance Review* April 88

"The Thiel 3.5 is a true standard for dynamic speakers. An extraordinarily musical speaker. My compliments and praise to Mr. Thiel."  
—Bebo Moroni, *Audio Review, Italy* April 87

"The Thiel CS 3.5 shows that the best cone systems can certainly rival or surpass the better electrostatic and ribbon planar speakers in resolution and transparency."  
—Anthony H. Cordesman, *Stereophile* Vol. 10 No. 1

"The Thiel CS3.5 is a remarkable loudspeaker. It offers exceptional imaging, both laterally and in terms of depth."  
—*Audio Ideas, Canada* Summer 87

"The CS3 has quite remarkable detail, and the imaging is nothing short of amazing."  
—Gordon Holt, *Stereophile* Vol.7 No.3

"The CS3 is simply a superb-sounding loudspeaker with a remarkable natural tonal balance and excellent imaging."  
—*High Fidelity* Vol. 34 No. 6

"The exceptionally fine impulse response clearly verifies the CS3's claim of being a coherent-source loudspeaker."  
—Richard C. Heyser, *Audio* November 85

"Musically, the CS2 is outstanding. The imaging and depth are exceptional."  
—Anthony H. Cordesman, *Stereophile* Vol. 8 No. 6

"After the first couple of minutes, we had no doubt that the CS2s were exceptional speakers."  
—Julian Hirsch, *Stereo Review* January 86

"The CS2 provides incredible stereo imaging with stunning depth. This is the speaker of choice for the music lover in search of a true rendition of timbres and dynamics."  
—*Revue Du Son, France* June 87

"The Thiel CS1s are excellent portrayers of musical detail, and they faithfully and naturally reproduce all timbres."  
—*Hi Fi Heretic* number 7

"The CS1s do it all. Indeed this is a highly musical system."  
—*Revue Du Son, France* November 86

CS1.2 \$1090, CS2 \$1650, CS3.5 \$2450  
prices suggested retail per pair, slightly higher in the West

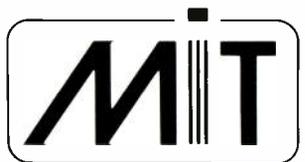
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# CVT™: A QUANTUM IMPROVEMENT IN PHASE CORRECT AUDIO CABLE

***constant velocity transmission™***

*from* 

MIT proudly announces the next generation of superior audio cable technology: **constant velocity transmission/CVT™**

The fulfillment of an eight-year design program, CVT™ is the only audio cable technology that maintains constant velocity transmission of complex audio signals, which virtually eliminates resultant phase noise distortions well into the megahertz region.

For audio cable to transmit music accurately, it must control frequency-dependent delays. Because low frequencies penetrate to the core of the conductor or conductor bundle within most cable, low frequencies travel more slowly than high frequencies which travel on the conductor surface. This time-delay creates distortions that are internal to the conductor or conductor bundle within most audio cables.

These internal frequency-dependent delay distortions manifest themselves as noise that settles throughout the frequency spectrum, thereby overlaying the music signal. The result is that much musical information is lost because it is below the noise floor, the quiet space between music tones is obscured, and the original music tones are changed.

For the first time, the ultra wide-band accuracy of MIT's CVT design eliminates phase noise and its destructive impact on music. MIT's testing shows the dramatic superiority of MIT MI-330SG/Spectral MI-500SG Interconnect with CVT vs. solid-core straight wire, a widely accepted reference standard. A series of complex music tone bursts (40hz to 40khz) were separated by brief delays to show the back of one wave form and the front of the next wave form.

Wave forms transmitted through solid-core straight wire (Figure 1) are severely distorted by phase noise. The 40hz step in each wave form is absent, and the back and front of the two wave forms overlap (A). The solid trace illustrates how + and - energy from the wave form tails (B), which should be at 0 volts, is added to the distorted wave form and creates a resultant wave form.

This excess energy "settles" onto the 40khz part of each wave form (C), adding distortion. The phase noise created obscures the quiet space between music tones (D). The result: the output signal varies significantly from the input signal.

MIT-Spectral with CVT (Figure 2) transmits clean, sharply-defined wave forms.

The 40hz steps (A) are precise. Wave form tails (B) are a steady 0 volts, as they should be. The 40khz parts of each music tone (C) are smooth and undistorted. With CVT the output signal matches the input signal.

CVT is today's last word on phase-correct advanced audio cable interfacing. The remarkable CVT technology is available from authorized dealers in MIT MI-330SG/Spectral MI-500SG Interconnect and MH-750 Music Hose speaker cable.

For further information on CVT and a technical discussion of phase noise, please write to:

**Transparent Audio Marketing,  
Route 202, Box 117, Hollis, ME 04042.**

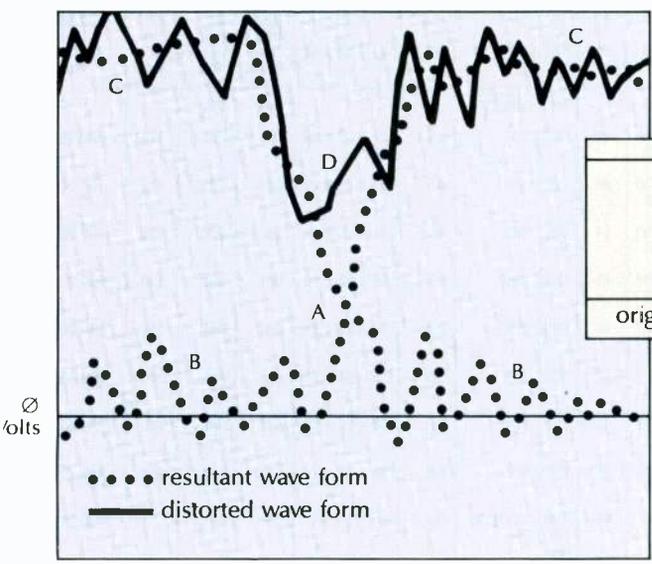


Figure 1  
Solid-core straight wire

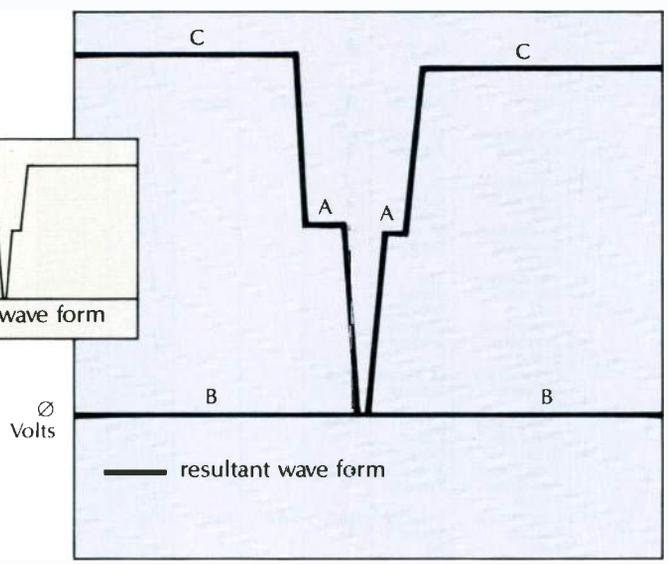
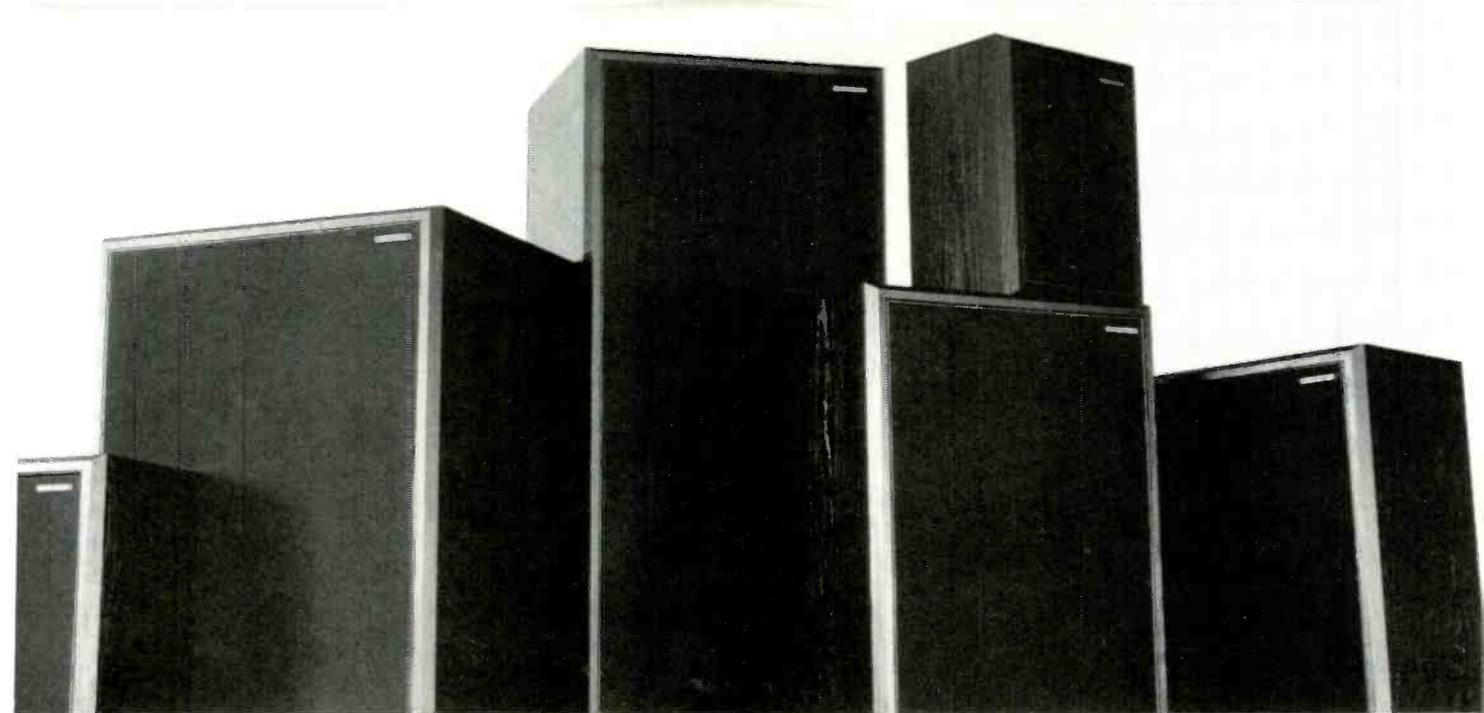


Figure 2  
MIT MI-330SG/  
Spectral MI-500SG with CVT™

# LOUDSPEAKERS

MANUFACTURER	Model	Design Principle, Enclosure or System Type	Woofer Diameter, Inches		Midrange Diameter, Inches		Tweeter Diameter, Inches		SPL, 1 Watt/1 Meter, dB		Crossover Frequencies, Hz		Dimensions, Inches (To Nearest Inch)		Grille Color and Material		Weight, Lbs.	Price, \$
											Impedence, Ohms: Nominal/Minimum	Dimensions, Inches (To Nearest Inch)	Finish	Grille Color and Material				
JBL (Continued)	52TQX	Bass Ref.	5 1/4			1/2	Dome		85-20	89	10	4k	8/6	12 x 8 x 7	Oak Vinyl Opt., Vinyl Opt., Vinyl Opt., Wood Opt., Wood Gray	Gray Knit Opt., Knit Opt., Knit Opt., Knit Opt., Perf. Metal	20 Pair	89.00
	62T/62TQX	Bass Ref.	6 1/2			1	Dome		75-23	89	10	3k	8/6	16 x 10 x 9		Black Knit Opt., Knit Opt., Knit Opt., Knit Opt., Perf. Metal	32 Pair	125.00
	82T/82TQX	Bass Ref.	8			1	Dome		60-23	90	10	3k	8/6	22 x 14 x 9		Black Knit Opt., Knit Opt., Knit Opt., Knit Opt., Perf. Metal	30 Pair	175.00
	630T/630TQX	Bass Ref.	(2)6 1/2			1	Dome		58-23	93	10	200,3k	4/3	37 x 15 x 9		Black Knit Opt., Knit Opt., Knit Opt., Knit Opt., Perf. Metal	40	245.00
	830T/830TQX	Bass Ref.	(2)8			1	Dome		55-23	94	10	200,3k	4/3	40 x 17 x 9		Black Knit Opt., Knit Opt., Knit Opt., Knit Opt., Perf. Metal	53	325.00
	Pro III	Bass Ref.	5			1	Dome		65-27	87	10	3k	4/3	9 x 6 x 6		Black Knit Opt., Knit Opt., Knit Opt., Knit Opt., Perf. Metal	5 1/2	285.00
	Pro VIII	Bass Ref.	6 1/2			1	Dome		55-27	90	10	3k	6/4	15 x 10 x 9		Black Knit Opt., Knit Opt., Knit Opt., Knit Opt., Perf. Metal	26	
	S-1	Bass Ref. Subwoof.	8						40-200	88	10	125	8/6	34 x 10 x 10		Black Knit Opt., Knit Opt., Knit Opt., Knit Opt., Perf. Metal	38	From 295.00
	S-2	Bass Ref.	8			(4) 1/2	Domes		40-20	88	10	4k	8/6	40 x 10 x 10		Black Knit Opt., Knit Opt., Knit Opt., Knit Opt., Perf. Metal	40	From 550.00
JENSEN	Concert Series 3100	Vented	10	5	Cone	3	Cone		48-21	90			8/	20 x 13 x 11	Wal. Vinyl	Black Knit	24	219.95
	Concert Series 3120	Vented	12	5	Cone	3	Cone		43-21	91			8/	29 x 16 x 11	Wal. Vinyl	Black Knit	30	279.95
	Concert Series 3150	Vented	15	5	Cone	3	Cone		33-21	94			8/	32 x 18 x 11	Hick. Vinyl	Black Knit	45	349.90
JORDAN	HRM-1	Ac. Sus.	8			2	ACT		42-23	86	35	420	8/8	22 x 11 x 11	Ven.	Black Cloth	29	Kit, 550.00
	HRM-2	Ac. Sus.	(2)8			(2)2	ACTs		32-23	89	50	250	4/4	Six Pieces	Ven.	Black Cloth	350 Sys.	Kit, 1595.00
	HRS-W	Ac. Sus. Subwoof.	(2)8				ACT		Var.			Var.		33 x 10 x 13	Ven.	Black Cloth	65	Kit, From 499.00
	HRM-4	Ac. Sus.	(2)8			(4)2	ACTs		30-23	90	50	200	4/4	Six Pieces	Ven.	Black Cloth	400 Sys.	Kit, From 2250.00
	HRS-BR Kit	Bass Ref. Subwoof.	(2)8				ACT		Var.			Var.			Ven.	Black Cloth	68	Sys.
JPW LOUDSPEAKERS	AP3	Inf. Baf.	8			3/4	Dome		55-20 ±3	89	10	3.2k	8/6.2	21 x 10 x 12	Opt., Wood	Opt., Knit	53 Pair	599.50
	AP2	Inf. Baf.	8			3/4	Dome		60-20 ±3	89	10	3.2k	8/6.2	17 x 10 x 10	Opt., Wood	Opt., Knit	42 Pair	399.50
	P1	Inf. Baf.	8			3/4	Dome		65-20 ±3	90	10	3.2k	8/6.2	17 x 10 x 10	Opt., Wood	Opt., Knit	34 Pair	349.50
JRM	Monitor	Powered	12, (4)6 18	(4)3	Cones		Horn	W, M, T	20-20 ±2	Inc.	150,1k,5k				Opt.	Opt.		
	Transparency Subwoofer S18A	B4 Vented Subwoof.	18						25-250 ±1.5	95	200	Sel.	8/6	36 x 30 x 24	Opt.	Opt.	175	500.00
	Transparency Subwoofer S18B	QB3 Vented Subwoof.	18						27-250 ±1.5	94	200	Sel.	8/7	36 x 25 x 24	Opt.	Opt.	175	700.00
	Transparency Subwoofer S18B-6	B6 Vented Subwoof.	18						20-250 ±1.5	94	200	Sel.	8/7	36 x 25 x 24	Opt.	Opt.	175	700.00
	Transparency Subwoofer S15A	QB3 Vented Subwoof.	15						27-300 ±1.5	91	200	Sel.	8/7	36 x 23 x 16	Opt.	Opt.	130	550.00
	Transparency Subwoofer S15A-6	B6 Vented Subwoof.	15						20-300 ±1.5	91	200	Sel.	8/7	36 x 23 x 16	Opt.	Opt.	130	550.00
	Transparency Subwoofer D15A	C4 Vented Subwoof.	(2)15						18-300 ±1.5	89	200	Sel.	Sel.	48 x 34 x 24	Opt.	Opt.	200	550.00
	Transparency Subwoofer D12A	QB3 Vented Subwoof.	(2)12						27-450 ±1.5	88	200	Sel.	Sel.	36 x 23 x 18	Opt.	Opt.	150	450.00
Transparency Subwoofer D12A-6	B6 Vented Subwoof.	(2)12						18-450 ±1.5	88	200	Sel.	Sel.	36 x 23 x 18	Opt.	Opt.	150	450.00	
Transparency Satellite Tower	Triamped Sealed Sat.	(18)5	3x26	Horn	1 1/8	Horn	W, M, T	20-20 ±2	98	200, (2) 40	150,800, 7k	Sel.	8 x 16 x 66	Opt.	Opt.		1700.00	
JS AUDIO	26P	Vented	6			1	Dome		40-22 ±3	92	15	2.5k	8/	16 x 10 x 11	Opt.	Opt.	28 Pair	600.00
	28P	Ac. Sus.	8			1	Dome		38-22 ±4	91	20	2.5k	8/	19 x 12 x 10	Opt.	Opt.	32 Pair	600.00
	26J	Ac. Sus.	6			1	Dome		46-21 ±4	94	5	2.5k	8/	12 x 8 x 8	Opt.	Opt.	24 Pair	450.00
	38P	Vented	8	3	Cone	1	Dome		30-22 ±3	93	15	700,4k	8/	19 x 12 x 10	Opt.	Opt.	32 Pair	900.00
	310P	Vented	10	5	Cone	1	Dome		32-22 ±3	95	15	700,4k	8/	24 x 14 x 10	Opt.	Opt.	70 Pair	1100.00
	313N	Vented	13	4	Cone	1	Dome		30-20 ±3	91	20	600,3k	8/	32 x 16 x 12	Opt.	Opt.	130 Pair	1600.00
	412P	Vented	12	5	Cone	(2)1	Dome, Horn		28-40 ±3	98	15	600,4k, 10k	8/	27 x 16 x 12	Opt.	Opt.	90 Pair	1500.00
	312P	Vented	12	5	Cone	1	Dome		28-30 ±3	96	15	700,4k	8/	32 x 16 x 12	Opt.	Opt.	130 Pair	1600.00



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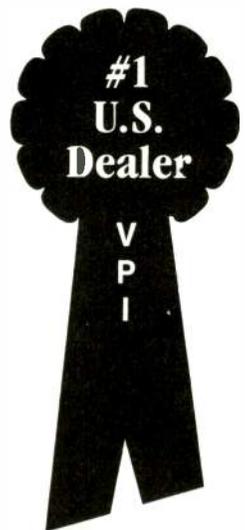
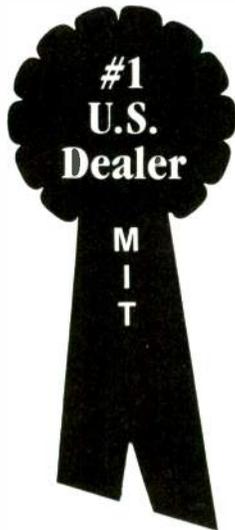
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# LOUDSPEAKERS

MANUFACTURER	Model	Design Principle, Enclosure or System Type	Woofer Diameter, Inches	Midrange Diameter, Inches	Midrange Type	Tweeter Diameter, Inches	Tweeter Type	Separate Level Controls? Woofer=W, Midrange=M, Tweeter=T	Anechoic Frequency Response, Hz to kHz, ±dB	SPL, 1 Watt/1 Meter, dB	Recommended Min. Amp Power, Watts	Crossover Frequencies, Hz	Impedance, Ohms: Nominal/Minimum	Dimensions, Inches (To Nearest Inch)	Finish	Grille Color and Material	Weight, Lbs.	Price, \$
JS AUDIO (Continued)	415P	Vented	15	2	Dome	(3)1	Dome, Horns		20-30 ±3	99	30	700,4k, 12k	8/	36 x 19 x 12	Opt.	Opt.	180 Pair	2800.00 Pair
	Mesa II	Trans. Line	12	2	Dome	1½, 1	Horns		25-25 ±2	90	40	400,3k, 10k	8/	33 x 16 x 15	Opt.	Opt.	160 Pair	3000.00 Pair
	310N	Vented	10	4	Cone	1	Dome		32-22 ±3	91	20	700,3k	8/	29 x 13 x 10	Opt.	Opt.	90 Pair	1500.00 Pair
	612P	Vented	(2)12	(2)5	Cones	(4)1	Domes, Horns		24-22 ±3	99	30	600,4k, 10k	8/4	74 x 16 x 12	Opt.	Opt.	400 Pair	4800.00 Pair
	DCI	Vented	(2)10	(2)4	Cones	(4)1	Domes, Horns			96	50	400,4k, 10k	8/4	61 x 8 x 16	Opt.	Opt.	200 Pair	5400.00 Pair
	Shelf Sub.	Vented Subwoof.	10						24-120	89	40	120	8/4	24 x 14 x 10	Opt.	Opt.	40	600.00
	Sub Woofer	Vented Subwoof. Ac. Sus.	15						20-120	91	40	120	8/4	18 x 18 x 19	Opt.	Opt.	78	900.00
	320		(2)10	5	Cone	1	Dome		26-21 ±2	92	50	400,4k	8/4	48 x 13 x 10	Opt.	Opt.	80	1500.00 Pair
JS ENGINEERING	.6	Ported	8			1	Dome		45-18 ±3	90	10	2k	8/5	11 x 12 x 23	Opt.	Black Knit	45	599.00 Pair
	.8	Phase-Shift Loaded	(2)8			1	Dome		40-19 ±3	89	10	2k	8/5	12 x 15 x 29	Opt.	Black Knit	50	899.00 Pair
	1	Phase-Shift Loaded	8	7	Cone	1½	Dome		40-20 ±2	89	10	150,2k	8/5	13 x 15 x 29	Opt.	Black Knit	55	1095.00 Pair
	1.8A	Phase-Shift Loaded	(2)10	6½	Cone	1½	Dome		30-20 ±2	89	20	150,2k	8/5	15 x 17 x 38	Opt., Wood	Black Knit	100	1795.00 Pair
	2A	Phase-Shift Loaded	10,12	6½,2	Cone, Dome	7/8	Dome		25-25 ±2	89	50	150,1k,4k	8/5	16 x 18 x 45	Opt., Wood	Black Knit	125	2495.00 Pair
	4	Phase-Shift Loaded	(2)10	7.2	Cone, Dome	7/8	Dome		25-25 ±2	88	70	100,1k,4k	8/5	19 x 22 x 49	Opt., Wood	Black Knit	150	4500.00 Pair
JVC	SX911WD	Air Sus.	12	4½		1	Dome		40-50	91	30	500,4k	6/	15 x 23 x 14	Wood Knit	Brown Knit	63	720.00
	SXA6	Pas. Rad.	8	8	Dome	1	Dome		25-23	89	50	1.2k,6.5k	6/	15 x 32 x 10	Wood Knit	Gray Knit	38½	250.00 Pair
	SXA3	Pas. Rad.	8	8	Dome	1	Dome		35-23	88	30		6/	14 x 25 x 11	Wood Knit	Gray Knit	34	400.00 Pair
KEF	Reference 107	Coherent Phase Coupled Cavity	(2)10	4	Cone	1	Dome	W	20-20 ±2	90	50		4/4	46 x 13 x 18	Opt., Wood Knit	Black Knit	99	4500.00 Pair
	Reference 104/2	Coupled Cavity	(2)8	(2)4½	Cones	1	Dome		35-20 ±2	92	25		4/4	35 x 11 x 16	Opt., Wood Knit	Black Knit	71	2000.00 Pair
	Reference 103/3	Coupled Cavity	8	6	Cone	1	Dome	W	50-20 ±2	92	50		4/4	23 x 10 x 13	Opt., Wood Knit	Black Knit	38	1390.00 Pair
	Reference 102	Conjugate Load	6			1	Dome	W	65-20 ±2	92	50		4/4	13 x 8 x 10	Opt., Wood Knit	Black Knit	15	870.00 Pair
	C95	Uni-Q	8	8	Cone	1	Dome		50-20 ±3	90	10		4/4	34 x 10 x 12	Opt., Wood Knit	Black Knit	42	1290.00 Pair
	C75	Uni-Q	8	8	Cone	1	Dome		57-20 ±3	91	10		4/	28 x 10 x 10	Opt.	Black Knit	28	750.00 Pair
	C55	Uni-Q	8	8	Cone	¾	Dome		60-20 ±3	90	10		4/	19 x 10 x 10	Opt.	Black Knit	16	550.00 Pair
	C35	Uni-Q	8		¾	Dome			64-20 ±3	88	10		4/	15 x 10 x 8	Opt.	Black Knit	11	440.00 Pair
	C25	Closed Box	6½		¾	Dome			65-20 ±3	87	10		4/	13 x 8 x 7	Opt.	Black Knit	9	330.00 Pair
	C15	Closed Box	5		¾	Dome			68-20 ±3	85	10		4/	10 x 7 x 6	Opt.	Black Knit	7	240.00 Pair
KEFEK	ES.6	Bass Ref.	6½		¾	Dome			60-20 ±3	88	10	4k	8/6	20 x 12 x 8	Oak	Black Knit	18	520.00 Pair
	ES.8	Inf. Baf.	8	4	Cone	¾	Dome		50-20 ±3	89	20	500,4k	8/6	38 x 16 x 10	Oak	Black Knit	35	1050.00 Pair
	ES.10	Inf. Baf.	10	6½	Cone	¾	Dome		40-20 ±3	89	20	250,4k	8/5	42 x 20 x 11	Oak	Black Knit	47	1350.00 Pair
	ES.12	Bass Ref.	12	6½	Cone	¾	Dome		30-20 ±3	90	20	250,4k	8/5	50 x 22 x 11	Oak	Black Knit	70	1825.00 Pair
KINDEL AUDIO	P-55	Q.7 Box	6½			1	Dome	No	50-22 ±2	86	20	3k	8/8	14 x 8 x 8	Black	Black Cloth	17	289.00 Pair
	P-105	Q.7 Box	8			1	Dome	No	35-22 ±2	88	20	3k	4/4	21 x 10 x 10	Black	Black Cloth	27	458.00 Pair
	Purist LT	QB3, Pas. Rad.	(2)6½			1	Dome	T	35-22 ±2	89	20	300,2.5k	4/4	43 x 13 x 7	Oak	Black Cloth	46	850.00 Pair
	PLS-A	QB3	(6)6½			(16)1	Domes	T	32-22 ±2	92	50	2.5k	6/2	64 x 22 x 9	Oak	Black Cloth	142	2495.00 Pair
	Purist LT-S	Q.7 Box	8	6	Cone	1, ½x2	Dome, Ribbon	No	27-30 ±2	88	50	150,2.5k, 10k	4/4	48 x 9 x 11	Oak	Black Cloth	70	1495.00 Pair
KINERGETICS	Compusound SW 100	Powered Inf. Baf. Subwoof.	(2)10					W	15-100 ±3	113	150 Inc.	100	8/6	24 x 11 x 16	Opt.	Opt., Knit	45	1389.00 Pair
	Compusound SW 100.5	Powered Inf. Baf. Subwoof.	10					W	15-100 ±3	107	150 Inc.		8/6	11 x 13 x 15	Opt.	Opt., Knit	20	997.00 Pair
KINETIC AUDIO	Titan	TATL (Tap. Ac. Trap. Line)	(2)12	6½	Cone	2.1,¾	Domes	(2)M, T,ST	12-22 ±1.5	90	35	60,90,350, 3k,7k	6/3	18 x 22 x 60	Oiled Wal.	Black Knit	245	5000.00 Pair
	Trapezium	TATL	12	6½	Cone	2.1,¾	Domes	(2)M, T,ST	12-22 ±1	89	45	90,350, 3.5k,7k	8/5	16 x 20 x 60	Oiled Wal.	Black Knit	205	4000.00 Pair

# #1



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# LOUDSPEAKERS

MANUFACTURER	Model	Design Principle	Enclosure or System Type	Woofer Diameter, Inches	Midrange Diameter, Inches	Midrange Taps	Tweeter Diameter, Inches	Tweeter Type	Separate Level Controls: Woofer = W, Midrange = M, Tweeter = T, Superwoofer = ST	Angular Frequency Response, Hz to kHz, ±dB	SPL, 1 Watt/1 Meter, ±dB	Recommended Min. Amp Power, Watts	Crossover Frequencies, Hz	Impedance, Ohms: Nominal/Minimum	Dimensions, Inches (To Nearest Inch)	Finish	Grille Color and Material	Weight, Lbs.	Price, \$
KINETIC AUDIO (Continued)	Labyrinth	TATL	12	6½	Cone	2,1	Domes	(2)M, T	16-22 ±1.5	91	35	90,350, 3.5k	8/5	16 x 18 x 48	Oiled Wal.	Black Knit	185	3000.00	
	Trapezoid	TATL	12	6½	Cone	1,¾	Domes	M, T, ST	18-22 ±1.5	92	20	90,2k,7k	8/6	16 x 14 x 40	Oiled Wal.	Black Knit	115	2000.00	
	Stat Monitor	TATL	12	6½	Cone		Dome	M, T	18-22 ±1.5	93	15	90,2k	8/6	15 x 14 x 26	Oiled Wal.	Black Knit	95	1000.00	
	Stat Miniature	TAL (Tap, Ac. Line)	6½			1	Dome	T	38-22 ±2	93	5	2k	8/6	9 x 9 x 15	Oiled Wal.	Black Knit	30	700.00	
	Stat S/W	TATL Subwoof.	12						18-2 ±2	93	15	180,2k	8/6	15 x 14 x 26	Oiled Wal.	Black Knit	80	450.00	
	Trapezoid S/W	TATL Subwoof.	12						16-2 ±1.5	92	25	180,2k	8/6	16 x 14 x 40	Oiled Wal.	Black Knit	95	600.00	
KIRKSAETER	Concept 100	Vented	7			1	Cone		39-22	89	10	2k	8/4	8 x 10 x 17	Vinyl	Opt., Knit	19	750.00	
	Concept 200	Vented	8½	4	Cone	1	Cone		38-22	90	10	1k,5k	8/4	10 x 11 x 20	Vinyl	Opt., Knit	24	950.00	
	Tower 120	Ac. Sus.	8½	4	Cone	¾	Dome		28-30	90	10	1k,5k	8/4	10 x 10 x 33	Vinyl	Opt., Knit	28	995.00	
	Tower 260	Ac. Sus.	(2)10	4,2	Cone, Dome	¾	Dome		20-32	94	10	200,1k,5k	8/4	11 x 11 x 42	Opt.	Opt., Knit	53	2395.00	
	501	Powered Subwoof.	12					W	18-160			Set.		16 x 16 x 16	Opt.	Opt.	46	1295.00	
	Satellite	Vented Sat.	4½			1	Dome		68-32	89	15	2k	8/4	6 x 7 x 9	Opt.	Opt.	9	595.00	
KLARK-TEKNIK	Jade One mkII	Powered Bass Ref.	8			1¼	Dome	W, T	55-17 ±3	107	100 Inc.	2.5k	20k/10k	21 x 15 x 10	Black Epoxy	None	48½	2295.00	
KLEIN & HUMMEL	098	Powered	8¼	1½	Dome	¾	Dome	W, M, T	50-16 ±2.5		Inc.	850,6.5k	4.7k	15 x 10 x 8	Brown Enam.	Brown Knit	26½	985.00	
	096	Powered	10	2	Dome	¾	Dome	W, M, T	50-20 ±2.5		Inc.	600,4k	4.7k	12 x 21 x 11	Brown Enam.	Brown Knit	48½	1695.00	
	092	Powered	(2)10	3½	Cone	1	Dome	W, M, T	50-17 ±2.5		Inc.	500,3k	4.7k	17 x 32 x 12	Brown Enam.	Brown Knit	66	2995.00	
KLH	862AX	Bass Ref.	6½			1	Dome	No	50-20 ±2.5	86	10	3.5k	8/6	15 x 10 x 10	Oak Ven.	Black Cloth	19	340.00	
	882AX	Ac. Sus.	8				Dome	No	45-20 ±2.5	87	10	3.5k	8/6	18 x 11 x 11	Oak Ven.	Black Cloth	48	448.00	
	SW12	Bass Ref. Subwoof.	10					No	35-150 ±3	90	15	150	8/6	17 x 19 x 18	Oak Ven.	Black Cloth	48	349.00	
KLIPSCH	Chorus	Bass Ref.	15	1½	Horn	1	Horn		45-20 ±3	101	20	600,6k	8/4	39 x 15 x 19	Opt.	Opt.	89	750.00	
	Klipschorn	Folded Horn	15	2	Horn	1	Horn		35-17 ±5	104	20	400,6k	8/4	52 x 34 x 29	Opt.	Opt.	185	1600.00	
	Belle Klipsch	Folded Horn	15	2	Horn	1	Horn		45-17 ±5	104	20	500,6k	8/4	36 x 30 x 19	Opt.	Opt.	133	1300.00	
	LaScala	Folded Horn	15	2	Horn	1	Horn		45-17 ±5	104	20	400,6k	8/4	36 x 24 x 25	Birch		130	853.00	
	Cornwall II	Bass Ref.	15	1½	Horn	1	Horn		38-20 ±3	101	20	600,6k	8/4	36 x 26 x 16	Opt.	Opt.	100	819.00	
	Forte	Pas. Rad.	12	1½	Horn	1	Horn		32-20 ±3	98	20	800,6k	8/4	35 x 12 x 17	Opt.	Opt.	65	590.00	
	Heresy II	Inf. Baf.	12	1½	Horn	1	Horn		50-20 ±3	96	20	700,6k	8/4	21 x 16 x 13	Opt.	Opt.	50	441.00	
	KG4	Pas. Rad.	(2)8			1	Horn		38-20 ±3	94	30	1.8k	6/4	28 x 11 x 16	Opt.	Opt.	45	300.00	
	KG2	Pas. Rad.	8			1	Dhorm		38-20 ±3	90.5	30	1.8k	4/4	19 x 12 x 13	Dpt.	Opt.	25	210.00	
KORT	CC-B	Trans. Line	4							84	5		8/7.5	16 x 5 x 9	Opt.	Opt., Metal		225.00	
	CC-One	Trans. Line	8			4	Cone			86	60	900	8/7.5	31 x 9 x 35	Opt.	Opt., Metal		900.00	
	Proxy	Trans. Line, Ac. Sus.	(2)12			(4)4	Cones			96	100	550	4/1.9	Four Pieces	Opt.	Opt., Metal		3500.00	
KOSS	M/100 Plus	Powered Bass Ref.	(2)4½			1	Dome		50-30	Inc.	2.5k		13 x 5 x 6	Wal. Vinyl	Brown Knit	27	259.95		
	M/90 Plus	Bass Ref.	(2)4½			1	Dome		50-30	88	10	2.5k	6/4	13 x 5 x 6	Wal. Vinyl	Brown Knit	15	219.95	
	M/80 Plus	Ac. Sus.	(2)4½			1	Dome		50-30	86	10	2.5k	6/4.5	13 x 5 x 6	Wal. Vinyl	Brown Knit	8	189.95	
	M/60 Plus	Ac. Sus.	4½			1	Dome		100-30	84	10	2.25k	8/6	8 x 5 x 6	Wal. Vinyl	Brown Knit	4.9	134.95	
	JCK/5000 "Kordless"	Powered Ac. Sus.	6½			2	Cone	T	40-20	Inc.	1.5k			15 x 9 x 5	Wal. Vinyl	Brown Knit		349.95	
LAKESHORE IMPORTS	Kassel IV	Vented	8,12	1½	Dome	1	Dome		18-30 ±3	90		250,1.1k, 4.6k	4/	58 x 22 x 20	Opt.	Opt., Cloth	140	14,000.00	
	Kiser II	Vented	12	4¾	Cone	1	Dome		19-30 ±3	94		450,3k	4/	49 x 20 x 20	Opt.	Opt., Cloth	105	7200.00	
	Amy I	Ac. Sus.	12	4¾	Cone	1	Dome		20-30 ±3	92		450,3k	4/	49 x 36 x 24	Opt.	Opt., Cloth	57	4600.00	
	Molli II	Ac. Sus.	10	4¾	Cone	1	Dome		22-30 ±3	92		450,3k	4/	34 x 24 x 23	Opt.	Opt., Cloth	52	3200.00	
	Barnett X	Ac. Sus.	10	1½	Dome	1	Dome		25-30 ±3	90		850,4k	8/	22 x 12 x 11	Opt.	Opt., Metal	34	2400.00	

# Digital Discrimination.

## BECAUSE ALL CD'S ARE NOT CREATED EQUAL, THE NEW CARVER DTL-200 MK II COMPACT DISC PLAYER IS INTRIGUINGLY DIFFERENT.

The Carver DTL-200 MK II answers the audiophile's demand for a CD Player which provides not only the greater dynamic range and richer bass expected from compact disc technology, but also the musicality, spectral balance and spatial qualities of well executed analog high fidelity recordings.

The new remote control Carver DTL-200 MK II represents the next logical evolutionary step towards marrying the awesome technology of digital playback with Bob Carver's commitment to the re-creation of the live performance. It embodies the latest digital/analog conversion circuitry with oversampling, sophisticated laser system and a wealth of operating features. And it possesses unique Carver circuitry that solves real-world sonic problems associated with commercial CDs.

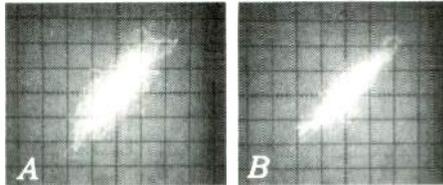
**TIME DOMAIN CORRECTION.** The Carver DTL-200 MK II incorporates an important new computer logic innovation that monitors the incoming digital signal for imperfections and "glitches" caused in recording and production. Such errors are immune to conventional error-correction processes because they are actually data anomalies. Yet they can add overall harmonic distortion and cause audible changes in sound quality.

The DTL-200 MK II's Time Domain Correction circuit constantly performs a complex, 25-bit digital calculation on passing data. This high-speed error correction algorithm, in conjunction with a 121-pole digital filter, terminates distortion-causing high harmonics as they occur in the bit stream. The result is frequency response within 1/1000 of a dB of the original, with significant reduction of distortion to less than 0.007%.

**PLUS THE DIGITAL TIME LENS.** On top of this unerring ability to produce natural, real-sounding music from the CD's digital bits, the Carver DTL-200 MK II has the remarkable Digital Time Lens circuit to insure your listening enjoyment.

When Bob Carver obtained his first compact disc player, he was surprised at the sound derived from most of the compact discs he purchased. The three-dimensional musical perspective which his analog system provided in lush abundance on phono discs evaporated into a flat, brittle wasteland. After exten-

sive testing, Bob uncovered two fundamental flaws in almost all compact discs: 1) An unpleasant, harsh spectral energy balance. The overall octave-to-octave energy balance was shifted on the CD towards more midrange above 400Hz; 2) The amount of L-R signal (which carries the spacial detail of the music) on the CD was inexplicably, but substantially, reduced when compared with the amount of L-R signal found on the corresponding analog disc. The difference is obvious in these two oscilloscope photos.



- A. Lissajous pattern showing spatial detail (L-R) (L+R) ratio from an LP record.  
B. The same instant of music but taken from the CD version. Note the decreased (L-R) content, as shown by the narrowed trace.

Carver's circuitry corrects the ratio of L-R to L+R by performing one extra, but important mathematical operation on the signal stream that all other CD players fail to perform. This final operation makes all the difference.

The result is a natural sound with more of the three-dimensional information that places us in the same space with performers. You won't need the Digital Time Lens on all CDs. But it is there when you need it.

In the beginning, Carver hoped, indeed he expected, that once recording artists and engineers became more experienced with CD technology

fewer and fewer CDs would require the Digital Time Lens. But both laboratory and listening tests reveal that the majority of even the most recently released CDs benefit significantly from the Digital Time Lens.

**PACKED WITH USEFUL FEATURES.** The Carver DTL-200 MK II makes enjoying Compact Discs a simple exercise in button pushing from your favorite listening chair. You can program any combination of up to twelve tracks from a single CD, repeat a specific track or a whole Compact Disc for uninterrupted enjoyment.

Along with the ability to skip forward or backwards song-by-song, a touch of a key allows you to audibly review a disc backwards or forwards at many times normal speed. An A-B Specific Phrase Repeat lets you carefully analyze one section of a performance or simply provide a point of reference in a long, un-indexed symphonic movement.

All functions are displayed on an easy-to-read but subtle LCD display including programming sequence, current selection number, individual and total playing times plus indexing cues.

### HEAR THE CARVER DIGITAL DIFFERENCE.

Just as all CD's are not created equal, neither are Compact Disc Players. Of all the models currently available, only the new DTL-200 MK II (and DTL-50) have the innovative and exacting Bob Carver touches that can substantially enhance your enjoyment of the digital medium.

Audition the new DTL-200 MK II today at your Carver dealer, using a variety of discs. You will be surprised at how audibly it can improve on what is already the best playback medium ever offered.

**SPECIFICATIONS.** Frequency Response, 5Hz-20kHz @ 0dB,  $\pm 0.2$ dB Total Harmonic Distortion, 0.007%, S/N, -100db, channel Separation, 90dB - 1KHz, Dynamic Range, 96dB Wow & Flutter, unmeasurable, Programming, 12-track remote and manual.



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# LOUDSPEAKERS

MANUFACTURER	Model	Design Principle, Enclosure or System Type	Woofer Diameter, Inches		Midrange Diameter, Inches		Tweeter Diameter, Inches		Separate Low Crossover W. Woofer = W, Midrange = M, Tweeter = T, Superwoofer = ST		Ancholic Frequency Response, Hz to kHz, ±dB		SPL, 1 Watt/1 Meter, dB		Recommended Min. Amp Power, Watts		Crossover Frequencies, Hz		Impedance Ohms: Nominal/Minimum		Dimensions, Inches (To Nearest Inch)		Finish		Grille Color and Material		Weight, Lbs.		Price, \$	
LANCER ELECTRONICS	LE-25	Vented	4			3/4	Dome				55-20	87	10	3.5k	8/6	8 x 8 x 10	Opt., Wood	Black Knit	7 1/2				110.00							
	LE-50	Vented	6 1/2			3/4	Dome				49-20	87	10	3k	4/3.5	9 x 8 x 14	Opt., Wood	Black Knit	12				125.00							
	LE-75	Vented	(2)6 1/2			1	Dome				42-20	89	15	3k	4/3.5	8 x 10 x 28	Opt., Wood	Black Knit	32				250.00							
	LE-100B	Vented	12	4	Cone	1	Dome	M, T			36-20	90	25	800,4k	8/6	15 x 11 x 26	Opt., Wood	Black Knit	45				350.00							
	LE-150	Vented	10	4	Cone	1	Dome				28-20	89	25	800,4k	8/6	14 x 11 x 39	Opt., Wood	Black Knit	48				400.00							
LANTANA	TAD	Vented	(2)4 1/2			2	Cone	T			50-22 ±3	91	40	2k	6/4	17 x 6 x 7	Opt., Wood	Opt., Knit	12 1/2				450.00							
	Laug Mono	Vented Mono Subwoof.	(2)8								25-90 ±3	40	90		6/4	33 x 11 x 12	Opt., Wood	Opt., Knit	47				Pair							
	Laug Stereo	Vented Stereo Subwoof.	(2)8								25-90 ±3	40	90		8/4	33 x 11 x 12	Opt., Wood	Opt., Knit	49				500.00							
	Mink	Vented	(2)8	(2)4 1/2		2	Cone	T			30-22 ±3	90	40	90,2k	6/4	36 x 9 x 9	Opt., Wood	Opt., Knit	54				575.00							
LASER AUDIO	FXT-6	Ported Reflex	6			1	Dome				40-20 ±3	91	15		8/4	15 x 9 x 10	Black Knit	Black Knit					350.00							
	FXT-8 MK VII	Ported Reflex	8			1	Dome				35-20 ±3	92	15		8/4	19 x 10 x 11	Black Knit	Black Knit					Pair							
	Reference 1000	Ac. Sus.	10	6	Cone	1	Dome				25-20 ±3	97	15		8/4	35 x 15 x 16	Black Knit	Black Knit					Pair							
	Reference 1200	Ac. Sus.	12	8	Cone	1	Dome				22-20 ±3	97	15		8/4	36 x 13 x 16	Black Knit	Black Knit					Pair							
LEGACY LOUDSPEAKER SYSTEMS	Signature	Slot Loaded	8,10	6 1/2, 1 1/4	Cone, Dome	1/2x4	Ribbon	W, M			22-30 ±2	92	45	Ext.	8/4	44 x 12 x 13	Opt., Wood	Opt., Knit	98				2496.00							
	1	Slot Loaded	8,10	6 1/2, 1 1/4	Cone, Dome	1/2x4	Ribbon	W, M			26-30 ±2	91.5	45	120, 2.2k, 8.5k	8/4	44 x 12 x 13	Opt., Wood	Opt., Knit	98				w/Xover							
	2 Plus	Vented, QB5	10	6 1/2	Cone	1	Dome	T			30-22 ±2	91	30	180, 2.8k	8/4	38 x 12 x 11	Opt., Wood	Opt., Knit	88				1196.00							
	2	Vented, Fourth Order	10	6 1/2	Cone	1	Dome	T			33-22 ±2	90	30	180, 2.8k	8/4	38 x 12 x 11	Opt., Wood	Opt., Knit	80				996.00							
	3	Double Reflex	8	6 1/2	Cone	1	Dome	T			36-22 ±2	91	30	200, 2.8k	4/4	35 x 12 x 10	Opt., Wood	Opt., Knit	70				796.00							
	Satellite	QB5 Sat.	6 1/2			1	Dome	T			41-22 ±2	90	30	2.8k	8/8	13 x 11 x 10	Opt., Wood	Opt., Knit	30				548.00							
	Subwoofer	Vented, Fourth Order	(2)10					W			22-100 ±2	91	30	Var.	8/4	24 x 16 x 16	Opt., Wood	Opt., Knit	85				548.00							
Amplified Subwoofer	Powered, Sixth Order	(2)10					W			19-100 ±2	99	300 Inc.	Var.		24 x 16 x 16	Opt., Wood	Opt., Knit	95				996.00								
LINN HI-FI	Helix LS150	Ported	8			3/4	Dome				55-18 ±3	88		3k	8/7	20 x 10 x 11	Black Knit	Black Knit	22				895.00							
	Nexus LS250	Ported	8			3/4	Dome				50-20 ±2.5	88		2.5k	8/7	22 x 10 x 12	Ash Black Knit	Black Knit	22				1195.00							
	DMS Isobarik	Isobarik	(2)9x12	(2)5	Cones	(2)3/4	Domes				25-20 ±3	86	50	375, 3k	4/3	17 x 15 x 30	Ash Teak	Black Foam	95				3995.00							
	SARA Isobarik	Isobarik	(2)8			3/4	Dome				36-20 ±3	86	35	1.5k	4/3	17 x 14 x 10	Teak	Foam Black Cloth	31				1695.00							
	Kan	Inf. Baf.	5			3/4	Dome				70-20 ±3	86	15	3k	8/6	8 x 6 x 12	Teak	Foam Black Cloth	11				695.00							
	Index	Inf. Baf.	8			1	Dome				60-20 ±3	86	10	2k	8/6	17 x 11 x 8	Black	Black Cloth	17				525.00							
MADISOUND	Phoenix	Sealed Box	10	5	Cone	3/4	Dome				35-18	88	50	500, 5k	8/5	15 x 25 x 12	Nat. Oak	Brown Knit	40				700.00							
	Sledgling	Sealed	6 1/2			3/4	Dome					90		3.2k	4/3.5	9 x 12 x 6	Oiled Wal. Oak	Brown Knit					300.00							
	The Movie	Sealed	12	(2)6	Cones	1	Dome					95	50	400, 6k	8/6	Four Pieces	Wal. Oak	Brown Knit					1500.00							
	Thallic	Sat. & Sealed Subwoof.	12	6	Cone	3/4	Dome					88	100	100, 4k	4/3.5	Three Pieces	Dak	Brown Knit					900.00							
MAGNASPHERE	Delta II	Ac. Sus.	(6)5 1/4	(2)2	Domes	(2)1	Domes				32-29 ±3	89	30	200, 800, 5k	4/3	14 x 44 x 14	Opt., Enam.	Black Mesh	65				3290.00							
	Gamma	Ac. Sus.	(2)8, (2)5 1/4	(2)2	Domes	(2)1	Domes				32-29 ±3	88	30	200, 800, 5k	4/3	14 x 50 x 14	Opt., Wood	Black Mesh	67				2490.00							
	Beta	Ac. Sus.	8, 5 1/4	(2)2	Domes	(2)1	Domes				37-29 ±3	88	30	200, 800, 5k	4/3	13 x 43 x 13	Opt., Wood	Black Mesh	54				1990.00							
MAGNAT	Sigma 1000	Vented	(2)8	2 3/4	Cone	1	Dome				32-27 ±3	90	25	850, 5.5k	4/3	12 x 43 x 11	Opt., Wood	Black Cloth	70				2190.00							
	MSP 300	Ac. Sus.	(2)8	3	Cone/Dome	1	Dome				32-29 ±3	88	30	550, 3.5k	4/3	12 x 43 x 11	Opt., Wood	Opt., Knit	60				1690.00							
	MSP 110	Ac. Sus.	8	3	Cone/Dome	1	Dome				39-29 ±3	88	30	500, 3k	4/3	12 x 31 x 11	Opt., Wood	Opt., Knit	42				1090.00							

(Continued)

# Dynamically Different.

## THE CARVER M-500t MAGNETIC FIELD POWER AMPLIFIER LEADS AN INDUSTRY TREND TOWARDS MORE USEFUL DYNAMIC POWER FOR MUSIC... AND YET STAYS WELL AHEAD OF ITS INSPIRED IMITATORS.

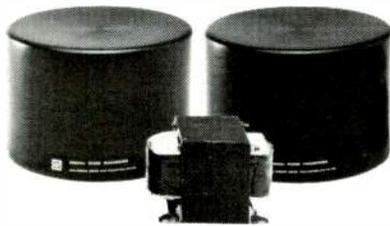
With its astonishingly high voltage/high output current and exclusive operation features, the M-500t sets standards yet unequalled in the audio community. A conservative FTC sine wave output of 251 watts per channel belies its incredible ability to satisfy peak musical transients demanding far more power. In fact, the M-500t provides more power, more current and more voltage than any comparably priced amplifier ever offered.

**POWER EXPRESSED BY THE DEMANDS OF MUSIC.** The Carver M-500t responds to musical transients with 600 to 1000 watts of dynamic power, depending on speaker impedance. The gulf between FTC and dynamic power ratings reflects Bob Carver's insistence that amplifier design should fit the problem at hand: The need to reproduce music with instantaneous, stunning impact.

The individual leading edge attack of each musical note lasts less than 1/1000 of a second, yet forms the keen edge of musical reality which must be present if true high fidelity is to be realized. It is especially necessary with the increased dynamic capabilities of Compact Discs and video Hi-Fi. In ordinary amplifier designs, the vast amounts of power required is provided by bulky, expensive power supplies and huge output transformers.

**THE MAGNETIC FIELD AMPLIFIER SOLUTION.** Rather than increase cost, size and heat output with massive storage circuits, Magnetic

Field Amplification delivers instantaneous high peak and long-term power from a six-pound, four-ounce Magnetic Field Coil. Shown below are the 40-pound toroid coils from a pair of \$7000 esoteric power amplifiers. In front of them is the M-500t's Magnetic Field Coil capable of delivering TWICE the output current ( $\pm 100$  amperes at 10% regulation!) for exceptionally precise control of voice coil motion.



Thus Carver's remarkable, patented design not only lets you enjoy the stunning sonic benefits of simultaneous high current and voltage in a compact, cool-running component, but enables you to afford audiophile-level power as well.

**POWER WITH FINESSE.** While the M-500t isn't the only amplifier with aggressive output capabilities, it is one of the few that tempers brute power with sophisticated protection circuits beneficial to both the amplifier and your loudspeaker system. These include DC offset, short circuit and power interrupt systems, as well as two special computer-controlled speaker monitor circuits which protect against excessive high frequency tweeter input and overall voice coil thermal overload.

Output is continuously monitored through dual lighted infinite-resolution VU-ballistic meters

which can react to musical transients as brief as 1 millisecond.

In addition, the M-500t's lack of external fan noise is complimented by internal circuitry with the best signal-to-noise ratio of any production amplifier: Better than 120dB. And, unlike any other amplifier in its price or power ranges, the M-500t is capable of handling problematic speaker loads as low as 1 ohm. It may also be used in a bridged mode as a 700 watt RMS per channel mono amplifier without any switching or modification.

**MUSIC IS THE FINAL PROOF.** Specifications aside, final judgment of any amplifier must be based on musicality.

Bob Carver has carefully designed the M-500t with a completely neutral signal path that is utterly transparent in sonic character, resulting in a total lack of listener fatigue caused by subtle colorations exhibited by many other amplifiers, regardless of their power rating. A veil will be lifted between you and your musical source as the most detailed nuances are revealed and delivered with proper impact.

We invite you to audition the M-500t at your nearest Carver dealer soon. Against any and all competition. We believe that you will be pleasantly surprised at just how affordable this much power, musicality and accuracy can be.

**SPECIFICATIONS: POWER, 251 watts/channel into 8 ohms 20Hz to 20 kHz, both channels driven with no more than 0.15% THD. Instantaneous Peak power, 1000 watts into 2 ohms, 950 watts into 4 ohms, 600 watts into 8 ohms. Long Term Sustained RMS power, 500 into 2 ohms, 450 into 4 ohms, 300 into 8 ohms, 1000 watts bridged mono into 4 ohms, 900 watts bridged mono into 8 ohms. Bridged Mono RMS Continuous Power, 700 watts continuous into 8 ohms. Noise, -120dB IHF A-Weighted. Weight, 25 lbs**



# CARVER

PO Box 1237, Lynnwood, WA 98046

POWERFUL

MUSICAL

ACCURATE

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# LOUDSPEAKERS

MANUFACTURER	Model	Design Principle, Enclosure or System Type	Woofer Diameter, Inches			Midrange Diameter, Inches			Tweeter Diameter, Inches			Separate Level Control? Woofer = W, Midrange = M, Tweeter = T, Super-tweeter = ST	Amplitude, Hz to kHz, ±dB	SPL, 1 Watt/1 Meter, dB	Recommended Min. Amp Power, Watts	Crossover Frequencies, Hz		Imagrandance, Ohms: Nominal/Minimum	Dimensions, Inches (To Nearest Inch)	Finish	Grille Color and Material	Weight, Lbs.	Price, \$
MAGNAT (Continued)	MSP 70	Ac. Sus.	10	2 3/4	Dome	1	Dome			39-29 ±3	90	25	600,2.5k	4/3	13 x 23 x 12	Black Vinyl	Black Knit	33	890.00				
	MSP 60	Vented	8	2 3/4	Dome	1	Dome			41-29 ±3	90	25	800,2.5k	4/3	12 x 20 x 11	Black Vinyl	Black Knit	29	750.00				
	MSP 50	Ac. Sus.	8			1	Dome			45-29 ±3	88	25	1.8k	4/3	11 x 17 x 10	Black Vinyl	Black Knit	22	550.00				
	MSP 10	Vented	5 1/4			1	Dome			60-29 ±4	88	25	4k	4/3	6 x 9 x 7	Black Vinyl	Black Mesh	7	390.00				
	Magna-Star System Monitor C	Sat. & Subwoof. Ac. Sus.	(2)8	5 1/4	Cone	1	Dome			36-27 ±3	88	25	100,3k	4/3	Three Pieces	Black Vinyl	Black Mesh	40 Sys.	795.00				
	Monitor B	Ac. Sus.	8	4	Cone	1	Dome			46-29 ±3	90	25	800,2k	4/3	15 x 23 x 14	Black Vinyl	Black Mesh	22	470.00				
	Monitor A	Ac. Sus.	8	4	Cone	3/4	Dome			54-29 ±3	90	25	800,2k	4/3	14 x 21 x 14	Black Vinyl	Black Mesh	20	390.00				
		Ac. Sus.	8	4	Cone	3/4	Dome			54-20 ±3	90	25	950,5k	4/3	14 x 20 x 18	Black Vinyl	Black Mesh	18	300.00				
WAGNEPAN	Magneplanar SMGa	Planar Mag.	370 Sq. In.							50-18 ±4	90	40	2.4k	4/4	19 x 48 x 2	Oak	Opt.	25	495.00				
	Magneplanar MG-1c	Planar Mag.	428 Sq. In.							45-18 ±4	85	40	1.5k	5/5	22 x 60 x 2	Oak	Opt.	35	880.00				
	Magneplanar MG-1ic	Planar Mag.	500 Sq. In.							40-18 ±4	84	50	800	5/5	22 x 71 x 2	Oak	Opt.	46	1195.00				
	Magneplanar MG-2.5/R	Planar Mag. & Ribbon	606 Sq. In.						T	37-40 ±4	85	50	1k	5/5	22 x 71 x 2	Oak	Opt.	49	1550.00				
	Magneplanar MG-IIIa	Planar Mag. & Ribbon	620 Sq. In.	170 Sq. In.	Planar Mag.	15 Sq. In.	Ribbon		T	32-40 ±4	85	50	400,2k	4/4	24 x 72 x 2	Oak	Opt.	52	1995.00				
	Tympani-IVa	Planar Mag. & Ribbon	1254 Sq. In.	135 Sq. In.	Planar Mag.	15 Sq. In.	Ribbon		T	30-40 ±4	87	100	350,3k	4/4	54 x 72 x 2	Oak	Opt.	106	3800.00				
MARANTZ	LSP9010	Sealed	10	4	Cone	1	Dome			25-20	90			8/	39 x 15 x 11	Black Lacq.	Black	45	349.95				
	LSP1415	Sealed	15	4	Cone	1	Dome			15-20	91			8/	34 x 19 x 14	Black Lacq.	Black	64	349.95				
	LSP1412	Ported	12	4	Cone	1	Dome			20-20	91			8/	34 x 15 x 14	Black Lacq.	Black	51	299.95				
	LSP28	Ported	8			1	Dome			40-20				8/	17 x 12 x 10	Black Lacq.	Black	20	199.95				
	SP124	Pas. Rad.	12	4	Cone	3	Cone			25-20	91			8/	38 x 15 x 13	Vinyl	Black		199.95				
	SP104	Pas. Rad.	10	4	Cone	3	Cone			35-20	90			8/	38 x 13 x 11	Vinyl	Black		169.95				
	SP103	Sealed	10	4	Cone	3	Cone			40-20	90			8/	38 x 13 x 11	Vinyl	Black		149.95				
	SP1515	Ported	15	5	Cone	3	Cone			18-20	90			8/	30 x 17 x 13	Vinyl	Black		199.95				
	SP1200	Ported	12	4	Cone	3	Cone			25-20	90			8/	30 x 15 x 12	Vinyl	Black		149.95				
	SP1000	Ported	10	4	Cone	3	Cone			40-20	89			8/	27 x 13 x 11	Vinyl	Black		119.95				
	SP800	Ported	8	4	Cone	2	Cone			70-20	89			8/	26 x 13 x 9	Vinyl	Black		74.95				
	SP308	Sealed	8	3	Cone	2	Cone			80-20	90			4/	19 x 11 x 8	Vinyl	Black		64.95				
	SP208	Sealed	8	3	Cone	2	Cone			80-20	90			4/	19 x 11 x 8	Vinyl	Black		59.95				
MARIAH ACOUSTICS	Thimble	Ac. Sus.	6 1/2			1	Dome			55-20 ±3	89	20		5/	10 Dia. x 16	Oak	Opt., Knit	38 Pair	348.00				
	L.S. #4III	Bass Ref.	8			1	Dome			45-20 ±3	90	20		5/	12 Dia. x 23	Oak	Opt., Knit	50 Pair	448.00				
	Illusion	Bass Ref.	8			1	Dome			40-20 ±2.5	90	30		4/	12 Dia. x 34	Oak	Opt., Knit	40 Pair	798.00				
	L.S. #3II	Bass Ref.	10			1	Dome			38-20 ±3	87	30		6/	14 Dia. x 36	Oak	Opt., Knit	50 Pair	648.00				
	L.S. #2II	Bass Ref.	(2)8			1	Dome			35-20 ±2.5	88	30		8/	14 Dia. x 38	Oak	Opt., Knit	50 Pair	848.00				
MARTIN-LOGAN	The Monolith	ES & Subwoof.	12				24x48	ES		27-22 ±2	90	50	100	6/3	26 x 74 x 12	Lacq. Oak	Opt.	350 Pair	5000.00				
	The CLS	Dipole ES	24x48					ES		45-20 ±2	86	50		6/3	28 x 58 x 3	Lacq. Oak	Opt.	135 Pair	2500.00				
	The Sequel	ES & Subwoof.	10				12x48	ES		30-22 ±2	88	50	125	6/4	14 x 72 x 13	Lacq. Oak	Opt.	204 Pair	2250.00				
	The Statement	ES & Woof.	(4)12				36x72	ES	W,T	16-25 ±2	93	50	100	6/3	Two Pieces Per Side	Oak Opt.	Opt.	1500 Pair	40,000.00				
MASTERCRAFT AUDIO	Sound Panels SP-MK 1	Ac. Sus.	8			1	Dome	T		40-22 ±3	89	30	3.1k	8/	12 x 6 x 26	Black Lam.	Black Knit	58 Pair	799.00				
	Sound Panels SP-MK 2	Ac. Sus.	(2)8			1 1/2	Dome, Piezo	T		37-27 ±3	91	30	3k	4/	30 x 15 x 8	Opt.	Black Knit	88 Pair	1099.00				
	Black Box	Ac. Sus.	8			1	Dome			45-22 ±3	91	10	3.1k	8/	14 x 10 x 8	Opt.	Black Knit	42 Pair	389.00				
	Music Monitor SW-1	Ac. Sus.	10			1	Dome			38-21 ±3	92	15	2.5k	8/	15 x 26 x 11	Opt.	Black Knit	60 Pair	559.00				
		Ac. Sus. Subwoof.	12						W	28-90 ±3	89	50	90	8/	30 x 15 x 10	Opt.	Black Knit	42 Pair	579.00				
MB QUART ELECTRONICS	220	Inf. Baf.	6 1/2			1	Dome			60-32	87	20	1.5k	4/	9 x 12 x 8	Opt.	Opt.	11	479.00				
	280	Inf. Baf.	8			1	Dome			50-32	88	20	1.5k	4/	11 x 17 x 10	Opt.	Opt.	22	579.00				
	390	Inf. Baf.	10	4	Cone	1	Dome			40-32	88	35	400,1.8k	4/	12 x 21 x 12	Opt.	Opt.	28	889.00				
	350	Bass Ref.	8			1	Dome			38-32	88	35	1.5k	4/	10 x 32 x 11	Opt.	Opt.	40	999.00				
	480	Inf. Baf.	10	2	Dome	1	Dome			32-32	88	35	500,2.5k	4/	13 x 22 x 14	Opt.	Opt.	38	1199.00				

(Continued)

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## LOUDSPEAKERS



Elegance of appearance has finally been combined with highly refined ribbon and planar-magnetic driver technologies. Serious music lovers must audition Magneplanars to fully appreciate how an enclosureless design can bring home the beauty and dynamics of live music. From \$495 pair.

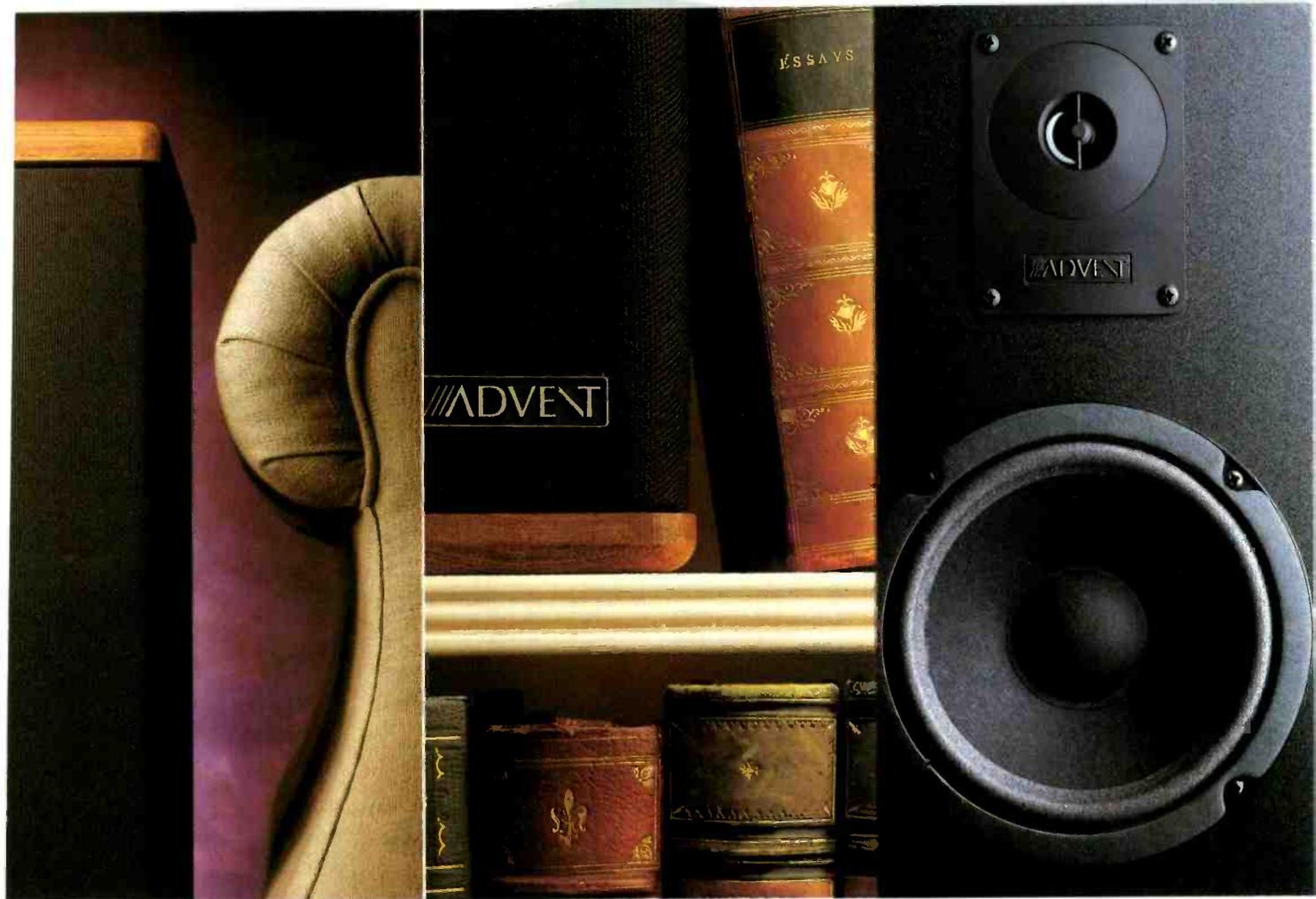
 **MAGNEPAN**

1645 Ninth Street, White Bear Lake, MN 55110

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# LOUDSPEAKERS

MANUFACTURER	Model	Design Principle	Enclosure or System Type			Woofer Diameter, Inches	Midrange Diameter, Inches	Midrange Type	Tweeter Diameter, Inches	Tweeter Type	Separate Level Control? Woofer, W/Midrange, M, Tweeter, T, Super-tweeter = ST	Angular Frequency Response, Hz to kHz, ±dB	SPL, 1 Watt/1 Meter, dB	Recommended Min. Amp Power, Watts	Crossover Frequencies, Hz	Impedance, Ohms: Nominal/Minimum	Dimensions, Inches (To Nearest Inch)	Finish	Grille Color and Material	Weight, Lbs.	Price, \$
			8	2	Dome																
MB QUART ELECTRONICS (Continued)	650S	Inf. Baf.	8	2	Dome	1	Dome				35-32	87	45	400, 2.9k	4/	11 x 34 x 11	Opt.	Opt.	44	1299.00	
	980S	Inf. Baf.	(2)8	2	Dome	1	Dome				34-32	87	50	350, 500, 2.9k	4/	11 x 40 x 11	Opt.	Opt.	57	2499.00	
	3200	Inf. Baf.	12.6	2	Dome	1	Dome				21-32	87	100	200, 700, 3.5k	4/	16 x 59 x 16	Opt.	Opt.	128	7000.00	
	310	Subwoof.	12								25-150	87	70	100	4/	15 x 19 x 15	Opt.	Opt.	40	849.00	
	850S	Inf. Baf.	(2)8	4	Cone	1	Dome				31-32	87	70	350, 2k	4/	11 x 37 x 11	Opt.	Opt.	53	1899.00	
MERIDIAN	M30	Active Ported	6			1½	Dome				38-20 ±3		Inc.			7 x 15 x 12	Black	Black Knit	15½	1750.00	
	M20	Active Ported	(2)4			1½	Dome				35-20 ±3		Inc.			7 x 15 x 20	Opt.	Black Knit	39½	2500.00	
	M100	Active Pas. Rad.	(4)4	(2)4	Cones	1½	Dome				33-20 ±3		Inc.			17 x 41 x 19	Opt.	Black Knit	101	6800.00	
MERLIN	1B+	Vented	6			1¼	Dome	T			48-22 ±3	87	30	3k	8/4.8	11 x 11 x 37	Opt.	Black Foam	50	690.00	
	2B+	Vented	8			1¼	Dome	T			38-22 ±3	89	40	2.2k	8/5.2	12 x 12 x 42	Opt.	Black Foam	70	960.00	
	3B+	Vented	8	4½	Cone	1¼	Dome	M, T			38-22 ±3	90	50	600, 3k	8/5.5	16 x 13 x 45	Opt.	Black Foam	120	1880.00	
	4+	Vented	8	(2)4½	Cones	1¼	Dome	M, T			30-22 ±3	92	100	600, 3k	4/4.1	16 x 13 x 65	Opt.	Black Foam	185	3100.00	
MIRAGE ACOUSTICS	260	Ported	6½			¾	Dome				60-20 ±3	88	15	2.2k	6/4	15 x 9 x 9	Black Vinyl	Black Knit	15	250.00	
	360	Ported	8			¾	Dome				50-20 ±3	88	15	2.2k	6/4	20 x 10 x 9	Black Vinyl	Black Knit	20	375.00	
	460	Ported	8			1	Dome				40-20 ±3	88	15	2.2k	6/4	25 x 10 x 11	Black Vinyl	Black Knit	31	500.00	
	M2	Ported, Bipolar	10	(2)4	Cones	(2)¾	Domes				30-22 ±3	86	40	2.2k	6/4	53 x 16 x 7	Black Vinyl	Black Knit	60	3000.00	
	M1	Ported, Bipolar	(2)8	(2)4	Cones	(2)¾	Domes				20-22 ±3	86	60	300, 2.2k	6/4	59 x 19 x 9	Black Lacq.	Black Knit	120	4000.00	
760	Ported	(2)8			1	Dome				30-20 ±3	89	30	2.2k	8/4	37 x 11 x 14	Black Vinyl	Black Knit	62	900.00		
MISCO	Redline Chamber Suite	Inf. Baf.	4½			2	Dome				55-20 ±3	86	10	3.13k	8/6.2	12 x 6 x 4	Oiled Wal.	Black Knit	6	200.00	
MISSION	70	Inf. Baf.	7			¾	Dome				60-20 ±3	90	20	3.4k		14 x 8 x 8	Black		11	249.00	
	700LE	Inf. Baf.	7			¾	Dome				55-20 ±3	90	20	3.5k		15 x 8 x 8	Opt.		13	349.00	
	707	Bass Ref.	8			¾	Dome				50-20 ±3	91	20	2.7k		18 x 10 x 11	Opt.		17½	499.00	
	Renaissance	Bass Ref.	8			¾	Dome				40-20 ±3	88	30	2.5k		21 x 10 x 11	Opt.		20½	699.00	
	Freedom	Bass Ref.	8			1	Ellip. Load Dome				35-20 ±3	91	30	1.9k		24 x 10 x 13	Opt.		35	1199.00	
	Argonaut	Inf. Baf.	(2)8			1	Ellip. Load Dome				30-20 ±3	95	50	1.7k		37 x 10 x 13	Opt.		61	1800.00	
mitsubishi	M-S5100	Ported	12	5	Cone	1	Dome	M, T			45-20 ±3	92	50	800, 3.5k	8/	41 x 15 x 13	Gray	Gray Knit		1200.00	
M & K	TX-1000	Powered Ac. Sus. Subwoof.	(2)12					W			20-125 ±3		Inc.	50-125 Adj.	15k	26 x 28 x 22	Gray	Black Knit	115	1395.00	
	S1B	Ac. Sus. Sat.	(2)5			(2)1	Domes	M, T			65-22 ±3	96	7.5	2k	4/4	21 x 8 x 8	Opt., Wood	Black Knit	18	725.00	
	S2B	Ac. Sus. Sat.	6½			1	Dome	M, T			65-22 ±3	93	10	2k	4/4	13 x 9 x 8	Opt., Wood	Black Knit	15	550.00	
	S3B	Ac. Sus. Sat.	5			1	Dome	M, T			85-22 ±3	93	10	2k	4/4	11 x 7 x 7	Opt.	Black Knit	9	395.00	
	SX4	Ac. Sus. Sat.	(2)5			(2)1	Domes	M, T			65-22 ±3	96	7.5	2k	4/4	20 x 8 x 7	Black	Black Knit	14	495.00	
	SX7	Ac. Sus. Sat.	4			¾	Dome				100-20 ±3	87	5	2k	4/4	8 x 5 x 5	Black Metal	Perf. Metal	6	240.00	
	V1B	Powered Ac. Sus. Subwoof.	12					W			20-125 ±3		Inc.	50-125 Adj.	600/15k	18 x 19 x 17	Opt., Wood	Black Knit	50	850.00	
	V2B	Powered Ac. Sus. Subwoof.	12					W			24-125 ±3		Inc.	50-125 Adj.	600/15k	18 x 19 x 17	Opt., Wood	Black Knit	43	695.00	
	V3B	Powered Ac. Sus. Subwoof.	12					W			24-125 ±3		Inc.	50-125 Adj.	600/15k	18 x 18 x 15	Black	Black Knit	38	595.00	
VX4	Powered Ac. Sus. Subwoof.	12					W			30-125 ±3		Inc.	50-125 Adj.	600/15k	19 x 18 x 14	Black	Black Knit	38	440.00		
VX7	Powered Ac. Sus. Subwoof.	8					W			40-180 ±3		Inc.	90-180 Adj.	600/15k	12 x 10 x 10	Black	Black Knit	21	360.00		



# FROM THE PEOPLE WHO GIVE YOU ACCURATE SOUND, NOW COMES MORE ROOM TO ENJOY IT.

**INTRODUCING THREE SPACE-SAVING LOUDSPEAKERS FROM ADVENT.** Now you can enjoy the accurate sound of Advent® in more places than ever. Our three new speakers give you the clean, clear sound you expect from Advent, yet take up less space to do it.

**THE MINI-ADVENT AND MINI-ADVENT SUBWOOFER SYSTEM.** Mini-Advents are the perfect size for bookshelves. Desks. Even walls and ceilings, using our optional mounting brackets. They're small, but get big sound with 5¼" high excursion woofers, polycarbonate tweeters, 120 watts peak power and a tuned bass port. Or, add our subwoofer. It gives Mini-Advents the bass of a much larger system and creates exceptional stereo imaging for audio/video or surround sound systems.

**THE PRODIGY TOWER.** Taller and thinner than our still-famous Advent Prodigy, the Prodigy Tower gets maximum sound using minimum floorspace. How? With 300 watts

peak power, a more efficient 8" woofer and a polycarbonate dome tweeter for improved dispersion.

**THE BABY II.** Last, but not littlest, is the improved Baby Advent. Just as compact as the original Baby, but with a couple of changes that show it's maturing quite nicely. Like a ferrofluid-filled polycarbonate dome tweeter and re-adjustable logo for horizontal and vertical speaker placement.

All three new Advents have natural wood tops and bases. Even if you never hooked them up, they'd make great looking furniture.

Come in to your nearest Advent dealer and listen to the new Mini-Advent, Prodigy Tower and Baby Advent. And don't worry about the crowds. With these speakers, there's always plenty of room.



**ADVENT**  
Sound as it was meant to be heard.

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# LOUDSPEAKERS

MANUFACTURER	Model	Design Principle, Enclosure or System Type	Woofer Diameter, Inches		Midrange Diameter, Inches		Tweeter Diameter, Inches		Separate Level Controls? Woofer = W, Midrange = M, Tweeter = T, Supertweeter = ST		Amplitude Frequency Response, Hz to kHz, ±dB		SPL, 1 W/1 Meter, dB		Recommended Min. Amp Power, Watts		Crossover Frequencies, Hz		Impedance, Ohms: Nominal/Minimum		Dimensions, Inches (To Nearest Inch)		Finish		Grille Color and Material		Weight, Lbs.		Price, \$			
MONITOR AUDIO LOUDSPEAKERS	R100	Inf. Baf.	8			1	Dome		60-20 ±3	89	15	4k	8/5	16 x 10 x 7	Opt., Vinyl	Black Knit	25 1/2 Pair	319.00														
	R252	Inf. Baf.	8			1	Dome		55-20 ±3	90	15	4k	8/5	19 x 10 x 10	Opt., Vinyl	Black Knit	30 3/8 Pair	429.00														
	R300MD	Inf. Baf.	8			3/4	Dome		50-20 ±3	90	15	4.2k	8/5.5	19 x 10 x 12	Opt., Wood	Opt., Knit	35 Pair	669.00														
	R352MD	Ported	8			3/4	Dome		40-20 ±3	91	15	4.2k	8/6	25 x 10 x 13	Opt., Wood	Opt., Knit	57 1/2 Pair	899.00														
	R452MD	Ported	8			1	Dome		40-20 ±3	91	15	4.2k	8/6	25 x 10 x 13	Opt., Wood	Opt., Knit	66 Pair	1099.00														
	R700MD	Ported	6			1	Dome		45-20 ±3	89	20	4.2k	8/5	14 x 9 x 10	Opt., Wood	Opt., Knit	42 3/8 Pair	689.00														
	R652MD	Ported	6			1	Dome		45-20 ±3	89	20	4.2k	8/5	20 x 8 x 11	Opt., Wood	Opt., Knit	44 Pair	989.00														
	R852MD	Inf. Baf.	8			1	Dome		50-20 ±3	89	15	4.2k	8/5.5	18 x 10 x 11	Opt., Wood	Opt., Knit	44 Pair	1149.00														
	R952MD	Inf. Baf.	(2)6			1	Dome		45-20 ±3	89	15	4.2k	8/5.5	32 x 9 x 13	Opt., Wood	Opt., Knit	44 Pair	1549.00														
MORDAUNT-SHORT	MS 10	Bass Ref.	5 1/2			1/2	Dome		75-20 ±3	86	10		8/	11 x 8 x 7	Black Ash	Black Knit	7 1/4 Pair	229.00														
	MS 15	Sealed	6 1/2			1/2	Dome		75-20 ±3	87	10		8/	13 x 9 x 7	Black Ash	Black Knit	9 1/2 Pair	279.00														
	MS 25TI	Sealed	7 1/2			3/4	Dome		70-20 ±3	87	20		8/	16 x 10 x 9	Opt., Wood	Black Knit	15 1/4 Pair	339.00														
	MS 35TI	Bass Ref.	7 1/2			3/4	Dome		55-20 ±3	88	20		8/	19 x 10 x 11	Opt., Wood	Black Knit	20 3/4 Pair	389.00														
	MS 45TI	Sealed	(2)7 1/2			3/4	Dome		55-20 ±3	90	25		8/	25 x 10 x 12	Opt., Wood	Black Knit	27 1/2 Pair	569.00														
	MS 55TI	Sealed	7 1/2			3/4	Dome		50-20 ±3	90	25		8/	32 x 10 x 12	Opt., Wood	Black Knit	41 3/4 Pair	769.00														
	MS 100 Gold	Sealed	6 1/2			1/2	Dome		77-20 ±3	87	20		8/	13 x 9 x 8	Wood Mahog	Black	11 1/4 Pair															
	MS 300 Gold	Sealed	(2)6 1/2			1/2	Dome		70-20 ±3	89	30		8/	21 x 9 x 10	Mahog	Black	21 1/2 Pair															
	MS 500 Gold	Sealed	(2)6 1/2			1/2	Dome		50-20 ±3	90	25		8/	32 x 10 x 12	Mahog	Black	41 1/2 Pair															
	System 342		(2)5			1	Dome		60-20 ±3	87.5	30		8/	35 x 9 x 13	Mahog	Black																
System 442		(2)6 1/2			1	Dome		50-20 ±3	87	40		8/	37 x 10 x 15	Mahog	Black	66	2500.00															
MOREL ACOUSTICS	MLP-203	Ac. Sus.	6			1.1	Dome		45-28 ±3	89	15	1.8k	6/4	8 x 16 x 9	Opt.	Black Knit	18	695.00														
	CR-7	Ac. Sus.	6			1.1	Dome		70-25 ±3	90	15	1.6k	6/4	7 x 11 x 7	Black	Black Knit	10	498.00														
	MLP-201II	Ac. Sus.	9			1.1	Dome		40-20 ±3	90	10	1k	8/6	10 x 16 x 10	Wood Ven.	Black Knit	16	395.00														
	MLP-202II	Ac. Sus.	6			1.1	Dome		60-28 ±3	89	15	1.6k	6/4	8 x 13 x 10	Wood Ven.	Black Knit	14	545.00														
	MLP-403II	Ac. Sus.	9	3	Dome	1.1	Dome		38-25 ±3	90	20	500,5k	6/4	21 x 12 x 10	Wood Ven.	Black Knit	26	795.00														
	Duet	Ac. Sus.	6			1.1	Dome		40-22 ±3	91	15	1.8k	5/4	8 x 15 x 12	Wood Ven.	Black Knit	20	995.00														
MORRISON AUDIO	1	Quarter Wave	8			1	Dome	T	27-25 ±3	87	20	4.5k	8/6.2	9 x 11 x 29	Opt.	Black Foam	41	From 2695.00														
	SUB 1	Quarter Wave Subwoof.	8						21-80 ±3	87	20		8/6.2	10 x 12 x 26	Black Lacq.		50	2350.00														
MOUNTAIN POWER	Laurentian	Tuned Port	8			1	Dome		42-20 ±2	87		2.5k	8/	12 x 14 x 29	Oak	Black	54 Pair	995.00														
	Blue	Tuned Port	6 1/2			1	Dome		50-20 ±2	89		1.5k	6/	10 x 12 x 17	Oak	Black	35 Pair	695.00														
	Midnight Blue	Tuned Port	6 1/2			1	Dome		50-20 ±2	89		1.5k	6/	10 x 12 x 17	Lacq.	Black	35 Pair	549.00														
MTX	PRO110	Vented	10	4 1/2	Cone	1	Dome		75-21	94.8	15	2k,5k	4/8	18 x 14 x 13	Gray Cpto.	Black Steel	42	399.95														
	TA-2	Tweeter Array				(2)1 1/2	Domes		5k-17k	98	15	6k	4/	7 x 12 x 7	Gray Cpto.	Black Steel	27 Pair	229.95														
	PRO115	Vented	15	(2)5	Cones	3	Horn		60-21	96.6	15	2k,5k	8/	21 x 30 x 16	Gray Cpto.	Black Steel	77	699.95														
	PRO210	Vented	(2)10	(2)5	Cones	3	Horn		70-21	98.6	15	2k,5k	8/	23 x 18 x 13	Gray Cpto.	Black Steel	64	499.95														
	PRO215	Vented	(2)15	(2)5	Cones	3	Horn		50-21	99.2	15	2k,5k	8/	19 x 47 x 16	Gray Cpto.	Black Steel	125	799.95														
NAD	200A	Ac. Sus.	8			1	Dome	T	40-25	90	10	1.7k	4/4	30 x 9 x 10	Dark Oak	Black Knit	39	500.00														
	300A	Ac. Sus.	10	1 1/2	Dome	1	Dome	T	32-25	90	10	900,3k	4/4	32 x 11 x 12	Dark Oak	Black Knit	57	750.00														
NAIM AUDIO	SBL		8			3/4	Dome		30-20 ±3	88		2.4k	6/6	11 x 11 x 34	Opt.	Black Foam	60	2895.00														
	IBL		6			3/4	Dome		45-20 ±3	87		2.4k	6/6	10 x 11 x 32	Black Ash	Black Foam		1560.00														

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RA-340R

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# LOUDSPEAKERS

MANUFACTURER	Model	Design Principle, Enclosure or System Type	Woofer Diameter, Inches			Midrange Diameter, Inches			Tweeter Diameter, Inches			SPL, 1 Watt/1 Meter, dB	Recommended Min. Amp Power, Watts	Crossover Frequencies, Hz	Impedance, Ohms, Nominal/Minimum	Dimensions, Inches (To Nearest Inch)	Finish	Grille Color and Material	Weight, Lbs.	Price, \$
NEAR	10	Tuned Port	8			3/4	Dome		45-21 ±4	92	10	2.5k	8/6	11 x 9 x 20	Vinyl	Black Knit	22	140.00		
	30	Tuned Port	8			1	Dome		40-22 ±3	90	15	2.5k	8/5	11 x 9 x 24	Opt.	Black Knit	30	260.00		
	40	Tuned Port	8			1	Dome		35-22 ±2	90	25	3k	8/5	10 x 11 x 34	Oak	Black Knit	45	380.00		
	50	Tuned Port	8	3	Cone	1	Dome		35-22 ±2	92	25	2.5k, 10k	8/5	10 x 11 x 36	Oak	Black Knit	50	460.00		
	60	Tuned Port	12	4	Cone	1	Dome		32-22 ±3	94	25	800, 3k	8/5	15 x 10 x 27	Oak	Black Knit	55	460.00		
	70	Inf. Baf.	12	6	Cone	1	Dome		30-22 ±4	94	35	400, 3k	8/5	15 x 12 x 41	Oak	Black Knit	70	590.00		
	80	Inf. Baf.	12	6	Cone	3/4, 2	Dome, Cone, Cone		30-24 ±3	94	35	400, 2.5k, 13k	8/4	15 x 12 x 41	Oak	Black Knit	75	740.00		
	AES-2	Ported	8			2			45-18 ±3	90	25	2.5k	8/6	13 x 12 x 20	Opt.	Black ABS	32	279.00		
NEC	RS-500	Ac. Sus.	12	5	Cone	1	Dome		40-20 ±4	92	15	2.2k, 7k	8/5	14 x 27 x 11	Oak Vinyl	Black	35	499.00 Pair		
	RS-100	Trans. Line	(2)8	1 3/8	Dome	1	Dome		28-18.5 ±3	90	25	2k, 8.5k	4/	14 x 16 x 42	Oak	Brown Knit	103	1500.00 Pair		
	RS-1000	Ac. Sus.	(2)10	5	Cone	3/4	Dome		40-20 ±4	92	25		8/	12 x 37 x 13	Oak	Black	50	800.00 Pair		
NELSON-REED	8-04/B	Slot Loaded	(2)8	3	Dome	3/4	Dome	No	32-20 ±3	93	30	320, 4k	8/6	47 x 12 x 15	Opt.	Opt., Knit	100	3250.00 Pair		
	8-02/B	Slot Loaded	8	4	Cone	3/4	Dome	No	32-20 ±3	92	30	150, 4.5k	8/7	36 x 12 x 15	Opt.	Opt., Knit	60	1290.00 Pair		
	6-02/B	Ported	6 1/2			3/4	Dome	No	32-20 ±3	84	25	3.5k	8/6	19 x 12 x 11	Opt.	Opt., Knit	25	620.00 Pair		
	5-02	Ac. Sus.	5			3/4	Dome	No	70-20 ±3	90	25	3.5k	8/6	12 x 8 x 8	Opt.	Opt., Knit	12	550.00 Pair		
	1204	Powered Subwoof.	(4)12					W	16-62 ±3	93	50	62	8/2	39 x 18 x 18	Opt.	Opt., Knit	100	1200.00 Pair		
	1201	Subwoof.	12					No	32-120 ±3	90	25	120	8/6	18 x 18 x 18	Opt.	Opt., Knit	40	570.00		
	1202	Subwoof.	12					No	32-120 ±3	90	25	120	8/6	25 x 15 x 12	Opt.	Opt., Knit	40	890.00 Pair		
NESTOROVIC LABS	Type 5AS Mk. III T. Cab.	Nestorovic	8, 10	5 1/4	Dome	4 1/2	Planar	M, T	25-40 +1, -3	91	50	1k, 7k	8/5	40 x 15 x 15	Opt., Wood	Black Knit	85	2950.00 Pair		
	Type 5AS Mk. III R. Cab.	Nestorovic	8, 10	5 1/4	Dome	4 1/2	Planar	M, T	28-40 +1, -3	91	50	1k, 7k	8/5	36 x 15 x 15	Opt., Wood	Black Knit	75	2750.00 Pair		
	Type 4A Mk. II	Sat.	8	5 1/4	Dome	4 1/2	Planar		60-40 +1, -3	91	50	200, 1k, 7k	8/6	22 x 12 x 12	Opt., Wood	Black Knit	40	2550.00 Pair		
	Type 8 Mk. II	Nestorovic Subwoof.	(2)12					(2)W	18-200 +1, -3	91	75	200	8/5	22 x 26 x 26	Opt., Wood	Black Knit	130	1450.00		
	System 12A Mk. II	Sat. & Nestorovic Subwoof.	(2)8, (4)12	(2)5 1/4	Domes	(2)4 1/2	Planars	(2)W	18-40 +1, -3	91	75	200, 1k, 7k	8/5	Four Pieces	Opt., Wood	Black Knit	340 Sys.	5450.00 Sys.		
	System 16A Mk. II	Sat. & Nestorovic Subwoof.	(4)8, (4)12	(4)5 1/4	Domes	(4)4 1/2	Planars	(2)W	18-40 +1, -3	91	75	Ext.	8/4	Six Pieces	Opt., Wood	Black Knit	420 Sys.	8000.00 Sys.		
NONSPEAKER	Ribbon Reference Supreme	Trans. Line	6	(3)1x2	Ribbons	(3)1x2	Ribbons	No	29-40 ±3	91	30		6/5	12 x 10 x 50	Black Lacq.	None	67	2700.00 Pair		
	Ultra-Quik Subwoofer	Trans. Line Subwoof.	(2)6					No	22-100 ±3	91	30	100	8/7	12 x 10 x 50	Black Lacq.	None	67	900.00		
NOYAK	2	Ported	6 1/2			3/4	Dome		45-24 ±3	91.5	5		4/	21 x 11 x 10	Opt., Wood	Black Foam	22	300.00 Pair		
	2B	Ported	6 1/2			3/4	Dome		45-24 ±3	91.5	5		4/	21 x 11 x 10	Black Lam.	Black Foam	22	330.00 Pair		
NOVATEK	NTS100SW	Powered Inf. Baf. Subwoof.	12					W	25-150 ±3	100	Inc.	Ext.		18 Dia. x 20	Oiled Oak	None	58	649.00		
	NTS50X2	Powered Tuned Port	(2)5 1/4			1/2	Dome	(2)W, (2)M, (2)T	55-20 ±3	92	50	2.5k	600/	8 x 8 x 23	Oiled Oak	Black Knit	55 Pair	595.00 Pair		
NOW HEAR THIS	I	Sealed	6 1/2			3/4	Dome		63-23 ±3	89	20	3.5k	8/16	12 x 7 x 10	Opt.	Opt.	13	299.00 Pair		
	Octave	Subwoof.	(2)6 1/2						45-90 ±3	89	30	70	8/5.2	20 x 8 x 12	Opt.	Opt.	25	230.00		
	II	Sealed	(2)6 1/2			3/4	Dome		38-23 ±3	87	35	100, 3.5k	8/4.4	37 x 12 x 7	Opt.	Opt.	40	700.00 Pair		
OHM ACOUSTICS	CAM42	Pas. Rad.	8 1/2			3/4	Dome		32-20 ±4	91	15		8/	15 x 11 x 26	Brnz. Vinyl	Brnz.		500.00 Pair		
	CAM32	Pas. Rad.	6 1/2			3/4	Dome		39-20 ±4	90	15		8/	13 x 11 x 22	Brnz. Vinyl	Brnz.		400.00 Pair		
	CAM16	Vented	6 1/2			3/4	Dome		46-20 ±4	89	15		8/	9 x 11 x 17	Brnz. Vinyl	Brnz.		300.00 Pair		
	Walsh 5	Walsh Cone							25-25 ±4	88	100		4/	18 x 18 x 43	Brnz. Vinyl	Opt.	95	5000.00 Pair		
	4X0	Walsh Cone							32-23 ±4	91	30		8/	15 x 15 x 40	Opt.	Opt.	63	2000.00 Pair		
	3X0	Walsh Cone							36-22 ±4	90.6	18		8/	13 x 13 x 36	Opt.	Opt., Knit	48	1500.00 Pair		
	2X0	Walsh Cone							44-21 ±3	90.2	15		8/	11 x 11 x 32	Opt.	Opt., Knit	29	1000.00 Pair		
	1X0	Walsh Cone							48-20 ±3	90	10		8/	11 x 11 x 32	Wal.	Black Knit	24	750.00 Pair		

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RA-1340R

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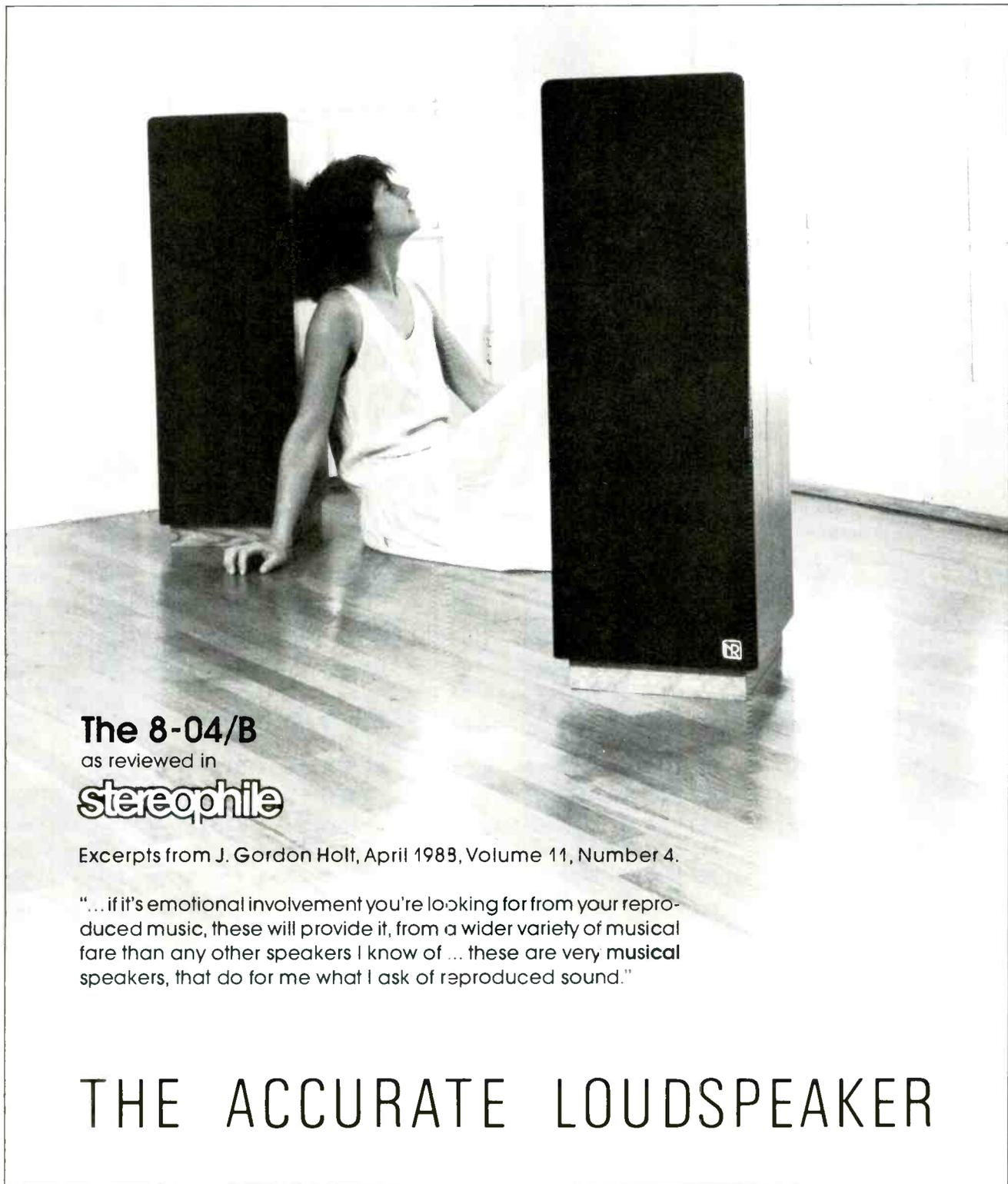
# LOUDSPEAKERS

MANUFACTURER	Model	Design Principle, Enclosure or System Type	Woofer Diameter, Inches			Midrange Diameter, Inches		Tweeter Diameter, Inches		Separate Level Controls? Woofer W/Midrange W, Tweeter W			Anechoic Frequency Response, Hz to kHz, ± dB		SPL, 1 Watt/1 Meter, dB		Recommended Min. Amp Power, Watts		Crossover Frequencies, Hz		Impedance, Ohms: Nominal/Minimum		Dimensions, Inches (To Nearest Inch)		Finish		Grille Color and Material		Weight, Lbs.		Price, \$				
OHM ACOUSTICS (Continued)	PRO16	Vented	6½			¾	Dome		46-20 ± 4	89	15		8/	17 x 9 x 11	Oak Vinyl	Black Knit			330.00	Pair															
	PRO32	Pas. Rad.	6½			¾	Dome		39-20 ± 4	90	15		8/	22 x 13 x 11	Oak Vinyl	Black Knit			440.00	Pair															
	PRO42	Pas. Rad.	8½			¾	Dome		32-20 ± 4	91	15		8/	25 x 13 x 11	Oak Vinyl	Black Knit			550.00	Pair															
	PRO150	Coherent Line Source							42-20 ± 4	91	10		8/	12 Dia. x 35	Oak Vinyl	Black Knit			750.00	Pair															
	PRO200	Coherent Line Source							39-20 ± 4	91	10		8/	12 Dia. x 39	Oak Vinyl	Black Knit			950.00	Pair															
	PRD250	Coherent Line Source							35-20 ± 4	91	10		8/	12 Dia. x 46	Oak Vinyl	Black Knit			1200.00	Pair															
	SCS	Vented							44-20 ± 4	89	15		8/	12 Dia. x 32	Wal. Vinyl	Black Knit			600.00	Pair															
	SCT	Vented							39-21 ± 4	90	15		8/	12 Dia. x 36	Wal. Vinyl	Black Knit			750.00	Pair															
OLSON ACOUSTICS	Studio Monitor	Ported	8	5	Cone	2x5	Horn		40-30 ± 1.5	90	20	250,5k	8/6	11 x 14 x 20	Opt., Wood	Blue Knit	26		350.00	Pair															
	Lorelei	Ported	(2)8	5	Cone	½x3	Ribbon		24-30 ± 1.5	90	20	250,5k	8/6	12 x 16 x 36	Opt., Wood	Blue Knit	55		600.00	Pair															
	Gabriel	Ported	(4)8	4x12	Horn	2x5	Horn		20-30 ± 2	96	10	500,5k	8/6	15 x 16 x 42	Opt., Wood	Blue Knit	80		900.00	Pair															
OMNI SOUND	TCM I	Vented	6½			1	Dome		62-22 ± 3	90	20	3k	4/3.5	8 x 9 x 13	Vinyl Lam.	Black Knit	22		500.00	Pair															
	TCM II	Vented	8			1	Dome		50-22 ± 3	92	20	3k	8/7	11 x 12 x 20	Vinyl Lam.	Black Knit	35		560.00	Pair															
	TCM III	Vented	8			1	Dome		36-22 ± 3	92	20	3k	8/7	13 x 11 x 36	Vinyl Lam.	Black Knit	53		660.00	Pair															
	TCM IV	Vented	12	6½	Cone	1	Dome		30-22 ± 3	95	50	425,3k	8/6	16 x 15 x 42	Vinyl Lam.	Black Knit	90		1495.00	Pair															
	TCM V	Vented	15	6½	Cone	1	Dome		28-22 ± 3	97	50	425,3k	8/6	15 x 20 x 54	Vinyl Lam.	Black Knit	113		1995.00	Pair															
	TCM VI	Vented	(2)15	(2)6½	Cones	(2)1	Domes		18-23 ± 3	101	50	425,3.5k	4/2	18 x 22 x 84	Vinyl Lam.	Black Knit	260		3995.00	Pair															
ONBOARD MONITOR	SD-8 SpaceDrive	Vented	8			1	Dome		30-20 ± 3	91	10	1.2k	4/4	16 x 11 x 17	Opt., Lacq.	Opt.	30		849.00	Pair															
	SD-7 SpaceDrive	Vented	6½			¾	Dome		42-18	89	10	3.3k	4/4	14 x 10 x 15	Opt., Lacq.	Opt.	21		699.00	Pair															
ONKYO	S-70		12	5	Dome	1	Dome		55-20		10		8/	16 x 41 x 10	Oak Ven.	Brown	40		300.00	Pair															
	S-60		12	5	Dome	1	Dome		32-22		10		8/	17 x 40 x 10	Oak Vinyl	Brown	45		200.00	Pair															
	S-40		12	5	Dome	1	Dome		36-20		10		8/	15 x 37 x 9	Oak Vinyl	Brown	35		150.00	Pair															
	HS-15		6¼	2¾	Dome	2	Dome		55-20		5		8/	8 x 14 x 10	Oak Vinyl/Black	Black	9½		125.00	Pair															
OPTION AUDIO	1-A	Bass Ref.	7			1	Inv. Dome		52-19	90	25	300,3.6k	4/4	17 x 10 x 9	Ven.	Black Cloth	32		765.00	Pair															
	.5-A	Bass Ref.	5			¾	Inv. Dome		58-19	90	25	450,5k	4/4	14 x 7 x 11	Ven.	Black Cloth	20		545.00	Pair															
OPUS 3	Credo	Bass Ref.	6½			1	Dome	No	45-20	89	40		4/	11 x 13 x 13	Opt.	Black Knit	30		600.00	Pair															
	Chorus	Bass Ref.	6½			1	Dome	No	40-20	89	40		4/	11 x 31 x 13	Opt.	Black Knit	50		850.00	Pair															
	Chaconne	Bass Ref.	8			1	Dome	No	37-20	91	60		4/	13 x 35 x 14	Opt.	Black Knit	77		1400.00	Pair															
PARADIGM	3se-mini	Bass Ref.	6½			1	Dome		55-20 ± 2	88	20	3k	6/5	15 x 9 x 10	Opt.	Black Knit	35		130.00	Pair															
	3se	Bass Ref.	8			1	Dome		45-20 ± 2	91	15	2.5k	6/5	20 x 10 x 11	Opt.	Black Knit	44		145.00	Pair															
	5se	Bass Ref.	8			1	Dome		38-20 ± 2	90	15	2.5k	8/6	21 x 10 x 12	Opt.	Black Knit	48		175.00	Pair															
	7se	Bass Ref.	8			1	Dome		32-20 ± 2	91	15	2.3k	8/6	24 x 11 x 12	Opt.	Black Knit	55		240.00	Pair															
	9se	Bass Ref.	(2)8			1	Dome		38-20 ± 2	95	15	2k	4/4	28 x 12 x 14	Opt.	Black Knit	77		320.00	Pair															
	11se	Bass Ref.	10	3	Dome	¾	Dome		35-20 ± 2	91	15	600,3.2k	6/5	30 x 12 x 14	Opt.	Black Knit	104		430.00	Pair															
	11se-deluxe	Bass Ref.	10	3	Dome	¾	Dome		35-20 ± 2	91	15	600,3.2k	6/5	40 x 13 x 15	Opt.	Black Knit	140		690.00	Pair															
	Compact Monitor	Bass Ref.	6½			1	Dome		40-20 ± 2	88	20	2k	6/5	16 x 9 x 12	Opt., Wood	Black Knit	45		300.00	Pair															
	Control Monitor	Bass Ref.	8			1	Dome		39-20 ± 2	90	15	2k	8/6	20 x 10 x 14	Opt., Wood	Black Knit	55		350.00	Pair															
	Export Monitor	Bass Ref.	8			1	Dome		28-20 ± 2	89	15	2k	8/6	24 x 11 x 14	Opt., Wood	Black Knit	70		400.00	Pair															
	Studio Monitor	Bass Ref.	(2)8	6½	Cone	1	Dome		26-20 ± 2	92	15	350,2.2k	6/5	40 x 11 x 16	Opt., Wood	Black Knit	160		850.00	Pair															
PARASDUND	Sub/Sat One	Vented Sat. & Vented, Fourth Order Subwoof.	(2)8	4	Cone	1	Dome		35-20 ± 3	89	10	110,2.4k	4/4	Three Pieces	Black Oak	Opt., Black	48 Sys.		465.00	Sys.															
	Sub/Sat Two	Inf. Bat. Sat. & Subwoof.	(2)5¼	4	Cone	1	Cone		40-19 ± 3	88	10	125,2.6k	4/4	Three Pieces	Black Oak	Black Knit	35 Sys.		365.00	Sys.															

(Continued)

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## The 8-04/B

as reviewed in

**stereophile**

Excerpts from J. Gordon Holt, April 1983, Volume 11, Number 4.

"... if it's emotional involvement you're looking for from your reproduced music, these will provide it, from a wider variety of musical fare than any other speakers I know of ... these are very musical speakers, that do for me what I ask of reproduced sound."

# THE ACCURATE LOUDSPEAKER

# LOUDSPEAKERS

MANUFACTURER	Model	Design Principle, Enclosure or System Type	Woofer Diameter, Inches		Midrange Diameter, Inches		Tweeter Diameter, Inches		Separate Level Controls? Woofer=M, Midrange=M, Tweeter=T, Superwoofer=ST		Anchoic Frequency Response, Hz to kHz, ±dB		SPL, 1 Watt/1 Meter, dB	Recommended Min. Amp Power, Watts		Impedance, Ohms: Nominal/Minimum		Dimensions, Inches (To Nearest Inch)		Finish	Grille Color and Material		Weight, Lbs.	Price, \$
PARASOUND (Continued)	AWM-380	Inf. Baf.	5 1/4				1	Dome			48-20 ±3	90	15	2.6k	4/4	7 x 9 x 7	White Enam.	White Metal	23 Pair			325.00	Pair	
	AW-S390	Inf. Baf.	5 1/4							44-130 ±3	88	15	130	4/4	7 x 9 x 7	White Enam.	White Metal	30 Pair			325.00	Pair		
	AWS-280	Subwoof. Ac. Laby.	5				1 1/2	Cone			55-20 ±3	88	10	3.3k	4/4	7 x 11 x 7	White Enam. Beige Enam.	White Metal Beige Metal	17 Pair			265.00	Pair	
PASO SOUND	C-1000	Ac. Sus.	5 1/2					Piezo			100-20	89		14k	16/3	17 x 6 x 4	Beige Steel Opt., Plast.	Steel Mesh Steel Mesh	9			321.40		
	C-90	Ac. Sus.	5 1/2					Piezo			100-20	85		14k	8/3	11 x 7 x 5	Opt., Plast.	Steel Mesh	5			130.56		
PHASE TECHNOLOGY	435ES	Ac. Sus.	8				1	Dome			45-20 ±3	92	15	2.5k	8/	11 x 12 x 23	Opt.	Black Knit				300.00	Pair	
	530ES	Ac. Sus.	10				1	Dome			40-20 ±3	93	15	2.2k	8/	11 x 13 x 24	Opt.	Black Knit				420.00	Pair	
	730ES	Ac. Sus.	10	5 1/4	Cone		1	Dome			36-20 ±3	93	15	250,3k	8/	11 x 13 x 34	Opt.	Black Knit				550.00	Pair	
	PC 600	Ac. Sus.	8				1	Dome			35-20 ±3	91	20	1.4k	4/3.5	31 x 12 x 8	Opt., Ven.	Brown Knit	42			620.00	Pair	
	PC 800	Ac. Sus.	10	5 1/4	Solid Piston		1	Dome			30-20 ±3	91	20	200,2k	4/3.5	36 x 15 x 9	Opt., Ven.	Brown Knit	57			990.00	Pair	
	325ES	Ac. Sus.	6 1/2			1/2		Dome			55-20 ±3	92	15	2.5k	4/3.5	17 x 8 x 9	Opt.	Black Knit	17			240.00	Pair	
	535ES	Ac. Sus.	6 1/2	6 1/2	Cone		1	Dome			40-20 ±3	92	15	100,1.7k	4/3	33 x 9 x 10	Opt.	Black Knit	32			450.00	Pair	
	745ES	Ac. Sus.	8	6 1/2	Cone		1	Dome			35-20 ±3	93	15	100,1.7k	4/3.5	35 x 10 x 12	Opt.	Black Knit	42			550.00	Pair	
	PC 40	Ac. Sus.	5 1/4				1	Dome			70-20 ±3	89	15	1.5k	4/3.5	6 x 10 x 5	Opt.	Brown Knit	20			380.00	Pair	
	PC 50	Ac. Sus.	10								30-150 ±3	87	25	150	8/6	13 x 14 x 15	Opt.	Brown Knit	33			350.00	Pair	
	PC 60	Subwoof. Ac. Sus.	6				1	Dome			55-20 ±3	87	15	1.2k	4/4	8 x 14 x 8	Opt.	Brown Knit	30			480.00	Pair	
	PC 1000	Pas. Rad.	8	5 1/4	Solid Piston		1	Dome			30-20 ±3	91	25	250,2k	8/6	15 x 38 x 9	Opt.	Brown Knit	65			1300.00	Pair	
	PC 60/50	Ac. Sus.	10	6	Solid Piston		1	Dome			30-20 ±3	87	25	150,1.2k	8/6	Three Pieces	Opt.	Brown Knit	66			830.00	Pair	
PHILIPS	FB585	Tuned Port	12	5	Cone		1	Dome	No		35-27 ±6	91	20	800,4.5k	8/6	16 x 38 x 16	Opt., Oak	Black Knit	70			1100.00	Pair	
	FB565	Pas. Rad.	(2)8	1	Dome		3/4	Dome	No		28-20 ±6	90	20	2.2k,8.8k	8/4	11 x 12 x 29	Black Oak	Black Knit	35			550.00	Pair	
PINNACLE	PN 5 +	Tuned Port	5 1/4				3/4	Dome			50-21	87	10	5k	6/	11 x 7 x 7	Hick, Vinyl	Black Knit	17			169.00	Pair	
	PN 6 +	Tuned Port	6 1/2				3/4	Dome			40-21	89	10	4.5k	4/	15 x 9 x 8	Hick, Vinyl	Black Knit	25			229.00	Pair	
	PN 7	Bass Ref.	6 1/2				3/4,1	Domes			40-21	89	10	3.5k,10k	4/	15 x 9 x 9	Hick, Vinyl	Black Knit	26			249.00	Pair	
	PN 8	Ac. Sus.	8	4 1/2	Cone		3/4	Dome			40-21	90	10	1.2k,6k	4/	15 x 10 x 9	Hick, Vinyl	Black Knit	32			279.00	Pair	
	The Diaduct 8	Tuned Ports	8	4	Cone		3/4	Dome			40-20 ±3	90	10	650,5.2k	6/	23 x 13 x 10	Black/Oak	Black Knit	40			750.00	Pair	
Monitor 200	Ac. Sus.	12	4 1/2	Cone		3/4	Dome			48-21	92	10	800,8k	6/	23 x 13 x 12	Hick, Vinyl	Black Knit	35			449.00	Pair		
PIONEER	DSS-9	Bass Ref.	12	4 3/4	Cone			Ribbon			30-50	91		650,4k	6/	15 x 27 x 14	Wal. Vinyl	Brown	57 3/8			550.00		
	DSS-7	Bass Ref.	12	2 1/2	Cone			Ribbon			30-50	91		850,4.5k	8/	15 x 26 x 14	Wal. Vinyl	Brown	49 3/8			380.00		
	DSS-5	Bass Ref.	10	2 1/2	Cone	3/4		Dome			38-30	91		1.2k,5k	8/	13 x 22 x 11	Wal. Vinyl	Brown	32			260.00		
	CS-707	Bass Ref.	15 3/4	4 3/4	Cone			Horn, (2) Piezos			30-25	98		1.5k,4k, 11k	8/	18 x 29 x 11	Wal. Vinyl	Black	44			380.00		
	CS-607	Bass Ref.	12	4 3/4	Cone			Horn, (2) Piezos			33-25	96		2k,5k, 11k	8/	16 x 25 x 11	Wal. Vinyl	Black	35 1/4			320.00		
	CS-407	Bass Ref.	12	4	Cone	2 1/2		Cone			35-20	94		3k,10k	8/	15 x 25 x 10	Wal. Vinyl	Black	23 1/8			190.00		
	CS-G301WAll	Bass Ref.	12	4 3/4	Cone	2 1/2		Cone			35-20	91		3.5k,7k	6/	15 x 27 x 13	Wal. Vinyl	Black	29 3/4			140.00		
	CS-G201WAll	Bass Ref.	10	3	Cone	2 1/2		Cone			40-20	90		3k,6k	6/	14 x 24 x 12	Wal. Vinyl	Black	21			105.00		
	CS-G101WAll	Inf. Baf.	10			2 1/2		Cone			55-20	90		5k	6/	13 x 22 x 8	Wal. Vinyl	Black	14 3/8			75.00		
	S-X7	Bass Ref.	3 1/2								100-20	90			16/	5 x 8 x 5	Wal. Vinyl Black				3 3/8		130.00	Pair
	CS-G401	Bass Ref.	16	4 3/4	Cone	2 1/2		Cone															180.00	Pair
	CS-X5		4									90			8/	6 x 8 x 5	Sim. Oak				7 3/8		60.00	Pair
PLASMA-TRONICS	Hill Type I	Plasma Inf. Baf.	14	6 1/2	Cone			Plasma	T		18-100 ±3	107	100	130,700	8/3	58 x 25 x 20	Opt.	Black Cloth	580			10,000.	Pair	
PLC AUDIO	7	Ac. Sus.	5				2	Cone			76-22 ±3	87	20	1k,10k	8/4	8 x 5 x 10	Opt.	Black Mesh	6 3/4			345.00	Pair	
	5	Ac. Sus.	5				2	Cone			81-22 ±3	87	15	1.5k,10k	8/4	8 x 5 x 7	Wal. Vinyl	Black Mesh	5			285.00	Pair	
PLEXUS AUDIO SYSTEMS	SWS-1	Subwoof.	(2)8						W		26-100 ±2	93	30	100	8/8	24 x 13 x 26	Opt.	Black Knit	34			600.00		



## Triad System Six

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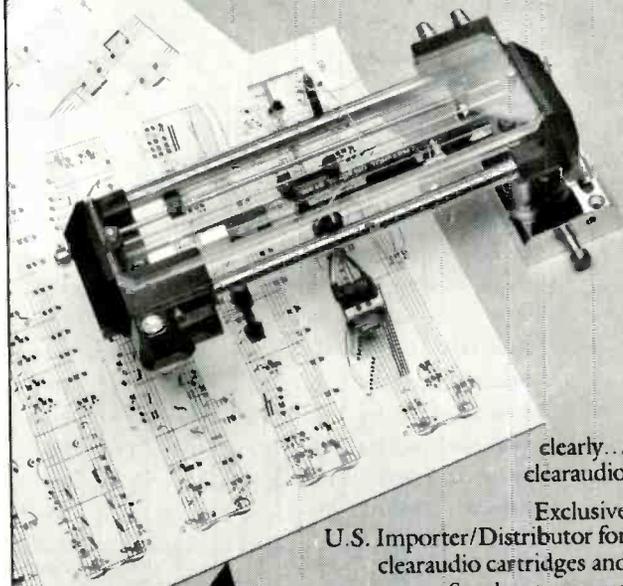
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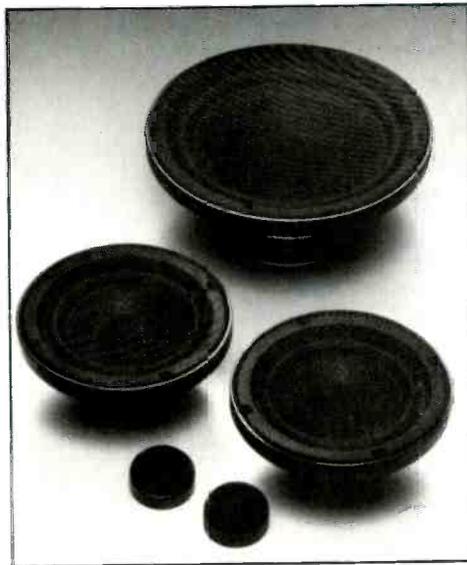
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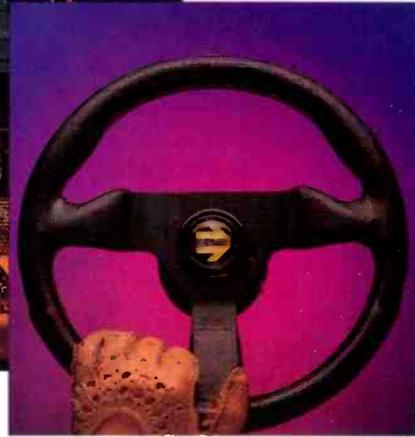
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# LOUDSPEAKERS

MANUFACTURER	Model	Design Principle, Enclosure or System Type	Woofer Diameter, Inches		Midrange Diameter, Inches		Tweeter Diameter, Inches		SPL, 1 Watt/1 Meter, dB		Crossover Frequencies, Hz	Impedance, Ohms		Dimensions, Inches (To Nearest Inch)	Finish	Grille Color and Material	Weight, Lbs.	Price, \$
												Nominal/Minimum						
POLK	SDA SRS 1.2	Pas. Rad.	15	(8)6½	Cones	(8)1	Domes		10-26	93	10	45,150,2k	6/	64 x 21 x 13	Opt., Wood	Black Cloth	180	1495.00
	SDA SRS 2.3	Pas. Rad.	15	(6)6½	Cones	(3)1	Domes		12-26	92	10	45,150,2k	6/	55 x 21 x 13	Opt., Wood	Black Cloth	155	1099.00
	SDA 1C	Pas. Rad.	12	(4)6½	Cones	(2)1	Domes		14-26	92	10	50,150,2k	6/	44 x 17 x 12	Opt., Wood	Black Cloth	85	849.00
	SDA 2B	Pas. Rad.	12	(2)6½	Cones	1	Dome		15-26	92	10	50,150,2k	6/	40 x 17 x 12	Opt., Wood	Black Cloth	70	599.95
	SDA CRS +	Pas. Rad.	10	(2)6½	Cones	1	Dome		24-26	92	10	60,150,2k	6/	13 x 20 x 10	Opt., Wood	Black Cloth	38	425.95
	RTA 11t	Pas. Rad.	(2)8	(2)6½	Cones	1	Dome		18-26	93	10	60,2.5k	6/	39 x 11 x 14	Opt.	Black Cloth	55	449.95
	RTA 8t	Pas. Rad.	(2)6½			1	Dome		22-26	93	10	2.5k	6/	34 x 9 x 12	Opt.	Black Cloth	39	289.95
	Monitor 10B	Pas. Rad.	10	(2)6½	Cones	1	Dome		20-26	92	10	60,2.5k	6/	28 x 16 x 12	Opt.	Black Cloth	50	329.95
	Monitor 7C	Pas. Rad.	10	6½	Cone	1	Dome		24-26	91	10	60,2.5k	6/	24 x 14 x 9	Opt.	Black Cloth	36	259.95
	Monitor 5B	Pas. Rad.	8	6½	Cone	1	Dome		28-26	91	10	60,3k	6/	22 x 11 x 9	Opt.	Black Cloth	29	199.95
	Monitor 5jr +	Pas. Rad.	6½	6½	Cone	1	Dome		29-26	92	10	80,3k	6/	19 x 9 x 9	Opt.	Black Cloth	25	339.90
	Monitor 4.5	Ported	6½			1	Dome		30-25	92	10	4.5k	6/	17 x 9 x 9	Opt.	Black Cloth	22	244.90
Monitor 4A	Ported	6½			1	Dome		31-35	92	10	4.5k	6/	14 x 9 x 7	Opt.	Black Cloth	16	199.90	
PRECISE ACOUSTIC LABORATORIES	Monitor 3	Tuned Port	6½			1	Dome		48-22 ±5	89	30		7/4	8 x 15 x 13	Oak Vinyl	Brown Knit	13¼	280.00
	Monitor 5	Tuned Port	8			1	Dome		32-24 ±5	90	40		7/4	10 x 21 x 12	Dak Vinyl	Brown Knit	23½	360.00
	Monitor 7	Tuned Port	8			1	Dome		28-24 ±5	91	50		7/4	11 x 28 x 12	Oak Vinyl	Brown Knit	41½	460.00
	Monitor 9	Pas. Rad.	10			1	Dome		29-24 ±6	91	50		7/3	13 x 31 x 13	Oak Vinyl	Brown Knit	50¾	660.00
	Monitor 10	Tuned Port	10	6½	Cone	1	Dome	T	20-24 ±6 20-24 ±4.5	90	50		4/3	15 x 44 x 13	Oak Vinyl	Brown Knit	70½	1500.00
PRES SPEAKERS	Mini "S"	Bass Ref.	6½			1	Dome		50-20 ±3	90		2.7k	8/6	16 x 10 x 8	Opt., Wood	Black Knit	9	350.00
	lbex	Bass Ref.	8	2	Dome	1	Dome		45-20 ±3	90		800,6k	8/6	21 x 13 x 10	Opt., Wood	Black Knit	17	550.00
	Dual	Bass Ref.	10	6½		7x2,1¼	Horn, Dome	T	40-22 ±5			300,2.7k, 6.5k	6/4	36 x 15 x 13	Opt., Wood	Black Knit	30	850.00
	Quad Dual	Bass Ref.	(2)10	6½		7x2,1¼	Horn, Dome	T	35-22 ±3			100,300, 2.7k,6.5k	6/4	54 x 15 x 13	Opt., Wood	Black Knit	40	1200.00
PRINCETON ACOUSTICS	PA-7	Bass Ref.	8			2	ACT		38-23	88	35	420	8/8	40 x 10 x 13	Ven.	Black Cloth	49	1295.00
	PA-10-3	Ac. Sus.	(2)8			(2)2	ACTs		32-23	89	30	250	4/4	42 x 10 x 13	Ven.	Black Cloth	60	1850.00
	PA-20-2	Trans. Line Sat. & Bass Ref. Subwoof.	(2)8			(4)2	ACTs		26-23	90	50	180	4/4	Four Pieces	Ven.	Black Cloth	350	3750.00
	Aria-1 EB-2	Ac. Sus.	(4)8			(4)2	ACTs		21-23	90	50	200	4/4	Six Pieces	Ven.	Black Cloth	390	4850.00
	Monitor VLS-1	Hybrid	(6-8)8			(20)2	ACTs		18-23	92	75	140	4/4	Six to Eight Pieces	Ven.	Black Cloth	600	Sys. From 14,000.00
	Aumakua Series-1	Hybrid	Opt.			(2)2	ACTs											
PROAC	Super Tablette	Ported	4			¾	Dome		70-20	87	25	5k	8/	10 x 6 x 9	Opt., Wood	Black Knit	10	625.00
	Studio 1	Ported	7			1	Dome		40-30	88	30	2.7k	8/	16 x 8 x 10	Opt., Wood	Black Knit	25	1150.00
	Mini Tower	Ported	(2)4			¾	Dome		40-30	88	25	5k	8/	36 x 6 x 10	Opt., Wood	Black Knit	30	1550.00
	Super Tower	Ported	(2)7			1	Dome		30-30	90	30	2.5k	8/	42 x 8 x 10	Opt., Wood	Black Knit	55	2400.00
	EBS-FS	Ported	10	3	Dome	¾	Dome		25-25	91	40	450,5k	8/	43 x 12 x 13	Opt., Wood	Black Knit	100	5000.00
PSB SPEAKERS	20MKII		6			½	Dome		80-20 ±2.5	89	15	2.5k	7/5	13 x 9 x 6	Opt., Vinyl	Black Knit	11	200.00
	30MKII		6			¾	Dome		80-20 ±2	87	20	2.2k	7/5	15 x 9 x 8	Opt., Vinyl	Black Knit	14	300.00
	40MKII		8			¾	Dome		60-20 ±2	90	20	2.2k	7/5	21 x 10 x 11	Opt., Vinyl	Black Knit	23	400.00
	50MKII		8			1	Dome		58-20 ±2	90	25	1.8k	7/5	25 x 11 x 11	Opt., Vinyl	Black Knit	31	500.00
	Cirrus 180V		8			1	Dome		48-20 ±1.5	90	30	1.8k	7/5	36 x 14 x 11	Opt., Vinyl	Black Knit	50	700.00
	Cirrus 180W		8			1	Dome		48-20 ±1.5	90	30	1.8k	7/5	36 x 14 x 11	Opt., Vinyl	Black Knit	50	700.00
	Cirrus 260		(2)6			1	Dome		48-20 ±1.5	91	30	1.8k	7/5	38 x 12 x 11	Opt., Oak	Black Knit	52	1000.00
			8			1	Dome		48-20 ±1.5	88	30	1.8k	6.5/6	38 x 13 x 16	Opt., Oak	Black Knit	60	1400.00
			(2)8			1	Dome		40-20 ±1.5	88	30	100		22 x 22 x 22	Opt., Vinyl	Black Knit	90	700.00
		Tuned Port Subwoof.																

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# LOUDSPEAKERS

MANUFACTURER	Model	Design Principle, Enclosure or System Type	Woofer Diameter, Inches		Midrange Diameter, Inches		Tweeter Diameter, Inches		Separate Level Drivers? Woofer: W, Midrange: M, Tweeter: T, Superwoofer: ST		Aerocholic Frequency Response, SPL, 1 Watt/1 Meter, dB		Recommended Min. Amp Power, Watts		Impedance Ohms, Nominal/Minimum		Dimensions, Inches (To Nearest Inch)		Finish		Grille Color and Material		Weight, Lbs.	Price, \$
QUAD	ESL 63	ES									36-20 ± 5	87	100		8/6.2	26 x 36 x 10	Oiled Teak	Black Knit	54			3990.00	Pair	
QUORANT ACOUSTICS	Q-250	Bass Ref.	8			1	Dome				36-20 ± 3	90	15	2.8k	8/6	23 x 13 x 11	Black Vinyl	Black Knit	54	Pair		695.00	Pair w/ Stands	
QUANTA TECHNOLOGIES	The Amazing Mini-Monitor	Vented	5 1/4			1	Dome				54-22 ± 3	88	20	2.5k	8/6	17 x 7 x 11	Unf.	None	16			Kit, 510.00	Pair	
	III	Hybrid	6 1/2			1	Dome				47-20 ± 3	89	25	2k	8/6	20 x 9 x 13	Matte Black	Black Foam	28			1260.00	Pair	
	VII	Hybrid	8			1 1/8	Dome				29-20 ± 3	90	40	2k	8/5.2	34 x 11 x 18	Matte Black	Black Foam	58			2750.00	Pair	
	IX	Hybrid	8			1 1/8, 3/8	Domes				28-35 ± 3	90	40	2k, 19k	8/5.2	38 x 17 x 14	Black Opt., Wood	Brown Knit	58			4900.00	Pair	
	B Sub-Woofer	Hybrid Subwoof.	10								25-200 ± 3	92	60		8/5.2	34 x 14 x 24	Matte Black	Black Foam	75			3000.00	Pair	
	Baby Pyramid	Vented Sat.	5 1/4			1 1/8	Dome				54-20 ± 3	91	40	2k	8/5.3	15 x 10 x 11	Matte Black	Black Foam	25			2850.00	Pair	
RAUNA	Tyr	Ported, Concrete Encl.	6 1/2			1	Dome				40-20 ± 3	90	25	2.3k	8/8	10 x 10 x 13	Rswd.	Black Foam	28			625.00	Pair	
	Freja	Ported, Concrete Encl.	6 1/2			1	Dome				40-20 ± 3	90	25	2.3k	8/8	11 x 11 x 16	Black	Black Mesh	25			625.00	Pair	
	Leira II	Trans. Line, Concrete Encl.	6 1/2			1	Dome				30-20 ± 3	88	30	2.3k	8/8	9 x 14 x 32	Opt., Paint	Black Mesh	65			965.00	Pair	
	Balder	Trans. Line, Concrete Encl.	(2)6 1/2			1	Dome				30-20 ± 3	90	30	2.3k	8/8	9 x 15 x 36	Opt., Paint	Black Mesh	80			1500.00	Pair	
REALISTIC	Optimus 650	Bass Ref.	10	4	Cone	2 1/2	Cone				60-20	91		8/	27 x 12 x 10	Oiled Wal.	Black Knit				240.00	Pair		
	Minimus 0.9	Powered	5			1 1/4	Cone	W, M, T					5 Inc.		14 x 8 x 7	Oiled Wal.	Black Knit				99.95	Pair		
	Mach Two (40-4032)	Tuned Port	15	5	Cone	4	Horn	M, T			25-40	94		8/6.5	28 x 18 x 12	Oiled Wal.	Brown				500.00	Pair		
	Optimus-1000 (40-1130)	Tuned Port	15	5	Cone	3	Dome	No			50-20	92		8/	31 x 17 x 12	Oiled Wal.		44			400.00	Pair		
	Optimus-900 (40-1121)	Tuned Port	12	4	Cone	2 1/2	Dome	No			50-20	90		8/	30 x 14 x 11	Oiled Wal.		33			300.00	Pair		
	Optimus-600 (40-1100)	Tuned Port	8	4	Cone	2 1/2	Cone	No			50-20	90		8/6.5	27 x 12 x 10	Oiled Wal.	Black				200.00	Pair		
Nova 15 (40-4034)	Tuned Port	8			2 1/2	Cone	No			60-20	89		8/6.5	19 x 11 x 8	Oiled Wal.	Brown				79.95	Pair			
RECOTON	SP 1	Powered Bass Ref.	5								50-20 ± 5	85	12 Inc.		9 x 6 x 6	Matte Black	Black Mesh	14	Pair		169.95	Pair		
	SP 2	Powered Air Sus.	5 1/4			2 1/4	Cone	W, T			50-20 ± 5	85	12 Inc.	800	16 x 7 x 7	Matte Black	Black Knit	25	Pair		199.95	Pair		
	SP 3	Bass Ref.	5								20-20 ± 5	85	30		9 x 6 x 6	Matte Black	Black Mesh	14	Pair		99.95	Pair		
	W100	Powered Bass Ref.	5								20-20 ± 5	85	12 Inc.		9 x 6 x 6	Matte Black	Black Mesh	14	Pair		249.00	Pair		
RENAISSANCE ACOUSTICS	Companion I	Ac. Sus.	7			1	Dome				60-20 ± 3	87	15	3k	8/6	16 x 10 x 8	Opt., Ven.	Opt., Knit	36	Pair		395.00	Pair	
	Companion II	Ac. Sus.	8			1	Dome				55-20 ± 3	87	20	3k	8/6	19 x 12 x 10	Opt., Ven.	Opt., Knit	55	Pair		485.00	Pair	
	Companion Bass Module	Ac. Sus. Subwoof.	10								40-100 ± 3	89	40		8/6	25 x 15 x 12	Opt., Ven.	Opt., Knit	75	Pair		425.00	Pair, 485.00	
RESPONS	Grand		12	3 1/2	Cone	3/4	Dome				20-25 ± 3	85	50		7/5	20 x 49 x 22	Oak	Black Foam	200			7500.00	Pair	
	Baby Grand		9	3 1/2	Cone	3/4	Dome				35-25 ± 3	87	50		7/5	15 x 49 x 17	Oak	Black Foam	120			4200.00	Pair	
REVOX	Power Cube	Active Subwoof.	12 3/8					W			35-90 ± 3	100	Inc.	90		16 x 15 x 17	Opt., Matte	Black Metal	42			1600.00		
	Forum MKII	Bass Ref.	9 1/2	4	Cone	3/4	Dome				30-32 ± 3	88	20	400, 3.5k	4/4	13 x 18 x 13	Wal. Ven.	Black Knit	39 3/4			650.00		
	Plenum MKII	Bass Ref.	10	4 1/2	Cone	1	Dome				25-26 ± 3	89	20	380, 4.1k	4/4	14 x 23 x 13	Wal. Ven.	Black Knit	59 1/2			950.00		
	Atrium MKII	Bass Ref.	10	4 3/4	Cone	1	Dome				22-26 ± 3	91	20	400, 4k	4/4	14 x 34 x 15	Wal. Ven.	Black Knit	84			1450.00		
	Svmbol MKII	Pas. Rad.	12	4 3/4	Cone	1	Dome				20-26 ± 3	92	20	340, 3k	4/4	17 x 40 x 17	Wal. Ven.	Black Knit	113			2000.00		
	Bass	Internal Triamp Sat. & Subwoof.	(2)12	5	Cone	3/4	Dome	W, T			30-21 ± 3	Inc.	200, 3.7k		17 x 29 x 17	Wal. Opt.	Black Knit	68			2500.00			
			10 1/4	4 1/4	Cone	1	Dome				48-22 ± 3	86	20	120, 1.8k	4/4	Three Pieces	Black Varn.	Black Metal	37 1/2			595.00	Sys.	

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# LOUDSPEAKERS

MANUFACTURER	Model	Design Principle	Enclosure or System Type		Woofer Diameter, Inches	Midrange Diameter, Inches	Midrange Type	Tweeter Diameter, Inches	Tweeter Type	Separate Level Crossovers? Woofer = W, Midrange = M, Tweeter = T	Analogous Frequency Response, Hz to kHz, ±dB	SPL, 1 Watt/1 Meter, dB	Recommended Min. Amp Power, Watts	Crossover Frequencies, Hz	Impedance, Ohms: Nominal/Minimum	Dimensions, Inches (To Nearest Inch)	Finish	Grille Color and Material	Weight, Lbs.	Price, \$
			Powered Subwoof. Powered Subwoof.	12																
RICH ACOUSTIC	6	Tuned Port	6½			¾	Dome				38-20 ±3	90	25	2.7k	8/6	9 x 9 x 21		Black Knit	33	198.00
	8	Tuned Port	8			1	Dome				34-20 ±3	90	25	2.5k	8/6	11 x 11 x 24		Black Knit	48	249.00
	MT88	Tuned Port	(2)8			1	Dome				31-20 ±3	91	25	60,2.7k	4/	11 x 11 x 33		Black Knit	64	399.00
ROGERS	LS2	Bass Ref.	5			¾	Dome				60-20 ±3	88	15	3.5k	8/6	14 x 9 x 8	Opt.	Black Knit	13	399.00
	LS6	Bass Ref.	8			¾	Dome				50-20 ±2	89	10	3.5k	8/6	20 x 11 x 11	Opt.	Black Knit	21	599.00
	LS71	Bass Ref.	8			1	Dome				50-20 ±2	88	15	3k	8/6	22 x 11 x 11	Opt.	Black Knit	30	899.00
	Studio 1A	Bass Ref.	8			1¼	Dome				40-20 ±2	89	10	2.8k	8/6	25 x 12 x 12	Opt.	Black Knit	36	1299.00
	LS3/5A	Inf. Baf.	5			¾	Dome				70-20 ±3	82	25	3k	15/8	12 x 8 x 6	Opt.	Black Tygan	11½	599.00
	LS5/9	Bass Ref.	8			1¾	Dome				60-16 ±3	88	15	3k	8/6	18 x 11 x 11	Opt.	Black Tygan	28½	2595.00
	PM510A	Bass Ref.	12			1¾	Dome				40-20 ±3	92	15	2.5k	8/6	30 x 16 x 18	Opt., Wood	Black Knit	70½	3495.00
ROGERSOUND LABS	RSL 1600 Mini Monitor	Ac. Sus.	6½			1¾	Cone				55-20 ±3	91	15	3.75k	8/	12 x 8 x 9	Black	Black Plast.	8¾	79.00
	RSL 2600 Mini Monitor	Ac. Sus.	8	4	Cone	1	Dome				50-22 ±3	92	15	1k,6k	4/	14 x 9 x 11	Black	Black Metal	12½	139.00
	RSL 2800 Mini Monitor	Ac. Sus.	10	4	Cone	1	Dome				41-22 ±3	93	15	1k,6k	4/	22 x 12 x 10	Black	Black Cloth	23	199.00
	RSL 3800 Studio Monitor	Bass Ref.	12	4	Cone	1	Dome	M,T			32-22 ±3	91	15	800,5k	8/	26 x 15 x 12	Opt., Wood	Black Cloth	43	299.00
	RSL Outsider	Ac. Sus.	6½			3	Cone				15-20	15	2.5k	8/	12 x 8 x 7	Opt., ABS	Opt., Metal	8½	99.00	
	RSL Depth Charge	Subwoof.	12								30-120 ±3	92	25	120	4/	26 x 21 x 19	Opt., Wood	Black Cloth	66½	219.00
	RSL Magnificent	Ac. Sus.	8			1	Dome				45-22 ±3	91	20	3k	8/	17 x 10 x 9	Opt., Wood	Black Cloth	19	149.00
	RSL Speedscreen II	Pas. Rad.	8	1¼	Dome		Ribbon				32-20 ±3	88	35	1.2k,6k	8/	48 x 19 x 5	Opt., Wood	Black Cloth	67	449.00
ROHRER ACOUSTIC	RM702D	Bass Ref.	7			¾	Dome	T			40-40 ±3	91	30	3k	8/8	41 x 12 x 19	Oak	Black Knit	68	1200.00
	RM902R	Bass Ref.	9			3	Ribbon	T			35-40 ±3	91	30	3k	8/6	44 x 12 x 19	Black	Black Knit	68	1800.00
	RM2902R	Bass Ref.	(2)9			3	Ribbon	T			35-40 ±3	91	30	3k	8/10	50 x 12 x 20	Black	Black Knit	80	2700.00
	RM4602R	Bass Ref.	(4)6			3	Ribbon	T			35-40 ±3	95	20	3k	8/6	51 x 12 x 20	Black	Black Knit	85	4400.00
	RT1201	Bass Ref. Subwoof.	12								16-100 ±3	91	50		8/6	19 Dia. x 82	Black Knit	Black Knit	75	1400.00
	RT212	Bass Ref. Subwoof.	(2)12								16-100 ±1	97	30		4/3	19 Dia. x 82	Black Knit	Black Knit	85	2400.00
	RT212.5	Bass Ref. Subwoof.	(2)12								16-100 ±3	97	30		4/3	19 Dia. x 44	Black Knit	Black Knit	65	2000.00
	RT212S	Bass Ref. Subwoof.	(12)2								12-100 ±2	97	30		4/3	25 Dia. x 82	Black Knit	Black Knit	105	3600.00
	Reference System	Bass Ref.	(4)15	(12)6	Cones	(16)3	Ribbons	T			8-40 ±2	98	30	40,3k	8/8	Six Pieces	Black	Black	1000 Sys.	33,000.00
ROSSMAN AUDIO	SA.5	Powered Bass Ref.	5			1	Dome	No			55-20 ±3	88	15	2.3k	100k	13 x 9 x 12	Black Slate	Black Knit	48	400.00
	SA.8	Powered Bass Ref.	6½			1	Dome	No			42-20 ±3	89	15	2.3k	100k	17 x 10 x 12	Black Slate	Black Knit	60	500.00
ROYD LOUDSPEAKER	A7II	Reflex	5			¾	Dome/ Cone				70-22 ±3	89	10	4k	8/6.7	12 x 8 x 7	Black Vinyl Opt.	Black Foam	19	350.00
	Coniston R	Reflex	5			¾	Dome				60-22 ±3	89	10	4k	8/6.7	12 x 8 x 7	Black Vinyl Opt.	Black Foam	20	400.00
	A14II	Reflex	6½			¾	Dome				55-22 ±3	89	10	4k	8/6.7	17 x 9 x 9	Black Vinyl Opt.	Black Foam	25	550.00
	A25	Inf. Baf.	8			¾	Dome				70-22 ±3	88	10	2.7k	8/6.7	20 x 12 x 9	Black Vinyl Opt.	Black Foam	35	450.00
	Eden	Reflex	5			¾	Dome				57-22 ±3	90	10	4k	8/6.7	12 x 8 x 7	Black Vinyl Opt.	Black Foam	31	850.00
SANSUI	Vintage SP-100i	Inf. Baf.	8			1	Dome				40-30	88		1.5k	6/	11 x 18 x 13			41¾	900.00
	SP-X3U	Inf. Baf.	10	5		¾					35-23 ±3			700,5k	8/	14 x 27 x 13			39	200.00
	SP-X2U	Inf. Baf.	8			¾					40-23 ±3			5k	8/	12 x 21 x 10			25½	150.00
	SP-X1U	Inf. Baf.	6½			½					50-20 ±3			6k	8/	8 x 15 x 19			16	220.00
SARAS	ST200A	Inf. Baf.	(2)10	5	Cone	1	Inv. Dome	No			30-18 ±2	88		500,5k		43 x 15 x 12	Wal.	Brown		1800.00
	ST101	Bass Ref.	(2)8	5	Cone	1	Inv. Dome	No				90		500,5k		36 x 13 x 12	Opt., Wood	Brown		1500.00

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ACOUSTICS

# LOUDSPEAKERS

MANUFACTURER	Model	Design Principle, Enclosure or System Type	Woofer Diameter, Inches			Midrange Diameter, Inches			Tweeter Diameter, Inches			Separate Level Controls Woofer, W Midrange, M, Tweeter, T = ST Analog, Frequency Response, SPL, 1 Watt/1 Meter, dB	Recommended Min. Amp Power, Watts	Crossover Frequencies, Hz	Impedance, Ohms: Nominal/Minimum	Dimensions, Inches (To Nearest Inch)	Finish	Grille Color and Material	Weight, Lbs.	Price, \$
			Woofer	Midrange	Tweeter	Woofer	Midrange	Tweeter	Woofer	Midrange	Tweeter									
SARAS (Continued)	ST50	Ac. Sus.	12	5	Cone	1	Inv. Dome	No		87		550,6.5k				Opt., Wood	Brown	1200.00		
	33	Ac. Sus.	10	5	Cone	1	Inv. Dome	No		87		500.5k		24 x 14 x 12	Wood	Brown	900.00			
	12	Ac. Sus.	10			1	Inv. Dome	No		87		2k		24 x 14 x 12	Wood	Brown	700.00			
	8	Bass Ref.	8			1	Inv. Dome	No		87		1.8k		19 x 12 x 10	Wood	Brown	600.00			
	6	Ac. Sus.	6½			1	Inv. Dome	No		90		3.5k		13 x 9 x 8	Wood	Brown	500.00			
	SSB-1	Powered Subwoof.	12				Inv. Dome			20-160	Inc.	60,80,100,140,160 (Sel.)		18 x 18 x 21	Wal.	Brown	950.00			
SASS	BH-30	Vented	6½			½	Dome			55-17.5 +5,-3	91	20	5k	8/7	10 x 10 x 15	Opt., Wood	Gray Knit	35	369.00	
	SA-1	Vented, Third Order	8			1	Dome	T		40-50 +2,-3	90	40	1.5k	8/6	10 x 10 x 38	Oiled Wood	Black Knit	33	899.00	
	SA-2	Vented, Third Order	8			1	Dome	T		45-15 +2,-3	89	40	1.5k	8/6	12 x 13 x 23	Oiled Wood	Black Knit	33	675.00	
	SA-3	Vented, Fourth Order	8			½	Dome			45-17.5 +2,-3	90	30	1.5k	8/6	9 x 12 x 35	Oiled Wood	Black Knit	39	600.00	
	ITC 1	Vented, Seventh Order	4	1½	Dome	¾	Dome	M, T		50-16 ±3	88	50	2k,6k	8/6	7 x 7 x 11	Opt., Wood	Opt., Knit	39	1200.00	
	ITC 4	Vented, Seventh Order	10							24-120 ±3					18 x 18 x 19	Opt., Wood	Opt., Knit	61	1400.00	
	ITC CSII	Vented, Fourth Order Ceiling Mount	6			½	Dome			60-17 ±4	90	25	3k	8/6	19 x 13 x 8		Opt.	24	450.00	
	ITC CS-Sub	Vented, Fourth Order Ceiling Mount Subwoof.	8							40-200 ±3	90	35		8/7	19 x 13 x 8		Opt.	30	500.00	
S.C.D.	G.C. Rock Monitor	Sealed	(2)8	3	Dome	(2)2	Ribbons	No		50-20 ±3	91	25	1k,4k	10/6	11 x 10 x 36	Wood Vinyl	Black Knit	105	799.00	
	J.C. Classical Monitor	Sealed	12	3	Dome	(2)2	Ribbons	No		38-24 ±3	91	100	800,4k	8/4	Four Pieces	Black Knit	None	235	1695.00	
SCOTT	6.2	Air Sus.	6			2	Cone			60-18 ±4	90	5	3.5k	8/	15 x 9 x 8	Hick.	Black Knit	9	69.95	
	8.2	Air Sus.	8			2	Cone			45-19 ±4	92	5	3.5k	8/	18 x 10 x 8	Hick.	Black Knit	12	79.95	
	10.3	Air Sus.	10	4	Cone	2	Cone			45-19 ±4	92	10	1.1k,3.5k	8/	23 x 13 x 9	Hick.	Black Knit	20	129.95	
	S-123	Air Sus.	12	4½	Cone	1¾	Cone			45-20 ±4	92	10	1.1k,3.5k	8/	32 x 16 x 11	Hick.	Black Knit	33½	164.95	
	AS-1	Air Sus.	6			1	Dome			55-22 ±4	90	15	2.2k	4/	15 x 9 x 7	Oak	Black Knit	14	149.95	
	S-10T5	Air Sus.	10	(2)4½	Cones	(2)1¾	Cones			45-20 ±4	92	10	1.1k,3.5k	4/	31 x 13 x 9	Oak	Black Knit	25¾	199.95	
	S-12T6	Air Sus.	12	(2)4½	Cones	(3)1¾	Cones			42-20 ±4	92	15	1.1k,3.5k	4/	31 x 16 x 11	Opt., Wood	Black Knit	37	249.95	
SDM/ SOUND DYNAMICS	Monitor One	Bass Ref.	8	5	Cone	1	Horn			35-22 ±3	96	10	2k,5k	8/4	23 x 12 x 9	Opt.	Black Knit	29	330.00	
	Monitor Two	Bass Ref.	10	5	Cone	1	Horn			30-22 ±3	97	10	2k,5k	8/4	24 x 14 x 9	Opt.	Black Knit	29	400.00	
	Monitor Three	Bass Ref.	12	5	Cone	1	Horn			25-22 ±3	98	15	2k,5k	8/4	26 x 15 x 12	Opt.	Black Knit	33	500.00	
SEATTLE SOUND TECHNOLOGY	P.S. 1	Biamped, Vented, 2, 4, & 6 Orders Tuned Port.	(2)8	6½	Cone	¾	Dome	W		20-21 ±3	Inc.	150,2.5k		39 x 14 x 17	Rswd.	Black Knit	110	3000.00		
	CI2	4th Order Tuned Port.	5¼			¾	Dome			50-21 ±3	89	5	2.5k	8/4	15 x 14 x 9	Black	Opt.	13	300.00	
	CI3	4th Order Tuned Port.	6½			¾	Dome			42-21 ±3	91	10	2.5k	8/4	20 x 11 x 8	Black	Opt.	23	400.00	
	CI4	4th Order Tuned Port.	8			¾	Dome			36-21 ±3	92	20	2.5k	8/4	24 x 16 x 10	Black	Opt.	39	500.00	
	M2	4th Order Tuned Port.	5¼			¾	Dome			50-21 ±3	89	5	2.5k	8/4	13 x 7 x 9	Opt.	Black Knit	13	250.00	
	M3	4th Order Tuned Port.	6½			¾	Dome			42-21 ±3	91	10	2.5k	8/4	21 x 8 x 10	Opt.	Black Knit	23	300.00	
	M4	4th Order Tuned Port.	8			¾	Dome			36-21 ±3	92	20	2.5k	8/4	28 x 10 x 12	Opt.	Black Knit	39	400.00	
	M5	4th Order Tuned Port.	8	6½	Cone	1	Dome			34-21 ±3	93	20	180,2.5k	8/4	31 x 11 x 13	Opt.	Black Knit	47	500.00	

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# LOUDSPEAKERS

MANUFACTURER	Model	Design Principle	Enclosure or System Type			Woofer Diameter, Inches	Midrange Diameter, Inches	Midrange Type	Tweeter Diameter, Inches	Tweeter Type	Separate and Control? Woofer = W, Midrange = M, Tweeter = T, Superwoofer = ST			Impedance, Ohms	Dimensions, Inches (to nearest inch)	Finish	Grille Color and Material	Weight, Lbs.	Price, \$
			Woofer	Midrange	Tweeter						Frequency Response, Hz to kHz, ±dB	SPL, 1 Watt/1 Meter, dB	Recommended Min. Amp Power, Watts						
S.G.M.	Slim Jim	Pas. Rad.	5/4							45-20	93	15	3k	4/	21 x 6 x 3	Black Text. Pearl Gloss	Black Cloth Black Knit	12 Pair	299.00
	The Mystique	Aperiodic	(2)6				1 1/8	Dome		37-23 ± 1.5	89	20	1.7k	4/2	53 x 32 x 12	Oiled Oak	Black Foam	222 Pair	3700.00
SHADOW AUDIO	Compact Monitor	Vented	6 1/2				1	Dome	No	38-20 ± 3	86	30	2.7k	6/4	10 x 11 x 34	Oiled Oak	Black Foam	35	599.00
SHAHINIAN ACOUSTICS	Obelisk	Trans. Line, Pas. Rad.	8	(2)1 3/8	Domes	(4)3/8	Domes			28-22 +0, -3	90	50	900, 1.8k	5/4	15 x 13 x 29	Opt., Wood	Opt., Knit	56	1750.00
	Arc	Pas. Rad.	8	1 3/8	Dome	1	Dome			28-18 ± 3	88	30	1.9k, 10k	4/3	14 x 10 x 28	Opt., Wood Oiled Oak	Opt., Knit	44	1050.00
	Lyre	Pas. Rad.	8	5/4	Cone	1	Dome	T		32-18 ± 3	90	30	500, 5k	6/5	12 x 12 x 24	Oiled Oak	Opt., Knit	43	850.00
	Elf	Vented	5 1/4			1	Dome	T		55-18 ± 3	90	25	4.5k	6/5	7 x 8 x 13	Oiled Oak	Opt., Knit	26 Pair	375.00
	Double Eagle	Pas. Rad. Subwoof.	(2)8							20-200 ± 3	90	150	140	6/3	23 x 15 x 32	Opt., Wood Birch	Opt., Knit	105	850.00
	Diapason Module Contra-Bombarde	Sat. Slot Loaded Subwoof.	(4)5 3/4 (2)8	(2)1 1/8	Domes	(2)3/4, (6)3/8	Domes			140-25 ± 2 16-200 +0, -3	91 89	150 50	140, 4k, 7k, 11k Ext.	4/3 8/4	15 x 22 x 7 28 x 19 x 35	Oiled Wal.	Opt., Knit	26	4000.00
SHANNON-BROOKE AUDIO	Cynthia	Ac. Sus.	10			1	Dome			45-21 ± 3	87	20	1.4k	8/3	12 x 12 x 37	Black Cloth Wal.	Black Cloth Black Knit	35	895.00
	I	Ac. Sus.	12	6 1/2	Cone	3/4	Dome			27-35 ± 3	89	40	200, 3.2k	4/3	20 x 19 x 39	Black Cloth Wal.	Black Cloth Black Knit	80	1850.00
SHURE HTS	HTS50CF	Inf. Baf., Fourth Order	(2)6 1/2			1	Dome			55-18	88		2.4k	5.6/	20 x 13 x 9	Wal.	Brown	37	750.00
	HTS50LRS	Inf. Baf., Fourth Order	6 1/2			1	Dome			60-18	85		2.4k	5.6/	13 x 10 x 9	Wal.	Brown	24 1/4	500.00
	HTS50SW	Vented, 86 Subwoof.	12							33-80	91		Ext.	8/	18 x 23 x 14	Wal.	Brown	65	650.00
SIEFERT RESEARCH	Maxim III	Ducted Port	6 1/2			1	Dome			46-22 ± 3	86	30	3.5k	8/6	13 x 11 x 19	Opt.	Black Knit	18	499.00
	Maxim III H	Ducted Port	6 1/2			1	Dome			48-24 ± 1.5	86	30	3.5k	8/6	13 x 11 x 9	Opt.	Black Knit	18	549.00
	Maxim IV	Ducted Port	6 1/2			1	Dome			46-24 ± 1.5	86	30	3.5k	8/6	15 x 11 x 9	Opt.	Black Knit	22	599.00
	Magnum III	Ducted Port	8	4	Cone	1	Dome			38-24 ± 3	88	30	350, 3k	6/4	22 x 14 x 13	Opt.	Black Foam Black Knit	42	899.00
E. S. SINFONIC	LS1200	Second Order	(2)10	5.2	Cone, Dome	1	Dome	W, M, T, ST		28-25	90	150	250, 850, 4k	4/	16 x 14 x 51	Acryl.	Black	75	7000.00
SNELL ACOUSTICS	A-III-i	Inf. Baf.	12	4 1/2	Cone	1 3/4	Domes			24-20 ± 2	87	80	275, 2.7k, 10k	8/4	51 x 24 x 14	Opt., Ven.	Black Cloth Black Knit	148	4680.00
	C-II	Bass Ref.	10	4 1/2	Cone	1 3/4	Domes			35-20 ± 2	88.5	20	275, 2.7k, 15k	8/5	46 x 15 x 12	Opt., Ven.	Black Cloth Black Knit	90	1890.00
	E-II	Bass Ref.	8			1 3/4	Domes			35-20 ± 3	93	15	2.3k, 10k	8/5	33 x 14 x 11	Opt., Ven.	Black Cloth Black Knit	50	990.00
	J-II	Bass Ref.	8			1	Dome			45-20 ± 3	92	15	2.3k	8/5	23 x 13 x 10	Opt., Ven.	Black Cloth Black Knit	35	680.00
	K-II	Inf. Baf.	8			1	Dome			55-20 ± 3	90	15	2.7k	8/7	18 x 11 x 9	Opt., Ven.	Black Cloth Black Knit	26	465.00
	Q	Inf. Baf.	6 1/2			1 3/4	Domes			70-20 ± 1.5	90	15	2.2k	8/8	16 x 11 x 7	Opt., Ven.	Black Cloth Black Knit	24	780.00
SONANCE	M10	Inf. Baf.	4							90-11 ± 4	88	5		8/8	9 x 7 x 3	White	Opt., White	2	
	M20	Inf. Baf.	4			3/4	Dome			85-16 ± 3	86	5	5k	8/8	9 x 7 x 3	White	Opt., White	4	
	M30	Inf. Baf.	4			1	Dome			70-20 ± 2	86	5	4.5k	8/8	9 x 7 x 3	White	Opt., White	4	
	1, MkII	Inf. Baf.	6 1/2							70-10 ± 4	88	5		8/8	12 x 9 x 3	White	Opt., White	7	
	2, MkIIa	Inf. Baf.	6 1/2			1	Dome			50-20 ± 3	89	5	3.5k	8/8	12 x 9 x 3	White	Opt., White	8	
	3, MkII	Inf. Baf.	6 1/2			1	Dome	T		45-20 ± 2	88	5	2.5k	8/6	12 x 9 x 3	White	Opt., White	9	
	4	Inf. Baf.	8 1/4			1	Dome	T		35-22 ± 2	89	10	2.5k	8/8	12 x 16 x 3	White	Opt., White	11	
	Subwoofer	Compr. Slot Subwoof.	(2)6 1/2							25-140 ± 2	88	5	125	8/4	12 x 9 x 8	White	Opt., White	14	
	Subwoofer Two Powered Subwoofer	Inf. Baf. Subwoof. Powered Inf. Baf. Subwoof.	8 8						W	35-125 ± 3 20-100 ± 2	87	10	125 50, 75, 100 Inc.	8/8 8/8	16 x 12 x 3 16 x 12 x 3	White	Opt., White	11 18	
SONOGRAPHE	SL21	Bass Ref.	6 1/2			1	Dome			52-20 ± 3	90	20	1.5k	8/4	10 x 14 x 14	Oiled Oak	Opt., Foam	22	695.00
	SL500	Bass Ref. Subwoof.	10							28-110 ± 3	90	50		8/4	18 x 18 x 19	Oiled Oak	Opt., Cloth	40	595.00
	SL1000	Bass Ref. Subwoof.	(2)10							25-110 ± 3	90	50		8/4	18 x 36 x 19	Oiled Oak	Opt., Cloth	80	849.00
SONY ES	APM-66ES	Bass Ref.	10	3 1/2	Flat Diaph.	1	Flat Diaph.	M, T		30-30 +4, -8	89	20	600, 4.5k	6/	15 x 26 x 14	Oiled Wal. Opt.	Black	57 1/2	1100.00
	APM-22ES	Bass Ref.	8			1	Flat Diaph.			40-20 +4, -8	88	20	2k	6/	12 x 20 x 13	Oiled Wal. Opt.	Black	31	500.00

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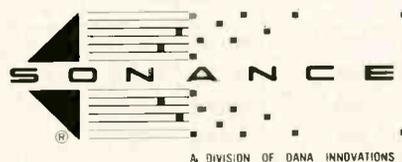


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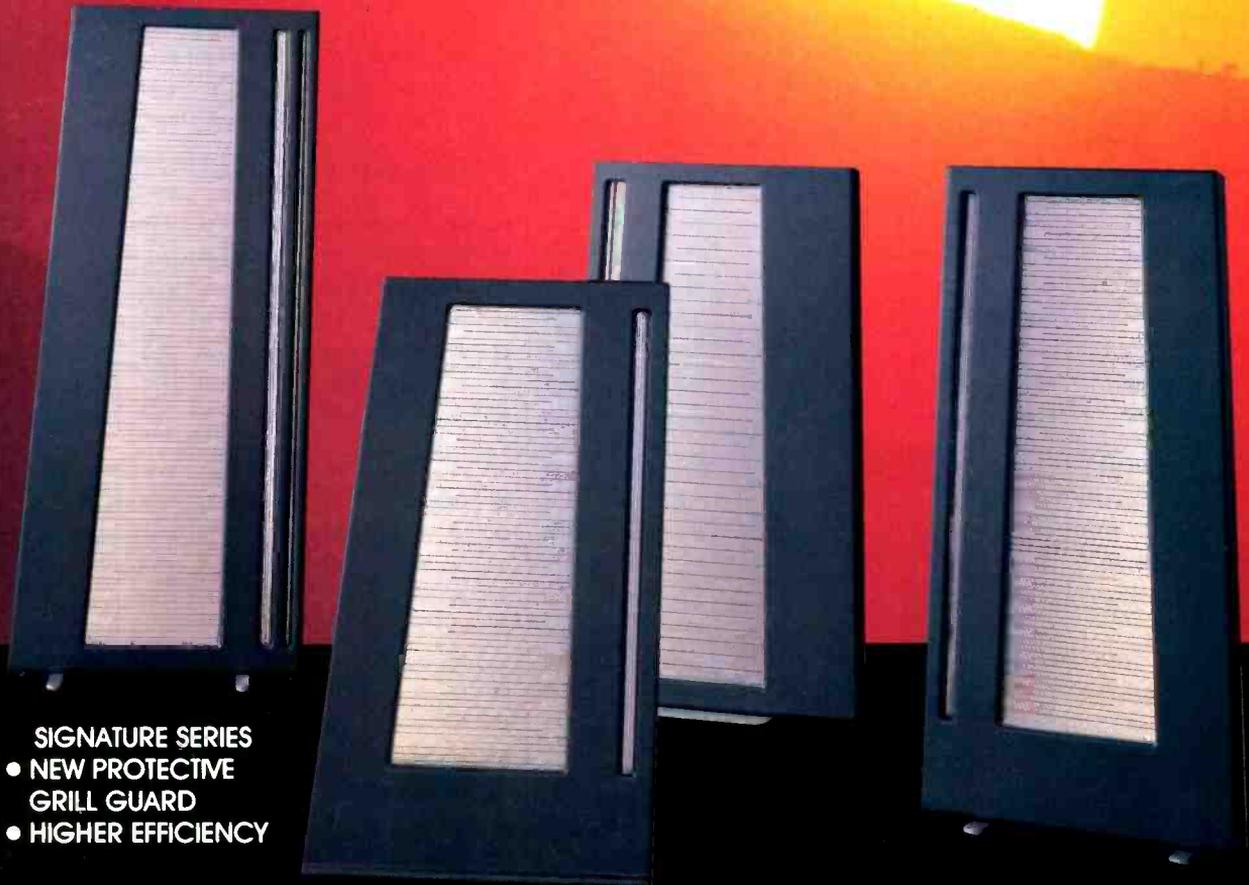


32992 Calle Perfecto  
San Juan Capistrano, CA 92675

# LOUDSPEAKERS

MANUFACTURER	Model	Design Principle	Enclosure or System Type	Woofer Diameter, Inches	Midrange Diameter, Inches	Midrange Type	Tweeter Diameter, Inches	Tweeter Type	Separate Level Control? Woofer = W, Midrange = M, Tweeter = T, Superwoofer = ST	Anchoic Frequency Response, Hz to kHz, ±dB	SPL, 1 Watt/1 Meter, dB	Recommended Min. Amp Power, Watts	Crossover Frequencies, Hz	Impedance, Ohms: Nominal/Minimum	Dimensions, Inches (To Nearest Inch)	Finish	Grille Color and Material	Weight, Lbs.	Price, \$
SOTA	Panorama	Bal. Port	7		Cone	1	Dome	No		45-22 ±3	89	25	6/4	14 x 8 x 16	Black Foam	35	1495.00 Pair		
	SOUND DYNAMICS	100 S MK II	Bass Ref.	6½		1	Dome			50-20 ±3	93	10	2k	8/4	9 x 16 x 9	Opt., Vinyl Wal. Vinyl	Black	20	250.00 Pair
		100 CM	Bass Ref.	6		1	Dome			38-23 ±3	96	5	2k	8/4	17 x 9 x 10	Wal. Vinyl	Black	20	300.00 Pair w/ Stands
		500 CM	Bass Ref.	10		1	Dome			34-23 ±3	98.5	10	2k	8/4	23 x 12 x 12	Wal. Vinyl	Black	38	500.00 Pair w/ Stands
		700 CM	Bass Ref.	12		1	Dome			32-23 ±3	101	15	1.9k	8/4	28 x 14 x 12	Wal. Vinyl	Black	45	700.00 Pair w/ Stands
1500 CM	Bass Ref.	15		1	Dome			28-23 ±3	102	20	1.8k	8/4	35 x 18 x 16	Wal. Vinyl	Black	90	900.00 Pair		
SOUND-LAB	DynaStat	Dynamic ES Hybrid ES	8			48x4	ES	W,T		35-22 ±2	88	50	350	8/6	72 x 15 x 3	Cloth	Black Knit	65	1995.00 Pair
	A-1	ES						W,T		30-22 ±2	82	100		8/3	81 x 35 x 11	Opt., Wood	Opt., Linen	185	8950.00 Pair
	A-3	ES						W,T		32-22 ±2	82	100		8/3	73 x 31 x 9	Opt., Wood	Opt., Linen	145	6350.00 Pair
	A-5	ES						W,T		35-22 ±2	82	100		8/3	71 x 39 x 7	Opt., Wood	Opt., Linen	125	3950.00 Pair
	B-1	ES Subwoof.								26-350 ±2	86	100	Adj.	50/50	81 x 44 x 4	Opt., Wood	Opt.	210	10,500.00 Pair
	B-1 Stereo	ES Subwoof.								26-350 ±2	86	100	Adj.	50/50	81 x 44 x 4	Opt., Wood	Opt.	210	6500.00 Pair
	B-3	ES Subwoof.								26-350 ±2	86	100	Adj.	50/50	73 x 44 x 4	Opt., Wood	Opt.	190	9950.00 Pair
	B-3 Stereo	ES Subwoof.								26-350 ±2	86	100	Adj.	50/50	73 x 44 x 4	Opt., Wood	Opt.	190	6250.00 Pair
SPEAKERLAB	SL88	Subwoof.	(2)8							28-110	92	30	110	8/6	14 x 16 x 23	Opt., Wood	None	70	349.00
	OAS.8	Tuned Port	6½	3	Dome	1	Oome			42-21 ±3	91	30	650,5k	8/6	21 x 8 x 10	Opt., Wood	Opt., Knit	29	279.50
	DAS2	Tuned Port	5¼			¾	Oome			50-21 ±3	91	5	2.5k	4/6	13 x 7 x 8	Opt., Wood	Opt., Knit	13	119.00
	OAS3	Tuned Port	6½			¾	Dome			42-21 ±3	91	10	2.5k	4/3.3	21 x 8 x 10	Opt., Wood	Opt., Knit	23	179.00
	OAS4	Tuned Port	8			¾	Oome			36-21 ±3	92	20	2.5k	4/3.3	28 x 10 x 12	Opt., Wood	Opt., Knit	39	239.00
	OAS5	Tuned Port	8	6½	Cone	1	Oome			34-21 ±3	93	20	180,2.5k	4/3.2	13 x 11 x 13	Opt., Wood	Opt., Knit	47	349.00
	DAS6	Tuned Port	10	8	Cone	1	Dome			30-21 ±3	94	20	180,2.5k	4/3.4	36 x 12 x 14	Opt., Wood	Opt., Knit	62	459.00
	OAS7	Tuned Port	10,12	6½	Cone	1	Dome			25-21 ±3	94	20	180,350,3k	4/3.2	38 x 14 x 16	Opt., Wood	Opt., Knit	86	569.00
	OAS8	Tuned Port	10,12	6½,3	Cone, Dome	1	Dome			23-21 ±3	94	20	150,350,1.5k,5k	4/3.2	46 x 16 x 13	Opt., Wood	Opt., Knit	105	899.00
	DAS SW	Subwoof.	10							30-160 ±3	92	20	150	8/6	18 x 18 x 18	Opt., Wood	Opt., Knit	62	359.00
SPECTRUM LOUDSPEAKERS	New 108A	Reflex	8			1½,½	Cone, Dome			55-20 ±3	92	15	2.3k	8/8	15 x 12 x 10	Opt., Wood	Black Knit	39	269.00 Pair
	208B	Reflex	8			1	Dome			39-20 ±2	91	20	1.6k	8/6	26 x 15 x 11	Opt., Wood	Black Knit	41	449.00 Pair
	410	Reflex	10			1	Dome			29-20 ±1.5	89	30	1.2k	8/6	38 x 15 x 12	Opt., Wood	Black Knit	65	799.00 Pair
SPENOOR	LS 3/5A	Inf. Baf.	4½			1	Dome			80-20 ±3	83	25	3k	15/8	12 x 7 x 7	Opt., Wood	Black Cloth	12	550.00 Pair
	Prelude MKII	Bass Ref.	8			1	Dome			50-20 ±3	88	20	3k	8/7	20 x 10 x 11	Opt., Wood	Black Cloth	28	650.00 Pair
	SP-2	Bass Ref.	8			¾	Dome			50-20 ±3	88	25	3k	8/7	20 x 10 x 11	Opt., Wood	Black Cloth	32	850.00 Pair
	BC-1	Bass Ref.	8			1¼,¾	Oomes			45-18 ±3	85	25	3k,13k	8/7	25 x 12 x 12	Opt., Wood	Black Cloth	38	1095.00 Pair
	SP-1	Bass Ref.	8			1¼,¾	Oomes			45-20 ±3	88	25	3k,13k	8/7	25 x 12 x 12	Opt., Wood	Black Cloth	42	1195.00 Pair
	SA-3	Bass Ref.	12			1½	Dome			38-20 ±2	90	40	2k	8/7	34 x 15 x 18	Opt., Wood	Black Cloth	85	2500.00 Pair
	SPICA	Angelus	Inf. Baf.	8			1	Dome			45-17.5 ±3	87	25	3.4k	8/6	46 x 21 x 10	Opt., Wood	Black Cloth	57
TC-50	Inf. Baf.	6½			1	Oome			60-17 ±3	84	25	2.7k	4/	13 x 16 x 12	Opt., Wood	Black Cloth	45	550.00 Pair	
SPL	1000	Bass Ref.	(2)5¼			¾	Dome			40-20 ±3	90	10	3k	8/4	21 x 10 x 12	Opt., Wood	Black Knit	26	400.00 Pair
	2000	Pas. Rad.	8			1	Dome			35-22 ±3	95	10	2.2k	8/4	33 x 12 x 9	Opt., Wood	Black Knit	33	500.00 Pair
	3000	Bass Ref.	(2)8			1	Dome			30-22 ±3	96.5	15	2.2k	8/4	37 x 12 x 16	Opt., Wood	Black Knit	52	700.00 Pair
	4000	Bass Ref.	(2)10			1	Dome			25-22 ±3	98	20	2.2k	8/4	43 x 13 x 16	Opt., Wood	Black Knit	65	900.00 Pair
SRT	Bolero	Ported	5¼			1	Dome			50-19 ±3	90	10	300,3k	4/3.5	8 x 9 x 14	Opt., Wood	Black Knit	17	1580.00 Pair
STILLWATER DESIGNS	Hideaways	Pas. Rad.	8			1	Dome			35-20 ±3	92	10	3k	8/4	17 x 30 x 5	Black Knit	Black Knit	55	469.50 Pair

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# LOUDSPEAKERS

MANUFACTURER	Model	Design Principle, Enclosure or System Type	Woofer Diameter, Inches	Midrange Diameter, Inches	Midrange Type	Tweeter Diameter, Inches	Tweeter Type	Separate Level Controls	Woofer = W, Midrange = M, Tweeter = T, Superwoofer = ST	Amplitude Frequency Response, Hz to kHz, ±dB	SPL, 1 Watt/1 Meter, dB	Recommended Min. Amp Power, Watts	Crossover Frequencies, Hz	Impedance, Ohms, Nominal/Minimum	Dimensions, Inches (To Nearest Inch)	Finish	Grille Color and Material	Weight, Lbs.	Price, \$
STREAMLINE SYSTEMS	M-1 Nearfield Monitors	Vented	8			1	Dome			42-24	88	20	2.4k	8/6	16 x 10 x 7	Oak	Brown	28	1800.00 Pair
SUMO	Opus Two	Inf. Baf.	6½			1	Dome			42-24 +0, -3	85	50	2.5k	4/3.4	38 x 11 x 5	Oak	Black Knit	46	699.00 Pair
	Opus Three	Inf. Baf.	6½			1	Dome			42-24 +0, -3	85	50	2.5k	4/3.4	11 x 10 x 16	Oak	Black Knit	68	649.00 Pair
	Samson	Ducted Port Subwoof.	15							25-125 ±0.5	91	200	Sel.	8/7	30 x 24 x 19	Oak	Black Knit	150	749.00 Pair
SYMDEX AUDIO SYSTEMS	Epsilon	Ac. Sus.	10	6½	Cone	1	Dome						100, 2.8k	8/	13 x 13 x 48	Oak	Black Knit	110	2000.00 Pair
	Gamma	Ac. Sus.	6½			1	Dome						2.8k	8/	6 x 10 x 39	Oak	Black Knit	45	1000.00 Pair
	E.L.S.A.	Ac. Sus.	6½			1	Dome						2.8k	8/	8 x 10 x 16	Oak	Black Knit	25	550.00 Pair
SYNTHESIS	Reference System	Bass Ref. Sat. & Subwoof. Bass Ref.	(2)10	7	Cone	1, ½x2	Dome, Leaf	W		25-35 ±3	91	50	100, 1.25k, 20k	8/4	Four Pieces & Xover	Oiled Oak	Opt., Knit	350 Sys.	6800.00 Sys.
	LM 310	Bass Ref.	10	7	Cone	1	Dome			28-20 ±3	91	20	85, 1.25k	8/4	14 x 15 x 44	Oiled Oak Knit	Opt., Knit	90	3250.00 Pair
	LM 300	Bass Ref.	10	7	Cone	1	Dome			30-20 ±3	91	20	85, 1.25k	8/4	14 x 15 x 44	Wrap Knit	Opt., Knit	90	2450.00 Pair
	LM 260	Bass Ref.	8			1	Dome			42-20 ±3	91	20	1.25k	8/4	11 x 12 x 40	Oiled Oak Knit	Opt., Knit	58	1695.00 Pair
	LM 250	Bass Ref.	8			1	Oome			45-20 ±3	91	20	1.25k	8/4	11 x 11 x 34	Oiled Oak Knit	Opt., Knit	47	1185.00 Pair
	LM 210	Bass Ref.	6½			1	Oome			48-20 ±3	89	20	1.5k	8/4	11 x 11 x 34	Oiled Oak Knit	Opt., Knit	42	1195.00 Pair
	LM 200	Bass Ref.	6½			1	Dome			48-18 ±3	89	20	1.5k	8/4	10 x 10 x 34	Oiled Oak Knit	Opt., Knit	40	850.00 Pair
	LM 20X	Bass Ref.	6½			1	Dome			52-20 ±3	90	20	1.25k	8/4	10 x 14 x 14	Oiled Oak Knit	Opt., Knit	22	950.00 Pair
	TANNDY	Stirling HW	Tuned Port	10			2	Horn	T		35-20 ±3	93	30	1.2k	8/6	28 x 19 x 12	Oiled Wal.	Beige Knit	48½
Edinburgh HW		Tuned Port	12			2	Horn	T		30-20 ±3	95	30	1.2k	8/6	40 x 26 x 17	Oiled Wal.	Beige Knit	97	4995.00 Pair
G.R.F. Memory HW		Tuned Port	15			2	Horn	M, T		29-20 ±3	96	30	1k	8/6	43 x 32 x 19	Oiled Wal.	Beige Knit	137	5995.00 Pair
R.H.R. HW		Coaxial Horn	15			2	Horn	M, T		35-20 ±3	95	30	1k	8/6	44 x 28 x 27	Oiled Wal.	Beige Knit	165	8995.00 Pair
Westminster HW		Coaxial Horn	15			2	Horn	M, T		18-20 ±3	99	30	1k	8/6	60 x 40 x 25	Oiled Wal.	Beige Knit	253	9495.00 Pair
C-6		Tuned Port	6½			¾	Dome			57-20 ±3	90	25	2.5k	8/4	12 x 8 x 9	Black Vinyl Knit	Black Knit	10	299.00 Pair
C-8		Tuned Port	8			1	Dome			55-20 ±3	92	25	2.8k	8/4	19 x 10 x 9	Black Vinyl Knit	Black Knit	17½	399.00 Pair
C-10		Tuned Port	10			1	Dome			47-20 ±3	93	25	3k	8/4	24 x 12 x 12	Black Vinyl Knit	Black Knit	27	499.00 Pair
Eclipse		Tuned Port	6			1	Dome			55-22 ±3	92	25	3k	8/6	15 x 8 x 9	Black Vinyl Knit	Black Knit	10½	399.00 Pair
Mercury "S"		Tuned Port	8			1	Dome			48-22 ±3	92	25	3k	8/6	20 x 10 x 9	Black Vinyl Knit	Black Knit	17	599.00 Pair
M-20 Gold "S"		Tuned Port	8			1	Dome			48-22 ±3	92	25	Sel.	8/6	20 x 10 x 9	Black Vinyl Knit	Opt., Knit	17	799.00 Pair
Jupiter "S"		Tuned Port	(2)8			1	Dome			42-22 ±3	94	25	3k	8/5	26 x 10 x 11	Wood Black Vinyl	Black Knit	29	899.00 Pair
TDL	Reference Standard Monitor	Trans. Line	(2) 9½x6½	(2)4½	Cones	(3)1	Domes			16-35	87	50	200, 3.5k, 13k	8/5	20 x 22 x 48	Wal./Brass	Brown	154	6995.00 Pair
	Studio 3	Trans. Line	(2) 9½x6½	4½	Cone	(2)1	Domes			18-35	87	40	300, 3.5k, 13k	8/5	18 x 12 x 47	Wal./Brass	Brown	103	4595.00 Pair
	Studio 2	Trans. Line	(2)8			1	Oome			20-20	87	30	3k	8/5	16 x 12 x 39	Wal./Brass	Brown	59	1995.00 Pair
	Super Compact	Bass Ref.	8			1	Dome			24-20	87	30	3k	8/5	15 x 11 x 35	Wal./Brass	Brown	48	1595.00 Pair
	Compact	Bass Ref.	8			1	Dome			28-20	87	25	3k	8/4	22 x 11 x 20	Wal./Brass	Brown	53	1095.00 Pair
		Bass Ref.	6			1	Dome			30-20	86	20	3k	8/4	12 x 9 x 18	Wal./Brass	Brown	44	935.00 Pair
TEAC	ST-X1	Ac. Sus.	6½			¾	Dome			60-22 ±3	89	10	2k	6/	10 x 15 x 7	Sim. Oak	Gray Knit	10	239.95 Pair
	ST-X3	Ac. Sus.	8			¾	Oome			55-22 ±3	89	15	1.5k	6/	12 x 20 x 8	Sim. Oak	Gray Knit	16	319.95 Pair
	ST-X5	Ac. Sus.	10	5	Cone	¾	Oome	M		45-22 ±3	90	20	1.2k, 6k	6/	13 x 30 x 8	Sim. Oak	Gray Knit	29	479.90 Pair
TECHNI-COUSTICS	Alpha	Vented	6½			1	Dome			48-20 ±3	90	15	5k	8/6.6	20 x 13 x 9	Wal. Lam.	Black Knit	25	250.00
	Beta	Vented	10			1	Dome			36-20 ±3	92	15	3.5k	6/3.8	27 x 17 x 11	Wal. Lam.	Black Knit	52	399.00
	Gamma	Vented	8			1	Dome			32-20 ±3	89	25	3k	8/5.6	25 x 16 x 11	Wal. Lam.	Black Knit	48	450.00
TECHNICS	SB-RX50	Bass Ref.	9½			1½	Flat	T		30-48	87		2.2k	6/	12 x 19 x 11	Sim. Wood	Brown	36¾	1330.00 Pair
	SB-RX30	Bass Ref.	9			1½	Flat	No		44-30	88		2.5k	6/	10 x 15 x 9	Sim. Wood	Brown	16½	615.00 Pair
	SB-F2MK2K	Ac. Sus.	5½			1½	Flat			55-33	88		2.5k	8/4	6 x 10 x 7	Wood Silv.	Black Metal	11	500.00 Pair



## “Why all Boston Acoustics

# speakers sound alike. (More or less, that is.)”

Andy Petite, chief designer, Boston Acoustics.

“At Boston Acoustics, live music is our basic reference standard. And since we design each of our speakers to sound musically accurate, all of our systems have a remarkable sonic resemblance.

“Any full-range speaker system, whatever its size, should have good octave-to-octave tonal balance and wide dispersion. We provide these qualities in *all* of our speaker systems—from the A40 bookshelf to the T1000 tower. (From our long experience in listening to many competitive speaker lines, the same can be said of only a few.)

“In larger rooms and at higher listening levels, the differences—and the superiority—of our more expensive systems begin to emerge. They can play louder without strain, and reproduce deeper bass. *But this doesn't detract from the musicality, accuracy and tonal balance of our smaller speakers.*

“How much sound a speaker produces in your listening room also depends on the room's size, the music you listen to, and how loud you play it. Because all Boston Acoustic speaker systems—bookshelf, floor-standing and tower—meet all *our* standards, there's at least one that should meet *your* special requirements and conditions.\*

“So when you visit a Boston Acoustics dealer, ask to hear a Boston speaker. *Any* Boston. We can't promise you perfection, but we *will* bring you as close to the music as the state of the art allows.”

\*“It certainly helps that we design and build our own speakers—all with the same high quality materials. Further, we manufacture all our speakers to such tight tolerances that any two samples of a given model are virtually identical. And to insure this, we test each completed system—every single one—before it leaves the factory.

“Finally, sonic similarity is especially important with surround-sound systems. An all-Boston system assures the greatest sonic impact.”



### The A40 Series II.

\$170 a pair. † Our most popular bookshelf system. “...attains an aura of spaciousness surpassed only by some of the far more expensive multi-directional speakers.” *The New York Times.*



### The T830.

\$500 a pair. † Our most popular tower system. “...we were enormously impressed...superb sound, practical size and proportions, and affordable price.” Julian Hirsch, *Stereo Review.*

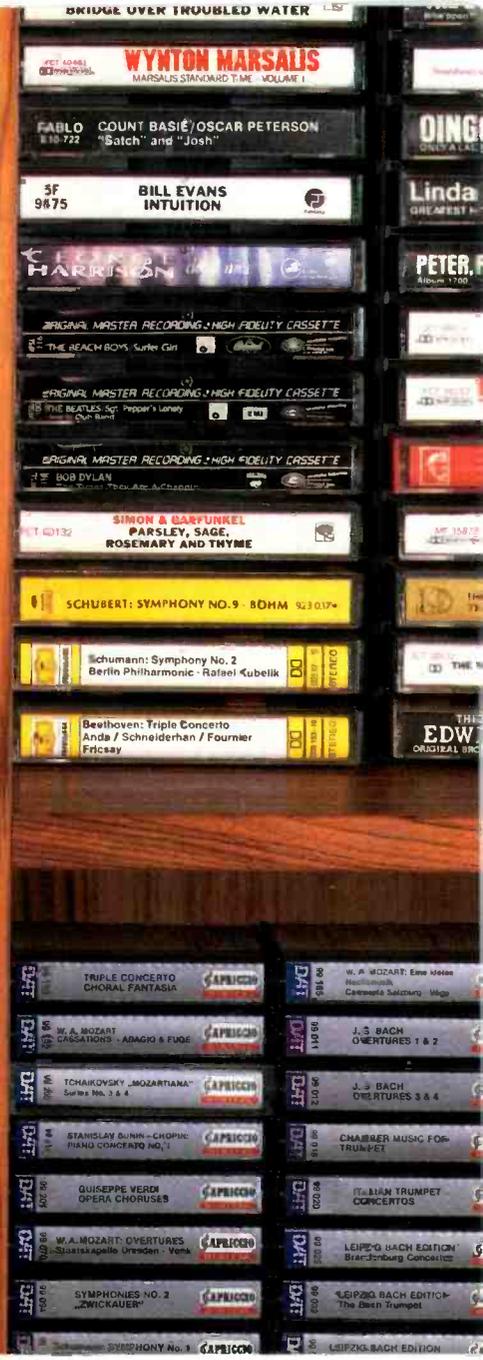
† Suggested retail price.

## **Boston**Acoustics

247 Lynnfield Street, Peabody, MA 01960 (508) 532-2111

# LOUDSPEAKERS

MANUFACTURER	Model	Design Principle	Enclosure or System Type			Midrange Diameter, Inches	Midrange Type	Tweeter Diameter, Inches	Tweeter Type	Sensitivity Level (1 Watt/1 Meter, dB)	Impedance (Ohms)	Nominal/Minimum	Crossover Frequencies, Hz	Dimensions, Inches (To Nearest Inch)	Finish	Grille Color and Material	Weight, Lbs.	Price, \$
			Woofer Diameter, Inches	Midrange Diameter, Inches	Midrange Type													
TECHNICS (Continued)	SB-F1MK2K	Ac. Sus.	4 3/4			1 1/2	Cone	No	48-35	86		2k	8/	6 x 9 x 6	Silv.	Black Metal	6 3/4	425.00
	SB-S20	Bass Ref.	4			2	Cone	No	97-20	88		9k	8/	6 x 9 x 6	Sim. Wood	Black Metal	4 5/8	125.00
	SB-C250	Bass Ref.	7			1	Dome	No	47-30	86		3k	8/	9 x 15 x 8	Sim. Wood	Brown	11	425.00
	SB-R100	Flat Coax					Flat Coax	No	55-30	87		2k	8/	13 x 13 x 3	Sim. Wood	Black Metal	9 7/8	600.00
	SB-L36	Bass Ref.	10				Cone	No	57-20	92		4k	8/	13 x 23 x 9	Sim. Wood	Black Metal	16	200.00
	SB-L56	Bass Ref.	10	4	Cone	2 1/2	Cone	No	47-20	92		2.5k,5k	8/	13 x 26 x 11	Sim. Wood	Black	19	290.00
	SB-L76	Bass Ref.	12	4	Cone	2 1/2	Cone	No	43-20	92		2.5k,5k	8/	14 x 27 x 13	Sim. Wood	Black	24	350.00
	SB-L96	Bass Ref.	15	4	Cone	2 1/2	Cone	No	42-20	93		3k,5k	8/	18 x 31 x 13	Sim. Wood	Black	36	240.00
TERPSICHORE	QT-1	Trans. Line	5 1/2			1	Inv. Dome		40-20 ±3	90	35	400,3.8k	8/3	8 x 10 x 40	Opt.	Opt.	45	1550.00
	QT-2	Trans. Line	7			1	Inv. Dome		30-20 ±3	92	60	400,4k	8/3	10 x 15 x 44	Opt.	Opt.	100	1995.00
	Bifocal Woofer	Trans. Line Subwoof.	(2)8						52-18 ±2	92	100		8/		Opt.	Opt.	100	1200.00
THIEL	CS 3.5	Electr.	10	4	Cone	1	Dome		20-20 ±2	88	40	400,3k	4/4	13 x 13 x 41	Teak	Black Cloth	75	2450.00
	CS 2	Bass Ref.	8	3	Cone	1	Dome		38-20 ±2	87	40	800,3k	6/5	12 x 12 x 39	Teak	Black Cloth	62	1650.00
	CS 1.2	Bass Ref.	6 1/2			1	Dome		52-18 ±2	87	40	2.5k	4/4	10 x 10 x 36	Teak	Black Cloth	47	1090.00
TIARE ACOUSTICS	TL-17A	Trans. Line	7			1.1	Dome		55-22 ±3	88	50	2.6k	8/4	9 x 13 x 42	Foam Wrap	Black Foam	48	995.00
	TL-12	Ac. Sus.	7			1.1	Dome		65-21 ±3	91	30	2.1k	8/5	8 x 12 x 17	Oiled Oak	Black Foam	18	595.00
TNT-LINES	M1	Bass Ref.	5 1/4			1 1/2	Inv. Dome		45-19 ±3	91.5	30	450,3.5k	8/6	9 x 11 x 15	Oak	None	25	899.00
	T2	Trans. Line	8	5 1/4	Cone	1 1/2	Inv. Dome		32-19 ±3	91.5	40	350,4.5k	8/6	Two Pieces Per Side	Oak	None	75/Side	2295.00
	T3	Trans. Line	10	5 1/4	Cone	1 1/2	Inv. Dome		20-20 ±3	92	50	350,4.5k	8/6	Two Pieces Per Side	Oak	None	100/Side	2995.00
	T1	Trans. Line	8			1 1/2	Inv. Dome		30-20 ±3	91	30	3.5k	8/4	43 x 13 x 13	Oiled Oak	Brown Knit	83	1495.00
	B1	Bass Ref.	7			1 1/2	Inv. Dome		50-21 ±3	89	30	3.5k	8/4	16 x 10 x 9	Opt., Wood	Black Knit	23	695.00
	SW1	Trans. Line, Dual V.C. Subwoof.	8				Inv. Dome		30-70 ±3	89	40	70	8/6	27 x 16 x 15	Black Lam.	Black Knit	60	500.00
TRIAD DESIGN	System Two	Sat. & Powered Subwoof.	6 1/2	3 1/2	Cone	3/4	Dome	W	35-20 ±4	88	25	150,4k	8/5	8 x 8 x 36	Opt.	Black Knit	50	1000.00
	System Four Satellite	Ac. Sus.	8			1	Dome		70-18 ±3	89	50	2k	8/6	18 x 11 x 10	Opt.	Black Knit	42	550.00
	System Four Woofer	Sat. Powered Subwoof.	(2)8						39-110 ±3	89	100			Opt.	Black Knit	42	425.00	
	Bass Base	Powered Subwoof.	8						38-120 ±3	89	70			Black	Black Knit	46	350.00	
	System Six	Sat. & Subwoof.	8	3 1/2	Cone	3/4	Dome	W	40-20 ±2	88	25	150,4k	8/5	Three Pieces	Opt.	Black Knit	26	600.00
	System Eight	Sat. & Subwoof.	10	4	Cone	3	Cone		32-20 ±2	89	50	800,6k	8/6	16 x 13 x 42	Rswd.	Black Knit	70	2500.00
UNITY AUDIO	CLA 1	Bass Ref.	10	7	Cone	1	Dome		34-20 ±2	90	40	175,1.9k	8/4	9 x 10 x 44	Oak	Black Knit	55	1700.00
	CLA 2	Bass Ref.	8	7	Cone	1	Dome		43-20 ±2	89	40	175,1.9k	8/5	9 x 10 x 37	Oak	Black Knit	45	1195.00
	CLA 3	Bass Ref.	8			1	Dome		50-20 ±2	88	40	2.1k	8/5	10 x 5 x 37	Oak	Black Knit	30	850.00
	PARM	Biamp. Sat. & Subwoof.	(2)13	(2)7	Cone	1 1/2	Dome		19-21 ±1.5	90	100/150	175,1.7k	5/3	Four Pieces	Opt.	Black Knit	380	10,000.00
	Foundation Subwoofer	Subwoof.	(2)18						16-220 ±1	94	200	75	4/4	22 x 22 x 15	Opt.	None	150	6000.00
UNIVERSAL SECURITY INSTRUMENTS	SP-1616	Inf. Baf.	3	1 1/2	Cone	1	Dome		220-19 ±6				8/4	3 x 4 x 6	Black Plast.	Black Metal	2	49.99
	SP-1717	Inf. Baf.	4	2	Cone	1	Dome		150-19 ±6				8/4	4 x 4 x 7	Black Plast.	Black Metal	3	69.99
	V-7700	Powered	4						130-20		Inc.		4/	5 x 2 x 14	Black	Black	2	39.99
	V-8800	Powered Inf. Baf.	4			2	Cone		128-16		Inc.			6 x 6 x 18	Black Vinyl	Black	13	129.99
VANDERSTEEN AUDIO	1B	Trans. Line	8			1	Dome	T	38-20 ±3	90	30	2.8k	8/6	12 x 10 x 36	Opt., Wood	Opt., Knit	50	650.00
	2C	Pas. Rad.	8	4 1/2	Cone	1	Dome	M, T	29-21 ±3	88	50	500,5k	8/6	16 x 10 x 36	Opt., Wood	Opt., Knit	63	1195.00
	4A	Inf. Baf., Biamp	8, (2)12	4 1/2	Cone	1 1/2, 3/4	Domes	M, T	26-30 ±3	88	70	80,500, 5k, 13k	8/4	18 x 17 x 52	Opt., Wood	Opt., Knit	150	4250.00
	2W	Powered Inf. Baf. Subwoof.	(3)8					W	26-80 ±3		300	Inc.		18 x 17 x 18	Opt., Wood	Opt., Knit	90	1200.00



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RS 4000

8 Kappa

Reference Standard Plate System

# LOUDSPEAKERS

MANUFACTURER	Model	Design Principle, Enclosure or System Type	Woofer Diameter, Inches		Midrange Diameter, Inches		Tweeter Diameter, Inches		SPL, 1 Watt 1 Meter, dB		Crossover Frequencies, Hz		Impedance, Ohms: Nominal/Minimum		Dimensions, Inches (To Nearest Inch)		Grille Color and Material		Weight, Lbs.	Price, \$
VECTOR RESEARCH	VSP-82	Inf. Baf.	8			2	Cone	No	40-17.5 +3,-4	89	10	2k	8/	19 x 11 x 8	Oak	Black Knit	29 Pair	79.00		
	VSP-102	Bass Ref.	10			1	Dome	No	30-20 +2,-2.5	91	10	3.5k	8/	27 x 13 x 11	Oak	Black Knit	26	149.00		
	VSP-123	Bass Ref.	12	5	Cone	1	Dome	No	20-20 ±3	92	10	500,3.5k	8/	27 x 14 x 11	Oak	Black Knit	37	199.00		
	VSP-124	Pas. Rad.	12	5	Cone	1	Dome	No	20-20 +3,-2	92	10	500,3.5k	8/	39 x 14 x 12	Oak	Black Knit	47	259.00		
VELODYNE ACOUSTICS	ULD-12	Powered Servo Subwoofer	12					W	15-85 ±3	100 Inc.	85			21 x 16 x 17	Opt.	None	51	1195.00 w/Amp		
	ULD-15	Powered Servo Subwoofer	15					W	15-85 ±3	400 Inc.	85			22 x 17 x 18	Opt.	None	76	1795.00 w/Amp		
	ULD-18	Powered Servo Subwoofer	18					W	15-85 ±3	400 Inc.	85			23 x 31 x 21	Opt.	None	105	2595.00 w/Amp		
VINTEC ACOUSTICS	Vesuvius	Subwoofer	(2)15						16-125 ±2	93	80	Sel.	4/2	38 x 24 x 24	Oak		247	4000.00		
	Vibrato	Subwoofer	(2)10						20-150 ±2	86	40	75	4/2	28 x 23 x 19	Oak		105	1000.00		
	Valour	Bass Ref.	6½			1	Dome		37-20 ±2	87	30	2.5k	8/5	22 x 10 x 11	Oak	Black Knit	60 Pair	899.00 Pair		
	Vanguard	Bass Ref.	(2)6½			1½	Dome		32-20 ±2	91.5	30	2k	5/3	38 x 10 x 12	Oak	Black Knit	110 Pair	1499.00 Pair		
	Vinny	Bass Ref.	6½			1	Dome		45-20 ±2	86	30	2.5k	8/5	16 x 10 x 9	Oak	Black Knit	45 Pair	700.00 Pair		
VMPS	QSO 404	Ported	8			1	Dome	T	48-17 +0,-3	90	20	3.5k	8/6	18 x 12 x 9	Oiled Wal.	Black Cloth	25	229.00		
	Mini Tower Ila	Pas. Rad.	(2)10	5	Cone	(2)1	Dome, M.T, ST		28-30 +0,-3	92	20	500,4.5k, 15k	8/6	39 x 12 x 15	Dpt., Wood	Black Cloth	70	479.00		
	Tower Ila/R	Pas. Rad.	(2)12, 10	5	Cone	(2)1, ¾x3	Domes, Ribbons	M.T, ST	22-50 +0,-3	94	20	80,600, 4.5k,15k	4/3	43 x 14 x 15	Wood Opt., Wood	Black Cloth	95	714.00		
	Super Tower III	Pas. Rad.	(2)15, 12, (2)10	(4)5	Cones	(4)1, ¾x3	Domes, Ribbons	M.T, ST	17-50 +0,-3	98	20	80,500, 4.5k,15k	8/6	72 x 17 x 19	Wood Opt., Wood	Black Cloth	300	2288.00		
	QSO 808	Ported	8	5	Cone	1	Dome	M.T	34-20 ±3	94	20	600,5k	8/6	26 x 15 x 12	Oiled Wal.	Black Knit	50	630.00		
	Tower II/R	Multiband Bass	(3)12	5	Cone	1,(1)	Dome, Ribbons	M.T, ST	22-50 ±3	95	20	80,400,4k, 12k	8/6	43 x 15 x 15	Oiled Wal.	Black Knit	95	1329.00		
	Super Tower/R	Multiband Bass	(2)15, 12	(2)5	Cones	(2)1, (2)2	Domes, Ribbons	M.T, ST	20-50 ±3	96	20	80,400,4k, 12k	8/6	49 x 22 x 17	Oiled Wal.	Black Knit	150	1938.00		
	Super Tower Ila/R Special Edition	Multiband Bass	(2)15, (3)12	(4)5	Cones	(2)1, (1)	Domes, Ribbons	M.T, ST	17-50 ±3	100	20	80,400,4k, 12k	8/6	76 x 22 x 17	Oiled Wal.	Black Knit	250	3876.00		
	Widerange Ribbon II	Pas. Rad.	12, (2)8	69L	Ribbon	(1)	Ribbon	M.T	17-50 ±3	92	50	80,300, 18k	3/3	Five Pieces	Oiled Wal.	Black Knit	800 Sys.	9500.00 Sys.		
	Smaller Subwoofer	Pas. Rad.	12						28-600 ±3	92	20	Var.	8/6	26 x 15 x 16	Oiled Wal.	Black Knit	52	299.00		
Original Subwoofer	Pas. Rad.	12						19-600 ±3	94	20	Var.	8/6	27 x 22 x 17	Oiled Wal.	Black Knit	95	375.00			
Larger Subwoofer	Pas. Rad.	15,12						17-250 ±3	95	20	Var.	4/3	39 x 22 x 17	Oiled Wal.	Black Knit	140	549.00			
WAVEFORM RESEARCH	The Waveform Loudspeaker	Bass Ref.	15	(2)6½	Cones	1½, (1)	Dome, Ribbon	W	28-20 ±1	90	150	150,3k,9k	8/4	20 x 30 x 48	Oiled Chrry	Gray Silk	210	17,000.00		
	The Waveform Loudspeaker HFM	Bass Ref.	15	(2)6½	Cones	1½, (1)	Dome, Ribbon	W	28-20 ±1	90	150	150,3k,9k	8/4	20 x 30 x 48	Black Lacq.	Black Knit	180	9800.00		
WENGER/ALS	1104	Pas. Rad.	10	5	Cone	(2)1	Domes		32-20 ±3	91	50	650,5k	6/4	16 x 13 x 9	Opt.	Black Knit	35	857.00		
	1124	Pas. Rad.	12	5	Cone	(2)1	Domes		25-20 ±3	93	50	500,5k	6/4	34 x 15 x 11	Black	Black Knit	57	987.00		
	1154SW	Pas. Rad. Subwoofer	15						20-800	95	150		6/4	34 x 19 x 15	Black	Black Knit	65	499.00		
	2154	Pas. Rad. Subwoofer	(2)15						20-800	98	150		6/4	32 x 34 x 19	Black	Black Knit	125	813.00		
	4154	Pas. Rad. Subwoofer	(4)15						20-800	101	250		6/4	33 x 33 x 33	Black	Black Knit	250	1546.00		
	1154S	Pas. Rad. Triamped Pas. Rad.	15	10	Cone	(2)5, 2	Cones, Compr.	T	32-20 ±3	94	400	125,1.4k, 5k	6/4	33 x 23 x 18	Opt.	Black Knit Opt.	165	3500.00		
WESTLAKE AUDIO	SM-1		(2)18	12, (2)2	Cone, Horns	½	Compr.	M.T, ST	20-20	101	250	200,800, 3.2k,10k	4/2	39 x 49 x 32	Oiled Wal.	Brown Knit	450	11,450.00		
	HR-1		(2)15	10,2	Cone, Horn	1	Compr.	M.T	34-16	98	250	250,1k, 5.2k	4/2	30 x 44 x 20	Oiled Wal.	Brown Knit	350	5235.00		
	HR-1VF		(2)15	10,2	Cone, Horn	1	Compr.	M.T	34-16	98	250	250,1k, 5.2k	4/2	30 x 44 x 20	Oiled Wal.	Brown Knit	375	6499.00		
	TM-3		(2)15	2	Compr.	1	Compr.	M.T	34-16	98	250	800,4k	4.2	30 x 44 x 20	Oiled Wal.	Brown Knit	325	4795.00		
	TM-3VF		(2)15	2	Compr.	1	Compr.	M.T	34-16	98	250	800,4k	4.2	30 x 44 x 20	Oiled Wal.	Brown Knit	370	5495.00		
	HR-7		(2)12	10,1	Cone, Horn	½	Compr.		48-20	96	250	400,1.8k, 7.5k	4/2	24 x 38 x 18	Oiled Wal.	Brown Knit	183	4675.00		
	BBSM-15		(2)15	10	Cone	1	Compr.	T	38-16	98	200	350,1.8k	4/2	27 x 41 x 25	Oiled Wal.	Brown Knit	345	3795.00		

(Continued)

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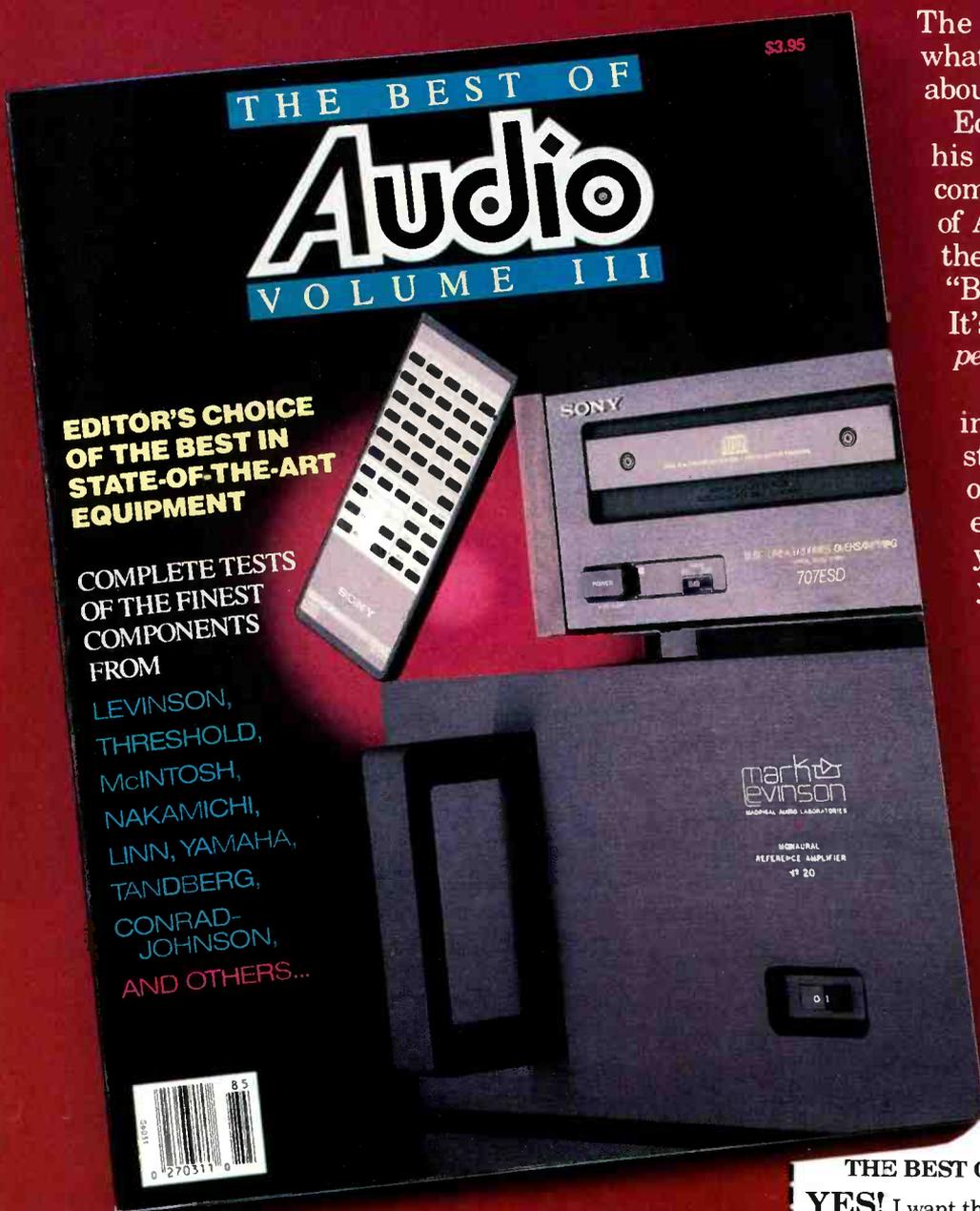
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# LOUDSPEAKERS

MANUFACTURER	Model	Design Principle, Enclosure or System Type	Woofer Diameter, Inches			Midrange Diameter, Inches			Tweeter Diameter, Inches			Separate Level Controls? Woofer = W, Midrange = M, Tweeter = T, Super-tweeter = ST	Angular Frequency Response, Hz to kHz, ±dB	SPL, 1 Watt/1 Meter, dB	Recommended Min. Amp Power, Watts	Crossover Frequencies, Hz	Impedance, Ohms, Nominal/Minimum	Dimensions Inches (To Nearest Inch)	Finish	Grille Color and Material	Weight, Lbs.	Price, \$
			Woofer	Midrange	Tweeter	Woofer	Midrange	Tweeter	Woofer	Midrange	Tweeter											
WESTLAKE AUDIO (Continued)	BBSM-12		(2)12	6½	Cone	1¼	Dome		60-15	89	200	500,4k	4/2	19 x 34 x 23	Oiled Wal.	Brown Knit	160	1749.00				
	BBSM-12VF		(2)12	6½	Cone	1¼	Dome		60-15	89	200	500,4k	4/2	28 x 45 x 15	Oiled Wal.	Brown Knit	227	1899.00				
	BBSM-10		(2)10	6½	Cone	1¼	Dome		40-15	88	200	600,4k	4/2	16 x 30 x 22	Oiled Wal.	Brown Knit	115	1549.00				
	BBSM-8		(2)8	3½	Cone	1	Dome		65-18	85	200	600,5k	4/2	13 x 26 x 17	Oiled Wal.	Brown Knit	90	1199.00				
	BBSM-6		(2)6	3½	Cone	1	Dome		70-18	82	100	600,6k	4/2	11 x 22 x 13	Oiled Wal.	Brown Knit	55	933.00				
	BBSM-5		(2)5			1¼	Dome		80-15	81	100	1.2k	4/2	11 x 18 x 10	Oiled Wal.	Brown Knit	35	718.00				
	BBSM-4		(2)4			¾	Dome		65-20	80	100	1.5k	4/2	8 x 15 x 10	Oiled Wal.	Brown Knit	25	589.00				
WHARFEDALE	Delta 30	Tuned Port Inf. Bat.	6½			¾	Dome		45-20 ±3	89	15	5k	8/6.4	15 x 8 x 6	Black Oak	Black Knit	17½ Pair	135.00				
	Delta 50		8			¾	Dome		45-20 ±3	89	15	5k	8/6.4	18 x 10 x 8	Black Oak	Black Knit	26¾ Pair	175.00				
	Delta 70	Tuned Port	8			¾	Dome		40-20 ±3	89	15	3.5k	8/6.4	21 x 11 x 8	Black Oak	Black Knit	33 Pair	225.00				
	Delta 90	Tuned Port	10	4	Cone	¾	Dome		35-20 ±3	89	15	1k,5k	8/6.4	27 x 12 x 9	Black Oak	Black Knit	33 Pair	350.00				
	504.2	Tuned Port	4			¾	Dome		48-22 ±3	86	20	3.5k	8/6.4	11 x 7 x 8	Red Mahog	Brown Knit	20 Pair	330.00				
	507.2	Tuned Port	8			¾	Dome		40-22 ±3	90	15	5k	8/6.4	19 x 9 x 11	Red Mahog	Brown Knit	22½ Pair	470.00				
	510.2	Tuned Port	8	4	Cone	¾	Dome		35-22 ±3	90	15	1k,5k	4/3.2	24 x 11 x 11	Red Mahog	Brown Knit	30¾ Pair	700.00				
	512.2	Tuned Port	(2)8	4	Cone	¾	Dome		30-22 ±3	90	15	1k,5k	8/6.4	35 x 11 x 11	Red Mahog	Brown Knit	53¾ Pair	900.00				
	Diamond III	Tuned Port	4			¾	Dome		50-20 ±3	86	20	3.5k	8/6.4	9 x 7 x 8	Black Oak	Black Knit	15½ Pair	150.00				
	Ritz Diamond	Tuned Port	6½			¾	Dome		40-22 ±3	90	15	5k	8/6.4	14 x 9 x 8	Black Oak	Black Knit	17½ Pair	225.00				
	Active Diamond Plus	Powered Tuned Port	4			¾	Dome		50-20 ±3		20 Inc.	3.5k		9 x 7 x 8	Black Oak	Black Knit	18 Pair	175.00				
WILSON AUDIO SPECIALTIES	WAMM Series VI	Sat. & Subwoof.	18, (2) 8¼x 11¼	(2)4½	Cones	(2)1, (9) 5x5	Domes, ES	W, M, T, ST	17-30	98	50	55,400, 3k	4/3	Four Pieces	Opt.	Black Foam	1850 Sys.	80,000. Sys. w/EQ				
	WATT	Ported	6½			1	Dome	No	50-18 ±3	90	30	1.8k	4/1	12 x 14 x 17	Opt.	Black Foam	120 Pair	From 5200.00				
	WHOW Universal Powered WHOW	Ported Subwoof. Powered Ported Subwoof.	18					W	16-55	91	80	55	30/11	17 x 29 x 40	Rswd.		210	10,250. w/Xover				
			18				W	16-55	91	400 Inc.	55		17 x 29 x 40	Rswd.		260	13,250. w/Xover					
WOLCOTT AUDIO	Omnisphere MDF	Ported	(4)6½			1½	Dome	T	30-18 ±3	90	20	2k	8/5	21 x 21 x 50	Oiled Wal.	Brown Knit	100	3750.00 Pair				
	Omnisphere MDH-1	Ported	(4)6½			1½	Dome	No	30-18 ±3	90	20	2k	8/5	21 x 21 x 48	Gray Nxtl.	Black Foam	100	2950.00 Pair				
YAMAHA	NS-1	Ac. Sus.	6½			1½	Dome	T	60-30	66	30	2.5k	6/	8 x 15 x 11	Lacq. Birch	Brown Knit	21	499.00				
	NS-W10	Powered Subwoof.	8					W	30-120		60 Inc.	Sel.	6/	15 x 10 x 17	Black	Black Knit	29¾	359.00				
	NS-A90	Ac. Sus.	4½			2	Cone		120-18	91	5	3k	4/	9 x 9 x 4	White	White Knit	4½	69.95 Pair				
	NS-A95	Ac. Sus.	4½			2	Cone		120-18	91	5	3k	4/	9 x 9 x 4	Black	Black Knit	4½	69.95 Pair				
	NS-1000M	Ac. Sus.	12	3½	Dome	1¼	Dome	M, T	40-20 ±3	98	30	500,6k	6/	14 x 27 x 13	Black	Black Knit	68	749.00				
	NS-20M	Ac. Sus.	9	2½	Cone	1¼	Dome		55-20 ±3	91	30	2k,10k	6/	11 x 16 x 10	Black	Black Knit	21	249.00				
	NS-100X	Ac. Sus.	9	2½	Dome	1¼	Dome		45-20 ±3	91	30	2k,10k	6/	12 x 21 x 11	Black	Black Knit	31	299.00				
	NS-10M	Ac. Sus.	7			1¼	Dome		60-20 ±3	91	30		8/	9 x 15 x 8	Black	Black Knit	13	199.00				
	NS-W2	Powered Bass Ref. Subwoof. Bass Ref.	10						30-100	91	40 Inc.			18 x 14 x 13	Black	Black Knit	27	289.00				
	NS-A10.3	Bass Ref.	10	4	Cone	1	Dome		29-20 ±3	91	30	500,3k	8/	37 x 12 x 10	Oak Vinyl	Black Knit	45	259.00				
	NS-A10.2	Bass Ref.	10			1	Dome		32-20 ±3	91	30	3k	8/	32 x 12 x 10	Oak Vinyl	Black Knit	35	209.00				
	NS-A8.2	Bass Ref.	8			1	Dome		35-20 ±3	91	30	3k	8/	28 x 11 x 9	Oak Vinyl	Black Knit	25	169.00				
NS-7.2	Bass Ref.	7			¾	Dome		37-20 ±3	92	30	3k	8/	18 x 10 x 9	Oak Vinyl	Black Knit	14	109.00					
YANKEE AUDIO	FPR-72	Planar Ribbon	1020 Sq. In.						29-20 ±2	88	75		3/3	30 x 72 x 3	Opt. Wood	Opt.	270 Pair	4800.00 Pair				
	FPR-64	Planar Ribbon	864 Sq. In.						33-20 ±2	88	75		3/3	30 x 64 x 3	Opt. Wood	Opt.	236 Pair	4600.00 Pair				
ZSE	380	Dipole							35-25	91	50	1.2k	8/6	34 x 17 x 27	Oiled Wal.	Brown Knit	45	1800.00 Pair w/Xover				



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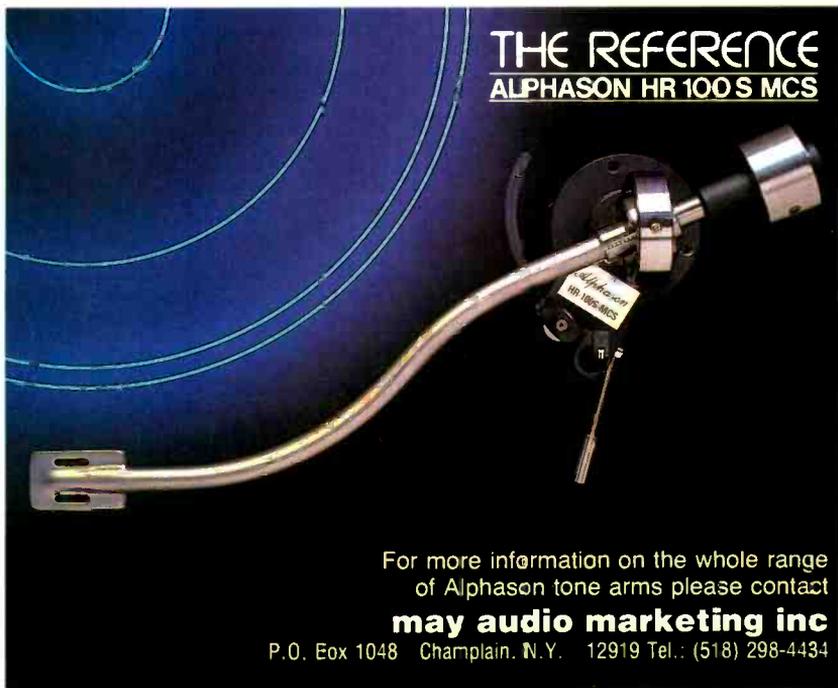
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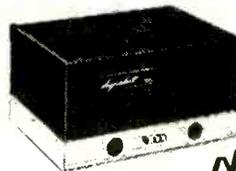
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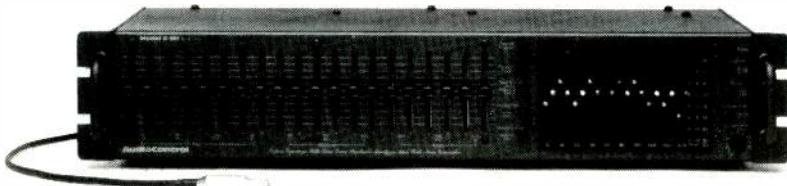
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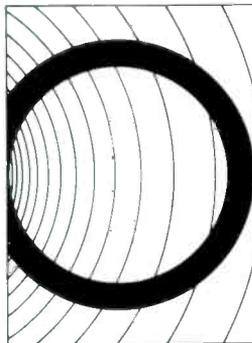
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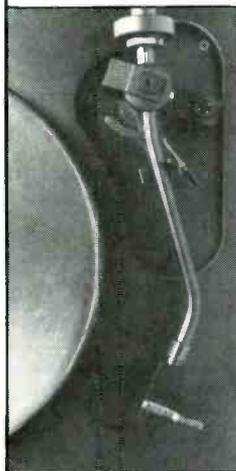
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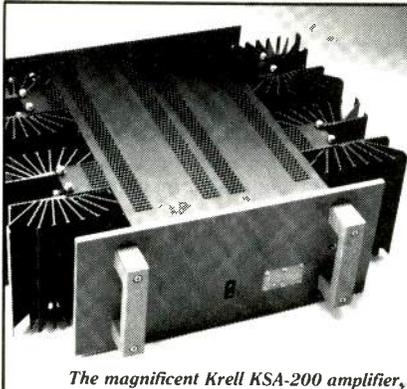


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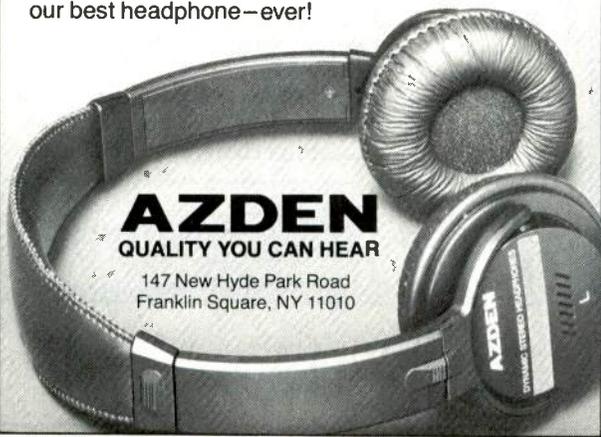
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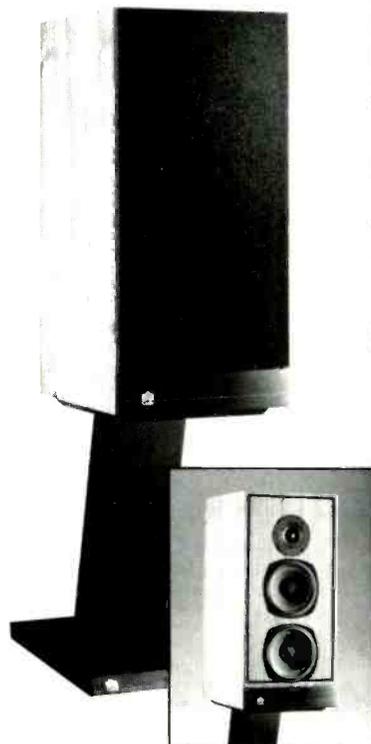
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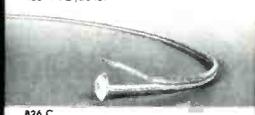
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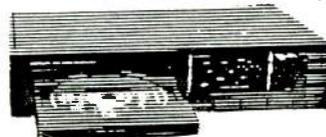
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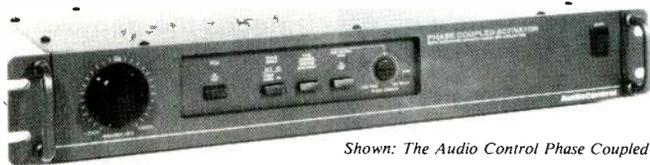
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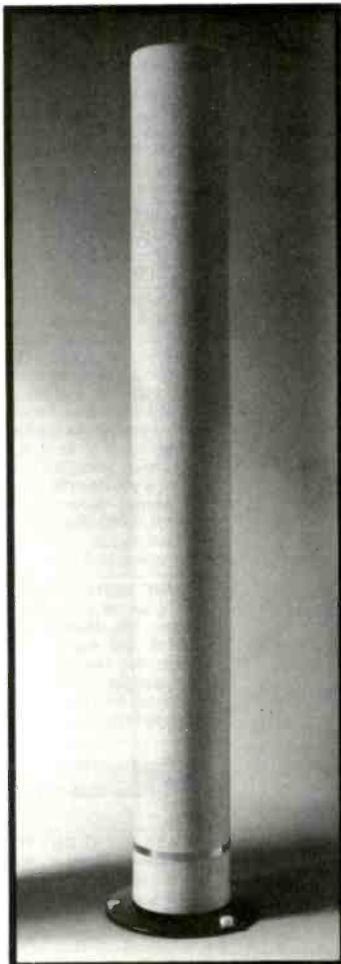
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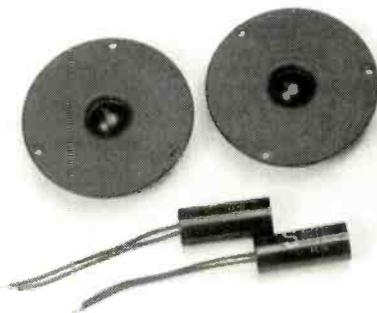
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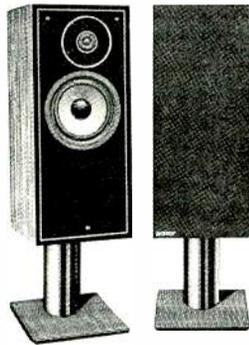
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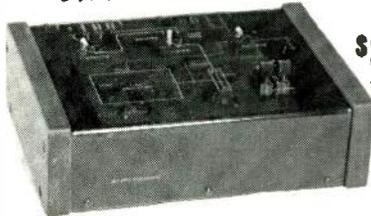
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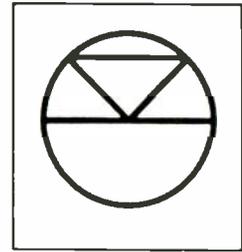
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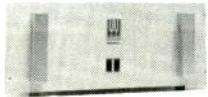
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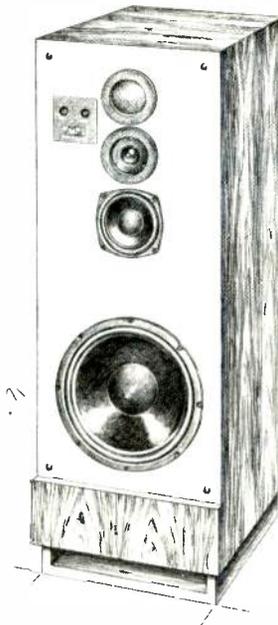
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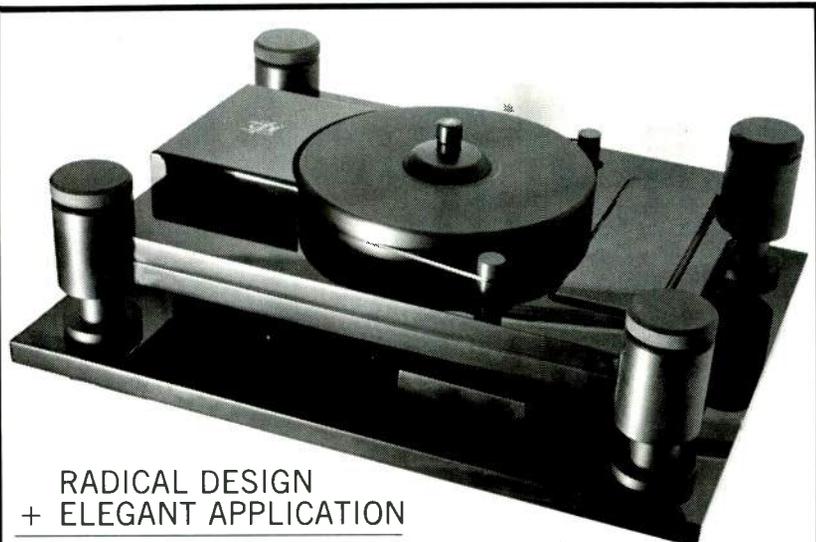
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Box 3340 Rosedale Station Kansas City, Kans. 66103</p> <p><b>Digital Designs</b> See Audix</p> <p><b>Digitrac</b> 122 Dupont St. Plainview, N.Y. 11803</p> <p><b>Dimensia</b> See Thomson</p> <p><b>Dimensional Optics</b> See Mavrick</p> <p><b>Direct Sound</b> 150 Fifth Ave. Suite 845 New York, N.Y. 10011</p> <p><b>Discwasher</b> 4309 Transworld Rd. Schieler Park, Ill. 60176</p> <p><b>Distech</b> Discrete Technology 3254 Fifth St. Oceanside, N.Y. 11572</p> <p><b>DLW Audio Consultants</b> Main St. Stevens, Pa. 17578</p> <p><b>R. A. Dolan Electronics</b> See Audiophile Accessories</p> <p><b>Dual</b> 122 Dupont St. Plainview, N.Y. 11803</p> <p><b>Duntech Speakers</b> See W &amp; W Audio</p> <p><b>E F</b></p> <p><b>Ebony Acoustics</b> See Mavrick</p> <p><b>Eidolon Research</b> P.O. Box 1384 Davidson, N.C. 28036</p> <p><b>Electrocompaniet</b> See Music &amp; Sound</p> <p><b>Electro Magnetic</b> 7028 Texas Rd. Fort Smith, Ark. 72903</p>	<p><b>Electro-Voice</b> 600 Cecil St. Buchanan, Mich. 49107</p> <p><b>Emerald Physics</b> 2400 N.W. 30th, #409 Oklahoma City, Okla. 73112</p> <p><b>Emerson Radio</b> One Emerson La. North Bergen, N.J. 07047</p> <p><b>Eminent Technology</b> 225 East Palmer St. Tallahassee, Fla. 32301</p> <p><b>EMT</b> See Gotham Audio</p> <p><b>Energy</b> See API</p> <p><b>Entec</b> 41934 Christy St. Fremont, Cal. 94538</p> <p><b>Entré</b> See Analog Excellence</p> <p><b>EPI</b></p> <p><b>Epicure Products</b> 25 Hale St. Newburyport, Mass. 01950</p> <p><b>Epik Audio</b> 1720 Lilac Dr. Walnut Creek, Cal. 94595</p> <p><b>Epoch</b> See Stanton</p> <p><b>Epos</b> See Music Hall</p> <p><b>ESM/Energy</b> See API</p> <p><b>Esoteric</b> See TEAC</p> <p><b>Esoteric Sound</b> 4813 Wallbank Ave. Downers Grove, Ill. 60515</p> <p><b>Essence</b> 805 'M' St. Lincoln, Nebr. 68508</p> <p><b>ESS Laboratory</b> 2575 El Presidio St. Long Beach, Cal. 90810</p> <p><b>Euphonic Audio</b> RD 1, Box 266 Oakwood Dr. New Egypt, N.J. 08533</p> <p><b>Euphonic Technology</b> 19 Danbury Rd. Ridgefield, Conn. 06877</p> <p><b>Eurostat</b> 1132 East Ave. Rochester, N.Y. 14607</p> <p><b>Excellerator Cable</b> See Audio Authority</p> <p><b>Exposure</b> See Audiophile</p> <p><b>Fanfare Acoustics</b> 3615 Presley Ave. Riverside, Cal. 92507</p>
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<p><b>Fidelus</b> See Apax Marketing</p>	<p><b>Gold Sound</b> P.O. Box 141 Englewood, Colo. 80151</p>	<p><b>Hitachi Cable</b> 28360 Hawthorne Blvd. Suite 101 Torrance, Cal. 90505</p>	<p><b>JS Audio</b> 643 Speedwell Ave. Morris Plains, N.J. 07950</p>	<p><b>Koetsu</b> See Krell</p>
<p><b>Fischer</b> See Madrigal</p>	<p><b>Goldstar Electronics</b> 1050 Wall St. West Lyndhurst, N.J. 07071</p>	<p><b>HM Electronics</b> 6675 Mesa Ridge Rd. San Diego, Cal. 92121</p>	<p><b>JS Engineering</b> 519 East Middle Turnpike Manchester, Conn. 06040</p>	<p><b>Kort Audio</b> 1530 South 6th St., C608 Minneapolis, Minn. 55454</p>
<p><b>Fisher</b> 21350 Lassen St. Chatsworth, Cal. 91311</p>	<p><b>Goodmans</b> 1225 17th St. Suite 1430 Denver, Colo. 80202</p>	<p><b>I</b> <b>Image</b> See API</p>	<p><b>JVC</b> 41 Slater Dr. Elmwood Park, N.J. 07407</p>	<p><b>Koss</b> 4129 North Port Washington Milwaukee, Wisc. 53212</p>
<p><b>Focus Speaker Systems</b> 1101 East Second St. Dayton, Ohio 45403</p>	<p><b>Gordon Instruments</b> P.O. Box 794 Blacksburg, Va. 24060</p>	<p><b>Import Audio Ltd.</b> 3149 Shenandoah St. St. Louis, Mo. 63104</p>	<p><b>K</b> <b>Kama-Ispeak</b> Kibbutz Beit Kama D.N. Negev 85 325 Israel</p>	<p><b>Krell Industries</b> 20 Higgins Dr. Milford, Conn. 06460</p>
<p><b>Forté Audio</b> 12919 Earhart Ave. Auburn, Cal. 95603</p>	<p><b>Gotham Audio</b> 1790 Broadway New York, N.Y. 10019</p>	<p><b>Impulse</b> Route 2, Box 477 Dover, Ark. 72837</p>	<p><b>KEF</b> 14120-K Sullyfield Circle Chantilly, Va. 22021</p>	<p><b>Kyocera</b> 100 Randolph Rd. CN 6700 Somerset, N.J. 08873</p>
<p><b>Fosgate-Audionics</b> P.O. Box 70 Heber City, Utah 84032</p>	<p><b>Gott Labs</b> 424 Clay Pitts Rd. East Northport, N.Y. 11731</p>	<p><b>Incon</b> See May Audio Marketing</p>	<p><b>Kenwood</b> 2201 East Dominguez St. Long Beach, Cal. 90810</p>	<p><b>L</b> <b>Lakeshore Imports</b> 1009 North Jackson, #802 Milwaukee, Wisc. 53202</p>
<p><b>Fostex</b> 15431 Blackburn Ave. Norwalk, Cal. 90650</p>	<p><b>Grace</b> See Sumiko</p>	<p><b>Infinity Systems</b> 9409 Owensmouth Ave. Chatsworth, Cal. 91311</p>	<p><b>Kevek Loudspeaker Technology</b> 191 North El Camino Real, #206 Encinitas, Cal. 92024</p>	<p><b>Lancer Electronics</b> 12340 McCann Dr. Santa Fe Springs, Cal. 90670</p>
<p><b>Frazier</b> Rte. 3, Box 319 Morrilton, Ark. 72110</p>	<p><b>Grado Laboratories</b> 4614 7th Ave. Brooklyn, N.Y. 11220</p>	<p><b>Innotech</b> 77 Clinton St. Brooklyn, N.Y. 11201</p>	<p><b>Kevro Electronics</b> P.O. Box 1355 Buffalo, N.Y. 14205</p>	<p><b>Lantana Ltd.</b> P.O. Box 1958 Garden Grove, Cal. 92642</p>
<p><b>Fried Products</b> 7616 City Line Ave. Philadelphia, Pa. 19151</p>	<p><b>Joseph Grado Signature</b> 921 Tice Pl. Westfield, N.J. 07090</p>	<p><b>Inouye</b> See Audiophile Accessories</p>	<p><b>Kimber Kable</b> 20675 Industrial Dr. Ogden, Utah 84401</p>	<p><b>Laser Audio</b> 1140 Eighth Line Oakville, Ont. Canada L6H 2R4</p>
<p><b>Fuji</b> 555 Taxter Rd. Elmsford, N.Y. 10523</p>	<p><b>Graham Engineering</b> 7 Baron Park, #33 Burlington, Mass. 01803</p>	<p><b>Instant Replay</b> 2951 South Bayshore Dr. 8th Floor Coconut Grove, Fla. 33133</p>	<p><b>Kindel Audio</b> 32992 Calle Perfecto San Juan Capistrano, Cal. 92675</p>	<p><b>Lazarus Electronics</b> 701-03 Ivy St. Glendale, Cal. 91204</p>
<p><b>Fulton Audio</b> P.O. Box 22537 Minneapolis, Minn. 55422</p>	<p><b>Greencorp</b> 3505 South Ocean Dr. Suite 1216 Hollywood, Fla. 33019</p>	<p><b>International Audio Technologies</b> 13897 Willard Rd., Suite J Chantilly, Va. 22021</p>	<p><b>Kinergetics</b> 6029 Reseda Blvd. Tarzana, Cal. 91356</p>	<p><b>Lelectron</b> See Audio Advancements</p>
<p><b>Fuselier Loudspeakers</b> 5269-2 Buford Hwy. Doraville, Ga. 30340</p>	<p><b>Reuben Guss Enterprises</b> 215 West 92nd St. New York, N.Y. 10025</p>	<p><b>Itone Audio</b> 3412 Eric Court El Sobrante, Cal. 94803</p>	<p><b>Kinetic Audio</b> P.O. Box 31075 Chicago, Ill. 60631</p>	<p><b>Legacy Loudspeaker Systems</b> See Reel to Real Designs</p>
<p><b>G H</b> <b>Garrott Brothers</b> See Audiophile Accessories</p>	<p><b>Hafler</b> 613 South Rockford Dr. Tempe, Ariz. 85281</p>	<p><b>J</b> <b>Jadis</b> See Madrigal</p>	<p><b>Kirksaeter</b> 4648 Evansdale Rd Woodbridge, Va. 22193</p>	<p><b>Lemo</b> P.O. Box 11488 Santa Rosa, Cal. 95406</p>
<p><b>GC-Thorsen</b> P.O. Box 1209 Rockford, Ill. 61105</p>	<p><b>Harman America</b> <b>Harman/Kardon</b> 240 Crossways Park West Woodbury, N.Y. 11797</p>	<p><b>Jamo Hi-Fi</b> 425 Huehl Rd., 3A Northbrook, Ill. 60062</p>	<p><b>Kiseki</b> See Sumiko</p>	<p><b>Mark Levinson</b> See Madrigal</p>
<p><b>Gemini Sound Products</b> 1221 38th St. Brooklyn, N.Y. 11218</p>	<p><b>Hartley Products</b> 1200 North 23rd St. Suite 105 Wilmington, N.C. 28405</p>	<p><b>Janis</b> See John Marovskis</p>	<p><b>Clark-Teknik</b> 30B Banfi Plaza North Farmingdale, N.Y. 11735</p>	<p><b>Lexicon</b> 100 Beaver St. Waltham, Mass. 02154</p>
<p><b>GlenMonitor Speaker Systems</b> P.O. Box 1146 Troy, N.Y. 12181</p>	<p><b>Heco</b> See Alphasonik</p>	<p><b>Jecklin</b> See May Audio Marketing</p>	<p><b>Klein &amp; Hummel</b> See Gotham Audio</p>	<p><b>Linn Hi-Fi</b> See Audiophile Systems</p>
<p><b>GNP</b> 1244 East Colorado Blvd. Pasadena, Cal. 91106</p>	<p><b>Helius Designs</b> See Terpsichore Imports</p>	<p><b>Jensen</b> 4136 North United Pkwy. Schiller Park, Ill. 60176</p>	<p><b>KLH</b> 100 Randolph Rd. CN 6700 Somerset, N.J. 08873</p>	<p><b>Logan Labs</b> 1031 Montgomery Rd. Altamonte Springs, Fla. 32714</p>
<p><b>Gold Aero</b> 2129 Venice Blvd. Los Angeles, Cal. 90006</p>	<p><b>Heybrook</b> See D'Ascanio Audio</p>	<p><b>Jordan</b> E. J. Jordan U.S.A. 301 North Harrison St. Bldg. B, Suite 252 Princeton, N.J. 08540</p>	<p><b>Klumo</b> See Audio Advancements</p>	<p><b>Loran</b> 10-48 Clark St. Warren, Pa. 16365</p>
<p><b>Goldmund</b> See International Audio Technologies</p>	<p><b>Hifonics</b> 11 Victoria Terrace Ridgefield, N.J. 07657</p>	<p><b>JPW Loudspeakers</b> See Power Audio</p>	<p><b>Klipsch</b> P.O. Box 688 Hope, Ark. 71801</p>	<p><b>Lotus</b> See Audio Access</p>
<p><b>Gold Ribbon Concepts</b> 211 East 11th St. Coralville, Iowa 52241</p>	<p><b>Highphonic</b> See Analog Excellence</p>			<p><b>LSR&amp;D</b> 10415 Forest Bridge Dr. Alpharetta, Ga. 30201</p>

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Box 58118 Santa Clara, Cal. 95052</p> <p><b>Meridian</b> See Madrigal</p> <p><b>Merlin International</b> 4705 South Majn St. Hemlock, N.Y. 14466</p> <p><b>Merrill Audio</b> 2125 Central Ave. Memphis, Tenn. 38104</p> <p><b>MFA Systems</b> 3178 Fowler Rd. San Jose, Cal. 95135</p> <p><b>J. A. Michell Engineering</b> See Artech</p> <p><b>Micro Seiki</b> See Analog Excellence</p> <p><b>Minolta</b> 101 Williams Dr. Ramsey, N.J. 07446</p> <p><b>Mirage Acoustics</b> See API</p> <p><b>Mirror Image Audio</b> 700 Springvale Rd. Great Falls, Va. 22066</p> <p><b>MISCO</b> Minneapolis Speaker Co. 3806 Grand Ave. Minneapolis, Minn. 55409</p> <p><b>Mission Electronics</b> 5985 Atlantic Dr., Unit 6 Mississauga, Ont. Canada L4W 1S4</p> <p><b>Mitek</b> One Mitek Plaza Winslow, Ill. 61089</p>	<p><b>Mitsubishi</b> 5757 Plaza Dr. Cypress, Cal. 90630</p> <p><b>MJS</b> 2280A Stevens Creek Blvd. San Jose, Cal. 95128</p> <p><b>M &amp; K</b> Miller &amp; Kreisel 10391 Jefferson Blvd. Culver City, Cal. 90230</p> <p><b>Modern Audio Consultants</b> 112 Swanhill Court Baltimore, Md. 21208</p> <p><b>The Mod Squad</b> 542 Coast Highway 101 Leucadia, Cal. 92024</p> <p><b>Mogami</b> See Marshall Electronics</p> <p><b>Mondial</b> 2 Elm St. Ardley, N.Y. 10502</p> <p><b>Monitor Audio Loudspeakers</b> See Kevro Electronics</p> <p><b>Monster Cable</b> 101 Townsend St. San Francisco, Cal. 94107</p> <p><b>Mørch</b> See Audio Advancements</p> <p><b>Mordaunt-Short</b> 1225 17th St. Suite 1430 Denver, Colo. 80202</p> <p><b>Morel Acoustics</b> 414 Harvard St. Brookline, Mass. 02146</p> <p><b>Morrison Audio</b> See Audiophile Accessories</p> <p><b>Moth Marketing</b> See Panther Enterprises</p> <p><b>Motif</b> See conrad-johnson</p> <p><b>Mountain Power Ltd.</b> See Audiophile Accessories</p> <p><b>MTX</b> See Mitek</p> <p><b>Museatex Audio</b> 6695 Thiemens Blvd. St. Laurent, Que. 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Kirkland, Wash. 98034</p> <p><b>Neumann</b> See Gotham Audio</p> <p><b>Nikko Audio</b> 5830 South Triangle Dr. Commerce, Cal. 90040</p> <p><b>Nitty Gritty</b> 4650 Arrow Highway #F4 Montclair, Cal. 91763</p> <p><b>Nonspeaker</b> See Mavrick</p> <p><b>NOVA Electro-Acoustics</b> P.O. Box 25488 Los Angeles, Cal. 90025</p> <p><b>Novak Loudspeaker</b> Merrits Island Rd. Pine Island, N.Y. 10969</p> <p><b>Novatek</b> 12826 N.E. 178th Suite C Woodinville, Wash. 98072</p> <p><b>Now Hear This</b> P.O. Box 1228 Fullerton, Cal. 92632</p> <p><b>O</b> <b>Octave Research</b> 183-08 Camden St. St. Albans, N.Y. 11412</p>	<p><b>Ohm Acoustics</b> 241 Taaffe Pl. Brooklyn, N.Y. 11205</p> <p><b>Old Colony Sound Lab</b> P.O. 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## Plasmatronics

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## PLC Audio

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## Plexus Audio Systems

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## Polk Audio

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## Posthorn Recordings

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## Power Audio Distributors

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## Precise Acoustic Laboratories

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## Preferred Sound

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## Premier

See Sumiko

## Pres Speakers

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See Modern Audio  
Consultants

## Proton

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## PS Audio

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## PSE

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Minneapolis, Minn. 55423

## Q

### QED Hi Fi

See May Audio Marketing

## Quad Electroacoustics

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Chantilly, Va. 22021

## Quadrant Acoustics

See Audiophile Accessories

## Quanta Technologies

See Rayco Sound

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## R

### Radford

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## Scandinavian Sounds

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## Sescom

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