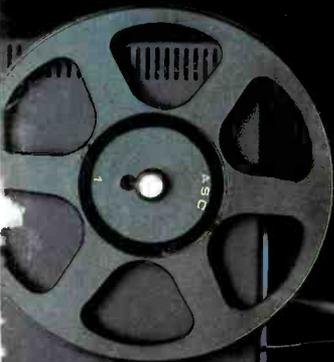
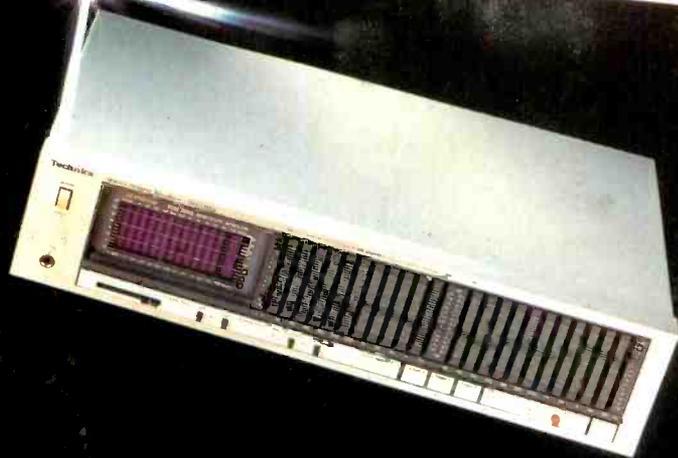


# Audio

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50,000+  
Specs on Over  
3,200 Models

## ANNUAL EQUIPMENT DIRECTORY



H I G H V I D E O F I D E L I T Y



"Flashdance" is available on Stereo Beta Hi-Fi Videocassettes from Paramount Home Video for \$39.95 © Paramount Pictures Corporation.

The NEC VC-739E with Beta Hi-Fi sound. A technological breakthrough in video recording and playback whereby the video heads record both the audio and video information. Compared to conventional VCR's which use stationary audio heads, the VC-739E offers 30 times greater dynamic range. In fact, the audio specifications of the VC-739E exceed even those of a studio open-reel tape recorder!

The NEC VC-739E is the industry's most "fully loaded" Beta Hi-Fi model, with four heads for clear special effects; 134 channel cable ready quartz PLL tuner; 8-event, 14 day programmable timer; audio-only recording capability; fluorescent indicator level meters and more ... all controllable by a full function remote.

You'll see picture quality with very same "High Video Fidelity" in every NEC model, only with different arrays of features.

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NEC Home Electronics (U.S.A.) Inc., 1401 Estes Avenue, Elk Grove Village, Illinois 60007, (312) 228-5900

**NEC**  
**THE ONE TO WATCH.**  
NEC Corporation, Tokyo, Japan



**THE NEC VC-739E BETA HI-FI VCR.  
THE VCR WITH THE PICTURE THAT  
SOUNDS AS GOOD AS IT LOOKS.**

Enter No. 1 on Reader Service Card

# Audio

OCTOBER 1983

VOL. 67, NO. 10



See page 51.



See page 41.

## ANNUAL EQUIPMENT DIRECTORY

INTRODUCTION .....	51	PHONO CARTRIDGES .....	88
DIGITAL RECORDERS/ PROCESSORS .....	53	OPEN-REEL TAPE DECKS .....	96
COMPACT DISC PLAYERS .....	54	CASSETTE DECKS .....	98
AMPLIFIERS .....	56	HEADPHONES .....	103
PREAMPLIFIERS .....	62	MICROPHONES .....	121
TUNERS .....	70	EQUALIZERS .....	126
RECEIVERS .....	72	LOUDSPEAKERS .....	129
TURNTABLES .....	81	DIRECTORY OF MANUFACTURERS .....	218
TONEARMS .....	86		

## MUSIC REVIEWS

ROCK/POP RECORDINGS .....	Michael Tearson, Jon & Sally Tiven .....	168
AUDIOPHILE RECORDINGS COMPACT DISCS .....	Bert Whyte, John M. Eargle, C. Victor Campos .....	174 185

## DEPARTMENTS

SPECTRUM .....	Ivan Berger .....	6
AUDIOCLINIC .....	Joseph Giovanelli .....	22
TAPE GUIDE .....	Herman Burstein .....	26
AUDIO ETC .....	Edward Tatnall Canby .....	29
ROADSIGNS .....	Ivan Berger .....	37
BEHIND THE SCENES .....	Bert Whyte .....	41
CLASSIFIED ADVERTISING .....		196
ADVERTISING INDEX .....		217

The Cover Equipment: ASC 6000 open-reel recorder, Walker CJ55 turntable, Audio Research SP-10 preamplifier, Pioneer F90 tuner, Technics SH8055 equalizer, NEC CD803 compact disc player, Pentagram P8 speaker, Proton 830 headphones, and Shure SP19-CN microphone.

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See page 168.



See page 29.



## Status System

Finally, there is car audio that does great justice to your music, your car. And your love of the finest.

Finally, there is Proton Car Audio.

With one of the most sophisticated FM tuning systems available: the Proton Schotz Detector.\* For incredibly clean, clear, beautiful reception. And more stations than you ever thought existed.

With a shock-mounted cassette system of such dynamic range that home recorded tapes play back with astonishing realism.

And you see it here, custom installed in the Aston Martin Lagonda: the incredible Proton

207 Fully Electronic FM/AM Cassette Deck and 271 Equalizer/Crossover, with lights that fade to black at the touch of a button.

Ask to hear all the Proton Status Systems™ at your nearby Proton Dealer: including powerful, bridgeable amplifiers. And speakers from four inch coaxials to twelve inch subwoofers. For your dealer's location call us toll-free, 800-772-0172.

Proton Car Audio. There's not a system on the road that can touch us.

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**PROTON**

**CAR AUDIO**



## It's magic. Sansui's one-touch high fidelity.

You probably have been depriving yourself all these years of the great pleasure of real high fidelity music because you thought hi-fi was a confusing assortment of too many dials and knobs.

Sansui, one of hi-fi's foremost innovators, has changed all that with a little technological magic. It's the "one-touch" Intelligent Super Compo music system.

Imagine. Just touch a button—and presto—the "brain" automatically turns on one component: the turntable, or the tape player, or the AM/FM radio—and switches off another at the same time. It's so simple, it completely takes the work out of play. And only Sansui offers this "one-

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The Intelligent Super Compo system illustrated includes perfectly matched components: a low-distortion amplifier; a super-sensitive, digital AM/FM tuner; a top performance double cassette deck; robust-sounding speakers; and a 24-hour program timer, all displayed in an attractive, space-saving audio cabinet.

With a variety of Intelligent Super Compo systems to meet any need or budget, Sansui has removed your last reason for denying yourself the pleasure of quality hi-fi. No other component music system offers so much enjoyment with so little effort. That's the magic of Sansui.

**INTELLIGENT  
SUPER COMPO**

**Sansui**

**Putting more pleasure in sound.**

SANSUI ELECTRONICS CORPORATION, Lyndhurst, NJ 07071; Gardena, CA 90248; Sansui Electric Co., Ltd., Tokyo, Japan

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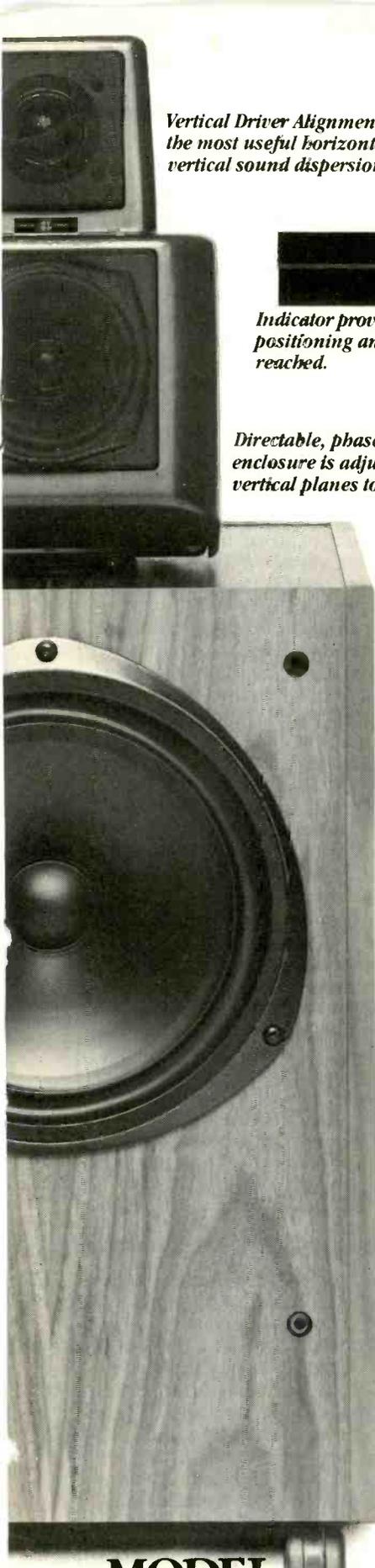
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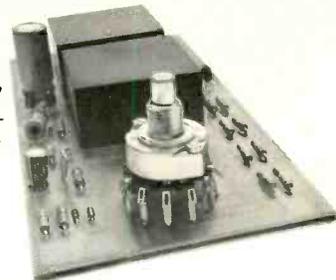
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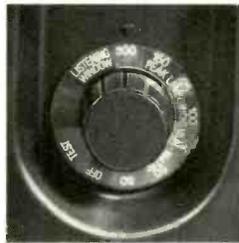


*Vertical Driver Alignment provides the most useful horizontal and vertical sound dispersion patterns.*

*S-Stop Overload Protection Circuitry makes the 105.2 virtually damage-proof, even with the highest power amplifiers.*



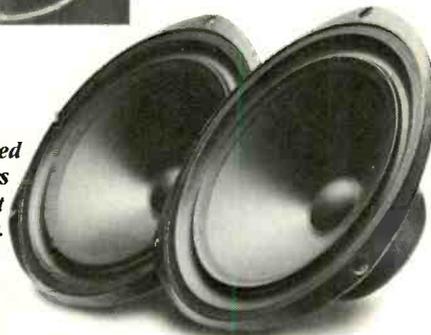
*LED Listening Window/Peak Power Indicator provides a visual indication of optimum listener positioning and signals when peak input levels are reached.*



*Switchable Peak Indicator from 50-200 watts triggers front LED to help avoid distortion due to amplifier clipping.*

*Directable, phase-compensating mid-range treble enclosure is adjustable in both horizontal and vertical planes to provide further control of dispersion.*

*Every 105.2 individual driver is computer matched to within 1/2 db to its mate and to the other drivers in the enclosure to guarantee absolute unit-to-unit and side-to-side consistency.*



*3 point shock-mounted bass driver prevents any possible twisting of the basket or transmission of unwanted vibrations to the speaker enclosure.*



*Advanced Bextrene polymer drive units exhibit far less sonic coloration than conventional paper or other plasticized materials.*

*Each 105.2 full system is matched to its mate to within 1/2 db to assure absolutely precise stereo imaging. (A slight variation at one frequency spreads, or smears the sound.)*



*Each separate piece of the carefully selected woods on every 105.2 is precisely matched to its mate to achieve a level of cabinet finish rarely found on the finest furniture.*

*An advanced crossover network designed with aerospace quality components (tolerances to within 1%) provides smooth, rapid roll off between drivers for the absolute minimum interdriver interference.*

# The Compleat\* Loudspeaker.

\*In Olde English, the word "compleat" is used to connote the most exhaustive, comprehensive study of a given subject.

Unlike manufacturers who would try to convince you that one form of technology or product feature solves all acoustic problems, KEF engineers address every minute aspect of loudspeaker design. The result is a level of balanced performance that exceeds the overall quality level thus far achieved by any loudspeaker currently on the market. This explains why KEF is the favorite choice of professional musicians, equipment reviewers, and serious music lovers worldwide. They don't listen to sales pitches; they listen for music that sounds real. And they know that there is no substitute for thorough engineering.

**KEF**  
The Speaker Engineers

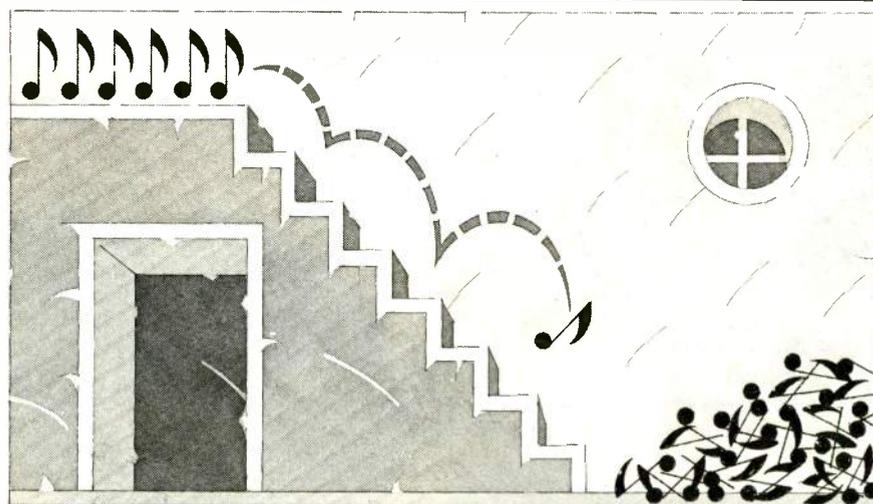
KEF Electronics, Ltd. 425 Sherman Avenue, Palo Alto, California 94306

**MODEL  
105.2**

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## HOME AND THE RANGE

Illustration: Philip Anderson



### Dynamics vs. Digital

The "96 dB" figure quoted for CDs is sometimes referred to as "dynamic range," but it is not: The figure refers strictly to signal-to-noise ratio. The noise floor can, indeed, be 96 dB below peak recording level. But music recorded down to  $-96$  dB would have only 1-bit resolution. "Technically," says Dr. J. B. Vandenbulcke of Philips, "you can get to  $-60$  dB without significant distortion of quiet passages." That's probably a bit conservative (pun unintentional); Nimbus, a British record company, says they are already mastering with an 80 dB range, and Telarc's CDs probably have similar dynamic range.

What matters is not the S/N of the medium, but the dynamic range of

the music. In the classical concert hall, Peter Burkowitz of Polygram told us, a live symphony may cover 70 dB dynamic range; very few go as high as 80, and that's just about the maximum range between the noise floor of the hall with audience (about 30 dB) and the loudest peak the audience can stand (about 110 dB). In the home, 80 dB of dynamic range would be excessive, since the noise floor of the average home is higher, and the maximum permissible volume often lower, especially if there are neighbors, sleeping children, or people trying to make telephone calls nearby. For attentive listening, the permissible maximum range is about 45 to 60 dB.

For this reason, average recordings have a maximum range of only 40 or

50 dB (which makes them "a good match for the living room, as is," Vandenbulcke says). The LP can handle 55 to 60 dB, according to Burkowitz, so "the great advantage of CD is its lower noise floor—transparency which adds to the sensual sensation, the 'goose-skin' effect, for connoisseur and average listener alike." (Vandenbulcke also points out CD's "immediate advantage in handling transients.")

That's not the whole dynamic-range story, of course. On the one hand, as Len Feldman points out, "You can handle more dynamic range than the bare numbers indicate, because the spectral distribution differs between noise and music." On the other, as Vandenbulcke comments, "Polygram already gets complaints: 'I have to turn the volume down.'" This is true even though CD dynamic range is limited (at least for now) by the software makers' choice, either deliberate or by default through using the same limited-range master tapes as the LP releases.

Not everyone will want compression all the time. But even if the record companies continue to restrict their dynamic range as they do now, compression will be needed sometimes—e.g., for background listening, or late at night, or when the sound system can't cleanly deliver more. Luckily, says Vandenbulcke, "CD is especially suited for compression because, with no background noise, there's no noise pumping."

### Going Pro

The word "professional" doesn't add as much luster to home sound gear as it did back in the days when many "home" components were public-address or broadcast equipment in wood cabinets. Nowadays, the shoe is on the other foot.

A few years back, a friend of mine entering the studio equipment business realized the best phono preamp he could offer would be a Dynaco stereo preamp, rack-mounted, with its controls preset to prevent user tinkering. He offered it at

a suitable markup, but got no sales: The specified performance was better than that of competing studio equipment, and legitimately so. But the price (while still higher than Dyna's) was so low the pros would not believe the specs. With the price raised, though, it sold quite merrily.

Today, equipment that has made its name on the home front can gain pro acceptance openly . . . with a few small changes. One is to beef up the chassis, to stand the travels and travails pro sound gear is subjected to. Connectors are changed, from phono plugs to sturdier phone or XLR

plugs, and inputs may be changed to balanced. The new Hafler professional amplifiers are cases in point.

Occasionally, however, there are functional changes, too. The new dbx 610, a professional version of the dbx 20/20 automatic equalizer, devotes one of its 10 memory positions to a "room curve" of the user's own devising. The system can then be equalized until its acoustic or electrical output matches this curve; the home version only equalizes towards flat response, with the user imposing his or her taste on it afterwards. *Continued on page 18*

# REDEFINITION.

## THE CARVER RECEIVER

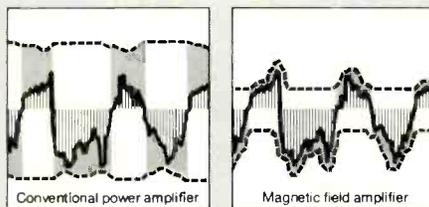
Redefines your expectations of receiver performance with the power you need for Digital Audio Discs plus virtually noise-free stereo FM reception. A receiver with astonishing performance incorporating two highly significant technological breakthroughs: Bob Carver's Magnetic Field Power Amplifier and his Asymmetrical Charge Coupled FM Detector.

**ESSENTIAL POWER:** Your system needs an abundance of power to reproduce, without distortion, the dynamic range of music on Digital Audio Discs and fine analog recordings.

The Magnetic Field Amplifier in the CARVER Receiver gives you 130 watts per channel\* of pure, clean power with superbly defined, high fidelity reproduction.

The Magnetic Field Amplifier produces large amounts of power (absolutely necessary for the accurate reproduction of music at realistic listening levels) without the need for heavy heat sinks, massive transformers, and enormous power capacitors required by conventional amplifier design.

Unlike conventional amplifiers which produce a constant, high voltage level at all times, irrespective of the demands of the ever-changing audio signal (Even when there is no audio signal in the circuit at all!), the Magnetic Field Amplifier's power supply is signal responsive. Highly efficient, it produces exactly and only the power needed to carry the signal with complete accuracy and fidelity.



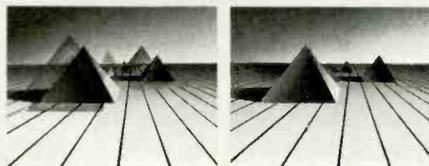
Solid line: audio output signal. Broken line: power supply voltage. Shaded area: wasted power. Vertical lines: power to speakers.

The 130 watts-per-channel\* CARVER Receiver is about the same size and weight of conventional receivers having merely 30 watts per channel!

**NOISE-FREE RECEPTION:** The AM-FM CARVER Receiver gives you FM stereo performance unmatched by that of any other receiver.

As it is transmitted from the station, the stereo FM signal is extremely vulnerable to distortion, noise, hiss and multipath interference.

However, when you engage CARVER's Asymmetrical Charge Coupled FM Detector circuit, the stereo signal arrives at your ears virtually noise-free. You hear fully separated stereo with space, depth and ambience!



Reflected multi-path signals cause audible distortion.

Asymmetrical Charge Coupled FM Detector gives your ears a true sonic image.

The Asymmetrical Charge Coupled FM Detector was first introduced in CARVER's TX-11 Stereo Tuner, receiving unparalleled critical acclaim:

*"A major advance... Its noise reduction for stereo reception ranged from appreciable to tremendous. It makes the majority of stereo signals sound virtually as quiet as mono signals, yet it does not dilute the stereo effect."*

Julian D. Hirsch, **STEREO REVIEW**  
(December, 1982)

*"Separation was still there; only the background noise had been diminished, and with it, much of the sibilance and hissy edginess so characteristic of multipath interference."*

Leonard Feldman, **AUDIO**  
(December, 1982)

*"What distinguishes the TX-11 is its ability to pull clean, noise-free sound out of weak or multipath ridden signals that would have you lunging for the mono switch on any other tuner we know of."*

**HIGH FIDELITY** (January, 1983)

The CARVER Receiver has been designed for fidelity, accuracy and musicality. You will want to visit your CARVER dealer for a personal audition of this remarkable instrument.

\*130 watts per channel RMS into 8 ohms, 20 Hz to 20 kHz with no more than 0.05% total harmonic distortion.

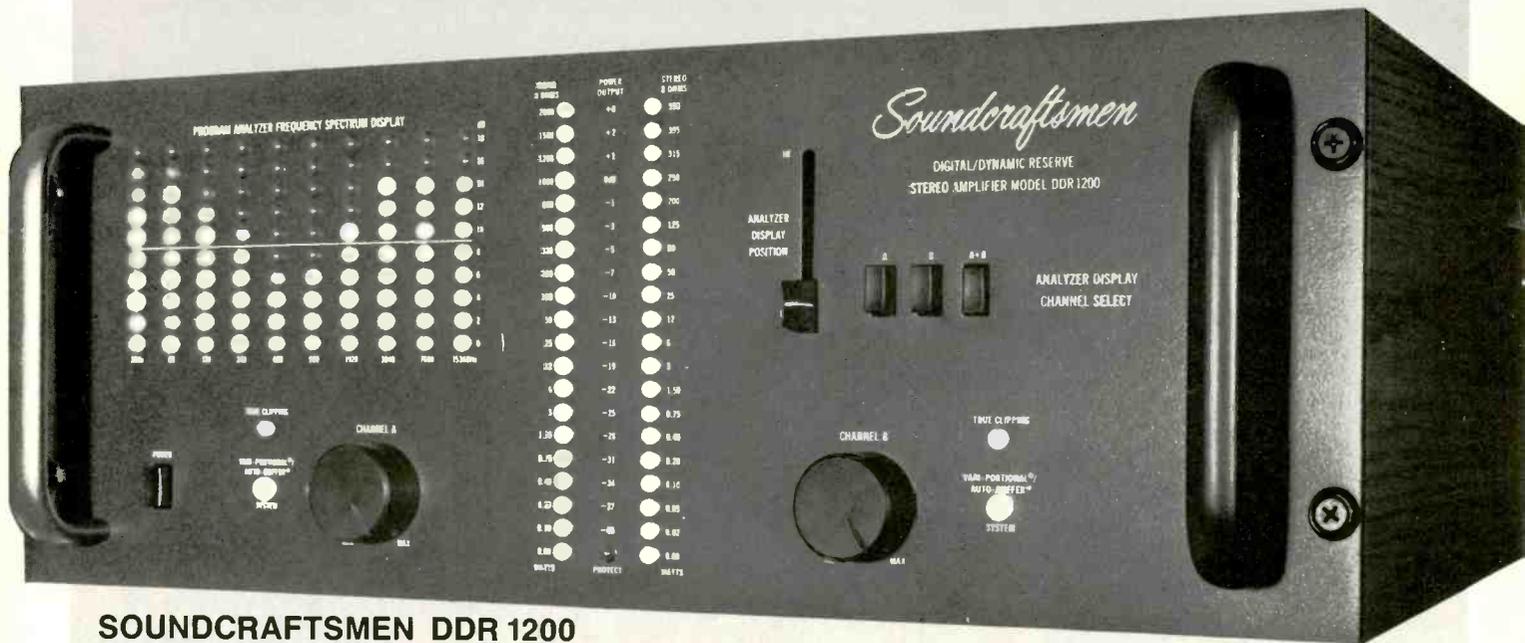


**CARVER** Powerful Musical Accurate

Carver Corporation P.O. Box 664, Woodinville, WA 98072

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# DIGITAL/DYNAMIC RESERVE™



## SOUNDCRAFTSMEN DDR 1200 DIGITAL/DYNAMIC RESERVE™ STEREO POWER AMPLIFIER



**POWER!** Lots of clean, pure power... the ONE ESSENTIAL REQUIREMENT for the reproduction of the magnificent new Digital Recordings.

With 30dB greater dynamic range, the new Digital Audio Discs demand up to ONE THOUSAND TIMES more power than conventional records, even at moderate listening levels!

The DDR 1200 can deliver over ONE THOUSAND WATTS of total power (see specifications) to reproduce digital dynamic musical "peaks" with a degree of sonic effortlessness unheard-of in conventional amplifiers.

And, unlike the "lightweights," the DDR 1200 will produce its rated power hour after hour without overheating or breakdown!

Need even more power for low-efficiency loudspeakers or multi-speaker installations? The DDR 1200 converts to a 750-watt mono amplifier with the flip of a switch!

The DDR 1200 is the world's only stereo amplifier capable of analyzing the other components in the music system! Its 100-LED Frequency Spectrum Display lets you see, in Real Time, exactly how your phono cartridge, tape deck and other program sources are performing. A specially-recorded Frequency Spectrum Analysis 12" LP Test Record is included with the DDR 1200.

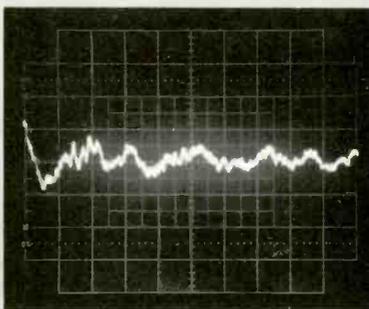
If **Digital Audio** is in your future, a Soundcraftsmen amplifier should be in your present!

Soundcraftsmen DDR 1200 . . . \$1199 . . . Other models from \$649.

**SPECIFICATIONS:** 250 watts per channel @ 8 ohms, minimum RMS, with no more than .09% total harmonic distortion, 20Hz to 20kHz. 375 watts per channel @ 4 ohms, 750 watts @ 8 ohms mono mode. 1200 watts total dynamic reserve power.

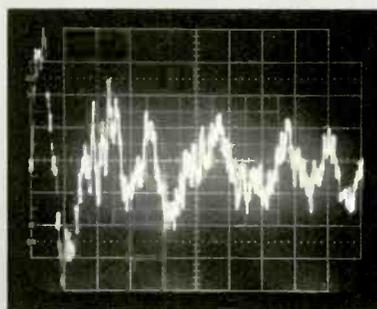
### CONVENTIONAL RECORD

Oscilloscope photo shows music playing at normal listening level. Only 1 watt of power is required for average level, but 16 watts are needed to produce "peaks."



### DIGITAL AUDIO DISC

Oscilloscope photo shows same music playing at same normal listening level. Again only 1 watt is required for average level, but 500 watts are needed to produce the... "digital/dynamic peaks" without distortion!



## GUARANTEED SPECIFICATIONS

### Power Output:

250 watts per channel @ 8 ohms  
375 watts per channel @ 4 ohms  
750 watts @ 8 ohms, mono mode  
1200 watts total limited-time-period reserve power

**THD and Noise:** Less than .09% (Typically less than .02%)  
**Frequency Response:** ± 0.1dB, 20 Hz to 20 kHz

**IM Distortion:** Less than .05%

**TIM Distortion:** Unmeasurable

**Signal-To-Noise Ratio:** 110dB (A-weighted)

**Slew Rate:** 50 V per microsecond

**Stability:** Any load 2 ohms or greater

**Dimensions:** 7" x 19" x 15" deep

**Weight:** 55 pounds

**Side Panels:** Genuine Oak or Walnut, optional

*Soundcraftsmen*

Enter No. 6 on Reader Service Card

An advanced line of stereo components which are designed not just to accommodate digital program sources, but to extract the full performance potential of this new medium.



The Finest! Full-Coil Equalizer and Automatic-Scanning Analyzer in One Package. 0.1dB Accuracy with Differential/Comparator® Design. Analyze and Equalize Accurately in Minutes! .....The AE2000: \$699



The Ultimate Preamp! Adjustable Capacitance, Moving-Coil Inputs, Full-Coil EQ, AutoBridge® Circuit, Patch-Bay, Headphone Amp and Digital Audio Inputs. State-of-the-Art Performance and Flexibility .....The DX4200: \$699



Excellent Phono Preamp with Integral 10-Band Equalizer. External Processor Loop, Two Tape Inputs with Dubbing, Patch-Bay, CX-Decoding, Headphone Amplifier. Best Buy! .....The CX4100: \$549



Superb Phono Preamp with Two External Processor Loops, Three Tape Inputs with Cross-Dubbing, Headphone Amplifier, Pushbutton Patch-Bay, Built-In CX-Decoding Circuitry .....The CX4000: \$419



Differential/Comparator®. Precision Passive Coil Filters for Zero Coloration, 15dB Boost/Cut and -114dB Signal-to-Noise Ratio. The Ultimate Octave-Band Graphic EQ. ....The DC2215: \$399



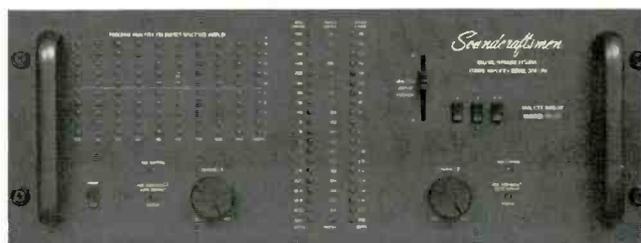
Differential/Comparator® for Full Headroom with Digital Discs. Ultra-low Noise and Distortion. Test Record, Computone Charts and Cables. Optional Oak or Walnut Side Panels. ....The DC2214: \$299



Soundcraftsmen Performance at a Budget Price. Full 10-Band Equalizer, complete with Test Record, Computone Charts, Cables and Accessory Case. ....The SE450B: \$249



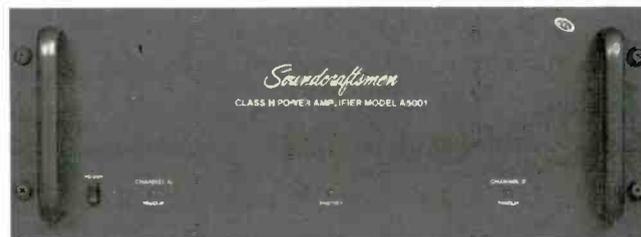
Outstanding Performance. 7-AM, 7-FM Station Memory. Digitally-Synthesized Quartz PLL Tuner. Auto or Manual Station Scanning. Low-Profile. Rack-Mount Panel. Optional Oak or Walnut Side Panels. ....The T6002: \$299



The Ultimate Amplifier! Tremendous Power Reserves for Digital Dynamics. Built-in Spectrum Analyzer for Pinpoint Adjustment of System Components. Mono-Mode Power: 750 Watts @ 8-Ohms .....The DDR1200: \$1199



Power Plus Features. Same Performance as A5001, Plus Two Sets Speaker Outputs, Calibrated Power Meters, Level Controls, Speaker Switching. Digital-Ready! .....The A5002: \$899



Power for Digital! 250-Watts Per Channel. Class H Design for Cool, Reliable Uncolored Sound. Auto-Buffer® for 2-Ohm Operation. Auto-Crowbar Fail-Safe Protection .....The A5001: \$749



Power MOSFET Stereo Amplifier. 125 Watts Per Channel. Calibrated Power Meters, Speaker Switching, True Clipping Indicators and Carrying Handles. Exceptional Performance and Reliability .....The A500: \$649



Power MOSFET Basic Stereo Amplifier. 140 Watts Per Channel Plus Exceptional Reserve Power for Digital Dynamics. Clean, Uncolored Audio Reproduction Combined with Complete Reliability .....The A2801: \$549



REVOLUTIONARY DIGITAL SWITCHMODE Stereo Amplifier! Technological Breakthrough Makes Possible 205 WATTS/CHANNEL in 13-Pound Package! MOSFET Output Stages for Sonic Purity, Reliability ....The DDX410: \$449

# The World's MOST VERSATILE Stereo Preamplifier



## THE SOUNDCRAFTSMEN DX4200 PREAMP/EQUALIZER



**THE PREAMP:** Starting with two completely independent Mono Phono Preamp Sections with vanishingly low distortion and  $-97$ dB noise, every conceivable operational control is combined in the DX4200. Fully-Adjustable Capacitance Loading from 50 to 800 picofarads for perfect matching of any cartridge, including Moving-Coil types. Digital inputs for CD player. Inputs for Audio from VCR or Videodisc. Cross-Dubbing between three Tape Decks. Sub-Sonic Filter operating from 15Hz down. Low-Impedance Headphone Amplifier for private listening. Exclusive AutoBridge circuitry for operation of two stereo amps in bridged mode, tripling per-channel power.

**THE SIGNAL-PROCESSOR PATCH BAY:** Allows you to use any combination of Sub-Sonic Filter, Equalizer, Mono A&B and Two External Signal Processors, either for listening or tape recording, by simply pushing buttons—no cable switching!

**THE EQUALIZER:** Probably the finest octave-band equalizer available, due to the employment of Precision Wire-Wound Inductors in the octave-filter circuits, instead of ordinary IC "chips." The result is greater gain, lowest possible noise and distortion and completely neutral sonic qualities. Only Soundcraftsmen Equalizers feature the exclusive **Differential/Comparator**® circuit which allows you to instantly adjust the Equalizer for Maximum "Headroom" so necessary with CX, dbx, Digital and Dolby-encoded recordings—regardless of the EQ curve selected! This adjustment is accurate to a phenomenal 0.1 dB readout and employs balancing LED's for visual verification.

**THE DX4200** has been called "The Ultimate Preamp," yet it is a superb value at only \$699. Other Soundcraftsmen Preamps with similar features and performance start at \$419.

## GUARANTEED SPECIFICATIONS

### PREAMP SECTION

**FREQUENCY RESPONSE:** Hi-level  $\pm 1/4$  dB, 5 Hz to 100 kHz  
Phono  $\pm 1/2$  dB, 20 Hz to 20 kHz  
**TOTAL HARMONIC DISTORTION:** .01% at 1 Volt  
**IM DISTORTION:** Less than .01% at 1 Volt  
**PHONO IMPEDANCE:** 47K or 100 Ohms  
**PHONO SIGNAL-TO-NOISE:** 97 dB  
**PHONO CARTRIDGE SENSITIVITY:** Any High Fidelity cartridge  
0.28 millivolts or greater output  
**PHONO PREAMP DESIGN:** Two separate mono preamp circuits  
**PHONO LEVEL ADJUSTMENT:** Individual  $\pm 20$  dB gain controls  
**PHONO CARTRIDGE COMPATIBILITY:** Moving coil, variable reluctance or moving magnet (no head-amp required if over 0.28 MV output)  
**HEADPHONE LEVEL:** Capable of driving 8 Ohms to 2000 Ohms

### EQUALIZER SECTION

**IN-OUT MONITORING:** Differential/Comparator® circuit with LED's, for 0.1dB accuracy  
**HARMONIC DISTORTION:** Less than .01% at 2 V  
**IM DISTORTION:** Less than .01% at 2 V  
**SIGNAL-TO-NOISE:** 114 dB at 10 V output  
100 dB at 2 V output  
**OCTAVE CONTROLS:**  $\pm 22$  dB boost or cut—each octave (all other octaves set at maximum)  $\pm 15$  dB boost or cut—each octave (all other octaves set at zero)  
**GAIN CUT CAPABILITY:** +32 dB/—38 dB—all controls maximum  
**UNITY GAIN CONTROLS:** 18dB range  
**FILTER TYPE:** Precision tuned passive wire-wound coil inductors  
**DIMENSIONS:** 5 1/4" x 19" x 11"  
**WEIGHT:** 23 LBS.  
**SIDE PANELS:** Genuine Oak or Walnut, optional

*Soundcraftsmen*

Enter No. 7 on Reader Service Card

# WHAT DO THE EXPERTS SAY ABOUT SOUNDCRAFTSMEN?

## AMPLIFIERS

**A2502:** "The 8- and 4-ohm maximum outputs were, respectively, 225 and 370 watts (dynamic-headroom ratings of 2.55 and 2.9dB, respectively) and the output into 2 ohms was 468 watts." (STEREO REVIEW)

"...there was absolutely no detectable second-order distortion at 1,000 Hz..." (STEREO REVIEW)

"Electrically (and audibly) there was nothing about the Soundcraftsmen A2502 that we could criticize...We were especially aware of the conservatism of its ratings..." (STEREO REVIEW)

"The Soundcraftsmen A2502 is a superior power amplifier, far more powerful in real (that is to say, audible) terms than its modest 125-watt rating would imply." (STEREO REVIEW)

**CLASS H 250-WATT AMPLIFIERS:** "...at least two companies that I know of have used 'variations on the Class H theme' ever since Soundcraftsmen showed everyone how it was done." (AUDIO)

"In continuous power tests, the amp beats its specs into all load impedances and still has some reserve left for peaks." (HIGH FIDELITY)

"...the Auto-Buffer<sup>®</sup> circuit...enables the amp to drive impedances as low as 2 ohms safely without recourse to conventional current limiters, which can create severe distortion..." (HIGH FIDELITY)

"The meters also proved responsive and accurate..." (HIGH FIDELITY)

"It has plenty of power and sounds every bit as good as anything else we've come across, regardless of price." (HIGH FIDELITY)

"For its rated distortion of .09%...The amplifier delivered in excess of 300 watts per channel into 8-ohm loads, and nearly 450 watts per channel into 4-ohm loads." (AUDIO)

"I played all manner of demanding source material through this amplifier and it just refused to quit!" (AUDIO)

"...Class H circuitry eliminates the need for any cooling fan, even for amplifiers with such high power ratings used under the most difficult conditions." (AUDIO)

## PREAMPLIFIERS

"The total harmonic distortion at a 1-volt output was 0.006% at 20 Hz, 0.0018% at 1kHz, and .01% at 20kHz." (STEREO REVIEW)

"The A-weighted noise output was unmeasurable..." (STEREO REVIEW)

"The equalizer controls are capable of providing a nearly infinite number of response curves. With the controls centered, the response curve is ruler flat even when the EQ button is engaged." (STEREO REVIEW)

"...a highly versatile control center whose performance and sound quality should satisfy the most critical listener." (STEREO REVIEW)

## DIFFERENTIAL/COMPARATOR<sup>®</sup> EQUALIZERS

"Especially commendable was the extremely low distortion measured (well under spec), and the accuracy of both the octave frequency settings and the indicated control ranges." (MODERN RECORDING)

"The Differential/Comparator<sup>®</sup> is used with a pair of balancing LED's for each channel to obtain close-to-exact matching of overall levels between EQ in and out, to preserve headroom." (AUDIO)

"...a number of trials demonstrated that any desired boost or cut could be set within a small fraction of a dB." (AUDIO)

"As is normally the case with Soundcraftsmen equalizers, the DC2214 was supplied with a test record..." (AUDIO)

"Soundcraftsmen makes possible a form of EQ memory by supplying 'Computone Charts' which can be cut to match all of the equalizer settings, including the unity-gain controls." (AUDIO)

"The Soundcraftsmen DC2214...offers very low distortion and noise, good filter properties, and an excellent in/out unity gain scheme—all at a very good price." (AUDIO)

## SOUNDCRAFTSMEN SCAN-ALYZERS

"Whereas most Real-Time Analyzers...are usually limited in their accuracy to anywhere from 1dB to 4dB of error, the AS1000 actually can maintain accuracy to within 0.1dB." (MODERN RECORDING)

"An Automatic Scanning mode...greatly simplifies the equalization procedure." (MODERN RECORDING)

"...you are assured of an accuracy of system equalization far better than that obtainable in the conventional manner." (MODERN RECORDING)

"Before you can deal with taste, you have to honestly hear 'flat.' That's where the AE2000 comes in. This piece of test gear is more precise than an RTA." (INTERNATIONAL MUSICIAN)

"Soundcraftsmen calls this 'Differential/Comparison equalization,' and it makes spectrum analysis simple for anyone." (INTERNATIONAL MUSICIAN)

"What's needed here is 'true' unity-gain (as Soundcraftsmen puts it) and they have the only analyzer to my knowledge that shows this to within .1dB." (INTERNATIONAL MUSICIAN)

"The Soundcraftsmen AE2000 is one of the finest instruments for any of these tasks that I have had the pleasure of using." (MODERN RECORDING)

"Nor do I know of any comparable equalizer/analyzer that offers such precision and quality for the same reasonable price as the AE2000." (MODERN RECORDING)

# POWER ON DEMAND



## THE SOUNDCRAFTSMEN A2801 POWER MOSFET STEREO AMPLIFIER



Ordinary Recordings—even so-called “audiophile discs”—are often so limited in their dynamic range that even small, lightweight, low-powered amplifiers and receivers can reproduce their musical information without serious problems.

However, Digital, dbx and CX-encoded records have changed all that. Where 20 to 40 watts once was acceptable, not even double and triple that power is enough to reproduce these new recordings without severe “clipping” distortion!

Designed specifically for this new technology, the A2801 produces 140 watts per channel continuously with 8-ohm loads and 205 watts per channel continuously with 4-ohm loads and huge power reserves of more than 700 watts are always available to reproduce the tremendous Digital dynamic “peaks” with absolutely effortless clarity. More than enough for these new wide-range Program Sources.

Featuring the latest POWER MOSFET circuitry, the A2801 offers power, sonic purity and unmatched reliability at only \$549.00.

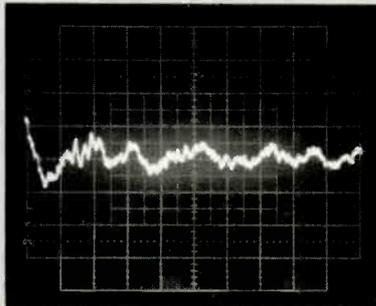


### SOUNDCRAFTSMEN A2502

A deluxe, full-featured version of the A2801, the A2502 includes Calibrated 20-LED Power Meters, Full-Range Input Level Controls, and Switching for Two Separate Pairs of Loudspeakers in Any Combination. The A2502 Represents an Excellent Value at \$649.00.

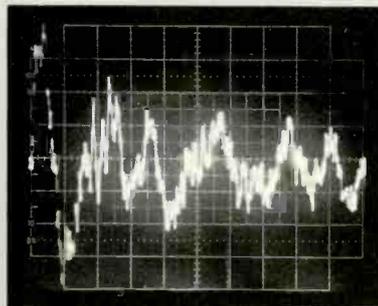
#### CONVENTIONAL RECORD

Oscilloscope photo shows music playing at normal listening level. Only 1 watt of power is required for average level, but 16 watts are needed to produce “peaks.”



#### DIGITAL AUDIO DISC

Oscilloscope photo shows same music playing at same normal listening level. Again only 1 watt is required for average level, but 500 watts are needed to produce the... “digital/dynamic peaks” without distortion!



### GUARANTEED SPECIFICATIONS

#### CONTINUOUS AVERAGE POWER OUTPUT:

205 watts, 20Hz to 20KHz (4 ohms)  
140 watts, 20Hz to 20KHz (8 ohms)  
700 watts total dynamic reserve

#### THD AND NOISE:

(140w @ 1KHz): Typ. less than .01%  
(1/12w to 140w 20-20K): Less than .05%

FREQUENCY RESPONSE:  $\pm 0.1$ dB, 20Hz to 20KHz

I.M. DISTORTION: (60H/7KHz): Less than .05%

T.I.M. DISTORTION: Less than .02%  
(unmeasurable)

SIGNAL-TO-NOISE RATIO: (A-weighted): Greater than 105dB

SLEW RATE: Greater than 40v per microsecond

RISE TIME: better than 2.2 microseconds

*Soundcraftsmen*

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# 65 DIFFERENT EQUALIZERS?!!

According to the 1982 **AUDIO Magazine** Annual Equipment Directory, there are 65 different equalizer models available from 28 different Hi-Fi companies. And 91.6% of these models cost less than the **SOUNDCRAFTSMEN DC2215**. So why in the world do so many audiophiles select the **DC2215**?

## HERE ARE SOME OF THE IMPORTANT REASONS WHY...

1. **Only** Soundcraftsmen equalizers employ the revolutionary **Differential/Comparator®** circuit, assuring maximum headroom, even for **digital audio** playback...**regardless** of the EQ curve selected!
2. **Only** the DC2215 utilizes Precision Passive-Coil Inductors instead of ordinary IC "chips." Coils result in **total** lack of coloration, lowest possible noise and nearly unmeasurable distortion.
3. **Only** Soundcraftsmen equalizers are shipped complete with a specially-recorded 12" **FREQUENCY SPECTRUM ANALYZER TEST RECORD** so that the equalizer can be used as a **FUNDAMENTAL** part of your music system, without need for testing equipment.
4. **ONLY** Soundcraftsmen equalizers come with **COMPUTONE CHARTS®** for easy semi-automatic resetting of your various EQ curves.
5. Soundcraftsmen equalizers are designed, engineered and manufactured by Americans, in America!

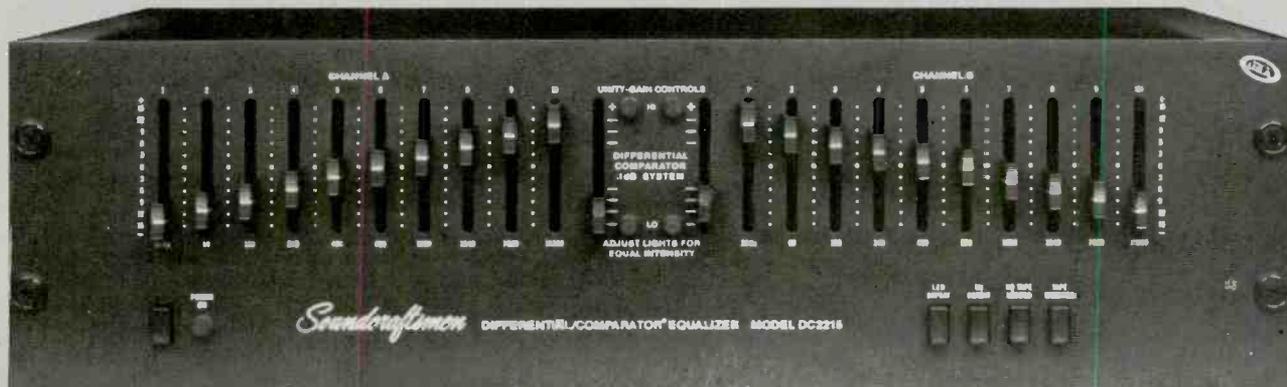
## AND IN CONCLUSION...

Graphic Equalizers are usually presented in advertising encouraging prospective owners to "be your own recording engineer," or "make your inexpensive loudspeakers sound like expensive ones!"

While such uses are fun, the fact is that a Graphic Equalizer has **ONE BASIC, FUNDAMENTAL PURPOSE**: to "NEUTRALIZE" the inevitable acoustic effects of the listening room upon the stereo system's performance. Unless this is done, **NO MUSIC SYSTEM** can possibly sound as good as its designers intended! This is

equally true with low-budget systems and cost-no-object systems. In order to be utilized for its fundamental purpose, however, certain "tools" must be used in conjunction with the equalizer, such as a "pink noise" reference source and a method for recording EQ curves.

**Only Soundcraftsmen**, America's pioneer graphic equalizer manufacturer, recognizes the equalizer's fundamental purpose and supplies at **NO EXTRA COST**, all of the **NECESSARY TOOLS** for proper use of the Equalizer.

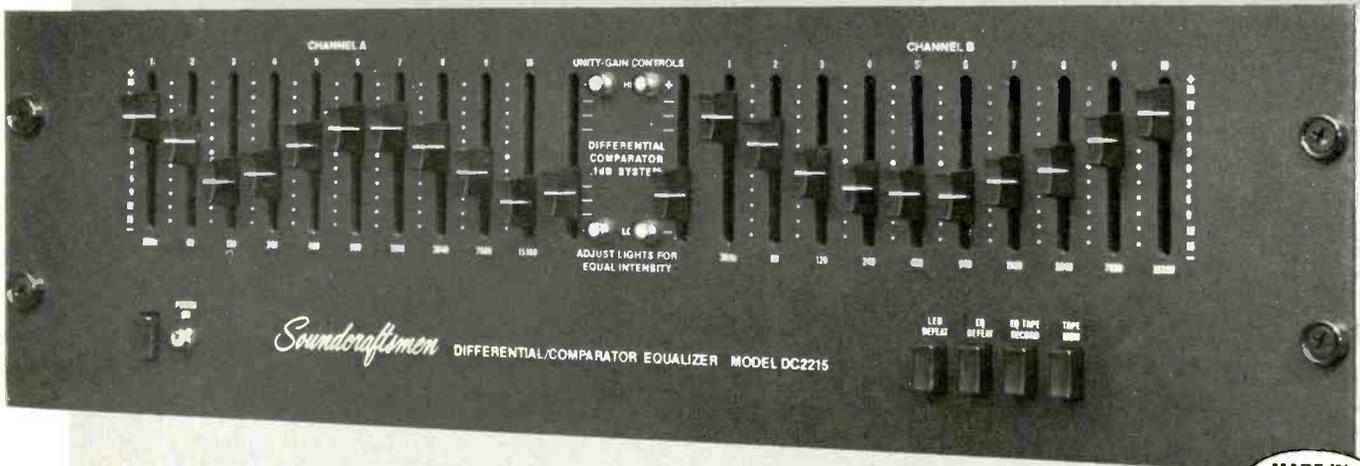


**SOUNDCRAFTSMEN DC2215...\$399**

*Soundcraftsmen*

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# The World's first *DIFFERENTIAL/COMPARISON* Equalizer ...Designed with *DIGITAL* in Mind



## THE SOUNDCRAFTSMEN DC2215 GRAPHIC EQUALIZER



Digital, CX, dbx, Dolby and direct-disc recordings offer vastly-improved dynamic range, compared with the finest recordings of only a few years ago.

But all this sonic improvement is lost if any component in the audio chain "clips" trying to reproduce it.

Conventional equalizers have no easy or accurate method of adjusting for maximum "headroom" regardless of the EQ curve selected.

Only Soundcraftsmen employs the Differential/Comparator® circuit with LED indicators for instant, accurate, visual balancing of the crucial input-to-output voltages.

And only the Soundcraftsmen DC2215 utilizes precision wire-wound coil filters, instead of ordinary IC "chips," for maximum gain, minimum noise and sonic purity.

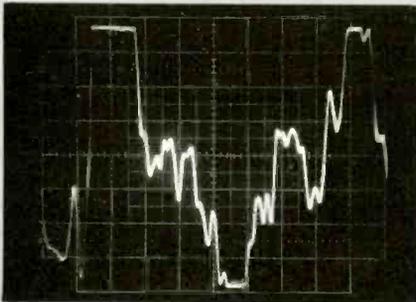
The DC2215 is truly the Perfectionist's Equalizer at only \$399.



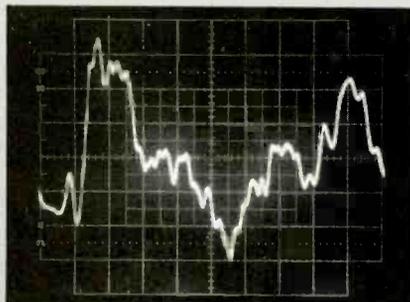
### New DC2214 EQUALIZER-\$299

Exceeded in performance only by the DC2215, and utilizing the identical Differential/Comparator® circuit, the DC2214 is the audio industry's finest value at only \$299.

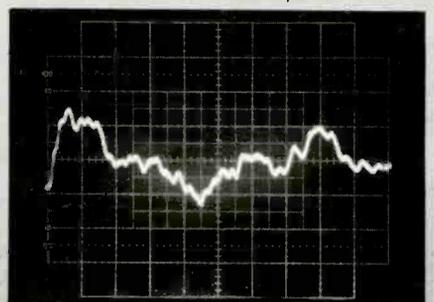
Wide-Range Material is Severely Distorted in an Improperly-Adjusted Equalizer



The Same Audio "Peaks" pass Undistorted when the Soundcraftsmen Differential/Comparator® Circuit is used.



Inadequate Gain Results in Reduced Dynamics and Increased Noise. Eliminated with the Soundcraftsmen Differential/Comparator® circuit.



## GUARANTEED SPECIFICATIONS

**IN-OUT MONITORING:** Differential/Comparator® Circuit with LED's for 0.1dB accuracy.  
**HARMONIC DISTORTION:** Less than .01% at 2 V.  
**IM DISTORTION:** Less than .01% at 2 V.  
**SIGNAL-TO-NOISE:** 114dB at 10 V output 100dB at 2 V 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.  
**DIMENSIONS:** 5¼" x 19" x 11¼"  
**WEIGHT:** 21 lbs.  
**SIDE PANELS:** Genuine Oak or Walnut, optional

# Soundcraftsmen

Enter No. 12 on Reader Service Card

...a revolutionary **NEW APPROACH** to EQ,  
*Soundcraftsmen* and no one else has it...

## DIFFERENTIAL/COMPARISON EQUALIZATION

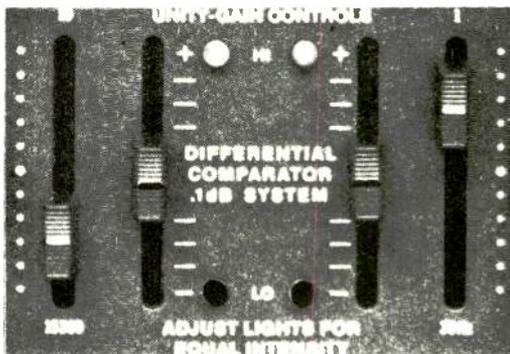


FIG. 1

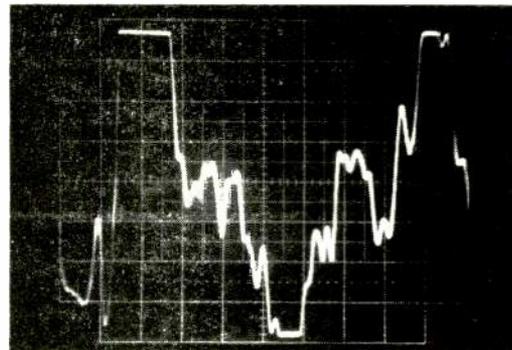


FIG. 2

### EXCESSIVE GAIN

The Differential/Comparator<sup>®</sup> Unity-Gain balancing LED's in FIG. 1 indicate an output voltage which is higher than the input voltage. Notice that the upper pair of LED's is glowing brightly, while the lower pair is unlit. FIG. 2 shows a scope picture of an actual musical signal as it leaves the improperly-adjusted equalizer. The "clipped" peaks show the severe distortion that can occur when any equalizer is not adjusted for True Unity Gain.

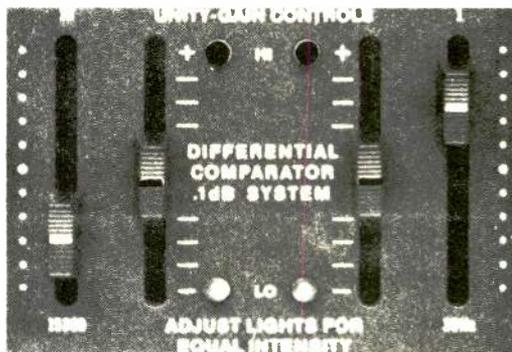


FIG. 3

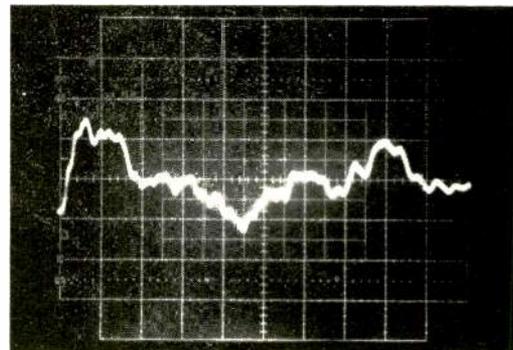


FIG. 4

### INSUFFICIENT GAIN

Just as excessive gain is undesirable, insufficient gain can create a poor signal-to-noise ratio and cause related components to operate at less than their capabilities. Bottom LED's glowing as in FIG. 3 indicates an output voltage of less than the equalizer's input voltage. (EXAMPLE: 1 volt input; 1/2 volt output.)

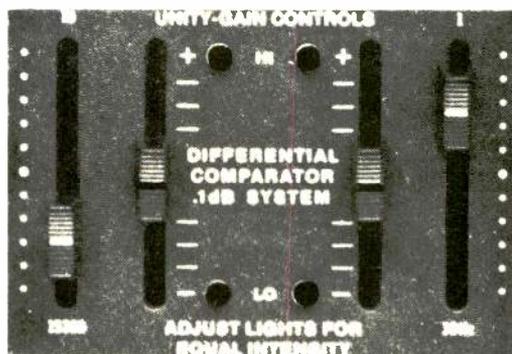


FIG. 5

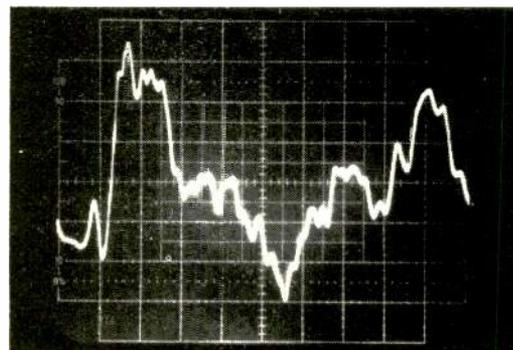


FIG. 6

### TRUE UNITY GAIN

When both top and bottom LED's have been balanced for equal intensity, as in Fig. 5 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. FIG. 6 shows the same musical signal as it leaves the properly-adjusted equalizer. Note the absence of clipping. When True Unity Gain is established, the equalizer's full dynamic range is available for undistorted reproduction of wide-dynamic-range recordings.

*Exclusive Differential/Comparator<sup>®</sup> 0.1dB Unity Gain Controls with LED display assure full dynamic range with the most demanding recordings.*

# THE ULTIMATE EQUALIZER



## THE SOUNDCRAFTSMEN AE2000... WORLD'S MOST ACCURATE ANALYZER/EQUALIZER



Like other Real Time Analyzers, the Soundcraftsmen AE2000 utilizes a Full Frequency Spectrum Display System for broad (2dB) adjustments... But it is the **ONLY DUAL-SYSTEM analyzer!**... It also includes our exclusive Differential/Comparator® System which is accurate to within **0.1dB**. **Ten times more accurate than any other system!**... No other Analyzer/Equalizer at any price can equal the **0.1dB readout accuracy of the Differential/Comparator® System.**

The AE2000 combines this Revolutionary Analyzer circuitry with a superb 10-Band Precision-Coil Octave Equalizer (no "artificial" IC's), identical to the DC2215, which is generally considered to be the ultimate in Octave Equalizers. The Differential/Comparator® system is used in the equalizer section to assure TRUE UNITY-GAIN within 0.1dB, regardless of the EQ curve selected. This guarantees maximum headroom for wide-dynamic-range material, highest gain, lowest noise, without overloading. With the AE2000 the peaks and valleys found in every listening environment can be effectively "neutralized" quickly and easily to realize the full potential of your sound system.

And at only **\$699.00** RETAIL, the AE2000 is a full **\$250.00** below the price of the AS1000 Analyzer and the DC2215 Equalizer separately!



### DC2215 GRAPHIC EQUALIZER

The equalizer section of the fabulous AE2000 is available separately as the DC2215. Truly the world's finest equalizer at only **\$399.**

## GUARANTEED SPECIFICATIONS

### EQUALIZER SECTION

**HARMONIC DISTORTION:** Less than .01% @ 2 V.  
**IM DISTORTION:** Less than .01% @ 2 V.  
**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")  
**GAIN/CUT CAPABILITY:** +32dB/-38dB—all controls maximum.  
**UNITY-GAIN CONTROLS:** 18dB range.  
**FILTER TYPE:** Precision-tuned passive wire-wound coil inductors.  
**DIMENSIONS:** 5¼" x 19" x 11¼" WT: 28 Lbs.  
**SIDE PANELS:** Genuine Oak or Walnut optional

### ANALYZER SECTION

**DIFFERENTIAL/COMPARATOR®:** Minimum input 75 millivolts. Measurement accuracy **0.1dB**.  
**HI-LEVEL INPUT:** Impedance 47K ohms. Gain: adjustable—30dB max. Frequency response: ±0.1dB 20Hz to 20KHz.  
**MIC PREAMP:** Input impedance 2K ohms. Gain: 80dB max. Frequency response: ±0.1dB 20Hz to 20KHz.  
**PINK NOISE SOURCE:** Internal generator.  
**BAND-PASS FILTERS:** Standard ISO center frequencies 30, 60, 120, 240, 480, 960 Hz 1.92, 3.84, 7.68, 15.36KHz.  
**SELECTABILITY:** Manual or Auto-Scanning with adjustable scan rate, Electronic switching of Display and Analyze filters.

*Soundcraftsmen*

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# WHO NEEDS A PROFESSIONAL-QUALITY GRAPHIC EQUALIZER?

**MYTH #1** A good stereo system doesn't need a professional-quality equalizer.  
**FACT:** Every stereo system benefits from proper equalization!

**MYTH #2** Average rooms don't have much effect on sound.  
**FACT:** Every listening room **degrades** the performance of any stereo system, unless the room effects are "neutralized!"

**MYTH #3** All Equalizers are simply glorified tone-control toys.  
**FACT:** A **professional-quality** equalizer, with the **essential related tools**, is the single most **valuable** audio component in your system!

**MYTH #4** All equalizers do more harm than good.  
**FACT:** A **professional-quality** equalizer, **properly used**, will greatly enhance any music system's performance!

**MYTH #5** Only poor loudspeakers benefit from proper equalization.  
**FACT:** The **better** a loudspeaker is, the **more** it can be improved through **proper** equalization!  
**FACT:** Only Soundcraftsmen equalizers include **essential** Frequency Spectrum Analyzer 12" Test Record, Computone Charts and Connecting Cables at **no extra cost**.

Would you invest \$19.95 for a test kit to find out **just how well your music system is now performing** in its own listening environment?

The Soundcraftsmen **EQUALIZATION EVALUATION KIT** will allow you to measure and record the actual frequency response of **your music system, in your room**, quickly and easily. (Any stereo system, provided your receiver or preamp has a balance control.) With this simple 10-minute test, you'll be able to make an intelligent decision as to the benefits to be derived from the addition of a graphic equalizer to your stereo system!

## THE EQUALIZATION EVALUATION KIT Includes:

1. A Specially-Recorded, Fully-Narrated 12" Frequency Spectrum Analysis Test Record.
2. Two Sets of Computone Charts® for Recording Frequency Response Curves.
3. A Copy of "The Whys and Hows of Equalization."
4. One A/B Comparison Connector Cable.
5. Complete Instructions.

*Tear off and send in the coupon below  
to receive your EQUALIZATION EVALUATION KIT!*

Send your check for \$19.95 to:  
**Soundcraftsmen, Inc.**  
2200 S. Hitchey St.  
Santa Ana, CA 92705

NAME: \_\_\_\_\_

ADDRESS: \_\_\_\_\_

CITY: \_\_\_\_\_

STATE: \_\_\_\_\_

ZIP: \_\_\_\_\_



**“Countryman’s Precision Pressure Microphones have more extended frequency response and appear to be omnidirectional.”**

*Continued from page 6*

**Fliers’ Friend**

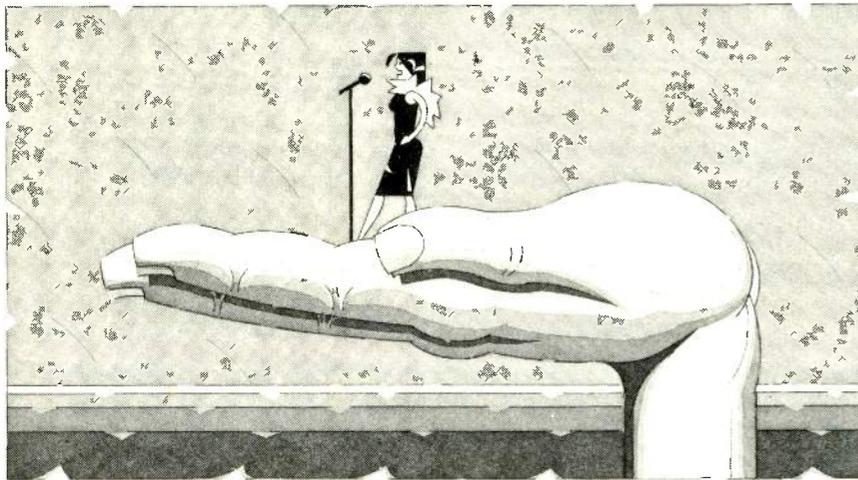
Airline eartubes are uncomfortable and tinny-sounding. Those new, lightweight stereo headphones are neither—but you can’t plug them into most airline sound systems. The answer is a \$28 gadget called Airphones, from MicroFidelity in Norwalk, Conn. It plugs into the airline eartube outlets, but its plug has two built-in microphones connected by wire to a cigarette-pack-sized amplifier with two 3.5-mm stereo

headphone jacks, a power switch, and a pilot light. It works best with in-the-ear rather than on-the-ear phones; the former do a better job of blocking out an airliner’s low-frequency ambient noise.

It’s not a perfect solution, yet. It does make the airline system’s frequency response more broad and even. It can’t improve the airline signal-to-noise ratio or wow and flutter, both of which are often good but not infrequently horrific. And on

some airline seats, big people like me find the plug sticking into their thighs. The gain on my early sample was a bit high—I had to turn the airline’s volume control all the way down to keep from blasting myself. (That’s being corrected.) Also, it would have been nice to have a clip to hold the amplifier to my clothes, rather than have it lying loose in my lap. But for music-lovers who take frequent or long trips, it’s the best solution to come along in a while.

Illustration: Philip Anderson



to be omnidirectional. The spec sheets say they’re so insensitive to conducted vibration that they can be placed directly on or inside an instrument (they can handle sound levels up to 150 dB).

The big news in conventionally sized microphones was made by Bruel & Kjaer, with microphones designed for studio use instead of for the instrumentation work that B & K is known for. The 4003/4006 mikes have unusually low noise (15 dB). The 4003, with power supply and transformerless, line-level output, is rated for a maximum peak sound pressure level of 154 dB; the phantom-powered 4006 has a 143 dB maximum, and both reach 1% distortion at 135 dB. The 4004/4007 mikes have about 10 dB higher noise, but can handle about 15% greater sound levels with less than 1% distortion, and about 13 dB higher levels before clipping. I heard several comments on how clean the B & K mikes sounded. I found it interesting that B & K’s literature covered not only noise and frequency response, but also energy-time response and phase response, measured both on and 90° off axis.

**Microphone Musings**

There are big, impressive microphones, and tiny mikes for use where unobtrusiveness counts more than quality . . . and then there are the little ones from Countryman Associates. At last October’s AES Convention, I ran into two lines of tiny microphones ( $\frac{5}{8} \times \frac{5}{16} \times \frac{5}{32}$  inches) from Countryman that piqued my interest. The Isomax line included the first directional lavaliers I’ve seen, available in cardioid, hypercardioid

and figure-eight directional patterns, with frequency response of 50 Hz to 20 kHz and switchable, low-frequency roll-off and high-frequency shelf boost. You can even mount two of these mikes on a single pin or tie clip, though they’d be too close together for stereo if you want fail-safe redundancy.

Countryman’s Precision Pressure Microphones have more extended frequency response (10 Hz to 25 kHz) and slightly lower noise, and appear

**The Box That Roared**

I recently got cable TV and discovered a pleasant but unheralded feature: When a station goes off the air, my cable system keeps a carrier on the channel so viewers aren’t blasted by noise as they tune past it.

That hasn’t been a problem on FM for decades, since all component tuners, at least, have muting to

silence vacant channels. TV sets could have that if the makers bothered—TV sound is FM, too. But so far the only TV set I’ve seen with it is Heathkit’s old GR-2001; Heath informs me that their new GR-3000 also has it, with the addition of video muting so your eyes won’t be dazzled by the snow, and a muting defeat switch on the remote controller. Anyone else have it?

Not that all is hunky-dory on the cable front, however. My local system used to have much higher sound levels on its local-access and imported channels than on the locally broadcast stations that it carries. That seems to be less of a problem this month—but stations which are shifted to new channels on the cable (such as local UHF’s) now sound abysmally distorted. **A**

# HEAR ALL OF THE MUSIC AND NONE OF THE TAPE...



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# State Of The Art Television Just Moved To Another State.

The Mitsubishi CM-1901 component video system shares a great deal more than a striking resemblance to the electronic exotica of the professional.

For it marks the first time ever that professional quality video and audio has been made available for the home.

Far more than components separated

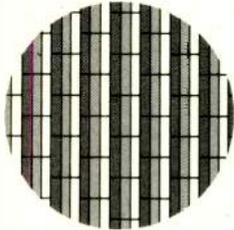
for cosmetic reasons that some call "pro" television, it delivers performance that is professional in every aspect.

Except price.

The CM-1901 brings this lofty level of performance and technology into the home in the form of a High-Definition Diamond Vision™ picture tube.

From a standard broadcast signal, the CM-1901 monitor will produce well in excess of 330 horizontal lines of resolution. That adds up to a stunning 400 lines from video discs. For computers, that translates into the faithful reproduction of 2000 bright, legible characters and high-density graphics.

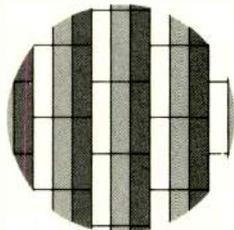
*Mitsubishi's fine-pitch design delivers 36% more resolution.*



*High-definition (.4mm) CRT.*

**36% MORE RESOLUTION,  
40% MORE COLOR.**

The CM-1901's ability to discern such fine detail is made possible by a 0.40mm fine-pitch black-matrix striped phosphor screen. In conjunction with the reduced beam spot size of its multi-step focus electron gun and the extended high frequency output of the video amplifiers, this results in 36% greater resolution than a conventional screen.

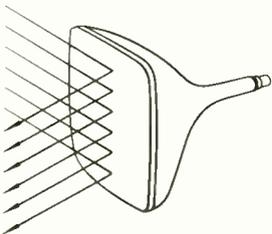


*Conventional (.63mm) CRT.*

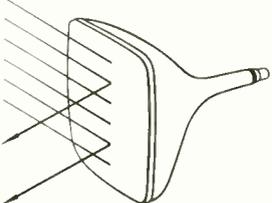
Further separating CM-1901's screen from the conventional is a feature that can be legitimately called one of the most significant innovations in the color picture tube ever.

**Diamond Vision.**

The Diamond Vision screen selectively transmits only the most desirable light wavelengths of the phosphors, producing truer, cleaner primary colors. The special chemicals mixed into the screen also absorb ambient light striking the faceplate. With color impurities filtered out and less light reflected back at you, the range of colors that can be reproduced is improved



*Conventional screen reflects most ambient light.*



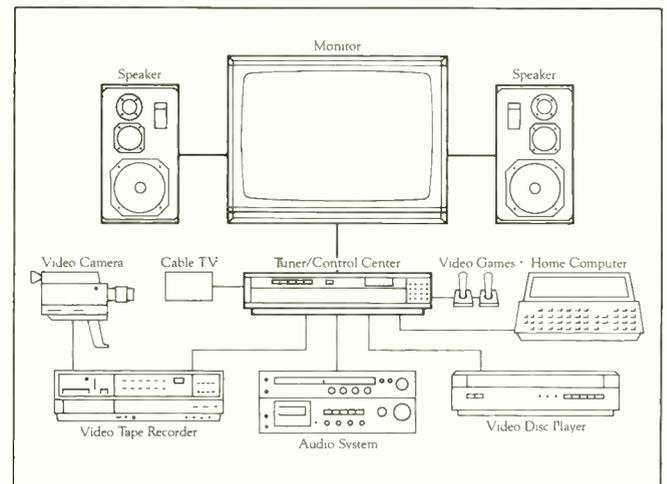
*Diamond Vision absorbs most ambient light.*

dramatically — as much as 40%. Subtle shades and hues are revealed. The picture takes on a more three-dimensional quality.

When used with a computer, an additional high-contrast tint helps reduce the eye-strain associated with long hours spent in front of the monitor.

The "nerve center" of the system is the TX-102R Control Center. Besides functioning as a sophisticated routing network integrating your entire system, it offers 139 channel cable-ready tuning, phase-locked-loop, frequency-synthesized, with the convenience of random access and remote control, plus twin video outputs, twin antenna inputs, and an RGB input for direct access to your computer.

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*The CM-1901's Component System is flexible, capable of expanding with your needs.*

Spend the money for the CM-1901 Component System and you can be sure of one thing. State-of-the-art's new home is yours.



Even If You Can't Have The Best Of Everything,  
You Can Have The Best Of Something.

Mitsubishi Electric Sales America, Inc., 3030 E. Victoria St., Rancho Dominguez, CA 90221.

## Muting Switch

*Q. What is the purpose of the -20 dB muting switch that can be found on many preamplifiers?—Scott Van Note, APO, N.Y.*

A. The -20 dB muting found on some preamplifiers is designed to enable you to quiet the music system during phone calls and to restore the sound to the volume you were using before the call was received.

Assuming that you did not have such a switch, you would have to turn the volume control down and, when appropriate, raise it to its former position.

## Tuner With a Receiver

*Q. Can I operate a separate tuner through my receiver (possibly via the tape loop), or must I acquire an amplifier as well?—Jeffrey R. Myers, Langhorne, Pa.*

A. You can use any tuner with your present receiver. The tuner contained in the receiver will never know about the new tuner and it won't be jealous! Use any appropriate, high-level input—tape loop, AUX or what have you. Everything will work as you hope.

## Solid-State Rectifier Substitution

*Q. Please comment on the replacement of a tube-type rectifier by a solid-state rectifier. My intention here is to improve low-frequency response from an audio amplifier.—Franklin F. Coperich, Silver Spring, Md.*

A. I do not think that this change will improve the low-frequency response. If the amplifier is deficient in bass, it may be that your output stage is unbalanced because of weak output tubes, unbalanced drive from the previous stage, or misadjusted bias on the output-tube grids.

It could also be that the output transformer lacks sufficient inductance to transmit bass to the speakers. If so, replace the output transformer with one having a heavier core (assuming that there is a physical way to mount the larger, replacement transformer). The replacement must also have the correct, specified plate impedance and the appropriate screen grid taps. And if you change the transformer, you will probably need to make adjustments in the feedback circuit.

From the nature of the question, I suspect that this amplifier is quite old.

If it once possessed better low-frequency response than it does today, this is probably due to the failure of capacitors somewhere in the circuit. The simplest way to cure that is to replace all electrolytic capacitors and proceed from there, rather than do extensive tests and trouble-shooting.

Replacing a tube rectifier with a solid-state one can cause problems, too. With a solid-state rectifier, there will be a surge at the moment the equipment is turned on; a rectifier tube's gradual warm-up would prevent this. This surge may hasten failure of the power-supply filter capacitors, if they are not rated conservatively but are operated near their voltage breakdown point.

Operating voltages run higher with solid-state rectifiers too, due to the rectifiers' lower internal resistance. If this voltage comes close to the filter capacitors' rated voltage, you'll need to lower that voltage to its original value, by inserting a series resistor between the rectifier and the rest of the circuit. But if the filters and other components can withstand the higher operating voltage, omit the resistor. The amplifier will then produce somewhat more output power.

Because the solid-state rectifier has no heaters, the system will also run more efficiently, producing less heat.

## Cartridges and Sonic Definitions

*Q. My question concerns phono cartridges. I want a very good, very compliant cartridge to take advantage of my turntable's tonearm characteristics.*

*I have been to many audio salons. Their salesmen's descriptions of various cartridges use the following terms—"flat," "silky," "smooth," "musical." What does all this mean?—Lee R. Antokal, Central Islip, N.Y.*

A. The various terms used by audiophiles, dealers and others describe tonal qualities and are attempts to divine what their ears hear. Because sound quality cannot be described in absolute terms, people try to use words which describe their subjective feelings and experiences.

You may find it difficult to tell much difference between one cartridge and another, as they are all surprisingly similar in sound quality. The only way you will know any of this for sure is

to take some of your favorite (and hence familiar) recordings with you to a dealer who stocks at least most of the phono cartridges in which you are interested. Use your ears and see what you come up with by way of a cartridge which suits *your* case.

There are some points for which you can, and should, listen. If there are bells on some discs or perhaps percussion with a considerable amount of high-frequency energy, listen for distortion, especially at the inner bands of a disc. Be sure to bring discs which have been difficult for your present system to track cleanly. I tend to give the highest marks to a cartridge which handles all of these difficult passages properly. Let us understand, however, that there are some discs which will never sound good because they have been cut at too high a level. No stylus can trace these grooves properly.

You should also listen for "smoothness." Smoothness and silkiness are related—here we go with those words again! Listen to strings and hear whether they appear to "scream" at you or are pleasing to your ears.

How is the bass? Is it "boomy," where some notes tend to stand out more than they should? See how such bass passages sound with various cartridges. If all cartridges sound alike in this regard, the bass problems you are hearing have more to do with the listening room or to the loudspeakers than they gave to do with the sound of the cartridges. You should then ignore that problem. Believe me when I say that noting differences from one cartridge to the next is not easy. You well may find that there is little or no difference for you.

Under such circumstances, I suggest that you buy the cheapest of those that you like. Chances are that you will be very happy with your choice.

## Burglary Protection

*Q. I am a student in a university, enrolled in a course titled "Industrial Research." Presently, I am trying to*

**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.**

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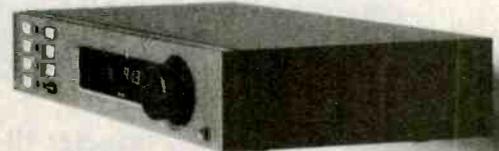
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sound engineering and intelligent design...

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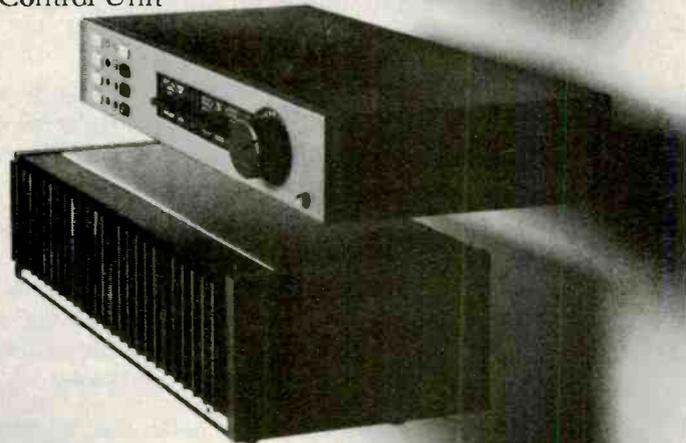


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Enter No. 18 on Reader Service Card

"The best way to prevent a theft is to keep the burglar out of the house in the first place."

*determine what type of electrical alarm circuit would best protect a multi-component home stereo system.*—Paul S. Howard, San Francisco, Cal.

A. Burglary is rampant, and stereophonic equipment is a prime target for burglars. The problem is not how to protect the equipment itself; the first

line of defense is to deter the would-be burglar from entering the premises in the first place. Should he gain access, there is a second line of defense, but more on that later.

My thoughts, to put it succinctly, are simply that you must keep the thief out of the house. If a professional burglar

is really determined to steal your gear, there is little you can do to stop him. Fortunately, however, most burglaries are committed by amateurs. They do not want to hang around, make noise, and otherwise attract attention. If there are bars in front of the windows and a solid, wooden door with a good lock, these will make the would-be thief think twice about entering your home. The noise, plus the time required to gain access, will dissuade many thieves from even trying to break in.

A light that's always on when no one is present is not necessarily good protection. The light in itself might give just the opposite impression from that which you wish to create. After all, if a person is really at home, there would be times when a light is not lit.

A timer used to control lights is not always helpful, either. Timers are excellent at turning lights on and off at precise times, but today's burglars often watch the homes of their intended victims, just to determine the regularity of such events.

There is at least one class of timer which helps overcome this. Rather than turning lights on and off at specific times, this equipment controls lights in a more or less random way, centered around the actual on and off times chosen by the user of the equipment. In addition to lights, these devices can control appliances such as radios or TV sets. The sound of these devices, heard by the would-be thief, gives one more illusion that there is someone home. The BSR X-10 and its Radio Shack and Sears equivalents are examples of this. Not only can they control gear plugged into outlets, but they can also control outside lights via wall-switch modules which substitute for wall switches.

Control is achieved by radio-frequency signals sent over the power line. Because of the frequencies on which they operate and because of the lack of frequency discrimination in the receivers, these systems are subject to "jamming" from devices such as wireless intercoms (which also transmit over the power line). Also, when lights are turned on, a considerable amount of r.f. "hash" is generated, causing interference to AM radio reception. (I have heard that one manufacturer offers a module which eliminates this in-

## THE TURNTABLE THAT BEAT THE COMPACT DISC

In a recent test done by **Popular Hi-Fi**, all four reviewers chose the Linn Sondek LP12 Turntable over the Compact Digital Disc.

"The Compact Disc Player sounds impressive at first, probably due to its relative absence of surface noise but once the music starts there is something which tells you immediately that it is wrong."—Chris Thomas

"All the key musical elements were there, but the subtle nuances of the music — delicate cymbal playing, intricate guitar work and so on — were missing which made the overall presentation of the music less convincing and involving than that provided by the analogue front end." — Simon Davies

"... although it was better than we had anticipated, it still was far behind our reference Linn/Ittok/Asak T combination in pure sound quality." — Chris Frankland

"In my view it still has some way to go before it is as good as the best analogue disc playing systems." — Jonathan Kettle

For a complete reprint of the review, and other information on the turntable that beat the compact disc, circle the reader service number listed below.



For further information contact:

AUDIOPHILE SYSTEMS LTD., 6842 HAWTHORN PARK DR., INDIANAPOLIS, INDIANA USA 46220  
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"There is little you can do to stop a professional thief, but fortunately most thieves are amateurs."

terference. I do not have the name of this company nor have I had the opportunity to check as to whether it truly does this.)

Radio Shack offers random on/off timers that can be substituted for wall switches and are completely self-contained, are not controlled by external signals, and do not produce radio "noise." They cannot, therefore, be jammed in the manner just described.

Another piece of equipment which can be useful is one or another of the various alarm systems now widely sold. Some are "hard-wired" into the home, which makes them inappropriate for temporary housing, such as school dormitories. A wireless system is probably best here. Some systems include very loud sirens which can scare almost anyone, including the owner of the alarm. They will attract attention!

Many wireless systems are designed to "listen" for the sounds of breaking and entering—breaking of glass, splintering of wood, etc. Their sensors are, to a degree, frequency-discriminating, and will therefore tend to overlook sounds which are normal to the environment.

Some of the more recent entrants on the market can also act like hard-wired systems, sensing the state of magnetic switches, pressure switches and the like. These systems operate from the power line; some will continue to operate in the event of a power loss and some will not. These systems can control recorded alarms. When activated, they can dial one phone number (or perhaps several in sequence), transmitting a "spoken" message that help is required at your address. One of the numbers generally included is the 911 police emergency number. While all this can be helpful, so many of these systems are set off accidentally that the police often do not respond to them as high-priority matters. You can see, therefore, that help may arrive too late to catch the burglar in the act.

If, after all of your attempts at prevention, the burglar does gain entry, it may help to have a second line of defense—a motion detector. No matter what its operating principle may be, it will sense motion in the vicinity of the equipment you want protected. It can then activate a silent, recorded alarm

or set off an audible or visible alarm (or any combination).

In short, anything you can do to slow the thief down will help deter him, but not necessarily stop him.

The information used in this answer was obtained in part through some years of association with a police pre-

dict community council, and in part by my having installed and/or worked with a number of the systems mentioned. Many police departments offer free security checks and advice. I strongly suggest that you take advantage of these services, if they are available to you. **A**

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# TAPE GUIDE

HERMAN BURSTEIN

## Recording TV Sound

*Q. I would like to record TV sound on my cassette deck. Do I need some kind of adapter? Do you have the names of manufacturers?—Pongsak Srisa-an, Syracuse, N.Y.*

A. TV audio tuners—that work in the same manner as AM or FM tuners, but on the VHF and UHF channels—have been made at one time or another by Radio Shack, by Pioneer, and by a company called Rhoades National Corp. (P.O. Box 817, Hendersonville, Tenn. 37075). I gather that the Radio Shack and Pioneer units have been discontinued, but some may still be around. I don't know about the Rhoades unit, but you might write to the company.

Another way is to take the TV sound signal from across the hot and ground leads of the TV set's volume control. Shielded cable should be used to connect from these points to the deck. However, this should be attempted **only if the TV set has an isolation transformer**. Otherwise the connecting cable may be carrying a potentially lethal power line voltage.

The least satisfactory approach, but one that works for some, is to set up a mike in front of the TV speaker.

## Too Much High Frequency

*Q. I want to transfer a vocal disc onto cassette. One of the songs is much too abundant in highs. I've been thinking that there might be a gizmo I could connect between the output of the amplifier and the input of the cassette deck to reduce the highs. However, I don't want to spend too much, naturally, to cut the highs for just one song. I have tried recording this song with Dolby off and playing it with Dolby on, but this didn't help much. Can you suggest anything?—John Scapelito, Fort Lauderdale, Fla.*

A. Ordinarily, one would employ a graphic or parametric equalizer for this purpose, but these aren't exactly inexpensive. There is, however, one simple approach which might work for you, and it is cost-free. This is to increase the bias beyond the amount normally required for the tape you are using. An increase in bias reduces the high frequencies; it may also increase distortion, but not necessarily to an objectionable extent. For example, if you use

ferric-oxide tape (Type I), set bias in recording for Type II (chromium dioxide and ferricobalt); this will substantially increase bias and cut the highs.

## Mikes for Organ Recording

*Q. I am planning to purchase a pair of microphones and would appreciate your suggestions. I will use these to record live classical pipe organ and choral music.—David R. Lenington, Towanda, Pa.*

A. Only some general suggestions can be offered in this space. First, you may prefer an omnidirectional mike to a cardioid one for at least two reasons: For a given price, an omni usually has smoother frequency response, and it will pick up more hall ambience (assuming that's what you want). Second, for organ you will want a mike with extended low-frequency response. Third, you should assay whatever mike you select on a trial basis, because it is difficult to tell in advance just how well any given mike will work in specific circumstances and with specific objectives in mind.

## Open-Reel Decks with 1½ ips Speed

*Q. Why don't open-reel deck manufacturers bring back the 1½ ips speed on their equipment? With the growth of noise reduction units, better electronics, and better tape formulations, it seems that the manufacturers could improve their decks' performance at this speed.—Robert Patterson, Des Plaines, Ill.*

A. True, the substantial majority of home open-reel decks do not provide the 1½ ips speed. However, some do: Akai, Sony and Telex-Magnecord listed such models in *Audio's* 1982 Annual Equipment Directory issue, and ASC, Ampex, Revox and Uher have such models listed (elsewhere in this issue).

It may be that most of the manufacturers felt that those who want 1½ ips will simply turn to cassette decks, particularly since good performers can be had there for as little as \$300 or even appreciably less. On the other hand, when you consider the high price of the really top-quality cassette decks—often rivalling or exceeding the price of good-quality open-reel decks—you realize that excellent performance at 1½ ips isn't all that easy to achieve. Unless

one uses the quite expensive metal tape, cassette at 1½ ips offers relatively little headroom (freedom from tape saturation when recording high frequencies at high levels); this is particularly significant when recording live material. But at the 3¾ and 7½ ips speeds most commonly found in open-reel decks, there is usually ample headroom. Further, the slower the tape speed, the greater the treble loss due to a given degree of azimuth misalignment (although Nakamichi, in its Dragon cassette deck, appears to have found an elegant—if not inexpensive—solution to the problem of azimuth misalignment). And still further, as tape speed is reduced, the gap of the playback head must be made correspondingly narrower in order to preserve high frequency response, which again costs dearly.

## One-Pass Noise Reduction

*Q. My problem is background noise on cassettes. This is not due to my tape system, which contains Dolby C noise reduction, but is part of the incoming signal from a remote FM station. I assume that a single-ended (one-pass) noise-reduction device could help me. If so, please provide a listing of such devices.—Gabriel Katona, New York, N.Y.*

A. Yes, a one-pass NR unit could be helpful. The answer to the rest of your question lies in the November 1982 issue of *Audio*, which contains a directory of such devices and the addresses of their manufacturers. Detailed information about units of interest to you can be obtained by writing to the manufacturers, who can also supply you with names of dealers in your area.

## Dolby Mistracking

*Q. When playing cassettes that I recorded in Dolby, the highs disappear. But when I switch off the Dolby, the highs return. What is the problem?—R. P. Murphy, Milwaukee, Wisc.*

A. Dolby works on the principle of boosting the high frequencies in recording (the lower the signal level rela-

**If you have a problem or question on tape recording, write to Mr. Herman Burstein at AUDIO, 1515 Broadway, New York, N.Y. 10036. All letters are answered. Please enclose a stamped, self-addressed envelope.**

tive to a reference level, the greater the boost) and cutting the high frequencies in playback (the lower the signal level relative to a reference level, the greater the cut). The treble cut in playback matches the treble boost in recording, thus restoring flat response, and at the same time reduces tape system noise, chiefly in the treble range.

It seems that the Dolby system in your deck is not working properly, either in recording or in playback or both. That is, the system may not be supplying sufficient treble boost in recording, or it may be supplying excessive cut in playback, or both. Such mismatching is called mistracking. On the basis of the reference level, a Dolby system must be properly calibrated so that treble boost in recording and treble cut in playback are equal, thus producing flat response. It appears that the Dolby system in your deck is either miscalibrated or defec-

tive. I suggest that you return your deck to the place of purchase or take it to an authorized service station.

#### Cassette Track Format

*Q. I have a portable mono cassette deck and I play mono tapes through my audio system, using a Y-connector to feed both channels of my system's amplifier. If I were to play a stereo cassette tape through this system, would both tracks of the tape be picked up or only one track? If I had a stereo cassette deck, could I still play mono tapes and have the sound come through both speakers?—Rudolph Feitl, Dumont, N.J.*

A. The standards for mono cassette recording state that Tracks 1 and 2—the upper two tracks out of the four—shall be used in one direction of operation, and Tracks 3 and 4 (lower two tracks) shall be used in the other direction. The standards for stereo cassette recording specify that Tracks 1 and 2

shall be used for stereo in one direction, and Tracks 3 and 4 in the other. Accordingly, if you play a stereo cassette on a mono deck, you will be playing both the left and right channels. If you use a stereo cassette deck to play mono tapes, each section of the stereo head will pick up the same signal, which has been recorded on both Tracks and the island between.

#### Which Deck Gets the NR Unit?

*Q. I own an open-reel deck and a cassette deck, and one dbx noise reduction unit. Should I use the dbx with the open-reel or cassette deck?—Emil Garlitz, Jacksonville, Fla.*

A. If you can use your dbx unit only with one deck or the other, it would probably be most effective when used with the cassette deck. The general principle is that noise reduction devices are most effective when used with equipment that can use the most help. A

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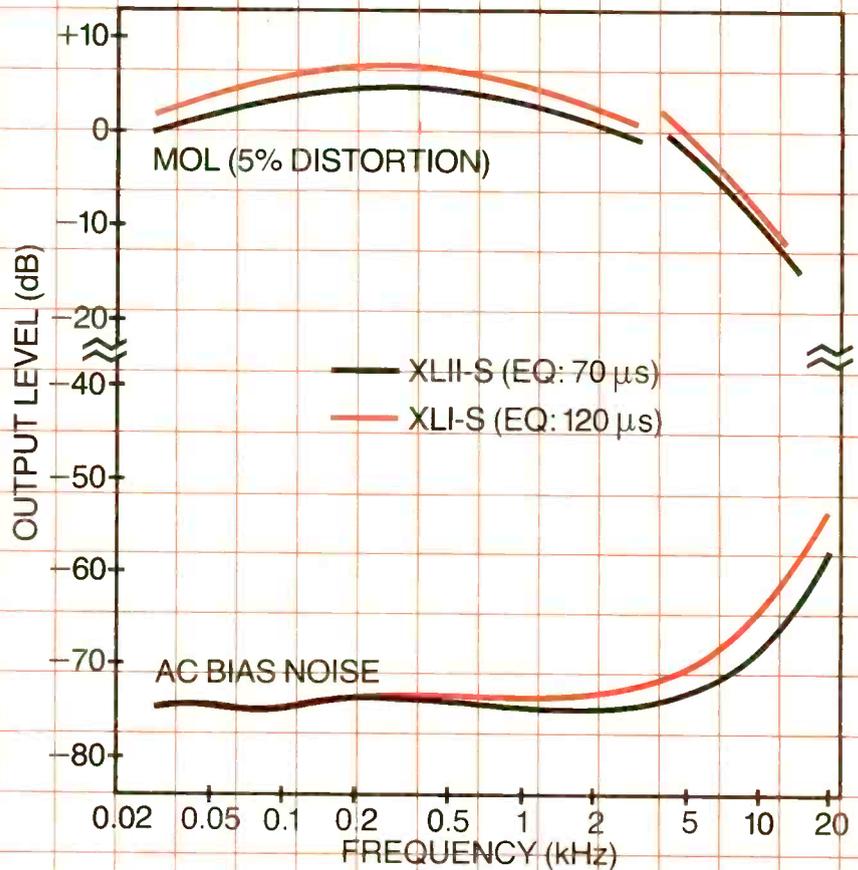
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For technical specification sheets on the XL-S series, write to:

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IT'S WORTH IT.

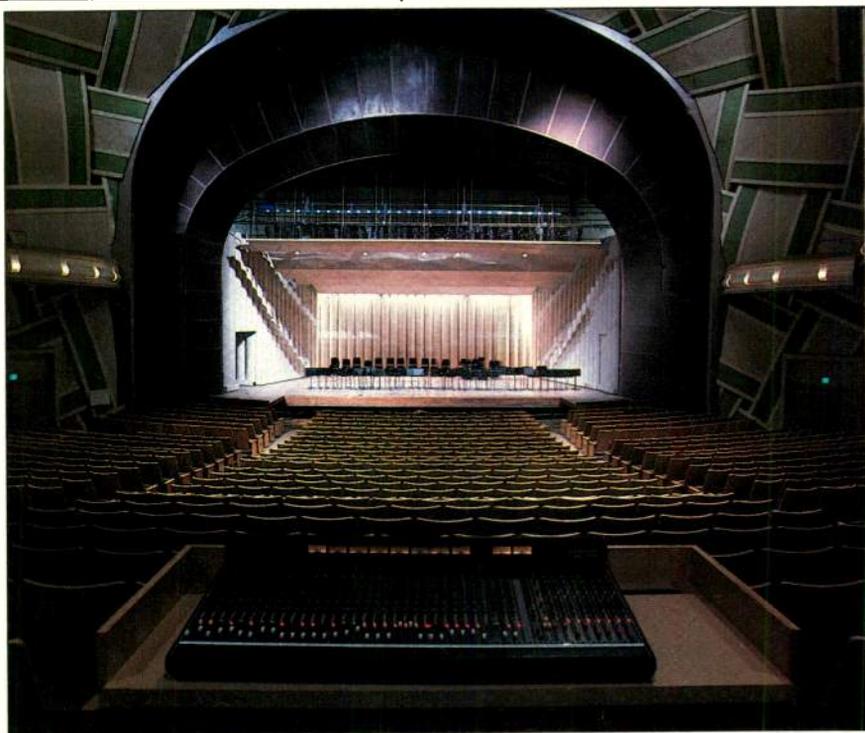
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## SILVA NUGGET

This last spring, on my annual vacation, I very nearly gave my all to *Audio*, though it was perfectly safe. I do not like heights. You know the feeling! And there I was, walking, almost crawling, across a 3-foot-wide catwalk of steel grating about 200 feet (that's the way it looked) above the floor of a new concert hall, the tiny seats all too visible straight down between my shoes. At first I flatly refused—but this was no ordinary hall and duty called, so I did it. Oof! I keep saying, never again. But it was worth the torture, for here was the first hall ever to be built from the start with *electronic* acoustics as part of the basic design. And the "works" of that system, alas, were up on the catwalks.

Silva Hall in Eugene, Oregon, just happens to be visibly, and structurally, the most startling example of new hall architecture anywhere around right now—it has already become world famous since its opening last fall. Every year I seem to run into something new in that enterprising small city on my visits to its Oregon Bach Festival. This year the festival was held mainly in Silva Hall.

I caught a glimpse of the inside of this hall two years ago—nothing but dreary concrete walls and floors joined by rickety ladders—and again last year when the basic insides and outsides were in place, though not the stage. What was once the Eugene Performing Arts Center is now the Hult Center, thanks to a large last-minute gift, and the bigger of the two enclosed spaces is Silva Hall. As a music listener I can tell you that it is the most exciting, refreshing place to hear music, almost any sort, that I have ever been in, absolutely unlike any other, all rococo lightness and humor. The huge external lobby is an airy assemblage of incredibly tall, peaked roofs in wood and glass, touched up inside with lofty balconies at many levels joined by stairs (and an elevator) paved in apple green floral carpets. The hall itself is a basket, inverted—you are inside a rounded basket-weave shell, the bands of material literally woven criss-cross at the diagonal (some absorbing, some reflecting) like some huge party basket with ribbons, the whole again in deliciously frivolous shades of fresh green, mint and watercress. The



Photographs: Hugh G. Barton

three balcony fronts (one an extension of the floor itself) snake back and forth in compound curves, each different; the high seats are warm-blond pressed wood with green cushions—the audience is a sea of heads.

What a pleasure at intermission to go from the subdued but warm lighting of the hall itself out into the high, brightly lit lobby, fresh aired, friendly, decked with people on many levels above and below. In daylight, the sun streams through multi-pasteled glass; at night, colored tubes light the peaked structures. Intermissions go on and on—such gab sessions you never heard. Several large refreshment places serve everything from hamburgers to glasses of champagne. It is concert heaven, even if a good many of the older, wealthier inhabitants of Eugene do not much approve. After all, shouldn't a concert be dignified, i.e. stuffy and formal? These are the folk who go to sleep with the first notes of the music and wake up to applaud mightily. They subscribe to every series and go to all the events, too. They don't really like all this fresh informality. I do. So will plenty of others.

I cite these visible attributes because a concert center is for live

sound, and the sound must match the intentions, the visibilities, of the hall itself. Without its electronics, Silva Hall would be useless—it is so designed. It depends deliberately on the immensely sophisticated electronic assistance that helps the hall itself produce its own sound and indeed, a far wider range of sounds, types of music and entertainment, that could ever be achieved acoustically. And this at a cost, assuming the electronics work out, which is far less than an equivalent mass of adjustable panels, curtains, hanging reflectors, and all the rest of the paraphernalia which has been developed, not without many a failure, since WW II.

We are thus at a new cutting edge. Ours is an age where music of wildly different sorts and periods must somehow be brought viably to audiences far greater than ever envisioned before. We cannot build separate halls—Baroque, Classic, Jazz, Chamber Music, Opera, Big-Band & Rock, Solo Recital, each with its own size and sound—and then run every show on successive nights (as the Eugene Bach Festival did in the old and right-sized Beall Hall, seating 500) in order to accommodate everybody! What we must

**“As a music listener I can tell you that Silva Hall is the most exciting, refreshing place to hear music . . .”**

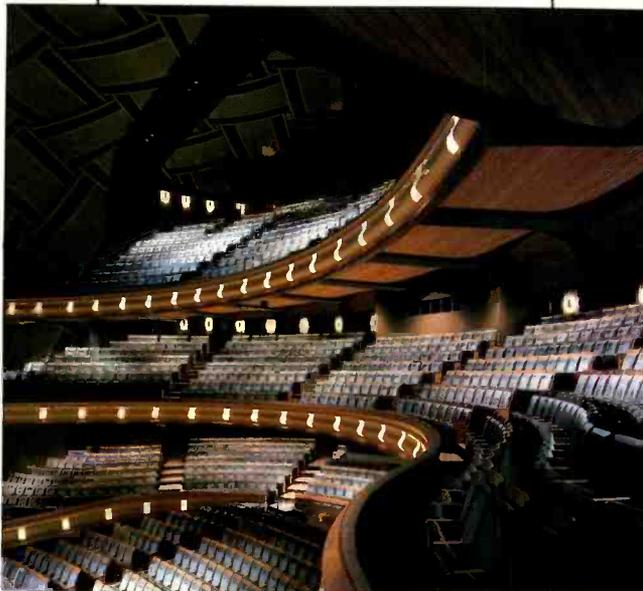
have is over-all, general-purpose centers, with no more than perhaps two sizes of hall (Hult has two) to cover everything in sound. This has been the goal since the 1930s, and it never was met with much success. The changeable, physically adjustable hall, once so promising, has not worked out. Too often everything is compromised, nothing sounds really right. Millions of dollars, pounds, whatever, have been spent on costly, painful revampings, notably the immense Lincoln Center complex in New York, where Avery Fisher Hall (ex-Philharmonic) has had two near-total rebuildings.

If I may say so, the electronically assisted hall is to the all-acoustic general-purpose space as the digital CD is to the LP. The things we now ask the LP to accomplish, like four channels, automatic operation, silent background, and so on, it does do, but inadequately; the digital compact disc takes to the same like the usual duck to water and offers huge future flexibilities too. The old concert halls, marvelous in their day, are still marvelous for what is now a limited, restricted use. We have hundreds of them, worldwide—splendid for recording, too. And we have the “new” old-type halls, running on acoustic power, modernized, and all too often inadequate. There are indeed a few halls electronically assisted after the fact—and *one* (to date) brand-new hall designed for the new age, acoustics and electronics intimately combined. Silva Hall.

It may never work perfectly without fixes and it doesn't yet. Even the operators are new to the concept and must learn plenty. But the future, if we continue to enjoy kilowatts of a.c. minus missiles, surely lies right here. Isn't ours the age of electronics?

Of course, you want to know the details of this Hult Center system in Eugene and you will find them in recent technical articles, both in architectural (*Architectural Record*) and in sound engineering journals. After three weeks and a dozen or more classical concerts of every sort in Silva Hall, plus a

tour of the inside works, I know something first-hand as to how it all operates. My best function is to look at the phenomenon from outside, to give you an idea of the audio importance of this development, a whole new major division of audio art—and the sort of effect it has on (a) audiences and (b) on the performing musicians themselves.



The reactions are remarkable, mainly in that practically nobody (save a few scientifically interested souls) pays the slightest attention to the electronics. The audience ignores the whole thing and speaks of the hall like any other. The musicians, so to speak, enjoy the publicity, the warm response to their playing, but complain (rightly) of a certain lack of two-way response; they do not feel enough a part of the audience in the sound they themselves hear. The town music critics studiously avoid any mention of other than musical performance—it is their tradition, of course, to keep things like hi-fi, records and all electronics on a suitably lower plane than the Real Thing, live music. In all these reactions, then, the performances are judged exactly as if the natural hall sound was all that was heard. Oddly, this is good. It is in fact necessary as a start. But I found it often exasperating.

In fact my ceaseless questions really got me confused—did conductor Helmut Rilling deliberately play down and soften and make distant the opening of

the Brahms *Requiem*, or was the electronic system wrongly set or misbehaving? I could not get any intelligible answer. It was perhaps some of both? Good, actually; and indeed it is difficult to discern any concrete, direct effect of the hundred or so hidden loudspeakers in that hall, as distinguished from the live sound supposedly coming from the stage. Very good! But also very revolutionary, as you may begin to understand.

This is no mere sound system, even state-of-the-art, though there is such a system on hand, with a speaker cluster that will blow your musical pants off if that's what you want. They also do rock shows and musicals and pop stuff here, remember, as well as harpsichord solos by Carl Philipp Emmanuel Bach. This (basically independent) system was used in the Bach Festival concerts mainly as a very gentle accent for soloists, if I am right, and to boost the harpsichord just enough so it would carry to the far balcony, faintly (as is proper) or be heard solo against an

orchestra of 20 or so players. But even here there was innovation. Instead of the usual solo mike, there was a flat black spot on the floor, at the end of a long snaky cable—a Crown PZM. Set well in front of a soloist or even groups of three or four, or mounted low next to the harpsichord, it did unobtrusively what PZMs can do and failed only once—when a slightly rattled violinist stood much too far away.

There are *no* close-up mikes in the two main electronic assistance systems which work together in this hall though on very different principles. All sound is picked up at a distance as hall sound. This is not sound reinforcement, it is *hall reinforcement*. Let me circle in a bit closer. What I like to call the primary system is AR—no, not Acoustic Research (have to do something about that) but Assisted Resonance, out of England. It is not new; it began in the celebrated Festival Hall in London, rescuing that foundering acoustic from sure doom. Other halls in the U.S. have been revamped to improve their ailing acoustics, or are in

"Today, music of wildly different sorts and periods must somehow be brought, viably, to far greater audiences than ever before."

the process of extensive face lifting. Eugene's AR is the latest and most daring application, via a new building designed for its use. In Eugene there are—so you'll see what's involved—no fewer than 90 microphones in the main AR array, all of them mounted high up in an arc at the top of the hall on one of those dizzy catwalks (the ribs to the basketry). They feed—more properly, feedback—into an equal array of 90 smallish loudspeakers set out on another catwalk high over the edges of the balcony.

These mikes hang a foot or so apart on dangling chains, all across the catwalk. You can lift them up to look at them, then dangle them back into space. They are no ordinary mikes. Every one is inside a tube, a tuned (Helmholtz) resonator, various sizes, each responding to an extremely narrow range of frequencies only a few Hertz wide. Indeed, they are remarkably like organ pipes in reverse, though the array is deliberately random, apparently so that no fixed directionality will be observed in the output.

These mikes feed their controlled resonance (feedback) in pairs to half as many preamps, the levels extremely critically adjusted to avoid real or uncontrolled feedback, i.e. howl and squeal. The total frequency range covered is remarkably small, only upward to some 1.2 kHz if I read right, this being the area of greatest definition in musical sound. Not far downwards either; we all know that low bass just rolls around any old way. I assume the two-into-one preamps are a useful working compromise, saving on complexity. Each preamp feeds out to a pair of speakers, which receive nothing but two highly resonant bands of narrow sound—no doubt unintelligible as music. But, by adjusting the levels, the die-away time of every frequency can be set independently of the others, to alter and extend the hall's own physical sound in extraordinary detail. And this is only one of the three systems in use!

Space is up—I'll get to the associated ERES system, very different, and to some of the concerts I heard and comments thereon, in a later follow-up. But do you already perceive a major new dimension in audio? And maybe a new industry, too?

A

# You never forget your first Girl.



# From lasers that play digital records to computerized tape decks that make digital recordings, nobody delivers the startling realism of digital sound like Technics.

The challenge: to eliminate the audible differences between live music and its recorded counterpart.

The solution: Technics digital audio technology.

Technics digital technology is not a conventional (analog) process of music reproduction as in ordinary turntables and tape decks. Instead, music that is recorded in the digital process is electronically translated into a numerical (digital) code. So sound is not only immune to the scratching and physical damage that can affect conventional records and tapes. But also to distortion that can ruin music.

When you play back a digital disc or tape, the numerical code is translated back into music. And the sound is indistinguishable from the original.

With all of this digital technology Technics has emerged as the only manufacturer to bring you not one, but three digital components. For both tape and disc formats.

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The SL-P10 uses a standard 4.7-inch grooveless, digitally encoded disc. This compact disc (CD) is not played in the conventional sense with a tracking stylus that can damage a record. Instead it is scanned by a computerized laser system. There is no wear on the disc, and the music is reproduced with a purity that could only be digital.

And the SL-P10 can be programmed to find a specific cut, play a series of cuts in any order or play a cut repeatedly.

Then there is the Technics SV-P100. The world's first compact, fully self-contained digital cassette recorder. It is a computerized marvel that uses ordinary video cassettes to record, store and play back the astonishing realism of digitally encoded music.

If you already have a video cassette recorder, the ingenious Technics SV-100 Digital Audio Processor connects to your VCR. This endows it with the same kind of computerized digital capability as our digital cassette recorder.

And whatever the future of audio holds, digital and beyond, Technics is committed to leading you to it.





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**Technics**  
The science of sound

# They don't just reduce tape noise. They eliminate it. Technics cassette decks with Dolby<sup>®</sup> B, C and dbx<sup>®</sup>.

This remarkable series of Technics cassette decks represents an important technological advance in the fight against tape noise. Because unlike other decks that give you only one or the other, Technics now gives you: Dolby B noise reduction for compatibility with your present tape collection. Dolby C for compatibility with the new "C" encoded tapes. And dbx to eliminate virtually every decibel of audible tape noise. All in one deck.



dbx is effective because it compresses a musical signal so its dynamic range is cut in half. When the tape is played back, the original dynamic range is restored, but the noise level is pushed below the level of audibility.

This allows loud passages to be recorded without distortion and soft ones without hiss.

These Technics cassette decks go on to give you computerized performance: microprocessor feather-touch controls. Music Select to automatically find any song on the tape. Music Repeat to replay a song up to 16 times. And a remaining time display to tell you how much recording is left on a tape.

In addition, there is automatic tape bias and EQ setting, expanded range (-40db to +18db) three-color FL meters to handle all the dynamic range dbx gives you, the accuracy and precision of two-motor drive and more.

Explore all of the Technics cassette decks with Dolby B, C and dbx. After all, why own a deck that just reduces tape noise, when you can own one that also eliminates it. Technics.

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The science of sound

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## A unique solution to a serious turntable problem: Technics turntables with the P-Mount system.

Unfortunately, standard turntable design has left too much to chance in terms of cartridge mounting and performance.

Technics turntables with the patented P-Mount tonearm/cartridge system have changed all that. By providing complete compatibility between tonearm and cartridge to achieve the optimum tonearm resonant frequency: the level at which annoying bass frequency interference is minimized. For the accuracy and fidelity conventional turntables can deny you.

In addition, P-Mount is a plug-in system. You'll get outstanding performance without struggling to install the cartridge. There's nothing to wire. There's no longer a headshell. There's no more fumbling to calibrate overhang or stylus position. Tracking and anti-skating adjustments have been virtually eliminated.

Just plug any P-Mount cartridge into a Technics straight, low mass, high performance tonearm, and tighten one locking screw. With Technics, your records are now virtually immune to the groove wear, poor channel separation and distortion caused by improper cartridge-to-tonearm mounting.

Technics has standardized all key specifications with manufacturers of P-Mount cartridges: cartridge weight, external dimensions, connector shape, stylus position and more. So you can choose from a wide range of cartridges from virtually every manufacturer.

The P-Mount plug-in cartridge system. Just one of the many advances you'll find in the entire line of sophisticated Technics turntables. Including our surprisingly affordable new quartz-locked series.

The turntable revolution continues at Technics.

**Technics**  
The science of sound

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# Technics introduces an awesome Computer-Drive Receiver. It stops distortion before it starts. And that's just the beginning.

The new Technics SA-1010 Computer-Drive Receiver. A receiver that combines so many technological advances it is the most sophisticated ever to carry the Technics name.

It starts with Technics innovative Computer-Drive technology: a microcomputer with the intelligence to sense potential causes of amplifier distortion. And to stop that distortion before it starts. So your music comes through with breathtaking clarity.

A second computer not only operates the world's most accurate tuning system, quartz synthesis. It also scans and mutes unwanted signals before they interfere with your music.



And the SA-1010's intelligence touches other areas.

A microprocessor is also used in conjunction with Technics Random Access Tuning with auto memory. It allows you to pre-set and store up to 16 of your favorite stations. And to hear any one, in any order, at the push of a button.

And whatever music you do listen to can be made to virtually envelop you, surround you by engaging Technics Dimension Control circuitry.

Then there's the sheer power of the SA-1010: 120 watts per channel, minimum continuous RMS, both channels driven into 8 ohms, from 20Hz to 20kHz, with no more than 0.003% total harmonic distortion.

And of course, the SA-1010 is ready for digital. It will be able to reproduce the flawless sound of digital sources soon to come.

Power. Perfection. And performance. The awesome SA-1010 Computer-Drive Receiver. From Technics.

**Technics**  
The science of sound

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## MUSIC ON THE MOVE

**T**here were some clear but hardly unexpected trends visible in the car-stereo offerings unveiled at the Summer CES. For example, I saw the first AM-stereo production models, the first prototype Compact Disc players for the car, more noise-reduction options and the beginnings of a traffic-warning system.

The first AM-stereo unit to hit the market will probably be Sansui's CX-990, with its universal AM-stereo decoder that automatically senses which system it's receiving and sets itself accordingly. Kenwood took more of a let's-see approach, equipping its new KRC-800 with terminals for an external AM-stereo decoder. Meanwhile, Delco has announced its support of the Motorola system, and Jensen has come out for the Harris one, but neither has announced production models.

At this rate, CD could be in cars before AM stereo gets there—ironic, considering that in-car listening was one of the main reasons for the latter's introduction. Fujitsu Ten says it may have a player by mid-1984. Philips had a Magnavox 1000 player sitting in their demonstration car, but it's not really ready for the road yet; in the Philips press bus, a few months back, it took average bumps in stride, but big ones confused its electronics completely. Mitsubishi's in-dash adaptation of its home CD player was obviously designed more for show than practicality—a production version would probably be a slot- or drawer-load model, to save dash space.

The trend beyond Dolby B NR continues, but slowly. Alpine's new 7155, at \$400, has Dolby B and C, as does Sony's new XR-100. Concord now has Dolby C as well as dbx outboard adaptors. Kenwood's new KRC-800 has Dolby C and dbx. And Panasonic's new CQ-S793 has dbx alone—no Dolby system—and is \$280.

While good music in the car makes traffic jams easier to take, it would be better if your car sound system could get you out of them. Hence, Blaupunkt's ARI road information system. Tune an ARI-equipped radio to the FM station broadcasting ARI signals for your area, and it will automatically override whatever you're listening to, adjust its volume to a preset level, play an announcement tone and then give

*Mitsubishi will probably change its CD player from door loading to slot or drawer to save dash space in production units for the car.*



you the local traffic information. When the announcement's over, you go back to your tape (it pauses while the ARI is on, so you'll miss nothing), radio program or even silence.

The traffic info is more localized than most stations now give. Instead of covering the whole metropolitan area in one report, each of the four stations now broadcasting ARI in the New York area gives you a concentrated look at just its local area—Long Island, Westchester/Rockland/Fairfield, New York City or Northern New Jersey. By the time you read this, Philadelphia may have ARI, with perhaps a South Jersey station filling the gap between there and New York.

At least one Blaupunkt model, the Chicago, has ARI built in, and several others (the Seattle, Richmond, Frankfurt and Manhattan) have jacks for add-on decoders which will cost about \$25 to \$35. Grundig's GCH 9600M is ready for Metro Traffic Information, which is compatible with ARI. Jensen, Alpine and Philips already sell traffic-information models in Europe, and could bring them in here if there's a demand.

Sansui joins Pioneer and Kenwood

in offering shift-key preset tuning. Here, that yields 18 FM presets (in three shifts of six) plus six AM ones.

There's now a definite trend away from the old, big-knob-at-each-end styling that has characterized car radios since the '30s. Just about everyone (Alpine, Grundig, Kenwood, Panasonic, Proton, Sansui, Vector . . .) has a model or two with just one or two small knobs, just one big one, or perhaps no knobs at all. Not having tried any of these on the road, I can't say how they'll compare, ergonomically, with more conventional designs.

A development I've been impatiently awaiting is modular design. That's not the same as dividing the system into the very components (amp, preamp, tuner, tape deck) we have at home, an approach which forces your eyes and hands to roam all over the dashboard chasing the controls. But there are ways to divide a system into modules which are functional in terms of operation in the car.

Blaupunkt started this with their original Berlin, the unit with the tape controls on the dash (because the transport had to fit there) and the tuner controls on a flexible stalk which could

"While good music in the car makes traffic jams easier to take, it would be better if your car sound system could get you out of them."

be swung wherever it was handy. There are now two Berlin variants, the analog-tuned 8000 and the digital SQR 83. A Berlin owner can zip the control head off and stick it in his pocket, as a theft deterrent. The amplifier and tuner circuitry are in separate, hidden boxes. To the rare thieves who know Blau-

punkts, this decentralization will serve as deterrents—and average thieves will only get the tape transport.

Philips' AC825 tuner/deck is an all-in-one unit with extra modules—a remote LCD (liquid-crystal display) station-frequency panel and a remote station-search control. The main unit also

has an angle adjustment for its built-in LCD display, and two-level search tuning, which runs through the strongest signals before checking out the weaker ones. It costs \$600.

Pioneer showed a multi-component system, but with a difference. The basic module is the FXK-90 tape deck, whose front panel flips down to reveal bass, treble and other controls, saving panel space. The tuner display is built into the tape deck, but the tuner itself is a small, separate unit with seven station buttons. Other modules include the amp, an equalizer/dual-amp balancer, and a motional-feedback unit for the speakers! There's also an infrared remote control, so the back-seat passengers can play, too.

Sansui's set of separates (small prize for saying that fast) takes a different tack, with remote controls for the tape decks and integrated amps, plus a tuner and an equalizer shaped and sized like the remotes so they can be grouped together. That's not just convenient—remote control also lets you put the amplifier where its distracting, dancing-light volume display can't be seen. (The amps have headphone outlets, too, which are fine for users smart enough to restrict their use to passengers. But I do hope that those who deafen themselves to the outside world by wearing phones while driving do it on some road I'm not on at the time.)

Another visible trend is toward better control illumination. Again, Blaupunkt has led the way, here. But many more companies are now taking this seriously, to varying degrees, including Alpine, Fujitsu Ten, Grundig, Philips, Proton, Sansui, Sony, and Vector Research (another home company which is hitting the road).

Proton's new top-of-the-line Model 207 has notches molded into its panel to help you locate the controls by feel, and to give you a better grip on the tape. Fuji's new GT-1 tape is also designed for an easier grip, with a non-skid surface. It also has asymmetric labelling and concave/convex moldings which let you tell which side of the tape is up with only a quick glance, or even by feel, and its shell is designed to resist baking in parked cars in Summer. Alas, it's only available as a normal ferric tape for now, but I bet premium versions will come. 

## A LASER MONITOR FOR THE PRIVILEGED FEW.

The new Celestion SL-6 is like no other loudspeaker in the world.

Designed with a laser, a computer and a blank sheet of paper by a new generation of engineering talent, it began with something never seen before. The microscopic vibrations of drivers in action, frozen in time. Scanned and plotted in exquisite three-dimensional detail by the laser-computer system we call ULTRA.<sup>TM</sup>\*

With the knowledge ULTRA gave us, we could discard the misconceptions and guesswork of conventional speaker design. The results: Two radically different transducers with precise, perfect-piston response. A crossover network of unique simplicity, because the drivers are so perfectly matched. And an enclosure of incredible rigidity.

What's more, the SL-6 is the first compact loudspeaker of studio monitor quality. Smaller than many "bookshelf" units,

Conventional driver



yet effortlessly handling up to 200 watts per channel.

There is much more to tell. But the most eloquent way to hear it is musically, from the SL-6 itself.

SL-6 driver



But first, a word of caution: only a limited number are planned for production. Which means its pleasures are limited to a privileged few. That select group of music lovers with the sensory and, yes, the financial resources to appreciate it. If the idea of being among them intrigues you, write or call for more information.

\*Ultra-accurate Laser Topographic Response Analysis.



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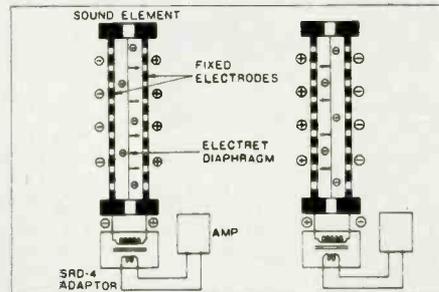
# STAX<sup>®</sup> electrostatic earspeakers

Understanding how STAX electrostatic earspeakers work will explain why they sound so drastically superior.



The new STAX SR-LAMBDA/SRM-1Mk2 Professional Earspeaker System provides serious audiophiles unprecedented realism that even the most sophisticated loudspeaker systems cannot provide. In applications where transparency, accurate phasing, and natural tonal balance are required, the SR-Lambda Professional Earspeaker System surpasses any other acoustical transducer.

The SR-Lambda Professional Earspeaker System was originally designed by the West German automotive manufacturer Daimler-Benz for their research and quality control engineers to use in car noise analysis. From a musical point of view, the end result of the SR-Lambda Professional is so outstanding that STAX is now making it available for home & studio use.



If we speak of a headphone, it usually means a dynamic one employing a dynamic transducer. In the dynamic transducer the driving force is applied only to the one part of the diaphragm which, therefore, must be stiff enough not to be deformed by air load. However, stiff materials considerably increase the diaphragm mass resulting in significant deterioration of transient response. In addition, the ununiform force applied over the diaphragm area leads to what is called "cone break-up". Hysteresis distortion caused through the magnet inevitable in the dynamic transducer cannot be ignored, either.

The electrostatic transducer adopted in the STAX earspeakers consists of two parallel-arranged fixed electrodes and several microns thick (2 microns in the SR-Sigma, the SR-Lambda and the SR-X/Mk3 and the SR-5N, 4 microns in the SR-84 and the SR-34) high-polymer film diaphragm suspended in the middle of the electrodes. The low-mass film diaphragm is supplied with biasing voltage from the energizing adaptors or from the SRM-1/Mk2. In the electret type earspeakers like the SR-84 and the SR-34 the diaphragm is permanently charged minus. When the fluctuating voltage of the audio signal is applied to the electrodes, the diaphragm is pulled by the electrode which has the opposite charge of the diaphragm's and simultaneously pushed by the other electrode which then has the like charge of the diaphragm's. The continuous flow of alternating voltage in interpretation of audio signals causes the diaphragm to vibrate in faithful compliance with the amplified output without time lag, assuring undistorted sound waves. This is why the STAX electrostatic earspeakers sound so good. The figure above shows the driving mechanism of the SR-84 and the SR-34.



## SR-34

Cost vs. Performance  
Electret Earspeaker



## SR-84

Lambda Junior  
Electret Earspeaker



## SR-Lambda

Semi-Panoramic Imaging  
Electrostatic Earspeaker



## SR-Sigma

Panoramic Imaging  
Electrostatic Earspeaker

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The Digital Age is upon us. It will provide a whole new dimension in listening dynamics and clarity—but, only when used with loudspeakers capable of reproducing the range, dynamics and realism digital recording makes possible.

Suddenly, everyone else's speaker systems are obsolete. While fine for standard analog recordings on tape or vinyl disc, they just can't handle the sonic requirements for proper Digital sound.

For nearly three decades, our philosophy and goal at Cerwin-Vega has been to produce a loudspeaker capable of the wide dynamic range, extended frequency response, proper phase coherence, low distortion and high efficiency required for modern music reproduction. Requirements, as it turns out, also necessary for proper Digital sound.

In addition, for the past five years, we've been using digital source material, exclusively, to further perfect

our loudspeaker systems. That is why Cerwin-Vega is the first and only loudspeaker company to have a full line of seven "Digital Ready" speaker systems—ranging in price from a few hundred to nearly a thousand dollars a pair, ready, Now!

Cerwin-Vega's Digital Series deliver just what they promise: true Digital sound with all its breathtaking dimension and accuracy. Listen to Digital sound on anyone else's conventional loudspeakers and they'll probably sound like they're wrapped in a wet blanket.

See your local Cerwin-Vega dealer and let your ears do the judging. While all the other companies are still working on their Digital prototypes, you can enjoy a proven Cerwin-Vega Digital Series speaker system in your home, today.

Write for a copy of our technical white paper: "Digital Speaker Systems"  
12250 Montague Street, Arleta, Ca. 91331 © 1983 Cerwin-Vega

 **Cerwin-Vega! Digital Series**

Enter No. 29 on Reader Service Card

## CONVENTION(AL) GEAR

Monitoring  
Loudspeaker  
KEF KM-1



Since I devoted last month's column to the introduction of the Compact Disc at the 1983 SCES, here I'll report on the conventional audio equipment that caught my eye.

Whether our hi-fi technology be analog or digital, music will still have to be reproduced through loudspeakers, and at the SCES there were legions of them in every size, shape and form.

At the KEF room, old friend Raymond Cooke, managing director of KEF and president-elect of the Audio Engineering Society, was beaming with pride as he demonstrated his new KM-1 monitoring loudspeaker built for the British Broadcasting Corporation.

This KM-1 is an absolute brute of a speaker, an all-out attack on the problem of producing a monitor with high output and high quality sound. One of the new breed of active loudspeakers, it has an integral amplifier of more than 1,200 watts from eight output sections and powering seven drive units. Remember—this is *per speaker*. With a frequency response of 30 Hz to 20 kHz  $\pm 2$  dB, the KM-1 can reach 120 dB SPL on program peaks. This speaker system is *big*, measuring 30½ in. H  $\times$  52¾ in. W  $\times$  26 in. D. Mounted on a pedestal, the KM-1s weigh 264 pounds each. The room in which they

were played at SCES was too small to do them justice, but I heard some mighty impressive sounds with a hint of the speakers' awesome power. If you have just made a killing in pork bellies, then the KM-1 can be yours for a mere \$32,000 the pair.

Certainly one of the most unusual speakers was the system manufactured by Apogee Acoustics Inc. of Norwood, Mass. Would you believe a full-range ribbon loudspeaker? As you know, up to now, ribbon drivers have mainly been used as tweeters, with a few mid-range units operating from about 600 Hz upward. The Apogee is an imposing 80 in. H  $\times$  35 in. W, but it is only four inches in depth. Each speaker has a steel framework to support a proprietary ultra-high-intensity magnetic drive system and each weighs over 300 pounds. The woofer ribbon is trapezoidal in shape so that resonances are staggered to avoid peaks. The special, corrugated aluminum alloy, two-inch wide mid-range ribbon is 80 inches long, and the half-inch wide tweeter ribbon is the same length and made of the same material. There are coupling transformers and a passive network with crossover points at 400 Hz and 3.5 kHz. The speakers are of medium efficiency and are designed to be bi-amplified. The Apogee

is said to be capable of producing an SPL of 115 dB at four meters when driven by a pair of 100 watt per channel stereo amplifiers. Frequency response is claimed to be from below 30 Hz to beyond 30 kHz, with extremely low distortion. At the show, the Apogee ribbon speakers were driven by two Levinson ML-3 amplifiers and ML-6A pre-amps. Along with some other members of the audio press corp, I had heard a demonstration of prototype Apogee speakers in a New York apartment and we were all quite impressed. At the show the production model, with added refinements, had a seamlessly smooth quality of reproduction which was outstanding for its lack of coloration across the music spectrum. As you might expect with ribbon speakers, transient attack was lightning-fast and recordings like Real-Time Records *Hot Stix*—a tour de force in drum work—were reproduced with spectacular realism. Of course, the big question was whether the Apogee speakers could really reproduce low frequencies and high SPL. The "punch in the stomach" bass drum in the Telarc recording of Tchaikovsky's *Cossack Dance* was very convincing evidence of the Apogee's low frequency capabilities. The 32-foot organ pedal notes I recorded on the Crystal Clear Virgil Fox discs were reproduced accurately with great sonority and room-shaking authority. With voice, with large-scale orchestral works, with solo instruments, and with jazz and pop groups, the Apogee full-range ribbon loudspeaker afforded a natural sound quality of compelling realism. Price of a pair is \$6,100.

Some people are so taken with CDs that they are sounding an early death knell for analog records. Many feel that the CD will make a significant impact on the analog market within a year and make really serious inroads in about three years. Could be—but you would never have guessed that analog records were in any jeopardy, judging by the considerable number of new phonograph products introduced at the SCES. Perhaps it would be best to paraphrase General MacArthur: "Old analog recordings will never die, they'll just fade away." Remember, in some parts of the world 78-rpm records are still spinning.



*Apogee Acoustics Loudspeaker*

New phonograph cartridges were introduced by quite a few companies. Shure had a new line, headed by their V-15 Type V MR. The MR designates "Micro Ridge Tip," whose smaller tracing radius is said to reduce harmonic and intermodulation distortion. Present Type V cartridges can be updated by obtaining an MR replacement stylus assembly.

Goldring of England was proudly showing their new Electro Two moving-coil phono cartridge, whose high output obviates the use of step-up transformers or head amps. The cartridge features a van den Hul stylus, and is the first moving-coil cartridge ever manufactured in England. Price has been set at \$300.

The well-known Decca cartridge is also now available with a van den Hul stylus. Marketed by Audio Access, it claims superior tracking, higher definition, better transient response, and total elimination of microphonics.

Accuphase showed their AC-2 moving coil cartridge with such features as a tubular sapphire cantilever, samarium cobalt magnets, and die-cast aluminum alloy cartridge housing. The AC-2 is claimed to have a frequency response up to 60 kHz, channel separation of 31 dB at 1 kHz, and channel balance within 0.5 dB.

Evidently Goldmund doesn't think analog records are a dying technology either. They introduced a "dream turntable," the Goldmund Reference. With its special stand, it weighs in at 200 pounds, has a suspended weight of 80 pounds, and uses a 35-pound turntable platter. Goldmund claims the best speed stability ever offered—0.01%. The unit features the Goldmund T3 lateral-tracking tonearm, and a programmable computer control for all functions. This "analog fantasy" can be yours for a mere \$11,000!

An English turntable called the Rock aroused considerable interest. You all probably saw turntables featuring con-

crete bases some years ago. The Rock turntable uses a special cast-stone agglomerate base which is mounted on a heavy suspension. The turntable platter itself is made from the same material and is said to have the same resonant frequency as a vinyl record. If you recall the viscous fluid damper of the SME arms, there is a similar device on the arm supplied with this turntable. The difference is that the Rock's paddle is at the other end of the arm, beyond the cartridge from the pivot. The oil-filled damping trough is arc shaped and swings into position over the record for use. During play, the rotating record can be sharply rapped, not only with no loss of stability but also with no production of microphonics. The Rock will be imported by Essence of Lincoln, Neb.

Finally, by the time you read this, SOTA will have started production of their Star Sapphire vacuum-platter turntable. Several other improvements have also been incorporated, including a computer-generated optical stroboscope, and the unit now features a separate power supply. They will also offer a mounting board for the Souther arm, as will the Oracle turntable folks.

With the 90 dB dynamic range of CDs, big-brute, high-wattage amplifiers are in vogue again. Perreux was showing a monster amplifier which is said to have an output of 800 watts per channel into 8 ohms! Frank Dickinson, my recording associate, who does much digital recording around New York, has the professional version of this amplifier, with XLR inputs and outputs, balanced connections, etc. He tells me that this is one of the few amplifiers which can withstand the rigors of digital recording. Price is stated to be slightly under \$3,000.

Accuphase was demonstrating their P-600 stereo amplifier, an 85-pound unit which has an output of 300 watts per channel into 8 ohms and which can be bridged for an output of 1,000

**"At SCES there were legions of loudspeakers in every size, shape and form to handle analog or digital hi-fi technology."**

watts monophonic into 8 ohms. The P-600 has special circuitry that permits operation into 1 ohm with an output of 450 watts per channel! Harmonic distortion is claimed to be less than 0.01% with 4 to 16 ohms. The amplifier has a digital peak-power display, using a 12-bit A/D converter and a 4-bit microprocessor. This facility features a Hold Time circuit which can keep the peak-level reading for 30 minutes and thus show the maximum level on one side of a record. This amplifier can also be operated into a 600-ohm balanced line input.

Spectral has been researching the design of a Class-A amplifier for some years, and finally they unveiled it in the form of their DMA-100. This amplifier claims 100 watts per channel into 8 ohms with a power bandwidth of 1 MHz and a slew rate exceeding 500 V/ $\mu$ S. The unit will drive loads as low as



*Spectral DMA-100 Class A Amplifier*

1.2 ohms with an output of 270 watts per channel. The DMA-100 is also said to recover instantaneously from overloads as high as 20 dB. In what appears to be a growing trend, this amplifier can also be operated in a balanced configuration. The DMA-100 will sell for \$3,195.

Counterpoint entered the world of exotic amplifiers with their SA-4 mono tube amplifier. An output-transformerless design, it has an output of 100 watts per channel into 8 ohms, with Class-A operation up to 25 watts. A pair of these mono amplifiers will sell for \$4,000.

As usual, more products at the SCES than one could possibly cover. I'll try to slip in mentions of some other loudspeakers and assorted items in forthcoming columns. **A**

# Buff Stuff from TDK.



You, the audiophile, are the toughest critic we know when it comes to sound performance. You're very selective in deciding the perfect equipment for your recording and listening needs.

And you're just as selective in choosing your recording tape. TDK knows that. So we developed a line of high performance audio cassettes that meet your critical requirements.

We call it the TDK Professional Reference Series.

You're probably using TDK SA-X high bias cassettes now because of their superior performance characteristics. In addition, TDK has developed normal bias AD-X which uses TDK's famous Avilyn particle formulation and delivers a wider dynamic range with far less distortion than ever before. Plus, TDK's unique metal bias MA-R cassette which features high-energy performance in a one-of-a-kind unibody

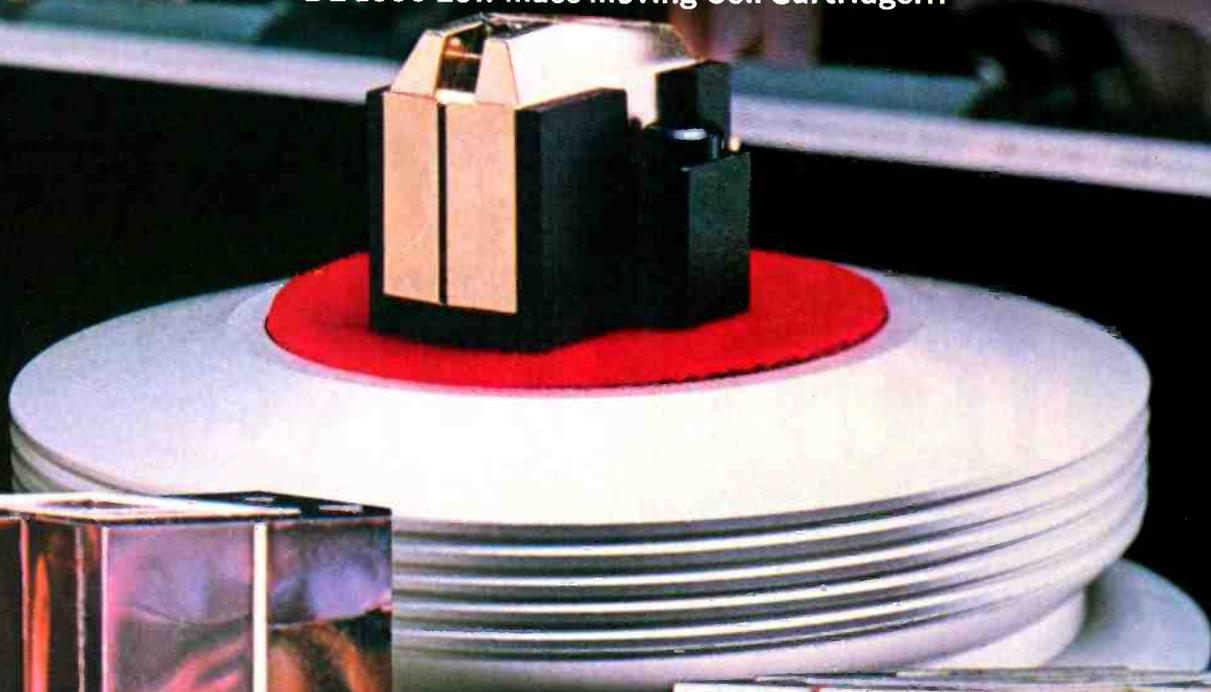
die-cast metal frame.

The TDK Professional Reference Series...it'll sound impressive to your ears. So share the pleasure with your friends; they'll appreciate it.

 **TDK**  
THE MACHINE FOR YOUR MACHINE<sup>®</sup>

# DESIGN INTEGRITY:

The same pick-up technology developed for our \$1,000.  
DL-1000 Low Mass Moving Coil Cartridge...



...can be found on our  
Boron-cantilevered \$275. DL-207...

... and on our split-cantilevered \$100.  
DL-300 MC Cartridge.

The perhaps ultimately low effective tip mass of Denon's most expensive cartridge establishes new standards for cartridge tracing and minimal record wear (the recommended stylus force is a mere 0.8g). Yet the basic design configuration of the DL-1000 is common to many Denon cartridges.

For example, an amorphous deposition Boron cantilever (with the highest rigidity/weight ratio known) is also used on Denon's new DL-207, as is Denon's original dual damping mechanism, which effectively cancels resonances in the two critical portions of the musical bandwidth.

More amazing, perhaps, is the fact that Denon's *least* expensive cartridge, the DL-300, benefits from much of the technology that has made Denon Moving Coil Cartridges the world's reference standard for years. Like the DL-1000, it features a cross-coil armature (for better stereo separation and imagery), a poleless magnetic structure (for vastly reduced weight), and a single-point cantilever suspension system (for maximum compliance *and* strength).

Denon products share more than name alone.

**DENON**  
*Imagine what we'll do next.*

# DESIGN INTEGRITY:

The same Dynamic Servo Tracer tonearm technology found on our \$6,200. DP-100M...  
Cutting Lathe Motor AC Direct Drive Turntable.

... can be found on our \$525. DP-52F...  
Microprocessor-controlled Fully Automatic AC Direct Drive Turntable.

... and on our \$199. DP-11F.  
Fully Automatic Flat-Twin Direct  
Drive Compact Turntable.

Instead of gimmicks, the Denon DP-100M uses the same cutting lathe motor that creates disc masters. Its Dynamic Servo Tracer system, working in concert with a Denon high-precision, ultra-low mass tonearm effectively suppresses resonances while providing the proper damping for the widest variety of cartridges.

The same Dynamic Servo Tracer system is incorporated on the DP-52F, making it one of the most effective playback systems ever developed for warped and hard-to-track records. Damping, anti-skating and tonearm lift/locate are all applied through microprocessor-controlled non-contact electronics. Its AC Servo motor employs the same drive principle and magnetic speed control found on Denon's DP-100M.

The DP-11F introduces Denon design technology to a new price category. It features magnetic speed detection, a Flat-Twin Direct Drive motor and the same Microprocessor-controlled Dynamic Servo Tracer tonearm system found at the very top of our line.

Design Integrity: Denon's products share more than name alone.

# DENON

*Imagine what we'll do next.*

Enter No. 32 on Reader Service Card

Denon America, Inc., 27 Law Drive, Fairfield, N.J. 07006

Prices shown are for comparison purposes only.

# DESIGN INTEGRITY:

**WHAT MAKES DENON CASSETTE DECKS UNCOMMON IS HOW MUCH THEY HAVE IN COMMON.**

Denon has never built multi-thousand dollar cassette decks in order to sell unrelated inexpensive machines. Instead, Denon has concentrated its full engineering effort to produce rationally-priced cassette decks that would impress serious music lovers with their sound rather than their features. Now, the new DR-M4, DR-M3 and DR-M2 cassette decks exceed Denon's previous sonic performance levels, while adding significant technological and convenience features.

Denon's Tape Tension Servo Sensor System has been further refined to provide automatic sensing and correction of tape tension for optimum tape-to-head contact throughout the entire play of each cassette. A new SF combination head extends frequency response to 23kHz (metal) with a 70dB S/N ratio (Dolby C). A new computer controlled silent tape transport mechanism provides entirely quiet and safe tape handling. An electronic computer digital counter using a laser detector system automatically indicates tape used and tape remaining information.

The DR-M Cassette Decks feature Denon's Flat Twin direct capstan drive; non-slip clutchless, beltless, reel drive mechanisms; Dolby B & C noise reduction; direct-coupled amplifier design, and separate amp/mechanical power supplies.

The DR-M3 offers computer tape tuning for bias and sensitivity. The DR-M4 adds programmable random access, stopwatch function and dual-capstan transport. Otherwise, all the Denon DR-M Series Cassette Decks are principally the same — each offering the highest performance and quality at its price in the industry.

Denon products share more than name alone.

*For the best results on the new DR-M Series, or any cassette decks, for that matter, try new Denon DX-Series Cassette Tape.*

**Denon DR-M1 Two-Head Cassette Deck with Dolby C; Tape Tension Servo. \$299.**

**Denon DR-M2 Three Head Cassette Deck**

with Dolby C; Tape Tension Servo; SF Combination Head.  
(Side panels optional) **\$399**

**Denon DR-M3 Three Head Cassette Deck**

adds Computer Tuning System.  
(Side panels optional) **\$499**



**Denon DR-M4 Three Head Cassette Deck**  
adds Dual Capstan and Music Search.  
(Including side panels) **\$599**

Prices for comparison purposes only.

# DENON

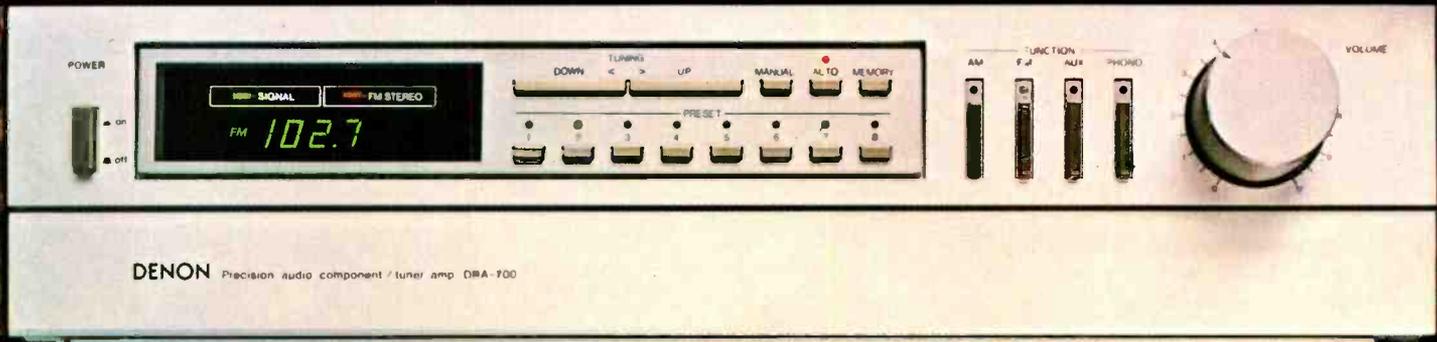
Imagine what we'll do next.

Denon America, Inc., 27 Law Drive, Fairfield, N.J. 07006

Enter No. 33 on Reader Service Card

# DESIGN INTEGRITY:

WHAT MAKES DENON RECEIVERS UNCOMMON IS HOW MUCH THEY HAVE IN COMMON.



DENON Precision audio component / tuner amp DRA-700

## Denon DRA-700 AM/FM Stereo Receiver \$549

Non-NFB OdB Amplifier; Quartz PLL Synthesized FM Tuning; MC Head Amp; 60 Watts\* per Channel.



## Denon DRA-300 AM/FM Stereo Receiver \$299

Non-switching A Amplifier; Quartz PLL Synthesized FM Tuning; 33 Watts\* per Channel.



## Denon DRA-400 AM/FM Stereo Receiver \$399

Non-switching A Amplifier; Quartz PLL Synthesized FM Tuning; MC Head Amp; 45 Watts\* per Channel.

The DRA-700 Receiver incorporates the same OdB Non-NFB circuitry that earned Denon special recognition by *Audio Video International* magazine in their Hi-Fi Grand Prix Competition. This straight-forward circuit design makes the DRA-700 the most electronically sophisticated receiver on the market today.

The DRA-400 actually won the AVI Hi-Fi Grand Prix Award, and was cited for its Non-Switching A Amplifier (which eliminates Switching and Crossover distortions) and Quartz PLL Synthesized FM Tuning System (which improves tuning accuracy and eliminates station drift).

The DRA-300 also offers a Non-Switching A Amplifier and Quartz PLL Synthesized Tuning, but for under \$300.

Denon products share more than name alone.

Denon America, Inc., 27 Law Drive, Fairfield, N.J. 07006

\*Prices for comparison purposes. Side panels optional except on DRA-700. All power ratings at 8 ohms; 20Hz-20kHz; THD 0.05%; (DRA-700; 0.015%).

# DENON

Imagine what we'll do next.

Enter No. 34

on Reader Service Card

For years you have been fed some pretty tall stories about cassette tape. Denon only makes one claim for DX-Series Cassettes. We don't say they will play on the moon; we don't say they will survive being baked in ovens. We hope that they won't tip over your chair or shatter your stemware. We only say that Denon DX-Series Cassette Tape will sound more like real music than any other brand on the market.

**"YOU DON'T LISTEN TO SPECIFICATIONS;  
YOU LISTEN TO MUSIC."**

Most cassette tape advertising tries to impress you with specifications. The trouble is that specifications do not

necessarily equate to *musicality*.

Most manufacturers' specifications are based on static measurements, the tape's response to steady test tones. Denon DX-Series Cassette Tape goes one step further: it also minimizes Dynamic Distortion, the distortion created by actual musical signals.

**"DENON WILL BECOME  
THE AUDIOPHILES CASSETTE TAPE."**

True audiophiles realize the A-B testing is not the real gauge of sound quality. Only extended listening can tell you if a component — or a tape — is superior.

Perform this test for yourself. Make a recording on Denon DX-Cassette Tape first listening to the source. Then playback your DX-Tape recording and compare the two experiences.

The message is in the music.



**"YOU WILL DISCOVER A CASSETTE TAPE  
THAT SOUNDS LIKE REAL MUSIC."**



C37-7001 BEETHOVEN SYMPHONY NO. 5 in C Minor, Op. 67  
Otmar SUITNER conducting  
STAATSKAPELLE BERLIN



38C37-7026 HANDEL TRIO SONATAS  
Heinz HOLLIGER, oboe



C37-7033 MOZART STRING QUARTET  
NO. 17 in B Flat Major, KV 458 "HUNTING"  
NO. 15 in D Minor, KV 421  
SMETANA QUARTET



C37-7004 DIE GROSSE SILBERMANNORGEL  
DES DOMES ZU FRIEBERG  
J.S. BACH  
Hans OTTO, organ



38C37-7011 BEETHOVEN SYMPHONY NO. 3  
"EREOICA" in E Flat Major, Op. 55  
Otmar SUITNER conducting  
STAATSKAPELLE BERLIN

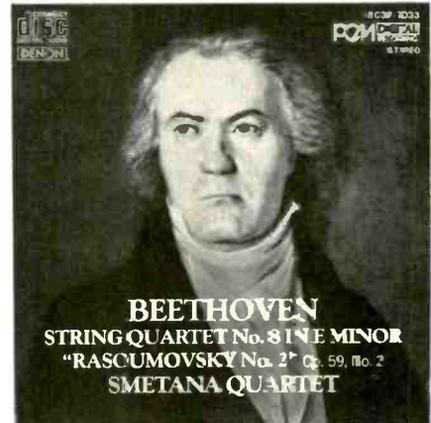


38C37-7013 ANTONIO VIVALDI THE FOUR SEASONS  
Gunars LARSENS violin  
Rudolf BAUMGARTNER, direction  
FESTIVAL STRINGS LUCERNE

**TO DECIDE  
WHICH  
CD PLAYER  
IS BEST,  
MAKE THESE  
YOUR  
REFERENCE  
CD'S.**



38C37-7022 BEETHOVEN NO. 7 in A Major, Op. 92  
Otmar SUITNER conducting  
STAATSKAPELLE BERLIN



38C37-7033 BEETHOVEN STRING QUARTET NO. 8  
in E Minor, Op. 59, NO. 2  
RASOUMOVSKY NO. 2  
SMETANA QUARTET

Analog or digital, a system is only as good as its signal source. When it comes to recording digitally, one company stands out from the rest—with over a decade's more experience than most of its competition.

Denon is credited with having introduced digital technology to the field of audio in 1972. For over a decade Denon continually has refined PCM recording technology to a point where fifth-generation Denon professional PCM recorders are currently in use in Denon's own recording studios.

During these exciting years, Denon has

digitally recorded over 650 titles, and in the process has captured many of the most critically-acclaimed performances of the world's greatest music with sonic accuracy second to none.

Compositional masterpieces; definitive performances; state-of-the-art sound. The Denon Reference Compact Discs.

**DENON**  
IMAGINE WHAT WE'LL DO NEXT.

Denon America, Inc. 27 Law Drive, Fairfield, N.J. 07006

# MICHELOB<sup>®</sup>

*Every ingredient  
barley malt,  
hops, rice and  
very finest*

Some things speak for themselves

MIKE VAN HAUWERE (P) 1995

# 1983 ANNUAL EQUIPMENT DIRECTORY

Well, it's that time of year again. Magnifiers at the ready, you can scan the following pages for a thorough cross-section view of audio equipment and specifications.

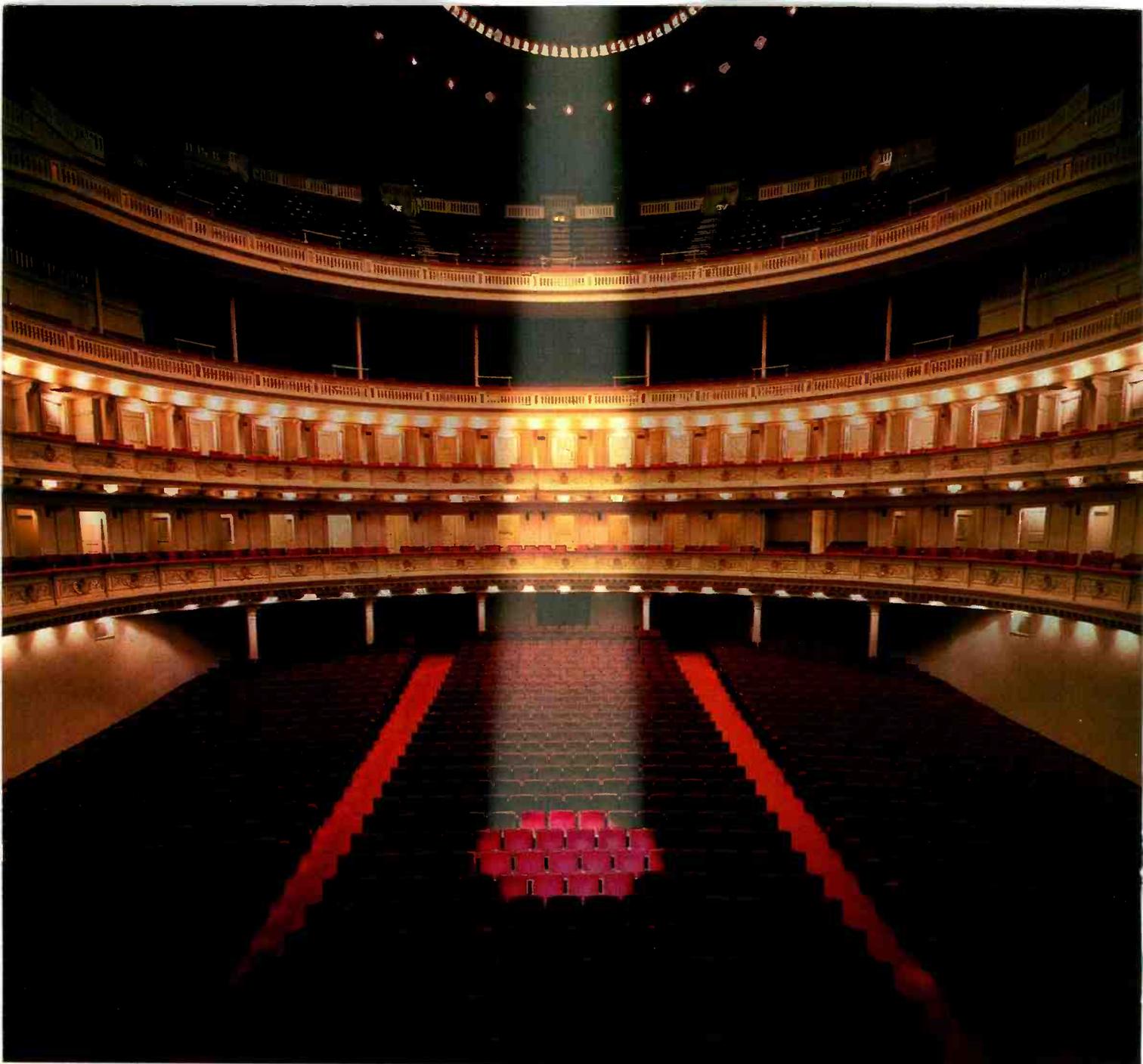
This year, we have two firsts, and the return of an old favorite. The firsts are (1) the introduction of Compact Disc players (no great surprise, there) and (2) our first product information tables to be spread across two pages. They're actually one and the same: We felt we needed to expand the CD player table because the product category is so new and the features so many and varied. Please write and let us know how you like this new approach.

The returning friend is the letter code for turntable speeds. Most turntables are strictly 33/45 models, but there are still plenty of exceptions—and plenty of people looking for them. Those people range from record-collectors looking for 78-rpm or variable speed to audiophiles who will have no truck with any speed but 33 $\frac{1}{3}$ . Both will now find what they want at a glance.

As usual, these listings are as complete and accurate as we can make them, subject to the usual sprinkling of human error (ours and the manufacturers'), companies that moved or opened too late for us to find them, and companies that didn't get their material here on time. But then, no directory has ever been 100% complete and up to date since Adam took census in Eden. For additional information, write the companies involved (addresses begin on page 218).



Photograph: Carl Zapp



## Sony creates seventh row, center. Forever.

### INTRODUCING THE SONY COMPACT DISC PLAYER.

The inventor of digital audio processing is pleased to raise the curtain on the CDP-101. Hailed by the discriminating ears at *High Fidelity* as "the most fundamental change in audio technology in more than eighty years."

There are compelling reasons for such applause.

The CDP-101, based on the world's first compact disc system co-developed by Sony and Philips of Holland, offers concert-hall freedom from distortion, wow, flutter, and other sonic gremlins. Plus an awesome dynamic range exceeding 90dB. To bring you the full

beauty of Mahler or the Moody Blues as never before.

This highest of fidelity remains faithful, too. Because the digital discs are read by laser beam, there's none of the physical wear inevitable with tape or vinyl. While the CDP-101 ingeniously ignores scratches, dust, and fingerprints.

Equally ingenious, an infrared remote control even lets you select tracks without budging from your armchair. Yet for all its sophistication, the CDP-101 is thoroughly compatible with whatever sound system you now own.

We suggest you hear the CDP-101

soon. For a sound you can't believe, from the audio innovator you assuredly can.

**SONY**  
THE ONE AND ONLY.



# DIGITAL RECORDERS/ PROCESSORS



SANSUI PC-X1



SONY PCM-F1



NAKAMICHI DMP-100



dbx 700



TECHNICS SV-100

VCR SPEED CODE  
A—Beta II & VHS SP  
B—Beta III & VHS LP or EP

MANUFACTURER	Model	Unit Type, Recorder = R, Processor = P, Both = RP	V Recorder, Tape Format Type	Coding Format	Quantization, No. of Bits, Linear = L, Floating Point = F	Maximum Recording Time, Minutes	VCR Speed Capability—See Code	Frequency Response, Hz to kHz, ±dB	Dynamic Range, dB	Total Harmonic Distortion, %	Inputs, Mike = M, Line = L, Direct Digital = D, Video Composite = V	Outputs, Headphone = H, Line = L, Digital Video = V	Dimensions, Inches	Weight, Lbs.	Price, \$	Notes
DBX	700	P		dbx	+	A/B	10-20 ± 0.5	110	0.05	ML	HLV	19 x 5¼ x 11½		5000.00	†CPDM (Companded Predictive Delta Modulation).	
NAKAMICHI	DMP-100	P		†	14L, 6L		10-20 ± 0.5	92	0.005	MLV	HLV	8½ x 3¼ x 12½	8.8	1990.00	†EIAJ and 16 bit.	
SANSUI	PC-X1	P		EIAJ	14L		5-30	85	0.01	ML	HLV	10½ x 2½ x 12		1000.00		
SONY ES	PCM-F1	P		EIAJ	*4L, 6L	120 A	10-20 ± 0.5	90	0.005	MLD	HL	8½ x 3¼ x 12½	8¾	1900.00	Portable, d.c. operation.	
	PCM-701ES	P		EIAJ	*4L, 6L	120 A	10-20 ± 0.5	90	0.005	LD	HLV	17 x 4¼ x 14¾	18½	1200.00		
TECHNICS	SV-P100	RP	VHS	EIAJ	14L	120 A	2-20 ± 0.5	86	0.01	MLD	LV	17 x 11 x 13½	46.3	3000.00	Editing "jump & search" marks on audio track, dubbing.	
	SV-100	P		EIAJ	14L	120 A	2-20 ± 0.5	86	0.01	MLV	LV	9¾ x 3¾ x 9½	6.4	900.00	Battery operated, with a.c. adaptor.	
	SV-110	P		EIAJ	14L	360 B	2-20 ± 0.5	86	0.01	MLV				800.00	Digital dubbing, drives two VCRs, two-way digital copying.	

# COMPACT DISC PLAYERS



NEC CD-803E



SEARS 57 E 9750C



MAGNAVOX FD1000



SANSUI PC-V1000

MANUFACTURER	Model	Frequency Response, Hz to KHz, ±dB	Dynamic Range, dB	S/N Ratio, -dB	Channel Separation, dB, at 1 KHz	Harmonic Distortion, %, at 1 KHz	Line Output Level, V	Required Load Impedance, Kilohms	Headphone Output = H, Headphone Output with Level Control = HL	Loading, Front = F, Top = T	Dimensions, inches	Weight, Lbs.	Price, \$	Notes
AIWA	DX-1000	0-20 +0.5, -0.7	90	90	90	0.003	2.0		HL	F	13 x 11¼ x 2¾	12½	1000.00	
AKAI	CD-D1	20-20 ±0.5	90	90	90	0.005	2.0			F	7.3 x 5.7 x 12.6	16.3	1000.00	
DENON	DCD-2000 DN-3000F	5-20 ±0.5 20-20 ±0.5	90 90	90 90	85† 85	0.03 0.007	1.4 †	100	HL HL	F T	12½ x 5½ x 9¾ 16½ x 3¾ x 22¼	12½ 79	995.00 8500.00	†At 10 kHz. †Output, +30 dBm.
DUAL	CD120	5-20 ±0.5	90	90	85	0.003	1.4		HL	F	12½ x 9¼ x 5¼		899.95	
FISHER	AD850	20-20	90	90	90	0.006			None	F	13¼ x 5¾ x 9¾	15	999.95	
HITACHI	DA1000 DA800	20-20 20-20	93 93	94 94	92 92	0.003 0.003	1.4 1.4		HL HL	F F	12¾ x 5¾ x 9¼ 17¼ x 4¾ x 10½	12½ 13	1000.00 1000.00	
JVC	XL-V1	5-20 ±0.5	90	90	90				HL	F	12¾ x 5¾ x 9¾	12.3	1000.00	
KYOCERA	DA-01	20-20 ±0.5	90	90	90	0.005	2.0	1.5		F	18¼ x 5¼ x 12¾	18½	1050.00	
LUXMAN	DX-104	5-20 ±3	90	90	90	0.004	†			F	16¾ x 5¾ x 13¾	21.6	1199.95	†Fixed, 2.0 V; variable, 0-0.5 V.
MAGNAVOX	FD1000SL FD2000SL FD2020SL FD3030SL	20-20 ±0.3 20-20 ±0.3 20-20 ±0.3 20-20 ±0.3	90 90 90 90	90 90 90 90	90 90 90 90	0.004 0.004 0.004 0.004	2.0 2.0 2.0 2.0	10 10 10 10		T T T T	12½ x 3 x 10½ 16½ x 3¾ x 12 16½ x 3¾ x 12 16½ x 3¾ x 12	11 13	800.00 800.00 850.00 950.00	
MARANTZ	CD 73	20-20	90	90	90	0.005	2			F	16¾ x 5¾ x 11¾	19	999.00	
MICRO SEIKI	CD-M1	20-20 ±0.5	90	90	90	0.005	2.0	100	None	F	18¼ x 5¼ x 12¾	18½	1100.00	
MITSUBISHI	DP-101	5-20 ±0.5	96	90	90	0.004	2.5		HL	F	16¾ x 5¾ x 12¼	23	1050.00	
NEC	CD-803E	5-20 ±0.5	90	90	70	0.01	†	100	HL	F	17 x 5¾ x 14¾	26.4	1300.00	†Fixed, 1.5 V; variable, 0-1.5 V.
PHASE LINEAR	9500	20-20 ±0.5	92	92	92	0.005	2.0	1	None	F	17½ x 5½ x 12½	17	995.00	
SANSUI	PC-V1000	5-20 ±0.5	90	90	90	0.004	2		H	F	17 x 4¾ x 11¾	22	1000.00	
SANYO	DA08	5-20	90	90	90	0.006	1.4	0.47	HL	F	13½ x 5½ x 10¾	15	999.95	
SEARS ROEBUCK	57 E 9750C	6-20	90	90	90	0.003	2.0		H	F	13¼ x 12½ x 3½	16	589.99	
SHARP	DX-3	5-20 ±0.5	90	90	80	0.01	†	10		F	13 x 5¾ x 9½	18	950.00	†High, 2.0 V; low, 0.8 V.
SONY	CDP-101	5-20 ±0.5	90	90	90	0.004	2	10	HL	F	14 x 4¼ x 12¾	16½	900.00	
SONY ES	CDP-701ES	5-20 ±0.5	95	95	90	0.003	2	10	HL	F	17 x 4¼ x 15¼	25½	1500.00	
SYLVANIA	FDC303SL	20-20 ±0.3	90	90	90	0.004	2.0	10		F	16½ x 3¾ x 12		950.00	
TECHNICS	SL-P10 SL-P8 SL-P7	4-20 ±0.5 4-20 ±0.5 4-20 ±0.5	96 96 96	96 96 96	90 90 90	0.003 0.003 0.003	2 2 2	75 75 75	HL HL F	F F F	17 x 5¼ x 12½ 17 x 3½ x 12¾ 12½ x 3½ x 12¾	22	1000.00 800.00 700.00	
TOSHIBA	XR-Z90	5-20 ±0.3	90	90	90	0.004	†	100	HL	F	16½ x 5¾ x 13¾	21¾	1000.00	†Fixed, 2.0 V; variable, 0-5 V.
YAMAHA	CD-1	10-20 ±0.5	90	90	90	0.005	2	100		F	17½ x 14 x 4¾	29¾	1395.00	

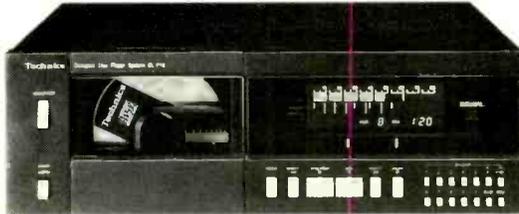
# COMPACT DISC PLAYERS



SONY 101



DUAL CD120



TECHNICS SL-P10



SANYO DAD 8

MANUFACTURER	Model	DISPLAY FUNCTIONS										ACCESS FUNCTIONS										Notes
		Elapsed Time: From Disc Start = D, From Track Start = T, Both = B.	Remaining Time: To Disc End = D, To Track End = T, Both = B.	Track/Program Selection Number?	Index Display?	Program-Recall Display?	Programmable: Number of Selections, Random = R, Sequential = S.	Repeat Track = T, User-Marked Phrase = P, Index = I.	Random Access: Entire Disc = D, Within Track?	Autobrite Fast Search?	Auto Scan of Track Beginnings?	Remote Control Type: Infrared = I, Wired = W, Gives Confirmation Beep = B.	No. of Remote Control Functions	Output Level Control?	Decode System: 16 Bit = A, 14 Bit Oversampling = B, To bit Oversampling = B.	Filtration: Digital = D, Analog = A, Both = B.						
AIWA	DX-1000	B		Yes		Yes	16R	D/T	No	No	Yes			Yes	A	A						
AKAI	CD-D1	T		Yes	Yes	Yes	24R	D/T/P	Yes	No	Yes	None		No	B	B						
DENON	DCD-2000 DN-3000F	B B	B	Yes Yes	No Yes	Yes Yes	15R	D/P	No Yes	No Yes	Yes	W	4	Yes Yes	A C	A B						
DUAL	CD120	B		Yes		Yes	15R	D/T/P	No	No	No	None		Yes								
FISHER	AD850	B	Yes	Yes	No	Yes		Yes		Yes					B	D	Sync recording with some Fisher decks.					
HITACHI	DA1000 DA800	T T		Yes Yes	No Yes	Yes Yes	15R 15R	D/T/P D/T/P/I			Yes No			Yes Yes	A A	A A						
JVC	XL-V1	T		Yes			15R	D/T/P	No		Yes			Yes	A							
KYOCERA	DA-01	B		Yes	Yes	Yes	24R	D/T/P	Yes	No	No	None		Yes	C	B						
LUXMAN	DX-104	T	T	Yes	Yes	Yes	8R	D/T/I		Yes	Yes			Yes	A	D						
MAGNAVOX	FD1000SL FD2000SL FD2020SL FD3030SL	B B B		Yes Yes Yes Yes		Yes Yes Yes Yes	15R 15R 15R 15R	D/T D/T D/T D/T	No No No No	No No No No	No No No No			No No No No	B B B B	B B B B						
MARANTZ	CD73			Yes	No		15R	D/T	No	No	No	Opt. I	4	No	A	D						
MICRO SEIKI	CD-M1	B	B	Yes	Yes	Yes	24R	D/T/P/I	Yes	No	No	None		Yes	C	B						
MITSUBISHI	DP-101	B		Yes	Yes	Yes	30R	D/T/P/I	Yes	Yes	No	I	24	No	A	B						
NEC	CD-803E	B	B	Yes	Yes	Yes	99R/S	D/T/I	No	Yes	Yes	I†	11	Yes	A	B	†Gives confirmation light.					
PHASE LINEAR	9500	B	No	Yes	Yes	Yes	24R	D/T/P/I	Yes	No	Yes	None		Yes	C	B						
SANSUI	PC-V1000	T		No	Yes	Yes		D/T		Yes	Yes	I	13	No	A	D						
SANYO	DAD8	B	B	Yes		Yes	R	D/T/P	Yes		Yes	None			A							
SEARS ROEBUCK	57 E 9750C	No	No	Yes	Yes	No	R	D/T	No	No	No	None			A	B						
SHARP	DX-3	T		Yes	No	No	20S	D/T	No	No	No			No	A	A						
SONY	CDP-101	D	D	Yes	No	Yes	99S	D/T/P	No	Yes	No	I/B	11	No	A	A	Anti-shock, timer play, auto pause.					
SONY ES	COP-701ES	D	B	Yes	Yes	Yes	99S, 8R	D/T/P/I	Yes	Yes	Yes	I/B	11	No	A	A	Timer play.					
SYLVANIA	FDC303SL	B		Yes		Yes	15R	D/T	No	No	No			No	B	B						
TECHNICS	SL-P10 SL-P6 SL-P7	B B B	B B	Yes Yes Yes	No Yes Yes	Yes Yes Yes	31R/S 16R/S 0	D/T/P D/T/P D/T	Yes Yes Yes	No Yes Yes	No Yes No	I		Yes Yes Yes	A A A	A A A						
TOSHIBA	XR-Z90	B		Yes	Yes	Yes	8R	D/T/P	Yes	No	Yes	None		Yes	A	A						
YAMAHA	CD-1	T		Yes	No	Yes	15R	D/T/P	Yes	No	No			Yes	B	B	Dual analog to digital conversion with dual filtration.					

# AMPLIFIERS



STAX DA-100M



ADCOM GFA-2



REVOX B-740



TECHNICS SE-A3MK2

MANUFACTURER	Model	Unit Type: Mono = M, Stereo = S, Tube = T, Solid State = S, Moving Coil Input = MC	Cont. Avg. Watts/Channel into 8 Ohms		Power Bandwidth, Hz to kHz		Rated THD, %	Rated IHF IM, %	Class of Output Operation	MM Phono S/N, -dB, "A" Wtd. re. 5 mV	MM Phono S/N, -dB, "A" Wtd. re. 5 mV	Maximum MM Phono Input, mV	Rated Slew Rate, V/μs	High Level Sensitivity, mV	Meters — M, Peak/Clip LEDs = L	Dynamic Headroom, dB	Does Unit Invert Phase?	Weight, Lbs.	Price, \$	Notes
			Cont. Avg. Watts/Channel into 8 Ohms	Power Bandwidth, Hz to kHz																
AB SYSTEMS	600	B	175	300	20-20	0.25	0.25	AB2				1.5V		No	30	599.00	Unbalanced phone. As above. Balanced XLR with ground lift, unbalanced phone. As above. As above. Mono blamp for CFR-180 speaker. VLF amp for LBS-125 speaker. Stereo blamp for CFR-180 speaker.			
	900	B	300	450	20-20	0.25	0.25	AB2				1.5V		No	39	799.00				
	2220	B	50	75	20-20	0.25	0.25	AB2				1.5V		No	17	549.00				
	6220	B	175	300	20-20	0.25	0.25	AB2				1.5V		No	32	739.00				
	9220	B	300	450	20-20	0.25	0.25	AB2				1.5V		No	39	1099.00				
	1200A	B	300	500	20-20	0.25	0.25	AB2				1.5V		No	72	1649.00				
	712CFR	M	300, 300, 175, 300	500, 500, 300, 500	20-20	0.25	0.25	AB2				1.5V								1090.00
412LBS	M	175, 300	300, 500	20-20	0.25	0.25	AB2				1.5V					800.00				
524CFR		(2) 100, (2) 50	(2) 150, (2) 75	20-20	0.25	0.25	AB2				1.5V						1180.00			
821LBS	M	50, 300	75, 450	20-20	0.25	0.25	AB2				1.5V						1090.00			
ACCU PHASE	P-600	B, M	300	500	20-20	0.02	0.01											84.7	3583.00	
	M-100	M	500	800	20-20	0.01	0.003											91.4	3500.00	
	P-400	B	200	300	20-20	0.01	0.003											68.6	2100.00	
	P-266	B, M	130	200	20-20	0.005	0.003		80	200								44	1375.00	
	E-203	I	70	90	20-20	0.01	0.005											32.3	900.00	
ACOUSTAT	TNT-200	B	200	325	2-400	0.01	0.01	AB				160		No	40	1095.00	Pure FET.			
ADCOM	GFA-1A	B	200	300		0.05	0.1	AB				80		L	2.8		23	499.95	Dual power supplies.	
	GFA-2	B	100	170		0.05	0.05	AB						L			29	375.00		
ADS	A2	I/MC	80	100	10-80	0.05	0.05	AB	80	0.26	120	30	350	M, L	2	Yes	20	579.00		
AKAI	AM-U3	I	45	45	10-60	0.05			72		60							14.3	249.95	
	AM-U5	I/MC	60																299.95	
	AM-U7	I/MC	80																399.95	
AMBER ELECTRONICS	Series 70	B	70	120	20-20	0.01	0.02	AB				25		No	32	579.00	Bridge mono: 200 W/8 ohms, 300 W/4 ohms. Preamp-out jacks, passive RIAA.			
	Series 50A	I	50	80	20-20	0.01	0.02	AB	90		250	25		No	24	599.00				
APT	1	B	100		20-20 ± 0.2	0.03	0.01	AB				60	900	L	3	No	23	680.00		
ARCAM	SA.200	B	100	195	20-20	0.01	0.01	AB						L		No	22	895.00		
	A.60	I	35	70	20-20	0.2	0.2	AB	70	2	175			No	10½	550.00				
AUDIO DESIGN	10A	B	100	175	10-50	0.03	0.03	B				120	125		3	No	33	549.95	10-ampere output per channel. 20-ampere output per channel. 30-ampere output per channel.	
	20A	B	100	185	10-50	0.03	0.03	B				120	125	L	3	No	37½	799.95		
	30A	B	100	200	10-50	0.03	0.03	B				120	125	L	3	No	44	1299.95		
AUDIONICS	CC-3	B	70	120	20-20	0.018	0.01	AB				50		L	2.5	No	20	745.00	Bridgeable.	
	CC-5	B	70	110	20-20	0.10	0.01	AB				50		No	15	499.95				
AUDIO RESEARCH	D-70	B/T	65	65	10-60	0.5		AB				12	950			No	49	1995.00		
	D-115	B/T	115	115	10-60	0.5		AB				12	1.1V			No	70	2995.00		
	D-79C	B/T	75	75	15-40	1.0		AB				10	750	M		No	85	6000.00		
	D-250	B/T	250	250	15-50	1.0		AB				15	1.5V			No	120	4995.00		
	D-120	B	120	200	1-100	0.25		AB				40	1.5V			No	43	2195.00		
AUDIRE	Monarch	M	100	200	2-50	0.008	0.0025	A				50				No	150	6000.00	720 W into 1 ohm. 190 W into 1 ohm.	
	Parlando	B	100	200	2-50	0.02	0.003	A				50				No	90	2850.00		
	Otez	B	250	500	2-50	0.015	0.015	AB				50				No	90	2750.00		
	Forte	B	125	250	2-50	0.025	0.008	AB				50				No	45	895.00		
	Forte II	B	25	50	2-50	0.025	0.008	A				50				No	45	950.00		
	Crescendo	B	75	130	2-50	0.05	0.01	AB				45				No	25	395.00		

# AMPLIFIERS

MANUFACTURER	Model	Unit Type	Input Impedance	Gain	Cont. Avg. Wtds Channel	Cont. Avg. Wtds Channel	Power Bandwidth	Rated THD	Rated IHF IM	Class of Output Operation	MM Phono S/N	MM Phono Sensitivity	Maximum MM Phono Input	Rated Slew Rate	High Level Sensitivity	Meters	Dynamic Headroom	Does Unit Invert Phase?	Weight	Price	Notes
			100k	dB	Watts	Watts	Hz	%	%		dB	mV	V	V/μs	mV	M, L, S	dB		Lbs.	\$	
BEARD AUDIO SYSTEMS	P-100 US	B/T	100	100	20-20	0.9			A AB							No	77		2195.00	Class A, 20 watts.	
BEDINI ELECTRONICS	25/25DE 50/50DE 100/100DE	B B B	28.5 70 110	50 100 200	20-20 20-20 20-20	0.1 0.1 0.1	0.25 0.25 0.25	A A A				160			3 6 3	Yes Yes Yes	27 27 47		588.00 688.00 888.00	Diode emitter. As above. As above.	
BEL	2002 1001	B B	100 50	200 100	3-250 3-250			A A					1.7V 1V	†	No No	52 30		2395.00 1295.00	†Status/fault indicators.		
DAVID BERNING CO.	EA-230 EA-2100	B/T B/T	30 100	30 100	30-20 30-20	2 2	2 2	B B								No No	28 40		895.00 2695.00		
BGW SYSTEMS	75 150 2500  320B  600 620B 750B  6000 8000	B B B  B  B B B  B B	25 50 100  100  200 200 225  100 225	37.5 75 150  100  250 250 360  130 350	20-20 20-20 20-20  20-20  20-20 20-20 20-20  20-20 20-20	0.1 0.05 0.1  0.2  0.1 0.25 0.1  0.1 0.1	0.03 0.02 0.02  0.05  0.02 0.06 0.02  0.02 0.02	AB AB AB  AB  AB AB AB  AB AB					700 1V 1.41V  700  1.88V 700 2.12V  1.23V	M L   L L M  M	No No No  No  No No No  No No	14 18 33  39  44 58 57  25		409.00 639.00 839.00  909.00  1029.00 1209.00 1439.00  749.00 999.00	With meters, Model 250E, \$959.00. With 25/70 V XFMR output. As above. With clip LEDs, Model 750C, \$1339.00.		
BIAMP SYSTEMS	1200  2400	B  B	170  340	290  570	10-27  10-27	0.05  0.05	0.05  0.05	AB  AB			40  50					No  No	42  52		799.00  999.00	Balanced input and output XLR connectors, input limiter. As above.	
B & K COMPONENTS	ST-140 ST-140 Deluxe EX-140 Export	B B B B B	70 70 70 70 70	142 142 142 142 142	20-20 20-20 20-20 20-20 20-20	0.09 0.09 0.09 0.09 0.09	0.09 0.09 0.09 0.09 0.09	AB AB AB AB AB			20 20 20		No No No	3.2 3.2 3.2	No No No	32 32 32		495.00 550.00 595.00			
BOOTHROYD STUART/MERIDIAN	105	B/M	100		20-20	0.01												13	595.00		
BOZAK	E-929A  E-939A	B  B	150  70	180  90	6-30  20-20	0.2  0.02	0.02  0.02	B  B						M				46  35	599.00  999.00	Subsonic filter, bridgeable. Bridgeable.	
BRYSTON	4B 3B 2B	B B B	200 100 50	400 200 100	20-20 20-20 20-20	0.01 0.01 0.01	0.01 0.01 0.01	AB AB AB			60 60 60		L L L	2 2 2	No No No	55 35 20		1400.00 900.00 525.00			
CARVER	M-1.5+  M-500  M-400†  M-200†	B  B  B  B	350  251  201  120	550  350  300  200	1-250 +0, -3 1-100 +0, -3 1-100 +0, -3 1-80 +0, -3	0.05 0.05 0.05 0.05	0.1 0.05 0.05 0.15	AB AB AB AB			100 80 80 80		L M L	3 0.5 0.5 0.5	No † † †	16 22 9 10¼		799.00  629.00  449.00  349.00	†Right channel. Transfer function modification. As above.		
CLASSE AUDIO	DR-2	B	25	50	0.1-80	0.1	0.1	A					800			No	65	2000.00			
CM LABS	CM915 CM925	B B	150 250	225 400	20-20 20-20	0.1 0.1	0.1 0.1	AB AB			40 40		M, L M, L		No No	33 47		750.00 995.00	Bridgeable. As above.		
CONRAD-JOHNSON	MV-45a MV-75a Premier Four Premier One	B/T B/T B/T B/T	45 75 100 200	45 75 100 200	30-15 30-15 30-15 30-15	1.0 1.0 1.0 1.0	1.0 1.0 1.0 1.0	AB AB AB AB							No No No No		850.00 1450.00 2950.00 4350.00				
COUNTERPOINT	SA-4	B/T/M	100	50	0-50	0.1	0.1	AB Var.							3	No	35	4000.00 Pair	No output transformer.		
CREEK AUDIO	CAS 4040	I	40	70	10-60	0.05	0.01			2.0			480			No	10	299.95			
CROWN INTERNATIONAL	SA-2 Power Line Four Power Line Three Power Line Two	B B B B	220 165 90 50		0-20 0-20 0-20 20-20	0.001 0.001 0.001 0.001		Var. A, AB A, AB A, AB			30 16 12 8	2.1V 1.8V 1.3V 970	L L L L		No No No No	57 55 25 15		1999.00 1349.00 949.00 579.00			
DB SYSTEMS	DB-6 DB-6M	B B/M	40 140	60 225	20-40 20-40	0.003 0.008	0.002 0.004	AB AB			15 30	1V 1V	L L	2 2	No No	18 18		625.00 625.00	Subsonic filter. As above.		
DENNESEN	Antares Orion DM-4 DM-73S	B B/M B/T, M B/T	75 175 50 35	125 300 50 35	10-100 10-100 20-20 20-20	0.1 0.1 0.1 0.1	0.1 0.1 0.1 0.1	AB AB AB AB			50 75			3 3	No No No No	21 30 40 50		600.00 750.00 1850.00 2250.00	MOS-FET. As above.		
DENON	POA-8000 POA-1500 PMA-770 PMA-750 PMA-730	B/M B M/C M/C M/C	200 150 100 80 60	240 150 100 100 60	5-100 5-100 5-100 5-100 5-80	0.005 0.005 0.02 0.02 0.05	0.005 0.005 0.002 0.002 0.004	A Dir. A Dir. A Dir. A Dir. A		90 88 86	2.5 2.5 2.5	380 400 250 200 150	M, L M		No No No No No	49 49 27 27 19		2800.00 695.00 620.00 450.00 299.00			

# AMPLIFIERS

MANUFACTURER	Model	Unit Type	Integrated = I, Basic = B, Mono = M, K = K, Cont. Inpd = MC		Power Bandwidth, Hz to kHz	Rated THD, %	Rated IHF IM, %	Class of Output Operation	MM Phono S/N	MM Phono S/N, -dB, A' Wid. re: 5 mV	Maximum Sensitivity, mV	Rated Slew Rate, V/μS	High Level Sensitivity, mV	Meters = M, Peak/Clip LEDs = L	Dynamic Headroom, dB	Does Unit Invert Phase?	Weight, Lbs.	Price, \$	Notes
			Cont. Avg. Watts/Channel into 8 Ohms	Cont. Avg. Watts/Channel into 4 Ohms															
ELECTRO-COMPAJET	Ampliwire II	B	50	80	5-100	0.002	0.005	AB			250			No	30	1495.00	†Hybrid.		
	Ampliwire I	B/T†	150	250	5-100	0.002	0.005	AB			250			No	35	2195.00			
	Ampliwires	B/T† M	150	250	5-100	0.002	0.005	AB			250			No	30	2990.00			
ELECTRON KINETICS	Eagle 7A		300	550	0-7M	0.1	0.1	AB			680	1.5V		No	100	2500.00	Dual mono.		
ESOTERIC AUDIO RESEARCH	509	B/T/M	100	100	12-60	0.5	0.5	A			20	300		3	No	36	2250.00		
	519	B/T/M	100	100	12-60	0.25	0.2	A			20	1V	L	3	No	38	2800.00		
	549	B/T/M	200	200	12-60	0.25	0.2	A			20	1.5V	L	3	No	59	3995.00		
	529	B/T/M	500	500	12-60	0.5	0.5	A			20	1.5V		3	No	100	7200.00		
EXPOSURE ELECTRONICS	IV	B	98	150	2-60			AB						0.3	No	27	1300.00	Dual mono. inc. preamp power supply.	
	VIII	B	66	120	2-60			AB							No	15	650.00		
FM ACOUSTICS	FM 300A	B	100	150	5-100	0.008		A/AB			30	1V		No	24	2100.00			
	F 600A	B	250	350	5-100	0.008		A/AB			25	900	L	No	42	3700.00			
	FM 800A	B	400	600	5-100	0.008		A/AB			25	900	L	No	64	5100.00			
GOTT LABS	A1	B	75	120	20-20 ± 0.25	0.08	0.05	AB			40	1V	L†	2	No	32	545.00	†Optional.	
	A2	B	200	300	20-20 ± 0.25	0.05	0.05	AB			50	1.5V		1.5	No	48	845.00	Single-channel subwoofer amp.	
	ASW	B M	100		15-150 Hz	0.05	0.05	AB			40	1V		1.5	No	18	350.00		
GROMMES	G252HF	B	90	125	20-20	0.05	0.05	AB			30	750	M	1.5	No	31	599.95		
DAVID HAFLER CO.	DH-220A	B†	115		20-20	0.02		AB			30	150		2.5	No	26	449.95	†Kit Model DH-220K, \$349.95; mono bridge kit opt.	
	DH-500A	B†	255		20-20	0.025		AB			45	145		1.5	No	48	749.95	†Kit Model DH-500K, \$599.95; mono bridge kit opt.	
HARMAN/KARAOON	PM640	I	35		10-60	0.05		AB	80	2.2	120	80	130	No	18	200.00			
	PM650	I/MC	50		10-80	0.03		AB	80	2.2	200	80	130	No	26	400.00			
	PM660	I/MC	80		10-100	0.02		AB	84	2.2	200	80	130	No	31	575.00			
	hk870	B	100		10-70	0.06		AB				160	1V	No	38	500.00			
HITACHI	HMA 8500	B	100		20-20	0.005	0.005	B	72	3			M		33 1/2%	700.00	MOS-FET.		
	HA1	I	28		40-20	0.5	0.5	B	72	3		160	M		8 7/8%	140.00			
	HA2	I	50		40-20	0.05	0.05	B	72	3		160	M		12 3/4%	250.00			
	HA6	I	100		20-20	0.005	0.005	B	90	2.5		150			20%	400.00			
JRM	Power Tower	B M	†	††	10-20 + 0. -1	0.02	0.02	AB			80	†††	M, L	1.5	No	65	2000.00	†(2) 45 & (2) 180; ††(2) 80 & (2) 300; †††(2) 2.2V & (2) 1.1 V; will drive 2-ohm speakers.	
JVC	A-K11	I	30			0.5			67	2.5						125.00	†Fluorescent peak ind.		
	A-K22	I	40		40-20	0.5			67	2.5					9.5	190.00			
	A-X30	I	40		20-20	0.007	0.007	Sup. A	81	2.5			†		13.2	230.00			
	A-X40	I	50		20-20	0.007	0.007	Sup. A	81	2.5			†		13.9	280.00			
	A-X50	I/MC	65		20-20	0.007	0.005	Sup. A	85	2.5					18.9	430.00			
	A-X77	I/MC	90		20-20	0.003	0.001	Dyn. Sup. A	83	2.5					24.2	650.00			
	M-L10	B	160		20-20	0.002	0.002	Sup. A				1V	M		61.6	2100.00			
KENWOOD	Basic M-2	B	220		20-20	0.004	0.004				100	1V	L	2.9	34.1	600.00			
	Basic M-1	B	105		20-20	0.005	0.005				100	1V		2.8	20.1	330.00			
	KA-71/KA-71B	I	65		20-20	0.05	0.05		80	2.5	110	150			14.7	265.00			
	KA-51/KA-51B	I	50		20-20	0.09	0.05		80	2.5	110	150			13.4	175.00			
	KA-9XG	I/MC	120		20-20	0.008	0.008		93	2.5	250	100			22.4	495.00			
	KA-7X	I/MC	100		20-20	0.008	0.008		92	2.5	200	100			20.9	400.00			
	KA-5X	I/MC	40		20-20	0.03	0.03		92	2.5	200	150			15.75	210.00			
	A-9	I	40		20-20	0.05	0.05		77	2.5	150	150			13.75	235.00			
	L-02A	I/MC	170		20-20	0.003	0.003		97	2.5	350	100			76	3000.00			
KINERGETICS	KBA-100	B	100	200	3-70	0.01	0.01	AB			60	1.5V		3.0	No	29	795.00		
KIRKSAETER	LAB 80	B	90	135	8-120	0.015	0.003	Servo A			40	1V	L†				†Available with Model LAB 80-LED. †Available with Model LAB 120-LED.		
	LAB 120	B	135	200	8-120	0.015	0.003	Servo A			40	1V	L†						
KLH	A-601	I	60		10-50	0.02	0.02		84				P, L				299.95		
KRELL	KSA 50	B	50	100	1-200	0.05	0.05	A			80			0	No	70	1800.00		
	KSA 100	B	100	200	1-250	0.05	0.05	A			100			0	No	110	2500.00		
	KMA 100	B M	100	200	0.1-400	0.05	0.05	A			250			0	No	76	1800.00		
	KMA 200	B M	200	400	0.1-400	0.05	0.05	A			250			0	No	140	3000.00		
KYOCERA	B-901	B	130	180	20-20	0.01	0.01	AB			100	1.5V/3.0V	M		No	48.4	1670.00		
MARK LEVINSON	ML-2	B M	25	50	20-20	0.1	0.1	A			50	860		1.0	Sel.	65	6490.00	Pair	
	ML-3	B	200	400	20-20	0.2	0.2	AB2			15	1.3V		2.0	No	116	5400.00		

# AMPLIFIERS

MANUFACTURER	Model	Type: Inertance = Basic = B. Type: 1 Mono, 2 Stereo, K. Moving Coil = MC	Cont. Avg. Watts/Channel into 8 Ohms	Cont. Avg. Watts/Channel into 4 Ohms	Power Bandwidth, Hz to KHz	Rated THD, %	Rated IHF IM, %	Class of Output Operation	MM Phono S/N	MM Phono S/N - dB, "A" Wtd. re: 5 mV	Maximum MM Phono Input, mV	Rated Slew Rate, V/μs	High Level Sensitivity, mV	Meters = M, Peak/Crop LEDs = L	Does Unit Invert Phase?	Weight, Lbs.	Price, \$	Notes	
																			Cont. Avg. Watts/Channel into 8 Ohms
MARK LEVINSON (Continued)	ML-9	B	100	200	20-20	0.2	0.2	AB2			15	1.5V		2.5	No	56	2870.00		
	ML-11	B	50	100	20-20	0.5	0.5	AB2			15	633		1.0	No	25	1750.00		
LUXMAN	LX-104	I	120		20-20	0.012	0.012	AB	86	2.5						35.2	899.95	Duo-Beta circuitry, remote control.	
	L-450	I	55		20-20	0.03	0.03	AB	90	2.0	150	90	190	L		23.1	399.95	Duo-Beta circuitry.	
	L-480 MQ-68C	I B/T	70 30	30	20-20 50-15	0.03 0.05	0.03 0.05	AB AB	94	1.2	150	120	190	L L		26.4 30	499.95 799.95	As above.	
MARANTZ	PM 225	I	30	33	20-20	0.09	0.08	AB	83	2.5	150	160	L		No	14	190.00		
	PM 325	I	40	45	20-20	0.09	0.05	AB	83	2.8	190	150	L		No	14.7	250.00		
	PM 730	I MC	70		20-20	0.03	0.03	AB	85	2.5	120				No	18.7	420.00		
	MA 5	B M	120	150	20-20	0.02	0.02	AB							No	22	575.00		
	SM 1000	B	400	550	20-20	0.01	0.01	AB				35 70			L M	94.6	4995.00		
JOHN MAROVSKIS	Janis Interphase 1A	I	100		1-1k	0.02		AB							Yes	22	625.00	Crossover and amp.	
	Janis 60-18	I	60		1-1k	0.03		AB							No	18	395.00	Low-pass filter and amp.	
McINTOSH	MC2500	B	500	500	20-20	0.02	0.02						M			129	3300.00	Mono, 1000 W.	
	MC2255	B	250	250	20-20	0.02	0.02						M			82	2790.00	Mono, 500 W.	
	MC2250	B	250	250	20-20	0.02	0.02						M			80	2300.00	As above.	
	MC2155	B	150	150	20-20	0.02	0.02						M			65	2150.00	Mono, 300 W.	
	MC2150	B	150	150	20-20	0.02	0.02									58	1800.00	As above.	
	MC502	B	50	75	20-20	0.02	0.02									27	1100.00	Mono, 150 W.	
	MA6200	I	75	100	20-20	0.05	0.05		85	2.5		250				30	1649.00		
MICHAELSON & AUSTIN	Monoblok 100	B/T/M	100		12-65	0.3		AB								31	1000.00	Class A, 60 watts.	
	Monoblok 200	B/T/M	200		12-70	0.25		A/AB								70	2000.00		
MISSION ELECTRONICS	777	B	100	175	0-200	0.05	0.05	AB			180			3	Yes	50	1400.00		
	778	I	50	80	0-75	0.03	0.05	AB	81	0.33	270	180	240	1.5	Yes	15 1/2	699.00		
mitsubishi	DA-A30	B	105	140	20-20	0.008	0.006	AB			200			Dpt. 2	No	32	500.00	Dual mono.	
MONOLITHIC SOUND	CA 80	I MC	80	140	5-50	0.05	0.05	AB			50					28	849.00		
	a 80	B	80	140	5-50	0.05	0.05	AB			50					24	499.00		
	a 150	B	150	240	5-50	0.05	0.05	AB			50					36	899.00		
NAD	3020A	I MC	20	55	10-70	0.02	0.02	AB	75	2.5	250	30	150	L	3	No	11.5	218.00	Soft clipping.
	3150	I MC	50	75	10-100	0.03	0.03	AB	76	2.8	240	30	150	L	3	No	20	398.00	Bridges with Model 2150.
NAIM AUDIO	2150	I	50	75	10-100	0.03	0.03	AB	76	2.8	240	30	150		3	No	18.8	278.00	Bridges to 125 W mono.
	NAP250	B	70	125	5-40			B								27	2250.00		
NIKKO	Alpha-450	B	220	240	5-100	0.008	0.008	A+			100				No	47.3	1050.00	†Non-switching.	
	Alpha-230	B	120	130	5-70	0.008	0.008	A+			100	1V	L		No	29.7	560.00		
	NA-2090	I MC	85	110	10-40	0.015	0.015	A+	86	2.5	150	150	L		No	19.8	430.00		
	NA-1090	I MC	60		5-45	0.02	0.02	AB	86	2.5	150	150	L		No	19.3	320.00		
NEW YORK AUDIO LABORATORIES	Julius Futterman	B/T/M	125		2-200	0.03	0.05	AB			33			M	2	No	250	9000.00	
	OTL-1	B/T/M	20		2-200	0.03	0.05	AB			33			M	2	No	75	3000.00	Triode output.
	OTL-2	B/T/M	100		2-200	0.03	0.05	AB			33			M	2	No	100	4000.00	
	OTL-3	B/T/M	40		2-200	0.03	0.05	AB			33			M	2	No	75	3000.00	
ONKYO	OTL-4	B/T/M	200		2-200	0.03	0.05	AB			33			M	2	No	150	6000.00	
	M-5030	B	100		20-20	0.005	0.005	AB						M		No	600.00		
	M-5060R	B	120		20-20	0.005	0.005	AB						M		No	800.00		
	M-5090	B	200		20-20	0.003	0.003	AB						M		No	39.2	800.00	
	A-8015	I MC	55		20-20	0.018	0.018	AB	80	2.5	180	150			No	19.9	320.00		
PARASOUND	A-8017	I MC	75		20-20	0.015	0.018	AB	80	2.5	210	150			No	25.4	400.00		
PERREAUX	PA260	B	50	65	20-40	0.01	0.01	AB			22	150		1.5	No	14	199.95	Bridges to 140 W.	
	PMF 1150B	B	100	200	10-3M	0.009	0.009	AB						3		37	990.00		
PHASE LINEAR	PMF 2150B	B	200	400	10-3M	0.009	0.009	AB						3		48	1480.00		
	DRS 900	B	150	300	10-80	0.015	0.009	AB +			100	800	M, L	4.8	No	38	1095.00		
	DRS 400	B	50	100	10-80	0.015	0.009	AB +			100	500	L	6	No	21	695.00		
PIONEER	DRS 250	I	50	100	10-80	0.015	0.009	AB +	79	0.63	150	100	150	L	6	No	23	875.00	
	A-90	I MC	200		20-20	0.002	0.002	+	89	2.5	300	150	L			43.2	1230.00	†Non-switching.	
	A-70	I MC	120		20-20	0.003	0.003	+	87	2.5	150	150	L			27.1	610.00		
	A-60	I MC	100		20-20	0.007		+	86	2.5	200	150	L			20.8	420.00		
PRECISION FIDELITY	A-40	I	70		20-20	0.009		+	86	2.5	150	150	L			14.3	330.00		
	M-8	B/T	100	200	5-50	0.1	0.1	AB			50	1.25V		2	No	35	769.00	†Hybrid.	
	M-7B	B/T	85	85	30-45	0.1	0.1	AB			50	1.2V		6	No	44	1495.00		
PS AUDIO	Elite	I MC	55	90	2-100	0.05	0.05	AB	88	5	250				No		719.00	Remote power supply; bridges to 200 W/8 ohms.	
	Two-C	B	55	90	2-100	0.05	0.05	AB				13			No		429.00	As above.	
	Two-C Plus	B	70	135	2-300	0.02	0.02	AB				40			No		600.00	Remote power supply.	
PSE	Three	B	200	400	2-300	0.02	0.02	AB				100			No		1200.00	As above.	
	Studio Two	B	80		10-30	0.02		AB			100	100		1	No	33	760.00		



# AMPLIFIERS

MANUFACTURER	Model	Unit Type: Integrated = I, Basic = B, Tube = T, Mono = M, Kit = K, Moving Coil Input = MC	Cont. Avg. Watts/Channel into 8 Ohms	Cont. Avg. Watts/Channel into 4 Ohms	Power Bandwidth, Hz to kHz	Rated THD, %	Rated IHF IM, %	Class of Output Operation	MM Phono S/N, -dB	MM Phono Sensitivity, mV	Rated Stew Rate, V/μS	High Level Sensitivity, mV	Dynamic Headroom, dB	Does Unit Invert Phase?	Weight, Lbs.	Price, \$	Notes		
TANDBERG	TIA 3012	I	100	125	20-20	0.02	0.02	AB	78	1.9	250	1000	150	L	1.75	No	21.4	995.00	MOS-FET, 110- or 120-V operation, toroidal transformer.
	TPA 3003A	B	150	250	20-20	0.02	0.02	AB				70	1V	L		No	25	895.00	
TANNOY	Tresham DR 102		90	110	20-20	0.015		A				80					31	1449.00	MOS-FET, external power supply inc. As above.
	Tresham DR 302		240	320	20-20	0.008		A				80					52	2299.00	
TECHNICS	SE-A3MK2	B	300	300	20-20 +0, -0.1	0.002	0.002	New A						M, L	1	No	86	2200.00	Bridges to 120 W/ 8 ohms.
	SE-A7	B	60	60	20-20 +0, -0.1	0.003	0.003	New A						L	1.5	No	20.9	500.00	
	SU-V707	I	90	80	20-20	0.003	0.007	New A	88	2.5	170	150				No	22	380.00	
TEI ELECTRONICS	49-104	M	20	20	50-15	3			60									210.00	
	49-106	M	55	55	50-15	3			60									310.00	
THRESHOLD	S/150	B	75		0.5-100	0.1	0.1	Stasis				100			1	No	38	1320.00	
	S/300	B	150		0.5-100	0.1	0.1	Stasis				100			1	No	53	1980.00	
	S/500	B	250		0.5-100	0.1	0.1	Stasis				100			1	No	80	2970.00	
	S/1000	B/M	500		0.5-100	0.1	0.1	Stasis				160			1	No	80	3300.00	
UREI	6150	B	80	80	20-20		0.05	AB				50	1.1V	L		No	22	696.00	Bridging switch. As above. As above. As above, conductor compensation.
	6250	B	150	200	20-20		0.05	AB				50	1.1V	L		No	36	896.00	
	6300	B	225	380	20-20		0.05	AB				50	1.1V	L		No	52	1346.00	
	6500	B	275	450	20-20		0.05	AB				50	1.1V	L		No	84	2396.00	
VANDERSTEEN AUDIO	WXA-4	B		200	1-100 Hz	0.01	0.01	AB							Sel.		48	990.00	For subwoofer, with crossover.
YAMAHA	M-70	B/MC	200	250	10-100	0.001	0.002	AB				200	150	L		No	30	950.00	
	M-50	B/MC	120	200	10-100	0.001	0.002	AB				200	150	L		No	260	650.00	
	A-1000	I/MC	120	320	10-100	0.003	0.002	A, AB	94	0.23	165	150				No	29	590.00	
	A-700	I/MC	100	230	10-100	0.003	0.002	A, AB	92	0.25	165	150				No	25	450.00	
	A-500	I/MC	70	100	10-50	0.003	0.01	AB	92	2.5	165	150				No	16	320.00	

## Please remain seated for this performance.

When you audition the new 200 Series separates from Revox, you will enjoy a musical experience rarely encountered outside the concert hall.

First, listen to the new Revox B251 Integrated Amplifier. It offers a switching power supply for more power reserves; a new power output stage with a faster rise time for accurate transient reproduction; and a signal-to-noise ratio at low output (better than -80 dB at 50 mW) that makes it an ideal companion for digital disc players.

When you audition the B261 Digital Synthesizer FM Tuner, you'll notice how it locks in weak FM signals - even when adjacent to strong ones - that other tuners mute or mask with noise. The B261's signal-to-noise and distortion specs are so low that they challenge the limits of test instruments. So the music you hear is the music being broadcast. No more, no less.

Finally, you may switch back and forth among the B251's six source inputs. Choose any of the B261's 20 pre-set stations. Adjust the volume and balance. Monitor the separate record-out circuit. Or operate the Revox turntable, open reel recorder, and cassette deck. You may do so without leaving your easy chair.

The 200 Series from Revox of Switzerland. A quantum leap forward in sonic accuracy. With the convenience of infrared remote control. Contact your Revox dealer for an audition session.



B201 remote transmitter and wood cabinet optional. Remote capability retrofitable into most Revox turntables and tape decks.

**STUDER REVOX**

1425 Elm Hill Pike, Nashville, Tennessee 37210

# PREAMPLIFIERS



LEVINSON ML-10



THRESHOLD FETone



SAE P101



DENON PRA-1000

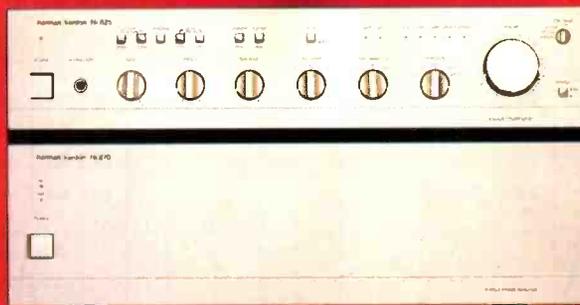
MANUFACTURER	Model	Unit Type: K=K, Tube= Mono=M, Phono Stage Only=P, Moving Coil Stage Only=MC	Frequency Response, Hz to kHz, ±dB	Maximum Output, V	THD, %	IHF IM Distortion, %	Number of Tape & Processor Loops	MM Phono Sensitivity, mV for 0.5 V Output at 1 kHz	MM Phono S/N, -dB	MM Phono Overload, mV	MC Phono S/N, -dB	High Level Sensitivity, mV	No. of Tone Controls per Channel	Phono Input Capacitance, pF	Moving Coil Input?	Does Unit Invert Phase?	Weight, lbs.	Price, \$	Notes	
ACCU PHASE	C-280		20-20 ±0.2	2	0.005	0.002	2	0.5	300	82	76	31.5	2			Yes	39.9	3672.00		
	C-222		20-20 ±0.2	2	0.005	0.002	2	0.5	300	85	78	31.5	2	Var.		Yes	21.3	1252.00		
	C-7	MC	5-100 +0, -0.2		0.002											Yes	5.5	400.00		
ACOUSTAT	TNP		2-250 +0, -3	16	0.01	0.01	2	3.5	240	90	80	250	0	Sel.	47k	Yes	No	12	795.00	Pure FET.
ADCOM	GFP-1A		6-40 +0, -1	10	0.007	0.0012	3	0.65	290	85	76	150	2	Sel.	Sel.	Yes	No	16	375.00	CX, DAD Input, tone defeat, dubbing sel.
AGI	511A		20-20 ±0.1	9.5	0.005	0.005	3	1.3	160	82		230	0	Sel.	Sel.	No	No	13	650.00	
	511AH		20-20 ±0.1	9.5	0.005	0.005	3	0.56	70	82		230	0	Sel.	Sel.	No	No	13	650.00	
	511AM		20-20 ±0.1	9.5	0.005	0.005	3				77	230	0	Sel.	Sel.	Yes	No	13	740.00	No MM input.
AMBER ELECTRONICS	Full Function 17		0-150	9	0.008	0.005	3		250	90	70		2	Sel.	Sel.	Yes	No	12	699.00	Passive RIAA, two separate phono sections. Passive RIAA, can be upgraded to FF-17.
	Straight Line 17		0-150	9	0.008	0.005	3		250	90				Sel.	47k	No	No	12	499.00	
APT	Holman		20-20 ±0.5	7	0.01	0.01	3	1.25	180	74		320	2	Sel.	Sel.	Opt.	No	12	648.00	
	Holman Two		20-20 ±0.5	7.5	0.006	0.006	1	1.25	180	76	80	320	2	Var.	Var.	Yes	No	9	417.00	
ARCAM	C.200		20-20 +0, -0.5	8	0.01	0.01	2	Sel.	175	75	66		2	50	47k	Opt.	No	9	750.00	
AUDIO DESIGN	MCP-1	MC	10-1M ±0.5	2	0.01	0.01					75			Var.	Yes	No	No	6.6	219.95	
	Model One		5-500 ±0.25	10	0.005	0.005	1		200	80				Var.	47k	No	No	12	429.95	
AUDIONICS	SC-5		20-30 ±0.5	7.5	0.05	0.05	2	1.4	130	85		100	2	47	47k	No	No	9	499.95	Tape-to-tape dubbing.
	SC-3		20-30 ±0.25	9.2	0.03	0.03	1	1.6	160	87	95	100	0	Adj.	Adj.	Yes	No	12	729.00	MC gain selection.
	ET-1	MC	20-30 ±0.2	0.3	0.01	0.01					95			Adj.	Yes	No	3	250.00		



# PREAMPLIFIERS

MANUFACTURER	Model	U/I Type U/I = MC, K, T, P W = MM, MC, MC, MC W = MM, MC, MC, MC	Freq. Response Hz to kHz, ±dB	Maximum Output, V	THD, %	IHF IM Distortion, %	Number of Traps & Processor Loops	MM Phono Sensitivity, mV for 0.5 V Output at 1 kHz	MM Phono Overload, mV	MC Phono S/N, -dB	MC Phono S/N, -dB, "A" Wld. re. 5 mV	High Level Sensitivity, mV	No. of Tone Controls per Channel	Phono Input Capacitance, µF	Moving Coil Input?	Does Unit Invert Phase?	Weight, Lbs.	Price, \$	Notes	
																				0.5-350
COUNTERPOINT	SA-2	T/MC	0.5-350	38															External transformer.	
	SA-2 MKII	T	0.5-350	38															External power supply.	
	SA-3	T	2.5-30	70	0.18	0.18	1	2.5	800	80									External transformer.	
	SA-5	T	±0.1	70	0.08	0.08	1	0.5	700	86									External power supply.	
	SA-6	T/MC	1-30	30	0.06	0.07														
	SA-7	T	5-27	30	0.25	0.3	1	0.8	500											
CROWN INTERNATIONAL	Straight Line Two DL2		10-50 ±0.5	11	0.009		2	Adj.	Adj.	87										
			1-100 ±0.5	11	0.0008	0.0003	3-5	Adj.	Adj.	94										2999.00
DAYTON WRIGHT	SPA Mk1a			8	0.001	0.002	2	0.2	160	88	72	45								
	SPA Mk1b			8	0.001	0.001	2	0.2	160	88	87	45								
	SPA Mk2m			8	0.001	0.001	2	0.2	170	88	88	45								
	DW 535	MC	9-300 ±3	1.5	0.005	0.003					72									
	DW 777	MC	5-800 ±3	1.2	0.001	0.001					87									
DB SYSTEMS	DB-1B & DB-2A		20-20 ±0.04	9			1	0.9	150	77		120		100	47k	No	Var.	7.6	595.00	
	DB-1A & DB-2A		20-20 ±0.04	9	0.0008	0.001	1	0.9	150	77		120		100	<7k	No	Var.	4.6	475.00	
	DBR-15B & DB-2A		20-20 ±0.04	10	0.0008	0.001	1	0.9	150	77		120	6	100	47k	No	Var.	7.2	850.00	
	DB-4A	MC	10-100 ±0.1	2	0.0008	0.001								2000	9k	Yes	No	1.1	185.00	
DENNESEN	JC-80	M	2-100 ±0.1	20	0.01	0.01	2	2	300	85	70	100		100	Sel.	Yes	Sel.	25	3500.00	
	Sirius		5-100 ±0.1	10	0.01	0.01	2	2	200	80		125		100	47k	No		7	489.00	
	Sirius II		5-100 ±0.1	10	0.01	0.01	2	2	200	80		125		100	47k	No		10	650.00	
	Cetus	MC	5-250 ±0.1	1	0.1	0.1					70			50	Sel.	Yes	No	2	350.00	
DENON	PRA-6000		10-100 +0, -0.3	23	0.002		2	2.5		86	76	150	2		50k	Yes		32	3000.00	
	PRA-1000		20-100 ±0.2	5	0.002		2	2.5		90	75	150	2		47k	Yes		22	495.00	
EIDOLON RESEARCH	Julia	T	0.1-200 +0, -1.5	40	0.03	0.01	2	0.1	500	76			0	Adj.	Adj.	Yes	Yes	24	2895.00	
	Mentat	T	0.1-200 +0, -1.5	40	0.03	0.01	2	0.1	500	76			0	Adj.	Adj.	Yes	Yes	19	2195.00	
	Salesia V	T	0.5-100 +0, -1.5	40	0.03	0.01	2	0.1	500	76			0	Adj.	Adj.	Yes	Yes	15	1150.00	
	Salesia	T	0.5-100 +0, -1.5	40	0.03	0.01	2	0.1	500	76			0	Adj.	Adj.	No	Yes	14	995.00	
ELECTRO-COMPANET	Preampli-wire II			13	0.003		4	1	200						Yes	No	8	1295.00		
EMPIRE SCIENTIFIC	ET-1	MC	20-30		0.01										Yes				50.00	Coaxial mini step-up transformer.
ESOTERIC AUDIO RESEARCH	802	T	5-80 +0, -1	10	0.03	0.05	2	2.0	250	90		150	0	100	47k	No		15	995.00	
EXPOSURE ELECTRONICS	VII		4-43				1	7.5					0	60	Sel.	Yes	No	6	704.00	Dual mono.
FM ACOUSTICS	FM212A	MC	1-3M	1											Var.	Yes	Yes	1.9	680.00	
	FM240		2-2M +0, -3	8.5	0.018	0.01	2	0.7	2V			75	0	Sel.	Sel.	No	Yes	17.6	3995.00	
GOTT LABS	P1	P		10	0.01	0.01	2	1.25	200	75		50		Sel.	47k	Opt.	No	12	410.00	
DAVID HAFLER CO.	DH-110A	†	5-250 +0, -3	12	0.001		3	11	300	87		56	2	Adj.	47k	††	No	8½	399.95	†Kit, Model DH-110K, \$299.95; ††opt. with Kit DH-112, \$74.95.
	DH-100A	†	20-20 ±0.25	8	0.005		1	12	180	87		50	2	130	47k	No	No	7	199.95	†Kit, Model DH-100K, \$149.95.
HARMAN/KARDON	hk825		1-180 +0, -3	10	0.05		2	1.1	220	83	80	130	2	Sel.	47k	Yes	No	16	400.00	Active/passive RIAA EQ.
HITACHI	HCA 8500		5-100 +0, -1		0.005		4	2.5	260	91	75	150	2	Sel.	Yes			9%	370.00	
JVC	P-L10											150	2		Yes			26.4	1650.00	
KENWOOD	Basic C-1		1-250 +0, -3	5	0.004		2	1.25	200	93	76	150	2	Sel.	Yes			10%	225.00	

# HARMAN KARDON INTRODUCES STATE-OF-THE-MIND TECHNOLOGY



30 years ago Harman Kardon introduced the world's first high fidelity receiver. It was built on the philosophy that quality audio must evolve from creative, quality thinking.

Over the years, Harman Kardon continued to introduce original audio theories that were truly "state-of-the-mind", each proving so successful that they were immediately absorbed into the marketplace as "state-of-the-art".

For example, in 1958, Harman Kardon developed the first stereo receiver. A state-of-the-mind theory that instantaneously became state-of-the-art.

Harman Kardon, in 1970, saw the need for a noise reduction system for recording tapes and became the first company to use Dolby<sup>1</sup> in a cassette deck.

Now, Harman Kardon's most important state-of-the-mind concept, High Current Capability, has turned state-of-the-art. A recently published paper<sup>2</sup> states that in order for an amplifier to properly drive loudspeakers it must have the High Current Capability to instantaneously generate as much as 6 times its rated power into a 1.33 Ohm load. Harman Kardon has consistently

used High Current Capability in our products and we are presently using it in all of our receivers and amplifiers.

The hk870 100 Watt<sup>3</sup> power amplifier, our newest product, carries this philosophy even further. The hk870 has an exceptional 60 Amps of High Instantaneous Current Capability and maintains a negative feedback level of only 12dB.

The hk870 is matched by the hk825 preamplifier. The hk825 offers dual RIAA equalization circuitry in the phono section, a discrete Moving Coil head amplifier and Ultrawidebandwidth of 0.1Hz to 180kHz delivering extremely pure, transparent sound.

So, while other manufacturers continue to pile on unnecessary features and performance reducing gimmicks, Harman Kardon continues to fine tune the basics and develop fundamentally advanced audio equipment.

1. Dolby is the registered trademark of Dolby Laboratories Inc.  
2. "Input Current Requirements of High Quality Loudspeaker Systems", published and presented to the AES by Dr. Matti Otala. For a copy of this paper, write to Harman Kardon.

3. 100 Watts RMS per channel, into 8 Ohms, 20Hz-20kHz with less than .06% THD.

## harman/kardon

Our state-of-the-mind is tomorrow's state-of-the-art.

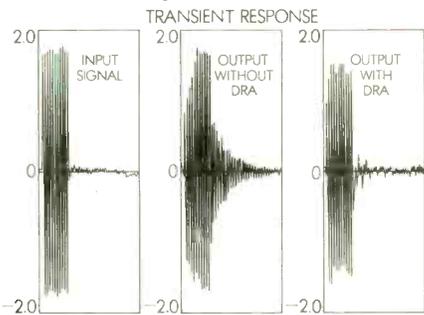
# PREAMPLIFIERS

MANUFACTURER	Model	Unit Type: MC = MC, Table 1; MM = MM, Phono Stage Only = P; Moving Coil Stage Only = MC	Frequency Response, Hz to kHz, ±dB	Maximum Output, V	THD, %	IMF IM Distortion, %	Number of Taps & Processor Loops	MM Phono Sensitivity, mV, for 0.5 V Output at 1 kHz	MM Phono Overload, mV	MC Phono S/N, -dB, "A" Wtd. re 3 mV	High Level Sensitivity, mV	No. of Tone Controls per Channel	Phono Input Capacitance, pF	Moving Coil Input?	Does Unit Invert Phase?	Weight, Lbs.	Price, \$	Notes		
KIRKSAETER	LAB 11		2-120	15	0.002	0.002	3	Adj.	220	83	81	200	4	200	47k	Yes				
KRELL	PAM 1		0.1-500 ±1	15	0.001	0.001	1	0.5	250			200		Sel.	Var.	Yes	No	25	2000.00	Dual mono.
	KRS 1	M	0.1-1M ±1	25	0.001	0.001	2	0.5	800			200		Sel.	47k	Yes	No	60	3250.00	Plug-in phono stage.
KYOCERA	C-901		5-100 +0, -1	13	0.007		2		300			150	3	Sel.	Sel.	Yes	No	15.4	1290.00	Transformer.
MARK LEVINSON	ML-6A	M	20-20 ±0.1		0.01	0.01	0			86				Sel.	Sel.	Yes	No	18	5950.00	External power supply.
	ML-7		20-20 ±0.1		0.01	0.01	2			86				Sel.	Sel.	Yes	No	21	4325.00	As above.
	ML-10		20-20 ±0.1		0.02	0.02	1			86				Sel.	Sel.	Yes	No	18	2870.00	
	ML-12		20-20 ±0.5		0.05	0.05	1			86				Sel.	Sel.	Yes	No	14	1240.00	
LINN PRODUCTS	LINNK	MC	5-40 ±3	75 mV										395	Yes		2	395.00	Drives high-level input.	
	PNAG	MC	5-40 ±3	20 mV										470	Yes		2	199.00	Drives phono input.	
LUXMAN	CL-34	T	3-70 +0, -1	10	0.008	0.008	2	2	300	80		170	2		50k	No		14	699.95	
MARANTZ	SC6		5-100 +0, -1	10	0.006	0.004	2			90	82		2	100		Yes		14.3	550.00	
	SC9		5-100 ±1.2	10	0.006	0.003	2			90	80		3	Var.		Yes		19.4	750.00	
MAYWARE	T-24		5-50		0.001	0.001								Adj.	Yes	No	1	375.00	Universal transformer, MC or MM.	
McINTOSH	C33		20-20 +0, -0.5	10	0.01		4	2.5		90		250	5	65	47k	No			2299.00	With 20-W monitor amp, compressor/expander; sep. dubbing.
	C29		20-20 +0, -0.5	10	0.02		3	2.5		90		250	2	65	47k	No			1299.00	
	C504		20-20 +0, -0.5	10	0.02		2	2.5		90		250	3	50	47k	No			975.00	
MICHAELSON & AUSTIN	TVP-X	T	5-40 +0, -1	17	1		2	1.25	550					Sel.	Sel.	Opt.		11	2000.00	Separate power supply.
MISSION ELECTRONICS	776	P	20-20 ±0.2	1	0.01	0.01	1	2	200	82	75	100	0	100	47k	Yes	No	34	999.00	Battery powered.
MITSUBISHI	DA-P30		10-100 +0, -0.5	19	0.0015	0.0015	2	2.8	380	81	92	150	3	Sel.	47k	Yes	No	15.7	400.00	Dual mono.
MONOLITHIC SOUND	Preamp		5-50	10	0.05	0.05	2					100	2	Adj.	Adj.	Yes			399.00	
MUSICAL FIDELITY	AC-1	MC	1-1M +0, -3	2	0.03	0.03				90				200	Var.	Yes	No	4½	600.00	Dual mono.
	BB-2	MC	1-300 +0, -3	6	0.03	0.03				85				200	Var.	Yes	No	3	200.00	Battery powered.
MXR	System		20-20 ±0.25	7	0.005	0.005	4	5	120	82		800	0	200	47k	No	No	7	545.95	
	System II		20-20 ±0.25	7	0.005	0.005	4	5	120	82		800	0	200	47k	No	No	7	605.95	
	Linear		20-20 ±0.25	7	0.005	0.005	2	5	120	82		800	0	200	47k	No	No	5	389.95	
NAD	1020A		20-40 ±0.05	15	0.03	0.01	1	1.25	200	75	72	80	2	Sel.	47k	Yes	No	3¾	198.00	
NAIM AUDIO	NAC42S		20-20 ±0.5	1.0								75	0		470	Yes		6	560.00	
	NAC42N		20-20 ±0.5	1.0			2	200				75	0		47k	No		6	560.00	
	NAC32		20-20 ±0.5	1.0			2	2	200			75	0	Sel.	Yes		6	1050.00		
NIKKO	Beta-50		20-20 ±0.5	9	0.004	0.004	4	2.5	200	88	70	150	2	100	Sel.	Yes	No	8.4	495.00	
	Beta-30		20-20 ±0.5	9	0.004	0.004	3	2.5	200	88	70	150	2	100	Sel.	Yes	No	8.4	325.00	
NEW YORK AUDIO LABORATORIES	NCP-I	T	20-300 ±1	60	0.05	0.05	0	1	500	80	80	100	0	100	5-50	Yes	No	15	800.00	
	NCP-II	T	20-300 ±1	60	0.05	0.05	2	1	500	80	80	100	0	100	5-50	Yes	No	20	2000.00	
	NCP-III	T	20-300 ±1	60	0.05	0.05	2	1	500	80	80	100	0	100	5-50	Yes	No	30	3000.00	Tube power supply opt.

# HERE'S A TECHNOLOGY STORY THAT'S TRULY ABSORBING.

Every story has a protagonist and an antagonist. And this one's no different.

The hero, in this case, is an unassuming, little technological breakthrough from Pioneer called the Dynamic Resonance Absorber™ (DRA).



And the arch-villain, the ever-present Resonant Tonearm Vibration.

What the Dynamic Resonance Absorber does, to make a long story short,

is to absorb the resonant frequency of the tonearms on all of our new turntables.

Thereby eliminating distortion which causes music to lose clarity and accuracy of reproduction.

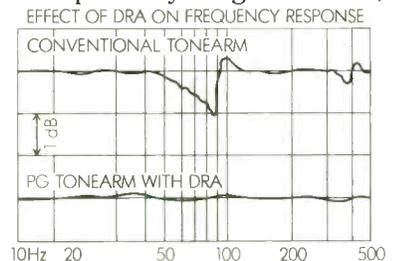
As if this weren't thrilling enough, there's also an exciting subplot. The DRA eliminates acoustic feedback that results when the turntable is too close to speakers played at high volume.



How the Dynamic Resonance Absorber causes all this to happen is actually quite simple, as most acts of genius usually are.

The DRA is composed of a damper made of extremely dense butyl rubber enclosed in a weighted collar on the tonearm.

Working within the precisely weighted collar, the butyl rubber acts just like a spring. When the pipe of the Polymer Graphite™ (PG) tonearm vibrates, the "spring" compresses and simultaneously soaks up vibrations.



That's why Pioneer can virtually promise that muddy reproduction is an out-of-date story. And why transient response is far more accurate. In fact, as you can see on the chart, the cartridge output (with DRA) closely resembles the original input.

Furthermore, frequency response, as you can also see, is tremendously flat.

But, while the Dynamic Resonance Absorber is a real blockbuster, it's not the only story here.

Every Pioneer turntable also features a Stable Hanging Rotor™ that improves stability by reducing friction which decreases wow and flutter.

A zero-clearance dust cover allows you to place the turntable flush against a wall, yet still open it all the way.

And another convenience item: all controls are located outside the dust cover.

In addition, the PL-S70 (shown here) has two other ease-of-operation features: an automatic disc size selector (ADSS) and auto repeat function.

Naturally, you'll want to audition each new Pioneer turntable with Dynamic Resonance Absorber at your earliest convenience.

If only to convince yourself that this story falls in the non-fiction, not the science-fiction category.

 **PIONEER**<sup>®</sup>  
Because the music matters.



# PREAMPLIFIERS

MANUFACTURER	Model	Unit Type: KT=K Tube, MC=MC Mono, P=Phono Stage, Only=MC Moving Coil Stage, Only=P. Frequency Response: Hz to kHz, ±dB	Maximum Output, V	THD, %	IMF IM Distortion, %	Number of Tape & Processor Loops	MM Phono Sensitivity, mV for 0.5 V Output at 1 kHz	MM Phono S/N, —dB	MM Phono Overload, mV	MC Phono S/N, —dB	High Level Sensitivity, mV	No. of Tone Controls Per Channel	Phono Input Impedance, Ω	Moving Coil Input?	Does Unit Invert Phase?	Weight, Lbs.	Price, \$	Notes		
																			5-50 +0, -0.3	20
SCHUG ELECTRONICS	Preamp T																			
SESCOM	SC-2		20-20 +1, -1	7	0.05	0.05	1	1.85			700	0	100	47k	No	No	6	200.00		
SHERWOOD	S-6020 CP		0-100	10	0.005	0.005	2	1.17	250	80	74	2	170	47k	No		17	249.95		
SONY ESPRIT	TA-E900		0-300 +0, -1	12	0.005	0.005	2	2.5	180	84	70	150		Sel.	Sel.	Yes		28 3/4	3200.00	Dual mono.
	TA-E901		0-200 +0, -1	12	0.008	0.008	2	2.5	180	84	70	150	2	100	Sel.	Yes		22	2500.00	As above.
SOTA INDUSTRIES	II Head Amp RIALAL	MC	1-500 +0, -0.3	2	0.03	0.03								Var.	Yes	No	4	350.00		
		P MC	10-200 +0, -0.3	9	0.02	0.02					90	100			Var.	Yes		90	200	Dual mono.
SOUND-CRAFTSMEN	DX4200		5-100 ±0.25	10	0.01	0.005	4	Adj.	300	97	97	90	†	Adj.	Sel.	Yes	No	25	699.00	†Dual 10-band EQ; auto bridging circuitry. CX decoder.
	CX4100		5-100 ±0.25	10	0.01	0.005	3	1.4	200	97		90	†	100	47k	No	No	22	549.00	
	CX4000		5-100 ±0.25	10	0.01	0.005	4	1.4	200	97		90	0	100	47k	No	No	20	419.00	As above.
SPECTRAL	MS-One Series 4 DCM-10 Series Beta		0-1M +0, -1	9	0.01	0.01	2				102			100	47k	Yes	No	32	3495.00	
			0-1M +0, -1	9	0.01	0.01	1				102			100	47k	Yes	No	25	2395.00	
SPECTRASCAN	LCA-10		20-20	15	0.008	0.008	3	1.0	250	80	78	100	0	Sel.	Sel.	Opt.	No	10	595.00	
	LCA-20		20-20	15	0.006	0.005	3	1.0	250	85	78	100	2	Sel.	Sel.	Opt.	No	12	749.00	
STANTON	310 SP98	P MC	20-20 10-120 ±3	10 4	0.05 0.035	0.002		0.5	120	70				Adj.	47k 100	No Yes	No No	1.2	240.00 189.00	Two 9-V batteries for power.
STAX	CA-X Pro.		0-1M +0, -0.3	20	0.002	0.003	1	1	200	90	68	100	0	100	Var.	Yes	No	34	4000.00	Dual mono.
	CA-Y		0.33-150	20	0.003	0.003	2	1.2	180	78	68	143	0	100	Var.	Yes	No	14	1650.00	FET.
STRELIOFF	PS 1		10-60 ±1.5	25			2	1.0	250	92		100	0	300	47k	No	No	33	2500.00	
	PS 11		10-60 ±1.5	25			2	1.0	250	92		100	0	300	47k	No	No	39	3500.00	Dual mono.
SUMIKO	The Phono Amp		2-100	10	0.03	0.03	1	Var.	500	85	75			50	Var.	Yes	No	2	600.00	
SUMO	Electra		2-100 ±3	18	0.01	0.01	1	0.38	125	85	85	315	2	100	47k	Yes	No	12	435.00	
TANDBERG	TCA 3002A		5-130 ±1.5	10	0.004	0.004	2	1	290	80	74	70	2	Adj.		Yes	No	12 1/2	795.00	
TANNOY	Tresham DR-1		20-20 ±2	1.1	0.015		3	0.2		63			0	Adj.	Adj.	No		2.2	499.00	External power supply.
	Tresham DR-3		20-20 ±2	1.1	0.01		3			65			0	Adj.	Adj.	Yes		2.2	599.00	As above; no MM input.
TECHNICS	SU-A4MK2		0-100 +0, -0.3	8	0.001		2	2.5	150	92	82	150	2		47k	Yes	No	17.6	1100.00	
	SU-A8		0-100 +0, -0.3	9	0.002		2	2.5	150	88	73	150	1		47k	Yes	No	9.9	350.00	
	SH-305MC	MC	15-100 ±0.2		0.001								0		47k	Yes		9.9	350.00	Transformer.
THRESHOLD	FET two		2-100 +0, -0.3	10	0.02	0.02	1	0.5	140	80	70		0	Sel.	Sel.	Yes	No	9	1100.00	
	FET one		2-100 +0, -0.3	10	0.02	0.02	2	0.5	140	80	70		0	Sel.	Sel.	Yes	No	13	2200.00	
TIBI ELECTRONICS	MCP-100	MC	20-20 ±0.1		0.02	0.02							0	50	80	Yes	No	1 1/2	139.00	
VAN OEN HUL	Head Amp	MC	1-3M +0, -1	2	0.005						90			3	Yes	No	3	595.00	Replaceable input load.	
VANDERSTEEN AUDIO	OL-1	MC	1-500 +0, -1	1	0.01	0.01				80						No	4	285.00	Var. input and output loading.	
YAMAHA	C-70		5-100 +0, -0.5	10	0.001	0.001	2	2.5	300	94	90	150	2		Yes	Yes	16	780.00	Parametric tone controls.	
	C-50		0-100 +0, -0.5	10	0.002	0.002	2	2.5	220	93	90	150	2		Yes	No	15	530.00		

# TUNERS



**TANDBERG 3001A**



**CARVER TX-11**



**ADS T2**



**NAD 4150**

MANUFACTURER	Model	Unit Type: Kit = K, FM Only = F, Digitally Synthesized = D	IHF Sensitivity, dB <sub>1</sub> , Mono Stereo	Signal Strength for 50-dB Quieting, dB <sub>1</sub> , Mono Stereo	Capture Ratio, dB, Wide Narrow	AM Suppression, dB	Alternate Channel Selectivity, dB, Wide Narrow	Total Number of Memory Presets	Separation, dB, 1 kHz	Separation, dB, 10 kHz	THD, %, Mono Stereo, 1 kHz, 100% Modulation	THD, %, Mono Stereo, 6 kHz, 100% Modulation	Maximum S/N, -dB, Mono Stereo	Weight, Lbs.	Price, \$
ACCPHASE	T-105	F/D	12.2/28.8	17.3/37.3	1.5	80	80/100	6	50	45	0.04/0.04	0.08/0.08	80/75	18½	950.00
ADCDM	GFT-1A GFT-2	D D	9.8/ 17.2/34.7	17.5/38.5	1.0 1.2	50	85 70	16 14	55 50	45 45	0.08/0.1 0.09/0.18	0.09/0.15 0.1/0.22	80/75 75/70	14 14	375.00 249.95
ADS	T2	D	11.0/26.1	18.38	2.5		75	16	38		0.15/0.2		70/65	13¼	399.00
AKAI	AT-S3 AT-S7	D D	11.2/ 11.2/	16.2/37.2 16.2/37.2	1 1		70 70	16 20	60 80	45 53	0.1/0.3 0.03/0.05		75/65 80/75	6.4 7.2	199.95 249.95
AMBER ELECTRONICS		D	11.2/	14.6/37.2	1.0	58	60	12	48	40	0.08/0.2	0.2/0.3	75/73	9	349.00
ARCAM	T.21	F	16.1/33.2		1.5/2	50	60/80	5	40	35	0.4/0.9		70/68	7	499.00
BOOTHROYD STUART/MERIDIAN	104	F	14.7/26.8		1.6	54	35	6	46		0.1/0.2		67/	4	595.00
CARVER	TX-11	F/D	11.3/34	16.1/21	1.0/1.5	100	37/88	16	45	36	0.04/0.08	0.05/0.1	82/85	11¼	549.00
CREEK AUDIO	CAS 4040T	F							40	40				10	299.95
CROWN INTERNATIONAL	FM Two	F	9.31/	11.2/36	1.5		75	6	60	45	0.1/0.09		75/70	15½	699.00
DENON	TU-750 TU-720	D D	10.2/ 9.8/	14.2/35 15.6/34.7	1.0 1.0	60 55	60 65	14	55 55		0.06/0.08 0.04/0.06		80/75 86/84	7 8½	285.00 225.00
ELECTROCOMPANET	Electro-tuner I	D						8					8	750.00	
DAVID HAFNER CO.	DH-330	K/F/D	11.3/	17.2/37.2				5	45	35	0.1/0.18		72/68	9½	429.95; Kit, 329.95
HARMAN/KARDON	TU610 TU615		10.8/ 10.3/	16.8/38.1 15.3/36.8	1.5 1.0	50 55	70 70	6	45 50		0.09/0.15 0.08/0.1		77/71 81/72	10 11	200.00 350.00
HITACHI	FT1 FT2 FT5500	D D D	11.2/38.2 10.8/39.2 10.8/38.2		1.0 1.0 1.0		50/55 50/55 45/65	16 16 10	45 45 60		0.3/0.4 0.15/0.3 0.04/0.06	0.06/0.08	75/70 75/70 85/78	5¾ 5¾ 8¾	120.00 210.00 300.00
JVC	T-K10 T-X22 T-X55	D D D	10.3/ 10.3/ 10.3/	22.1/43.2 16.3/38.1 16.4/31	1 1 1	60 67	60 65 80	14 14 16	37 50 50		0.2/0.3 0.1/0.15 0.07/0.07		74/67 80/76 84/80	6.4 6.8 7	130.00 180.00 350.00
KENWOOD	Basic T-1 KT-9XG KT-7X KT-51/51B KT-31/31B T-9 L-D2T	D D D D D D F	10.8/ 10.8/ 10.8/ 10.8/ 10.8/ 10.8/ 10.7/	16.4/37.2 16.4/37.2 16.4/38.4 16.4/37.2 17.2/37.2 16.4/37.2 10.3/39.2	1.0 1.0/2.0 1.0 1.0 1.5 1.0 1.0/3.8	47 70 65 47 60 65 70	50 45/65 55 50 50 50 45/65	12 8 12 12 40 12 55	45 55 50 45 40 45 55	32 45 40 32 35 35 45	0.1/0.15 0.03/0.04 0.07/0.09 0.1/0.15 0.12/0.2 0.1/0.15 0.006/0.01	0.3/0.3 0.04/0.1 0.1/0.15 0.3/0.3 0.3/0.35 0.3/0.3 0.02/0.03	72/69 86/80 74/71 72/69 80/74 72/77 95/85	5½ 9¼ 8¾ 5½ 6½ 5¾ 27¼	200.00 400.00 250.00 200.00 120.00 235.00 3000.00
KIRKSAETER	LAB FM10 LAB FM10/16	D D	10/ 10/	10/15 10/15	1 1	55 55		8 16	50 50		0.08/0.10 0.08/0.10		78/75 78/75		
KLH	T-201 T-101	D D	10.1/ 11.2/	16.5/38.0 17.2/39.6	1.5 1.8		60 40	14	45 40		0.1/0.2 0.15/0.3		70/65 68/62		299.95 179.95

# TUNERS

MANUFACTURER	Model	Unit Type: K1=K, FM Only=F, Digitally Synthesized=D	IHF Sensitivity, dbf	Signal Strength to 50 db Queuing, dbf, Mono/Stereo	Capture Ratio, db, Mono/Stereo	AM Suppression, db, Wide/Narrow	Alternate Channel Selectivity, db, Wide/Narrow	Total Number of Memory Presets	Separation, db, 1 kHz	Separation, db, 10 kHz	THD, %, Mono/Stereo, 1 kHz, 100% Modulation	THD, %, Mono/Stereo, 6 kHz, 100% Modulation	Maximum S.N., -db, Mono/Stereo	Weight, Lbs.	Price, \$
LUXMAN	TX-101	D	10.3/	13.2/	1.2		80	24	50		0.06/0.07		78/	9.8	349.95
MARANTZ	ST 530	D	10.3/	13.2/37.3	1.2	60	72	16	48	40	0.1/0.25	0.2/0.3	71/78	6.6	265.00
McINTOSH	MR80 MR78 MR75 MR500	F/D F F F/D	9.3/ 13.2/ 11.2/ 13/	14.7/ 14.8/36 19.1/ 16.8/37.3	1.5 2.5 1.8		110 90 75 70	4 0 0 6	50 40 45 50		0.2/0.2 0.2 0.18/0.38 0.08/0.18	0.15	75 75 70 80/75	27 27 23 18	2499.00 1699.00 1349.00 1499.00
MITSUBISHI	DA-F30	F/D	10.3/	16.1/37.3	1.0/1.5	55	45/75	8	50	43	0.05/0.08		84/78	11	350.00
NAD	4020A 4150	D	10.9/ 7/	16/37 14/33	1.5 1.0	60 55	65 75	10	42 45	32 35	0.2/0.3 0.1/0.15	0.3/0.4 0.2/0.3	75/70 83/75	9.3 8.7	218.00 338.00
NIKKO	Gamma-30 NT-990 NT-700II NT-500II	D D D D	11.2/ 11.2/ 11.5/ 10.8/	14.34 14.8/36 14.7/36 14.7/36.1	1.5 1.5 1.5 1.5	50 60 60 50	60 60 60 60	14 12 12 12	45 50 45 45	35 40 35 35	0.15/0.2 0.1/0.2 0.1/0.2 0.1/0.2		70/67 75/65 75/68 75/65	8.8 9.9 9.5 9.9	425.00 320.00 280.00 180.00
ONKYO	T-9060 T-4017 T-4015	F/D D D	10.3/17.2 10.3/17.2 10.8/17.2	14.7/36 14.7/36 16.1/36.1	1 1 1.3		80 80 55	14 16 16	45 45 40		0.05/0.13 0.05/0.1 0.1/0.2		81/73 81/73 75/68	12.3 10.6 9.9	490.00 350.00 250.00
PHASE LINEAR	T5200	D	10.8/25.0	15/37	1.0/2.5	65	40/85	12	55	48	0.03/0.05	0.03/0.10	90/85	15	450.00
PIONEER	F-90 F-70	D D	10.8/ 10.8/	16.2/37.7 16.2/37.2	0.8 1.0		85 56	16 16	65 50	50 35	0.0095/0.02 0.05/0.08	0.01/0.07 0.1/0.2	93/86 85/80	9.9 5.5	365.00 250.00
PRECISION FIDELITY	T-8	F/D	10.3/31.2	28.7/33.2	1.5	100	100	5	45	45	0.01/0.05	0.01/0.05	80/75	9	
PSE	Studio Three	F		17/40	1			6	50		0.2/0.3		75/70	9	510.00
QUAO	FM4	F	30/50	10/29	1.5	60	53	7	40		0.15/0.15	0.05/0.10	70/76	4	625.00
QUANTUM	ST 100	F	10.8/39.2			50		8	35	35			70/	7	375.00
REVOX	B261	D	10.8/34.8	13.2/34.8	2	72		20	43	40	0.031/0.07	0.01/0.01	79/75	18 3/4	1500.00
SAE	T101 T6 T14	D D D	10.3/17 11.25/17.3 10.3/17.3	14.35.3 17.3/36.11 17.3/34.8	1.2/2.2 1.5 1.5/1.0	60 55 55	40/100 65 40/70	16 0 10	55 45 48	40 40 40	0.05/0.08 0.1/0.25 0.08/0.15	0.1/0.15 0.28/0.4 0.22/0.3	75/70 75/67 76/70	20 14 18	650.00 329.00 599.00
SANSUI	TU-S77AMX TU-S77XW TU-S77X TU-S55X TU-S33	D D D D D	10.5/ 10.5/ 10.5/ 10.8/ 10.6/	16.2/ 16.2/ 16.2/ 16.0/ 16.5/	1.0 1.0 1.0 1.0 1.0			16 16 16 16					92/ 92/ 92/ 85/ 81/	6.6 6.6 6.6 6.2 7.7	390.00, AM stereo capable 370.00 350.00 280.00 200.00
H. H. SCOTT	528T 558T	F F/D	10.8/ 9.8/	16.5/37 16.5/37	1.2 1.0		60 60	14	50 50		0.15/0.3 0.08/0.15		72/66 78/72	8 8	159.95 279.95
SEQUERRA	Model One Broadcast Analyzer	F	5.0/15	12.9/34	0.75	70	100		40	40	0.10/0.15	0.10/0.18	70/70	48	6000.00 Spectrum, multipath & vector analyzers inc.
SHERWOOD	S-6010 CP TD-2010 CP	D D	10.3/ 10.8/	15.3/36.5 15.8/39.2	1 1.5	60 60	80 65	16 12	50 50	40 35	0.09/0.09 0.1/0.15	0.09/0.25 0.1/0.3	80/75 80/75	17 14	249.95 199.95
SONY	ST-JX500 ST-V7 ST-JX44 ST-JX35	D D D D	10.3/ 10.3/ 10.3/ 10.3/	16.1/37.9 16.1/37.9 16.1/37.9 16.1/38.3	1.0 1.0 1.0 1.0	60 60 60 54	80 80 80 65	10 8 8 10	50 50 50 45	35	0.08/0.1 0.08/0.15 0.08/0.15 0.15/0.3	0.1/0.15	90/84 84/78 82/77 82/77	6 1/8 6 1/8 6 1/2 6 1/8	250.00 300.00 w/Remote 200.00 150.00
SONY ES	ST-S55ES	F/D	10.3/	16.8/37.9	1.0	65	90/60	8	60	45	0.03/0.04	0.03/0.12	92/86	10 5/8	450.00
SOUNDCRAFTSMEN	T6002	D	9.5/30	16.2/35	1.2		70	14	50		0.1/0.2		80/74	13	299.00
SUMO	Charlie	F/D	13/18	17/38	1.0/1.5	60	65/100	5	50	45	0.04/0.05	0.05/0.08	80/74	12	505.00
TANDBERG	TPT3001 TPT3011	F F	7.5 9.8/	10.3/32.1 8.7/32.2	0.4/3 0.9	70 70	30/90 80	8 8	70 40	45 35	0.03/0.04 0.2/0.3	0.03/0.1 0.3/0.4	95/92 78/75	15.3 12.6	1195.00 695.00
TECHNICS	ST-S8 ST-S707 ST-S505	D D D	10.8/ 10.8/ 10.8/	16.3/37.2 18.1/38.1 18.1/38.1	1 1 1	55 55 55	55/80 55/80 55/80	16 16 16	55 65 60	50 50 45	0.04/0.06 0.03/0.04 0.04/0.05		80/74 80/70 78/70	9 5.7 5.3	500.00 270.00 220.00
YAMAHA	T-70 T-1000 T-700 T-500	D D D D	12.4/42.2 9.8/	14.7/35.3 9.3/31.2 9.3/31.2 15.3/7.7	1.2/2.5 1.2/2.5 1.2/2.5 1.5/2.7	65 65 60 58	25/85 30/85 55 55	10 10 10 5	60 65 58 55	50	0.03/0.04 0.03/0.15 0.05 0.08/	0.05/0.06 0.06/0.4 0.06/0.4 0.1/	88/83 92/85 89/84 85/80	9 8 1/2 8 1/2 6 1/4	370.00 320.00 280.00 230.00

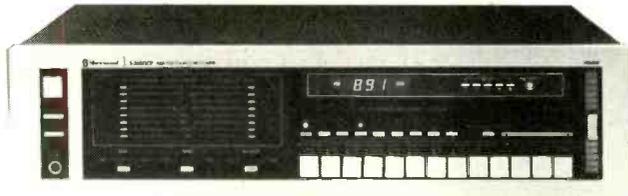
# RECEIVERS



**YAMAHA R-100**



**NIKKO NR-1000**



**SHERWOOD S-2680 CP**



**VECTOR RESEARCH VRX-9500**

MANUFACTURER	Model	AMPLIFIER SECTION										TUNER SECTION						Price, \$
		Unit Type: FM Only, F Digitally Synthesized = D	Avg. Watts Channel into 8 Ohms	THD, %	IHF IM, %	Rated Power Bandwidth, Hz to kHz	MM Phono S/N, -dB	"A" Wtd. re: 5 mV	Dynamic Headroom, mV	Toler Number of Memory Presets	IHF Sensitivity, dB, Mono/Stereo	Signal Strength for 50-dB Curing, dB, Mono/Stereo	Capture Ratio, dB	THD, % 100% Modulation, 1 kHz, Mono/Stereo	Alternate Channel Selectivity, dB, Wide/Narrow I.F. Bandwidth	Max. S/N, -dB, Mono/Stereo	Weight, Lbs.	
ADS	R1	35	0.1	0.05	10-70	73	80	2.0	5	11.2/31	16.5/37.7	1.8	0.15-0.25	75	70/67	17½	499.00	
AKAI	AA-R1	D	22	0.3	20-20	75	250		12	12.7/	16.2/37.2	1.5	0.1-0.3	60	75/65		169.95	
	AA-R22	D	30	0.08	20-20	75	280		12	11.2/	16.2/37.2	1.5	0.1-0.3	60	75/65	13.2	249.95	
	AA-R32	D	50	0.05	20-20	75	280		16	11.2/	16.2/37.2	1.5	0.1-0.3	60	75/65	19.8	329.95	
	AA-R42	D	70	0.05	20-20	85	280		20	11.2/	16.2/37.2	1.5	0.1-0.3	60	75/65	22	429.95	
BANG & OLUFSEN	8000	F/D	100	0.05	0.1	20-20	75	125	1	9	13/15	19/34	1.8	0.1/		76/72	46¼	1495.00
	6000	F	75	0.08	0.05	20-20	75		0.7	6	15/39	22/39	1.8	0.29/	56	75/72	32	w/Remote 895.00
	5000	D	55	0.09	0.15	20-20	74	55	1	9	15/17	21/42	1.8	0.3/		70/67	18¾	w/Remote 1195.00
	2200		20	0.15	0.4	20-20	78			6		36.1		0.5/			24¼	w/Remote 1195.00
	7700	F	30	0.1	0.3	20-30	82		2	7		33.2		0.4/			36¼	w/Remote, Spkrs., Cassette, T-table 1995.00
CARVER	The Carver Receiver	D	130	0.1	0.1	20-20	80	100	0.5	10	11.3/16.3	16.1/23.5	1.5	0.3/0.3	58/50	82/85	28½	699.00
DENON	DRA-700	D	60	0.015	0.01	5-40	84	150		16	10.2/			0.07/0.15	70	81/78	23	550.00
	DRA-400	D	45	0.05	0.03	5-40	80	200			10.2/			0.07/0.15	77	75/71	20	399.00
	DRA-300	D	33	0.05	0.03	5-40	79	150			11.2/			0.1/0.2	50	82/79	16¾	299.00

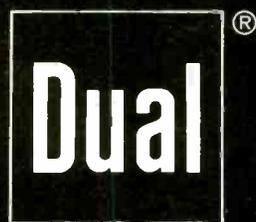
# RECEIVERS

MANUFACTURER	Model	AMPLIFIER SECTION										TUNER SECTION						
		Unit Type: FM Only = F, Digitally Synthesized = D	Avg. Watts Channel Inpt & Dimms	THD, %	IHF IM, %	Rated Power, kHz to kHz	MM Phono S/N, -dB	MM Phono S/N, -dB "A" Wtd. re: 5 mV	Dynamic Overload, mV	Total Number of Memory Presets	IHF Sensitivity, dbi Mono/Stereo	Signal Strength for 50-dB Quietng, dbi Mono/Stereo	Capture Ratio, db	THD, % 100% Modulation, 1 kHz Mono/Stereo	Alternate Channel Selectivity, dB, Wide Narrow I.F. Bandwidth	Max. S/N, -dB, Mono/Stereo	Weight, Lbs.	Price, \$
FISHER	RS120		20	0.09	0.1	20-20	70			14.1/25.4	25.4/39.2	1.5	0.35/0.7	55	70/65	13	199.95	
	RS225		25	0.2	0.2	20-20	70			14.1/21.5	21.5/39.2	1.0	0.2/0.4	60	66/17	17	279.95	
	RS140		40	0.09	0.09	20-20	78			12.4/18.5	20/38.3	1.5	0.3/0.4	60	70/15	15	299.95	
	RS255	D	50	0.2	0.2	20-20	73		12	14.1/21.5	21.5/39.2	1.0	0.1/0.2	70	73/14.8	14.8	349.95	
	RS280		100	0.05	0.05	20-20	70			10.8/18.5	20/38.3	0.8	0.3/0.3	70	70/65	36	499.95	
HARMAN/KARDON	NK330I		20	0.09		10-60	80			13.2/	17.3/38.3	1.5	0.1/0.12	60	82/72	18	235.00	
	NK380I		30	0.08		10-60	80			10.8/	16.6/36.6	1.75	0.1/0.12	60	82/74	19	315.00	
	NK490I	D	30	0.08		10-100	80		16	10.8/	15.6/36.6	1.25	0.08/0.1	65	82/75	22	400.00	
	NK590I	D	45	0.08		10-100	80		16	10.8/	15.6/36.6	1.25	0.08/0.1	65	82/75	24	525.00	
	NK690I	D	60	0.06		10-100	80		16	10.8/	15.6/36.6	1.2	0.08/0.1	65	82/76	26	675.00	
HITACHI	HTA2		25	0.1	0.05	40-20	70	120		13.2/	18.2/	1.5	0.15/0.25	53	76/70	11 1/2	180.00	
	HTA3F	D	30	0.05	0.05	20-20	70	140	8	13.2/38.2	20.2/38.2	1.5	0.15/0.25	53	76/70	12 1/2	250.00	
	HTA4F	D	40	0.01	0.01	20-20	71	150	10	13.2/38.2	20.2/38.2	1.5	0.15/0.25	53	76/70	15 1/2	370.00	
	HTA6F	D	60	0.01	0.01	20-20	72	150	10	13.2/38.2	20.2/38.2	1.5	0.15/0.25	53	76/70	18 1/2	500.00	
JVC	R-K11		30	0.03	0.03	20-20	78			10.3/	14.8/37.3	1.5	0.15/0.3	65	76/70	11.9	190.00	
	R-K22	D	30	0.03	0.03	20-20	78		12	10.3/	14.8/37.3	1.5	0.12/0.25	60	80/73	12.1	250.00	
	R-X44	D	50	0.008	0.008	20-20	78		12	10.3/	14.8/37.3	1.5	0.15/0.2	65	80/73	14.5	330.00	
	R-X60	D	55	0.008	0.008	20-20	80		16	10.3/	14.8/37.2	1.5	0.1/0.15	75	83/74	18.3	450.00	
	R-X80	D	70	0.008	0.008	20-20	80		16	10.3/	14.8/37.2	1.5	0.1/0.15	75	83/74	20.9	570.00	
KENWOOD	KR-1000B	D	120	0.01	0.01	20-20	88	150	12	10.3/	16.1/35.6	1.0	0.09/0.1	30/60	76/70	35 1/4	1250.00	
	KR-950/	D	80	0.015	0.015	20-20	92	200	12	10.8/	14.2/36.8	1.5	0.07/0.08	60	80/74	19 3/4	530.00	
	KR-950B																	
	KR-930/	D	65	0.015	0.015	20-20	84	200	12	10.8/	14.8/37.3	1.0	0.08/0.09	62	78/73	15	380.00	
	KR-930B																	
KR-920		50	0.09	0.09	20-20	81	150		10.8/	14.0/37.3	1.0	0.12/0.15	47	81/74	15 1/2	260.00		
KR-910		30	0.09	0.09	20-20	78	120		10.8/	17.2/37.2	1.5	0.1/0.2	45	75/70	11 3/8	200.00		
KIRKSAETER	Moderator 100MC	F	90	0.02	0.005	10-120	82	140	5	11	16/30	1.5	0.15/0.2		75/73			
	Moderator 150MC	F	135	0.02	0.005	10-120	82	140	5	11	16/30	1.5	0.15/0.2		75/73			
KLH	R-301		30	0.08	0.08	15-30				11.2/	17.2/39	1.8	0.15/0.3	40	68/62		249.95	
KYOCERA	R-851	D	85	0.015	0.015	20-20	78	200	14	9.8/	14.8/35	1.0	0.06/0.07	40/85	88/76	27.1	850.00	
	R-651	D	65	0.015	0.015	20-20	82	150	14	10.1/	15.5/36.5	1.0	0.07/0.1	75	84/76	24.9	730.00	
	R-451	D	45	0.015	0.015	20-20	80	120	14	10.3/	17.0/37.2	1.2	0.09/0.15	65	80/74	18.5	550.00	
H. S. LEAK CO.	2000		35													795.00		
LUXMAN	R-5030		35	0.03	0.03	20-20	77	150	0	10.3/	14.8/	1.5	0.12/0.2	79	82/	17	349.95	
	RX-101	D	40	0.025	0.025	20-20	79	200	24	10.3/	13.2/	1.2	0.15/0.25	60	78/	27.5	499.95	
	RX-102	D	60	0.018	0.018	20-20	80	200	24	6.3/	13.2/	1.0	0.06/0.08	60	78/	30.8	599.95	
	RX-103	D	90	0.018	0.018	20-20	80	200	24	10.3/	13.2/	1.0	0.06/0.08	80	78/	33.6	999.95	
MARANTZ	SR 430	D	30	0.05	0.02	20-20	80	130	16	11.2/	13.9/38.1	1.2	0.2/0.2	60	77/71	9.9	300.00	
	SR 520	D	32	0.09	0.05	20-20	80	130	16	10.3/	14.5/38.3	1.0	0.15/0.1	60	75/65	13.8	325.00	
	SR 620	D	46	0.06	0.05	20-20	80	130	16	10.2/	14.5/38.3	1.0	0.15/0.1	60	75/65	13.8	400.00	
	SR 7100 DC	D	55	0.06	0.06	20-20	90	225	16	9.8/	13.2/36.1	1.0	0.15/0.2	65	80/72	22.2	525.00	
	SR 8100 DC	D	76	0.06	0.06	20-20	90	225	16	9.8/	13.2/36.1	1.0	0.15/0.2	65	80/72	24.2	599.00	
McINTOSH	MAC4100		75	0.05	0.05	20-20	90		0	11.2/		1.8	0.18/0.38		70	42	1999.00	
MITSUBISHI	DA-R11	D	35	0.015	0.01	10-80	78	140	2.0	14	10.3/	15.0/36.8	1.5	0.08/0.1	55/75	84/78	21	260.00
	DA-R15	D	45	0.015	0.01	10-80	78	140	2.0	14	10.3/	15.0/36.8	1.5	0.08/0.1	55/75	84/78	24 1/2	360.00
	DA-R25	D	60	0.015	0.005	10-80	78	250	2.0	14	10.3/	15.0/36.8	1.5	0.08/0.1	55/75	84/78	27 1/2	490.00
	DA-R35	D	85	0.01	0.005	10-80	78	250	2.0	14	10.3/	15.0/36.8	1.5	0.08/0.1	55/75	84/78	31 1/4	590.00
NAD	7125	D	20	0.05	0.02	10-50	75	140	4	10	10.8/	14.8/34.8	1.5	0.2/0.3	65	80/75	16	298.00
	7150	D	50	0.03	0.03	10-100	76	240	3	10	7.0/	14/33	1.0	0.08/0.10	78	83/75	22	598.00
NIKKO	NR-1000	D	65	0.03	0.03	10-50	83	150	2.3	12	10.8/	14.7/33	1.5	0.1/0.2	60	70/60	19.9	525.00
	NR-800	D	50	0.04	0.04	10-35	80	150		12	11.2/	15.0/	1.5	0.2/0.3	60	70/60	19.8	445.00
	NR-700	D	40	0.04	0.04	10-35	75	150		12	11.2/	15.0/	1.5	0.2/0.3	60	70/60	18.7	390.00
	NR-520	D	30	0.05	0.05	15-35	75	100		12	11.2/	14.0/	1.5	0.1/0.2	60	75/65	13.7	275.00
	NR-320	D	28	0.08	0.08	15-30	75	140		12	11.2/	13.2/35.2	1.5	0.1/0.2	55	75/70	12.8	220.00
ONKYO	TX-11		20	0.08	0.08	20-20	73	100			13.2/19.2	19.2/41	1.8	0.3/0.5	50	70/65	12.8	200.00
	TX-21		30	0.06	0.06	20-20	75	110			12/19.2	18.2/39.2	1.5	0.2/0.4	55	71/66	14.5	250.00
	TX-25	D	33	0.08	0.08	20-20	75	110	1.6	16	11.2/17.2						250.00	
	TX-31		45	0.04	0.04	20-20	75	180			11.2/19.2	17.2/37.2	1.5	0.15/0.3	60	72/66	18.7	350.00
	TX-35	D	43	0.04	0.04	20-20	75	150	2.1	16	10.9/17.2						330.00	
	TX-41	D	33	0.06	0.06	20-20	75	110		16	11.2/19.2	17.2/37.2	1.5	0.15/0.3	55	71/66	17	300.00
	TX-51	D	43	0.04	0.04	20-23	76	180		16	10.8/18.3	17.2/37.2	1.5	0.15/0.25	60	72/67	20.9	400.00
TX-61	D	60	0.025	0.025	20-20	76	200		16	10.3/17.2	14.7/37.2	1.3	0.12/0.2	70	75/70	28.6	540.00	
PARASOUND	SR230		25	0.1	0.05	20-20	74	200	1.5		14.1/36.8	2.0	0.1/0.15	75	75/72	18	199.95	
	SR250		45	0.1	0.05	20-20	75	200	1.6		14.1/36.8	2.0	0.1/0.15	75	75/72	21	249.95	
PIONEER	SX-60	D	80	0.005	0.005	20-20	86	150	20	10.3/	15.7/37.0		0.07/0.1	80	83/80	22.7	600.00	
	SX-50	D	50	0.007	0.007	20-20	80	130	16	10.8/	17.3/37.5		0.1/0.15	65	79/75	15.9	450.00	
	SX-40	D	38	0.02	0.02	20-20	70	130	16	10.8/	17.3/37.5		0.1/0.15	65	79/75	14.3	350.00	
	SX-303		45	0.3	0.3	40-20	71	150		10.7/	15.3/37.6		0.3/0.6	50	75/70	11	240.00	
	SX-202		25	0.3	0.3	40-20	71	150		10.7/	1							

# RECEIVERS

MANUFACTURER	Model	AMPLIFIER SECTION										TUNER SECTION						
		Unit Type: FM Only = F Digitally Synthesized = D	Avg. Watts-Channel Imp. & Ohms	THD, %	IHF IM, %	Rated Power, Hz to kHz	MM Phono S.N. - dB	MM Phono A - dB	MM Phono High re. 5 mV	Dynamic Overload, mV	Total Number of Memory Presets	IHF Sensitivity, dB	Signal Strength for 50-dB Quieting, dB	Capture Ratio, dB	THD, % 100% Modulation, 1 kHz: Mono-Stereo	Alternate Channel Selectivity, dB, Wide/Narrow I.F. Bandwidth	Max. S.N. - dB, Mono-Stereo	Weight, Lbs.
REALISTIC	STA-2290	D	100	0.05	0.02	20-20	85	230	0.6	12	16.1/31.4	13.2/37.2	1.5	0.15/0.3	70	74/		599.95
	STA-2270	D	65	0.05		20-20	85	165		12	15.2/31.1	14.7/37.6	1.25	0.08	75	75/		399.95
	STA-860		65	0.03		20-20	85	120			15.2/31.1	14.7/37.6	1	0.15	65	78/		359.95
	STA-790		45	0.04	0.12	20-20	86	140			17/31.9	14.7/37.6	1.5	0.1/0.2	53	72/65		359.95
	STA-112	D	35	0.05		20-20	85	175		12	15.2/31.1	14.7/37.6	1	0.15	75	75/		339.95
	STA-740		40	0.05	0.08	20-20	85	140			17/31.9	14.7/37.6	1.5	0.1/0.2	53	72/65		299.95
	ST-500/SA-500		30	0.08	0.05	20-20	78	140			19.2/33.6	20.1/40	2	0.3/0.6	50	70/		299.95
	STA-730		27	0.08	0.03	20-20	81	140			15.2/31.1	14.7/37.6	1	0.15/0.3	55	73/		279.95
	STA-115		24	0.03		20-20	85	120			17/31.1	14.7/37.6	1.2	0.15	60	78/		219.95
	STA-204		16	0.08	0.1	20-20	78	100			19.2/33.6	18.3/40.1	1.5	0.2/0.5	52	73/65		199.95
	STA-700		12	0.5	0.3	20-20	82	140			20.0/34.2	20.9/40	2.5	0.1/0.6	45	75/65		179.95
	STA-450		14	0.3		20-20	81	120			19.8/34.0		2	0.3/	60	78/		159.95
	STA-12		5	0.9		40-20	70				28.1/38.2		3	0.8/1	55	60/		119.95
	REVDX	B780	F/D	70	0.03	0.03	20-20	82	300	1	18	25.2/38.1	10.0/28.0	2	0.1/0.25	78	78/74	37 1/2
SAE	R2		20	0.1	0.1		76			0						17	299.00	
	R102		50							16							499.00	
SANSUI	Z-9000X	D	130	0.005	0.005	20-20	82	120		16	10.3	14.0/37	1.0	0.05/0.07	50/75	80/76	33 1/2	960.00
	Z-7000X	D	100	0.005	0.005	20-20	82	120		16	10.3	14.0/37	1.0	0.1/0.15	60	80/76	31 1/2	800.00
	Z-5000	D	70	0.007	0.007	20-20	82	120		16	10.8	15.0/37	1.0	0.15/0.2	60	76/70	19	500.00
	Z-3000X	D	55	0.008	0.008	20-20	82	120		16	10.8	15.0/37	1.0	0.15/0.2	60	76/70	17	400.00
SANYO	DCR350	D	33	0.03			78			12	10.8					30	279.95	
	DCR250	D	22	0.09			70			10	11.2					20	199.95	
H. H. SCOTT	319RA	F	25	0.08	0.08	40-20	80	160			10.8	15.35	1.5	0.1/0.15	65	75/68		219.95
	349RA	F	45	0.06	0.06	40-20	80	160			10.8	15.35	1.5	0.1/0.15	65	80/72		279.95
	339RS	F/D	25	0.05	0.05	20-20	80	160		14	10.8	15.35	1.2	0.1/0.15	65	80/72		279.95
	359RS	F/D	45	0.05	0.05	20-20	82	180		14	10.3	15.35	1.2	0.1/0.15	65	80/75		389.95
	379RS	F/D	70	0.03	0.03	20-20	82	180		14	9.8	15.35	1.0	0.1/0.15	70	80/75		469.95
SHARP	SA-150	F	10	0.9	0.2	40-20	70	150	2.5	0	11.7/25.2	19.2/37.2	1.5	0.3/0.6	55	73/68	11	119.95
	SA-250	F	22	0.09	0.09	20-20	70	150	2.5	0	11.7/25.2	19.2/37.2	1.5	0.3/0.6	55	73/68	11.3	159.95
SHERWOOD	S-9180 CP	D	29	0.5	0.08	40-20	88	140	1.4	10	10.3/	15.8/37.2	1.5	0.15/0.2	65	80/75	18	199.95
	S-2620 CP	D	25	0.5	0.05	40-20	88	140	1.3	10	10.8/	15.8/39.2	1.5	0.1/0.15	65	80/72	18	219.95
	S-2640 CP	D	45	0.5	0.05	40-20	88	140	1.4	12	10.8/	15.8/39.2	1.5	0.1/0.15	65	80/72	20	279.95
	S-2660 CP	D	50	0.05	0.05	20-20	92	250	1.2	16	10.3/	15.3/36.5	1.2	0.1/0.1	70	80/75	23 1/2	379.95
	S-2680 CP	D	70	0.05	0.05	20-20	92	250	1.2	16	9.8/	14.1/36.5	1.2	0.1/0.1	80	80/75	25	479.95
SONY	STR-VX750	D	70	0.006	0.006		85	150	0.5	10	11.2/	17.3/38.3	1.0	0.08/0.15	60	82/76	14 3/4	490.00
	STR-VX550	D	50	0.008	0.008		85	150	1.4	10	11.2/	17.3/38.3	1.0	0.08/0.15	60	82/76	17 3/4	360.00
	STR-VX450	D	40	0.008	0.008		81	150	1.4	10	11.2/	17.3/38.3	1.0	0.15/0.25	60	80/75	13 3/4	300.00
	STR-VX350	D	30	0.03	0.03		80	150	1.4	10	11.2/	17.3/38.3	1.0	0.15/0.25	60	80/75	12 1/4	250.00
	STR-VX250	D	20	0.08	0.08		80	150	1.2	8	11.2/	17.3/38.3	1.5	0.2/0.3	60	75/70	12 3/4	180.00
TANDBERG	TR3030		20	0.2	0.2	20-20	75	190	1	4	14.8/57.2	14.8/37.25		0.6/0.5	80	75/72	19	299.00
TECHNICS	SA-1010	D	120	0.003	0.01	20-20	73	170	1.1	16	10.8/	13.7/37.2	1.0	0.05/0.08	55/80		32.2	850.00
	SA-810	D	80	0.005	0.01	20-20	73	170	1.9	16	10.8/	16.1/38.3	1	0.08/0.15	80	78/72	19.6	530.00
	SA-510	D	60	0.005	0.01	20-20	74	170	1.8	16	10.8/	16.1/38.3	1	0.08/0.15	75	78/72	18.3	420.00
	SA-410	D	45	0.007	0.01	20-20	76	160	1.2	16	10.8/	16.1/38.3	1	0.08/0.15	70	78/72	15	300.00
	SA-310	D	35	0.02	0.02	20-20	77	160	1.2	16	10.8/	16.1/38.3	1	0.15/0.3	70	77/71	13	250.00
	SA-210	D	25	0.5	0.5	40-20	75	150	1.2	14	10.8/	16.1/38.3	1	0.15/0.3	70	77/71	9.9	200.00
	SA-110	D	20	0.5	0.5	40-20	75	130	1.0		10.8/	16.1/38.3	1	0.15/0.3	60	76/70	9.9	160.00
	TOSHIBA	SA-R10		20	0.09	0.09	20-20	70	150			10.8/17.2	17.2/40.2	1.5	0.3/0.5	65	74/65	9 7/8
SA-R2			25	0.05	0.05	20-20	72	150			10.3/16.3	16.3/39.2	1.0	0.08/0.15	65	75/70	13 3/8	289.95
SA-R3		D	40	0.04	0.04	20-20	72	150		12	10.3/16.3	16.3/39.2	1.0	0.08/0.15	65	75/70	15	379.95
VECTOR RESEARCH	VRX-9500	D	90	0.02	0.02	20-20	82	180	3.0	16	9.8/	15/35	1.0	0.06/0.08	70	75/70	30 1/2	1000.00
	VRX-9000	D	80	0.04	0.04	20-20	82	180	3.0	12	9.8/	15/35	1.0	0.06/0.08	70	75/70	30	650.00
	VRX-8000	D	50	0.02	0.02	20-20	82	180	2.8	10	9.8/	15/35	1.0	0.06/0.08	70	75/70	28	550.00
	VR-7000		65	0.05	0.05	20-20	82	180	2.5		10.8/	15/33	1.0	0.1/0.2	65	78/71	26	450.00
	VR-5000		45	0.05	0.05	20-20	82	180	2.5		10.8/	15/33	1.0	0.1/0.2	65	78/71	24	360.00
	VR-3000		25	0.09	0.09	30-20	82	180	2.0		10.8/	15/33	1.0	0.1/0.2	65	78/71	22	250.00
	VR-2000		22	0.09	0.09	30-20	82	180	2.0		10.9/	15/33	1.0	0.1/0.2	65	78/71	21	250.00
	YAMAHA	R-100	D	100	0.01	0.008	10-30	88	110	1.5	10	8.8/	14.8/37.3	1.2	0.05/0.07	85/35	88/83	24 1/4
R-90		D	70	0.01	0.008	10-30	88	110	1.5	10	8.8/	14.8/37.3	1.2	0.05/0.07	85/35	88/83	21 1/4	w/Remote 590.00
R-70		D	45	0.015	0.008	10-30	88	110	1.3	10	9.3/	15.3/38.1	1.5	0.1/0.15	55	85/81	18 3/4	465.00
R-50		D	35	0.015	0.01	10-30	88	110	1.8	10	9.3/	15.3/38.1	1.3	0.1/0.15	55	85/81	14 1/2	330.00
R-30		D	25	0.015	0.01	10-30	88	110	1.7	5	9.3/	15.3/38.1	1.3	0.1/0.2	55	82/80	14	275.00

**Dual answers  
some important questions  
about digital and  
analog disc players.**



# Should I buy a digital compact disc (CD) player now?

**Dual**®



**Dual's second-generation CD player.** The Dual CD120 is a front-loading player with automatic disc feed. Among its features: programming up to 15 selections on a disc; music selection in any sequence; cueing in 30-second steps; separately adjustable headphone output; adjustable and fixed amplifier output. Among its digital displays: total playing time and number of selections; individual playing time; remaining playing time in minutes.

That depends.

First, let's assume you'd like to be an early owner of this new format, and are willing to spend between \$750 and \$1000 for a CD player and about \$17 for each disc. Now we can get to the important part of the subject.

The digital audio disc (actually a more accurate term than "compact disc") has the potential for far greater dynamic range than the analog disc. This extended dynamic range is most important at low levels where the music can be played more softly without the intrusion of background noise, such as master tape hiss or record-surface noise.

(The dead silence at the start of a CD disc is so startling and unexpected that it's tempting to turn up the volume before the music starts. Don't do it—the excessively high level of music you'll hear could be painful and conceivably damage your speakers.)

There's no audible wow and flutter, nor the ticks, pops and scratches that can appear on even the most carefully preserved analog discs. And with reasonable care, the CD disc can be considered virtually indestructible.

However, if you're to enjoy the full potential of the CD format, your other audio components should be com-

parably advanced. Your electronics should have low distortion, low noise, and the ability to take advantage of the greater dynamic-range possibilities of the CD. In particular, your power amplifier needs adequate (that is, considerable) reserve power to reproduce the loud transient peaks cleanly. And for the same reason, your speakers should have high power-handling capacity.

Like other major technological developments in their early stages, the CD player and discs can be expected to undergo further evolution in the future. When other companies were still introducing their first models, Dual was already out with a second generation product.

Well, should you buy a CD player now?

Knowing what you now know, the answer could be yes. But only as an addition to—not a replacement for—your present analog turntable. You'll need that turntable for many years to come, for all the irreplaceable LP records you now have, and will still be acquiring.

With the CD player and the analog turntable, you'll enjoy the latest in audio technology as well as the performances you've long treasured.

And if you buy ours, you'll have the most up-to-date CD player available. And it will cost you less than \$900.

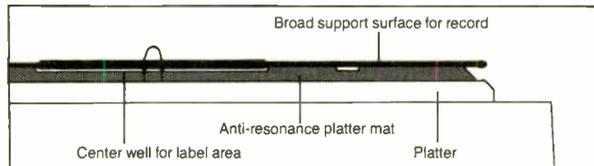
# Should I buy a new turntable now?

This one is easy to answer. Yes.

In fact, if you don't own a very good "analog" turntable now, you should buy one at your earliest opportunity. And a high quality one, for the reasons that follow.

There are hundreds of thousands of performances available on analog records, and new ones being issued every day. Most of these performances, which were originally recorded on analog master tapes, are irreplaceable and may never appear on a CD disc. Such recordings won't realize the full sonic potential of the CD format. In fact, experience to date suggests that a performance recorded on an analog master may sound better on an analog record than on a CD disc.

Chances are you already own hundreds of records, and will want to enjoy them indefinitely. In that case, you have no choice but to play them on the best possible turntable... and with the best possible tonearm and cartridge.



The platter mat is another important element in the total shock-absorbing system. The mat's high density, slow-reactive material "grips" to both the record surface and the platter. The top surface of the mat provides solid support for the record throughout the groove area. All this minimizes resonance, and dissipates vibration from any source. Underneath the mat is Dual's shock absorbing system. Four independent shock-absorbing elements, with computer-calculated damping, isolate the tonearm, platter and drive system from the turntable base, and thus from external shock and vibrations such as those caused by footsteps or acoustic feedback. The total result: a higher level of isolation for the record during play.

You should keep in mind that the analog disc is made of very soft vinyl, and its grooves are tracked by a diamond stylus. It's critical that the stylus leave no permanent evidence of its passage. The stylus should trace the complex undulations of the groove that embody the music without damaging the groove walls, either by excessive wear or by sudden gouging.

All this is primarily up to the tonearm/cartridge system, whose role is far more complex and demanding than is generally realized. Every aspect of the tonearm design should result in the stylus being vibrated by the groove and by nothing else. What's more, the tonearm should be dynamically balanced so that stylus pressure



will be equal on both groove walls. With unbalanced tonearms, stylus pressure is likely to be greater on one groove wall than on the other.

All this has been Dual's message to you for years. And the clearest expression of that message is in the design, engineering and reliable operation of Dual tonearms and turntables.

Long-term audiophiles will recall how Dual single-handedly forced most other tonearm manufacturers to abandon their curved tonearms. And how Dual's development of the ULM (Ultra Low Mass) tonearm and cartridge system brought about a lowering of tonearm mass by virtually all other manufacturers.

Other Dual innovations include the four-point gyroscopic gimbal, tracking force applied at the pivot (preserving dynamic balance), calibrated anti-skating and special anti-resonance counterbalances.

Dual's concern with accurate music reproduction extends beyond "just" the tonearm. A unique special suspension system separates the tonearm, motor and drive mechanism from the base—isolating them from such external influences as footsteps and acoustic feedback.

Even the platter mat is an integral part of the isolation system, its material and design providing an inert support for the record throughout its grooved area.

You may find some of Dual's technological features among many competitive turntables. But not nearly enough. And nothing approaching the precision of Dual manufacturing. If you want all the advantages of Dual performance, you'll find it much simpler—and wiser—to choose the original. Dual.

**Dual**<sup>®</sup>  
ADCOM<sup>®</sup>  
11 Elkins Road  
East Brunswick, N.J. 08816  
U.S.A.

Adcom is exclusive U.S. distribution agency for Dual

# The more you know about Dual the more this turntable will surprise you.

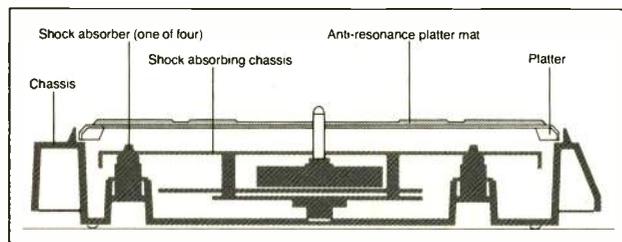


This one is the new Dual 515, one model in an entirely new generation of Dual turntables. There's one reason you'll want to know more about it. And one that will surprise you.

## 1. The design and engineering.

Vibrations from footsteps and acoustic feedback can not only muddy the sound from records, but can also cause mistracking and even groove jumping. The sophisticated suspension system of the 515 solves this problem with typical Dual ingenuity.

The tonearm, platter and complete drive system are isolated from the base by four independent shock absorbers, whose damping qualities have been set by a computer to cope with all conditions likely to be encountered in the typical home.



Four independent shock-absorbing elements, with computer-calculated damping, isolate the tonearm, platter and drive system from the turntable base, and thus from external shock and vibrations such as those caused by footfalls or acoustic feedback. This system, combined with the new Dual platter mat, achieves a higher level of isolation for the record during play.

The record rests on a newly designed platter mat, made from a special high density, extremely inert material that "grips" both the platter and the record surface. The mat supports the record throughout the groove area, with a center well allowing for the thicker label area. All this helps dissipate acoustic vibration and resonances, preventing them from reaching the stylus.

You can easily hear the difference this entire system makes when you play a record on the 515. The bass will be tighter, the highs cleaner and the missing details restored.

Now for the tonearm.

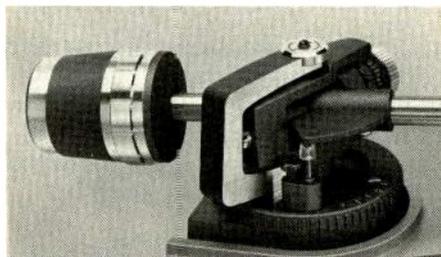
Dual's exclusive ULM (Ultra Low Mass) tonearm and cartridge system has only 7 grams total effective mass. That's less than half of what conventional tonearm and cartridge combinations bring to bear on the record. ULM makes for accurate, stable tracking, especially on badly warped records. But low mass is only one aspect of the total design of the significantly different Dual tonearm.

The Dual straight-line tubular tonearm is suspended in a four-point gyroscopic gimbal which centers and balances the tonearm where it pivots. The tonearm tube is made of

XM300 alloy for its extremely high rigidity and low resonance. Zero balance for the weight of the cartridge is set with micrometer-like precision by the vernier-adjustable counterbalance.

Dual's system for applying tracking force—by a tempered, flat-wound spring housed within the pivot—maintains the tonearm's dynamic balance throughout play. This is not so with most other tonearms, which actually unbalance the tonearm! That is, by sliding a weight, such as the counterbalance, forward. (With tonearms designed like this, make absolutely sure the entire turntable is level. Otherwise, the stylus is likely to track one groove wall with more pressure than the other.)

The 515's belt-drive system is also pure Dual. The belt is no mere elastic band, but is precision-ground to within 1/200 of a millimeter. The high-torque motor is electronic, as is the 12% pitch control. And an illuminated strobe lets you confirm when speed is dead on.



The four-point gyroscopic gimbal centers and balances the tonearm where it pivots.

## 2. The price.

This is the surprise. And we can state it briefly: less than \$135! (The 515 is semi-automatic. The fully automatic version, 530, is less than \$150.) We think this will really surprise all those who've known Dual for so many years. And who've been willing to pay substantially more for West German design, engineering and precision manufacturing. Now you have all that, plus new and unprecedented Dual value.



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# D Y N A V E C T O R

## WHY SETTLE FOR ANYTHING ELSE?

**A** moving coil cartridge can afford you greater dynamic range and better resolution—important in the search for perfect musical reproduction. Dynavector offers a line of moving coil cartridges—the Karat series—compatible with virtually every tonearm and turntable available today. Each is an exceptional performer.

various musical frequencies. Shortening the cantilever results in a nearly identical travel time for all frequencies from stylus tip to the coils. This controls dispersion, minimizes resonances and creates a much more life-like sound.

All cantilevers flex back and forth and set up unwanted vibrations while tracking records. By shortening the cantilever and manufacturing it out of an extremely hard, solid material, flex and vibrations are greatly reduced resulting in more accurate sound reproduction.

A benefit of the short, dense cantilever is the high resonance frequency—above 50kHz. This allows for the elimination of rubber damping which, in turn, eliminates changes in performances due to temperature and aging. Thus, the cartridge's sonic integrity is maintained over its lifetime.

Dynavector's improvements

extend beyond the cantilever and into the internal workings of the cartridge. A coil winding technique utilizing wire, one-third the thickness of a human hair was developed, leading to microminiaturization of all internal components and reducing overall moving mass. These improvements contribute to tremendous transient attack and exceptional trackability.

All these technological breakthroughs are fully embodied in Dynavector's Karat series.

There is much more to say, but ultimately, the truth is in the listening. The only problem you'll have is deciding on which Karat series cartridge is right for you.

## Dynavector

World leader in moving-coil cartridges

Dynavector Systems USA  
1721 Newport Circle  
Santa Ana, CA 92705  
(714) 549-7204



Dynavector engineers know the length of the cantilever has an effect on the "travel time" of

13D NOVA

17DS

23R

19A



Cantilever	Solid Round Diamond 1.3mm length	Solid Tapered Diamond 1.7mm length	Solid Ruby 2.3mm length	Solid Aluminum 1.9mm length
Stylus Tip	Improved Super Elliptical	Micro Reach	Improved Super Elliptical	Improved Super Elliptical
Tracking (grams)	1.7—2	1.7—2	1.5	1.7—2
Output Voltage	0.1mV	0.2mV	0.2mV	0.2mV
Minimum Channel Separation	25dB	20dB	20dB	20dB
Frequency Range	20—100,000Hz	20—90,000Hz	20—50,000Hz	20—70,000Hz
Weight (grams)	5.3	5.3	5.3	5.3

Specifications subject to change

©1983, Dynavector

# There's never been a separates system to match this one for sonic performance, flexibility... and affordability.



Top: GFT-2 AM Stereo-FM tuner, \$250. Center: GFP-1A stereo preamplifier \$375. Bottom: GFA-2 stereo power amplifier, \$375.

If you've been just thinking about upgrading toward a complete separates system, this one should take you all the way.

Of course, there have always been lower-priced components for those more concerned about cost than performance and long-term satisfaction. There have also been price-no-object "state-of-the-art" components with considerable overkill. Far less available have been components offering exceptional performance at a rational price—the special niche that Adcom has chosen to fill.

And the system shown here is a perfect example of this.

#### The GFT-2 AM/stereo-FM tuner.

Starting from the top, our new GFT-2 tuner features quartz-referenced digitally synthesized tuning. Since accuracy (and lower distortion) is the purpose of such a tuning system, you'll be pleased to know this one is within 0.00025 percent. For operating convenience, the GFT-2 provides manual or automatic station scan, a 5-stage LED signal-strength display, and its memory presets 14 stations (7 AM and 7 FM).

Of course, the essential purpose of any tuner is to optimize the musical aspects of the received signal. The GFT-2 accomplishes this admirably, especially in urban areas where excessively strong stereo-FM signals and multipath distortion are the two main sources of sonic blight.

#### The GFP-1A preamplifier.

The all new GFP-1A preamplifier is virtually two preamplifiers in one. With its two functionally separate stereo phono preamplifiers (one with selectable input capacitance), you can listen to one disc while taping another. You can also dub recordings from one deck to another while listening to a broadcast or disc. There are also two switchable phono-input circuits—for moving magnet and low or high output moving coil cartridges.

Other operating features include: an external signal processor loop (for an equalizer, expander, etc.); CX noise-reduction decoding circuits; a built-in separate headphone amplifier; FET differential-input; and tone control circuits with defeat switch.

Signal-to-noise ratio at the high level inputs is greater than 100-dB—very important for reproducing CD discs and the new wide-range audio VCR systems. And for a typical example of thoughtful refinements, function switching takes place directly on the circuit board, minimizing capacitive-coupling and noise pickup problems.

#### The GFA-2 stereo power amplifier.

Like any power amplifier, the GFA 2 has few features to point out. That is, externally. Internally, however, there is quite a story, as Julian Hirsch told it in Stereo Review:

"Not only did the Adcom GFA-2 easily

surpass its key specifications, but it proved to be rugged enough to withstand our full test sequence without damage or even a blown fuse... on the test bench we took no special precautions such as shutting off the power when changing input cables. The amplifier survived unscathed."

For some of the specifics, the GFA-2 is rated at 100 watts per channel, 20–20,000 Hz, both channels driven into 8 ohms, with total harmonic distortion less than 0.05%. Dual power supplies increase stability and improve stereo resolution. Its FET input stage provides very low distortion, and its high speed output transistors achieve extreme linearity and excellent transient response. And it is totally direct-coupled from input to output for phase consistency and clean, tight bass.

Julian Hirsch's last word: "In addition to being a top-quality product with state-of-the-art performance... the Adcom GFA-2 is a genuine bargain in today's market."

As you can now appreciate, that comment easily applies to the entire Adcom system, which can be yours for far less than you may think possible. Anything less is a compromise... anything more, an extravagance.

## ADCOM®

11 Elkins Road, East Brunswick, N.J. 08816

# TURNTABLES



**BROADCAST ELECTRONICS 12C/S-320**



**NAKAMICHI TX-1000**



**TRANS-AUDIO PREMIERE/FINALE**



**PARASOUND LTd900**

MANUFACTURER	Model	Speeds—See Code	Wow & Flutter, % @ 33 1/3 rpm, DIN 45-507	Rumble, -dB, DIN 45-539-B	Drive System	Speed Inaccuracy, ± %	Speed Adjustment Range, ± %	Control Outside Dustcover?	Multi-Play, No. of Discs	Record Clamp Supplier?	TONEARM/CARTRIDGE										Price, \$
											Arm Type: Non-P, K, Opt.=0, Servo=S, Linear=L	Pivot Stylus Distance, Inches	Auto Cue=C, Auto Return=R, Programmable Play=P	Recommended Tracking Force Range, Grams	Anti-Skating Adjustment?	Total Cable Capacitance, pF	Cart Mount: Fixed=F, Removable=Slid=R, P-Mount=P	Changeable Hand=W	Dimensions, Inches, Including Dustcover		
ACOUSTIC RESEARCH	The AR	B	0.03	65	Belt	0.03	0	No	No	O/P	9.02		0-3	Yes	85	R	14 1/2 x 18 3/8 x 5 1/2	299.99; 429.99 w/Arm			
ADC	LT-30	B	0.22	55	Belt	-1, +2		Yes	No	O/L		C/R	3		275	F	14 1/4 x 13 1/8 x 4 1/2	99.95			
	LT-31	B	0.22	55	Belt	-1, +2		Yes	No	O/L		C/R	3		275	F	14 1/4 x 13 1/8 x 4 1/2	129.95			
ADS	P2	B	0.05	70	Direct		5	Yes	No	P	8 3/4	R	1.2-1.8	Yes	150	R	17 1/2 x 14 1/4 x 4 5/8	329.00; 399.00 w/Cart.			
AIWA	AP-D80U	B	0.028 wrms		Direct		3	Yes	No	P	8 1/2	C/R	1-3.0	Yes		R	17 3/4 x 14 3/4 x 4 1/4	320.00			
	LX-100	B	0.03 wrms		Direct		3	Yes	No	L/S	5 1/2	C/R				F	13 x 13 x 3 1/2	290.00			
	LX-70	B	0.03 wrms		Direct		3	Yes	No	D/L/S	5 1/2	C/R/P				F	13 x 13 x 3 1/2	250.00			
AKAI	AP-B1	B	0.05	70	Belt			Yes		P	8.7	R	1-2.5	Yes	250	R	17.3 x 13.5 x 4.2	99.95			
	AP-D2	B	0.045	73	Direct			Yes		P	8.7	R	1-2.5	Yes	250	W	17.3 x 14.1 x 3.8	135.00			
	AP-D3	B	0.03	73	Direct			Yes		P	8.7	C/R	1-2.5	Yes	250	R	17.3 x 13.5 x 3.9	149.00			
	AP-D310	B	0.03	75	Direct			Yes		P/S	8.7	C/R	1-2.5	Yes	250	W	17.3 x 13.5 x 3.9	175.00			
	AP-M5	B	0.03	75	Direct			Yes		P	8.7	C/R	1-2.5	Yes	250	R	13.8 x 12.6 x 3.5	199.95			
	AP-M5	B	0.03	75	Direct			Yes		L	8.7	C/R	1-2.5	Yes	250	P	13.8 x 12.6 x 3.5	249.95			
	AP-M7	B	0.03	75	Direct			Yes						Yes	250	P	13.8 x 12.6 x 3.5	249.95			
ARISTON	RD40SL	B	0.08	73	Belt	0.025	0		1	Yes	N					F	5 3/4 x 16 1/4 x 13 1/4	349.00			
	RD40SLA	B	0.08	73	Belt	0.025	0		1	Yes	SME						5 3/4 x 16 1/4 x 13 1/4	449.00			
	RD40SLS	B	0.08	73	Belt	0.025	0		1	Yes	SME						5 3/4 x 16 1/4 x 13 1/4	549.00			
	RD40SLB	B	0.08	73	Belt	0.25	0		1	Yes	SME						6 3/4 x 17 1/2 x 13 3/4	599.00			
	RD80SLA	B	0.05	74	Belt	0.025	0		1	Yes	N						6 3/4 x 17 1/2 x 13 3/4	499.00			
	RD80SLS	B	0.05	74	Belt	0.025	0		1	Yes	SME						6 3/4 x 17 1/2 x 13 3/4	699.00			
	RD80SLB	B	0.05	74	Belt	0.025	0		1	Yes	SME						6 3/4 x 17 1/2 x 13 3/4	749.00			
	RD11	B	0.05	75	Belt		2.5	Yes	1	Yes	D						6 3/4 x 17 1/2 x 13 3/4	899.00			
	Superieur RD11-B	B	0.05	75	Belt		2.5	Yes	1	Yes	SME						6 3/4 x 17 1/2 x 13 3/4	1149.00			
	Superieur RD11-R	B	0.05	75	Belt		2.5	Yes	1	Yes	SME						6 3/4 x 17 1/2 x 13 3/4	1249.00			
	Superieur	B	0.05	75	Belt		2.5	Yes	1	Yes	SME						6 3/4 x 17 1/2 x 13 3/4	1249.00			
BANG & OLUFSEN	8002 TX	B	0.02	75	Direct	0.003	3	Yes	No	L/S		C/R/P				F	19 1/4 x 3 1/2 x 14 3/4	695.00			
	5000	B	0.05	70	Belt	0.02	3	Yes	No	L/S		C/R				F	19 1/4 x 3 1/2 x 14 3/4	495.00			
	1800	B	0.07	75	Belt	0.2		No	No	P		C/R/P		No		F	16 1/2 x 3 x 12 3/4	320.00			
	RX	B	0.07	70	Belt	0.2	3	No	No	P		C/R		No		F	16 1/2 x 2 1/2 x 12 3/4	250.00			
	RX	B	0.9	62	Belt	0.1		No	No	P		C/R		No		F	17 3/8 x 3 3/8 x 14 3/8	195.00			
BENJAMIN ELECTRO-PRODUCTS	B55BR		0.12		Idler			No	No	P			0.5-5.0	Yes		R	18 1/2 x 14 1/2 x 5 3/4	210.00			
BROADCAST ELECTRONICS	12C	C	0.1	38	Rim	1	3	Yes		O							15 x 15 1/2 x 15 1/2	425.00			

# TURNTABLES

SPEED CODE A—33 1/3 B—33 1/3, 45 C—33 1/3, 45, 78 D—Cont. Variable	TONEARM/CARTRIDGE														Price, \$				
	MANUFACTURER	Model	Speeds—See Code	Wow & Flutter, % DIN 45-507	Rumble, -db, DIN 45-539-B	Drive System	Speed Inaccuracy, ±%	Speed Adjustment Range, ±%	Controls Outside Dustcover?	Multi-Play, No. of Discs	Record Clamp Supplied?	Arm Type: None = N, Opt. = O, Phono = P, Linear = L	Pivot-Stylus Distance, Inches	Auto Cue = C, Auto Return = R, Programmable Play = P		Recommended Tracking Force Range, Grams	Anti-Skating Adjustment?	Total Cable Capacitance, pF	Cart. Mount: Fed = F, Removable (Cable) = R, P-Mount = P, Characterizable = W
BSR	MT-1	B	0.30	50	Rim	-1, +2		No	No		P	7	R	5	No	275	F	11 7/8 x 10 1/8 x 4 1/4	79.95
	MT-2	B	0.30	50	Rim	-1, +2		No	No		P	7	R	3	No	275	F	11 7/8 x 10 1/8 x 4 1/4	79.95
MITCHELL A. COTTER	B-1	C	0.02	95	Direct	0.001	9.9	Yes	No		O							19 x 23 1/2 x 12	4500.00; Platform, 300.00
DENON	DP-100M	C	0.003	90	Direct	0.002	9.9	No	No	No	S	11 1/4		0-3	Yes		R,W	22 3/4 x 12 1/2 x 18 3/4	6200.00
	DP-80	B	0.008	80	Direct	0.002	6											15 Dia. x 5 1/4	895.00
	DP-75	B	0.008	80	Direct	0.002												15 Dia. x 5 3/4	550.00
	DP-72L	B	0.008	82	Direct	0.002		No	No	No	S	9 3/4		0-3	Yes		R,W	19 1/2 x 7 3/4 x 16 1/2	695.00
	DP-52F	B	0.01	78	Direct	0.002		Yes	No	No	S	9 3/4	C/R	0-3	Yes		R	18 3/4 x 5 3/4 x 17	595.00
	DP-51F	B	0.01	78	Direct	0.002		Yes	No	No	S	9 3/4	C/R	0-3	Yes		R	18 3/4 x 5 3/4 x 17	525.00
	DP-45F	B	0.012	78	Direct	0.002		Yes	No	No	S	8 7/8	C/R	0-3	Yes		R	17 1/2 x 5 1/2 x 16 1/2	425.00
	DP-35F	B	0.012	78	Direct	0.002		Yes	No	No	S	8 7/8	C/R	0-3	Yes		R	17 1/2 x 5 1/2 x 16 1/2	350.00
	DP-30LII	B	0.015	78	Direct	0.002		Yes	No	No	P	8 7/8		0-2.5	Yes		R	18 x 5 5/8 x 16 7/8	300.00
	DP-11F	B	0.02	75	Direct	0.002		Yes	No	No	S	8 7/8	C/R	0-3	No		R	14 5/8 x 4 x 13 1/2	275.95
DUAL	CS 515	B	0.045	72	Belt		6	Yes	No	No	P	8 3/4	C/R	0-3	Yes		R	17 1/2 x 14 1/2 x 4 1/2	134.95
	CS 530	B	0.035	75	Belt		6	Yes	No	No	P	8 3/4	C/R	0-3	Yes		R	17 1/2 x 14 1/2 x 4 1/2	149.95
	CS 616Q	B	0.025	75	Direct			Yes	No	No	P	8 3/4	C/R	0-3	Yes		R	17 1/2 x 14 1/2 x 4 1/2	179.95
	CS 620Q	B	0.025	78	Direct			Yes	No	No	P	8 3/4	C/R	0-3	Yes		R	17 1/2 x 14 1/2 x 4 1/2	199.95
	CS 630Q	B	0.02	80	Direct		10	Yes	No	No	P	8 3/4	C/R	0-3	Yes		R	17 1/2 x 14 1/2 x 4 1/2	249.95
	CS 1254	B	0.05	68	Belt		6	No	6	No	P	8 1/4	C/R	0-3	Yes		R	16 3/4 x 14 1/2 x 7 1/4	159.95
	CS 1258	B	0.05	70	Belt		6	No	6	No	P	8 3/4	C/R	0-3	Yes		R	16 3/4 x 14 1/2 x 7 1/4	189.95
ELITE TOWNSHEND	The Rock	B	0.07	60	Belt	0.1	2	No	No	No	O/P	8 3/4		1-2	Yes	80	F	19 1/4 x 18 x 7	1800.00; 2995.00 w/Arm & Cart.
EMT	938	C	0.075	70	Direct	0.1	Opt.		No	No	P						R	19 3/4 x 17 1/4 x 7 3/4	
ENTECH	Granite	B	0.03	70	Direct	0.02	5		No	Vacuum								19 x 16 x 8	4500.00
FISHER	MT6118	B	0.08	55	Belt	1						7.6	R	0.6-3.5	Yes			17 3/8 x 5 1/2 x 13 3/4	99.95
	MT100C	B	0.04	68	Belt	0.8	3				P	8.7	R	0.6-3.5	Yes			15 3/4 x 4 1/4 x 13 3/4	119.95
	MT35C	B	0.08	55	Belt	1.5					P	8.7	R	0.6-3.5	Yes			15 3/4 x 4 1/4 x 13 3/4	119.95
	MT6410C	B	0.04	68	Belt	0.8	3				P	8.7	R	0.6-3.5	Yes			17 3/8 x 5 1/2 x 14 1/2	149.95
	MT125C	B	0.035	68	Direct	0.5	3				P	8.7	R	0.6-3.5	Yes			15 3/4 x 4 1/4 x 13 3/4	149.95
	MT273C	B	0.035	70	Direct	0.5	3				P	8.7	R	0.6-3.5	Yes			17 3/8 x 4 1/2 x 14 1/2	189.95
	MT640C	B	0.035	70	Direct	0.5	3				P	8.7	R/P	0.6-3.5	Yes			17 3/8 x 4 1/2 x 14 1/2	199.95
	MT6435C	B	0.035	70	Direct	0.5	3				P	8.7	R	0.6-3.5	Yes			17 3/8 x 5 1/2 x 14 1/2	199.95
	MTM300C	B	0.04	70	Direct	0.5	3				P	8.3	R	0.6-3.5	Yes			13 1/8 x 4 3/8 x 13 1/8	219.95
	MT6360	B	0.035	70	Direct	0.3	6				P	8.7	R/P	2	Fixed			17 3/8 x 5 1/2 x 14 1/2	349.95
HARMAN/KARDON	T20	B	0.045	65	Belt		3	Yes	No	No Mech.	P	8.7	R	1-3	Yes	Sel.	R	15.2 x 5.3 x 14.2	200.00
	T40	B	0.04	66	Belt		3	Yes	No	Mech.	P	8.7	C	1-3	Yes	Sel.	R	17.3 x 5.8 x 15.7	295.00
	T60	B	0.035	67	Belt		3	Yes	No	Mech.	P	8.7	C	1-3	Yes	Sel.	R	17.3 x 5.8 x 15.7	440.00
HEYBROOK	TT-2	B	0.1	73	Belt	0.1					O							17 1/2 x 14 1/2 x 6 1/4	500.00
HITACHI	HT1	B	0.045	70	Belt			Yes			P	8	R	1.25	Yes		P	17 1/8 x 14 3/8 x 4 3/8	90.00
	HT2	B	0.025	78	Direct			Yes			P	8	R	1.25	Yes		P	17 1/8 x 14 3/8 x 4 3/8	130.00
	HT6	B	0.025	78	Direct			Yes			P	8	C	1.25	Yes		P	17 1/8 x 14 3/8 x 4 3/8	200.00
	H TL33	B	0.045	70	Belt			Yes			L	3 3/4	P	1.25			P	12 5/8 x 13 1/2 x 12 5/8	180.00
	H TL303	B	0.045	70	Belt			Yes			L	3 3/4	P	1.25			P	12 5/8 x 13 1/2 x 12 5/8	180.00
	H TL55	B	0.025	78	Direct			Yes			L	3 3/4	P	1.25			P	12 5/8 x 13 1/2 x 12 5/8	240.00
	H TL70	B	0.025	78	Direct	0.003		Yes	Yes		L	3 3/4	P	1.25			P	12 5/8 x 13 1/2 x 12 5/8	300.00
ISOS	One	A	0.04	72.9	Belt	0.04												20 1/4 x 14 3/8 x 7 1/2	895.00
	Two	B	0.04	72.9	Belt	0.04												20 1/4 x 14 3/8 x 7 1/2	995.00
JVC	L-A100	B	0.07		Belt			Yes			P		C/R		Yes		R	17 1/8 x 4 1/8 x 14 1/4	100.00
	QL-A200	B	0.045		Direct	0.005		Yes			P		R		Yes		R	17 1/8 x 4 1/8 x 14 1/4	140.00
	QL-F300	B	0.045		Direct	0.005		Yes			P		C/R		Yes		R	17 1/8 x 4 1/8 x 14 1/4	160.00
	L-F71	B	0.05		Direct			Yes			P		C/R/P		Yes		R	16 5/8 x 4 1/2 x 14	350.00
	L-E22	B	0.08		Belt			Yes			P		C/R				P	13 3/8 x 3 3/8 x 13 3/8	175.00
	L-E33	B	0.045		Direct			Yes			P		C/R				P	13 3/8 x 3 3/8 x 14 1/8	220.00
	L-L1	B	0.07		Belt			Yes			L		C/R				P	17 1/8 x 3 7/8 x 14 1/4	190.00
	QL-L2	B	0.045		Direct	0.005		Yes			L		C/R				P	17 1/8 x 3 7/8 x 14 1/4	240.00
	QL-Y55F	B	0.035		Direct	0.002		No			L		C/R				P	19 1/2 x 7 3/4 x 16 1/2	500.00
	QL-75	B	0.03		Direct	.0015		No			L						R	19 1/2 x 8 1/4 x 16 1/2	650.00
	QL-A75	B	0.03		Direct			No			P						R	19 1/2 x 8 1/4 x 16 1/2	650.00
KENWOOD	KD-9XG	B	0.05	75	Direct			Yes			L	6 1/2	C/R/P	2.0	No		F	17 3/8 x 15 3/8 x 4 1/4	450.00
	KD-7X	B	0.05	75	Direct			Yes			L	8 7/8	C/R		Yes		R	17 3/8 x 14 3/4 x 5 1/8	200.00
	KD-51F	B	0.07	74	Direct			Yes			P	8 7/8	C/R		Yes		R	17 3/8 x 14 1/4 x 4 1/8	190.00
	KD-41R/ KD-41RB	B	0.07	74	Direct			Yes			P	8 7/8	C/R		Yes		R	17 3/8 x 14 1/4 x 4 1/8	145.00
	KD-31F	B	0.07	70	Belt			Yes			P	8 7/8	C/R		Yes		R	17 3/8 x 14 1/4 x 4 1/8	135.00
	KD-21R/ KD-21RB	B	0.07	70	Belt			Yes			P	8 7/8	R		Yes		R	17 3/8 x 14 1/4 x 4 1/8	115.00
	P-9	B	0.07	65	Belt			Yes			L	2 1/2	C/R/P	2.5			F	14 1/8 x 15 1/2 x 7 3/8	329.00
	L-070N	B	0.02	94	Direct			Yes			P	9 3/8			Yes		R	21 7/8 x 6 3/8 x 18 1/2	2500.00
KLH	TT-101	B	0.08	67	Belt	0.75	6	Yes			P	8 3/8	C/R	0.5-3.0	Yes		R	17 3/4 x 14 x 5 1/2	159.95
LINN PRODUCTS	Linn Sondek LP-12	A	0.02	60	Belt	0.02		No	No		N							17 1/2 x 14 x 5 1/2	995.00

# TURNTABLES

MANUFACTURER	Model	Spreeds—See Code	Wow & Flutter, % DIN 45-507	Rumble, -dB, DIN 45-539-B	Drive System	Speed Inaccuracy, ±%	Speed Adjustment Range, ±%	Controls Outside Dustcover?	Multi-Play, No. of Discs	Record Clamp Supplied?	TONEARM/CARTRIDGE										Price, \$
											Arm Type: Not = N, On = O, P = P, S = S, L = L, V = V, W = W	Phono Stylus Distance, Inches	Auto Cue = C, Auto Return = R, Programmable Play = P	Recommended Tracking Force Range, Grams	Anti-Skating Adjustment?	Total Cable Capacitance, pF	Card Mount Fines = F, Removable Spindle = R, P Mount = P, Changeable Wind = W	Dimensions, Inches, Including Dustcover			
LUXMAN	PD-284	B	0.035		Direct	3	No			P	8 1/4	R	1-3	Yes		F	17 1/4 x 5 1/2 x 14	229.95			
	PD-289	B	0.035		Direct	3	No			P/S	8 1/4	R	1-3		F	17 1/4 x 5 1/2 x 14 3/8	299.95				
	PX-99	B	0.03		Direct	3	No			P	8 1/4	R	1-3		R	17 3/8 x 5 7/8 x 13 3/4	229.95				
	PX-100	B	0.03		Direct	3	No			P/S	8 1/4	R	1-3		R	17 3/8 x 5 7/8 x 13 3/4	299.95				
	PX-101	B	0.045		Direct	3	Yes			L/S	8 1/4	R	1-3		R	17 3/8 x 4 3/4 x 16 1/8	399.95				
	PD-375	B	0.03		Direct	3	No		Vacuum	P	8 1/4	R	1-3	Yes		R	19 1/4 x 8 x 15 1/4	499.95			
PD-300	B	0.03		Belt	3	No		Vacuum	N	8 1/4	R	1-3			R	19 1/4 x 8 x 15 1/4	999.95				
MARANTZ	TT 1060	B	0.05	74	Belt	0.05	4	Yes		P	8 3/4	R	R	Yes	R	16 1/2 x 4 3/4 x 14 3/8	99.00				
	TT 1080	B	0.04	76	Direct	0.04		Yes		P	8 3/4	R	R	Yes	R	16 1/2 x 4 3/4 x 14 3/8	139.00				
	TT 510	B	0.04	75	Direct	0.04		Yes		P	8 3/4	C	C	Yes	R	16 3/8 x 4 3/4 x 14 1/2	180.00				
	TT 530	B	0.05	75	Direct	0.05	3	Yes		L	5 1/8	C	C	No	P	16 3/8 x 3 3/4 x 13 3/8	250.00				
J. A. MICHELL ENG.	Gyrodec	B	0.04	77	Belt	0.02	0	No	No	O	8 1/4						21 x 16 3/4 x 7 1/2	1190.00			
	Focus One	B	0.05	74.5	Belt	0.1	0	No	No	O	8 1/4						17 x 14 x 5 1/4	390.00			
	Focus 'S'	B	0.05	77	Belt	0.02	0	No	No	O	8 1/4						17 x 14 x 5 1/4	499.00			
MICRO SEIKI	MB12	B	0.055	63	Belt			No	No	P	8 3/8	R	1-3	Yes	R	17 3/8 x 13 3/4 x 6 3/8	149.00				
	BL31	B	0.025	72	Belt	3	No	No	No	P	8 1/2		1-3	Yes	R	17 3/8 x 14 x 5 1/2	250.00				
	BL41	B	0.025	72	Belt	3	Yes	No	No	P	8 1/2	C/R	1-3	Yes	R	17 3/8 x 14 1/4 x 5 1/2	350.00				
	BL10X	B	0.025	75	Belt	3	No	No	No	P	8 1/2		1-3	Yes	W	17 3/4 x 13 7/8 x 6 3/8	650.00				
	BL21	B	0.025	75	Belt	3, 5	No	No	No	N						17 3/8 x 15 x 16 1/8	329.00				
	BL51X	B	0.025	75	Belt	3	No	No	No	N						20 1/2 x 16 1/4 x 7	499.00				
	RX1500	B			Belt					N							995.00				
	RX1500VG	B			Belt					N							1995.00				
RX5000	B			Belt	6				N							4000.00					
MISSION ELECTRONICS	775	B	0.05	75	Belt	0.3		No	No	P	8 1/4		1.0-5.0	Yes	60	F	5 1/4 x 16 1/8 x 12 3/8	499.00			
	775S	B			Belt	0.2		No	No	N							5 3/4 x 16 1/8 x 13 1/2	649.00			
775SM	B			Belt	0.2		No	No	N								5 7/8 x 17 7/8 x 14	999.00			
MITSUBISHI	LT-30	B	0.025	78	Direct	0.04	0	No	No	L/S	6 7/8	C	0.75-5.5	No	55	R	19 1/8 x 5 3/4 x 16 1/4	690.00			
	LT-22	B	0.025	75	Direct	0.04	0	Yes	No	L/S	6 3/4	C	0.75-5.0	No	55	R	16 3/4 x 5 1/2 x 16 3/8	350.00			
	LT-10V	B	0.055	73	Belt	0.1	0	Yes	No	L/S	6 1/4	C	0.75-4.0	No	200	R	14 x 14 x 5 7/8	250.00			
	DP-52	B	0.04	75	Direct	0.05	3	Yes	No	P	8 1/2	C	0.75-5.0	Yes	200	R	16 1/2 x 5 1/4 x 15 1/8	150.00			
	DP-12	B	0.06	65	Belt	0.1	3	Yes	No	P	8 1/2	C	0.75-5.0	Yes	200	F	16 3/4 x 5 x 15 5/8	110.00			
MUSIC & SOUND IMPORTS	mas	B	0.06	77	Belt	0.02		No	No	O/P	8 3/4		1.0-3.0	Yes	100	R	18 3/4 x 14 1/2 x 6	289.00; 459.00 w/Arm			
NAD	5030	B	0.07	65	Belt	1.0		Yes		P	9	R	1-4	Yes	200	R	16 1/2 x 14 3/4 x 5	148.00			
	5120	B	0.07	70	Belt	0.5		Yes		P	8 1/4	C	1-4	Yes	150	W	16 1/2 x 14 x 4 1/8	248.00			
NAKAMICHI	TX-1000	B	0.003	78	Direct		9.9		Weight	N							26 3/4 x 20 1/2 x 8 1/4	7000.00			
NIKKO	NP-800H	B	0.035	68	Direct	3	Yes	No	No	P	8 1/2	R		Yes	R	16.5 x 15 x 4.3	200.00				
	NP-500H	B	0.08	45	Belt	0	Yes	No	No	P	8 1/2	R		Yes	R	16.5 x 15 x 4.8	120.00				
OAK AUDIO	Dak	A			Belt			Yes										199.95			
DNKYO	CP-1022A	B	0.045	70	Belt			Yes		P	8 1/4	R		Yes	R	16 1/2 x 14 3/4 x 5	100.00				
	CP-1033A	B	0.025	75	Direct			Yes		P	8 3/4	R		Yes	R	16 1/2 x 14 3/4 x 5	155.00				
	CP-1044F	B	0.025	75	Direct			Yes		P	8 3/4	R		Yes	R	16 1/2 x 14 3/4 x 5	200.00				
	CP-1055F	B	0.023	78	Direct			Yes		P	8 3/4	R		Yes	R	17 1/8 x 16 x 6	300.00				
	PL-33	B	0.027	72	Direct			Yes		L				Yes	R	13 x 13 1/4 x 5	290.00				
	CP-1028r	B	0.028	72	Direct	3		Yes		P	8 3/4	C/R/P		Yes	R	16 1/2 x 14 3/8 x 5 3/8	260.00				
PARASOUND	TT6700	B	0.05	42	Belt	0.02		Yes		P	9.8	R	0.25-3.5	Yes	250	P	16 1/2 x 14 1/4 x 4 3/4	99.95			
	TTd800	B	0.03	48	Direct	0.02	3	Yes		P	9.8	R	0.25-3.5	Yes	250	P	18 1/4 x 14 1/4 x 4 1/2	149.95			
	LTd900	B	0.02	50	Direct	0.02	3	Yes		L	5.1	C/R		Yes	250	P	16 1/4 x 13 1/2 x 3 3/4	199.95			
PHASE LINEAR	8000 A	B	0.013	78	Direct	0.002	0	Yes	No	L	7 1/2	C/R	0.5-4.0		180	R	19 3/8 x 6 x 17 1/2	650.00			
PINK TRIANGLE	Pink Triangle	B	0.06	78	Belt	0.09	3			N							18 x 14 x 6	995.00- 1149.00			
PIONEER	PL-707	B	0.025	80	Direct			Yes		P	9.25	C		Yes	R	6.5 x 18.1 x 16.1	360.00				
	PL-S70	B	0.025	78	Direct			Yes		P	8.7	C		Yes	R	4.6 x 16.5 x 14.4	220.00				
	PL-S50	B	0.025	78	Direct			Yes		P	8.7	C		Yes	R	4.6 x 16.5 x 14.4	200.00				
	PL-S40	B	0.025	78	Direct			Yes		P	8.7	R		Yes	R	4.6 x 16.5 x 14.4	165.00				
	PL-S30	B	0.05	68	Belt			Yes		P	8.7	R		Yes	R	4.6 x 16.5 x 14.4	135.00				
	PL-L800S	B	0.025	80	Direct			Yes		L	6.4	C	1.7-2.3		R	4.7 x 16.5 x 16.8	450.00				
	PL-88FS	B	0.025	78	Belt			Yes		P	8.2	P	1.7-2.3		F	3.9 x 16.5 x 13.2	480.00				
	PL-44FS	B	0.045	70	Belt			Yes		P	8.2	C	1.7-2.3		F	3.9 x 16.5 x 13.2	320.00				
REALISTIC	LAB-2100	B	0.025	75	Direct			Yes		L		C/R/P	1.25		P	4 1/2 x 13 3/4 x 15	219.95				
	LAB-440	B	0.035	70	Direct			Yes		P		C/R/P	1-1.5	Yes	P	5 1/4 x 16 1/2 x 14 1/2	179.95				
	LAB-1500	B	0.045	70	Belt			Yes		L		C/R/P	1.25		P	3 3/4 x 12 3/4 x 12 3/4	159.95				
	LAB-395	B	0.05	70	Direct			Yes		P		C/R	1.75-2.25	Yes	R	5 1/4 x 16 3/4 x 14 7/8	129.95				
	LAB-290	B	0.05	70	Belt			No		P		C/R	2.5-3.5	Yes	R	5 1/4 x 16 1/2 x 14 1/2	99.95				
	LAB-77	B			Belt			No	4	P		C/R/P	2.5-3.5		F	5 3/4 x 15 x 13	119.95				
	LAB-75	B			Belt			No	4	P		C/R/P	3-5		F	5 3/4 x 15 x 13	99.95				
	LAB-90	B			Rim			No	4	P		R	3-5		F	10 x 11 7/8 x 10 1/4	59.95				
LAB-59	B			Rim			No	4	P		C/R/P	3-5		F	7 x 17 x 14 1/2	69.95					
REGA RESEARCH	Planar 2	B			Belt	0.05		No	No	P	9 3/8		0-3	Yes	90	R	17 3/4 x 14 1/2 x 4 3/4	330.00; 435.00 w/Arm			
	Planar 3	B			Belt	0.05		No	No	P	9 3/8		0-3.5	Yes	90	F	17 1/2 x 14 x 5	440.00; 650.00 w/Arm			

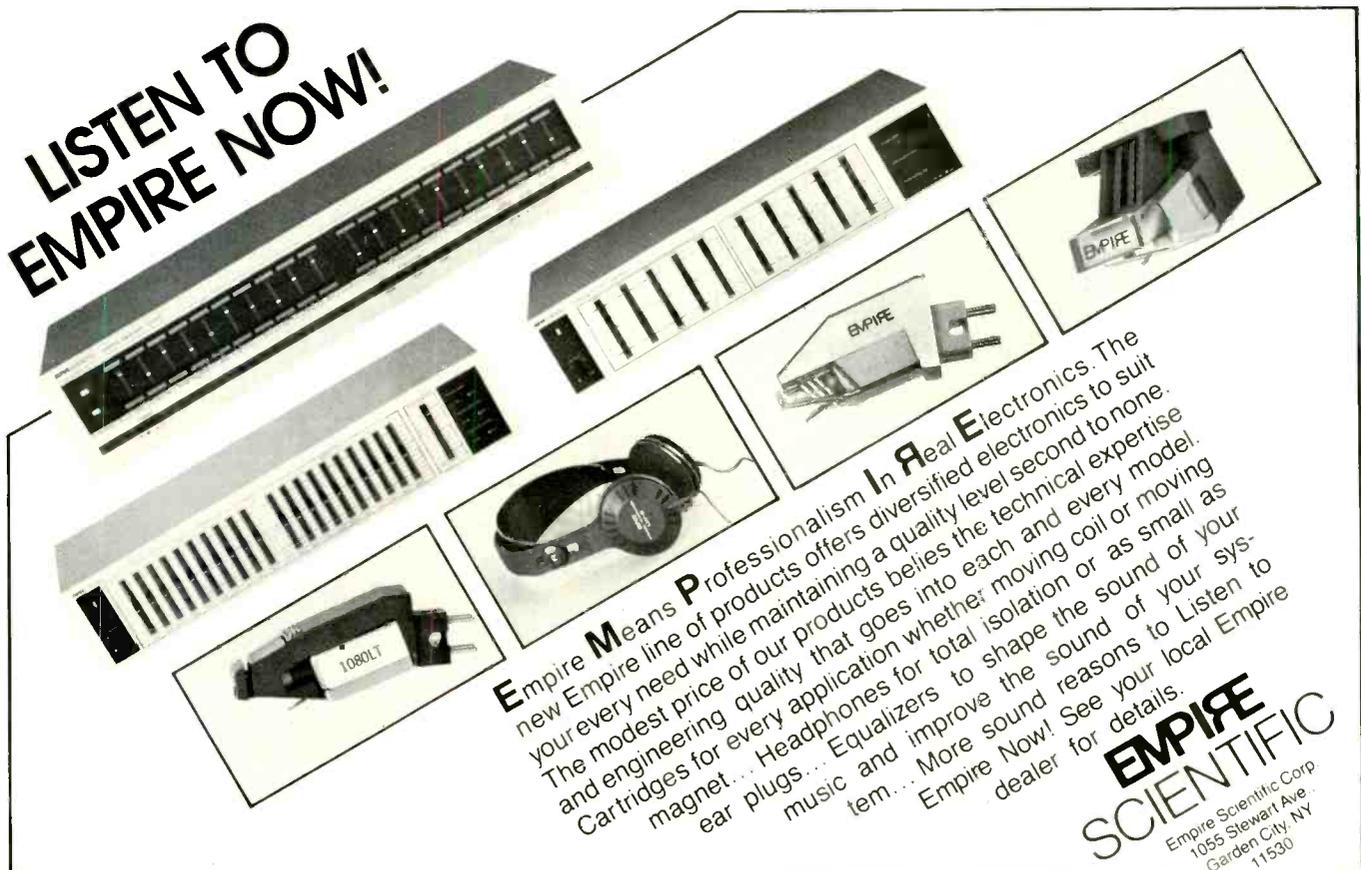
# TURNTABLES

MANUFACTURER	Model	Speeds—See Code	Wow & Flutter, % DIN 45-507	Rumble, -db, DIN 45-539-B	Drive System	Speed Inaccuracy, ±%	Speed Adjustment Range, ±%	Controls Outside Dustcover?	Multi-Play, No. of Discs	Record Clamp Supplied?	TONEARM/CARTRIDGE											
											Arm Type: Mono = M, Dpr = D, Stereo = S	Pivot-Stylus Distances, Inches	Auto Cue = C, Auto Return = R, Programmable Play = P	Recommended Tracking Force, Grams	Anti-Skating Adjustment?	Total Cable Capacitance, pF	Cart. Mount: Fixed = F, Removable Shell = R, P Mount = P	Dimensions, Inches, including Dustcover	Price, \$			
REVDX	B795 B791	B B	0.05 0.05	70 72	Direct Direct	0.01 0.01	9.9	Yes Yes	No No	No No	O/L/S O/L/S	1 1/2 1 1/2	C/R C/R	0.8-2.0 0.8-2.0	No No	220 220		17 1/2 x 15 x 5 1/2 17 1/2 x 15 x 5 1/2	599.00 749.00			
SANSUI	XR-07 XR-05 P-L50 P-L40 P-D30 P-D20 P-D10	B B B B B B B	0.009 0.012 0.028 0.028 0.038 0.038 0.038	80 78 72 72 72 72 72	Direct Direct Direct Direct Direct Direct Direct	0.002 0.002 0.12 0.12 0.12 0.12 0.12		Yes Yes Yes Yes Yes Yes Yes			P P L L P P P	9 3/4 9 3/4 5 5/8 5 5/8 8 3/4 8 3/4 8 3/4	C/R C/R C/R/P C/R C/R R R	0.5 Min. 0.5 Min. 1.0 Min. 1.0 Min. 1.0 Min. 1.0 Min. 1.0 Min.	Yes Yes Yes Yes Yes Yes Yes	70 70 120 120 120 120 120	F F R R R R R	19 3/8 x 7 1/8 x 17 19 3/8 x 6 7/8 x 14 3/4 17 x 4 1/2 x 14 3/4 17 x 4 1/2 x 14 3/4 17 x 4 3/4 x 14 1/4 17 x 4 3/4 x 14 1/4 17 x 4 3/4 x 14 1/4	500.00 370.00 340.00 270.00 200.00 160.00 120.00			
SANYO	P33 TPJ20 TPD4	B B B	0.04 0.03 0.05	78 65 70	Direct Direct Direct	0.01 0.01 0.01	3 3 3	Yes Yes Yes	No No No	No No No	L/S P/S P/S		C/R R R		No Yes Yes		R R R	13 1/4 x 13 1/2 x 4 13 1/4 x 13 1/4 x 4 16 3/4 x 13 1/2 x 4 1/2	199.95 149.95 139.95			
H. H. SCOTT	PS48A PS68A PS8B	B B B	0.05 0.04 0.035	60 60 55	Belt Direct Direct	0.01 0.01 0.01	3 3 3		No No No	No No No	P P P		R R C/R	1-3 1-3 1-3	Yes Yes Yes		R R R	17 3/8 x 5 3/4 x 14 3/4 17 3/8 x 5 3/4 x 14 3/4 16 1/2 x 5 3/4 x 15 1/4	159.95 189.95 224.95			
SHARP	RP-113 RP-113M RP-117	B B B	0.06 0.06 0.06	65 65 65	Belt Belt Belt			Yes Yes Yes	1 1 1		L L L		C/R C/R C/R/P	Fixed Fixed Fixed	No No No		P P F	13 x 4 x 13 3/4 13 x 4 x 13 3/4 13 x 4 1/8 x 13 3/8	169.95 149.95 249.95 w/Car. w/Car.			
SHERWOOD	ST-880 ST-890 ST-903 ST-905	B B B B	0.08 0.05 0.05 0.035	55 65 70 78	Belt Direct Belt Direct			Yes Yes Yes Yes			P P L L	8 5/8 8 5/8 6 1/2 6 1/2	R R C/R C/R	1-3 0.5-3 1.25 1.25	Yes Yes No No	100 100 100 100	R R P P	16 5/8 x 14 1/8 x 4 5/8 17 3/8 x 14 7/8 x 5 13 3/4 x 15 x 4 1/2 13 3/4 x 15 x 4 1/2	99.95 149.95 199.95 249.95			
SONOGRAPHE	SG-3SP SG-3	B B	0.22 0.22	60 60	Belt Belt	0.05 0.05		No No	No No	No No	P N	9.56		0.5-3.0	Yes	50	R	18 1/4 x 14 1/2 x 6 3/4 18 1/4 x 14 1/2 x 6 3/4	365.00 620.00			
SONY	PS-FL77 PS-FL1 PS-LX500 PS-LX55 PS-Q7 PS-LX2	B B B B B B	0.035 0.035 0.035 0.035 0.08 0.025	75 75 75 75 68 75	Direct Direct Direct Direct Direct Direct	0.02 0.02 0.02 0.02 0.02 0.02		Yes Yes Yes Yes Yes Yes	No No No No Yes No	No No No No No No	L/S P L L L P	4 8 1/2 3 3 3 8 1/2	C/R C/R C/R C/R C/R R	1.25 1-3 1.25 1.25 1.75 1-3	Yes Yes Yes Yes Yes Yes	90 90 90 90 90 90	P P P P R R	14 x 3 1/2 x 4 5/8 17 x 4 3/8 x 15 1/8 17 x 3 5/8 x 14 14 x 3 3/8 x 14 5/8 8 1/2 x 2 7/8 x 9 3/8 17 x 4 1/4 x 14	290.00 200.00 200.00 180.00 190.00 150.00			
SONY ES	PSX555ES	B	0.025	78	Direct	.0003		Yes	No	No	L/S	4 3/8	C/R	0-3		50	R	17 x 3 1/2 x 15 1/8	420.00			
SOTA INDUSTRIES	Sapphire	B	0.03	84.5	Belt	0.02	5	No	No	Vacuum Dpt. Vacuum								20 1/4 x 16 1/2 x 7 1/2	750.00			
	Star Sapphire	B	0.03	84.5	Belt	0.02	5	No	No	Vacuum								20 1/4 x 16 1/2 x 7 1/2	1250.00			
SYSTEMDEK	II	B	0.09	78	Belt	0	0.1	Yes	No	Opt.	O/P	9		0-4	Yes	100	R	16 3/4 x 12 1/2 x 4 1/2	399.00; 528.00 w/Arm 699.00; 828.00 w/Arm 899.00; 1028.00 w/Arm			
	II S	B	0.09	78	Belt	0	0.1	Yes	No	Yes	O/P	9		0-4	Yes	100	R	16 3/4 x 12 1/2 x 4 1/2				
	III	B	0.09	78	Belt	0	0.1	Yes	No	Yes	O/P	9		0-4	Yes	100	R	18 1/4 x 14 3/8 x 6				
TECHNICS	SP-10 MkII	C	0.015	92	Direct	0.001	9.9				N							14 1/2 x 14 1/2 x 4 1/2	1700.00			
	SP-10 MkIIA	C	0.025	78	Direct	0.002					N							14 1/2 x 14 1/2 x 4 1/8	1100.00			
	SP-15	C	0.025	78	Direct		9.9				N							13 3/4 x 13 3/4 x 3 3/8	700.00			
	SP-25	B	0.025	78	Direct		6				N							13 3/4 x 13 3/4 x 3 1/4	400.00			
	SL-1200 Mk2	B	0.025	78	Direct		8	No			P	9 1/8		1-2.5	Yes		R	17 7/8 x 14 3/8 x 6 1/4	400.00			
	SL-M1	B	0.022	82	Direct		6	Yes			P	9 1/8	R	1-1.5	Yes		P	17 x 13 3/4 x 3 1/2	350.00			
	SL-QL1	B	0.025	78	Direct			Yes			L	4 1/8	C/R	1-1.5			P	12 1/2 x 12 1/2 x 3 1/2	470.00			
	SL-10	B	0.025	78	Direct	0.002		Yes			L	4 1/8	C/R	1-1.5			P	12 1/2 x 12 1/2 x 3 1/2	620.00			
	SL-7	B	0.025	78	Direct	0.002		Yes		Yes	L	4 1/8	C/R	1-1.5			P	12 1/2 x 12 1/2 x 3 1/2	300.00			
	SL-QL15	B	0.025	78	Direct	0.002		Yes		Yes	L	4 1/8	C/R/P	1-1.5			P	17 x 13 3/4 x 3 1/2	280.00			
	SL-6	B	0.025	78	Direct			Yes			L	4 1/8	C/R/P	1-1.5			P	12 1/2 x 12 1/2 x 3 1/2	260.00			
	SL-V6	B	0.025	78	Direct			Yes		Yes	L	4 1/8	C/R/P	1-1.5			P	12 1/2 x 14 7/8 x 7 1/4	260.00			
	SL-V5	B	0.025	78	Direct			Yes		Yes	L	4 1/8	C/R	1-1.5			P	12 1/2 x 14 7/8 x 7 1/4	260.00			
	SL-DL5	B	0.025	78	Direct			Yes		Yes	L	4 1/8	C/R	1-1.5			P	12 1/2 x 14 7/8 x 7 1/4	220.00			
	SL-5	B	0.025	78	Direct			Yes			L	4 1/8	C/R	1-1.5			P	17 x 12 3/4 x 3 1/2	200.00			
	SL-BL3	B	0.045	70	Belt			Yes			L	4 1/8	C/R	1-1.5			P	12 1/2 x 12 1/2 x 3 1/2	200.00			
	SL-QX300	B	0.025	78	Direct		6	Yes			L	9 1/8	C/R	1-1.5	Yes		P	17 x 13 1/2 x 3 1/2	180.00			
	SL-QX200	B	0.025	78	Direct		6	Yes			P	9 1/8	R	1-1.5	Yes		P	17 x 14 3/4 x 3 1/8	240.00			
	SL-D500	B	0.03	75	Direct		5	Yes		6	P	9 1/8	C/R	1-1.5			P	17 x 14 3/4 x 3 1/8	220.00			
	SL-B500	B	0.045	70	Belt		3	Yes		6	P	9 1/8	C/R	1-1.5			P	17 x 14 3/4 x 3 1/8	250.00			
	SL-Q300	B	0.025	78	Direct			Yes			P	9 1/8	C/R	1-1.5			P	17 x 14 3/4 x 3 1/8	205.00			
	SL-Q200	B	0.025	78	Direct			Yes			P	9 1/8	C/R	1-1.5			P	17 x 14 3/4 x 3 1/8	160.00			
	SL-B300	B	0.045	70	Belt		6	Yes			P	9 1/8	C/R	1.25			P	17 x 14 3/4 x 3 1/8	140.00			
	SL-B200	B	0.045	70	Belt		6	Yes			P	9 1/8	R	1.25			P	17 x 14 3/4 x 3 1/8	130.00			
	SL-B100	B	0.045	70	Belt		6	Yes			P	9 1/8	R	1.25			P	17 x 14 3/4 x 3 1/8	110.00			
																		17 x 14 3/4 x 3 1/8	90.00			
THORENS	TD166 MkII	B	0.05	70	Belt			No	No	No	P	9		1-3	Yes	190	W	6 x 17 x 14	250.00			
	TD146	B	0.05	70	Belt			No	No	No	P	9		1-3	Yes	190	W	6 x 17 x 14	350.00			
	TD115 MkII	C	0.04	68	Belt		6	No	No	No	P	8 3/4	C	1-3	Yes	230	W	5 1/8 x 17 1/2 x 14	435.00			

# TURNTABLES

MANUFACTURER	Model	Speeds—See Code	Wow & Flutter, % DIN 45-507	Rumble, —dB, DIN 45-539-B	Drive System	Speed Inaccuracy, ±%	Speed Adjustment Range, ±%	Controls Outside Dustcover?	Multi-Play, No. of Discs	Record Clamp Supplied?	Arm Type: None = N, Opt. = O, Pivoted = P, Linear = L	TONEARM/CARTRIDGE				Cartridge Mount: Fixed = F, Removable Shell = R, P Mount = P, Changeable Wind = W	Dimensions, inches including Dustcover	Price, \$	
												Auto Cue = C, Auto Return = R, Programmable Play = P	Recommended Tracking Force Range, Grams	Anti-Skating Adjustment?	Total Cable Capacitance?				
THORENS (Continued)	TD147	B	0.04	72	Belt					P	9	C	1-3	Yes	190	W	6 3/4 x 17 3/8 x 14 1/4	525.00	
	TD126	C	0.035	72	Belt	6	No	No	No	P	9	C	1-3	Yes	190	W	6 3/4 x 19 1/8 x 15 1/2	800.00	
	MkIII C	C	0.035	72	Belt	6	No	No	No	P	9	C	1-2.5	Yes	100/300	W	6 3/4 x 19 1/8 x 15 1/2	1175.00	
	TD126 MkIII S ME	C	0.035	72	Belt	6	No	No	Opt.	P	9	C	1-2.5	Yes	100/300	W	8 5/8 x 26 5/8 x 18 1/8	1700.00	
	TD226	C	0.035	72	Belt	6	No	No	No	P	9	C	1-2.5	Yes	100/300	W	6 3/4 x 17 3/8 x 14 1/4	395.00	
TD160 Super	B	0.04	72	Belt	6	No	No	No								6 3/4 x 17 3/8 x 14 1/4	395.00		
TD126 MkIII B C	C	0.035	72	Belt	6	No	No	No								6 3/4 x 19 1/8 x 15 1/2	645.00		
TOSHIBA	SR-B2L	B	0.07	60	Belt	0.05	Yes	No		P	8 1/2	C/R	4-9	Yes	300	R	16 1/2 x 14 3/4 x 4 7/8	99.95	
	SR-B20L	B	0.07	60	Belt	0.05	Yes	No		P	8 1/2	C/R	4-9	Yes	300	R	16 1/2 x 14 3/4 x 4 7/8	99.95	
	SR-B30F SR-D3L	B	0.022	73	Belt Direct	0.02	3	Yes	No	P	8 1/2	C/R	4-9	Yes	300	R	16 1/2 x 15 x 5 1/8	149.95	
TRANS-AUDIO	Premiere	B	0.04		Belt	0.01	5	No	No	Screw	P	9.8	C	1-3	Yes	F	20 x 15 x 6 3/4	3000.00	
	Alexandria	B	0.04		Belt	0.01	5	No	No	Screw	O P	9.4	C	1-3	Yes	F	19 1/2 x 14 3/4 x 6 1/2	995.00	
VECTOR RESEARCH	VT-150	B	0.08	65	Belt			Yes			P		R	1-4	Yes	170	R	17 7/8 x 14 x 5 1/8	130.00
	VT-200	B	0.05	68	Direct		3	Yes			P		R	1-4	Yes	R	16 3/8 x 4 1/2 x 14 1/4	150.00	
	VT-250	B	0.03	68	Direct		3	Yes			P		C/R	1-4	Yes	R	16 3/8 x 4 1/2 x 14 1/4	200.00	
	VT-300	B	0.03	68	Direct		3	Yes			L		C/R	1-4	Yes	P	16 3/8 x 3 3/4 x 13 1/2	225.00	
VPI	HW-19	B	0.04		Belt	0.01		Yes									21 1/4 x 15 3/4 x 7 1/8	665.00	
C. W. & J. WALKER	CJ55	B	0.06	77	Belt	0.2		Yes	No	No							18 3/4 x 14 1/2 x 6	399.00	
YAMAHA	P-700	B	0.015	78	Direct		3	Yes			P	8 3/4	R	1-3.5	Yes	100	R	17 x 15 x 4 1/2	270.00
	P-500	B	0.015	78	Direct		3	Yes			P	8 3/4	R	1-3.5	Yes	100	R	17 x 15 x 4 1/2	220.00
	P-300	B	0.015	78	Direct		3	Yes			P	8 3/4	C	1-3.5	Yes	100	R	17 x 15 x 4 1/2	190.00
	P-200	B	0.04	70	Belt		3	Yes			P	8 3/4	C	1-3.5	Yes	100	R	17 x 15 x 4 1/2	150.00

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# TONEARMS



SUMIKO MDC 800



LINN ITTOK LV-II



AUDIO-TECHNICA AT1010



SME 3012-R

MANUFACTURER	Model	Type: Pivoted = P, Linear = L, Servo = S					Cart Mount Fixed = F, Removable Shed = R, 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
		P	R	F	Yes	Yes													
ALPHASON	HR-100S	P		F	Yes	Yes	Yes	Yes	9	11½		0-3.0	3-12				750.00	Titanium.	
AUDIOQUEST	AQ Shadow	P		R	Yes	Yes	Yes	Yes	9	11½							325.00		
	WE-317/LW	P		R	Yes	Yes	Yes	Yes	9½	12¼					1¼		575.00		
	WE-407/LW	P		R	Yes	Yes	Yes	Yes	9½	12¼					1¼		825.00		
AUDIO-TECHNICA	AT1010	P		R	Yes	Yes	Yes	Yes	9½	13	1.5	0-2.5	4-14	100	1		350.00		
BROADCAST ELECTRONICS	S-320	P		R	Yes	No	No	7⅞	12¼	1	1	1-12	1-12	120			136.00		
	S-260	P		R	Yes	No	No	11⅞	15¾	1	1	1-12	1-12	120			150.00		
DECCA	International	P		R		Yes	Yes	9½	12			0-3½	3-13	100	1½		249.95	Magnetic float and bias.	
DENNESEN	ABLT-1	†		W	Yes		Yes	Adj.	12	0	Any	Any	30			1400.00	†Linear/air-bearing.		
DYNAVECTOR	DV-501	P		R	Yes	Yes	Yes	Yes	9¼	12		0-3	4-12	84	1¼		600.00	Electrodynamic damping.	
ELITE TOWNSHENO	Excalbur	P		F	Yes	Yes	Yes	8¾	11	1	0.75-2.5	4-16	80			995.00	For use with The Rock turntable.		
EMINENT TECHNOLOGY	One	L†		R	Yes		Yes	7¼	9¾	0	0-5	0-12	30	½		398.00	†Air-bearing; air pump, \$70.00; mounting board, \$25.00.		
GRACE	G-747	P		R	Yes	Yes	No	9.33	11.7	0.4	0-3	4-10	86	1		300.00			
	G-707 II	P		F	Yes	Yes	No	9.33	11.7	0.4	0-3	4-10	86	1		225.00			
	G-707 Mark III	P		F	Yes	Yes	No	9.33	11.7	0.4	0-3	4-10	86	1		325.00			
	Advanced																	Black; chrome version; \$215.00. Internally damped arm tube.	
G.F.C. HADCOCK	Sound Tracer	P		R	Yes	Yes	Yes	9¾	11¼	1	0.5-3	5-10	160	¾		199.95	Stainless steel arm tube opt.		
HELIUS DESIGNS	Orion	P		F	Yes	Yes	Yes	9¾	12¼		1.0-3.0	4-20	73			995.00	Variable azimuth.		
	Aurum (Gold)	P		F	Yes	Yes	Yes	9	10½		1.0-3.0	4-17	90			495.00	SME mount.		
	Scorpio	P		F	Yes	Yes	Yes	9	10⅞		1.0-3.0	4-17	90	1¼		239.00	Variable azimuth.		
HEYBROOK	HT-1	P		F	Yes	Yes	Yes	8½	10½		0.75-3.0		70	¾		249.00			
ISOS	Three	P		W	Yes	Yes	Yes	9½	11½		0.5-2.5	4-16				219.95			
LINN PRODUCTS	Ittok LV-II	P		F	Yes	Yes	Yes	9	11¼		0.5-3.0	3-12	100	1		650.00			
	Basik LV-X	P		R	Yes	Yes	Yes	9	11¼		0.5-3.0	2-10	100	1		199.00	Includes cartridge.		
LUSTRE	GST-801	P		R	Yes	Yes	Yes	9.45	13.25	0.4	0-2.5	4-22	100	1¾		500.00	Magnetic VTF & anti-skate.		
MAGNEPAN	Unitrac 1	P		R	Yes	Yes	Yes	9.5	11.41	1.77	0.5-3	3-12	110	⅞		325.00			
MAYWARE	MKIV	P		R	Yes	Yes	Yes	9	11½		0.5-3.0	2½-12	112	⅞		275.00			
	Formula 4 MK III	P		R	Yes	Yes	Yes	9	11½		0.5-3.0	2½-12	112	⅞		175.00			
MICRO SEIKI	MAX237	P		W	Yes	Yes	Yes									1000.00			
	MAX505 MK III	P		W	Yes	Yes	Yes									425.00			
	CFX-1	P		R	Yes	Yes	Yes									225.00			
	MA500	P		W	Yes	Yes	Yes									225.00			

# TO NEARMS

MANUFACTURER	Model	Type: Pivoted = P, Linear = L, Servo = S			Cart. Mount Fixed = F, Removable Shell = R, P. Mount = P, Changeable Wand = W			Cueing?	Anti-Skating Adjustment?	Adjustable Vertical Tracking?	Pivot Stylus Vertical Tracking Angle?	Overall Length, Inches	Maximum Tracking, Inches	Recommended Tracking Range, Grams	Cartridge Weight Range, Grams	Total Cable Capacitance, pf	Mounting Hole Diameter, Inches	Price, \$	Notes
		Yes	Yes	Yes	Yes	Yes	Yes												
MISSION ELECTRONICS	774LC	P	F	Yes	Yes	Yes	8 1/8	11					0-10	60	1 1/4	199.00	†SME cutout.		
	774	P	F	Yes	Yes	Yes	8 5/8	12					0-10	60	†	399.00			
	774SM	P	F	Yes	Yes	Yes	8 1/4	11					0-20	60	1 1/4	499.00			
THE MOD SQUAD	Triplanar	P	F	Yes	Yes	Yes	9 3/4	12 7/8	0.03	0.5-3.0	4-22					2000.00			
MUSIC & SOUND	MAS 282	P	R	Yes	Yes	Yes	8 3/4	11 1/4		0-2.5	3-10	100	1			195.00	Adjustable arm mass kit opt.		
PREMIER	MMT	P	R	Yes	Yes	No	9.4	12		0-3	3-14	100	3/4			225.00	Optional fluid damping.		
PRO-ACOUSTICS	Profile II	P	R	Yes	Yes	Yes	9	11 1/2		0-4	4-11	100	3/4			169.00	Litz headshell leads, decoupled counterweight.		
	Profile III	P	F	Yes	Yes	Yes	9	11 1/2		0-4	4-12	100	1			449.00	Decoupled counterweight.		
PSIONIC	LOC1	P	F	No	Yes	Yes	9 1/4	12 1/4	0.33	1-3	3-12		3/8			610.00	Articulated vertical motion, calibrated VTA adjustment.		
REGA RESEARCH	RB300	P	F	Yes	Yes	Yes	9 3/8	12	1.0	0-3.5	4.5-10†	100	1			295.00	†With standard weight, alternate weights available.		
SIGNET	XK35	P	F	Yes	Yes	Yes	9 3/8	11 3/8	1	0-2	2-9	75	1						
	XK50	P	W	Yes	Yes	Yes	9 3/4	13 1/4	1	0-1.6	4-11	75	1						
SME	Series IIISB	P	W	Yes	Yes	Yes	9.18		0.33	0-2.5	0-12	Adj.				229.00	"S" shaped, black titanium nitride.		
	Series IIIB	P	W	Yes	Yes	Yes	9.18		0.33	0-2.5	0-12	Adj.				299.00	As above.		
	3009-R	P	R	Yes	Yes	Yes	9.42	12	0.33	0-5	1.5-26	200				350.00	"S" shaped.		
	3012-R	P	R	Yes	Yes	Yes	9.3	12	0.33	0-5	1.5-26	200				465.00	As above.		
	3009-RG	P	R	Yes	Yes	Yes	9.42	16	0.33	0-5	1.5-2.6	200				1750.00	As above.		
SOUNDAIDS	Mod-2	P	F		Yes		Var.	Var.	1.5	0.5-2	2-10					90.00	Modification for low mass.		
SOUTHER ENGINEERING	SLA-3 Improved	L	W	Yes		Yes	2	10	0	0.5-2.5	1-20	†				850.00	†User supplied.		
STAX	UA-9N	P	F	Yes	Yes	Yes	9.4	13	0.1	0.1-3	4-13.5	84	1.5			480.00	Carbon fiber tube.		
	UA-90N	P	F	Yes	Yes	Yes	12.3	16.25	0.08	0.1-3	4-17	84	1.5			520.00	As above.		
	UA-7 CF-N	P	R	Yes	Yes	Yes	9.4	13.25	0.1	0.1-3	2-16	84	1.5			370.00	As above.		
	UA-7N	P	R	Yes	Yes	Yes	9.4	13.25	0.1	0.1-3	2-16	84	1.5			345.00	Aluminum tube.		
SUMIKO	The ARM MDC-800	P	F	Yes	Yes	No	9	10.4		0-2.5		130	3/4			1200.00			
SYRINX	PU3	P	F	Yes	Yes	Yes	9 1/2†	11 1/2			3-16		1.2			700.00	†Adj.; azimuth and overhang adj.		
	LE1	P	F	Yes	Yes	Yes	9 1/2†	11 1/2			3-12		1.2			245.00	As above.		
TECHNICS	EPA-250	P	R	Yes	Yes	Yes	9 1/8									450.00			
TRANS-AUDIO	Finale Prelude	P	F	Yes	Yes	Yes	9 8		1	1-3	5-25					895.00			
		P	F	Yes	Yes	Yes	9 4		1	1-3	4-25					395.00			
ZETA	Zeta	P	F	Yes	Yes	Yes	9	11 1/4		1-5	4-15	100	1 1/4			875.00			



Model AT152LP  
Vector Aligned™ Dual Magnet™  
Stereo Phono Cartridge

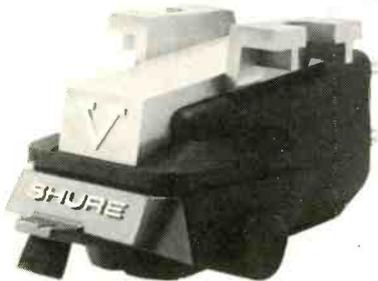
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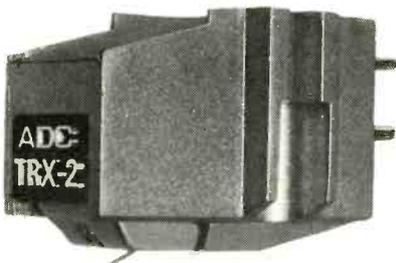
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MICRO-ACOUSTICS 830



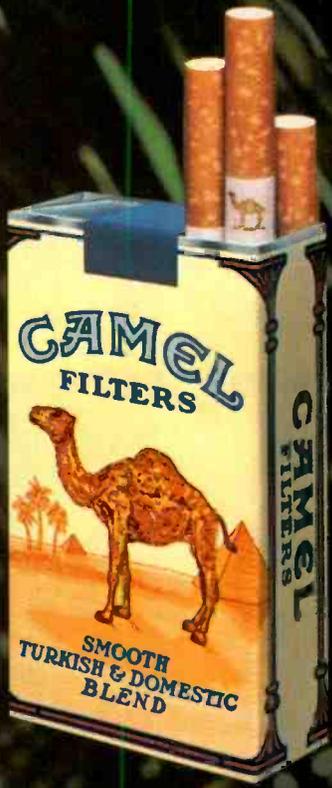
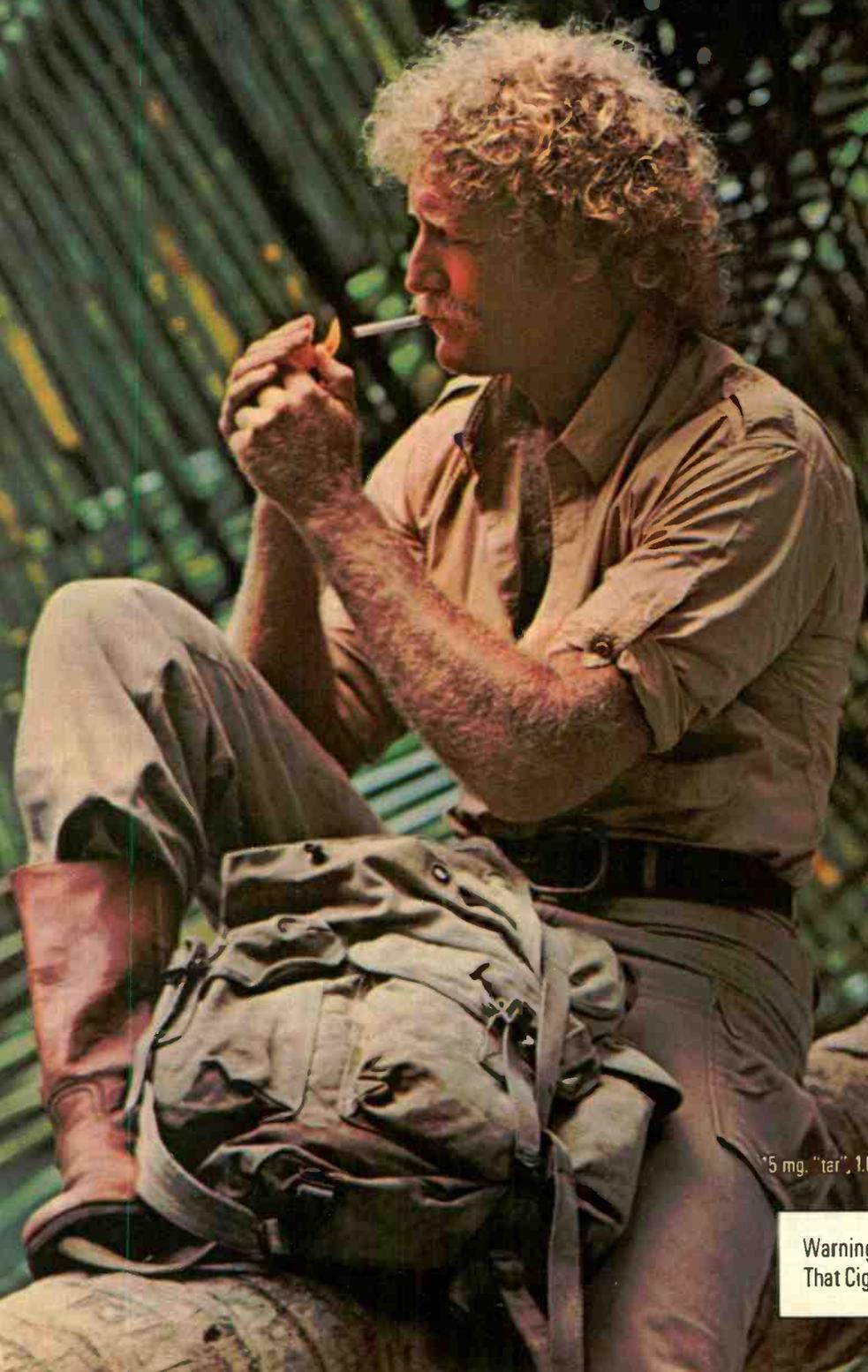
ADC TRX .2



DYNAVECTOR KARAT 17DS

MANUFACTURER	Model	Frequency Response, Hz to KHz, ± dB	Principle: Moving Iron, MM, Moving Magnet = IM, Moving Coil = MC	Individual Response Curves Supplied?	Channel Separation, 1 KHz, dB	Output, mV, 1 KHz, 5 cm/Sec. rms, Lateral Velocity	Recommended Tracking Force Range, Grams	Stylus Type—See Code	Stylus Radius (Radius), Mils	Dynamic Compliance, µm/mN, Vertical/Lateral	Stylus User = U, Factory = F, Mounting: Integral Shell = I, P-Mount = P, Standard = S	Weight, Grams	Price, \$	Replacement Stylus Price, \$			
															Stylus Type	Stylus Radius	Dynamic Compliance
ACCUPHASE	AC-2	20-20 ± 1	MC	Yes	30	0.18	1.5-2.5	X	0.2 x 1.3		F	S	9.5	475.00			
ADC	TRX-2	20-30 ± 1.5	IM	No	30	3	1-1.4	275	X	0.12 x 0.06 x 0.05	40/40	U	S	8	250.00	125.00	
	TRX-1	20-26 ± 1.5	IM	No	30	3	1-1.4	275	X	0.3 x 0.22 x 0.5	40/40	U	S	8	175.00	87.50	
	PSX-40	20-24 ± 1.5	IM	No	28	3.5	1.05-1.45	275	E	0.2 x 0.7	35/35	U	P/S	5-9	135.00	67.50	
	PSX-30	20-23 ± 2	IM	No	25	3.5	1.05-1.45	275	E	0.3 x 0.7	35/35	U	P/S	5-9	110.00	55.00	
	PSX-20	20-22 ± 2	IM	No	20	4	1.05-1.45	275	E	0.3 x 0.7	30/30	U	P/S	5-9	90.00	45.00	
	PSX-10	20-20 ± 2	IM	No	20	4	1.05-1.45	275	C	0.65	30/30	U	P/S	5-9	60.00	30.00	
ADCOM	HC-E II	20-20 +2, -1	MC		22	22	2.5	1.75-2.25	E	0.3 x 0.7		F	S	4.7	140.00	77.00	
	HC-VDH II	20-20 +2, -1	MC		22	22	2.5	1.9	V			F	S	4.7	220.00	121.00	
	XC-LT Super	20-20 ± 1	MC		25	25	2.5	1.8	X			F	S	4.7	310.00	171.00	
	SXC-VDH	20-20 ± 1	MC		25	25	2.5	1.9	V	0.15 x 3.3		F	S	4.7	450.00	248.00	
ADS	Mag 2 E (for ADS P2 only)	20-20 ± 3	MM	No	25	20	4	1.2-1.8	400	E	0.3 x 0.4	20/25	U	I			
AKG	P-25MD	10-28 ± 1	IM	Yes	30	25	2.7	1.0	300	X		24/24	U	S	3.5	250.00	150.00
	P-15MD	10-23 ± 1.5	IM	Yes	30	20	3.4	1.25	300	E	0.18 x 0.8	27/27	U	S	3.5	165.00	82.00
	P-10ED	20-20 ± 2	IM	No	25	20	5.8	1.5	300	E	0.18 x 0.8	20/20	U	S	3.5	115.00	55.00
	P-5ED	20-20 ± 3	IM	No	23	20	5.8	1.5	300	E	0.2 x 0.8	20/20	U	S	3.5	80.00	40.00
ANDANTE	FGV	12-40	MM	No	30	25	5.0	1.3-2.3	100	X		20/20	U	S	6	200.00	120.00
	E	12-30	MM	No	30	25	5.0	1.0-1.7	100	E	0.2 x 0.8	20/20	U	S	6	100.00	60.00
	S	18-27	MM	No	28	23	5.0	1-2.5	100	S	0.5	18/18	U	S	6	75.00	37.50
	H	18-23	MM	No	27	22	10.0	1-2.5	100	S	0.5	15/15	U	S	6	55.00	27.50
APATURE	MC-100	15-35	MC	Yes	25	20	2.5	2.0		C	0.6	8/8	U	S	4	100.00	40.00
	MC-200	10-50	MC	Yes	25	20	2.5	1.8		E	0.3 x 0.7	10/10	F	S	7	300.00	100.00
	MC-300	10-60	MC	Yes	35	30	0.8	1		X		17/17	F	S	6	700.00	300.00
ARCAM	C-77		MM	No	30	25		1.3-1.7	300	C	0.15	20/	U	S	6	50.00	30.00
	E-77		MM	No	30	25		1.3-1.7	300	E	0.3 x 0.7	20/	U	S	6	95.00	70.00
	P-77		MM	No	30	25		1.3-1.7	300	X	0.3 x 0.7	20/	U	S	6	125.00	98.00

# CAMEL FILTERS



Experience  
the Camel taste in  
Camel Filters.

\*5 mg. "tar", 1.0 mg. nicotine av. per cigarette, FTC Report MAR. '83.

Warning: The Surgeon General Has Determined  
That Cigarette Smoking Is Dangerous to Your Health.

# PHONO CARTRIDGES

MANUFACTURER	Model	Frequency Response, Hz to kHz, ±dB	Stylus Type	C—Conical S—Spherical E—Elliptical Q—For CD-4 Use V—Van den Hul X—Hyper-Elliptical, Stereohedron, Fine Line, Line Contact, Long Line, Line Trace, or similar	Pivoting Moving Iron—MI Integral Magnet—IM Moving Magnet—MM	Individual Response	Channel Separation, 1 kHz, dB	Channel Separation Curve Supplied?	Output, mv, 1 kHz, 5 cm/sec, rms Lateral Velocity	Recommended Tracking Force Range, Grams	Stylus Type—See Code	Stylus Radius (Radius), Mils	Dynamic Compliance, $\mu\text{m/mN}$ , Vertical/Lateral	Stylus Replacement User—U, Factory—F	Mounting, Integral Shell=I, P-Mount=P, Standard=S	Weight, Grams	Price, \$	Replacement Stylus Price, \$
ARGENT	Diamond Sapphire Base	10-50	MC	Yes	30	25	0.2	1.8-2.2	100	X	0.3 x 1.6	6/6	F	S	8	1200.00	660.00	
	Ruby Sapphire Base	10-50	MC	Yes	30	25	0.2	1.8-2.2	100	X	0.3 x 1.6	6/6	F	S	8	495.00	272.00	
	MC-110 Sapphire Base	10-50	MC	Yes	27	23	0.2	1.8-2.2	100	X	0.25 x 1.6	7/7	F	S	9½	385.00	211.75	
	MC-300	10-50	MC	Yes	25	20	0.1	1.8-2.2	100	X	0.3 x 1.6	7/7	F	S	7	235.00	141.00	
	MC-310	10-35	MC	Yes	25	20	0.1	1.8-2.2	100	E	0.3 x 0.7	7/7	F	S	7	175.00	96.00	
MC-500H	10-40	MC	Yes	25	20	2.0	1.8-2.2	100	X	0.3 x 1.6	6/6	F	S	7	265.00	145.75		
ASTATIC	MF-100	10-20 ± 1	Moving Flux	No	30	25	3.5	1-1.5	100	X	Parabolic		U	S	5.5	290.00	133.75	
	MF-200	10-20 ± 2	MF	No	28	20	4.2	1.5-2	100	X	Parabolic		U	S	5.5	160.00	80.00	
	MF-300	10-20 ± 2.5	MF	No	25	18	4.2	1.5-2	100	E	0.3 x 0.7		U	S	5.5	100.00	50.00	
	MF-400	10-18 ± 3	MF	No	22	18	4.2	1.5-2.5	100	S	0.5		U	S	5.5	80.00	40.00	
AUDIO NOTE	I-O Type II	10-55	MC	Yes	25	20	0.15	1.9		V		15 15	F	S	18	1250.00	625.00	
	Soara MS-10	20-40	MC	Yes	25	20	0.16	1.9		V		10 10	F	S	8	750.00	375.00	
AUDIOQUEST	AQ 404		MC	Yes			2.5	2.0				8 8	F	S		225.00	112.00	
	AQ 505		MC	Yes			0.22	2.0				8 8	F	S		225.00	112.00	
	AQ 606		MC	Yes			2.5	2.0				8 8	F	S		325.00	162.00	
	AQ 707		MC	Yes			0.22	2.0				8 8	F	S		325.00	162.00	
	AQ 808		MC	Yes			2.5	2.0		X		8 8	F	S		450.00	225.00	
	AQ 909		MC	Yes			0.22	2.0		X		8 8	F	S		450.00	225.00	
AUDIO-TECHNICA	AT152LP	5-35	MM	Yes	31	21	5	0.8-1.6	100-200	X	Line Cont.		U	P	6	225.00	100.00	
	AT132EP	10-30	MM	No	30	20	5	0.8-1.6	100-200	E	0.2 x 0.7		U	P	6	135.00	50.00	
	AT122LP	10-28	MM	No	29	20	5	1-1.5	100-200	X	Line Cont.		U	P	6	125.00	60.00	
	AT122EP	15-25	MM	No	29	20	5	1-1.5	100-200	E	0.3 x 0.7		U	P	6	95.00	45.00	
	AT112EP	20-22	MM	No	26	17	5	1-1.5	100-200	E	0.4 x 0.7		U	P	6	70.00	35.00	
	AT155LC	5-35	MM	Yes	31	21	5	0.8-1.6	100-200	X	Line Cont.		U	S	8.2	225.00	100.00	
	AT140LC	5-32	MM	No	30	20	5	0.8-1.6	100-200	X	Line Cont.		U	S	6.4	175.00	75.00	
	AT130E	10-30	MM	No	30	20	5	0.8-1.8	100-200	E	0.2 x 0.7		U	S	6.4	120.00	50.00	
	AT125LC	10-28	MM	No	29	20	5	1-1.8	100-200	X	Line Cont.		U	S	6.4	130.00	60.00	
	AT120E	15-25	MM	No	29	20	5	1-1.8	100-200	E	0.3 x 0.7		U	S	6.4	90.00	45.00	
	AT30HE	15-25	MC	No	29	20	2	1.4-1.8		E	0.3 x 0.7		U	S	5	135.00	65.00	
	AT30E	15-25	MC	No	25	15	0.3	1.4-2		E	0.3 x 0.7		U	S	5	135.00	65.00	
	AT31E	15-28	MC	No	29	20	0.4	1.2-1.8		E	0.2 x 0.7		U	S	4.8	175.00	80.00	
	AT35E	15-30	MC	No	30	20	0.4	1.2-1.8		E	0.2 x 0.7		U	S	4.3	250.00	100.00	
	BANG & OLUFSEN	MMC1	20-20 ± 1	MI	Yes	30	20	0.6	1		X		30/	I	I	1.6	445.00	
MMC2		20-20 ± 1.5	MI	Yes	25	20	0.6	1		X		30/	I	I	1.6	290.00		
MMC3		20-20 ± 2	MI	No	25	20	0.6	1		E	0.5 x 1.7	25/	I	I	1.6	180.00		
MMC4		20-20 ± 2.5	MI	No	22	17	0.6	1.2		E	0.5 x 1.7	25/	I	I	1.6	105.00		
MMC5		20-20 ± 3	MI	No	20	15	0.6	1		E	0.5 x 1.7	25/	I	I	1.6	60.00		
BOSTON ACOUSTICS	MC-1E	20-20 ± 1.5	MC	No	25	23	3.5	1.5-2		E	0.3 x 0.7	20/8	F	S	5	140.00	100.00	
	MC-1vdH	20-20 ± 1.5	MC	No	25	23	3.5	1.5-2		V	0.14 x 3.3	20/8	F	S	5	200.00	140.00	
MITCHELL A. COTTER	ADB-1	10-30 ± 1	MC	No	30	30	1.0	3-8		X	0.09 x 11	4.8/4.8	F	S	23	600.00	375.00	
DECCA	van den Hul	20-20	MI		20		5	1.8	100	V		7.5 15	F	S	5	750.00		
DENON	DL-1000	20-110	MC	Yes	30		0.12	0.7-0.9		X			F	S	5.8	1000.00		
	DL-305	20-75	MC	Yes	28		0.2	1-1.4		X	0.05 x 0.1		F	S	5.8	595.00		
	DL-303	20-77	MC	Yes	28		0.2	1-1.4		X	0.05 x 0.1		F	S	5.8	395.00		
	DL-207	20-60	MC	Yes	28		0.2	1.2-1.6		X	0.14 x 0.07		F	S	4.7	285.00		
	DL-301	20-60	MC	No	28		0.3	1.2-1.6		X	0.14 x 0.07		F	S	4.7	175.00		
	DL-300	20-40	MC	No	25		0.3	1.5-2.1		X	0.14 x 0.07		F	S	4.2	99.00		
	DL-103D	20-65	MC	Yes	28		0.25	1.3-1.7		X	0.1 x 0.07		F	S	7.5	295.00		
	DL-103S	20-60	MC	Yes	28		0.3	1.5-2.1		X	0.15 x 0.07		F	S	7.8	195.00		
	DL-103C	20-45	MC	Yes	28		0.3	2.2-2.8		C	0.2		F	S	8.5	150.00		
	DL-103M	20-60	MC	No	25		0.12	1.2-1.6		X	0.14 x 0.07		F	S	5.6	195.00		
	DL-160	20-50	MC	No	28		1.6	1.3-1.9		X	0.14 x 0.07		F	S	4.8	100.00		
	DL-110	20-45	MC	No	25		1.6	1.5-2.1		X	0.2 x 0.1		F	S	4.8	80.00		
	DYNAVECTOR	DV-13D Nova	20-100	MC	Yes	25	25	0.1	1.7-2		E	0.25 x 0.7		F	S		1500.00	
		DV-17DS	20-90	MC	Yes	20	20	0.2	1.7-2		X	0.16 x 0.2		F	S	5.3	700.00	430.00
DV-23R		20-50	MC	Yes	20	20	0.2	1.3-1.7		E	0.3 x 0.7	15/25	F	S	5.3	310.00	170.00	
DV-19A		20-70	MC	Yes	20	20	0.25	1.7-2		E	0.25 x 0.7		F	S	5.3	230.00	125.00	
DV-50A		20-50	MC	Yes	20	25	0.2	1.3-1.7		E	0.3 x 0.7	20/20	F	S	4.5	198.00	110.00	
DV-20B2		20-20	MC	Yes	20		3.6	1.8		E	0.3 x 0.7	24/25	F	S	5.3	298.00	164.00	
DV-20A2		20-20	MC	Yes	20		3.6	1.8		E	0.3 x 0.7	24/25	F	S	5.3	240.00	132.00	
DV-10x3		20-20	MC	Yes	20		2.5	1.8		E	0.3 x 0.7	24/25	F	S	4.8	150.00	82.50	
ELITE TOWNSHEND	The Grail	20-20 ± 0.5	MC	Yes	35	25	0.13	1.5-1.6	100	X	1.96 x 0.12	25/25	F	S	7.7	450.00		
EMPIRE SCIENTIFIC	150C	15-22	MM	No	25		4.5	1.5-2.5	100-300	C	0.6	10/	U	S	5	40.00	20.00	
	250E	12-24	MM	No	25		4.5	1.5-2.5	100-300	E	0.3 x 0.7	10/	U	S	5	50.00	30.00	
	350DE	20-20	MM	No	27		4.5	1.5	350	E	0.2 x 0.7	17/	U	S	5.3	70.00	35.00	
	400TC	20-20	MM	No	28		3.8	1.25	350	E	0.2 x 0.7	20/	U	S	5.3	100.00	50.00	
	500ID	20-23	MM	No	30		4.0	1	150	E	0.2 x 0.7	20/	U	S	5.3	125.00	62.50	
	600LAC	20-28	MM	No	30		4.0	1.5	150	X	0.25 x 2.5	20/	U	S	5.3	175.00	87.50	
	900GT	20-20	MM	Yes	28		3.0	0.75-1.25	300	E	0.2 x 0.7	30/	U	S	5.3	125.00	80.00	
	1000GT	20-20	MM	Yes	30		3.0	0.75-1.25	300	X	0.25 x 2.5	30/	U	S	5.3	150.00	100.00	
	BC100	20-20	MM	No	25		4.5	2-3.5	300	C	0.7	14/	U	S	5.3	45.00	21.00	
	BC200	20-20	MM	No	25		4.5	1.5-3.5	300	C	0.7	15/	U	S	5.3	70.00	30.00	
	SLM444	10-25	MM	No	25		4.0	1.2-1.8	150	E	0.3 x 0.7	12/	U	S	3.4	100.00	30.00	

# WHY PUT TWO FILTERS INTO ONE GREAT COMPACT DISC PLAYER?

Kyocera goes to double lengths to make sure there's no distortion in its DA-01 Compact Disc Player. It's got both digital and analog filters—so nobody hears distortion.

## The advantage of digital and analog filtering systems.

Modern technology has made analog filters pretty effective. But there can be a problem— analog filters by themselves render limited performance. By combining an analog filter with a digital filter, and precisely applying both types in just the right way, the limitations found with analog filters are not there anymore. Thanks to the unique use of these filters, and an impressive array of very advanced circuitry, the Kyocera CD Player provides accurate, crystal-clear, life-like sound.

## The awesome specs that only digital can provide.

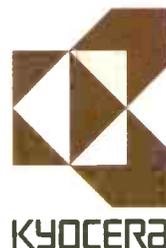
Needless to say, the Kyocera DA-01 comes through with some specs that are mind-boggling: A full 90 dB dynamic range... flat frequency response from 20-20,000 Hz... quiet 90 dB S/N ratio... and total isolation 90 dB channel separation.

And, just in case you didn't realize it, with the fabulous disc player system, as provided in Kyocera's DA-01 Player, there is no contact between disc and playback head. No ticks, clicks, pops, scratches or record wear. And the DA-01 plugs right into your present audio system—Kyocera or others—just like a conventional turntable.

## Easy to use, but total control of every function.

The DA-01 is easier to use than a modern cassette deck—slide the compact disc into the disc compartment, shut the door and hit the play button. With the DA-01's feather-touch controls, you can play the whole thing (60 minutes a side)...repeat a track...scan...pause...skip... advance...index... and program up to 24 different segments with an electronic memory. A functional LED digital panel tells you program running time and just where the optical scanner is on the disc.

Admittedly, our DA-01's are carried only by selected dealers. If you have trouble finding one, contact: Kyocera International, Inc., 7 Powder Horn Drive, Warren, NJ 07060 (201) 560-0060.



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# PHONO CARTRIDGES

MANUFACTURER	Model	Frequency Response, Hz to kHz, ±dB	Principal Magnet: MM Inducer Magnet: MM	No. 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 Range, Grams	Recommended Load Capacitance, pF	Stylus Type—See Code	Stylus Radius (Radius), Milis	Dynamic Compliance, µm/mN, Vertical/Lateral	Stylus Replacement: User = U, Factory = F	Mounting: Integral Stylus = I, P Mount = P, Standard = S	Weight, Grams	Price, \$	Replacement Stylus Price, \$
EMPIRE SCIENTIFIC (Continued)	EDR.7	20-20 ±2.5	MM	No	27	4.0	0.75-1.75	150	X	0.25 x 2.5	25/	U	S	5.3	100.00	40.00		
	EDR.9	20-35 ±1	MM	No	30	4.5	1.5	100	X	0.3 x 3.0	28/	U	S	5.3	200.00	100.00		
	MC +20	10-25 ±1	MC	No	28	2.6	1.5-2.5	0-10k	E	0.3 x 0.7	10/	U	S	4.7	125.00	90.00		
	MC5	10-50 ±1	MC	No	30	0.2	1.5-2	0-10k	E	0.3 x 0.7		U	S	6.1	250.00			
	190LT	15-22	MM	No	24	4.0	1-1.5	300	C	0.6		U	P	6	40.00			
	290LT	12-24	MM	No	24	4.0	1-1.5	300	E	0.3 x 0.7		U	P	6	50.00			
	390LT	10-26	MM	No	30	4.5	1-1.5	300	E	0.3 x 0.7		U	P	6	70.00			
	480LT	7-32	MM	No	28	4.0	1-1.5	150-400	E	0.2 x 0.7		U	P	6	90.00	50.00		
	580LT	7-34	MM	No	28	3.0	1-1.5	300	E	0.2 x 0.7		U	P	6	100.00	75.00		
	980LT	6-36	MM	No	28	3.0	1-1.5	300	E	0.2 x 0.7		U	P	6	125.00	80.00		
	1080LT	6-40	MM	No	30	3.0	1-1.5	300	X	0.25 x 2.5		U	P	6	150.00	100.00		
	EMT	XSD 15	20-20 ±2	MC	Yes		0.75	2-3		C	0.6		F	I	21	499.00	200.00	
GOLDBUG	Medusa	20-20 ±1	MC	Yes	30	25	0.2	1.6-2.0	E	0.3 x 0.7	9	F	S	5.8	220.00	120.00		
	Clement	20-20 ±1	MC	Yes	35	25	0.2	1.6-2.0	E	0.3 x 0.7	13	F	S	5.6	350.00	250.00		
	Mr. Brier	20-20 ±0.5	MC	Yes	40	25	0.22	1.3-1.7	E	0.3 x 0.7	15	F	S	7	990.00	550.00		
GOLDRING	Elecro II	20-22 ±3	MC	Yes	25		2.5	1.6-2.2	V	0.6	20 40	F	S	9	300.00	200.00		
	G900 IGC	20-22 ±2	MM	Yes	25		4.5	0.75-1.5	V	0.6	20 40	U	S	4	240.00	135.00		
	G910 IGC	20-22 ±2	MM	Yes	25		4.5	0.75-1.5	V	0.6	16 24	U	S	4	240.00	135.00		
	G920 IGC	20-20 ±2	MM	Yes	20		6.5	1-3	V	0.45	16 24	U	S	4 1/4	125.00	72.00		
	G900E	20-20 ±3	MM	No	20		6.5	1-3	E	0.7 x 0.3	16 24	U	S	5	65.00	52.00		
	G950E	20-10 ±2	MM	No	20		6.5	1.5-3	E	0.7 x 0.3	20 20	U	S	5	40.00	24.00		
GRACE	F-9E Ruby	10-50 ±2	MM	No	30	25	2.6	1.25-2	E		25 25	U	S	6	300.00	200.00		
	F-9E	10-45	MM	No	30	25	3.5	1.25-2	E		25 25	U	S	6	200.00	100.00		
	F-9L	10-40	MM	No	30	25	5.5	1.25-2	X		20 20	U	S	6	180.00	90.00		
	F-8L	20-20	MM	No	25	20	5.5	1.2-5	X		20 20	U	S	6.5	125.00	62.50		
GROOV-DANCER	IM + MC +		IM MC	No No			3.0 2.5	1.5 2.0	E E		15 15 8#	U U	S S	5.5 4	85.00 135.00	40.00 67.50		
	INDUCED MAGNET SYSTEMS	1400ER	IM	No	20		3.5	1.75-2.25	S	0.6	5 16	U	S	5.4	55.00	14.00		
JVC	1440E	20-22	IM	No	22		3.5	1.75-2.25	E	0.4 x 0.7	5 16	U	S	5.4	65.00	17.00		
	1466E	20-22	IM	No	25		3.5	1.75-2.25	S	0.4 x 0.7	7 20	U	S	5.4	80.00	26.00		
	1460IE	20-22	IM	No	22		3.5	1.75-2.25	E	0.4 x 0.7	5 10	U	I	9	90.00	23.00		
	165S	10-20	IM	No	25		3.6	1.7-2.3	S	0.5	8 8	U	S	5.6	55.00	17.00		
	185E	10-22	IM	No	25		3.6	1.7-2.3	E	0.3 x 0.7	8 8	U	S	5.6	65.00	27.00		
	210E	10-25	IM	No	25		4.0	1.5-2.0	E	0.3 x 0.7	8 8	U	S	5.8	110.00	55.00		
	220CE	10-25	IM	No	25		4.0	1.5-2.0	E	0.3 x 0.7	8 8	U	S	5.8	150.00	75.00		
	300DJ	20-20	IM	No	25		4.0	2.8-5.0	S	0.5	8 8	U	S	6	70.00	30.00		
	9600	20-20	IM	No	27		2.0	0.9-1.3	X		15 15	U	S	7.6	275.00	124.00		
	P-2000	20-22	IM	No	23		4.0	1.25	S	0.6		U	P		60.00			
	P-2500	20-24	IM	No	25		4.0	1.25	E	0.4 x 0.7		U	P		80.00			
	KISEKI	MC-2E	20-50	MC		25		0.2	1.5	E			F	S	8.7	199.95		
Z-4SEP		20-50	MM		25		2.5	1.25	E	0.3 x 0.7		U	P	5.9	70.00	40.00		
Z-4SEBP		20-50	MC		25		0.25	1.6-2.2	E	0.3 x 0.7	17-17	F	S	11.4	600.00	200.00		
MC-L10		20-50	MC		30	26	0.35	1.5-2	E	0.14 x 0.6	17-17	F	S	10	850.00	300.00		
KLIPSCH	Blue	20-50	MC	No	30	26	0.5	1.6-2.2	E	0.14 x 0.6	17-17	F	S	14	1200.00	650.00		
	Purple Heart	20-50	MC	No	30	26	0.5	1.6-2.2	E	0.14 x 0.6	17-17	F	S	14	1250.00	650.00		
	Agate	20-50	MC	No	30	26	0.5	1.6-2.2	E	0.14 x 0.6	17-17	F	S	14	1250.00	650.00		
	Lapis Lazuli	20-50	MC	No	30	26	0.5	1.2-2	E	0.14 x 0.6	17-17	F	S	16	3500.00	1800.00		
LINN PRODUCTS	MCZ-2	20-45 ±2	MC	Yes	27		0.2	1.5-2.1	X	0.3 x 0.7	9 9	U	S	5.1	215.00			
	MCZ-7	20-45 ±2	MC	Yes	27		0.2	1.5-2.1	X	0.3 x 0.7	9 9	U	S	5.1	375.00			
	MCZ-10	20-45 ±2	MC	Yes	27		0.2	1.5-2.1	X	0.3 x 0.7	9 9	U	S	5.1	325.00			
	MCZ-110	20-45 ±2	MC	Yes	27		0.2	1.5-2.1	X	0.3 x 0.7	9 9	U	S	5.1	1000.00			
JOHN MAROVSKIS	MIT-1	20-20 ±2	MC	No	25	23	0.25	2.0-2.5	V	0.25 x Line	16	F	S	5.5	550.00	275.00		
	ASAK DC2100K TRAK	10-50 ±3	MC	No	27		0.2	1.7	E	0.2 x 0.8		F	S	6	495.00	247.50		
MAYWARE	MC-2 Vital	10-50 ±2	MC	Yes	29	25	0.25	1.8-2.1	X	0.2 x 0.8		F	S	6.9	250.00	89.00		
	MC-3L 11 Vital	10-50 ±2	MC	Yes	29	25	2.5	1.8-2.1	X			F	S	6.9	250.00	89.00		
MICRO-ACOUSTICS	830CSA	10-30 ±0.75	Elect.	Yes	30	25	3.5	0.75-1.25	X	0.15	40/40	U	S	Var.	335.00	148.00		
	630MP	10-30 ±1	Elect.	Yes	30	25	3.5	0.75-1.25	X	0.2	40/40	U	S	Var.	265.00	117.00		
	3002	10-30 ±1.5	Elect.	No	30	25	3.5	0.75-1.25	E	0.2 x 0.7	40/40	U	S	Var.	170.00	57.00		
	382	10-25 ±1.5	Elect.	No	25	20	3.5	0.75-1.25	E	0.2 x 0.7	35/35	U	S	4	140.00	48.00		
	309	10-20 ±1.5	Elect.	No	25	20	3.5	1.0-1.5	E	0.2 x 0.7	30/30	U	S	4	120.00	38.00		
	100e	10-20 ±2	Elect.	No	25	20	3.5	1.0-1.5	E	0.2 x 0.7	25/25	U	S	4	90.00	30.00		
	Stratus I	10-25 ±1.5	Elect.	No	25	20	3.5	0.75-1.25	E	0.2 x 0.7	30/35	U	S	4	200.00	50.00		
	Stratus II	10-20 ±1.5	Elect.	No	25	20	3.5	1.0-1.5	E	0.2 x 0.7	30/30	U	S	4	150.00	40.00		
	Stratus III	10-20 ±2	Elect.	No	25	20	3.5	1.0-1.5	E	0.2 x 0.7	25/25	U	S	4	115.00	32.00		
	50 PE	10-20 ±3	IM	No	25	20	3.5	1.0-1.5	E	0.24 x 0.7	35/35	U	P	6	75.00	25.00		
	MICRO SEIKI	LC-80W		MC						X			F	S		400.00	200.00	
		LF-7		MM						E			U	S		100.00	50.00	
MISSION ELECTRONICS	773MM	10-20 ±1	MM	Yes	28	20	3.0	1.5-2.0	E	0.3 x 0.8	22	U	S		79.00			
	773LC	10-30 ±1	MC	Yes	35	26	0.4	1.8-2.2	E	0.6 x 0.8	15	F	S	5.5	199.00			
	773HC	10-30 ±1	MC	Yes	35	26	1.7	1.8-2.2	E	0.3 x 0.7	15	F	S	5.5	399.00			
	773SM	10-30 ±1	MC	Yes	35	26	0.4	1.8-2.2	E	0.3 x 0.7	13	F	S	5.5	599.00			
MONSTER CABLE	Alpha 1	10-20 ±1	MC	Yes	35		0.3	1.75	X	0.1 x 0.45	15	F	S	6.5	475.00	380.00		
MUSIC & SOUND IMPORTS	Econocoil	20-20 ±2	MC	No				1.5-2.0	E						89.95			



# PHONO CARTRIDGES

MANUFACTURER	Model	Frequency Response, Hz to kHz, ±dB	Stylus Type	MC	No	30	20	0.4	1.2-1.8	100-200	E	0.2 x 0.7	Stylus Radius (Radial), 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, \$
SIGNET	MK110E	15-28	MC	No	30	20	0.4	1.2-1.8			E	0.2 x 0.7		U	S	4.8			
	MK111Ea	5-50	MC	No	30	20	0.4	1.2			E	0.2 x 0.7		U	S	4.8			
	MK220E	5-50	MC	No	30	20	0.4	1.2			E	0.2 x 0.7		F	S	4.8			
	H-Ten	20-20	MM	No	25	15	3.5	1.5-2.5	100-200		C	0.6		U	U	S	6.6		
	H-Eleven-p	20-22	MM	No	25	17	5	1-1.5	100-200		E	0.4 x 0.7		U	P	S	6.6		
	H-Twelve	20-22	MM	No	25	17	3.5	1.25-2.25	100-200		E	0.4 x 0.7		U	U	S	6.6		
	TK2Ep	15-25	MM	No	26	17	5	1-1.5	100-200		E	0.4 x 0.7		U	P	S	6.6		
	TK4Ep	15-28	MM	No	28	19	5	1-1.5	100-200		E	0.3 x 0.7		U	P	S	6.6		
	TK6Ep	10-30	MM	No	29	20	5	1-1.5	100-200		E	0.2 x 0.7		U	U	S	6.6		
	TK8LcP	5-35	MM	No	33	23	5	1-1.5	100-200		X	Line Cont.		U	P	S	6.6		
	TK10ML	5-35	MM	No	35	26	2.2	1-1.5	100-200		X	Micro Line		U	U	S	7.5		
	TK1Ea	15-25	MM	No	26	17	5	1.3-2.3	110-200		E	0.4 x 0.7		U	U	S	6.2		
	TK3Ea	15-28	MM	No	28	19	5	0.9-1.9	100-200		E	0.3 x 0.7		U	U	S	6.2		
	TK5Ea	10-30	MM	No	29	20	5	0.8-1.6	100-200		E	0.2 x 0.7		U	U	S	6.5		
	TK7Ea	5-30	MM	No	33	22	5	0.8-1.6	100-200		E	0.2 x 0.7		U	U	S	6.5		
	TK7LcA	5-35	MM	No	33	23	5	0.8-1.6	100-200		X	Line Cont.		U	U	S	6.5		
TK9Ea	5-30	MM	No	35	25	2.2	0.8-1.6	100-200		E	0.2 x 0.7		U	U	S	7.5			
TK9LcA	5-35	MM	No	35	26	2.2	0.8-1.6	130-200		X	Line Cont.		U	S	7.5				
SONUS	Dimension 5	20-20 ±1	MI	No	30	25	4.0	1-1.5	350		X			U	S	5.5	250.00	125.00	
	Super Blue	20-20 ±2.5	MI	No	30	25	4.0	1-1.5	350		X			U	S	5.5	195.00	98.00	
	Gold Blue	20-20 ±2	MI	No	30	25	4.0	1-1.5	350		X			U	S	5.5	165.00	87.00	
	Bronze	20-20 ±1.5	MI	No	30	20	4.0	1-1.5	350		X			U	S	5.5	130.00	70.00	
	Silver P	20-20 ±2	MI	No	30	20	5.0	1-1.5	350		X			U	S	5.5	100.00	50.00	
	Silver E	20-20 ±2	MI	No	30	20	5.0	1-1.5	350		E			U	S	5.5	95.00	45.00	
	Black A	20-20 ±2	MI	No	25	20	5.0	1.5-2.0	350		E			U	S	5.5	80.00	40.00	
	SR-202	20-20 ±2	MI	No	25	20	5.0	1.5-2.5	350		E	0.3 x 0.7		U	S	5.5	60.00	25.00	
	SPM-2	20-20 ±2	MI	No	25	20	4.0	1.25	350		E	0.2 x 0.7		U	P	S	5.9	90.00	45.00
	SPM-1	20-20 ±2	MI	No	25	20	4.0	1.25	350		E	0.3 x 0.7		U	P	S	5.9	60.00	30.00
SONY	VL-5	10-20	MM	No	20		3.5	2.0			C	0.6		U	S	5	50.00	15.00	
	VL-45G	10-25	MM	No	25		3.5	1.25			E	0.3 x 0.8		U	P	S	6	90.00	30.00
	XL-MC1	10-30	MC	No	26		0.2	1.5	40		E	0.3 x 0.8		U	S	3	60.00	45.00	
	XL-MC2	10-45	MC	No	30		0.2	1.5	40		X	0.3 x 0.8		U	S	3	80.00	60.00	
	XL-MC3	10-50	MC	No	30		0.2	1.5	40		X	0.3 x 0.8		U	S	3	200.00	150.00	
SONY ESPRIT	XL-8B	10-50	MC	No	33		0.4	1.2-1.8	100		X	0.3 x 0.8		F	S	6.8	350.00		
	XL-8BD	10-50	MC	No	33		0.4	1.2-1.8	100		X	0.3 x 0.8		F	S	6.8	1000.00		
STANTON	981 HZS	10-50	MM	Yes	35	25	3.5	0.75-1.5	275		X	0.3 x 2.8	30/30	U	S	5.5	250.00	90.00	
	980 HZS	10-50	MM		35	25	3.5	0.75-1.5	275		X	0.3 x 2.8	30/30	U	S	5.5	220.00	90.00	
	981S	10-25	MM		35		3.5	0.75-1.5	275		X	0.3 x 2.8	30/30	U	S	5.5	180.00	75.00	
	880S	10-25	MM		35		3.5	0.75-1.5	275		X	0.3 x 2.8	30/30	U	S	5.5	150.00	61.60	
	981 LZS	10-50	MM	Yes	35		0.3	0.75-1.5	275		X	0.3 x 2.8	30/30	U	S	5.5	250.00	90.00	
	980 LZS	10-50	MM		35		0.3	0.75-1.5	275		X	0.3 x 2.8	30/30	U	S	5.5	220.00	90.00	
	885 LZS	20-40	MM		35		0.3	0.75-1.5	275		X	0.3 x 2.8		U	S	5.5	150.00	60.00	
	785 LZE	20-30	MM		30		0.3	0.75-1.5	275		E	0.2 x 0.7		U	S	5.5	100.00	45.00	
	681 EEE(S)	10-12 ±0.5	IM	Yes	35		3.5	0.75-1.5	275		X	0.3 x 2.8	25/25	U	S	6.3	140.00	57.50	
	681 EEE	10-12	IM		35		3.5	0.75-1.5	275		E	0.2 x 0.7	25/25	U	S	6.3	120.00	45.00	
	681 SE	10-10 ±0.5	IM		35		5.0	2-4	275		E	0.4 x 0.7	12.5/12.5	U	S	6.3	100.00	39.00	
	680 EE(S)	10-20	IM		35		4.2	0.75-1.5	275		X	0.3 x 2.8	18/18	U	S	6.3	95.00	43.75	
	680 EE	20-20	IM		35		4.2	0.75-1.5	275		E	0.3 x 0.7	18/18	U	S	6.3	76.00	31.25	
	680 EL	20-18	IM		30		4.2	2-5	275		E	0.4 x 0.7	13.5/13.5	U	S	6.3	106.00	30.00	
	680 AL	20-18	IM		30		5.0	2-5	275		S	0.7	13/13	U	S	6.3	90.00	25.00	
	600 EE	20-20	IM		35		5.0	1-2	275		E	0.3 x 0.7	14.5/14.5	U	S	5	66.00	27.50	
	600 E	20-20	IM		35		5.0	1.5-3	275		E	0.4 x 0.7	11/11	U	S	5	56.50	25.00	
	500EE MKII	10-20 ±3	MM		35		5.0	1-2	275		E	0.3 x 0.7	15/15	U	S	5	50.00	25.00	
	500E MKII	10-20 ±2	MM		35		5.0	2-5	275		E	0.3 x 0.7	13/13	U	S	5	45.00	20.00	
	500A MKII	10-20 ±2	MM		35		5.0	2-5	275		S	0.7	13/13	U	S	5	37.50	12.00	
	500 AL	20-17 ±2.5	MM		28		5.0	3-7	275		S	0.7	10/10	U	S	5	37.50	12.00	
	L-847S	10-36	MM		35			0.75-1.5	275		X	0.3 x 2.8		P	S	5.9	180.00	60.00	
	L-837S	10-30	MM		35			0.75-1.5	275		X	0.3 x 2.8		P	S	5.9	140.00	55.00	
	L-725E	10-22	IM		28			1-1.5	275		E	0.4 x 0.7		P	S	6	60.00	30.00	
	L-747S	10-22	IM		35		4.4	0.75-1.5	275		X	0.3 x 2.8		P	S	5.7	110.00	40.00	
	L-737S	10-22	IM		35		4.4	0.75-1.5	275		X	0.3 x 2.8		P	S	5.7	100.00	36.00	
	L-737E	10-22	IM		35		4.4	0.75-1.5	275		E	0.3 x 0.7		P	S	5.7	80.00	29.50	
	L-727E	10-20	IM		32		4.4	0.75-1.5	275		E	0.4 x 0.7		P	S	5.7	60.00	24.50	
L-717E	10-20	MM		28		4.4	0.75-1.5	275		E	0.4 x 0.7		P	S	5.9	45.00	20.00		
SUPEX	SDX-2000	10-45 ±2	MC	Yes	30	25	2.0	1.7-2.1			X	0.3 x 0.7	11/11	F	S	4¾	500.00	250.00	
	SDX-2000 Boron	10-45 ±2	MC	Yes	30	25	0.2	1.7-2.1			X	0.3 x 0.7	11/11	F	S	4¾	500.00	250.00	
	SD-1900 TQA	20-45 ±2	MC	Yes	30	25	0.2	1.2-1.7			E	0.3 x 0.8	18/18	F	S	8	250.00	125.00	
	SD-1901 TQA	20-45 ±2	MC	Yes	30	25	2.5	1.2-1.7			E	0.3 x 0.8	15/15	F	S	8	275.00	137.50	
TALISMAN	Alchemist S	10-60	MC	Yes	30	25	1.75	1.7-2.3			X	0.02 x 1.2	15/12	F	S	6.6	400.00	225.00	
	B	10-60	MC	Yes	30	25	0.26	1.7-2.3			X	0.02 x 1.2	15/12	F	S	6.3	300.00	175.00	
	A	10-50	MC	Yes	30	25	0.26	1.5-2.1			X	0.02 x 1.2	15/12	F	S	6.3	235.00	135.00	
		20-40	MC	Yes	25	20	0.22	1.5-2.1			X	0.3 x 0.7	15/12	F	S	6.3	175.00	100.00	
TECHNICS	EPC-305MC2	20-15 ±0.5	MC	Yes	25	20	0.18	1-1.5			E	0.2 x 0.7	12/12	U	P	6	300.00	115.00	
	EPC-P205CMK3	20-15 ±0.5	MM	Yes	25	20		1-1.5			E	0.2 x 0.7	12/12	U	P	6	210.00		

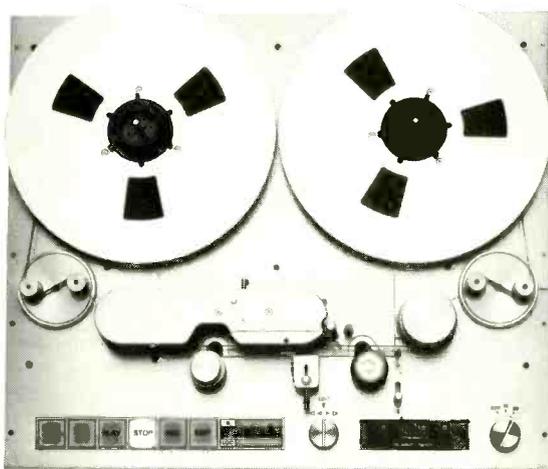
# OPEN-REEL TAPE DECKS



ASC 6004 S



REVOX B-77 MkII



LEVINSON ML-5A



TANDBERG TD 20A

MANUFACTURER	Model	Speeds—See Letter Code	Maximum Reel Size, Inches	Number of Heads	Number of Tracks	Number of Channels, Record/Play	Drive to Capstan	Frequency Response, Hz to kHz, ±dB, with Best Tape at Highest Machine Speed	Wow & Flutter, Wtd. Peak, %	S/N, —dB	Output Level at 0 VU, mv	Mike Mixing?	Mike Input Impedance, Ohms, Balanced= B	Record Level Indicators(s), Number and Type	EE Tape Capable?	Dimensions, Inches	Weight, Lbs.	Price, \$	Notes	
																				SPEED CODE
AEG-TELEFUNKEN	m 21	E	12½	3	2	3	Direct	20-20 ±2	0.2	68		No		2 VU Mtrs.		12½ x 19 x 20½	99	7500.00	Microprocessor controlled.	
AKAI	GX-4000D	A	7	3	4	2	1	Idler	30-24 ±3	0.08	60	775		5k	VU Mtr.		17.3 x 12.4 x 9.1	29.1	399.95	dbx NR.
	GX-77D	A	7	3	4	2	3	Belt	25-33 ±3	0.03	63	775			VU Mtr.	Yes	17.3 x 9.6 x 8.9	37.5	795.00	
	GX-625	A	10½	3	4	2	3	Direct	30-26 ±3	0.03	65	775		5k	VU Mtr.	Yes	17.3 x 19 x 10.1	46.4	850.00	
	GX-747 dbx	A	10½	3	4	2	3	Direct	25-33 ±3	0.03	65	410		5k	VU Mtr.	Yes	17.3 x 19 x 10.1	46.4	1400.00	
AMPEX	ATR-700	A,D	10½	3	1 or 2	2	3	Direct	100-18 ±2	0.08 wrms	60	1.2V	Yes	600	2 VU Mtrs.	Yes	21½ x 17½ x 9¾	62	1695.00	†Speed E plus 30 ips; ††3, fourth head opt.
	ATR-800-1	†	10½	††	1	1	3	Servo	30-20 ±2	0.05	75		No	600	1 VU or EBU Peak Mtr.	Yes	19 x 22¾ x 14	123	4995.00	
	ATR-800-2	†	10½	3	2	2	3	Servo	30-20 ±2	0.05	70		No	600	2 VU or EBU Peak Mtrs.	Yes	19 x 22¾ x 14	123	5195.00	
	ATR-800-2 Euro Stereo	†	10½	3	2	2	3	Servo	30-20 ±2	0.05	71		No	600	2 VU or EBU Peak Mtrs.	Yes	19 x 22¾ x 14	123	5195.00	
	ATR-800-4	A	10½	††	4	4	3	Servo	30-20 ±2	0.05	70		No	600	4 VU or EBU Peak Mtrs.	Yes	19 x 26¼ x 14	143	6496.00	

# OPEN-REEL TAPE DECKS

MANUFACTURER	Model	Speeds—See Letter Code	Maximum Reel Size - inches	Number of Heads	Number of Tracks	Number of Channels	Record/Play	Drive to Capstan	Frequency Response, Hz to kHz, ±dB with Best Tape at Highest Machine Speed	Wow & Flutter: Wtd. Peak, %	S.N. - dB	Output Level at 0 VU, mV	Mike Mixing? Balanced - B	Mile Input Impedance, Ohms.	Record Level Indicator(s), Number and Type	EE Tape Capable?	Dimensions, inches	Weight, lbs.	Price, \$	Notes
ASC ELECTRONIC	AS 6002	B/E	10½	3	2/4	2	3	Direct	20-28 ±2, -3	0.04	59	1V	No	1.4k, B	2 Peak Mtrs.	No	17 x 15¼ x 6	48	1795.00	Echo, sound on sound, cue review, balanced/unbalanced input.
MARK LEVINSON	ML-5	†	12½	3	2	2	3		30-25 ±1.5	0.04	385	No					25½ x 21½ x 11¼	117	14,400.	†15 30 ips; built on Studer A80RC transport.
NAGRA	T-Audio	†	11.8	3	2	2	4	Dual Direct	30-20 ±1.5	0.015	78	Sel.	No		Sel.	Yes	15.8 x 15.4 x 9.8	45	10,114.	†Speed E plus 30 ips.
	IV-SD	E	†	3	2	2	1	Direct	30-20 ±2	0.05	72	400	Yes	200 Phn.	1 Peak Mtr.	No	13.2 x 9.6 x 4.5	15	6681.00	†10½ inches with QGB adaptor.
OTARI	MTR-10	E†	10½	3	1/2	1/2	3	Direct	42-29 ±0.5, -2	0.03	75		No		2 VU Mtrs. & 2 Peak LEDs	No	35.3 x 22.8 x 25.3	200	5650.00	†Or 30, 15, 7½ ips.
	ARS-1000	A	10½	3	2	2	3	Direct	50-18 ±2	0.06	60		No		None	No	15.7 x 19 x 7.6	45	1535.00	Repro only.
	8GM-1000	A	10½	3	2/4	1/2	3	Direct	50-18 ±2	0.06	60		No		None	No	15.7 x 19 x 7.6	45	2249.00	As above.
	MX5050-BII	E	10½	4	1/2/4	1/2	3	Direct	30-20 ±2	0.06	71	Yes	250B		2 VU Mtrs. & 2 Peak LEDs	No	22.1 x 21.3 x 10.2	60	2295.00	
	MX5050-BQII	D	10½	4	4	4	3	Direct	30-20 ±2	0.06	66	Yes	250		2 VU Mtrs. & 2 Peak LEDs	No	22.1 x 21.3 x 10.2	60	2995.00	
	MX5050-MK III/2	E	10½	4	2	2	3	Direct	25-20 ±2	0.04	72	Yes	250B		2 VU Mtrs. & 2 Peak LEDs	No	18.8 x 21.3 x 28.3	89	2795.00	
MX5050-MK III/4	D	10½	3	4	4	3	Direct	30-20 ±2	0.05	70	Yes	250		4 VU Mtrs. & 4 Peak LEDs	No	19.2 x 21.3 x 26.1	77	3895.00		
PIONEER	RT-909	A	10½	4	4	2	3	Idler	20-28 ±3	0.04	60	450	Yes	27k	2 Peak Mtrs.	No	13.4 x 18.9 x 12.5		1000.00	Auto reverse.
	RT-707	A	7	4	4	2	3	Idler	30-24 ±3				Yes		2 Mtrs.	No	9.1 x 18.9 x 14		800.00	As above.
REVOX	B77 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	1799.00	†Any two adjacent speeds from 15/16 to 15 ips.
	PR99	A D	10½	3	2	2	3	Direct	30-22 ±2, -3	0.06	67	775	Yes	†	2 Mtrs. & 2 Peak LEDs	No	17¾ x 19 x 8	40½	2095.00	†22k, 110k, balanced opt.; balanced line in/out; self-sync.
SONY	TC-399	E	7	3	4	2	1	Belt	30-25 ±3	0.06	61	775	Yes		2VU Mtrs. & 1 Peak LED	No	17¼ x 16½ x 7½	30	600.00	
TANDBERG	TD20A SE	A/D	10½	3	2/4	2/4	4	Belt	20-30 ±2	0.03	80	1.5V	Yes	Auto	2 Peak Mtrs.	No	17½ x 17½ x 6	49	1595.00	Actilinear II record; Dyneq equalization.
TEAC	X-300	A	7	3	2/4	2/4	3	Belt	30-34	0.04	65	450	Yes	250	2VU Mtrs.	Yes	16½ x 12¾ x 9½	30¼	620.00	
	X-300R	A	7	3	2/4	2/4	3	Belt	30-34	0.04	65	450	Yes	250	2 VU Mtrs.	Yes	16½ x 12¾ x 9½	33¼	690.00	
	X-700R	A	7	6	2/4	4/4	3	Belt	30-34	0.03	†	450	Yes	250	2 VU Mtrs.	Yes	17 x 14¾ x 10¾	39¾	950.00	†95 with dbx NR.
	X-1000	A	10½	3	2/4	2/4	3	Belt	30-34	0.03	††	450	Yes	250	2 VU Mtrs.	Yes	17 x 17¾ x 10¾	48¾	1200.00	††100 with dbx NR.
	X-1000R	A	10½	6	2/4	4/4	3	Belt	30-34	0.03	††	450	Yes	250	2 VU Mtrs.	Yes	17 x 17¾ x 10¾	48¾	1400.00	
TECHNICS	RS-1520	E	10½	4	2/4	2	3	Direct	30-30 ±3	0.035	68		Yes	4.7k	2 VU Mtrs.		19¾ x 18 x 10½	61¾	2100.00	
	RS-1700	E	10½	6	2/4	2	3	Direct	30-30 ±3	0.035	66		Yes		2 VU Mtrs.		19¾ x 17½ x 10½	58½	2100.00	
	RS-1500US	E	10½	4	2/4	2	3	Direct	30-30 ±3	0.035	68		Yes		2 VU Mtrs.		19¾ x 17½ x 10½	57¼	1600.00	
	RS-1506US	E	10½	4	2/4	2	3	Direct	30-30 ±3	0.035	66		Yes		2 VU Mtrs.		19¾ x 17½ x 10½	57¼	1600.00	
UHER/MARTEL	4400 Report Monitor AV 5000	C	5	3	4	2	1	Idler	20-25 ±2	0.15	66	1V	No	Low	2 Peak Mtrs.	Yes	11 x 3½ x 9	9	1185.00	
	4000 AV	C	5¾	2	2	1	1	Idler	40-16 ±3	0.2	60	900	No	Low	1 Peak Mtr.	Yes	13 x 6 x 13	19	1149.00	
	4000 AV	C	5	3	2	1	1	Idler	20-25 ±2	0.15	66	1V	No	Low	1 Peak Mtr.	Yes	11 x 3½ x 9	9	1085.00	

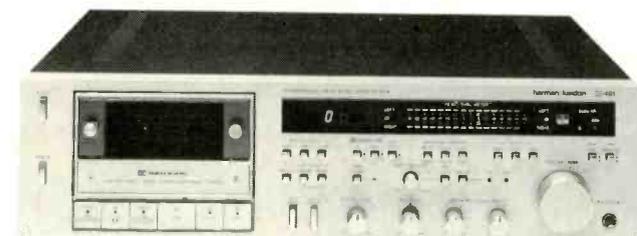
# CASSETTE DECKS



AIWA AD-F990



KYOCERA D-801



HARMAN/KARDON CD491



NAKAMICHI DRAGON

MANUFACTURER	Model	Frequency Response with CrO <sub>2</sub> Tape (Type II), Hz to kHz, ±dB	Number of Heads	Wow & Flutter, Wtd. Peak, %	S/N without Noise Reduction, -dB	S/N with Noise Reduction, -dB	Noise Reduction Circuit: Dolby B = B, Dolby C = C, dbx = D	Continuously Adjustable Bias: Auto = A, Manual = M	No. of Preset Bias EQ Positions	Music Search?	Level Indicators: Average = A, Peak = P, Peak-Hold = PH	Counter Indications: All at Turn = T, Elapsed Time = E, Remaining Time = R	Dimensions, Inches	Weight, Lbs.	Price, \$	Notes
ADS	C2	20-18 ± 2	2	0.06	58	74	B/C		4	No	P	T	17½ x 14⅞ x 2¾	18½	549.00	
AIWA	AD-F990	20-20 ± 3	3	0.025	63	75	B/C	A	3	Yes	PH	E/R	16½ x 11½ x 4¾	12½	595.00	
	AD-F770	20-19 ± 3	3	0.025	63	75	B/C	A	3	Yes	PH	E/R	16½ x 11½ x 4¾	12½	495.00	
	AD-F660	20-19 ± 3	3	0.028	63	75	B/C	A	3	Yes	P	E/R	16½ x 11½ x 4¾	12½	395.00	
	RD-R600	20-15 + 2, -3	2	0.035	60	73	B/C	M	3	No	P	T	16½ x 12⅞ x 4⅞	12½	395.00	
	AD-WX110	20-15 + 2, -3	2	0.05	61	71	B/C	M	3	Yes	T	T	13 x 12⅞ x 4¼	11½	395.00	
	AD-3500	25-15 + 2, -3	3	0.035	62	74	B/C	M	3	No	P	T	16½ x 11½ x 4¾	8¾	295.00	
	AD-F330	25-15 + 2, -3	2	0.035	60	73	B/C	M	3	No	P	T	16½ x 11½ x 4¾	12½	225.00	
	AD-F220	25-15 + 2, -3	2	0.038	60	73	B/C	M	3	No	P	T	16½ x 11½ x 4¾	8¾	160.00	
AKAI	HX-1	30-17 ± 3	2	0.05	56	66	C		3		A		17.3 x 4.1 x 11.3	8.8	179.95	
	HX-2	30-17 ± 3	2	0.05	56	66	C		3		A		17.3 x 4.1 x 11.3	8.8	199.95	
	HX-3	30-17 ± 3	2	0.05	56	66	C		3		A		17.3 x 4.1 x 11.3	8.8	229.95	
	GX-F31	20-19 ± 3	2	0.035	60	80	C		3		A		17.3 x 3.9 x 13.6	12.8	299.95	
	HX-R5	20-17 ± 3	2	0.04	58	78	C		3	Yes	A		17.3 x 4.1 x 11.3	10.3	349.95	Auto reverse.
	GX-7	20-21 ± 3	3	0.028	60	80	C		3	Yes	A		17.3 x 4 x 13.3	12.8	399.95	
	GX-R6	20-19 ± 3	2	0.04	60	80	C		3	Yes	A		17.3 x 4.1 x 11.3	10.3	399.95	As above.
	GX-F91	20-21 ± 3	3	0.025	60	80	C	A/M	3	Yes	A/P	E	17.3 x 3.9 x 14.3	21.6	750.00	
ASC ELECTRONIC	AS 2001	20-20	3	0.07	62	77	B/C	M	5	No	P,PH	T	5 x 17⅞ x 14¼	30	1395.00	Varispeed control, memory, cue, FM/MPX switch. As above; 6 bias/EQ memories.
	AS 3001	20-20	3	0.07	62	77	B/C	M	6	No	P,PH	T	5 x 17⅞ x 14¼	33	1895.00	
BANG & OLUFSEN	9000	10-25 ± 3	3	0.045	79	79	B/C	A	4	Yes	PH	E/R	20⅞ x 5½ x 11⅞	17	1295.00	
	8004	20-20 ± 3	2	0.045	68	68	B/C		0	Yes	PH	E	20⅞ x 5½ x 11⅞	16½	695.00	
	5000	30-18 ± 3	2	0.078	56	74	B/C	A	4	Yes	PH	T	16⅞ x 3 x 13	18¼	695.00	
DENON	DR-M4	20-23 ± 1.5	3	0.027 wrms	73	73	B/C	A	3	Yes	PH	T,E/R	17⅞ x 4⅞ x 11½	13¼	595.00	
	DR-M3	20-23 ± 1.5	3	0.027 wrms	73	73	B/C	A	3	Yes	PH	T,E/R	17⅞ x 4⅞ x 11½	13¼	495.00	
	OR-M2	20-23 ± 1.5	3	0.027 wrms	73	73	B/C	M	3	No	PH	T,E/R	17⅞ x 4⅞ x 11½	13¼	395.00	
FISHER	CR36	40-14 ± 3	2	0.06 wrms	48	58	B		3		P	T	15¼ x 4¾ x 8¾	7	129.95	
	CR140	30-15 ± 3	2	0.06 wrms	52	62	B		3		P	T	15¼ x 4¾ x 11	9.9	149.95	
	CRW40	40-15 ± 3	2	0.06 wrms	51	61	B		3		P	T	15¼ x 4¾ x 11⅞	9.9	199.95	
	CR77	30-15 ± 3	2	0.06 wrms	52	60	C	No	3		P	T	15¼ x 4½ x 10	7.7	199.95	
	CR127	30-15 ± 3	2	0.08 wrms	52	62	C		3		P	T	17½ x 4⅞ x 10½	11	199.95	
	CR356	30-15 ± 3	2	0.05 wrms	54	68	C		3		P	T	17⅞ x 4⅞ x 10½	16	249.95	
	CRW77	30-15 ± 3	2	0.06 wrms	52	70	C	No	3	Yes	P	T	15¼ x 4½ x 10	9.9	249.95	Two-speed dubbing.
	DD350	40-15 ± 3	2	0.04 wrms	54	62	B		3		A,PH	T	17⅞ x 4 x 10¾	13	179.95	

# CASSETTE DECKS

MANUFACTURER	Model	Frequency Response with CrO <sub>2</sub> Tape (Type II), Hz to KHz, ±dB		Number of Heads	Wow & Flutter, Wtd. Peak, %	S/N without Noise Reduction, -dB	S/N with Noise Reduction, -dB	Noise Reduction Circuit: Dolby B = B, Dolby C = C, dbx = D Continuously Adjustable Bias Auto = A, Manual = M	No. of Preset Bias EQ Positions	Music Search?	Level Indicators: Peak = P, Peak Hold = PH, Counter Indication = C, No. of Turns = T, Elapsed Time = E, Remaking Time = R	Dimensions, Inches	Weight, Lbs.	Price, \$	Notes	
		20-20 ±3	20-21 ±3													
HARMAN/KARDON	CD91	20-20 ±3	2	0.08	57	65	B	M	3	No	P	T	17 3/8 x 13 1/2 x 4 1/2	16	265.00	↑Dolby HX Pro. ↑↑Bidirectional search.
	CD191	20-21 ±3	2	0.08	57	72	B/C	M	3	No	P	T	17 3/8 x 13 1/2 x 4 1/2	16	345.00	
	CD291	20-22 ±3	2	0.08	57	72	B/C	M	3	No	P	T	17 3/8 x 13 1/2 x 4 1/2	16	435.00	
	CD391	20-22 ±3	2	0.04	58	74	B/C	M	3	↑↑	P/PH	T	17 3/8 x 13 1/2 x 4 1/2	18	575.00	
	CD491	20-24 ±3	3	0.04	58	75	B/C	M	3	↑↑	P/PH	T/E	17 3/8 x 13 1/2 x 4 1/2	18	785.00	
HITACHI	DE1	20-16	2	0.05	58	66	B				A	T	17 1/8 x 4 3/8 x 8 5/8	7 1/8	140.00	
	DE2	20-16	2	0.05	58	72	C				A	T	17 1/8 x 4 3/8 x 8 5/8	7 1/4	170.00	
	DE3	20-18	2	0.04	58	72	C				A	T	17 1/8 x 4 3/8 x 8 5/8	7 3/4	200.00	
	DE7	20-20	3	0.038	61	75	C				P	E	17 1/8 x 4 3/8 x 10 3/4	10 1/8	350.00	
	DRV7	20-18	2	0.04	60	74	C			Yes	P	E	17 1/8 x 4 3/8 x 10 3/4	10 3/8	300.00	
	DW700	20-17	2	0.04	60	74	C			Yes	A	E	17 1/8 x 4 3/8 x 11	13 1/4	370.00	
	D2200	20-22	2	0.019	61	75	C	A	1		P	E	17 1/8 x 5 7/8 x 11 1/8	16 1/8		
JVC	KD-V11	40-15 ±3			58	68	B						17 1/8 x 4 3/8 x 9 1/2	7.7	140.00	
	KD-V22	40-15 ±3			58	78	B/C						17 1/8 x 4 3/8 x 9 1/2	8.2	180.00	
	KD-V33	30-15 ±3			58	78	B/C						17 1/8 x 4 3/8 x 11 1/8	9.9	220.00	
	KD-V40	30-16 ±3			58	78	B/C						17 1/8 x 4 3/8 x 11 1/8	10.6	290.00	
	KD-V44	30-16 ±3			58	78	B/C						17 1/8 x 4 3/8 x 11	10.4	330.00	
	KD-D55	30-16 ±3			58	78	B/C						17 1/8 x 4 3/8 x 11	12.1	380.00	
	DD-V7	30-17 ±3			58	78	B/C						17 1/8 x 4 3/8 x 11 1/8	12.8	500.00	
	DD-V9	25-18 ±3	3			60	80	B/C					17 1/8 x 4 3/8 x 11	15	800.00	
	D-M3							B					13 3/8 x 2 3/8 x 10 1/4	8.8	330.00	
	KD-W5	30-16 ±3			58	68	B						17 1/8 x 4 3/8 x 11 1/8	11	340.00	
KENWOOD	KX-7XCG	20-20 ±3	2	0.04	59	74	B/C		3	Yes	P/PH	T	17 3/8 x 13 x 4 3/8	12 3/4	400.00	
	KX-5XC	20-17 ±3	2	0.04	57	72	B/C		3	Yes	P	T	17 3/8 x 13 x 4 3/8	12 1/2	245.00	
	KX-71R	30-15 ±3	3	0.04	57	67	B/C		3	Yes	P	T	17 3/8 x 9 1/8 x 4 3/8	10 3/4	320.00	
	KX-71RB	30-16 ±3	2	0.045	57	67	B/C		3	No	P	T	17 3/8 x 9 1/8 x 4 3/8	8 3/4	225.00	
	KX-41/ KX-41B	30-16 ±3	2	0.045	57	67	B		3	No	P	T	17 3/8 x 9 1/8 x 4 3/8	8 3/4	180.00	
	KX-31/ KX-31B X-9C	40-16 ±3	2	0.04	57	67	B/C		3	Yes		T	13 3/4 x 8 3/4 x 4 1/4	9	309.00	
KLH	CD-101	30-16 ±3	2	0.08	55	65	B		3		P	T	17 3/8 x 4 3/8 x 12 1/8	12.1	199.95	
KYOCERA	D-801	20-20 ±3	2	0.02	58	78	B/C	M	3	Yes	P/PH	T/E/R	18 1/8 x 5 1/4 x 12 1/8	17.6	590.00	
	D-601	20-20 ±3	2	0.35	58	78	B/C	M	3		P	T	18 1/8 x 4 x 12 1/8	16	520.00	
LUXMAN	K-210	20-16 ±3	2	0.06	58	70	B/C	M	3	No	P	T	17 1/8 x 4 3/8 x 10 7/8	10.4	249.95	Computer bias, EQ, and CAT tuning.
	K-118	20-18 ±3	2	0.04	58	93	B/C/D	M	3	No	P	E	18 1/8 x 5 1/8 x 10 1/4	13.2	399.95	
	KX 100	20-16 ±3	2	0.04	58	73	B/C	M	3	No	A	E	17 1/8 x 5 3/4 x 14 3/8	17.6	399.95	
	KX-101	20-18 ±3	2	0.04	58	73	B/C	M	3	No	P	E	18 x 5 1/2 x 14 3/8	17.6	499.95	
	KX-102	20-18 ±3	2	0.04	61	94	B/C/D	A	3	Yes	P	E	18 x 5 1/2 x 14 3/8	20.9	999.95	
MARANTZ	SD 221	30-15 ±3	2	0.05	52	62	B		3	No	P	T	16 3/8 x 3 7/8 x 7 1/2	6	130.00	Auto reverse.
	SD 320	40-14 ±3	2	0.07	52	72	C		3	No	P	T	16 3/8 x 3 7/8 x 7 1/2	7	225.00	
	SD 321	30-15 ±3	2	0.05	52	70	C		3	No	P	T	16 3/8 x 3 7/8 x 7 1/2	7	185.00	
	SD 420	40-15 ±3	2	0.05	52	72	C	M	3	Yes	P	T	16 3/8 x 3 7/8 x 12	12.1	299.00	
	SD 530	35-15 ±3	2	0.05	52	70	C		3	Yes	P	T	16 3/8 x 3 7/8 x 11 1/8	8	350.00	
MITSUBISHI	DT-35	30-20 ±3	3	0.035	58	74	B/C	M	4	No	P	T	18 1/2 x 5 3/8 x 11 1/8	16	490.00	
NAD	6125	40-17 ±3	2	0.10	55	72	B/C		3	No	P	T	16 5/8 x 10 3/8 x 4 3/8	8	198.00	
NAKAMICHI	BX-1	20-20 ±3	2	0.11	62	68	B		3/2	No	P	T	17 x 4 3/8 x 9 7/8	12 1/8	299.00	
	BX-2	20-20 ±3	2	0.11	68	72	C		3/2	No	P	T	17 x 4 3/8 x 9 7/8	12 1/8	450.00	
	LX-3	20-20 ±3	2	0.11	68	70	C	M	3/2	No	P	T	17 3/4 x 5 3/8 x 12 1/8	18 3/4	595.00	
	LX-5	20-20 ±3	3	0.11	70	70	C	M	3/2	No	P	T	17 3/4 x 5 3/8 x 12 1/8	18 3/4	850.00	
	ZX-7	20-20 ±3	3	0.08	72	72	C	M	3/2	No	P	T	17 3/4 x 5 3/8 x 11 7/8	21	1250.00	
	ZX-9	20-20 ±3	3	0.045	72	72	C	M	3/2	No	P	T	17 3/4 x 5 3/8 x 11 7/8	21	1550.00	
	Dragon	20-21 ±3	3	0.04	72	72	C	M	3/2	No	P	T	17 3/4 x 5 3/8 x 11 7/8	21	1850.00	
	1000ZXL	18-25 ±3	3	0.08	66	66	B	A	4	Yes	A/P/ PH	T	20 3/4 x 10 1/4 x 12 3/4	41 7/8	3800.00	
	1000ZXL Limited	18-25 ±3	3	0.08	72	72	C	A	4	Yes	A/P/ PH	T	20 3/4 x 10 1/4 x 12 3/4	43	6000.00	
NIKKO	ND-1000C	30-19 ±3	3	0.05	75	75	B/C	A	3	No	P	T	17.3 x 4.3 x 10	11.6	630.00	
	ND-700H	30-17 ±3	2	0.055	91	91	B/D		3	No	P	T	17.3 x 4.7 x 11	10.3	300.00	
	ND-620	30-16 ±3	2	0.045	72	72	B		3	No	P	T	17.3 x 4.4 x 10.6	8.6	210.00	
	ND-520	30-16 ±3	2	0.05	72	72	B		3	No	P	T	17.3 x 4.3 x 10.9	8.2	189.00	
ONKYO	TA-2022	30-16 ±3	2	0.045	60	80	B/C		3	No	P	T	16 1/2 x 4 1/4 x 10 3/8	9.9	200.00	High-speed, dual-well dubbing. Auto reverse.
	TA-2033	30-16 ±3	2	0.045	60	80	B/C		3	Yes	P	T	16 1/2 x 4 1/4 x 10 3/8	10.6	250.00	
	TA-2035	30-17 ±3	2	0.045	60	80	B/C	M	3	Yes	P	T	16 1/2 x 3 7/8 x 10 3/8	9.9	300.00	
	TA-2044	30-17 ±3	2	0.040	60	80	B/C		3	Yes	P	T	17 1/8 x 4 3/8 x 14 3/8	14.8	300.00	
	TA-2055	20-18 ±3	2	0.035	60	80	B/C	M	3	No	P	E/R	16 1/2 x 3 7/8 x 14 3/8	14.8	360.00	
	TA-2066	25-20 ±3	3	0.035	60	80	B/C	M	3	Yes	P	T	17 1/8 x 4 3/8 x 14 3/8	14.8	480.00	
	TA-2070	20-19 ±3	3	0.021	60	80	B/C	A	3	No	PH	E/R	17 3/8 x 3 7/8 x 15 3/8	20.9	700.00	
	TA-2070	20-19 ±3	3	0.021	60	80	B/C	A	3	No	PH	E/R	17 3/8 x 3 7/8 x 15 3/8	20.9	700.00	
	TA-W88	30-16 ±3	2	0.06	58	68	B		3	No	P	T	16 1/2 x 4 3/8 x 10 3/8	14.3	380.00	
	TA-R77	30-18 ±3	2	0.04	60	80	B/C		3	Yes	P	T	17 1/8 x 4 3/8 x 10 3/8	14.8	400.00	
PARASOUND	CD200	40-17 ±3	2	0.06	55	65	B		3		P	T	17 x 5 1/4 x 11 1/4	11	149.95	
PIONEER (Continued)	CT-30	35-15 ±3	2	0.04	57	76	B/C		3		A		3.9 x 16.5 x 11.5	10.1	260.00	Full logic control, one-touch recording, timer standby.

# CASSETTE DECKS

MANUFACTURER	Model	Frequency Response with CO <sub>2</sub> Tape (Type II), Hz to KHz. ±dB	Number of Heads	Wow & Flutter	S/N without Noise Reduction, %	S/N with Noise Reduction, -dB	Noise Reduction Circuit: Dobey B = B, Dobey C = C, dbx = D Auto = A, Manual = M	No. of Preset Bias EQ Positions	Musical Search?	Level Indicators	Level Indicators: Average = A, Peak = P, Peak-Hold = PH	Covered Tapes: No. of Tapes = T, Elapsed Time = E, Remaining Time = R	Dimensions, Inches	Weight, Lbs.	Price, \$	Notes
PIONEER (Continued)	CT-20	35-15 ±3	2	0.04	57	67	B		3	A			3.9 x 16.5 x 11.5	9	200.00	As above. One-touch recording, timer standby. Dual wells, synch. recording, relay play, sound-on-sound recording. Auto reverse, music repeat, real-time counter, opt. remote. As above but electronic counter. Auto reverse, record mute, opt. remote. IC full logic transport, electronic counter, one-touch recording.
	CT-10	35-15 ±3	2	0.05	57	67	B		3	A			4.7 x 16.5 x 9.1	9.5	180.00	
	CT-1040W	35-15 ±3	3	0.045	57	67	B		3	Yes	A		4 x 16.5 x 12.4	15.9	450.00	
	CT-90R	20-18 ±3	4	0.03	58	77	B/C	A	3	Yes	PH	R	4.7 x 16.5 x 14	15.9	620.00	
	CT-70R	30-17 ±3	3	0.03	58	77	B/C		3	Yes	P		4.7 x 16.5 x 14	14.6	500.00	
	CT-50R	35-15 ±3	3	0.04	57	76	B/C		3	Yes	P		4.7 x 16.5 x 11.3	11.9	370.00	
	CT-40	35-15 ±3	2	0.04	57	76	B/C		3	Yes	A		3.9 x 16.5 x 11.5	10.1	310.00	
REALISTIC	SCT-42	45-17 ±3	2	0.04	75	65	B/C		3	Yes	P	T	4 1/4 x 17 1/8 x 11 3/4		299.95	Auto reverse. High-speed, dual-well dubbing.  Play only, auto reverse. Play only.
	SCT-28	30-18 ±3	2	0.07	65	65	B	M	3	Yes	P	T	4 1/4 x 16 1/2 x 9 1/8		279.95	
	SCT-500A	25-16 ±3	2	0.05	75	75	B/C		3	Yes	P	T	4 1/4 x 17 x 9 1/8		219.95	
	SCT-40	27-16 ±3	2	0.05	74	74	B/C		3	Yes	P	T	4 1/4 x 17 x 9 1/8		179.95	
	SCT-41	25-16 ±3	2	0.06	73	73	B/C		3	Yes	P	T	4 1/4 x 15 3/8 x 8 1/4		159.95	
	SCT-24A	30-14 ±3	2	0.15	64	64	B		3	Yes	P	T	4 1/8 x 15 3/8 x 9		119.95	
	SCT-25	50-12 ±3	2	0.3	55	55	B		3	Yes	P	T	3 1/2 x 5 1/8 x 9		79.95	
	SCP-5	40-14 ±3	2	0.16	58	58	B		3	Yes	P	T	2 1/8 x 8 1/4 x 9		99.95	
	SCP-3	50-10 ±3	2	0.2	55	55	B		3	Yes	P	T	3 1/2 x 5 1/8 x 9		49.95	
REVOX	B710 MKII	22-22 +2, -3	3	0.035	58	72	B/C		3	No	P	T	18 x 14 x 6	23	1999.00	
SAE	C2	30-18 ±3	2	0.006	70	73	B/C	No	3	Yes	P	T	16 1/2 x 14 x 4 1/4		650.00	
	C101	25-20 ±2.5	3	0.05	53	73	B/C	M	4	No	P	T/E/R	5 1/4 x 19 x 12 1/4			
SANSUI	D-990R	20-18 ±3	2	0.04	58	88	B/C/D		3	Yes	P	T/R	17 x 4 3/8 x 12 3/4	15.5	650.00	Two transports. IC logic transport. Auto reverse, auto tape sensing.
	D-590R	20-18 ±3	2	0.04	58	78	B/C		3	Yes	P	T/R	17 x 4 3/8 x 12 3/4	15	480.00	
	D-970	20-22 ±3	3	0.025	61	81	B/C	A	3	Yes	P	E	17 x 4 3/8 x 12 3/4	15.7	680.00	
	D-770R	20-18 ±3	2	0.04	60	80	B/C		3	Yes	P	T/E	17 x 4 3/8 x 12 3/4	14.6	600.00	
	D-370	20-18 ±3	2	0.03	60	80	B/C		3	Yes	P	T/E	17 x 4 3/8 x 12 3/4	14.1	420.00	
	D-W9	20-18 ±3	2	0.04	58	78	B/C		3	No	P	T	17 x 4 3/8 x 12 3/4	14.1	450.00	
	D-99D	30-15 ±3	2	0.07	68	68	B		3	Yes	P	T	17 x 4 3/4 x 8 7/8	9.3	350.00	
	D-77R	30-16 ±3	2	0.05	68	68	B		3	Yes	P	T	17 x 4 3/4 x 8 7/8	8.8	320.00	
	D-77F	30-16 ±3	2	0.05	68	68	B		3	Yes	P	T	17 x 4 3/4 x 8 7/8	7.9	230.00	
	D-55M	30-15 ±3	2	0.07	68	68	B		3	No	P	T	17 x 4 3/4 x 8 7/8	7.1	190.00	
SANYO	RDW310	40-16	2/2	0.055	57	65	B	A	3	Yes	P	T	16 1/2 x 4 1/4 x 6 1/2	9 3/4	169.95	Two transports. IC logic transport. Auto reverse, auto tape sensing.
	RDF70	30-17	2	0.04	57	77	B/C	M	3	Yes	A/P	T/E/R	16 1/2 x 4 1/4 x 8 1/2	9	229.95	
	RDR60	30-16	2/2	0.05	59	77	B/C	M	0	Yes	A/P	T	16 1/2 x 4 1/2 x 10 1/2	8	219.95	
	RDS30	40-15	2	0.06	57	77	B/C	M	3	Yes	A/P	T	16 1/2 x 4 1/4 x 7 1/4	7	149.95	
H. H. SCOTT	619DB	25-16 ±2	2	0.045	57	66	B	M	3	No	PH	T	17 x 4 3/8 x 10 3/8		199.95	Auto reverse. Auto reverse, intro scan. Double wells.
	639DC	25-16 ±2	2	0.04	60	70	B/C	M	3	No	PH	T	17 x 4 3/8 x 10 3/8		299.95	
	659DA	25-16 ±2	2	0.04	60	70	B/C	M	3	No	PH	T	17 x 4 3/8 x 10 3/8		279.95	
SHARP	RT-100	40-12 ±3	2	0.1	52	62	B		3	No	P	T	15 3/8 x 4 5/8 x 8 5/8	5.5	109.95	Rewind, auto play.  Auto reverse, intro scan. Double wells.
	RT-150	40-13 ±3	2	0.06	52	72	B/C		3	No	P	T	15 3/8 x 4 5/8 x 9 5/8	7.1	129.95	
	RT-250	40-13 ±3	2	0.065	56	76	B/C		3	Yes	P	T	15 3/8 x 4 x 9	7.1	149.95	
	RT-350	30-13 ±3	2	0.07	57	77	B/C	A	0	Yes	P	T	16 1/8 x 4 1/8 x 9 1/8	9.3	239.95	
	RT-4040	30-17 ±3	3	0.048	57	67	B		0	Yes	A/P	T	16 1/8 x 4 1/8 x 11 1/4	12.8	329.95	
SHERWOOD	S-150 CP	30-16.5 +1, -3	2	0.07	57	66	B		3	No	P	T	17 3/8 x 4 3/8 x 11 3/4	15	199.95	MPX filter defeat.  Music repeat, index scan. MPX filter defeat.
	S-250 CP	30-18 +1, -3	2	0.07	57	74	C		3	No	P	T	17 3/8 x 4 3/8 x 13 3/4	15	229.95	
	S-450 CP	30-18 +1, -3	2	0.06	57	75	C	M	3	Yes	P	T/E/R	17 3/8 x 4 3/8 x 13 3/4	17	299.95	
	S-6000 CP	30-19.5 +1, -3	3	0.055	57.5	76.5	C	M	3	No	P	T	17 3/8 x 4 3/8 x 13 3/4	18	399.95	
SONY	TC-FX1010	25-17 ±3	3	0.04	61	74	B/C	A	4	No	PH	E	17 x 4 1/4 x 13	17 3/4	650.00	Dual capstan. Auto reverse. Nine search/repeat operations. Auto reverse.  Professional portable.
	TC-K555	25-17 ±3	3	0.04	61	74	B/C	M	4	No	PH	E	17 x 4 1/4 x 11 1/4	13 1/2	430.00	
	TC-V7	30-15 ±3	2	0.065	59	72	B/C		4	Yes	PH	E	14 x 3 1/4 x 11 1/8	11 1/8	350.00	
	TC-FX600	30-17 ±3	2	0.04	60	73	B/C		4	Yes	PH	E	17 x 4 1/4 x 10 3/4	12 3/8	320.00	
	TC-FX505R	30-17 ±3	2	0.05	59	72	B/C		4	Yes	P	T	17 x 4 1/4 x 10 3/4	10	260.00	
	TC-FX45	30-15 ±3	2	0.05	59	72	B/C		4	Yes	P	T	17 x 4 1/4 x 10 3/4	9 3/4	230.00	
	TC-FX44	30-15 ±3	2	0.05	59	72	B/C		4	Yes	P	T	17 x 4 1/4 x 10 3/4	9 1/4	190.00	
	TC-FX25	30-14 ±3	2	0.05	59	66	B		4	No	P	T	17 x 4 1/4 x 10 3/4	9 1/4	170.00	
	TC-D5M	30-15 ±3	2	0.06	59	66	B		4	No	A/P	T	9 1/4 x 1 7/8 x 6 5/8	3 3/4	780.00	
SONY ES	TC-K555ES	25-17 ±3	3	0.04	62	75	B/C	M	4	No	PH	E	17 x 4 1/4 x 11 1/4	13 1/2	500.00	
TANDBERG	TC03014	18-20 ±1.5	3	0.09	76	70	B/C	M	3	Yes	P	T/E	17 1/4 x 6 1/2 x 15	22	1395.00	Actilinear II Dyneq. As above. As above. As above. As above.
	TC03004	19-21 ±2	3	0.09	70	70	B	M	3	No	P	T	17 x 9 3/8 x 14	27	2395.00	
	TC0440A	20-20 ±2	3	0.12	70	70	B	M	3	No	P	T	18 1/2 x 9 x 4 1/4	15	995.00	
	TC0420A	30-18 ±3	2	0.13	68	68	B	M	3	No	P	T	18 1/2 x 9 x 4 1/2	14 1/2	649.00	
	TC03034	20-20 ±3	2	0.12	66	66	B	M	3	No	P	T	17 1/8 x 6 1/2 x 6 7/8	15	499.00	
TEAC (Continued)	V-4RX	20-19	2	0.035	60	92	D		3	Yes	P	E	17 1/4 x 4 1/4 x 10 5/8	15 1/2	430.00	Real time, auto reverse.
	V-2RX	20-19	3	0.035	60	92	D	M	3	Yes	P	E	17 1/4 x 4 1/4 x 10 5/8	15 1/2	520.00	
	V-707RX	20-18	3	0.045	59	91	D		3	Yes	P	T/E	17 1/4 x 4 1/4 x 10 1/4	14 1/2	500.00	

# CASSETTE DECKS

MANUFACTURER	Model	Frequency Response with CrO <sub>2</sub> Tape (Type II), Hz to kHz, ±dB	Number of Heads	Wow & Flutter, Wtd. Peak, %	S/N without Noise Reduction, dB	S/N with Noise Reduction, -dB	Noise Reduction Circuit: Dolby B=B, Dolby C=C, dbx=D, Auto=A, Manual=M	No. of Preset Bias EQ	Music Search?	Level Indicators: Peak=P, Average=A, Engraved Time=E	Dimensions, Inches	Weight, Lbs.	Price, \$	Notes		
TEAC (Continued)	V-909RX	20-18	3	0.045	59	91	D	M	3	Yes	P	T/E	17 1/4 x 4 1/4 x 10 1/4	15 1/2	650.00	As above.  dbx disc decoding. As above.
	Z-5000	20-20 ±3	3	0.025	60	92	D	M	3	Yes	P	E	17 x 5 1/8 x 13 1/4	22	1000.00	
	Z-6000	20-21 ±3	3	0.019	60	92	D	M	3	Yes	P	E	17 x 6 1/2 x 17 1/4	36 1/8	1400.00	
	Z-7000	20-22 ±3	3	0.019	60	92	D	M	3	Yes	P	E	17 x 6 1/2 x 17 1/4	39 1/2	1800.00	
	V-300	30-17	2	0.06	50	60	B	M	3	Yes	P	E	17 1/4 x 4 1/4 x 10 1/4	13 3/8	200.00	
	V-350C	30-17	2	0.06	55	70	C	M	3	Yes	P	E	17 1/4 x 4 1/4 x 10 1/4	13 3/8	230.00	
	V-400X	30-18	2	0.06	55	85	B/D	M	3	Yes	P	E	17 1/4 x 4 1/4 x 10 1/4	14 1/4	260.00	
	V-500X	30-20 ±3	2	0.05	55	85	B/C/D	M	3	Yes	P	E	17 1/4 x 4 1/4 x 10 1/4	14 1/4	340.00	
	C-3RX	20-20 ±3	3	0.04	60	92	D	M	3	Yes	P	E	19 x 5 1/8 x 13 3/8	20 7/8	690.00	
	V-1RX	20-20 ±3	3	0.025	60	92	D	M	3	Yes	P	E	17 1/4 x 4 1/2 x 10 1/4	13 1/4	590.00	
TECHNICS	RS-M85MK2	30-17 ±3	2	0.035	59	69	B	M	4		A/P	T	19 x 3 7/8 x 15	23	750.00	Auto reverse.  Dual wells.
	RS-M275X	30-17 ±3	2	0.03	58	92	B/C/D	M	3	Yes	P/PH	T/R	16 1/2 x 3 3/8 x 12 7/8	14	600.00	
	RS-M253X	30-18 ±3	3	0.04	60	92	B/C/D	M	3	Yes	P/PH	T/R	16 1/2 x 3 3/8 x 10	11 3/4	450.00	
	RS-M258R	30-16 ±3	3	0.07	57	67	B	M	3	Yes	P	T	16 1/2 x 4 1/4 x 13 3/8	12 3/4	400.00	
	RS-M245X	40-17 ±3	2	0.045	57	92	B/C/D	M	3	Yes	P/PH	T/R	16 1/2 x 3 3/8 x 10 3/4	11 1/4	330.00	
	RS-M222	20-18	2	0.048	57	67	B	M	3		P/PH	T	16 1/2 x 4 3/4 x 11	12 1/2	300.00	
	RS-M235X	40-17 ±3	2	0.045	57	92	B/C/D	M	3		F/PH	T	16 1/2 x 3 3/8 x 10 3/4	11 1/4	270.00	
	RS-M234X	40-16 ±3	2	0.045	57	92	B/C/D	M	3		P/PH	T	16 1/2 x 4 1/4 x 9 1/4	9 3/4	220.00	
	RS-M227X	30-14 ±3	2	0.05	57	92	B/D	M	3		A	T	16 1/2 x 4 1/4 x 9 1/4	8 3/4	180.00	
	RS-M224	20-18	2	0.048	57	75	B/C	M	3		A	T	16 1/2 x 4 1/4 x 9 1/4	8 3/4	160.00	
	RS-M205	20-16	2	0.05	56	66	B	M	3		A	T	16 1/2 x 4 3/4 x 8	8 1/2	130.00	
	TOSHIBA	PC-G10	30-15 ±3	2	0.05	56	63	B	M	3	No	P	T	16 5/8 x 4 5/8 x 10 5/8	7 3/4	
PC-G30		30-16 ±3	2	0.04	57	75	B/C	M	3	No	P	T	16 5/8 x 4 5/8 x 10 5/8	8 1/2	179.95	
PC-G50R		20-17 ±3	2	0.04	57	75	B/C	M	3	Yes	P	T	16 5/8 x 4 5/8 x 10 5/8	10 3/4	229.95	
VECTRA RESEARCH	VX-800	20-21 ±3	3	0.03	56	76	B/C	M	4		P/PH	R	17 3/8 x 14 3/4 x 5 5/8	25	1000.00	
	VX-510	20-18 ±3	2	0.05	56	76	B/C	M	4	Yes	P	T	17 3/8 x 14 3/4 x 5 5/8	22	450.00	
	VX-400	20-18 ±3	2	0.05	56	76	B/C	M	4		P	T	17 3/8 x 14 3/4 x 5 5/8	20	350.00	
	VX-200	30-18 ±3	2	0.05	56	76	B/C	M	4	Yes	P	T	17 3/8 x 14 3/4 x 4 3/4	18	250.00	
YAMAHA	K-2000	20-20 ±3	4	0.02	59	108	B/D	A	3	No	PH	ER	17 1/4 x 13 5/8 x 4 3/4	20	795.00	
	K-1000	20-18 ±3	3	0.02	59	105	B/C	M	3	No	PH	ER	17 1/4 x 13 5/8 x 4 3/4	17	595.00	
	K-700	30-18 ±3	2	0.04	59	75	B/D	M	3	Yes	PH	ER	17 1/4 x 11 1/4 x 4 1/2	12	449.00	
	K-500	40-18 ±3	2	0.05	60	76	B/C	M	3	No	PH	T	17 1/4 x 11 x 4 1/8	10	299.00	
	K-300	40-16 ±3	2	0.05	60	76	B/C	M	3	No	PH	T	17 1/4 x 11 x 4 1/8	10	249.00	
	K-200	40-16 ±3	2	0.05	58	66	B	M	3	No	P	T	17 1/8 x 11 x 4 1/8	10	199.00	

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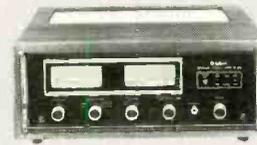


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## New Zealand Hits Lawton, Oklahoma

"The phase accuracy of the Perreaux SM-2 preamp creates a stereo image of startling reality."  
Robert Zwaan, HiFi Shop (405) 353-2453

This "ultimate" phono section has the greatest phase accuracy of any preamp made. Since active circuitry will severely alter the phase of the RIAA, in the same manner that an active equalizer will alter the phase of a system, Perreaux of New Zealand's RIAA is totally passive with buffer stages to preserve the phase accuracy. This is the first and only passive RIAA with low noise and high overload.

## New Zealand Hits Fort Lauderdale, Florida

"Finally 'The' preamp for moving coil cartridges. The Perreaux SM-2 preamp has tremendous sound quality with incredible gain."  
Dr. Howard Horowitz and Paul Hauser, Audio Insight (305) 491-7678

Perreaux has the only phono section with a single gain stage capable of handling any cartridge made. The lowest output moving coil will have astonishing gain, without the use of any additional circuitry. This same high gain phono section is capable of handling over 1 volt overload at 1Khz Perreaux's gain and headroom is delivered by a 55,000 MFD capacitor power supply — more storage than in most high-power amplifiers.

## New Zealand Hits Fairfield, California

"The Perreaux 1150B represents the finest value in audio today. The transparency, smoothness, and musicality are simply not available elsewhere in today's market."

John Cushing, C & M Stereo Unlimited (707) 422-3340

Perreaux of New Zealand has been manufacturing amplifiers by hand for almost 10 years. In fact much of their manufacturing technology is patented. This allows Perreaux to manufacture components of the highest quality at a very favorable cost versus quality ratio. All transistors are individually tested, calibrated and matched. Every 1150B goes through over 100 quality control tests before leaving New Zealand and is backed by a 5 year parts and labor warranty.

## New Zealand Hits Brookline, Massachusetts

"All too often HiFi is not the sound of music. The Perreaux 1150B has the strength and fineness to recreate the sound of music."  
Phil Ressler, Audio Studio (617) 277-0111

Although the 1150B is rated at 100 wpc into 8 ohms and 200 wpc into 4 ohms. Its true power can astonish. With a capability of 120 volts peak to peak and 7.5 amps continuous per channel, its capability is that of other high quality amplifiers rated at twice the 1150B's power. With a bandwidth of 3,000,000 hz and a phase accuracy of  $\pm 1^\circ$  20-20,000 hz the subtlest detail is preserved.

## New Zealand Hits Tulsa, Oklahoma

"The Perreaux 2150B provides the detail and definition of a solid state amp with the sweetness and depth of a tube amp. Combining these attributes with the ability to drive the most demanding speaker loads, yields a product of enduring greatness."  
Dave Parsons, Imperial Sound (918) 622-6111

All Perreaux amplifiers exhibit only even order harmonic distortion, when tested on a spectrum analyzer. The same attribute of tube amplifiers. This quality is intrinsic to the Perreaux design. These amplifiers will drive any speaker load known without exhibiting any instability whatsoever. It is so perfectly designed that as a reviewer stated "The PMF 2150B behaved like a true constant voltage source. . ."

## New Zealand Hits West Hollywood, California

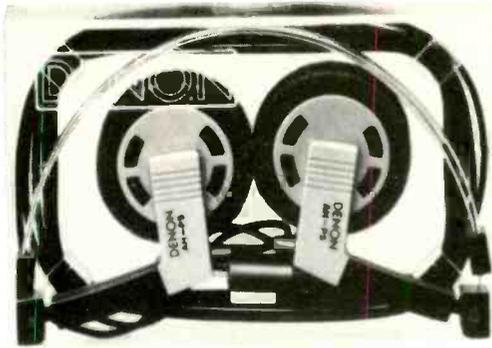
The Perreaux 2150B power amp is truly unique . . . combining musical accuracy and prodigious power capability. The production of the bass notes, by the 2150B, can only be described as thunderous.

Ken Mavrick, Audio One (213) 652-7771

Perreaux's 2150B has as much circuitry and components as a 10 watt amplifier, yet a magazine reviewer rated it at 960 watts per channel into 2 ohms. This simple circuit provides incredible musicality while providing as much power as any amp tested by any magazine. The power supply can deliver over 200 amps peak current to the 2150B circuit.

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# HEADPHONES



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STAX LAMBDA PRO

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	Plug Type	Weight, Ounces	Circumaural = C, Supra-aural = S, Headband None (Fis + Ear) = N, Adjustable = A, Folding = F	Individual Volume Controls?	Cover Material on Ear Cup	Price, \$	Notes
AIWA	HP-T10	Dynamic	10-24	40	103		8 1/4	F	A	2 1/2	S	A/F	No	Foam	65.00		
	HP-A50Y	Dynamic	18-22	25	100		8 1/4	F	A	1 1/4	S	A/F	No	Foam	35.00		
	HM-7Y	Dynamic	18-22	25	100		5	F	M	1 1/2	S	A/F	No	Foam	45.00		
	HP-V2	Dynamic	20-20	32	102		4	F	M	1/2	S	N	No	Foam	20.00		
AKG	K-340	ES/Dyn.	15-25	400	95	10V	0.1	10	C	P	13	C	A	No	Foam	195.00	Two-way system with passive diaphragms.
	K-4	ES/Dyn.	20-25	400	94	8.9V	0.5	10	F	P	3	C	A	No	Cloth/Foam	99.00	Two-way system.
	K-240	Dynamic	15-20	600	102	11V	0.3	10	F	P	8	S	A	No	Foam	99.00	Passive diaphragms.
	K-3	Dynamic	20-20	200	92	6.3V	0.5	10	F	P	2	S	A	No	Cloth/Foam	79.00	As above.
	K-141	Dynamic	20-20	600	98	11V	0.5	10	F	P	7	S	A	No	Foam	80.00	
	K-130	Dynamic	20-20	200	96	9V	0.7	10	F	P	4.5	S	A	No	Cloth/Foam	55.00	
AKG	K-40	Dynamic	30-18	200	95	6.3V	0.9	10	F	P	3.7	S	A	No	Foam	35.00	
	K-1	Dynamic	30-18	200	100	1.5V	0.9	4	F	M/A	2.3	S	F	No	Foam	29.00	Belt case inc.
ALPHASDNK	HP-1	Dynamic	20-20	30	99	100	0.5	4	F	M	2	S	A/F	No	Foam	15.00	
AUDIOTECHNICA	ATH 0.2	Dynamic	35-20	4-16	105	2V	0.6†	5	F	M/A	1	S	A	No	Foam	34.95	†At 100 dB SPL.
	ATH 0.2F	Dynamic	35-20	4-16	105	2V	0.6†	5	F	M/A	1.1	S	F	No	Foam	39.95	
	ATH 0.4	Dynamic	25-20	4-16	100	1.7V	0.4†	8.2	F	M/A	1.6	S	A	No	Foam	59.95	
	ATH 0.6	Dynamic	20-20	4-16	100	1.7V	0.4†	8.2	F	M/A	1.6	S	A	No	Foam	89.95	
BEYER DYNAMIC	DT880	Dynamic	5-25	600	94			10	C	P	7	C	A	No	Plastic	135.00	50 mW = 112 dB, 1 kHz, 0.5% THD.
	DT880 Studio	Dynamic	5-35	600	94			10	C	P	7	C	A	No	Plastic	173.00	As above.
	DT660 MKII	Dynamic	15-25	600	97			10	C	P	9	C	A	No	Plastic	123.00	As above but 113 dB.
(Continued)	DT550	Dynamic	10-22	600	95			10	C	P	7	C	A	No	Plastic	93.00	As above.

# 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: 3.5mm = M, 1/4" Phone = P, Adapter Incl. = A	Weight, Ounces	Circumaural = C, Supra-aural = S	Headband: None (Fits in Ear) = N, Adjustable = A, Rollable = R	Individual Volume Controls?	Cover Material on Ear Cup	Price, \$	Notes
BEYER DYNAMIC (Continued)	DT330 MK II	Dynamic	15-18	40	90		10	F	P	6 3/4	C	A	No	Plastic	60.00	100 mW = 110 dB, 1 kHz, 0.5% THD.	
	DT220	Dynamic	20-20	400	102		10	C	P	9 1/4	C	A	No	Plastic	75.00	102 mW = 122 dB, 1 kHz, 0.5% THD.	
	DT302	Dynamic	20-20	600	97		10	F	P	2 1/2	S	A	No	Foam	38.00	240 mW = 115 dB, 1 kHz, 0.5% THD.	
	DT302 Mini	Dynamic	20-20	40	97		10	F	M	2 1/2	S	A	No	Foam	38.00	As above.	
DENON	AH-99	Dynamic							M/A							85.00	
	AH-77	Dynamic							M/A							55.00	
	AH-55	Dynamic							M/A							35.00	
	AH-33	Dynamic							M/A			F				25.00	
	AH-P5	Dynamic							M/A							39.95	
AH-P1	Dynamic							M							17.00		
EMPIRE SCIENTIFIC	LW1	Dynamic	30-22	32	95	0.1W	4 1/2	F	M/A	9	S	A	No	Foam	20.00		
	LW2	Dynamic	20-22	200	105	0.1W	8	F	P	4.2	C	A	No	Foam	20.00		
	LW3	Dynamic	20-20	32	102	0.05W	3 1/2	F	M/A	0.5	S	A	No	Foam	20.00		
	Studio V	Dynamic									S	A	No	Foam			
GC ELECTRONICS	90-116	Dynamic	20-20	32		100mW	3	F	M/A	1.02		A/F	No			10.95	
	90-115	Dynamic	20-20	32		50mW	3 1/2	F	M	0.17		N	No			9.95	
	90-114	Dynamic	20-20	32		300mW	4 1/2	F	M/A	0.88		A	No			8.95	
	90-107	Dynamic	20-20	4-100		100mW	5 1/2	F	M/A	1.50		A	No			11.95	
	90-112	Dynamic	20-20	4-16		100mW	10	C	P	6		A	No	Plastic		16.95	
	90-102	Dynamic	30-18	4-8		500mW	10	C	P	11.75		A	Yes	Plastic		11.95	
	90-100	Dynamic	20-15	4-16		500mW	10	C	P	8		A	No	Plastic		8.95	
INDUCED MAGNET SYSTEMS	HG-102	Dynamic	20-20	32	102	50mW	4	F	M/A	0.17		N	No	Foam		19.95	Extra ear pads inc.
	P-10	Dynamic	20-22	32	102	50mw	4	F	M/A	0.17		N	No	Foam		29.95	As above, additional 5-foot cord, pocket holder, Y connector.
JVC	H-404	Dynamic	20-20	16	102	100mW	9.8	F	P	3.7	C	A				30.00	
	H-505	Dynamic	20-20	8	106	100mW	9.8	F	P	4.6	C	A				40.00	
	H-707	Dynamic	20-20	63	104	100mW	9.8	F	P	5.7	C	A				60.00	
	HM-4	Dynamic	30-18	32	98	30mW	9.8	F	A	1	S	A				35.00	
	HM-8	Dynamic	20-20	32	102	100mW	9.8	F	A	1.6	S	A				60.00	
	HM-15	Dynamic	18-22	63	106	100mW	9.8	F	A	2.6	S	A				110.00	
KENWOOD	KH-7L	Dynamic	20-20	30	100	100mW	9.8	F	M/A	1.6		A	†	No	Plastic	75.00	†Muting.
	KH-5L	Dynamic	25-20	30	100	100mW	8.2	F	M/A	1.6		A	No	Plastic	55.00		
	KH-3L	Dynamic	35-20	40	103	250mW	4.9	F	M/A	1.1		A/F	No	Plastic	33.00		
	KH-M5	Dynamic	20-20	32	102	50mW	4.7	F	M/A	0.2		N	No	Plastic	20.00		
KOSS	ESP-10	ES	20-22	3-180		1.9V	12	F	P	14	C	A	Yes	Plastic	175.00		
	PRO/4X	Dynamic	10-40	120		110	10	C	P	10	C	A	No	Plastic	85.00		
	HV/XLC	Dynamic	15-35	90		1V	10	C	P	7.8	C	A	Yes	Foam	69.95		
	PRO/4AAA	Dynamic	10-22	220			10	C	P	15.5	C	A	No	Plastic	85.00		
	KSP	Dynamic	20-17	43			11	F	M/P	3.5	S	A/F	No	Foam	29.95		
	K 6XLC	Dynamic	10-22	90			8	F	P	10	S	A	Yes	Plastic	39.95		
	P-19	Dynamic	20-17	90			6	F	M/P	3.5	S	A	No	Foam	19.95		
	HV/X	Dynamic	15-35	90		1V	10	C	P	7.5	S	A	No	Foam	59.95		
	K 6X	Dynamic	10-22	90			8	C	P	10	S	A	No	Foam	29.95		
	K 20	Dynamic	18-22	110			8	F	P	4.2	C	A	No	Foam	19.95		
NAD	B30	Dynamic	15-25	75	91	0.5	4	F	M/A	1 3/4	S	A	No	Foam	55.00	10-foot coil adaptor.	
NAKAMICHI	SP-7	Dynamic	20-20	45	98	2.1V	9	F	P	5.3	S	A	No	Foam	70.00		
ONKYO	HP-S1	Dynamic	20-22	32	96	100	4	F	M/P/A	0.15		N	No	Foam	20.00		
	HP-L1	Dynamic	20-20	32	96	100	5	F	M/P/A	0.9		A	No	Foam	30.00		
	HP-L2	Dynamic	20-20	32	101	100	4, 9.8	F	M/P/A	1.0		A	No	Foam	40.00		
	HP-L3	Dynamic	20-20	32	103	100	4, 9.8	F	M/P/A	1.2		A	No	Foam	50.00		
PEERLESS/DLK	PMB5	Dynamic	20-20	400	107	6.3V	10	F	P	0.2	S	A	No	Foam	39.95	Open-air design.	
	PMB20	Dynamic	20-20	400	96	6.3V	10	F	P	3.3	C	A	No	Foam	49.95	As above.	
	PMB45	Dynamic	16-20	400	92	6.3V	10	F	P	8.3	S	A	No	Plastic	79.95		
	PMB80	Dynamic	15-26	150	89	6.7V	10	F	P	10.5	C	A	No	Plastic	99.95	Semi-open design.	
	PMB100	Orthodyn.	15-26	150	84	6.7V	10	F	P	15	S	A	No	Plastic	149.95	Open-air design.	
PICKERING	OA-7	Dynamic	20-22 ±5	100	110†	0.1W	10	F	P	6	S	A		Nylon	70.00	†At 0.2 V; ††at 0.25 V; †††at rated sensitivity.	
	OA-5	Dynamic	20-22	100	110†	0.25W	10	F	A	7 1/2	S	A		Nylon	60.00		
	OA-303	Dynamic	20-20	70	101†	0.1W	7	F	P	4 1/2	S	A		Leather	39.95		
	OA-202	Dynamic	10-20	50	100††	0.1W	7	F	P	6	S	A		Foam	29.95		
	OA-4	Dynamic	20-22	100	105†††	0.05W	10	F	P	2	S	A		Foam	60.00		
	OA-2	Dynamic	10-20	40	100††	0.05W	7	F	P	2	S	A		Foam	34.95		
	OA-101	Dynamic	20-18	40	100††	0.05W	5	F	P	2	S	A		Foam	25.95		
PIONEER	SE-450	Dynamic	20-20	22	105		8.2	F	P	11	C	A	No	Plastic	50.00		
	SE-4	Dynamic	20-20	250	96		9.8	F	P	7.6	S	A	No	Plastic	45.00		
	SE-2	Dynamic	20-20	150	99		8.2	F	P	7.4	S	A	No	Plastic	30.00		
	SE-205	Dynamic	20-20	10	103		8.2	F	P	15	C	A	No	Plastic	30.00		
	SE-L90	Dynamic	10-22	40	103		10	F	M/A	2.5	S	A	No	Plastic	100.00		
	SE-L70	Dynamic	10-22	40	103		10	F	M/A	2.5	S	A	No	Plastic	75.00		
	SE-L50	Dynamic	10-22	40	103		10	F	M/A	2.1	S	A	No	Plastic	60.00		
	SE-L30	Dynamic	12-22	40	103		8	F	M/A	2.1	S	A	No	Plastic	50.00		
	SE-L10	Dynamic	12-22	50	101		8	F	M/A	1.3	S	A	No	Plastic	30.00		

# HEADPHONES

MANUFACTURER	Model	Operating Principle	Frequency Range, Hz to kHz	Impedance, Ohms	Sensitivity dB SPL for 1 mW input	Maximum Input, mV	TWD at 95 dB SPL, %	Cord Length, Feet	Cord Style: Flat = F, Coiled = C	Plug Type: 3.5 mm Mini = M, Phone = P, Adapter Inset = A	Weight, Ounces	Circumference = C, Subjective = S	Headband: None (N) in Ear = N, Adjustable = A, Folding = F	Individual Volume Controls?	Cover Material on Ear Cup	Price, \$	Notes
REALISTIC	Pro-60	Dynamic	15-30	90		0.5	10	C	P	8	C	A	No	Foam	49.95		
	LV-10	Dynamic	20-20	4-16		0.5	10	C	P	10	C	A	No	Foam	39.95		
	Nova-Pro	Dynamic	20-20	8			10	C	P		C	A	Yes	Foam	31.95		
	Pro-30	Dynamic	20-20	4-16			10	C	P	6.7	C	A	No	Foam	29.95		
	Nova-40	Dynamic	30-18	4-8			10	C	P		C	A	No	Plastic	24.95		
	Nova-16	Dynamic	50-15	4-16			6.5	C	P		C	A	Yes	Foam	19.95		
	Nova-10	Dynamic	50-15	4-16			6.5	C	P		C	A	No	Plastic	14.95		
	Nova 51	Dynamic	50-20	32			6.7	F	P	3	F	F	No	Foam	19.95		
	Nova 52	Dynamic	50-20	32			6.7	F	M	3	F	F	No	Foam	19.95		
	Nova 50	Dynamic	50-20	32			6.5	F	P	3	F	A	No	Foam	13.95		
	Nova 35	Dynamic	50-20	32			5	F	M	3	F	A	No	Foam	13.95		
	Nova 33	Dynamic	20-20	32			4	F	M	1.25	F	A	No	Foam	9.95		
	Micro	Dynamic	50-20	32			4	F	M	0.6	F	N	No	Foam	12.95		
ROGERSDUND	R.S.L. H-4	Dynamic	20-22	600	94	300	1.0	6	F	P	7.4	S	A	Yes	Foam	39.95	
SAE	PRD-1	Dynamic	50-20	432	100	100			F	M/P	16		A	No	Foam	20.00	
SANSUI	SS-L5	Dynamic	20-20	100	104	0.5W	6	F	F	4.8	S	A	No	Vinyl	50.00		
	SS-L3	Dynamic	20-20	60	104	0.5W	6	F	F	4.4	S	A	No	Vinyl	30.00		
	MS-7	Dynamic	30-20	40	100	0.25W	8	F	F	1.3	S	A	No	Foam	40.00		
	MS-3	Dynamic	35-20	30	97	0.1W	8	F	F	1.9	S	A	No	Foam	20.00		
SENNHEISER	MS100	Dynamic	20-20	42	96		1	4.6	F	A	1.4	S	A	No	Foam	85.00	
	HD 44	Dynamic	40-15	17			3	3	F	P	1.2	S	N	No	Foam	49.00	Under-chin design.
	HD 40	Dynamic	22-18	600	90	1.5	10	F	P	2	S	A	No	Foam	37.50	Open-air design.	
	HD 400	Dynamic	20-18	600	88	1.8V	10	F	P	3	S	A	No	Foam	49.00	As above.	
	HD 414	Dynamic	16-20	2k	102	1	10	F	P	2.6	S	A	No	Foam	84.00		
	HD 420	Dynamic	18-20	600	94	8V	10	F	P	4.6	S	A	No	Foam	94.00		
	HD 424	Dynamic	16-20	2k	102	1.8V	10	F	P	4.3	S	A	No	Foam	122.00		
	HD 430	Dynamic	16-20	600	94	8V	10	F	P	6.8	C	A	No	Vinyl & Foam	134.00	Open-air design with over-the-ear cushions.	
	HD 222	Dynamic	16-20	600	94	8V	10	F	P	8.8	C	A	No	Vinyl & Foam	128.00		
	HD 224	Dynamic	16-20	200	94		1	10	F	P	8.9	C	A	No	Vinyl & Foam	153.00	
HD 40W	Dynamic	20-18	42	90		1.5	4	F	M	2.0	S	A	No	Foam	37.50	Open-air design for personal portables.	
HD 400W	Dynamic	20-18	42	88		1.3	4	F	M	2.8	S	A	No	Foam	49.00	For personal portables.	
SIGNET	TK11	Dynamic	30-20	4-16	93	1.7V	0.6†	4.9	F	M/A	1.9	S	A	No	Foam		†At 110 dB SPL.
	TK20	Dynamic	25-20	4-16	100	1.7V	0.5†	4.9	F	M/A	1.6	S	A/F	No	Foam		
	TK22	Dynamic	20-20	4-16	96	5V	0.4†	11.5	F	P	7.2	S	A	No	Foam		††For 1-V input.
	TK33	ES	10-23	4-16	100†	17V	0.1†	8.2	F		7.4	S	A	No	Vinyl		
SONY	MDR20T	Dynamic	20-20	32	98	1W		9.9	F	M/P/A			A	No	Foam	19.95	Open-air design.
	MDR22	Dynamic	20-20	32	98	1W		3.3	F	M			N	No	Foam	24.95	
	MDR232	Dynamic	20-20	18	108	1W		3.3	F	M	4.8	N	No	Foam	24.95	Wind-up storage case.	
	MDR30T	Dynamic	18-20	25	100	1W		9.9	F	M/P/A	3.5	N	No	Foam	29.95		
	MDR252	Dynamic	20-20	18	108	1W		3.3	F	M	4.8	N	No	Foam	34.95	As above.	
	MDR255	Dynamic	20-20	18	108	1W		3.3	F	M	4.8	N	No	Foam	34.95	Storage case, water resistant.	
	MDRA30L	Dynamic	18-20	25	100	1W	0.04	3.3	F	M		F	No	Foam	34.95	Mono/stereo switch, open-air design.	
	MDR40T	Dynamic	18-22	45	101	1W	0.04	9.9	F	M/P/A			A	No	Foam	39.95	Open-air design.
	MDR50T	Dynamic	18-22	55	101	1W	0.04	9.9	F	M/P/A			A	No	Foam	49.95	
	DRM5	Dynamic	20-20	28	110	1W		6.6	F	P			A	No	Vinyl	65.00	
	MDRCD5	Dynamic	2-22	45	108	1W	0.02	9.9	F	M/P/A			A	No	Foam	100.00	
	MDR70II	Dynamic	16-24	45	101	1W	0.04	9.9	F	M/P/A			A	No	Foam		
MDR80II	Dynamic	16-24	45	101	1W	0.04	9.9	F	M/P/A			A	No	Foam			
SDNY ES	MDR-CD7	Dynamic	2-24	45	110	5W	0.02	9.9	F	M/P/A			A	No		120.00	
STANTON	Micro Wafer XII	Dynamic	10-20	40	105†	0.15W	0.5†††	7	F	M	2	S	A	No	Nylon	49.95	†At 0.2 V; ††at 0.25 V; †††at rated sensitivity.
	Micro Wafer X	Dynamic	10-20	40	100††	0.05W	0.5†††	7	F	M	2	S	A	No	Foam	34.95	
	Dyna 25	Dynamic	10-20	50	100††	0.2W	0.5†††	7	F	P	6	S	A	No	Vinyl	29.95	
	Dyna 55/600	Dynamic	20-22	600	110†	0.25W	0.25†††	10.3	F	P/A	5.5	S	A	No	Foam	70.00	
	Stereowafer XXI	Dynamic	20-22	100	110†	0.05W	0.25†††	10	F	P	6	S	A	No	Foam	70.00	
	Micro/Wafer F	Dynamic	20-18	40	100††	0.5W	0.1†††	5	F	M	2	S	F	No	Foam	24.95	
STANTON	Stereowafer 45	Dynamic	20-20	±5	100	105†	0.1W	7	F	P/A	3.3	C	A	No	Vinyl	45.00	
	Stereowafer 80	Dynamic	20-22	100	110†	0.1W	0.5†††	10.3	F	P	5.9	S	A	No	Vinyl	70.00	
STAX	SR-34	Electret	25-25	8	95	1.5V	0.02	7	F	A	8	C	A	No	Vinyl	109.95	
	SR-84	Electret	20-25	8	95	1.5V	0.02	7	F	A	7.5	C	A	No	Vinyl	159.95	
	SR-5/N	ES	25-25	8	97	1.5V	0.05	7	F	A	13.9	C	A	No	Vinyl	199.95	
	SR-X/Mk3	ES	25-25	8	97	1.5V	0.05	7	F	A	13.2	C	A	No	Vinyl	329.95	
	SR-Lambda	ES	8-35	8	102	1.5V	0.05	7	F	A	15.1	C	A	No	Vinyl	374.95	
	SR-Sigma	ES	30-35	8	94	1.5V	0.05	7	F	A	16.4	C	A	No	Vinyl	484.95	
	SR-Lambda Pro.	ES	8-35	50k	102	2V	0.005	7	F	A	15.1	C	A	Yes	Vinyl	780.00	Class-A amp inc.
TEAC	TH-101	Dynamic	40-18	600			10	F	P/A	12	F	N	No	Foam	40.00		
	HP-30	Dynamic	40-15	600			10	F	M/P/A	29/4			No	Foam	30.00		
TECHNICS	EAH-05	Dynamic	20-20	32		100			F	M/A		S	A/F	No		50.00	
YAMAHA	YH-100	Orthodyn.	20-20	150	93	3V	0.3	8	C	P	12	C	A	No	Plastic	95.00	
	YH-1		20-20	150	93	3V	0.5	8	F	P	10.2	C	A	No	Plastic	70.00	
	YH-2		20-20	150	93	3V	0.5	8	F	P	8.1	C	A	No	Plastic	50.00	
	YH-3		20-20	150	93	1V	0.5	8	F	P	7.4	C	A	No	Plastic	40.00	
	YHL-005		20-20	45	102	100	0.5	8	F	P/A	1.8	S	A	No	Plastic	40.00	
	YHL-007		20-20	45	102	100	0.5	8	F	P/A	1.4	S	A	No	Plastic	30.00	



Nakamichi Sound Research Center Concert Hall

## Nakamichi—Commitment To Excellence

No great work of art—no masterpiece of music—is created without *commitment*. Every great artist—every musician—is driven by an internal need to express an emotion. At Nakamichi, we understand that need. We too are committed—to excellence—to perfection in the realm of recorded sound. In short, we are committed to *high fidelity!*

What does that mean? What is "high fidelity?" For a company with Nakamichi's reputation for outstanding specifications, it may be surprising to learn that specifications, in themselves, do not concern us! We are interested only in *perfect music reproduction*. When we attain that goal, excellent specifications follow automatically for they simply document technical performance. We believe that excellent specifications are the *effect*—not the cause—of high fidelity—the *result*—not the means—of attaining our goal!

All too easily, this distinction is blurred and ultimately forgotten! Specifications become an end in themselves. This is not surprising for specifications are easily quantified and naturally appeal to the technical minds that create high-fidelity products.

Not so at Nakamichi! We are unlike many audio giants. To serve as a constant reminder that our goal is *music reproduction*, we constructed an excellent concert hall as part of our headquarters/research facility. We consider the *concert hall* our Ultimate Test Instrument—a place

where the creation and recreation of music are directly compared.

The concert hall symbolizes Nakamichi Philosophy—a dedication to creativity, innovation, and musical excellence. Its location in our combined headquarters and research lab is symbolic in itself for the Nakamichi Philosophy permeates our entire organization.

We are proud to be small enough for our President to have a drafting board in his office and a sketch pad at hand as he prowls the laboratories keeping his finger on the pulse of research. We are proud to be large enough to have the finest staff and the finest test instruments in the industry. And we are proud of our dedication to music and to research—research that creates the products of the future—the products of the next decade and beyond.

This philosophy—this dedication to imagination and creativity—attracts the very finest engineers to

our staff—engineers who are in love with music, in love with sonic perfection. Our philosophy sets us apart from others and, more than anything else, has helped establish our enviable reputation for innovation and musical perfection.

This philosophy created the legendary Nakamichi 1000—the world's first Discrete Three-Head Cassette Deck—the first cassette recorder worthy of the name "high fidelity." It led us to develop the Nakamichi 680—the world's first high-fidelity *half-speed* recorder. It guided us in developing Hi-Com II—the world's first 20-dB noise-reduction system without audible side effects. It produced the Nakamichi 1000ZXL—the world's first cassette deck with true random-access program selection.

Nakamichi Philosophy—the unending search for sonic perfection—has now created the world's first automatic azimuth correction system—NAAC! Nakamichi Auto Azimuth Correction is found only in the incredible Nakamichi Dragon and Mobile Sound System. NAAC—the unique technological breakthrough that creates sonically perfect reproduction in a bi-directional playback system! NAAC—from Nakamichi—where devotion to music creates the products of the future—today!



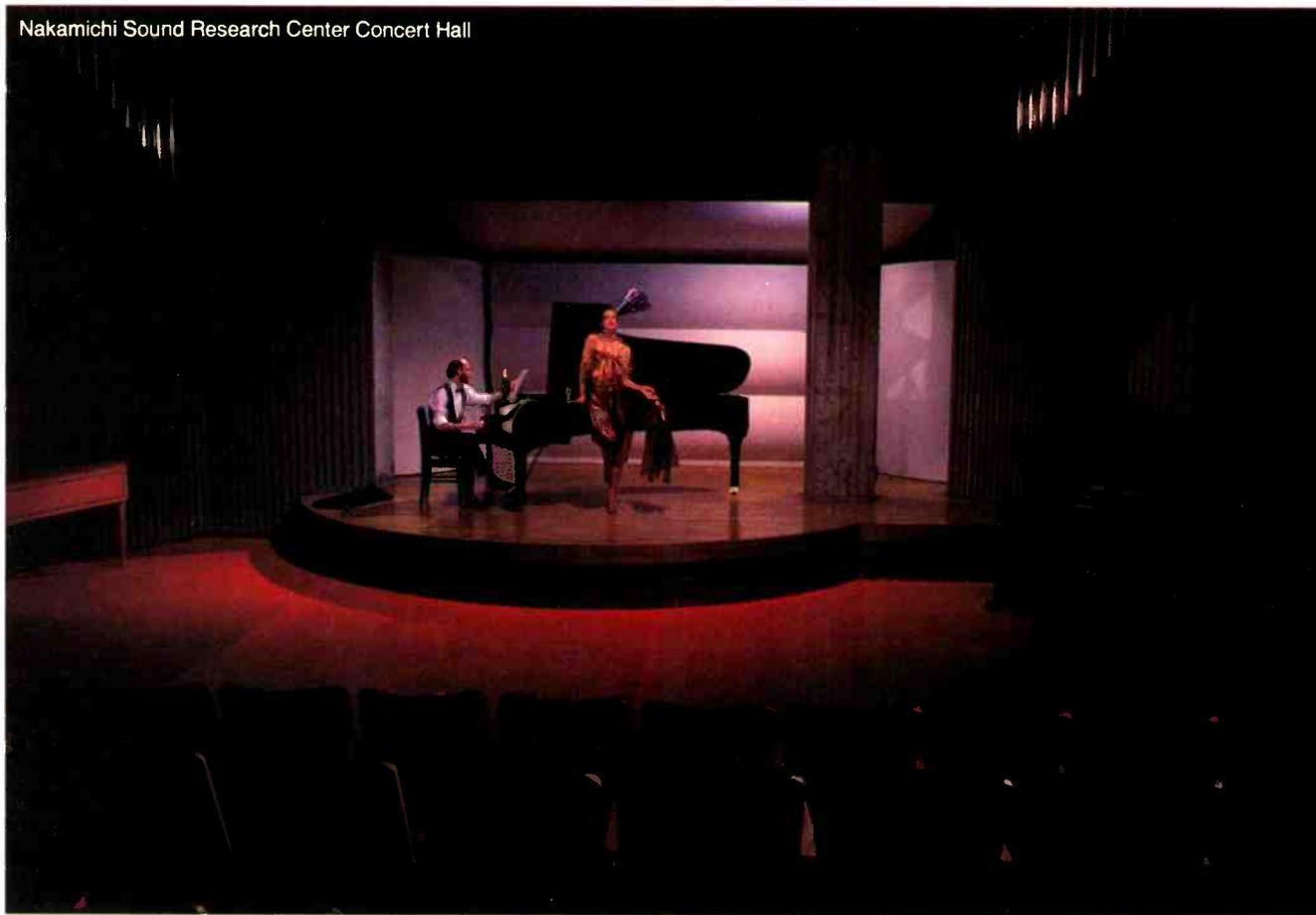
DRAGON Auto Reverse Cassette Deck



TD-1200 Mobile Tuner/Cassette Deck

For more information, write to  
Nakamichi U.S.A. Corporation  
1101 Colorado Avenue,  
Santa Monica, California 90401.

 Nakamichi



## Nakamichi—Commitment to Innovation

Innovation—not a word to use lightly! Innovation demands a fresh look—a break with the past—a new solution to an existing problem. Innovation begins with an idea born of free thought, unfettered by tradition, unshackled by preconceived notions of what is possible. Technological innovation is akin to artistic inspiration. An idea originates in the creative soul of one person; the R&D lab—technology's "orchestra"—converts that idea into reality.

Consider the Nakamichi Dragon—an innovative cassette deck in the true sense of the word! Why? Not because Dragon plays both sides of a cassette automatically, but because it is the first to do it *perfectly*—the first to solve the "bi-directional playback problem" that has plagued every auto-reverse cassette deck ever made!

The "bi-directional playback problem" is caused by cassette tolerances which allow tape to follow a different path when played in reverse than it did when recorded. This produces "azimuth error" which results in lost overtones. Instruments no longer sound true to life and the music is dead!

This is not acceptable to Nakamichi! A decade ago, we solved the "azimuth-alignment problem" of conventional re-

orders by using special test tones on each cassette. This technique cannot be used when *playing* tapes that were recorded *without* the tones. A practical *playback* azimuth-alignment system must utilize *music itself* as a test signal, but how can an electronic circuit know what music should sound like?

Can *music* be used to check itself? Yes! We've invented a way to measure phase error between signals on a single track. To the non-technical music lover, this sounds like gobbledygook, but your ears will tell you that it works! It won't make good music out of bad, but it does reproduce absolutely everything that was recorded without loss of overtones, clarity, or life. And, it works on every tape—recorded commercially or at home—and in both playback directions!

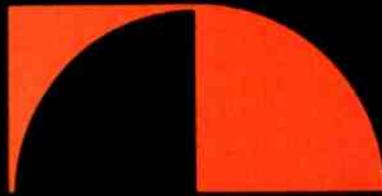
The system is NAAC—Nakamichi Auto Azimuth Correction. Dragon is the first deck to have it—which makes Dragon the world's first "perfect" auto-reverse cassette deck! Nakamichi—where commitment to innovation creates the products of the future—today!



For a 22"x30" full-color poster of the Nakamichi Concert Hall, send \$2.00 check or money order payable to Nakamichi U.S.A. Dept. M-1 1101 Colorado Ave., Santa Monica, CA 90401. Allow 4-6 weeks. Offer expires March 31, 1984. Void where prohibited.

DRAGON Auto Reverse Cassette Deck

 Nakamichi



# Nakamichi DRAGON

Auto Reverse Cassette Deck

Nakamichi DRAGON Auto Reverse Cassette Deck



NAAC

Discrete 3 Head/Double Direct Drive Capstan / Silent Mechanism / Microprocessor Control

XX DOLBY B-C NR

Reset

Memory Off / On

Stop / Play

Auto Rev Off / On

Level (400Hz)

Revers

Bias (500Hz)

Cue

Rec.Mute

Auto Fader

Down

Left

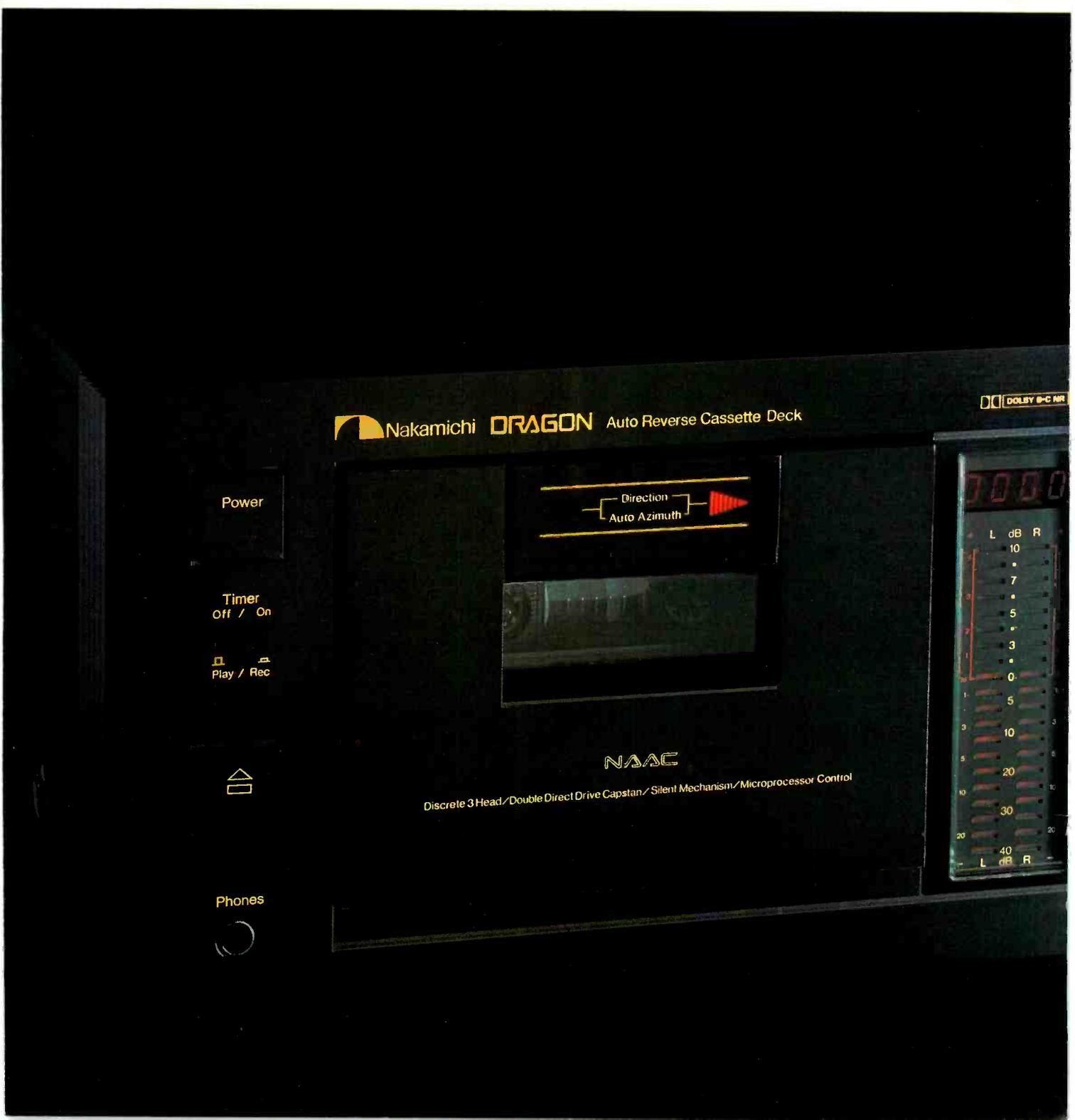
Right

Output

Mix

# —DRAGON— The Most Incredible Creature Of The Decade !

Only once or twice a decade does a truly remarkable "breakthrough" occur in cassette-recording technology — not a mere refinement of past technique but a dramatic advance in engineering knowledge that solves a basic technological problem and opens the door to the future. One such "breakthrough" was the development of Dolby-B noise-reduction — the first viable consumer NR system — the one that suppressed tape hiss without introducing audible coloration. With Dolby-B NR, high-fidelity cassette reproduction became a possibility. Another "breakthrough" occurred when Nakamichi created the Model 1000 — the world's first three-head cassette deck — the one that made high-fidelity cassette reproduction a *reality!*



Steady progress has been made "refining" these "breakthroughs." Dolby-B NR led to the C-type system, and hiss was banished to the point of inaudibility. With new tapes, it became possible to extend response beyond 20 kHz, and we developed the advanced magnetic heads and electronics to do so. We refined the dual-capstan drive and ultimately created the Asymmetrical Diffused-Resonance transport that eliminated common-mode resonance and controlled tape tension so precisely that it required no pressure pad. Mechanical "logic" gave way to "IC logic" and then to full microprocessor control. Finally, we developed the SLT motor that eliminated "belt wow" without introducing "direct-drive flutter."

It seemed as if cassette recording had advanced to its limit, but one problem remained — a basic one that limits cassette interchangeability and precludes "reverse playback" with full fidelity — play-head azimuth misalignment! True, we had developed a system to ensure proper *recording* azimuth, but it cannot correct a tape that has *already* been recorded improperly or one that tracks slightly askew in reverse. Such correction must occur *on playback*, and that was considered impossible! No longer! In DRAGON, we introduce NAAC — Nakamichi Auto Azimuth Correction — the most revolutionary "breakthrough" of the decade — an automatic *playback* azimuth-correction system that brings forth the full spectrum recorded on every cassette!



## NAAC Reveals The Hidden Highs Of Each Cassette

Azimuth misalignment between record and play-head gaps severely restricts high-frequency response. As Figure 1 shows, a disagreement between the angle at which a tape was recorded and the angle at which it is played has an effect very similar to that of widening the playback gap. When this happens, the play head is unable to "resolve" short wavelengths and high-frequency response drops precipitously as shown in Figure 2. The music sounds dull and lacks the crispness and clarity that give it life *even though the tape may contain the full range of frequencies that originally were recorded!*

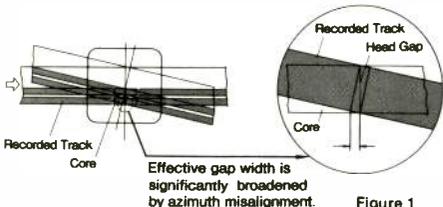


Figure 1

Azimuth disagreement can happen for several reasons, the most obvious being physically misaligned heads. But even heads that were properly aligned at the factory will not guarantee perfect reproduction. Tape-width and cassette-shell tolerances, together with differences in tape tension from deck to deck, cause the tape to track along a slightly different path in each cassette and in each machine. Thus, a tape recorded on one deck will not necessarily reveal its full response when played on another, and, when a tape is recorded in one direction and reproduced in the opposite direction — as, for example, on an auto-reverse deck — there is almost bound to be considerable azimuth disagreement.

Even the slightest misalignment — one measured not in "degrees," but in "minutes" of arc (sixtieth parts of a degree!) — causes a very audible loss in treble response. To make matters worse, noise-reduction systems increase whatever loss exists in the basic record/play response. Without doubt, azimuth misalignment is the prime reason why, in the past, cassettes have usually sounded best when played on the deck that recorded them.

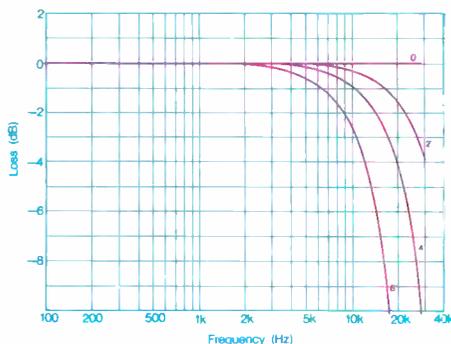


Figure 2 Frequency Response Loss Due To Azimuth Misalignment

NAAC (Nakamichi Auto Azimuth Correction) is the first system capable of extracting every bit of information stored on cassette. Obviously, it cannot reproduce what had never been recorded, but, if there is treble energy on the tape, NAAC will bring it to you with full fidelity and clarity *even if the tape has been recorded with improper azimuth!* NAAC automatically determines the *actual* recorded azimuth on the tape, aligns the *playback* head to it, and continues to track it throughout the program. NAAC works on *every* tape — commercially recorded, borrowed from a friend, or made yourself. It works in *both* directions, requires no test tones, no setup, no action on your part at all! NAAC utilizes the "phase-comparison" method of azimuth alignment, but, unlike systems that record test tones and adjust the *recording* head for in-phase left and right signals, NAAC determines the actual azimuth of the *recording* and aligns the *playback* head to it! It does not compare the phase in the left and right channels for, in stereo, the two contain different information. It works *within the same channel* by utilizing a unique playback head that splits the track in half and derives *two* signals from it. (Figures 3 and 4) The signals — "a" and "b" — are processed to extract the phase difference. This "error" drives a servo motor that realigns the playback head to the track. (Figure 5) The improvement in sound quality on *every* cassette is nothing less than amazing!



Figure 3 Standard core construction for one stereo channel.

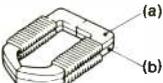


Figure 4 Dual core construction for channel to be used for azimuth measurement.

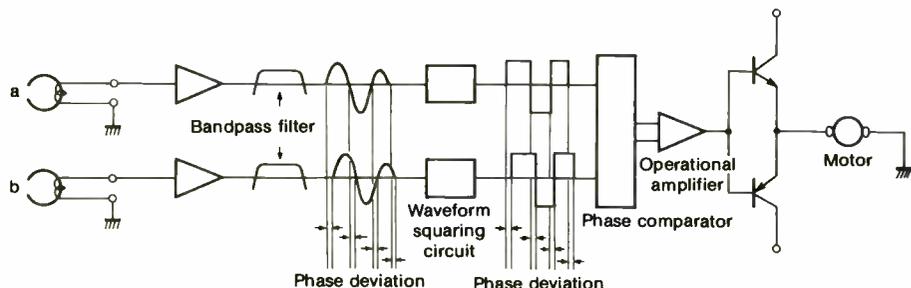


Figure 5 Automatic Playback Head Azimuth Correction System Block Diagram

## Double-Direct-Drive Auto-Reverse Transport

DRAGON is the world's first Dual-Capstan, Double-Direct-Drive, Auto-Reverse cassette deck! Now you can have the convenience of auto-reverse playback *without* sacrificing treble response — thanks to NAAC — or speed stability — thanks to the Nakamichi Super-Linear-Torque motor. Actually, *two* SLT motors are used, one directly driving each capstan. Both are active in each direction so flutter and modulation noise are eliminated in *both* forward *and* reverse.

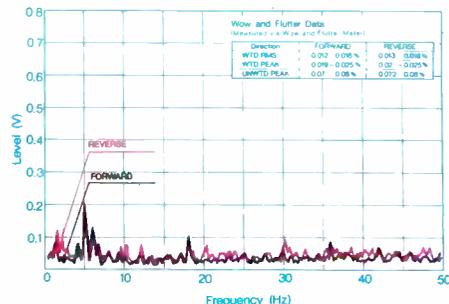


Figure 6 Flutter Spectral Analysis (UNWTD Peak)

Frequency : 3kHz Test Tape  
Wow/Flutter Meter: Meguro MK-615  
Spectrum Analyzer: HP-3582A



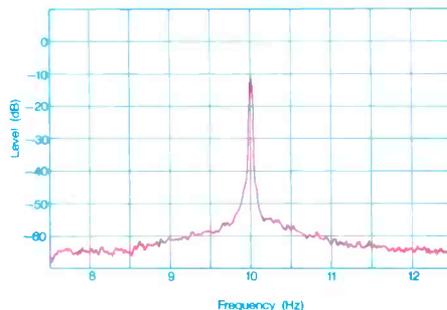


Figure 7 Modulation Noise Analysis  
 Freq.: 10kHz/ Tape: ZX (Metal)/ Eq: 70µs

With its unusual star-shaped rotor magnetization, the SLT motor generates "cog-free" uniform torque. It eliminates "belt-drive wow" without introducing "direct-drive flutter." In a Double-Direct configuration like DRAGON, it produces less than 0.019% wow and flutter and virtual freedom from modulation noise! Figures 6 and 7 depict DRAGON's flutter spectrum and modulation noise. Note the peak-free flutter spectrum and the absence of side-bands about the 10-kHz tone. These characteristics, ignored by standard specifications, are responsible for DRAGON's remarkable tonal purity — the quality known as "Nakamichi Sound!"

DRAGON's SLT motors are locked to quartz reference in such a way that, in either direction, the supply capstan rotates 0.2% slower than the takeup capstan to provide precise control over tape tension and eliminate the need for a pressure pad. The capstans are "asymmetrical" to avoid resonance, and, since DRAGON is auto-reversing, an unusual mechanism ensures that the "supply" guide is automatically engaged and the "takeup" guide retracted.

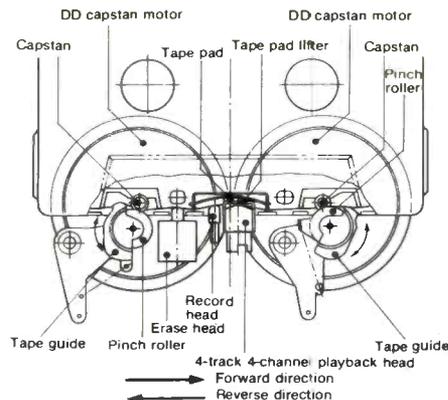


Figure 8 Auto-Reverse Dual-Capstan Double-Direct-Drive System Construction

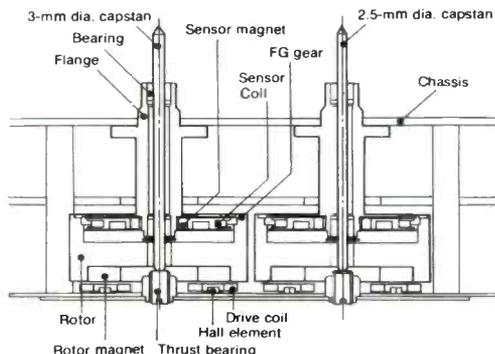
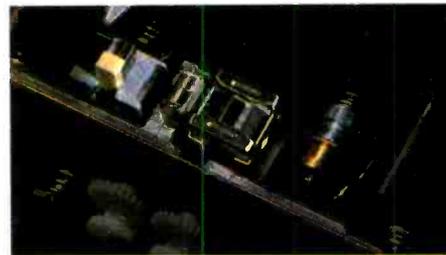


Figure 9 Auto-Reverse Dual-Capstan Double-Direct-Drive System Cross Section

## Discrete 3-Head Technology In An Auto-Reverse Deck!

DRAGON also is the world's first Discrete 3-Head Auto-Reverse cassette deck! Now you can have the sound quality available *only* with this Nakamichi creation and the convenience of auto-reverse playback.



PA-1L Playback Head

NAAC made high-fidelity reproduction possible in the auto-reverse format. But what made NAAC possible? The PA-1L 4-track/2-channel-stereo Crystalloy playback head — a unique creation of Nakamichi technology! Each stereo track is a mere 0.6 mm (24 *thousandths* of an inch) wide. Most engineers thought that it was impossible to divide the track into two parts and read separate signals from each, but this is exactly what Nakamichi creativity and expertise in magnetic technology has accomplished!

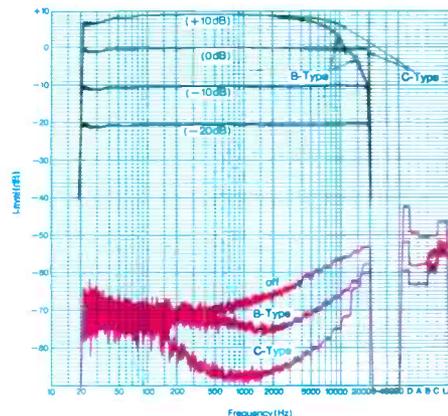


Figure 10 Frequency Response/Noise Analysis

Deck : Nakamichi DRAGON  
 Tape : ZX (Metal)  
 PB Eq : 70µs  
 Dolby NR : Off

With its 2-track/2-channel Crystalloy recording head and dual-gap Ferrite/Sendust erase head, DRAGON records the *full* frequency spectrum — from 20 Hz to 22 kHz — in the forward direction and reproduces it in *either* direction with remarkable uniformity. Nakamichi's special poletip geometry suppresses low-frequency "head bumps" completely, and thanks to a special surface treatment, our heads have a useful life of more than 10,000 hours!

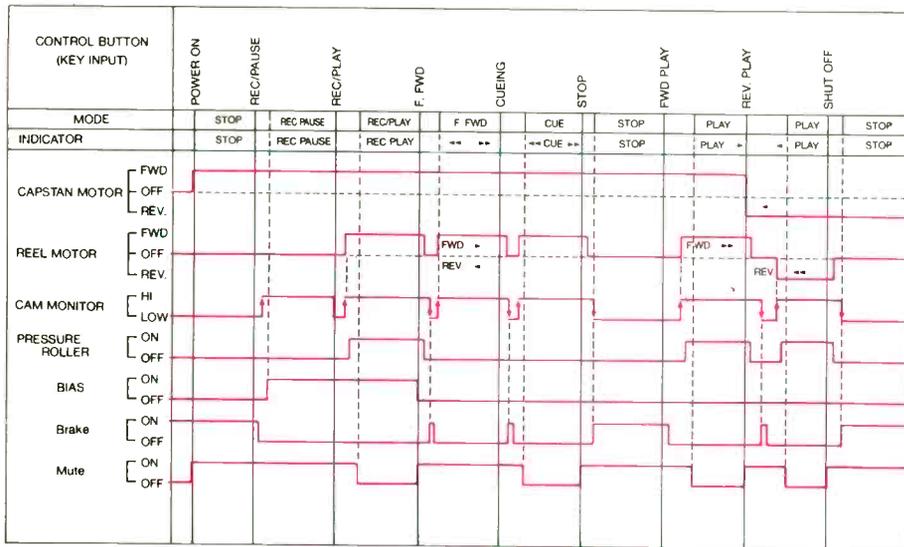


Figure 11 Transport Control Timing Chart

## Easy Cueing

Thanks to the "continuous" action of DRAGON's motor-driven control system and the "intelligence" of its microprocessors, cueing is exceptionally versatile. Pressing Cue during fast-forward or rewind reduces transport speed by one-third and brings the playback head close to the tape so you can hear the program. Pressing either fast-wind button again now drops tape speed to one-sixth normal for as long as the button is held. You can zero in on the start of a program very precisely!

Easy Cueing also is possible via the optional RM-20 Remote Control Unit. The RM-20's Pause button duplicates the action of the on-board Cue button whenever the deck is in either fast-wind mode.

## Punch-In Recording

You can enter Record directly from Forward-Play by pressing Record and Record simultaneously so you can "splice" a new program into an old one very accurately. Punch-In Recording is possible either from the DRAGON control panel or via the RM-20 Remote Control Unit.

## Memory Stop/Play

With Memory on, DRAGON automatically stops at a counter reading of "0000" in either fast mode. Depending upon whether "Stop" or "Play" had been selected, the tape either remains stationary or immediately begins playback.



## Precision And Convenience Through Microprocessor Control

DRAGON is intelligent! Three microprocessors monitor the control panel and key points in the operating system. The microprocessors instantly issue commands to a special motor-control mechanism that positions the heads, engages and disengages reel brakes and pinch rollers, and performs the mechanical functions normally assigned to solenoids. Figure 11 shows the system timing diagram and DRAGON's intricately interwoven operational modes.

The motor-control mechanism performs each change of function rapidly and much more precisely than is possible with solenoid actuation because the microprocessors monitor the control motor and thus place it inside a digital servo loop. Operation is remarkably smooth, quiet, and free of the jarring mechanical shock typical of solenoid operation.

Delicate mechanical adjustments are not disturbed and very little heat is generated. Thus mechanical and electrical reliability are greatly improved.

The chassis is fabricated from an aluminum alloy that is specially treated to absorb vibration before it can affect tape motion. This greatly improves speed stability, reduces flutter and modulation noise, and contributes to the unique purity of "Nakamichi Sound."

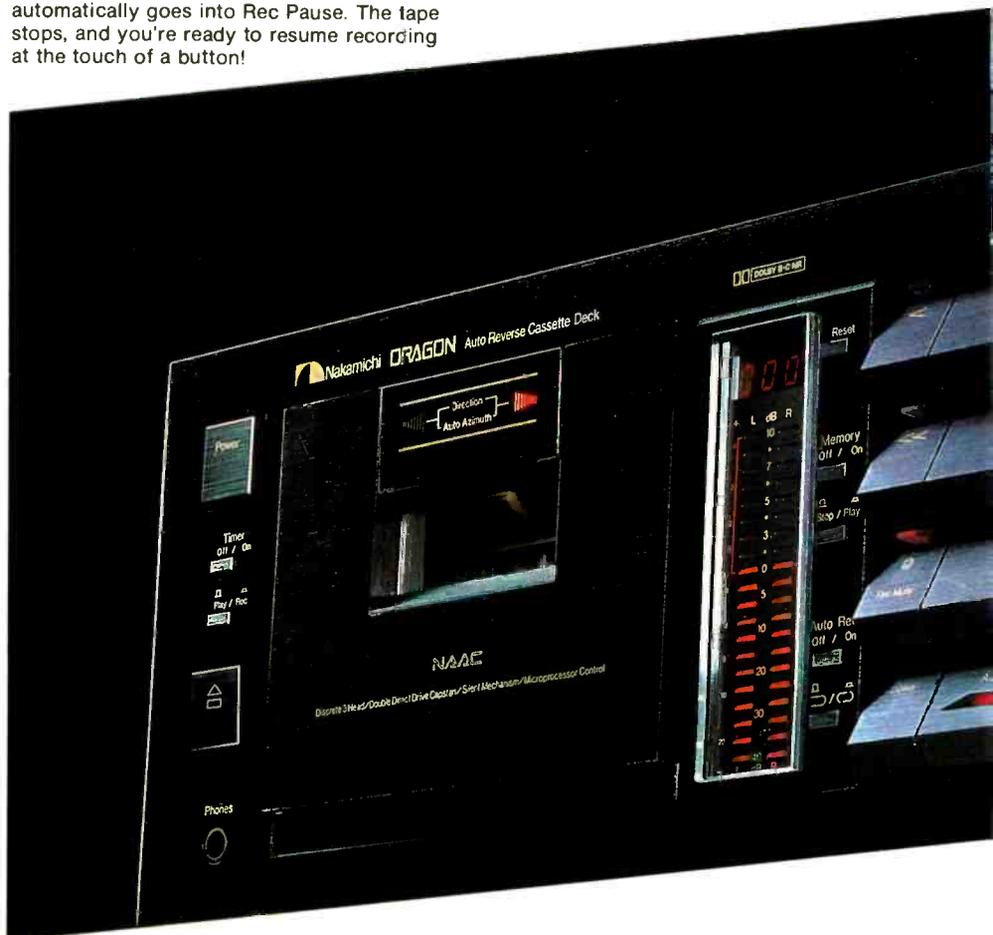


The microprocessors determine drive motor speed and direction to provide flawless auto-reverse operation. With this "intelligence" in control of DRAGON's mechanism and circuitry, several unusual features are possible: Auto Record Pause, Easy Cueing, Punch-In Recording, and Memory Stop/Play.

## Auto Record Pause

When you are dubbing a record onto tape, it is bothersome to constantly watch over the recording process in order to catch the end of the program. If your attention wanders or you're called away, it is easy to miss the end of the side; the tape continues to run, and you're left with a long length of blank tape. You must rewind to find the end of the last program and "splice" in the next.

Now, DRAGON's "intelligent" electronics can do the monitoring for you! Simply switch on Auto Rec Pause, and DRAGON checks the incoming program. If it finds a silence of more than 30 seconds, DRAGON automatically goes into Rec Pause. The tape stops, and you're ready to resume recording at the touch of a button!



## Dual-Speed Auto Fader

DRAGON's dual-speed Auto Fader allows you to create professional-like level fades at the press of a button. Once you have adjusted recording balance and level with the independent left and right level controls, a quick tap on UP or DOWN produces a smooth 6-second fade up to or down from the preset level. If you hold either button down, the fade occurs just as smoothly but more rapidly — in 2 seconds.



## Record Mute

You can prevent recording of the source signal entirely via the Rec Mute button. For as long as this button is pressed, the record amplifiers are muted, and a bland section of tape is recorded. This allows you to clearly delineate between recordings and to eliminate commercials.

The Record Mute function also is accessible by remote control. Once you are in the recording mode, pressing the RM-20's record button a second time activates the mute.

## Perfect Recordings With Every Tape

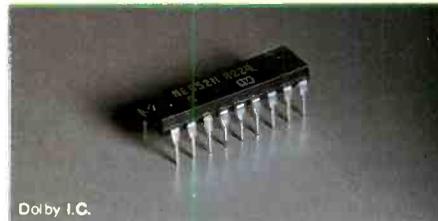
With NAAC's unique ability to reproduce every subtle nuance recorded on cassette, it is all the more important that each tape be created as perfectly as possible to take full advantage of this extraordinary system. DRAGON accommodates the three major tape types — "standard" ferric, chrome/ferricobalt, and metal. What's more, you can individually calibrate the system for best performance on the particular brand of tape you are using.

Separate sets of bias and record-level (sensitivity) controls are provided for each channel and tape type. Self-contained test oscillators generate a 400-Hz signal for setting record level and a 15-kHz tone for adjusting bias. In the calibration mode, DRAGON's recording indicators automatically become 20 dB more sensitive to improve the precision of adjustment.

It takes only a moment to calibrate DRAGON for peak performance, and it is a moment well spent! Tapes *do* differ in bias requirement and sensitivity. These differences are most apparent from brand to brand, but slight differences exist even between batches of the same brand! These can audibly affect high-frequency response and throw off Dolby tracking. Especially when using the more sophisticated Dolby-C system, perfect *basic* response is the key to total system fidelity.

## Advanced Dolby Processing

DRAGON contains a highly sophisticated single-chip Dolby B-C processor. By employing this device rather than conventional cascaded Dolby-B chips, tolerances are eliminated, and a very wide dynamic range becomes possible.



## High-Performance Electronics

DRAGON's electronic circuitry is of a quality rarely found in cassette decks. Distortion is kept under 0.005% — no small feat when you consider the complexity of tape-recording electronics! DRAGON actually has six separate preamp/equalizers in its playback chain to accommodate the NAAC system and provide for bi-directional playback.

Side-A/Side-B switching is entirely electronic — no clumsy unreliable head-rotation devices — and the switching is performed after preamplification to avoid noise. Each unit is hand calibrated at the factory to ensure perfect level matching and optimum performance.

## MPX And Subsonic Filters

With DRAGON's broad frequency response — 20 Hz to 22,000 Hz — it may sometimes be desirable to eliminate unwanted signals in the recording amplifier. When taping an FM-stereo broadcast, for example, 19-kHz pilot from a misadjusted tuner could upset Dolby tracking. DRAGON's MPX filter prevents that from occurring!

At the other end of the spectrum, infrasonic signals generated when playing a warped record — especially with a tonearm/cartridge system whose resonance is poorly placed — can intermodulate with the music and produce an effect similar to wow. DRAGON's subsonic filter can then be called upon to eliminate the condition.

DRAGON's filters are independently switchable and so can be called into play only as needed.

## Wide-Range Peak-Level Meters



DRAGON's peak-reading electronic meters span a full 50-dB range — from -40 dB to +10 dB — with 20 LED segments per channel. They are fast responding but hold the peak reading momentarily so they are easier to read. Being completely electronic, they are free of "pointer lag" and "overshoot." These precision instruments automatically increase sensitivity by 20 dB in the calibration mode to improve the precision of the adjustments.



## DRAGON Features

- NAAC (Nakamichi Auto Azimuth Correction) System Automatically Adjusts Playback-Head Azimuth To Agree With Each Cassette
- Auto-Reverse, Asymmetrical, Dual-Capstan, Double-Direct-Drive Transport On Non-Resonant Chassis
- Dual Super-Liner-Torque DD Capstan Motors Phase Locked To Quartz Crystal
- Motor-Driven Control System Under Supervision Of Three Microprocessors
- Auto-Retracting Slot Guides And Tape-Pad Lifter
- Discrete Three-Head Technology Employing Unique Quadruple Split-Track Playback Head With 20—22,000 Hz  $\pm 3$  dB Response
- Laminated Crystalloy Record And Playback Heads For Reduced Distortion
- Dual-Gap Ferrite/Sendust Erase Head For Low-Noise Erasure Of Metal Tape
- Individual Bias And Record-Level Calibration Controls For Each Channel And Tape Type With Two-Tone Test Oscillator
- Auto Rewind After Calibration Via Calibration-Reset Button
- Separate Tape And Equalization Switches For ZX, SX, and EX Tapes
- Double Dolby-B And Dolby-C Noise Reduction Employing One-Chip Processors
- Defeatable MPX Filters For FM-Stereo Recording
- Defeatable Subsonic Filters For Phono-Disc Recording
- Master Input Level Control With Individual Left And Right Controls To Establish Balance
- Full Off-Tape Monitoring
- Two-Speed Auto-Fader For Professional Fades Plus Record Mute
- Auto Record Pause
- Punch-In Recording In Forward Direction
- 50-dB Peak-Responding Electronic LED Metering
- Six Discrete Equalizer/Amplifiers
- Direct-Coupled Record And Playback Amplifiers
- Two-Speed Easy Cue
- Output Level Control
- High-Output Headphone Jack Plus DC Power For BlackBox Series
- 4-Digit LED Electronic Counter (-999 to 9999) With Memory Stop And Memory Repeat
- Unattended Operation In Record Or Playback Via Accessory Timer
- Remote Control Capability Via RM-20 Option



RM-20 Remote Control



SP-7 Stereo Headphones



### Tapes

ZX Metalloy Cassette Tape  
(70  $\mu$ s, metal bias)  
ZX C-60 ZX C-90

SX Ferricobalt Cassette Tape  
(70  $\mu$ s, CrO bias)  
SX C-60 SX C-90

EX Ferrioxide Cassette Tape  
(120  $\mu$ s, normal bias)  
EX C-60 EX C-90

SX II Super Ferricobalt Tape  
(70  $\mu$ s, CrO bias)  
SX II C-60 SX II C-90

EX II Ferricrystal Cassette Tape  
(120  $\mu$ s, normal bias)  
EX II C-60 EX II C-90



DM-10 Head Demagnetizer

## DRAGON Specifications

Track Configuration.....	4 tracks/2-channel stereo (Playback Auto Reverse)
Heads.....	.3 (erase head $\times$ 1, record head $\times$ 1, 4-track, 4-channel playback head $\times$ 1)
Motors .....	• <b>TRANSPORT</b> Quartz PLL DC, brushless, slotless, coreless Super Linear Torque D.D. Motor (capstan drive) $\times$ 2, DC Motor (reel drive) $\times$ 1 • <b>AUTO AZIMUTH CORRECTION</b> DC Motor $\times$ 1 • <b>MECHANISM</b> DC Motor $\times$ 1
Power Source .....	100, 120, 120/220-240, 220 or 240V AC; 50/60Hz (According to country of sale)
Power Consumption .....	45 W max.
Tape Speed.....	1-7/8 ips. (4.8 cm/sec.)
Wow-and-Flutter.....	Less than 0.019% WTD RMS Less than 0.04% WTD Peak
Frequency Response .....	20 Hz~22,000 Hz $\pm 3$ dB (recording level -20dB, ZX tape) 20 Hz ~21,000 Hz $\pm 3$ dB (recording level -20dB, SX, EX II tape)
Signal-to-Noise Ratio .....	<b>Dolby C-Type NR on</b> <70 $\mu$ s, ZX tape> Better than 72 dB (400 Hz, 3% THD, IHF A-WTD RMS) <b>Dolby B-Type NR on</b> <70 $\mu$ s, ZX tape Better than 66 dB (400 Hz, 3% THD, IHF A-WTD RMS)
Total Harmonic Distortion .....	Less than 0.8% (400 Hz, 0 dB, ZX tape) Less than 1% (400 Hz, 0 dB, SX, EX II tape)
Eraseure .....	Better than 60 dB (100 Hz, 0 dB)
Separation.....	Better than 37 dB(1 kHz, 0 dB)
Crosstalk .....	Better than 60 dB (1 kHz, 0 dB)
Bias Frequency.....	105 kHz
Input (Line) .....	50 mV, 50 k $\Omega$
Output (Line) .....	1 V (400 Hz, 0 dB, output level control at max.) 2.2k $\Omega$
(Headphone).....	45 mW (400 Hz, 0 dB, output level control at max.) 8 $\Omega$
BlackBox Series DC Output .....	$\pm 10$ V, 125mA max.
Dimensions .....	450(W) $\times$ 135(H) $\times$ 300(D) mm 17-3/4(W) $\times$ 5-5/16(H) $\times$ 11-13/16(D) inches
Weight .....	Appr. 9.5 kg 21 lb

- Specifications and appearance subject to change for further improvement without notice.
- Dolby NR under license from Dolby Laboratories Licensing Corporation.
- The word "DOLBY" and the Double-D symbol are trademarks of the Dolby Laboratories Licensing Corporation.

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Nakamichi Sound Research Center Concert Hall



## Nakamichi—Commitment to Perfection

Perfection—freedom from fault or defect—an unsurpassable degree of accuracy or excellence. For Nakamichi, perfection is the ultimate goal, our *raison d'être*. Our products are dedicated to true audiophiles who appreciate the best in sound reproduction and, like us, will settle for nothing less.

When we decided to re-enter the auto-sound market (we offered an under-dash player years ago), we had only one concern—sound quality! Could Nakamichi Sound be brought on the road? Many were skeptical. No one doubted that we could build a “better” system than our competition, but could we make one to equal a *home* system?

We had already overcome the major stumbling block of bi-directional playback—the azimuth misalignment that occurs when a tape is played in reverse. Our unique Nakamichi Auto Azimuth Correction (NAAC) system made its debut in Dragon and could be adopted for the mobile environment. But what about the horrendous wow and flutter that plagues auto decks? What about distortion orders of magnitude worse than home power amps? Could we overcome the horrible acoustics in

a car? Could we develop an FM tuner that could fight off multipath noise and distortion?

After man-years of effort, we created the Nakamichi Mobile Sound System. It's as close to perfection as we know how to come—which is why it bears the Nakamichi name.

The complete Nakamichi Mobile Sound System consists of three units: the TD-1200 Mobile Tuner/Cassette Deck, the PA-300 Mobile Power Amplifier, and the SP-400 Mobile Speaker System. Each is an engineering tour de force in itself; together they form the most remarkable sound system that has ever taken to the road.

If you are seriously interested in experiencing sonic perfection in your automobile, we invite you to audition the Nakamichi Mobile Sound System. But beware! Once you've heard Nakamichi *Mobile Sound*, it is sure to become the standard of perfection against which you judge all others. It's even convinced those skeptics who thought it couldn't be done!

The *Mobile Sound System*—from Nakamichi—the company committed to perfection.

For more information on NAAC and the Nakamichi Mobile Sound System, write to Nakamichi U.S.A. Corporation, 1101 Colorado Ave., Santa Monica, CA 90401. TD-1200 Mobile Tuner/Cassette Deck



 Nakamichi



Nakamichi Mobile Speaker System

SP-400 3-Way  
Mobile Speaker System

PA-300 Mobile  
Power Amplifier

TD-1200  
Mobile Tuner  
Cassette Deck

## Win The Nakamichi Mobile Sound System—Gift Wrapped

Amazing but true! You can win the incredible Nakamichi Mobile Sound System gift wrapped in a 1983 BMW 318i! Just drop into your nearest Nakamichi Mobile Sound dealer and fill out an entry form. That's all there is to it! But bring your favorite cassettes along. This system will amaze you! It's unlike *any* other mobile-sound system ever created.

Only the TD-1200 Mobile Tuner/Cassette Deck has NAAC—the unique Nakamichi Auto Azimuth Correction system that automatically aligns the playback head in *each* direction to extract the last iota of per-

formance. Only the TD-1200 senses when the music has stopped and fast winds to the end of tape for quick reversal. Only the TD-1200 is powered by the unique Nakamichi SLT motor that virtually eliminates wow and flutter. And, the TD-1200 gives you a choice of EQ and Dolby\* B or C noise reduction to accommodate the many tapes in your collection.

That's not all. Tone controls are specifically designed to compensate for *automobile* acoustics, and the TD-1200's 10-preset quartz-PLL synthesized FM/AM tuner has the pulling power, selectivity, and immunity to

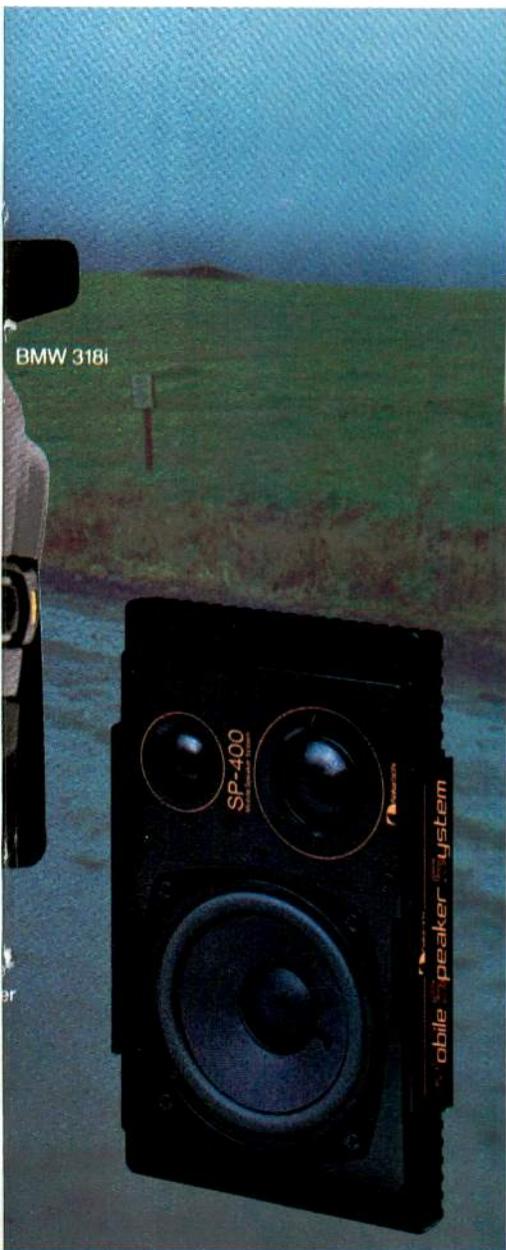
multipath that you *need* on the road.

The PA-300 Mobile Power Amplifier is incredible—70 watts per channel continuous power, with a dynamic range of more than 115 dB and distortion under 0.003%! Matched with the Nakamichi SP-400 3-way Mobile Speaker System, the TD-1200 and PA-300 bring home music fidelity to the road!

The Nakamichi Mobile Sound System—it not only *rivals* the finest home equipment, it *outperforms* most of it!

 Nakamichi

## Entry Forms Available At Your Nearest Authorized Nakamichi MSS Dealer



... in a BMW 318i!

### Grand Prize

1983 BMW 318i with a complete Nakamichi Mobile Sound System—TD-1200 Tuner/Deck, PA-300 Power Amplifier, and SP-400 Loudspeaker System

### First Prize

Nakamichi Mobile Sound System

### 12 Second Prizes

Nakamichi Windbreaker Jackets

Entry forms and complete contest rules are available from your local authorized Nakamichi Mobile Sound dealer. Open to all residents of the United States, except employees and their families of Nakamichi U.S.A. Corporation, C.B.S. Inc. and members of the judging organization. Void where prohibited by law.

\*TM Dolby Laboratories Licensing Corporation

#### Alabama

AUDITION: Birmingham, Homewood  
SOUND ADVICE: Mobile  
SOUND DISTRIBUTORS: Huntsville

#### Alaska

SHIMEK'S: Anchorage  
GREAT ALASKAN SOUND: Anchorage

#### Arizona

CLASSIC CAR SOUNDS: Tucson  
JERRY'S AUDIO EXCHANGE: Phoenix

#### Arkansas

CUSTOM AUDIO: Little Rock, North Little Rock

#### California

ANDY'S AUTO RADIO: Sherman Oaks  
AUDIO VISION: Santa Barbara  
BEVERLY ELECTRONICS: Los Angeles  
BEVERLY HILLS AUTO RADIO: Los Angeles  
BURDICK'S: Santa Cruz  
CENTURY STEREO: Hayward, San Jose  
DEALER'S CAR STEREO: Los Altos  
ELECTRONIC ENTERTAINMENT: Hawthorne  
GARLAND AUDIO: San Jose  
GENESIS AUDIO: El Toro  
GLENDALE AUTO RADIO: Glendale  
GROSS NATIONAL PRODUCTS: Pasadena  
HAVENS AND HARDESTY AUDIO SYSTEMS: Huntington Beach  
HERMARY'S: San Carlos  
HONKER'S SOUND: Berkeley  
HOUSE OF MUSIC: San Francisco  
HOUSE OF NATURAL SOUND: Monterey Park

#### Colorado

JONAS MILLER SOUND: Santa Monica  
KAR TUNES: Seaside  
KUSTOM HI FI: Burlingame  
MARIN AUTO STEREO & ALARM: San Rafael  
MESATRONICS: Costa Mesa  
MOBILE ACOUSTICS CAR STEREO: Dublin, Fremont  
MONTEREY STEREO: Monterey  
NOR-CAL OFFSHORE, LTD.: Santa Clara  
PAN AUTO SOUNDS: San Mateo  
PARADYME CAR AUDIO: Davis  
PETER'S AUTO RADIO: San Francisco  
THE RADIOMAN: San Diego  
REUS AUTOSOUND: Villa Park  
SOUND COMPANY: San Diego  
SOUND FACTOR: Encino, North Hollywood  
SOUND ON WHEELS: Glendale  
SOUND STATION: Northridge  
SPEAKER WORKS: Orange  
STEREO SHOWCASE: Sacramento, Vallejo  
TOWN & COUNTRY: Mill Valley  
TRANS-LEX TRAVELIN' MUSIC: Bakersfield  
WALNUT CREEK AUTO RADIO: Walnut Creek  
WESTERN AUDIO IMPORTS: Palo Alto

#### Connecticut

AUDIO JUNCTION: Ft. Collins  
AUDIOTRONIX: Grand Junction  
LISTEN UP: Boulder, Denver, Evergreen  
MOBILE ACOUSTICS: Aurora  
SOUNDS GREAT: Colorado Springs

#### Delaware

AUDIOCOM: Old Greenwich  
AUDIOTRONICS: Fairfield, Norwalk  
MOONROOFS: New Haven  
SOUNDS INCREDIBLE: Brookfield

#### Florida

AUTO AUDIO: Tallahassee  
AUDIO GARAGE: Orlando, Winter Park  
CAR SOUNDS: Miami  
CARTRONICS OF AMERICA: Miami  
HI FI ASSOCIATES: Fort Lauderdale, Miami  
KUBAN'S: Brandon, Sarasota  
SENSUGUS SOUND: Tampa  
SOUND PLUS WOOD: Boca Raton  
SOUND SHACK: Fort Pierce, West Palm Beach  
TECH ELECTRONICS: Gainesville  
THE TRUCK STOP: Melbourne  
WALDER ELECTRONIC DISTRIBUTORS: Jacksonville

#### Georgia

HI FI BUYS: Atlanta  
HI FIDELITY SSS: N.E. Atlanta  
SOUTHLAND SOUND: Savannah  
STEREO DESIGNS: Atlanta

#### Hawaii

ISLAND SOUND: Honolulu

#### Illinois

APPLETREE STEREO: Champaign, Decatur, DeKalb, Normal, Peoria, Rockford  
AUDIO CONSULTANTS: Evanston, Libertyville  
AUDIO ENTERPRISES: Chicago Heights  
COLUMBIA HI FI VIDEO: Buffalo Grove, Highland Park, Rockford  
HI FI HUTCH: Villa Park  
MUSIC IN MOTION: Glenview  
NORTHWEST AUDIO VIDEO: Crystal Lake  
STEREO DESIGNS: Riverdale  
VICTOR'S STEREO: Chicago, Morton Grove

#### Indiana

AUDIOTREND: Evansville  
HI FI BUYS: Greenwood, Indianapolis, Lafayette, Muncie, South Bend, Speedway  
SOUND PRODUCTION: Carmel

#### Iowa

AUDIO EMPORIUM: Sioux City  
AUDIO LABS: Des Moines  
AUDIO ODYSSEY OF IOWA CITY: Iowa City

#### Kansas

CUSTOM SOUND: Wichita  
RIVER CITY RADIO: Lawrence

#### Kentucky

HI FI BUYS: Louisville

#### Louisiana

ART COLLEY'S AUDIO SPECIALTIES: Baton Rouge  
AUDIO FIDELITY: Shreveport  
AUDIO SYSTEMS: Lafayette  
STEREO VILLAGE: Metairie

#### Maryland

GRAMOPHONE: Lutherville  
HUNT AUDIO & ASSOCIATES: Hagerstown  
MYER EMCO: Rockville

#### Massachusetts

NATURAL SOUND: Framingham  
RICH'S CAR TUNES: Watertown  
SOUNDTRAK AUDIO: Brockton  
TWEETER, ETC.: Boston, Burlington, Cambridge, Chestnut Hill, Danvers, Dedham  
WALTHAM CAMERA & SOUND: Waltham

#### Michigan

ABSOLUTE SOUND: Ann Arbor, Royal Oak  
ALMAS HI FI: Dearborn  
BIRMINGHAM AUTOSOUND: Birmingham  
HI FI BUYS: Grand Rapids, Kalamazoo

#### Minnesota

AUDIO KING: Minneapolis

#### Mississippi

AUTOMOTIVE AUDIO: Jackson  
IDEAL ACOUSTICS: Starkville  
SOUND ADVICE: Gulfport

#### Missouri

AUTO-EAR-OTIC: Saint Louis  
BRAND'S MART: Kansas City

#### Montana

ROCKY MOUNTAIN HI FI: Great Falls  
THIRSTY EAR: Bozeman

#### Nebraska

CUSTOM ELECTRONICS: Omaha  
STEREO WEST: Omaha

#### Nevada

Q AUDIO: Reno  
SOUND EMPORIUM: Las Vegas

#### New Hampshire

TWEETER, ETC.: Manchester, Nashua, Newington

#### New Jersey

AUDIO 22: North Plainfield  
BRYN MAWR STEREO: Maple Shade  
CONKLIN'S: Wycoff  
HAL'S STEREO SOUND CENTER: Trenton  
LEONARD RADIO: Paramus  
SAMM SOUND: West Caldwell  
SOUNDWAVES: Northfield, Tom Rivers

#### New Mexico

SOUND IDEAS: Albuquerque

#### New York

A B CAR STEREO: Huntington, Manhasset  
AUDIO DEN: Lake Grove  
AUDIO GENESIS: Glens Falls  
AUTO SOUND SYSTEMS: Latham

#### AUTOSOUND UNLIMITED:

White Plains  
CHAROS CUSTOM SOUND: Southampton  
CLARK MUSIC CO.: Albany, Syracuse  
4-WHEEL SOUND: Mount Kisco  
GORDON ELECTRONICS: Schenectady, Syracuse, Vestal  
HI-WAY HI FI: Ithaca  
MUSIC BOX: New Windsor  
ROGERS STEREO: Freeport  
SOUND ODYSSEY: Wappinger Falls  
SQUARE DEAL RADIO & TV: Patchogue  
ULTRA SMITH SYSTEMS: New York

#### North Carolina

ATLANTIC AUDIO: Wilmington  
DASHBOARD STEREO: Durham  
HIGHWAY FIDELITY: Raleigh  
SOUND SYSTEMS: Charlotte, Fayetteville, Greensboro

#### North Dakota

PACIFIC SOUND: Bismark

#### Ohio

AUDIO CRAFT: Cleveland, Fairlawn, Mayfield Heights, Westlake  
CARLIN AUDIO: Dayton  
MIAH, INC.: Columbus  
SOUNDWAVES: Dayton

#### Oklahoma

GRAMOPHONE: Norman  
IMPERIAL SOUND: Tulsa  
SOUND ROOM: Altus

#### Oregon

CHELSEA AUDIO: Beaverton, Portland  
PENNINGTON AUDIO: Coos Bay  
STEREO TO GO: Coos Bay

#### Pennsylvania

BRYN MAWR STEREO: Bryn Mawr, Frazer, Jenkintown, Quakertown  
WES, INC.: State College

#### Rhode Island

TWEETER, ETC.: Providence

#### Tennessee

HI FI BUYS: Nashville, South Madison  
HI FI HOUSE: Knoxville  
MODERN MUSIC AUDIO: Memphis  
NICHOLSON'S STEREO: Nashville

#### Texas

ARNOLD & MORGAN: Dallas, Garland  
AUDIO CONCEPT: Austin  
AUDIO CONCEPTS: San Antonio  
AUDIO SYSTEMS: Laredo  
AUDIO VIDEO: College Station  
AUDIOWORKS: Lufkin, Nacagdoches  
CUSTOM CAR STEREO: Houston  
EL CENTRO SOUND CENTER: McAllen, Pharr  
EARMARK: Addison  
ELECTRONIC SERVICE CENTER: Odessa, Midland  
HIGH FIDELITY: Austin  
HI FIDELITY OF LUBBOCK: Lubbock  
HILLCREST HIGH FIDELITY: Dallas  
HOME ENTERTAINMENT: Houston  
MARVIN ELECTRONICS: Fort Worth  
MUSIC SYSTEMS: El Paso  
SOUND ROOM OF SOUTHWEST MUSIC: Amarillo  
TAPE TOWN: Corpus Christi

#### Utah

AUDIOWORKS: Salt Lake City  
AUTO SPECIALTIES: Provo

#### Vermont

AUDIO DEN: South Burlington

#### Virginia

GARY'S STEREO: Richmond  
MYER EMCO: Falls Church

#### Washington

HAL'S STEREO: Spokane  
MAGNOLIA HI FI: Bellevue, Lynnwood, Seattle  
Q.C. STEREO: Bellingham, Mount Vernon, Oak Harbour  
STEREOCRAFT: Walla Walla, Yakima, Ellensburg

#### Washington D.C.

MYER EMCO

#### Wisconsin

EME AUDIO SYSTEMS: Strum, Eau Claire  
HI FI HEAVEN: Green Bay

If a local dealer is not listed, please contact Nakamichi U.S.A., 1101 Colorado Ave., Santa Monica, CA 90401, (800) 421-2313 in California and Hawaii call (213) 451-5901 for the dealer nearest you.



KING: 17 mg. "tar", 1.3 mg. nicotine,  
100's: 17 mg. "tar", 1.4 mg. nicotine,  
av. per cigarette by FTC method.

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*You've got what it takes.*

# Salem Spirit

*Share the spirit.  
Share the refreshment.*



Warning: The Surgeon General Has Determined  
That Cigarette Smoking Is Dangerous to Your Health.

# MICROPHONES



SENNHEISER MD 402 U

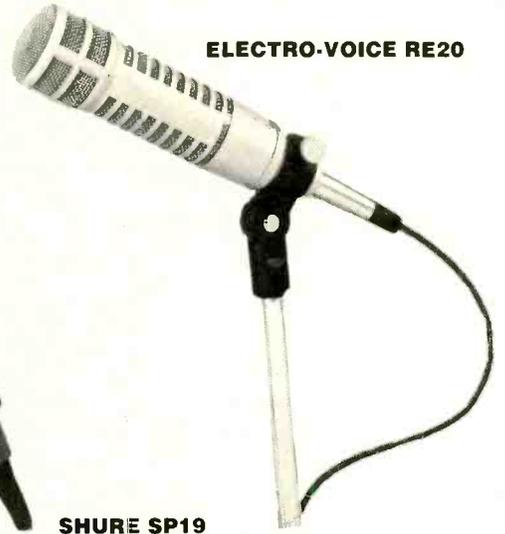


AKG D190E



SHURE SP19

ELECTRO-VOICE RE20



MANUFACTURER	Model	Directional Pattern Plus Channels: Stereo = 2, Quad = 4, M-S = M-S	Operating Principle	Case Material	Most Common Use	Actual Impedance, 1 kHz, Ohms: Balanced = B	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 Equipment End of Cable	Weight, Ounces	Wire Screen = W On Off Scale = S Shielded or Prot. Filter = F	Price, \$	Notes
AIWA	CM-Z7	M-S Var.	Electret Condenser Dynamic	Zinc	Record	600B	60-12	70	XLR-3-11C	10	Phone, Mini Phone, Mini Phone, Mini Phone	6	WSF	150.00	Zoom, stereo, wide post.
	DM-D6	Uni	Dynamic	Zinc	Record	600	80-12	55	XLR-3-11C		8 3/4	S		50.00	
	DM-D3	Uni	Dynamic		Record	600	80-12	55			6	S		30.00	
	DM-501	Uni	Dynamic		Record	600		44		8	5 1/2	WS		20.00	
	CM-60	Uni x2	Electret Condenser		Record						1/2	S		29.50	
	CM-30	Bi	Electret Condenser		Record		50-17	54			2	WS		39.00	
	CM-Z3	Var.	Electret Condenser		Record			50			1 1/2	WSF		39.00	
AKG	C-422	Multi x2	Condenser	Brass	Studio	200B	20-20	44.5	Multi	66	XLR	15 1/2	WF	2500.00	Remote control with 9-pattern selector.
	C-34	Multi x2	Condenser	Brass	Studio	200B	20-20	47	Multi	66	XLR	9 3/4	WF	1649.00	As above.
	C-33	Card. x2	Condenser	Brass	Studio	200B	20-20	47	Multi	66	XLR	9 3/4	W	950.00	X-Y record.
	C-414EB/P48	Multi	Condenser	Brass	Studio	200B	20-20	41	XLR			12	WF	795.00	Four patterns.
	C-460B	Multi	Condenser	Brass	Studio	200B	20-20	40	XLR			4	WF	464.00	Modular system.
	C-535EB	Card.	Condenser	Brass	Vocal	200B	20-20	Var.	XLR			10	WF	295.00	
	C-568EB	Lobe	Condenser	Brass	Record	200B	50-20	42	XLR			6 1/4	WF	295.00	Shotgun.
	C-567E	Omni	Condenser	Brass	Speech/ Instr.	200B	20-20	45	XLR	4	XLR	3 1/2	W	235.00	Lavalier.
	D-12E	Card.	Dynamic	Zinc	Instr. Home	200B	30-15	53	XLR			17		295.00	
	D-40	Card. x2	Dynamic	Zinc	Record	600	80-15	59	Attached	15	Phone	7		99.00	Stereo pair.
	D-58E	Card.	Dynamic	Zinc	Record	200B	75-15	63	XLR			1 1/2		99.00	Noise cancelling.
	D-109	Omni	Dynamic	Zinc	Speech	200B	70-15	59	XLR	30	XLR	5 1/2		99.00	Lavalier.
	D-125E	Card.	Dynamic	Zinc	General	200B	90-18	54	XLR			8		110.00	
	D-130E	Omni	Dynamic	Zinc	General	200B	50-15	56	XLR			8		105.00	
	D-190E	Card.	Dynamic	Brass	General	200B	30-16	56	XLR			6 1/2	S	115.00	
	D-222EB	Card.	Dynamic	Zinc	Record	200B	20-17	56	XLR			9	WF	290.00	Two-way system.
	D-244EB	Card.	Dynamic	Zinc	Record	200B	20-20	58	XLR			10	WF	500.00	As above.
D-310	Card.	Dynamic	Zinc	Vocal	200B	80-18	58	XLR			8 1/2	WS	135.00		
D-320B	Hyper Card.	Dynamic	Zinc	Vocal	200B	80-18	57	XLR			10 1/2	WF	170.00		
D-330BT	Hyper Card.	Dynamic	Zinc	Vocal	200B	50-20	58	XLR			12	WF	210.00	EQ switching.	
D-900	Lobe	Dynamic	Zinc	Sound Reinf.	200B	60-15	50	XLR			18	WF	310.00	Shotgun.	
ASTATIC	BL 94	Card.	Dynamic	Zinc	Vocal	250B	40-16	75	A3F	25	A3M	9 1/2	WS	116.00	Switch lock.
	BL 74	Card.	Dynamic	Zinc	Vocal	250B	50-16	74	A3F	25	A3M	9 1/2	WS	98.00	As above.
	BL 64	Card.	Dynamic	Zinc	Instr.	250B	40-15	74	A3F	25	A3M	9	WS	88.60	As above.
	BL 54	Omni	Dynamic	Zinc	Instr.	250B	50-15	82	A3F	25	A3M	7 1/2	S	88.00	As above.
	BL 44	Card.	Dynamic	Zinc	Instr.	250B	40-15	74	A3F	25	A3M	10 1/2	WS	85.60	As above.
	BL 24	Omni	Dynamic	Zinc	Instr.	200B	50-16	82	None	30	A3M	5 1/2		66.60	Lavalier.
	BL 14	Card.	Dynamic	Zinc	Instr.	HI	40-15	53	None	20	Phone	21	WS	59.50	Switch lock.
	BLIT-30	Omni	Dynamic Crystal	Zinc	Instr.	HI	30-10	49	TA3M	20	Phone	8 1/2		68.50	Harmonica mike.
AUDIO-TECHNICA	AT9100	Uni	Dynamic	Plastic	Vocal	600	60-15	79		10	Mini, Phone	6.7	S	19.95	
	AT9200	Uni	Condenser	Plastic	Vocal	1500	60-17	61		10	Mini, Mini, Phone	7.1	S	29.95	
	AT9400	Uni x2	Condenser	Plastic	Instr.	1500	60-17	64		10	Mini, Mini, Phone	7.1	S	39.95	
	AT9500	Omni	Condenser	Plastic	Vocal	2000	50-16	63		10	Mini, Mini, Phone	0.17	W	24.95	Lavalier.

# MICROPHONES

MANUFACTURER	Model	Directional Pattern Plus Channels: S = S, O = O, A = A, MS = MS	Operating Principle	Case Material	Most Common Use	Actual Impedance, 1 kHz, Ohms: B = 250	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	Wire Screen = W, On Off Switch = F, Switched Low of Proximity Filter = F	Price, \$	Notes
BEYER DYNAMIC	M69	Hyper Card.	Dynamic	Brass	Vocal	200B	50-16	51†	Neutrik 3 Pin-Male		11	††	160.00	†dBm; ††speech/music switch opt.	
	M88	Hyper Card.	Dynamic	Brass	Vocal	200B	30-20	51†	Neutrik 3-Pin Male		11		320.00		
	M101	Omni	Dynamic	Brass	Instr.	200B	40-20	57†	Neutrik 3-Pin Male		5¾	WS	210.00		
	M111	Omni	Dynamic	Zinc Alloy	Vocal	200B	60-15	62†	Neutrik 3-Pin Male Attached		2¾		200.00	Lavalier.	
	M160	Hyper Card.	Ribbon	Brass	Studio/Reinf. Instr.	200B	40-18	59†	Neutrik 3-Pin Male		6½		360.00		
	M201	Hyper Card.	Dynamic	Brass	Instr.	200B	40-18	56†	Neutrik 3-Pin Male		7¾	WS	200.00		
	M260	Hyper Card.	Ribbon	Brass	Instr.	200B	50-18	60†	Neutrik 3-Pin Male		10¾	†††	195.00	†††On /off switch opt.	
	M300	Card.	Dynamic	Alum.	Vocal	250B	50-15	58†	Neutrik 3-Pin Male		8½		125.00		
	M400	Super Card.	Dynamic	Alum.	Vocal	200B	50-15	53†	Neutrik 3-Pin Male		9	†††	160.00		
	M500	Hyper Card.	Ribbon	Alum.	Vocal	200B	40-18	60†	Neutrik 3-Pin Male		8½	†††	240.00		
	M600	Hyper Card.	Dynamic	Alum.	Vocal	250B	40-16	56†	Neutrik 3-Pin Male		8¾	†††	270.00		
	MCE 5.11	Omni	Electret Condenser	Brass	Speech	200B	20-20	36†	3-Pin Male XLR		½		265.00		
	MC 711	Omni	Condenser	Brass	Instr.	200B	40-20	41†	3-Pin Male XLR		4		490.00		
	MC 713	Card.	Condenser	Brass	Instr.	200B	40-20	39†	3-Pin Male XLR		4½		545.00		
	MC 718	Fig. 8	Condenser	Brass	Loc. Record Instr./Film	200B	40-20	39†	3-Pin Male XLR		7¾		745.00		
	MC 716	Card./Lobe	Condenser	Brass	TV/Film	200B	40-20	39†	3-Pin Male XLR		6½		690.00		
MC 717	Lobe	Condenser	Brass	TV/Film	200B	40-20	39†	3-Pin Male XLR		12		795.00			
M1-K	Omni	Dynamic	Plastic	Vocal/Instr.	200B	40-15		3-Pin Male XLR	10	4		48.00			
M2-K	Card.	Dynamic	Plastic	Vocal/Instr.	200B	40-15		3-Pin Male XLR	10	4		60.00			
CROWN INTERNATIONAL	30GP	PZM Hem.	Electret	Carbon Fiber	Studio	150	50-20	76	Swcft. A3F	6		W	359.00		
	6LP	PZM Hem.	Electret	Carbon Fiber	Studio	150	50-20	76	A3F	15		W	359.00		
	31S	PZM Hem.	Electret	Carbon Fiber	Studio	150	30-20	76	A3F	6		W	359.00		
	2LV	PZM Hem.	Electret	Carbon Fiber	Instr.	150		76	A3F	3½	Swcft. TA4F		279.00		
	2ORMG 3LV	PZM Hem.	Electret	Alum. Carbon Fiber	Conf. Vocal	150 150	50-20	76 76	A3F A3F	15	TA4F		299.00 269.00		
	3LVR	PZM Hem.	Electret	Carbon Fiber	Studio	150		76	A3F	10	TA4F		399.00		
	180 Sound Grabber	PZM Hem.	Electret	Carbon Fiber Plastic				74					169.00 99.00		
	C-TAPE DEVELOPMENTS	B 1/3	Contact	Condenser	Vinyl	Violin	5k	25-50 ±3		None	12	Phone		157.00	
B 1/8		Contact	Condenser	Vinyl	Guitar	5k	25-50 ±3		None	12	Phone		157.00		
B 2/8		Contact	Condenser	Vinyl	Piano	5k	25-50 ±3		None	12	Phone		214.00		
C 1/3		Contact	Condenser	Vinyl	Violin	600B	10-100 ±3		None	12	Phone		198.00		
C 1/8		Contact	Condenser	Vinyl	Guitar	600B	10-100 ±3		None	12	Phone		198.00		
C 2/8		Contact	Condenser	Vinyl	Piano	600B	10-100 ±3		None	12	Phone		236.00		
C S-8		Contact x2	Condenser	Vinyl	Piano	600B	10-100 ±3		None	12	Phone		291.00		
ELECTRO-VOICE	RE20	Card.	Dynamic	Steel	Music/Voice	50B/150B/250B	45-18	57†	A3F	15	None	WF	484.50	†0 dB = 1mW per 10 dynes/cm <sup>2</sup> .	
	RE18	Super Card.	Dynamic	Steel	Music/Voice	150B	80-15	57†	A3F	15	None	W	279.25		
	RE16	Super Card.	Dynamic	Steel	Voice	150B	80-15	56†	A3F	15	None	WF	269.50		
	RE15	Super Card.	Dynamic	Steel	Voice	150B	80-15	56†	A3F	15	None	WF	256.75		
	RE11	Super Card.	Dynamic	Steel	Voice	150B	90-13	56†	A3F	15	None	WF	179.50		
	RE10	Super Card.	Dynamic	Steel	Voice	150B	90-13	56†	A3F	15	None	WF	166.50		
	DS35	Card.	Dynamic	Steel	Music/Voice	150B	60-17	60†	A3F	15	None	WF	159.00	Bass-boost proximity effect.	
	PL77AA	Card.	Condenser	Zinc & Alum.	Music/Voice	150B	60-17	60†	A3F	15	None	W	183.75	Phantom and/or battery power, pop filter.	
	CS15P	Card.	Condenser	Steel	Music/Voice	150B	40-18	45†	A3F	15	None	W	263.00		
	CO15P	Omni	Electret Condenser	Steel	Music	150B	20-20	45†	A3F	15	None	W	283.25	Phantom power.	
	RE55	Omni	Dynamic	Steel	Music	150B	40-20	57†	A3F	15	None	W	259.00		
	DO54	Omni	Dynamic	Steel	Music	150B	50-18	58†	A3F	15	None	W	150.00		
DO56	Omni	Dynamic	Steel & Alum.	Voice	150B	80-18	61†	A3F	15	None	W	125.00	Integral shock mount.		
DO56L	Omni	Dynamic	Steel & Alum.	Voice	150B	80-18	61†	A3F	15	None	W	141.00	As above, long handle.		
(Continued)	RE50	Omni	Dynamic	Alum.	Voice	150B	80-15	55†	A3F	15	None	W	156.00	Integral shock mount.	
	G35A	Omni	Dynamic	Steel	Voice	150B	80-13	55†	A3F	15	None	W	95.50		

# MICROPHONES

MANUFACTURER	Model	Directional Pattern Plus Cabarets: S=2 Quad=4 MS=MS-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 $\mu$ 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	
ELECTRO-VOICE (Continued)	DL42	Super Card.	Dynamic	Steel & Alum.	Voice	150B	50-12	50†	A3F	1	A3M	27	W	525.00	Shotgun, shock mount.
	667A	Card.	Dynamic	Alum.	Voice	50B/150B/250B	40-10	51†	A3F	2	A3M	24	WF	525.00	Boom mount, selectable patterns.
	CO94	Omni	Electret Condenser	Brass & Alum.	Voice	150B	80-15	45†	A3F	15	A3M	7/10	W	231.75	Lavalier.
	CO90	Omni	Electret Condenser	Brass & Alum.	Voice	150B	40-15	57†	A3F	15	None	7/10	W	145.00	Lavalier, battery powered.
	CO90P	Omni	Electret Condenser	Brass & Alum.	Voice	150B	40-15	57†	A3F	15	None	7/10	W	176.50	Lavalier, phantom powered.
	CO90E	Omni	Electret Condenser	Brass & Alum.	Voice	150B	40-15	57†	A3F	15	None	7/10	W	98.00	Lavalier, for wireless.
	RE85	Omni	Dynamic	Steel	Voice	150B	90-10	61†	A3F	15	None	8	W	145.50	
	649B	Omni	Dynamic	Alum.	Voice	150B	80-10	61†	A3F	15	None	1.1	W	132.00	
	PL80	Super Card.	Dynamic	Zinc & Alum.	Voice	150B	60-17	56†	A3F	0	None	12.5	W	216.00	
	PL91A	Card.	Dynamic	Zinc & Alum.	Voice	150B	60-15	59.5†	A3F	0	None	8	W	132.00	
	PL95A	Card.	Dynamic	Steel	Voice	150B	60-17	60†	A3F	0	None	9.2	W	180.00	Battery powered.
	PL76B	Card.	Condenser	Zinc & Alum.	Voice	150B	50-20	55†	A3F	0	None	12	WS	177.00	
	PL77B	Card.	Condenser	Zinc & Alum.	Voice	150B	50-20	50†	A3F	0	None	12	WF	210.00	Battery or phantom powered.
	PL5	Omni	Dynamic	Steel	Music	150B	80-13	55†	A3F	0	None	6	W	110.00	
	PL6	Super Card.	Dynamic	Zinc	Music	150B	90-13	56†	A3F	0	None	10.5	W	119.00	
	PL9	Omni	Dynamic	Steel	Music	150B	50-18	58†	A3F	0	None	6.5	W	169.00	
PL11	Super Card.	Dynamic	Steel	Music	150B	90-13	56†	A3F	0	None	6	W	204.00		
PL20	Super Card.	Dynamic	Steel	Music/Voice	50B/150B/250B	45-18	57†	A3F	0	None	26	WF	570.00		
681	Card.	Dynamic	Steel	Music/Voice	150B/Hi-Z	60-14	59.5†	A3F	15	None	8	W	135.00		
644	Super Card.	Dynamic	Zinc & Brass Alloy	Music/Voice	150B/Hi-Z	40-12	53†	QC-4M	15	None	41	W	244.00	Shotgun.	
RE30	Omni	Condenser	Alloy	Voice	200B	40-15	54†	A3F	15	None	11.7	WS	400.00	Special ENG/EFP with limiter.	
RE34	Card.	Condenser	Alloy	Voice	200B	40-15	54†	A3F	15	None	11.8	WS	400.00	As above.	
GC ELECTRONICS	30-2373	Uni	Dynamic	Alum.		30k	50-17	58	2-Pin Screw	16.5	Phone	S		39.95	Lavalier strap.
	30-2374	Uni	Dynamic	Alum.		500	80-15	72.5†	4-Pin Screw	20	Phone	S		27.95	
	30-2376	Uni	Dynamic	Alum.		200	100-13	85	2-Pin Screw	15	Phone	S		37.95	
	30-2372	Uni	Dynamic	Alum.		200	60-15	75	3-Pin	20	Phone	S		70.00	
	30-2378	Uni	Electret Condenser	Alum.		600	30-16	68	Attached	20	None	WS		30.95	Built-in preamp.
	30-2382	Uni x2	Electret Condenser	Alum.		600	50-16	68	Attached	9.9	None	S		43.00	
	30-2398	Omni	Electret Condenser	Alum.		600	50-16	65	Attached	20	Phone	WS		23.95	As above.
	30-2388	Omni	Dynamic	Alum.		250/50k	100-10	78/60	4-Pin Screw	15	Phone	S		38.00	
	30-2300	Omni	Dynamic	Plastic		200	100-10	70	Attached	4	Micro, Mini	S		6.75	
	30-2302	Omni	Dynamic	Plastic		30k	50-13	60	Attached	4.5	Micro, Mini	S		10.35	
30-2308	Omni x2	Dynamic	Plastic		500	100-10	74	Attached	4.3	Phone	WS		21.40	Matched stereo pair.	
30-2384	Omni	Electret Condenser	Alum.		1k	50-16	63	Attached	13.2	Mini			20.95	Lapel style.	
30-2383	Omni	Dynamic	Alum.		30k	70-12	57	Attached	16.5	Mini	S		16.95	Lavalier.	
JVC	M-201												59.95		
MARANTZ	EC 1	Omni	Electret Condenser	Alum.		2k	60-13	156	Attached	10	Mini	3.5		18.00	
	EC 3	Card.	Electret Condenser	Alum.		1.5k	50-15	156	Attached	10	Mini	8.8		28.00	
	EC 5	Card.	Electret Condenser	Alum.		2.2k	40-15	149	Attached	10	Mini	4.1		42.00	
	EC 7	Card.	Electret Condenser	Alum.		250	40-16	146	Attached	10	Phone	10.3	F	64.00	
	EC 9P	Card.	Electret Condenser	Alum.		250B	30-17	151	Attached	10	None	13.8		110.00	
	EC 12B	Omni	Electret Condenser	Alum.		250B	100-15	143	Attached	10	Mini	2.3		54.00	
	EC 15P	Omni	Electret Condenser	Alum.		250B	70-16	144	Attached	15	ILR	1		100.00	Lavalier.
	EC 33S	Bi x2	Electret Condenser	Alum.		1k	50-15	146	Attached	10	Mini	6.24		66.00	
NAKAMICHI	CM-100	Card.	Electret Condenser	Alum.		200	30-18 $\pm$ 3.5	76	3-Pin XLR	25	Phone	5.6	WSF	110.00	
	CM-300	Card. or Omni	Electret Condenser	Alum.		200	30-18 $\pm$ 3.5	76	3-Pin XLR	25	Phone	5.9	WSF	170.00	Set of three, \$465.00.
	DM-500	Card.	Dynamic	Alum.		250	50-15 $\pm$ 2.5	73	3-Pin XLR	25	Phone	5.6	WSF	100.00	
	DM-1000	Card.	Dynamic	Alum.		250	30-18 $\pm$ 2.5	76	3-Pin XLR	25	Phone	12.3	WSF	300.00	
NEUMANN	KM83	Omni	Condenser	Brass	General	200B	40-20	7†	Swcft. OG3M	0	None	2.8	W	349.00	1mV/Pa (1 Pa = 94 dB SPL).
	KM84	Card.	Condenser	Brass	General	200B	40-20	10†	Swcft. OG3M	0	None	2.8	W	349.00	
	KM85	Card.	Condenser	Brass	Sound Reinf. Studio	200B	40-20	9†	Swcft. OG3M	0	None	2.8	W	349.00	
	KM86	(3) Sel.	Condenser	Brass	Studio	200B	40-20	9.5†	Swcft. OG3M	25	Swcft. A3M	7.4		915.00	
	KM88	(3) Sel.	Condenser	Brass	Hall	200B	40-16	6.5†	Swcft. OG3M	25	Swcft. A3M	4.6	W	1000.00	
	KMF4	Card.	Condenser	Brass	Film/Sound Reinf.	150B	40-20	14†	Swcft. OG3M	25	Swcft. A3M	0.7, 3.7	WF	655.00	
(Continued)															

# MICROPHONES

MANUFACTURER	Model	Directional Pattern Plus Channels: Stereo = S, Quad = Q, MS = M+S	Operating Principle	Case Material	Most Common Use	Actual Impedance: Balanced = B	Operating Range: Hz to kHz: 1 kHz. Ohms:	Open-Circuit Sensitivity: 1 kHz. db re 1 Volt/1 bar	Mike Connector Type	Cable Length: Feet	Connector Type on End of Cable	Weight: Ounces	Wide Screen = W, On-off Switch = S, Switched Low or Proximity Filter = F	Price: \$	Notes
NEUMANN (Continued)	KMR81	Super/Hyper Card.	Condenser	Brass	Film/Brdcst.	150B	40-18	18†	Swcft. QG3M	25	Swcft. A3M	5.2	WF	695.00	
	KMR82	Lobe	Condenser	Brass	Film/Brdcst.	150B	40-20	21†	Swcft. QG3M	25	Swcft. A3M	8.8	WF	775.00	
	KMS84	Card.	Condenser	Brass	Stage/TV	150B	40-16	5†	Swcft. QG3M	25	Swcft. A3M	7.4	WF	835.00	
	KMA U47tet	Omni Super Card.	Condenser	Brass	Speech Studio	800	40-16	5†	Spez. Swcft. QG3M	3	Spez. Swcft. A3M	1.1	WF	300.00	
	U87	(3) Sel.	Condenser	Brass	Studio	200B	40-16	8†	Swcft. QG3M	25	Swcft. A3M	17.7	WF	1048.00	
	U89	(5) Sel.	Condenser	Brass	Studio	150B	40-18	8†	Swcft. QG3M	25	Swcft. A3M	14.1	WF	1098.00	
	TLM170	(5) Sel.	Condenser	Brass	Studio	150B	40-18	8†	Swcft. QG3M	25	Swcft. A3M	22.1	WF	1198.00	
	SM69tet	Sel. x2	Condenser	Brass	Hall	200B	40-16	19†	Spez. Swcft. QG5M	33	Spez. Swcft. A5F	16.4		2850.00	
	USM69	Sel. x2	Condenser	Brass	Hall/Studio	150B	40-16	10†	Swcft. QG5M	33	Swcft. A5F	18		2590.00	
KU81	Head x2	Condenser	Brass	Test	150B	40-16	10†	Swcft. QG3M	25	Swcft. A3M	95.3		2570.00		
PML	DC-21	Card.		Alum.	Vocal/Music	30/50, 200, 600	30-20 ±3		Attached	33	Preh	1½		275.00	Balanced HI-Z, unbalanced. As above.
	DC-20	Omni		Alum.	Vocal/Music	30/50, 200, 600	30-20 ±3		Attached	33	Preh	1½		265.00	
	VM-41/4130	Card.	Interfer. Condenser	Alum.	Vocal/Music	200B	30-20 ±3		XLR 3-12	20	Preh	5			
REALISTIC	Highball	Card.	Dynamic	Alum.	Vocal	600	Hi/Low	80-15	XLR	16	Phone	WS		49.95	
	Super Omni	Card.	Dynamic	Alum.	Vocal	600	40-17		XLR	16	Phone	W		39.95	
	Dual-Pattern	Card. x2	Condenser	Alum.	Vocal	600	30-15			16	Phone	W		39.95	
	Cardioid-Dyn	Card.	Dynamic	Alum.	Vocal	600	50-15			12	Phone	WS		29.95	
	Ultra-Compact	Card. x2	Condenser	Plastic	Vocal	600	50-18			8	Mini	WS		29.95	
	Super-Cardioid	Card.	Dynamic	Alum.	Vocal	600	80-12			6	Phone	WS		24.95	
	Dual Heads	Card. x2	Condenser	Plastic	Music	600	50-15			6½	Mini	WS		19.95	
	Low-Cost Dyn	Omni	Dynamic	Alum.	Vocal	600	50-13			6	Phone	WS		19.95	
	Dual Pattern	Card. Super Card.	Condenser	Alum.	Vocal		80-12			18	Phone, Mini	WS		49.95	Video camera use.
	PZM Tie-Clip	Omni	Condenser	Steel	Music		20-18			18	Phone	WS		39.95	
Ultra-Slim	Omni	Condenser	Alum.	Vocal		30-12			10	Mini	WS		19.95		
MC-1000	Omni	Condenser	Alum.	Vocal		20-13			9	Phone	3	W	17.95		
Tie-Clip	Omni	Condenser	Alum.	Vocal		150-10			6	Phone			15.95	Lavalier.	
			Condenser	Alum.	Vocal		30-12		6	Mini			9.95		
REVOX	M3500	Super Card.	Dynamic	Alum.	General	600	40-18	72	XLR	16	Phone	10½	W	185.00	
SANSUI	DM-3	Card.	Dynamic		Vocal	500	100-10	77		10	Phone	W		20.00	
	EM-5	Dual Card.	Electret		General	1k	70-15	72		6	Phone	W		37.00	
SCHDEPS	CMC 32	Omni	Condenser	Nickel	Instr.	20B	20-20	35	XLR-3M			5		640.00	
	CMC 34	Card.	Condenser	Nickel	Instr.	20B	40-20	35	XLR-3M			5		640.00	
	CMC 341	Hyper Card.	Condenser	Nickel	Instr.	20B	40-20	35	XLR-3M			5		730.00	
	CMC 35	Card./Omni	Condenser	Nickel	Instr.	20B	20-20	35	XLR-3M			5		835.00	
	CMC 36	Card. 8/Omni	Condenser	Nickel	Instr.	20B	20-20	35	XLR-3M			5		985.00	
	CMC 38	Fig. 8	Condenser	Nickel	Instr.	20B	40-16	35	XLR-3M			5		780.00	
	BLM 33	Hemi.	Condenser	Nickel	Instr.	20B	20-20	35	XLR-3M			10		780.00	
	CMTS 301	†	Condenser	Nickel	Instr.	20B	20-20	35	XLR-5M			8		2125.00	†Dual card./Fig. 8/omni.
	CMH 34	Card.	Condenser	Brass	Vocal	20B	50-20	35	XLR-3M			7		835.00	
SENNHEISER	MD200	Omni	†	PVC	Vocal	600	60-13	0.5	Phone	10		3.7		33.00	†Pressure transducer.
	MD400	Card.	†	PVC	Vocal	600	60-13	0.5	Phone	10		3.7		41.00	
	MD402u	Super Card.	Dynamic	Metal	Vocal	200B	80-12.5	151	XLR	15		5.4		85.00	
	MD402K	Super Card.	Dynamic	Metal	Vocal	200	80-12.5	151	Phone	10		6.7		80.00	
MD421	Card.	Dynamic	Plastic	Vocal	200	30-17	146				18		332.00		
SHURE	SM63-CN	Omni	Dynamic	Alum.	Vocal	285	50-20	76	Swcft. A3M	25	Swcft. A3M	2.8	W	130.00	
	SM77-CN	Card.	Dynamic	Alum.	Instr.	180	50-15	79	Swcft. A3M	25	Swcft. A3M	6		127.25	
	SM77-LC	Card.	Dynamic	Alum.	Instr.	180	50-15	79	Swcft. A3M	25	Swcft. A3M	6		105.50	
	SM78-CN	Card.	Dynamic	Alum.	Vocal	180	50-15	79	Swcft. A3M	25	Swcft. A3M	7.2		158.00	
	SM78-LC	Card.	Dynamic	Alum.	Vocal	180	50-15	79	Swcft. A3M	25	Swcft. A3M	7.2		136.25	
	SM17-CN	Omni	Dynamic	Alum.	Instr.	200	50-15	85	Attached	10	Swcft. A3M	0.28		103.00	Spring clip & expansion mount.
	516EQ	Card.	Dynamic	Zinc	Instr.	170	50-15	81	Swcft. A3M	15	Phone	9.5	WF	127.25	
	545SD	Card.	Dynamic	Zinc	Instr.	24.0/39k	50-15	78	Swcft. A3M	15	None	9	S	125.00	
	565SD	Card.	Dynamic	Zinc	Vocal	24.0/39k	50-15	77	Swcft. A3M	15	None	10.5	S	137.00	
	586SAC	Card.	Dynamic	Zinc	Vocal/Voice	60k	50-13	79.5	A3M	20	Phone	12.5	S	109.25	
	515SAC	Card.	Dynamic	Zinc	Speech	44k	80-13	82	Attached	15	Phone	18	S	56.75	
	SM57	Card.	Dynamic	Zinc	Instr./Vocal	65.270	40-15	82	Swcft. A3M	20	None	10		143.25	
	SM58	Card.	Dynamic	Zinc/Alum.	Instr./Vocal	65.270	50-15	83	Swcft. A3M	20	None	10.5		180.25	
	SM59-CN	Card.	Dynamic	Alum.	Instr./Vocal	160	50-15	83	Swcft. A3M	20	Swcft. A3M	7.6	W	211.25	
	SM81-CN	Card.	Electret Condenser	Steel	Prof. Record	85	20-20	64	Swcft. A3M	25	Swcft. A3M	8	WF	358.50	Attenuator.
	SM61	Omni	Dynamic	Alum.	Vocal	175	50-14	82	Swcft. A3M	20	None	5.2	W	144.25	
	SM80-CN	Omni	Electret Condenser	Steel	Prof. Record	85	20-20	64	Swcft. A3M	25	Swcft. A3M	8		358.50	As above.
SP19H-C	Card.	Dynamic	†	Record Voice	High	80-13	60	Attached	15	Phone	10	S	48.00	†Armour.	
SIGNET	RK201	Uni	Condenser	Alum.	Music	600	45-17.5	79	Attached	16½	Phone	6½	S		

# MICROPHONES

MANUFACTURER	Model	Directional Pattern Plus Channels: Stereo = S, Quad = Q, M-S = M-S	Operating Principle	Case Material	Most Common Use	Actual Impedance, Balanced - B	Operating Range, 1 kHz., Ohms.	Open-Circuit Sensitivity 1 kHz., dB, re: 1 Volt/1 μbar	Micro Connector Type	Cable Length, Feet	Connector Type on Equipment End of Cable	Weight, Ounces Wired Stereo = W, Other = S Switched Low or Proximity Filter = F	Price, \$	Notes
SONO'TRIM	STR-26-PS STR-26-BAT STR-26s-BAT	Omni Omni Omni x2	Electret Electret Electret	Plastic Plastic Plastic	Voice Voice Voice	250B 2k 2k	50-15 50-15 50-15	50 50 50	XLR-3 Micro 3-Cir. Micro	9 5 6	XLR-3 Micro 3-Cir. Micro	1/8 W 1/4 W (2)W	250.00 210.00 400.00	Lavalier. As above. As above.
SONY	FV30T F99T ECM16T	Card. x2	Dynamic Dynamic Electret	Alum. Alum. Nickel	Vocal Stereo Stereo	Low 200, Low Low	100-12 80-12 50-15	72	Attached Attached Attached	16 5 6 1/2	Adaptor Adaptor Adaptor	7.1 1.8 W	29.95 39.95 39.95	Tie-tac.
	ECM101	x2	Condenser Electret	Nickel	Stereo	Low	100-15		Attached		Mini	0.5 WS	39.95	For personal portables.
	FV50T ECM220T		Dynamic Electret	Alum. Alum.	Vocal Instr.	Low 200	90-13 50-14	75	Attached Attached	16 16	Adaptor Adaptor	6.7 8.5 W	44.95 49.95	
	FV7ET ECM150		Dynamic Electret	Nickel Nickel	Echo	500 250	100-12 40-15	72	Attached Attached	16 6 1/2	Adaptor Adaptor	6.7 0.18 W	59.95 65.00	Tie-tac.
	ECM929LT	M-S†	Condenser Electret	Black Alum.	Stereo	Low	70-15	67	Attached	6	Adaptor	2.8 WS	85.00	† Var. by opt. remote.
	ECM939LT	M-S†	Condenser Electret	Black Alum.	Stereo	Low	50-15	57	Attached	6	Adaptor	2.6 WS	115.00	
	ECM-D15		Condenser Electret	Alum.	Vocal/ Conf. Instr.	Low	150-15		Attached	3.9	Mini	2.5	115.00	Solar battery.
	ECM23FM		Condenser Electret	Alum.	Vocal/ Conf. Instr.	250B	20-20		Attached	20	Adaptor	6.7 W	115.00	
	ECM2300	Card.	Condenser		Zoom	Low	100-15	52	Attached	0.9	Adaptor	6.6	150.00	
SOUNDCRAFTSMEN	SAM II	Omni	Electret	Alum.	RTA	600	20-18	65†	Phone	15		3	69.00	† dBm.
TEAC	MC-10 ME-15 ME-20 ME-50 ME-80 ME-120	Card. Card. Card. Card. Card. Omni	Ribbon Ribbon Ribbon Ribbon Ribbon Ribbon	Plastic Plastic Plastic Alum. Alum. Alum.	General General General General PA Rec. PA Rec.	500 500 500 200 200 200	40-18 40-18 40-20 40-20 40-20 40-20		Phone Phone Phone Phone XLR XLR	15 15 15 20 20 20		WF WF WF WSF WSF WSF	20.00 30.00 40.00 50.00 90.00 120.00	
TECHNICS	RP-3545E RP-3215E RP-3500E RP-V370 RP-V340	Card. Card. x2 Card. Uni Card.	Electret Electret Electret Dynamic Dynamic	Alum. Alum. Alum. Alum. Alum.	Music General General General Voice		40-14 50-10 50-12 40-12 100-10	70 70 68		20 10 16 1/2		6 1/2 3 1/4 4 1/4 W	70.00 60.00 60.00 40.00 26.00	

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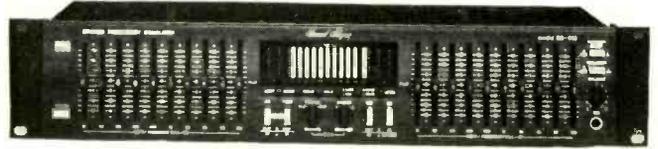
# EQUALIZERS



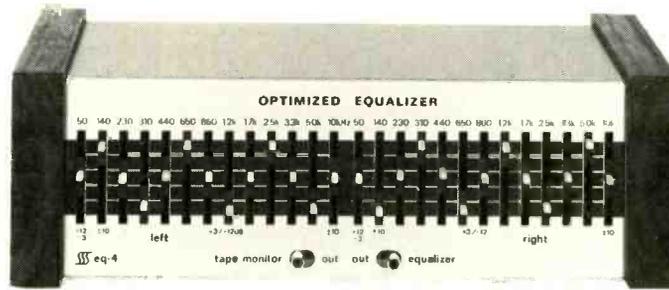
**SOUNDCRAFTSMEN AE2000**



**AUDIO SOURCE EQ-FOUR**



**ADC SOUND SHAPER SS-315**



**SYMMETRIC SOUND SYSTEMS EQ-4**

MANUFACTURER	Model	No. of Channels	No. 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	RTA?	Pink Noise Generator?	With Calibrated Mike?	Dimensions, inches	Weight, lbs.	Price, \$	Notes
ADC	SS-315	2	10	1	Yes	Yes	0.008	102	No	No	15	Yes	Yes	Yes	17 1/8 x 8 3/4 x 3 1/2	9 1/4	399.95		
	SS-215	2	12		Yes	Yes	0.008	102	No	No	15	No	No	No	17 1/8 x 8 3/4 x 3 1/2	8 5/8	329.95		
	SS-115	2	10	1	Yes	Yes	0.01	98	No	No	15	No	No	No	17 1/8 x 8 3/4 x 3 1/2	7	249.95		
	SS-5	2	5		No	No	0.18	95	No	No	15	No	No	No	12 1/4 x 7 1/2 x 3 3/8	6	129.95		
AKAI	EA-G30	2	5	1 1/2	Yes	Yes	0.02	95	No	No	12		No	No	17.3 x 3.2 x 9.3		129.95		
	EA-G90	2	12	1	Yes	Yes	0.02	95	No	No	12		No	No	17.3 x 4.7 x 11.8		279.95		
AUDIOL CONTROL	Octave Plus	2	10	1	No	No		116	No	No	12	No	†	Yes	17 x 6 x 2 1/2	8	239.00	†Warble tone generator; subsonic filter, 18 dB/octave.	
	Ten Series	2	10	1	Yes	No	0.005	120	No	No	15	No	No	No	17 x 7 1/2 x 3 1/2	12	229.00		
	Two Ten Plus Series	2	10	1	Yes	No	0.005	120	No	No	15	No	†	Yes	17 x 7 1/2 x 3 1/2	12	329.00	Digital-controlled warble tone analyzer, video input ready.	
	Two Richter Scale	2	5	1/2	No	No	0.008	116	No	No	12	No	†	Yes	17 x 6 x 2 1/2	8	259.00	For bass only; electronic crossover; rumble reduction circuit; subsonic filter, 18 dB/octave; 1/2 octave warble tone analyzer.	
	Octave	2	10	1	Yes	No	0.008	118	No	No	12	No	No	No	17 x 6 x 2 1/2	8	149.00	Subsonic filter as above, LED indicator.	
	C-101 Series Two	2	10	1	Yes	No	0.009	120	No	No	15	Yes	Yes	Yes	17 x 6 x 3 1/2	12	429.00		
AUDIO SOURCE	EQ-One	2	10	2 1/2	Yes	No	0.035	90	Yes	Yes	12	Yes	Yes	Yes	19 x 8 1/2 x 5 1/4	8.4	399.95		
	EQ-Two	2	5	1/3	Yes	Yes	0.01	85	No	No	12	No	No	No	13 x 8 1/4 x 3 1/2	5	99.95		
	EQ-Four	2	10	2 1/2	Yes	Yes	0.035	90	No	No	12	No	No	No	17 5/8 x 9 5/8 x 3	7.5	197.95		
	EQ-Five	2	5	1/3	Yes	Yes	0.01	85	No	No	12	No	No	No	13 x 8 1/4 x 3 1/2	5	99.95		
AWARD	EQ-210S	2	10	1	Yes	Yes	0.05	80	No	No	12	No	No	No	17 1/4 x 8 x 2 7/8	6	199.95	Silver panel; Model EQ-210, black panel, 19 inches wide.	
	EQ-205S	2	5	1	Yes	No	0.05	80	No	No	12	No	No	No	10 1/2 x 6 1/4 x 3 3/8	2 1/2	119.95		

# EQUALIZERS

MANUFACTURER	Model	No. of Channels	No. of Bands per Channel	Bandwidth, Octaves	Switched Tap EQ?	Unity Gain Control?	Rated Output, rms V	THD at Rated Output, rms V	S/N, -dB, at Rated Output, %	Variable Center Frequencies?	Variable Filter "Q"?	Boost/Cut Range, ±dB	RTA?	Pink Noise Generator?	With Calibrated Mille?	Dimensions, Inches	Weight, Lbs.	Price, \$	Notes
BIAMP SYSTEMS	220	2	10		No	Yes	6	0.005	90	No	No	15	No	No	No	3 1/2 x 19 x 6		299.00	Balanced outputs and inputs, floating grounds. As above. As above. As above.
	230	2	15	2/3	Yes	Yes	6	0.002	90	No	No	12	No	No	No	3 1/2 x 19 x 6		399.00	
	290	1	29	1/3	Yes	Yes	6	0.002	90	No	No	12	No	No	No	3 1/2 x 19 x 6		649.00	
	PA140	4	1		Yes	Yes	6	0.05	90	No	Yes	12	No	No	No	1 3/4 x 19 x 6		399.00	
	270	1	27	1/3	No	Yes	6	0.003	90	No	No	12	No	No	No	3 1/2 x 19 x 6		649.00	
OB SYSTEMS	DB-5	2	6			Yes	3	0.0008	96	Yes		15				8.5 x 3.2 x 7	2.8	348.00	DB-2A power supply, \$78.00.
DBX	20/20	2	10	1	No	Auto	5.6	0.01	80	No	Auto	+14, -15	Yes	Yes	Yes	19 x 5 1/4 x 12 1/4	22	1700.00	Computerized auto room/speaker EQ, SPL meter, LED display, 10 memories, averaging. As above. Computerized with four memories; wireless remote with memory, EQ, and volume (gain).
	10/20	2	10	1	Yes	Auto	5	0.03	95	No	Auto	12	Yes	No	Yes	18 x 3 1/2 x 12 1/4	17 1/2		
	10/5	2	10	1	Yes	Yes	5	0.1	92	No	Auto	12	Yes	No	Yes	18 x 3 1/2 x 12 1/4	15 1/2		
DENON	DE-70	2	12	1/3	Yes	Yes	1	0.003	113	No	No	12	No	No	No	17 3/8 x 5 1/4 x 12	13 1/4	425.00	
EMPIRE SCIENTIFIC	GX55	2	5		Yes	Yes	6			No		10	No	No	No	17 x 9 x 3.6	1.2	170.00	
	GX100	2	10		Yes	Yes	6	0.005	110	No		10	No	No	No	17 x 9 x 3.6	1.3	190.00	
	GX200	2	10		Yes	Yes	6	0.003	110	No		10	No	No	No	17 x 9 x 3.6	1.5	250.00	
	GX500	2	10		Yes	Yes	6			No		10	No	No	No			400.00	
GOTT LABS	WE-1	2	1				3	0.01	80			+12				19 x 5 x 1 3/4	8	199.00	Woofer EQ.
GROMMES	G4EQ	1	28	1/3	No	Yes	1	0.01	80	No	No	12	No	No	No	19 x 5 1/4 x 6	12	490.30	H.F. and L.F. cutoff filters.
DAVID HAFLER CO.	DH-160	2	10	1	Yes	Yes	3	0.0049	108	No	No	12			Opt.	17 x 9 x 3 1/2	12	399.95	Opt. test record; kit, \$299.95.
HARMAN/KARDON	EQ8	2	10	1	Yes	Yes	2.0	0.02	105	No	No	12	No	No	No	17 3/8 x 13 7/8 x 4		225.00	Variable subsonic filter, 5-30 Hz, 12 dB/octave.
HITACHI	HGE 1100	2	10	1/2	Yes		1.0	0.1	96			10				17 1/8 x 3 1/4 x 8 7/8	6 5/8	190.00	
	HGE 2100	2	9	1/2	Yes		0.15	0.1	70			10				17 1/8 x 3 1/4 x 8 7/8	6 5/8	240.00	
JVC	SEA-33	2	10				2	0.005	115	No	No	12		No		17 1/8 x 2 3/8 x 10 1/2	6.6	160.00	
	SEA-R7	2	12				2	0.001	118	No	No	6 or 12		No		17 1/8 x 6 1/4 x 13	12.1	400.00	
KENWOOD	GE-1000	2	12	1	Yes	Yes	1	0.003	103	No	No	12		No	No	17 3/8 x 13 3/4 x 5 7/8	16 1/2	440.00	Built-in reverb.
	GE-9X	2	10	1	Yes	Yes	1	0.006	103	Yes	No	12		No	No	17 3/8 x 12 3/8 x 4 3/8	9 3/4	300.00	
	GE-100II/GE-100IIB	2	10	1	Yes	Yes	1	0.31	110	No	No	10		No	No	17 3/8 x 9 x 3 1/2	6 1/4	200.00	
KLARK-TEKNIK	DN22	2	11	1	No	Yes	9	0.008	90†	No	No	12	No	No	No	19 x 8 1/4 x 5 1/4	14	925.00	†Unweighted.
	DN27	1	27	1/3	No	Yes	9	0.008	90†	No	No	12	No	No	No	19 x 8 1/4 x 5 1/4	14	900.00	
	DN300	1	30	1/3	No	Yes	8.5	0.01	90†	No	No	12	No	No	No	19 x 8 x 3 1/2	13	900.00	
	DN301	1	30	1/3	No	Yes	8.5	0.01	90†	No	No	-15	No	No	No	19 x 8 x 3 1/2	13	980.00	
	DN332	2	16	2/3	No	Yes	8.5	0.01	90†	No	No	12	No	No	No	19 x 8 x 3 1/2	13	1000.00	
	DN30-30	2	30	1/3	No	Yes	8.5	0.01	90†	No	No	12	No	No	No	19 x 8 x 5 1/4	16	1500.00	
LT SOUND	PEQ-1	1	4	1.6-2	No	No		0.007	91	Yes	Yes	16	No	No	No	20 x 19 x 7 1/2		349.00	
	PEQ-2	2	4	1.6-2	No	No		0.007	91	Yes	Yes	16	No	No	No	3 1/2 x 19 x 7 1/2	8	625.00	
LUXMAN	GX-101	2	7	1	Yes	No	4	0.01	80	Yes	No	12		Yes	No	17 7/8 x 3 3/8 x 11 7/8	11.2	499.94	Computerized, auto EQ; memory analyzer.
MARANTZ	EQ 20	2	10		Yes	No	1	0.005	110	No	No	10	No	No	No	16 3/4 x 2 7/8 x 7 1/2	6 1/2	250.00	
	EQ 10	1	10		Yes	No	1	0.005	110	No	No	10	No	No	No	16 3/4 x 2 7/8 x 7 1/2	6	200.00	
McINTOSH	MQ107	2	7	1/3	Yes	Yes				Yes	Yes	18		No	Yes			650.00	Room measured by installing dealer. As above.
	MQ104	2	4	1/3	Yes	No				Yes	Yes	18		No	Yes			500.00	
MODULAR AUDIO PRODUCTS	3100	1	11	1/3		No		0.5		No	No	15		No		1 1/2 x 5 1/4 x 5 3/4	2	390.00	Console mounting. As above.
	3550	1	21			No		0.3		No	No	12		No		1 1/2 x 5 1/4 x 5 3/4	2	410.00	
MXR	Dual Octave	2	10	1	No	Yes	8	0.005	115	No	No	12	No	No	No	3 1/2 x 6 1/4 x 19		290.00	
	Dual 2/3 Octave	2	15	2/3	No	Yes	8	0.005	115	No	No	12	No	No	No	3 1/2 x 6 1/4 x 19		375.00	
	1/3 Octave	1	31	1/3	No	Yes	8	0.005	115	No	No	12	No	No	No	3 1/2 x 6 1/4 x 19		400.00	
NEI	2711	1	27	1/3	No	Yes		0.01	82	No	No	12	No	No	No	19 x 3 1/2 x 9 1/2	9	549.00	Auto digital EQ RTA.
	2712	1	27	1/3	No	No		0.01	82	No	No	12	No	No	No	19 x 3 1/2 x 9 1/2	9	449.00	
	1021	2	10	1	No	Yes		0.01	90	No	No	12	No	No	No	19 x 3 1/2 x 9 1/2	9	435.00	
	1022	2	10	1	No	No		0.01	90	No	No	12	No	No	No	19 x 3 1/2 x 9 1/2	9	365.00	
	341	1	4	0.1-3	No	No		0.01	80	Yes	Yes	15	No	No	No	19 x 1 3/4 x 6 1/2	8	325.00	
	342	2	4	0.1-3	No	No		0.01	80	Yes	Yes	15	No	No	No	19 x 3 1/2 x 6 1/2	10	595.00	
	2711X	1	27	1/3	No	Yes		0.01	85	Yes	Yes	15	Yes	Yes	No	19 x 5 1/4 x 6 1/2	15	1995.00	

# EQUALIZERS

MANUFACTURER	Model	No. of Channels			Bandwidth, Octaves		Switched Tape EQ?		Unity Gain Control?		THD at Rated Output, rms V		S/N, -dB at Rated Output, %		Variable Center Frequencies?		Variable Filter "Q"?		Boost/Cut Range, ±dB		Pink Noise Generator?		With Calibrated Mikes?		Dimensions, inches		Weight, lbs.		Price, \$		Notes	
		2	10	1	Yes	No	1	0.007	100	No	No	12	No	No	No	No	No	19 x 3.6 x 13	11	325.00												
NIKKO	EQ-20	2	10	1	Yes	Yes	1	0.007	100	No	No	12	No	No	No	No	19 x 3.6 x 13	11	325.00													
	EQ-500	2	6	1	Yes	No	1	0.01	100	No	No	12	No	No	No	No	17.3 x 3.8 x 13	9.2	160.00													
ONKYO	EQ-08	2	10	1	Yes	No	1.5	0.01	100	No	No	6:12	No	No	No	No	16 1/2 x 3 1/8 x 10 1/4	6.8	180.00													
	EQ-35	2	12	1	Yes	Yes	1.5	0.01	100	No	No	6:12	No	†	No	No	17 1/8 x 14 3/8 x 3 7/8	9.9	260.00		†Sweep or step frequency generator.											
ORBAN ASSOCIATES	674A	2	8	1 1/8	No	Yes		0.08	78	Yes	Yes	16	No	No	No			11	1299.00													
	622B	2	4	1 1/8	No	Yes		0.025	84	Yes	Yes	+16, -40	No	No	No			10	879.00													
PARASOUNO	EQ25	2	5	1			7	0.01	100								10 1/4 x 3 1/2 x 7	4 1/2	79.95													
	EQ1206	2	6	1	Yes		8.5	0.005	100			12					17 x 3 x 9	6 1/2	129.95													
	EQ1210	2	10	1	Yes	Yes	8.5	0.005	100			12					19 x 3 x 9	8	199.95													
PHOENIX SYSTEMS	P-94-SA	2	2	Var.	No	No	8	0.01	109	Yes	Yes	20	No	No	No		11 x 2 5/8 x 5 3/4	5	179.00		Kit, Model P-94-s, \$129.00.											
PIONEER	SG-540	2	7	1	Yes	No	1	0.005	100	No	No	10	No	No	No	No	3.9 x 16.5 x 9.5	6.6	195.00		Recording EQ.											
	SG-90	2	17	1/3	Yes	Yes	1	0.001	114	No	No	12 or 6	No	No	No	No	5.2 x 16.5 x 13.8	15.4	460.00		Inverse EQ, auto fader.											
	MA-100	2	2	1	Yes	Yes	1.5	0.008	83	Yes	No	10	No	No	No	No	6.2 x 16.5 x 8.9	9.3	440.00		Four-channel mixer, 4 pan pots, built-in echo amp.											
	CA-100	2	7	1	Yes	Yes	1.5	0.01	90	No	No	10	No	No	No	No	6.2 x 16.5 x 8.9	9.3	320.00		Auto fader, pan pot, echo amp, mike mixing.											
REALISTIC	31-2005	2	10	1/3	Yes	Yes		0.02	85	No	No	12	No	No	No	No	16 1/2 x 7 x 4 1/2		119.95		Handles two tape decks.											
	31-1988	2	5		No	No		0.02	85	No	No	12	No	No	No	No	10 1/4 x 6 x 4 1/2		69.95													
SAE	EQ-10	2	3	0.3-3	Yes	No				Yes	Yes	16	No	No	No	No	13 1/4 x 3 1/2 x 14 1/4	13	299.00													
	E101	2	2	0.3-3	Yes		2.5	0.2	100	Yes	Yes	16	No	No	No	No	19 x 3 1/2 x 12 1/2	20	650.00													
	2800	2	4	0.3-3	Yes		2.5	0.2	100	Yes	Yes	16	No	No	No	No	19 x 8 3/4 x 3 1/2	14	700.00													
SANSUI	SE-9	2	8	1 1/4	Yes	Yes	1	0.008	110	No	No	12		Yes	Yes	Yes	17 x 5 7/8 x 12 1/4	14.6	700.00		Auto.											
	SE-8 X	2	10	1	Yes		1	0.005	110	No	No	12		No	No	No	17 x 5 7/8 x 11	9.7	400.00													
	SE-77	2	12	1	Yes		1	0.005	110	No	No	6:12		No	No	No	17 x 3 x 9 1/4	6.6	280.00													
	RG-707	2	7		Yes			0.05	110	No	No	12		No	No	No	17 x 3 7/8 x 8 3/4	6.2	260.00													
H. H. SCOTT	859Z	2	10	1	Yes	No	0.15	0.02	97	No	No	12		No	No	No	17 x 10 3/8 x 4 3/8		199.95													
SHERWOOD	EQ-200	2	12	1	Yes	No	7	0.01	95	No	No	12	No	No	No	No	17 3/8 x 4 3/8 x 3 3/4	14	219.95													
SONY	SEQ-11	2	11	1/3	Yes	No	2.45	0.006	90	No	Yes	12	No	No	No	No	17 x 4 1/4 x 11 1/8	8 7/8	310.00													
	SEM-310	2	9	1/3	Yes	No	1.5	0.01	95	No	No	10	No	No	No	No	17 x 2 1/4 x 11 5/8	7 3/4	250.00		Mike mixing, echo.											
	SEM-22	2	9	1/3	No	No	1.5	0.01	85	No	No	10	No	No	No	No	8 1/2 x 2 1/4 x 11 1/4	3 3/4	120.00													
	SEM-V5	2	9	1/3	Yes	No	2.45	0.05	85	No	No	10	No	No	No	No	14 x 2 1/4 x 9 7/8	4 7/8	175.00		Mike mixing.											
SONY ESPRIT	SE-P900	2	3	0.15-1	Yes		1.5	0.01	84	Yes	Yes	12	No	No	No	No	18 7/8 x 3 1/8 x 15 7/8	22	1750.00													
SOUNCRAFTSMEN	SE450	2	10	1	Yes	Yes	10	0.01	105	No	No	16	No	No	No	No	17 x 3 1/2 x 10	14	249.00		With test record.											
	DC2214	2	10	1	Yes	Yes	10	0.01	105	No	No	16	No	No	No	No	19 x 3 1/2 x 8 3/4	18	299.00		Differential comparator balancing LEDs.											
	DC2215	2	10	1	Yes	Yes	10	0.01	114	No	No	22	No	No	No	No	19 x 5 1/4 x 11 1/4	21	399.00		As above.											
	TG3044	2	21	1/3, 2/3	Yes	Yes	10	0.01	114	No	No	22	No	No	No	No	19 x 5 1/4 x 11 1/4	23	649.00		As above.											
	AE2420	2	10	1	Yes	Yes	10	0.01	105	No	No	16	Yes	Yes	Opt.	Opt.	19 x 5 1/4 x 11 1/4	20	499.00		Differential comparator analyzer circuit.											
AE2000	2	10	1	Yes	Yes	10	0.01	114	No	No	22	Yes	Yes	Opt.	Opt.	19 x 5 1/4 x 11 1/4	23	699.00		As above.												
SYMMETRIC SOUND SYSTEMS	EQ-2	2	12	0.8	No	No	2	0.02	92	No	No	10	Opt.	Opt.	Opt.	Opt.	10 x 3 1/4 x 4 3/8	4	89.00		Kit.											
	EQ-3S	2	24	0.4	No	No	2	0.02	88	No	No	10	No	No	No	No	19 x 3 1/4 x 6	8	200.00		As above.											
EQ-4	2	13	†	No	No	0.5	0.02	82	No	No	10	Var.	Opt.	Opt.	Opt.	10 x 3 1/4 x 4 3/8	4	100.00		†10 bands, half octave and 3 bands, two octaves; as above.												
TECHNICS	SH-8065	2	33	1/3	Yes		1	0.0025	110	No	No	12 or 3	No	No	No	No	17 x 6 x 13	14 1/4	500.00													
	SH-8055	2	12	2/3	Yes		1	0.003	110	No	No	12	Yes	Yes	Opt.	Opt.	17 x 4 1/4 x 10 3/4	9 1/2	340.00													
	SH-8045	2	12	1	Yes		1	0.003	110	No	No	12 or 3	No	No	No	No	17 x 2 1/8 x 9 1/4	5 3/4	200.00													
	SH-8025	2	7		Yes		1	0.05	110	No	No	12	No	No	No	No	17 x 3 3/8 x 7 7/8	4 3/8	150.00													
TEI	36-165	2	10		Yes	Yes		0.01	100	Yes	Yes	12		No	No	No	19 x 3 x 8	6	205.00		Fluorescent output meters.											
	36-195	2	10		Yes	No		0.01	100	Yes	Yes	12	Yes	Yes	No	No	19 x 5 x 12 1/2	11	359.00													
UREI	533	1	10	1	No	Yes		0.25	86	No	No	12	No	No	No	No	8 1/2 x 3 1/2 x 8	6 1/2	366.00													
	535	2	10	1	No	Yes		0.25	90	No	No	12	No	No	No	No	19 x 3 1/2 x 8	9 1/2	496.00													
	537	1	27	1/3	No	Yes		0.5	94	No	No	12	No	No	No	No	19 x 3 1/2 x 8	11	846.00													
	539	1	27	1/3	No	Yes		0.5	90	No	No	-15	No	No	No	No	19 x 3 1/2 x 8	11	996.00													
	546	2	4	Var.	No	Yes		0.5	85	Yes	Yes	15	No	No	No	No	19 x 5 1/4 x 8	13	746.00													
VECTOR RESEARCH	VQ-100	2	10		Yes	Yes	2	0.005	110			10					17 3/8 x 4 3/4 x 9 3/8	9	250.00													
YAMAHA	GE-5	2	10	1	Yes	No	†	0.01	85	No	No	No	No	No	No	No	17 1/8 x 2 7/8 x 11		245.00		†Unity gain.											

# LOUDSPEAKERS

MANUFACTURER	Model	Enclosure or System Type	Woofer Diameter, Inches	Midrange Diameter, Inches	Midrange Type	Tweeter Diameter, Inches	Tweeter Type	Separate Level Controls? W = Woofer, M = Midrange, T = Tweeter, ST Super Tweeter		Amplitude Freq. Response, Hz to kHz, ±dB	SPL, 1 Watt / Meter, dB	Recommended Min. Amp. Pwr., Watts	Crossover Frequencies, Hz	Impedance, Ohms	Nominal Minimum Dimensions, Inches	Finish	Grille Color and Material	Weight, Lbs.	Price, \$
AAL	dr/S 800	Inf. Baf.	8			3½	Cone			50-20		25	5k	8/	18½ x 11¼ x 8	Wood Vinyl	Brown Cloth	15	89.00
	dr/S 1000	Air Sus.	8			3½	Cone			45-20		30	5k	8/	23 x 11½ x 8/	Wood Vinyl	Brown Cloth	16	99.00
	dr/S 2000	Air Sus.	10	5	Sealed	3½	Cone			35-20		75	2.5k,5k	8/	24 x 15 x 10½	Vinyl Wood	Brown Cloth	28	139.00
	dr/S 3000	Air Sus.	12	5	Sealed	3½	Cone			40-20		40	2.5k,5k	8/	24 x 15 x 10	Vinyl Wood	Brown Cloth	26	99.00
	dr/S 4000	Air Sus.	12	5	Sealed	3½	Cone			30-20		75	2.5k,5k	8/	27 x 16 x 11	Vinyl Wood	Brown Cloth	36	189.00
	dr/S 5000	Bass Ref.	12	5	Sealed	(2)3½, 3	Cones, Pz.	M, T		25-22		100	1.5k,5k	8/	27 x 16 x 11	Vinyl Wood	Brown Cloth	37	219.00
	dr/S 6000	Air Sus.	15	5	Cone	3½, 3	Cone, Pz.	M, T		20-22		110	1.5k,5k	8/	29 x 18½ x 15	Vinyl Wood	Brown Cloth	61	279.00
	dr/S 7000	Vented Bass Ref. Air Sus.	(2)10	5	Cone	3	Cone, Pz.	M, T		20-22		100	1k,5k	8/	32¾ x 14½ x 10½	Vinyl Wood	Brown Cloth	65	299.00
dr/S 8000			(2)5	Cones	(4)3	Pz.	M, T		17-40		150	1.5k,5k	8/	29 x 18½ x 15	Vinyl Wood	Brown Cloth	63	399.00	
AB SYSTEMS	CFR-180	Biamped, B4 Vented	12			1¾	Horn			80-16 ±3		Inc.	800		25½ x 14¾ x 12¾	Wal. Stain	Black Steel	68	1020.00
	LBS-125	B4 Vented Subwoof.	18							30-250 ±3	95	200	250 Max.	8/5.3	34 x 30 x 20	Wal. Stain	Black Steel	134	806.00
ACCULAB	230	Ac. Sus.	8	3½	Cone	2¾	Cone			50-18.5 ±4	90	5	2.5k,10k	8/	11 x 20¾ x 7¼	Wal. Vinyl	Black Cloth	20	119.00
	330	Ac. Sus.	10	3½	Cone	2¾	Cone			40-18.5 ±4	91	5	2k,10k	8/	13 x 22 x 10½	Wal. Vinyl	Black Cloth	28	149.00
	350	Ac. Sus.	12	3½	Cone	2¾	Cone			36-18.5 ±4	92	5	1.5k,10k	8/	14¼ x 25½ x 11	Wal. Vinyl	Black Cloth	39	199.00
	450	Ac. Sus.	12	3½	Cone	2¾, 2½	Cone, Pz.			32-25 ±3.5	92.5	5	1.5k, 7.5k, 10k	8/	14¼ x 32 x 11	Wal. Vinyl	Black Cloth	45	249.00
	550	Ac. Sus.	12	3½	Cone	2¾, 2½	Cone, Pz.			30-25 ±3.5	92.5	5	48, 1.5k, 7.5k, 10k	8/	15 x 40 x 11	Wal. Vinyl	Black Cloth	54	319.00
ACDUSTAT	2MH	ES and Subwoof. ES	10				ES	T		30-20 ±3	40	100	4/3	Three Pieces	Opt.	Opt.	110	1295.00 Sys.	
	2M	ES					ES	T		35-20 ±3	100		4/3	72 x 20 x 3½	Opt.	Opt.	81	1395.00 Pair	
	3MH	ES and Subwoof. ES	10				ES	T		30-20 ±3	40	100	4/3	Three Pieces	Opt.	Opt.	127	1595.00 Sys.	
	3M	ES					ES	T		30-20 ±3	70		4/3	72 x 28 x 3½	Opt.	Opt.	98	1695.00 Pair	
	2+2	ES					ES	T		28-20 ±2	50		4/3	94 x 20 x 3½	Opt.	Opt.	95	2095.00 Pair	
	6	ES					ES	T		26-20 ±2			6/3	94 x 28 x 3½	Opt.	Opt.	170	3750.00 Pair	
	8	ES					ES	T		24-20 ±2			6/3	94 x 36 x 3½	Opt.	Opt.	220	4750.00 Pair	
ACOUSTICAL PHYSICS LABS	II	Ac. Sus.	10			1	Dome	No		28-22 ±2	85	40	3.5k	8/8	13 x 34½ x 13¾	Oiled Wal.	Black	65	600.00 Pair; Kit, 400.00
	V	Push-Pull	(2)13	8, 2	Cone, Dome	1	Dome	No		22-35 ±2	88	100	100, 2k, 4k	8/8	49½ x 58 x 13¾	Oiled Wal.	Black	300	12,800.00 Pair
ACOUSTIC DESIGN GROUP	Triad 50	Sat. & Subwoof.	6½	3½	Cone	¾	Dome	W		24-21 ±3	Inc.	150, 5k		Three Pieces	Opt.	Opt.	22 Sys.	499.95 Sys.	
ACOUSTIC INTERFACE	Angstrom	Ac. Sus.	6½			1	Dome			78-20 ±2.5	90	15	5k	8/5	12½ x 6½ x 6½	Black Ennl.	Black Cloth	9	110.00
	Shadow	Ac. Sus.	8			1	Dome			69-20 ±2.5	91	15	5k	8/5	24½ x 8¾ x 8¾	Black Cloth	Black Cloth	18	125.00
	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	220.00
	Transcendant	Vented	12	1¼	Dome	1¼	Dome	M, T		38-20 ±2.5	94	15	1.9k	8/6	24 x 16 x 14½	Oiled Oak	Black Cloth	51	325.00
	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 18½	Oiled Wal.	Black Cloth	80	550.00
	Tremor	Vented Subwoof.	(2)12					M, T		29-200 ±2.5	95	15	100	8/6	62 x 26 x 16	Oiled Oak	Black Cloth	150	690.00
	Studio Reference	Vented	12	4x15	Horn	2x5½	Horn	M, T		22-20 ±2.5	96	15	880, 5k	8/6	48 x 16 x 18½	Oiled Wal.	Black Cloth	102	790.00
	Sound Portal	Vented	24x32½	7x19	Horn	5x6	Horn	M, T		15-20 ±2.5	101	15	800, 5k	8/6	48 x 25½ x 24	Oiled Oak	None	175	1500.00
Sound Prism	Triamped, Vented	24x52	13x22	Horn	3x7¼	Horn	M, T		10-20 ±1	105	100, 300, 800, Inc.	550, 5k	8/6	72 x 27 x 36	Oiled Wal.	None	500	15,000.00 Pair	
ACOUSTIC RESEARCH	AR 9Ls	Ac. Sus.	12, 10	8, 1½	Cone, Dome	¾	Dome			28-32	87	15	200, 1.1k, 5.5k	4/3.2	51½ x 16½ x 14¾	Oiled Wal.	Brown Cloth	118	849.99
	AR 98Ls	Ac. Sus.	12	8, 1½	Cone, Dome	¾	Dome			39-32	87	15	200, 1.1k, 5.5k	4/3.2	29½ x 15½ x 10½	Oiled Wal.	Brown Cloth	63	499.99
	AR 78Ls	Ac. Sus.	12	1½	Dome	¾	Dome			39-32	87	15	700, 5k	4/3.6	26¾ x 15 x 11¾	Oiled Wal.	Brown Cloth	52	429.99
	AR 58B	Ac. Sus.	12	4	Cone	¾	Dome			39-32	87	15	600, 4.5k	4/3.6	26¾ x 15 x 10¾	Wal. Vinyl	Brown Cloth	49½	329.99
	AR 48B	Ac. Sus.	10	4	Cone	¾	Dome			45-32	87	15	400, 3.5k	6/4.5	26 x 14 x 10¾	Wal. Vinyl	Brown Cloth	39½	259.99
	AR 38B	Ac. Sus.	8	4	Cone	¾	Dome			52-32	87	15	650, 3.5k	6/4.5	22 x 12 x 7¾	Wal. Vinyl	Brown Cloth	28	199.99

(Continued)

# LOUDSPEAKERS

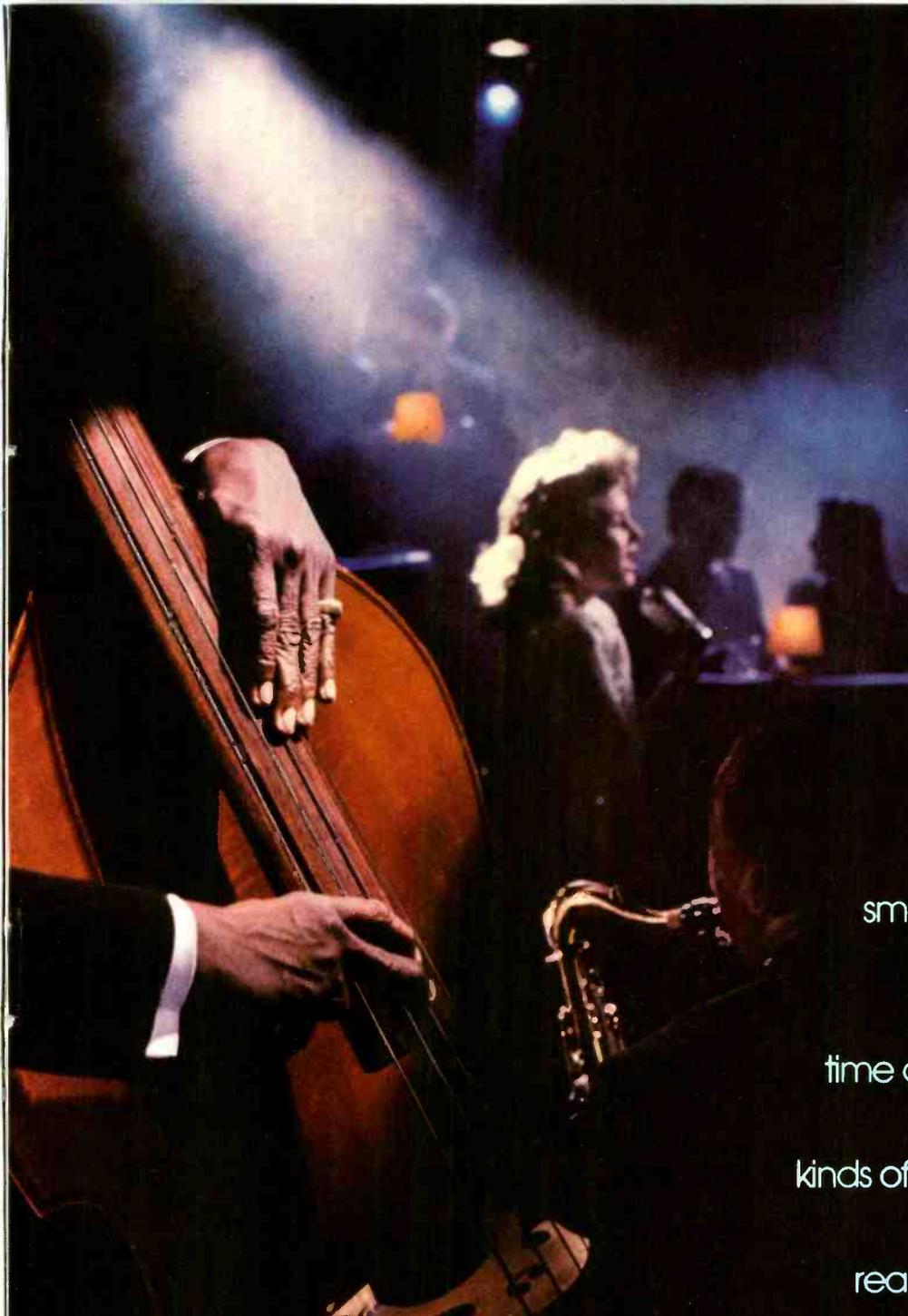
MANUFACTURER	Model	Enclosure or System Type	Woofer Diameter, Inches		Midrange Diameter, Inches		Tweeter Diameter, Inches		Separate Level Controls: W=Woof., M=Midrange, T=Tweeter, ST=Super Tweeter	Apparatus Freq. Response, Hz to kHz, ±dB	SPL, 1 Watt/1 Meter, dB	Recommended Min. Amp. Pwr., Watts	Crossover Frequencies, Hz	Impedance, Ohms: Nominal/Minimum	Dimensions, Inches	Finish	Grille Color and Material	Weight, Lbs.	Price, \$
ACOUSTIC RESEARCH (Continued)	AR 28B	Ac. Sus.	8			1 1/4	Cone			52-22	88	10	2k	8/5.6	20 x 11 x 7 1/4	Opt.	Brown Cloth	19	159.99
	AR 18B	Ac. Sus.	8			1 1/4	Cone			62-22	88	10	2k	8/5.6	17 x 10 1/2 x 6 5/8	Opt.	Brown Cloth	15	119.99
	AR 8B	Ac. Sus.	6			1 1/4	Cone			74-22	88	10	2k	8/5.6	14 3/4 x 9 1/2 x 6 1/4	Opt.	Brown Cloth	10 1/2	89.99
	AR 1ms	Ac. Sus.	4			3/4	Dome			95-25	85	7	2.8k	4/3.8	7 5/8 x 4 3/4 x 4 3/4	Opt., Alum.	Black Cloth Black Alum.	4 1/2	119.99
ACOUSTI-PHASE	Micro Phase	Vented	6 1/2			3/4	Dome			48-20 ±4	90	3	1.6k	8/4	17 1/2 x 10 1/2 x 8	Wal. Vinyl	Black Cloth	19	99.95
	Phase 150	Vented	10			3/4	Dome	T		40-20 ±4	90	5	2.6k	8/7	22 1/4 x 13 1/4 x 11 1/4	Wal. Vinyl	Black Cloth	32	159.95
	Phase Monitor II	Vented	12	4	Cone	3/4	Dome	M,T		35-20 ±3	90	10	1.5k,6.5k	8/6	25 x 15 x 13 1/2	Wal. Vinyl	Black Cloth	49	219.95
ADC	12	Ac. Sus.	12	4	Cone	1	Dome	T		20-20	90		1.2k,3.5k	8/6.5	11 1/4 x 14 1/2 x 26 1/2	Wal. Vinyl	Brown Cloth		179.95
	10	Ac. Sus.	10	4	Cone	1	Dome	T		20-20	90		1.2k,3.5k	8/6.5	9 1/2 x 12 3/4 x 22 7/8	Wal. Vinyl	Brown Cloth		129.95
	8	Inf. Baf.	8			1	Dome			20-20	90		3.5k	8/6.5	9 1/2 x 10 3/4 x 18 3/4	Wal. Vinyl	Brown Cloth		89.95
ADS	L780	Ac. Sus.	8 1/4	1 1/2	Dome	3/4	Dome			45-23 ±3	90	15	700,4.5k	8/	20 7/8 x 12 1/4 x 10 1/2	Opt.	Black Steel		639.00
	L880	Ac. Sus.	10	2	Dome	3/4	Dome			40-23 ±3	90	15	600,4k	8/	23 x 13 x 11 5/8	Opt.	Black Steel		799.00
	L980	Ac. Sus.	12	2	Dome	3/4	Dome	T		37-23 ±3	90	15	600,4k	8/	26 3/4 x 15 x 13 3/8	Opt.	Black Steel		999.00
	L1090	Ac. Sus.	(2)7 1/2	1 1/2	Dome	3/4	Dome			47-23 ±3	90	15	700,4.5k	8/	37 3/8 x 9 1/2 x 10 5/8	Opt.	Black Steel		1039.00
	L1290	Ac. Sus.	(2)8 1/4	2	Dome	1	Dome	T		42-20 ±3	91	15	600,4k	8/	41 7/8 x 10 1/2 x 11 7/8	Opt.	Black Steel		1299.00
	L1590	Ac. Sus.	(2)10	5 1/4, 1 1/2	Cone, Dome	3/4	Dome	T		35-23 ±3	92	10	300,2k, 6k	8/		Opt.	Black Steel		
	L200	Ac. Sus.	4			1	Dome			85-20 ±3	88	10	2k	4/	6 7/8 x 4 1/4 x 4 3/4	Opt., Alum.	Black Steel		259.00
	L300	Ac. Sus.	5 1/4			1	Dome			65-20 ±3	89	10	2k	4/	8 5/8 x 5 7/8 x 5 3/4	Opt., Alum.	Black Steel		339.00
	L300W	Ac. Sus.	5 1/4			1	Dome			65-20 ±3	89	10	2k	4/	8 5/8 x 5 7/8 x 6 7/8	Opt., Alum. Wal.	Black Steel		349.00
	L400	Ac. Sus.	7			1	Dome			60-20 ±3	90	10	2k	4/	11 3/4 x 7 5/8 x 7 3/4	Opt.	Black Steel		399.00
	L470	Ac. Sus.	7			1	Dome			50-20 ±3	89	15	1.8k	8/	16 3/8 x 10 1/8 x 9 5/8	Opt.			319.00
L570	Ac. Sus.	8			1	Dome			46-20 ±3	90	15	1.8k	8/	19 x 11 5/8 x 10 1/8	Opt.			439.00	
ADVENT	2002	Ac. Sus.	8			2	Cone			50-23 ±3	88	7	3.2k	8/6	18 1/2 x 11 x 8	Wal. Vinyl	Opt., Cloth	16 1/2	119.95
	3002	Ac. Sus.	8			1	Dome			48-23 ±3	88	7	2.8k	8/7	20 x 12 x 8 1/2	Wal. Vinyl	Opt., Cloth	21 1/2	149.95
	4002	Ac. Sus.	10			1	Dome			46-23 ±2.5	87	10	1.8k	8/6	21 7/8 x 13 1/4 x 9 5/8	Wal. Vinyl	Opt., Cloth	31 1/2	209.95
	5002	Ac. Sus.	10			1	Dome			40-23 ±2.5	87	10	1.8k	8/6	26 x 14 1/4 x 11 1/2	Wal. Vinyl	Opt., Cloth	39 1/2	249.95
	5012	Ac. Sus.	10			1	Dome			40-23 ±2.5	87	10	1.8k	8/6	26 5/8 x 14 3/8 x 11 7/8	Wal. Vinyl	Opt., Cloth	41	279.95
	6003	Ac. Sus.	10	2	Dome	1	Dome			40-23 ±2.5	88.5	10	750,4.5k	8/5	32 3/4 x 22 x 8 3/4	Wal. Ven.	Opt., Cloth Brown Cloth	55	379.95
AKAI	CW-T33	Closed	10			1 1/4	Cone			45-20	90	2	5k	8/	11.8 x 22.8 x 9.1	Wal. Vinyl	Brown Cloth	20.4	269.95
	CW-T55	Closed	10	4	Cone	1 1/4	Cone	M,T		40-20	93	2	1.5k,9k	8/	13.4 x 26.4 x 9.6	Wal. Vinyl	Brown Cloth	28.6	199.95
	CW-T77	Closed	12	4	Cone	1 1/4	Cone	M,T		30-20	93	4	1.5k,9k	8/	15.3 x 29.4 x 12	Wal. Vinyl	Brown Cloth	41.8	269.95
	AE-63	Inf. Baf.	6 1/2	1 1/4	Dome	1	Dome			60-23	88		800,3k	4/	8.1 x 13.6 x 6.7	Wal. Vinyl	Brown Cloth	13.7	359.95
ALLISON ACOUSTICS	One	Ac. Sus.	(2)10	(2)3 1/2	Cones	(2)1	Cones	M,T		87	30	350,3.75k	8/7	40 x 19 x 10 3/4	Oiled Wal.	Black Plas.	67	590.00	
	Two	Ac. Sus.	(2)8	(2)3 1/2	Cones	(2)1	Cones	M,T		87	30	350,3.75k	8/7	36 x 16 x 9 3/8	Oiled Wal.	Black Plas.	57	510.00	
	Three	Ac. Sus.	10	3 1/2	Cone	1	Cone	M,T		87	30	350,3.75k	4/3.5	40 x 15 1/4 x 10	Oiled Wal.	Black Plas.	45	395.00	
	Four	Ac. Sus.	8			(2)1	Cones	T		87	30	2k	8/6.5	11 x 19 3/8 x 10	Opt. Oiled Wal.	Opt. Black Plas.	23 1/2	290.00	
	Five	Ac. Sus.	8			1	Cone	T		87	15	2k	4/3.5	11 x 18 1/4 x 10	Opt. Oiled Wal.	Opt. Black Plas.	21	195.00	
	Six (Wal.)	Ac. Sus.	8			1	Cone	T		87	15	2k	4/3.5	11 3/4 x 11 3/4 x 11 3/4	Opt. Oiled Wal.	Opt. Black Plas.	17	160.00	
	Six (Oak)	Ac. Sus.	8			1	Cone			87	15	2k	4/3.5	11 3/4 x 11 3/4 x 11 3/4	Opt. Oiled Wal.	Opt. Black Plas.	17	172.00	
	Seven	Ac. Sus.	8			1	Cone			87	15	2k	4/3.5	27 1/2 x 9 5/8 x 9 5/8	Opt. Oiled Wal.	Opt. Black Plas.	22	225.00	
	Eight	Ac. Sus.	8	3 1/2	Cone	1	Cone	M,T		87	30	450,3.75k	4/3.5	12 1/4 x 20 x 10	Opt. Oiled Wal.	Opt. Black Plas.	30	345.00	
	Nine	Ac. Sus.	10	3 1/2	Cone	1	Cone	M,T		87	30	350,3.75k	4/3.5	37 1/4 x 12 1/2 x 10 3/4	Opt. Oiled Wal.	Opt. Black Plas.	55 1/2	495.00	
	110	Ac. Sus.	8			1	Cone			87	15	2k	4/3.5	18 x 11 1/2 x 7 1/2	Wal. Vinyl	Black Plas.	16 1/2	130.00	
120	Ac. Sus.	8			1	Cone			87	15	2k	4/3.5	21 3/4 x 13 3/4 x 7 1/2	Wal. Vinyl	Black Plas.	21 1/4	160.00		
130	Ac. Sus.	10			1	Cone			87	15	2k	4/3.5	29 1/8 x 16 1/2 x 8 1/4	Wal. Vinyl	Black Plas.	34 1/2	195.00		

# LOUDSPEAKERS

MANUFACTURER	Model	Enclosure or System Type	Woofer Diameter, Inches			Midrange Diameter, Inches			Tweeter Diameter, Inches		Separate Level Crossover? W = Woofer, M = Midrange, T = Tweeter, S = Superwoofer		Anechoic Freq. Response, Hz to kHz, ±dB	SPL, 1 Watt/1 Meter, ±dB	Recommended Min. Amp. Pwr., Watts	Crossover Frequencies, Hz	Impedance, Ohms, Nominal/Minimum	Dimensions, Inches	Finish	Grille Color and Material	Weight, Lbs.	Price, \$
ALTEC LANSING	208	Vented	8			2½		Cone			75-20 ±3	89	20	1.5k	8/	19 x 10 x 10	Oak	Black Knit	19	119.95		
	310	Vented	10	4	Cone	2½		Cone			70-20 ±3	93	20	3k,10k	8/	23 x 15 x 12	Oak Vinyl	Black Knit	30	199.95		
	312	Vented	12	5	Cone	2½		Cone			60-20 ±3	91	20	1.2k,7k	8/	25 x 16 x 12	Oak Vinyl	Black Knit	41	249.95		
	14	Vented	12					Horn	T		40-20 ±3	97	10	15k	8/	30 x 21 x 16	Oiled Wal.	Black Knit	77	699.95		
	19	Vented	15					Horn	T		35-20 ±3	103	10	12k	8/	39 x 30 x 21	Oiled Wal.	Black Knit	143	1200.00		
	LF2 Subwoofer	Vented Subwoofer	12						W			35-80 ±3	96	85	40 60/80	8/	16 x 36 x 36	Lacq. Encl.	Black Knit	122	949.95	
	4 Series II	Vented	10					Horn	M,T			60-22 ±3	91	20	2k	8/	23 x 15 x 12	Lacq. Encl.	Black Knit	30	299.95	
	6 Series II	Vented	10	5	Cone			Horn	M,T			55-22 ±3	91	20	700,5k	8/	25 x 15 x 14	Lacq. Encl.	Black Knit	37	399.95	
	8 Series II	Vented	12	5	Cone			Horn	M,T			50-22 ±3	91	20	700,5k	8/	30 x 17 x 14	Lacq. Encl.	Black Knit	51	479.95	
APATURE	Pro-I	Trans. Line	10			2½		Cone			38-22	92	10	1.8k	4.4	11 x 12 x 33	Oak	Brown Knit	48	199.95		
	Trident	Sat. & Subwoofer	(2)10	5¼	Cone	2x½		Rbn.	T		34-40	92	10	125,5k	8.4	Three Pieces	Koa	Brown Knit	98	550.00 Sys.		
	Bass Mod.	Subwoofer	(2)10						(2)W		34-125	92	10	125	8.4	21 x 30 x 15½	Koa	Brown Knit	70	279.95		
APOGEE ACOUSTICS		Ribbon Dipole	12x80	2x80	Rbn.	½x80		Rbn.	M/T, T		90	100	400,3.5k	4	4 x 35 x 80	Suede	Opt.	300	6100.00 Pair			
ATLANTEAN	ATN-210	Inf. Baf.	(2)10	4	Cone	1		Dome	M,T		45-20 ±2	90	30	500,4k	8.4	42½ x 18½ x 6½	Wood Vinyl	Black Cloth	40	600.00 Pair		
	ATN-110	Inf. Baf.	10	4	Cone	1		Dome	T		50-20 ±2.5	87	30	500,4k	8.4	37 x 18½ x 6½	Wood Vinyl	Black Cloth	36	500.00 Pair		
AUDIO CONCEPTS	Jack Caldwell Ribbon D-1		(2)8¾	(2)1x24	Rbns.				W,M		38-20 ±3	89			3/2	20½ x 18 x 75½	Opt.	Black	125	3600.00 Pair		
		Vented	8¾	2	Dome	¾		Dome			40-30 ±3	92			8/6	14½ x 13¼ x 43	Opt.	Black	75	1095.00 Pair		
	M	Vented	6½			1		Dome			55-20 ±3	89			8/4	8 x 10 x 15½	Opt.	Brown	18	389.00 Pair		
AUDIOPHILE PRODUCTS	MS-1	Aperiodic Sat.		6½	Cone	1½		Dome			90-19.5	91.5	35	2.4k	5/4	18 H	Black Lacq.	Black Foam	36	790.00 Pair		
	MS-3	Aperiodic Sat.		8	Cone	1½		Dome			90-19.5	92	100	1.8k	5/4	18 H	Black Lacq.	Black Foam	38	850.00 Pair		
	MW-TL10a	Trans. Line Subwoofer	10								28-2.5	89	200		5.4	25 x 31 x 13	Black Lacq.	Black Foam	94	630.00 Pair		
	MW-TL12	Trans. Line Subwoofer	12								22-2	90	200		5.4	25 x 31 x 24	Black Lacq.	Black Foam	135	1080.00 Pair		
	FR-1	Aperiodic	8			1½		Dome			32-19.5	91	45	1.8k	5/4	32 H Pyr.	Black Lacq.	Black Foam	63	1500.00 Pair		
AUDIO PRO	2-25	B3 Inf. Baf.	8			1		Dome			52-20 +0,-3	90	15	2k	6/4.5	20¼ x 11¼ x 10¼	Opt.	Black Foam	20	225.00		
	A4-14	Biamped Subwoofer	(2)5	4½	Cone	1		Dome	W,M, T		30-20 +0,-3	Inc.	300,2.5k			20¼ x 12½ x 10½	Opt.	Black Foam	35	897.50		
	B2-40	Bass Ref. Subwoofer	(2)5½						W		30-200 +0,-3	Inc.	50-200			20½ x 15 x 15	Opt.	None	41	695.00		
	B2-50	Bass Ref. Subwoofer	(2)5½						W		20-200 +0,-3	Inc.	40-200			21½ x 18¼ x 17½	Opt.	Black Cloth	64	995.00		
	B4-200	Bass Ref. Subwoofer	(4)8						W		20-200 +0,-3	Inc.	40-200			42½ x 21¼ x 21¼	Wal.	Black Cloth	131	2750.00		
	B2-45	B3 Sat. & Bass Ref. Subwoofer	(2)5½	8	Cone	1		Dome	W		30-20 +0,-3	90	15	100,2k	4/4.5	Three Pieces	Opt.	Black Foam	81	1145.00 Sys.		
AUDIOSOURCE	LS-One	Ac. Sus.	4			1		Dome			100-20 ±3	83	5	2.5k	8/4	7½ x 4½ x 4½	Opt.	Opt.	5½	99.95		
	LS-Three	Ac. Sus.	5	1	Dome	1		Dome			80-20 ±3	85	5	1.2k,5k	8/4	10¼ x 6¼ x 5½	Alum.	Black Metal	9¼	159.95		
	LS-Four	Ac. Sus.	4			1½		Dome			100-20 ±3	87	5	2.5k	4/2	7½ x 5½ x 2¾	Plas.	Black Metal	2½	84.95		
	LS-Six	Ac. Sus.	2			¾		Coax			200-20 ±4	84	0.5		20/8	3½ x 2¾ x 2½	Alum.	Black Metal	1¾	39.95		
	LS-Seven	Ac. Sus.	6½			1		Dome			70-20 ±3	87	5	2k	8/4	13½ x 8½ x 6½	Oiled Oak	Brown Cloth	7	129.95		
	LS-Eight	Ac. Sus.	3			1		Dome			150-20 ±3	86	3		8/4	5½ x 3½ x 3½	Oak Plas.	Black Foam	1½	24.95		
AUOIRE	Image I	Ribbons, Bipolar Blamp						Rbn.			30-25 ±5	86	100	80	3/2	33 x 4 x 72	Oiled Wal.	Black Cloth	100	4500.00 Pair		
AURATONE	5C Super- Sound Cube 5S	Sealed	5								100-17	89	3		8/	6¾ x 6¾ x 5¾	Wal. Vinyl	Black Foam	5	90.00 Pair		
		Sealed	5								100-17	89	3		8/	10½ x 6½ x 4¾	Wal. Vinyl	Black Foam	5½	95.00 Pair		
	5W Super- Sound Wedge	Sealed	5								100-17	89	3		8/	7½ x 7½ x 2¾/4¾	Wal. Vinyl	Black Plas.	5¼	95.00 Pair		
	5RC Super- Road Cube	Sealed	5								100-17	89	3		8/	6½ x 6½ x 10¾	Wal. Vinyl	Black Plas.	10 Set	120.00 Set		

# LOUDSPEAKERS

MANUFACTURER	Model	Enclosure or System Type	Woofer Diameter, Inches		Midrange Diameter, Inches		Tweeter Diameter, Inches		SPL, 1 Watt, 1 Meter, dB	Recommended Min. Amp. Pwr., Watts	Crossover Frequencies, Hz	Impedance, Ohms	Dimensions, Inches	Finish	Grille Color and Material	Weight, Lbs.	Price, \$	
			Woofer	Midrange	Midrange	Tweeter	Tweeter	Separate Level Controls? W = Woofer, M = Midrange, T = Tweeter, S1 = Superwoofer										Angular Freq. Response, Hz to kHz, ±dB
AURATONE (Continued)	T5 Ultra-Compact	Sealed	5¼			1	Dome		90-20 ± 3.5	87	5	2.7k	8/6	10½ x 7 x 7¾	Wal. Vinyl	Black Cloth	10	250.00
	T6 Sub-Compact	Ducted Port	6½			1	Dome		60-20 ± 3	88	10	2.7k	8/6	14½ x 9½ x 10	Wal. Vinyl	Black Cloth	18	325.00
	T66 Compact	Ducted Port	(2)6½			1¼	Dome		55-18 ± 2.5	90	20	2.2k	8/6	12 x 18 x 12½	Wal. Vinyl	Black Cloth	33	595.00
	QC66 Quality Control	Ducted Port	(2)6½	1¼	Dome	¾	Dome		50-20 ± 2	90	20	2.2k, 6k	8/6	13½ x 16½ x 12½	Wal. Vinyl	Black Cloth	35	695.00
RC66 Road Cube	Ducted Port	(2)6½			1¼	Dome		55-18 ± 2.5	90	20	2.2k	8/6	14¾ x 14¾ x 24½	Wal. Vinyl	Black Cloth	70 Set	795.00	
AVID AUDIO	60ab	Ac. Sus.	6½			1	Dome		70-20 ± 3	87	20	3.5k	8/	14 x 8¾ x 8	Wood Vinyl	Brown Cloth	13	240.00
	80ab	Ac. Sus.	8			1	Dome		53-20 ± 3	88	20	3k	8/	19½ x 12 x 8¾	Wood Vinyl	Brown Cloth	22	300.00
	102ab	Ac. Sus.	10			1	Dome		43-20 ± 3	89	20	2.5k	8/	25 x 15 x 10½	Wood Vinyl	Brown Cloth	42	400.00
	232ab	Bass Ref.	10	4½	Cone	1	Dome		40-20 ± 3	90	20	650, 5k	8/	28 x 15 x 10¾	Wood Vinyl	Brown Cloth	50	580.00
AWARD	820d	Tuned Port	8			2	Cone		50-18 ± 15	87	10		8/	23 x 11½ x 9	Wood Vinyl	Black Cloth		99.95
	1030d	Tuned Port	10	4	Cone	2	Cone	T	45-18 ± 15	90	10		8/	28 x 15 x 10½	Wood Vinyl	Black Cloth		129.95
	1240d	Tuned Port	12	4x11	Horn	2,2	Cone, Pz.	M, T	35-22 ± 15	95	10		8/	32 x 15 x 13	Wood Vinyl	Black Cloth		199.95
	620	Inf. Baf.	12	4	Cone	2	Cone		40-18 ± 15	92	10		8/	24 x 15 x 10	Wood Vinyl	Black Cloth	26	149.95
BABB AUDIO	C14	Tuned Port		5¼	Cone				50-18 ± 4	90	30		4/3	8 x 9 x 11	Black	Black Metal	16	160.00
	B18	Tuned Port		5¼	Cone				25-18 ± 4	91	30		8/6	10 x 10 x 16½	Black	Black Metal	24	180.00
	P14	Tuned Port		5¼	Cone				25-18 ± 4	91	30		4/3	9 x 9 x 31	Black	Black Metal	28	200.00
	T18	Tuned Port		6x9	Cone				30-18 ± 4	97	30		8/6	13 x 13 x 36	Black	Black Metal	45	280.00
	W24	Tuned Port		(2)5¼	Cones				25-18 ± 4	92	50		4/3	10 x 18 x 31½	Black	Black Metal	28	320.00
	B28	Tuned Port		(2)5¼	Cones				25-18 ± 4	92	50		8/6	16 x 16 x 20	Black	Black Metal	28	320.00
	T44	Tuned Port		(4)5¼	Cones				25-16 ± 4	92	100		4/3	13 x 13 x 36	Black	Black Metal	58	530.00
BANG & OLUFSEN	MS 150.2	Bass Ref.	8, 10	3	Dome	1	Dome	No	30-22 ± 3	92	30	150, 900, 3k	8/8	14½ x 33 x 13¾	Rswd.	Black Cloth	66	
	MC 120.2	Bass Ref.	8	3	Dome	1	Dome	No	42-22 ± 3	92	30	800, 4k	8/8	10½ x 22½ x 11	Rswd.	Black Cloth	26½	
	S 80.2	Ac. Sus.	8	3	Dome	1	Dome	No	50-22 + 4, -8	90	30	800, 4k	8/8	10½ x 21 x 11	Rswd.	Black Cloth	19¾	
	S 55	Ac. Sus.	8	3	Dome	1	Dome	No	50-20 + 4, -8	90	20	800, 3k	8/8	10½ x 21 x 9½	Rswd.	Black Cloth		
B.E.S.	SM100	Puls. Diaph.	850 Sq. In.				Puls. Diaph.		40-19 ± 5	88	5	800	8/5.5	27¾ x 19 x 4½	Oiled Oak	Brown Cloth	26	460.00
	SM250MKII	Puls. Diaph.	850 Sq. In.				Puls. Diaph. Pz.	T	38-22 ± 5	88	5	800, 10k	8/5.5	28½ x 19 x 4½	Oiled Oak	Brown Cloth	26	580.00
	SM255MKII	Puls. Diaph.	850 Sq. In.				Puls. Diaph. Pz.	M, T	32-22 ± 5	91	10	800, 10k	9/5.5	30¼ x 20 x 5¼	Oiled Oak	Brown Cloth	39	800.00
	SM280	Puls. Diaph.	1360 Sq. In.				Puls. Diaph. Pz.	M, T	32-22 ± 3	93	10	500, 5k, 10k	8/6	44¼ x 21 x 5¼	Oiled Oak	Brown Cloth	58½	1100.00
	SM300	Puls. Diaph.	1750 Sq. In.				Puls. Diaph. Pz.	M, T	30-22 ± 3	93	25	500, 5k, 10k	8/6	53½ x 22 x 6¼	Oiled Oak	Brown Cloth	79	1500.00
	C60S	Puls. Diaph.	850 Sq. In.				Puls. Diaph. Pz.		50-10 ± 3	86.5	5	800	8/5.5	23¾ x 17¾ x 3	Alum.	Brown Cloth	9½	186.00
	C60D	Puls. Diaph.	850 Sq. In.				Puls. Diaph. Pz.		40-19 ± 3	92	5	800	8/5.5	23¾ x 17¾ x 3	Alum.	Brown Cloth	11½	230.00
	B-81	Puls. Diaph.	850 Sq. In.				Puls. Diaph. Pz.		50-10 ± 3	86.5	5	800	8/5.5	25 x 19 x 4¼	Brown Alum.	Brown Cloth	16	320.00
	B-82	Puls. Diaph.	850 Sq. In.				Puls. Diaph. Pz.		40-19 ± 3	92	5	800	8/5.5	25 x 19 x 4¼	Brown Alum.	Brown Cloth	19	380.00
	B-81 I	Puls. Diaph.	850 Sq. In.				Puls. Diaph. Pz.		50-10 ± 3	86.5	5	800	8/5.5	25 x 19 x 4¼	Brown Alum.	Brown Cloth	16	300.00
	B-82 I	Puls. Diaph.	850 Sq. In.				Puls. Diaph. Pz.		40-19 ± 3	92	5	800	8/5.5	25 x 19 x 4¼	Brown Alum.	Brown Cloth	19	360.00
	HAROLD BEVERIDGE CO.	System 2SW	ES w/ Subwoof.	12			(3) 13x24	ES	W	27-20 ± 3	110	inc.	100	8/2	78 x 24 x 16	Opt.	Black Foam	510
System 5		ES w/ Subwoof.	12			13x35	ES	No	33-20 ± 3	106	50	200	8/4	17½ Dia. x 63 H	Opt.	Black Foam	200	3295.00 Sys.
BLACK ACOUSTICS	Rainbow II	Ducted Vent	6½			2½	Cone	No	60-19 ± 2	90	20	2.1k	6/4	21 x 9 x 9	Opt.	Opt.	21	450.00
	Night II	Dual Ducted Vent	6½	6½	Cone	1	Dome	No	39-21 ± 4	91	40	2.5k	6/4	40 x 8 x 12	Opt.	Opt.	35	900.00
	Onyx	Dual Ducted Vent	(2)8	1¼	Dome	4	Rbn.	No	28-37 ± 1.5	90	60	1.75k, 10k	6/4	56 x 9½ x 19	Opt.	Opt.	81	1800.00
BML ELECTRONICS	Tracer AM-I								32-19 ± 3	88	45		7.2/7	22½ x 10¼ x 11½	Oiled Wal. Opt.	Black Cloth Opt.	51	1200.00
	Tracer AM-II								27-22 ± 3	89	45		7.2/7	25½ x 10½ x 15½	Oiled Wal. Opt.	Black Cloth Opt.	46	2150.00



"That night  
I was listening to  
the bass player cook.  
As his hands went  
spidering up and down  
the strings  
his thum-thum-thum  
became the group's  
heartbeat — and mine too.  
In my living room, I had  
traveled once again to that  
smokey little jazz club long ago."  
A JVC High Fidelity System  
can take you to another  
time and place, with components  
that reduce six different  
kinds of distortion down to inaudible.  
Nothing interferes with the  
reality of your music. You're there.

We take you there.

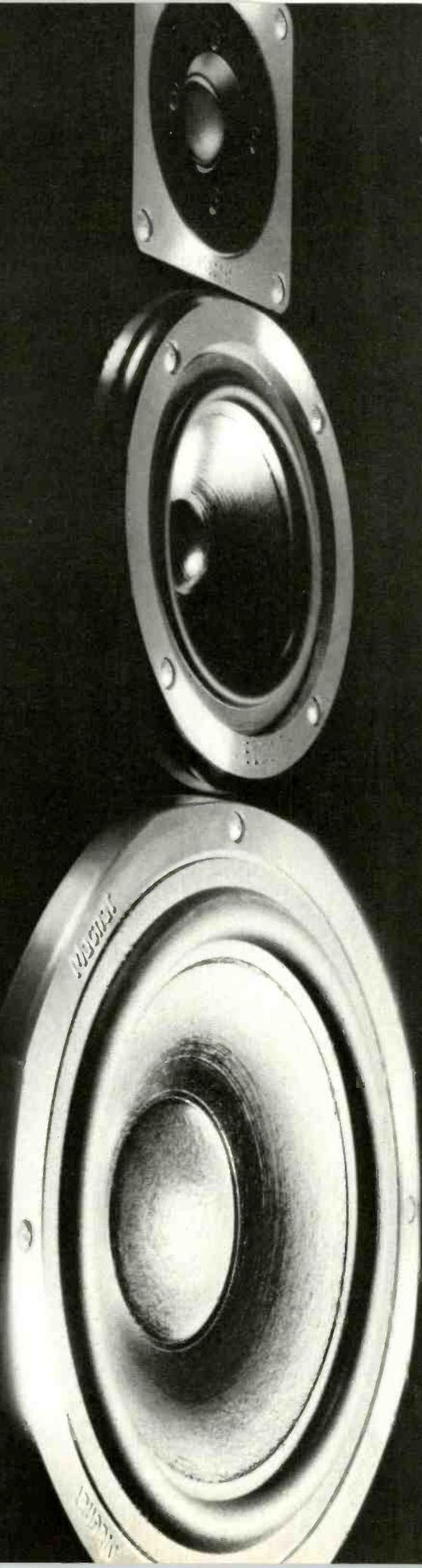


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For those  
is ready,



# who question whether digital now there's a way to find out.

You're looking at the Dahlquist DQM Series of high performance loudspeakers. They're the result of Dahlquist's commitment to build studio monitors for the pioneers of digital recording technology.

What these producers and engineers needed in a digital studio monitor, the Dahlquist DQM Series was designed to deliver...the energy of the original performance. Quite a feat when you realize that digital recordings capture a range of sound energies that exceed 100 million to 1!

Even though the compact digital disc is slightly less demanding than professional digital, the progress is still enormous.

Here's how the Dahlquist DQM Series delivers what digital demands.

#### **The un-box enclosure.**

To eliminate any sonic problems caused by cabinet excitation, Dahlquist developed a unique multi-density, double side-wall cabinet. The result is an absence of the "boxy" sound produced by conventional enclosures under dynamic stress.

To control diffraction for accurate lateral and in-depth imaging, Dahlquist coated each DQM front baffle with electro-statically aligned fibres.

#### **Satellite mounted crossovers.**

The hand wired crossover networks in each DQM loudspeaker are both physically and electronically isolated. An eccentricity? Hardly. This design

successfully eradicates the problems caused by the interaction of components on single board crossovers under wide dynamic conditions.

#### **Machined zinc alloy driver chassis.**

To further enhance performance, the DQM-9, DQM-9 Compact and DQM-7 Compact (the models shown) feature driver chassis machined from a rigid die cast zinc alloy. The acoustic properties of this alloy are far superior to aluminum. (While the benefits may seem esoteric to some, it's interesting to note that zinc alloy is specified for the platter of what critical listeners consider to be the most "musical" turntable in the world today.)

These same drivers also feature flat wound ribbon wire voice coils for a 40% increase in winding density. They're fast, precise and highly efficient.

#### **What price perfection?**

Surprisingly the Dahlquist DQM Series features 5 models ranging from \$200 to \$600 apiece. Hardly a hardship for the very best. What's more, these loudspeakers are not exclusive to those few committed to high wattage systems. Each DQM loudspeaker is designed to complement specific system requirements.

The Dahlquist DQM Series... ready when you are.

## **DAHLQUIST**

601 Old Willets Pt., Hauppauge, New York 11788

# The car you can test drive for the rest of your life.

The Alfa Romeo GTV-6 is not one of those country club performance cars you master in a matter of miles. It is, instead, a car you'll want to keep on driving. Because no matter how much you drive this car, it will keep on challenging you more.

Every aspect of this Alfa was conceived to help you do just that. From an aluminum alloy SOHC V-6 that delivers more than 1 hp for every cubic inch of displacement.

To a de Dion racing-type rear suspension system that maximizes the transfer of all that power to the road.

From the very first moment you experience this Alfa's extraordinary balance of acceleration and control, you'll know you'll never outdrive it. But with such a heightened sense of self and road, you'll never want to stop trying.

Test yourself against the extraordinary \$19,000\* Alfa Romeo GTV-6 at your nearest Alfa Romeo Dealer now.

\*Mfr's. suggested retail price at P.O.E. is \$18,995, higher in Calif. Actual prices vary by dealer. Destn. chrgs., taxes, dealer prep, if any, optl. equip. and license fees are extra.

*Alfa Romeo* 



# LOUDSPEAKERS

MANUFACTURER	Model	Enclosure or System Type	Woofer Diameter, Inches		Midrange Diameter, Inches		Tweeter Diameter, Inches		Sensitivity Level (100 Hz, 1 Watt)	Impedance, Ohms	Response, Hz to kHz	Crossover Freq. Response, Hz	Crossover Freq., Hz	Dimensions, Inches	Finish	Grille Color and Material	Weight, Lbs.	Price, \$
			Woofer	System	Midrange	Type	Tweeter	Type										
BOOTHROYD STUART MERIDIAN	M3	Ported	4 3/4				2	Dome	38-25 ± 3	100	Inc.	2k		14 3/8 x 6 3/4 x 11 3/4	Opt.	Opt.	26	1395.00
	M2	Ported	(2)4 3/4				2	Dome	38-20 ± 3	195	Inc.	2k		19 3/4 x 7 1/8 x 14 7/8	Opt.	Opt.	40	1995.00
	M10	Pas. Rad.	(2)4 3/4	(2)4 3/4	Cones	2	Dome	33-20 ± 3	110	Inc.	190,2k			40 x 16 3/8 x 18 3/8	Opt.	Opt.	70	4995.00
BOSE	901-V	Ac. Matrix	(9)4 1/2							10			8/	21 x 12 5/8 x 13	Wal. Ven.	Brown Cloth	35	1399.00 Pair w/EQ
	601-II	Subport	(2)8			(4)3	Cones			20	1.5k, 2.5k	8/	8/	29 1/2 x 14 x 13	Wal. Vinyl	Brown Cloth	47	944.00 Pair
	501-III	Ducted Port	10			(2)3	Cones			20	1.5k, 2.5k	8/	8/	24 x 14 1/2 x 14 1/2	Wal. Vinyl	Brown Cloth	48	684.00 Pair
	301-II	Ducted Port	8			(2)3	Cones			10	1.5k, 2.5k	8/	8/	10 1/2 x 17 x 9 1/2	Wal. Vinyl	Brown/Beige Cloth	18	390.00 Pair
	201	Ducted Vent	6			2	Cone			10	1.5k, 2.5k	8/	8/	7 7/8 x 14 1/8 x 6 3/4	Black Plas.	Black Foam	6.2	262.00 Pair
BOSTON ACOUSTICS	A40	Ac. Sus.	6 1/2			3/4	Dome	68-20 ± 3	89	5	3.5k	8/5	8/5	13 1/2 x 8 1/4 x 7 3/4	Wal. Vinyl	Black Cloth	9	75.00
	A60	Ac. Sus.	8			1 1/2	Cone	55-20 ± 3	90	10	3k	8/6	8/6	18 x 11 1/2 x 7 3/4	Wal. Vinyl	Black Cloth	16	100.00
	A70	Ac. Sus.	8			1	Dome	40-25 ± 3	90	15	2k	6/4	6/4	24 x 14 x 8	Wal. Vinyl	Black Cloth	26	140.00
	A100	Ac. Sus.	10			1	Dome	38-25 ± 3	90	15	2k	8/5	8/5	32 x 16 x 8 3/8	Wal. Vinyl	Black Cloth	44	195.00
	A150	Ac. Sus.	10	4 1/2	Cone	1	Dome	38-25 ± 3	90	15	650,3k	8/5	8/5	32 x 16 x 8 3/8	Wal. Vinyl	Opt. Cloth	47	295.00
	A400	Ac. Sus.	(2)8	6 1/2	Cone	1	Dome	36-25 ± 3	90	15	300,3k	4/4	4/4	41 x 21 x 7 3/8	Opt.	Opt. Cloth	85	475.00
BOZAK	LS-200A	Ported	8			1	Dome	50-20 ± 3	89	15	2k	8/6.5	8/6.5	20 x 11 1/2 x 10 1/4	Wal. Ven.	Brown Knit	32	179.00
	LS-220A	Ported	8			1	Dome	50-20 ± 3	39	20	3k	8/6.5	8/6.5	36 x 11 1/2 x 10 1/4	Wal. Ven.	Brown Knit	45	249.00
	LS-250A	Inf. Baf.	12	4	Cone	1	Dome	45-20 ± 3	36	20	800,2.5k	8/7	8/7	23 1/2 x 14 1/2 x 12 1/4	Wal. Ven.	Brown Knit	46	299.00
	LS-330A	Inf. Baf.	12	6	Cone	1	Dome	40-20 ± 3	86	35	500,2.5k	8/6.5	8/6.5	34 1/2 x 15 1/2 x 12 1/4	Wal. Ven.	Brown Knit	64 1/2	519.00
	CS-200	Ported	8			2	Cone	50-20 ± 3	89	15	2k	8/6.5	8/6.5	20 x 11 1/2 x 10 1/4	Wal. Ven.	White	32	259.00
	CS-400	Inf. Baf.	12	6	Cone	(2)2	Cones	40-20 ± 3	89	20	800,2.5k	8/6.5	8/6.5	25 1/2 x 18 x 13 1/4	Wal. Ven.	White	65	429.00
	CS-501	Inf. Baf.	12	6	Cone	(3)2	Cones	35-20 ± 3	89	35	400,2.5k	8/6.5	8/6.5	32 1/4 x 20 1/4 x 16	Wal. Ven.	White	90	699.00
	CS-4000	Inf. Baf.	(2)12	6	Cone	(8)2	Cones	28-20 ± 3	89	60	400,2.5k	8/6.5	8/6.5	44 1/2 x 26 1/4 x 15 5/8	Wal. Ven.	White	165	1199.00
	CS-310	Inf. Baf.	(4)12	(2)6	Cones	(8)2	Cones	20-20 ± 3	89	80	400,2.5k	8/6.5	8/6.5	52 x 36 x 19	Wal. Ven.	White	225	1899.00
	CS-410	Inf. Baf.	(4)12	(2)6	Cones	(8)2	Cones	20-20 ± 3	89	80	400,2.5k	8/6.5	8/6.5	52 x 36 x 19	Wal. Ven.	White	225	1999.00
	MB-80	Mini	6			1	Dome	60-20 ± 3	81	50	1.6k	8/6.5	8/6.5	12 1/2 x 7 7/8 x 7 7/8	Oak Ven.	Opt. Cloth	34 1/2	499.00 Pair
	B-1000		8							15		8/7	8/7	18 x 21 x 12	Enam.	Metal	21	199.00
B-1002		8			2	Cone	60-20 ± 3	15			8/7	8/7	18 x 21 x 12	Enam.	Metal	21	259.00	
BRANDENBURG	10	Ac. Sus.	8			1	Dome	30-20	89	27	3.5k	8/	8/	15 1/4 x 11 3/4 x 9 1/2	Wal.	Brown Foam	16	119.00
	25	Bass Ref.	10			3 3/4	Pz.	20-40	90	20	3k	8/	8/	21 1/4 x 14 1/2 x 12	Wal.	Brown Cloth	35	229.00
	990	Tuned Port	10	5	Cone	1	Dome	20-21	90	20	700,4k	8/	8/	30 x 14 1/2 x 14 1/2	Wal.	Brown Cloth	50	349.00
	1000	Bass Ref.	(2)10	5	Cone	1	Dome	20-21	90	20	700,4k	8/	8/	43 1/2 x 14 1/2 x 14 1/2	Wal.	Brown Cloth	75	500.00
	2000	Ac. Sus.	(2)10	5	Dome	1	Dome	14-21	90	20	700,5k	8/8	8/8	48 x 22 1/2 x 12	Wal.	Brown Cloth	84	895.00
BSC	Compusound 150	Inf. Baf.	(2)8	5 1/4	Cone	1	Dome	W.M.T. 15-20 ± 2	110		195,2.25k			13 1/2 x 15 3/4 x 43	Oiled Oak	Brown Cloth	90	3600.00 Pair
BSR	153c	Ac. Sus.	15	4	Cone		Horn	M,T 20-20	91		1k,4k	8/7	8/7	11 x 18 x 29 1/2	Wal. Vinyl	Brown Cloth		199.95
	123c	Ac. Sus.	12	4	Cone	3	Cone	T 20-20	90		1k,4k	8/7.6	8/7.6	11 1/4 x 14 1/2 x 26 1/2	Wal. Vinyl	Brown Cloth		129.95
	103c	Ac. Sus.	10	4	Cone	3	Cone	T 20-20	90		1k,4k	8/7.6	8/7.6	9 1/2 x 12 3/4 x 22 7/8	Wal. Vinyl	Brown Cloth		99.95
	82c	Inf. Baf.	8			3	Cone	20-20	91		4k	8/7.3	8/7.3	9 1/2 x 10 3/4 x 18 3/4	Wal. Vinyl	Brown Cloth		69.95
BTM	290	Inf. Baf.	8	2	Dome	1	Dome	No		15	700,4k	8/	8/	21 1/2 x 12 x 4 1/2 x 7 1/2	Lam.	Black Cloth	22	200.00
	300	Inf. Baf.	10	2	Dome	1	Dome	No		20	700,4k	8/	8/	24 1/2 x 14 x 4 1/2 x 7 1/2	Lam.	Black Cloth	27	250.00
	310	Inf. Baf.	12	2 1/2	Cone	1	Cone	No		35	700,4k	8/	8/	38 x 17 x 4 1/2 x 9 1/2	Lam.	Black Cloth	46	450.00
	320	Inf. Baf.	(2)10	(2)2	Domes	(2)1	Domes	No		35	700,4k	8/	8/	43 1/2 x 21 x 4 1/2 x 9 1/2	Lam.	Black Cloth	64	600.00

# LOUDSPEAKERS

MANUFACTURER	Model	Enclosure or System Type	Woofer Diameter, Inches		Midrange Diameter, Inches		Tweeter Diameter, Inches		SPL, 1 Watt/1 Meter, dB	Recommended Min. Amp. Pwr., Watts	Crossover Frequencies, Hz	Impedance, Ohms	Nominal Minimum Dimensions, Inches	Finish	Grille Color and Material	Weight, Lbs.	Price, \$	
			Woofer	System	Midrange	Tweeter	Woofer	System										Midrange
B & W	DM110	Vented	8				1	Dome	70-20 ±3	90	10	3k	8/	19 1/4 x 10 1/4 x 9 3/4	Vinyl	Brown Cloth	19	149.00
	DM220	Ac. Sus.	8	8	Cone		1	Dome	53-20 ±3	90	10	150,3k	8/	26 3/4 x 11 3/8 x 12 5/8	Vinyl	Brown Cloth	33 1/4	249.00
	DM12	Ac. Sus.	6				1	Dome	85-20 ±3	85	15	3.3k	8/6	14 x 8 3/4 x 10 1/2	Opt.	Brown Cloth	21	335.00
	OM17 LTD	Ac. Sus.	6				1	Dome	85-20 ±2	85	40		8/	16 x 8 3/4 x 10 1/2	Opt.	Brown Cloth	19 3/4	395.00
	DM14	Ac. Sus.	6	6	Cone		1	Dome	80-20 ±2	86	15	400,3.2k	8/6	22 1/2 x 10 x 11 1/2	Opt.	Brown Cloth	41 3/4	495.00
	OM7/11	Pas. Rad.	6 1/4				1	Dome	80-20 ±2	86	40	3k	8/6	35 1/2 x 10 3/4 x 15	Wal.	Brown Cloth	62 3/4	645.00
	802F	Ac. Sus.	(2)6 1/2	4	Cone		1	Dome	55-20 ±2	85	80	450,3.5k	8/8	41 x 11 3/4 x 14 1/2	Opt.	Brown Cloth	70	1250.00
	801F	Ac. Sus.	10 5/8	4	Cone		1	Dome	45-20 ±2	85	50	450,3.5k	8.8	37 1/4 x 17 x 22	Opt.	Brown Cloth	103	1750.00
	LM1	Ac. Sus.	4				3/4	Dome	80-25 ±4	85	10	3k or 4.5k	8/3	9 1/2 x 6 1/8 x 7 3/4	Opt., Nxtl.	Mesh	11 1/2	249.00
	LM1 Marine	Ac. Sus.	4				3/4	Dome	80-25 ±4	85	10	3k or 4.5k	8/3	9 1/2 x 6 1/8 x 7 3/4	Opt., Nxtl.	Mesh	11 1/2	300.00
	LM1/PM	Inf. Baf.	4				3/4	Dome	80-25 ±4	85	10	3k or 4.5k	8/3	9 1/2 x 6 1/8 x 2 3/4	Opt., Nxtl.	Mesh	6 1/8	225.00
	LM1/PM Marine	Inf. Baf.	4				3/4	Dome	80-25 ±4	85	10	3k or 4.5k	8/3	9 1/2 x 6 1/8 x 2 3/4	Opt., Nxtl.	Mesh	6 1/8	270.00
	CALIBRATION STANDARD INSTRUMENTS	MDM-4	Ported	(2)6 1/2			3 1/2	Cone	60-17 ±3	89	15	1.5k	8.5	19 x 13 x 9 3/4	Rswd. Lam.	Brown Cloth	25	890.00
MDM-TA2		Time Align	6 1/2			3/4	Dome	45-20 ±3	91	15	2.5k	8.5	16 x 11 3/4 x 9 1/4	Rswd. Lam.	Opt.	20	990.00	
MDM-TA3		Time Align	(2)6 1/2	3 1/2	Cone	3/4	Dome	60-20 ±3	87	15	1.8k,7k	8.4	19 x 16 x 11 3/4	Rswd. Lam.	None	35	1190.00	
CANNON-TLS	C-1025	Vented Port	10			2	Cone	45-20 ±0.4	92.5	12	2k	6/4	11 3/4 x 14 1/4 x 2 5/8	Wal. Vinyl	Brown Cloth	36	199.00	
	C-1035	Pas. Rad.	10	5	Cone	2x5	Pz.	40-24 ±3.5	93	12	1k,5k	6/4	11 3/4 x 14 1/4 x 25	Wal. Vinyl	Brown Cloth	38	249.00	
	C-1235	Pas. Rad.	12	5	Cone	2x5	Pz.	35-24 ±3	93.5	12	1k,5k	6/4	11 3/4 x 15 1/4 x 26 3/4	Wal. Vinyl	Brown Cloth	42	299.00	
	C-1235T	Pas. Rad.	12	5	Cone	2x5	Pz.	30-24 ±3	94	12	1k,5k	6/4	11 3/4 x 14 1/4 x 42	Wal. Vinyl	Brown Cloth	60	399.00	
CANTON	HC 100	Ac. Sus.	4 3/4			1	Dome	48-30 ±6	108	9	1.7k	4/	5 1/8 x 7 1/2 x 5 3/4	Opt.	Opt.	5	250.00	
	AC 200	Biamped Ac. Sus.	4 3/4			1	Dome	48-30 ±6	102	Inc.	1.7k		5 1/8 x 7 1/2 x 5 3/8	Black	Black	5 1/2	350.00	
	Pullman	Ac. Sus.	(4)4 3/4	1 1/4			Dome	45-30 ±6	108	2.9	800,4k	4/	37 3/8 x 4 1/8 x 5	Opt.	Opt.	18	400.00	
	GL 210	Ac. Sus.	4 3/4			1	Dome	48-30 ±6	102	9	2.1k	4/	4 3/4 x 7 5/8 x 4 3/8	Opt.	Opt.	5	250.00	
	GL 260	Ac. Sus.	6 1/4			1	Dome	42-30 ±6	104	7.5	1.7k	4/	7 1/8 x 10 1/2 x 4 3/4	Opt.	Opt.	8 1/2	350.00	
	GLE 40F	Ac. Sus.	6 1/4			1	Dome	48-30 ±6	103	9	1.7k	4/	12 5/8 x 8 5/8 x 3 1/8	Opt.	Opt.	9	350.00	
	Plus L	Ac. Sus. Sat.	4 3/8			1	Dome	45-30 ±6	103	11	2.2k	4/	4 3/4 x 7 5/8 x 4	Opt.	Opt.	5 1/2	350.00	
	Plus B	Triamped Subwoof.	12						20-130 ±6	105	Inc.	130		13 3/8 x 15 x 15	Opt.	Opt.	48	1100.00
	Plus Set	Triamped Sat. & Subwoof.	12	4 3/8	Cone	1	Dome	20-30 ±6	103	Inc.	130,2.2k		Three Pieces	Opt.	Opt.	59	1450.00	
	GLS 50	Ac. Sus. Subwoof.	12						22-120 ±6	105	9	120	4/	13 3/8 x 13 3/8 x 13 3/8	Opt.	Opt.	28	400.00
	Plus A	Triamped Subwoof.	(2)12						-6 dB @16 Hz	115	Inc.	90/110/130		30 3/4 x 22 3/4 x 7	Opt.	Opt.	165	2400.00
	Ergo A	Triamped	(2)10	4 3/4	Cone	1	Dome	20-30 ±6	116	Inc.	130,220		15 x 39 x 15	Opt.	Opt.	82	3500.00	
	Quinto 510	Ac. Sus.	8	1 1/4	Dome	1	Dome	36-30 ±6	105	7	800,5k	4/	8 5/8 x 13 3/8 x 8 1/4	Opt.	Opt.	15	500.00	
	Quinto 520	Ac. Sus.	8 3/4	1 1/4	Dome	1	Dome	28-30 ±6	107	6.5	800,5k	4/	9 5/8 x 15 3/8 x 9 1/2	Opt.	Opt.	20	600.00	
	Quinto 530	Ac. Sus.	10	1 1/4	Dome	1	Dome	25-30 ±6	108	6.2	1k,5k	4/	11 1/4 x 18 1/8 x 10 5/8	Opt.	Opt.	25	750.00	
Quinto 540	Ac. Sus.	12	1 1/2	Dome	1	Dome	22-30 ±6	111	5.1	800,3.5k	4/	13 3/8 x 22 1/2 x 12 3/8	Opt.	Opt.	41	1000.00		
CT 1000	Ac. Sus.	12	4 3/4	Cone	1	Dome	20-30 ±6	114	1.8	450,3.1k	4/	14 x 26 x 12 5/8	Opt.	Opt.	55	1350.00		
Ergo P	Ac. Sus.	(2)10	4 3/4	Cone	1	Dome	20-30 ±6	116	1.6	450,3.1k	4/	15 x 39 x 15	Opt.	Opt.	63	2000.00		
Super Set	Triamped Sat. & Subwoof.	(2)12	8 3/4	Cone	1	Dome	16-30 ±6	115	Inc.	90/110/130 and 800,5k		Three Pieces	Opt.	Opt.	180	3000.00		
CELESTION	Ditton 100	Inf. Baf.	6 1/2			1	Dome	78-20 ±6	87	10	2.3k	8/6	13 x 8 1/4 x 7 3/4	Wal. Vinyl	Brown	9.8	130.00	
	Ditton 110-II	Inf. Baf.	8			1	Dome	65-20 ±6	87.5	10	2.3k	8/6	17 1/4 x 10 x 8 1/4	Wal. Vinyl	Brown	14.8	200.00	
	Ditton 250	Inf. Baf.	8	5	Cone	1	Dome	45-20 ±6	86.6	10	500,3k	8/6	22 1/2 x 11 1/2 x 9 1/2	Wal. Vinyl	Brown	24	300.00	
	SL6	Inf. Baf.	6 1/2			1 1/4	Dome	60-20 ±6	82	35	2.3k	8/6	14 1/2 x 8 x 10	Opt.	Opt.	17	500.00	
	SL600	Inf. Baf.	6 1/2			1 1/4	Dome	60-20 ±6	82	35	2.3k	8/6	14 1/2 x 8 x 10	Nxtl.	Brown		1500.00	

# LOUDSPEAKERS

MANUFACTURER	Model	Enclosure or System Type	Woofer			Midrange			Tweeter			Sensitivity			Power			Impedance			Dimensions			Finish	Grille Color and Material	Weight, Lbs.	Price \$
			Type	Diameter, Inches	Area, Sq. Inches	Type	Diameter, Inches	Area, Sq. Inches	Type	Diameter, Inches	Area, Sq. Inches	100 Hz	1 kHz	10 kHz	100 Hz	1 kHz	10 kHz	Min.	Nominal	Max.	Min.	Nominal	Max.				
CERWIN-VEGA	D-9	Vented	15	6	Cone	1	Horn	M, T	29-20	101	5	500, 3.5k	6/4	35 1/2 x 18 x 17 3/4	Vinyl Ven.	Brown	85	950.00									
	D-7	Vented	12	6	Cone	1	Horn	M, T	25-20	98	5	500, 3.5k	8/6	34 x 16 x 14 3/4	Vinyl Ven.	Brown	70	790.00									
	D-5	Vented	12	6	Cone	1	Horn	M, T	29-20	96	5	700, 3.5k	8/6	27 1/2 x 16 1/4 x 10 3/4	Vinyl Ven.	Brown	44	630.00									
	D-3	Vented	10	6	Cone	1	Horn	T	29-20	94	5	700, 3.5k	8/6	27 1/2 x 14 x 10 3/4	Vinyl Ven.	Brown	39	530.00									
	D-2	Vented	10			1	Horn	T	30-20	84	5	3k	8/6	24 1/2 x 14 x 10	Vinyl Ven.	Brown	34 1/2	410.00									
	D-1	Vented	10			1	Horn		30-20	92	5	3k	8/6	20 x 11 x 10	Vinyl Ven.	Brown	24 1/2	310.00									
CHAPMAN SOUND		Air Sus.	10	5	Cone	1	Dome		32-20 ± 3	86	50	200, 3k	4, 3.8	13 x 10 x 38 3/4	Dpt.	Black Cloth	70	1495.00 Pair									
CIZEK	SW-1	Sealed	6 1/2			2	Cone	No	100-17 ± 3	90	15	120	4/	12 x 12 x 3	Opt.	Brown Foam	8	195.00 Pair									
	SW-SW	Pas. Rad. Subwoof.	10					No	58-120 ± 3	90	15		4/	13 3/8 x 13 3/8 x 16 1/8	Opt.	Brown Foam	32	249.00 Pair									
DAHLQUIST	DQM-9 "N"	Tuned Ports	11	5	Cone	1	Dome		28-22	92	25	450, 3.5k	8/6	14 1/2 x 25 x 13 1/4	Gray Nxtl. Wal.	Black	65	600.00									
	DQM-9	Tuned Ports	11	5	Cone	1	Dome		28-22	92	25	450, 3.5k	8/6	14 1/2 x 25 x 13 1/4	Wal. Grain	Black	65	560.00									
	DQM-9 Compact "N"	Tuned Ports	9	5	Cone	1	Dome		35-22	90	25	450, 3.5k	8/6	14 3/8 x 22 3/4 x 11 1/4	Gray Nxtl. Wal.	Black	55	450.00									
	DQM-9 Compact	Tuned Ports	9	5	Cone	1	Dome		35-22	90	25	450, 3.5k	8/6	14 3/8 x 22 3/4 x 11 1/4	Wal. Grain	Black	55	410.00									
	DQM-7 Compact "N"	Tuned Ports	9			1	Dome		37-22	90	25	3k	8/6	13 3/8 x 21 3/4 x 11 1/4	Gray Nxtl. Wal.	Black	50	365.00									
	DQM-7 Compact	Tuned Ports	9			1	Dome		37-22	90	25	3k	8/6	13 3/8 x 21 3/4 x 11 1/4	Wal. Grain	Black	50	325.00									
	DQM-5 "N"	Tuned Ports	9			1	Dome		37-22	90	25	3k	8/6	13 3/8 x 21 3/4 x 11 1/4	Wal. Grain	Black	46	300.00									
	DQM-5	Tuned Ports	9			1	Dome		37-22	90	25	3k	8/6	13 3/8 x 21 3/4 x 11 1/4	Nxtl. Wal. Grain	Black	46	260.00									
	DQM-3 "N"	Ac. Sus.	8			1	Dome		50-20	90	20	2k	8/6	11 1/4 x 17 3/4 x 10 3/4	Wal. Grain	Black	35	225.00									
	DQM-3	Ac. Sus.	8			1	Dome		50-20	90	20	2k	8/6	11 1/4 x 17 3/4 x 10 3/4	Nxtl. Wal. Grain	Black	35	200.00									
DAYTON WRIGHT	XG-10Mk2 & XIM-10 Xover System A (XG-10Mk2 & XIM-11)	Dipole ES & Subwoof.	(2)10		ES		EML	T	35-20 ± 4	88	50	4.7k	6/4.2	Three Pieces	Opt.	Opt.	270 Sys.	3846.15 Sys.									
	System H (Sys. A & two XW-5)	Dipole ES & Subwoof.	(2)10		ES		EML	T	25-25 ± 3	88	50	38, 4.7k	6/4.2	Three Pieces	Opt.	Opt.	340 Sys.	4408.00 Sys.									
DBX	Soundfield Imaging		(4)10	(4)4	Cones	(6) 1/2	Domes	W, T	20-20 ± 2	89	30	450, 3.15k	4/3.5	Two Pieces	Oiled Wal.	Brown Cloth	76	2500.00 Pair									
	Imagemaster	Trans. Line	6 1/2	6 1/2	Cone	3/4	Dome	T	55-18 ± 2	93	5	2.5k	8/5	23 3/4 x 12 1/2 x 12 1/2	Opt., Wal. Opt., Wal. Wal.	Black Foam Black Foam Black Foam	21 37 44	437.00 Pair 597.00 Pair 597.00 Pair									
DCM	QED	Trans. Line	8			1	Dome		50-18 ± 2	90	10	2k	8/5	36 x 11 1/4 x 9 1/2	Wal. Opt.	Black Foam	40	797.00 Pair									
	Time Window	Trans. Line	(2)6 1/2			(2)1	Domes		45-18 ± 2	89	15		8/5	36 x 14 3/4 x 11 1/2	Opt.	Opt.	47	1397.00 Pair									
	Time Window Three	Trans. Line	8	6 1/2		(2) 3/4	Domes	M, T	40-18 ± 3	90	15		8/5	39 x 16 x 12 1/2	Opt.	Opt.	88	2197.00 Pair									
DENNESEN	SW	Vented Subwoof.	8						27-200 ± 2	85		Sel.		14 x 12 x 16	Oiled Wal.	Black Foam	35	895.00									
	ESL-110	Hybrid ES	5			(3)3	ES		50-35 ± 3	87	15	3k	4/10	18 x 7 1/2 x 8	Oiled Wal.	Black Foam	14	750.00 Pair									
	ESL-120	Hybrid ES	6 1/2			(3)3	ES		40-35 ± 3	87	15	2.5k	4/10	20 x 8 1/2 x 9	Oiled Wal.	Black Foam	20	850.00 Pair									
DESIGN ACOUSTICS	PS.5	Ac. Sus.	5 1/2			1	Dome	T	70-22	90	15	2.4k	8.5.8	11 1/4 x 7 3/8 x 5 1/4	Wal.	Brown Cloth	9	350.00 Pair									
	PS.8		8			1 1/4	Dome	T	55-21.5	90	15	800	8.5.6	11 x 9 x 13 3/4	Wal. Vinyl Wal.	Brown Cloth	15 1/2	360.00 Pair									
	PS.10		10	5	Cone	1	Dome	T	48-22	90	15	190, 2.4k	8.5.6	14 x 11 x 13 3/4	Wal. Vinyl Wal.	Brown Cloth	25	499.00 Pair									
	PS.30	Ac. Sus. Sat. & Subwoof.	12	5	Cone	1	Dome	T	40-22	90	15	140, 2.4k	8/4.3	Three Pieces	Wal.	Brown Cloth	68	695.00 Sys.									

(Continued)



# LOUDSPEAKERS

MANUFACTURER	Model	Enclosure or System Type	Woofer Diameter, Inches		Midrange Diameter, Inches		Tweeter Diameter, Inches		Tweeter Type		Separate Level Controls: W. Woofer, M. Midrange, T. Tweeter, ST - Super Tweeter		Angular Freq. Response, Hz to kHz, ± dB		SPL, 1 Watt/1 Meter, dB		Recommended Min. Amp. Pwr., Watts		Crossover Frequencies, Hz		Impedance, Ohms: Nominal/Minimum		Dimensions, Inches		Finish	Grille Color and Material	Weight, Lbs.	Price, \$
			Woofer	Midrange	Tweeter	W	M	T	W	M	T	W	M	W	M	W	M	W	M	W	M	W	M	W				
ESB	7/05	Pas. Rad.	12	8,2	Cone, Dome	1	Dome	W, (2)M, T	35-20 ± 3	83	100	500,2k,5k	6/5	67 1/4 x 19 x 14 1/2	Rswd.	Black Cloth	143	4500.00	Pair									
	7/06	Ac. Sus.	12	8,2	Cone, Dome	1	Dome	W, M, T	35-20 ± 3	89	80	500,2k,5k	6/5	55 x 19 x 11 1/2	Rswd.	Black Cloth	106	3000.00	Pair									
	7/07	Ac. Sus.	12	8,1 1/2	Cone, Dome	1	Dome	T	40-20 ± 3	98	50	550,2.2k,6k	6/5	47 x 16 1/2 x 12	Wal.	Black Cloth	90	2000.00	Pair									
	7/08	Ac. Sus.	10	2	Dome	1	Dome		45-20 ± 3	87	40	650,6k	6/5	37 x 15 x 11	Wal.	Black Cloth	55	1300.00	Pair									
	7/09	Ac. Sus.	10	1 1/2	Dome	1	Dome		45-20 ± 3	87	40	800,6k	6/5	13 x 21 x 13	Wal.	Black Cloth	40	800.00	Pair									
ESSENCE	3	Trans. Line	6			1.7	Cone		32-19 ± 3	89	15	2.07k	8/6	33 1/4 x 10 1/4 x 14	Oiled Wal.	Brown Cloth		595.00	Pair									
	4	Trans. Line	6			1	Dome		32-21 ± 3	89	25	2.07k	8/6	39 3/8 x 10 1/4 x 14	Oiled Wal.	Brown Cloth		965.00	Pair									
	5	Trans. Line	6			1.0.7	Domes		32-23 ± 3	89	25	2.07k, 6.22k	8/6	44 3/8 x 10 1/4 x 14	Oiled Wal.	Brown Cloth		1385.00	Pair									
	6	Trans. Line	6	6	Cone	1.0.7	Domes		32-23 ± 3	89	40	150,2.07k, 6.22k	8/6	Two Pieces	Oiled Wal.	Brown Cloth		1985.00	Pair									
	7	Trans. Line (2)6				1	Dome		34-21 ± 3	88	50	2.07k	8/3	38 3/8 x 15 1/4 x 25	Opt.	Brown Cloth		2100.00	Pair									
	8	Trans. Line	8	(2)6		1	Dome		26-31 ± 3	88	60	242,2.07k	8/3	38 3/8 x 15 1/4 x 25	Opt.	Brown Cloth		3750.00	Pair									
	9	Trans. Line	8	(2)6		1.0.7	Domes		26-23 ± 3	88	60	242,2.07k, 6.22k	8/3	43 3/8 x 15 1/4 x 25	Opt.	Brown Cloth		4200.00	Pair									
	10	Trans. Line	8	(2)6, 2.4	Cones, Dome	1.0.7	Domes		26-23 ± 3	88	60	242,1.04k, 2.07k, 6.22k	8/3	50 1/2 x 15 1/4 x 25	Opt.	Brown Cloth		5450.00	Pair									
	ESS LABORATORY	AMT 1d	Pas. Rad.	12			21.5 Sq. In.	Heil AMT	W, M, T	35-23 ± 3	91	35	800	6/	35 1/4 x 16 1/4 x 16 1/4	Oiled Wal.	Black Cloth	85	667.00	Pair								
		PS12C	Pas. Rad.	12			10.4 Sq. In.	Heil AMT	W, M, T	32-22 ± 3	93	15	1.8k	6/	25 x 14 1/4 x 13 1/2	Wal. Vinyl	Brown Cloth	41	359.00	Pair								
PS5C		Pas. Rad.	10			10.4 Sq. In.	Heil AMT	W, M, T	40-22 ± 3	93	15	1.8k	6/	25 x 14 1/4 x 13 1/2	Wal. Vinyl	Brown Cloth	39	314.00	Pair									
PS9C		Inf. Baf.	8			10.4 Sq. In.	Heil AMT	W, M, T	50-22 ± 3	91	15	1.8k	6/	19 3/4 x 11 1/4 x 11 1/4	Wal. Vinyl	Brown Cloth	33	209.00	Pair									
HD1200		Ported	12		Horn		AMT Horn	M, T	34-23 ± 3	96	10	1.5k, 8k	4/		Wal. Vinyl	Brown Cloth	43	261.00	Pair									
HD1000		Ported	10		Horn		AMT Horn	M, T	40-23 ± 3	96	10	1.5k, 8k	4/	22 x 12 1/4 x 12	Wal. Vinyl	Brown Cloth	36	209.00	Pair									
HD1020		Ported	10				AMT Horn	T	45-23 ± 3	96	10	3k	4/	22 x 12 1/4 x 12	Wal. Vinyl	Brown Cloth	34	157.00	Pair									
EUPHONIC AUDIO	Nymph	Vented	6 1/2			1	Dome		45-18 ± 3	89	20	2k	6/4	22 x 9 1/2 x 15 1/4	Opt.	Brown Foam	30	795.00	Pair									
	Mole	Vented Subwoof.	10						30-1.5 ± 3	91	20		6/4	22 x 20 x 24	Opt.	Brown Foam	90	795.00	Pair									
FISHER	MS 129	Bass Ref.	8			2			60-14	91	4	6k	8/	24 1/8 x 13 3/8 x 8 3/8	Hick. Vinyl		18	89.95	Pair									
	MS 139	Bass Ref.	8	3		2			60-16	91	4	6k, 8k	8/	14 x 26 1/8 x 10 1/2	Hick. Vinyl		22 1/2	99.95	Pair									
	MS 147	Bass Ref.	10	5		3			50-17	92	6 1/2	1k, 5k	8/	14 3/8 x 26 3/4 x 11	Hick. Vinyl Wood		22	99.95	Pair									
	MS 159	Bass Ref.	12	3		2			40-20	92	8	1.5k, 6k	8/	14 1/2 x 29 3/8 x 11 1/8	Hick. Vinyl		29	159.95	Pair									
	DS 128	Bass Ref.	8	5		3			50-20	92	4	1.5k, 6k	8/	12 3/4 x 22 3/4 x 10	Hick. Vinyl		40	119.95	Pair									
	DS 152	Bass Ref.	10	5		3			45-20	92	5	1.5k, 6k	8/	14 3/8 x 23 1/2 x 10	Hick. Vinyl		pr. 61	159.95	Pair									
	DS 178	Bass Ref.	12	5	Cone	3	Cone		40-20	92	10	1.5k, 6k	8/	16 x 25 1/2 x 11 3/8	Hick. Vinyl		pr. 74	199.95	Pair									
	OS 196	Bass Ref.	15	5	Cone	3	Cone		38-20	94	20	1.5k, 6k	8/	18 1/4 x 29 1/4 x 13 1/2	Hick. Vinyl		pr. 47.8	259.95	Pair									
	ST 915	Bass Ref.	10	5		3			50-20	92	10	1.5k, 6k	8/	14 1/4 x 26 1/4 x 11 3/8	Hick. Vinyl		31	249.95	Pair									
	ST 920	Bass Ref.	12	5		4			45-20	94	20	1.5k, 6k	8/	16 x 28 x 12 1/8	Hick. Vinyl		41	349.95	Pair									
	ST 925	Bass Ref.	15	6		4	Horn		40-20	96	25	1.5k, 7k	8/	18 1/4 x 31 1/2 x 13 1/2	Hick. Vinyl		51	419.95	Pair									
	ST 280		8			3			55-20	90	8	3k	8/	11 7/8 x 17 7/8 x 8 3/4	Hick. Vinyl		16	129.95	Pair									
	MS M100		6			2 1/2			60-20	5			8/	8 3/4 x 10 1/4 x 9 7/8	Vinyl Rswd.		8	89.95	Pair									
MS M140		6			2 1/2			60-20	5			8/	9 7/8 x 11 7/8 x 8 5/8	Hick. Vinyl		9	99.95	Pair										
MS M104		6 1/2						60-12	5			8/	11 7/8 x 8 3/8 x 8 7/8	Hick. Vinyl		8	49.95	Pair										
FOURIER SYSTEMS	1	Vented	10	4 1/2	Cone	1	Dome		32-20 ± 3	90	25	570,4.5k	6/4.5	16 x 11 1/2 x 40	Oiled Wal.	Black Cloth	82	1549.00	Pair									
	Eight	Vented	8			1	Dome		41-20	90	20	1.7k	4/2.5	22 x 11 1/2 x 12 1/2	Oiled Wal.	Black Foam	28	800.00	Pair									
	6	Vented	6			1	Dome		55-20	90	20	3k	8.4	17 3/4 x 9 1/2 x 10 3/8	Oiled Wal.	Black Foam	21	500.00	Pair									
FRAZIER	CAD-1	Tuned Slot	8			3	Cone		50-14 ± 5	93	5	3k	8/8	19 x 10 1/2 x 10 1/2	Wal. Vinyl	Black Knit	21	110.00	Pair									
	Monte Carlo-D	Tuned Slot	8			3	Dome		50-22 ± 5	94	5	4k	8/8	19 x 10 1/2 x 12	Oiled Wal.	Black Knit	31	160.00	Pair									
	Mark IV-D	Tuned Slot	10			3	Dome	T	40-22 ± 5	96	5	3k	8/8	24 x 14 x 12	Oiled Wal.	Black Knit	44	255.00	Pair									
	Concerto D	Tuned Slot	10	3x7	Horn	3	Dome	M, T	35-22 ± 5	97	5	2k, 4k	8/8	21 1/2 x 16 x 16	Oiled Wal.	Black Knit	56	345.00	Pair									

(Continued)

# LOUDSPEAKERS

MANUFACTURER	Model	Enclosure or System Type	Woofer Diameter, Inches			Midrange Diameter, Inches			Tweeter Diameter, Inches			Separate Level Controls: W=woofer, M=midrange, T=tweeter, ST=super tweeter	Anchoic Freq. Response, Hz to kHz, ±dB	SPL, 1 Watt/1 Meter, dB	Recommended Min. Amp. Pwr., Watts	Crossover Frequencies, Hz	Impedance, Ohms: Nominal/Minimum	Dimensions, Inches	Finish	Grille Color and Material	Weight, Lbs.	Price, \$
			12	4	Cone	3	Dome	M,T	35-22 ±5	97	5											
FRAZIER (Continued)	Mark V-D	Tuned Slot	12	4	Cone	3	Dome	M,T														
	Seven D	Tuned Slot	12	4	Cone	3	Dome	M,T														
	Eleven	Tuned Slot	12,15	(4)4	Cones	(2)3	Pz.	M,T														
FRIED PRODUCTS	Beta	Press. Release Line Tun.	6½			2	Cone/Dome															
	Q/2	Line Tun.	8			1	Dome															
	A/2	Line Tun.	8			1	Dome															
	W/2	Line Tun.	8	6½	Cone	¾	Dome															
	G 2A	Line Tun.	10	6½	Cone	¾	Dome															
	C/2	Press. Release Trans. Line Subwoof.	6½			¾	Dome															
	O/2	Line Subwoof.	10																			
	SM/2	Line Subwoof.	12																			
FULTON	Midget Monitor 80	Inf. Baf.	5			2¼	Cone															
	B Woofer	Oval Window Subwoof. Planar Slot	8	2¼	Cone	2¼	Cone															
	Premiere P-20	Line Tun.	10, (3)12	5	Cone		Cone Piston	(3)W, M, (4)T														
GC ELECTRONICS	30-5121		4			2																
GENESIS PHYSICS	G 210	Pas. Rad.	8			1	Inv. Dome															
	G 20	Pas. Rad.	8			1	Inv. Dome															
	G 10	Ac. Sus.	8			1	Inv. Dome															
	G 1	Ac. Sus.	8			1	Inv. Dome															
	Genesis Basic	Ac. Sus.	6			1	Inv. Dome															
GNP	Woofer 1	Ac. Sus.	8																			
	Woofer 2	Ac. Sus.	(2)6½					W														
	Woofer 3	Ac. Sus.	(3)6½																			
	Satellite 10	Ac. Sus.	6½	3	Dome	1	Dome	T														
	Satellite 20	Ac. Sus.	6½	3	Dome	1	Dome	M,T														
	Satellite 30	Ac. Sus.	6½	3	Dome	1	Dome	M,T														
	System 110	Ac. Sus.	8	3	Dome	1	Dome	M,T														
	System 220	Ac. Sus.	(2)6½	3	Dome	1	Dome	W,M,T														
Valkyrie	Ac. Sus.	(3)6½	3	Dome	1	Dome	M,T															
GOETZ SYSTEMS	GMS-1	Vented	8	4	Cone	¾	Dome	No														
	GMS-3	Vented	13	5	Cone	¾	Dome	No														
GOLD SOUND	Kit 1	Bass Ref.	6½			¾	Dome															
	Kit 2	Bass Ref.	8			1	Dome															
	Kit 3	Bass Ref.	10	4½	Cone	1	Dome															
	Kit 4	Bass Ref.	12	4½	Cone	1	Dome															
	Kit 5	Bass Ref.	8	4½	Cone	1	Dome															
	Kit 6	Bass Ref. Sal. & Subwoof.	(2)10	6½	Cone	1	Dome	M,T														
	Kit 7	Bass Ref. Sal. & Subwoof.	(2)12	6½	Cone	1, 3x3½	Dome, Rbn.	M,T														
	(Continued)	Kit 8	Bass Ref.	(2)8	4½	Cone	1, 3x3½	Dome, Rbn.	M,T													

# LOUDSPEAKERS

MANUFACTURER	Model	Enclosure or System Type	Enclosure or System Type			Midrange Type			Tweeter Type			Separate Level Controls: W = Woofer, M = Midrange, T = Tweeter, S = Superwoofer			Ancholic Freq. Response, Hz to kHz, ±dB			SPL, 1 Watt/1 Meter, dB	Recommended Min. Amp. Pwr., Watts	Crossover Frequencies, Hz			Impedance, Ohms: Nominal/Minimum	Dimensions, Inches	Finish	Grille Color and Material	Weight, Lbs.	Price, \$
			Woofer Diameter, Inches	Midrange Diameter, Inches	Midrange Type	Tweeter Diameter, Inches	Tweeter Type	30-100	100-1000	1000-10000	100-1000	1000-10000	10000-100000	100-1000	1000-10000	10000-100000												
GOLD SOUND (Continued)	Kit 9	Bass Ref.	10	4½	Cone	1, 3x3½	Dome, Rbn.	M, T	29-20 ±3	90	10	350.4k, 10k	8/	30 x 19 x 12	Dpt.	Dpt.	74	499.00										
	Kit 10	Bass Ref.	12	5	Cone	1, 3x3½	Dome, Rbn.	M, T	34-20 ±3	92	10	600.4k, 10k	8/	30 x 19 x 12	Opt.	Opt.	75	569.00										
	Studio Monitor Kit 11	Bass Ref.	(2)10	5	Cone	1, 3x3½	Horn	M, T	36-18 ±3	93	10	600.4k	4/8	30 x 19 x 12	Dpt.	Opt.	94	789.00										
	Kit 12	Bass Ref.	15	8x18	Horn	5x6	Horn	M, T	29-18 ±3	93	10	500.5k	8/16	36 x 24 x 12	Dpt.	Dpt.	128	998.00										
	Kit Pro 12	Bass Ref.	15	8x18	Horn	5x6	Horn	M, T	35-18 ±3	97	3	500.5k	8/16	36 x 24 x 18	Dpt.	Dpt.	128	998.00										
	Kit 13	Bass Ref. Sat. & Subwoof.	15,10	4x9	Horn	5x5	Horn	W, M, T	28-21 ±3	93	10	150.1.2k, 5k	8/16	Three Pieces	Opt.	Dpt.	141	1400.00										
	Kit Pro 13	Bass Ref. Sat. & Subwoof.	15,10	4x9	Horn	5x5	Horn	W, M, T	35-21 ±3	97	3	150.1.2k, 5k	8/16	Three Pieces	Dpt.	Opt.	141	1400.00										
	Kit 14	Bass Ref. Sat. & Subwoof.	18,10	4x9	Horn	5x5	Horn	W, M, T	26-21 ±3	95	5	150.1.2k, 5k	8/16	Three Pieces	Opt.	Dpt.	196	1976.00										
Kit Pro 14	Bass Ref. Sat. & Subwoof.	18,10	4x9	Horn	5x5	Horn	W, M, T	35-21 ±3	98	2	150.1.2k, 5k	8/16	Three Pieces	Dpt.	Opt.	196	1976.00											
GOTT LABS	Studio	Ac. Sus.	5			1	Dome	T	85-20 ±3	87	20	2.7k	8/5	7½ x 5¼ x 10¼	Wal. Lam.	Brown Cloth	15	150.00										
	10	Pas. Rad.	8,10	4½	Cone	1	Dome	M, T	33-20 ±3	90	25	450.4k	8/6	12½ x 14 x 37	Wal.	Brown Cloth	60	419.00										
	G	Ac. Sus.	10	6½, 1½	Cone, Dome	2x½	Leaf	M, T	35-25 ±3	91	30	250.1.25k, 7k	8/6	16 x 14½ x 44	Rswd.	Black Cloth	85	780.00										
	GX	Ac. Sus./ Reflex	12,10	(2)6½, (2)1½	Cones, Domes	(2) 2x½	Leaves		28-30 ±3	91	30		4/3	23 x 14½ x 44	Rswd.	Black Cloth	103	1250.00										
GRAFYX	1	Vented Port	5¼			3.9	Dome		50-20 ±3	90	50	6.5k	4/	12 x 8½ x 7½	Wood Vinyl	Tan Cloth	13	99.00										
	2	Vented Port	6			1	Dome		45-20 ±3	92	65	6.4k	8/	23 x 11½ x 8½	Wood Vinyl	Tan Cloth	27	149.00										
	3	Vented Port	8			1	Dome		41-20 ±3	90	75	2.5k	8/	27¾ x 13¾ x 9¾	Wood Vinyl	Tan Cloth	38	199.00										
	4	Vented Port	10	5		1	Dome		30-20 ±3	91.5	100	1.8k, 7k	8/	32¾ x 14¾ x 10¾	Wood Vinyl	Tan Cloth	53	249.00										
HARTKE SYSTEMS	System 18	Vented	8			2	Cone		38-20 ±2	85	25		7/4	16 x 11½ x 9	Dpt. Lam.	Black Mesh	15	400.00										
	System 110	Inf. Baf.	10			(2)1	Domes		33-20 ±2	87	40		7/4	Two Pieces	Dpt. Lam.	Black Mesh	25	1000.00										
HARTLEY PRODUCTS	H-100	Air Col.	8	1½	Air Col.	2	Cone	No	50-20 ±4	93	5	2.3k	8/	10½ x 10½ x 21½	Oiled Wal.	Black Cloth	30	160.00										
	H-200	Air Col.	10	2½	Air Col.	1	Dome	No	35-25 ±3	95	5	2.6k	8/	15 x 15 x 30	Oiled Wal.	Black Cloth	65	275.00										
	H-300	Air Col.	(2)10	(4)1½	Air Col.	(2)1	Domes	No	30-25 ±3	96	5	3.4k	4/	15 x 15 x 43	Oiled Wal.	Black Cloth	125	425.00										
	SPL-1	Air Col.	10	3	Air Col.	(4)¾	Phsrs.	No	25-25 ±3	95	15	3.8k	8/6	Two Pieces	Oiled Wal.	Black Cloth	200	1550.00										
	SW-10	Air Col. Subwoof.	10					No	25-3.8 ±3	93	15		6/	18 x 18 x 24	Oiled Wal.	Black Cloth	70	475.00										
	ST-4	Phasor				(4)¾	Phsrs.	No	3.8k-25k ±2	96	15	3.8k	8/	5 x 5 x 12	Oiled Wal.	Black Cloth	15	175.00										
	Concertmaster	Inf. Baf.	18	10	Cone	(2)7	Cones	No	16-25 ±3	92.5	25	250.3k, 8k	8x5	29 x 18 x 41½	Oiled Wal.	Black Cloth	175	1670.00										
	Reference	Inf. Baf.	24	10	Cone	(2)7	Cones	No	16-25 ±3	93	25	250.3k, 8k	8x5	36 x 24 x 50¼	Oiled Wal.	Black Cloth	300	2170.00										
	SW-18	Inf. Baf. Subwoof.	18					No	16-350 ±4	92.5	25		5/	29 x 18 x 41½	Oiled Wal.	Black Cloth	150	900.00										
	SW-24	Inf. Baf. Subwoof.	24					No	16-250 ±3	93	25		5/	36 x 24 x 50¼	Oiled Wal.	Black Cloth	250	1200.00										
HEYBROOK	HB-3	Inf. Baf.	10	4	Cone	¾	Dome		35-20 ±3	88	15	800.5k	8/	13¾ x 11¾ x 25	Dpt.	Black Foam	46	989.00										
	HB-2	Bass Ref.	6½			1	Dome		40-20 ±3	84	20	3k	8/	9¼ x 9¼ x 16¾	Dpt.	Foam	19	489.00										
	HB-1	Inf. Baf.	8			1	Dome		42-18 ±3	89	10	4k	8/	11½ x 9¼ x 18¾	Dpt.	Foam	19	339.00										
HITACHI	HSA2103	Bass Ref.	10			2½	Cone		45-20 ±3				8	22¼ x 12½ x 10½		Black	24	100.00										
	HSA3103	Bass Ref.	10	5	Cone	2	Horn		40-20 ±3				8	23¾ x 13½ x 10¾		Black	28	130.00										
	HSA3123	Bass Ref.	12	5	Cone	2	Horn		35-20 ±3				8	26½ x 15½ x 12¾		Black	37	170.00										
	HSA4122	Pas. Rad.	12	4¾	Cone	2½x5½	Horn		30-30 ±3	91		1.5k, 5k	8	39¾ x 14¼ x 11½		Black	54	220.00										
	HS310	Bass Ref.	10	4	Cone	1	Dome		35-20 ±3	91		1k, 4k	8	12¾ x 22¾ x 12¾		Brown Cloth	26	200.00										
	HS410	Bass Ref.	12	4	Cone	1	Dome	M, T	35-20 ±3	91		1k, 3.5k	8	14¼ x 26¼ x 12¾		Brown Cloth	32	300.00										
	HS40F	Bass Ref.	10	2¼	Cone	¾	Dome	M, T	40-20 ±3	91		800, 2.8k	6	12¾ x 22½ x 12¾		Brown Cloth	31	340.00										
	HS50F	Bass Ref.	12	2¼	Cone	¾	Dome	M, T	35-20 ±3	91		630, 2.8k	6	14¾ x 24¾ x 14¾		Brown Cloth	42	440.00										
	HS70F	Bass Ref.	12	2¼	Cone	¾	Dome	M, T	30-20 ±3	90		630, 3.15k	4/8	16½ x 26¾ x 15¾		Brown Cloth	55	800.00										
	HLX	2C	Inf. Baf.	8			¾	Dome		42-20 ±3	92	5	3.2k	8/8	12 x 18 x 8	Lam.	Brown Knit	17	69.00									
22		Inf. Baf.	(2)8			¾	Dome		38-20 ±3	92	5	3.2k	4/4	12 x 22 x 12	Lam.	Brown Knit	26	99.00										
5B		Trans. Line	10			2½	Cone		34-20 ±3	92	10	4.3k	8/4	12 x 22 x 12	Lam.	Brown Knit	33	129.00										

# LOUDSPEAKERS

MANUFACTURER	Model	Enclosure or System Type	Woofer Diameter, Inches		Midrange Diameter, Inches		Tweeter Diameter, Inches		SPL, 1 Watt 1 Meter, dB		Recommended Min. Amp. Pwr., Watts		Impedance, Ohms: Nominal/Minimum		Finish	Grille Color and Material		Weight, Lbs.	Price, \$
			Woofer	Midrange	Woofer	Midrange	Woofer	Midrange	Woofer	Midrange	Woofer	Midrange	Woofer	Midrange		Woofer	Midrange		
HLX (Continued)	15	Trans. Line	10	5 1/4	Cone	1	Dome		34-22	92	10	700.5k	8.4	12 x 24 x 12	Lam.	Brown Knit	36	169.00	
	13	Twin Port	12	5 1/4	Cone	1	Dome		30-22	92	10	700.5k	8.4	15 1/2 x 28 x 12	Lam.	Brown Knit	42	199.00	
IAI	Point I	Vented	8	5x23 1/4	Rbns.	1 1/4	Elect.		28-30 ± 2	89	30		8.7	23 1/2 x 11 x 50	Dpt.	Black	70	1800.00	
	LSFM II	Biamped, Vented	12	(2)5x 23 1/4	Rbns.	(12)3x 1 1/2	Rbns.		18-22 ± 2	92	50		8.6		Oak	Black	165	5500.00	
	LSFM III	Biamped, Vented	12	(3)5x 23 1/4	Rbns.	(18)3x 1 1/2	Rbns.		18-22 ± 2	94	50		8.6		Oak	Black	205	7500.00	
IMAGE LABORATORIES	IL800	Pas. Rad.	(2)8	(2)5	Cones	(2)1	Domes		35-20 ± 3	92	15	600,2.5k	4.3	14 x 14 x 36	Oiled Wal.	Black Foam	55	399.00	
	IL600	Pas. Rad.	(2)6 1/2			(2)1	Domes		40-20 ± 3	91	15	2.5k	4.3	13 x 13 x 24	Lam. Wal.	Black Cloth	35	249.00	
	IL500	Pas. Rad.	(2)5			(2)1	Domes		45-20 ± 3	90	10	2.5k	4.3	12 x 12 x 20	Lam. Wal.	Black Cloth	25	179.00	
	IL101	Sealed Box	(2)5			(2)1	Domes		65-20 ± 3	89	Inc.	2.5k		8 1/2 x 8 1/2 x 9	Plas. Foam	Perf. Metal	11	149.00	
	IL100	Sealed Box		(2)5	Cones	(2)1	Domes		65-20 ± 3	89	10	2.5k	8.6	8 1/2 x 8 1/2 x 9	Plas. Foam	Perf. Metal	10	109.00	
	IL150	Pas. Rad. Subwoof.	(2)8						35-400 ± 3	92	15	400	8.6	19 x 20 x 18	Oiled Wal.		45	279.00	
IMF ELECTRONICS	MCR-2A	Inf. Baf.	5			3/4	Dome		65-40	83	20	3k	8.6	14 7/8 x 9 x 9	Wal.	Brown Foam	25	456.00	
	CM-2a	Inf. Baf.	8			1	Dome		54-25	86	20	3k	8.6	18 7/8 x 10 x 10 3/4	Wal.	Brown Foam	30	395.00	
	CM-3a	Inf. Baf.	8	4	Cone	1	Dome		45-25	84	30	340,3.2k	8.6	22 1/2 x 11 x 11 3/4	Wal.	Brown Foam	58	675.00	
	HPCM	Inf. Baf.	1 1/4 x 8 1/4	4	Cone	1	Dome		37-40	86	30	300,2.8k	8.6	26 3/4 x 14 3/4 x 11 3/4	Wal.	Brown Foam	80	1196.00	
	Studio Monitor	Trans. Line	8	4	Cone	3/4	Dome	M,T	23-40	84	30	375,3k	8.6	34 5/8 x 13 3/4 x 15 3/8	Wal.	Brown Foam	125	1575.00	
	Professional Monitor	Trans. Line	1 1/4 x 8 1/4	5	Cone	1 3/4, 3/4	Domes	M,T	19-40	86	40	350,3k, 13k	8.6	37 3/8 x 15 3/4 x 18 1/8	Wal.	Brown Foam	174	2580.00	
	RSPM MkVII	Trans. Line	1 1/4 x 8 1/4	5	Cone	1 3/4, 3/4	Domes	M,T	17-40	86	40	350,3k, 13k	8.6	40 7/8 x 16 7/8 x 19 5/8	Wal.	Brown Foam	212	3600.00	
	SACM	Trans. Line	1 1/4 x 8 1/4	5	Cone	1 3/4, 3/4	Domes	M,T	17-40	86	40	350,3k, 13k	8.6	50 3/4 x 16 1/8 x 18 1/8	Wal.	Brown Foam	220	4600.00	
IMPULSE	One	Ported	10			45L	Rbn.	T	28-18 ± 2	84	60	200	4.2	Two Pieces	Wal.	Black Plas.	400	3000.00	
INFINITY	IRS	Biamped Servo	(6)12	(12)3	EMIMs	(36)1/2	EMITs	W,M, T	16-40 ± 2	100 Inc.	80,5k			Four Pieces	Rswd.	Brown Cloth	1200	30,000. Sys.	
	RS1		(12)8	(14)3	EMIMs	(8)1/2	EMITs	W,M, T	20-32 ± 2	86	100	150,1k, 4k,10k		Four Pieces	Oak	Brown Cloth	400	4995.00 Sys.	
	RS2a	Sealed Box	(2)10	(3)3	EMIMs	(3)1/2	EMITs	W,T	25-32 ± 2	86	90	250,1k, 3k,7k	6/	55 x 25 x 19	Oak	Brown Cloth	120	2995.00 Sys. w/ EQ	
	RS3a	Sealed Box	(2)10	2	Dome	1/2	EMIT	M,T	35-32 ± 3	87	50	600,4k	6/	48 x 18 x 7 3/4	Oak	Brown Cloth	84	650.00	
	RS4	Sealed Box	(2)8	2	Dome	1/2	EMIT	M,T	40-32 ± 3	87	40	600,4k	6/	33 x 13 1/2 x 10	Oak	Brown Cloth	49	470.00	
	RS5	Sealed Box	(2)6 1/2	2	Dome	1/2	EMIT	M,T	43-32 ± 3	87	35	600,4k	6/	29 x 13 1/2 x 10	Oak	Brown Cloth	43	385.00	
	RS6	Sealed Box	8	2	Dome	1/2	EMIT	M,T	45-32 ± 3	87	35	600,4k	6/	22 x 13 1/2 x 10	Oak	Brown Cloth	34	299.00	
	RS7	Sealed Box	8	4	Cone	1/2	EMIT	T	45-32 ± 3	87	20	500,5k	6/	22 x 13 1/2 x 10	Oak	Brown Cloth	32	215.00	
	RS8a	Sealed Box	6 1/2	4	Cone	3/4	Dome		46-22 ± 3	87	20	500,5k	6/	22 x 12 x 10	Oak Vinyl	Brown Cloth	27	169.00	
	RS9	Sealed Box	6 1/2			3/4	Dome		48-22 ± 3	88	15	2.5k	6/	18 x 12 x 10	Oak Vinyl	Brown Cloth	23	109.00	
	RS10	Sealed Box	6 1/2			3/4	Dome		59-22 ± 3	88	15	3k	6/	13 1/2 x 8 3/8 x 7 3/4	Oak Vinyl	Brown Cloth	14	79.00	
Infinitesimal 3	Sealed Box	5			1/2	EMIT	W,T	65-32 ± 2	86	15	3.5k	6/	11 1/2 x 6 3/4 x 5 3/4	Oak Vinyl Black Metal	Black Metal	12	199.00		
INNOTECH	D-24	Trans. Line	(2)5	1 1/2	Dome	1	Dome	No	35-20 +0.5,-3	88	35	3.5k,7k	8.5	36 1/2 x 10 1/2 x 15 3/8	Opt.	Black	60	895.00 Pair	
INNOVATIVE TECHNIQUES	ITC 1	B7 Active	5 1/4	1 1/2	Dome	1	Dome	M,T	50-18 ± 3	86	50	1k,8k	8.6	7 1/8 x 7 1/8 x 11 3/4	Oiled Wal.	Brown Cloth	16	775.00 Inc. EQ	
INTERAUDIO/ BOSE	Alpha 1	Ported	8			3	Cone		42-16.5 ± 3	89	10	2k	8/	8 1/2 x 11 3/8 x 9 1/2	Wal. Vinyl	Black Cloth	18 1/2	318.00 Pair	
	Alpha 2	Ported	10			3	Cone		40-16.5 ± 3	89	15	2k	8/	22 1/4 x 13 1/4 x 11 3/8	Wal. Vinyl	Black Cloth	27 1/2	478.00 Pair	
	Alpha 3	Ported	10	6 1/2	Cone	3	Cone		38-16.5 ± 3	90	15	400,2.5k	8/	32 x 14 1/2 x 11 3/8	Wal. Vinyl	Black Cloth	47 1/2	686.00 Pair	
	Alpha 4	Pas. Rad.	10	6 1/2	Cone	(2)3	Cones		36-16.5 ± 3	91	15	60,400, 2.5k	8/	44 x 14 1/4 x 11 3/8	Wal. Vinyl	Black Cloth	63	918.00 Pair	
	Studiocraft 2	Ported	8			3	Cone			10	1.5k		8/	17 3/4 x 10 5/8 x 7 1/2	Wal. Vinyl	Black Cloth	15 1/4	308.00 Pair	
	Studiocraft 3	Ported	10			(2)3	Cones			15	1.5k		8/	23 3/4 x 14 x 9 1/4	Wal. Vinyl	Black Cloth	31 1/2	540.00 Pair	
	Studiocraft 4	Pas. Rad.	10	6 1/2	Cone	(2)3	Cones			15	60,400, 2.5k		8/	46 1/2 x 14 1/2 x 10	Wal. Vinyl	Black Cloth	65	918.00 Pair	



## Space-contoured Sound.

Introducing the finest listening instruments Acoustic Research has ever built. The AR9LS and 98LS. Two speakers that reach such shimmering highs and thundering lows they evoke a new experience in high fidelity. An intensified sonic experience in which listener, living space and speakers form an integrated relationship. Where optimum sound is achieved within the natural acoustics of the living space—not just in a scientific test chamber. This experience we call Space-contoured Sound.

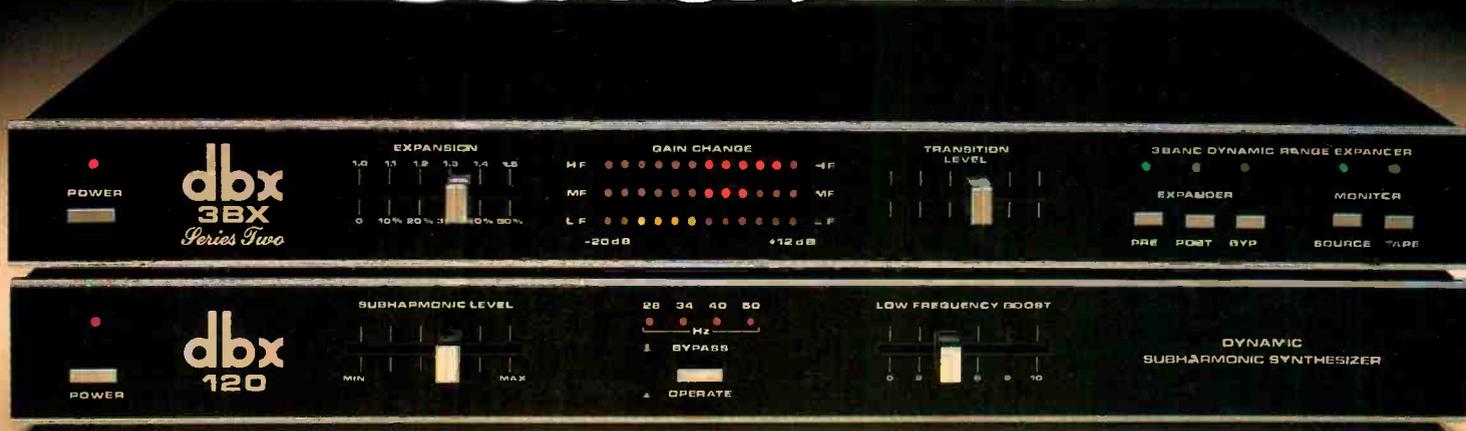
To contour sound to human living spaces, both the 9LS and 98LS feature a revolutionary driver. A Dual Dome™ mid-high-range configuration that eliminates crossover interference and achieves totally coherent dispersion. In the 9LS, we've introduced a down-firing woofer coupled with a Bass Contour Chamber. When you hear it, you'll know why Acoustic Research is more than our name.

**AR** Hear what you've been missing.

# LOUDSPEAKERS

MANUFACTURER	Model	Enclosure or System Type	Woofer Diameter, Inches		Midrange Diameter, Inches		Tweeter Diameter, Inches		Signal Level (1000 Hz) W = Woofer, M = Midrange, T = Tweeter, ST = Super Tweeter		Anechoic Freq. Response, Hz to kHz, ± dB		SPL, 1 Watt/1 Meter, dB		Recommended Min. Amp. Pwr., Watts		Crossover Frequencies, Hz		Impedance, Ohms, Nominal/Minimum		Dimensions, Inches	Finish	Grille Color and Material	Weight, Lbs.	Price, \$
			Woofer	Midrange	Woofer	Midrange	Woofer	Midrange	Woofer	Midrange	Woofer	Midrange	Woofer	Midrange	Woofer	Midrange	Woofer	Midrange	Woofer	Midrange					
JAMO HI-FI	1703CBR	Bass Ref.	13	2.7	Dome, Cone	1	Dome	M, T	22-22 ± 3	95.9	20	350, 1.5k, 5.5k	8/4	32 x 17 x 14	Opt.	Gray Cloth	68	649.95							
	1303CBR	Bass Ref.	11	4½	Cone	1	Dome	M, T	24-22 ± 3	93.4	20	750, 3.5k	8/4	28 x 14 x 13	Opt.	Gray Cloth	46	439.95							
	903CBR	Bass Ref.	8½	4½	Cone	1	Dome	M, T	28-20 ± 3	92.8	20	850, 4.5k	8/4	24 x 12 x 11	Opt.	Gray Cloth	31	299.95							
	703	Bass Ref.	9	4½	Cone	1	Dome	T	32-20 ± 3	93	20	900, 3.5k	8/4	21 x 10 x 11	Opt.	Gray Cloth	22	214.95							
	503	Bass Ref.	9	4½	Cone	1	Dome		34-20 ± 3	92.4	20	1.8k	8/4	19 x 10 x 9	Opt.	Gray Cloth	16½	149.95							
	Mini CBR	Bass Ref.	5½	4½	Cone	1	Dome		37-20 ± 3	92.2	20	1.85k	8/4	12 x 7½ x 10	Opt.	Gray Cloth	12	169.95							
	P500	Bass Ref.	12	15½ x 3¾	Horn	(5)3	Horns	M, T	22-20 ± 3	96.1	20	1k, 4.5k	8/4	30 x 18 x 14	Opt.	Gray Cloth	75	599.95							
	P350	Bass Ref.	9¾	13 x 3½	Horn	5½ x 2½	Horn	M, T	22-20 ± 3	96	20	1.25k, 5k	8/4	26½ x 15 x 12	Opt.	Gray Cloth	48½	369.95							
	P200	Bass Ref.	8¼	11 x 2¾	Horn	5½ x 2½	Horn		25-20 ± 3	95.9	20	1.4k, 4.8k	8/4	23½ x 13 x 10½	Opt.	Gray Cloth	33	259.95							
P150	Bass Ref.	8¼		Horn	5½ x 2½	Horn		30-20 ± 3	95.8	20	2.5k	8/4	20 x 12 x 9	Opt.	Gray Cloth	19¾	159.95								
JBL	J216	Vented	6½			1	Dome			87		4k	8/	14¾ x 10 x 9¼	Oak Vinyl	Black Cloth	120	99.95							
	J320	Vented	8	5	Cone	1	Dome			89		1k, 6k	8/	23 x 12¾ x 9¼	Oak Vinyl	Black Cloth	36	169.95							
	J325	Vented	10	5	Cone	1	Dome			89		1k, 6k	8/	26 x 15¾ x 9¼	Oak Vinyl	Black Cloth	42	199.95							
	J350	Pas. Rad.	10	5	Cone	1	Dome			89		1k, 6k	8/	38¾ x 18½ x 12½	Oak Vinyl	Black Cloth	65	299.95							
	4312	Vented	12	5	Cone	1½	Cone	M, T		91		1.5k, 6k	8/	23½ x 14¼ x 11¾	Oiled Wal.	Black Cloth	46	435.00							
	LT-1	Vented	5¼			1	Dome			87		3k	8/	9¾ x 6¼ x 5	Black Alum.	Black Metal	15	125.00							
	L15	Vented	6½			1	Dome			87		2.5k	8/	14¾ x 9¾ x 7¼	Oiled Wal.	Brown Cloth	17½	150.00							
	L46	Vented	8			1	Dome			88		3k	8/	20½ x 12½ x 10½	Oiled Wal.	Brown Cloth	29	180.00							
	L56	Vented	10			1	Dome			90		2.2k	8/	22¼ x 14 x 11¾	Oiled Wal.	Brown Cloth	44	245.00							
	L86	Vented	8	5	Cone	1	Dome			88		800, 3.7k	8/	21¾ x 13 x 10	Oiled Wal.	Brown Cloth	35	295.00							
	L96	Vented	10	5	Cone	1	Dome	M, T		89		1.1k, 3.7k	8/	23½ x 14¼ x 11¾	Oiled Wal.	Brown Cloth	52	400.00							
	L112	Vented	12	5	Cone	1	Dome	M, T		89		1.1k, 3.7k	8/	24½ x 14¼ x 13	Oiled Wal.	Brown Cloth	56	550.00							
	L150A	Pas. Rad.	12	5	Cone	1	Dome	M, T		89		1.1k, 3.7k	8/	41½ x 17 x 13	Oiled Wal.	Brown Cloth	90	750.00							
	L250	Vented	14	8.5	Cones	1	Dome	(2)M, T		90		400, 1.5k, 5k	8/	52 x 22½ x 14¼	Oiled Wal.	Opt., Cloth	150	1500.00							
	B380	Vented Subwoof.	15							90	200		8/	20¾ x 27½ x 17	Oiled Wal.	Brown Cloth	70	495.00							
B460	Vented Subwoof.	18							94	200		8/	24¾ x 38¾ x 24¼	Oiled Wal.	Opt., Cloth	126	1250.00								
Paragon	Horns	(2)15	(2)	Horns	(2)	Rings	M, T		96		500, 7k	8/	103¾ x 35½ x 24¼	Oiled Wal.			9000.00								
JENSEN	200/A	Ac. Sus.	8			1	Dome	T	56-20 ± 3	88	10	3.1k	8/5	18¾ x 11 x 9¾	Oak Vinyl	Brown Cloth	16	140.00							
	300	Ac. Sus.	10			1	Dome	T	48-20 ± 3	88	10	3.1k	8/5	23 x 13 x 10¾	Oak Vinyl	Brown Cloth	23	175.00							
	400	Ac. Sus.	10	3½	Cone	1	Dome	M, T	45-20 ± 3	89	10	1.5k, 4.2k	8/5	26¼ x 13 x 10¾	Oak Vinyl	Brown Cloth	31	230.00							
	500	Ac. Sus.	12	5	Cone	1, 2	Dome, Cone	M, T	38-20 ± 3	90	10	760, 4.2k	8/5	29 x 15¼ x 11¾	Oak Vinyl	Brown Cloth	45	300.00							
	System C	Vented	10	2	Dome	1, 2	Dome, Cone	M, T	47-21 ± 2, -4	87	9	900, 5.5k	8.5	24¾ x 14½ x 12½	Oak Vinyl	Brown Cloth	52	440.00							
	820	Vented	8			3	Cone		68-21.5 ± 4	92.5	8	3.5k	8, 6	21 x 11¾ x 9¼	Ven. Wal.	Black Cloth	14½	119.00							
	1030	Vented	10	5	Cone	3	Cone		58-21.5 ± 4	93.5	8	3.5k, 10k	8, 6	24½ x 15 x 10¾	Vinyl Wal.	Black Cloth	23	169.00							
	1230	Vented	12	5	Cone	3	Cone		56-21.5 ± 4	94.5	8	3.5k, 10k	8, 5	27 x 16¾ x 11¾	Vinyl Wal.	Black Cloth	29	199.00							
JRM	Transparency Sat. Tower	Triamped, Vented Sat.	(16)5	4	Horn/Lens	1¾	Horn	W, M, T	150-20 ± 3	99	(2) 100, 7k	150, 800.	Sel.	50 x 14½ x 8	Opt.	Opt.		1200.00							
	Transparency Subwoofer	Vented Subwoof.	18					W	24-150 ± 3		40 150	150	8.5	24½ x 37 x 26	Opt.	Opt.		450.00							
JUMETITE LABORATORIES	RM1					¾x1½	Rbn.	T	3k-20k ± 1.5	90	20	2.5k	8/6	10 x 6 x 5	Opt.		10	295.00							
	JR100	Ac. Sus.	6½			¾x1½	Rbn.		80-20 ± 2	83	20	2k	8, 8	7 x 9 x 15	Oiled Wal.	Opt.	22	400.00							
	JR200	Vented	(2)6½			¾x1½	Rbn.		45-20 ± 2	86	20	2k	4/4.5	10 x 12½ x 42	Oiled Wal.	Opt.	70	625.00							
	JR400	Ac. Sus.	12	6½	Cone		¾x1½	Rbn.	40-20 ± 2	86	40	200, 2k	8, 6	14 x 16 x 46	Oiled Wal.	Opt.	108	1000.00							
	CR611	Ac. Sus.	(2)10				¾x3	Rbn.	31-18 ± 3	86	40	600	8, 6	15 x 21½ x 65	Opt.	Brown	139	1200.00							
JVC	SK-30	Bass Ref.	8			2¾	Cone		45-20	90		3.5k	8/	17¾ x 10¼ x 9¾	Wal.	Brown Cloth	16.5	200.00							
	SK-50	Bass Ref.	10	2¾	Cone	1	Dome		40-40	90		1.5k, 10k	8/	21¾ x 12¾ x 11¾	Wal.	Brown Cloth	24.3	300.00							
	SK-90	Bass Ref.	12	5	Cone	1	Dome	M, T	30-40	92		1.2k, 9k	8/	26¾ x 15 x 13	Wal.	Brown Cloth	47.4	280.00							

# DBX GIVETH.



# AND DBX TAKETH AWAY.



Only dbx Sound Components offer you this many ways to improve the sound of your stereo system. We do it by giving, and by taking away.

Our 3BX Series Two Dynamic Range Expander, for example, gives back up to 50% of the dynamic range that was lost in the recording studio. So your music takes on a new "liveness," with more impact, drama, definition and punch.

The dbx 120 Subharmonic Synthesizer gives back the deepest bass notes that are lost on records, tapes, and FM broadcasts. Which means that with the 120, you get the kind of bass you hear in a live concert. The kind of bass you can feel.

There are some things dbx taketh away. Like tape noise. The dbx 224 Noise Reduction System audibly eliminates the tape hiss from cassettes and open reels

that a Dolby\* system merely reduces. The 224 also includes a Disc Decoder for dbx Discs, Digital dbx Discs, and dbx Cassettes.

To complete your system, try the Model 200 Program Route Selector. It lets you "route" the audio signal through as many as three tape decks, a noise-reduction system, and three sound processors.

Of course, you don't just have to read about the dbx difference. You can hear it at your local authorized dbx retailer. Or, for our full line brochure, call or write dbx, Incorporated, Route 303, Blauvelt, N.Y. 10913 U.S.A. (914) 358-6060 TELEX: 13-7441.



# dbx®

## Music can't live without us.

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# CREATIVE DISSATISFACTION...

... helped Tandberg engineers put memory in its place with the new Series 3000A

Memory is one of the key elements that make computers tick. That's why Tandberg engineers include up to 32k of EPROM in the computerized operating circuits of the TCD 3014 Cassette Deck and memory for 8 preset stations in the Series 3000A Tuners.

But "memory" caused by electrolytic capacitors in the signal carrying stages of stereo components can produce audible distortion in the lower mid-range and bass frequencies.

Electrolytic capacitors used by most manufacturers tend to memorize signals passing through them and impress them on following signals.

This capacitor "memory," also called Di-Electric Constant, acts like a transparent curtain standing between you and the music, obscuring detail and precision.

Remove this memory effect and you experience greater clarity throughout the lower mid-range and bass plus better stereo imaging.

It's like listening to an orchestra composed of individual instruments rather than a mass of sound.

Tandberg engineers reduced this capacitor "memory" to a minimum by replacing electrolytics with more expensive polystyrene and polypropylene capacitors in all critical audio circuits.

Because this dramatic change only improves sonic quality not specifications, many manufacturers would not have bothered.

But Tandberg engineers share the "creative dissatisfaction" that inspired Vebjorn Tandberg to found the company in 1933. Like Mr. Tandberg, they will not be satisfied until the equipment they design produces sound to equal the reality of the original musical source.

So reducing capacitor memory was just a start.

Tandberg's "creative dissatisfaction" also meant eliminating ceramic capacitors and integrated circuits in signal carrying stages.



The Tandberg TPT 3001A Programmable FM Tuner, like all the other members of the Series 3000A, features discrete components — not integrated circuits — individually selected to meet ideal performance parameters.

It meant increasing the value of all remaining coupling capacitors to eliminate sonic aberrations.

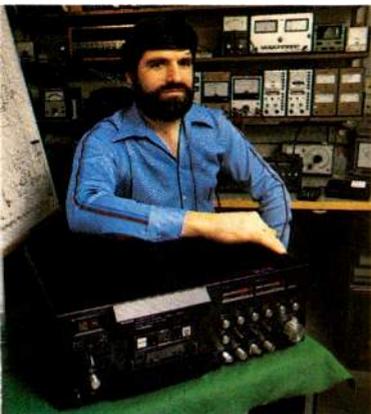
Finally, it meant hundreds of improvements in the Series 3000 — highly praised components with unprecedented performance specifications — to create the even more remarkable Series 3000A.

Was this intensive commitment to perfection worth it?

Ask Tandberg engineers. They'll tell you that the Series 3000A tuners, amplifiers, and cassette decks come the closest to satisfying their "creative dissatisfaction" of any other audio components available today.

Just think how well they will satisfy your desire for the best in music reproduction.

Visit your nearest authorized Tandberg dealer and let the Series 3000A cure the "creative dissatisfaction" you feel about your present audio equipment.



Tandberg Senior Engineer Jens Werner Werenskiold with the TCD 3014 Cassette Deck. "I designed the TCD 3014 to be good enough to please the most critical audience in the world — Me."

# TANDBERG

Labriola Court, Armonk, N.Y. 10504

Enter No. 58 on Reader Service Card

# LOUDSPEAKERS

MANUFACTURER	Model	Enclosure or System Type	Woofer Diameter, Inches				Midrange Diameter, Inches		Tweeter Diameter, Inches		Separate Level Controls w/ Woofer	Mids-Midrange	Anchorage Freq. Response, Hz to kHz, ±dB	SPL, 1 Watt/1 Meter, dB	Recommended Min. Amp. Pwr., Watts	Crossover Frequencies, Hz	Impedance, Ohms	Nominal/Minimum	Dimensions, Inches	Finish	Grille Color and Material	Weight, Lbs.	Price, \$
			Woofer	Midrange	Midrange	Tweeter	Tweeter	Tweeter Type															
JVC (Continued)	SK-S11	Bass Ref.	8	2 3/4	Cone	2	Cone			50-20	90			8/	12 5/8 x 22 1/4 x 8 3/8	Wal.	Black Cloth	16.5	180.00				
	SK-S22	Bass Ref.	10	2 3/8	Cone	2	Cone			40-20	91			8/	13 5/8 x 23 3/8 x 10 1/2	Wal.	Black Cloth	22.3	220.00				
	SK-S44	Bass Ref.	12	4 3/4	Cone	2 3/8	Cone			36-20	92			8/	15 1/8 x 26 1/4 x 12 5/8	Wal.	Black Cloth	33.7	150.00				
KEF	101	Closed Box	5			3/4	Dome			90-30 ±2	81	20	2.5k	8/	13.4 x 7 x 7.5	Opt.	Black	12.5	590.00				
	103.2	Inf. Baf.	8			1	Dome			60-20 ±2	86	20	2.5k	8/	20 x 10.4 x 9.8	Opt.	Black	19	900.00				
	105.2	Coherent Phase	12	5	Cone	1 1/2	Dome			38-22 ±2	85	20	400,2.5k	8/	38 x 16.3 x 17.9	Opt.	Black	80	1400.00				
	105.4	Coherent Phase	(2)8	5	Cone	1	Dome			55-20 ±2	86	20	400,2.5k	8/	36.9 x 13.8 x 14.9	Opt.	Black	45	1850.00				
	Coda III	Closed Box	8			1	Dome			60-20 ±2	87	10	3k	8/	18 1/2 x 11 x 8 1/8	Wal.	Brown	13.1	300.00				
	Carina II	Closed Box	8			1	Dome			55-20 ±3	10	2.5k	8/	23 3/8 x 11 1/4 x 10	Wal.	Brown	20.7	500.00					
	Carlton III	Box Mech. Ref.	8			1	Dome			47-20 ±3	86	15	3k	8/	27 1/2 x 12 3/8 x 11	Wal.	Brown	26.2	750.00				
KENWOOD	LSK-5000	Ac. Sus.	11	4 3/8	Cone	2 3/8	Cone			40-20	89		1k,5k	8	23 3/8 x 10 1/8 x 13 1/4	Wal. Vinyl	Black Cloth	25 1/4	189.00				
	LSK-4000	Ac. Sus.	10	4 3/8	Cone	2 3/8	Cone			45-20	89		1k,5k	8	21 7/8 x 10 1/8 x 12 1/8	Wal. Vinyl	Black Cloth	19 3/4	326.00				
	LSK-2000	Ac. Sus.	8			2 3/8	Cone			50-20	89		5k	8	20 1/8 x 8 5/8 x 11 1/8	Wal. Vinyl	Black Cloth	14 7/8	155.00				
KINDEL AUDIO	Phantasy 100	Sealed Box	6 1/2			2	Cone	T		50-20 ±5	90	10	3k	8/8	16 x 10 x 8 1/2	Oak	Brown	18	275.00				
	Phantasy 300	Sealed Box	8	4	Cone	3/4	Dome			25-25 ±2	200	25	175,3k	4/4	28 1/2 x 10 1/2 x 13	Oak	Brown	40	725.00				
	Phantom II	QB3	(2)5 1/2, 8	1 1/2	Dome	2 1/2 x 1/2	Rbn.	M, T		30-25 ±2	100	10	1.3k,6k	4/4	40 x 18 x 6 1/2	Oak	Brown	52	1350.00				
KINETIC AUDIO	Stat	TAL (Tap. Ac. Line)	6 1/2			1 1/8	Dome	T		38-21 ±3.5	91	10	1.8k	8/3	9 x 9 x 15 1/2	Oiled Wal.	Black Cloth	30	299.00				
	Impulse Nouveau	TATL (Tap. Ac. Trap. Line), TAL	12	6 1/2	Cone	1 1/8	Dome	M,W,T		20-21 ±2.5	92	10	90,1.8k	8/4	14 1/2 x 14 1/2 x 26	Oiled Wal.	Black Cloth	85	599.00				
	Trapezoid	TATL, TAL	12	6 1/2	Cone	1 1/8, 3/4	Domes	M,W,T,ST		18-21 ±2.5	91	15	90,3.5k, 7k	8/4	16 x 14 1/2 x 40	Oiled Wal.	Black Cloth	115	999.00				
	Labyrinth	TATL/Laby., TAL	12	6 1/2, 2	Cone, Dome	1 1/8	Dome	M,W,T,ST		16-21 ±2	91	25	90,750, 3k	8/5	16 x 18 x 48	Oiled Wal.	Black Cloth	175	1999.00				
	Titan Trapezium	TATL/Laby., TAL	(2)12	6 1/2, 2	Cone, Dome	1 1/8, 3/4	Domes	M,W,T,ST		12-21 ±1.5	92	40	45,90, 750,3k, 7k	6/3	22 x 18 x 60	Oiled Wal.	Black Cloth	250	2999.00				
	Titan SW	TATL Subwoof.	(2)12							12-200 ±1.5	92	20	65,100, 200	6/	22 x 18 x 60	Oiled Wal.	Black Cloth	220	1299.00				
	Trapezium SW	TATL Subwoof.	12							14-200 ±1.5	92	20	65,100, 200	8/	20 x 16 x 60	Oiled Wal.	Black Cloth	205	1049.00				
	Labyrinth SW	TATL Subwoof.	12							16-200 ±2	91	20	65,100, 200	8/	18 x 16 x 48	Oiled Wal.	Black Cloth	155	599.00				
Trapezoid SW	TATL Subwoof.	12							18-200 ±2.5	91	25	65,100, 200	8/	14 x 16 x 40	Oiled Wal.	Black Cloth	85	299.00					
Impulse SW	TATL Subwoof., TAL	12							20-200 ±2.5	90	25	65,100, 200	8/	14 x 14 1/2 x 26	Oiled Wal.	Black Cloth	68	229.00					
KIRKSAETER	Monitor 80	Inf. Baf.	8			1	Dome			35-20	89		1.5k	8/4		Opt.	Opt.						
	Monitor 100	Inf. Baf.	8	2	Dome	1	Dome	M, T		28-25	90		450,5k	8/4									
	Monitor 120	Inf. Baf.	10	2	Dome	1	Dome	M, T		22-25	90		450,5k	8/4									
	Monitor 150	Inf. Baf.	12	2	Dome	1	Dome	M, T		20-25	90		450,5k	8/4									
	Monitor 280	Inf. Baf.	(2)8	3, (2)4 1/4	Dome, Cones	(3)1	Domes	(2)M, (3)T		18-25	89		300,400, 4k	8/4									
	Monitor 450	Inf. Baf.	(4)8	3, (2)4 1/4	Dome, Cones	(3)1	Domes	(2)M, (3)T		16-25	90		300,400, 4k	8/4									
KLEIN & HUMMEL	O 92	Triamped	(2)10	3 1/2		1	Dome	W, M, T		80-12.5 ±1.5	105	Inc.	500.4k	4/7k	17.3 x 31.5 x 11.8	Gray Velv.	Metal	66	2670.00				
	O 96		10	2	Dome	3/4	Dome	W, M, T		80-12.5 ±1.5	100	Inc.	600.4k	4/7k	12.4 x 20.6 x 11.4	Brown Epoxy	Metal	48 1/2	1260.00				
	O 98		8 1/4	1 1/2	Dome	3/4	Dome	W, M, T		15-16 ±2	97	Inc.	850.6k	4/7k	15 x 10 x 7.25	Brown Epoxy	Brown Cloth	26 1/2	770.00				
KLH	608	Tuned Port	8			3	Cone			8-20 ±3	88	10	6k	8/	12 x 9 3/4 x 21	Vinyl Wal.	Black Cloth	17	74.95				
	610	Tuned Port	10	5	Cone	3	Cone	T		70-20 ±3	89	10	2.6k,9k	8/	12 1/2 x 11 x 22 1/2	Vinyl Wal.	Black Cloth	24	109.95				
	612	Tuned Port	12	5	Cone	3	Cone	M, T		60-20 ±3	92	10	2.6k,9k	8/	15 x 13 3/8 x 25 1/2	Vinyl Wal.	Black Cloth	35	149.95				
	620	Tuned Port	(2)10	5	Cone	3	Cone	M, T		65-20 ±3	90	10	2.5k,5k	8/	13 x 12 1/2 x 35 3/4	Vinyl Wal.	Black Cloth	42	199.95				
KLIPSCH	Klipschorn	Folded Horn	15	1	Horn	1	Horn			35-17 ±5	104	20	400,6k	8/4	52 x 34 1/4 x 28 1/2	Opt.	Opt., Cane	408	986.00				
	Belle Klipsch	Folded Horn	15	1	Horn	1	Horn			45-17 ±5	104	20	400,6k	8/4	35 3/8 x 30 1/8 x 18 3/4	Opt.	Opt., Cane	161	1119.00				
	LaScala	Folded Horn	15	1	Horn	1	Horn			45-17 ±5	101	20	400,6k	8/4	35 1/2 x 23 3/4 x 24 1/2	Birch	Cane	151	749.00				
	Cornwall	Horn Bass. Ref.	15	1	Horn	1	Horn			38-17 ±5	98	20	700,6k	8/4	35 3/4 x 25 1/2 x 15 1/2	Opt.	Opt., Cane	105	574.00				
	Heresy	Inf. Baf.	12	1	Horn	1	Horn			50-17 ±5	96	20	700,6k	8/7	21 3/8 x 15 1/2 x 13 1/8	Opt.	Opt., Cane	54	336.00				
	KG2	Pas. Rad. Inf. Baf.	8			1	Dhorm			35-20 ±3	90.5	10	1.8k	4/4	18 3/8 x 11 1/2 x 13 1/4	Opt.	Opt.	32	420.00				

# LOUDSPEAKERS

MANUFACTURER	Model	Enclosure or System Type	Woofer Diameter, Inches		Midrange Diameter, Inches		Tweeter Diameter, Inches		Separate Level Controls W. Woofer		Anchoic Freq. Response		SPL, 1 Watt/1 Meter, dB	Recommended Min. Amp. Pwr., Watts	Crossover Frequencies, Hz	Impedance, Ohms: Nominal/Minimum	Dimensions, inches	Finish	Grille Color and Material	Weight, Lbs.	Price, \$
			Woofer	System	Woofer	System	Woofer	System	Woofer	System	Woofer	System									
KOSS	Kosfire 210	Bass Ref.	12	5	Cone	(2)	Cones	M,T	30-20	92	10		8	32½ x 15½ x 13½	Pecan Ven.	Brown Cloth	52	550.00	Pair		
	Kosfire 110	Bass Ref.	10	14½	Cone	1¼	Cone		30-20 ±5	10	10		8/6	13¾ x 23 x 10¾	Vinyl Lam. Wal.	Brown Cloth	18½	300.00	Pair		
	Dynamite M/80	Ac. Sus.	(2)4½		Cone	1	Dome		50-30	87	30		6/4.5	12¾ x 5¼ x 5¾	Wal. Ven.	Brown Cloth		260.00	Pair		
	CM 1030	Bass Ref.	10	(2)4½	Cones	1	Dome	M,T,ST	26-19.5 ±6	94	15		5/4	16½ x 14½ x 13¾	Pecan Ven.	Brown Cloth	74	1000.00	Pair		
	CM 1020	Bass Ref.	10	4½	Cone	1	Dome	M,T	27.5-19 ±6	92	15		5/4	15½ x 13¾ x 33	Pecan Ven.	Brown Cloth	60	774.00	Pair		
	CM 1010	Bass Ref.	8		Cone	1	Dome	T	32-18.5 ±6	90	15		6/4	15½ x 11 x 28	Pecan Ven.	Brown Cloth	44	540.00	Pair		
LANCER ELECTRONICS	LX-1	Ac. Sus.	6			3	Pz.		45-22	88	10	3k	8/6	13¾ x 9 x 8½	Oiled Wal.	Beige Cloth	12	59.50			
	LX-2	Ac. Sus.	8			3	Pz.		38-22	89	10	3k	8/6	18½ x 10¾ x 8¾	Oiled Wal.	Black Cloth	19	89.50			
	LX-3	Ac. Sus.	12	5	Cone	3	Pz.		35-22	91	15	500,3k	8/7	25 x 14 x 11¼	Oiled Wal.	Brown Cloth	34	139.50			
	LX-4	Ac. Sus.	12	5	Cone	3	Pz.	M,T	32-22	91	15	500,4.5k	8/6	23½ x 15 x 12½	Oiled Wal.	Brown Cloth	42	199.50			
	LE-7	Ac. Sus.	10			1	Dome	T	30-20 ±5	89	20	2.5k	8/5	20½ x 12½ x 10	Oiled Wal.	Brown Cloth	30	199.50			
	LE-9	Ac. Sus.	10	5	Cone	1	Dome	M,T	25-20 ±4	91	20	800,4.5k	8/5	12 x 12 x 38½	Oiled Wal.	Brown Cloth	48	249.50			
	LE-10	Ac. Sus.	12	5	Cone	1	Dome	M,T	25-20 ±4	92	20	500,4k	8/6	25½ x 15 x 11¾	Oiled Wal.	Black Cloth	45	289.50			
	LE-11	Ac. Sus.	12	5	Cone	1	Dome	M,T	24-22 ±4	93	20	500,5.5k	8/6	28 x 16½ x 12¾	Oiled Wal.	Black Cloth	50	349.50			
LINN PRODUCTS	OMS Isobarik	Isobarik	(2) 9x12	(2)5	Cones	(2)1	Domes		25-20 ±3	50	375,3k	4.3	16½ x 15 x 30	Teak	Black Foam	105	3740.00	Pair			
	Sara Isobarik	Isobarik	(2)8			1	Dome		36-20 ±3	40	3k	4.3	17 x 13½ x 9½	Teak	Black Foam	33	1590.00	Pair			
	KAN	Inf. Baf.	5			1	Dome		70-20 ±3	20	3k	8.6	12 x 7½ x 6½	Teak	Black Cloth	11	625.00	Pair			
MAGNEPAN	MG-IIB	Planar	449 Sq. In.	449 Sq. In.	Planar	85 Sq. In.	Planar		40-18 ±3	84	75	400-1.6k	5/5	22 x 71 x 2	Oak	Ivory	100	1075.00			
	MG-I IMP	Planar	354 Sq. In.	354 Sq. In.	Planar	67 Sq. In.	Planar		45-18 ±4	87	40	1k-6k	5/5	22 x 60 x 2	Oak	Ivory	85	700.00			
	SMG	Planar	312 Sq. In.	312 Sq. In.	Planar	58½ Sq. In.	Planar		50-16 ±4	90	20	2.4k	4/4	24¼ x 48½ x 1¾	Oak	Ivory	70	475.00			
	Tympani-IV	Planar	627 Sq. In.	144 Sq. In.	Planar	14¼ Sq. In.	Planar		30-40	86		250,2k		72 x 39 x 1		Ivory	186	2975.00			
MARANTZ	HLM 308	Bass Ref.		4	Cone	2	Cone		50-20	93	10		4/	27¾ x 13 x 9¼	Vinyl	Brown Cloth		98.00			
	HE 10	Bass Ref.	10	5	Cone	3	Cone		35-20	94	10		4/	29½ x 15½ x 10¾	Vinyl	Brown Cloth		140.00			
	HE 12	Bass Ref.	12	5	Cone	3	Cone		25-20	95	10		4/	31¾ x 15 x 10¾	Vinyl	Brown Cloth		198.00			
	DR 80	Bass Ref.	8		Cone	1	Dome		40-20	89	10	1.8k	7/	23 x 12½ x 8¾	Hick. Vinyl	Brown Cloth		150.00			
	DR 100	Bass Ref.	10	3	Cone	1	Dome	T	35-20	90	10	700,1.8k	7/	26 x 15½ x 10¾	Hick. Vinyl	Brown Cloth		215.00			
	DR 120	Bass Ref.	12	3	Cone	1	Dome	M,T	32-20	89	10	700,1.8k	6/	29½ x 15½ x 10¾	Hick. Vinyl	Brown Cloth		260.00			
JOHN MARDVSKIS	Janis W1	Subwoof.	15						30-100 ±1	87	60	100	8/8	22 x 22 x 17½	Oiled Wal.	Black Wood	100	750.00			
	Janis W2	Subwoof.	15						33-100 ±1	87	60	100		22 x 22 x 17½	Oiled Wal.	Black Wood	90	550.00			
MARTIN-LOGAN	The Monolith	ES and Subwoof.	12				ES		25-22 ±1.5	90	20	100	8/6	25½ x 13½ x 75	Opt.	Gray	150	4250.00	Pair		
MASTERCRAFT AUDIO	Sound Panels SP-MK1	Ac. Sus.	8			1	Dome	T	40-22 ±3	91	30	2.7k	8/6	12 x 6 x 26	Black Lam.	Black Cloth	24	549.00	Pair		
	Black Box Graph	Ac. Sus.	8			1	Dome	T	45-22 ±3	92	30	2.4k	8/6	14½ x 10½ x 6½	Black Lam.	Black Cloth	22	429.00	Pair		
	Black Box Teak	Ac. Sus.	8			1	Dome	T	50-22 ±3	94	25	2.7k	8/6	14½ x 10½ x 6½	Teak Lam.	Black Cloth	22	359.00	Pair		
	Black Box Walnut	Ac. Sus.	8			2	Cone		60-20	94	10	3k	9/6	14½ x 10½ x 6½	Wal. Lam.	Brown Cloth	17	199.00	Pair		
	SW-1 Subwoofer	Ac. Sus. Subwoof.	12					W	28-90	90	50	90	8/6	29½ x 14½ x 8½	Opt., Lam.	None	35	359.00	Pair		
McINTOSH	XRT20	Air Spring	(2)12	8	Cone	(24)1	Domes			30	250,1.5k	8/	Four Pieces	Oiled Wal.	Black	164	6200.00	Sys.			
	XR19	Air Spring	(2)12	8	Cone	(12)1	Domes			30	100,250,1.5k	8/	45¾ x 25¾ x 12¾	Oiled Wal.	Black	151	2649.00				
	XR16	Air Spring	12	8,1½	Cone, Dome	1	Dome			30	250,1.4k, 7k	8/	35 x 17½ x 11¾	Oiled Wal.	Black	75	899.00				
	XR14	Air Spring	10	5,1½	Cone, Dome	1	Dome			30	700,1.4k, 7k	8/	30¼ x 14¾ x 10	Oiled Wal.	Black	54	699.00				
MISSION ELECTRONICS	70	Inf. Baf.	6½			1	Dome		70-20 ±3	89	20	2.2k	8.8	13¾ x 8¼ x 8¼	Wal. Vinyl	Black Cloth	17½	199.00	Pair		
	700	Bass Ref.	8			¾	Dome		60-20 ±3	90	20	3.2k	8.5	18½ x 9¾ x 10¾	Wal. Vinyl	Black Cloth	35	299.00	Pair		
	700S	Bass Ref.	8			¾	Dome		60-20 ±3	91	20	3.2k	8.5	18½ x 9¾ x 10¾	Wal. Vinyl	Black Cloth	35	399.00	Pair		
	737	Bass Ref.	8			1	Dome		50-20 ±3	87	20	2.7k	8.5	21¼ x 9¾ x 10¾	Wal.	Black Cloth	38½	699.00	Pair		

# Independent Test Reports



Presenting

## **POINT SOURCE LOUDSPEAKER SYSTEMS**

by Design Acoustics

**DA**

# Ovation

The Magazine for Classical Music Listeners



*Design Acoustics' PS-10 contains three separate drivers but, by virtue of its own cube-shaped design, saves on space and lowers diffraction, yet manages not to skimp on bass response.*

## Design Acoustics PS-10 Loudspeaker System

by Len Feldman

To look at this diminutive loudspeaker system, you'd never guess that it contains three separate drivers. This latest model from the speaker company that was recently acquired by Audio-Technica measures a mere 14 inches high by 11 inches wide by 13-1/4 inches deep. When you listen to the PS-10, you will be even more amazed. It reproduces resounding bass all the way down to 50 Hz or so, and while that's theoretically one octave above the deepest bass sound humans are supposed to be able to hear, you'll find that there's very little actual musical material below 50 Hz in most of the program sources you now listen to (records, tapes, FM radio). From a purely practical point of view, the small size of the PS-10 speakers makes them an ideal choice for the apartment dweller who can't give up floor

*Len Feldman, an audio engineer who has been spreading the word about good sound for nearly 25 years, is president of Leonard Feldman Electronic Laboratories and a Contributing Audio Editor of Ovation.*

space for conventional floor-standing speaker systems. The PS-10's fit nicely on a shelf or, if you insist, they can be mounted on stands.

Economizing on space required for the PS-10's, while certainly a benefit to the user, was not really the prime consideration in arriving at their almost cube-shaped configuration. Design Acoustics calls the approach their "Point Source Design Philosophy." It claims that the large baffles associated with conventionally shaped speaker boxes cause diffraction — the spreading out of sound across the baffle surface — and that is the reason so many speakers sound like speakers, instead of like musicians. Reduced baffle area, say the engineers, diminishes diffraction, and the way they've reduced baffle area in the PS-10 is to mount the woofer facing downward, with only the mid-woofer and tweeter facing forward. The speaker complement includes one 10-inch woofer, a 5-inch mid-woofer and a 1-inch soft-dome tweeter. The crossover frequencies selected for these speakers are a bit unusual, too: 200 Hz between the down-firing woofer and the mid-woofer, and 2,000 Hz between the mid-woofer and the tweeter. In this way, crossover points are kept below and above the critical mid-range frequencies that are so important to the "musicality" of a speaker system.

Another fine point of the PS-10's worth mentioning is the fact that they are supplied as matched pairs. The tweeter in each unit is positioned asymmetrically (one at the left upper corner, the other at the right upper corner), to further reduce possible diffraction and to enable you to position the speakers for optimum stereo imaging in your listening room. Since not all of us feel the same way about high-frequency response, there's a continuously variable adjustment on each speaker that allows you to vary the high-frequency driver's output by  $\pm 3$  dB.

Though the enclosure is basically designed as a sealed box, or "acoustic suspension" type of system, it boasts the efficiency of many vented or "bass reflex" systems. Specifically, with only a 1-watt input signal, each speaker will deliver a sound pressure level of 90 dB, measured at a distance of 1 meter from the front surface of the speaker. Typically, acoustic-suspension systems deliver from 3 to 6 dB lower sound pressure levels under the same test conditions. The immediate benefit to the user is that he or she need not buy nearly as powerful an amplifier or receiver to properly drive these systems as might be the case with other "bookshelf" sized speakers.

On the other hand, the power-handling capability of these systems is awesome. Although they will operate nicely with as little as 15 watts per channel of amplifier power (in typically small listening rooms), they can handle power peaks of as high as 250 watts without going up in smoke. The speakers have an impedance of 8 ohms, which remains pretty much constant at all frequencies. That means you can use two pairs of them (feeding two rooms, or even in the same room for better sound coverage) connected to your amplifier or receiver without worrying about the "net" impedance dipping below the safe 4-ohm level.

So much for the technical details of the PS-10. What's more important is how they sound. To these ears they provided a very open and transparent kind of sound, with excellent and stable stereo imaging and an amount of fundamental, undistorted bass that prompted us to keep looking around the room for some "hidden" extra sub-woofer. (There was none, of course.) Some speaker systems are characterized as being particularly suitable for one kind of music or another. I believe that a speaker that is accurate will sound good no matter what type of music is reproduced by it. My own extended auditioning of the Design Acoustics PS-10 units suggest that they are just those kinds of speakers. The PS-10's are priced at \$500 per pair. □

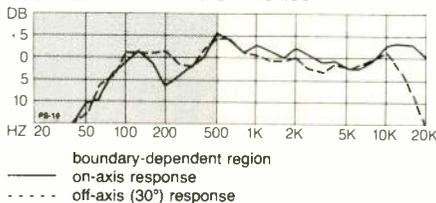
# High Fidelity



## Design Acoustics' Small Speaker with a Big Voice

**Design Acoustics PS-10 loudspeaker, in wood cabinet with walnut-grain vinyl finish. Dimensions: 11 by 14 inches (front), 14 inches deep. Price: \$250. Warranty: "limited," five years parts and labor. Manufacturer: Design Acoustics Corp., 1225 Commerce Drive, Stow, Ohio 44224.**

### ROOM RESPONSE CHARACTERISTICS



**SENSITIVITY** (at 1 meter; 2.8-volt pink noise, 250 Hz to 6 kHz) 91½ dB

**AVERAGE IMPEDANCE** (250 Hz to 6 kHz) 8.0 ohms

**Report Policy:** Equipment reports are based on laboratory measurements and controlled listening tests. Unless otherwise noted, test data and measurements are obtained by Diversified Science Laboratories. The choice of equipment to be tested rests with the editors of HIGH FIDELITY. Samples normally are supplied on loan from the manufacturer. Manufacturers are not permitted to read reports in advance of publication, and no report or portion thereof may be reproduced for any purpose or in any form without written permission of the publisher. All reports should be construed as applying to the specific samples tested. HIGH FIDELITY and Diversified Science Laboratories assume no responsibility for product performance or quality.

DESIGN ACOUSTICS HAS NEVER settled for the ordinary in loudspeakers. The company's first effort was dodecahedral in shape, with its twelve sides approximating a pulsating sphere. A later design, the Model LDM (test report, June 1980), was in most respects a conventional two-way mini-speaker, but for its beveled front edges designed for minimum diffraction. Although still committed to the goal of low diffraction, Design Acoustics is now offering a bookshelf speaker intended to provide what other small speakers frequently cannot—ample low-frequency output. To that end, the PS-10 resembles no other bookshelf speaker we know of, other than the company's own smaller PS-8.

Though it probably won't fit comfortably on most shelves, its 14-inch depth is no accident: To make sure that reflections from shelf walls, books, and so forth won't degrade performance, the speaker's baffle is intended to protrude a bit when the system is seated on a typical 12-inch-deep shelf. For those who object to this on aesthetic grounds, the company has an optional wooden stand that raises the PS-10 some two feet off the floor.

Another notable difference from more standard speakers of this type is the use of an integral base. No mere cosmetic conceit, the raised bottom of the enclosure permits the mounting of a 10-inch down-firing woofer. This was the only way to include such a large driver and still keep overall system height to acceptable shelf limits; moreover, the designers say that the small front baffle helps to minimize diffraction.

Other design features include an interesting crossover arrangement that lets the midrange driver act more as a mid-woofer, covering the range from 200 Hz to 2 kHz. The reason, according to Design Acoustics, is to eliminate the possibility of crossover-induced anomalies in the critical midrange. Shipped in mirror-image pairs, each PS-10 has a tweeter-level control. Amplifier connections are made via spring-loaded clips that accept banana plugs or stripped wire.

The PS-10 proved itself a worthy performer in Diversified Science Labs' tests. Power handling is exceptional. Indeed, in the 300-Hz pulse test the speaker accepted the full output of DSL's test amp—57½ volts peak (equivalent to 26¼ dBW, or 413 watts, into 8 ohms). The resulting sound pressure level is a staggering 117¼ dB. Sensitivity is also quite high, with the PS-10 producing a sound pressure level of 91½ dB with a 2.8-volt input (equivalent to 0

dBW, or 1 watt, into 8 ohms).

Distortion measurements likewise connote good design. At a moderate 85-dB sound pressure level, total harmonic distortion (THD) remains less than 1% from 100 Hz to 10 kHz, and at 90 dB SPL, THD increases only slightly, barely exceeding 1% from 100 Hz to 10 kHz. Impedance, too, appears well controlled. From a minimum of 4.7 ohms at 120 Hz, it rises to a maximum of 12.8 ohms at 210 Hz and remains at or above 6.4 ohms across the midrange and into the treble. Impedance does vary slightly in the treble according to the setting of the tweeter-level control, but not to any significant degree. The control itself is very gentle in its action, matching almost exactly the ±3 dB range marked on its continuously adjustable rotary knob. Its action begins to be felt at 2 kHz and reaches its maximum at 20 kHz.

Placed according to the manufacturer's recommendation, well away from the back wall and two feet off the floor, the PS-10 exhibits some response irregularities, although our listening tests (conducted under similar conditions) disclosed little evidence of the drop in output at 200 Hz shown by the on-axis curve. Response is reasonably smooth through the midrange and treble, with the latter showing just the usual amount of off-axis drop-off as directivity increases at very high frequencies.

Our experience does suggest that best performance will indeed be obtained with the PS-10's mounted out into the room, away from walls. Placed against the rear wall, they sound a little bass-heavy (seemingly confirming the response bump at 126 Hz in the curves DSL made with the speaker in that position). With the speakers optimally set up, the overall sound is smooth, clean, and detailed. Bass is surprisingly well maintained for so small a speaker. Imaging is also outstanding, with firm, stable stereo localization and a good sense of spaciousness and depth.

The PS-10 is not an easy speaker to characterize, but then innovative products often resist pigeonholing. The consensus here is that Design Acoustics has succeeded in building a loudspeaker that will produce wide-range, neutral sound, provided you take some care in finding the optimum placement for it. The PS-10's sonic performance belies its size and price to a very great degree, and we would unhesitatingly advise that you add it to your auditioning list.

# Rolling Stone®

## A speaker you'll listen to: the PS-10



The PS-10 loudspeakers from Design Acoustics provide a wide-open sound.

**T**he PS-10 loudspeakers by Design Acoustics could be the last pair you'll ever buy. Though each is barely larger than a one-foot-square cube, the speakers are able to handle anything you can deliver and provide tight bass and excellent imaging — better, in fact,

than that possible from many speakers costing twice the PS-10's suggested retail price of \$249.95 each.

What keeps the cabinet so compact is that the ten-inch woofer fires downward—a design that extracts low bass from a small enclosure. The down-firing woofer also

keeps the system's front baffle small, thereby minimizing muddy sound. The result is wide-open sound and an enhanced stereo image. The PS-10 is rated to handle up to 250 watts per channel, yet it operates effectively with as little as fifteen watts.

—PAUL TERRY SHEA

**If we made them look like other loudspeakers... that's all they would sound like.**

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# LOUDSPEAKERS

Continued from page 150

MANUFACTURER	Model	Enclosure or System Type	Woofer Diameter, Inches		Midrange Diameter, Inches		Tweeter Diameter, Inches		Separate Line Controls w/ Woofer: M = Midrange, T = Tweeter, ST = Super-tweeter		Anechoic Freq. Response, Hz to kHz, ±dB		SPL, 1 Watt/1 Meter, dB		Recommended Min. Amp. Pwr., Watts		Crossover Frequencies, Hz		Impedance, Ohms: Nominal/Minimum		Dimensions, Inches		Finish	Grille Color and Material	Weight, Lbs.	Price, \$
MISSION ELECTRONICS (Continued)	770S	Bass Ref.	8			1	Dome		40-20 ±3	90	20	2k	8.5	24 x 10 1/8 x 11 3/4	Wal.	Black Cloth	56	999.00						Pair		
	780	Inf. Bal.	(2)8			2	Horn		30-20 ±3	93	40	2k	4/3	27 3/4 x 10 5/8 x 11 3/4	Wal.	Black Cloth	77	1500.00						Pair		
MITDM INDUSTRIES	Series 2 Mk2	Bass Ref.	8			3	Cone		48-18	91	15	4.5k	8/4	22 7/8 x 12 3/8 x 8 1/8	Birch	Black Cloth	14 1/2									
	Series 3 Mk2	Bass Ref.	8	3	Cone	2	Cone		48-20	92	15	2k, 6k	8/4	22 7/8 x 12 3/8 x 8 1/8	Birch	Black Cloth	14 3/4									
	Series 4 Mk2	Bass Ref.	10	3	Cone	2	Cone		40-20	92	15	2k, 6k	8/4	22 7/8 x 12 3/8 x 8 1/8	Birch	Black Cloth	15									
	Series 7 Mk2	Bass Ref.	12	4 1/2	Cone	1	Dome		30-20	94	15	2k, 5k	8/4	26 x 15 1/2 x 11 1/8	Birch	Black Cloth	28									
	Series 9 Mk2	Bass Ref.	12	4 1/2	Cone	1	Dome		30-20	94	15	2k, 5k	8/4	31 x 14 1/2 x 9 3/4	Birch	Black Cloth	33									
	Series 15 Mk2	Bass Ref.	15	6 1/2	Cone	1	Dome		28-20	96	15	1.5k, 5	8/4	30 x 18 x 14 1/4	Birch	Black Cloth	48									
	Micro Monitor L50	Inf. Bal.	4 1/2			1	Dome		55-20	87	25	5k	8/4	11 1/8 x 6 1/2 x 6 1/4	Birch	Black Cloth	8									
	L70	Bass Ref.	8			1	Dome		45-20	90	15	4.5k	8/4	18 1/2 x 11 x 9 3/4	Birch	Black Cloth	21									
	L80	Bass Ref.	10	4 1/2	Cone	1	Dome	T	40-20	92	15	4k	8/4	20 x 12 x 10 1/4	Birch	Black Cloth	22									
	L100	Bass Ref.	10	4 1/2	Cone	1	Dome	M, T	35-20	93	15	1.25k, 4.5k	8/4	21 1/2 x 12 1/2 x 10	Rswd.	Black Cloth	26 1/2									
	L150	Bass Ref.	10	4 1/2	Cone	1	Dome	M, T	30-20	91	15	1.25k, 4.5k	8/4	24 1/2 x 14 1/2 x 12 3/8	Rswd.	Black Cloth	36									
	L250	Bass Ref.	15	6 1/2	Cone	1	Dome	M, T	26-20	94	15	1k, 5k	8/4	24 1/2 x 14 1/2 x 12 3/8	Rswd.	Black Cloth	37									
	FXT 8	Pas. Rad.	8			1	Dome		40-20	90	15	3.5k	8/4	31 7/8 x 11 x 9 1/4	Birch	Black Cloth	26 1/2									
FXT 10	Pas. Rad.	10			1	Dome		35-20	92	15	3k	8/4	32 3/8 x 12 x 10 3/8	Birch	Black Cloth	30										
MITSUBISHI	DS-505	Ac. Sus.	12 3/8, 6 1/4	1 5/8	Dome	7/8	Dome	M, T	50-40 ±3	90	50	350, 1.5k, 5k	6/5	16 1/2 x 28 1/4 x 16 3/4	Diled Wal.	Black Cloth	92	1300.00								
	DS-328II	Bass Ref.	10	2	Cone	5/8	Dome	M, T	58-20 ±4	91	35	700, 5k	6/5	12 3/8 x 18 1/8 x 9 5/8	Vinyl	Black Cloth	35	265.00								
	DS-181W	Bass Ref.	8	2	Cone	5/8	Dome	T	60-20 ±5	90	35	2k, 10k	6/5	10 1/4 x 18 1/8 x 9 5/8	Vinyl	Black Metal	21	187.00								
	DS-141	Bass Ref.	6 1/2			2	Cone		70-18 ±5	90	20	5k	6/4	7 7/8 x 14 x 8 1/4	Vinyl	Black Metal	9	80.00								
M & K	Satellite-1B	Ac. Sus. Sat.	(2)5			(2)1	Domes	M, T	65-22 ±3	7.5	2k	4/4	21 x 7 3/4 x 7 3/8	Dpl.	Black Cloth	18	645.00									
	Satellite-2B	Ac. Sus. Sat.	6 1/2			1	Dome	M, T	65-22 ±3	10	2k	4/4	13 x 9 1/4 x 8	Dpl.	Black Cloth	15	495.00									
	Satellite-3B	Ac. Sus. Sat.	5			1	Dome	M, T	85-22 ±3	10	2k	3/4	10 1/2 x 6 1/2 x 7	Dpl.	Black Cloth	9	395.00									
	Volkwoofer-1B	Subwoof.	12					W	20-125 ±3	inc.	50-125	600	17 3/4 x 18 3/4 x 17 1/4	Dpl.	Black Cloth	50	750.00									
	Volkwoofer-2B	Subwoof.	12					W	24-125 ±3	inc.	50-125	600	17 3/4 x 18 3/4 x 16 3/4	Dpl.	Black Cloth	43	600.00									
	Volkwoofer-3B	Subwoof.	12					W	24-125 ±3	inc.	50-125	600	17 1/2 x 17 1/2 x 15 1/4	Dpl.	Black Cloth	38	500.00									
	Goliath 3B	Subwoof.	12						30-150 ±3	30	100	4/4	17 1/2 x 17 1/2 x 15 1/4	Black	Black Cloth	35	300.00									
MORDAUNT-SHORT	MS20	Inf. Bal.	8			1/2	Dome		80-20 ±3	85.5	10	3.5k	8/6	9 3/4 x 8 x 16 1/2	Black Ash Wal.	Black Cloth	11 3/4									
	MS40	Bass Ref.	8			3/4	Dome		70-17 ±3	86.5	15	3.5k	8/6	10 x 9 x 20 1/2	Wal.	Brown Cloth	19									
	Carnival 3	Inf. Bal.	8			1/2	Dome		80-20 ±3	85.5	15	3.5k	8/6	9 3/4 x 7 3/4 x 16 1/2	Wal.	Brown Cloth	15									
	Festival 3	Bass Ref.	8			1	Dome		70-20 ±3	86	15	3.5k	8/6	10 x 8 3/4 x 20 1/2	Wal.	Brown Cloth	19 1/4									
	Pageant 3	Bass Ref.	8	4 3/4	Cone	1/2	Dome		60-20 ±3	86.5	25	750, 4.5k	8/6	10 1/2 x 12 x 24 1/2	Wal.	Brown Cloth	31									
MOREL ACOUSTICS	MLP-201	Ac. Sus.	9			1.1	Dome		48-20 ±3	88	10	1.5k	8/6.3	10 x 16 x 10	Wal.	Black Cloth	16	248.00								
	MLP-202	Ac. Sus.	6			1.1	Dome		60-28 ±3	88	10	1.6k	6/4	8 x 13 x 10	Dpt.	Black Cloth	14	395.00								
	MLP-307	Ported	(2)9			1.1	Dome		33-25 ±3	93	10	300, 1.8k	8/6.3	13 1/2 x 23 1/2 x 12 1/2	Dpt.	Black Cloth	32	600.00								
	MLP-403	Ported	9	3	Dome	1.1	Dome	T	38-25 ±3	90	10	500, 5k	6.4/4	21 x 12 x 10	Dpt.	Black Cloth	26	700.00								
MTX	MTX-6	Bass Ref.	6			1	Dome		50-20 ±3	89	30	6.4k	8/	23 x 11 1/2 x 8	Vinyl	Black Cloth	15	99.00								
	MTX-8	Bass Ref.	8			1	Dome		45-20 ±3	91	40	2.5k	8/	24 x 15 x 10	Vinyl	Black Cloth	30	129.00								
	MTX-10	Bass Ref.	10	5		1	Dome		40-20 ±3	93	50	1k, 3k	8/	32 3/4 x 14 1/2 x 10 1/2	Vinyl	Black Cloth	43	219.00								
	MTX-12	Bass Ref.	12	5		1	Dome		30-20 ±3	95	60	1k, 3k	8/	29 x 18 1/2 x 14 1/2	Vinyl	Black Cloth	52	239.00								
MUSIC & SOUND	MAS 925	Pas. Rad.	8			3/4	Dome	No	30-18 ±3	90	20	3.3k	8/5	11 3/4 x 11 3/4 x 23 1/2	Dak	Brown Cloth	34	449.00						Pair		

# LOUDSPEAKERS

MANUFACTURER	Model	Enclosure or System Type	Woofer Diameter, Inches			Midrange Diameter, Inches			Tweeter Diameter, Inches			Separate Level Components W = Woofer, M = Midrange, T = Tweeter, ST = Super Tweeter			SPL, 1 Watt/1 Meter, dB	Recommended Min. Amp. Pwr., Watts	Crossover Frequencies, Hz	Impedance, Ohms: Nominal/Minimum	Dimensions, Inches	Finish	Grille Color and Material	Weight, Lbs.	Price, \$
			Woofer	Midrange	Midrange	Tweeter	Tweeter	W	M	T	Archoic Freq. Response, Hz to kHz, ±dB	Archoic Freq. Response, SPL, 1 Watt/1 Meter, dB	Archoic Freq. Response, Hz to kHz, ±dB										
NELSON-REED	5-02	Sat.	5			1	Dome	No	60-20 ±3	84	25	3.5k	8/6	8 x 6 x 12	Opt.	Brown Cloth	12	450.00	Pair				
	6-02/B		6½			1	Domes	No	40-20 ±3	84	50	3.5k	8/6	12 x 9½ x 19	Oiled Wal.	Brown Cloth	25	550.00	Pair				
	SW 1201	Inf. Baf. Subwoof.	12					W	32-125 ±3	84	50	125	6/4	18 x 18 x 18	Oiled Wal.	Brown Cloth	52	425.00	Pair				
	TW 1202	Inf. Baf. Subwoof.	12					W	32-160 ±3	84	50	160	12/8	25 x 14½ x 12	Opt.	Brown Cloth	45	650.00	Pair				
	12-03	Inf. Baf.	12	5	Cone	1	Dome	W	32-20 ±3	84	50	160, 3.5k	8/6	Four Pieces	Opt.	Brown Cloth	57	1100.00	Sys.				
NESTOROVIC LABORATORIES	Type 5AS	Sealed Nestorovic Sat.	(2)8, 10	4	Dome Cone Dome Cone	4½	Planar	M, T	28-40 ±4	91	50	1k, 7k	8/5	36 x 15 x 15	Opt.	Black Cloth	75	2100.00	Pair				
	Type 4A	Nestorovic Sat.	8	4	Dome Cone Dome Cone	4½	Planar	T	60-40 ±1, -3	92	50	200, 1k, 7k	8/6	22 x 12 x 12	Opt.	Black Cloth	40	2200.00	Pair				
	Type 8	Nestorovic Subwoof.	(2)12						18-250 ±1, -3	92	75	250 Max.	8/5	22 x 26 x 26	Opt.	Black Cloth	125	1350.00	Pair				
NORTH AMERICAN SOUND	Monitor	Trans. Line	8			1	Dome		35-20.5 ±4	90	15	3.5k	8/6	13¼ x 11¼ x 36	Oiled Wal.	Black Cloth	52	695.00	Pair				
	Squire	Bass Ref.	12	6x15	Horn	2x5½	Horn		40-20 ±3	93	15	500.6k	8/4	16 x 15½ x 42	Oiled Wal.	Black Cloth	104	1690.00	Pair				
	Studio Monitor	Bass Ref.	15	6x15	Horn	2x5½	Horn		36-20 ±3	96	15	500.6k	8/6	20 x 15½ x 54	Oiled Wal.	Black Cloth	165	2590.00	Pair				
NOVAK LOUDSPEAKER	2	Vented	6½			¾	Dome		44-24 ±2	91.5	5			20¾ x 11¼ x 10¾	Opt.	Black Foam	24	299.95	Pair				
	3	Vented	(2)6½			1	Dome		35-24 ±2	91	15				Opt.	Black Foam		599.95	Pair				
	4	Vented	(2)6½			1	Dome		29-24 ±2	91	15				Opt.	Black Foam		799.95	Pair				
	5	Vented	(2)6½	3	Dome	1	Dome		29-24 ±2	91	15				Opt.	Black Foam		999.95	Pair				
OHM ACOUSTICS	1	Vented	8, 12			(3)1	Domes	W, T, ST	32-21 ±3.5	10	100, 2k, 10k	4/4	33¼ x 15½ x 15½	Oiled Wal.	Black Cloth		1500.00	Pair					
	C3	Vented	10			1, 2	Dome	(2)T	37-21 ±4	15	2.4k, 14k	4/4	26¾ x 15 x 11¾	Oiled Wal.	Black Cloth		650.00	Pair					
	L	Vented	8			(2)2	Cones	(2)T	42-20 ±4	8	1.7k, 10k	8/4	20 x 12 x 9¾	Oiled Wal.	Black Cloth		440.00	Pair					
	K2	Vented	9			1	Dome		42-20 ±4	15	2.7k	8/4	23 x 13 x 10¾	Oiled Wal.	Black Cloth		450.00	Pair					
	E2	Vented	8			2		T	48-17 ±4	7	2.7k	8/4	21½ x 11½ x 7¼	Oiled Wal.	Black Cloth		300.00	Pair					
	M	Vented	4			1	Dome	No	120-20 ±4	5	3.5k	4/4	7½ x 4½ x 4½	Oiled Wal. Metal	Black Cloth		300.00	Pair					
	N2	Vented Subwoof.	(2)8					T	32-140 ±4	10	140	8/4	15 x 16 x 15	Oiled Wal. Opt.	Black Cloth Knit		385.00	Pair					
	Walsh 2	Vented							45-16 ±4	30		4/4	32½ x 11½ x 11½	Oiled Wal. Opt.	Black Cloth Knit	29	750.00	Pair					
	Walsh 4	Vented							32-17 ±4	50		4/4	40 x 15½ x 15½	Oiled Wal. Opt.	Black Cloth Knit	41	1500.00	Pair					
OMEGA	55/EX	Inf. Baf.	5¼			2	Pz.	No	60-30 ±6	89	5	3k	8/7	12¼ x 7¾ x 6½	Vinyl	Brown Cloth	13	69.95	Pair				
	301	Vented	12	5	Cone	3	Cone	No	50-20 ±6	91	5	3k, 6k	8/7	23 x 14 x 8½	Vinyl	Brown Cloth	19	119.88	Pair				
	401	Vented	12	5	Cone	3	Cone	No	45-20 ±6	91	5	3k, 6k	8/7	26½ x 15¼ x 11	Vinyl	Brown Cloth	25	149.88	Pair				
	501	Vented	15	5	Cone	3x7	Horn	No	40-20 ±6	90	5	3k, 6k	8/7	32 x 18 x 14½	Vinyl	Brown Cloth	45	249.88	Pair				
	75 XT	Inf. Baf.	(2)10			3x7	Horn	No	50-20 ±6	92	5	1.5k, 3k	4/4	33¾ x 13 x 12	Vinyl	Black Cloth	28	149.88	Pair				
	400 XT	Inf. Baf.	12			(2)3x7	Horns	T	30-20 ±6	92	5	2k	8/7	25¾ x 15¾ x 15¾	Vinyl	Black Cloth	39	249.88	Pair				
ORPHEUS	8	Pas. Rad.	8			1	Dome		30-20 ±3	88	25	70.2k	8/4	44¾ x 15½ x 8½	Oiled Wal.	Black Cloth	60	1150.00	Pair				
	12	Pas. Rad.	12	5	Cone	1	Dome		20-20 ±3	87	30	45, 90, 2k	8/4	61¾ x 20 x 10½	Oiled Wal.	Black Cloth	120	1750.00	Pair				
PAC	LG-5	Ducted Port	6½			1	Dome		40-20 ±3	89	20	2.5k	8/7.5	18 x 14½ x 9½	Oiled Oak	Black Cloth	25	520.00	Pair				
PARASOUND	CMs300	Inf. Baf.	4			1	Dome		80-22 ±4	88.5	10	2.6k	8/6	7½ x 4¾ x 4½	Black Metal	Metal	6	199.95	Pair				
	Perfect Image	Ported	8			1	Dome		32-22 ±2.5	93	15		10/8	40 x 19 x 11	Oiled Wal. Black	Beige Cloth	58	799.95	Pair				
	CMs250	Inf. Baf.	4			1	Dome		80-22 ±4	88.5	10	2.6k	8/6	7½ x 1¼ x 4½	Black Metal	Metal	3½	149.95	Pair				
	CRs200	Inf. Baf.	4			1½	Cone		90-20 ±4	88	10	2.4k	6/4	8¼ x 5 x 4½	Oiled Wal.	Metal	4½	99.95	Pair				
PENTAGRAM	P-10	Pas. Rad.	10	3	Dome	2	Leaf Rbn. Leaf Rbn.	No	24-20 ±2	90	35	450, 5.5k	7.2, 4.8	34½ x 25½ x 26¼	Opt.	Black	90	1800.00	Pair				
	P-8	Pas. Rad.	8	3	Dome	2	Leaf Rbn. Leaf Rbn.	No	33-20 ±2	90	25	450, 5.5k	7.2, 5	23½ x 18 x 16¾	Opt.	Black	42	990.00	Pair				
PHASE DIAMETRICS	Fuselier	Bass Ref.	8	2	Dome	(2)¾, 1	Domes		33-20 ±3	87	20	1.2k, 4.5k	8/5.5	12¼ x 11¾ x 36	Oiled Wal.	Black Poly.	62	1100.00	Pair				

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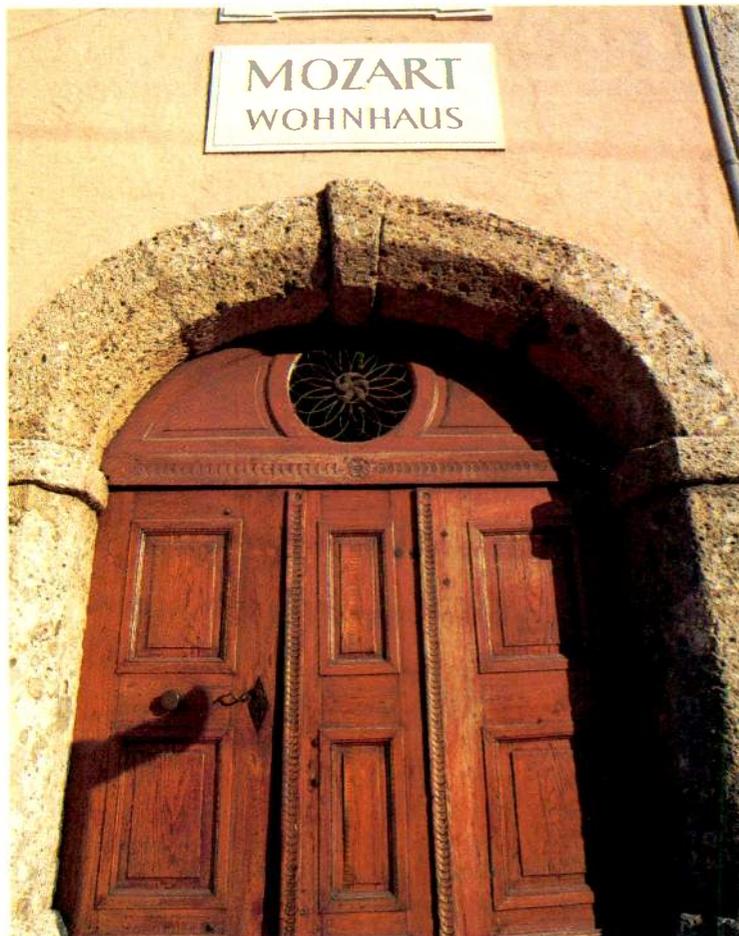
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JBL engineers share the concerns of the curators. JBL loudspeakers deliver not only the notes but the spirit of great musical performances. From wax cylinders to the latest digital and advanced analog recordings, JBL loudspeakers will help you appreciate musical genius.

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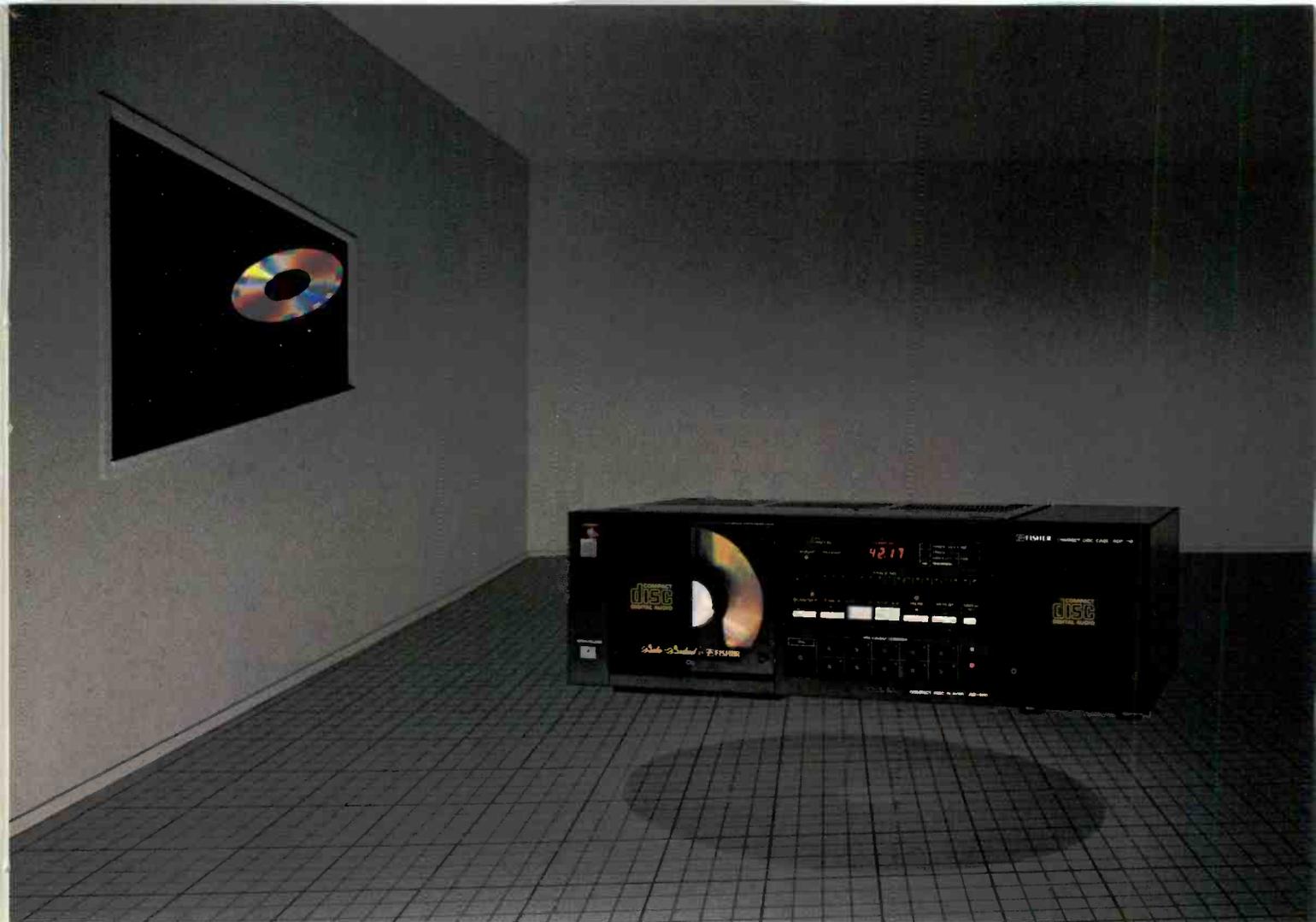
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# LOUDSPEAKERS

MANUFACTURER	Model	Enclosure or System Type	Woofer Diameter, Inches	Midrange Diameter, Inches	Midrange Type	Tweeter Diameter, Inches	Tweeter Type	Separate Level Controls W. Woofer, M, Midrange, T = Tweeter, ST = Super-tweeter	Anechoic Freq. Response, Hz to kHz, ±dB	SPL, 1 W/1 M, Meter, dB	Recommended Min. Amp. Pwr., Watts	Crossover Frequencies, Hz	Impedance, Ohms	Dimensions, Inches	Finish	Grille Color and Material	Weight, Lbs.	Price, \$
PHASE TECHNOLOGY	PC-50	Subwoof.	10						30-175 ±3	87.5	25		8/7	14 x 13 x 15	Opt.		33	250.00
	PC-60	Ac. Sus.	6		1	Dome	T		60-20 ±3	87.5	25	1k	4/4	8 x 13 1/4 x 8	Opt.	Brown Cloth	15	200.00
	PC-65	Ac. Sus.	8		1	Dome	T		35-20 ±3	89	25	12k	8/6	12 x 21 x 10 1/2	Opt.	Brown Cloth	29	250.00
	PC-70	Ac. Sus.	10	2	Dome	1	Dome	M,T	25-20 ±3	89	25	375,3k	8/6	14 x 26 x 10 1/2	Oiled Wal.	Brown Cloth	53	375.00
	PC-100	Ac. Sus.	2(10)	3, 1 1/2	Domes	1	Dome	(2)M, T	25-20 ±3	90	50	250,700, 4k	8/6	14 x 42 1/2 x 8	Oiled Wal.	Brown Cloth	80	650.00
PIONEER	S-1010	Pas. Rad.	10 1/2	2 1/2	Cone		Rbn.	M,T	28-50	92.5		1.5,6k	6,3/	36.5 x 18.3 x 13.4	Wal. Ven.	Black Cloth	82.7	850.00
	S-910	Ducted Port	12	4	Cone		Rbn.	M,T	30-50	92.5		1.3k,5.8k	6,3/	26.4 x 15.4 x 14.6	Vinyl	Black Cloth	50.7	375.00
	S-710	Ducted Port	12	4	Cone		Rbn.	M	33-50	91.5		1.5k,12k	6,3/	25.6 x 14.6 x 12.6	Vinyl	Black Cloth	38.6	315.00
	S-510	Ducted Port	10	1 3/4	Cone		Rbn.	M	35-50	91		2k,13k	6,3/	22.4 x 12.8 x 12.3	Vinyl	Black Cloth	26.4	255.00
PLASMA-TRONICS	Hill Type I	Plasma. Inf. Baf.	14	6 1/2	Cone		Plasma	T	18-100 ±3	107	100	130,700	8,3	57 1/2 x 24 1/2 x 20	Opt.	Black Cloth	580 Pr.	10,000.00
POLK AUDIO	Mini Monitor II	Pas. Rad.	4 1/2	4 1/2	Cone	1	Dome		60-20.5 ±2	92	5	100,3k	6/	13 7/8 x 6 x 4 3/4	Opt.	Black Cloth	23 Pr.	250.00
	Monitor 4	Ported	6 1/2		Cone	1	Dome		55-21 ±3	92	10	4.5k	8/	14 1/2 x 8 1/2 x 7 3/8	Opt.	Black Cloth	32 Pr.	109.95
	Monitor 5A	Pas. Rad.	8	6 1/2	Cone	1	Dome		40-21 ±3	90	10	60,3k	8/	21 1/2 x 10 1/2 x 8 1/2	Opt.	Black Cloth	29 Pr.	174.95
	Monitor 7B	Pas. Rad.	10	6 1/2	Cone	1	Dome		33-20.5 ±2	91	10	60,3k	8/	24 x 14 x 9 1/4	Opt.	Black Cloth	36 Pr.	239.95
	Monitor 10B	Pas. Rad.	10	(2)6 1/2	Cones	1	Dome		30-20.5 ±2	92.5	10	60,3k	6/	28 x 16 x 11 1/2	Opt.	Black Cloth	50	320.00
	RTA 12C	Pas. Rad.	12	(2)6 1/2	Cones	1	Dome		25-21.5 ±2	94	10	50,2k	4/	39 x 16 x 11 7/8	Opt.	Black Cloth	75	460.00
	LF14	Pas. Rad.	12	(2)6 1/2	Cones				32-20.5 ±2	92	10	120,4.5k	4/	28 x 16 x 11 1/2	Opt.	Black Cloth	54	330.00
	SDA I	Pas. Rad.	12	(4)6 1/2	Cones	1	Dome		15-26 ±2	91	10	50,100, 2.5k	4/	43 1/2 x 16 x 12	Rswd.	Black Cloth	85	850.00
	SDA II	Pas. Rad.	12	(3)6 1/2	Cones	1	Dome		16-26 ±2	91	10	50,2.5k	4/	39 1/2 x 16 x 12	Opt.	Black Cloth	80	599.95
PYLE INDUSTRIES	HS100A		4			1	Dome		50-20 ±5	90	4	4k	4,3	4 5/8 x 7 1/4 x 4 1/2	Gray	Black Metal	9	229.95
	HS150P		4			1	Dome		50-20 ±5	90	4	4k	4,3	4 3/4 x 7 1/2 x 7	Gray	Black Metal	8 3/4	219.95
PYRAMID	MET 7	Ac. Sus.	5		Cone	2	Cone		76-22 ±3	87	20	1k,10k	4-8,4	7 5/8 x 5 1/4 x 10	Opt.	Opt.	13.2	370.00
	MET 8W	Sealed Box Subwoof.	12						28-250	88	40	Self.	4/	28 1/2 x 16 3/4 x 13	Opt.	Black Cloth	70	395.00
	MET 8W-LC	Sealed Box Subwoof.	12						28-80	88	40	Self.	4/	28 1/2 x 16 3/4 x 13	Opt.	Black Cloth	70	395.00
	MET 10	Sealed Box	12	5	Cone	2	Cone, Rbn.	T, ST	28-46 ±3	88	40	200,1.2k, 5k,9k	4/	45 1/2 x 16 3/4 x 13	Opt.	Black Cloth	190	1750.00
	MET 11	Sealed Box	8	5	Cone	(2)2	Cones	T	38-22 ±3	89	40		4/	19 x 11 1/2 x 12 1/2	Opt.	Black Cloth	70	500.00
	T-9						Rbn.	ST	6-46 ±3	88	20	6k	4/	6 1/4 x 4 x 5 3/4	Opt.	Black Foam	24	495.00
	HF-1						Rbn.	ST	3-40 ±3	86	20	3.5k or 6.4k	8/	5 1/4 x 7 7/8 x 7 5/8	Black Vinyl	Black Foam	27	595.00
	T-1						Rbn.	ST	3-80 ±3	93	20	3.5k or 6.4k	10/	4 5/8 x 7 3/4 x 4 3/4	Black Alum.	Black Foam	17	1200.00
QUAD	ESL	ES Dipole							45-18	86	25		15/		Wood	Black Metal	36	1780.00
	ESL-63	ES Dipole							35-20	86.5	50		8/		Wood	Black Metal	36	3310.00
RAUNA CONCRETE SPEAKERS	Leira	Trans. Line	6 1/2	6 1/2	Cone	1	Dome		35-20 ±3	86	25	2.6k	8,5	9 x 14 x 27	Paint	Black Foam	55	695.00
	Njord	Trans. Line	(2)6 1/2	(2)6 1/2	Cones	1	Dome		30-20 ±3	88	25	2.6k	8,5	9 x 14 x 36	Paint	Black Foam	77	995.00
REALISTIC	Optimus T-300	Pas. Rad.	(2)10	5	Cone	1	Dome	M,T	44-20	91	10		8/	34 x 12 5/8 x 14	Oiled Wal.	Brown Cloth		259.95
	Mach One	Inf. Baf.	15	16	Horn	2	Horn	M,T	25-20	90	10		8/	28 3/4 x 17 5/8 x 12	Oiled Wal.	Brown Cloth		239.95
	Optimus T-120	Inf. Baf.	10	5	Cone	1	Dome	M,T	50-20	91	10		8/	35 1/2 x 12 1/2 x 11 1/2	Oiled Wal.	Brown Cloth		179.95
	Optimus-50	Bass Ref.	12	4	Cone	2 1/2	Cone	M,T	50-20	90	10		8/	25 x 14 x 10	Oiled Wal.	Brown Cloth		159.95
	Optimus-40	Pas. Rad.	8,10			2	Cone	T	40-20	87	10		8/	26 x 14 1/2 x 10	Oiled Wal.	Brown Cloth		129.95
	Optimus-30	Bass Ref.	10			2 1/2	Cone		55-20		10		8/	22 7/8 x 12 1/4 x 8 5/8	Oiled Wal.	Brown Cloth		99.95
	Nova-4	Bass Ref.	8			2 1/2	Cone		60-20		10		8/	19 x 10 3/4 x 7 1/2	Oiled Wal.	Black Lattice		79.95
	MC-1600	Bass Ref.	8			2 1/2	Cone		60-20		10		8/	18 x 11 1/2 x 6 3/4	Oiled Wal.	Brown Cloth		69.95
	MC-1201	Inf. Baf.	8			2 1/2	Cone		85-17		10		8/	17 3/4 x 10 5/8 x 7 1/2	Oiled Wal.	Brown Cloth		59.95
	(Continued)	MC-600	Inf. Baf.	6 1/2			2 1/2	Cone		100-18		10		8/	13 1/2 x 8 7/8 x 5 1/4	Oiled Wal.	Brown Cloth	



## THE STATE OF THE ART HAS JUST BEEN ELEVATED.

In 1937, Fisher introduced high fidelity. And changed the world.

This year, Fisher has taken another step into the future to produce perhaps the highest fidelity ever.

The AD850 Compact Digital Disc Audio Player.

It utilizes the latest space-age technology to produce a degree of sonic perfection that's almost inconceivable.

A laser beam scans the computer-encoded surface of an encased disc to pick up audio signals and deliver them through a digital filter.

Since nothing touches the disc, surface noise and wear-out are things of the past. The 60 minutes of playback on each 4 $\frac{3}{4}$ " disc is reproduced at the original digitally recorded specifications almost indefinitely.

And as both player and disc offer dynamic range of more than 90 dB, the sound is almost indistinguishable from a live performance.

As well as perfecting its reproduction, we've also endowed the AD850 with the most sophisticated features and virtually faultless human engineering. Via soft-touch controls, you have instant command of random access, sample scanning, auto-search plus pre-programmed automatic playback.

But perhaps the AD850's most convenient feature is synchronous recording. Used with compatible Fisher components, it makes recording a simple pleasure.

In spite of all this advanced technology, the front-loading AD850 will fit most of today's rack systems. Once there, we're confident you'll find your entire hi-fi system taken to levels you've never imagined.

Let alone experienced.



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THE ULTIMATE EXPERIENCE.

Infinity never did recognize the conventional limitations of speaker designs.

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And in addition they're impervious to the rotting humidity and destructive heat in your car.

These speakers are designed to reveal all the dynamic intensity and musical subtlety the new generation of car stereo cassette/receivers can reproduce.

So when you can shift into

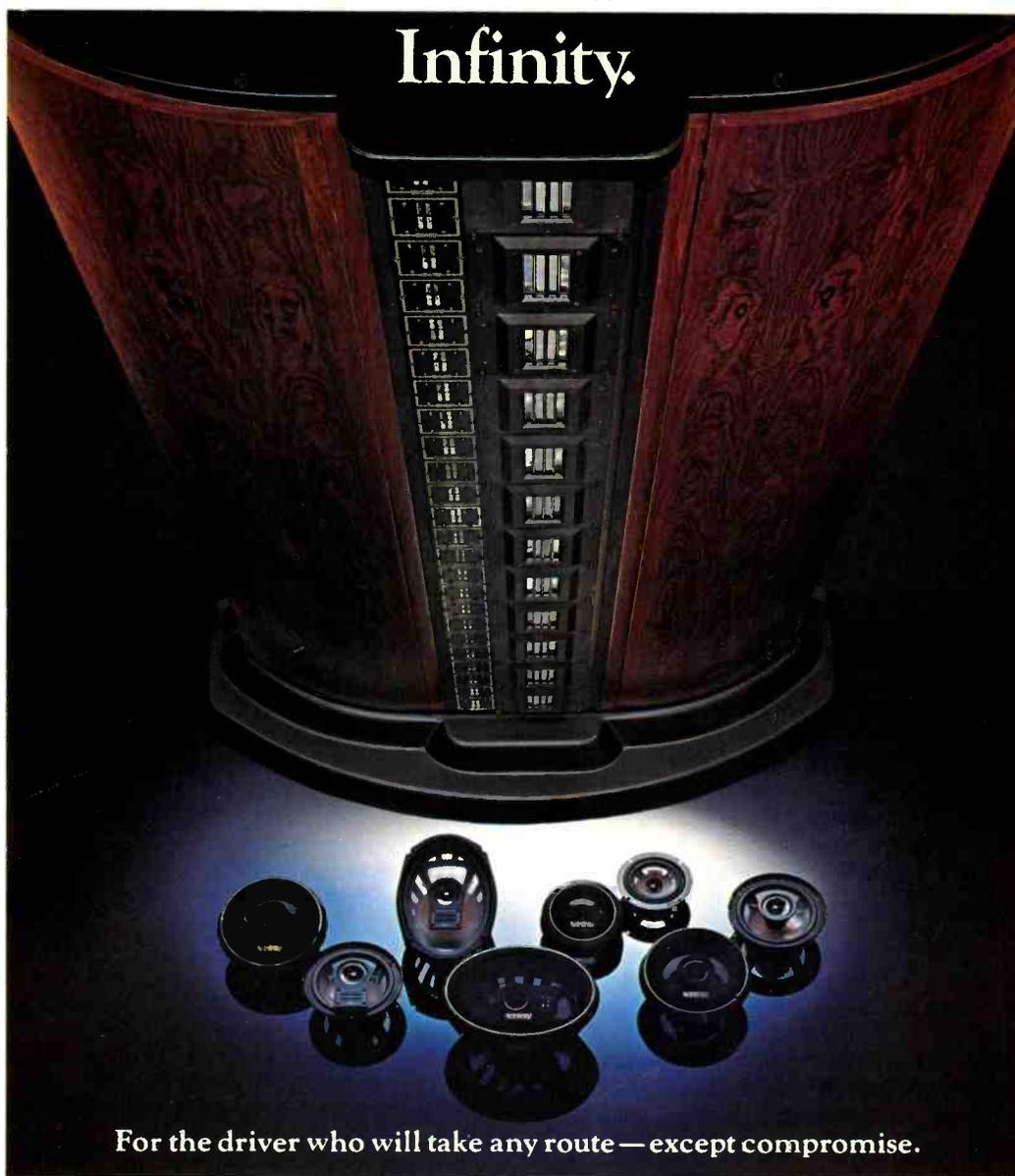
high fidelity with Infinity, why not travel first class?



Shift into high fidelity.

 **Infinity**®

## The New Reference Standard in car stereo speakers.



**Infinity.**

**For the driver who will take any route — except compromise.**

# LOUDSPEAKERS

MANUFACTURER	Model	Enclosure or System Type	Woofer Diameter, Inches		Midrange Diameter, Inches		Tweeter Diameter, Inches		Sensitivity Level (Cont'd): W = Woofer, M = Midrange, T = Tweeter, S = Superwoofer	Frequency Response, Hz to kHz, ± dB	SPL, 1 Watt/1 Meter, dB	Recommended Min. Amp. Pwr., Watts	Crossover Frequencies, Hz	Impedance, Ohms, Nominal/Minimum	Dimensions, Inches	Finish	Grille Color and Material	Weight, Lbs.	Price, \$
REALISTIC (Continued)	Minimus-50	Bass Ref.	6½			2	Cone		50-20		10		8/	15¼ x 8¼ x 9	Foam	Metal		89.95	
	Minimus-12	Inf. Baf.	5			2	Cone		60-20		10		10½ x 7 x 6¼	Metal	Metal		79.95		
	Minimus-7W	Inf. Baf.	4			1	Dome		70-20		5		8 x 5 x 4	Oiled Wal.	Brown Cloth		59.95		
	Minimus-7	Inf. Baf.	4			1	Dome		70-20		5		7 x 4½ x 4¼	Metal	Metal		49.95		
	Minimus-3.5	Inf. Baf.		3		5	Cone						8/	5½ x 3½ x 3½	Metal	Metal		19.95	
Minimus-17	Inf. Baf.		3		5	Cone						8/	6½ x 6½ x 6	Wire Mesh	Wire Mesh		21.95		
Minimus-0.3	Inf. Baf.		3			Cone						8/	4 x 4 x 3¾	Oiled Wal.	Wire Mesh		11.95		
REVOX	Symbol B	Pas. Rad.	12½	2	Dome	1	Dome	M,T	27-22 ±3	89	20	730,2.8k	4/	18 x 43½ x 15½	Oiled Wal.	Brown Cloth	111	1099.00	
	Triton System	Sat. & Subwool.	(2)9½	6¾, 1½	Domes	¾	Dome		30-25 ±3	91	20	150,1.3k, 3.2k	4/	Three Pieces	Oiled Wal.	Brown Cloth	240	1699.00	
	Plenum B	Bass Ref.	12½	2	Dome	1	Dome		33-22 ±3	89	20	720,2.5k	4/	15½ x 24 x 13½	Oiled Wal.	Brown Cloth	48	599.00	
	Forum B	Bass Ref.	10	1½	Dome	¾	Dome		33-24 ±3	85	20	820,2.6k	4/	13 x 20 x 12¾	Oiled Wal.	Brown Cloth	32	399.00	
RH LABS	SB-2b	Subwool.	12					W	30-120 ±3	82	100		8.5	20½ x 20½ x 16½	Opt.		80	385.00	
	SB-2p	Subwool.	12					W	30-120 ±3	80	60	90	8.4	20½ x 20½ x 16½	Opt.		80	485.00	
	KRH	Inf. Baf.	6½			1	Dome	T	63-20 ±2	84	25		8.6	17 x 6½ x 10	Wal.	Black Cloth	48 Pr.	495.00	
ROBERTSON AUDIO	Twenty One	Inf. Baf.	(2)8			1½	Cone		30-22	92.5	20	3.5k	4/	31½ x 19 x 9	Mahog.	Black Cloth	54	1695.00	
	Eleven	Inf. Baf.	8			1½	Cone		40-22	90	20	1.5k	8/	21 x 12 x 11	Mahog.	Black Cloth	36	795.00	
ROGERSOUND LABS	Elan	Pas. Rad.	12	5	Cone	1	Dome	M,T	25-22 ±4	85	15	1k,5k	8/	14½ x 12½ x 41	Oak	Brown	67	650.00	
	3600	Bass Ref.	12	5	Cone	1	Dome	M,T	35-22 ±4	87	15	800,5k	8/	14½ x 11½ x 25	Opt.	Opt.	50	415.00	
	Nevada	Ac. Sus.	12,8	5	Cone	1	Horn	M,T	28-20 ±4	90	10	1k,4k	4/	17 x 13½ x 26½	Opt.	Opt.	63	640.00	
	6600H Magnificent	Bass Ref. Ac. Sus.	(2)12 8	(2)5	Cones	2x6	Horn Dome	M,T	45-22 ±4	92 85	20	800,4k 2.5k	4/ 8/	18 x 11 x 46 10 x 9 x 17	Wal. Oak	Black Brown	90 21	725.00 200.00	
	Outdoor	Ac. Sus.	6½			3	Cone	No	50-20 ±4	84	15	2.5k	8/		Brown	Brown	8½	85.00	
	Forty	Bass Ref.	12	5	Cone	2½	Cone	M,T	40-22 ±4	88	10	1k,4k	8/	14½ x 11 x 25½	Opt.	Opt.	40	275.00	
	Eighty	Pas. Rad.	12	5	Cone	1	Dome	M,T	32-22 ±4	88	10	1k,4k	8/	15 x 11 x 38	Vinyl	Brown	58	320.00	
	Minicron	Ac. Sus.	4			1	Dome	No	70-20 ±4	94	10	2.5k	8/	7 x 4½ x 4	Black Metal	Black Metal	5¼	249.95	
ROYD	Akroyd 7TS	Trans. Line	3½			¾	Dome		50-20	88	10	3k	8/6.2	12 x 8 x 7	Wal.	Black	8	200.00	
	Akroyd 14L2	Bass Ref.	4¾			¾	Dome		50-20	89	10	2k	8.6.2	16½ x 9¾ x 8	Opt.	Opt.	10	250.00	
	Akroyd 25	Bass Ref.	6	2	Dome/ Cone	¾	Dome/ Cone		35-20	89	10	3k,9k	8.6.2	20 x 11½ x 9	Opt.	Opt.	17	390.00	
	Akroyd Quadrille	Bass Ref.	(4)3½			¾	Dome		35-20	90	10	3k	8.6.2	27 x 14½ x 12½	Opt.	Opt.	40	690.00	
	Akroyd The Ribbon	Bass Ref.	6				Rbn.		35-20	88	20	3k	8.8	27 x 14½ x 12½	Opt.	Black	44	975.00	
RTR	G-40B	Pas. Rad.	8			1	Dome	T	60-22 ±2.5	90	10	2k	8/	12 x 23 x 9½	Wal. Vinyl	Black Cloth	31	159.00	
	G-80B	Pas. Rad.	8			1	Dome	T	48-22 ±2.5	90	10	2k	8/	14½ x 25½ x 11	Wal. Vinyl	Black Cloth	40	199.00	
	G-200B	Pas. Rad.	10			1	Dome	T	42-22 ±2.5	91	10	2k	8/	14½ x 36 x 12½	Wal. Ven.	Black Cloth	62	299.00	
	G-350B	Pas. Rad.	10	1½	Dome	1	Dome	M,T	36-22 ±2.5	91.5	10	1.25k,10k	8/	18 x 38 x 11	Wal. Ven.	Black Cloth	75	399.00	
SANSUI	PM-C200	Bass Ref.	15	5	Cone	1¼,1	Planar Diaph., Rbn.		25-40	94			8/	17½ x 29½ x 12¾	Sim. Wood	Brown Cloth	55.1	1000.00	
	PM-C100 II	Bass Ref.	12	4¾	Cone	1¼,1	Planar Diaph., Rbn.		30-40	93			8/	15 x 26¾ x 12¾	Sim. Wood	Brown Cloth	40.1	800.00	
	PM-C70	Bass Ref.	10	4	Cone	2,¾	Cone, Dome		35-35	91			6/	13 x 23¼ x 12½	Sim. Wood	Brown Cloth	28.2	600.00	
	S-1130	Pas. Rad.	12	4	Cone	¾	Dome		28-22	92			8/	14½ x 41 x 13	Wood Grain	Blue Cloth	45.5	640.00	
	S-930	Ac. Sus.	12	4	Cone	¾	Dome	T	30-22	92	10	3.5k,6k	8/	14½ x 27 x 13¾	Wood Grain	Blue Cloth	32.5	400.00	
	S-730	Ac. Sus.	10	4	Cone	2	Cone		30-22	91	10	4k,9k	8/	13 x 25 x 11¾	Wood Grain	Blue Cloth	23	300.00	
	S-530	Ac. Sus.	8	4	Cone	2	Cone		35-22	90	10	4.5k,10k	8/	12 x 23½ x 10½	Wood Grain	Blue Cloth	17.5	180.00	
SARAS	ST 200	Encl. Baf.	(2)10	5	Cone	1	Dome		36-18 ±3	90	40	500,5k	8/	43 x 14½ x 12	Sat. Wal.	Brown Cloth	80	650.00	
	ST 100	Bass Ref.	10	5	Cone	1	Dome		40-18 ±3	90	40	400,2.5k	4/	36 x 14½ x 11½	Sat. Wal.	Brown Cloth	70	550.00	
	44	Encl. Baf.	12	5	Cone	1	Dome		40-18 ±3	90	40	500,5k	8/	25 x 15½ x 15½	Sat. Wal.	Brown Cloth	60	450.00	
	33	Encl. Baf.	10	5	Cone	1	Dome		40-18 ±3	88	40	400,3.5k	8/	24 x 13¾ x 12¼	Sat. Wal.	Brown Cloth	52	375.00	

# LOUDSPEAKERS

MANUFACTURER	Model	Enclosure or System Type	Woofer Diameter, Inches		Midrange Diameter, Inches		Tweeter Diameter, Inches		Separate and Coings? W = Woofer, M = Midrange, T = Tweeter, ST = Super-Tweeter		Anechoic Freq. Response, Hz to kHz, ±dB	SPL, 1 Watt/1 Meter, dB	Recommended Min. Amp. Pwr., Watts	Crossover Frequencies, Hz	Impedance, Ohms	Nominal Minimum Dimensions, Inches	Finish	Grille Color and Material	Weight, Lbs.	Price, \$
SARAS (Continued)	22	Encl. Baf.	12			1	Dome				40-18 ±3	90	40	2k	8	25 x 15½ x 15½	Sat. Wal.	Brown Cloth	55	295.00
	11	Encl. Baf.	10			1	Dome				40-18 ±3	88	40	1.8k	5	24 x 13¼ x 12¼	Sat. Wal.	Brown Cloth	46	245.00
S.C.D.	J.C. Mini Monitor	Ac. Sus.	5			4	Rbn.				40-45	87	15	6k	8.5	10 x 8½ x 7½	Birch Vinyl	Black Cloth	12	125.00
	J.C. Maxi Monitor	Vented	6½			4	Rbn.				30-45	90	15	5.2k	8.5	17 x 12 x 10	Birch Vinyl	Black Cloth	28	165.00
	J.C. Tower	Dipole	(8)6½			(8)4	Rbns.				40-45	93	100	40.3.2k	8.4	72 x 36 x 3	Birch Vinyl Opt.	Black Cloth Opt.	97	1495.00
H. H. SCOTT	166B	Ac. Sus.	6½			1	Dome				55-20 ±4	89.5	10	2.2k	8/6	13 x 7½ x 6½	Wal. Vinyl	Brown Cloth	11	144.95
	206D	Ac. Sus.	6½			1¾					65-22 ±4	89	5	3.5k	8/6	13¾ x 8½ x 7¼	Wal. Vinyl	Brown Cloth	11	109.95
	2080	Ac. Sus.	8			1¾					60-22 ±4	92.5	5	3.5k	8/6	21½ x 11½ x 8¾	Wal. Vinyl	Brown Cloth	15½	129.95
	1778L	Ac. Sus.	8	4½	Cone	1¾					50-18 ±4	92.5	7	1.2k, 3.5k	8/6	21½ x 11 x 9½	Wal. Vinyl	Brown Cloth	22	154.95
	1868II	Ac. Sus.	10	5	Cone	1¾	M/T				38-18 ±4	95	10	900, 3.5k	8/6	24 x 13½ x 10½	Wal. Vinyl	Brown Cloth	34	269.95
	311D	Ac. Sus.	10	5	Cone	1¾					45-23 ±4	92	10	1.1k, 3.5k	8/6	23 x 13 x 9¼	Wal. Vinyl	Brown Cloth	25	259.95
	311DC	Ac. Sus.	10	5	Cone	1¾	M/T				45-23 ±4	92	10	1.1k, 3.5k	8/6	23 x 13 x 9¼	Wal. Vinyl	Brown Cloth	25	274.95
	196B	Ac. Sus.	12	4½	Cone	1	Dome	M, T			38-20 ±4	96	15	800, 3.5k	8/6	25½ x 15 x 10¾	Wal. Vinyl	Brown Cloth	43	349.95
	312D	Ac. Sus.	12	5	Cone	1¾	M/T				45-18 ±4	92	10	1.1k, 3.5k	8/6	26 x 15½ x 11¾	Wal. Vinyl	Brown Cloth	35	329.95
	315D	Ac. Sus.	15	5	Cone	1	Dome	M/T			45-20 ±4	90.5	10	1.1k, 3.5k	8/6	29¼ x 18¼ x 12½	Wal. Vinyl	Brown Cloth		379.95
	1978II	Ac. Sus.	15	4½	Cone	1	Dome	M/T			38-20 ±4	92	15	750, 3.5k	8/6	32 x 17 x 10¾	Wal. Vinyl	Brown Cloth	55	409.95
PRO1008II	Ac. Sus.	15	(2)4½	Cones	(3)1	Domes	M, T			36-20 ±4	90	20	700, 3.5k	4	33¾ x 19½ x 12½	Oiled Wal.	Brown Cloth	62	794.95	
SHAHINIAN ACOUSTICS	Obelisk	Trans. Line Pas. Rad.	8	4¼	Dome	(2)½	Domes				28-22 +0,-3	91	30	2k, 7.5k	6/4	14 x 12 x 27	Opt.	Opt.	49	1800.00 Pair
	The Box	Pas. Rad.	8			1	Dome	T			30-18 +0,-3	92	25	3k	8/6	11¾ x 11¾ x 23	Oak	Brown	38	650.00 Pair
	Slant	Tuned Tapered Slot	6			1	Dome				35-18 +0,-3	89	25	3.5k	6/4	9½ x 11 x 23½	Wal. Fib.	Brown	27	450.00 Pair
	Lark	Tuned Port	4½			½	Dome				60-22 +0,-3	88	25	6.5k	4/3	5½ x 8½ x 13	Oiled Wal. Opt.	Brown	9½	350.00 Pair
	Eagle Woofer	Pas. Rad.	8								28-1 +0,-3	88	35	350, 700	4/3	12 x 12 x 26½	Opt.	Brown	40	700.00 Pair
	Contra-Bombarde	Slot Loaded Horn Subwoof.	(2)8								16-200 +0,-3	89	50	Ext.	8/4	28 x 19 x 35	Opt.		188	1500.00
SHERWOOD	S-11	Pas. Rad.	8	6½	Cone	2	Dome				50-20	90	8	70, 3k	8/6	23 x 12 x 10¼	Wal. Vinyl	Black Cloth	20	240.00 Pair
	S-31	Ac. Sus.	10	4½	Cone	2	Dome				40-20	90	10	1k, 4k	8/6	24 x 14 x 11	Wal. Vinyl	Black Cloth		360.00 Pair
	S-51	Ac. Sus.	12	4½	Cone	2	Dome				33-20	90	15	1k, 4k	8/6	26 x 15½ x 13	Wal. Vinyl	Black Cloth		250.00
SIOEREAL		Sealed Aperiodic	8	2	Cone	½x2	Rbn.	No				86	50	400, 4k	8/7		Opt.	Black Cloth	70	1295.00 Pair
SIEFERT-MAY LABS	Maxim	Inf. Baf.	6½			1	Dome				45-20 +3,-10	82	50	1.5k	4/3.6	12½ x 9 x 9½	Oak	Brown Cloth	17	199.00
	Maxi-Sub	Inf. Baf. Subwoof.	12								20-100 ±3	82	50	100	4/3.3	29½ x 15½ x 15½	Oak	Brown Cloth	50	349.00
	Maxi-Tower	Inf. Baf.	10	4¾	Cone	1	Dome				25-22 +3,-6	85	25	550, 3.5k	4/3.6	14 x 38 x 14	Oak	Brown Cloth	45	399.00
SNELL ACOUSTICS	Type A/III	Sealed	10	4½	Cone	1	Dome				36-22 ±1.25	86	80	275, 2.5k	4/4	46½ x 24 x 13	Opt.	Opt., Cloth	130	3200.00 Pair
	Type C	Ported	10	4½	Cone	(2)¾	Cones				36-22 ±1.25	89	50	350, 3.3k, 15k	4/4	44 x 15 x 13	Opt.	Opt., Cloth	80	1490.00 Pair
	Type E	Ported	8			1, ¾	Dome, Cone				39-22 ±1.75	93	10	2.3k, 15k	8/5	33 x 14 x 11	Opt.	Opt., Cloth	48	798.00 Pair
	Type J	Ported	8			1	Dome				50-22 ±2	90	10	2.3k	8/5	23 x 13 x 10	Opt.	Opt., Cloth	38	549.00 Pair
	Type K	Sealed	8			¾	Dome				70-20 ±2.5	90	10	2.3k	8/6	18 x 11 x 9	Opt.	Opt., Cloth	26	349.00 Pair
SONY	SSU-560A	Bass Ref.	10	4	Cone	1½	Dome				38-20	93	10	2k, 7k	8/	13½ x 25½ x 10¾	Wal. Ven. Wal. Ven. Silv.	Black Cloth	24¼	360.00 Pair
	SSU-660A	Bass Ref.	12	4	Cone	1½	Dome				36-20	93	15	1.5k, 7k	8/	14¾ x 31 x 12¾	Wal. Ven. Wal. Ven. Silv.	Black Cloth	37½	290.00 Pair
	APM-700	Bass Ref. Sat.	6½			2	Fiat	T			45-20	89	10	2.2k	6/	8¾ x 15¾ x 8¾	Black Lacq.	Black Cloth	13¼	500.00 Pair
	SA-W30	Subwoof.	12									50 inc.	60/90/140	8/	19 x 19½ x 15½	Black Lacq.		4¾	295.00	
SONY ES	APM-33W	Bass Ref.					Fiat	T			39-20 +4,-8	91	30	2.2k	6/	12½ x 21¾ x 12¾	Oiled Wal.	Brown Cloth	31¾	800.00 Pair

# LOUDSPEAKERS

MANUFACTURER	Model	Enclosure or System Type	Woofer Diameter, Inches		Midrange Diameter, Inches		Tweeter Diameter, Inches		Tweeter Type	Separate level Control? W = Woofer, M = Midrange, T = Tweeter, S = Superwoofer	SPL, 1 Watt/1 Meter, dB	Recommended Min. Amp. Pwr., Watts	Crossover Frequencies, Hz	Impedance, Ohms: Nominal/Minimum	Dimensions, Inches	Finish	Grille Color and Material	Weight, lbs.	Price, \$
SONY ESPRIT	APM-77W	Bass Ref.			Flat		Flat	M, T	28-30 +4,-8	90	50	700, 4.5k	6/	16 x 29 $\frac{3}{8}$ x 12 $\frac{7}{8}$	Oiled Wal.	Brown Cloth	70 $\frac{5}{8}$	2000.00	
	APM-6	Bass Ref.			Flat		Flat		22-18 +4,-8	88	100	1.2k	8	32 $\frac{1}{2}$ x 21 $\frac{1}{2}$ x 14 $\frac{3}{4}$	Oiled Wal.	Blue Cloth	106	8000.00	
	APM-8	Bass Ref.	(2)		Flat		Flat	(2)M, T	28-30 +4,-8	92	100	320, 1.5k, 4.5k	8	43 $\frac{1}{2}$ x 25 $\frac{5}{8}$ x 17 $\frac{3}{4}$	Oiled Wal.	Brown Cloth	203	12,000.00	
SOUND DYNAMICS	SD100 Concert Monitor		6			1	Dome		38-23 $\pm 3$	56	5	1.8k	8/	14 $\frac{1}{2}$ x 9 $\frac{1}{8}$ x 9	Wal. Vinyl	Black	20	150.00	
	SD500 Concert Monitor		10			1	Dome		34-23 $\pm 3$	95.5	10	1.8k	8/	23 $\frac{3}{8}$ x 12 $\frac{1}{8}$ x 11 $\frac{7}{8}$	Wal. Vinyl	Black	38	200.00	
	SD1000 Concert Monitor		12			1	Dome		28-23 $\pm 3$	101	15	1.8k	8/	34 $\frac{1}{2}$ x 14 $\frac{3}{8}$ x 12	Wal. Vinyl	Black	72	350.00	
SOUND RESEARCH	PR 1001	Bass Ref.	10			2 $\frac{1}{2}$	Dome	W, T	50-20	93	10	2k	8/	21 $\frac{3}{4}$ x 12 $\frac{3}{4}$ x 14 $\frac{1}{4}$	Wood Vinyl	Brown Cloth	34	144.95	
	PR 1202	Bass Ref.	12	5 $\frac{1}{2}$		2 $\frac{1}{2}$	Dome	W, M, T	40-20	91	15	1k, 5k	8/	25 $\frac{1}{2}$ x 15 x 14 $\frac{1}{4}$	Wood Vinyl	Brown Cloth	43	159.95	
	AL 5	RBR	5 $\frac{1}{2}$			2 $\frac{1}{2}$	Dome		60-20	5		3.7k	8/	9 $\frac{1}{2}$ x 7 $\frac{1}{4}$ x 6 $\frac{1}{2}$	Black Cloth	7	79.95		
	AL 11	RBR	10	4 $\frac{1}{2}$		2	Dome	W, M, T	45-20	92	15	1.2k, 6k	8/	22 $\frac{3}{4}$ x 12 $\frac{3}{4}$ x 14 $\frac{1}{4}$	Wood Vinyl	Brown Cloth	34	169.95	
	AL 13	RBR	12	4 $\frac{1}{2}$		2	Dome	W, M, T	40-20	92	15	1.2k, 6k	8/	25 $\frac{1}{2}$ x 15 x 14 $\frac{1}{2}$	Wood Vinyl	Brown Cloth	42	199.95	
SPEAKERLAB	S Point One	Inf. Baf.	5 $\frac{1}{4}$			1	Dome		90-20 $\pm 3$	91	15	3k	6/5	11 x 5 x 7	Opt.	Black	10	210.00	
	S Point One Plus	Pas. Rad.	6 $\frac{1}{2}$			1	Dome		50-20	91	10	3k	6/5	20 $\frac{1}{2}$ x 8 $\frac{1}{2}$ x 7 $\frac{1}{2}$	Opt.	Black	21	149.00	
	SQ	Vented	8			$\frac{3}{4}$	Dome		40-30	91	10	5k	8/6	24 $\frac{1}{8}$ x 9 $\frac{7}{8}$ x 9	Opt.	Black	31	129.00	
	SR	Pas. Rad.	8			$\frac{3}{4}$	Dome		36-30	91	10	5k	8/6	28 $\frac{1}{4}$ x 11 $\frac{3}{4}$ x 10 $\frac{1}{4}$	Opt.	Black	34	169.00	
	ST	Pas. Rad.	(2)B			(2) $\frac{3}{4}$	Domes		36-30	94.5	10	5k	4/3, 3	31 x 12 $\frac{7}{8}$ x 11 $\frac{1}{4}$	Opt.	Black	41	229.00	
	S19	Vented	10	4	Cone		Leaf		32-42	91	15	750, 7.5k	8/6	31 x 12 $\frac{7}{8}$ x 11 $\frac{1}{4}$	Opt.	Black Cloth	52	289.00	
	S6	Inf. Baf.	8, 10	4	Cone		Leaf		35-42	91	20	900, 7.5k	4/3, 3	35 $\frac{1}{2}$ x 14 x 11 $\frac{7}{8}$	Opt.	Black Cloth	56	359.00	
	S7	Inf. Baf.	10, 12	6 $\frac{1}{2}$	Cone		Leaf		34-45	93	20	350, 4k	4/3, 3	38 $\frac{1}{2}$ x 16 x 14	Opt.	Black Cloth	90	459.00	
	SDT4	Vented	8, 10	4 $\frac{1}{2}$	Cone		Leaf		33-45	92	35	900, 7k	8/6	31 x 12 $\frac{7}{8}$ x 11 $\frac{1}{4}$	Opt.	Black Cloth	70	519.00	
	SDT5	Vented	10, 12	1 $\frac{1}{2}$ , 6 $\frac{1}{2}$	Dome, Cone		Leaf		24-45	93	35	350, 1.5k, 8k	4/3, 6	46 x 16 x 10 $\frac{1}{2}$	Oak	Black Cloth	101	899.00	
SK	Horn	15	7 $\frac{1}{2}$	Cone	2x5	Horn	W	33-20	99	5	350, 7k	8/7	39 $\frac{1}{2}$ x 24 $\frac{3}{8}$ x 23	Opt.	Black Cloth	165	999.00		
S10	Subwoof.	10						32-200 $\pm 3$	91	10	180	6/	18 x 18 x 18	Opt.	Black Cloth	59	299.00		
SPECTRASCAN	Ashley 100L	Pas. Rad.	(2)10, 8	4	Cone	(2) $\frac{1}{2}$ , 2	Domes		32-30 $\pm 2$	90	30	250, 2k, 8k	8/6	38 $\frac{1}{2}$ x 15 x 16 $\frac{1}{2}$	Opt.	Black Cloth	55	1500.00	
SPECTRUM LOUDSPEAKERS	208 A	Bass Ref.	8			1 $\frac{1}{2}$			38-20 $\pm 3$	91	10	2.3k	10/8, 5	25 $\frac{1}{2}$ x 14 $\frac{1}{2}$ x 10 $\frac{1}{2}$	Opt.	Black Foam	40	320.00	
	Aurora 3	Bass Ref.	8	2	Dome	$\frac{3}{4}$	Dome		34-30 $\pm 1.5$	89	20	600, 6k	8/6, 2	31 $\frac{1}{2}$ x 10 $\frac{1}{2}$ x 12	Oiled Wal.	Black Foam	46	830.00	
SPENDOR	Prelude	Inf. Baf.	8			1	Dome		50-20 $\pm 3$	90	20	3k	8/7	20 x 10 $\frac{1}{2}$ x 11	Sim. Rswd. Opt.	Black Cloth	25	425.00	
	LS 3/5A	Ac. Sus.	4 $\frac{1}{2}$			1	Dome		80-20 $\pm 3$	82.5	25	3k	15/8	11 $\frac{3}{4}$ x 7 $\frac{1}{4}$ x 6 $\frac{1}{2}$	Opt.	Black Cloth	12	450.00	
	SA-1	Ac. Sus.	6			1	Dome		70-18 $\pm 3$	82	20	3k	8/7	12 x 9 x 8 $\frac{3}{4}$	Opt.	Black Cloth	16	498.00	
	SA-2	Inf. Baf.	8			1	Dome		50-20 $\pm 3$	90	20	3k	8/7	20 x 10 $\frac{1}{2}$ x 11	Opt.	Black Cloth	25	625.00	
	BC-1	Inf. Baf.	8			1 $\frac{1}{4}$ , $\frac{3}{4}$	Domes		45-18 $\pm 3$	84.5	25	3k, 13k	8/7	25 x 12 x 11 $\frac{3}{4}$	Opt.	Black Foam	31	725.00	
	SP-1	Inf. Baf.	8			1 $\frac{1}{4}$ , $\frac{3}{4}$	Domes		45-20 $\pm 3$	87	25	3k, 13k	8/7	25 x 12 x 11 $\frac{3}{4}$	Opt.	Black Cloth	34	900.00	
	SA-3	Inf. Baf.	12			1 $\frac{1}{2}$	Dome		38-20 $\pm 2$	90	40	2k	8/7	34 x 15 x 18	Opt.	Black Foam	80	1550.00	
SPICA	TC-50	Sealed	6 $\frac{1}{2}$			1	Dome		56-15 $\pm 3$	83	25	2.7k	4/	13 x 15 $\frac{1}{2}$ x 11 $\frac{5}{8}$	Wal.	Black Cloth	21	420.00	
STAX	ELS-F81	ES						No	50-20 $\pm 3$	76	100	None	4/4	18 x 40 x 12	Teak	Tan	45	3100.00	
	ELS-F83	ES						No	40-20 $\pm 3$	79	50	None	4/2	18 x 80 x 13	Teak	Tan	80	5800.00	
SYMDEX AUDIO SYSTEMS	Sigma	Ac. Sus.		6 $\frac{1}{2}$	Cone	1	Dome	No	60-20	85	50	2.3k	8/	10 x 22 x 6	Opt.	Opt.	25	795.00	
	Omega	Ac. Sus. Subwoof.	10					No	40-400	85	100	400	8/	13 $\frac{1}{2}$ x 31 x 13 $\frac{1}{2}$	Opt.	Opt.	60	1095.00	
TAMANTON SOUNDWORKS	TS-2	Asym. Inf. Baf.	4 $\frac{1}{2}$		Cone	1	Dome		55-20 $\pm 4$	86	20	3.5k	8/6	12 x 7 x 7	Oak Ven. Opt.	Black	10	350.00	
	Homonym	Ac. Sus. Subwoof.	8, 10	4 $\frac{1}{2}$	Cone	1, 2	Dome, Rbn.	T	35-20 $\pm 3$	89	40	110, 380, 4k, 10k	8/4	43 x 19 x 6 $\frac{1}{2}$ /12	Opt.	Opt.	85	1500.00	
TANDBERG	Brick	Ac. Sus.	8			1	Dome		70-20 $\pm 4$	93	15	6.5k	8/	25.2 x 11.8 x 10.1	Oiled Wal.	Brown Cloth	28.6	700.00	
	Sloop	Ac. Sus.	11.8	4.7	Cone	1	Dome		60-20 $\pm 3$	94		900, 6.5k	8/	25.2 x 13.8 x 13	Oiled Wal.	Brown Cloth	44	1200.00	
	Clipper	Ac. Sus.	11.8	2.2	Dome	1	Dome		55-20 $\pm 3$	94		100, 5k	8/	29.1 x 13.8 x 13	Oiled Wal.	Brown Cloth	48.4	1600.00	
(Continued)																			

# LOUDSPEAKERS

MANUFACTURER	Model	Enclosure or System Type	Woofer Diameter, Inches	Midrange Diameter, Inches	Midrange Type	Tweeter Diameter, Inches	Tweeter Type	Separate Level Controls? W= Woofer, M= Midrange, T= Tweeter, ST= Super Tweeter	Anechoic Freq. Response, Hz to kHz, ±dB	SPL, 1 Watt 1 Meter, dB	Recommended Min. Amp. Pwr., Watts	Crossover Frequencies, Hz	Impedance, Ohms, Nominal/Minimum	Dimensions, Inches	Finish	Grille Color and Material	Weight, Lbs.	Price, \$
TANDBERG (Continued)	Gallon	Ac. Sus.	11.8	6.7, 2.2	Cone, Dome	1	Dome		50-20 ±3	95	150, 1.2k, 5k	8/	100 x 36 x 34	Oiled Wal.	Brown Cloth	72.6	2400.00	
TANNDY	Mercury	Ducted Port	8			1	Dome	No	55-20 ±3	93	10	3k	8/6	19 x 10 1/2 x 9	Wal. Vinyl	Brown Cloth	12	179.00
	Venus	Ducted Port	8			1	Dome	No	50-20 ±3	93	10	3k	8/6	21 x 12 x 10	Wal. Stain	Brown Cloth	21	299.00
	Jupiter	Ducted Port	8			1	Dome	No	42-20 ±3	91	10	2.5k	8/6	23 x 12 1/2 x 11	Wal. Stain	Brown Cloth	30	429.00
	Stratford	Ducted Port	8				Horn	No	53-20 ±3	93	10	3.5k	8/6	19 x 10 x 10	Wal. Vinyl	Black Foam	16	199.00
	Oxford	Ducted Port					Horn	No	50-20 ±3	93	10	4k	8/6	22 x 13 x 10 1/2	Wal. Stain	Black Foam	28	329.00
	Caermarvon	Ducted Port	10			2	Horn	M,T	40-20 ±3	93	50	1.2k	8/6	Three Pieces	Wal. Stain	Beige Cloth	61	849.00 Sys.
	Balmoral	Ducted Port	12			2	Horn	M,T	30-20 ±3	50	1.2k	8/6	Three Pieces	Wal. Stain	Beige Cloth	83	999.00 Sys.	
	Arundel	Ducted Port	15			2	Horn	M,T	32-20 ±3	50	1k	8/6	Three Pieces	Wal. Stain	Beige Cloth	101	1099.00 Sys.	
	G.R.F. Memory	Ducted Port	15			2	Horn	M,T	29-20 ±3	50	1k	8/6	4 3/2 x 3 1/2 x 19	Wal. Stain	Beige Cloth	137	1799.00 Sys.	
	Edinburgh	Port Distr.	12			2	Horn	M,T	30-20 ±3	50	1.2k	8/6	40 x 26 x 16 1/2	Wal. Stain	Beige Cloth	119	1599.00	
	Westminster	Port Horn	15			2	Horn	M,T	18-20 ±3	50	300,1k	8/6	51 x 40 1/2 x 25	Wal. Stain	Beige Cloth	253	3000.00	
	SRM10B-SS	Ducted Port	10			2	Horn	M,T	55-20 ±4	93	10	1.2k	8/6	20 1/2 x 14 1/2 x 10	Wal. Stain	Brown Cloth	40	595.00
	SRM12B-SS	Ducted Port	12			2	Horn	M,T	55-20 ±4	95	10	1.2k	8/6	23 x 16 x 11	Wal. Stain	Brown Cloth	46	695.00
	SRM12X-SS	Ducted Port	12			2	Horn	M,T	52-20 ±4	95	10	1.2k	8/6	33 x 17 1/2 x 11	Wal. Stain	Brown Cloth	66	850.00
	SRM15X-SS	Ducted Port	15			2	Horn	M,T	52-20 ±4	97	10	1k	8/6	40 x 25 1/2 x 15	Wal. Stain	Brown Cloth	112	1250.00
	SRM15XB-SS	Ducted Port	15			2	Horn	M,T	42-20 ±4	95	10	1k	8/6	40 x 25 1/2 x 15	Wal. Stain	Brown Cloth	112	1250.00
	BM8	Ducted Port	8			1	Dome	T	42-20 ±4	91	50	2.5k	8/6	23 x 12 1/2 x 11	Wal. Stain	Black Cloth	32	475.00
	M-1000-SS	Ducted Port	15			2	Horn	M,T	50-20 ±4	97	10	1k	8/6	40 1/2 x 28 1/2 x 17	Wal. Stain	Brown Cloth	132	1600.00
	M-2000 Buckingham	Ducted Port	(2)12	10	Cone	2	Horn	M,T	35-20 ±3	94	10	Var.	8/6	28 1/2 x 40 1/2 x 17	Wal. Stain	Black Cloth	176	2400.00
	M-3000-SS	Ducted Port	15			2	Horn	M,T	40-20 ±3	95	10	1k	8/6	40 1/2 x 28 1/2 x 17	Wal. Stain	Brown Cloth	132	1600.00
	Dreadnought	Ducted Port	(2)15	15	Cone	2	Horn	M,T	30-20 ±3	96	10	Var.	8/6	52 1/2 x 35 x 23	Wal. Stain	Black Cloth	263	5000.00
TECHNICS	SB-8	Bass Ref.	13	3 1/4	Cone	1 1/8	Cone	M,T	36-35	94		1.2k, 3.5k	8/	15 1/8 x 28 x 14 1/8	Chry. Wood	Brown Cloth	59	650.00
	SB-6	Bass Ref.	10	3 1/8	Cone	1 1/8	Cone	M,T	38-35	93		800, 4k	8/	13 3/4 x 23 3/8 x 12 7/8	Chry. Wood	Brown Cloth	37	400.00
	SB-X700	Bass Ref.	12	3 1/8	Cone	1 1/8	Cone	M,T	39-30	90		1k, 4k	8/	15 x 26 5/8 x 12 7/8	Wal.	Black Cloth	36.4	500.00 Pair
	SB-X500	Bass Ref.	10	3 1/8	Cone	1 1/8	Cone	T	40-30	90		1.5k, 4k	8/	13 3/4 x 23 3/8 x 12 7/8	Wal.	Black Cloth	31	400.00 Pair
	SB-X300	Bass Ref.	9	2	Cone	1 1/8	Cone		45-30	90		1.6k, 4k	8/	11 1/4 x 21 1/4 x 10 1/2	Wal.	Black Cloth	21	300.00 Pair
	SB-F3	Air Sus.	6 1/4				Horn		45-20	89		3k	8/	12 5/8 x 7 x 7 1/2	Alum.	Black Mesh	11	370.00 Pair
	SB-F2	Air Sus.	5				Horn		48-20	88		3.5k	8/	10 x 5 3/8 x 6 1/8	Alum.	Black Mesh	7	310.00 Pair
	SB-F1	Air Sus.	4				Horn		50-20	86		4k	8/	8 1/4 x 4 5/8 x 5	Alum.	Black Mesh	5	240.00 Pair
	SB-L71	Bass Ref.	10 5/8	2 1/2	Cone		Horn		47-25	92		4k, 8k	8/	14 1/4 x 27 1/8 x 10 5/8	Wal.	Black Cloth	21	250.00 Pair
	SB-L51	Bass Ref.	8 5/8	2 1/2	Cone		Horn		51-25	92		3.5k, 8k	8/	12 3/4 x 23 5/8 x 8 7/8	Wal.	Black Cloth	16	200.00 Pair
	SB-L31	Bass Ref.	8 5/8			2 1/2	Cone		55-20	91		4k	8/	11 5/8 x 22 7/8 x 8 7/8	Wal.	Black Cloth	15.4	140.00 Pair
THIEL	CS3	Elect.	10	4	Cone	1	Dome		20-20 ±1.5	89	40	400, 3.5k	5/4	13 x 13 x 41	Teak	Brown Cloth	75	1500.00 Pair
	D3A	Elect.	10	5	Cone	1	Dome		30-20 ±2	90	30	400, 4k	3/4	12 x 12 x 38	Teak	Black Cloth	62	1120.00 Pair
	D4A	Ported	6 1/2			1 1/4	Dome		50-15 ±2	87	40	2.5k	8/6	10 x 10 x 36	Teak	Black Cloth	35	640.00 Pair
	D2	Ported	6 1/2			1	Dome		45-20 ±3	90	20	2k	8/7	11 x 19 x 9 1/2	Teak	Black Cloth	22	350.00 Pair
ULTRAPHONICS	U28P	Ac. Sus.	8			1	Dome		50-20 ±4	90	15	2k	8/	21 1/2 x 11 3/4 x 7 7/8	Wood Lam.	Black	18	400.00 Pair
	U210P	Ac. Sus.	10			1	Dome		45-20 ±3	90	15	2.5k	8/	24 x 13 1/2 x 10 7/8	Wood Lam.	Black	22	600.00 Pair
	U310P	Ac. Sus.	10	5	Cone	1	Dome		40-20 ±3	92	15	700, 4k	8/	25 x 14 x 10 7/8	Wood Lam.	Black	25	800.00 Pair
	U412P	Vented	12	5	Cone	3/4	Dome, Pz.	ST	32-40 ±3	95	20	700, 4k, 9k	8/	26 1/2 x 15 1/2 x 11 1/2	Wood Lam.	Black	45	995.00 Pair
	Mesa 1	Vented	8			1	Dome		45-20 ±2.5	92	20	2.5k	8/	23 1/2 x 12 x 11 1/2	Wood Lam.	Black	26	800.00 Pair
	Mesa 11	Vented	12	5	Dome	2	Dome		26-25 ±2	90	35	400, 3k, 10k	8/	33 1/2 x 12 x 11	Wood Lam. Dpt.	Dpt.	60	2400.00 Pair
	U310N	Vented	10	5	Cone	1	Dome		35-20 ±3	91	15	700, 3k	8/	29 x 13 x 9 5/8	Wood Lam.	Black	35	1000.00 Pair
	U313N	Vented	13	5	Cone	1	Dome		30-20 ±3	92	30	600, 3k	8/	31 1/2 x 14 1/2 x 13	Wood Lam.	Black	55	1400.00 Pair
	UltraMint	Ac. Sus.	4 1/2			1	Dome		60-20 ±4	91	15	2.5k	8/	11 3/4 x 7 7/8 x 7	Wood Lam.	Black	12	300.00 Pair
	Subwoofer System	Sat. & Subwoofer	12	6 1/2	Cone	1	Dome		20-20 ±3			150, 2.5k	4/	Three Pieces	Wood Lam.	Black	75	900.00 Pair

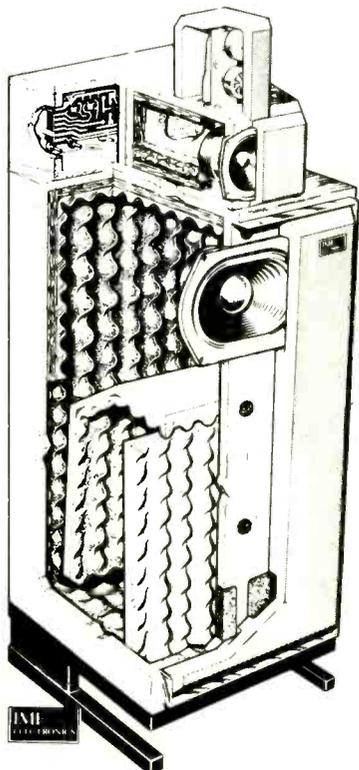
# LOUDSPEAKERS

MANUFACTURER	Model	Enclosure or System Type	Woofer Diameter, Inches			Midrange Diameter, Inches			Tweeter Diameter, Inches			Separate Level Crossover? W = Weeper, M = Midrange, T = Tweeter, ST = Super Tweeter	Anechoic Freq. Response, Hz to kHz, ± dB	SPL, 1 Watt, 1 Meter, dB	Recommended Min. Amp. Pwr., Watts	Crossover Frequencies, Hz	Impedance, Ohms, Nominal/Minimum	Dimensions, Inches	Finish	Grille Color and Material	Weight, Lbs.	Price, \$
UNITRONEX	2	Ported	8			2½	Horn		60-20	98	50	3.5k	8/	21.3 x 11.6 x 9.1	Oak	Brown Cloth	21	149.00				
	4	Ported	10			2½	Horn	T	50-20	97	70	2.5k	8/	22.7 x 14 x 9.8	Oak	Brown Cloth	31	199.00				
	6	Ported	10	5	Cone	2½	Horn	M,T	45-22	104	100	800,8k	8/	25.2 x 16.6 x 11.2	Oak	Brown Cloth	55	299.00				
	8	Ported	12	7	Cone	2x5	Horn	M,T	30-23	105	150	300,7k	8/	26.8 x 17.3 x 12.6	Dak	Brown Cloth	64	399.00				
VANDERSTEEN AUDIO	1B	Ported	8			1	Dome	T	40-20 ±2.5	90	20	3k	8/6	12 x 10 x 36	Opt.	Opt. Cloth	49	630.00 Pair				
	2C	Pas. Rad.	8,10	4	Cone	1	Dome	M,T	29-20.1 ±3	88	40	500,5k	8/4	16 x 10 x 36	Opt.	Opt. Cloth	60	990.00 Pair				
	4	Inf. Baf.	8, (2)12	4	Cone	1½,¾	Domes	M,T, ST	20-30 ±3	89	80	100,700, 4k,12k	8/4	18 x 17 x 50	Opt.	Opt. Cloth	130	3000.00 Pair				
VIBE ACOUSTICS	Nebula N-1	Subwoof.	13						30-100 ±3	91	20	100	8/5	48½ x 21½ x 18	Oiled Wal.	Black Cloth	90	450.00				
	Studio Monitor STD-1	Bass Ref.	12	2	Dome	1	Dome	W,M, T	38-20 ±3	91	15	700,4k	8/5	28½ x 14½ x 13½	Oiled Wal.	Black Cloth	50	770.00 Pair				
	Mini Monitor M-1	Ac. Sus.	6½			1	Dome		60-20 ±3	84	20	3.5k	8/5	12 x 8 x 6½	Oiled Wal.	Black Cloth	13	175.00				
VISONIK	Sub 1	Subwoof.	12						30-150 ±2	87	40	150	4/3	23¾ x 17 x 13¾	Wal.	Brown Cloth	65	430.00				
	Sub 2S	Subwoof.	10						45-150 ±2	85	30	150	4/3	19 x 14¼ x 12¼	Wal.	Brown Cloth	37	300.00				
	A60	Ac. Sus.	5	1			Dome		45-2.5 ±5	10	2.5k	4/3	9.9 x 6.4 x 6.7	Wal.	Brown Cloth	7	150.00					
	A80	Ac. Sus.	7	1	Dome	¾	Dome		35-2.5 ±5	20	1k,5k	4/3	13.8 x 9.9 x 7.9	Wal.	Brown Cloth	10	295.00					
	A100	Ac. Sus.	8	1½	Dome	¾	Dome		28-2.5 ±5	20	800,5k	4/3	16.5 x 12.8 x 8.3	Wal.	Brown Cloth	20	335.00					
	A120	Ac. Sus.	10	1½	Dome	¾	Dome		25-2.5 ±5	30	800,5k	4/3	21.6 x 12.8 x 10.1	Wal.	Brown Cloth	25	385.00					
	A150	Ac. Sus.	12	2	Dome	1	Dome		20-2.2 ±5	40	600,4k	4/3	23.7 x 14.9 x 11.1	Wal.	Brown Cloth	35	465.00					
	D4000	Ac. Sus.	4			1	Dome		110-17 ±2	85	10	2.5k	4/3	6¾ x 4¼ x 4	Gray Nxtl.	Gray	4	107.00				
	D5000	Ac. Sus.	4			1	Dome		110-17 ±2	85	10	2.5k	4/3	6¾ x 4¼ x 4	Gray Nxtl.	Gray	4	138.00				
	D6000	Ac. Sus.	4			1	Dome		90-17 ±2	84	10	2.5k	4/3	7¾ x 5 x 5¼	Opt., Nxtl.	Opt.	5	165.00				
	D7000	Ac. Sus.	5			1	Dome		70-17 ±2	86	15	2.5k	4/3	9¾ x 6¼ x 5½	Opt.	Opt.	6¾	195.00				
	D8000	Ac. Sus.	5	1¼	Dome	¾	Dome		70-17 ±2	87	20	800,4k	4/3	9¾ x 6¼ x 5½	Opt., Nxtl.	Opt.	10	230.00				
D9000	Ac. Sus.	7	1½	Dome	¾	Dome		60-17 ±2	87	20	900,4.5k	4/3	14¾ x 9¼ x 9¾	Dpt.	Dpt.	20	330.00					
VMPS	404b	Ported	8			1	Dome	T	43-18 ±3	92	10	3.5k	8/6	18 x 12 x 8	Wal.	Black Cloth	24	129.00				
	606c	Ported	10			1	Dome	T	40-18 ±3	93	10	3.5k	8/6	23 x 12½ x 7½	Vinyl Oiled Wal.	Black Cloth	30	199.00				
	808c	Ported	12	5	Cone	1	Dome	M,T	34-20 ±3	94	10	600,5k	8/6	25 x 15 x 12	Wal.	Black Cloth	50	289.00				
	Mini Tower II	Multiband Bass	(2)12	5	Cone	1,2	Dome, Pz.	M,T, ST	28-30 ±3	97	20	80,600, 4k,10k	8/6	35 x 15 x 15¾	Oiled Wal.	Black Cloth	60	439.00				
	Tower II	Multiband Bass	(3)12	5	Cone	1,(2)2	Dome, Pz.	M,T, ST	22-30 ±3	99	20	80,200, 600,4k, 10k	4/4	43 x 15 x 15¾	Oiled Wal.	Black Cloth	90	599.00				
	Super Tower/R	Multiband Bass	(2)15, 12	(2)5	Cones	(2)1, (2)2	Domes, Rbns.	M,T, ST	20-50 ±3	100	20	80,200, 600,4k, 10k	4/4	49 x 21½ x 17	Wal.	Black Cloth	140	969.00				
	Super Tower IIa/R	Multiband Bass	(3)15, (3)12	(4)5	Cones	(5)1,2	Domes, Rbn.		17-50 ±3	101	20	80,200, 600,4k, 10k	6/6	76 x 21½ x 17	Opt.	Black Cloth	300	1699.00				
	Wide Range Ribbon	Multiband Bass	(2)15, (2)12, 8	¾x130	Rbn.		Rbn.	M,T	19-50 ±3	94	50	80,300, 15k	3/3	Four Pieces	Opt.	Black Cloth	380	5995.00 Set w/ Space Boxes & Xover				
	Space Boxes	Multiband Bass Subwoof.	15,12						19-600 ±3	94	20	60	8/8	27 x 21½ x 17	Dpt.	Black Cloth	80					
	The Subwoofer	Multiband Bass Subwoof.	15,12						19-600 ±3	94	20	Var.	8/8	27 x 21½ x 17	Opt.	Black Cloth	80	375.00				
WHARFEDALE	W10	Ac. Sus.	6			2	Cone		75-20	90	15	4k	8/	10½ x 7¼ x 16¼		Black Cloth						
	W20	B4 Pas. Rad.	6			2	Cone		52-20	90	15	4k	8/	9¾ x 7½ x 22		Black Cloth						
	W30	B3	(2)7			2	Cone		48-20	94	15	4k	8/	12 x 9 x 22¼		Black Cloth						
	W40	Bass Ref.	10	5	Cone	2	Cone		43-20	93	15	800,6k	8/	13½ x 11¼ x 26		Black Cloth						
	W50	Bass Ref.	10	(2)5	Cones	2	Cone		40-20	94	15	800,6k	8/	13½ x 14¼ x 32		Black Cloth						
	Laser 50	Ac. Sus.	6½			¾	Dome		65-20 ±3	88	15	4k	8/	9 x 7½ x 14½	Diled Wal.	Black Cloth		90.00				
	Laser 90	Ac. Sus.	7½			¾	Dome		50-20 ±3	88	15	4k	8/	10¾ x 8¾ x 18¾	Diled Wal.	Black Cloth		125.00				

# LOUDSPEAKERS

MANUFACTURER	Model	Enclosure or System Type	Woofer		Midrange		Tweeter		Special Level Control		SPL - 1 Watt/1 Meter, dB	Recommended Min. Amp. Pwr., Watts	Crossover Frequencies, Hz	Impedance, Ohms	Nominal Minimum Dimensions, Inches	Finish	Grille Color and Material	Weight, Lbs.	Price, \$
			Diameter, Inches	Diaphragm Type	Diameter, Inches	Diaphragm Type	Diameter, Inches	Diaphragm Type	W = Woofer, M = Midrange, T = Tweeter, ST = Super-tweeter	Anchoic Freq. Response, Hz to kHz, ±dB									
WHARFEDALE (Continued)	Laser 130	Ac. Sus.	7 $\frac{1}{8}$	2	Cone	$\frac{3}{4}$	Dome		50-20 ±3	89	15	1k,4k	8/	10 $\frac{3}{8}$ x 8 $\frac{7}{8}$ x 18 $\frac{3}{4}$	Oiled Wal.	Black Cloth		175.00	
	Laser 150	Ac. Sus.	10	2	Cone	$\frac{3}{4}$	Dome		44-20 ±3	89	15	1k,4k	8/	12 x 8 $\frac{7}{8}$ x 22 $\frac{1}{4}$	Oiled Wal.	Black Cloth		220.00	
	Mach 3	B4 Bass Ref.	7 $\frac{1}{8}$			1	Horn	T	65-17 ±3	94	15	5k	8/	13 $\frac{1}{8}$ x 9 $\frac{1}{8}$ x 22 $\frac{5}{8}$	Oiled Wal.	Black Cloth		265.00	
	Mach 5	B4 Bass Ref.	7 $\frac{1}{8}$	4	Cone	1	Horn	T	62-17 ±3	94	15	1k,5k	8/	13 $\frac{1}{8}$ x 11 $\frac{1}{2}$ x 22 $\frac{5}{8}$	Oiled Wal.	Black Cloth		405.00	
	Mach 7	B4 Bass Ref.	10	4	Cone	1	Horn	M,T	55-17 ±3	94	15	900,5k	8/	13 $\frac{1}{8}$ x 13 x 26 $\frac{7}{8}$	Oiled Wal.	Black Cloth		620.00	
	Mach 9	B4 Bass Ref.	10	(2)4	Cones	1	Horn	M,T	50-17 ±3	94	15	1k,5k	8/	13 $\frac{1}{8}$ x 13 x 32 $\frac{1}{2}$	Oiled Wal.	Black Cloth		755.00	
	E90	B4 Bass Ref.	(2)10	(2)4	Cones	1	Horn	M,T	43-18 ±3	95	15	150,800,7k	8/	15 x 14 $\frac{1}{8}$ x 44 $\frac{1}{2}$	Oiled Wal.	Black Cloth	47	975.00	
	TSR102.2	Inf. Baf.	4 $\frac{3}{8}$	4 $\frac{3}{8}$	Cone	$\frac{3}{4}$	Dome		75-20 ±3	83	25	300,3.5k	8/	7 $\frac{1}{4}$ x 7 $\frac{1}{2}$ x 16	Oiled Wal.	Black Cloth		325.00	
	TSR108.2	B4 Bass Ref.	7 $\frac{1}{8}$			$\frac{3}{4}$	Dome	T	45-25 ±3	88	25	3.5k	8/	12 x 11 $\frac{1}{4}$ x 22 $\frac{3}{4}$	Oiled Wal.	Cloth	31	450.00	
	TSR110.2	Ac. Sus.	7 $\frac{1}{8}$	7 $\frac{1}{8}$	Cone	$\frac{3}{4}$	Dome	T	45-25 ±3	88	25	300,3.5k	8/	13 x 13 $\frac{1}{4}$ x 27	Oiled Wal.	Cloth	39	550.00	
TSR112.2	Ac. Sus.	(2)7 $\frac{7}{8}$	7 $\frac{1}{8}$	Cone	$\frac{3}{4}$	Dome	T	39-25 ±3	87	25	100,800,3.5k	8/	14 x 15 x 36 $\frac{3}{4}$	Oiled Wal.	Cloth	69	850.00		
WILSON AUDIO	WAMM	Sat. & Subwoof.	18	(2)15, (2)8 $\frac{1}{4}$ x11 $\frac{1}{2}$	Cones	(2)1, (9)	Domes, ES	W.M, T,ST	17-30 +0,-3	97	50	55,400, 3k	4/3	Four Pieces	Opt.	Gray Foam	1650 Sys.	42,000. Sys.	
YAMAHA	NS-2000	Inf. Baf.	13	3 $\frac{1}{2}$	Dome	1	Dome	M,T	30-20 ±2	88	30	325,6k	6/5	17 $\frac{1}{8}$ x 15 $\frac{1}{8}$ x 29 $\frac{3}{4}$	Oiled Wal.	Brown Cloth	123	1450.00	
	NS-70T	Inf. Baf.	10	2 $\frac{1}{2}$	Dome	1	Dome	M,T	40-20 ±3	88	20	800,6k	6/5	14 $\frac{1}{8}$ x 12 $\frac{1}{8}$ x 24 $\frac{3}{4}$	Oiled Wal.	Brown Cloth	44	375.00	
	NS-50T	Inf. Baf.	10			1	Dome		40-20 ±3	89	20	1.5k	6/5	14 x 12 $\frac{1}{8}$ x 23 $\frac{3}{8}$	Oiled Wal.	Brown Cloth	39	260.00	
	NS-30T	Inf. Baf.	8			1	Dome		45-20 ±3	89	20	1.5k	6/5	12 $\frac{1}{8}$ x 9 $\frac{3}{4}$ x 21	Vinyl Wal.	Brown Cloth	23	190.00	
	NS-20T	Inf. Baf.	8			1	Dome		45-20 ±3	89	20	1.5k	6/5	11 $\frac{1}{8}$ x 9 $\frac{3}{4}$ x 18 $\frac{3}{8}$	Vinyl Wal.	Brown Cloth	18 $\frac{3}{4}$	145.00	
	NS-10T	Inf. Baf.	7			1	Dome		50-20 ±3	89	20	1.5k	6/5	9 $\frac{3}{4}$ x 8 $\frac{3}{8}$ x 16 $\frac{1}{4}$	Vinyl Wal.	Brown Cloth	14	110.00	

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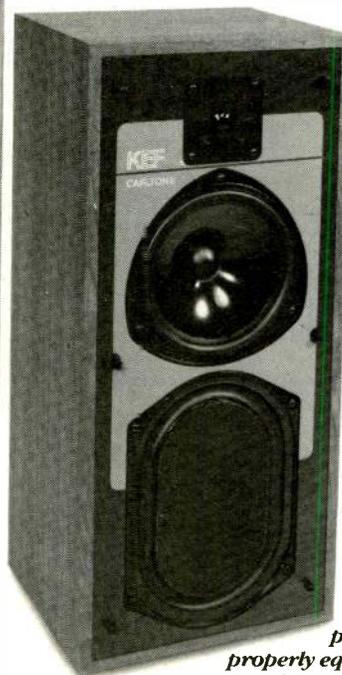


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# ROCK/POP RECORDINGS

MICHAEL TEARSON  
JON & SALLY TIVEN

## FLATFOOT FEAT



**Synchronicity:** The Police  
A&M SP-3735, \$8.98.

Sound: A- Performance: A-

The Police are a band that came out like a shot with three or four great singles, but after "Message in a Bottle" they failed to release a full LP of striking material. Nevertheless, the string of commercially viable singles propelled them to superstar status which, until now, was not fully earned. Although not a masterpiece, *Synchronicity* is a first-rate marriage of pop and progressive music, and shows The Police to be in the prime of their creative lives. Instead of just presenting us with the sound that's brought them global success, Sting and the boys use that as a starting point for some interesting musical departures. Not all of these succeed (there's the less-than-substantial "Miss Gradenko," drummer Copeland's composition, and the rather dull "Tea in the Sahara"), but the boys should be commended for pushing their music forward as much as they do on this LP.

The spacious arrangements and sparse instrumentation which characterize most of the tracks make the presentation of the songs quite dramatic. Guitarist Andy Summers keeps his considerable chops in check and uses

his lines as punctuation; every lick he plays is pointed, yet he manages to make his playing provocative by abetting his natural melodic talent with various heavy chorus and delay effects. The one dense-sounding track on the album is the opening number, which is both unusually driving and instrumentally busy (closer to the "Damien, the Omen II" soundtrack than the laid-back tunes we've come to expect from this outfit), and it starts the album off with a bang. One skill the group (or perhaps the chief songwriter, Sting) has mastered is the ability to build a tune. Many of these songs have empty verses—just some light percussion, no guitars and negligible bass lines which snowball into more heavily orchestrated and dynamic choruses. It seems that Sting has the art of chorus writing down to a T because no matter how esoteric the lyric or melodic content of his verses (and there are plenty of weird chord patterns; on e.g. on "King Of Pain"), the chorus always takes the song back up to the anthem level.

All kudos aside about the consistency of good writing on this album, the highlights could well be the most conservative and eccentric numbers of the bunch. "Every Breath You Take" is a fine song constructed out of a simple

melody and presented with a Beatles-flavored blues ballad chord sequence. Summers' "Mother," on the other hand, sounds like a no-wave tirade of near-dissonant chords and Eastern scales, and it accompanies an incredibly silly lament of the Freudian kind. For those of us who wondered when the axe master would step out, this number confirms that Andy ain't half as conventional as living in Sting's shadow would make him appear.

Where previous Police albums seemed to be jam-laden, their current is more developed. It's as if they taped a bunch of jams, listened to the results, and then constructed songs out of them. Thus, there is a looseness even to their more tightly structured songs, and even their more out-there jams resolve pleasantly and have strong hooks. The ultra-processed semi-synthetic sound of *Ghost in the Machine* has been stripped away; Sting is sounding less like Marley (and, on the single, more like Paul Rodgers), and The Police seem to be gaining in consistency.

Guess it's time for them to break up then, eh wot? *Jon & Sally Tiven*

**Secret Messages:** Electric Light Orchestra

Jet QZ 38490, \$8.98.

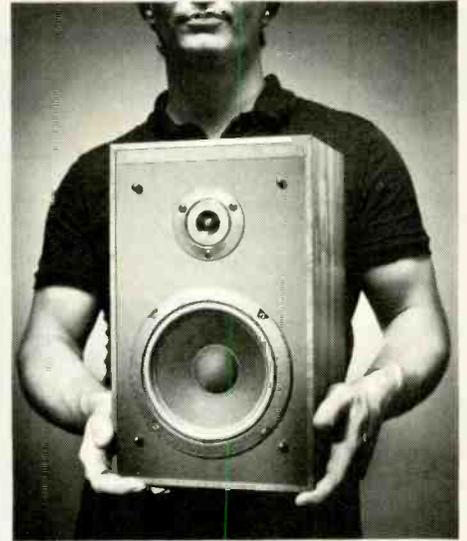
Sound: B+ Performance: B

One would expect Jeff Lynne to be quite comfortable in the synth-pop genre, as he's used to playing most of the instruments on the E.L.O. albums. Lynne's production of the recent Dave Edmunds single revealed that he was already on the drum machine bandwagon; his synthesizer fascination has already been heard in great evidence on previous E.L.O. releases. The advance word was that this was going to be a Jeff Lynne solo release, and a two-record set at that, but the actual album reveals that Lynne was not so anxious to discard the highly commercial E.L.O. handle, nor, apparently, was there enough material for two discs.

*Secret Messages* is not a change in the least, merely a hedged bet. Although the disc has the superficial appearance of departure from Lynne's usual recording method, he merely

No matter what you've heard, it is possible to make a high quality speaker at low cost.

Magazine reviewers listen to many speaker systems each year. Rarely has one of them received praise as unanimous and enthusiastic as that received by the Boston A40. Here are excerpts from several reviews:



## Audio

The Boston Acoustics Model A40 is a diminutive loudspeaker system capable of high performance at a very low cost... Stereo imaging is excellent... I was pleasantly surprised to find that, although rated for a maximum of only 40 watts, the system can handle very brisk levels without stress or audible breakup... If this loudspeaker were to sell for a few hundred dollars, I would be tempted to say that it is a moderately good bargain; considering its actual price, I think it is an extraordinarily good one.

**Richard C. Heyser**

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## The New York Times

Boston Acoustics' A40 would be hard to beat for dollar value... In music of a lighter texture - chamber music and jazz - this speaker holds its own against larger models costing far more and even in symphonic music the sound is enjoyable, if not overpowering. In particular, the treble dispersion of this little speaker is so good that it attains an aura of spaciousness surpassed only by some of the far more expensive multidirectional speakers.

**Hans Fantel**

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## Stereo Review

The Boston Acoustics' A40... delivers exceptional performance at a very low price... Very few forward-radiating systems we have seen can match its dispersion... The A40 comes surprisingly close to matching the essential sound quality and character of the best and most esteemed speakers for a small fraction of the cost. With respect to sound quality per dollar, the A40 is surely one of the most cost-effective speaker designs we have seen in recent times; we are impressed.

**Julian Hirsch**

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The Boston A40 has a suggested retail price of \$75 each. To receive full information about the A40, and a list of dealers where you can hear it, write to us or send us the coupon below.

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"While ELO's Jeff Lynne sounds comfortable on *Secret Messages*, he doesn't surpass his earlier achievements."

makes the drum machine sound like the drums on any record he's made over the years.

This is not really a knock on *Secret Messages*, because it actually has some very strong songs ("Bluebird" is among the best he's written) and rather impressive guitar playing from some-

one who's not particularly well rated as a guitarist (Lynne, that is). Jeff still sounds remarkably like Beatle John in places—this was one of Lennon's favorite bands—and again very little gets heard from the rest of the group. But considering Lynne's past few recordings have been minor flops (commer-

cially), and that his own financial security is hardly in question (he gets a million bucks per album upon delivery), you'd think he could take a few more chances in his recording approach. The material itself is fine, but you always get the feeling that Lynne is either using all 24 tracks or just one or two—there is no in-between to his dynamics. Every vocal is layered, there are countless synth pads, and not much is achieved that brings the song beyond a vocal and guitar demo.

# ANALYZE

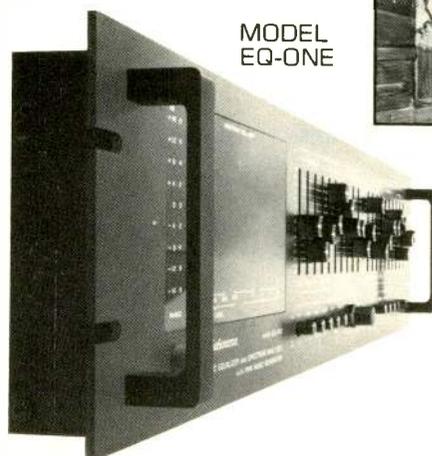
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It seems like Lynne is trying to create a *Pet Sounds* of his own, but E.L.O. is neither enough of a performing unit nor highly stylized enough to meet such a standard. The result is a collection of very good songs that could have profited enormously by having a stronger point of musical reference (such as an active band). While *Secret Messages* does satisfy, it never really goes over the top to surpass the decent standards he's already set with the group.

Jon & Sally Tiven

**Plays Live:** Peter Gabriel  
**Geffen 2 GHS 4012 F, \$10.98.**

Sound: B Performance: A

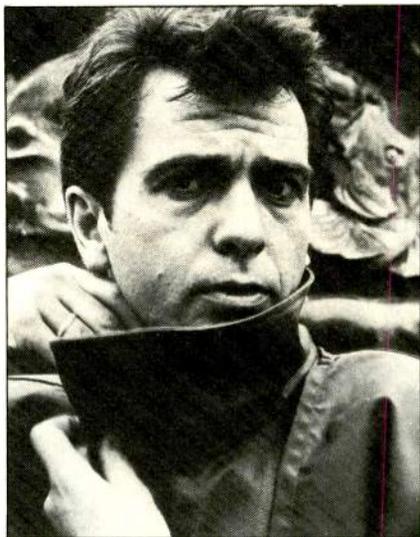
I don't like many live rock show albums. This one is an exception. But then again anything Peter Gabriel does is likely to be exceptional. In the notes, Gabriel quite openly admits that the album was heavily doctored with studio overdubs. He further notes, "Care has been taken to keep the essence of the gigs intact." Success is achieved on both counts. The excellent definition and crowd ambiance are captured in the live sound as well.

The contents come from all four Ga-

"If you ever had any doubts that Zeppelin's discards were miles above whatever any other band was doing, *Coda* will allay them."

briel studio albums, with "I Go Swimming," an unrecorded long-time concert favorite, included. In short this live album is a very effective best of.

The live band is essentially the unit Gabriel uses in the studio—Jerry Marotta (drums), Tony Levin (bass), David Rhodes (guitar), Larry Fast aka Synergy (synthesizers and piano), and Gabriel (more synthesizers and piano).



Peter Gabriel is a most extraordinary artist. His songs challenge and almost never take an easy route. As a result they can cover some fascinating and scary territory.

If you haven't seriously looked into Gabriel's work, this live set is the place to start. If you're a fan, you probably already have the record and play it a lot.

Michael Tearson

**Coda:** Led Zeppelin  
**Swan Song 7 90051, \$8.98.**

Sound: A— Performance: A—

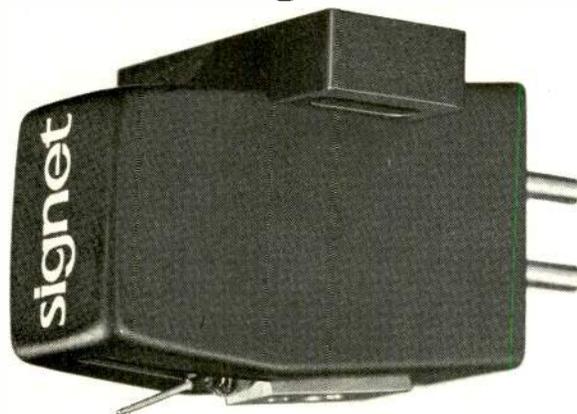
If you ever had any doubts that Led Zeppelin's discards were miles above what any other heavy-rock band was doing, *Coda* should allay them. *Coda* is by no means the "Great Lost Zep" album, and in fact one can easily understand why old Pagey filed these away, but they're only slightly less enjoyable than the best Zep. It also confirms how irreplaceable John Bonham was, and how Zep is really in another league than its imitators.

The recording information provided on the sleeve is rather minimal, in that

it's hard to tell how much the rest of the group was involved in the post-production. One can readily assume that Jimmy Page's guitar overdubs on much of this work are fairly recent. The tracks, all done between 1969 and 1978, were mixed at Page's home studio, which is fully computerized and

seems to have a plethora of delay and reverb devices. The whole of this record—including the earliest tracks, which were cut before John Bonham had perfected his room sound—are consistent with Zeppelin's ambient recording approach, guaranteed to make your room sound twice as big.

## The new Signet TK10ML



...so remarkable  
it may set digital records  
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Until you hear the Signet TK10ML, you may not fully appreciate how superb today's styli are threatening irreparable damage to your record collection.

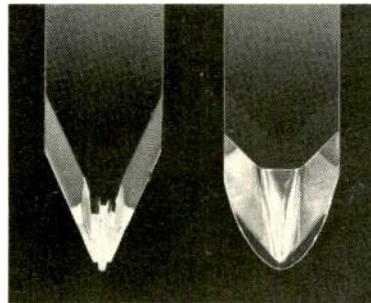
Each Signet TK10ML MicroLine stylus is created from a whole, natural octahedral diamond, oriented for longest life, and with a square shank to precisely fit the laser-cut hole in our unique, ultra-rigid low-mass boron cantilever. You get perfect alignment. Period.

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"Zeppelin's Jimmy Page didn't care that much for precision, odd in view of his training as a studio musician."

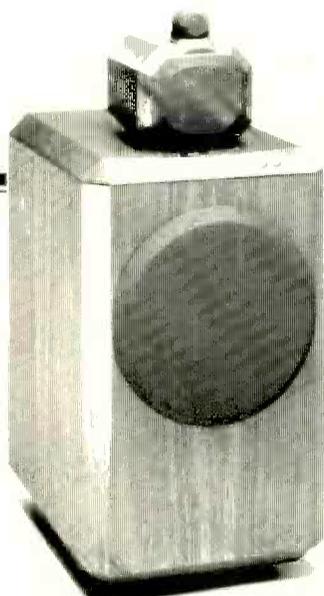
It's interesting to hear how Page's guitar playing was more impressive due to his sound than his accuracy. Even on an early live recording ("I Can't Quit You Baby"), where one has to assume the track is pretty much as it was, Page's distorted approach to tone, fused with his sloppy fingerings,

makes for the trademark Zep sound. Where contemporaries Beck and Clapton were moving toward cleanliness and playing "properly," Page didn't really care that much for precision, and the dirtier his guitar sounded the wilder he'd play. This is particularly odd in view of his training as a studio musi-

cian, whereas Beck and Clapton were schooled in street rock bands.

Anyway, *Coda* is terrific even though its best song ("Darlene") isn't particularly finished or structured, and many of the vocals sound like they were intended as references and not finals. It doesn't really matter—these guys were so *out* most of the time that they could do no wrong. *Coda* certainly maintains that standard without half-trying.

Jon & Sally Tiven



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**Body Wishes:** Rod Stewart  
Warner Bros. 1-23877, \$8.98.

Sound: B+ Performance: B+

I liked *Body Wishes* more than anything from Rod in years. First off, the album *sounds* right. Its punchy rock and roll beat feels bigger than nearly any record you could've had on the turntable just before.



As styles go, *Body Wishes* is almost retrograde in its straightforwardness and simplicity. In his relentless dabbling of the last few years in everything from disco and technopop to crooning, Rod Stewart has sacrificed his musical focus—an unfortunate casualty. The new album corrects this and it plays right into Rod's greatest strengths as a good-time rocker with a strong touch of lyricism.

"Stevie Nicks' second album doesn't expand or deviate from the plaintive vocals that are her trademark."

Much of the album's success derives from very savvy track sequencing. Each side starts off steaming and moves gradually to more sensitive and romantic material. The ballads which close side one ("Sweet Surrender") and appear next to last on side two ("Strangers Again") set up the album's emotional finale song, "Satisfied." Throughout, Stewart's band is suitably restrained or raucous, as occasion demands.

Special note goes to the cover design, for which Stewart mentions "inspiration from the King." It is a loving tribute/satire of *50,000,000 Elvis Fans Can't Be Wrong—Elvis' Gold Records Volume 2*, the one with the multiple images of Elvis in his famous gold lamé suit.

With *Body Wishes* it appears that old Rodney Stewart has regained his favorable groove. He has rediscovered some long-lost elements of the formula that put the boy on top.

Michael Tearson

**The Wild Heart:** Stevie Nicks  
Modern 90084-1, \$8.98.

Sound: B+ Performance: B+

By now Stevie Nicks' musical vocabulary is a set piece. Her second solo album apart from Fleetwood Mac doesn't either expand or deviate from what she has done before. Her distinctively plaintive vocals have become a comforting trademark.

*The Wild Heart* is a class album from cover to vinyl, with almost obsessive attention to detail. Jimmy Iovine again handles production sparkingly, behind Shelley Yakus' engineering. As it was on *Bella Donna* last year, one track is a Tom Petty song backed by Petty and the Heartbreakers and co-produced by Petty as well. Stevie's songs have that emotionally-charged yearning feel she first became known for with "Rhiannon."

Yes, this is a formula album. But right now, Stevie Nicks' formula works very well indeed. A year after her first solo album, Stevie can now deliver a surer, sturdier performance. Her lingering insecurity in striking out on her own is gone, with confidence obviously taking its place. The album's title, *The Wild Heart*, belies the strength and control of the artist. Michael Tearson

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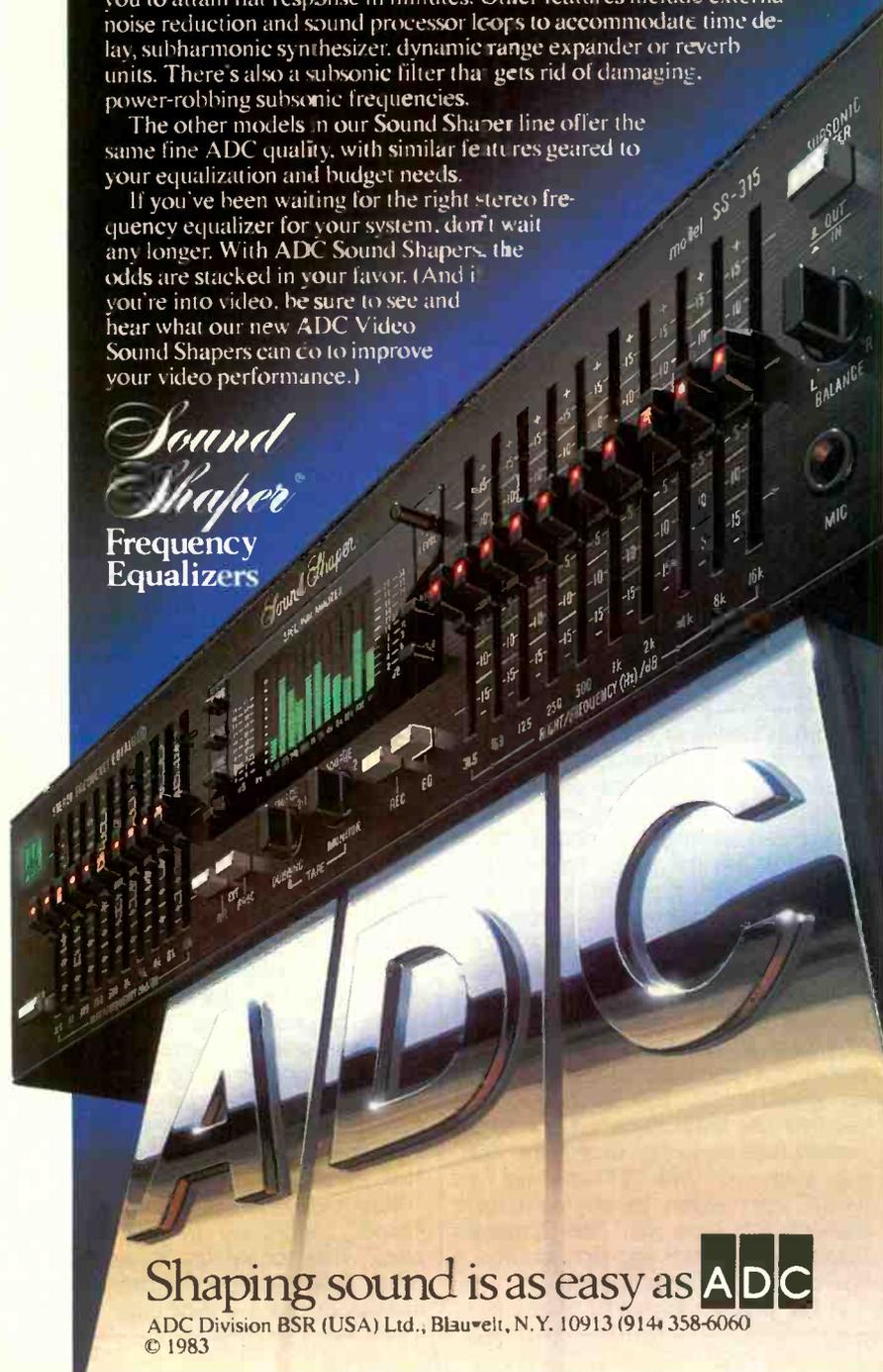
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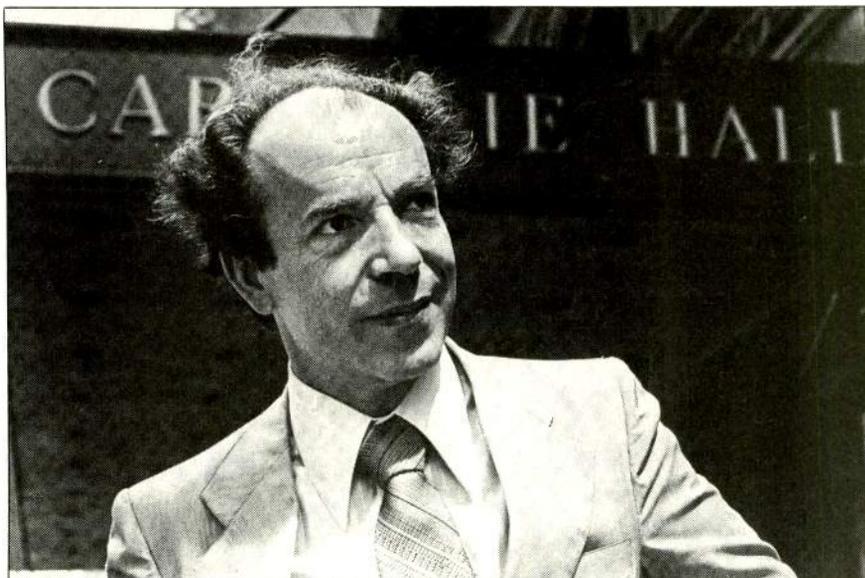
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## BEAUTIFUL BEETHOVEN BOX



**Beethoven: Sonatas for Pianoforte**, No. 29 in B flat, Op. 106, "Hammerklavier" (Astrée AS 47); No. 28 in A, Op. 101 and No. 30 in E, Op. 109 (Astrée AS 48); No. 31 in A flat, Op. 110 and No. 32 in C minor, Op. 111 (Astrée AS 49). Paul Badura-Skoda on a Conrad Graf Hammerflügel

**Astrée AS 47, 48, 49**, \$13.98 each. Boxed set, AS 909, \$27.96. (Available through AudioSource, 1185 Chess Dr., Foster City, Cal. 94404.)

Recording: A - Surfaces: B +

Born in Vienna in 1927, Paul Badura-Skoda, a well-traveled and respected musician in Europe, was originally introduced to us in the early '50s through an extensive series of mono recordings on the Westminster label. Even then, his pianistic ability was more than respectable—witness the remarkable performances on the Schubert *Trio No. 1 in B flat* on Westminster WL 5188 with Janigro and Fournier and on the Schubert *Piano Quintet in A*, the "Trout" (probably one of the best renditions on records), also on Westminster. The decline of the Westminster label curtailed our exposure to Badura-Skoda during the '60s, and it was not until 1971 that he was heard from again in any extensive manner, this time with *The Complete Piano Sonatas* of Franz Schubert on a now-deleted Victrola release.

In the present series of recordings,

Badura-Skoda plays a Hammerflügel built by Conrad Graf around 1824. (The Hammerflügel is one of the steps in the progression toward the modern piano. If nothing else, its sound is much more like what Beethoven and his contemporaries heard from the fortepiano than anything we know today.) I find it difficult to judge the quality of this instrument's recorded sound, since there are no examples readily available. I tried to make a comparison to other similar instruments through the Jörg Demus recording on a Broadwood Flügel (on EMI/Electrola C 187-30 166/167 of the Beethoven Sonatas Nos. 11, 25, 26 and 27). However, the Broadwood seemed to be a radically different device and to my ears, anyway, thoroughly unlikable.

It is also difficult to determine the pitch to which the Hammerflügel is tuned. It sounds as if it were tuned much lower than 440 (at least in the "Hammerklavier"), and I couldn't readily deduce if the pitch is lower because of design and construction of the piano or if, because of great age, adequate tension could not be placed on the strings. The pitch, as it is, does contribute to the overall timbre of the instrument, and it appears sharper on Nos. 28 and 31.

Badura-Skoda plays the "Hammerklavier" vigorously in a "fall-off-the-stool" manner which is exciting indeed. This may not be a definitive performance, but it is not easy to judge

performances on a totally unfamiliar instrument. One can only guess what difficulties the performer had to face in working the instrument and how these required him to modify his fingering, pedal work and, ultimately, his interpretation. Plus the "Hammerklavier," with all the help a performer can obtain, is no easy piece, certainly among the most difficult of pianistic interpretations. Incidentally, the review copy of AS 47 had a few ticks in the beginning of side one, but these sounded more like a problem intrinsic to the copy than a processing defect.

The Sonata No. 28, Opus 101 is rather tame in comparison with the "Hammerklavier" and does not wear well, even through the first hearing. In contrast, the Sonata No. 30, Opus 109, on the reverse side, is frantic, rushed and not too satisfying when compared to other available interpretations. Again, my copy of AS 48 had a few slight noises in the beginning of the Opus 101.

The slightly increased brightness of the instrument on the Sonata No. 31, Opus 110 helps to compensate somewhat for the lackluster performance that simply becomes more and more boring. The interpretation of the Sonata No. 32, Opus 111 is also not very inspired, certainly not when compared to that of Julius Katchen (London STS 15508) and the vintage Arthur Schnabel (on the limited edition EMI issue of the complete piano sonatas of Beethoven, which is even worse sonically).

Part of the problem is that these sonatas, as presented in this production, cannot be listened to consecutively. The instrument used, the limitations it places on the performer, and the intrinsic sound of the instrument itself soon conspire to make one seek a more familiar and different sonic representation of the music.

The Hammerflügel is not a very expressive instrument, especially when juxtaposed with the modern piano. Just as an exercise, and to see how far piano technology has advanced, listen to Ikuyo Kamiya's recording of Beethoven's "Appassionata" (No. 23, Op. 57 in F minor), played on a Bösendorfer Imperial available on RCA RDC-4 (a direct-to-disc Japanese recording available in the U.S. through Audio-Technica). Besides a superb dynamic

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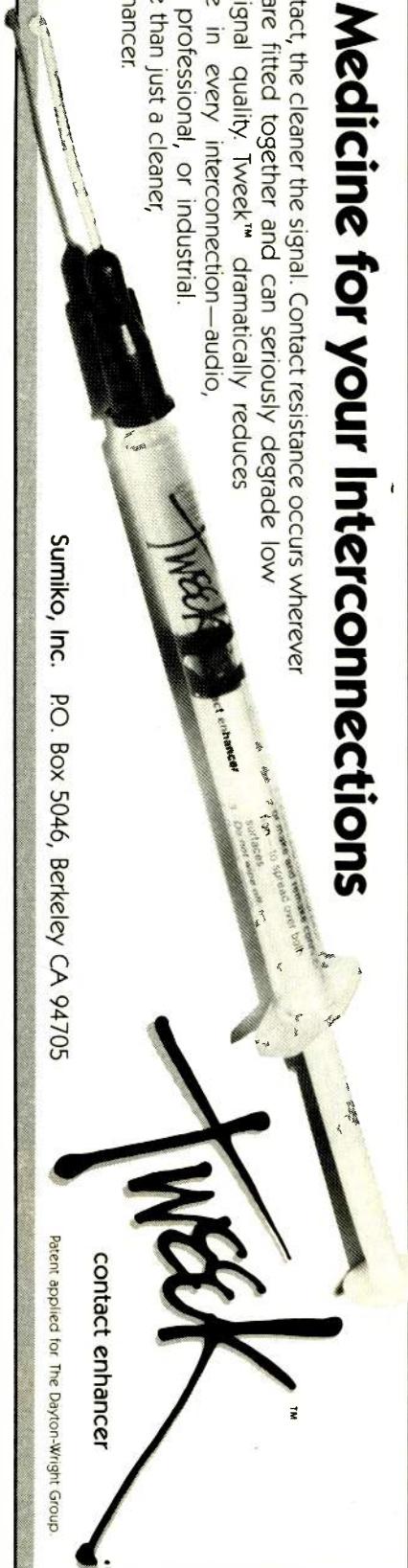
# SORRY, SONY

"The last five sonatas of Beethoven are pianistic demons, not easy to play and fraught with traps for those who would interpret them."

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range, the Bösendorfer Imperial also has nine extra notes in the bass, below low A, and what is probably the best action in the world.

All in all, this is a commendable musical undertaking, if only from an historical point of view, but recommended only to those with such an interest. The last five sonatas of Beethoven are pianistic demons, not easy to play and fraught with traps for those who would interpret them. Whether everyone can agree, ever, as to the definitive performance remains a moot point.

The records themselves are outstanding and show that extreme care was exercised in the overall processing and pressing. Although all my copies suffered from pinch warp, it seemed clear this was due to mishandling in shipping. The surfaces of these French products were excellent; only a slight amount of surface noise and tape hiss from the master tape were evident—not enough to be considered a factor in the judgment.

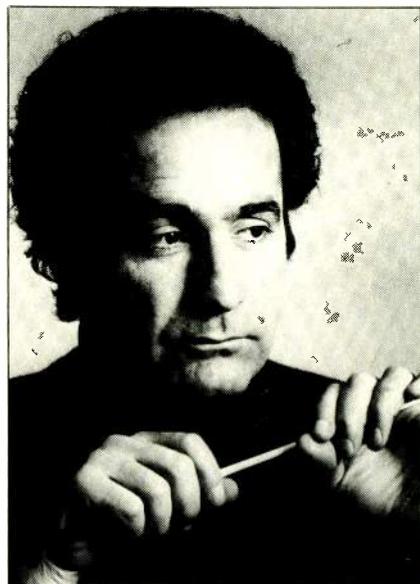
The recording perspective is close in, but not so much so that it's annoying or affects the balance of low to high strings. The microphone technique is good and strives to present the sound of the instrument as faithfully as possible. The "Hammerklavier," Opus 101 and Opus 109 were recorded in December 1978, while the Opus 110 and Opus 111 were taped in January 1980. The recording locale for all performances was the Baumgartner Casino in Vienna—which can be considered, sonically, a proper and reasonably "warm" environment for this instrument. Liner notes are, unfortunately for most of us, all in French.

C. Victor Campos

**Brahms: Symphony No. 3 in F Major, Opus 90; Tragic Overture, Opus 81.** The Utah Symphony Orchestra, Varujan Kojian  
**Sine Qua Non Seven Star Series 79023**, cassette, Dolby B, \$6.98.

Performance: C Processing: D-

This cassette, along with nine others, came along with a folder with the heading "Break The Sound Barrier." This is a Varese-Sarabande recording of a very undistinguished performance of Brahms *Third* accompanied by the most boring performance of the *Tragic*



Varujan Kojian

*Overture* I've heard. Actually it was difficult to tell much about the performance and the original recording, since my copy of the cassette had serious wow and no top end whatsoever. In addition, the Dolby encoding was incorrect, so audible mistracking was continuously present (I checked alignment and Dolby tracking on the cassette machine I used and these were well within tolerances). The problem seems to be the tape intermaster, coupled with the impossibility of monitoring 16:1 duplication of cassettes, or A-Bing against the original. Pass up this one.

C. Victor Campos

**Liszt: "Dante" Symphony.** The Utah Symphony Orchestra, Varujan Kojian  
**Sine Qua Non Seven Star Series 7019**, cassette, \$6.98.

Performance: C Processing: D

This Varese-Sarabande recording emerges here with no high or mid frequencies. Because it is a somewhat distantly miked recording, the missing midrange makes the orchestra sound as if one were standing in the lobby waiting to get in the hall. The effect is to totally emasculate the music and destroy its very exciting character. The performance itself is undistinguished and detached. Not recommended.

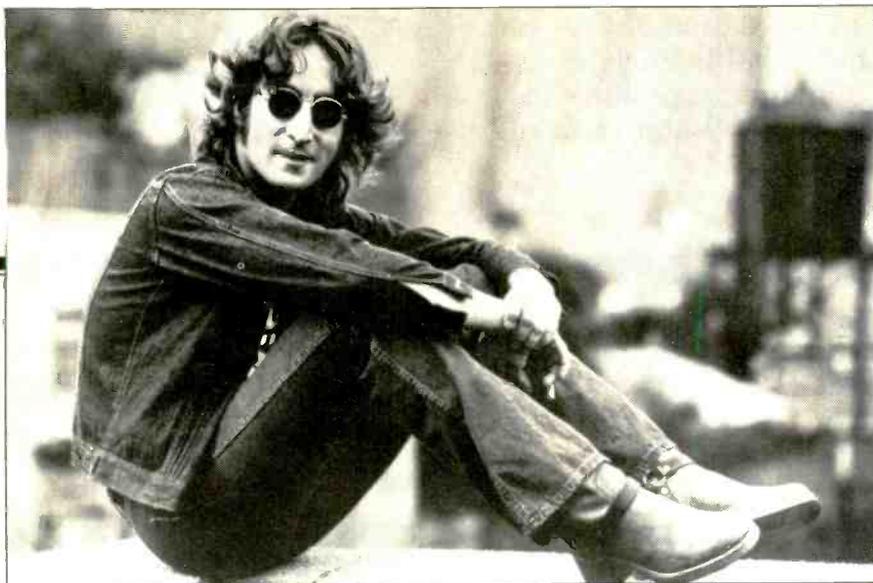
C. Victor Campos

**Double Fantasy:** John Lennon/Yoko Ono  
**Nautilus Superdisc NR 47, \$15.98.**

Sound: A- Performance: B+

It is surprising that Yoko Ono didn't take more interest in the remastering of these tracks—the popping “esses” in “Kiss Kiss Kiss” and “Watching the Wheels” are pretty annoying, and in general Yoko's tracks seem top-heavy and accentuate her vocals. The instrumental tracks stand up well, particularly with the added bottom provided by this version. One hopes that when part two of *Double Fantasy* is released—later this year on Polygram Records, so we are told—the mastering job will better this clean-up attempt.

“Starting Over” is especially altered, as the vocal presence seems stronger and the enunciation is more evident; passages which previously seemed unclear come through loud and clear. The phasing portion of the song, near



John Lennon

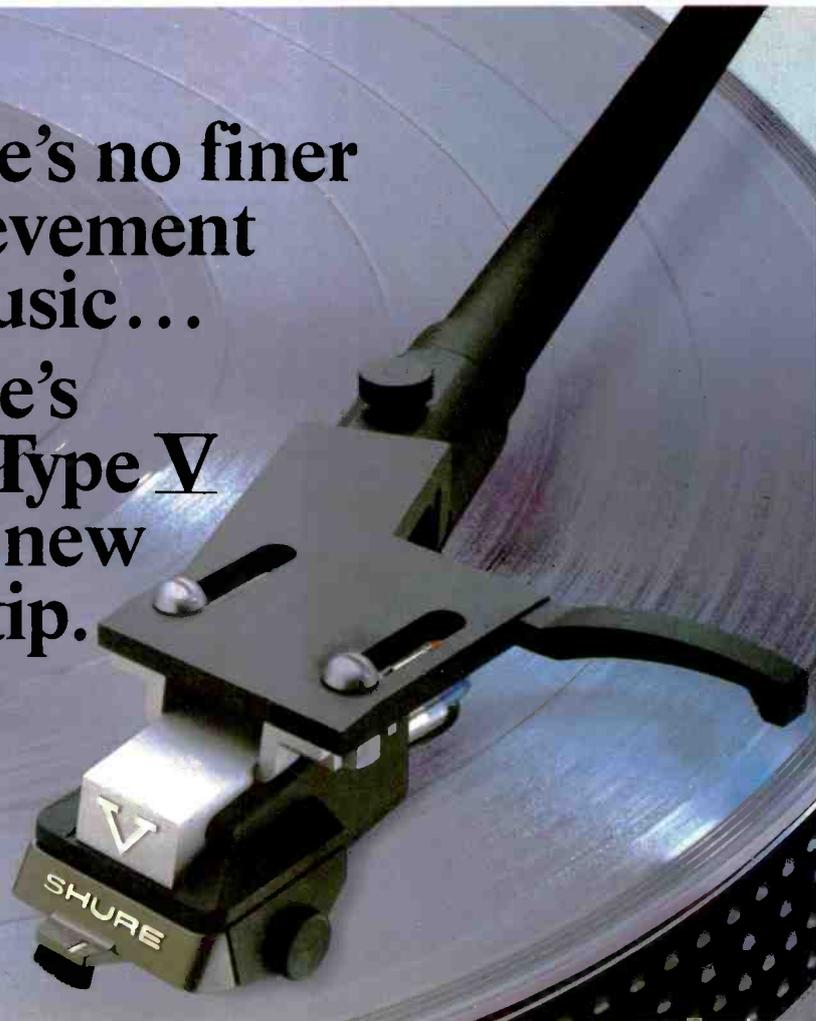
the end of the track, is less dominant, leading us to believe that this effect was something created in the original mastering or else appeared on an alternate master which has been lost or intentionally overlooked. In general, the sound of *Double Fantasy* is improved, but there appears to be a deliberate spirit of alteration at hand here. The tinting of the cover is wholly different, and for some reason they saw fit to enclose a poster of John and Yoko

coming out of a taxi with an inserted shot of Yoko looking out a window—perhaps a companion picture to the back cover of Yoko's new album, where she and Sean have the ghost of John standing next to them.

Anyhow, the mastering job on “Woman” is quite something, and fanatics will probably run out and get this one immediately. But be prepared for less than perfection in the overall mastering process. *Jon & Sally Tiven*

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"The recreation of the concert feel is fairly astounding, especially in the Muddy Waters tracks."

**The Blues . . . A Real Summit Meeting:** Various Artists  
**Mobile Fidelity MFSL 2-518, \$16.98.**

Sound: A                      Performance: A-

There's practically no better example of the value of audiophile record-

ings than their application to a live performance, particularly one made at a relatively low-volume concert where factors like space and the mood of the audience really come into play. On this disc, the recreation of the concert feel is fairly astounding, especially on the Muddy Waters tracks where a genuine

rapport between the artist and the audience occurs.

Quite a variety of performers is offered here, as the recording was made 10 years or so ago at the Newport in New York Festival. So there's plenty here for jazz aficionados more at home with traditional bluesers like Eddie "Cleanhead" Vinson and Jay McShann, who at one time had done tenure with the better-known jazzers. On the other hand there's a pretty wild rendition of "Ball and Chain" (a song best known as a Janis Joplin wail) by its author, Big Mama Thornton, and Arthur Crudup sings "That's Alright Now Mama" which was recorded by Elvis Presley. With a cross-section of performers such as this, it's interesting to note the differences and similarities of approach, which were also picked up on by the white blues artists (Jay McShann's song "Confessin' the Blues," one of the oldest on the album, was covered by The Rolling Stones).

In no way is this the ultimate blues album, or even all that comprehensive—only six artists are featured—but it does include some very fine performances. The recording and pressing is such that the spirit of the live show is most definitely present.

*Jon & Sally Tiven*

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**Beethoven: Trio No. 6 in B Flat Major, Opus 97, "Archduke."** Claude Frank, piano; Emanuel Borok, violin; Leslie Parnas, cello

**Sine Qua Non Seven Star Series 79005, cassette, \$6.98.**

Performance: B+                      Processing: D

A nice performance of the *Archduke* is featured on this cassette. Both Frank and Parnas are well known to New York concert audiences while Borok is Assistant Concertmaster of the Boston Symphony Orchestra. Unfortunately, my copy had no top end, and the pitch was seriously off due to incorrect speed during duplication. I borrowed another copy of this cassette from a friend and it was quite a bit better, indicating troubles in the duplicating system. Nevertheless, it was not really possible to make any judgments with such a poor copy. The instrumental balance was clearly excellent in the original recording, making one wish for a better copy. *C. Victor Campos*

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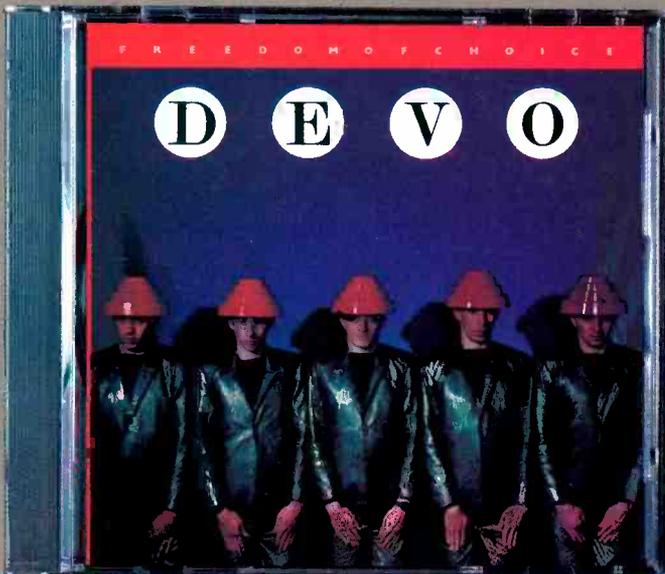
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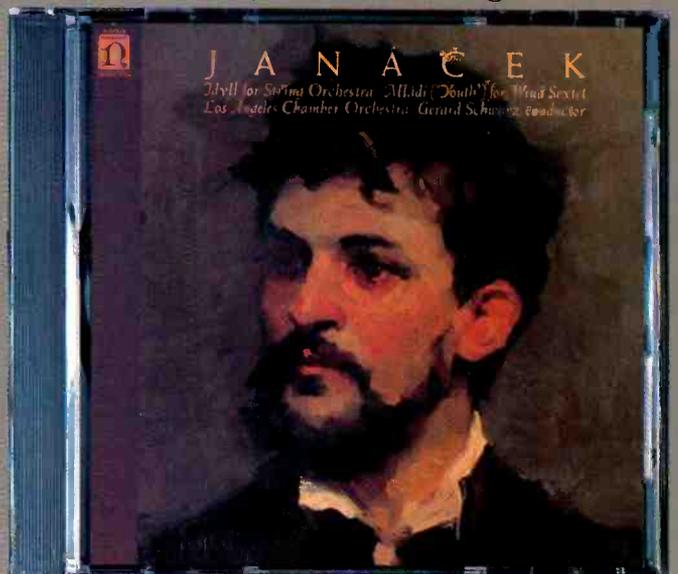
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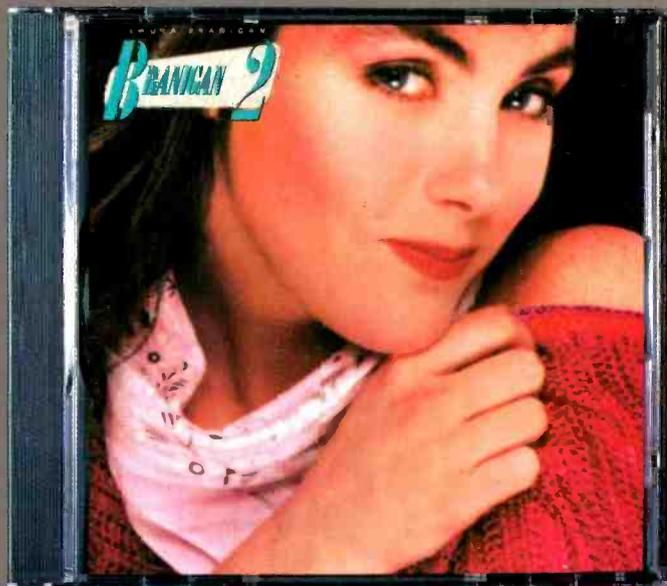
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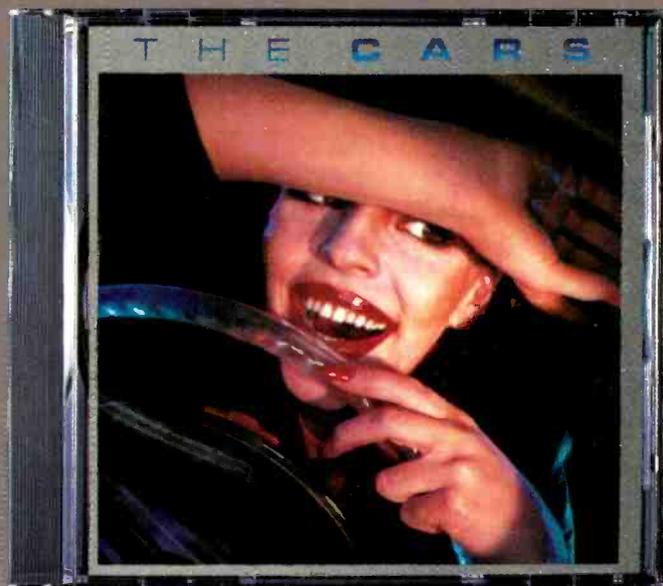
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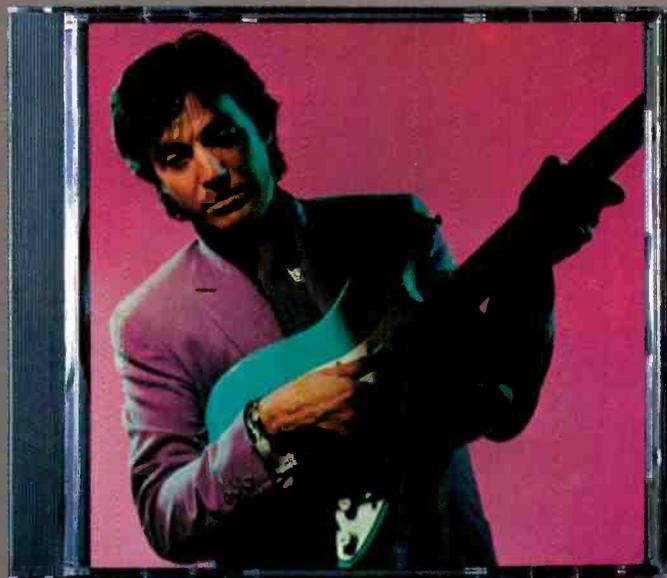
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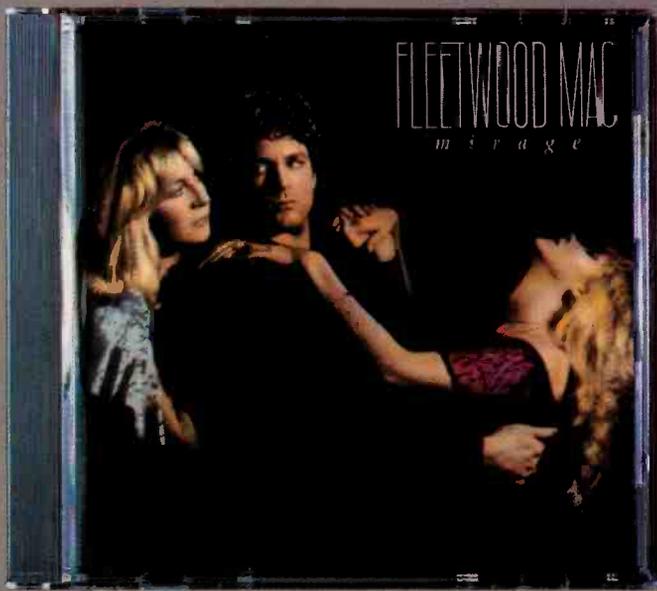
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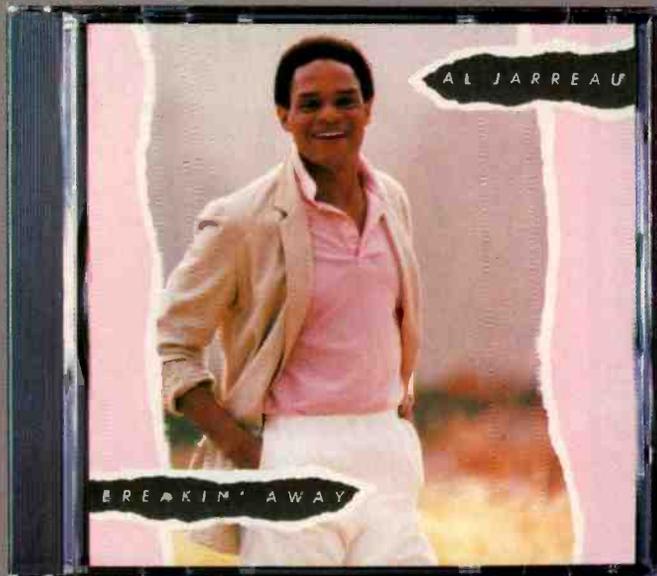
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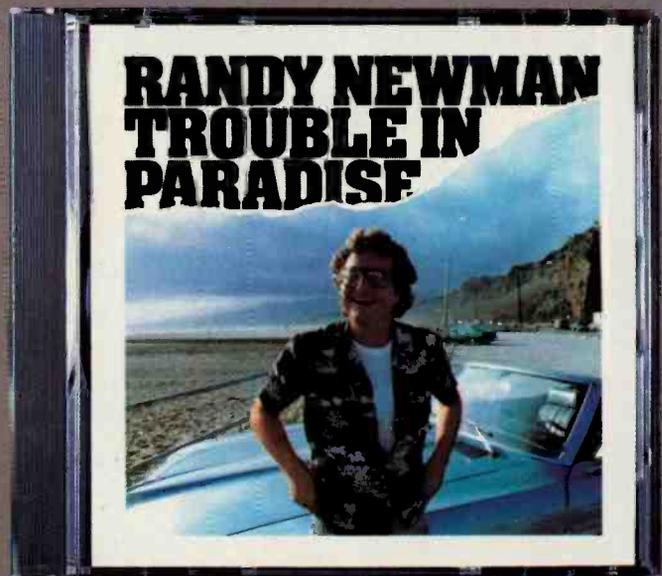
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## A TELARC FIRST



Rudolf Serkin

**Beethoven: Piano Concerto No. 3; "Choral" Fantasy.** The Boston Symphony Orchestra, Seiji Ozawa; Rudolf Serkin, piano.  
**Telarc CD-80063, \$17.95**

Telarc has established a precedent of sorts by releasing this recording in the CD format before the regular LP release.

This recording brings together the formidable talents of Seiji Ozawa, the Boston Symphony, and Rudolf Serkin, the great piano virtuoso who, for decades, has been so closely identified with the Beethoven concertos and the "Choral" Fantasy.

In his traversal of the Beethoven 3rd piano concerto, Serkin gives us a typically sensitive, insightful, richly expressive performance, cast in the traditional mold. His ennobling performance of this work is in marked contrast to the flashier, more bravura approach of many of the younger piano virtuosos. Ozawa and the Boston Symphony furnish, as usual, a well-played sympathetic accompaniment.

Serkin has been an ardent champion of the rarely performed "Choral" Fantasy for many years. With its obvious allusions to the "Ode to Joy" finale of the Beethoven 9th Symphony, the

"Choral" Fantasy uses many of the same forces. Thus, we have the Tanglewood Festival Chorus and six excellent soloists in addition to the piano and orchestra. The Chorus is very cohesive and extremely well-disciplined and, with the stirring orchestral accompaniment, generates the same sort of uplifting excitement as in the "Ode to Joy."

Boston Symphony Hall is justly renowned for its acoustics, but it should be noted that this reputation is based on a full house at a concert. In that circumstance the reverberation time of the hall is about 1.9 seconds. When empty, as used in recording sessions, we are dealing with a reverberation time of 2.5 to 2.6 seconds, and this can be problematic.

Telarc has obtained a nice clean sound in this recording, with good orchestral definition. However, they had to place their omnidirectional Schoeps mikes a bit closer in so that they wouldn't pick up too much of the hall ambience. They handled this well, although the first and second violins are slightly bright, though not edgy.

The piano was given better focus with a separate mike, but this also made it seem as if it was in a slightly less reverberant perspective. In my

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"This *Pictures* CD was a complete letdown. It had to be one of Solti's bad days. Digital or not, it's boring."

opinion, the lower register of this particular piano is a bit thick and turgid, and articulation could be better. The balance between piano and orchestra is nicely handled, as is the chorus and orchestra in the "*Choral*" *Fantasy*. Soloists are in the same acoustic plane as the chorus, which affords a very natural balance. In both works, the tympani are especially well focused and their imperative punctuations are very expressive.

Telarc in no manner compresses dynamic range in their CD recordings and in both of these works it is impressively wide. To savor the full dynamic impact of this recording, I suggest playback at an elevated level. With the few caveats I have noted, a thoroughly musical, highly enjoyable recording.

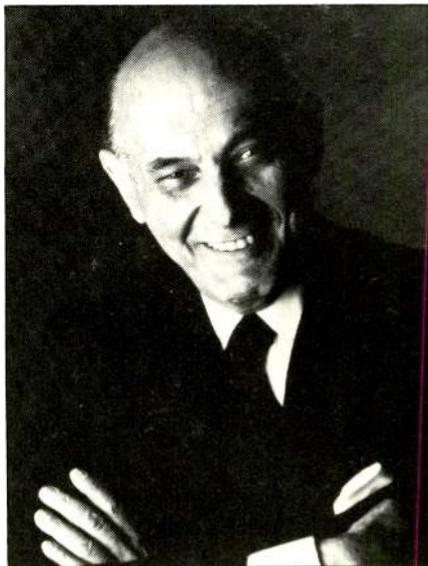
Bert Whyte

**Moussorgsky: Pictures At An Exhibition; Ravel: Le Tombeau de Couperin.** The Chicago Symphony Orchestra, Sir Georg Solti.  
**London CD 400 051-2, digital.**

Performance: B — Recording: C

Ever since I heard, in my early youth, the Kubelik/Chicago Symphony recording of *Pictures* on Mercury's first Olympian Series release 50001 (and still available in a thoroughly massaged stereo version on Philips/Mercury 75114E), I've looked forward to this piece being recorded with new technology. This CD was a complete letdown. It had to be one of Solti's bad days. In comparison with some of the better known interpretations, including Kubelik's and Cantelli's, this one lacks drive and intensity. Digital or not, it's boring. Kubelik's older version is so exciting that this pales by comparison. The less said the better.

The recording itself is no great achievement either. The accent microphones, particularly the cardioids on the woodwinds, put an edge onto the sound from the overall microphones, especially on the brass, that borders on distortion. The strings also suffer from harshness. In "*Bydlo*" the snare drum crescendo is nearly inaudible. There also appears to be a bad edit, at 26:14 into the record, during the repeat in "*The Hut on Fowl's Legs*," where four eighth-notes seem to have crept in where they don't belong. These char-



Sir Georg Solti

acteristics appeared during play on both the Technics SL-P10 and Magnavox FD-1000 and were there on the analog disc version as well.

However, on the LP, the bass was tubbier, and less distinct and extended; the loudest parts were less loud and slightly more distorted, and the dynamic range slightly more limited (again, the *orchestral* dynamic range was about 65 to 68 dB maximum in this CD). When I donned headphones it became clearly evident that the unlikable character of this recording, including the large change in the acoustical character surrounding orchestral choirs as accent mikes were brought in and out, was preserved in both the CD and analog disc versions.

C. Victor Campos

**Saint-Saëns: Symphony No. 3, Organ Symphony.** The Berlin Philharmonic, Herbert von Karajan; Pierre Cochereau, organ.  
**Deutsche Grammophon 400 063-2, \$17.95.**

This could be a treatise on "How not to record the Saint-Saëns Organ Symphony." How someone like Herbert von Karajan could have committed his redoubtable talents and the superb Berlin Philharmonic Orchestra to such a recording project is a mystery.

This recording is one of those experiments in which the Berlin Philhar-

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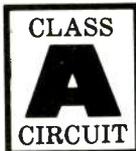
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"This is an absolutely superb performance of Stravinsky's hi-fi showpiece, *Le Sacre du printemps*."

monic records the orchestral parts of the Saint-Saëns score in more or less normal fashion in their own hall, while the organ parts are recorded separately. In this case, it was the organ of Notre Dame Cathedral in Paris, with the famous Pierre Cochereau at the console. The engineers later mix the

orchestral and organ parts together to make a complete recording. This has been done before, and I believe it was DGG on that occasion too. Well, it just doesn't work, and frankly, this one is a mess. The orchestra is in the acoustic perspective of their hall, and the organ in the reverberant acoustics of Notre

Dame. The two are just plain immiscible, and the disc sounds weird. To make matters worse, the subterranean 32-foot organ pedal notes that should be in the first movement and in the grand Finale are simply missing. The great shuddery pedals, such as those easily heard in the famous Charles Munch/Boston Symphony recording made many years ago, are just not reproduced here. Instead we have this amorphous, acoustically detached organ sound, which is completely unacceptable.

To top things off, the first and second violins have that all-too-familiar edginess. I have great respect for Maestro von Karajan and his fabulous orchestra. Such misuse of great talent is inexplicable. Surely in a country like Germany which is so richly endowed with churches and cathedrals with fine organs, a suitable recording venue could be found to record this magnificent music.

*Bert Whyte*

**Stravinsky: *Le Sacre du printemps* (1913).** The Detroit Symphony Orchestra, Antal Dorati.  
London CD 400 084-2, digital.

Performance: A      Recording: B+

This is an absolutely superb performance of Stravinsky's hi-fi showpiece. Dorati's conception of this music is not only unique, but has a cohesion that is seldom heard, stressing the ballet as the source of the music.

The recording in toto serves Stravinsky's music quite well, and as spectacular sounding as it is, it does not sacrifice the essence of the music for sonic effect. It is an excellent recording, though there are audible evidences of accent microphones, which impart different ambiances to different orchestral choirs and tend to add a slight edge to the brass and strings. If I were to pick a fault, I'd say that the tympani had a character somewhat removed from the other instruments. The orchestral dynamic range here is very wide (measuring some 65 to 68 dB from pppp to absolute peak) but some of the explosive character of the music appears to be somewhat subdued. To assure myself that the actual character of the recording was the CD's property, I played it both on a Technics SL-P10 and a Magnavox FD-1000 and

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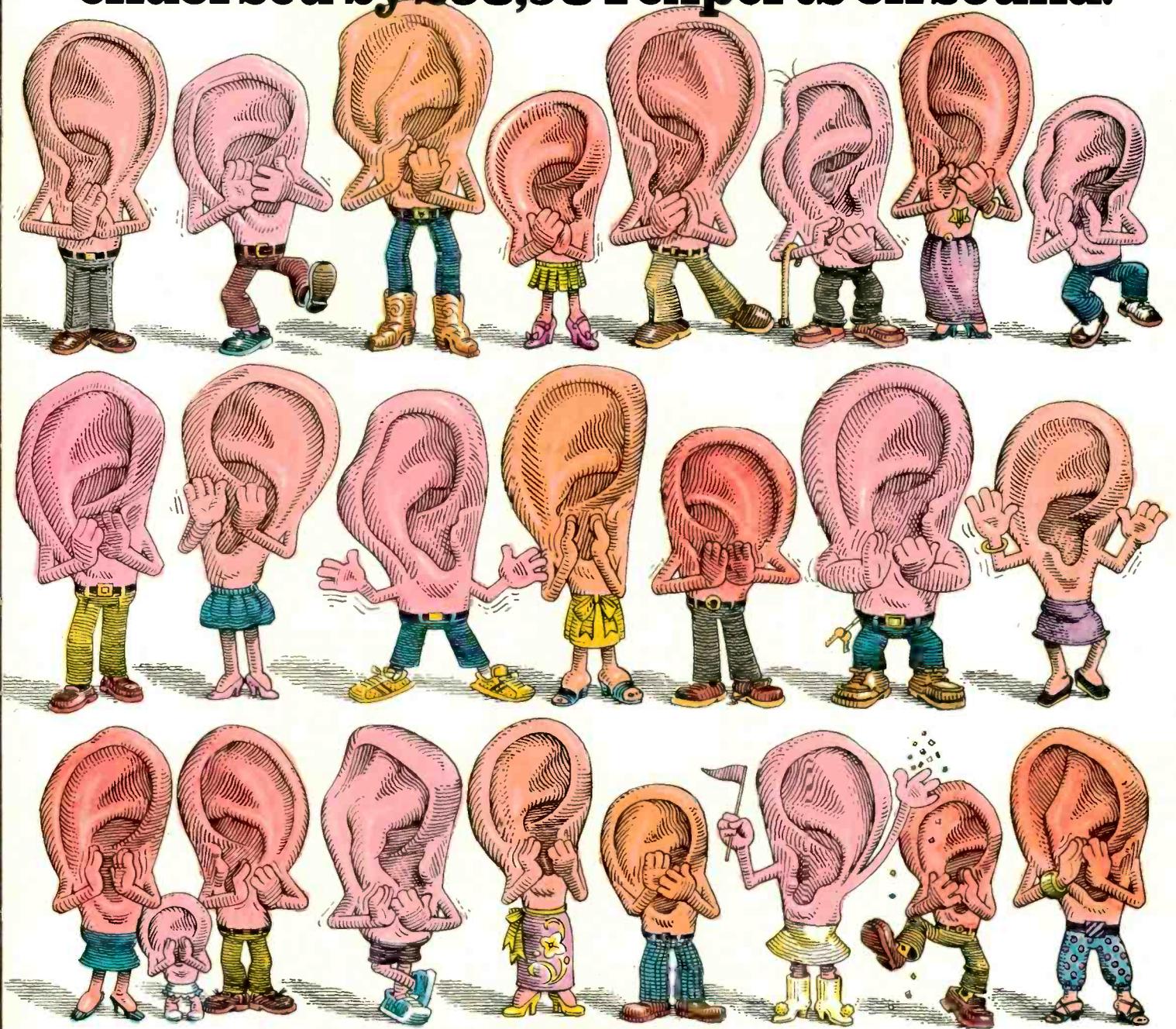
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Antal Dorati

then compared it to the analog disc version already in release (there are audible differences between CD players but the sonic character of the recording was always clearly evident). Upon direct comparison, the analog version of this digital recording had a fatter, less distinct bass, perhaps not as extended as the CD's, and the fortes and fortissimos had a constipated, strained and veiled quality. Also, the dynamic range was patently not as wide. If one set the levels equally at soft levels, the loud portions were louder on the CD. If one equalized levels for loud portions, then the softer parts were louder on the analog disc. To check recording characteristics, I put on a pair of headphones and found the characteristics of the recording itself were present in both versions, although perhaps more masked by the surface noise of the analog disc. Altogether, though, an eminently recommended undertaking.

C. Victor Campos

**Digital Dixie.** The Dutch Swing College Band.

Philips CD 800 065-2, digital.

Performance: B- Recording: D-

Auditioning this very clean recording promptly reveals a multi-mike, multiple-mono disaster which will help give digital a bad name. To begin with, the Dutch group, although excellent musicians, just don't have the flavor of a real Dixieland band. Even when their performances in some of the 12 selections could have been enjoyable, that was rendered impossible by the recording.

This session used a percussion set that sounds as if it were made out of glass. The kick drum has no solidity. The banjo sounds clinky and appears

not to have a resonator. The sousaphone in the fourth selection has no weight and sounds nothing like the instrument. The high-frequency burrs on the brass are exaggerated to pain. The baritone sax and lead clarinet sound as if they were played by the Jolly Green Giant. Here is a perfect example of how not to mike a piano; it comes across like a grown-up toy. If ever there was a genuine bomb, here it is.

C. Victor Campos

**Debussy: Nocturnes; Jeux.** The Amsterdam Concertgebouw Orchestra, Bernard Haitink.

Philips 400 023-2, \$17.95.

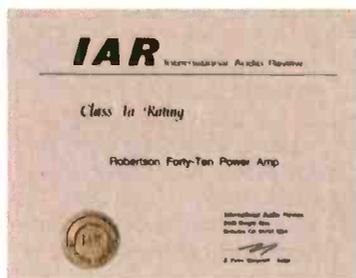
Here, unquestionably, is one of the best CD recordings now available. This marvelously evocative performance of the familiar *Nocturnes* and the rarely played *Jeux* shows off the CD medium to great advantage.

There have been plenty of gripes, in certain quarters, that quite a few CD discs are derived from analog masters. I hope these people are aware that in the vaults of the major record companies, especially the likes of Decca, EMI and Philips, are thousands of *great* analog recordings. For the most part, these recordings were made with Dolby A professional noise reduction at 15 ips. If the original master is used, *not the cutting master* which has often been equalized and otherwise processed, a signal-to-noise ratio of around 70 to 72 dB is commonplace. When this quality of analog recording is transferred to CD, with no impulse noise whatever to intrude, an outstanding sonic experience can result. Think of it this way—with no degradation in the transfer to the digital medium, you are being given what amounts to the master analog recording! Far from

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"This marvelously evocative performance of the familiar *Nocturnes* and the rarely played *Jeux* shows off the CD medium to great advantage.

complaining about the transfer of great analog recordings to CD, I hope the powers-that-be at the record companies have enough sense to pursue this practice.

This present recording quite deservedly won an award from the British magazine *Gramophone* for best engineering several years ago. A lovely spacious ambience is presented with splendid orchestral definition. String tone is sweet, clean and smooth, woodwinds especially mellifluous, the balances and recording perspectives entirely appropriate to the score. Is the recording quiet enough? More than satisfactory, since the wordless chorus in the "Sirenes" section of the *Nocturnes* essay some magically atmospheric pianissimos without any annoying veneer of noise. Haitink elicits superb playing from the Concertgebouw in both the *Nocturnes* and *Jeux*, in what must be considered definitive performances. Highly recommended.

Bert Whyte

**Vivaldi: The Four Seasons.** The Boston Symphony Orchestra, Seiji Ozawa; Joseph Silverstein, violin.  
**Telarc CD-80070, \$17.95.**

This CD recording is an absolute delight. Vivaldi's spritely music is well-served by a chamber orchestra made

up of Boston Symphony Orchestra players, conducted by Seiji Ozawa. Recorded in Houghton Chapel of Wellsley College in Massachusetts, this Telarc recording has captured a splendid blend of warm acoustics and good string sound. The ensemble playing is gorgeous, and the performances quite ingratiating. The sound of concertmaster Joseph Silverstein's violin is very clean and smooth, nicely balanced and not too forward of the main body of strings. The general string sound is quite clean, with just a tinge of brightness. The complete absence of noise greatly contributes to the sense of realism.

Bert Whyte

**Beethoven: Symphony No. 7.** The Staatskapelle Berlin, Otmar Suitner.  
**Denon 38C37-7032, \$17.95.**

Here is an odd situation. This is the same conductor and orchestra as in the CD of the Beethoven 5th, and from what I hear of the acoustics, it was apparently recorded in the same hall. Yet the difference in sound quality between the two is astonishing.

While orchestral balances are good and the ambience of the recording hall nicely captured, the overall sound is really quite poor. Main problem is the fiercely aggressive string tone of the first and second violins. They are ex-



Joseph Silverstein

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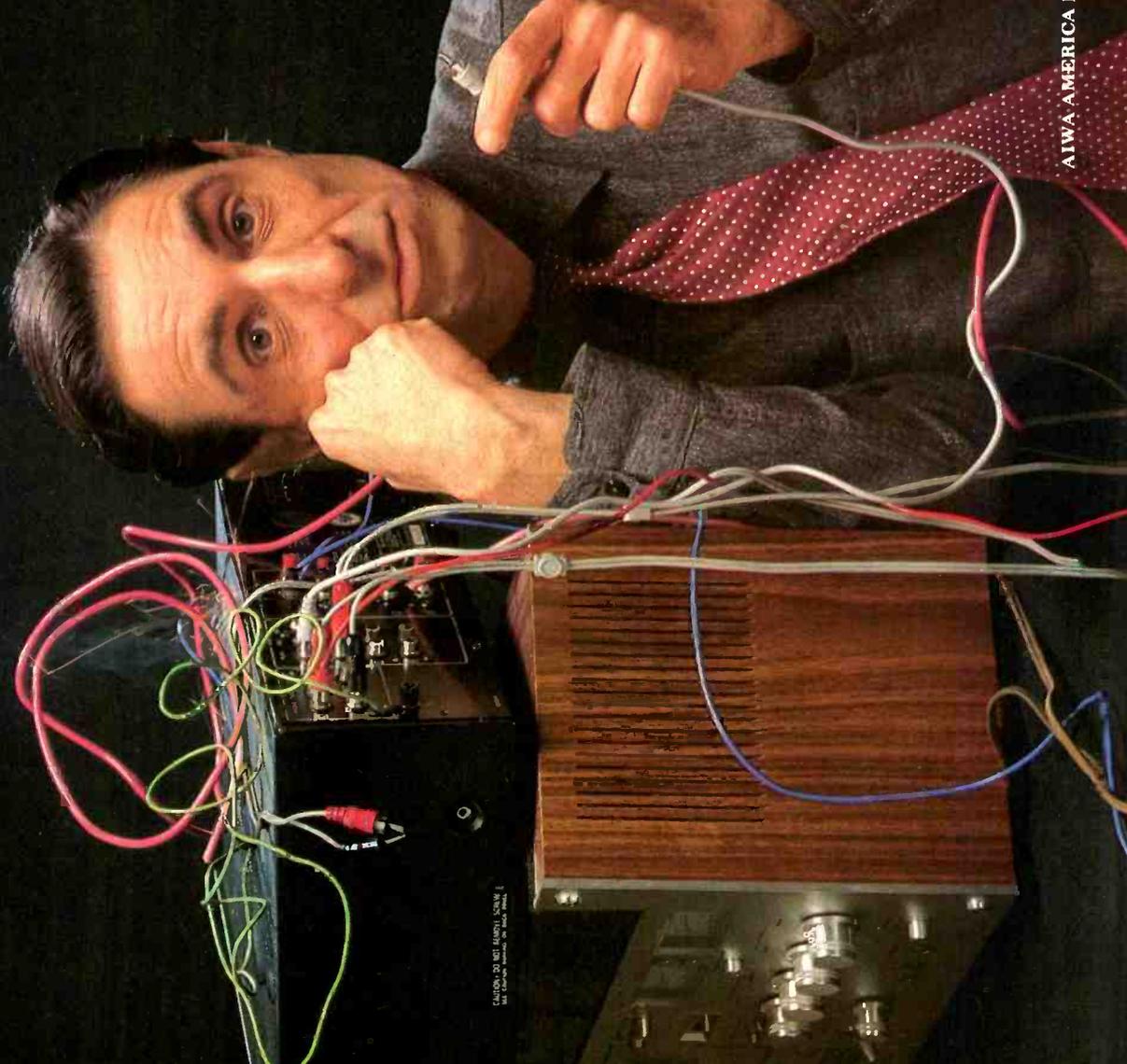


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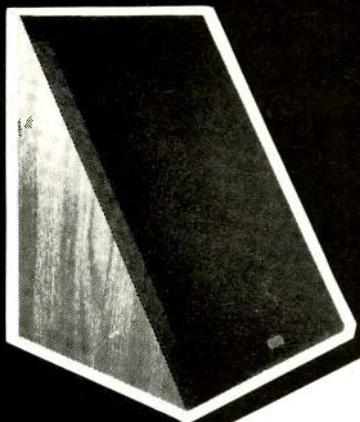


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"For devotees of Pink Floyd, this CD will be pure rapture. This, of course, is one of their sonic blockbusters."

tremely strident. Whereas in the Beethoven 5th the contrabasses were clean and well-focused, in this recording they are lumpy and amorphous. Tympani suffer as well, having little impact and poor articulation. More is the pity, for Suitner gives a good, solid, well-paced performance which is quite attractive. Perhaps the Beethoven 5th and 7th were made by two different recording engineers. The overall recording approach was the same for both symphonies, but something really went wrong on this 7th. *Bert Whyte*

**Mendelssohn-Bruch:** Violin Concertos. The Berlin Philharmonic, Herbert von Karajan; Anne-Sophie Mutter, violin.

**Deutsche Grammophon 400 031-2, \$17.95.**

These popular violin concertos serve as good display pieces for one of the new whiz kids of violin playing, Anne-Sophie Mutter.

Mutter's performance of these works leaves no doubt about her virtuosity. She can double-stop in the cadenzas on a par with most of the big name virtuosos. Miss Mutter receives a well-balanced accompaniment from von Karajan. The recording perspective is well chosen, with the violin forward in balance, but not overly prominent, as in so many violin concerto recordings. Miss Mutter's violin tone is clean and fairly smooth, but, alas, in the first and second violins of the orchestra, we once again encounter the shrillness and stridency which mar so many CD recordings. As usual the absence of noise is wonderful, but this only highlights the unfortunate discrepancies in the recording. *Bert Whyte*

**Wish You Were Here: Pink Floyd.  
CBS CK 33453.**

This, of course, is one of the Pink Floyd sonic blockbusters. On "Shine On You Crazy Diamond" and "Welcome To The Machine" all the special effects, the stunning synthesizer work, especially in the sub-bass region, are all there, perfectly transferred from the multi-tracked analog master. Yes, there is a residue of tape hiss, but it hardly matters in this case. The sound is quite clean with great impact and



*Pink Floyd*

sonority. For devotees of Pink Floyd, this will be pure rapture. Without any groove-tracking problems and a complete absence of acoustic feedback, they can use playback levels limited only by their amplifiers, speakers, the threshold of pain, and the police.

*Bert Whyte*

**Stravinsky: Petrouchka (1911).** The London Symphony Orchestra, Claudio Abbado.

**Deutsche Grammophon CD 400 042-2, digital.**

Performance: A      Recording: B+

This is an excellent performance, with good to very good orchestral playing. By and large, the internal orchestral balances are very good and the orchestral image is okay, although variable, due to the way multi-miking distorts the perspective. This is especially true of Leslie Howard's piano miking, which tends to move the piano forward and back as the level is changed, making it sound at times as if it were playing in a different room. The brass tuttis and fortes also have a harsh, distorted edge to them and the bass drum is unrecognizable as such, since the extreme bottom end is entirely missing in this recording. On the other hand, this CD contains what I think is the lowest level pianissimo I've ever heard on a record. The analog version was not quite as good as the CD, having more limited dynamics and a slightly more strained sound in the fortes. The basic characteristics of the recording, however, remained, although the overall clarity of the CD won hands down. *C. Victor Campos*

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**GENERAL INFORMATION**—Ad copy must be type-written or printed legibly. The publisher, in her sole discretion, reserves the right to reject any ad copy she deems inappropriate. **ALL ADVERTISERS MUST SUPPLY:** Complete name, Company name, Full Street address (P.O. Box numbers are insufficient) and telephone number. Classified **LINE ADS** are not acknowledged and do not carry Reader Service Card Numbers. **AGENCY DISCOUNTS** do not apply to line advertising. **FREQUENCY DISCOUNTS** not fulfilled will be short rated accordingly. Only those advertisers who have prepaid for their entire contract time will be **RATE PROTECTED** for the duration of that contract, in the event of a rate increase. For any additional information contact Laura J. Lo Vecchio, Classified Adv. Mgr., 1515 Broadway, New York, NY 10036... Direct Dial (212) 719-6338.

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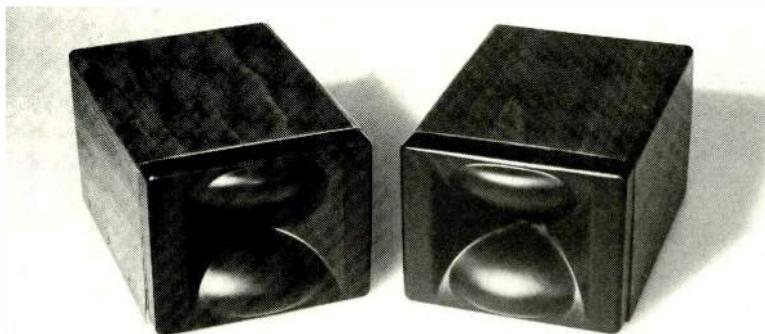
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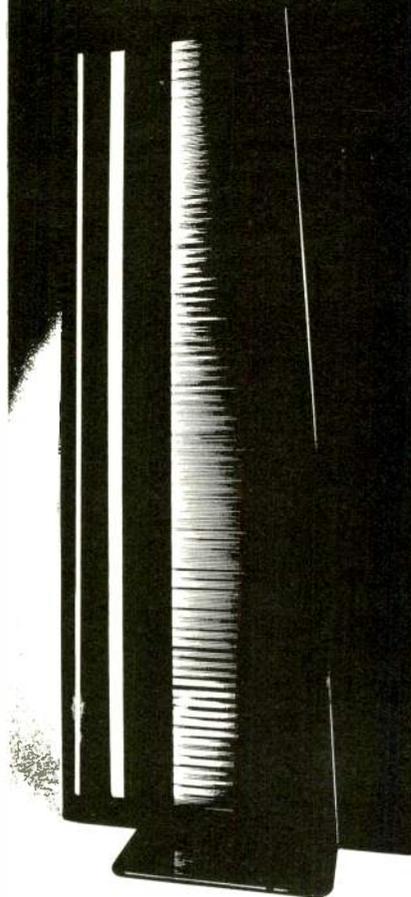
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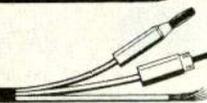
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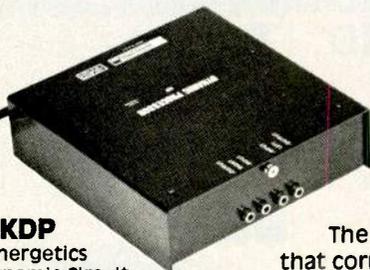
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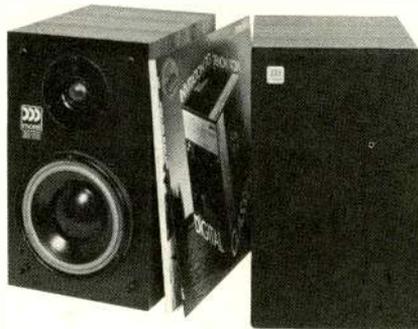
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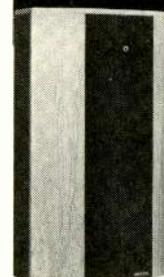
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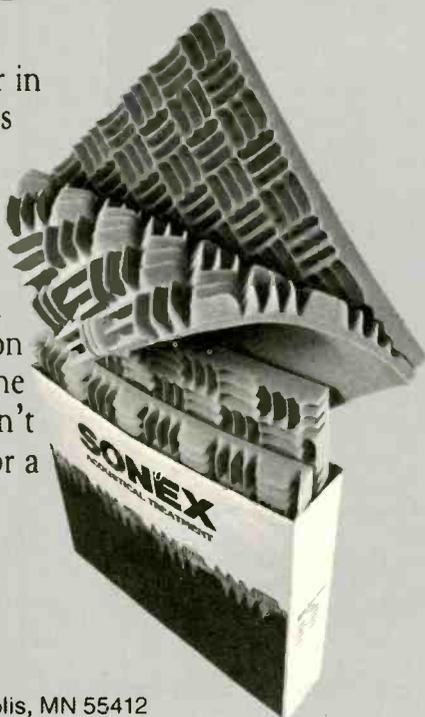
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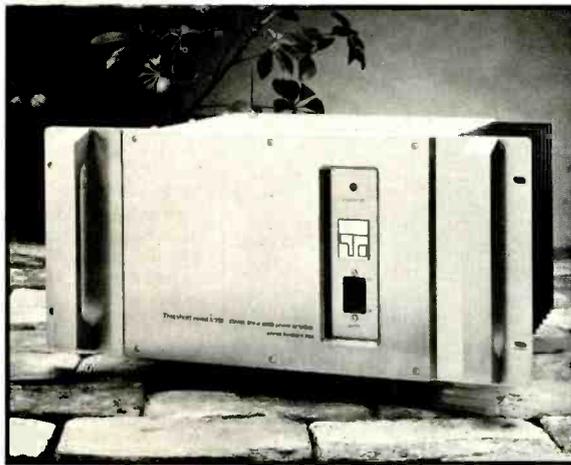
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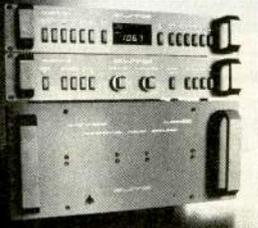
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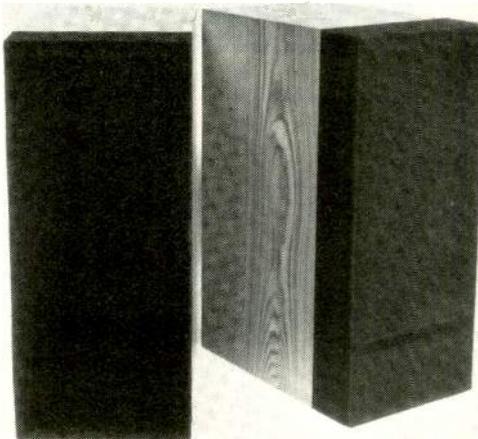
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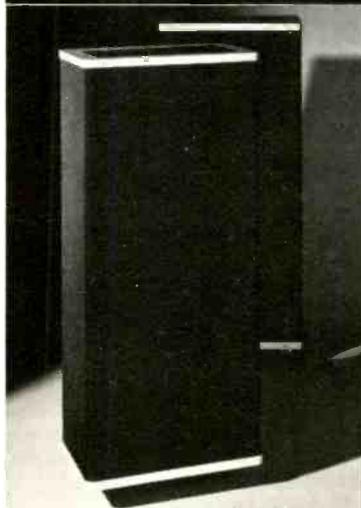


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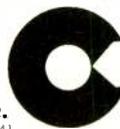
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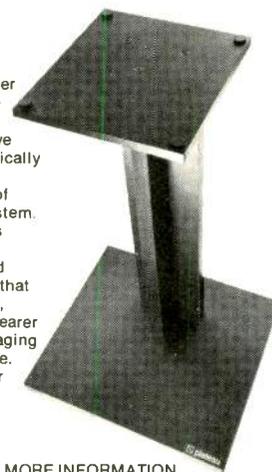


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# AD INDEX

Firm (Reader Service No.)	Page
Acoustic Research	145
ADC (68)	173
Adcom (46)	80
Aiwa (82)	193
Alfa-Romeo	136
Ameritech (52)	101
APT (75)	187
Audio-Technica (48)	87
Audiophile Systems (19)	24
AudioSource (65)	170
B & W Loudspeakers (67)	172
BASF (16)	19
BES (71)	178
B & K Components (50)	92
Boston Acoustics (64)	169
Bryston Manufacturing (74)	186
Camels	89
Carver Corp. (5)	7
Celestion (27)	38
Cerwin-Vega (29)	40
Crutchfield (72)	185
Dahlquist (57)	134-135
D'Ascanio (21)	27
dbx	147
Denon (31, 32, 33, 34, 35, 36)	44-49
Design Acoustics (89)	151-154
Dual (42, 43, 44)	75-78
Dynavector (45)	79
Empire Scientific (47)	85
Fisher (60)	159
Harman/Kardon	65
Hitachi (84)	221
IMF (62)	166
Infinity (61)	160
J & R Music World	220
JBL (59)	157
JVC (56)	133
KEF (4, 63)	5, 167
Kyocera (49)	91
LaBelle	195
McIntosh (51)	101
Magnepan (20)	25
Maxell (22)	28
Michelob	50
Mitsubishi (17)	34-35
Nakamichi	106-119
NEC (1)	Cov. II & 1
Pioneer (40)	67
Polk (77)	188
Proton	3, 175
Quad (18)	23
Revox (38)	61
Robertson Audio (80)	191
SAE (73)	186
Salems	120
Sansui (3)	4
Shure Bros. (70)	177
Signet (66)	171
Singer Products (53)	102
Sony (37, 78, 85)	52, 189, Cov. III
Soundcraftsmen (6, 7, 8, 9, 10, 11, 12, 13, 14, 15)	8-17
Spica (79, 81, 83)	190, 192, 194
Stanton (55)	125
Stax Kogyo (28)	39
Stereo Corp. of America (54)	125
St. Pauli Girl	31
Studer-Revox (38)	61
Sumiko (69)	76
Tandberg (58)	148
TDK (30)	43
Technics (23, 24, 25, 26, 86)	32-36, Cov. IV
Visonik (76)	187
Warner/Elektra/Atlantic	179-184
Yamaha	223

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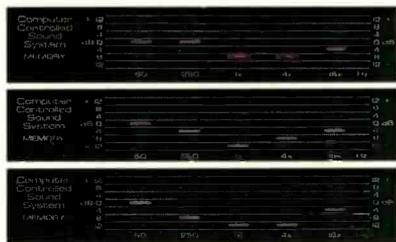
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And, since Beta Hi-Fi also lays down a standard monaural track, it's fully compatible with existing Betamax equipment and Beta videocassettes.

But don't just take our word for it; experience it for yourself at your nearest Sony dealer.

Beta Hi-Fi. It's like nothing you've ever seen... or heard.



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# To eliminate the major flaws of cone-shaped speakers we created speakers without a cone. Technics Honeycomb Disc Speakers.

One of the unfortunate aspects of the conventional audio speaker is the speaker design itself: a cone-shaped diaphragm that performs with undesirable dips and peaks in frequency response. The result is reproduction that can be less than accurate.

Technics has eliminated this problem by eliminating the cone. Instead Technics uses an ingenious, flat speaker called the Honeycomb Disc. This flat Honeycomb Disc is extremely rigid and lightweight. So it responds quickly and with superb accuracy to the most delicate or the most dynamic musical signal. And can handle a wider range of frequencies than conventional speakers without creating distortion.

Another problem of conventional speakers is that each speaker cone is mounted at a slightly different distance from your ears. So you hear each musical frequency at a slightly different time.

But the revolutionary design of the Technics flat Honeycomb Disc ensures precise speaker alignment. You hear the musical frequencies the way you're supposed to: all at the same time.

In fact, Technics Honeycomb Disc Speakers are so well engineered, they achieve Waveform Fidelity: the speaker output signal is virtually a mirror-image of the input signal.

And because of this Honeycomb Disc technology, these speakers are capable of reproducing the exceptional sound of digital recordings.

But perhaps best of all, the price of all this technology is remarkably modest.

Hear how eliminating the speaker cone can add to your music. Experience the startling fidelity of Honeycomb Disc Speakers from Technics.



**Technics**  
The science of sound