NEW PRICES, SPECS! 4,500 Home & Car Components

HIGH FIDELITY'S Buying Guide to Stereo Components®

1981 Edition

$3.95
ICD 08403

6 Critical Steps In Buying A Stereo System

HOW TO:

- **Purchase the Perfect Receiver**
- **Select Superlative Speakers**
- **Track Down a Top Turntable**
- **Find Superior Tape Deck Values**
- **Determine the Correct Tape**
- **Choose an Excellent Amplifier**

PLUS

Buying Home Video

Car Stereo Shopping

At-Home System Repairs

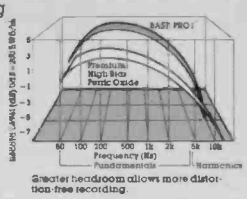
0 74820 08403 15

The Tape Guide

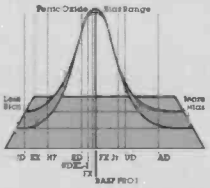
Professional·I. The one tape that stands up when you crank it up.

BASF 90 professional·I normal (norm) position

Premium ferric oxide tapes have more headroom which allows higher maximum recording levels (MRL). Among all premium ferric oxides PRO I has the best MRL for loud recordings. Uniform maghemite particles provide increased headroom for very accurate and loud recordings with virtually no distortion. In the fundamental music range (20Hz-5kHz) PRO I can be recorded louder and driven harder than even high bias tapes. PRO I is the internationally accepted reference tape, whose bias point is specifically matched to the Type I/normal/ferric position on today's high quality cassette decks.



Greater headroom allows more distortion-free recording.

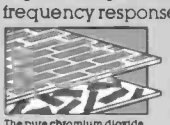


PRO I is designed to be compatible with the normal bias setting of most cassette decks than any other ferric tape.

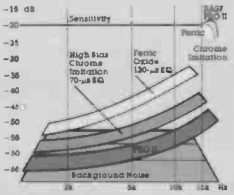
Professional·II. The world's quietest tape puts nothing between you and your music.

BASF 90 professional·II chrome/high (CrO_2) position

High bias tapes consistently provide wider frequency response and less tape noise (hiss or background noise) than any other tape type. Among premium high bias tapes PRO II is in a class by itself. It is the second generation chromium dioxide tape with superb frequency response and outstanding sensitivity in the critical (10kHz-20kHz) high frequency range. It also has the lowest background noise of any other competitive tape available today.


The pure chromium dioxide particles in the PRO II, unlike ferric oxide particles, are homogeneously shaped and universally sized to give this tape superior performance.

PRO II will capture the many subtle harmonics of the most demanding recordings and play them back with the reality and presence of a live performance. PRO II is the tape for the Type II/chrome/high bias position that comes closest to Metal tape performance for half the price.

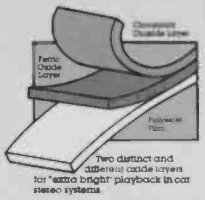


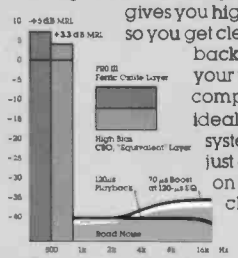
PRO II has the best high frequency sensitivity and the least background noise of any high bias tape.

Professional·III. The only car tape that eliminates the car.

BASF 90 professional·III ferrichrome (FeCr) position

Ferrichrome tapes combine the benefits of chromium dioxide and ferric oxide tapes for superior performance in car stereos. The top layer is pure chromium dioxide for unsurpassed highs and low background noise. The bottom layer is ferric oxide for superior lows and great middle frequencies. And it also gives you higher recording levels, so you get clearer, louder playback without cranking up your volume control to compensate. PRO III is the ideal tape for car stereo systems and performs just as well in the home on the Type III/ferrichrome position.

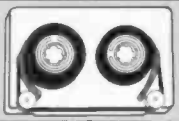




PRO III provides a higher maximum recording level (MRL) than high bias tapes, and effectively boosts the highs to overcome road and car noise.

GUARANTEE OF A LIFETIME

"The guarantee of a lifetime." All BASF tape cassettes come with a lifetime guarantee that covers everything. Should any BASF cassette ever fail—for any reason—simply return it to BASF for a free replacement.



Patented "Jam-Proof" Security Mechanism (SM). All BASF tape cassettes come with our exclusive SM—Security Mechanism. Two precision arms actually "guide" the tape in a smooth, exact and consistent track, so that winding is always even, no matter how often the cassette is played. SM puts an end to tape jamming.

BASF

Crosby Drive, Bedford, Massachusetts 01730

CIRCLE 5 ON READER-SERVICE CARD

KOSS THINKS THIS KIND OF SOUND WEIGHS 385 GRAMS MORE THAN SONY DOES.

The MDR-7 Sonyphones deliver the same extra-wide frequency response as the Koss Pro/4 headphones.

The MDR-7 Sonyphones deliver all the smoothness, crispness, depth and tonal color Koss built a business on.

But unlike Sony, it takes our competition 440 grams of metal and molded plastic to do it. That's almost a pound.

On the other hand, MDR-7 Sonyphones weigh 1.9 oz.

And the MDR-5a, MDR-3 and MDR-2 Sonyphones are even lighter.

In short, with Sonyphones, a new generation of headphones is born. Sonyphones mean the end of sacrificing great sound to comfort. Or great comfort to sound.

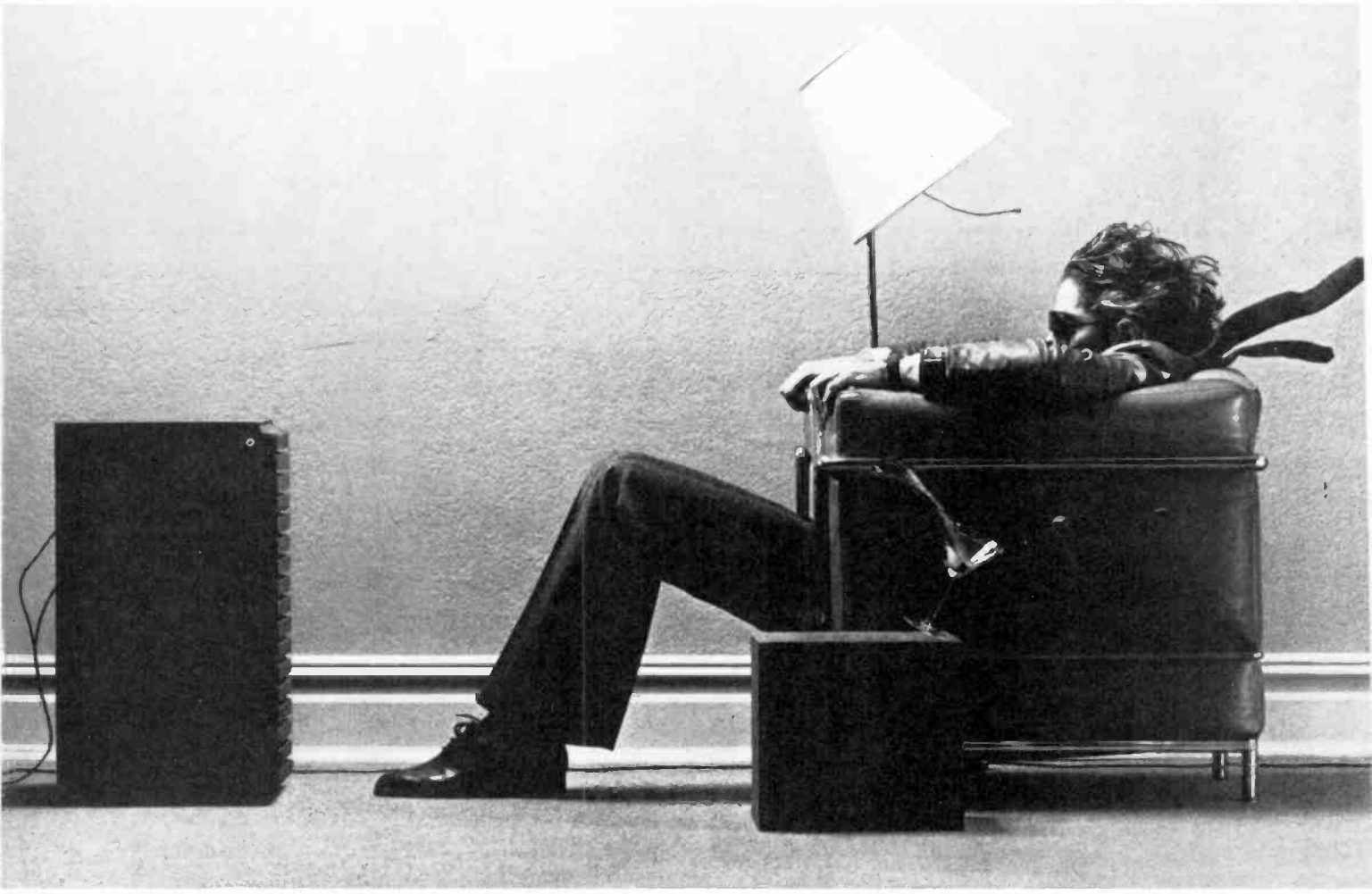
Because never before has so little weight delivered so much sound.

Sonyphones by Sony.

SONY
Professional Audio

CIRCLE 14 ON READER-SERVICE CARD

AFTER 500 PLAYS OUR HIGH FIDELITY TAPE STILL DELIVERS HIGH FIDELITY.



If your old favorites don't sound as good as they used to, the problem could be your recording tape.

Some tapes show their age more than others. And when a tape ages prematurely, the music on it does too.

What can happen is, the oxide particles that are bound onto tape loosen and fall off, taking some of your music with them.

At Maxell, we've developed a binding process that helps to prevent this. When oxide particles are bound onto our tape, they stay put. And so does your music.

So even after a Maxell recording is 500 plays old, you'll swear it's not a play over five.

IT'S WORTH IT.

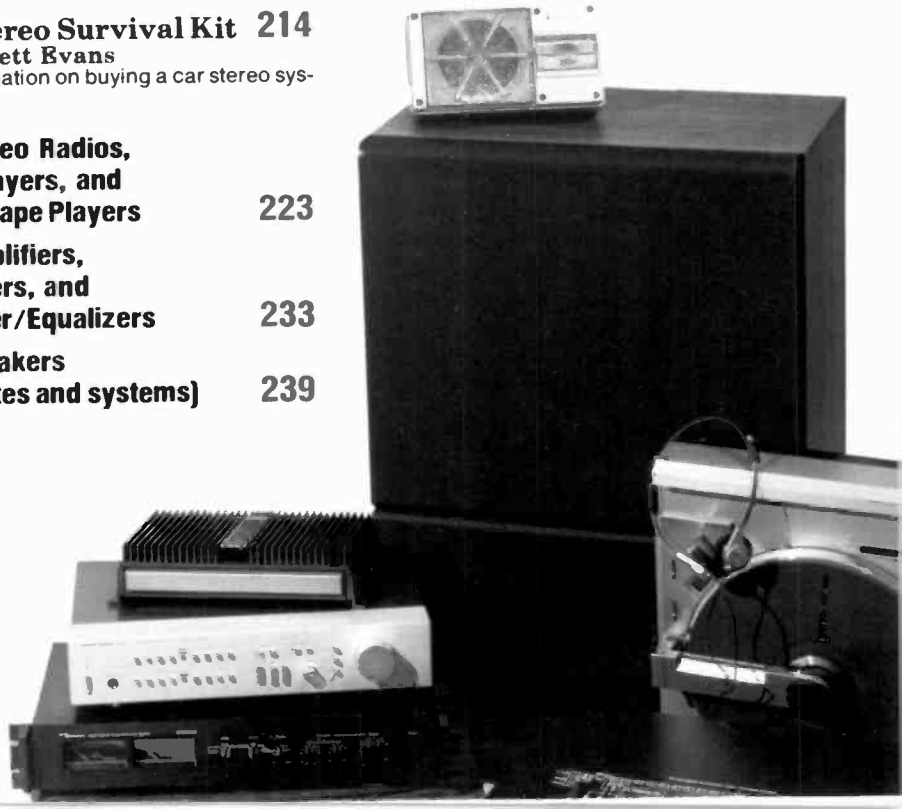
Maxell Corporation of America 60 Oxford Drive, Moonachie N.J. 07074

CIRCLE 11 ON READER-SERVICE CARD

HIGH FIDELITY'S

Buying Guide to Stereo Components

1981 Edition



About This Issue

Assembling a stereo system takes time. While an increasing number of manufacturers do offer the option of buying a complete, single-brand system, many of you will still prefer to make your own decisions on individual components. With this in mind, in this, our third annual edition of HIGH FIDELITY'S BUYING GUIDE TO STEREO COMPONENTS, our writers and editors have focused on what we believe are six critical steps in buying a stereo system.

Certainly the heart of most systems is the receiver. In "The System Centerpiece," Edward J. Foster, consulting audio editor for HIGH FIDELITY and technical editor for its sister publication, STEREO, points out which specs are most meaningful and which are of secondary importance. Then Foster teams up with Michael Riggs, former editor of the Boston Audio Society's journal and frequent contributor to HIGH FIDELITY to highlight the important considerations in matching the three elements of a phono system—turntable, tonearm, and cartridge—in "The Secrets of Golden Sound."

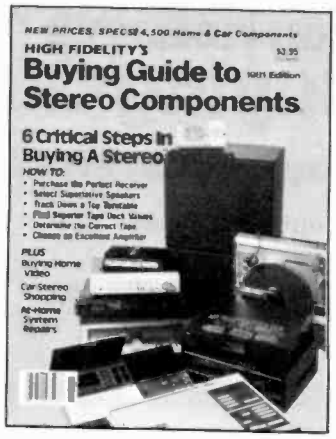
If tape recording is included in your plans, be sure to read Foster's article on "A Deck for Every Whim," where he singles out the truly significant features to look for. In a follow-up piece, "Choosing a Cassette Tape," he tells you how, depending on the particular recording situation. And, of course, what would your system be without speakers? One problem is determining which of the more than 1,000 models you want. Foster, who also conducts many test reports for both HIGH FIDELITY and STEREO, and who has listened to hundreds of speakers over the years, outlines which designs will give you the most satisfying sound in "Buying Speakers?" Complementing this article is one by HIGH FIDELITY contributor Norman Eisenberg, who offers a selection of functional and enjoyable recordings in "8 Great Ways to Judge Speakers." Finally, for those of you who really prefer separates, Riggs returns with some ideas on how to "Pick the Perfect Amp," including *tube* models.

Three special articles are also included. In the first, STEREO's regular columnist, Alexander N. Retsoff ("Retsoff's Remedies"), tells how to diagnose and cure problems that commonly occur with stereo systems in "Troubleshooting Tips." Then Bennett Evans, a regular contributor to STEREO, opens his "Car Stereo Survival Kit" to offer you a complete guide to buying a *car* stereo system. Evans also explains all the new home video systems in "Home Video: What You Need to Know."

As usual, the bulk of HIGH FIDELITY'S BUYING GUIDE TO STEREO COMPONENTS is its special buying guide section. This year's is the most complete ever, with prices on more than 4,500 home, car, and video products, and complete specs on more than 3,000 of them. And we've expanded our Systems Accessories section to include special listings for tape care, phono care, speaker systems, car stereo systems, and video accessories. In addition, to help you understand the terminology used both in the buying guide and in the articles, we've provided a glossary that explains many of the most commonly used terms.

We trust you'll find this year's edition a valuable buying guide/reference.

—WT



Cover equipment (clockwise from top): Fujitsu Ten Tenvox SSB-4B39F car speaker system; Electro-Voice Interface: C Series II speaker; Sony MDR-3 headphone; Mitsubishi LT-5V turntable; Philips AH-180 tuner; Onkyo M-5060 power amplifier; Pioneer VP-1000 Laser Disc videodisc player; Bang & Olufsen Beocord 8000 cassette deck; Luxman 1120A receiver; Nakamichi High-Com II noise-reduction system; Harman Kardon hk-725 preamplifier; Kenwood KAC-801 car stereo power amplifier.

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WE DON'T FIGHT YOUR SYSTEM. WE JOIN IT.

Steremote brings total entertainment into every room of your home.

Until now you could listen to music in only one or two rooms at a time. Now you can enjoy music throughout the house. Steremote integrates all your existing components (including your speakers), giving you remote control over them from anywhere in your home. It's control at a touch. From any room. The kind of control you've never had before. All through the portable Steremote control unit that plugs into any AC outlet.

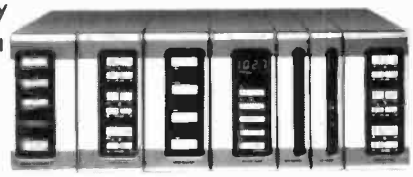
If your system is good enough for you, it's perfect for Steremote.

Your system may consist of just a receiver and turntable. Or it may include a cassette recorder, open reel, TV and video deck. By joining them with Steremote you'll be entertained in more ways than you've ever thought possible. One touch lets you play records, tapes, even change FM stations.

You can also take in a video performance. With Steremote control, you can switch rooms and change music. Keep different tunes for different rooms. Or fill the house with one beautiful performance. The Steremote choice is limitless.

How many modules make a Steremote?

You decide. Steremote offers you a selection of modules (six shown), each with a specific remote control capability. By combining them you can control every component in your system. You can record, play back, walk around, lay back. Change rooms and moods at will. For more flexibility just add a module and you can expand your musical environment to as many as nine rooms. Basically, it will be your system. Plus Steremote. Plus a lot of fun.



How to join.

Call any of the better high fidelity stores in your area. They'll help you select the Steremote modules best suited to your needs and show you how to install them in minutes. Call now. Don't fight it. Join it.

YOUR SYSTEM PLUS STEREMOTE

Steremote Inc., 1845 Utica Avenue, Brooklyn, N.Y. 11234
212-241-3500

CIRCLE 17 ON READER-SERVICE CARD

The Sound of Koss is no longer something you have to keep to yourself.

You no longer have to limit your listening to stereophones to enjoy the incredible Sound of Koss. Because now you can get the optimum loudspeaker system, and the Sound of Koss, in any Koss CM series system you choose.

KOSS CM 1010

Here's the ultimate 2-bandpass system. The Koss CM 1010 has a unique passive radiator to enhance the lower two octaves of bass. As well as a special 8-inch woofer to increase the midrange frequency response up to 3500Hz.

And with the CM 1010's 1-inch dome tweeter, you get the highest energy output, and lowest distortion, of any tweeter on the market.

KOSS CM 1020

No three bandpass loudspeaker system currently available offers the benefits of the Koss CM 1020. Its dual ports improve cabinet tuning and structural stability. And its 10-inch woofer provides a 3db gain in efficiency, as well as flat response over the lower bandpass. In addition, the CM 1020 uses a 4½-inch midrange driver to capture all the energy and presence of this critical bandpass. And the CM 1020's unique 1-inch dome tweeter produces the highest energy output and lowest distortion of any tweeter currently available. Indeed, the Koss CM 1020 is the 3-bandpass loudspeaker system you really have to hear to believe.

KOSS CM 1030

The Koss CM 1030 represents the ultimate in 4-bandpass loudspeaker systems. It includes a 10-inch woofer, mass aligned dual port system, a parallel midrange system with two 4½-inch drivers, and both a tweeter and a 1-inch treble tweeter that feature a unique acoustic transformer. Each has been carefully and specifically designed to produce the optimum spectral characteristics of their respective bandpass.

Uniting the CM 1030 into a total system that represents the ultimate in loudspeaker technology, is a unique, quasi second-order crossover network. In all, the CM 1030 is so amazing, no other 4-bandpass system even comes close in bass, midrange or high bandpass performance.

KOSS CM 530

Setting entirely new standards for bookshelf speakers is the Koss CM 530. Whether you place them horizontally or vertically, they deliver perfect mirror imaging, an incredible degree of dispersion, and the breathtaking Sound of Koss.

KOSS PRO 4/TRIPLE A

Write us, c/o Virginia Lamm for a free copy of our full-color loudspeaker catalog. And when you visit your audio dealer to hear the incredible Sound of Koss loudspeakers, take an extra moment for a private listening experience with the

world famous Koss Pro/4 Triple A. Once you've heard the Sound of Koss for yourself, you'll know why hearing is believing.

KOSS® stereophones/loudspeakers

hearing is believing™

KOSS CORPORATION, 4129 N. Port Washington Ave., Milwaukee, Wisconsin 53212 International Headquarters Milwaukee facilities: Canada · France · Germany · Ireland

Glossary

AFC Automatic Frequency Control (AFC) is a common feature of FM tuners. The circuit senses any tuning error and corrects it by shifting the local-oscillator frequency. An overly aggressive AFC may lock onto the stronger of two stations on adjacent channels precluding the reception of the weaker one. A similar circuit is found in many TV sets, where frequently it is called AFT (automatic fine tuning).

AM Rejection More correctly called AM suppression, this is a measure of an FM tuner's ability to ignore amplitude modulation of the signal it is receiving. Amplitude modulation may occur because of multipath-reception conditions and/or atmospheric disturbances. Ignition "noise" also is AM in nature. The better the AM suppression of the receiver (the higher the value), the quieter and cleaner the reception will be under these conditions.

Amplifier Classes Engineers categorize amplifier circuitry into "classes" based upon the portion of the cycle during which current flows through the output devices. In a Class-A design, current flows through each output device throughout the entire signal cycle. Distortion is low but so is the efficiency, and a Class-A design is generally relegated to low-level stages or to power amps of relatively modest capability. In a pure Class-B amplifier, current flows through each transistor for 50% of the cycle, shifting between the transistors depending upon the polarity of the signal. Efficiency is relatively high, and the amplifier idles (without signal) with no current drain. Because of the nonlinear operation of the transistors at low currents, a Class-B amplifier generates a good deal of distortion when handling small signals.

Class AB is a hybrid of the above two classes and is the most common class of high-fidelity output circuitry. The transistors are idled at some "bias" current to make them more linear. Small signals are handled in essentially Class-A operation; large signals are handled in a way closely akin to Class B. The efficiency is better than Class A but not quite so good as Class B.

In Class C, current flows for less than half the cycle. Efficiency is very high, but so is distortion, and this class is not used in high-fidelity circuitry. Class D designates a "switching-amplifier" design. The output transistors are either completely on or completely off and are controlled by digital-like pulses. In such a design, the control pulses are generated from the audio signal, and the signal must be reconstructed from the pulses subsequent to amplification. The signal itself is not handled in "analog" fashion.

Classes G and H refer to new designs by Hitachi and Soundcraftsmen, respectively. Each design attempts to increase the efficiency of Class-AB design *when handling typical music signals* by improving the dynamic headroom of the traditional design. Technics' Class-A + design attempts the same for Class-A circuitry.

Automatic Noise Limiter This may refer to any circuitry whose objective is to provide quieter reception. A common technique to minimize noise that results from a weak stereo signal is to blend the high-frequency portions of the two channels into a quasi-mono condition.

Azimuth The azimuth angle is that formed between the magnetic gap of a recording or playback head and a line drawn parallel to the centerline of the tape. The gap line should be exactly perpendicular to the length of the tape.

If the recording- and playback-head gaps are not aligned properly (parallel to each other), high-frequency losses occur. The amount of loss is a complex function of track width and tape speed (as well as of frequency). The greater the track width and/or the slower the tape speed, the more critical azimuth alignment becomes for a given frequency. Suffice it to say that, in a cassette recorder, an azimuth misalignment of only 1/10 degree will cause a loss of more than 1 dB at 15 kHz, and that an error of ¼ degree would produce a loss of more than 8½ dB. The losses would increase quickly to greater than 2 dB and 22½ dB, respectively, at 20 kHz.

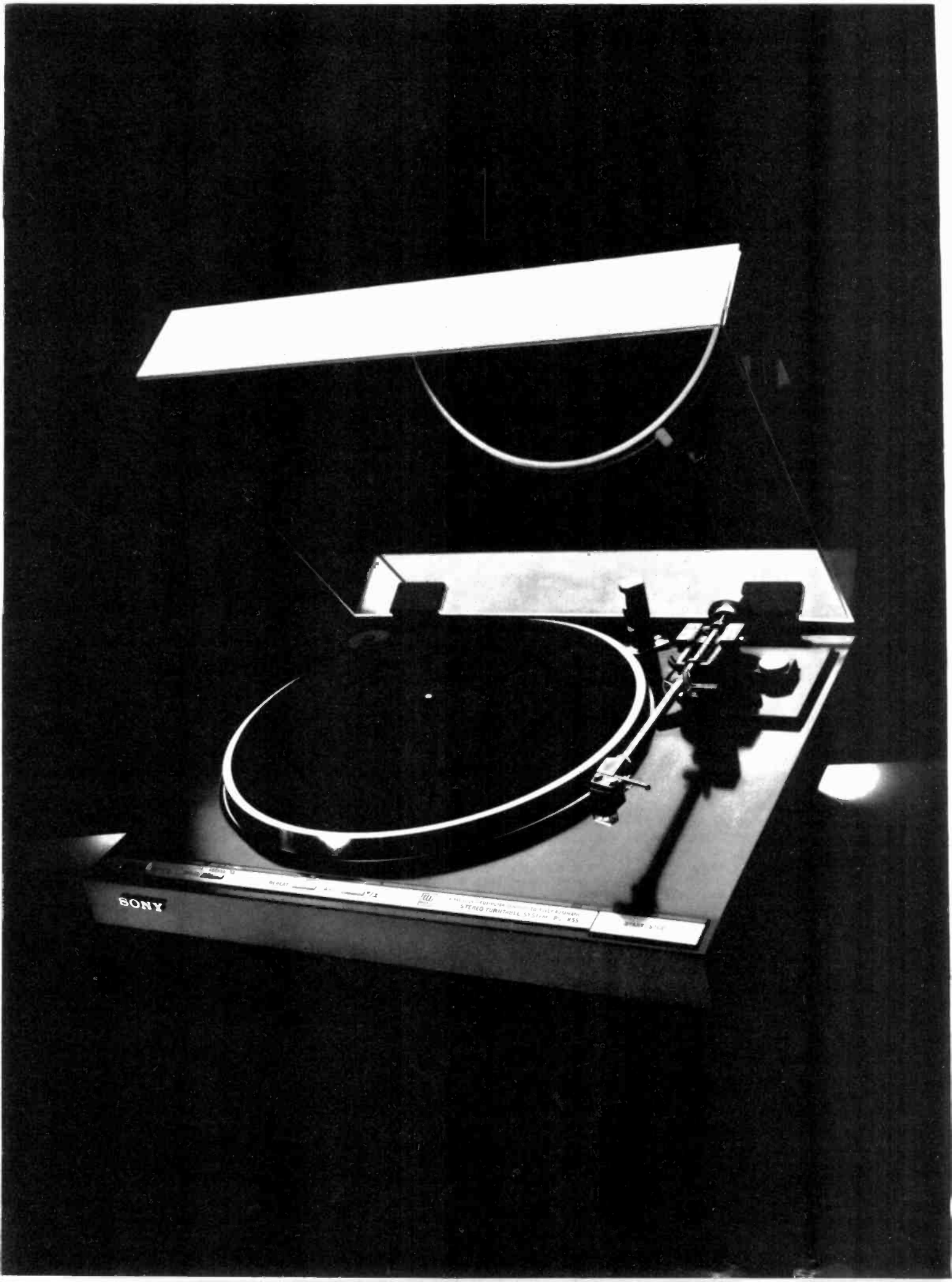
Actually, as long as the recording and playback magnetic gaps are *parallel*, no loss will result *for tapes recorded and reproduced on the same deck*. In order that tapes be interchangeable from deck to deck, however, it is necessary to adhere to the standard perpendicular orientation. For this reason, occasionally a deck can record and play its own tapes very well but has poor response to our test tape. This usually indicates azimuth misalignment and tapes made on that deck would not play equally well on other decks.

Biamplification With biamplification, or biamping, the musical spectrum is divided into two segments—bass and treble—by electronic filters prior to the power amp. Each segment is amplified separately to reduce intermodulation distortion and provide extra power. The low-frequency amplifier drives the woofer; the high-frequency one, the tweeter. No speaker-crossover network is needed.

Bias In tape-recorder parlance, "bias" is an ultrasonic signal added to the audio signal prior to recording. The bias is required to linearize the recording process and so reduce distortion. Different tapes require different bias levels to achieve optimum performance.

Booster This frequently refers to an add-on power amplifier with greater output capability than that included in typical car radios. Since the booster is driven by the radio's own amplifier, any distortion in the latter is amplified equally with the signal.

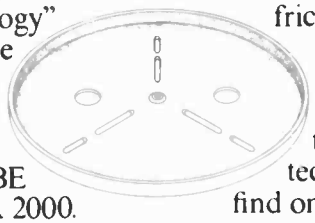
A booster may also refer to an RF amplifier used between the antenna and the receiver to increase the signal strength. Such


SONY

SONY ELIMINATES THE MOST DISTURBING VARIABLES IN TURNTABLE PERFORMANCE, STARTING WITH THE WAY IT TURNS.

At Sony, our commitment to being #1 in hi-fi didn't stop with the reinvention of the receiver.

By applying "Total System Technology" we've eliminated the headaches that plague the turntable. And developed the first state-of-the-art turntable that won't put you in a state of bankruptcy. The PS-X55.



A DRIVE SYSTEM THAT'LL BE ACCURATE BEYOND THE YEAR 2000.

In order to insure your records turn at the prescribed speed, utterly smoothly and without fluctuation, Sony has improved its already advanced direct-drive system with an electronic speed-control circuit that works like a quartz watch.

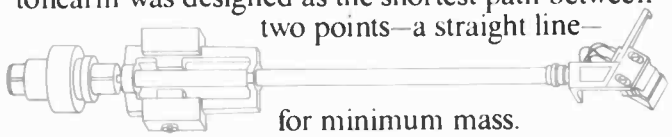
This gives the X55 up to 10 times more speed monitoring "pulse points" than competitive models, so it can better compensate for wow and flutter. We call this system "quartz-lock Magnedisc servo control." The audiophiles call it brilliant.

And unlike direct-drive motors found in competitive turntables, the X55's is both brushless and slotless. Which means it's even more accurate.

A NEW ANGLE ON THE TONEARM. STRAIGHT.

Sony engineers have paid meticulous attention to the X55's tonearm and its suspension.

Instead of the conventional shapes, the X55's tonearm was designed as the shortest path between two points—a straight line—



for minimum mass.

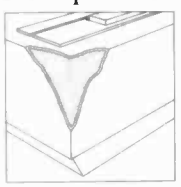
Minimizing mass maximizes compatibility with the widest range of cartridges, including the most advanced high-compliance types.

The tonearm pivot is supported in two places, not one. So it's virtually free of tonearm resonance, friction and side play.

And to let the platter motor do its job without interference, the X55 even has a separate motor that operates the tonearm during its automatic cycles. A technological advancement that's hard to find on any turntable at any price.

THE STANDARD BY WHICH ALL BASES WILL BE JUDGED.

Instead of using an inexpensive plastic, wood or cast-aluminum base, like many of our competitors, the X55 is made of a Sony-patented inorganic "Bulk Molding Compound," which sharply reduces feedback.



And because loudspeakers produce vibrations that can be transmitted to the turntable through its feet, Sony created special gel-filled feet which absorb energy so effectively that the X55 will perform flawlessly even when your music is loud enough to rattle the walls.

Yet the X55's advancements don't stop here. A special muting device eliminates the "pop" that normally occurs when the stylus touches down or lifts up—something you'll particularly appreciate when transferring records to tape. There's even an electric eye that automatically measures the disc size.

But the bottom line is this. Once you compare the Sony X55 for specifications, features and price, you'll come to an inescapable conclusion. There's only one thing you need to know about high fidelity.

It's Sony.

SONY.
High Fidelity

FEATURES AND SPECIFICATIONS: Fully automatic direct-drive turntable system/Linear BSL motor/Quartz-lock Magnedisc servo speed control/Electromagnetic braking/Sony Bulk Molding Compound anti-resonance base/Low-mass Duralumin tonearm/Logic IC function sequencing/Discrete tonearm servo motor/Speed accuracy ± 0.003%/Wow and flutter (WRMS) 0.025%/Rumble (DIN B) −78 dB/Effective tonearm mass 8 grams.

CIRCLE 15 ON READER-SERVICE CARD

a device frequently is called an "antenna booster."

Capture Ratio FM tuners have an ability to lock onto or "capture" the stronger of two signals on the same channel and suppress the weaker by an amount far greater than the difference in input signal strengths would imply. A tuner's capture ratio is a measure of how much stronger the one signal must be to suppress the weaker one by 30 dB. The smaller the capture-ratio figure, the better. Capture ratio is important for good reception under multipath conditions.

Clipping A modern transistor amplifier usually is able to handle signals, from very small levels up to its rating, with very low distortion. After the signal level exceeds the rating, a point is reached where the amplifier runs out of voltage or current capability, and the peak excursions of the signal are "clipped" off, generating tremendous distortion. This "clipping point" is an indication of the absolute maximum capability of the amplifier.

Although clipping usually occurs in an amp's output stages (where the signal is greatest), certain low-level input stages that precede the volume control can also clip. This happens most frequently with microphone and phono preamps, and the input level that causes this clipping determines the input-overload point of the amp. Once clipping has occurred in any input circuit that precedes the volume control, the sound will be distorted at *any* volume setting.

Coercivity This is a magnetic property that indicates the magnetic force required to reduce a material that has previously been magnetized to saturation to zero magnetization. In a magnetic tape it indicates how difficult it is to record on the tape, and, more importantly, how immune the magnetic pattern is to self-erasure. In general, high-coercivity tapes—such as chrome, chrome-equivalents, and metal—have a greater ability to retain the short-wavelength magnetic patterns that high-frequency/slow-speed recording demands.

Coercivity is measured in "oersteds"; typical values for magnetic tape are 250 oersteds (for ferrics), 550 oersteds (for chrome types), and 1,000 oersteds for the metals. For a given coating thickness, the greater the coercivity, the greater the bias and record current required to impress the magnetic pattern—and the greater the erase field needed to remove it.

Compander This is an abbreviation for "compressor/expander." Compressors and expanders are built around amplifiers whose gain can be controlled by the signal itself. In a compressor, the output of the amplifier is not linearly proportional to the input; instead, the proportionality factor is controlled in some known manner. For example, a 2:1 compressor will "compress" or decrease the dynamic range of a signal (in dB) by a factor of 2. For every 2-dB increase in input level, the output increases by only 1 dB.

An expander functions in exactly the opposite manner; it "expands" or increases the dynamic range, and for every 1-dB increase in input the output increases by 2 dB. Connected together, the expander compensates for the compressor, and, ideally, there would be no change in the signal.

By compressing a signal before tape recording, you can squeeze a wide dynamic range to fit the limited dynamic range of the recorder. When the signal is expanded on playback, the dynamic range is restored, and noise introduced in the recording process is reduced. All noise-prevention systems use companders of one form or another.

Continuous Power The continuous-power rating of an amplifier is based upon the amplifier's capability to supply power for long periods of time (say, for 5 minutes or more) when handling a sinusoidal signal. By FTC ruling, the continuous-power rating must receive the prime emphasis in a specification or advertisement, and it must be based upon the minumum continuous power the amplifier is capable of supplying to a rated resistive load over a rated bandwidth with less than a specified THD. Continuous power is sometimes inaccurately called "rms power."

Damping Factor Damping factor is a

TDK Metal. Now you can have ninety minutes in either case.

TDK sets the metal standard for most metal deck manufacturers. With good reasons. Superior high frequency MOL for extended response. Up to 8 dB greater MOL at high frequencies than any high bias tape. High coercivity and remanence for superior sensitivity and additional recording headroom.

This unsurpassed sound comes housed in two different cases. In the case of the MA-R, there is a unique TDK die-cast metal frame. Its unibody construction creates perfect integrity between sides A and B. This insures against signal overlap, channel or sensitivity loss from one side to the other. The Reference Standard Mechanism assures a lifetime * of superior performance. TDK MA has a computer-molded cassette shell. Like MA-R, it's specially designed for the best interfacing with the 3-head metal deck. And its Laboratory Standard Mechanism assures years of pure metal sound.

Now in both cases, TDK gives you a choice of 60- or 90-minute lengths. Whichever you choose, you'll hear how TDK makes a perfect case for metal.

TDK®
The machine for your machine

*In the unlikely event that any TDK cassette ever fails to perform due to a defect in materials or workmanship, simply return it to your local dealer or to TDK for a free replacement.

CIRCLE 19 ON READER-SERVICE CARD

measure of a power amplifier's ability to control spurious motion of the loudspeaker cone. In the frequency range near the loudspeaker's resonance, the woofer cone tends to continue to vibrate after the signal has stopped. This motion causes the *speaker* to act like a generator in creating an electrical signal. The signal is absorbed by the amplifier, which "damps" the cone motion.

The low-frequency damping factor is measured at 50 Hz, a typical loudspeaker resonant frequency. It is defined as the standard loudspeaker impedance (8 ohms) divided by the output impedance of the amplifier. An amplifier's ability to control the speaker increases as the damping factor increases. Once that factor reaches 40, further increases will result in no audible benefit. In fact, a damping factor of 20 should be adequate. Since the resistance of the wiring to the speaker adds to the amplifier impedance and thus reduces the damping factor, heavy wire must be used to preserve the amplifier's ability to control the speaker.

dB The decibel or dB is a measure of the ratio of two power levels and is defined as 10 log (P_2/P_1). Being a logarithmic function, the decibel provides a convenient means of expressing very large ratios—60 dB is equivalent to a ratio of 1,000,000 to 1. And since human perception of loudness approximates a logarithmic function, the dB is especially appropriate for audio work. Being a *ratio* implies that some *reference* must be stated or implied in order that the actual power level be known.

dBf This is a unit of *power*. The "f" indicates that the reference level is 1 femtowatt—1 x 10-15 or, in conventional notation, 0.000000000000001 watt.

Customarily, the dBf indicates the power required from the antenna to achieve some specified level of performance in an FM tuner or receiver. It replaces an older method—based on the antenna *voltage* in microvolts—of specifying input level.

The dBf is a less ambiguous measure in that the number of dBf required for, say, 50-dB quieting is the same regardless of whether a 75-ohm or 300-ohm antenna input is used. The number of microvolts required, however, would be half as much with a 75-ohm input as with a 300-ohm input. Since the same antenna, operating under identical conditions, provides the receiver with the same *power* whether or not its impedance is matched to the 75-ohm or 300-ohm inputs (via a balun), the dBf is less misleading than the microvolt specification.

For a 300-ohm antenna, the following table indicates the relationship between dBf and microvolts:

Power in dBf	Voltage in μV (across 300-ohms)
0	0.55
5	0.97
10	1.73
15	3.08
20	5.48
25	9.74
30	17.3
35	30.8
40	54.8
45	97.4
50	173
55	308
60	548
65	974

dBm The decibel or "dB" is a logarithmic means of comparing the power level of two signals. Since the comparison is calculated from *ratio* of the two power levels, one must always know one of them—the "reference"—if the figure is to have any meaning. Thus, to say that this signal level is "6 dB" means nothing: 6 dB relative to what? We can speak sensibly about one signal being 6 dB *greater than* (or less than) another, presumably known, reference point.

When the dB is used to describe an *absolute* signal level, we must supply a reference. Several "standard" references are in common use; rather than writing them out each time a term is used, it is much more convenient to indicate the reference by a suffix tagged onto the dB: "dBm" means "dB with respect to 1 milliwatt," dBW means "dB with respect to 1 watt," and dBf means "dB with respect to 1 femtowatt" (0.000000000000001 watt).

Although, properly speaking, the decibel *always* refers to a *power* ratio, it is often used to compare voltages, currents, and other quantities that are *related* to power.

By consensus, "dBm" frequently is used to describe a voltage level. In this case, the "voltage reference" is 0.775 volts—the level which develops a 1-milliwatt power in a 600-ohm resistor. For the curious, 600 ohms is the professional-standard line impedance. Hence, its appearance here.

dBW The dBW indicates an amplifier's output capability, referred to 1 watt, and expressed in decibels. Being a logarithmic measure, the decibel (or dB) relates more directly to the way we hear than does a linear measure such as the watt. One decibel is the minimum level change that a human ear can perceive, so amplifiers differing in dBW rating by less than 1 dB cannot be distinguished on the basis of power capability alone. One decibel is equivalent to approximately a 26% difference in power (in watts). Three decibels imply a 2:1 power ratio; 6 dB to a 4:1 power ratio; and amplifiers that differ by a 10:1 factor have dBW ratings that differ by 10 dB. Thus, a 1-watt amp has a 0-dBW rating: a 2-watt amp has a 3-dBW spec and a 10-watt amp has a 10-dBW rating. A 20-dBW amplifier is capable of delivering 100 watts.

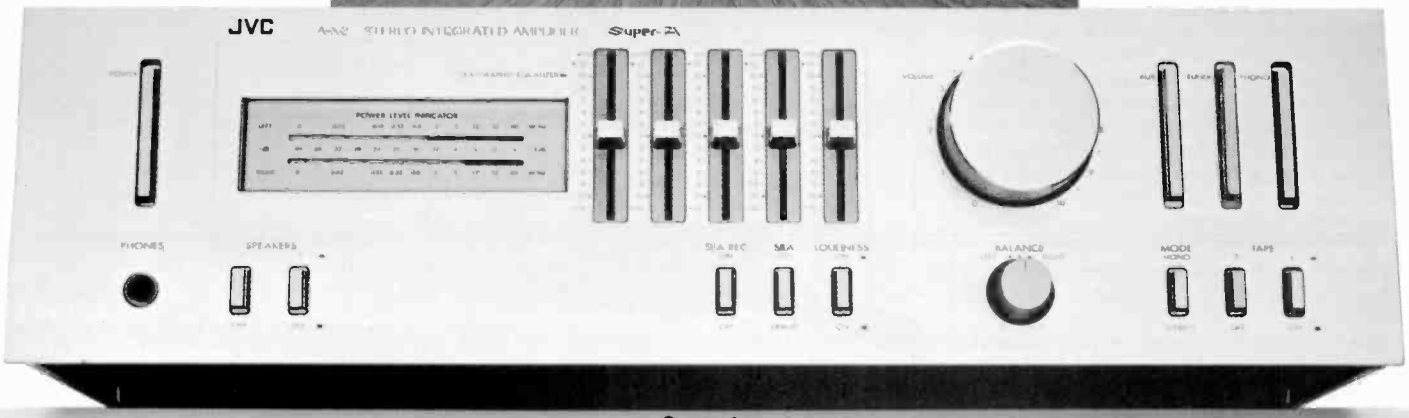
DC Amplifier The term "DC amplifier" can have two meanings. It may refer to a "direct-current" amplifier that is capable of uniform response down to DC (0 Hz), or it may refer to a "direct-coupled" amplifier (one without an output coupling capacitor). A true direct-current amplifier has negligible low-frequency phase shift. However, means must be provided to disconnect the loudspeaker to protect it from DC should any occur in the output.

Distortion Harmonics When an electronic circuit, transducer (such as a phono cartridge or loudspeaker), or storage medium (such as a tape or record) is nonlinear, harmonics are generated. "Linear" means that the output signal replicates the input signal precisely, except insofar as its amplitude may be altered by the gain of the circuit. For example, if a 1-volt input produces a 2-volt output and a 2-volt input produces a 4-volt output, the device is "linear" with a gain of 2. However, if a 1-volt input produces a 2-volt output and a 2-volt input produces a 3¾-volt output, the device is "nonlinear," since the gain changes with signal level. Such a device generates "harmonic distortion."

Harmonics are additional tones related in frequency to the original tone by whole multiples. Thus, the second harmonic of a 1-kHz tone occurs at twice the original frequency (2 kHz); the third harmonic at three times the frequency (3 kHz), etc. Harmonics occur naturally in music and are what give a sound its timbre. A piano and a violin playing the same note are distinguished by differences in the harmonic structure of the two instruments. Obviously, then, it is important that the music reproduction system create no *additional* harmonics that might alter the timbre and cause an instrument to sound differently than it should.

Studies performed on the sensitivity of human hearing to harmonic distortion suggest that we are more sensitive to "high-order" harmonic distortion (i.e., 5th, 6th, 7th, etc. harmonics) than to "low-order" distor-

We don't charge extra for brilliant engineering.
JVC Super-A.



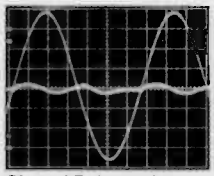
Super-A

A-X2

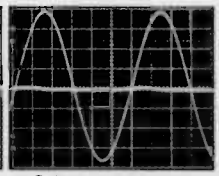
Integrated Amplifier

For years, audiophiles have praised the purity, depth and naturalness of Class-A amplifiers.

But they haven't been wild about the heat, weight, power limitations and high cost that go hand-in-hand with Class-A's low efficiency and high idling currents. That's why Class-A has remained a rare, esoteric design chosen by the few who were willing to pay for its fidelity and put up with its limitations.



Class-AB Jagged center line indicates switching distortion.



JVC Super-A Minimal distortion in output waveform.

JVC Super-A design brings together the purity of Class-A and the efficiency of the more common Class-AB. By eliminating most of the measurable switching and crossover distortion, Super-A achieves the kind of sound that has distinguished Class-A designs of the past.

At the same time, Super-A is as efficient as Class-AB, so there are no heat and weight problems which also drive up the cost of conventional Class-A. And JVC Super-A amplifiers have no transient intermodulation distortion (TIM) thanks to very wide bandwidth capabilities. What's more, the A-X2 Super-A amplifier shown here includes a 5-band graphic equalizer for both normal playback and recording EQ, LED power meters, "direct power supply" which yields high damping factor at all frequencies, and JVC's Triple Power Protection system.

All this comes with plenty of power behind it: *40 watts per channel continuous (RMS) power into 8 ohms, from 20-20,000 Hz, with no more than 0.007% total harmonic distortion.* When you put everything together, and compare our power and price with the competition, you'll discover you're getting the benefits of Super-A and graphic equalization practically for nothing.

JVC®

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tion (second and third harmonics). To the extent that these studies were performed on "pure tones" rather than on music, it is difficult to state precisely what the "allowable" harmonic distortion of a high-fidelity system might be. In practice, one measures harmonic distortion using a pure-tone (sinusoidal) signal because, if the signal already contains harmonics, it is difficult to distinguish them from the harmonics generated by the circuit.

Dolby The Dolby-B noise-reduction system frequently is referred to as just "Dolby." The circuitry is used widely in cassette decks and also by some FM stations. Dolby signals are "pre-encoded" to emphasize the treble range as a function of the high-frequency power in the program. The weakest portions of the program are emphasized the most. On the playback (or receiving) end, the treble is reduced in a compensatory manner, which thereby reduces the hiss that was introduced by the tape (or the transmission link).

Dynamic Power Although amplifiers are measured conveniently with sine waves, music is a much more complex amalgam of signals. And although the average power of music may be quite low it can demand much higher power capability from the amplifier for brief periods. The so-called "peak-to-average" power ratio of music may exceed 10 to 13 dB (100:1 to 200:1). Thus, the continuous-power rating of an amplifier need not accurately reflect how loudly the amplifier is capable of playing. The "dynamic-power" rating is determined by subjecting the amplifier to simulated-music signals—20-millisecond bursts repeated at ½-second intervals. The maximum power delivered during the burst is the "dynamic power."

Dynamic Range The dynamic range of a program refers to the power ratio of the strongest part of the program to the weakest part. It is expressed in dB. A component has a certain signal-to-noise ratio that may limit its ability to handle the dynamic range of the program without distorting the strongest portions or submerging the weaker ones in the noise.

Efficiency The efficiency of a loudspeaker is a measure of the sound level produced from a given input-signal level. Speakers vary in efficiency; the more efficient the speaker, the less power will be required to achieve a satisfactory listening level. A high efficiency speaker is especially important in a car-stereo system because of the limited power available from car-stereo amplifiers.

Electronic Crossover An electronic crossover is a set of filters that separates the audio band into several parts prior to the power amplifier. Thus, each range of frequencies can be amplified separately and fed to the appropriate speaker without requiring a speaker-crossover network.

Equalization In tape-recording terminology, equalization refers to the frequency-response characteristics of circuitry designed to compensate for the nonuniformity of response in the tape medium. There are two standard cassette playback-equalization curves—120-microsecond equalization for ferric tapes and 70-microsecond equalization for chrome, ferrichrome, and metal tape.

Equalizer An equalizer is any circuit that provides a specific frequency response characteristic—for example, to provide tape-playback equalization. But the term is used in a broader sense, and we speak of graphic equalizers that provide user control over the system frequency response. Since these devices were conceived as providing a means of correcting response deficiencies, they began to be called "equalizers." In practice, they are used to supplement (or in lieu of) tone controls.

Fader In car-stereo systems, the "fader" is the control that adjusts the relative level of the front and rear channels.

Flutter This refers to short-term variations in the speed of a tape deck or turntable. These variations cause equivalent shifts in the music's "pitch." Old-style terminology distinguished between "wow"—slow variations in speed (occurring, say, at a rate of from 0.1 Hz to 5 Hz) that are heard as distinct "wow-like" variations in pitch—and "flutter"—rapid speed variations between 5 Hz and 200 Hz that are not distinguished by the ear as pitch changes but as a fluttering or blurring of a note. The term "flutter" alone is now construed to mean both wow and flutter, although the combined term "wow-and-flutter" is also commonly used.

Flutter is measured by determining the dithering in the pitch of a recorded tone. It is expressed as a percentage of the average speed and is frequently based upon a "weighted" measurement in which pitch variations occurring at a 4-Hz rate count most heavily. (Our ears are extremely sensitive to pitch variations that occur at this rate.) The two common schemes of reporting flutter, each of which may or not be weighted, are ANSI/IEEE/DIN standards, which call for a measurement of "Peak" flutter given as ± X%, and Japanese standards, which call for a measure of the long-term average flutter given as X% rms. While the two are related, there is no correlation between the measurements of one and the other.

Headroom The headroom of a device is a measure of the additional output (or input) capability of the device with respect to some reference. Essentially, it is a ratio of the actual capability of the device to the reference (frequently the "rated" capability) and is usually expressed in decibels (dB). Thus, an amplifier rated at 100 watts that is actually capable of supplying 120 watts before clipping (or gross distortion) has a "clipping headroom" of 0.8 dB (a ratio of 1.2 to 1).

Dynamic headroom refers to a power amp's ability to supply more power for brief periods (such as is demanded by music reproduction) than it is capable of supplying continuously. In this case it is the ratio of the amp's dynamic power to its rated continuous power. It is an important consideration when choosing between amplifiers, since legally the manufacturer must highlight the continuous power rating in his advertisements.

Hz Once upon a time, frequency was specified in "cycles per second" or ("cps") a descriptive nomenclature, since it told how many complete variations occurred each second. In honoring the German physicist, Heinrich Hertz, we have lost the original designation and condensed his surname to a mere Hz—the new "cycle per second."

IM Intermodulation distortion (IM) is caused by nonlinear circuitry. When a pure tone (sine wave) is applied to a nonlinear circuit, harmonics are generated, and we speak of "harmonic distortion." If two signals are present simultaneously, both harmonics and "cross products"—new signals at frequencies equal to the sum and difference of the original frequencies—are generated. The two tones are said to "intermodulate," and the extraneous products that result constitute intermodulation distortion or IM. Depending upon the type of nonlinearity present, many more intermodulation products may be generated than the mere sum and difference tones.

Image Rejection Modern tuners and receivers are of the so-called "super-heterodyne" type. The desired signal is translated to a common "intermediate frequency" (IF) by "beating" it with a local-oscillator signal in a "mixer." What emerges from the mixer is a new signal at a frequency equal to the difference between the received frequency and carrying the modulation of the original broadcast. Thus, a 98.1-MHz broadcast is converted to the 10.7-MHz IF by mixing it with a 108.8-MHz local oscillator. But a frequency of 108.8 + 10.7 = 119.5 MHz will also produce a 10.7-MHz difference when beat against the 108.8-MHz oscillator. This is the so-called "image" frequency.

Every frequency has an image separated from it in frequency by twice the IF frequency. While most of a tuner's selectivity is provided by the IF amplifier, the IF circuits cannot tell the "image" from the desired transmission. Thus, the RF amplifier must provide sufficient "image rejection." FM frequencies have images in the aircraft-communications band and so good image rejection is required to avoid their pickup.

Infrasonic (Subsonic) Filter The lower limit of human hearing is generally considered to be 20 Hz. Signals of lower frequency are designated "infrasonic" or "subsonic." Although they can't be heard directly, they can have audible ill effects. Infrasonic signals rob the amplifier of some of its power capability and, through intermodulation with audible frequencies, increase the audible distortion in an amplifier and (more importantly) in a loudspeaker.

Warped records can generate these infrasonic signals, and the purpose of the infrasonic filter is to remove these signals before they cause audible effects. To operate effectively while not removing the musical bass, an infrasonic filter should be "sharp," i.e., roll off the low frequencies at a rapid rate (12 dB/octave or more), and

have a well-placed cutoff frequency (the frequency below which the filter becomes effective). A cutoff frequency of 15 Hz to 20 Hz is usually a good choice.

Loudness Switch Human hearing becomes less sensitive to low-frequency sounds when the average loudness level is reduced. Some think we also perceive high frequencies as being less loud than mid-frequencies when listening at low levels. The purpose of a loudness switch is to pre-emphasize the bass (and sometimes the treble) to achieve a more pleasing tonal balance at low listening levels.

MPX Filter When an FM-stereo signal is broadcast, the "sum" or left-plus-right (L + R) signal frequency modulates the carrier in the normal fashion. This provides "monophonic compatibility." The difference or (L-R) signal amplitude modulates a 38-kHz subcarrier and, for technical reasons, the subcarrier itself subsequently is suppressed. In order for the receiver to demodulate the difference information, the 38-kHz subcarrier must be regenerated. To "clue" the receiver as to how to regenerate the subcarrier, a 19-kHz "pilot" is transmitted. The sum (L + R), difference (L-R), and pilot are added togeher to form a composite or "multiplexed" signal which frequency-modulates the transmitter.

The receiver extracts the 19-kHz pilot, regenerates the 38-kHz subcarrier and uses this to demodulate the difference (L-R) information. During this process, some 19-kHz and 38-kHz signals may appear in the audio channels. These signals can create whistles when they intermodulate with a tape recorder's bias oscillator, and if not suppressed will cause Dolby noise-reduction circuitry to mistrack. To prevent mistracking, Dolby Laboratories requires each tape recorder manufacturer licensee to include a filter that notches out any residual 19-kHz pilot prior to recording. This filter is usually called a "multiplex" or "MPX" filter. In some decks, the filter can be bypassed when it is not needed (when recording from discs, for example) to extend the recorded bandwidth beyond 19 kHz. Less expensive decks usually have no means by which to bypass the filter, and bandwidth is therefore limited to somewhat less than 19 kHz.

Muting When an FM receiver is tuned between channels or for any other reason is not receiving sufficient signal strength, it produces an annoying level of noise. The tuner's muting circuit senses the signal level being received and squelches (or "mutes") the audio whenever the input level drops too low.

Parametric Mathematically, a parameter is defined as "a variable that is given a constant value for a specific purpose or process." In high-fidelity parlance, the term "parametric" usually refers to a parametric equalizer—a specific type of graphic equalizer in which the user is given control of the center frequencies and bandwidths of each of the filters in the set. Thus, each filter is variable in frequency and bandwidth, but, for any given setting, the variables are given constant values and

hence are "parameters."

Because you can control the bandwidth and frequency of each section as well as the amount of boost or cut induced, a parametric equalizer is more versatile than a "graphic" equalizer, which affords you control only over amplitude. Also, with a parametric equalizer, fewer filters are required. However, with these many variables at your disposal, test equipment is usually required to achieve the full potential of this type of equalizer.

Phase-Locked Loop This versatile circuit is capable of generating a signal that is phase-and frequency-locked to an input signal. The signal that is generated may be of the same frequency as the "input" or it may be a multiple (harmonic) thereof. In either case, the generated signal is "in step" or phase-locked to the input reference, since the circuit basically is a feedback or servo mechanism that compares the phase of the internally generated signal with that of the input reference and controls the internal-oscillator timing to maintain synchronism within a close tolerance.

A phase-locked loop (PLL) may be used to regenerate the 38-kHz subcarrier from the 19-kHz pilot in an FM-stereo demodulator. It also is used in certain AM-stereo applications. PLLs find their way into the local-oscillator section of a digitally-synthesized tuner and also may be used to maintain accurate motor speed in a turntable or tape deck. A phase-locked loop also makes an excellent FM detector, since the feedback or error signal follows the FM carrier deviation precisely as the internal oscillator is forced to maintain synchronism with the instantaneous frequency.

Preamplifier In general, the preamplifier (or preamp) consists of all circuitry whose purpose is to raise the signal voltage sufficiently to drive the power amplifier. Tone controls, source selector switch, and other such user-operated controls are part of the preamp.

Q The letter "Q" refers to the "quality factor" of a resonant circuit, and sometimes to describe the action of a high-pass or low-pass filter in the region of cutoff. A circuit with a high Q has a sharply defined resonance point at which the response is greatly augmented (or diminished, depending upon the configuration). High-Q circuits are characterized by a high ratio of reactance to resistance—energy-storage capacity to losses.

When used in a reference to a loudspeaker system, Q refers to the response in the bass-resonance region below which the acoustic output diminishes. In a high-Q system, response is exaggerated at resonance. Such a system presents a more difficult load on the amplifier which, during parts of the cycle, must absorb the energy stored in the acoustic reactances. An acoustic-suspension system with a Q of 1 shows a mild increase in output at resonance and is often used in practice. A Q of 0.7 suggests that the system will never Exhibit a boost; rather, it will be down 3 dB at resonance. (Few designers wish to lose that output.) Q values less than 0.7 suggest that the system is overdamped and that

bass output gradually diminishes from a point well above resonance, needlessly squandering acoustic efficiency.

Rated Power Output The rated output of a power amplifier is the power level (in watts) that the manufacturer claims for the product. By lumping the capabilities of both channels of a stereo amp and giving one rating, a manufacturer can mislead the public. Home-consumer products are subject to an FTC ruling that requires that output-power ratings be specified as the continuous power capability *per channel* into a stated load over a stated bandwidth at less than a stated distortion. Car-stereo equipment is not subject to the FTC ruling. However, those manufacturers belonging to the Ad Hoc Car Stereo Manufacturers' Committee have agreed to rate their products in a way that parallels that of home equipment.

Rumble Spurious low-frequency vibrations that may be set up in a record-playing system due to imperfections in the motor or turntable bearings are picked up by the phono-cartridge stylus; when amplified and reproduced by the loud-speakers, the result is a low-pitched "rumbly" sound. It is difficult to measure turntable rumble accurately, since imperfections in a record frequently exceed the vibration level of a good turntable.

To reflect the rumble's audibility or annoyance, several "weighting" curves are in common use: DIN A, DIN B, and ARLL curves. It is not possible to convert one reading to another without specific information regarding the spectrum of the rumble components.

Scan Scan tuning frequently is afforded by digitally-synthesized receivers. In the scan mode, the tuner locks onto each strong station for a few seconds, lets you hear it, and then moves on to the next. At the end of the band, it either reverses direction or starts over again. To defeat the scan and lock into a desired station, you press a "hold" button of the same type.

Seek Tuners using a digitally-synthesized local oscillator frequently offer a "seek" tuning mode. By pressing a button, the tuner sweeps the band and stops at the next station with sufficient strength to be usable. At the end of the band, the tuner may reverse the direction of search or may jump back to the lower end and start up again. Often two control buttons are used—one to search toward the higher frequencies, the other to reverse the search direction.

Selectivity This is a measure of a tuner's ability to reject unwanted broadcasts on frequencies close to the desired one. FM channels are spaced at 200-kHz increments, but in any given area they are allocated with a spacing of no less than 400 kHz. Channels 200 kHz apart are called "adjacent" channels, while a pair with 400-kHz separation are called "alternate" channels. Usually the "alternate-channel-selectivity" specification is the more important. The greater the number, the better.

AM stations are spaced every 10 kHz, and a single selectivity specification corresponding to the tuner's ability to reject the station that is 10-kHz removed from the one you are listening to is all that is given.

Sensitivity (Tape) This is an indication of the magnetic-pattern strength achieved for a given recording current. There is no particular virtue in high or low tape sensitivity, provided that the recording head and electronics have the capability to magnetize the low-sensitivity product. Nor does high or low sensitivity matter when recording without a Dolby NR (or similar) system; you would merely record "higher into the red" on a low-sensitivity product to achieve the same recording level.

However, when Dolby is used the tape sensitivity must match that of the tape for which the deck was adjusted, since relative sensitivity determines the "Dolby level," and it is the linchpin tying the Dolby decoder with the encoder. Using a tape with different sensitivity adversely affects the overall frequency response when using this type of noise-prevention circuitry.

Sensitivity (Tuner) In tuner parlance, this is a measure of the signal strength required from the antenna to provide a certain quality of audio performance. There are several standardized "sensitivities." For an FM tuner, the "usable sensitivity" refers to the signal level required to achieve 30-dB suppression of noise and distortion. The "50-dB quieting sensitivity" indicates the input required for an audio S/N of 50 dB. In the mono mode, the tuner requires less signal to achieve the benchmark than in the stereo mode, so sensitivity is specified separately for each mode. FM sensitivity is specified in dBf and the lower the figure, the more sensitive the tuner.

AM sensitivity is based upon the input *voltage* (in microvolts) required to achieve a 20 dB S/N under standard test conditions.

Separation The stereo illusion is predicated upon having separate left and right channels that act in consort to produce sounds that seem to emanate from points between the loudspeakers. In an FM-stereo broadcast, the two channels are multiplexed together so that they can be accommodated on a single broadcast channel. The receiver unscrambles the multiplex to provide independent left and right signals; however, some left-channel information remains in the right channel and vice versa. The separation specification indicates how much greater (in dB) is the desired signal than the unwanted one.

Shelving Tone Controls With some tone-control designs, the amount of boost (or cut) varies with frequency and becomes greater and greater as the ends of the audio band are reached. With other designs, the amount of boost (or cut) rapicly reaches a maximum value (for that particular setting of the control) and all frequencies from that point to the ends of the band are amplified by essentially the same amount. A graph of relative-output-level-vs.-frequency for such a control thus appears like a shelf; such controls are frequently called "shelving tone controls."

Slew Rate Slew rate refers to how rapidly an amplifier can respond to a step (infinitely rapid) change in input. It is usually measured in "volts per microsecond" (V/μs), which tells you how quickly the output level can shift (or slew) when following the input.

We avoid using the term for two reasons: First, while the amplifier is "slewing," distortion can be very high, and this is not considered in the specification. Thus, a high slew rate can be misleading if the amplifier cannot even approach the mark with reasonably low distortion; secondly, the slew rate that is "needed" depends upon the output rating of the amplifier. Thus, a 200-watt amplifier must slew twice as fast as a 50-watt amplifier in order not to be slew-limited, since twice the output-voltage swing is required to generate 4 times the power.

S/N A component's signal-to-noise ratio (S/N) suggests the program dynamic range that can be accommodated by that component, and is measured in decibels. There are several means of specifying S/N, all of which are not compatible. The noise may be "weighted" to reflect audibility, or it may be measured without weighting. The "signal" part of the ratio may refer to the maximum signal the component can accommodate, or it may be a specified "reference" level.

THD+N This is an acronym for "total harmonic distortion plus noise." Total harmonic distortion is defined as the power summation of all harmonics that are generated by a device when handling a pure sinusoidal signal. The harmonics are related in frequency to the desired signal, occurring at integral multiples of its frequency. Noise is a random electrical signal not related to the original signal.

Traditional distortion analyzers function by removing the original signal (via a sharp filter) and measuring what's left—the total of all the harmonics *plus* the residual noise. Such a device thus measures THD + N, and one cannot distinguish between the distortion caused by nonlinear operation and the residual noise. The total harmonic distortion can best be measured by determining the level of each harmonic (with a spectrum analyzer) and summing them mathematically.

TIM This is an acronym standing for "transient intermodulation distortion." Other acronyms that stand for a similar phenomenon are SID ("slew-induced distortion") and DIM ("dynamic intermodulation" distortion). Each refers to a type of distortion that can be generated when complex signals that require very rapid changes in output exceed the ability of the amplifier to respond that quickly. Traditional harmonic-distortion measurements may not reveal the existence of TIM because pure tones with relatively low slopes are used for the traditional measurements. Although several methods have been proposed for measuring TIM, SID, and DIM, to date there has not been general agreement on methodology, nor is everyone convinced of the importance of this distortion under normal music conditions.

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Introduction

There are literally thousands of stereo components available today, and as we've pointed out elsewhere in this magazine, one of the best ways to select the units you want is to compare what's available. We think this special buying guide section is a good place to begin. Here's how to use it to your best advantage.

First, we make no claims that we have tested any of the equipment listed here, nor that the specs represent lab results. In compiling the information, we faced a problem: Since not all manufacturers rate their equipment in the same way, and since it would be impossible for us to test every piece of equipment, how could we come up with comparable data that would allow you—the buyer—to use this information effectively?

We settled on a series of guidelines, which we sent to the manufacturers and which we asked them to adhere to when providing the performance specs. If they deviated from the guidelines, we asked them to state how they had obtained their particular measurements.

Where a particular spec does not appear, it means that the manufacturer did not supply it. N/A, or "not available," is generally reserved for new products on which complete information was unavailable at press time. Prices were supplied by the manufacturer, and may vary from area to area and among stores.

Because of space limitations, not every model produced by every manufacturer has been fully listed. Those on which complete specifications do not appear are summarized at the end of the manufacturer's product listing, and generally are those designated by the manufacturer as of lowest priority for listing.

You may want more information about specific products, in which case we suggest that you use our handy reader-service card or write directly to the manufacturers at the addresses in the directory. We also should add that, though manufacturers have assured us that all products listed here will be available at the time you buy this magazine, this has not always proved to be the case in the past.

Guidelines for each of the equipment types follow.

Power Amplifiers. Manufacturers were asked to specify power in watts (and dBW) delivered on a continuous basis into a specified resistance in ohms over a specified frequency range at a specified percentage of total harmonic distortion (THD). An intermodulation distortion (IM) rating was requested as a percentage at a specified output in watts. Frequency response was to be reported over a frequency range of the manufacturer's choice, plus or minus a dB figure, also of the manufacturer's choice. Signal-to-noise ratio (S/N) was to be expressed in dB with a specified weighting relative to a specified output in watts.

Preamplifiers. Specifications requested included frequency response, output in volts, THD expressed as a percentage. IM expressed as a percentage, sensitivity of both phono and high-level inputs expressed in millivolts, the phono overload point in millivolts, and phono equalization specifications. Also requested were bass, midrange (if available), and treble control ranges, along with high- and low-filter turnover points and slopes.

Integrated Amplifiers. Because these combine the characteristics of power amps and preamps, all of the above specifications were requested.

Tuners. Quieting refers to 50 dB quieting, unless otherwise specified. Both S/N and THD are given at 65 dBf. Selectivity is alternate-channel, subcarrier rejection refers only to stereo operation. When two sets of specifications are given, divided by a slash mark, the figure before the slash refers to mono operation. If a manufacturer has submitted figures for only the mono mode, the mode is specified in parentheses.

Receivers. Information requested for tuners applies to the tuner section of receivers; that requested for amplifiers applies to the power section of receivers, with the following additions. Sensitivity of the amp section is specified in the number of millivolts necessary to produce 0 dBW (1 watt). In amp S/N specifications, the weighting and reference specified by the manufacturer is in parentheses.

Turntables. Five types are covered: manual (single-play, no automatic features on tonearm); semiautomatic (raises and returns arm at end of play); fully automatic (positions arm at lead-in groove automatically and returns arm to rest at end of play); automatic repeat (fully automatic with repeat-play capability); and changer (fully automatic with multiple-record capability). All turntables are presumed to have cueing levers, unless otherwise indicated. Manufacturers were requested to specify rumble in dB, referenced to a specific standard, wow and flutter in percent, and the specific measuring method, the recommended tracking force range, and the range of tracking error in degrees and minutes.

Tonearms. Length is measured from pivot to stylus. Friction is specified in milligrams. Resonance point is specified in Hz with reference to a specific cartridge.

Phono Cartridges. Both lateral and vertical compliance were requested. Output was to be referenced to a certain number of centimeters-per-second at a specific frequency. Separation was to be measured at 1 kHz.

Open-Reel Decks. Reel size refers to the largest reel the deck can accommodate. Flutter and frequency response was requested for each of the deck's playing speeds. Separation and erasure were to be measured at 1 kHz. Each manufacturer was asked to specify a #1 recommended tape and a #2 recommended tape, and to supply performance specifications using recommended tapes.

Cassette Decks. The same information was requested for cassette decks as for open-reel decks.

Speaker Systems. Manufacturers were requested to designate the design of the speaker system, the number and type of drivers, the system's response with reference to a certain number of dB SPL measured at one meter at one watt, the recommended minimum and maximum power in watts and dBW, the crossover points, and any special controls.

Equalizers. "Bands" refer to the number of equalization points in each channel, and "range" specifies the degree (in dB) to which each band can be adjusted. A parametric equalizer is one in which the center frequency of the bands can be adjusted.

Signal Processors. These include both noise-reduction units, and what might be called a variety of signal-enhancement devices. An expander (sometimes called a "dynamic range enhancer") exaggerates loudness differences in the program source and is used to compensate for the compression system often used in recording and broadcasting. While compression can help prevent distortion in the loudest signals (and masking of the quietest by noise), it robs the program material of some of its dramatic impact. Expansion can restore the original dynamics precisely only when the compression characteristics are known and the expander is designed to react reciprocally to them.

Companders offer both compression and expansion of signal dynamics, usually with options that allow reciprocal actions in these two modes of operation.

Some noise-reduction devices are special-purpose companders that compress dynamic values for recording or broadcast and supply reciprocal expansion for playback or reception. With only rare exceptions, the same system must be used in both "encoding" (compression) and "decoding" (expansion) if dynamic values—and, often, other sound properties—are to be restored accurately. This makes most systems mutually incompatible.

The amount of compression and/or expansion is expressed as a ratio.

Headphones. Specifications were requested for frequency response; sensitivity, expressed in dB with a specific input in milliwatts; impedance; maximum power, expressed either in millivolts or dB; and total harmonic distortion, expressed as a percentage, either at a given sound pressure level (SPL) and a given frequency, or at a given input level measured in millivolts.

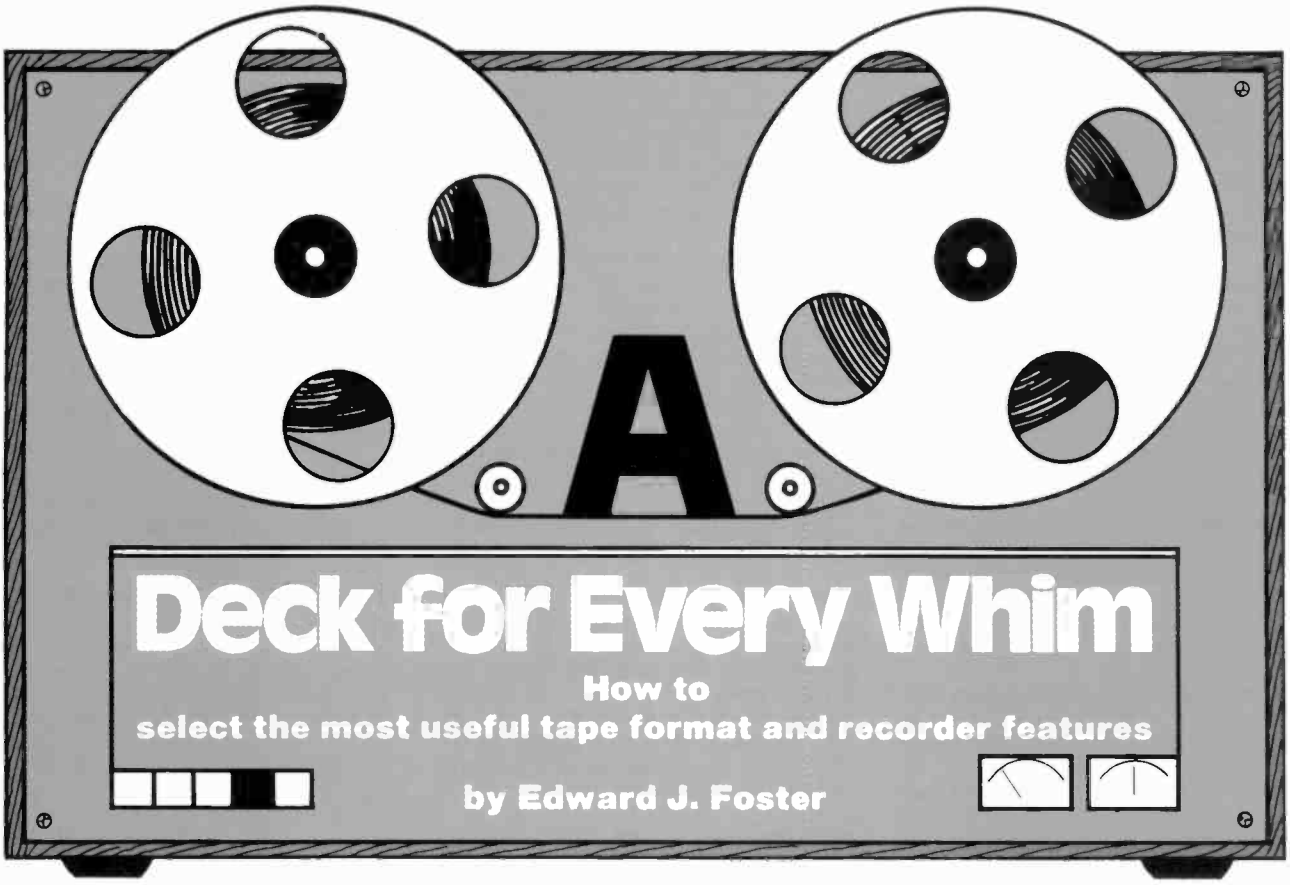
Microphones. Manufacturers were requested to indicate transducer type, polar pattern, frequency response, output (relative to 1 milliwatt output, at a sound pressure of 10 microbars), and impedance.

Blank Tape. For open-reel, cassette, and video tape, manufacturers were asked to indicate the type of coating and the lengths in which the tape is available. Special construction or packaging features are also noted.

Car Stereo Systems. In general, the specifications requested for car stereo tuners, tape players, amps, and speakers were the same as those of home component models. Manufacturers were also asked to indicate where in a vehicle the components were designed to be installed.

Video Cassette Equipment. This includes only VCRs intended for home use. "Format" refers to the design of the VCR system, such as VHS, Beta, etc. Specifications for video resolution and video S/N were requested for both the black and white and color modes.

Accessories. This section is divided into separate listings for tape, phono system, speaker system, car stereo, video, and miscellaneous accessories; i.e., an essentially wide-open category where manufacturers were simply requested to "describe" the item. In most cases the listings represent only a sampling of a company's entire accessory line. Complete catalogues generally are available directly from the particular company.



A Deck for Every Whim

How to select the most useful tape format and recorder features

by Edward J. Foster

In canvassing the market, you'll find that the number of cassette decks exceeds the number of open-reel decks by a wide margin, so wide a one that it has sounded the open-reel recorder's death-knell many times over. But, to paraphrase Mark Twain, the reports of its death have been greatly exaggerated, and it is not about to die any time in the near future. What *has* happened is that less expensive open-reel recorders with average specs have lost out to more convenient cassette decks that afford similar performance. What is left is the cream of the open-reel family. You won't find a *really* inexpensive open-reel deck, but you can still find models in the middle and upper ranges that offer performance comparable to that of top-notch cassette machines, though at a lower price.

When scouting for a tape recorder, your first decision is one of *format*. Choosing a tape format means choosing between cassette and open reel, at least until digital recording becomes practical *in the home*. (We'll rule out 8-track cartridges; they just don't qualify as a high-fidelity medium.) Once that choice is made, you must then decide what features you need—or want—and are willing to pay for.

If you simply want to dub your record collection or tape an FM broadcast, chances are you ought to go with the cassette format. Cassette decks are simple to operate, and a good one will handle these two tracks. But if you are into *live* recording, or assembling and editing your record library, open reel is likely the better choice. It will do everything a cassette recorder will do and more. It has greater dynamic range, can handle greater levels of high-frequency information cleanly and crisply, and the tape is infinitely easier to edit. But unless you *need* these advantages,

why forgo convenience, simplicity, and the lower cost per minute of recording time—the cassette's major strong points?

Open reel offers greater low-frequency headroom because the magnetic coating on its tape is thicker than that of a cassette; also, there's more oxide per millimeter of track width. Additionally, the tracks in the open-reel format are wider than on a cassette—more than twice as wide in the so-called "quarter-track" format, four times as wide in "half-track." For every doubling of the track width, a 3 dB increase in signal-to-noise ratio or available dynamic range results. Also, with open reel's faster tape speed—3¾ ips, 7½ ips, or 15 ips as opposed to 1⅞ ips on a cassette—you need less recording equalization and get better playback equalization. The less high-frequency boost needed when recording, the greater the signal level that can be handled before tape saturation occurs. And with 50-μsec playback equalization—standard at 7½ ips and 15 ips—tape hiss is less than with the 70- or 120-microsecond curve used with a cassette. (The greater tape speed does raise the potential noise floor, but overall the high-speed open-reel format offers a net advantage.)

Frequently, the greater potential of an open-reel recorder over that of a cassette deck is not readily apparent from the specs: standardized reference levels differ for the two formats. The "frequency response" of a cassette deck is specified at the -20 (or -30) dB recording level. At greater recording levels, the high end is not so extended as the spec would imply. Open-reel decks are characterized at the -10 dB recording level and at times can handle signals at 0 dB almost as well.

Specs often don't reveal the greater potential of an open-reel deck.

Furthermore, the noise level of a cassette deck is referenced to a "DIN 0" (250 nWb/m) recording level (or, sometimes, to the level that produces 3% distortion). Thus a cassette's S/N reflects the *maximum* dynamic range of which the tape is capable; there is little or no "headroom" or safety margin. An open-reel deck is referenced to a 185 (or 370) nWb/m recording, and with the thicker tape coating is capable of handling even greater levels. The lesson in this is that you can't compare cassette and open-reel specs directly; you must dial in some fudge factor to put them on a common footing. When this is done, the superiority of open reel is apparent.

Say you've chosen open reel. You must now make a decision on track layout(s), operating speed(s), and maximum reel size.

The common track layouts are "quarter-track" and "half-track"—and they're not compatible. With the quarter-track system, four recording bands, arranged in two stereo pairs, are laid out across the width of the tape. Tracks 1 and 3 record the left- and right-channel information on "Side 1" of the tape. When the reels are flipped over, track 2 records the right channel, track 4 the left. Thus, quarter-track allows you to record "both ways," doubling the playing time of a given length of tape.

With half-track, the entire tape width is used to record *one* stereo program; there's no flipping over the reels; i.e., there's no "Side 2." Since the half-track format uses more tape per channel (0.080-inch track width as opposed to 0.043 inch for quarter-track), an approximate 3-dB improvement in dynamic range is possible. For *really* serious recording, half-track is the better choice. If you're going to be editing the tape—cutting out undesirable portions and splicing the remainder together—you couldn't record on Side 2 anyway; you might remove desirable material on the second side while cutting out portions of the first side. So why sacrifice S/N? Being able to use only one "side" does double your tape cost, so you must weigh the S/N advantage of half-track against this factor. One alternative is to use only one "side" in the quarter-track format whenever you intend to edit.

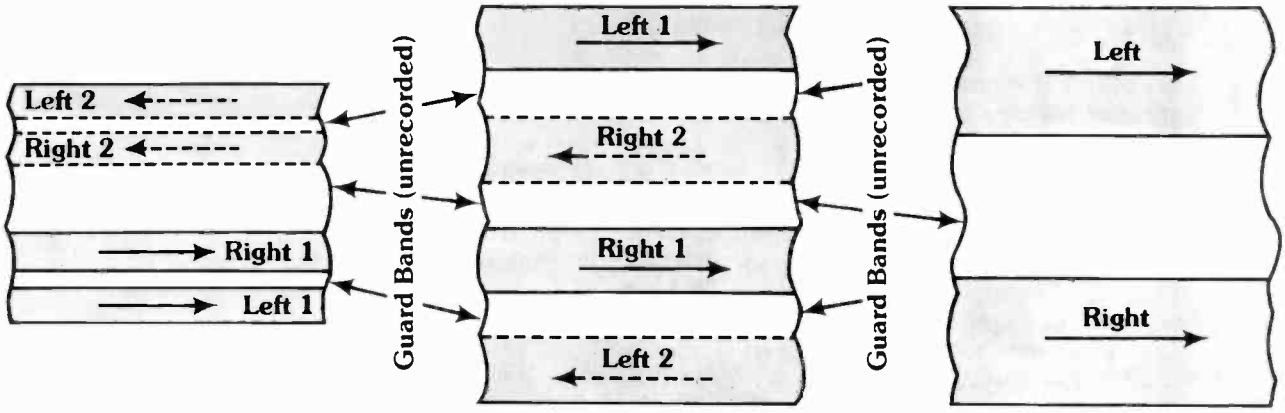


Fig. 1
Comparison of Popular Tape Formats (to scale)

Furthermore, commercially recorded tapes are almost always quarter-track, and a half-track machine can't play them. Some machines allow you to change the entire head-block assembly, and thus the format, to suit any immediate requirements. Obviously, buying two sets of heads is expensive. Instead, you could select a "four-head" machine of the type that lets you erase, record, play half-track tapes, and has a fourth playback head in quarter-track format to reproduce commercial tapes.

The semi-pro may choose to go with a "4-track" machine. On this deck, the track layout on the tape is the same as that in quarter-track, but 4-track heads are used, giving you the option of recording four channels simultaneously in one direction. This 4-track deck is "compatible" with quarter-track by using only two of the available channels, but you can switch in all four and record in quad or use separate tracks for different instruments for subsequent mixdown whenever you desire.

All audiophile open-reel decks have separate recording and playback heads, and inter-track dubbing and echo effects are common features. To create an echo, the signal is recorded, subsequently reproduced, and a portion of the playback signal is mixed with the signal being recorded. Since it takes some time for the tape to travel from the recording head to the playback head, the signal being returned and re-recorded is late—like an echo. Then, since the echo is reproduced and re-recorded, you get multiple echoes in a decaying pattern similar to reverberation. While you can create trick effects with such a system, reverberation is seldom realistic; the spacing between recording and playback heads is usually too large and echo time excessively long.

The ability to transfer from track to track is more useful. You can "lay down" a soundtrack on one channel, play it back later, mix in a completely separate sound in synchronism with the first, and record the composite on another track. Then you can reproduce the combination, add in a third sound, and record back onto the first track. This procedure can be repeated indefinitely; each time, however, the noise level will increase, since you will be re-recording the noise already on the tape. And with a

stereo recorder you are left with a mono tape, since one track must be held in reserve for recording while the other is being reproduced. With a 4-track machine, you can create a stereo multiply-recorded tape.

A professional feature called Sel-Sync or Simul-Sync is also available on some machines: Each track of the record head can be used either to record or to reproduce. Once the first track is laid down, it can subsequently be played by the *recording* head and a new soundtrack recorded on another channel without disturbing the first. The two will be in synchronism because the same head stack is being used simultaneously for recording and for playback. Professionals use this feature to "assemble" a band from individual players who need not be present in the studio at any one time.

Some open-reel decks afford a choice of three speeds—3¾ ips, 7½ ips, and 15 ips. Others offer only two and you must choose between 3¾ and 7½ or 7½ and 15. The 15 ips speed offers the greatest dynamic range, and tapes recorded at this speed are the easiest to edit—desirable for professional-quality live recording. On the other hand, the 3¾ ips option saves tape (and money), has longer uninterrupted playing time, and opens the possibility of playing commercially recorded tapes produced at that speed.

Another decision concerns maximum reel size. Unquestionably, any deck operated at 15 ips must be able to handle 10½-inch reels; a 7-inch reel affords only 15 to 22½ minutes of recording. With slower speeds, you may be able to get by with a 7-inch capacity, but we'd recommend a deck that can handle large reels; you can always use 7-inch reels if you don't require the double length on a professional reel.

All else being equal, a deck with separate heads is capable of better performance.

Since ease of editing is one of the prime advantages of this format, select a deck that makes editing convenient. You should be able to switch off the reel motors while keeping the tape in contact with the heads and the electronics active. That way you can find the precise point at which you want to cut by listening as you rock the reels back and forth.

If your choice of an open-reel deck is predicated in large measure on your desire to do live recording, the recorder should have input circuitry that is compatible with your mike system in terms of overload level and impedance. Few audiophile decks offer "balanced" microphone inputs; if you plan to use balanced lines and phantom powering to a condenser capsule, you will probably need a transformer and/or power supply. Many users of open-reel decks find that their recording needs eventually outgrow the number of mike inputs. In that case, you'll probably need an external mike mixer.

Good record-level indicators are vital. While open-reel decks afford the type of headroom that make "VU" meters feasible, we suggest a peak-responding meter for most amateur applications. The indicators should be large enough to be read easily and positioned so that you can see all of them at a glance. The meters should have sufficient range—preferably 40 dB or more—so that you can read the quiet passages as well as the loud ones.

It is generally believed that the superior dynamic range of open reel obviates the need for noise reduction. We disagree. Live program dynamics exceed the capability even of this type of recorder, and some noise-prevention system—Dolby, dbx, or High-Com II—should be included. Some recorders have built-in circuitry, which is very convenient, since you then can use the recorder's mike and line preamps as is. (With an outrigger noise-prevention system, separate mike preamps to bring the signals up to line level before they are fed to the encoder are necessary.)

Unless you plan to standardize on *one* brand of recording tape, you will need control of bias and (if possible) recording equalization to make opti-

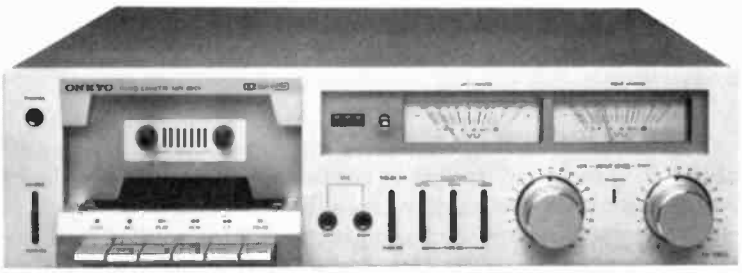
Open-reel is inherently more flexible than cassette. Teac's A-3440 (left) is a 4-track, 4-channel deck with 15 ips and 10½-in. reel capability. Revox's B-77 (below) is available in either 2- or 4-track with any of two adjacent speeds (15/16 and 1⅞, etc., through 7½ and 15 ips).

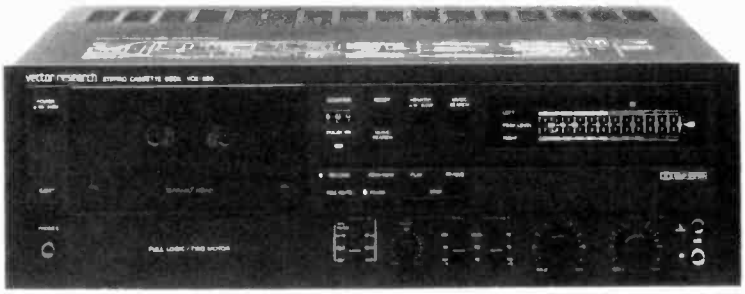
mum use of each formulation. As a rule, open-reel tape is of the gamma-ferric-oxide type, but there are substantial differences among brands.

Bidirectional tape drives are valuable only if you want uninterrupted playback over long periods of time. However, any deck should be capable of starting quickly so that you can begin recording without delay when you need to. The inertia of the large tape reels makes this much more difficult to achieve in an open-reel deck than in a cassette unit and some machines are notably better than others in this area. Most open-reel decks have a 3- or 4-digit mechanical counter to keep track of location. Some afford a true footage or time counter rather than merely counting reel revolutions. These are much more accurate if you need to find a precise point in the program in a hurry.

Open-reel decks aren't for everyone. Indeed, a good cassette deck will fulfill the requirements of most audiophiles quite satisfactorily. They offer remarkably good performance in light of the very low tape speed and narrow track width that are used. This is due in large measure to the advanced tape formulations that have been developed especially for the cassette format. Obviously, the cassette deck should be designed to handle the best tapes available. At a minimum, the deck should have bias and equalization settings for premium ferric (Type I) and chrome/chrome equivalent (Type II) tapes. Looking towards the future, we'd recommend compatibility with "metal" (Type IV) tape too. While their availability is limited at present, they should be obtainable soon. In our opinion, ferrichrome (Type III) settings are less important: products are limited and wholly dissimilar; with the advent of metal, they could disappear.

With the number of cassette tapes on the market, it is not surprising that differences exist between brands even within the same type grouping. For a deck to achieve optimum performance, its bias setting must match the requirements of the particular tape being used. Hence, many modern decks enable the user to "trim" or adjust the bias to match the tape—a worthwhile feature. To tell you when you've set the bias correctly





Cassette decks are popular because the wide range of models allows involvement at many levels of sophistication. Onkyo's TA-1900 (left) is a basic deck, offering a direct-load system, peak-reading VU meters, and metal tape capability for $190. More advanced audiophiles might prefer Vector Research's VCX-500, which for $575 offers a music search system, adjustable bias, logic controls, a switchable MPX filter, peak-reading 12-segment bar-graph meters, and an output level control.

some decks have built-in test oscillators that give more accurate results than those that rely on "setting by ear."

Without a noise-prevention system, the cassette format would be too noisy for quality recording. While the Dolby B is practically universal, there are competing systems: JVC's Dolby-like ANRS (and the Dolby incompatible Super ANRS), dbx's system II, and Nakamichi's High-Com II. When using a level-sensitive system such as Dolby B, JVC ANRS, and Nakamichi High-Com II, the tape's *sensitivity* becomes important inasmuch as it affects frequency response whenever the noise-prevention system is used.

Those who want the freedom to use different brands of tape will benefit from Dolby calibration (sometimes called record-calibration) controls as well as adjustable bias. Again, self-contained test oscillators facilitate adjustment. A few decks will make bias and record-calibration adjustments automatically. You merely pop in the cassette and press a button. Undoubtedly, you can make the adjustments yourself with equal accuracy, but there's no denying the convenience of having a "microcomputer" do it for you.

To avoid confusing the Dolby circuitry when recording FM stereo, all decks using the system must have a multiplex filter. This device eliminates any residual 19-kHz pilot tone that might be coming from your tuner. Since the filter is needed *only* when recording FM-stereo broadcasts and can limit high-frequency response in other recording modes, you should be able to switch it in or out of the circuit as needed.

Like open-reel transports, cassette decks can be designed with single or double capstans and with one-, two-, or three-drive motors. With the single-capstan approach, the tape is pulled past the heads; tape-to-head contact is maintained by the pressure pad within the cassettes, aided in part by whatever drag is applied by the supply spool. The stability of motion therefore depends on the quality of the cassette mechanism. More desirable is the dual-capstan drive, which holds the tape tautly between

the supply and takeup capstans and tends to isolate it from irregularities that may exist in the cassette itself. For similar reasons, two motors—one exclusively to drive the capstan; the other to drive the reels—should produce smoother motion than a single motor that is used for several purposes.

One major decision is choosing between a two-head cassette deck and the more expensive three-head design. A combination record/play head can produce and reproduce fine quality tapes. But, all else being equal, a three-head deck with separate record and play heads (as well as an erase head) should have better capability. By designing the head for a *single* purpose, a "compromise" gap length can be avoided. Besides providing off-tape monitoring, a three-head deck should give you better response, with less noise and distortion.

With separate record and play heads, it is important that the two gaps be precisely parallel to each other and perpendicular to the length of the tape. Some three-head decks allow you to check this (azimuth) alignment via a test tone and phase-comparator circuit. Others use a "sandwich-head" approach, whereby individual head sections are factory-aligned and combined into a single housing. One manufacturer (Nakamichi), as a matter of fact, has come up with an automatic azimuth-alignment system.

Bar-graph indicators—the current vogue—have several disadvantages over meters.

Much has been made of the relative virtues of head-core materials such ferrite, permalloy, and Sendust. Each has its advantages—and disadntages. Ferrite is exceedingly hard and wears well. However, these heads can suffer gap erosion, which makes a head useless. "Glass-bonded" ferrite helps to avoid this. Also, the flux-handling properties and permeability of ferrite is not so good as those of competing materials. Thus, distortion and noise may be greater, and the head may not be suited for metal tapes ("metal compatible").

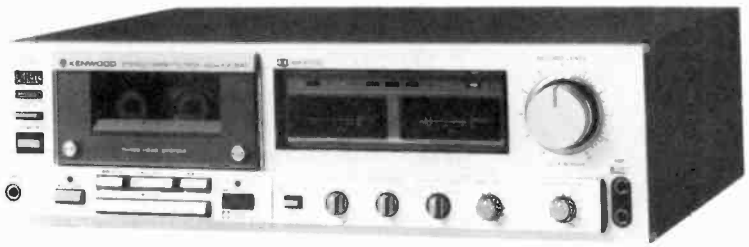
Permalloy has exceedingly high permeability and a flux-handling capability suitable for metal capability when used in a three-head format, which gives it a greater potential to record and reproduce with less noise and distortion than ferrite. But it is less hard and wears faster. "Hard" permalloy increases head life.

Sendust lies between the extremes. Harder than permalloy but not so hard as ferrite, its permeability is greater than that of ferrite, less than that of permalloy. It has found favor as a good material for combination metal-capable R/P heads.

Cassette decks aren't the ideal deck for live recording, but most have mike inputs and mike preamps. On two-head decks, the mike preamp often shares the same circuitry with the playback preamp, since the deck can't record and play simultaneously anyway. Such a preamp may be incapable of handling the output level of a high-sensitivity microphone, and it actually is suitable only for casual live recording. Three-head decks require separate microphone and play-head preamps and so the mike section *may* be better than that of a two-head deck.

A cassette deck's recording indicator is even more important than that on an open-reel deck; a cassette has less dynamic-range potential, and there is less tolerance for record-level error. In our opinion, 23-dB "VU" meters are least desirable; ballistics are too slow to respond to transients and the range indication too narrow to indicate the level on *both* quiet and loud passages. Those supplemented by a "peak-overload" LED are marginally more useful. A display that responds to the peak value of the signal *continuously* (rather than just at overload) is a much better choice. We favor the type that responds over a range of more than 35 dB.

"Bar-graph" indicators—fluorescent, LCD, or LED displays that indi-



The advantages of three separate heads—whether on an open-reel or cassette deck—is simple: you can hear what you have just recorded instead of having to stop and replay the segment. Three-head open-reel decks are commonplace; cassette decks have leaned toward the two-head design, though an increasing number are incorporating a third head. Shown are Kenwood's KX-800 (below) and B.I.C.'s T-3M (left), which is also a two-speed deck.

cate the signal level in discrete increments—are the current vogue. They have several advantages over meters: Usually, they have rapid ballistics and respond to peak levels; the physical side-by-side layout makes it easy to monitor the level of both channels at once; and many afford a "peak-hold cursor" (the maximum signal level is "held" by a brighter segment of the display for some period of time). The drawback of many (if not most) of these devices lies in their "discrete" nature. Only 12 or 14 segments may be used in the display to cover the *entire* dynamic range. That simply is not sufficiently fine resolution for us. (Don't be misled by the apparent number of segments; frequently three or more of them light up together at a specific signal level.)

In recent years, Philips' prohibition against non-standard cassette speeds has been circumvented. B.I.C. was the first to successfully introduce a 3¾-ips option. The higher speed affords greater bandwidth and less noise and distortion than a standard-speed cassette. But playing time is necessarily cut in half. Nakamichi went in the opposite direction (a 15/16 ips option) in its 680 and 680ZX. While other half-speed machines have become available, none matches the 15 kHz response at half speed that characterized the Nakamichi flagships. Whether going for extra bandwidth or extra playing time, all such decks provide standard-speed operation as well.

Also new are the Dolby HX and Tandberg Dyneq systems. Each promises extra high-frequency headroom by controlling the recording equalization (and, in the case of Dolby HX, the bias too) as a function of the signal's power spectrum. While Tandberg's circuitry is exclusively its own, the Dolby system is available to all Dolby licensees. Harman Kardon was the first to use it in a commercial cassette product.

Many cassette features affect *convenience,* rather than *performance.* You must decide whether they're worth the money. Almost every cassette deck has a 3-digit mechanical counter to indicate position along the tape. Many machines offer memory rewind as well: reset the counter to

Microprocessors are included in many cassettes decks, including Sharp's RT-4488 (below), $390, and Nakamichi's 1000 ZXL (left), $3,800. Sharp's APLD (Automatic Program Locating Device) allows you to select programs at random from throughout a tape side. Nakamichi's ABLE system automatically sets azimuth, bias, level and equalization, while its RAMM (Random Access Music Memory) accepts up to 30 commands for high-speed bidirectional search.

zero wherever you desire and when rewind is engaged the tape shuttles back to counter-zero and stops. In addition, the machine might have auto replay or memory replay; it automatically goes into the play mode after rewinding to counter-zero. Some decks are bidirectional and will reverse tape motion and play the second set of tracks when reaching the end of the cassette.

Some decks offer "unattended" or "timer" operation. You can preset them into either the recording or playback mode, plug them into an appliance timer, and when the timer applies power, off they go. Some have a "program-search" option: tell the deck how many selections you want to skip and it will shuttle the tape to the desired point and start to play. Usually these systems function in both fast forward and rewind. They work by counting the interprogram blanks. If the blank is less than 5 seconds, they may miss it—so a "record mute" function is included for you to "create" blanks (or eliminate commercials). While the systems are fairly reliable, they can interpret a long pianissimo passage as a "blank" and act accordingly. They work best on pop and rock—less so on the classics.

Virtually every cassette deck has a headphone-output jack. Some include output-level controls to set volume (and match the output to that of your other equipment); others do not. All decks have recording-level controls. Some have separate controls for mike and line (and so allow mike/line mixing); others do not. At least one deck will search for the loudest portion of a program and automatically set recording level. Other decks use a "limiter" to prevent overrecording, but this feature is seen on fewer and fewer models.

Decks that are solenoid (or otherwise electronically) actuated adapt themselves to remote control; if you like to work your recorder from your easychair, you'll have no difficulty finding a deck to accommodate this whim. No shortage of ideas exists when it comes to gee-gaws and features. What you must decide is threefold: What do you want your recorder to do—dub existing material or create original tapes? What features are essential? How much are you willing to spend? ***HF***

by Edward J. Foster

Choosing a Cassette Tape

Different recording situations demand different tape types

If you own a good cassette deck, there's no sense in compromising its performance by using bargain-basement tape. On the other hand, don't purchase a top-of-the-line tape unless your recording situation demands it.

For example, a garden-variety ferric from a reputable manufacturer is certainly adequate for making voice recordings, dubbing old records, and copying most commercially recorded cassettes. (You don't think the major duplicators use high quality tape on their high-speed slaves, do you?) Most FM broadcasts can be handled on an ordinary ferric too, although some stations that broadcast uncompressed transmissions may require a "premium" ferric.

A decent conventional phonograph record will call for a premium ferric, or, for lower noise, a chrome or ferricobalt (chrome equivalent.) Some audiophile discs are virtually impossible to copy on cassette without giving up something—usually the noise level will be perceptibly higher on the tape copy and/or the high-level treble will be somewhat dulled. Nonetheless, you can get decent copies by opting for a chrome, chrome equivalent, or, if your deck can accommodate it, one of the new, pure-metal tapes.

Live recording presents an even more taxing problem, and, except in the simplest of situations, is best handled by the open-reel format. Again, you can make good live recordings on cassette—interpret the word good as meaning better than commercially recorded cassettes but not likely to be the equal of a good record. Thus, a cassette deck alone may be perfectly adequate for your needs if you do not intend to do much live orchestral recording, and if you are willing to compromise perfection to some degree when you are recording live. The best live cassette recordings require the best in tape and special care (and luck) in setting the recording level.

So while it makes good sense to buy a less-expensive ferric for nondemanding tasks, it is *not* advisable to look for the cheapest off-brand tape. Stay with quality manufacturers and you will minimize your problems

Comparison of Cassette Tapes

Tape	Cost	Bias	Record EQ	Play EQ	Advantages	Suited For
"Normal" Ferric	Low	Normal	Normal	120 μs	Low cost	General purpose voice recording, copying commercially recorded cassettes, older records, and many FM broadcasts
"Type-I" Premium Ferric	Medium	Normal or High-Ferric	Normal	120 μs	Good low-frequency headroom; low distortion	Above, plus copying many records and virtually any FM broadcast
Type-II Chrome "Chrome-equivalent"	Medium High High	Chrome	Chrome	70 μs	Lower noise than ferrics; good high-frequency headroom	Above, plus copying the better records where low-noise reproduction is important
Type-III Ferrichrome	High	FeCr	FeCr	70 μs	Very low noise and low distortion with proper deck	Potentially a superior product, but results depend upon the deck used
Type-IV Metal	High Very High	Metal	Metal	70 μs	Improved dynamic range	Potentially highest performance suited for copying audiophile discs and live recording; requires compatible deck

with cassette jams, tape tangles, and oxide shedding, to say nothing of dropouts, response, and distortion. This is an area in which a few cents paid for a reputable manufacturer's product is worthwhile.

You should also be aware that all tapes, even those of the same generic type, are not precisely equivalent. Thus, all normal-bias ferric tapes do not, in fact, deliver their best performance at the same bias level. Some perform better with a higher bias setting, others with a lower one. The same is true of the premium ferrics, sometimes called high-bias or Type-I tapes. Differences among the Type-II chrome and chrome equivalents (the ferricobalts) also exist, but as a group they tend to cluster somewhat more closely.

Type III refers to the ferrichromes, the two-layer tapes that were to have combined the best characteristics of the ferric type—good low-frequency headroom and low distortion—with the best characteristics of the chromes—low noise and superior high-frequency headroom. Unfortunately few decks do justice to this type, (even if they have a ferrichrome position on the selector switch), and the sound is frequently raspy.

It is too soon to tell how uniform the Type-IV metal tapes will be. The current products on the market do not seem to be as equivalent to each other as, say, the Type IIs but are perhaps more similar to each other than the Type IIIs. The normal ferrics differ widely.

Select one brand of tape in each category that matches your deck and stick with it. If your deck has adjustable bias (and the test tones and metering needed to adjust it accurately), you have more freedom to experiment with different tapes. But be sure to readjust whenever you switch brands. (It is even a good idea to check the settings for every new batch of tapes you buy, since variations occur between batches even in the same manufacturer's tape.) If your deck lacks user-adjustable trim controls, try to find out from its manufacturer *the* specific tapes for which it was adjusted at the factory. Chances are these will suit the deck best. If the manufacturer is uncommunicative in this regard—not unlikely—a magazine review of your deck (such as those appearing in HIGH FIDELITY and STEREO magazines) may give you a clue as to which tape is best. Within reasonable limits, a knowledgeable technician should be able to make the internal adjustments required to match a specific tape's characteristics. **HF**

Tape Equipment

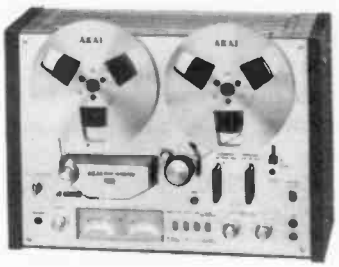
Open-Reel Recorders

AKAI
Akai America, Ltd.
2139 E. Del Amo Blvd.
P.O. Box 6010
Compton, Calif. 90224

PRO-1000
Price	$1,995
Max. reel size	10½"
Format	2; 4-track/2-channel (playback); 2-track/2-channel (recording)
Heads	4
Speeds	15; 7½; 3¾
Flutter	0.025% (WRMS) (15); 0.04% (WRMS) (7½); 0.08% (WRMS) (3¾)
Fast-forward	120 sec (1800')
Rewind	120 sec (1800')
N/R system	None
Input sens.	70 mV (line); 0.3 mV (mike)
Output level	775 mV (line); 300 mV (mixer)
Input imped.	100 ohms (line); less than 1K ohms (mixer)
Output load	10K ohms (line); 20K ohms (mixer)
Erasure	70 dB (1 kHz)
Level indic.	2 VU; peak- and bias-reading (-40 dB to +5 dB)
Features	Servomotor; direct capstan drive; double capstan; pan-pot mixing
Tape #1	Scotch 206
R/P resp.	50 Hz to 20 kHz, ±1 dB (15) (0 VU); 40 Hz to 24 kHz, ±3 dB (7½) (0 VU); 60 Hz to 12 kHz, ±3 dB (3¾) (0 VU)
S/N	60 dB
S/N ref. lvl.	DIN A
THD	1% (15); 1% (7½); 1% (3¾)
THD ref. lvl.	0 VU

GX-650D
Price	$1,295
Max. reel size	10½"
Format	4-track/2-channel
Heads	3
Speeds	15; 7½; 3¾
Flutter	0.04% (WRMS) (15); 0.055% (WRMS) (7½); 0.07% (WRMS) (3¾)
Fast-forward	120 sec (2400')
Rewind	120 sec (2400')
N/R system	None
Input sens.	80 mV (line); 0.3 mV (mike)
Output level	775 mV (0 VU)
Output load	20K ohms
Erasure	70 dB (1 kHz)
Level indic.	2 VU (-20 dB to +3 dB)
Features	Closed-loop double-capstan AC servomotor; sound, mike/line mixing; sound-on-sound; direct-function change control; 3 motors, dual monitoring; remote control capabilities
Tape #1	Akai LN-150
R/P resp.	30 Hz to 30 kHz, ±3 dB (15); 30 Hz to 26 kHz, ±3 dB (7½); 30 Hz to 20 kHz, ±3 dB (3¾)
S/N	58 dB
S/N ref. lvl.	+6 VU (DIN A)
THD	0.4% (15); 0.4% (7½)
THD ref. lvl.	0 VU

GX-620
Price	$725
Max. reel size	10"
Format	4-track/2-channel
Heads	3 (GX)
Speeds	(7½); 3¾
Flutter	0.03% (7½); 0.04% (3¾); (WRMS)
Play resp.	30 Hz to 26 kHz, ±3 dB (7½)
Fast-forward	120 sec (1800')
Rewind	120 sec (1800')
N/R system	None
Input sens.	70 mV (line); 0.25 mV (mike); 2 mV (DIN)
Output level	0.775 mV
Output load	20K ohms
Separation	55 dB (1 kHz)
Erasure	70 dB (1 kHz)
Level indic.	2 VU; (-20 dB to +5 dB)
Features	Direct-drive AC servomotor; feathertouch controls
Tape #1	Akai WR; Maxell UD
R/P resp.	30 Hz to 26 kHz, ±3 dB (7½); 30 Hz to 19 kHz, ±3 dB (3¾)
S/N	62 dB (7½)
S/N ref. lvl.	Peak (DIN)
THD	0.5% (7½); 0.5% (3¾)
THD ref. lvl.	0 VU

GX-4000D


Price	$400
Max. reel size	7"
Format	4-track/2-channel
Heads	3 (GX)
Speeds	7½; 3¾
Flutter	0.08% (7½)
Fast-forward	200 sec (1200')
Rewind	200 sec (1200')
Input sens.	70 mV (line); 0.25 mV (mike); 2 mV (DIN)
Output level	775 mV (line)
Output load	100K ohms
Erasure	70 dB (1 kHz)
Level indic.	2 VU
Features	Mixing; sound-on-sound
Tape #1	Scotch 211
R/P resp.	30 Hz to 24 kHz, ±3 dB (7½); 30 Hz to 16 kHz, ±3 dB (7½)
S/N	60 dB (7½)
THD	1% (7½)
THD ref. lvl.	0 VU

Models also available
GX-635D, $995; GX-267D, $850; GX-625, $750; GX-255, $650; 1722-II, $475

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

DH-510
Price	$1,350
Max. reel size	10½"
Format	½-track/2-channel
Heads	3
Speeds	15; 7½
Flutter	0.025% (15); 0.03% (7½)
Play resp.	20 Hz to 30 kHz, ±1 dB (15); 20 Hz to 25 kHz, ±1 dB (7½)
Input sens.	61.5 mV (line); 0.2 mV (mike)
Output level	1V
Input imped.	100K ohms
Output load	600 ohms
S/N	66 dB (without N/R)

NAGRA
Nagra Magnetic Recorders, Inc.
19 W. 44th St.
New York, N.Y. 10036

IV SD
Price	$6,228
Max. reel size	7" (10½" with QGB)
Format	2-track/2-channel
Heads	3
Speeds	15; 7½; 3¾
Flutter	0.028% (15); 0.030% (7½); 0.043% (3¾) (NAB)
Fast-forward	120 sec (900')
Rewind	120 sec (900')
Input sens.	7.8 microamps (line); 0.28 mV (mike)
Output level	1V
Input imped.	200 ohms
Output load	600 ohms
Separation	60 dB (1 kHz)
Erasure	83 dB (1 kHz)
Level indic.	Peak-reading (-30 dB to +5 dB)
Features	Closed-loop servo; dual-needle meter; universal preamp for all condenser and dynamic (mike); 15 ips Nagramaster EQ
Tape #1	3M 206

R/P resp.	30 Hz to 20 kHz, ±1 dB (15); 30 Hz to 15 kHz, ±1 dB (7½); 30 Hz to 10 kHz, ±2 dB (3¾)
S/N	74.5 dB (15); 68 dB (7½)
S/N ref. lvl.	730 nWb/m (A-weighted)
THD	1% (15)
THD ref. lvl.	730 nWb/m

NEAL-FERROGRAPH
Neal-Ferrograph
652 Glenbrook Rd.
Glenbrook, Conn. 06906

Logic 7

Price	$1,950
Max. reel size	10½"
Format	2- or 4-track/2-channel
Heads	3 (super permalloy)
Speeds	3¾; 7½; 15
Flutter	0.08% (15); 0.10% (7½); 0.17% (3¾)
Play resp.	20 Hz to 20 kHz, ±1.5 dB (15); 20 Hz to 18 kHz, ±2 dB (7½); 30 Hz to 15 kHz, ±2 dB at 3¾ ips
Fast-forward	120 sec (1800')
Rewind	120 sec (1800')
N/R system	Dolby
Input sens.	50 mV-7V (line); 200 uV-50 mV (mike)
Output level	2V at 600 ohms; low level: 300 mV into 10K ohms or greater; loudspeakers: up to 10 watts rms into 8 to 16 ohms
Separation	50 dB (1 kHz) (stereo)/65 dB (1 kHz) (mono)
Erasure	70 dB (1 kHz)
Level indic.	2 VU (–30 dB to +3 dB)
Features	Units available in quarter- or half-track, with or without Dolby, with or without built-in amp and loudspeakers and priced up to $2,650; variable wind control; record-cancel allows user to go into or out of record while deck is in play mode; bass and treble controls
Tape #1	TDK Audua; Ampex 456
R/P resp.	30 Hz to 20 kHz, ±2 dB (15); 30 Hz to 17 kHz, ±2 dB (7½); 40 Hz to 14 kHz, ±3 dB (3¾)
S/N	–60 dB at 2% distortion
THD	2% (7½)
THD ref. lvl.	0 VU

OTARI
Otari Corp.
1559 Industrial Road
San Carlos, Calif. 94070

MX-5050-QXHD

Price	$2,995
Max. reel size	10½"
Format	4-track/4-channel
Heads	4 (permalloy)
Speeds	15; 7½
Flutter	0.05% (15); 0.06% (7½)
Play resp.	35 Hz to 25 kHz, ±3 dB (15); 40 Hz to 20 kHz, ±3 dB (7½)
Fast-forward	90 sec (2500')
Rewind	90 sec (2500')
N/R system	dbx and Dolby interface provided
Input sens.	150 mV (line); 0.25 mV (mike)
Output level	1.25V
Input imped.	600 ohms
Output load	600 ohms
Separation	50 dB at 1 kHz
Erasure	70 dB at 1 kHz
Level indic.	2 VU
Features	DC servo-drive system (±10% speed control); mike/line mixing; selective reproduce; separate electronics; XLR connectors; motion-sense logic; front adjustable bias and EQ controls; 1 kHz test oscillator; splicing block, rack-mount, console, or road case optional
Tape #1	Ampex 456, 3M 250 or equivalent
R/P resp.	50 Hz to 20 kHz, ±2 dB (15); 40 Hz to 20 kHz, ±3 dB (7½)
S/N	65 dB (15) (with N/R)/64 dB (7½) (without N/R)
S/N ref. lvl.	520 nWb/m
THD	1% (15); 1% (7½)
THD ref. lvl.	200 nWb/m

MK-II-2

Price	$2,695
Max. reel size	10½"
Format	2-track/2-channel
Heads	4 (permalloy)
Speeds	15; 7½
Flutter	0.05% (15); 0.06% (7½)
Play resp.	35 Hz to 25 kHz, ±3 dB (15); 35 Hz to 18 kHz, ±2 dB (7½)
Fast-forward	90 sec (2500')
Rewind	90 sec (2500')
Input sens.	150 mV (line); 0.25 mV (mike)
Output level	1.25V
Input imped.	600 ohms
Output load	600 ohms
Separation	60 dB at 1 kHz
Erasure	70 dB at 1 kHz
Level indic.	2 VU (–20 dB to +3 dB)
Features	Servo capstan; variable speed (±7%); selective reproduce; minutes/seconds counter; edit & cue modes; motion-sense logic; XLR connectors; separate electronics on plug-in cards; test oscillator
Tape #1	Ampex 456, 3M 250, or equivalent
R/P resp.	50 Hz to 20 kHz, ±2 dB (15); 30 Hz to 18 kHz, ±2 dB (7½)
S/N	68 dB (15); 68 dB (7½)
S/N ref. lvl.	520 nWb/m
THD	1% (7½; 15)(1 kHz)
THD ref. lvl.	185 nWb/m

Models also available

MX-5050-8SD, $4,995; MX-5050-B, $2,150

PHILIPS
Philips High Fidelity Laboratories
Interstate 40 & Straw Plains Pike
P.O. Box 6960
Knoxville, Tenn. 37914

N-4506

Price	$629.95
Max. reel size	7"
Format	4-track/2-channel
Heads	3 (hardened permalloy)
Speeds	7½; 3¾; 1⅞
Flutter	0.05% (7½); 0.07% (3¾); 0.20% (1⅞) (WRMS)
Play resp.	35 Hz to 26 kHz, ±3 dB (7½); 35 Hz to 20 kHz, ±3 dB (3¾); 35 Hz to 11.5 kHz, ±3 dB (1⅞)
Fast-forward	180 sec (1800')
Rewind	180 sec (1800')
N/R system	Dynamic Noise Limiting (DNL)
Input sens.	100 mV (line); 0.2 mV (mike)
Output level	250 mV
Separation	730 dB at 1 kHz
Level indic.	Peak-reading (–20 dB to +3 dB)
Features	Tacho-control capstan motor; 3 motors; direct-drive DC; DNL; A-B monitor; solenoid controls; headphone amp; sound-on-sound; sound-mixing; LED overload indicators; cueing; variable speed wind and rewind; adjustable outputs

Models also available

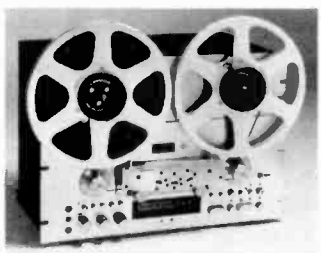
N-4504, $479.95

PIONEER
U.S. Pioneer Electronics Corp.
75 Oxford Drive
Moonachie, N.J. 07074

RT-2022

Price	$1,590
Max. reel size	10½"
Format	2-track
Heads	3 (ferrite, 2 permalloy)
Speeds	15; 7½
Flutter	0.04% (WRMS) (15); 0.08% (WRMS) (7½)
Fast-forward	110 sec (2400')
Rewind	110 sec (2400')
Input sens.	34 mV (line); 0.11 mV (mike)
Output level	450 mV to 930 mV into 50-ohm load
Separation	53 dB at 1 kHz
Level indic.	2 VU (–40 dB to +6 dB); peak-reading LEDs
Features	Two 6-pole inner-rotor induction reel motors; one 4/8 pole hysteresis synchronous capstan multi-mixing facilities with mixer; metered playback; changeable head unit (4 ch/2 ch); bias and EQ selector; built-in tape oscillator; remote control
Tape #1	Scotch 206
R/P resp.	30 Hz to 28 kHz, ±3 dB (15); 40 Hz to 20 kHz ±3 dB (7½)
S/N	57 dB (15)
S/N ref. lvl.	+6 dB (NAB)
THD	0.8% (15); 1% (7½)
THD ref. lvl.	0 dB (NAB)

RT-909



Price	$895
Max. reel size	10½"
Format	4-track/2-channel
Heads	4 (permalloy)
Speeds	7½; 3¾
Flutter	0.04% (7½); 0.08% (3¾)
Play resp.	20 Hz to 28 kHz, ±3 dB (7½); 20 Hz to 18 kHz, ±3 dB (3¾)
Rewind	120 sec (2400'
Input sens.	50 mV (line); 0.316 mV (mike)
Output level	450 mV
Input imped.	2.6 ohms
Erasure	60 dB
Level indic.	2 VU; peak-reading; (–30 dB to +8 dB)
Features	FG servo DC capstan motor; 24-segment Fluroscan meter; rack-mountable

RT-701

Price	$595
Max. reel size	7"
Format	4-track/2-channel
Heads	3 (permalloy)
Speeds	7½; 3¾
Flutter	0.5% (7½); 0.5% (JIS) (3¾)
Play resp.	30 Hz to 24 kHz, ±3 dB (7½); 30 Hz to 16 kHz, ±3 dB (3¾)
Fast-forward	100 sec (2139')
Rewind	100 sec (2139')
Input sens.	50 mV (line); 0.25 mV (mike)
Output level	450 mV
Output load	50K ohms (min)
Separation	50 dB (JIS)
Erasure	60 dB at 1 kHz
Level indic.	2 VU (–20 dB dB to +3 dB)
Features	Three-motor pitch controllable AC servo direct capstan-drive system; mike/line mixing; 2-step bias and EQ switches; electronic switching

Models also available

RT-2044, $2,010; RT-707, $695

REALISTIC
Radio Shack Corp.
1400 One Tandy Center
Ft. Worth, Texas 76102

TR-3000

Price	$499.95
Max. reel size	7"
Format	¼-track/2-channel
Heads	3 (2 hard permalloy R/P; ferrite doublegap erase)
Speeds	3¾; 7½
Flutter	0.08% (WRMS) (3¾); 0.06% (WRMS) (7½)
Play resp.	33 Hz to 14 kHz, ±1½ dB (3¾); 33 Hz to 20 kHz, ±1½ dB (7½)
Fast-forward	100 sec (1800')
Rewind	100 sec (1800')
N/R system	None
Input sens.	60 mV (line); 0.25 mV (mike)
Output level	450 mV
Input imped.	10K ohms
Separation	50 dB (1 kHz)
Erasure	75 dB (1 kHz)
Level indic.	2 VU (–20 dB to +3 dB)
Features	Full logic control; record mute button; 3 motors
Tape #1	Supertape Gold
R/P resp.	30 Hz to 20 kHz, ±3 dB (3¾); 30 Hz to 28 kHz, ±3 dB (7½)
S/N	55 dB (3¾); 58 dB (7½)
S/N ref. lvl.	185 nWb/m (A-weighted)
THD	0.9% (3¾); 0.9% (7½)
THD ref. lvl.	185 nWb/m

REVOX
Studer Revox America, Inc.
1425 Elm Hill Pike
Nashville, Tenn. 37210

B-67

Price	From $3,910
Max. reel size	10½"
Format	2-track/2-channel
Heads	3 (Studer)
Speeds	30; 15; 7½ (available in 15, 7½, 3¾)
Flutter	0.04% (30); 0.06% (15); 0.08% (7½)
Rewind	120 sec (2300')
N/R system	None
Input sens.	–20 dBm (line)
Output level	+22 dBm
Input imped.	50 ohms
Output load	200 ohms
Separation	45 dB (1 kHz); 40 dB, 80 Hz to 12 kHz
Erasure	75 dB at 1 Hz (15)
Level indic.	2 VU (–20 dB to +3 dB)
Features	Studio mastering deck; real-time digital readout; ASA VU meters; built-in editing facilities with dump edit mode; sync mode; fader start; quartz-controlled speed; all modular construction
Tape #1	3M 206
R/P resp.	40 Hz to 20 kHz, ±2 dB (30); 30 Hz to 18 kHz, ±2 dB (15); 30 Hz to 15 kHz, ±2 dB (7½); 40 Hz to 10 kHz, ±2 dB (3¾)
S/N	61 dB (30); 61 dB (15); 61 dB (7½); 59 dB (3¾) (without N/R)
S/N ref. lvl.	±6 dB re 185 nWb/m
THD	1% (30); 1% (15); 1% (7½); 1.5% (3¾)
THD ref. lvl.	185 nWb/m

A-77

Price	$1,399 (7½; 3¾ speeds); $1,499 (15; 7½ speeds)
Max. reel size	10½"
Format	4-track/2-channel
Heads	3 (Revodur)
Speeds	7½; 3¾
Flutter	0.08% (7½; 0.1% (3¾)
Play resp.	NAB or IEC (switchable)
N/R system	Optional Dolby-B
Input sens.	35 mV (line); 0.15/2.5 mV (switchable) (mike) 2.5 (other) (DIN)
Output level	2.5V
Input imped.	600 ohms
Separation	45 dB at 1 kHz
Level indic.	2 VU (–20 dB to +3 dB)
Features	Electronic-speed regulation and servo-controlled braking; logic-controlled transport with die-cast chassis; hi-Z or lo-Z mike inputs; built-in amplifier and speakers

Models also available

A-700, From $2,999; B-77, $1,499

SONY
Sony Industries
9 W. 57th St.
New York, N.Y. 10019

TC-399

Price	$500
Max. reel size	7"
Format	4-track/2-channel
Heads	3 (F&F)

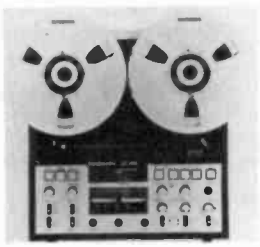
Speeds	7½; 3¾; 1⅞
Flutter	0.06% (7½)
Input sens.	77.5 mV (line); 0.025 mV (mike)
Output level	0.775V
Input imped.	50K ohms
Output load	10K ohms
Separation	60 dB at 1 kHz
Erasure	65 dB at 400 Hz
Level indic.	2 VU (–20 dB to +5 dB)
Features	Three-position bias and EQ; sound-on-sound; auto shutoff
Tape #1	Sony FeCr
R/P resp.	30 Hz to 25 kHz, ±3 dB (7½); 30 Hz to 18 kHz, ±3 dB (3¾)
S/N	61 dB (7½)
S/N ref. lvl.	3% (IHF A-weighted)
THD	0.8% (7½)
THD ref. lvl.	0 dB
Tape #2	Sony EHF
R/P resp.	30 Hz to 25 kHz, ±3 dB (7½); 30 Hz to 18 kHz, ±3 dB (3¾)
S/N	58 dB (7½)(without N/R)
S/N ref. lvl.	3% (IHF A-weighted)

Models also available

TC-766, $1,300

TANDBERG
Tandberg of America, Inc.
Labriola Court
Armonk, N.Y. 10504

TD-20A



Price	$1,500
Max. reel size	10½
Format	4-track/2-channel
Heads	3
Speeds	7½; 3¾
Flutter	0.05% (7½); 0.09% (3¾)
Play resp.	20 Hz to 26 kHz, ±2 dB (7½); 20 Hz to 18 kHz, ±2 dB (3¾)
Fast-forward	75 sec (2500')
Rewind	75 sec (2500')
N/R system	None
Input sens.	50 mV (line); 0.2 mV (mike)
Output level	1.5V
Input imped.	100 ohms
Separation	64 dB (1 kHz)
Erasure	70 dB (1 kHz)
Level indic.	2 VU; peak-reading (–24 dB to +3 dB)
Features	Four motors; Prom-Brain Logic; sel sync; wireless, PCM, infrared remote control; also available in high-speed half-track format, $1,650
Tape #1	Maxell UDXL

R/P resp.	20 Hz to 26 kHz, ±2 dB (7½); 20 Hz to 18 kHz, ±2 dB (3¾)
S/N	67 dB (7½); 65 dB (3¾)
S/N ref. lvl.	67 dB (IEC A)
THD	2% (7½); 2% (3¾)
THD ref. lvl.	3%

TEAC
Teac Corp. of America
7733 Telegraph Road
Montebello, Calif. 90640

35-2B

Price	$1,990
Max. reel size	10½"
Format	¼-track/2 channels
Heads	4
Speeds	15; 7½
Flutter	0.03% (15); 0.06% (7½)
Play resp.	40 Hz to 22 kHz, ±3 dB (15); 40 Hz to 13 kHz, ±3 dB (7½
Fast-forward	160 sec (1800')
Rewind	160 sec (1800')
N/R system	dbx
Input sens.	60 mV (line)
Output level	0.87V
Input imped.	50K ohms
Output load	10K ohms

40-4

Price	$1,790
Max. reel size	10½"
Format	4-track/4-channel
Heads	3 (2 permalloy R/P; 1 ferrite erase)
Speeds	15; 7½
Flutter	0.04% (15) (WRMS)
Play resp.	40 Hz to 20 kHz, ±3 dB (15); 40 Hz to 15 kHz, ±3 dB (7½)
Fast-forward	140 sec (1800')
Rewind	120 sec (2,500')
N/R system	Optional dbx
Input sens.	100 mV (line); 0.25 mV (mike)
Output level	300 mV
Input imped.	10K ohms
Output load	5K ohms
Separation	50 dB (1 kHz)
Erasure	68 dB (1 kHz)
Level indic.	2 VU (–20 dB to +3 dB); peak-reading LED
Features	Three motors (1 belt-drive capstan); solenoid-control transport; optional remote/manual cue control
Tape #1	Ampex 456
R/P resp.	40 Hz to 20 kHz, ±3 dB (15); 40 Hz to 15 kHz, ±3 dB (7½)
S/N	65 dB (7½) (without N/R)
S/N ref. lvl.	9 dB over 185 nWb/m (IEC A)
THD	1% (7½)
THD ref. lvl.	185 nWb/m
Tape #2	Maxell UD
R/P resp.	40 Hz to 20 kHz, ±3 dB (15); 40 Hz to 15 kHz, ±3 dB (7½)
S/N	63 dB (15); 65 dB (7½)
S/N ref. lvl.	3% (A-weighted)
THD	1% (15); 1% (7½)
THD ref. lvl.	185 nWb/m

A-3440

Price	$1,650
Max. reel size	10½"
Format	4-track/4-channel
Heads	3 (permalloy)
Speeds	15; 7½
Flutter	0.04% (15); 0.06% (7½) (NAB)
Play resp.	40 Hz to 20 kHz, ±3 dB (15); 40 Hz to 20 kHz, ±3 dB (7½)
Fast-forward	140 sec (1800')
Rewind	140 sec (1800')
N/R system	Optional dbx
Input sens.	60 mV (line); 0.25 mV (mike)
Output level	300 mV
Input imped.	10K ohms
Output load	5K ohms
Separation	50 dB (1 kHz)
Erasure	68 dB (1kHz)
Level indic.	2 VU (–20 dB to +3 dB)
Features	Three motors (1 belt-drive capstan); solenoid-control transport; optional remote/manual cue control
Tape #1	Maxell UD
R/P resp.	40 Hz to 22 kHz, ±3 dB (15); 40 Hz to 20 kHz, ±3 dB (7½)
S/N	65 dB (without N/R)
S/N ref. lvl.	9 dB over 185 nWb/m (IEC A)
THD	1% (7½)
THD ref. lvl.	185 nWb/m
Tape #2	TDK SA
R/P resp.	40 Hz to 22 kHz, ±3 dB (15); 40 Hz to 20 kHz, ±3 dB (7½)
S/N	65 dB (15)
S/N ref. lvl.	3% (A-weighted)
THD	1% (15); 1% (7½)
THD ref. lvl.	185 nWb/m

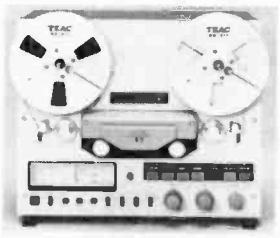
X-10R

Price	$1,150
Max. reel size	10½"
Format	4-track/2-channel
Heads	6 (2 erase, 2 play, 2 record)
Speeds	7½; 3¾
Flutter	0.03%
Play resp.	30 Hz to 28 kHz
Fast-forward	100 sec (1800')
Rewind	100 sec (1800')
N/R system	dbx
Input sens.	60 mV (line); 0.25 mV (mlke)
Output level	450 mV
Input imped.	10K ohms
Output load	5K ohms
Level indic.	2 VU (–20 dB to +3 dB)
Features	Three DC motors; bidirectional record/play; dual capstan closed-loop transport
Tape #1	Maxell UD
R/P resp.	30 Hz to 28 kHz (3¾); 40 Hz to 20 Hz, ±3 dB, –10 VU (7½)
S/N	63 dB
THD	0.8%

A-3300SX 2T

Price	$1,050
Max. reel size	10½"
Format	2-track/2-channel
Heads	3 (permalloy)
Speeds	15; 7½
Flutter	0.04% (15); 0.06% (7½) (NAB)
Play resp.	30 Hz to 26 kHz, ±3 dB (15); 30 Hz to 24 kHz, ±3 dB (7½)
Fast-forward	140 sec (1800')
Rewind	140 sec (1800')
Input sens.	100 mV (line); 0.25 mV (mike)
Output level	300 mV
Input imped.	10K ohms
Separation	50 dB (1 kHz)
Erasure	65 dB (1 kHz)
Level indic.	2 VU (–20 dB to +3 dB)
Features	Three motors (belt-drive capstan); 2-mike/2-line mixing; solenoid transport control; optional remote/manual cue control
Tape #1	Maxell UD; TDK Audua; Scotch 206; Ampex 456
R/P resp.	30 Hz to 22 kHz, ±3 dB (15); 30 Hz to 20 kHz, ±3 dB (7½)
S/N	67 dB (15) (without N/R)
S/N ref. lvl.	9 dB over 185 nWb/m (IEC)
THD	1% (15)
THD ref. lvl.	185 nWb/m

X-7



Price	$700
Max. reel size	7"
Format	4-track/2-channel
Heads	3
Speeds	7½; 3¾
Flutter	0.03% (7½)
Play resp.	30 Hz to 28 kHz
Fast-forward	140 sec (1800')
Rewind	140 sec (1800')
Input sens.	60 mV (line); 0.25 mV (mike)
Output level	450 mV
Input imped.	10K ohms
Output load	5K ohms
Level indic.	2 VU (–20 dB to +3 dB)
Features	Three DC motors; dual capstan closed-loop transport
Tape #1	Maxell UD
R/P resp.	30 Hz to 28 kHz (3¾); 40 Hz to 20 kHz, ±3 dB, –10 VU (7½)
S/N	63 dB
THD	0.8%

X-3

Price	$550
Max. reel size	7"
Format	4-track/2-channel
Heads	3
Speeds	7½; 3¾
Flutter	0.04% (7½); 0.06% (3¾)
Play resp.	30 Hz to 28 kHz (7½); 30 Hz to 20 kHz, (3¾)
Fast-forward	100 sec (1800")
Rewind	100 sec (1800')
Input sens.	60 mV (line); 0.25 mV (mlke)
Output level	0.45V
Input imped.	100K ohms
Output load	10K ohms

Models also available

80-8, $3,990; A-6600, $1,575; A-2340SX, $1,175; 32-2B, $1,125; X-10, $1,000; X-7R, $800

TECHNICS
Panasonic Co.
One Panasonic Way
Secaucus, N.J. 07094

RS-1700

Price	$2,000
Max. reel size	10½"
Format	4-track/2-channel
Heads	6 (permalloy)
Speeds	15; 7½; 3¾
Flutter	0.018% (15); 0.03% (7½); 0.06% (3¾) (WRMS) (JIS)
Play resp.	30 Hz to 30 kHz, ±3 dB (15); 20 Hz to 25 kHz, ±3 dB (7½); 20 Hz to 15 kHz, ±3 dB (3¾)
Fast-forward	150 sec (2500')
Rewind	150 sec (2500')
Input sens.	60 mV (line); 0.25 mV (mike)
Output level	775 mV
Input imped.	3K ohms
Output load	22K ohms
Erasure	65 dB (1 kHz)
Level indic.	2 VU
Features	Three-motor, quartz-locked "Isolated-Loop"; direct drive; auto reverse; tape-tension control; IC logic control
Tape #1	Scotch 207
R/P resp.	30 Hz to 30 kHz, ±3 dB (15); 20 Hz to 25 kHz, ±3 dB (7½); 20 Hz to 15 kHz, ±3 dB (3¾)
S/N	66 dB (15); 66 dB (7½); 64 dB 3¾
S/N ref. lvl.	3%
THD	0.8% (15); 0.8% (7½); 0.8% (3¾)
THD ref. lvl.	0 VU

RS-1506

Price	$1,500
Max. reel size	10½"

Format	4-track/2-channel
Heads	4 (permalloy)
Speeds	15; 7½; 3¾
Flutter	0.018% (15); 0.03% (7½); 0.06% (3¾) (WRMS) (JIS)
Play resp.	30 Hz to 30 kHz, ±3 dB (15); 20 Hz to 25 kHz, ±3 dB (7½); 20 Hz to 15 kHz, ±3 dB (3¾)
S/N	66 dB (15); 66 dB (7½); 64 dB (3¾)
S/N ref. lvl.	3%
THD	0.8% (15); 0.8% (7½); 0.8% (3¾)
THD ref. lvl.	0 VU to 25 kHz, ±3 dB (7½); 20 Hz to 15 kHz, ±3 dB (3¾)
Fast-forward	150 sec (2500')
Rewind	150 sec (2500')
Input sens.	60 mV (line); 0.25 mV (mike)
Output level	775 mV
Input imped.	3K ohms
Output load	22K ohms
Separation	50 dB
Erasure	65 dB (1 kHz)
Level indic.	2 VU
Tape #1	Scotch 207
R/P resp.	30 Hz to 30 kHz, ±3 dB (15); 20 Hz to 25 kHz, ±3 dB (7½); 20 Hz to 16 kHz, ±2 dB (3¾); 35 Hz to 16 kHz, ±2 dB (1⅞)
THD	2% (7½); 2% (3¾); 2.5% (1⅞)
THD ref. lvl.	0 VU

Models also available

RS-1520, $2,000; RS-1500US, $1,500

UHER
Mineroff Electronics, Inc.
946 Downing Road
Valley Stream, N.Y. 11580

SG-631

Price	$1,800
Max. reel size	10½
Format	2- or 4-track/2-channel
Heads	4 (μ-metal)
Speeds	3¾; 1⅞
Flutter	0.05% (7½); 0.1% (3¾); 0.2% (1⅞)
Play resp.	20 Hz to 25 kHz, ±2 dB (7½); 20 Hz to 16 kHz, ±2 dB (3¾); 20 Hz to 12.5 kHz, ±2 dB (1⅞)
Fast-forward	120 sec (4200')
Rewind	120 sec (4200')
Input sens.	80 mV (line); 0.1 mV (mike)
Output level	750 mV
Input imped.	15K ohms
Output load	600 ohms
Separation	55 dB (1 kHz)
Erasure	80 dB
Level indic.	2 peak-reading
Features	Four-motor Omega drive system; slide and movie sync; interchangeable head assembly
Tape #1	4000 IC
R/P resp.	35 Hz to 20 kHz, ±2 dB (7½); 35 Hz to 16 kHz, ±2 dB (3¾); 35 Hz to 8 kHz, ±2 dB (1⅞); 35 Hz to 5 kHz, ±2 dB (15/16)
S/N	64 dB (7½); 63 dB (3¾; 60 dB (1⅞)
S/N ref. lvl.	CrO_2 (SA)
THD	2% (7½); 2% (3¾); 25% (1⅞)
THD ref. lvl.	0 VU
Tape #2	4400-4200 (stereo)
R/P resp.	35 Hz to 20 kHz, ±2 dB (7½); 35 Hz to 16 kHz, ±2 dB (3¾); 35 Hz to 16 kHz, ±2 dB (1⅞)
THD	2% (7½); 2% (3¾); 2.5% (1⅞)
THD ref. lvl.	0 VU

Models also available

4000 Report Monitor AV, $950

Cassette Recorders

AIWA
Aiwa America, Inc.
35 Oxford Drive
Moonachie, N.J. 07074

ADM-800BU

Price	$795
Heads	3 (combination V-cut Sendust)
Flutter	0.04% (WRMS)
Play resp.	30 Hz to 17 kHz, +2, -3 dB
Fast-forward	90 sec (C-60)
Rewind	90 sec (C-60)
N/R system	Dolby
Input sens.	50 mV (line); 0.3 mV (mike)
Input imped.	50 ohms
Output load	50 ohms
Record indic.	VU; peak-reading (–6 dB to +10 dB)
Features	D.A.T.A. system; infared wireless remote control; feather-touch LC logic; dual motor; manual adjust bias/continuous auto repeat and memory replay; timer standby; rec/mute edit; rec sync operation
R/P resp.	30 Hz to 17 kHz, ±2 dB at -3 VU
S/N	68 dB (with N/R)/58 dB (without N/R)

AD-M700U

Price	$490
Heads	3 (Sendust)
Flutter	0.04%
Fast-forward	90 sec (C-60)
Rewind	90 sec (C-60)
N/R system	Dolby
Input sens.	50 mV (line); 0.3 mV (mike)
Output level	410 mV
Input imped.	50K ohms
Record indic.	2 VU (–20 dB to +10 dB); peak-reading LED
Features	Metal-tape capability; fine bias adjustment all tape; feather-touch logic control; auto repeat; rec/mute edit control; memory stop and replay; timer standby
Tape #1	Scotch Metafine
R/P resp.	30 Hz to 17 kHz, ±2 dB
S/N	65 dB (with N/R)/55 dB (without N/R)
S/N ref. lvl.	3% THD (IEC A-weighted)

ADR-500U

Price	$450
Heads	2 (sendust)
Flutter	0.05% (WRMS)
Play resp.	30 Hz to 17 kHz, +2, -3 dB
Fast-forward	70 sec (C-60)
Rewind	70 sec (C-60)
N/R system	Dolby
Input sens.	50 mV (line); 0.3 mV (mike); 0.1 (other) re NAB 0
Output level	0.41 mV re DIN 0
Input imped.	50 ohms
Record indic.	VU; peak-reading (+4 dB to +10 dB)
Features	Quick reverse (0.4 secs); 180-degree radial pivot head; dual motor drive; 3 playback, 2 record modes; 2 motor LC logic control; metal compapatible; auto LH/CrO_2 switch timer standby
R/P resp.	30 Hz to 17 kHz, ±2 dB at -3 VU
S/N	65 dB (with N/R)/55 dB (without N/R)

SDL-50U

Price	$320
Heads	2 (Sendust)
Flutter	0.04% (WRMS)
Fast-forward	90 sec (C-60)
Rewind	90 sec (C-60)
N/R system	Dolby
Input sens.	50 mV (line); 0.3 mV (mike)
Output level	0.41 mV re DIN 0
Input imped.	50 ohms
Record indic.	Bar-graph type (–20 dB to +10 dB)
Features	Dual motor drive; feather-touch logic control; auto rewind/repeat operation; timer standby; rec-sync operation; minl size
R/P resp.	30 Hz to 16 kHz, ±2 dB at -3 VU
S/N	64 dB (with N/R)/54 dB (without N/R)

ADL-300U

Price	$240
Heads	2 (hard permalloy)
Flutter	0.6% (WRMS)
Fast-forward	80 sec (C-60)
Rewind	80 sec (C-60)
N/R system	Dolby
Input sens.	5 mV (line); 0.3 mV (mike); 0.1 (other) re NAB O
Output level	0.41 mV re DIN O
Input imped.	50 ohms
Output load	50 ohms
Record indic.	Peak LED; bar-graph type (–20 dB to +10 dB)
Features	Metal tape compatibility; 9-step quick music sensor; LH bias fine adjust; rec mute; output level control
R/P resp.	30 Hz to 14 kHz, ±2 dB at -3 VU
S/N	62 dB (with N/R)/52 dB (without N/R)

Models also available

ADM-800U, $770; AD-M700BU, $500; AD-M600U, $390; ADL-450U, $295; AD-M250, $195; AD-M100U, $179

AKAI
Akai America, Ltd.
2139 E. Del Amo Blvd.
P.O. Box 6010
Compton, Calif. 90224

GX-F90

Price	$595
Heads	3 (R/P; super GX combo monitoring; erase)
Flutter	0.035% (WRMS)
Play resp.	25 Hz to 21 kHz, ±3 dB
Fast-forward	60 sec (C-60)
Rewind	60 sec (C-60)
N/R system	Dolby
Input sens.	70 mV (line); 0.25 mV (mike); 2 mV (DIN)
Output level	410 mV
Output load	20K ohms

Separation	30 dB (1 kHz)
Erasure	70 dB (1 kHz)
Record indic.	Bar-graph; peak-reading (with switch) (–20 dB to +8 dB)
Features	DC servo direct-drive motor; IPLS, feather-touch controls; line/mike mixing
Tape #1	Metal
R/P resp.	25 Hz to 21 kHz, ±3 dB
S/N	72 dB (with N/R above 5 kHz)/62 dB (without N/R)
S/N ref. lvl.	Peak (DIN)
THD	0.6%
THD ref. lvl.	0 VU
Tape #2	CrO_2
R/P resp.	25 Hz to 17 kHz, ±3 dB
S/N	71 dB (with N/R)/61 dB (without N/R)
S/N ref. lvl.	Peak (DIN)
THD	0.7%
THD ref. lvl.	0 VU

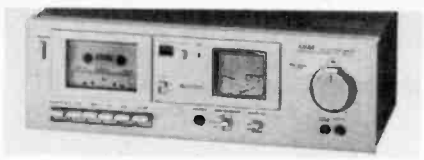
GX-M50

Price	$375
Heads	3 (super GX combo R/P; 2 erase)
Flutter	0.04% (WRMS)
Play resp.	30 Hz to 21 kHz, ±3 dB
Fast-forward	90 sec (C-60)
Rewind	90 sec (C-60)
N/R system	Dolby
Input sens.	70 mV (line); 0.25 mV (mike); 2 mV (DIN)
Output level	410 mV
Output load	20K ohms
Separation	30 dB (1 kHz)
Erasure	70 dB
Record indic.	2 bar-graph; two-color peak-reading (with switch) (–20 dB to +8 dB)
Features	IPLS (Instant Program Locating System); bias adjustment; record master; line/mike mixing
Tape #1	Metal
R/P resp.	30 Hz to 21 kHz, ±3 dB
S/N	72 dB (with N/R)/62 dB (without N/R)
S/N ref. lvl.	Peak (DIN)
THD	0.6%
THD ref. lvl.	0 VU
Tape #2	CrO_2 (SA)
R/P resp.	30 Hz to 16 kHz ±3 dB
S/N	72 dB (with N/R)/62 dB (without N/R)
S/N ref. lvl.	Peak (DIN)
THD	0.7%
THD ref. lvl.	0 VU

CS-732D

Price	$350
Heads	3 (R/P; 2 erase)
Flutter	0.06% (WRMS)
Play resp.	35 Hz to 15 kHz, ±3 dB
Fast-forward	90 sec (C-60)
Rewind	90 sec (C-60)
N/R system	Dolby
Input sens.	70 mV (line); 0.25 mV (mike); 2 mV (DIN)
Output level	410 mV
Output load	20K ohms
Erasure	65 dB (1 kHz)
Record indic.	2 VU (–20 dB to +5 dB); peak-reading lamp
Features	Bidirectional record/play
Tape #1	FeCr (Sony Duad)
R/P resp.	35 Hz to 15 kHz, ±3 dB
S/N	66 dB (with N/R)/56 dB (without N/R)
S/N ref. lvl.	DIN A-weighted
THD	1.5%
THD ref. lvl.	0 VU
Tape #2	CrO_2 (SA)
R/P resp.	35 Hz to 14 kHz, ±3 dB
S/N	66 dB (with N/R)/56 dB (without N/R)
S/N ref. lvl.	DIN A
THD	1.5%
THD ref. lvl.	0 VU

CS-M01



Price	$179.95
Heads	2 (permalloy)
Flutter	0.05% (WRMS)
Play resp.	30 Hz to 17 kHz, ±3 dB
Fast-forward	90 sec (C-60)
Rewind	90 sec (C-60)
N/R system	Dolby
Input sens.	70 mV (line); 0.25 mV (mike)
Output level	410 mV
Output load	20 ohms
Record indic.	2 bar-graph VU meters (–20 dB to +5 dB)
Features	Timer record and playback capability
Tape #1	FeCr
R/P resp.	30 Hz to 17 kHz, ±3 dB
S/N	67 dB (with N/R)/57 dB (without N/R)
S/N ref. lvl.	Peak (DIN)
THD	0.7%
THD ref. lvl.	0 VU
Tape #2	CrO_2
R/P resp.	30 Hz to 16 kHz, ±3 dB
S/N	67 dB (with N/R)/57 dB (without N/R)
S/N ref. lvl.	Peak (DIN)
THD	0.7%
THD ref. lvl.	0 VU

Models also available

GX-F60R, $500; GX-F80, $495; CS-M40R, $350; GX-M10, $299.95; CS-M02, $229.95

AUDIOLOGIC
Randix Industries Ltd.
991 Broadway
Albany, N.Y. 12204

TCD-27

Price	$299.95
Heads	2 (permalloy R/P)
Flutter	0.2% (WRMS)
Play resp.	35 Hz to 12.5 kHz, ±3 dB
Fast-forward	120 sec (C-90)
Rewind	120 sec (C-90)
N/R system	Dolby
Input sens.	100 mV (line); 0.5 mV (mike)
Output level	560 mV re DIN O
Input imped.	50K ohms
Output load	50K ohms
Separation	30 dB (1 kHz)
Erasure	60 dB (100 Hz) (Fe_2O_3)
Record indic.	VU (–20 dB to +3 dB)
Tape #1	Fe_2O_3
R/P resp.	35 Hz to 12 kHz, ±3 dB at –30 VU
S/N	52 dB (with N/R)/44 dB (without N/R)
S/N ref. lvl.	3% THD at 1 kHz (A-weighted)
THD	2.5%
THD ref. lvl.	O VU at 1 kHz
Tape #2	CrO_2
R/P resp.	35 Hz to 12.5 kHz, ±3 dB at –30 VU
S/N	53 dB (with N/R)/45 dB (without N/R)
S/N ref. lvl.	3% THD 1 kHz (A-weighted)
THD	3%
THD ref. lvl.	O VU 1 kHz

BANG & OLUFSEN
Bang & Olufsen of America
515 Busse Road
Elk Grove Village, Ill. 60007

Beocord 8000

Price	$995
Heads	2 (Sendust R/P; double-split ferrite erase)
Flutter	±0.1%
Play resp.	30 Hz to 16 kHz, ±2.5 dB
Fast-forward	70 sec (C-60)
Rewind	70 sec (C-60)
N/R system	Dolby
Input sens.	1 mV (10K ohms) (line); 0.1 mV (2.2K ohms) (mike); 120 mV (1.2K ohms) (aux)
Output level	800 mV (2K ohms)
Separation	35 dB (1 kHz)
Erasure	70 dB
Record indic.	Peak-reading (–20 dB to +6 dB)
Features	Tape position indicator in real-time; auto search in real-time
Tape #1	Metal
R/P resp.	30 Hz to 16 kHz, ±2.5 dB
S/N	68 dB (with N/R)/61 dB (without N/R)
THD	1.5%
Tape #2	Chrome
R/P resp.	30 Hz to 16 kHz, ±2.5 dB
S/N	66 dB (with N/R)/58 dB (without N/R)

Models also available

Beocord 1900, $525

B.I.C.
B.I.C./Avnet
South Service Road
Westbury, N.Y. 11590

T-4M Two-Speed Deck

Price	$749.95
Heads	3 (Sendust record; Sendust erase; hard ferrite play)
Flutter	0.05% (1⅞); 0.03% (3¾)
Fast-forward	50 sec (C-60)
Rewind	50 sec (C-60)
N/R system	Dolby
Input sens.	200 mV (line)
Output level	2V
Input imped.	600 ohms
Output load	3.3K ohms
Separation	35 dB at 1 kHz
Erasure	75 dB at 1 kHz
Record indic.	2 peak-reading bar-graph LED dis-

play (–36 dB to +9 dB)
Features Metal-equipped; 2 motors; dual capstan; bias trim; pitch; MPU; mike/line
Tape #1 TDK MA
R/P resp. 20 Hz to 21 kHz, ±3 dB (1⅞); 20 Hz to 23 kHz, ±3 dB (3¾) (guaranteed minimums)
S/N 71 dB/64 dB (3¾); 68 dB/60 dB (1⅞)
S/N ref. lvl. 3% THD (A-weighted)
THD 1.2% (1⅞); 0.9% (3¾)
THD ref. lvl. 0 (200 nWb/m)
Tape #2 TDK SA
R/P resp. 20 Hz to 23 kHz, ±3 dB (3¾); 20 Hz to 21 kHz, ±3 dB (1⅞) (guaranteed minimums)
S/N 68 dB/61 dB (3¾); 65 dB/57 dB (1⅞)
S/N ref. lvl. 3% THD (A-weighted)
THD 1.0% (3¾); 1.3% (1⅞)
THD ref. lvl. 0 (200 nWb/m)

T-2M Two-Speed Deck

Price $349.95
Heads 2 (Sendust dual gap erase; Sendust R/P)
Flutter 0.06% (1⅞); 0.04% (3¾)
Fast-forward 50 sec (C-60)
Rewind 50 sec (C-60)
N/R system Dolby
Input sens. 200 mV (line); 30 mV (mike)
Output level 2V
Input imped. 600 ohms
Output load 3.3K ohms
Separation 35 dB (1 kHz)
Erasure 75 dB (1 kHz)
Record indic. 2 peak-reading (–40 dB to +5 dB)
Features Metal-equipped; memory rewind; record mute; MPX filter switch; high-speed tape handling; output and headphone level controls
Tape #1 TDK MA
R/P resp. 25 Hz to 19 kHz, ±3 dB (1⅞); 25 Hz to 21 kHz, ±3 dB (3¾) (guaranteed minimums)
S/N 67 dB/60 dB (3¾); 64 dB/56 dB (1⅞)
S/N ref. lvl. 3% THD (A-weighted)
THD 1.5% (1⅞); 1.2% (3¾)
THD ref. lvl. 0 VU (200 nWb/m)
Tape #2 TDK SA
R/P resp. 25 Hz to 21 kHz, ±3 dB (3¾); 25 Hz to 18 kHz 20, ±3 dB (1⅞) (guaranteed minimums)
S/N 66 dB/59 dB (3¾); 63 dB/55 dB (1⅞)
S/N ref. lvl. 3% THD (A-weighted)
THD 1.4% (1⅞); 1.3% (3¾)
THD ref. lvl. 0 dB (200 nWb/m)

Models also available

T-3M Two-Speed Deck, $499.95; T-05M, $209.95

CALIBRE
Calibre
1301 65th St.
Emeryville, Calif. 94608

440

Price $335
Heads 2 (permalloy)
Flutter 0.06%
Play resp. 40 Hz to 15 kHz, ±3 dB
Fast-forward 85 sec (C-60)
Rewind 85 sec (C-60)
N/R system Dolby B
Input sens. 60 mV (line); 0.3 mV (mike)
Output level 580 mV
Input imped. 1K ohms
Separation 65 dB at 1 kHz
Erasure 65 dB at 1 kHz
Record indic. Peak-reading (–20 dB to +5 dB); LEDs
Features FM Dolby; 100 kHz bias; direct loading; memory stop; full auto shutoff
Tape #1 TDK AD
R/P resp. 30 Hz to 15.5 kHz, ±3 dB
S/N 52 dB/62 dB
S/N ref. lvl. Dolby
THD 1.5%
THD ref. lvl. Dolby
Tape #2 TDK SA
R/P resp. 30 Hz to 15.5 kHz, ±3 dB
S/N 52 dB/62 dB
S/N ref. lvl. Dolby
THD 1.5%
THD ref. lvl. Dolby

CONCEPT
CBS Retail Stores
1313 53rd St.
Emeryville, Calif. 94608

ELC

Price $525
Heads 2 (Sendust alloy)
Flutter 0.04%
Play resp. 30 Hz to 16 kHz, ±3 dB
Fast-forward 75 sec (C-60)
Rewind 75 sec (C-60)
N/R system Dolby
Input sens. 60 mV (line); 0.27 mV (mike)
Output level 1V
Input imped. 47K ohms
Output load 7K ohms
Separation 50 dB (1 kHz)
Record indic. 2 VU (–20 dB to +4 dB); peak-reading LED
Features Computer logic control; 2-motor drive; auto repeat; limiter
Tape #1 Maxell UDXL-I
R/P resp. 30 Hz to 16 kHz, ±3 dB
S/N 52 dB/62 dB
S/N ref. lvl. 0 VU
THD 1%
THD ref. lvl. +3 dB
Tape #2 TDK SA

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

DR-250

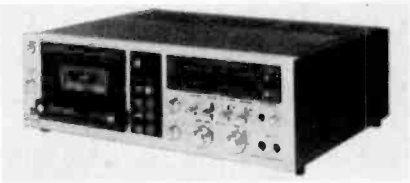
Price $430
Heads 2 (Sendust R/P; double-gap ferrite erase)
Flutter 0.045% (WRMS)
Play resp. 30 Hz to 16.5 kHz, ±3 dB
Fast-forward 70 sec (C-60)
Rewind 70 sec (C-60)
N/R system Dolby
Input sens. 69 mV (line); 0.3 mV (mike)
Output level 0.416 mV
Input imped. 50K ohms
Output load 10K ohms
Separation 35 dB at 1 kHz
Erasure 65 dB at 1 kHz
Record indic. 2 VU (–20 dB to +5 dB); 5 peak-reading LEDs
Features 4-position tape selector; metal-compatible; servo-controlled motor; auto repeat; auto memory; front-panel bias
THD ref. lvl. +3 dB
R/P resp. 30 Hz to 16.5 kHz
S/N 64 dB (with N/R)
S/N ref. lvl. +3 dB (A-weighted)

Models also available

DR-230, $375

DUAL
United Audio Products
120 S. Columbus Ave.
Mt. Vernon, N.Y. 10553

C-839RC



Price $875
Heads 2 (Sendust)
Flutter 0.03%
Play resp. 20 Hz to 20 kHz, ±3 dB
Fast-forward 65 sec (C-60)
Rewind 65 sec (C-60)
N/R system Dolby
Input sens. 30 mV (line); 0.2 mV (mike)
Output level 580 mV
Output load 2K ohms
Separation 40 dB (1 kHz)
Erasure 70 dB (1 kHz)
Record indic. Peak reading (–20 dB to +5 dB)
Features Auto-reverse; DLLS (direct load and lock system); optional remote control; equalized meters; 6-position bias and EQ; solenoid operation; auto tape-slack prewind
Tape #1 Metal
R/P resp. 20 Hz to 20 kHz, ±3 dB
S/N 69 dB (with N/R)
S/N ref. lvl. 3% THD (DIN B)
THD 0.4%
THD ref. lvl. 200 nWb/m (0 dB)
Tape #2 Ferrichrome
R/P resp. 20 Hz to 19 kHz, ±3 dB
S/N 69 dB (with N/R)
S/N ref. lvl. 3% THD (DIN B)
THD 0.4%
THD ref. lvl. 0 dB

C-812

Price $299.95
Heads 2 (M+X; ferrite)
Flutter 0.045% (WRMS)
Play resp. 20 Hz to 18 kHz, ±3 dB
Fast-forward 65 sec (C-60)
Rewind 65 sec (C-60)
N/R system Dolby
Input sens. 30 mV (line); 0.2 mV (mike)
Output level 580 mV re DIN O
Output load 2K ohms
Separation 40 dB at 10 kHz
Erasure 70 dB at 10 Hz
Record indic. Peak-reading (–20 dB + 5 dB)
Features DLLS (direct load and lock system); equalized metering system; switchable MPX FTR; 4-position bias and EQ; 4-point tape guidance system
Tape #1 Metal
R/P resp. 20 Hz to 18 kHz, ±3 dB at –20 VU
S/N 67 dB (with N/R)
S/N ref. lvl. 3% THD (DIN B)

THD	Less than 0.5%
THD ref. lvl.	200 nWb/m (0 dB)
Tape #2	FeCr
R/P resp.	20 Hz to 17 kHz, ±3 dB at –20 VU
S/N	66 dB (with N/R)
S/N ref. lvl.	3% THD (DIN B)
THD	Less than 0.5%
THD ref. lvl.	0 dB

Models also available

C-830, $499.95; C-820, $419.95

EUMIG
Eumig (U.S.A.) Inc.
Lake Success Business Park
255 Community Drive
Great Neck, N.Y. 11020

FL-1000

Price	$1,550
Heads	3
Flutter	0.035% (WRMS)
Rewind	35 sec (C-60)
N/R system	Dolby B
Input sens.	100 mV (line); 2/0.2 mV (switchable) (mike); 1 mV (DIN) re NAB O
Output level	775mV
Input imped.	100K ohms (line); 3K ohms/15K ohms (mike)
Record indic.	Peak-reading (–20 dB to +8 dB)
Features	Also has –6 dB meter sensitivity for higher allowable peaks of metal tape
Tape #1	Metal
R/P resp.	20 Hz to 20 kHz, ±3 dB
S/N	70 dB (with N/R)/62 (without N/R)
S/N ref. lvl.	3% (A-weighted)
Tape #2	TDK SA
R/P resp.	30 Hz to 20 kHz, ±3 dB
S/N	67 dB (with N/R)/59 dB (without N/R)
S/N ref. lvl.	3% (A-weighted)

FISHER
Fisher Corp.
21314 Lassen St.
Chatsworth, Calif. 91311

CR-4029 Two-Speed Deck

Price	$500
Heads	3 (VHT; Sendust)
Flutter	0.06% (1⅞); 0.05% (3¾)
Fast-forward	120 sec (C-60)
Rewind	120 sec (C-60)
N/R system	Dolby
Input sens.	100 mV (line); 2 mV (mike)
Output level	1V
Input imped.	5K ohms
Output load	22K ohms
Separation	45 dB (1 kHz)
Erasure	70 dB (1 kHz)
Record indic.	2 VU (–20 dB to +5 dB); peak-reading LEDs
Features	Metal-tape capability
Tape #1	FeO_3
R/P resp.	30 Hz to 14 kHz, ±3 dB (1⅞); 30 Hz to 20 kHz, ±3 dB (3¾)
S/N	62 dB (with N/R)/52 dB (without N/R)
S/N ref. lvl.	+3 VU (CCIR) (ARM)
THD	1.5% (1⅞); 1.1% (3¾)
THD ref. lvl.	0 VU
Tape #2	Metal
R/P resp.	30 Hz to 18 kHz, ±3 dB (1⅞); 30 Hz to 25 kHz, ±3 dB (3¾)
S/N	62 dB (with N/R)/52 dB (without N/R)
S/N ref. lvl.	±3 VU (CCIR) (ARM)
THD	1.5% (1⅞); 1.2% (3¾)
THD ref. lvl.	0 VU

DD-280

Price	$299.95
Heads	2
Flutter	0.04% (WRMS)
Play resp.	30 Hz to 15 kHz, ±3 dB
Fast-forward	90 sec (C-60)
Rewind	90 sec (C-60)
N/R system	Dolby
Input sens.	100 mV (line); 1 mV (mike)
Output level	500 mV re DIN O
Input imped.	50K ohms
Separation	40 dB
Erasure	70 dB
Record indic.	VU; 3 peak LEDs
Features	Direct-drive DC servo capstan motor; metal-tape capability; electronic solenoid-operated transport

CR-120

Price	$199.95
Heads	2 (hard permalloy; ferrite)
Flutter	0.08% (WRMS)
Play resp.	30 Hz to 15 kHz, ±3 dB
Fast-forward	100 sec (C-60)
Rewind	100 sec (C-60)
N/R system	Dolby
Input sens.	100 mV (line); 1 mV (mike)
Output level	500 mV re DIN O
Input imped.	50K ohms
Separation	40 dB
Erasure	68 dB
Record indic.	VU; 3 peak LEDs
Features	Auto Search Function (ASF); metal-tape capability

CR-4013

Price	$149.95
Heads	2 (super permalloy; ferrite)
Flutter	1% (WRMS)
Fast-forward	90 sec (C-60)
Rewind	90 sec (C-60)
N/R system	Dolby
Input sens.	100 mV (line); 0.2 mV (mike)
Output level	1V
Input imped.	5K ohms
Output load	22K ohms
Separation	40 dB (1 kHz)
Erasure	68 dB (1 kHz)
Record indic.	2 VU (–15 dB to +3 dB); 5 LEDs per channel
Tape #1	FeO_3
R/P resp.	40 Hz to 11 kHz, ±3 dB
S/N	58 dB (with N/R)/48 dB (without N/R)
S/N ref. lvl.	+3 VU (CCIR) (ARM)
THD	2.2%
THD ref. lvl.	0 VU
Tape #2	CrO_2 equivalent
R/P resp.	40 Hz to 13 kHz, ±3 dB
S/N	58 dB (with N/R)/48 dB (without N/R)
S/N ref. lvl.	+3 VU (CCIR) (ARM)
THD	2.2%
THD ref. lvl.	0 VU

Models also available

CR-4031 Two-Speed Deck, $350; DD-300 Two-Speed Deck, $349.95; CR-4027 Two-Speed Deck, $300; CR-4016M Two-Speed Deck, $249.95; CR-110, $169.95

HARMAN KARDON
Harman Kardon
55 Ames Court
Plainview, N.Y. 11803

hk-400XM

Price	$649
Heads	3
Flutter	0.03%
Play resp.	15 Hz to 20 kHz, ±3 dB
N/R system	Dolby HX
Separation	40 dB
Features	Super Sendust head; 2 motors; solenoid transport; auto rewind; auto search; line mixing; bias trim; bias tone; dual Dolby; Dolby tone; digital counter; headroom safety indicator; remote capable; timer, fader; tape monitor; metal capable
S/N	68 dB (with N/R)/60 dB (without N/R)
THD	0.8% (3 dB below Dolby level)

hk-705

Price	$449
Heads	2 (Sendust R/P; ferrite erase)
Flutter	0.04% (NAB) (WRMS)
Play resp.	20 Hz to 19 kHz, ±3 dB (metal)
Fast-forward	75 sec (C-60)
Rewind	75 sec (C-60)
N/R system	Dolby
Separation	38 dB
Record indic.	Dual 12-LED peak-responding arrays (–20 dB to +8 dB)
Features	Low-noise, FeCr, CrO_2, metal tape selector; Dolby HX system; tray-loading transport tape-end warning light; infrasonic filter; memory; record mute
Tape #1	Metal
R/P resp.	20 Hz to 19 kHz, ±3 dB
S/N	68 dB (with NR)/60 dB (without NR)
S/N ref. lvl.	A-weighted
THD	0.9%
THD ref. lvl.	3 dB below 200 nWb/m
Tape #2	CrO_2
R/P resp.	20 Hz to 18 kHz, ±3 dB
S/N	65 dB (with NR)/57 dB (without NR)

hk-100M

Price	$269
Heads	2
Flutter	0.05%
Play resp.	15 Hz to 19 kHz, ±3 dB
N/R system	Dolby
Separation	40 dB
Features	Metal capable; super Sendust head; MPX filter; bias trim; output level control; LED level display

Models also available

hk-300XM, $449; hk-200XM, $349

HITACHI
Hitachi Sales Corp. of America
401 W. Artesia Blvd.
Compton, Calif. 90277

D-5500M

Price	$999.95
Heads	3 (ferrite erase, record, play)
Flutter	0.028%
Play resp.	30 Hz to 20 kHz, ±3 dB
Fast-forward	90 sec (C-60)
Rewind	90 sec (C-60)
N/R system	Dolby (dual)
Input sens.	60 mV (line); 0.35 mV (mike)
Output level	550 mV
Input imped.	50K ohms
Output load	50K ohms
Separation	70 dB (1 kHz)
Erasure	65 dB (1 kHz)
Record indic.	2 VU (–20 dB to +7 dB); peak-reading LEDs
Features	ATRS (Automatic Tape Response System); full-function wireless remote; MPU memory circuits; metal-tape compatible
Tape #1	Hitachi ME
R/P resp.	30 Hz to 20 kHz, ±3 dB
S/N	68 dB (with N/R)/60 dB (without N/R)
S/N ref. lvl.	3% THD (DIN A-weighted)
THD	1.2%
THD ref. lvl.	0 VU
Tape #2	Hitachi UDEX
R/P resp.	30 Hz to 19 kHz, ±3 dB
S/N	68 dB (with N/R)/60 dB (without N/R)
S/N ref. lvl.	DIN A-weighted
THD	1.2%
THD ref. lvl.	0 VU

D-980M

Price	$499.95
Heads	30 (ferrite)
Flutter	0.03% (WRMS)
Play resp.	30 Hz to 17 kHz, ±3 dB
Fast-forward	90 sec (C-60)
Rewind	90 sec (C-60)
N/R system	Dolby (dual)
Input sens.	60 mV (line); 0.35 mV (mike)
Output level	550 mV
Input imped.	50K ohms
Output load	50K ohms
Separation	65 dB (1 kHz)
Erasure	65 dB (1 kHz)
Record indic.	2 VU; peak-reading (–20 dB to +7 dB); peak-reading LEDs
Features	Direct-drive motor; feather-touch logic controls; auto rewind; Dolby FM with 25 µs EQ; Dolby record calibration; metal-tape compatible; fine bias; optional wired remote timer rec/play
Tape #1	Hitachi ME
R/P resp.	30 Hz to 19 kHz, ±3 dB
S/N	68 dB (with N/R)/60 dB (without N/R) (A-weighted)
S/N ref. lvl.	3% THD
THD	1.2%
THD ref. lvl.	0 VU
Tape #2	Hitachi UDEX
R/P resp.	30 Hz to 18 kHz, ±3 dB
S/N	68 dB (with N/R)/60 dB (without N/R)
S/N ref. lvl.	3% THD
THD	1.2%
THD ref. lvl.	0 VU

D-75S

Price	$349.95
Heads	2 (Sendust erase; R/P)
Flutter	0.04% (WRMS)
Play resp.	30 Hz to 17 kHz, ±3 dB
Fast-forward	90 sec (C-60)
Rewind	90 sec (C-60)
N/R system	Dolby
Input sens.	60 mV (line); 0.30 mV (mike)
Output level	500 mV
Input imped.	100K ohms
Separation	30 dB (1 kHz)
Erasure	65 dB (1 kHz)
Record indic.	Fluorescent meters
Features	Metal capable; full logic
Tape #1	Hitachi ME
R/P resp.	30 Hz to 17 kHz
S/N	66 dB (with N/R)/58 dB (without N/R) (A-weighted)
S/N ref. lvl.	3% THD
THD	1.2%
THD ref. lvl.	0 VU
Tape #2	Hitachi UDEX
R/P resp.	30 Hz to 16 kHz
S/N	66 dB (with N/R)/58 dB (without N/R)
S/N ref. lvl.	3% THD
THD	1.2%
THD ref. lvl.	0 VU

D-45S

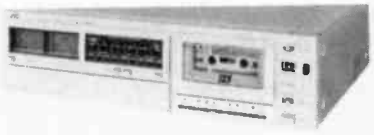
Price	$249.95
Heads	2 (Sendust erase; SL permalloy)
Flutter	0.05% (WRMS)
Play resp.	30 Hz to 15 kHz, ±3 dB
N/R system	Dolby
Input sens.	60 mV (line); 0.3 mV (mike)
Output level	500 mV re DIN O
Input imped.	50K ohms
Erasure	65 dB (1 kHz)
Features	Metal-compatible; fluorescent peak meters; slimline

Models also available

D-3300M, $699.95; D-90S, $449.95; D-33S, $199.95; D-22S Mk. II, $159.95

JVC
U.S. JVC Corp.
58-75 Queens Midtown Expressway
Maspeth, N.Y. 11378

KD-A8



Price	$750
Heads	2 (X-cut SA R/P; dual-gap SA erase)
Flutter	0.035% (WRMS)
Fast-forward	85 sec (C-60)
Rewind	85 sec (C-60)
Input sens.	80 mV (line); 0.2 mV (mike)
Output level	300 mV
Input imped.	3 to 8K ohms
Separation	35 dB (1 kHz)
Record indic.	2 VU; 5 peak-reading LEDs
Features	Computer tuning for bias/EQ/sensitivity
Tape #1	Metal
R/P resp.	25 Hz to 17 kHz, ±3 dB
S/N	70 dB (with N/R)/60 dB (without N/R)
THD	0.4%
Tape #2	SA chrome
R/P resp.	25 Hz to 17 kHz, ±3 dB

KD-A66

Price	$500
Heads	2 (X-cut SA R/P; dual-gap SA erase)
Flutter	0.04% (WRMS)
Fast-forward	85 sec (C-60)
Rewind	85 sec (C-60)
N/R system	ANRS; super ANRS
Input sens.	80 mV (line); 0.2V (mike)
Output level	500 mV re DIN 0
Input imped.	100 ohms
Separation	35 dB at 1 kHz
Record indic.	2 VU (–20 dB to +7 dB); 5 peak LEDs (–5 dB to +9 dB)
Features	B.E.S.T. system computer set bias, EQ; two-motor full logic transport
Tape #1	Metal
R/P resp.	30 Hz to 16 kHz, ±3 dB at –20 VU
S/N	20 dB (with N/R)/60 dB (without N/R)
THD	1%
Tape #2	SA
R/P resp.	30 Hz to 16 kHz, ±3 dB at –20 VU

KD-2

Price	$350
Heads	2 (SA R/P; double-gap ferrite erase)
Flutter	0.09% (WRMS)
Play resp.	40 Hz to 16 kHz, ±3 dB
Fast-forward	90 sec (C-60)
Rewind	90 sec (C-60)
N/R system	ANRS; super ANRS
Input sens.	80 mV (line); 0.2 mV (mike); 0.2 mV (DIN)
Output level	500 mV
Input imped.	2.5K ohms
Separation	35 dB (1 kHz)
Erasure	60 dB (1 kHz)
Record indic.	2 VU (–20 dB to +5 dB)
Features	Coreless DC motor; battery or AC operation
Tape #1	TDK SA
R/P resp.	40 Hz to 16 kHz, ±3 dB
S/N	57 dB/67 dB
THD	0.5%
THD ref. lvl.	0 VU
Tape #2	Maxell UD
R/P resp.	30 Hz to 15 kHz, ±3 dB
S/N	57 dB/67 dB
THD	0.5%
THD ref. lvl.	0 VU

KD-A33

Price	$300
Heads	2 (SA R/P; dual-gap SA erase)
Flutter	0.04% (WRMS)
Fast-forward	85 sec (C-60)
Rewind	85 sec (C-60)
N/R system	ANRS; super ANRS
Input sens.	80 mV (line); 0.2V (mike)
Output level	300 mV re DIN O
Input imped.	100K ohms
Separation	35 dB at 1 kHz
Record indic.	2 VU (–20 dB to +7 dB); 5 peak LEDs (–5 dB to +9 dB)
Features	Two-motor full logic control; ready for remote control
Tape #1	Metal
R/P resp.	30 Hz to 16 kHz, ±3 dB at –20 VU
S/N	70 dB (with N/R)/60 dB (without N/R)
THD	1%

Tape #2	SA
R/P resp.	30 Hz to 16 kHz, ±3 dB at –20 VU

KD-A11

Price	$170
Heads	2 (Metaperm; dual-gap ferrite)
Flutter	0.05% (WRMS)
Fast-forward	90 sec (C-60)
Rewind	90 sec (C-60)
N/R system	Dolby
Input sens.	80 mV (line); 0.2V (mike);
Output level	400 mV re DIN O
Input imped.	100K ohms
Separation	35 dB at 1 kHz
Record indic.	2 VU (–20 dB to ±7 dB)
Tape #1	Metal
R/P resp.	40 Hz to 15 kHz, ±3 dB at –20 VU
S/N	70 dB (with N/R)/60 dB (without N/R)
THD	1%
Tape #2	SA
R/P resp.	40 Hz to 15 kHz, ±3 dB at –20 VU

Models also available

KD-A77, $569.95; KD-A7, $450; KD-A55, $349.95; KD-A22, $200

KENWOOD
Kenwood Electronics, Inc.
75 Seaview Drive
Secaucus, N.J. 07094

KX-2060

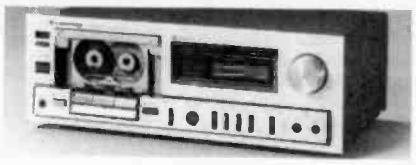
Price	$649
Heads	3 (ferrite)
Flutter	0.04% (WRMS)
Play resp.	25 Hz to 17.5 kHz, ±3 dB
Fast-forward	80 sec (C-60)
Rewind	80 sec (C-60)
N/R system	Yes
Input sens.	775 mV (line); 0.19 mV (mike)
Output level	775 mV
Input imped.	100K ohms
Record indic.	Fluorescent level display (–20 dB to +8 dB)
Features	Metal; tape monitor capability
R/P resp.	25 Hz to 18 kHz, ±3 dB
S/N	70 dB (with N/R)/60 dB (without N/R)
S/N ref. lvl.	160 nWb/m
THD	1%
THD ref. lvl.	160 nWb/m

KX-800

Price	$369
Heads	3 (ferrite)
Flutter	0.045% (WRMS)
Play resp.	30 Hz to 18 kHz, ±3 dB
Fast-forward	85 sec (C-60)
N/R system	Dolby
Input sens.	77.5 mV (line); 0.19 mV (mike)
Output level	775 mV re DIN O
Input imped.	50K ohms
Output load	100K ohms
Record indic.	VU; peak-reading (–20 dB to +5 dB)

KX-500

Price	$239
Heads	2 (hard permalloy with Sendust guard)
Flutter	0.05%
Play resp.	40 Hz to 15 kHz, ±3 dB



Fast-forward	85 sec (C-60)
Rewind	85 sec (C-60)
N/R system	Yes
Input sens.	77.5 mV (line)
Output level	390 mV
Input imped.	100K ohms
Record indic.	Fluorescent level display (–20 dB to +8 dB)
Features	Metal capability
Tape #1	Metal
R/P resp.	40 Hz to 15 kHz, ±3 dB
S/N	64 dB (with N/R)/54 dB (without N/R)
S/N ref. lvl.	160 nWb/m
THD	1%
THD ref. lvl.	160 nWb/m

Models also available

KX-1060, $450; KX-600, $269; KX-400, $189

LUX
Lux Audio of America
160 Dupont St.
Plainview, N.Y. 11803

5K-50

Price	$1,995
Heads	3 (Sendust)
Flutter	0.03% (WRMS)
Play resp.	30 Hz to 18 kHz, ±3 dB
N/R system	Dolby
Input sens.	100 mV (line); 0.25 mV (mike); 2 mV (DIN)
Output level	580 mV
Separation	35 dB (1 kHz)
Record indic.	Peak-reading plasma (–40 dB to +4 dB)
Features	DC amp configuration; BRBS (pat. pend.) recording system
Tape #1	CrO_2
R/P resp.	30 Hz to 18 kHz, ±3 dB
S/N	66 dB (with NR)/56 dB (without NR)
S/N ref. lvl.	200 nWb/m (A-weighted)
THD	1.2%
THD ref. lvl.	0 dB
Tape #2	LH (ferric oxide)
R/P resp.	30 Hz to 16 kHz, ±3 dB
S/N	65 dB (with NR)/55 dB (without NR)
S/N ref. lvl.	200 nWb/m (A-weighted)
THD	1.2%
THD ref. lvl.	0 dB

K-12

Price	$745
Heads	2 (Sendust)
Flutter	0.04% (WRMS)
Play resp.	30 Hz to 20 kHz, ±3 dB
N/R system	Dolby
Input sens.	100 mV (line); 0.25 mV (mike); 2 mV (DIN)
Output level	580 mV
Input imped.	220 ohms
Record indic.	Peak-reading plasma; (–60 dB to +4 dB)
Features	Metal capability; optional remote control
Tape #1	Metal
R/P resp.	30 Hz to 21 kHz, ±3 dB
S/N	69 dB (with NR)/60 dB (without NR)
S/N ref. lvl.	200 nWb/m (A-weighted)
THD	1.2%
THD ref. lvl.	0 dB
Tape #2	CrO_2
R/P resp.	30 Hz to 20 kHz, ±3 dB
S/N	65 dB (with NR)/56 dB (without NR)
S/N ref. lvl.	200 nWb/m (A-weighted)
THD	1.2%
THD ref. lvl.	0 dB

K-5A

Price	$399
Heads	2 (Sendust)
Flutter	0.06% (WRMS)
Play resp.	30 Hz to 20 kHz
N/R system	Dolby
Input sens.	100 mV (line); 0.45 mV (mike); 2 mV (DIN)
Output level	580 mV
Record indic.	Peak-reading fluorescent
Features	Metal-tape capability; bias fine-tone control; record mute
Tape #1	Metal
R/P resp.	30 Hz to 20 kHz
S/N	65 dB (with NR)/58 dB (without NR)
S/N ref. lvl.	200 nWb/m (A-weighted)
Tape #2	CrO_2
R/P resp.	30 Hz to 18 kHz, ±3 dB
S/N	63 dB (with NR)/56 dB (without NR)
S/N ref. lvl.	200 nWb/m (A-weighted)
THD	1.5%
THD ref. lvl.	0 dB

Models also available

K-15, $899; K-8, $495; K-1, $299

MARANTZ
Superscope, Inc.
20525 Nordhoff St.
Chatsworth, Calif. 91311

SD-9000 Two-Speed Compudeck®

Price	$800
Heads	3 (Sendust)
Flutter	0.03% (3¾); 0.05% (1⅞)
Play resp.	31.5 Hz to 14 kHz, –2 dB (1⅞); 31.5 Hz to 25 kHz, –2 dB (3¾)
Fast-forward	85 sec (C-60)

Rewind	85 sec (C-60)
N/R system	Double Dolby
Input sens.	70 mV (line); 0.25 mV (mike)
Output level	650 mV (line); 43 mV (headphone)
Input imped.	1.2K ohms (line); 150 ohms (headphone)
Separation	40 dB (1 kHz)
Erasure	60 dB (1 kHz)
Record indic.	2 peak-level LEDs
Features	Compudeck® microprocessor programming and selection; digital display including clock and timer; 2-motor transport; auto slack takeup and bias fine adjustment; mike/line mixing; record mute; sensor stop
Tape #1	Metal (3M Metafine)
R/P resp.	25 Hz to 20 kHz, ±3 dB (1⅞); 25 Hz to 23 kHz, ±3 dB (3¾)
S/N ref. lvl.	250 nWb/m over 5 kHz (IEC A-weighted)
THD	3%
THD ref. lvl.	250 nWb/m
Tape #2	FeCr (Sony CS-30)
R/P resp.	25 Hz to 18 kHz, ±3 dB (1⅞); 25 Hz to 22 kHz, ±3 dB (3¾)
S/N	69/59 dB (1⅞); 72/62 dB (3¾)
S/N ref. lvl.	250 nWb/m over 5 kHz (IEC A-weighted)
THD	3%
THD ref. lvl.	250 nWb/m

SD-6000 Two-Speed Deck

Price	$550
Heads	2 (Sendust)
Flutter	0.03% (3¾); 0.05% (1⅞)
Play resp.	31.5 Hz to 14 kHz, –2 dB (1⅞); 31.5 Hz to 25 kHz, –2 dB (3¾)
Fast-forward	85 sec (C-60)
Rewind	85 sec (C-60)
N/R system	Dolby
Input sens.	70 mV (line); 0.25 mV (mike)
Output level	650 mV (line); 43 mV (headphone)
Input imped.	1.2K ohms (line); 150 ohms (headphone)
Separation	40 dB (1 kHz)
Erasure	60 dB (1 kHz)
Record indic.	2 peak-level LEDs
Features	Electronic feather-touch operation; memory rewind/replay; output level control; 2-motor transport; auto slack takeup; bias fine adjustment; mike/line mixing; record mute; sensor stop
Tape #1	Metal (3M Metafine)
R/P resp.	30 Hz to 19 kHz, ±3 dB (1⅞); 30 Hz to 22 kHz, ±3 dB (3¾)
S/N	68/58 dB (1⅞); 71/61 dB (3¾)
S/N ref. lvl.	250 nWb/m over 5 kHz (IEC A-weighted)
THD	3%
THD ref. lvl.	250 nWb/m
Tape #2	FeCr (Sony CS-30)
R/P resp.	30 Hz to 17 kHz, ±3 dB (1⅞); 30 Hz to 21 kHz, ±3 dB (3¾)
S/N	68/58 dB (1⅞); 71/61 dB (3¾)
S/N ref. lvl.	250 nWb/m over 5 kHz, (IEC A-weighted)
THD	3%
THD ref. lvl.	250 nWb/m

SD-3020 Two-Speed Deck

Price	$330
Heads	2 (Metalloy®)
Flutter	0.05% (3¾); 0.07% (1⅞)
Play resp.	31.5 Hz to 14 kHz, ±2 dB 1⅞; 31.5 Hz to 25 kHz, ±2 dB (3¾)
Fast-forward	100 sec (C-60)
Rewind	100 sec (C-60)
N/R system	Dolby
Input sens.	2.5 mV (line); 0.25 mV (mike)
Output level	650 mV (line); 43 mV (headphone)
Input imped.	2.5K ohms (line); 100 ohms (headphone)
Separation	40 dB (1 kHz)
Erasure	60 dB (1 kHz)
Record indic.	2 peak LEDs
Features	Compuskip® program selection; metal-tape capability; MPX filter
Tape #1	Sony CS-30
R/P resp.	30 Hz to 16 kHz, ±3 dB (1⅞); 30 Hz to 19 kHz, ±3 dB (3¾)
S/N	64/54 dB (1⅞) 67/57 dB (3¾)
S/N ref. lvl.	250 nWb/m over 5 kHz (IEC A-weighted)
THD	3%
THD ref. lvl.	250 nWb/m
Tape #2	TDK AC-511
R/P resp.	30 Hz to 15 kHz, ±3 dB (1⅞); 30 Hz to 18 kHz, ±3 dB (3¾)
S/N	64/54 dB (1⅞); 67/57 dB (3¾)
S/N ref. lvl.	250 nWb/m over 5 kHz (IEC A-weighted)
THD	3%
THD ref. lvl.	250 nWb/m

SD-1000

Price	$245
Heads	2 (super-hard permalloy R/P; ferrite erase)
Flutter	0.06% (3¾); 0.08% (1⅞)
Play resp.	31.5 Hz to 14 kHz, –2 dB (1⅞); 31.5 Hz to 25 kHz, –2 dB (3¾)
Fast-forward	100 sec (C-60)
Rewind	100 sec (C-60)
N/R system	Dolby
Input sens.	25 mV (line); 0.25 mV (mike)
Output level	650 mV (line); 43 mV (headphone)
Input imped.	2.5K ohms (line); 100 ohms (headphone)
Separation	40 dB (1 kHz)
Erasure	60 dB (1 kHz)
Record indic.	2 peak-reading LEDs (–30 dB to +6 dB)
Features	Two-speed; extended range illuminated VU meters; tape counter; damped cassette door; total mechanism shut-off; separate record level controls; separate EQ and bias selector
Tape #1	FeCr (Sony CS-30)
R/P resp.	30 Hz to 16 kHz, ±3 dB (1⅞); 30 Hz to 19 kHz, ±3 dB (3¾)
S/N	66/63 dB (1⅞); 57/54 dB (3¾)
S/N ref. lvl.	250 nWb/m over 5 kHz (IEC A-weighted)
THD	3%
THD ref. lvl.	250 nWb/m
Tape #2	CrO_2 (TDK AC511)
R/P resp.	30 Hz to 15 kHz, ±3 dB (1⅞); 30 Hz to 18 kHz, ±3 dB (3¾)
S/N	63/54 dB (1⅞); 66/57 dB (3¾)
S/N ref. lvl.	250 nWb/m over 5 kHz (IEC A-weighted)
THD	3%
THD ref. lvl.	250 nWb/m

Models also available

SD-8000 Two-Speed Compudeck®, $700; SD-4000 Two-Speed Deck, $450; SD-3000, $315; SD-800, $200

MCS® SERIES
J.C. Penney
1301 Ave. of the Americas
New York, N.Y. 10019

3570

Price	$249.95
Heads	2 (R/P; erase)
Flutter	0.09% (WRMS)
Play resp.	31.5 Hz to 14 kHz, ±3 dB
Fast-forward	93 sec (C-60)
Rewind	93 sec (C-60)
N/R system	Dolby
Input sens.	60 mV/45K ohms (line); 0.3 mV/4.7K ohms
Output level	580 mV
Input imped.	1K ohms
Output load	10K ohms
Separation	45 dB at 1 kHz
Erasure	70 dB at 1 kHz
Record indic.	2 VU (–20 dB to +5 dB)
Features	Full automatic shutoff; 10-program selector capability; memory
Tape #1	CrO_2
R/P resp.	30 Hz to 14 kHz, ±3 dB
S/N	64 dB (with N/R)/59 dB (without N/R)
S/N ref. lvl.	+3 dB (DIN A-weighted)
THD	2.5%
THD ref. lvl.	+3
Tape #2	FeCr
R/P resp.	30 Hz to 14 kHz, ±3 dB
S/N	64 dB (with N/R)/59 dB (without N/R)
S/N ref. lvl.	+3 dB (DIN A-weighted)
THD	1.2%
THD ref. lvl.	+3 dB

Models also available

3552, $180

MITSUBISHI
Melco Sales, Inc.
3030 E. Victoria St.
Compton, Calif. 90221

MT-01 Micro

Price	$560
Heads	2 (Sendust R/P; R/P; ferrite erase)
Flutter	0.05%
Play resp.	40 Hz to 15 kHz, ±3 dB
Fast-forward	80 sec (C-60)
Rewind	80 sec (C-60)
N/R system	Dolby
Input sens.	100 mV (line); 0.3 mV (mike)
Output level	447 mV (0 dB)
Input imped.	2.2K ohms
Output load	22K ohms
Separation	35 dB (1 kHz)
Erasure	70 dB (1 kHz)
Record indic.	Peak-reading (–20 dB to +5 dB)
Features	Closed-loop dual-capstan DC quartz PLL servo drive; logic control transport; bias and EQ switching; ASPS; timer start; memory play/stop; line/mike mixing; MPX filter
Tape #1	FeCr
R/P resp.	40 Hz to 15 kHz, ±3 dB
S/N	64 dB (with N/R)/56 dB (without N/R)
S/N ref. lvl.	400 Hz (200 pwb/mm, DIN A-weighted)
THD	1%
THD ref. lvl.	160 nWb/m (400 Hz)
Tape #2	Special (UDXL I, SA, etc.)
R/P resp.	40 Hz to 15 kHz, ±3 dB
S/N	64 dB (with N/R)/56 dB (without N/R)
S/N ref. lvl.	400 Hz (200 nWb/m, DIN A-weighted)
THD	1%
THD ref. lvl.	400 Hz (160 nWb/m

DT-40

Price	$540
Heads	3 (Sendust R/P; Sendust/ferrite erase)
Flutter	0.05% (WRMS)

Play resp.	40 Hz to 20 kHz, ±3 dB
Fast-forward	80 sec (C-60)
Rewind	80 sec (C-60)
N/R system	Dolby
Input sens.	100 mV (line); 0.3 mV (mike)
Output level	500 mV re DIN 0
Input imped.	47K ohms
Output load	22K ohms
Separation	35 dB (1 kHz)
Erasure	65 dB (1 kHz) (metal tape)
Record indic.	Peak-reading; peak-hold (–40 dB to +7 dB)
Features	Dual-capstan closed-loop PLL DC drive; fluorescent digital counter with programmable memory; automatic spacing pause system (ASPS); 4-position tape select includes metal (Sony)
R/P resp.	40 Hz to 20 kHz, ±3 dB at –20 VU
S/N	68 dB (with N/R)/60 dB (without N/R)
S/N ref. lvl.	3% THD
THD	1%
THD ref. lvl.	400 Hz; 160 nWb/m
Tape #2	Sony Duad
R/P resp.	40 Hz to 18 kHz, ±3 dB at –20 VU
S/N	68 dB (with N/R)/60 dB (without N/R)
S/N ref. lvl.	3% THD
THD	1%
THD ref. lvl.	400 Hz; 160 nWb/m

Models also available

DT-7, $260

NAD
NAD (USA), Inc.
675 Canton St
Norwood, Mass. 02062

NAD-6100M

Price	$499 (including RC-61 remote control unit)
Heads	2 (Sendust R/P; ferrite erase)
Flutter	0.045% (WRMS)
Play resp.	35 Hz to 18 kHz, ±3 dB
Fast-forward	70 sec (C-60); 100 sec (C-90); 135 sec (C-120)
Rewind	70 sec (C-60)
N/R system	Dolby
Input sens.	35 mV (line) (50K ohms); 0.5 mV (mike) (10K ohms)
Output level	580 mV
Input imped.	2K ohms (output)
Output load	2K ohms
Separation	40 dB
Erasure	70 dB
Record indic.	Fluorescent
Features	DC servomotor; IC logic solenoid transport; fluorescent meters; metal ready
Tape #1	Maxell UDXL II
R/P resp.	35 Hz to 18 kHz, ±3 dB
S/N	64 dB (with N/R)/56 dB (without N/R)
THD	1% (0 dB)
THD ref. lvl.	0 dB (less at lower recording levels)

Models also available

NAD-6020, $275

NAKAMICHI
Nakamichi U.S.A. Corp.
1101 Colorado Ave.
Santa Monica, Calif. 90401

1000 ZXL

Price	$3,800
Heads	3 (crystalloy)
Flutter	0.04% (rms)
Play resp.	10 Hz to 25 kHz, ±3 dB
N/R system	Dolby; provision for external N/R
Input sens.	50 mV (line); 0.2 mV (mike); 100 mV (external N/R) re NAB 0
Separation	37 dB at 1 kHz
Erasure	60 dB at 100 Hz
Record indic.	Bar-graph type (–40 dB to +10 dB)
Features	A.B.L.E. microcomputer system; 15-program RAMM system; 4-digit electronic tape counter; mike/line mixing
Tape #1	ZX
R/P resp.	10 Hz to 25 kHz, ±3 dB at –20 VU
S/N	66 dB (with N/R)
S/N ref. lvl.	3% THD at 400 Hz (IHF A-weighted)
THD	0.8%
THD ref. lvl.	0 dB
Tape #2	SX
R/P resp.	20 Hz to 20 kHz, ±0.5 dB at –20 VU
S/N	66 dB (with N/R)
S/N ref. lvl.	3% THD at 400 Hz (IHF A-weighted)
THD	1%
THD ref. lvl.	0 dB

680 Two-Speed Deck

Price	$1,350
Heads	3 (Sendust-on-ferrite direct-flux erase; crystalloy R/P)
Flutter	0.08% (wtd. peak); 0.04% (WRMS) (1⅞); 0.14% (wtd. peak); 0.08% (WRMS) (15/16)
Play resp.	20 Hz to 22 kHz, ±3 dB
N/R system	Dolby
Input sens.	50 mV (line)
Output level	1V
Input imped.	3.3K ohms
Separation	37 dB at 1 kHz
Erasure	60 dB at 1 kHz (re saturation with metal tape)
Record indic.	2 VU; peak-reading (–40 dB to +10 dB) (peak hold)
Features	Two speed (normal & half); Random Access Music memory; fluorescent display
Tape #1	Nakamichi ZX metalloy
R/P resp.	20 Hz to 22 kHz, ±3 dB (1⅞); 20 Hz to 15 kHz, ±3 dB (15/16)
S/N	66 dB (with N/R)/58 dB (without N/R) (1⅞); 60 dB, –52 dB (15/16)
S/N ref. lvl.	3% THD (IHF A-weighted) (both speeds)
THD	0.8% (1⅞); 1.5% (15/16)
THD ref. lvl.	0 dB (200 nWb/m, 400 Hz (both speeds)
Tape #2	Nakamichi SX
R/P resp.	20 Hz to 22 kHz, ±3 dB
S/N	63 dB (with N/R)/55 dB (without N/R)
S/N ref. lvl.	3% THD (IHF A-weighted)
THD	1%
THD ref. lvl.	0 dB

582

Price	$890
Heads	3 (direct-flux erase; crystalloy R/P)
Flutter	0.1% (wtd. peak); 0.05% (WRMS)
Play resp.	20 Hz to 20 kHz, ±3 dB
N/R system	Dolby
Input sens.	50 mV (line)
Output level	1V
Input imped.	2.2K ohms
Separation	37 dB at 1 kHz
Erasure	60 dB at 1 kHz (re saturation with metal tape)
Record indic.	Peak reading (–40 dB to +7 dB)
Features	High-speed cueing; 15 kHz test tone for bias adjustment; diffused-resonance double capstan transport
Tape #1	Nakamichi ZX Metalloy
R/P resp.	20 Hz to 20 kHz, ±3 dB
S/N	66 dB (with N/R)/58 dB (without N/R)
S/N ref. lvl.	3% THD (IHF A-weighted)
THD	0.8%
THD ref. lvl.	0 dB (200 nWb/m) (400 Hz)
Tape #2	Nakamichi SX
R/P resp.	20 Hz to 20 kHz, ±3 dB
S/N	63 dB (with N/R)/55 dB (without N/R)
S/N ref. lvl.	3% THD (IHF A-weighted)
THD	1%
THD ref. lvl.	0 dB

482

Price	$775
Heads	3 (direct-flux erase; crystalloy R/P)
Flutter	0.11% (DIN wtd. peak); 0.06% (WRMS)
Play resp.	20 Hz to 20 kHz
Fast-forward	60 sec (C-60)
Rewind	60 sec (C-60)
N/R system	Dolby
Input sens.	50 mV (line)
Output level	600 mV
Input imped.	2.2K ohms
Separation	36 dB (1 kHz)
Erasure	60 dB (1 kHz)
Record indic.	2 peak-reading (–40 dB to +7 dB)
Features	Diffused-resonance double-capstan 3-motor transport; IC logic control; optional remote control
Tape #1	Nakamichi ZX Metalloy
R/P resp.	20 Hz to 20 kHz
S/N	63 dB (with N/R)
S/N ref. lvl.	3% THD (wtd. rms)
THD	0.9%
THD ref. lvl.	0 dB (200 nWb/m)
Tape #2	Nakamichi SX
R/P resp.	20 Hz to 20 kHz
S/N	60 dB (with N/R)
S/N ref. lvl.	3% THD (wtd. rms)
THD	1%
THD ref. lvl.	0 dB (200 nWb/m)

480

Price	$495
Heads	2 (direct-flux erase; Sendust R/P)
Flutter	0.11% (DIN wtd. peak); 0.06% (WRMS)
Play resp.	20 Hz to 20 kHz
Fast-forward	60 sec (C-60)
Rewind	60 sec (C-60)
N/R system	Dolby
Input sens.	50 mV (line)
Output level	600 mV
Input imped.	2.2K ohms
Separation	36 dB at 1 kHz
Erasure	60 dB at 1 kHz
Record indic.	2 peak-reading (–40 dB to +7 dB)
Features	Diffused-resonance double-capstan 3-motor transport; IC logic control; optional remote control; available in either black or silver finish
Tape #1	Nakamichi ZX Metalloy
R/P resp.	20 Hz to 20 kHz
S/N	63 dB (with N/R)
S/N ref. lvl.	3% THD (wtd. rms)
THD	1%
THD ref. lvl.	0 dB (200 nWb/m)
Tape #2	Nakamichi SX
R/P resp.	20 Hz to 20 kHz
S/N	59 dB (with N/R)
S/N ref. lvl.	3% THD (wtd. rms)
THD	1.2%
THD ref. lvl.	0 dB (200 nWb/m)

Models also available

680ZX Two-Speed Deck, $1,550; 670ZX, $1,150; 660ZX, $995; 581, $770; 580M, $690; 481, $655

NEAL-FERROGRAPH
Neal-Ferrograph
652 Glenbrook Rd.
Glenbrook, Conn. 06906

312

Price	$1,195
Heads	2 (Sendust)
Flutter	Less than 0.09% (DIN)
Play resp.	35 Hz to 15 kHz, +1, –3 dB
Fast-forward	50 sec (C-60)
Rewind	50 sec (C-60)
N/R system	Dolby; Dolby HX
Input sens.	50 mV (line) (200K ohms); 500 mV (mike); (2K ohms); 2.5 mV (10K ohms) re NAB O
Output level	600 mV re DIN O
Input imped.	5K ohms
Separation	40 dB (1 kHz)
Erasure	65 dB (1 kHz)
Record indic.	Peak-reading (–25 dB to +5 dB)
Features	Metal capability; built-in bias test tone; record calibration tone; 3 motors; full logic control; remote control optional
Tape #1	Metal
R/P resp.	35 Hz to 15 kHz, ±1 dB at –3 VU
S/N	66 dB (with N/R)/57 dB (without N/R)
S/N ref. lvl.	3% THD (CCIR)
THD	2%
THD ref. lvl.	22 nWb/m
Tape #2	Normal ferric oxide
R/P resp.	35 Hz to kHz, ±1 dB at –3 VU
S/N	66 dB (with N/R)/57 dB (without N/R)
S/N ref. lvl.	3% THD (CCIR)

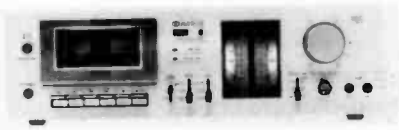
Models also available
302, $994

NIKKO
Nikko Audio
320 Oser Ave.
Hauppauge, N.Y. 11787

ND-990

Price	$419
Heads	2 (Sendust hyperbolic)
Flutter	0.045% (WRMS)
Play resp.	30 Hz to 21 kHz, ±3 dB
Fast-forward	70 sec (C-60)
Rewind	70 sec (C-60)
N/R system	Dolby
Input sens.	50 mV (line); 0.25 mV (mike)
Output level	450 mV re DIN O
Input imped.	50K ohms
Output load	50K ohms
Record indic.	Bar-graph type (–30 dB to +8 dB); peak LEDs
Features	Full IC logic control; 2-motor rock-mountable drive; memory counter with off/stop/play; remote control socket on front panel
Tape #1	Normal
R/P resp.	30 Hz to 15 kHz, ±3 dB at –20 VU
S/N	72 dB (with N/R)/62 dB (without N/R)
Tape #2	Metal
R/P resp.	30 Hz to 21 kHz, ±3 dB at –20 VU
S/N	72 dB (with N/R)/62 dB (without N/R)

ND-590

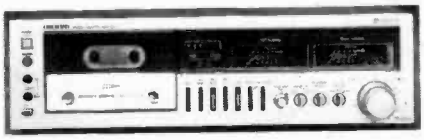


Price	$210
Heads	2 (hard permalloy)
Flutter	0.055% (WRMS)
Play resp.	30 Hz to 18 kHz, ±3 dB
Fast-forward	80 sec (C-60)
Rewind	80 sec (C-60)
N/R system	Dolby
Input sens.	50 mV (line); 0.25 mV (mike); 1.2 (other) re NAB O (DIN)
Output level	570 mV re DIN O
Input imped.	47K ohms
Output load	47K ohms
Record indic.	2 VU (–20 dB to +5 dB)
Features	MPX filter; record muting switch; cue-review feature
Tape #1	Normal
R/P resp.	30 Hz to 15 kHz, ±3 dB at –20 VU
S/N	63 dB (with N/R)/53 dB (without N/R)
Tape #2	Metal
R/P resp.	30 Hz to 18 kHz, ±3 dB at –20 VU
S/N	63 dB (with N/R)/53 dB (without N/R)

Models also available
ND-790, $330

ONKYO
Onkyo U.S.A. Corp.
42-07 20th Ave.
Long Island City, N.Y. 11105

TA-2080



Price	$799.95
Heads	3 (hard permalloy; ferrite)
Flutter	0.045% (WRMS)
Play resp.	20 Hz to 20 kHz, ±3 dB (metal tape)
Fast-forward	90 sec (C-60)
Rewind	90 sec (C-60)
N/R system	Dolby
Input sens.	50 mV (line); 0.3 mV (mike)
Output level	775 mV
Input imped.	50K ohms
Record indic.	2 VU (–40 dB to +5 dB); peak-reading LEDs
Features	Closedloop dual capstan; solenoid controls; Accu-Bias; front-panel Dolby calibration; auto fadeout; metal-tape capability
Tape #1	Scotch Metafine
R/P resp.	20 Hz to 20 kHz, ±3 dB
S/N	72 dB (with N/R)/62 dB (without N/R)
S/N ref. lvl.	3% THD (IHF A-weighted)
THD	1.2%
THD ref. lvl.	0 VU

TA-630DM

Price	N/A
Heads	2 (hyperbolic Sendust)
Flutter	0.055% (WRMS)
Play resp.	30 Hz to 20 kHz, ±3 dB
Fast-forward	70 sec (C-60)
Rewind	70 sec (C-60)
N/R system	Dolby
Input sens.	50 mV (line); 0.3 mV (mike) (50K ohms)
Output level	0.775V (0 VU)
Input imped.	50K ohms
Record indic.	2 VU; peak-reading LEDs
Features	Accu-Bias adjustable circuit; Dolby FM decoding capability; metal-tape capable
Tape #1	Maxell UDXL-II
R/P resp.	20 Hz to 18 kHz, ±3 dB
S/N	68 dB (with N/R)/58 dB (without N/R)
S/N ref. lvl.	3% THD (IHF A-weighted)
THD	1.2%
THD ref. lvl.	0 VU

TA-2020

Price	$224.95
Heads	2 (hard permalloy R/P; double-gap ferrite erase)
Flutter	0.06%
Play resp.	20 Hz to 16 kHz
N/R system	Dolby
Record indic.	2 VU; peak-reading
Features	Accu-Bias; metal capable
S/N	60 dB (without N/R) (metal tape)

Models also available
TA-2040, $369.95; TA-2050, $299.95; TA-1900, $189.95

OPTONICA
Sharp Electronics Corp.
10 Keystone Place
Paramus, N.J. 07652

RT-6905

Price	$1,600
Heads	4 (Sendust)
Flutter	0.038%
Play resp.	31.5 Hz to 14 kHz, ±3 dB
Fast-forward	100 sec (C-60)
Rewind	100 sec (C-60)
N/R system	Dolby
Input sens.	50 mV (line); 0.3 mV (mike)
Output level	1V
Input imped.	50K ohms
Output load	50K ohms
Separation	45 dB (1 kHz)
Erasure	70 dB
Record indic.	Fluorescent; peak-reading (–20 dB to +8 dB); hold or hold for 3 sec
Features	Computer-controlled; clock timer; 42 memories; sensitivity and bias fine calibration; APMS™; metal capable; 7-day programmable
Tape #1	Maxell UD
R/P resp.	30 Hz to 16 kHz, ±3 dB
S/N	70 dB (with N/R)/60 dB (without N/R)
S/N ref. lvl.	250 nWb/m, +1 dB (IHF A-weighted)
THD	1%
THD ref. lvl.	160 nWb/m, –3 dB
Tape #2	Maxell UDXL II
R/P resp.	30 Hz to 18 kHz, ±3 dB
S/N	70 dB (with N/R)/60 dB (without N/R)
S/N ref. lvl.	250 nWb/m, +1 dB (IHF A-weighted)
THD	1%
THD ref. lvl.	160 nWb/m, –3 dB

RT-6202

Price	$380
Heads	2 (hard permalloy; Sendust)
Flutter	0.04%
Play resp.	31.5 Hz to 14 kHz, ±3 dB
Fast-forward	100 sec (C-60)
Rewind	100 sec (C-60)
N/R system	Dolby
Input sens.	50 mV (line); 0.2 mV (mike)
Output level	500 mV
Input imped.	47K ohms
Output load	47K ohms

Separation	45 dB at 1 kHz
Erasure	70 dB at 1 kHz
Record indic.	2 fluorescent; peak-reading (–20 dB to +8 dB); hold switch
Features	LSI tape transport mechanism; opto peak-level display; 9-position APLD™; metal capable; available in black as RT-6206
Tape #1	Maxell UD
R/P resp.	30 Hz to 15 kHz, ±3 dB
S/N	67 dB (with N/R)/57 dB (without N/R)
S/N ref. lvl.	250 nWb/m, +1 dB (IHF A-weighted)
THD	1%
THD ref. lvl.	160 nWb/m, –3 dB
Tape #2	Maxell UDXL II
R/P resp.	30 Hz to 17 kHz, ±3 dB
S/N	67 dB (with N/R)/57 dB (without N/R)
S/N ref. lvl.	250 nWb/m, +1 dB (IHF A-weighted)
THD	1%
THD ref. lvl.	160 nWb/m, –3 dB

Models also available

RT-6502, $400; RT-6002/6, $210

PHASE LINEAR
Phase Linear Corp.
20121 48th Ave. W.
Lynnwood, Wash. 98036

7000 Series Two

Price	$1,350
Heads	3 (unicrystal)
Flutter	0.003% (WRMS)
Play resp.	25 Hz to 19 kHz, ±3 dB
Fast-forward	75 sec (C-60)
N/R system	Double Dolby
Input sens.	60 mV (line); 0.3 mV (mike)
Output level	450 mV
Input imped.	10 ohms
Record indic.	2 VU (–30 dB to +8 dB)
Features	MicroScan ® fully automatic bias/EQ/level setting with memory; mike/line mixing
Tape #1	1 Metal
R/P resp.	25 Hz to 19 kHz, ±3 dB
S/N	70 dB (with N/R)/60 dB (without N/R)
S/N ref. lvl.	0 dB (DIN)
THD	1%
THD ref. lvl.	0 dB
Tape #2	CrO_2
R/P resp.	25 Hz to 18 kHz, ±3 dB
S/N	70 dB (with N/R)/60 dB (without N/R)
S/N ref. lvl.	0 dB (DIN)
THD	1%
THD ref. lvl.	0 dB

PHILIPS
Philips High Fidelity Laboratories
Interstate 40 & Straw Plains Pike
P.O. Box 6960
Knoxville, Tenn. 37914

N-5788

Price	$599.95
Heads	3 (ferrite erase; long-life R/P)
Flutter	0.045%
Play resp.	20 Hz to 20 kHz, ±3 dB
Fast-forward	75 sec (C-60)
Rewind	75 sec (C-60)
N/R system	Dolby (with calibration control)
Input sens.	100 mV (line); 0.25 mV (mike)
Output level	0 to 0.7V (adjustable)
Input imped.	8 to 600 ohms (headphone)
Output load	8 ohms
Separation	35 dB (1 kHz)
Record indic.	2 bar-graph fluorescent tube display with peak hold
Features	Rack-mount; black finish; two motor; dual capstan; test oscillator; bias fine adjust; EQ for all tape types; pitch control; 2 electronic memories, auto stop-rewind-play cycling; solenoid controls; also available with silver front as model N-5781, $569.95
Tape #1	Metal
R/P resp.	20 Hz to 20 kHz, ±3 dB
S/N	72.5 dB (with N/R)/64 dB (without N/R)
S/N ref. lvl.	0 VU (WRMS)
THD	1.5%
THD ref. lvl.	0 VU
Tape #2	FerroChrome
R/P resp.	30 Hz to 20 kHz, ±3 dB
S/N	72.5 dB (with N/R)/64 dB (without N/R)
THD	1.5%
THD ref. lvl.	0 VU

N-5631

Price	$369.95
Heads	2 (ferrite erase; long-life R/P)
Flutter	0.06%
Play resp.	30 Hz to 18 kHz, ±3 dB
Fast-forward	90 sec (C-60)
Rewind	90 sec (C-60)
N/R system	Dolby
Input sens.	100 mV (line); 0.25 mV (mike)
Output level	0 to 0.7V (adjustable)
Input imped.	8 to 600 ohms (headphones)
Output load	8 ohms
Separation	35 dB (1 kHz)
Record indic.	VU; peak-reading (fluorescent tube display)
Features	Metal capable; auto stop; electronic pushbuttons with LED indicators; recording mute switch; MPX filter; headphone volume control; adjustable bias; damped eject; timer for unattended playback and recording
Tape #1	Metal
R/P resp.	30 Hz to 18 kHz, ±3 dB
S/N	70.5 dB (with N/R)/62 dB (without N/R)
S/N ref. lvl.	0 VU (WRMS)
THD	1.5%
THD ref. lvl.	0 VU
Tape #2	CrO_2
R/P resp.	30 Hz to 17 kHz, ±3 dB
S/N	69.5 dB (with N/R)/61 dB (without N/R)
S/N ref. lvl.	0 VU(WRMS)
THD	1.5%
THD ref. lvl.	0 VU

Models also available

N-5781, $569.95; N-5391, $269.95; N-5171, $179.95

PIONEER
U.S. Pioneer Electronics Corp.
75 Oxford Drive
Moonachie, N.J. 07074

CT-F1250

Price	$695
Heads	3 (unicrystal ferrite)
Flutter	0.03% (WRMS)
Play resp.	25 Hz to 16 kHz, ±3 dB
Rewind	85 sec (C-60)
N/R system	Dolby
Input sens.	63 mV (line); 0.3 mV (mike)
Output level	450 mV
Input imped.	50 ohms
Record indic.	2 VU (–30 dB to +8 dB)
Features	Three-mode Fluroscan meter; memory stop/repeat control
S/N	69 dB (with N/R)/59 dB (without N/R)
THD	1%

CT-F750

Price	$395
Heads	3 (hard permalloy)
Flutter	0.05%
Play resp.	25 Hz to 14 kHz, ±3 dB
Rewind	90 sec (C-60)
N/R system	Dolby
Input sens.	65 mV (line); 0.3 mV (mike)
Output level	450 mV
Input imped.	56 ohms
Record indic.	2 VU; peak-reading (–20 dB to +8 dB)
Features	Two-mode Fluroscan meter; DC motor; auto reverse record/repeat play
S/N	69 dB (with N/R)/59 dB (without N/R)
THD	1.2%

CT-F650

Price	$295
Heads	2 (hard permalloy)
Flutter	0.05%
Play resp.	25 Hz to 15 kHz, ±3 dB
Rewind	90 sec (C-60)
N/R system	Dolby
Input sens.	50 mV (line); 0.3 mV (mike)
Output level	450 mV
Input imped.	75 ohms
Record indic.	2 VU (–20 dB to +8 dB)
Features	DC servomotor; metal adaptable; electronic Fluroscan peak meter
S/N	69 dB (with N/R)/59 dB (without N/R)
THD	1.2%

Models also available

CT-F950, $595; CT-F850, $495; CT-F500, $195

REALISTIC
Radio Shack Corp.
1400 One Tandy Center
Ft. Worth, Texas 76102

SCT-3100

Price	$579.95
Heads	3 (2 hard permalloy R/P; ferrite double-gap erase)
Flutter	0.04% (WRMS)
Play resp.	30 Hz to 21 kHz, ±3 dB (metal)
N/R system	Dolby
Record indic.	2 VU; 2 peak LEDs
Features	Twin-tone bias adjust; full logic transport; auto rewind feature
Tape #1	Metal
R/P resp.	30 Hz to 21 kHz, ±3 dB at –20 VU
S/N	67 dB (with N/R)/57 dB (without N/R)
Tape #2	CrO_2
R/P resp.	30 Hz to 20 kHz, ±3 dB at –20 VU
S/N	64 dB (with N/R)/54 dB (without N/R)

SCT-21

Price	$299.95
Heads	2 (hard permalloy R/P; ferrite erase)
Flutter	0.06% (WRMS)
N/R system	Dolby
Record indic.	Peak-hold; bar-graph type
Features	Dolby FM; bias adjustment
Tape #1	Metal
R/P resp.	30 Hz to 20 kHz, ±3 dB at –20 VU
S/N	66 dB (with N/R)/56 dB (without N/R)
Tape #2	CrO_2
R/P resp.	30 Hz to 18 kHz, ±3 dB at –20 VU
S/N	63 dB (with N/R)/53 dB (without N/R)

SCT-24

Price	$149.95
Heads	2 (hard permalloy R/P; ferrite erase)
Flutter	0.15% (WRMS)
N/R system	Dolby
Record indic.	Bar-graph type
Tape #1	Metal
R/P resp.	30 Hz to 14 kHz, ±3 dB at –20 VU
S/N	64 dB (with N/R)/54 dB (without N/R)
Tape #2	CrO_2
R/P resp.	30 Hz to 12 kHz, ±3 dB at –20 VU
S/N	61 dB (with N/R)/51 dB (without N/R)

SCP-2

Price	$49.95
Heads	Permalloy
Flutter	0.2% (WRMS)
Features	Playback deck only; auto-stop; adjustable output level

Models also available

SCT-31, $399.95; SCT-22, $199.95; SCT-12, $79.95

REFERENCE
CBS Retail Stores
1301 65th St.
Emeryville, Calif. 94608

412D

Price	$249.95
Heads	2
Flutter	0.06%
Play resp.	30 Hz to 18 kHz, ±3 dB
N/R system	Dolby
Record indic.	Peak-reading
Features	Metal capability; auto shutoff

ROTEL
Rotel of America, Inc.
1055 Saw Mill River Road
Ardsley, N.Y. 10502

RD-2200M

Price	$450
Heads	2 (Sendust)
Flutter	0.05%
Play resp.	30 Hz to 19 kHz, ±3 dB
Fast-forward	90 sec (C-60)
Rewind	90 sec (C-60)
N/R system	Dolby
Input sens.	66 mV (line); 0.8 mV (mike); 10 mV (DIN)
Output level	650 mV
Input imped.	5K ohms
Output load	20K ohms
Record indic.	2 VU; peak-reading; fluorescent bar chart
Features	Full metal capability; fine bias adjust; 3 tape selectors; rack-mount design
Tape #1	Metal particle
R/P resp.	30 Hz to 19 kHz
S/N	64 dB (with N/R)/56 dB (without N/R)
Tape #2	CrO_2
R/P resp.	30 Hz to 19 kHz, ±3 dB
S/N	64 dB (with N/R)/56 dB (without N/R)

RD-2000

Price	$370
Heads	2 (R/P; ferrite erase)
Flutter	0.05%
Play resp.	30 Hz to 17 kHz, ±3 dB
Fast-forward	90 sec (C-60)
Rewind	90 sec (C-60)
N/R system	Dolby
Input sens.	66 mV (line); 0.8 mV (mike); 10 mV (DIN)
Output level	980 mV
Input imped.	5K ohms
Output load	20K ohms
Record indic.	2 VU; peak-reading LEDs (–42 dB to +5 dB)
Features	Damp cue eject; rack-mountable; bias adjust for normal control; MPX filter; output level controls
Tape #1	FeCr
R/P resp.	30 Hz to 17 kHz, ±3 dB
S/N	63 dB (with N/R)/55 dB (without N/R)

RD-18F

Price	$250
Heads	2 (super-hard permalloy)
Flutter	0.075%
Play resp.	30 Hz to 15 kHz, ±3 dB
Fast-forward	90 sec (C-60)
Rewind	90 sec (C-60)
N/R system	Dolby
Input sens.	25 mV (line); 0.3 mV (mike); 1.6 mV (DIN)
Output level	410 mV
Input imped.	47K ohms (line); 10K ohms (mike)
Output load	20K ohms
Record indic.	2 VU (–12 dB to +5 dB); peak-reading LED
Features	Fine-bias adjust; oil-damped eject; mike and headphone jacks
Tape #1	FeCr
R/P resp.	30 Hz to 15 kHz, ±3 dB
S/N	63 dB (with N/R)/53 dB (without N/R)

Models also available

RD-1000M, $440; RD-550, $300; RD-1010, $500

SAE TWO
Scientific Audio Electronics, Inc.
701 E. Macy St.
Los Angeles, Calif. 90012

C-4

Price	$550
Heads	2 (Sendust)
Flutter	0.06%
Play resp.	30 Hz to 14 kHz, ±2 dB
Fast-forward	70 sec (C-60)
Rewind	70 sec (C-60)
N/R system	Dolby
Input sens.	57 mV (line); 0.18 mV (mike)
Output level	350 mV
Separation	40 dB (1 kHz)
Erasure	65 dB (1 kHz)
Record indic.	Peak-reading (–25 dB to +5 dB)
Features	Fluorescent display; variable bias; full logic
Tape #1	Metal
R/P resp.	30 Hz to 18 kHz, ±2.5 dB
S/N	65 dB (with NR)/57 dB (without NR)
S/N ref. lvl.	0 VU (CCIR) (ARM)
THD	0.9%
THD ref. lvl.	0 VU
Tape #2	High output/FeCr
R/P resp.	30 Hz to 18 kHz, ±2.5 dB
S/N	63 dB (with NR)/55 dB (without NR)
S/N ref. lvl.	0 VU (CCIR) (ARM)
THD	1.1%
THD ref. lvl.	0 VU

Models also available

C-3D, $400

SAMSUNG
Samsung Electronics America, Inc.
2707 Butterfield Road, Suite 270
Oak Brook, Ill. 60521

TD-3500

Price	$259.95
Heads	2 (hard permalloy R/P; ferrite erase)
Flutter	0.1% (RMS)
Play resp.	30 Hz to 16 kHz, ±3.0 dB
Fast-forward	90 sec (C-60)
N/R system	Dolby
Input sens.	60 mV (line); 0.3 mV (mike)
Output level	775 mV re DIN O
Input imped.	47K ohms
Output load	10K ohms
Erasure	60 dB
Record indic.	VU (–20 dB to +5 dB); peak LED
Features	Line/mike selection; variable output level; full auto stop; limiter; MPX filter; 3-position bias and EQ selection; memory rewind
Tape #1	Normal
R/P resp.	30 Hz to 14 kHz, ±3 dB
S/N	60 dB (with N/R)/50 dB (without N/R)
Tape #2	CrO_2
R/P resp.	30 Hz to 15 kHz, ±3 dB
S/N	65 dB (with N/R)/55 dB (without N/R)

Models also available

TD-3300, $129.95

SANSUI
Sansui Electronics Corp.
1250 Valley Brook Ave.
Lyndhurst, N.J. 07071

SC-3330

Price	$420
Heads	2 (FH R/P for metal tape; ferrite erase)
Flutter	0.04%
Fast-forward	70 sec (C-60)
Rewind	70 sec (C-60)
N/R system	Dolby
Input sens.	70 mV (line); 0.2 mV (mike)
Output level	400 mV (line)
Input imped.	100K ohms (line)
Output load	47K ohms
Separation	50 dB at 1 kHz
Erasure	70 dB (full range)
Record indic.	LED
Features	Solenoid-operated LSI full-logic controls; roller-back hold-back tension mechanism; tape lead-in design; memory rewind; auto play; auto repeat; on/off operation from an external timer; memory stop; matte back finish; detachable rack-mounting handles
Tape #1	Metal
R/P resp.	20 Hz to 17 kHz, ±3 dB
S/N	69 dB (with N/R)/59 dB (without N/R)
S/N ref. lvl.	3% (A-weighted)
THD	1%
THD ref. lvl.	0 VU
Tape #2	Cro_2
R/P resp.	20 Hz to 16 kHz, ±3 dB
S/N	69 dB (with N/R)/59 dB (without N/R)
S/N ref. lvl.	3% THD (A-weighted)

SC-1330

Price	$320
Heads	2 (FH R/P metal tape; ferrite erase)
Flutter	0.05%
Fast-forward	75 sec (C-60)
Rewind	75 sec (C-60)
N/R system	Dolby
Input sens.	70 mV (line); 0.2 mV (mike)
Output level	400 mV
Output load	47K ohms
Separation	50 dB
Erasure	70 dB (full range)
Record indic.	Peak-reading LED
Features	One-touch tape lead-in; record mute; timer record and play function; output level control; matte black finish; detachable rack-mounting handles; Direct-O-Matic™ front-loading
Tape #1	Metal
R/P resp.	20 Hz to 16 kHz, ±3 dB
S/N	69 dB (with N/R)/59 dB (without N/R)
S/N ref. lvl.	3% (A-weighted)
THD	1%
THD ref. lvl.	0 VU
Tape #2	CrO_2
R/P resp.	20 Hz to 16 kHz, ±3 dB
S/N	69 dB (with N/R)/59 dB (without N/R)
S/N ref. lvl.	3% THD (A-weighted)

D-100

Price	$250
Heads	2 (Hi-B permalloy R/P; Hi-B double-gap ferrite erase)
Flutter	0.055%
Fast-forward	75 sec (C-60)
Rewind	75 sec (C-60)
N/R system	Dolby
Input sens.	70 mV (line); 0.3 mV (mike)
Output level	400 mV
Input imped.	47K ohms (line)
Output load	47K ohms
Erasure	60 dB (1 kHz)
Record indic.	2 VU (–20 dB to +5 dB); 5 peak LEDs
Features	Silent, smooth, and stable transport system with large flywheel; hard metal capstan and high-torque DC drive motor
Tape #1	Metal
R/P resp.	20 Hz to 17 kHz, ±3 dB at –20 VU
S/N	69 dB (with N/R)/59 dB (without N/R)
S/N ref. lvl.	3% THD (A-weighted)
Tape #2	CrO_2
R/P resp.	20 Hz to 16 kHz, ±3 dB at –20 VU
S/N	69 dB (with N/R)/59 (without N/R)
S/N ref. lvl.	3% THD (A-weighted)

Models also available

SC-5330, $520; SC-3300, $420; SC-1300, $320; D-90, $200

SANYO
Sanyo Electric, Inc.
Consumer Electronics Div.
1200 W. Artesia Blvd.
Compton, Calif. 90220

RD-5350

Price	$179.95
Heads	2 (permalloy)
Flutter	0.04%
Play resp.	30 Hz to 17 kHz, ±3 dB
N/R system	Dolby
Record indic.	2 VU; 3 peak-reading LEDs
Features	PLL DC servomotor; extended-range VU meters; separate EQ and bias; record mute; output level control; timer standby
Tape #1	CrO_2
R/P resp.	30 Hz to 17 kHz, ±3 dB
S/N	64 dB (with N/R)

RD-5008

Price	$149.95
Heads	2 (permalloy)
Flutter	0.1%
Play resp.	30 Hz to 14 kHz, ±3 dB
N/R system	Dolby
Record indic.	2 VU (LED)
Features	Tape select for normal or CrO_2; full auto stop
S/N	60 dB (with N/R)

Plus D-64

Price	$459.95
Heads	2 (Sendust alloy)
Flutter	0.04%
Play resp.	20 Hz to 14 kHz, ±3 dB
N/R system	Dolby
Input sens.	50 mV (line); 0.3 mV (mike)
Output level	775 mV (line)
Input imped.	7K ohms
Separation	42 dB
Record indic.	2 VU; peak-reading (–20 dB to +5 dB)
Features	Automatic Music Select System (AMSS) allows programming of 9 selections on cassette
Tape #1	Metal
R/P resp.	20 Hz to 20 kHz
S/N	70 dB (with N/R)/62 dB (without N/R)
THD	0.8%
Tape #2	CrO_2
R/P resp.	20 Hz to 17 kHz
S/N	67 dB (with N/R)/59 dB (without N/R)
THD	1.5%

Plus RD-5370

Price	$389.95
Heads	3 (Sendust alloy)
Flutter	0.04%
Play resp.	30 Hz to 19 kHz, ±3 dB
N/R system	Dolby
Record indic.	2 VU; LED meters with peak indicators
Features	Two-motor DC capstan drive; front-panel function displays; output level control
Tape #1	Metal-particle "Supertape"
S/N	70 dB (with N/R)/62 dB (without N/R)
Tape #2	CrO_2
S/N	67 dB (with N/R)/59 dB (without N/R)

Plus D-60

Price	$369.95
Heads	2 (Sendust R/P; ferrite erase)
Flutter	0.04%
Play resp.	20 Hz to 20 kHz, ±3 dB
N/R system	Dolby
Input sens.	50 mV (line); 0.3 mV (mike)
Output level	530 mV
Record indic.	Combined VU/peak; fluorescent peak-hold level meters
Features	One-chip noise reduction; Automatic Music Select System (AMSS); record mute control; timer standby; auto stop
Tape #1	Metal
R/P resp.	20 Hz to 20 kHz, ±3 dB
S/N	70 dB (with N/R)/62 dB (without N/R)
Tape #2	CrO_2
R/P resp.	20 Hz to 17 kHz, ±3 dB
S/N	67 dB (with N/R)/59 dB (without N/R)
THD	0.8%/1.5%

Plus D-45

Price	$299.95
Heads	2 (Sendust alloy R/P; ferrite erase)
Flutter	0.05%
Play resp.	30 Hz to 19 kHz, ±3 dB
N/R system	Dolby
Input sens.	0.3 mV (line); 50 mV (mike)
Output level	530 mV
Record indic.	Peak hold
Features	Defeatable FM MPX filter; mike/line mixing; record mute control; timer standby; auto-stop
Tape #1	Metal
R/P resp.	30 Hz to 19 kHz, ±3 dB
S/N	67 dB (with N/R/59 dB (without N/R)
THD	0.8%
Tape #2	CrO_2
R/P resp.	30 Hz to 17 kHz, ±3 dB
S/N	64 dB (with N/R) 56 dB (without N/R)
THD	0.8%

RD-5009

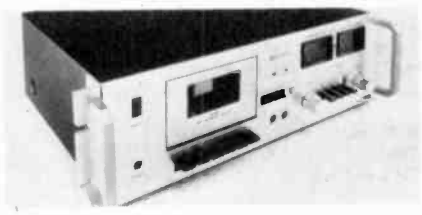
Price	$159.95
Heads	2
Flutter	0.07%
Play resp.	30 Hz to 16 kHz, ±3 dB
N/R system	Dolby
Record indic.	Peak LED
Features	Metal capable

Models also available

Plus RD-5372, $469.95; RD-5035, $199.95; RD-5030, $169.95; Plus D-62, $379.95; Plus D-55, $329.95; RD-5040, $249.95; RD-5025, $219.95

SCOTT
H. H. Scott
20 Commerce Way
Woburn, Mass. 01801

665-DM



Price	$299.95
Heads	2 (Super-B permalloy R/P; 3 dual-gap ferrite erase)
Flutter	0.05%
Fast-forward	80 sec (C-60)
Rewind	80 sec (C-60)
N/R system	Dolby
Input sens.	100 mV (line); 3 mV (mike)
Output level	550 mV re DIN O
Separation	40 dB
Erasure	65 dB
Record indic.	2 VU
Features	Full logic feather-touch controls; metal-tape compatability; FG/DC motor; separate channel record-level controls; all function remote-control option; slimline design
Tape #1	Metal
R/P resp.	25 Hz to 18 kHz, ±3 dB
S/N	66 dB (with N/R)
Tape #2	CrO_2
R/P resp.	25 Hz to 17 kHz, ±3 dB
S/N	66 dB (with N/R)

671DM

Price	$249.95
Heads	2 (permalloy "B")
Flutter	0.04%
Play resp.	25 Hz to 18 kHz, ±3 dB (CrO_2)
Fast-forward	90 sec (C-60)
Rewind	90 sec (C-60)
N/R system	Dolby
Input sens.	60 mV (line); 0.5 mV (mike)
Output level	580 mV
Separation	40 dB at 1 kHz
Erasure	70 dB at 1 kHz
Record indic.	2 VU; (–20 dB to +5 dB); equalized peak-reading LEDs

610D

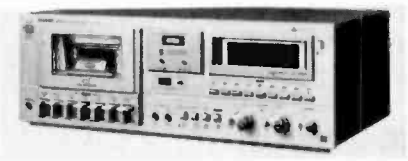
Price	$199.95
Heads	2 (permalloy)
Flutter	0.05%
Play resp.	25 Hz to 16 kHz, ±3 dB (CrO_2)
Fast-forward	90 sec (C-60)
Rewind	90 sec (C-60)
N/R system	Dolby
Input sens.	60 mV (line); 0.5 mV (mike)
Output level	580 mV
Separation	40 dB (1 kHz)
Erasure	70 dB (1 kHz)
Record indic.	2 VU; (–20 dB to +5 dB); equalized peak-reading LEDs
Features	Soft-eject front loading; tape-memory rewind; record and Dolby LEDs; 19" rack-mount handle option
Tape #1	TDK SA
R/P resp.	25 Hz to 16 kHz, ±3 dB
S/N	64 dB (with N/R)/56 dB (without N/R)
S/N ref. lvl.	3% THD (IHF A-weighted)
THD ref. lvl.	0 dB VU
Tape #2	TDK SA
S/N ref. lvl.	250 nWb/m, +1 dB (IHF A-weighted)
THD	1%
THD ref. lvl.	160 nWb/m, –3 dB
Tape #2	Maxell UDXL II
R/P resp.	30 Hz to 16 kHz, ±3 dB
S/N	67 dB (with N/R)/57 dB (without N/R)
S/N ref. lvl.	250 nWb/m, +1 dB
THD	1%
THD ref. lvl.	160 nWb/m, –3 dB

SHARP
Sharp Electronics Corp.
10 Keystone Place
Paramus, N.J. 07652

RT-2266

Price	$380
Heads	2 (permalloy plus)
Flutter	0.045%
Play resp.	31.5 Hz to 14 kHz
Fast-forward	100 sec (C-60)
Rewind	100 sec (C-60)
N/R system	Dolby
Input sens.	50 mV (line); 0.2 mV (mike)
Output level	500 mV
Input imped.	47K ohms
Output load	47K ohms
Separation	45 dB (1 kHz)
Erasure	70 dB 1 kHz
Record indic.	2 VU fluorescent; peak-reading (–20 dB to +8 dB); hold switch
Features	LSI controlled tape transport; 9-position APLD; 2 motors; metal capable; Sharpscan peak-level display
Tape #1	Maxell UD
R/P resp.	30 Hz to 14 kHz, ±3 dB
S/N	67 dB (with N/R)/57 dB (without N/R)

RT-1199



Price	$280
Heads	(High "B" R/P; hard permalloy erase)
Flutter	0.058%
Play resp.	31.5 Hz to 14 kHz, ±3 dB
Fast-forward	100 sec (C-60)
Rewind	100 sec (C-60)
N/R system	Dolby
Input sens.	63 mV (line); 0.2 mV (mike)
Output level	710 mV
Input imped.	50K ohms
Output load	50K ohms
Separation	45 dB (1 kHz)
Erasure	70 dB
Record indic.	Fluorescent; peak-reading (–20 dB to +8 dB); hold switch
Features	Sharpscan peak-level display; 9-position APLD™; metal capable; mike/line mixing
Tape #1	Maxell UD
R/P resp.	40 Hz to 12.5 kHz, ±3 dB
S/N	67 dB (with N/R)/57 dB (without N/R)
S/N ref. lvl.	250 nWb/m, +1 dB (IHF A-weighted)
THD	1%
THD ref. lvl.	160 nWb/m, –3 dB
Tape #2	Maxell UDXL-II
R/P resp.	40 Hz to 14 kHz, ±3 dB
S/N	67 dB (with N/R)/57 dB (without N/R)
S/N ref. lvl.	250 nWb/m, +1 dB
THD	1%
THD ref. lvl.	160 nWb/m, –3 dB

RT-30

Price	$200
Heads	2 (hard permalloy R/P; ferrite erase)
Flutter	0.075% (WRMS)
Play resp.	63 Hz to 12.5 kHz, ±3 dB
Fast-forward	100 sec (C-60)
Rewind	100 sec (C-60)
N/R system	Dolby
Input sens.	50 mV (line); 0.2 mV (mike)
Output level	580 mV
Input imped.	50K ohms
Separation	35 dB (1 kHz)
Erasure	70 dB (1 kHz)
Record indic.	5 LEDs (–13 dB to +3 dB)
Features	Sharpscan peak-level LED display; 3-position tape selector; APSS (auto program search system); metal capability
Tape #1	Maxell UD
R/P resp.	40 Hz to 12 kHz, ±3 dB
S/N	66 dB (with N/R)/56 dB (without N/R)
S/N ref. lvl.	250 nWb/m, +1 dB (1HF A-weighted)
THD	1.5%
THD ref. lvl.	160 nWb/m, –3 dB
Tape #2	Maxell UDXL-II
R/P resp.	40 Hz to 13 kHz, ±3 dB
S/N	66 dB (with N/R)/56 dB (without N/R)

S/N ref. lvl.	250 nWb/m, +1 dB (1HF A-weighted)
THD	1.5%
THD ref. lvl.	160 nWb/m, -3 dB

Models also available

RT-4488, $390; RT-1178, $220; RT-20, $190; RT-10, $130

SONY
Sony Industries, Inc.
9 West 57th St.
New York, N.Y. 10019

TC-D5M

Price	$700
Heads	2 (Sendust; ferrite)
Flutter	0.06% (WRMS)
Fast-forward	150 sec (C-60)
Rewind	150 sec (C-60)
N/R system	Dolby
Input sens.	77.5 mV (line); 2.5 mV (mike)
Output level	435 mV
Input imped.	50K ohms
Output load	10K ohms
Separation	30 dB (1 kHz)
Erasure	60 dB (400 Hz)
Record indic.	2 VU; peak-reading LED
Features	Lightweight (3 lb. 4 oz.)
Tape #1	Sony Metallic
R/P resp.	30 Hz to 17 kHz, ±3 dB
S/N	69 dB (with NR)/59 dB (without NR)
S/N ref. lvl.	-20 dB (IHF A-weighted)
THD	1.0%
THD ref. lvl.	0 dB
Tape #2	Sony EHF
R/P resp.	30 Hz to 15 kHz, ±3 dB
S/N	65 dB (with NR)/55 dB (without NR)
S/N ref. lvl.	3% (IHF A-weighted)

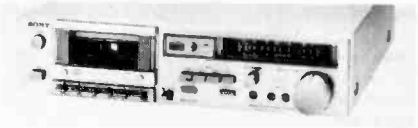
TC-K81

Price	$530
Heads	3 (Sendust and ferrite record, Sendust and ferrite play, 2-gap ferrite erase)
Flutter	0.04%
Play resp.	30 Hz to 18 kHz, ±3 dB
Fast-forward	80 sec (C-60)
Rewind	80 sec (C-60)
N/R system	Dolby
Input sens.	77.5 mV (line); 0.25 mV (mike) re NAB 0
Output level	435 mV re DIN 0
Input imped.	50K ohms
Output load	10K ohms
Separation	35 dB (1 kHz)
Erasure	60 dB (400 Hz)
Record indic.	Peak-hold (automatic or manual); peak LED; (-40 dB to +8 dB)
Features	Bias and record level calibration for all tapes; bias calibration; record-level calibration reference; closed-loop dual-capstan; line output attenuator; remote control RM-50; tape-source monitoring
Tape #1	Sony Metallic
R/P resp.	30 Hz to 18 kHz, ±3 dB
S/N	70 dB (with N/R)/60 dB (without N/R)
S/N ref. lvl.	3%
THD	0.8%
THD ref. lvl.	0 dB
Tape #2	Sony EHF
R/P resp.	30 Hz to 17 kHz, ±3 dB
S/N	68 dB (with N/R)/58 dB (without N/R)
S/N ref. lvl.	3% (IHF A-weighted)

TC-K71

Price	$430
Heads	3 (Sendust and ferrite record, Sendust and ferrite play, 2-gap ferrite erase)
Flutter	0.04%
Play resp.	30 Hz to 18 kHz, ±3 dB
Fast-forward	80 sec (C-60)
Rewind	80 sec (C-60)
N/R system	Dolby
Input sens.	77.5 mV (line); 0.25 mV (mike) re NAB 0
Output level	435 mV re DIN 0
Input imped.	50K ohms
Output load	10K ohms
Separation	35 dB (1 kHz)
Erasure	60 dB (400 Hz)
Record indic.	Peak-hold (automatic or manual); peak LED; (-40 dB to +8 dB)
Features	Remote control with RM-50; headphone line output attenuator; source or tape monitoring; switch-adjustable bias control for normal tapes; cue control; record mute; closed-loop dual-capstan drive; memory
Tape #1	Sony Metallic
R/P resp.	30 Hz to 18 kHz, ±3 dB
S/N	70 dB (with N/R)/60 dB (without N/R)
S/N ref. lvl.	3% (IHF A weighted)
THD	0.8%
THD ref. lvl.	0 dB
Tape #2	Sony EHF
R/P resp.	30 Hz to 17 kHz, ±3 dB
S/N	68 dB (with N/R)/58 dB (without N/R)
S/N ref. lvl.	3% (IHF A weighted)

TC-K44



Price	$230
Heads	2 (type) Sendust and ferrite record/play; 4-gap ferrite erase
Flutter	0.06%
Play resp.	30 Hz to 15 kHz, ±3 dB
Fast-forward	90 seconds for C-60 (length)
Rewind	90 seconds for C-60 (length)
N/R system	Dolby
Input sens.	77.5 mV (line); 0.25 mV (mike) re NAB 0
Output level	435 mV re DIN 0
Input imped.	50K ohms
Output load	10K ohms
Separation	35 dB (1 kHz)
Erasure	60 dB (400 Hz)
Record indic.	Peak LED (indicator range): -30 dB to +8 dB)
Features	Variable headphone output level; record mute; frequency-generator governed DC servo motor
Tape #1	Sony Metallic
R/P resp.	30 Hz to 15 kHz, ±3 dB
S/N	68 dB (with N/R)/58 dB (without N/R)
S/N ref. lvl.	3% Weighting curve: (IHF A)
THD	1%
THD ref. lvl.	0 dB
Tape #2	Sony EHF
R/P resp.	30 Hz to 14 kHz, ±3 dB
S/N	66 dB (with N/R); 56 dB (without N/R)
S/N ref. lvl.	3% Weighting curve: (IHF A) tf

TC-K22

Price	$190
Heads	2 (high density permalloy record/play; 4-gap ferrite erase)
Flutter	0.07%
Play resp.	30 Hz to 15 kHz, ±3 dB
Fast-forward	90 sec (C-60)
Rewind	90 sec (C-60)
N/R system	Dolby
Input sens.	77.5 mV (line); 0.25 mV (mike) re NAB 0
Output level	435 mV re DIN 0
Input imped.	50K ohms
Output load	10K ohms
Separation	35 dB (1 kHz)
Erasure	60 dB (400 Hz)
Record indic.	VU (-20 dB to +5 dB)
Features	DC servo-control motor; 3-function motor; headphone jack
Tape #1	Sony Metallic
R/P resp.	30 Hz to 15 kHz, ±3 dB
S/N	68 dB (with N/R)/58 dB (without N/R)
S/N ref. lvl.	3% (IHF A-weighted)
THD	1%
THD ref. lvl.	0 dB
Tape #2	Sony EHF
R/P resp.	30 Hz to kHz, ±3 dB
S/N	66 dB (with N/R)/56 dB (without N/R)
S/N ref. lvl.	3%
THD ref. lvl.	1 kHz re 0 dB

Models also available

TC-K88B, $1,200; TCK77R, $600; TC-K65, $500; TC-K61, $320

SUPERSCOPE
Superscope, Inc.
20525 Nordhoff St.
Chatsworth, Calif. 91311

CD-330 (Portable)

Price	$300
Heads	3 (superhard permalloy)
Flutter	0.12% (WRMS)
Play resp.	40 Hz to 17 kHz, ±3 dB
Fast-forward	110 sec (C-60)
Rewind	110 sec (C-60)
N/R system	Double Dolby
Input sens.	77.5 mV (line); 0.2 mV (mike)
Output level	775 mV
Input imped.	5K ohms (line)
Output load	1.5K ohms
Separation	38 dB (1 kHz)
Erasure	55 dB (100 kHz)
Record indic.	2 VU (-20 dB to +5 dB)
Features	Tape/source monitoring; 4" speaker; 3-position monitor switch, automatic-manual-limiter recording; locking pause control
Tape #1	CrO_2
R/P resp.	40 Hz to 13 kHz, ±3 dB
S/N	60 dB (with N/R)/50 dB (without N/R)
S/N ref. lvl.	Dolby (CCIR)
THD	1.5%
THD ref. lvl.	0 VU
Tape #2	FeCr
R/P resp.	40 Hz to 14 kHz, ±3 dB
S/N	60 dB (with N/R)/50 dB (without N/R)
S/N ref. lvl.	Dolby (CCIR)
THD	1.8%
THD ref. lvl.	0 VU

Models also available

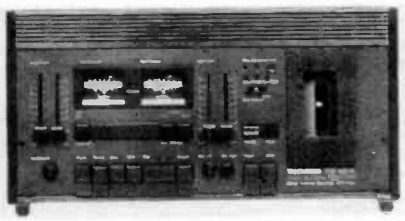
CD-320 (Portable), $235

TANDBERG
Tandberg of America, Inc.
Labriola Court
Armonk, N.Y. 10504

TCD-440

Price	$1,600
Heads	3 (ferrite erase; ferrite record; permalloy playback)
Flutter	0.08%
Play resp.	20 Hz to 20 kHz, ±3 dB
Fast-forward	60 sec (C-60)
Rewind	60 sec (C-60)
N/R system	Dolby
Input sens.	80 mV (line); 0.15 mV (mike)
Output level	1.5V
Input imped.	100 ohms
Separation	60 dB (1 kHz)
Erasure	80 dB (1 kHz)
Record indic.	2 peak-reading (–24 dB to +6 dB)
Features	Dyneq® record system; logic control; three motors; flying start
Tape #1	Maxell UDXL-I
R/P resp.	20 Hz to 20 kHz, ±3 dB
S/N	70 dB (with N/R)/60 dB (without N/R)
S/N ref. lvl.	3 (IEC A-weighted)
THD	2%
THD ref. lvl.	250 nWb/m (DIN)
Tape #2	Maxell UDXL-II
R/P resp.	20 Hz to 20 kHz, ±3 dB
S/N	70 dB (with N/R)/55 dB (without N/R)
S/N ref. lvl.	3% (IEC A-weighted)
THD	2%
THD ref. lvl.	3%

TCD-420A



Price	$850
Heads	2 (ferrite erase; senalloy R/P)
Flutter	0.06%
Play resp.	20 Hz to 18 kHz, ±3 dB
Fast-forward	60 sec (C-60)
Rewind	60 sec (C-60)
N/R system	Dolby
Input sens.	80 mV (line); 0.15 mV (mike)
Output level	1.5V
Input imped.	100 ohms
Separation	60 dB (1 kHz)
Erasure	80 dB (1 kHz)
Record indic.	2 VU (–24 dB to +6 dB); equalized peak-reading meter
Features	Actilinear™ Dyneq® recording systems; three motors, solenoid operation
Tape #1	Maxell UDXL-I
R/P resp.	30 Hz to 18 kHz, ±3 dB
S/N	67 dB (with N/R)/58 dB (without N/R)
S/N ref. lvl.	3% THD (DIN)
THD	2%
THD ref. lvl.	250 nWb/m (DIN)
Tape #2	Maxell UDXL-II
R/P resp.	30 Hz to 18 kHz
S/N	67 dB (with N/R)/58 dB (without N/R)
S/N ref. lvl.	3%
THD	2%
THD ref. lvl.	250 nWb/m

Models also available

TCD-340A, $1,200

TEAC
Teac Corp. of America
7733 Telegraph Road
Montebello, Calif. 90640

CX-650R

Price	$700
Heads	3
Flutter	0.06%
Play resp.	30 Hz to 16 kHz
Fast-forward	90 sec (C-60)
Rewind	90 sec (C-60)
N/R system	Dolby
Input sens.	60 mV (line); 0.25 mV (mike)
Output level	300 mV
Input imped.	50K ohms
Output load	50K ohms
Record indic.	2 VU (–20 dB to +5 dB)
Features	Bidirectional record/play

A-770

Price	$600
Heads	3
Flutter	0.05% (NAB)
Play resp.	30 Hz to 19 kHz
Fast-forward	90 sec (C-60)
Rewind	90 sec (C-60)
N/R system	Dolby
Input sens.	60 mV (line); 0.25 mV (mike)
Output level	0.3 mV re DIN O
Input imped.	50K ohms
Output load	50K ohms
Record indic.	Peak-reading (–20 dB to +5 dB)
Features	Tape/source monitor switch; switchable mike/line input; advanced Dolby noise-reduction circuitry; mechanical tape tension servo system
Tape #1	TDK SA
R/P resp.	30 Hz to 17 kHz, ±3 dB at –10 VU
S/N	69 dB (with N/R)/59 dB (without N/R)

A-550RX

Price	$550
Heads	2
Flutter	0.05%
Play resp.	20 Hz to 19 kHz
Fast-forward	90 sec (C-60)
Rewind	90 sec (C-60)
N/R system	dbx Dolby
Input sens.	60 mV (line); 0.25 mV (mike)
Output level	300 mV
Input imped.	50K ohms
Output load	50K ohms
Record indic.	2 VU (–20 dB to +5 dB)
Tape #1	Metal or CrO_2
R/P resp.	30 Hz to 18 kHz
S/N	66 dB (with N/R)/56 dB (without N/R)/85 dB (with dbx)
Tape #2	Low noise
R/P resp.	30 Hz to 16 kHz

A-510 Mk. II

Price	$475
Heads	2 (Sendust).
Flutter	0.045%
Play resp.	30 Hz to 20 kHz
Fast-forward	90 sec (C-60)
Rewind	90 sec (C-60)
N/R system	Dolby
Input sens.	60 mV (line); 0.25 mV (mike)
Output level	300 mV
Input imped.	50K ohms
Output load	50K ohms
Record indic.	Fluorescent bar meter (–20 dB to +8 dB)
Features	Metal capability
Tape #1	Metal
R/P resp.	30 Hz to 20 kHz
S/N	66 dB (with N/R)/56 dB (without N/R)
Tape #2	CrO_2
R/P resp.	30 Hz to 20 kHz
S/N	66 dB (with N/R)/56 dB (without N/R)

CX-400

Price	$320
Heads	3
Flutter	0.05% (NAB)
Play resp.	30 Hz to 20 kHz
Fast-forward	100 sec (C-60)
Rewind	100 sec (C-60)
N/R system	Dolby
Input sens.	60 mV (line); 0.25 mV (mike)
Output level	0.3 mV re DIN O
Input imped.	50K ohms
Output load	50K ohms
Record indic.	Peak-reading; peak-hold; peak LED; bar-graph type (–20 dB to +5 dB)
Features	Three-digit tape counter with reset button; 3-position bias and EQ settings; front panel mike/line select; large, dual concentric record level controls; left and right microphone inputs
Tape #1	TDK SA
R/P resp.	30 Hz to 18 kHz, ±3 dB at –10 VU
S/N	68 dB (with N/R)/58 dB (without N/R)

CX-310

Price	$200
Heads	2
Flutter	0.06% (NAB)
Play resp.	30 Hz to 19 kHz
Fast-forward	100 sec (C-60)
Rewind	100 sec (C-60)
N/R system	Dolby
Input sens.	60 mV (line); 0.25 mV (mike)
Output level	0.3 mV re DIN O
Input imped.	50K ohms
Output load	50K ohms
Record indic.	–20 dB to +3 dB
Features	Three-digit tape counter with reset button; 3-position bias and EQ settings; front-panel mike/line select; large, dual concentric record level controls; left and right microphone inputs; headphone jack
Tape #1	TDK SA
R/P resp.	30 Hz to 16 kHz, ±3 dB at –10 VU
S/N	65 dB (with N/R)/55 dB (without N/R)

Models also available

C-1 Mk.II (champagne) or C-1B Mk.II (brown), $1,350; C-3X, $650; M-124, $450; A-660, $360; CX-350, $229

TECHNICS
Panasonic Co.
One Panasonic Way
Secaucus, N.J. 07094

RS-M95

Price	$1,300
Heads	3 (2 HPF; Sendust ferrite)
Flutter	0.03%
Play resp.	20 Hz to 20 kHz, ±3 dB
Fast-forward	80 sec (C-60)
Rewind	80 sec (C-60)
N/R system	Dolby
Input sens.	60 mV (line); 0.25 mV (mike)
Output level	650 mV
Input imped.	6K ohms
Output load	22K ohms
Record indic.	2-color fluorescent peak-reading with peak-hold (–40 dB to +8 dB)
Features	Two quartz DD motors; microprocessor tape-tension control; fine bias (separate for each tape type)
Tape #1	Metal
R/P resp.	20 Hz to 20 kHz, ±3 dB
S/N	70 dB (with N/R)/60 dB (without N/R)

Tape #2	TDK SA
R/P resp.	20 Hz to 19 kHz, ±3 dB
S/N	70 dB (with N/R)/60 dB (without N/R)

RS-M68

Price	$500
Heads	2 (Sendust extra; ferrite)
Flutter	0.06%
Play resp.	20 Hz to 17 kHz
Fast-forward	86 sec (C-60)
Rewind	86 sec (C-60)
N/R system	Dolby
Input sens.	60 mV (line); 0.25 mV (mike)
Output level	650 mV
Input imped.	2.2K ohms
Output load	22K ohms
Record indic.	2-color fluorescent peak-reading (–20 dB to +8 dB)
Features	Auto-reverse record and play; memory auto play; cue/review
Tape #1	TDK SA
R/P resp.	20 Hz to 17 kHz
S/N	67 dB (with N/R)/57 dB (without N/R)

RS-M02

Price	$500
Heads	2 (Sendust extra R/P; Sendust/ferrite bias/erase)
Flutter	0.035% (WRMS)
Play resp.	30 Hz to 17 kHz, ±3 dB
Fast-forward	80 sec (C-60)
Rewind	80 sec (C-60)
N/R system	Dolby
Input sens.	60 mV (line); 0.25 mV (mike)
Output level	650 mV
Output load	22K ohms
Record indic.	2-color flourescent bar-graph
Features	Microcomponent; 2-motor system includes direct-drive for capstan; feather-touch logic controls; timer start; record mute
Tape #1	Metal
R/P resp.	30 Hz to 17 kHz, ±3 dB
S/N	68 dB (with N/R)/58 dB (without N/R)
Tape #2	TDK SA
R/P resp.	30 Hz to 16 kHz, ±3 dB

RS-M45

Price	$330
Heads	2 (Sendust extra R/P; Sendust ferrite bias/erase)
Flutter	0.035% (WRMS)
Fast-forward	85 sec (C-60)
Rewind	85 sec (C-60)
N/R system	Dolby
Input sens.	60 mV (line); 0.25 mV (mike)
Output level	700 mV
Input imped.	2.5K ohms
Output load	22K ohms
Record indic.	2-color fluorescent bar-graph; peak-hold
Features	Two-motor drive includes direct-drive for capstan; record mute; timer record/play; full function wireless or wired remote control
Tape #1	Metal
R/P resp.	30 Hz to 17 kHz, ±3 dB
S/N	68 dB (with N/R)/58 dB (without N/R)
Tape #2	TDK SA
R/P resp.	30 Hz to 16 kHz, ±3 dB
S/N	68 dB (with N/R)/58 dB (without N/R)

RS-M14

Price	$200
Heads	2 (MX)
Flutter	0.05% (WRMS)
Play resp.	20 Hz to 18 kHz
Fast-forward	90 sec (C-60)
Rewind	90 sec (C-60)
N/R system	Dolby
Input sens.	60 mV (line); 0.25 mV (mike) re NAB O
Output level	700 mV re DIN O
Input imped.	40K ohms
Output load	1.5K ohms
Record indic.	Peak-reading; peak-hold; fluorescent bar-graph type (–20 dB to +8 dB)
Features	Soft-touch controls; metal tape compatible; cue and review; record mute
Tape #1	Metal
R/P resp.	20 Hz to 18 kHz
S/N	67 dB (with N/R)/57 dB (without N/R)
Tape #2	TDK SA
R/P resp.	20 Hz to 18 kHz
S/N	67 dB (with N/R)/57 dB (without N/R)

RS-M8

Price	$175
Heads	2 (MX)
Flutter	0.07% (WRMS)
Play resp.	20 Hz to 17 kHz
Fast-forward	86 sec (C-60)
Rewind	86 sec (C-60)
N/R system	Dolby
Input sens.	60 mV (line); 0.25 mV (mike) re NAB O
Output level	420 mV re DIN O
Input imped.	47K ohms
Output load	1.4K ohms
Record indic.	Peak-reading; fluorescent bar-graph type (–20 dB to +8 dB)
Features	Metal tape capable; full auto-stop; separate right and left input levels
Tape #1	Metal
R/P resp.	20 Hz to 17 kHz
S/N	66 dB (with N/R)/56 dB (without N/R)
Tape #2	TDK SA
R/P resp.	20 Hz to 16 kHz
S/N	66 dB (with N/R)/56 dB (without N/R)

Models also available

RS-M85 Mk. II, $700; RS-M56, $500; RS-M51, $420; RS-M63, $380; RS-M04, $320; RS-M24, $260; RS-M6, $145

TOSHIBA
Toshiba America, Inc.
82 Totawa Road
Wayne, N.J. 07470

PC-X40

Price	$379.95
Heads	2 (Sendust R/P; ferrite erase)
Flutter	0.05% (WRMS)
Play resp.	20 Hz to 18 kHz
Fast-forward	80 sec (C-60)
Rewind	80 sec (C-60)
N/R system	Dolby
Input sens.	70 mV (line); 0.25 mV (mike)
Output level	5V
Input imped.	50K ohms
Separation	30 dB at 1 kHz
Erasure	60 dB at 1 kHz
Record indic.	LED (–30 dB to +8 dB); bar/dot switchable
Features	Metal tape capability; programmable; auto play/repeat; multi-music quick-select system
Tape #1	Metal
R/P resp.	20 Hz to 18 kHz, ±3 dB
S/N	72 dB (with N/R)/62 dB (without N/R)
THD	0.4%
THD ref. lvl.	0 dB
Tape #2	Chrome
R/P resp.	20 Hz to 18 kHz, ±3 dB at –20 VU
S/N	68 dB (with N/R)/58 dB (without N/R)

PC-X20

Price	$299.95
Heads	2 (Sendust R/P; ferrite erase)
Flutter	0.05% (WRMS)
Play resp.	20 Hz to 18 kHz
Fast-forward	80 sec (C-60)
Rewind	80 sec (C-60)
N/R system	Dolby
Input sens.	70 mV (line); 0.25 mV (mike)
Output level	0.5V
Input imped.	50K ohms
Separation	30 dB (1 kHz)
Erasure	60 dB (1 kHz)
Record indic.	LED (–30 dB to +8 dB); bar/dot switchable meters
Features	Metal-tape capability; auto repeat
Tape #1	Metal
R/P resp.	20 Hz to 18 kHz, ±3 dB
S/N	72 dB (with N/R)/72 dB (without N/R); 62 dB (with N/R)/62 dB (without N/R)
THD	0.4%
THD ref. lvl.	0 dB
Tape #2	Chrome
R/P resp.	20 Hz to 18 kHz, ±3 dB at –20 VU
S/N	68 dB (with N/R)58 dB (without N/R)

PC-X22

Price	$249.95
Heads	2 (AF)
Flutter	0.05% (WRMS)
Play resp.	25 Hz to 18 kHz, ±3 dB
Fast-forward	80 sec (C-60)
Rewind	80 sec (C-60)
N/R system	Dolby
Input sens.	70 mV (line); 0.25 mV (mike) re NAB O
Output level	0.4V re DIN O
Input imped.	50K ohms
Separation	30 dB (1 kHz)
Erasure	60 dB (1 kHz) (metal)
Record indic.	VU (–20 dB to +6 dB)
Features	Record mute; soft-touch pushbutton mechanism; 4-position tape selection
Tape #1	Metal
R/P resp.	25 Hz to 18 kHz, ±3 dB at –20 VU
S/N	70 dB (with N/R)/60 dB (without N/R)
THD	0.9%
THD ref. lvl.	0 dB
Tape #2	Chrome
R/P resp.	25 Hz to 17 kHz, ±3 dB at –20 VU

PC-X10M

Price	$169.95
Heads	2 (permalloy R/P; ferrite erase)
Flutter	0.055% (WRMS)
Play resp.	25 Hz to 16 kHz
Fast-forward	80 sec (C-60)
Rewind	80 sec (C-60)
N/R system	Dolby
Input sens.	100 mV (line); 0.25 mV (mike)
Input imped.	50K ohms
Separation	30 dB (1 kHz)
Erasure	60 dB (1 kHz)
Record indic.	VU (–20 dB to +5 dB)
Features	Timer recording and playback option; cue/review controls; full auto-stop
Tape #1	Metal
R/P resp.	25 Hz to 17 kHz, ±3 dB at –20 VU

S/N	69 dB (with N/R)/59 dB (without N/R)
THD	1%
THD ref. lvl.	0 dB
Tape #2	Chrome
R/P resp.	25 Hz to 16 kHz, ±3 dB at –20 VU
S/N	67 dB (with N/R)/57 dB (without N/R)
THD	1.3%
THD ref. lvl.	0 dB

Models also available

PC-X60, $399.95; PC-D12, $349.95; DC-X33, $329.95; PC-D10, $259.95; PC-X12, $199.95

UHER BY MINEROFF
Mineroff Electronics, Inc.
946 Downing Road
Valley Stream, N.Y. 11580

CR-240

Price	$1,211
Heads	2
Flutter	0.15%
Play resp.	30 Hz to 16 kHz, ±2 dB
Fast-forward	60 sec (C-90)
Rewind	60 sec (C-90)
N/R system	Dolby
Input sens.	750 mV (line); 0.2 mV (mike) 1.5 mV (car radio input)
Output level	775 mV
Input imped.	1K ohms; 2V (8 ohms)
Output load	4 ohms
Separation	45 dB
Erasure	–70 dB
Record indic.	2 peak-reading (–25 dB to +3 dB)
Features	Built-in power amps, speaker, mike; photo-electronic control; ALC; remote; sync
Tape #1	TDK SA
R/P resp.	30 Hz to 16 kHz, ±2 dB
S/N	66 dB (with N/R)/58 dB (without N/R)
S/N ref. lvl.	0 VU
THD	2%
Tape #2	TDK AD
R/P resp.	30 Hz to 18 kHz, ±2 dB
S/N	64 dB (with N/R)
THD	2%

CR-210

Price	$990
Heads	2 (newly developed 4-stacked system)
Flutter	0.12% (WRMS)
Play resp.	20 Hz to 16 kHz
Fast-forward	60 sec (C-90)
Rewind	60 sec (C-90)
Input sens.	4 mV (line); 0.2 mV (mike)
Output level	500 mV
Input imped.	0.74V into 22K-ohm load; also 3V into 8 ohms for speakers
Output load	15K ohms
Separation	25 dB
Erasure	70 dB
Record indic.	Peak-reading (–20 dB to +2 dB)
Features	DC motor; stereo/mono mixing; auto reverse (photo-sensitive); built-in mike; AC/DC battery
Tape #1	CrO_2
R/P resp.	20 Hz to 16 kHz
S/N	58 dB (without N/R)
S/N ref. lvl.	0 VU
THD	2%
Tape #2	TDK AD or SA
R/P resp.	30 Hz to 17 kHz, ±2 dB
S/N	52 dB
THD	2%

Models also available

CG-362, $1,119

VECTOR RESEARCH
Vector Research
20600 Nordhoff St.
Chatsworth, Calif. 91311

VCX-600

Price	$750
Heads	3 (Sendust)
Flutter	0.05%
Play resp.	20 Hz to 20 kHz, ±3 dB
Fast-forward	90 sec (C-60)
Rewind	90 sec (C-60)
N/R system	Dolby
Input sens.	60 mV (line); 0.25 mV (mike) re NAB 0
Output level	580 mV re DIN 0
Input imped.	50K ohms
Output load	1K ohms
Separation	33 dB (1 kHz)
Erasure	65 dB
Record indic.	Peak-reading; 12-point LED meter
Features	Programmable music search; 2-motor/solenoid transport variable bias for metal tape; auto rewind/play; optional remote; optional rack handles

VCX-300

Price	$400
Heads	2 (Sendust)
Flutter	0.08%
Play resp.	20 Hz to 19 kHz, ±3 dB
Fast-forward	90 sec (C-60)
Rewind	90 sec (C-60)
N/R system	Dolby
Input sens.	60 mV (line) re NAB 0
Output level	580 mV re DIN 0
Input imped.	50K ohms
Output load	1K ohms
Separation	33 dB (1 kHz)
Erasure	65 dB
Record indic.	Peak-reading; 12-point LED meter
Features	Music search; metal tape capability; variable bias; optional rack-mounting handles; optional remote

Models also available

VCX-500, $575

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

K-950

Price	$490
Heads	2 (Sendust)
Flutter	0.028% (JIS)
Play resp.	30 Hz to 22 kHz, ±3 dB
Fast-forward	75 sec (C-60)
Rewind	75 sec (C-60)
N/R system	Dolby
Input sens.	60 mV (line); 0.3 mV (mike)
Output level	340 mV re DIN 0
Input imped.	5K ohms
Record indic.	Bar-graph type (–30 dB to +3 dB)
Features	Yamaha low-impedance Pure Plasma Process Head; bias control; sound focus switch
Tape #1	TDK SA
R/P resp.	30 Hz to 19 kHz, ±3 dB at –20 VU
S/N	61 dB (with N/R)/52 dB (without N/R)
S/N ref. lvl.	3% at 333 Hz (DIN)
THD	1.5%
THD ref. lvl.	160 nWb/m at 1 kHz
Tape #2	Maxell UD
R/P resp.	30 Hz to 17 kHz, ±3 dB at –20 VU

K-350

Price	$240
Heads	2 (Sendust)
Flutter	0.06% (WRMS)
Play resp.	40 Hz to 18 kHz, ±3 dB
Fast-forward	90 sec (C-60)
Rewind	90 sec (C-60)
N/R system	Dolby
Input sens.	50 mV (line); 0.3 mV (mike)
Output level	340 mV re DIN 0
Input imped.	5K ohms
Output load	50K ohms
Record indic.	VU
Features	Direct changeover between modes; ebony wooden cabinet
Tape #1	TDK SA
R/P resp.	40 Hz to 15 kHz, ±3 dB at –20 VU
S/N	61 dB (with N/R)/52 dB (without N/R)
S/N ref. lvl.	3% at 333 Hz (DIN)
THD	1.5%
THD ref. lvl.	160 nWb/m at 1 kHz
Tape #2	Maxell UD
R/P resp.	40 Hz to 14 kHz, ±3 dB at –20 VU

Models also available

K-850, $360

ZENITH
Zenith Radio Corp.
1000 Milwaukee Ave.
Glenview, Ill. 60025

MC-9070

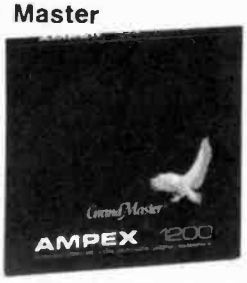
Price	$249.95
Heads	2 (R/P; erase)
Flutter	0.08% (WRMS)
Play resp.	30 Hz to 15 kHz
Fast-forward	85 sec (C-60)
Rewind	85 sec (C-60)
N/R system	Dolby
Input sens.	70 mV (line); 0.25 mV (mike)
Output level	450 mV
Input imped.	50K ohms (line out)
Output load	8 ohms (headphone jack)
Separation	45 dB (1 kHz)
Erasure	70 dB (1 kHz)
Record indic.	2 VU (–20 dB to +5 dB); peak-reading LEDs
Features	Accidental record-safety tape counter; EQ switch; input selector switch
Tape #1	Ferric oxide (Sony Lo-noise C-60)
R/P resp.	40 Hz to 13 kHz, ±3 dB (30 Hz to 15 kHz, ±6 dB)
S/N	62 dB (with N/R)/52 dB (without N/R)
S/N ref. lvl.	4 dB (IEC A-weighted)
THD	1.5%
THD ref. lvl.	0 dB
Tape #2	Sony Ferrichrome CS-30
R/P resp.	40 Hz to 15 kHz, ±3 dB; 30 Hz to 16 kHz, ±6 dB
S/N	62 dB (with N/R)/52 dB (without N/R)
S/N ref. lvl.	+4 dB (IEC A-weighted)
THD	1.5%
THD ref. lvl.	0 dB

Blank Tape

Open-Reel

AMPEX
Ampex Corp.
401 Broadway
Redwood City, Calif. 94063

Grand Master



Length/price Standard, 7", 1200', $9.99; extra, 7", 1800', $11.99; standard, 10½", 2500', $26.99; extra, 10½", 3600', $29.99
Coating(s) Ferric
Base Polyester
Backing Carbon
Packaging Cardboard box
Features Mastering quality; 10½" metal reel

ELN (Extra Low Noise)
Length/price Standard, 7", 1200', $6.99; extra, 7", 1800', $8.99
Coating(s) Ferric
Base Polyester
Packaging Cardboard box
Features Balanced frequency response; general music quality

AUDIOMAGNETICS
Audiomagnetics Corp.
2602 Michelson Dr.
Irvine, Calif. 92716

Tracs
Length/price 7", 1200', $6.79; 7", 1800', $7.19; 7", 2400', $7.49
Coating(s) Low-noise, ferric
Base Polyester
Packaging Hinged cardboard box

BASF
BASF Systems, Inc.
Crosby Drive
Bedford, Mass. 01730

Ferro LH
Length/price Extra, 7", 1800', $12.99; double, 7", 2400', $16.99; triple, 7", 3600', $21.99
Coating(s) Ferric
Base Polyester
Packaging Hinged plastic box
Features Dynamic range: 62 dB; dustproof high-impact plastic storage case; sensing foil attached to leader and trailer for recorders with automatic shut-off or reverse

IRISH
Irish Recording Tape
270-278 Newtown Road
Plainview, N.Y. 11803

277
Length/price Extra, 7", 1800', $17.20
Coating(s) Low-noise; high-output; low-print-through
Base Polyester
Packaging Cardboard box

276
Length/price Standard, 7", 1200', $13.15
Coating(s) Low-noise; high-output
Base Polyester
Packaging Cardboard box

251
Length/price Double, 7", 2400', $16.10
Coating(s) Premium
Base Polyester
Packaging Cardboard box

241 Premium
Length/price 5", 900', $5.25; 7", 1800', $9.25
Base Polyester
Packaging Cardboard box

231
Length/price Standard, 5", 600', $4.95; standard, 7", 1200', $7.35
Coating(s) Premium
Base Polyester
Packaging Cardboard box

MAXELL
Maxell Corp. of America
60 Oxford Drive
Moonachie, N.J. 07074

UD-XL Professional
Length/price UD-XL50-60B, 7", 1200', $12.45; UD-XL35-90B, 7", 1800', $14; UD-XL50-120B, 10½", 2500', $33.75; UD-XL35-180B, 10½", 3600', $38.50
Coating(s) Low-noise; high-output; epitaxial
Base Polyester
Backing Ultrafine carbon
Packaging Cardboard box
Features Back-coated tape

Ultra-Dynamic
Length/price UD50-60, 7", 1200', $9.95; UD35-90, 7", 1800', $11.50; UD50-120, 10½", 2500', $28.30; UD35-180, 10½", 3600', $31.90
Coating(s) Low-noise; high-output
Base Polyester
Packaging Cardboard box

Low-Noise
Length/price LN50-60, 7", 1200', $8.70; LN35-90, 7", 1800', $10; LN25-120, 7", 2400', $14.95; LN18-180, 7", 3600', $21.25; LN50-120, 10½", 2500', $24.70; LN35-180, 10½", 3600', $28
Coating(s) Low-noise
Base Polyester
Packaging Cardboard box

REALISTIC
Radio Shack Corp.
1400 One Tandy Center
Ft. Worth, Texas 76102

Supertape
Length/price Standard, 5", 900', $3.49; standard, 7", 1200', $4.99; extra, 7", 1800', $5.59; double, 7", 3600', $9.99
Coating(s) Premium
Base Polyester
Packaging Hinged cardboard box

Realistic
Length/price Standard, 5", 900', $2.49; 5", 1200', $3.49; extra 7", 1800', $4.49; extra, 7", 2400', $5.49; double, 7", 3600', $7.29
Coating(s) Low-noise
Base Polyester

Concertape
Length/price Standard, 7", 1800', $2.19
Coating(s) Ferric
Base Polyester
Packaging Cardboard box

SCOTCH
3M
Magnetic Audio/Video
Products Div.
3M Center
St. Paul, Minn. 55101

Master XS (Extra Sensitive)
Length/price Standard, 7", 1800', $13.39; standard, 10½", 3600', $35.69
Coating(s) Ferric
Base Polyester
Packaging Hinged cardboard box
Features Mastering quality tape for critical music applications combined with excellent print

and maximum-output properties; biased compatible with most retail open reel decks

Scotch 206-207
Length/price No. 206, 7", 1200', $7.99; No. 207, 7", 1800', $9.99
Coating(s) Low-noise; high-output
Base Polyester
Backing "Posi-track"
Packaging Hinged cardboard box

Dynarange
Length/price Standard, 5", 600', $4.09; extra, 5", 900', $4.89; triple, 5", 1800', $8.39; standard, 7", 1200', $6.29; extra, 7", 1800', $8.39; double, 7", 2400', $12.59; triple, 7", 3600', $16.59
Coating(s) Low-noise
Base Polyester
Packaging Hinged cardboard box
Features Multi-purpose tape providing full dynamic range; S/N: 4 to 6 dB better than standard tapes

Highlander
Length/price Standard, 7", 1200', $5.49; extra, 7", 1800', $7.59
Coating(s) Low-noise
Base Polyester
Packaging Cardboard box
Features All-purpose economy tape

SONY
Sony Industries
9 W. 57th St.
New York, N.Y. 10019

FeCr Series
Length/price Extra, 7", 1800', $14; extra, 10½", 3600', $39
Coating(s) Ferrichrome
Base Polyester
Backing Back coating
Packaging Cardboard box

ULH Series
Length/price Standard, 7", 1200', $9; extra, 7", 1800', $11.50; extra, 10½", 3600', $31
Coating(s) Low-noise; ferric; high-output
Base Polyester
Backing Back coating
Packaging Cardboard box

TDK
TDK Electronics Corp.
755 Eastgate Blvd.
Garden City, N.Y. 11530

LB (Audua)
Length/price Extra, 7", 1800', $15.65; standard, 10½", 3600', $42.50
Coating(s) Low-noise; ferric; high-output
Base Polyester
Backing 1-micron-thick back-treatment coating
Packaging Cardboard box

L (Audua)
Length/price Standard, 7", 1200', $10; standard 7", 1800', $12.50; standard, 10½" metal, 3600', $35
Coating(s) Low-noise; ferric; high-output
Base Polyester
Packaging Cardboard box

S (Superior)
Length/price Standard 7", 1800', $10; standard, 10½", 3600', $23.75
Coating(s) Low-noise; ferric
Base Polyester
Packaging Cardboard box

Cassette

AMPEX
Ampex Corp.
401 Broadway
Redwood City, Calif. 94603

MPT (Metal Particle Tape)

Length/price C-60, $9.99
Coating(s) Metal particle
EQ 70μs
Base Polyester
Packaging Hinged plastic box
Features Extended frequency response; higher MOL (maximum output level) than high-bias cassettes

GM II (GrandMaster II)
Length/price C-60, $4.79; C-90, $5.89
Coating(s) Cobalt-modified gamma ferric oxide
Bias High
EQ 70μs
Base Polyester
Packaging Norelco box
Features "True Track" tape-guide system; special cleaning leader

GM I (GrandMaster I)
Length/price C-60, $4.29; C-90, $5.39
Coating(s) Ferric
Bias Normal
EQ 120μs
Base Polyester
Backing Studio-mastering
Packaging Norelco box
Features Studio-mastering formulation; increased sensitivity; special cleaning leader; "True Track" tape-guide system

EDR (Extended Dynamic Range)
Length/price C-45, $2.69; C-60, $3.29; C-90, $4.29
Coating(s) Ferric
Bias Normal
EQ 120μs
Base Polyester
Backing Sensitivity;
Packaging Norelco box
Features Sensitivity; significant headroom above normal record levels

ELN (Extra Low Noise)
Length/price C-45, $1.79; C-60, $2.39; C-90, $3.29; C-120, $4.69
Coating(s) Ferric; extra low-noise/high-output
Bias Normal
EQ 120μs
Base Polyester
Packaging Norelco box
Features Screw-shell; extremely low-noise level/high output

AUDIO MAGNETICS
Audio Magnetics Corp.
2602 Michelson Drive
Irvine, Calif. 92716

High Performance II
Length/price C-60, $2.99; C-90, $5.29
Coating(s) Ferric; high bias
Base Polyester
Packaging Hinged plastic box
Features Instant start/record-play with special jam-proof mechanics in see-through housing

High-Performance
Length/price C-45, $3.19; C-60, $3.79; C-90, $5.09; C-120, $5.99
Coating(s) Ferric; high-output
Base Polyester
Packaging Hinged plastic box
Features Instant-start record/play with special jam-proof mechanics in see-through housing

Tracs
Length/price C-45, $1.19; C-60, $1.29; C-90, $1.95; C-120, $2.29
Coating(s) Low-noise; ferric
Base Polyester
Packaging Hinged plastic box

BASF
BASF Systems, Inc.
Crosby Drive
Bedford, Mass. 01730

Metal IV
Length/price C-60, $9.95
Coating(s) Metal particle
Bias Type IV
EQ 70μs
Base Polyester
Packaging Hinged plastic box
Features Designed for recording on the metal (Type IV) position; can also be played back on the chrome/Type II position with excellent results; 10 dB higher output level (MOL) in the critical high-frequency range compared to oxide tape

Professional III
Length/price C-60, $4.29; C-90, $5.79
Coating(s) Ferrichrome
Bias Type III
EQ 70μs
Base Polyester
Packaging Hinged plastic box
Features Combines the benefits of CrO_2 and ferric oxide tapes for superior performance in car stereos; performs equally well in decks on the ferrichrome/Type III position; the pure CrO_2 top layer provides unsurpassed highs with low background noise; the ferric oxide bottom layer provides superior lows and great middle frequencies

Professional II
Length/price C-60, $4.49; C-90, $5.99
Coating(s) Chromium dioxide
Bias Type II
EQ 70μs
Base Polyester
Packaging Hinged plastic box

Features The second generation CrO_2 tape with superb frequency response and outstanding sensitivity in the critical high-frequency range (10 kHz to 20 kHz); has the lowest background noise of any other competitive tape available today; the tape for the chromium/Type II position that comes closest to metal tape performance at half the price

Professional I

Length/price C-60, $3.99; C-90, $5.49
Coating(s) Ferric oxide
Bias Normal/Type I
EQ 120μs
Base Polyester
Packaging Hinged plastic box
Features Has the best maximum recording level (MRL) of any ferric oxide tape; uniform magnemite particles provide increased headroom for very accurate and loud recordings with virtually no distortion

Studio I

Length/price C-60, $3.29; C-90, $4.69
Coating(s) Ferric oxide
Bias Normal/Type I
EQ 120 μs
Base Polyester
Packaging Hinged plastic box or blister pack
Features Offers a higher maximum recording level (MRL) than most other ferric oxide tapes; can be recorded louder with lower distortion than other standard ferric oxide tapes

Performance

Length/price C-45, $2.59; C-60, $2.79; C-90, $3.99; C-120, $4.99
Coating(s) Low-noise; ferric
Bias Normal/Type I
EQ 120 μs
Base Polyester
Packaging Hinged plastic box or blister pack
Features The low noise, high output tape for clean and accurate recordings; the tape for the normal/Type 1 position that has long been the standard with record companies; idealy suited for both music and voice recordings, especially with portable cassette recorders

CALIBRON
Horian Engineering, Inc.
Calibron Div.
600 Lake Emma Road
Lake Mary, Fla. 32746

Calibron Precision Cassette

Length/price C-60, $3; C-90, $4
Coating(s) Ferric; high-output; low-print
Bias Low
EQ 70μ
Base Tensilized polyester
Packaging Hinged rigid plastic box; blister pack
Features Each piece is uniquely packaged for point-of-purchase display

CERTRON
Certron Corp.
1701 S. State Blvd.
Anaheim, Calif. 92806

Ferex I

Length/price C-60, $3; C-90, $3.99; C-60 (3-pack), $6.99; C-90 (3-pack), $8.99
Coating(s) Ferric
Bias Normal
EQ 120 φs
Base Polyester
Backing None
Packaging Hinged rigid plastic box; blister pack; 3-pack
Features One of the finest normal bias tapes in the industry

High Energy

Length/price C-60, $1.99; C-90, $2.59; C-120, $2.99
Coating(s) Low-noise; high-output
Bias Normal
EQ 120 φs
Base Polyester
Backing None
Packaging Hinged rigid plastic box; blister pack; 3-packs; 2-packs
Features No special bias adjustment necessary; good for music reproduction

DAK
DAK Industries, Inc.
10845 Van Owen
North Hollywood, Calif. 91605

ML

Length/price ML-46, $1.49; ML-60, $1.76; ML-90, $2.49
Coating(s) High-energy ferric oxide; normal bias
Bias Normal
EQ 120 μs
Base Polyester
Backing Polyester
Packaging Norelco box
Features Deluxe screw-etched precision cassette housing; index insert card; jamproof

HEC

Length/price C-40, $1.27; C-60, $1.57; C-90, $1.91; C-120, $2.96
Coating(s) Low-noise; high-output; cobalt-doped
Bias Normal
EQ 120 μs
Base Polyester
Backing Polyester
Packaging Hinged plastic box
Features Ultra-high output; jam-proof; insert card

LNC

Length/price C-30, 77¢; C-60, 92¢; C-90, $1.17; C-120, $1.89
Coating(s) Low-noise; ferric
Bias Normal
EQ 120 μs
Base Polyester
Backing Jam-proof
Packaging Bulk
Features Jam-proof mechanism

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

DXM

Length/price C-60, $8.60
Coating(s) Metal particle
Bias Metal
EQ 70μs
Base Polyester
Backing Polyester
Packaging Hinged rigid plastic box

DX-7

Length/price C-60, $5; C-90, $7
Coating(s) Double-coated/ferrichrome
Bias Chrome
EQ 70 μs
Base Polyester
Backing Polyester
Packaging Hinged plastic box

DX-5

Length/price C-60, $5; C-90, $7
Coating(s) Dual-layer ferric oxide, cobalt-doped
Bias Ferric
EQ 70μs
Base Polyester
Backing Polyester
Packaging Hinged plastic box

DX-3

Length/price C-60, $3.99; C-90, $5.60
Coating(s) Dual-layer ferric oxide
Bias Ferric
EQ 120μs
Base Polyester
Backing Polyester
Packaging Hinged plastic box

FUJI
Fuji Photo Film, USA, Inc.
350 Fifth Ave.
New York, N.Y. 10001

Metal

Length/price C-46, $8.30; C-60, $9.10; C-90, $12
Coating(s) Metal particle
Base Polyester
Backing Pre-stressed polyester
Packaging Hinged plastic box
Features 7 to 12 dB increased dynamic range over conventional premium formulations

FX-II

Length/price C-46, $4.25; C-60, $4.89; C-90, $6.70
Coating(s) Beridox (chrome-equivalent ferric)
Base Polyester
Backing Polyester
Packaging Hinged plastic box
Features High bias

FX-I

Length/price C-46, $4.25; C-60, $4.89; C-90, $6.70
Coating(s) Pure ferrix
Bias Normal
Base Polyester
Backing Polyester
Packaging Hinged plastic box
Features Normal bias

FL

Length/price C-46, $3; C-60, $3.45; C-90, $4.70; C-120, $6.50
Coating(s) Low-noise; ferric
Bias Normal
Base Polyester
Backing Prestressed polyester
Packaging Hinged plastic box
Features Super low noise, wide response; extended dynamic range; normal bias

HITACHI
Hitachi Sales Corp.
401 W. Artesia Blvd.
Compton, Calif. 90277

ME
Length/price C-46, $8.45; C-60, $9.45
Coating(s) Metal particle
Base Polyester
Backing Polyester
Packaging Hinged plastic box

UDER
Length/price C-60, $4; C-90, $5.50
Coating(s) Cobalt ferrite epitaxial
Base Polyester
Backing Polyester
Packaging Hinged plastic box
Features Replaceable self-index label; unique leader tape with built-in convenient functions

UDEX
Length/price C-60, $4; C-90, $5.50
Coating(s) Cobalt ferrite epitaxial
Base Polyester
Backing Polyester
Packaging Hinged plastic box
Features Chrome equivalent

IRISH
Irish Recording Tape
270-278 Newtown Road
Plainview, N.Y. 11803

262
Length/price C-60, $2.85; C-90, $4.25
Coating(s) Low-noise; ferric
Packaging Hinged plastic box

261
Length/price C-45, $1.95; C-60, $2.20; C-90, $3; C-120, $5.30
Coating(s) Ferric
Packaging Plastic box

2000
Length/price C-30, $1.40; C-60, $1.60; C-90, $1.65
Coating(s) Ferric
Base Polyester
Packaging Hinged plastic box
Features Also available packaged in polybag

LUX
Lux Audio of America, Ltd.
160 Dupont St.
Plainview, N.Y. 11803

XM-4
Length/price C-46, $10.95
Coating(s) Metal particle
Bias Metal
EQ 70μs
Packaging Hinged rigid plastic box
Features Twin-roller system; stainless-steel guide pins; large pressure pad; skew adjustment for play and record

XM-II
Length/price C-60, $6.75; C-90, $8.75
Coating(s) Chromium dioxide
Bias High
EQ 70s
Packaging Hinged rigid plastic box

XM-1
Length/price C-60, $6.25; C-90, $7.75
Coating(s) Low-noise, high-output
Bias Normal
Packaging Hinged rigid plastic box
Features Twin-roller system; stainless-steel guide pins; large pressure pad; skew adjustment for play and record

MAXELL
Maxell Corp. of America
60 Oxford Drive
Moonachie, N.J. 07074

Maxell
Length/price MX-46, $11.25; MX-60, $12.50; MX-90; $14.95
Coating(s) Metaxial
Bias Metal
EQ 70μs
Base Tensilized polyester
Packaging Hinged plastic box
Features 70 sec equalization

UD-XLII
Length/price C-60, $5.25; C-90, $7.25
Coating(s) High-output; epitaxial
Bias High level
EQ 70μs
Base Tensilized polyester
Packaging Hinged plastic box

UD-XLI
Length/price C-60, $5.25; C-90, $7.25
Coating(s) High-output; epitaxial
Bias Normal
EQ 120μs
Base Tensilized polyester
Packaging Hinged plastic box

Ultra-Dynamic (UD)
Length/price UD-46, $3.70; U-60, $4; UD-90, $5.90; UD-120, $7.90
Coating(s) High-output
Bias Normal
EQ 120μs
Base Tensilized polyester
Packaging Hinged plastic box

Low-Noise (LN)
Length/price LN-46, $2.45; LN-60, $2.70; LN-90, $4.10; LN-120, $5.30
Coating(s) Low-noise
Bias Normal
EQ 120μs
Base Tensilized polyester
Packaging Hinged plastic box

MEMOREX
Memorex Corp.
San Tomas at Central Expressway
Santa Clara, Calif. 95052

High Bias
Length/price C-60, $4.39; C-90, $5.99
Coating(s) Ferricobalt
Bias High (tape type)
EQ 70μs
Base Tensilized polyester
Packaging Improved hinged Philips-type plastic box with unique dual-direction cassette insertion capability
Features Superior high-frequency reproduction; lifetime warranty

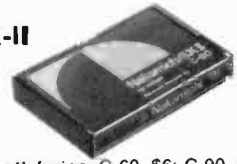
MRX_3 Oxide


Length/price C-30, $2.99; C-45, $3.19; C-60, $3.39; C-90, $4.99; C-120, $6.79
Coating(s) Ferric
Bias Normal
EQ 120μs
Base Tensilized polyester
Packaging Improved hinged Philips-type plastic box with unique dual-direction cassette insertion capability
Features Lifetime warranty

NAKAMICHI
Nakamichi U.S.A. Corp.
1101 Colorado Ave.
Santa Monica, Calif. 90401

ZX (Metal)
Length/price C-60, $9.75
Coating(s) Metal particle
Bias Metal
EQ 70μs
Base Polyester
Packaging Hinged plastic box
Features Ultra-high coercivity and retentivity; micro-precision plastic housing

SX
Length/price C-60, $6.30; C-90, $8
Coating(s) High-output; high-coercivity; ionized cobalt on ferric oxide
Bias Chrome
EQ 70μs
Base Polyester
Packaging Hinged plastic box
Features CrO_2 replacement; high bias; micro-precision plastic housing

EX-II

Length/price C-60, $6; C-90, $7.80
Coating(s) Low-noise; extra high-output; complex crystal ferricobalt
Bias Normal
EQ 120μs
Base Polyester
Packaging Hinged plastic box
Features High-ferric bias; micro-precision plastic housing

EX
Length/price C-60, $5.30; C-90, $6.60
Coating(s) Low-noise; high-output; high-bias; pure ferrocrystal formulation
Base Polyester
Packaging Hinged plastic box
Features Special micro-precision cassette housing

REALISTIC
Radio Shack Corp.
1400 One Tandy Center
Ft. Worth, Texas 76102

Supertape Chrome
Length/price C-60, $3.49; C-90, $4.49

Coating(s) Chromium dioxide
EQ 70μs
Base Polyester
Packaging Hinged plastic box
Features Head-cleaning leader tape

Supertape Gold
Length/price C-45, $2.59; C-60, $2.99; C-90, $3.99; C-120, $4.79
Coating(s) Low-noise; high-performance premium
EQ 120 μs
Packaging Hinged plastic box
Features Head-cleaning leader tape

Concertape
Length/price C-30, $1.99; C-60, $2.59; C-90, $3.59; C-120, $4.95
Coating(s) Ferric
EQ 120 μs
Packaging Three-pack

Realistic
Length/price C-30, $1.49; C-60, $1.89; C-90, $2.59; C-120, $3.19
Coating(s) Low-noise
EQ 120 μs
Base Polyester
Packaging Hinged plastic box
Features New low-noise tape with hi-flux density oxide

Super Tape Metal
Length/price C-60, $9.95
Coating(s) Metal particle
Bias Metal
EQ 70μs
Base Polyester
Packaging Hinged rigid plastic box

RECOTON
Recoton Corp.
46-23 Crane St.
Long Island City, N.Y. 11101

Rainbow Pack
Length/price RC5X60, $3.99; RC5X90, $5.79
Coating(s) Low-noise
Base Polyester
Packaging Five-pack
Features Screw shell; copper pressure pad; slip sheet

Ultra-Flow
Length/price C-45, $1.29; C-60, $1.49; C-90, $1.79; RU4X60 4-pack, $5.39; RU4X90 4-pack, $6.79
Coating(s) High-output
Base Polyester
Packaging Hinged plastic box; four-pack display box
Features Screw shell; copper pressure pad; slip sheet; calandered American tape

RKO
RKO Tape Corp.
3 Fairfield Crescent
West Caldwell, N.J. 07006

RKO Ultrachrome
Length/price C-90, $5.99; C-60, $4.20
Coating(s) Low-noise; high-output; chromium dioxide

Bias Chrome
EQ 70μs
Base Polyester
Packaging Hinged plastic box

RKO Broadcast I
Length/price C-90, $5.75; C-60, $4.10
Coating(s) Low-noise; ferric; high-output
Bias Ferric
EQ 120μs
Base Polyester
Packaging Hinged plastic box

RKO XD
Length/price C-90, $3.66; C-60, $2.60; C-45, $2.36
Coating(s) Low-noise; high-output
Bias Ferric
EQ 120μs
Base Polyester
Packaging Hinged plastic box
Features Extended dynamic range

SAMSUNG
Samsung Electronics America, Inc.
2707 Butterfield Road, Suite 270
Oak Brook, Ill. 60521

Super SM-100
Length/price C-60, $1.99; C-90, $2.79; C-120, $3.69
Coating(s) High-output; low-print; ferrichrome
EQ 120μs
Base Polyester
Packaging Hinged rigid plastic box
Features Slip-wafer magnetic shield; stainless-steel pine, nylon pulleys; 5-screw molded case

SCOTCH
3M
Magnetic Audio/Video Products Div.
3M Center
St. Paul, Minn. 55101

Metafine

Length/price C-46, $7.19; C-60, $7.99; C-90, $10.29
Coating(s) Metal particle
EQ 70 μs
Base Polyester
Packaging Hinged plastic box
Features Metal-particle formulation offers double maximum output of oxide tapes; 5 to 10 dB greater than chrome tapes

Master III
Length/price C-45, $4.39; C-60, $4.79; C-90, $5.99
Coating(s) Ferrichrome
Base Polyester
Packaging Hinged plastic box (C-Box, 40¢ additional)
Features Coating provides 3 dB improvement in output at low frequencies and 2 dB boost at high frequencies compared to chrome and ferric-oxide tapes

Master II
Length/price C-45, $4.39; C-60, $4.79; C-90, $5.99
Coating(s) Chrome compatible (70 μs)
EQ 70 μs
Base Polyester
Packaging Hinged plastic box (C-Box, 40¢ additional)
Features Coating offers 3 dB better S/N, 2 dB greater output sensitivity than standard chrome

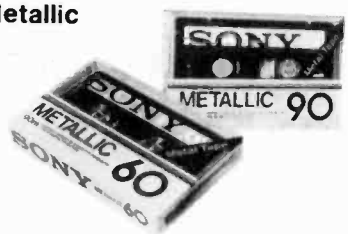
Master I
Length/price C-45, $3.79; C-60, $4.09; C-90, $5.39
Coating(s) Ferric; high-performance (120 μs)
EQ 120 μs
Base Polyester
Packaging Hinged plastic box (C-Box, 40¢ additional)
Features Premium grade, low-noise ferric oxide

Dynarange
Length/price C-45, $2.79; C-60, $3.29; C-90, $4.59; C-120, $6.39
Coating(s) Low-noise; high-output ferric
EQ 120 μs
Base Polyester
Backing Back-treated
Packaging Hinged plastic box

Highlander
Length/price C-45, $1.69; C-60, $1.99; C-90, $2.99; C-120, $4.39
Coating(s) Low-noise; ferric
EQ 120 μs
Base Polyester
Packaging One-piece plastic box
Features All purpose (voice-music) cassette

SONY
Sony Industries
9 West 57th St.
New York, N.Y. 10019

Metallic



Length/price C-46, $8; C-60, $10; C-90, $13
Coating(s) Metal particle
Bias Metal
EQ 70 μs
Base Polyester
Backing Tensilized polyester
Packaging Hinged rigid plastic box

FeCr Series
Length/price FeCr-46, $4.35; FeCr-60, $4.75; FeCr-90, $6.10
Coating(s) Low-noise; high-output; ferrichrome

Bias Normal or FeCr
EQ 70μs
Base Polyester
Backing Tensilized
Packaging Hinged plastic box; blister pack
Features Normal or FeCr bias; FeCr or 70 μs EQ

EHF Cassette
Length/price EHF-46, $3.70; EHF-60, $4.15; EHF-90, $5.75
Coating(s) Cobalt adsorbed ferric oxide magnetic
Bias High or CrO_2
EQ 70μs
Base Polyester
Backing Tensilized
Packaging Hinged plastic box; blister pack

SHF Series
Length/price SHF-46, $3.30; SHF-60, $3.70; SHF-90, $5
Coating(s) Low-noise; ferric; high-output
Bias Normal
EQ 120μs
Base Polyester
Backing Tensilized
Packaging Hinged plastic box; blister pack

HFX Series
Length/price HFX-46, $3; HFX-60, $3.20; HFX-90, $4.55; HFX-120, $6.20
Coating(s) Low-noise; ferric; high-output
Bias Normal
EQ 120μs
Base Polyester
Backing Tensilized
Packaging Hinged plastic box; blister pack

LNX Series
Length/price LNX-46, $2.05; LNX-60, $2.25; LNX-90, $3.20; LNX-120, $4.15
Coating(s) Low-noise; ferric
Bias Normal
EQ 120μs
Base Polyester
Backing Tensilized
Packaging Hinged plastic box; blister pack

SWIRE
Swire Intermagnetics, Inc.
234 W. 146th St.
Gardena, Calif. 90248

Laser UHD/1
Length/price C-45 $1.49; C-60, $1.99; C-90, $2.59; C-120, $3.29
Coating(s) High-output
Bias Normal
EQ 120μs
Base Polyester
Backing None
Packaging Hinged rigid plastic box

XL
Length/price C-40, 99¢; C-60, $1.29; C-90, $1.89; C-120, $2.49
Coating(s) Low-noise
Bias Normal
EQ 120μs
Base Polyester
Backing None
Packaging Hinged rigid plastic box

TAPE 5
Tape 5
111 Third Ave.
New York, N.Y. 10003

Wide-Latitude® Normal Bias
Length/price C-46, $2.99; C-60, $3.49; C-90, $4.49; C-120, $5.99
Coating(s) Low-noise; high-output; gamma ferric oxide
Base Tensilized polyester
Packaging Norelco-type
Features Dustproof, overlapping lid on outer box; small-particle, highly-polished gamma ferric oxide mastering tape; 5-stainless-steel-screw cassette shell; wide bias setting tolerance; guaranteed S/N of 64.4 dB, 30 Hz to 18.5 kHz, ±1.5 dB

TDK
TDK Electronics Corp.
755 Eastgate Blvd.
Garden City, N.Y. 11530

MA-R (Metal)
Length/price C-60, $15.60; C-90, $17.99
Coating(s) Metal particle
Bias Metal
EQ 70μs
Base Tensilized polyester
Packaging Hinged plastic box
Features Reference mechanism with die-cast metal unibody shell for reduced wow and flutter; super high frequency MOL for extended response; high coercivity and remanence for improved sensitivity and higher recording headroom; lifetime warranty

MA (Metal)
Length/price MA C-60 $11.60; MA C-90, $12.99
Coating(s) Metal
Bias Metal
EQ 70μs
Base Tensilized polyester
Packaging Hinged plastic box
Features Unsurpassed metal tape performance; tape-coating process prevents oxidation; Laboratory Standard mechanism with computer-molded cassette shell for better interfacing with 3-head metal decks; superior high-frequency MOL; high coercivity and remanence for improved sensitivity and higher recording headroom; lifetime warranty

SA (Super Avilyn)
Length/price SA-C-60, $5.25; SA-C-90, $7.40
Coating(s) Cobalt-adsorbed gamma ferric oxide
Bias High
EQ 70μs
Base Tensilized polyester
Packaging Hinged plastic box
Features Unsurpassed frequency response at the high-bias tape formulation; Super Precision Mechanism with bubble surface liner sheet and double hub clamp assembly; reference tape for most quality deck manufacturers; lifetime warranty

OD (Optimum Dynamic)
Length/price OD C-60, $4.70; OD C-90, $6.60
Coating(s) Optima ferric oxide particles
Bias Normal
EQ 120μs
Base Tensilized polyester
Packaging Hinged plastic box
Features Flat frequency response with well-balanced sensitivity; extra-high MOL, +2 dB at 333 Hz; low-noise characteristics from normal bias position; Super Precision mechanism for smooth, reliable tape operation

AD (Acoustic Dynamic)
Length/price AD-C-46, $3.60; AD-C-60, $3.85; AD-C-90, $5.60; AD-C-120, $7.75
Coating(s) New linear ferric oxide
Bias Normal
EQ 120μs
Base Tensilized polyester
Packaging Hinged plastic box
Features Normal bias with "hot high end"; Super Precision mechanism incorporates bubble surface liner sheet and double hub clamp assembly; lifetime warranty

D (Dynamic)
Length/price D-C-30, $2.50; D-C-46, $2.75; D-C-60, $3; D-C-90, $4.15; D-C-120, $5; D-C-180, $7
Coating(s) Low-noise; ferric; high-output; hi-grained
Bias Normal
EQ 120μs
Base Tensilized polyester
Packaging Hinged plastic box; blister pack
Features Precision Mechanism features bubble surface liner sheet and double hub clamp assembly for smooth, trouble-free operation; remarkable dynamic range and high recording headroom at normal bias position; lifetime warranty

EC (Endless Cassette)
Length/price EC-20S, $5.25; EC-30S, $5.35; EC-1, $5.50; EC-3, $5.60; EC-6, $6.25; EC-12, $7.50
Coating(s) Low-noise; ferric oxide
Bias Normal
EQ 120μs
Base Polyester
Backing Back-treated
Packaging Hinged plastic box
Features Continuous play with or without special sensing foil for use in answering machines; repeated messages; environmental sound tapestries

AMC-60DB3 Microcassette
Length/price AMC-60D, $17.50
Coating(s) Low-noise; ferric
Bias Normal
EQ 120μs
Base Tensilized polyester
Packaging Hinged plastic box; 3-pack
Features Brings the precision, reliability, quality, and tape technology of TDK's conventionally sized premium cassettes to the microcassette format for home, office, and on-the-go recording

ZENITH
Zenith Radio Corp.
1000 Milwaukee Ave.
Glenview, Ill. 60025

Ferrichrome
Length/price C-90, $8.50
Coating(s) Low-noise; ferrichrome
Packaging Hinged plastic box
Features Five-screw see-through construction; graphite creased shims; spoked roller guides; beryllum spring; felt pressure pad

High Performance
Length/price C-45, $2.95; C-60, $2.99; C-90, $3.89; C-120, $5.25
Coating(s) Low-noise
Packaging Hinged plastic box
Features Five-screw see-through construction; graphite creased shims; spoked roller guides; beryllum springs; felt pressure pad

Budget
Length/price C-45, $1.84; C-60, $1.99; C-90, $2.63
Coating(s) Low-noise
Packaging Plastic sleeve

Tape & Tape Care Accessories

ADD 'N STAC
Royal Sound Co., Inc.
200 Industrial Way W.
Eatontown, N.J. 07724

Cassette Add 'n Stac
Price $3
Description Plastic storage unit holds 8 cassettes in Philips-type boxes; interlocking feature permits units to be snapped together in any configuration as the need for additional storage space arises; available in a variety of colors; predrilled holes in the back of every module facilitate hanging

8-Track Add 'N Stac
Price $2.50
Description Plastic storage unit holds 6 8-track cartridges in Philips-type boxes; interlocking feature permits units to be snapped together in any configuration as the need for additional storage space arises; available in a variety of colors; predrilled holes in the back of every module facilitate hanging

AKAI
Akai America, Ltd.
2139 E. Del Amo Blvd.
Compton, Calif. 90220

AH-15 Tape Head Demagnetizer
Price $34.95
Description Designed especially for use with GX heads

AS-3 Tape Splicer
Price $6.95

CHR-1 Head Cleaning Fluid
Price $2.95

ALLSOP 3
Allsop, Inc.
P.O. Box 23
Bellingham, Wash. 98225

Cassette Deck Cleaner
Price $6.95
Description Cleans heads, pinch roller and capstan; non-abrasive; except for a few 3-motor home decks, works on home, car, or portable units

AUDIONICS
Audionics of Oregon
Suite 200, Computron Bldg.
5150 S.W. Griffith Drive
Beaverton, Ore. 97005

RVP-RVR Electronics
Price $425
Description Replacement record and playback electronics for Revox A-77; improves headroom, lowers distortion, improves S/N; user-replaceable

BIB AUDIOPHILE EDITION
BIB
1751 Jay Ell Drive
Richardsen, Tex. 75081

121-AE Tape Head Cleaning Fluid
Price $3.95
Description Safely removes accumulated debris from tape heads and guides; non-flammable; non-toxic; safe for all recorder surfaces; residue free

115-AE Tape Head Cleaning Kit
Price $14.95
Description Articulated cleaning tool safely and effectively clean heads in all types of recorders; includes cleaning fluid and inspection mirror with brush

90-AE Tape Head Demagnetizer
Price $24.95
Description Effectively removes residual magnetism from tape heads and guides

24-AE Professional Cassette Tape Splicer
Price $14.95

20-AE Professional ¼" Tape Splicer
Price $14.95

CALIBRON Div.
Horian Engineering, Inc.
Calibron Div
600 Lake Emma Road
Lake Mary, Fla. 32746

CT-4000 Illuminated Tape Head Demagnetizer
Price $20
Description Patented light probe illuminates work area; allows easy viewing and inspection of recorder heads; eliminates hiss and distortion

CT-3020 Clean-Track Total Cartridge
Price $6.50
Description Portable two-step manual maintenance for 8-track machines; non-abrasive automatic head cleaner for weekly maintenance

CT-3010 Clean-Track Total Cassette
Price $7.50
Description Non-abrasive automatic head cleaner for weekly maintenance; manual cleaning system for complete periodic professional maintenance

CT-2020 Clean-Track Cartridge Cleaning Kit
Price $4
Description Non-abrasive automatic 8-track head cleaner; Clean-Track fluid removes residual oxide buildup; housing brush removes dust from internal deck components; includes recording reference guide

CT-2010 Clean-Track Cassette Cleaning Kit
Price $3.75
Description Non-abrasive automatic cassette head cleaner; Clean-Track fluid removes dust from internal deck components; includes reference recording guide

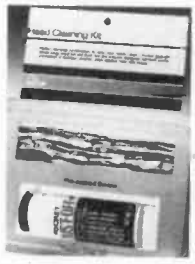
MT-700 Master Care Universal Tape Maintenance Kit
Price $9
Description Preventive maintenance system for cassette, open-reel and 8-track machines; all cleaning and inspection instruments provided

DUOTONE
Duotone Co., Inc.
6875 S.W. 81st St.
Miami, Fla. 33143

BE-9 Universal Bulk Eraser
Price $26
Description Designed for cassette, 8-track and open-reel formats

FALCON
Falcon Safety Products, Inc.
1065 Bristol Road
Mountainside, N.J. 07092

Tape Head Cleaning Kit



Price $6.95
Description Contains Pocket Dust-Off and unusual flat-head pre-moistened cleaning swab

FIDELITONE
Fidelitone, Inc.
3001 Malmo Rd.
Arlington Heights, Ill. 60005

8509 Cassette Holder

Price $21.95
Description Solid walnut; lacquer finished; vacuum-formed insert; holds 36 cassettes; also available as 8508, 24-cassette capacity, $19.95; 8507, 18-cassette capacity, $17.95; 8506, 12-cassette capacity, $15.95

8500 Cassette Holder
Price $93.95
Description Solid walnut; lacquer-finished; routed thumb slotted opener; vacuum-formed insert; holds 64 cassettes; also available as 3135, 36-cassette capacity, $52.95; 3135-01, 24-cassette capacity, $45.95 8505, 12-cassette capacity, $27.95

GC/AUDIOTEX
GC Electronics
400 S. Wyman St.
Rockford, IIL 61101

30-8714 "The Director"® stereo tape and input control system
Price $39.95
Description Allows recording between recorders while listening to another input source, or addition of equalizer or signal processor; inputs for amp, 2 aux, 2 tape; outputs for amp and 2 tape; connector (5-pin female DIN) for signal processor input and output

MR. AUDIO
Jasco Products Co, Inc.
217 N.E. 46th St.
P.O. Box 446
Oklahoma City, Okla. 73101

1015 Mylar® Splicing Tape
Price 91¢

1010 Tape-Head Cleaning Kit
Price $1.58

1002 Tape-Head Cleaning Spray
Price $2.11

NAGAOKA
Osawa & Co. (USA) Inc.
521 Fifth Ave.
New York, N.Y. 10175

CT-406 Cassette Winder
Price $9.99
Description Manual cassette winder no larger than the cassette itself; provides 7:1 gear ratio for rapid rewinding of cassettes

CW-402 Pocket Cassette Winder
Price $19.99
Description Battery operated high-speed cassette winder with auto shut-off at end of tape; handles C-60 cassette within 35 seconds; will not break tape or detach leader; requires two 1½ volt batteries

PC-507 Cassette Repair and Maintenance Kit
Price $24.99
Description For repairing or editing cassette tapes; includes splicing block with 60° and 90° cutting slots and tape hold downs, scissors, tweezers, Phillips and conventional screwdrivers, splicing tape, sensor tape, replacement pressure pads and screws

QC-209 Head Cleaning Cassette
Price $7.99
Description Removes oxide build-up from tape heads, capstans and pinch rollers, depositing debris on replaceable, specially surfaced pads

QC-205 Tape Deck Cleaning Kit
Price $7.99
Description Contains separate cleaning solutions for tape heads and rubber pinch rollers, mirror and cotton swabs; fluid refills available

TC-1 Tape Head Cleaner
Price $5.99
Description Non-flammable, safe spray-type cleaner for heads, pinch rollers and plastic and metal parts; includes 10 cotton swabs and spray extension tube

NORTRONICS
Nortronics Co., Inc.
Recorder Care Div.
8175 Lewis Road
Golden Valley, Minn. 55427

QM-707 Heat Lapping Block and Accessories
Price $77.80
Description Consists of a lapping block and accessories capable of performing the complete task of relapping a worn magnetic tape head; accessories include, Lapping Block (D1078); QM-702, coarse abrasive (black), five sheets 5" x 9"; QM-703, medium abrasive (yellow), five sheets 5" x 9"; QM-704, fine abrasive (red), five sheets 5" x 9"; photo illustrated head-wear and instruction manual; magnifying inspection lens (D1090); head support angle (D1092); and head holder (D1093)

QM-506 Inspection Mirror with Light
Price $6.60
Description Dental-type mirror attached to a small flashlight; illuminates hard-to-reach internal recorder areas; will not scratch delicate head surfaces; batteries supplied

QM-504 Maintenance Brush
Price $3.40
Description Cleans dust, dirt and tape oxide debris from heads, capstans, guides and other recorder parts; long bristles are stiff enough to clean effectively, yet soft enough to preclude any possibility of damage to sensitive parts; retractable bristles; supplied with an attractive gold cover with pocket clip

QM-501 Splicing Tape and Reel Tabs
Price $2.80
Description Mylar; ½" x .150 roll

QM-333 Tape Splicer
Price $16.80
Description Pop-out tape guide allows use with open-reel, cassette, or 8-track tapes

QM-311 Profesional Tape Splicing Block
Price $22
Description For all ¼" tapes; specially grooved to firmly hold tape during the splicing operation; two deep slits provided for straight and diagonal cuts; supplied with double-backed adhesive for mounting without drilling; stainless-steel cutting blade also included; precision machined of silver or gold anodized aluminum; measures 5¾" x 1 x 5/16"; also available as QM-312, for .150" cassette tapes, $22, and as QM-313, for ½" audio and video tapes, $30

QM-230 Cassette Bulk Eraser
Price $32.20
Description Self-powered, hand-held unit that completely erases cassette tapes without the use of an external power source or batteries; ideal for bulk cassette users; made of rugged Cycolac® and has wood-grain panel inserts

QM-211 Professional Bulk Eraser
Price $47
Description Erases reels, cassettes and 8-track cartridges down to the level of virgin tape; provides powerful 1,040 gauss intensity at ¼" spacing; usable with tapes up to ½" wide; features quality microswitch that activates on fingertip pressure and de-activates when the unit is put down; burn-out design with functional hand-contoured Cycolac® case; also available as QM-212, 230-250 VAC, $52

QM-202 Professional Head Demagnetizer
Price $20.80
Description For use on all reel-to-reel, cassette and 8-track cartridge recorders; generates magnetic field from a flexible probe tip; leaf switch activates with fingertip pressure, de-activates when unit is put down; features Cycolac® case; probe tip covered with soft plastic that cannot scratch or damage sensitive head faces; also available as QM-203, 230-250 VAC, $22.80, and as QM-206, 12 VDC, $28.30

QM-141 Cassette Life Extender
Price $3.40
Description Special non-abrasive belt that safely removes accumulated oxide and dirt from magnetic heads in cassette recorders; includes liquid cleaner for removing heavier accumulations; also available as QM-140, without liquid cleaner, $3

QM-102/103 Head Cleaner
Price $3.60 (liquid); $4.20 (spray)
Description Completely safe for use on plastics, rubber, metals, painted surfaces, epoxies and elastomer parts; high dielectric strength and quick-drying properties permit use while equipment is operational; leaves no residue and contains no silicone lubricant; may be used on capstans and pinch rollers; spray container includes extension nozzle

REALISTIC
Radio Shack
1300 One Tandy Center
Fort Worth, Tex. 76102

44-1165 Electronic Cassette Demagnetizer
Price $21.95

44-671 Freon TF Solvent
Price $1.99 (2 oz.)

44-670 Professional Cleaning Swabs and Freon TF
Price $2.99

44-667 Cassette Tape Carrying Case
Price $19.95

44-627 8-Track Cartridge Repair Kit
Price $4.49

44-626 Cassette Repair Kit
Price $1.19

44-612 Cassette Storage Album
Price $3.49

44-609 Cassette Storage Album
Price $6.49

44-280 7" Metal Reel
Price $6.95

44-222 Tape Recorder Care Kit
Price $5.95

44-215 Tape Head Demagnetizer
Price $5.95

44-214 Cassette Tape Splicer
Price $5.95

44-212 Open-Reel Tape Splicer
Price $5.95

44-211 Tape Head Demagnetizer
Price $9.95

44-210 Bulk Tape Eraser
Price $15.95

44-209 Electronic Cassette Winder
Price $10.95

44-207 Illuminated Head Demagnetizer
Price $13.95

RECOTON
Recoton Corp.
46-23 Crane St.
Long Island City, N.Y. 11101

RBM-37 Cassette Head Demagnetizer
Price $24.99
Description Battery operated; solid state construction; LED in-use indicator

RUSSOUND
Russound/FMP, Inc.
P.O. Box 2369
Woburn, Mass. 01888

TMS-2 Tape Recorder Selector Switch
Price $89.95
Description Connections for up to five tape recorders or other line level sources to be used in any combination; when used with a Russound SP-1 or FP-36, permits interface of such accessories as equalizers dbx or Dolby noise reduction, reverb, delay, etc. and adds switching for up to five additional recorders; walnut-finish vinyl over wood case 4⅛"H x 7¾"W x 4⅛"D

TMS-1 Tape Recorder Selector Switch
Price $49.95
Description Connections for up to three tape recorders to be used at once in any combination of functions; direct tape-to-tape transfer without going through a preamp or mixer; connects to tape monitor jacks; use for tape duplicating, editing, mixing, program production; internal network prevents overload of system when multiple recorders are used in parallel; black metal case with white lettering 3"H x 4¼"W x 3½"D

SANYO PLUS
Sanyo Electric Co.
Consumer Electronics Div.
1200 W. Artesia Blvd.
Compton, Calif. 90220

Cassette Caddy
Price $9.95
Description C-Box car saddle with 5 boxes

SONY
Sony Corp. of America
9 W. 57th St.
New York, N.Y. 10019

SB-300 Tape Deck Switching/ Copying Unit
Price $70
Description For up to 3 decks

SOUNDAIDS
SoundAids
395 Riverside Drive
New York, N.Y. 10025

SA-2 Cassette Storage Cabinets
Price $40
Description Oil-finished, 4-drawer wooden cabinets; hand-fitted drawers; each drawer holds 17 cassettes; lock-jointed corners make them usable for shelf supports; unit measures 12¾H x 5 9/16W x 12 3/16D

TDK
TDK Electronics Corp.
755 Eastgate Blvd.
Garden City, N.Y. 11530

AMR-7, AMR-10 Professional Take-Up Reels
Price AMR-7, $8.49; AMR-10, $13.99
Description Precision-engineered reels designed for use on any ¼" machine; anodized aluminum reels are available in 7" and 10½" NAB standard

CP-36 Cassette Storage Case
Price $39.99
Description Elegant wood finish component; sized storage unit holds 36 cassettes in 3 injection-molded pull-out drawers

CP-15 Plastic Cassette Storage Cabinet
Price $5.99
Description Colorful storage unit has clear hinged cover to keep out dust and dirt; lets you see casette labels; holds up to 15 cassettes; stackable

EX-25 Index Cards
Price $1.99
Description 25 quality index cards organized for maximum ease in notation and quick reference; indispensable for active recordist who uses and reuses cassettes

EL-40 Cassette Labels
Price $1.99
Description 40 cassette labels printed on superior paper stock; ultrathin to preserve cassette azimuth alignment; maintains order in large collections and small

HC-05 Head Maintenance Kit
Price $5.99
Description For all types of recorders; includes brush, self-adhesive felt cleaning probes, applicator wand, cleaning fluid, and inspection mirror, all in a standard cassette box for easy storage and portability

HC-1 Head Cleaner
Price $1.79
Description Removes dirt, dust, and excessive oxide buildup on recorder heads, capstans, and pinch rollers; inserted like standard audio cassette; recommended for use in conjunction with TDK HC-05 Head Maintenance Kit

TA-01 Cassette Level Adjust Test Tape
Price $13.99
Description For surefire channel balance when recording or playing back; designed to set up levels for dubbing, record, and playback on decks with nonfixed metered output levels

TEAC
Teac Corp. of America
7733 Telegraph Road
Montebello, Calif. 90640

E-3 Universal Head Magnetizer
Price $29.50
Description 220-degree moveable tip

HC-1 Head Cleaner
Price $3.25
Description 3-oz. bottle

R.C.K. Recorder Cleaning Kit
Price $6.95
Description Cleaning kit for tape-recorder & cassette deck

RMK Recorder Maintenance Kit
Price $9.95
Description Maintenance kit for tape recorder and cassette deck

WHISTLESTOP
Robins Industries, Corp.
75 Austin Blvd.
Commack, N.Y. 11725

25-005-C Whistlestop Electronic Cassette Head Demagnetizer
Price $25.50
Description Indicates demagnetizing action by "whistling"; no external power; two 1.5 volt batteries included; works on home cassette recorders and automobile units

by Edward J. Foster

Buying Speakers?

Discover which design will give you the most satisfying sound

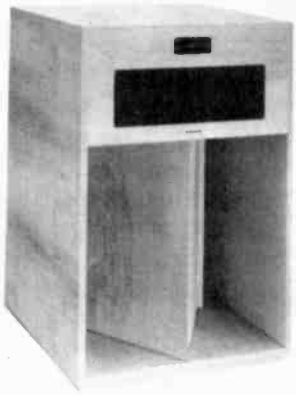
Selecting a speaker involves compromises, and each listener must decide what is personally important. One audiophile may place emphasis on the "tightness" of bass response, another on subjective bass power. One may be acutely sensitive to midrange coloration, another to stereo imaging. The character of a speaker is determined by these and other attributes, and to the extent that one loudspeaker cannot embody all of them, one is forced to be subjective.

According to one consumer-oriented magazine, loudspeakers can be numerically rated on a scale of 0 to 100. Take highest accuracy rating, phase in price by some other mathematical magic, and you presumably can determine which speaker is the "best buy" with relative ease. Our experience shows that the acoustical world is hardly that precise and nowhere near that simple. "Accuracy" is a hard term to pin down. A loudspeaker is a "transducer," and is so flawed in comparison with strictly electronic componentry that a *truly* "accurate" one—in terms of measurements—does not exist, in our opinion. Subjectivity thus plays a part in evaluating a loudspeaker.

Technical measurements on a loudspeaker system barely scratch the surface of the acoustical mirage, and are highly dependent upon the environment in which they are performed. Similarly, a good speaker can sound "bad" when placed in the wrong environment or even when positioned inappropriately in a "good" environment. There are indeed generic similarities among speakers of like design and some general conclusions can be drawn on the basis of design. But these still cannot be considered indicative of performance in specific cases. We can state, however, what you can *expect* from a particular design.

Multiple Drivers. A single driver that encompasses the entire musical spectrum smoothly, with low distortion, adequate power-handling ability, and uniform dispersion at all frequencies, would be the ideal speaker. At present no such driver exists and, in fact, many of the sonic ills that plague a loudspeaker are caused by the need for more than one driver. A driver large enough and strong enough to move the quantity of air needed for high-power bass is *too* large and massive to respond to high-frequency musical overtones.

Conventional high-fidelity loudspeaker systems, therefore, are either two-way, three-way, or four-way, according to the number of different *types* of drivers they incorporate. The two-way uses a low-frequency



Specially developed drivers are part of Infinity's Reference Standard 4.5 system (near right). Classic horn design is exemplified by Klipsch's La-Scala (center. Typical of the vented approach is the Ohm L (far right), a quasi third-order Butterworth model.

driver (woofer) and a high-frequency driver (tweeter); a three-way adds a midrange unit between the two extremes, and a four-way system divides the musical range into four parts. Some systems use more than one driver to cover a particular portion of the spectrum, to increase the power-handling ability, improve dispersion, or both. Thus, a three-way system may have more than three drivers if, for example, a pair of midrange units is used.

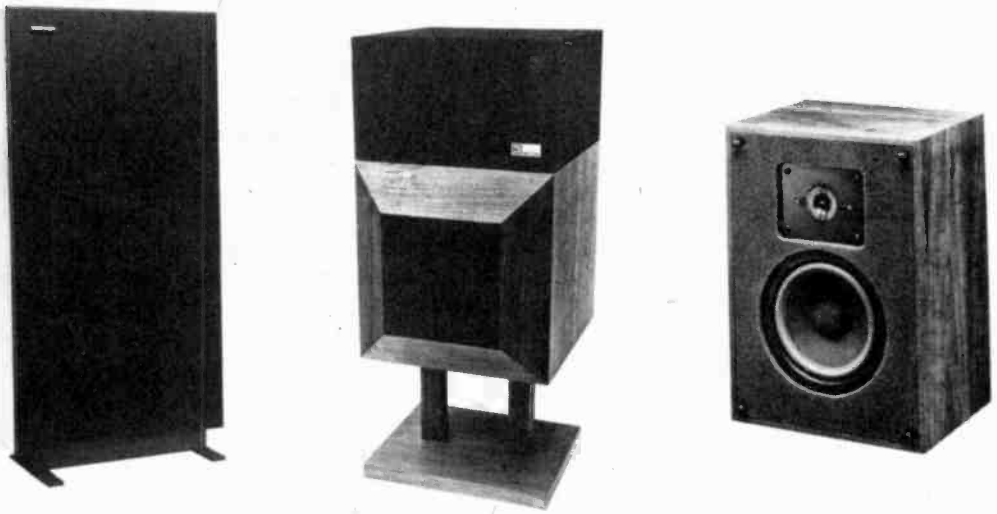
A crossover (or crossover network) is a set of filters that separates the signal in terms of its frequency content and routes the energy to whichever driver can accommodate the particular frequency most propitiously. A user-adjustable control is usually provided for the relative sensitivity of the higher-frequency units.

As soon as more than one driver is used, the ideal has been compromised; sound is coming from more than one location, creating a spatial disparity. It is as if there were two closely spaced violins, fundamentals from one, overtones from the other. A *temporal* disparity also occurs because the woofer is relatively deep and the tweeter relatively shallow. With the front of both drivers mounted on a common baffle board, the bass sound starts off *within* the cabinet, the treble from a point close to the surface. Thus bass soundwaves must travel farther from speaker to listener than must the treble. Hence, overtones arrive at the ear *before* the fundamental. To overcome this, some so-called "time-aligned" designs stagger the physical position of the drivers so that the sound *originates* on the same plane.

Still, by itself, time alignment does not solve the underlying problem caused by physically separate drivers. The sound may originate on the same *plane,* but it still does not originate at the same *point* in space. Nor does time alignment solve the problem of interference in the crossover region.

Crossover Interference. Over some portion(s) of the musical spectrum around each crossover point, *two* drivers are radiating sound. The two soundwaves interfere with each other, constructively at some frequencies, destructively at others, causing the total sound field in the room to exhibit peaks and dips in response throughout each region of overlap. When more than one driver is used to cover the *same* part of the spectrum, the two may interfere with each other throughout that region, although the possibility is less if they are located in the proper spatial relationship to each other.

A crossover network does not abruptly shift the signal from driver to driver. But the narrower the crossover region—the sharper the slope of



Only 6¾" deep, Boston Acoustics' Model 200 (far left) is an "out of the way" acoustic suspension system. Center left is the Belles 1, which isolates drivers in separate enclosures. The Epicure 1.0 (near left) is an acoustic suspension bookshelf system.

the crossover network—the more limited will be the range of frequencies over which these anomalies occur. The slope of the crossover depends upon the number of "poles" used in the filter. A first-order slope is gentle—6 dB/octave; a second-order slope is 12 dB/ octave; a third-order 18 dB/octave, etc. However, every filter has a certain "time delay" that induces a rapidly changing phase shift in the crossover region. The higher the order, the greater the time disparity induced by the crossover. So again, a compromise must be made.

To avoid outright phase cancellation in the crossover region, theory dictates that *even*-order filters should be avoided. However, many designs use them where a first-order filter would force a driver to function with signals beyond its capabilities and when a third-order filter would be too expensive.

Two-Way or Three-way? If the number of problems increases with the number of crossover networks and drivers, it would seem that a design employing the fewest number—a two-way system—would be your best choice. But that rarely is the case, since in a two-way system each driver must operate over an extremely wide range.

To provide uniform dispersion (sound radiation in all directions), a driver's diameter must be smaller than a wavelength of the sound it reproduces. Since the wavelength of a 15-kHz note is about ⅞ inch, a driver capable of reproducing it with even reasonable dispersion is much too small to be a useful woofer. In fact, if we demand *good* dispersion, such a driver is unlikely to operate effectively even in the midrange area.

So in theory and in almost all cases in practice, three-way systems are better than two-way designs. Although three-way systems require two crossovers rather than one, these can be located at points where they are less likely to be annoying. A practical two-way with reasonable power-handling ability and broad response must use a crossover somewhere between 1 kHz and 2.5 kHz—an area in which we tend to be sensitive to response anomalies. A three-way can use a woofer/midrange crossover at a much lower frequency, say, between 300 Hz and 600 Hz, and a midrange/tweeter crossover at a much higher frequency, perhaps between 4 kHz and 8 kHz. In the ear's most sensitive region, only one driver—the midrange—is active. Furthermore, a three-way system is likely to exhibit better power-handling ability because each driver receives less of the total power and because each can be designed to handle more power *in its range* to start with.

Full-range electrostatic panels are different from "conventional" loudspeaker systems using magnetic drivers. These are expensive and have a

sound character of their own. To produce adequate bass power, the panels must be huge, and the radiation pattern varies from bipolar at low frequencies to planar at progressively higher frequencies. Even some of the so-called "full-range" electrostatics require a cone woofer to flesh out their low end.

Bass Response. Bass *response* and bass *power-handling* ability are not the same; the former denotes a speaker's ability to reproduce low-frequency sounds at an arbitrarily low listening level; the latter refers to its ability to reproduce those fundamentals cleanly at realistic sound-pressure levels.

It is certainly possible to design a small system using, say, a 4½-inch or 6-inch woofer/midrange that has essentially flat response down to 40 Hz or perhaps even lower at relatively modest listening levels. And the woofer in such a system can respond smoothly and with good dispersion up to frequencies of from 2 to 3 kHz, where the tweeter would take over and carry the response up to the limits of audibility. However, the laws of physics require that a substantial volume of air be moved in order to generate high sound-pressure levels at low frequencies, something a small cone has obvious difficulties in achieving. In a nutshell, a physically small system can have excellent response when used in a small room and at modest listening levels, but is ill suited for a large room or loud listening levels.

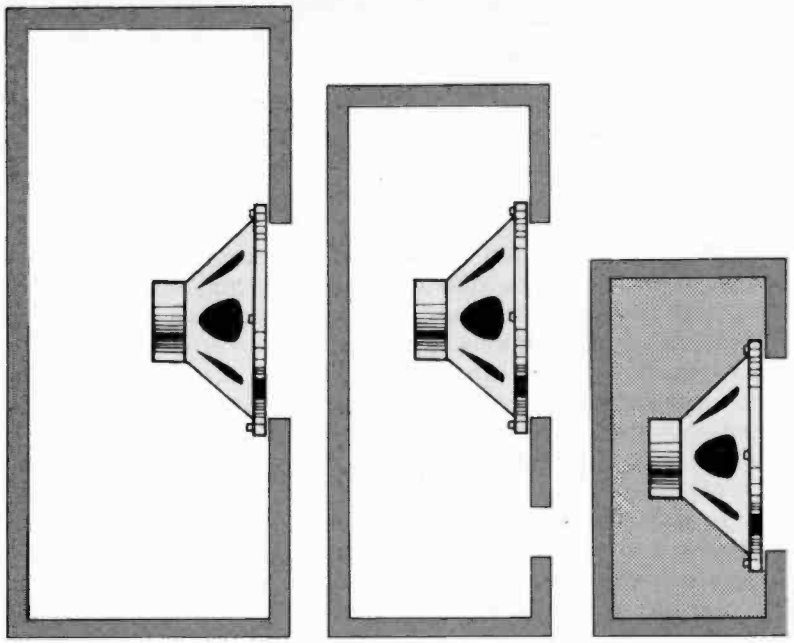
Selecting a speaker involves compromises; you must decide what is most important.

Equations from Thiele's filter-theory approach to loudspeaker design recognize several levels of compromise. First, there is the choice of "alignment." One can design the system to act as a second-order high-pass filter. Essentially, this is the acoustic-suspension design—a speaker in a totally sealed box. Below its bass cutoff frequency, system response diminishes at 12 dB/octave. One can also "vent" the enclosure and create a quasi-third-order or fourth-order "filter." The vent may be a hole or port of the proper dimensions, a port with an internal tube or duct, or a "passive radiator" or "drone"—a wooferlike cone and suspension without voice coil or magnet that is driven by the sound pressure within the box.

No one type of vent has a *theoretical* advantage over another; they all accomplish the same purpose. However, some practical considerations apply. If a vent's diameter is small, the air velocity through it can get quite high during loud bass passages, causing an unwanted wheezing or whistling. Also, a small-diameter woofer used in combination with a large-diameter passive radiator offers some advantages. The radiator can produce a high bass sound-pressure level without much cone motion and the smaller diameter woofer could work to higher frequencies without poor dispersion.

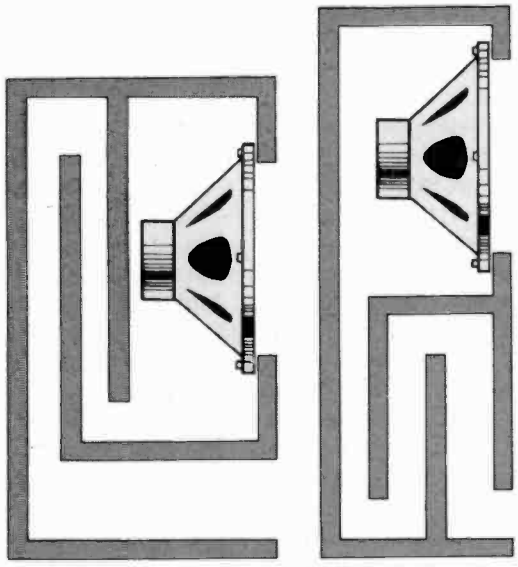
For an enclosure of a given size, vented alignments provide *either* a lower bass-cutoff frequency, greater efficiency, or lower distortion than would a second-order system. Gains on two or all three fronts are possible in lesser amounts, but below the cutoff frequency, response falls at 18 to 20 dB/ octave. So while response may hold up flat to a lower frequency (if that's the way the tradeoff was made), once rolloff begins, it happens faster than that of an acoustic-suspension system, and at *very* low frequencies this design is likely to put out *less* sound than a sealed system.

The vented system has some practical drawbacks, too. At infrasonic frequencies, the woofer cone is relatively uncontrolled because air escapes freely from the cabinet. Thus, a severely warped record played through wideband electronics may cause the woofer to be driven excessively. No "sound" is produced, but the cone's wide excursions may introduce distortion in the music that is present simultaneously. (A sharp infrasonic filter in the phono preamp will prevent this.) The acoustic-



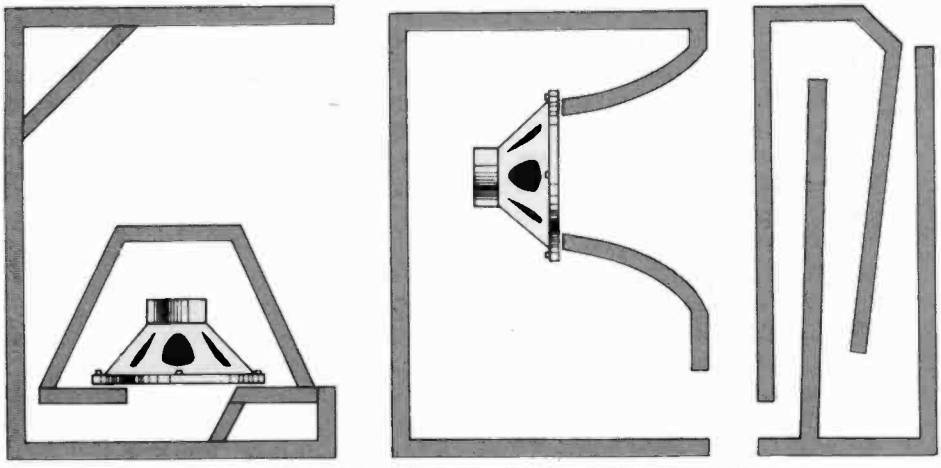
A: INFINITE BAFFLE B: BASS REFLEX C: AIR SUSPENSION

The infinite baffle (A) is a large, sealed box designed to completely "baffle" the speaker's rear wave from interfering with its frontal radiation. The bass-reflex enclosure (B) has an auxiliary opening, called a port, which permits most of the speaker's rear energy to emerge in phase with the front radiation. The air suspension system (C) uses a relatively small enclosure that is tightly sealed and stuffed with sound-absorbent material in order to confine a given amount of air behind the woofer cone.



D: ACOUSTICAL LABYRINTH

Two variations of the acoustical labyrinth, or "tuned-column" design are shown. Earlier duct-loaded enclosures (far left) had proportions similar to those of bass reflex or infinite baffle enclosures; recent models have taken advantage of the possibilities inherent in this design to assume a more columnar shape, known as the "tower" design (near left).



E: THREE TYPES OF HORN-LOADING

Front-horn-loading (left) uses speaker as compression driver. Design shown is simplified folded-horn design; "grandaddy" or folded horns, Klipschorn, is far more complex. Center drawing shows partial front-horn-loading combined with bass-reflex, while right drawing shows one section of double slot-loaded conical horn designed by Hegeman.

suspension design is less subject to this problem, because the air trapped in the box tends to act like a spring and keep the cone in place at low frequencies. (In an acoustic-suspension system, the cone displacement is constant below resonance; in a vented system it increases.)

All vented alignments are not the same. For example, a bit lower response or a bit more efficiency can be achieved by sacrificing *uniformity* of response through the rest of the woofer's range. By allowing response to peak or ripple, other performance characteristics can be improved. In fact, a boost around resonance is a common ploy to "improve" the apparent bass response and to add punch. Whether this technique results in a better-sounding system depends upon your listening tastes.

Higher-order alignments, such as sixth-order, require external electronics to synthesize the extra elements involved. These electronics—often referred to as speaker equalizers—are usually patched into the system between preamp and power amp or in a tape-monitor loop. While they boost (or equalize) response over part of the low bass, they are designed to serve only one *specific speaker design*. Think of them as *part* of the speaker, adding elements to the filter that cannot be synthesized acoustically with convenience.

Again, the laws of physics call for tradeoffs here. The boost caused by the "equalizer" demands that more power be supplied by your amplifier. Furthermore, below cutoff, response drops even faster than in a simple vented design—at 36 dB/octave.

As soon as more than one driver is used, the ideal is compromised.

After reviewing dozens of loudspeakers, we've found a *general* tendency for acoustic-suspension (second-order) systems to have a "tight" bass. A drum sounds as if its diaphragm is tautly stretched; the sound builds up and decays quickly. The attack of a plucked bass viol is also notably fast and when the instrument is bowed the sound has an astringent quality. High-order systems have struck us as less fast in attack and decay; the sound seems to hang on in a resonant fashion. And the higher the "order" of the system, the more obvious the effect has been to us. (We should stress that this is only our personal listening experiences, and should not be considered as immutable as a law of physics.)

This is not to say that higher-order systems sound unpleasant. In fact, for certain types of music they add punch. But yet, we would judge the sonic character of an acoustic-suspension system of equivalent bandwidth to be more "accurate" and prefer it ourselves. However, the "equivalent" acoustic-suspension system would be larger or less efficient than the vented one and/or may compare less favorably in some other respect. You must therefore judge the relative merits of each system for yourself.

The Midrange and Tweeter. So much emphasis has been placed on Thiele's studies and upon "computer-designed" speakers that we tend to forget that, in practice, these techniques apply only to a very small part of the spectrum—the very low bass. Since most of the action takes place at frequencies well above 100 Hz, the importance of quality midrange and tweeter units can't be overestimated.

In a three-way system, the midrange is crucial; it handles fundamentals corresponding to the topmost three octaves of a piano's range and the major overtones of most of the music. How well it does this is *the* key element in determining a speaker's "musicality." A good midrange has the clarity and airiness of reproduction that is essential in re-creating the true sound of the instruments. The pinched edginess that often characterizes the reproduction of the human voice, violin, and piano is usually directly attributable to problems with the midrange driver.

The tweeter in a three-way system usually comes in at a frequency

above 4 kHz—frequently as high as 8 kHz. Thus, rather than handling any of the fundamental tones, it is concerned primarily with higher overtones. Its prime task is to maintain the realism of reproduction and to assure that the instruments are distinguishable from their overtone structure. Obviously, the higher the frequency at which the tweeter comes in, the less the effect it has on tone color and the greater the relative importance of the midrange. Yet the tweeter establishes the brilliance or sheen of the cymbal, the attack of the triangle and xylophone, etc. A very "electrifying" sound is usually traceable to a peaky or overly sensitive tweeter. However, this type of exaggerated sound is ear-catching and frequently is induced purposely to make the speaker sound more impressive.

Stereo Imagery and Diffraction. The stereo illusion is created by a subtle interplay of factors. To establish a solid center and an image that spreads uniformly across the space between the speakers, to create an illusion of depth and height, to free the sound from the speakers as it were, *both* speakers must radiate similar sounds at the same time. The plausibility of the illusion depends on how well the two speakers are balanced and how uniform is their dispersion.

It is thought that the "direct" sound—that which reaches the ear first—is most critical in establishing the stereo image. Thus it is important that this sound not be muddled or confused by nearby reflections. Furthermore, to assure a relatively broad "acceptable listening area"—the region in which you can sit and still experience the stereo illusion—the speakers should have a wide and uniform radiation pattern (dispersion).

To some extent a driver with very wide dispersion can be even more subject to the early-reflection syndrome than one with poorer dispersion. A soundwave propagated along the baffle board is "diffracted" by the sharp discontinuity when it reaches the edge of the cabinet. This creates a phantom sound source at the edge of the cabinet that confuses the stereo illusion.

A boost around resonance is a common trick to "improve" bass and add punch.

At low frequency, where sound wavelengths are long, the diffraction effect is less noticeable; at higher frequencies it can be substantial. Enclosure shapes with smoothly rounded corners and/or inclusion of felt or foam pads surrounding the high-frequency drivers are designed to prevent these effects. The pads absorb sound traveling along the baffle board and hence minimize the strength of the diffraction. More directional radiators—those having a narrower dispersion—are also less subject to edge effects simply because only a small portion of the sound travels along the baffle board. The directionality of these radiators is not a negative factor, provided that the dispersion is *uniform* over a sufficiently wide angle to cover the listening area.

As should now be apparent, each loudspeaker-system design results from a series of compromises. And although each of the decisions may have been technically "correct" in that the desired result was achieved, you may not be pleased, because the particular compromise sacrificed something you wanted for something you didn't.

By now you should realize that determining what speaker is a "best buy" is not a simple 2 + 2 equals 4 equation. "The Best" implies a synergistic combination of performance and value. This article has dealt essentially with performance factors. Value implies getting the most performance for the least money. You can best apply the contents of this article by deciding which design offers you what you want and then searching out the brand of speaker system that you can afford. This may sound like a copout; it's not. There are more than 1,200 models of speakers you can buy. We wouldn't presume to tell you which one will sound best to you. Instead we've given you the tools on which to base your decision. **HF**

8 Great Ways to

A selection of functional and *enjoyable* recordings

From the standpoint of such accepted criteria of speaker performance as frequency response, power-handling ability, dynamic range, clarity, smoothness, definition, transparency, absence of spurious tonal coloration, transient attack, and any others you care to add, the best test equipment remains your own hearing, and the best test material remains musical recordings. This is not to deny the usefulness of such specialized signals as warble tones, pink noise, and the like; nor does it deny the aid provided by such devices as the sound-pressure-level meter or real-time analyzer. But while these techniques can provide clues as to how a speaker *might* sound, ultimately the only way to judge how it actually *does* sound is to listen.

Of course, some compositions are better than others for this purpose. The best choice is material that is fairly complex in harmonic structure and richly scored. Music that is relatively thin in texture—solo guitar, for instance—may sound good on any passable speaker. Beyond the music itself, of course, is the recording, and as it happens, classical performances are generally less gimmicked than pop recordings. Often, in the latter, you can't be sure whether the distortion you hear should be attributed to the playback system or was deliberately created for effect in the studio.

Some of my current favorites are among those that I have found especially good for judging speaker performance. I have tried to select them carefully so that, in addition to their technical uses, a good measure of musical merit also may be enjoyed by the serious stereo listener.

COPLAND: Appalachian Spring. St. Paul Chamber Orchestra, Dennis Russell Davies. SOUND 80 DLR 101A.

1. The Copland recording was made using the 3M digital audio mastering system and in "real time"—which is to say that the entire piece was played through and taped once, with no retakes, no splices, no mixdowns. The tape then was used to cut the master disc. Doubtless the care lavished on the cutting and subsequent disc processing is as responsible as anything else for the ultraclean sound and its unique impact. A kind of artistic/technical synergism seems at work: The lean orchestration (the original scoring for thirteen musicians) and the clean sonics make for an exceptionally sharp aural focus that not only is very revealing of instrumental timbres, but—especially in some of the more forceful passages toward the end—adds to the illusion that the entire ensemble is right in your room. Basically, this production is a fine proving piece for midrange response; if your speakers have it, there should be a startling sense of

Judge Speakers

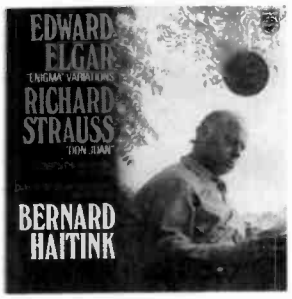
by Norman Eisenberg

presence. A closely related quality is the speakers' ability to distinguish between instruments with roughly the same tonal range but different overtone structures. The work as a whole should create a tight, bright acoustic feeling with well-etched transients.

2. Whatever else they are—musically, personally, or philosophically—the *Enigma* Variations are a rich storehouse of tonal color, challenging dynamics, and very wide spans of frequency. And the work demands "wide stage" stereo treatment, so that the miking captures all the inner detail while preserving the sense of ensemble. On a good playback system, these desiderata will be joyfully apparent. On anything less, many sections may sound muddled. There also are several climaxes that stretch your woofers' suspension, and others that will demand nothing but the smoothest response from your tweeters. One especially tricky passage in the finale tests a speaker's ability to handle sub-basement lows with plenty of power. It is perhaps revealing, with all the fuss over today's "superdiscs," that this one was made in 1975 and was neither direct-cut nor processed from a digital master.

3. With all due respect to previous "Suites from the *Water Music*," hearing this full version is a revelation. The recording preserves an airy feeling that—together with an ultraclean disc surface—affords amazing clarity of instruments. This effect is the more interesting because the performance uses original instruments that—historical authenticity aside—evoke a remarkable acoustic quality, one that is bright but never brash. At least that's how it should sound through speakers with really smooth response and good transient behavior. Especially good for this evaluation are Band 3 of Side 1 (the Allegro), and the Minuet toward the end of Side 2, where a deep, well-paced rhythm abruptly intrudes upon a passage for strings and thoroughbass and in turn is followed by the sudden piping of high-pitched piccolos. This record should sound different from performances with modern instruments; if it doesn't, start shopping for new speakers.

4. Mahler's Fifth Symphony abounds in sonic grandeur. It spans the full reaches of dynamic range and frequency response and presents a dazzling assortment of instrumental timbres and groupings. The first move-



ELGAR: Enigma Variations.* STRAUSS: Don Juan.† London Philharmonic Orchestra*, Concertgebouw Orchestra†, Bernard Haitink. PHILIPS 6500 481.

HANDEL: Water Music. Concentus Musicus, Nikolaus Harnoncourt. TELEFUNKEN 6.42497.

MAHLER: Symphony No. 5. Philadelphia Orchestra, James Levine. RCA ARL 2-2905.

RAVEL: Bolero; La Valse; Rapsodie espagnole. Boston Symphony Orchestra, Seiji Ozawa. DEUTSCHE GRAMMOPHON 2530 475.

STRAVINSKY: The Firebird Suite (1919 Version). BORODIN: Prince Igor: Overture; Polovetsian Dances.* Atlanta Symphony Orchestra and Chorus*, Robert Shaw. TELARC DG 10029.

ment's opening brass and later massed strings will test the mettle of your speakers' midrange and highs. So will the stormy second movement. In the Adagietto, listen for strength but no brashness in the strings. Incidentally, the sustained-note passages here are good for checking your turntable's wow and flutter. In the finale, there's another brass choir to challenge your system's high-end response. The later interplay between strings and winds will demolish a system that lacks ample dynamic range and sufficient power capability to span that range. The final bars of the full orchestral climax should come through with a definite sense of the drums and brass choirs holding firmly under it all.

5. *La Valse*'s big timpani burst and the galloping passages after it were used as a keynote theme from an early Vox album called "This Is High Fidelity," produced more than twenty years ago and, sadly, out of print now. I have long searched for a stereo version of the work that sounded as good, and this DG recording is it. There is something about much of Ravel's orchestrations that suggests a rapid-fire succession of taut transients, deep but well-defined bass passages, limitless tonal coloration for the midfrequencies, and piercing highs that make you wonder why you ever needed an oscillator to test tweeters. These effects abound in *La Valse* and in the *Rapsodie.*

Bolero, of course, is a tour de force of subtle changes in orchestral color, and you should be able to detect the sonic differences between each statement of the theme and the next. It also is an excellent test of stereo imaging in terms of both left-to-right breadth and front-to-rear depth. Correct stereo imaging involves correct phase relationships, good treble dispersion, linear power response, and other speaker design parameters, as well as effective placement in your room. With these pointers in mind, you may find yourself listening to that old *Bolero* with some fresh insight. By the way, this one was taped in 1974 and transferred to disc by the conventional method—but with care.

6. The Telarc disc was cut from a master tape made by the Soundstream digital recording system, obviously saving as many decibels as could be cut into the groove. From the very first notes of the Stravinsky, with their subterranean lows, you know that something special—sonically anyway—is going on. Look out for that lightning-bolt chord that starts (and reappears throughout)Kashchei's dance; it could, at high volume, tax your speakers' suspension. It also could drive your amplifier (or receiver) into clipping. It actually tripped the overload protection circuit in one receiver I tried it on, shutting the set down momentarily as if someone had pulled the plug. The same thing happened again at the end of the piece.

Some listeners—audio types, at that—have complained that, for all the dynamics and muscular tonality on this disc, it lacks a certain warmth and richness and takes on an antiseptic quality. Be that as it may, on capable speakers the overall sound is so clean you may find you are comfortably playing your system louder than usual. In my own listening room, I clocked sound pressure levels—at a distance of about ten feet from my speakers—of 95 to 100 dB, which sounded (subjectively) fairly appropriate to this recording. The same levels could bother me with many other recordings. So, in a real sense, the record is a test of the many distortions that add up to what is known as "listener fatigue," and as playback equipment goes these days, that problem is most likely to result from less-than-great speakers. Some of the passages also will tax a phono pickup's tracking ability. Watch out for stylus jumps during the massed crescendos.

Just past the Kashchei chord, your speakers should make a splendid

recovery and quickly settle down to project the soft, rhythmic passage of bassoons and low horns over strings. Listen here for any signs of tonal dropout. You should not have to turn up the volume to hear all the inner orchestral detail clearly. Listen carefully in the Finale as the music builds to the climax with sudden outbursts of brilliant brass and of heavy percussion with the triangle bravely tinkling away on top of it all. The final bass drum should set up a brief vibration that seems to hover in the air about the speakers.

The opening bars of the *Polovetsian Dances* are a good test of tweeter response: Can you distinguish among the various woodwinds? At the end of the first chorus, listen to the roll of timpani and bass drum, which should make you feel as if a thunderstorm has erupted in your room. At fairly loud playback levels, the bass will come up from the floorboards; you may actually feel it in your legs.

7. *The Rite of Spring* is still the best all-purpose single opus for showing off or showing up a high fidelity system. It has everything an audio-minded fanatic could wish to test the capabilities of his playback equipment. Did Stravinsky, sixty-six years ago, have some kind of audio presence? Certainly, the score lends itself most obligingly to the art and artifice of modern recording and playback techniques. So much is going on here, it is impossible to list every possible example of sonic wonderment that is useful for testing. One of my longtime favorites comes soon after the opening: The strings, repeating a chord in sharp, asymmetrical rhythms, evoke eruptions from the brasses and woodwinds and lead to a thunderous descending climax in the deep bass tones of percussion and brass. On a top playback system, the visceral effect becomes overwhelming.

And, near the middle of Side 2, there's a section with heavy drum work along with high woodwinds and brass. Each instrumental group should be clearly audible; if the high-pitched tones waver, it's a sign of intermodulation distortion—in the pickup, amplifier, or speakers. Toward the end of the piece is a passage where the cymbals should sound as if they are tearing the music apart—just make sure they don't tear your speakers apart. Another tricky section has the deep drums interwoven with softer string sounds; again, the one should not intermodulate with the other. The final outburst should linger an instant "in the air." If your speakers are overdamped (for instance, installed in less than an optimum enclosure), you will not hear this effect. If they are underdamped (for any of a number of possible reasons), the sound may linger too long.

8. Sheffield's direct-to-disc recording of Wagner opera excerpts is as much a tribute to the stamina and concentration of the Los Angeles players and Leinsdorf as it is an example of brilliantly clean sound emerging from a super-clean background. In the "Ride of the Valkyries," try to hear both the contrasts and the blending of the big brass choirs and massed strings; this is a good test of phase linearity. The tutti climaxes near the end can overload a system that has insufficient power reserves and dynamic range; this also will test your pickup's tracking ability. In the *Tristan* prelude, note the subtleties and nuances created by the strings; you need very smooth treble response to perceive these effects fully. The slight *r-r-r-r* of the trombones in the opening of "Siegfried's Funeral Music" is not distortion, although inferior reproduction can make it seem so. To resolve any doubt, compare this sound with the low brass section that follows—it should sound smooth, but with a slight "edge" to the top. Parts of this music can hit sound pressure levels above 95 dB and may, in some installations, set up feedback through the floor to the phono pickup. **HF**

STRAVINSKY: Le Sacre du printemps. New York Philharmonic, Zubin Mehta. COLUMBIA M 34557.

WAGNER: Die Walküre: Ride of the Valkyries. Siegfried: Forest Murmurs. Götterdämmerung: Siegfried's Funeral Music. Tristan und Isolde: Act I Prelude. Los Angeles Philharmonic Orchestra, Erich Leinsdorf. SHEFFIELD LAB 7.

Speaker Systems

ACCULAB
Acculab
8116 Deering Ave.
Canoga Park, Calif. 91304

440

Price	$250
Dimensions	25½H x 14¼W x 11D
Weight	43 lbs. (net)
Design	Bookshelf
Type	Acoustic suspension
Drivers	12" woofer; 3⅝" cone; 2¾" tweeter; 3½" piezoelectric tweeter; 3½" solid-state supertweeter
Response	33 Hz to 30 kHz, ±4 dB re 91 dB SPL at 1 meter at 1 watt
Sensitivity	91 dB SPL at 1 meter at 1 watt
Crossover	3.3 kHz; 7.5 kHz; 10 kHz
Impedance	8 ohms
Min. power	5 watts (7 dBW)
Max. power	50 watts (17 dBW)
Features	Controlled dispersion; pushbutton speaker terminals

320

Price	$150
Dimensions	22½H x 13W x 10½D
Weight	33 lbs. (net)
Design	Bookshelf
Type	Acoustic suspension
Drivers	10" woofer; 3⅝" cone midrange; 2¾" cone tweeter
Response	40 Hz to 18.5 kHz, ±4 dB re 91 dB SPL at 1 meter at 1 watt
Sensitivity	91 dB SPL at 1 meter at 1 watt
Crossover	3.3 kHz; 7.5 kHz
Impedance	8 ohms
Min. power	4 watts (6 dBW)
Max. power	32 watts (15.25 dBW)
Features	Controlled dispersion

Models also available
340, $200; 220, $125

ACOUSTAT
Acoustat Corp.
3101 S.W. 1st Terrace
Ft. Lauderdale, Fla. 33315

Monitor Four

Price	$2,195
Dimensions	61H x 36W x 9D
Weight	250 lbs. (net)
Design	Floorstanding
Type	Electrostatic
Drivers	Four full-range elements
Response	26 Hz to 20 kHz, ±3 dB
Sensitivity	85 dB SPL at 1 meter at 1 watt
Impedance	8 ohms
Min. power	50 watts (17 dBW)
Max. power	200 watts (23 dBW)
Controls	High-frequency balance
Features	Magne-kinetic 121 transformer drive

Model Two

Price	$1,195/pr.
Dimensions	58H x 20W x 3½D
Weight	150 lbs. (net)
Design	Floorstanding
Type	Electrostatic
Drivers	Two full-range elements
Response	30 Hz to 20 kHz, ±3 dB
Sensitivity	85 dB SPL at 1 meter at 1 watt
Impedance	8 ohms
Min. power	50 watts (17 dBW)
Max. power	200 watts (23 dBW)
Controls	High-frequency balance
Features	Magne-kinetic 121 transformer drive

Models also available
Monitor Three, $1,795/pr.

ACOUSTI-PHASE
Acousti-Phase
P.O. Box 207
Proctorsville, Vt. 05153

Disco II

Price	$449.95
Dimensions	29H x 18W x 15 ½D
Weight	75 lbs. (net)
Design	Floorstanding
Type	Bass reflex
Drivers	15" woofer; 2 midrange horns; 4 super horn tweeters
Response	28 Hz to 30 kHz, ±3 dB
Sensitivity	103 dB SPL at 1 meter at 1 watt
Crossover	1.9 kHz; 8 kHz
Impedance	4 ohms
Min. power	20 watts (13 dBW)
Max. power	200 watts (23 dBW)
Features	High-gloss black finish; side-mount handles; slide casters; accepts ¼" phone plug connection

Phase III+

Price	$309.95
Dimensions	25H x 15W x 14D
Weight	47 lbs. (net)
Design	Floorstanding
Type	Bass reflex
Drivers	12" woofer; 5" midrange; 1" Mylar dome tweeter
Response	32 Hz to 20 kHz, ±3 dB
Sensitivity	96 dB SPL at 1 meter at 1 watt
Crossover	700 Hz; 4.5 kHz
Impedance	4 to 8 ohms
Min. power	10 watts (10 dBW) continuous
Max. power	100 watts (20 dBW)
Controls	Tweeter
Features	Circuit breaker; also available in solid-wood butcher-block cabinet for $359.95

Phase I

Price	$139.95
Dimensions	21½H x 12½W x 10⅞D
Weight	29 lbs. (net)
Design	Bookshelf
Type	Bass reflex
Drivers	8" woofer; 1" Mylar dome tweeter
Response	40 Hz to 20 kHz, ±4 dB
Sensitivity	94 dB SPL at 1 meter at 1 watt
Crossover	1.5 kHz
Impedance	4 to 8 ohms
Min. power	6 watts (7.75 dBW)
Max. power	50 watts (17 dBW)
Controls	Tweeter
Features	Circuit breaker

Microphase

Price	$99.95
Dimensions	17½H x 10½W x 8D
Weight	19 lbs. (net)
Design	Bookshelf
Type	Bass reflex
Drivers	6½" woofer; 1" Mylar dome tweeter
Response	48 Hz to 20 kHz, ±4.5 dB
Sensitivity	93 dB SPL at 1 meter at 1 watt
Crossover	1.6 kHz
Impedance	4 to 8 ohms
Min. power	5 watts (7 dBW)
Max. power	30 watts (14.75 dBW)

Models also available
Disco II, $449.95; Phase Monitor, $189.95; Home Disco, $350

ADC
Audio Dynamics Corp.
Pickett District Road
New Milford, Conn. 06776

B-300 Subwoofer "Designer Series"

Price	$599
Dimensions	22¼H x 23 ¾W x 23 ¾D
Weight	95 lbs. (net)
Design	Floorstanding
Type	Acoustic suspension
Drivers	12" speaker with 2" voice coil
Response	27 Hz to 200 kHz, –3 dB re 1 dB SPL at 1 watt
Sensitivity	87 dB SPL at 1 meter at 1 watt
Features	Built-in 120-watt (20.75 dBW) power amplifier; laminate wood veneer finish available in rosewood, oak, or walnut; cabinet on furniture casters

B-410 "Designer Series"

Price	$185
Dimensions	16H x 10W x 9 ⅝D
Weight	24 lbs. (net)

Design	Bookshelf
Type	Acoustic suspension
Drivers	8" high-compliance woofer with extended voice coil; 1" polyamide soft-dome tweeter
Response	58 Hz to 20 kHz, –3 dB re 1.5 dB SPL at 1 meter at 1 watt
Sensitivity	88 dB SPL at 1 meter at 1 watt
Crossover	1.2 kHz
Impedance	4 ohms
Min. power	10 watts (10 dBW)
Max. power	250 watts (24 dBW)
Controls	Tweeter attenuation (–3 dB)
Features	Walnut wood veneer cabinet with removable front grille; power overload protection circuit (reset); designed as a satellite to the B-300 subwoofer or as a separate speaker

ADCOM
Adcom
9 Jules Lane
New Brunswick, N.J. 08901

GFW-1 Subwoofer

Price	$228.95 (vinyl); $289.95 (walnut)
Dimensions	15 ½H x 17 ½W x 17 ½D
Weight	36 lbs. (net)
Design	Floorstanding
Type	Infinite baffle
Drivers	10" long-throw woofer
Response	22 Hz to 150 Hz, ±3 dB re 86 dB SPL at 1 meter at 1 watt
Crossover	150 Hz
Impedance	4 ohms
Min. power	20 watts (13 dBW)
Max. power	120 watts (20.75 dBW)
Features	Two-way passive crossover built in; terminals for input from amp and output to satellites; phasing switch provided to increase installation flexibility; compact, end-table style

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

L-2030 Professional Monitor

Price	$1,900
Dimensions	58⅝H x 27¼W x 13⅛D
Weight	190 lbs. (net)
Design	Floorstanding
Type	Acoustic suspension
Drivers	Two 14" "Stifflite" woofers in separate chambers; four (1 main, 3 auxiliary) 2" soft-dome midranges; 1" soft-dome tweeter with samarium cobalt magnet
Response	22 Hz to 20 kHz, ±3 dB
Sensitivity	95 dB SPL at 1 meter at 1 watt
Crossover	450 Hz; 4 kHz
Impedance	6 ohms
Min. power	10 watts (10 dBW)
Max. power	1,200 watts
Controls	Front-panel tweeter level; midrange level/configuration selectors; bar-graph power level indicators optional
Features	User-accessible tweeter fuse; single-switch biamp conversion; rear compartment accepts ADS Power Plate 1,000 one-kilowatt biamplifier module; mirror-symmetrical matched pairs only; angled mid/high-frequency baffle for minimum diffractive interference

L-1230 Professional Monitor

Price	$595
Dimensions	40⅝H x 19¼W x 9⅝D
Weight	87 lbs. (net)
Design	Floorstanding panel
Type	Acoustic suspension
Drivers	Two 8" "Stifflite" woofers in separate chambers; 2" soft-dome midrange; ¾" soft-dome tweeter
Response	30 Hz to 20 kHz, ±3 dB
Sensitivity	94 dB SPL at 1 meter at 1 watt
Crossover	550 Hz; 4 kHz
Impedance	6 ohms
Min. power	20 watts (13 dBW)
Max. power	200 watts (23 dBW)
Controls	Tweeter level selector; biamp conversion switch
Features	Mirror-symmetrical matched pairs with angled mid/high-frequency baffle for minimum diffractive interference; user-accessible tweeter fuse; single-switch conversion to biamplification

L-730

Price	$365
Dimensions	25½H x 14⅛W x 11¾D
Weight	42 lbs. (net)
Design	Floorstanding; bookshelf (optional floor stand)
Type	Acoustic suspension
Drivers	10" "Stifflite" woofer; 1½" soft-dome midrange; ¾" soft-dome tweeter
Response	30 Hz to 23 kHz, ±3 dB
Sensitivity	92 dB SPL at 1 meter at 1 watt
Crossover	650 Hz; 4 kHz
Impedance	6 ohms
Min. power	20 watts (13 dBW)
Max. power	200 watts (23 dBW)
Features	User-accessible tweeter fuse; choice of oak or walnut finish with solid oak/walnut edge inserts; acoustically transparent frameless metal grill; piano-black baffle with diffraction-corrected flush driver mounting; optional metal base, ADS F-800

L-620

Price	$240
Dimensions	25½H x 14⅛W x 11¾D
Weight	40 lbs. (net)
Design	Floorstanding; bookshelf (optional floor stand)
Type	Acoustic suspension
Drivers	10" "Stifflite" woofer; 1" soft-dome tweeter
Response	30 Hz to 20 kHz, ±3 dB
Sensitivity	92 dB SPL at 1 meter at 1 watt
Crossover	1.5 kHz
Impedance	6 ohms
Min. power	15 watts (11.75 dBW)
Max. power	150 watts (21.75 dBW)
Features	User-accessible tweeter fuse; high-grade walnut finish; acoustically transparent frameless metal grille; piano-black baffle with diffraction-corrected flush driver mounting; optional metal base, ADS F-800

L-420

Price	$150
Dimensions	17½H x 11¼W x 7D
Weight	16 lbs. (net)
Design	Bookshelf
Type	Acoustic suspension
Drivers	7" "Stifflite" woofer; 1" soft-dome tweeter
Response	48 Hz to 20 kHz, ±3 dB
Sensitivity	92 dB SPL at 1 meter at 1 watt
Crossover	1.5 kHz
Impedance	6 ohms
Min. power	15 watts (11.75 dBW)
Max. power	100 watts (20 dBW)
Features	User-accessible tweeter fuse; high-grade walnut finish; acoustically transparent frameless metal grille; piano-black baffle with diffraction-corrected flush driver mounting

ADS 2002 Miniature Speaker System

Price	$470/pr.
Dimensions	6¾H x 4¼W x 5½D
Weight	4 lbs. 8 oz. (net)
Design	Mini
Type	Acoustic suspension
Drivers	4" woofer; 1" soft-dome tweeter
Response	85 Hz to 17 kHz, ±3 dB; 55 Hz to 20 kHz, ±5 dB
Crossover	2.5 kHz (electronic)
Impedance	47K ohms
Min. power	25 watts (14 dBW) continuous for woofer; 5 watts (7 dBW) continuous for tweeter
Controls	Tweeter level
Features	Biamplified miniature speaker for 12V operation (car) or home use with optional power supply (2002PS); optional carrying case for entire system

ADS-400

Price	$180
Dimensions	11¾H x 7⅝W x 6⅞D
Weight	9 lbs. (net)
Design	Floorstanding; bookshelf (optional floor stand)
Type	Acoustic suspension
Drivers	7" "Stifflite" woofer; 1" soft-dome tweeter
Response	65 Hz to 20 kHz
Sensitivity	93 dB SPL at 1 meter at 1 watt
Crossover	1.5 kHz
Impedance	6 ohms
Min. power	15 watts (11.75 dBW)
Max. power	75 watts (18.75 dBW)
Features	High-grade oak or walnut finish with solid oak/walnut edge inserts; acoustically transparent removable metal grille finished in complementary metallic colors; fiber-reinforced diffraction-corrected baffle; optional floor stand, ADS F-400

ADS 300C

Price	$155
Dimensions	8½H x 5¾W x 5¾D
Weight	7 lbs. (net)
Design	Mini
Type	Acoustic suspension
Drivers	5¼" woofer; 1" soft-dome tweeter
Response	68 Hz to 20 kHz, ±3 dB
Sensitivity	91 dB SPL at 1 meter at 1 watt
Crossover	2.5 kHz
Impedance	4 ohms
Min. power	5 watts (7 dBW)
Max. power	75 watts (18.75 dBW)
Features	Solid-aluminum miniature speakers with swivel brackets for car installation

ADS 300

Price	$150
Dimensions	8½H x 5¾W x 5¾D
Weight	7 lbs. (net)
Design	Mini
Type	Acoustic suspension
Drivers	5¼" woofer; 1" soft-dome tweeter
Response	68 Hz to 20 kHz, ±3 dB
Sensitivity	91 dB SPL at 1 meter at 1 watt
Crossover	2.5 kHz
Impedance	4 ohms
Min. power	5 watts (7 dBW)

Max. power	75 watts (18.75 dBW)
Features	Solid-aluminum loudspeaker; removable metal grille; black or silver brushed finish

Models also available

L-810, $425; L-710, $325; L-520, $190; L-10, $109; ADS 2001, $599/pr.; ADS 200C, $125; ADS 200, $120

ADVENT
Advent Corp.
195 Albany St.
Cambridge, Mass. 02139

Powered Advent

Price	$499
Dimensions	28⅜H x 14⅛W x 13D
Weight	70 lbs. (net)
Design	Floorstanding
Type	Biamplified acoustic suspension
Drivers	10" woofer; 1⅜" dome tweeter
Crossover	1.5 kHz
Controls	Input sensitivity; bass boost (below 100 Hz); treble boost and cut (above 3 kHz)
Features	Integral amplifier with infrasonic filter

New Advent

Price	$179 (wood cabinet); $155 (vinyl-clad utility cabinet)
Dimensions	25⅝H x 14¼W x 11½D
Weight	44 lbs. (net)
Type	Acoustic suspension
Drivers	10" woofer; 1⅜" dome tweeter
Response	30 Hz to 15 kHz, ±3 dB re 89 dB SPL at 1 meter at 1 watt
Crossover	1.5 kHz
Min. power	15 watts (11.75 dBW) continuous
Max. power	Available upon request
Controls	3-way high-frequency balance switch

3002

Price	$129.95
Dimensions	20H x 12W x 8.5D
Weight	21 lbs. 8 oz. (net)
Design	Bookshelf
Type	Sealed enclosure
Drivers	8" woofer; 1" parabolic tweeter
Response	48 Hz to 23 kHz, ±3 dB re 88 dB SPL at 1 meter at 1 watt
Sensitivity	88 dB SPL at 1 meter at 1 watt
Crossover	2.8 kHz
Impedance	8 ohms
Min. power	15 watts (11.75 dBW)
Max. power	75 watts (18.75 dBW)

Advent/1

Price	$120 (wood cabinet, $135)
Dimensions	22H x 13¼W x 9¼D
Weight	30 lbs. (net)
Design	Bookshelf
Type	Acoustic suspension
Drivers	10" woofer; 1⅜" dome tweeter
Response	30 Hz to 15 kHz, ±5 dB re 89 dB SPL at 1 meter at 1 watt
Crossover	1.5 kHz
Impedance	8 ohms
Min. power	15 watts (11.75 dBW)
Max. power	Available upon request

400

Price	$35
Dimensions	6⅝H x 11W x 6D
Weight	7 lbs. (net)
Design	Mini
Type	Acoustic suspension
Drivers	Full-range driver
Response	80 Hz to 14 kHz, ±5 dB
Impedance	8 ohms
Min. power	5 watts (7 dBW) continuous
Max. power	Available upon request

Models also available

5002, $199.95; 4002, $169.95; 2002, $99.95; Advent/4 System, $178 to $188/pr.; Advent/3, $65

AES
Audio Electronics Systems, Inc.
101 N. Park St.
East Orange, N.J. 07017

AES-25

Price	$595
Drivers	Two 10" woofer; 3" soft-dome lower midrange; 1½" soft-dome upper midrange; 1" soft-dome tweeter
Response	24 Hz to 20 kHz
Sensitivity	90 dB SPL at 1 meter at 1 watt
Crossover	250 Hz; 700 Hz; 3 kHz
Impedance	8 ohms

AES-22

Price	$190
Drivers	6" woofer; 1" soft-dome tweeter
Sensitivity	83 dB SPL at 1 meter at 1 watt
Crossover	1 kHz
Impedance	8 ohms

Models also available

AES-50T, $379.95; AES-42, $249.95; AES-32, $189.95; AES-31, $149.95; AES-28, $89.95

AKAI
Akai America, Ltd.
2139 E. Del Amo Blvd.
P.O. Box 6010
Compton, Calif. 90224

SW-177 II

Price	$395
Dimensions	27¼H x 17¼W x 12¼D
Weight	46 lbs. (net)
Type	Dynamic
Drivers	15" woofer; 5¼" midrange; two 1¾" tweeters
Response	25 Hz to 20 kHz, ±3 dB
Crossover	700 Hz; 5 kHz
Impedance	8 ohms
Min. power	40 watts (16 dBW)
Max. power	100 watts (20 dBW)
Controls	Midrange; tweeter

SW-T70

Price	$250
Dimensions	31 1/10H x 15 2/3W x 10 4/5D
Weight	40 lbs. 5 oz. (net)
Drivers	12" woofer; 5¼" midrange; 1¾" tweeter
Response	35 Hz to 20 kHz
Crossover	1.5 kHz; 5 kHz
Impedance	8 ohms
Max. power	100 watts (20 dBW)
Controls	Midrange; tweeter

SW-T50

Price	$180
Dimensions	27 2/5H x 13 4/5W x 10 4/5D
Weight	28 lbs. 12 oz. (net)
Drivers	10" woofer; 4" midrange; 1¾" tweeter
Response	40 Hz to 20 kHz
Crossover	1.5 kHz; 5 kHz
Impedance	8 ohms
Max. power	80 watts (19 dBW)
Controls	Midrange

SW-T30

Price	$250/pr.
Dimensions	22 3/5H x 11 7/10W x 8 3/10D
Weight	17 lbs. (net)
Drivers	10" woofer; 1¾" tweeter
Response	40 Hz to 20 kHz
Crossover	4 kHz
Impedance	8 ohms
Max. power	60 watts (17.75 dBW)
Features	Walnut vinyl enclosure

S-82

Price	$90/pr.
Dimensions	19H x 11W x 6¾D
Weight	36 lbs./pr. (net)
Type	Acoustic suspension
Drivers	8" woofer; 3" tweeter
Response	60 Hz to 17 kHz, ±5 dB
Crossover	4 kHz
Min. power	15 watts (11.75 dBW)
Max. power	30 watts (14.75 dBW)

Models also available

SW-157 II, $295; SW-137 II, $200; SW-127, $125; SW-7, $165./pr

RICHARD ALLAN
RCS Audio International, Inc.
1314 34th St., N.W.
Washington, D.C. 20007

Monitor 80

Price	$425
Dimensions	26H x 12W x 11¼D
Weight	41 lbs. (net)
Design	Floorstanding
Type	Acoustic suspension
Drivers	10" Richard Allan woofer; 5" Richard Allan midrange; 1" Richard Allan dome tweeter
Response	40 Hz to 20 kHz, ±3 dB
Crossover	1 kHz; 6 kHz
Impedance	8 ohms
Min. power	25 watts (14 dBW)
Max. power	100 watts (20 dBW)
Controls	None
Features	Walnut-veneer cabinet

Models also available

RA-8, $162.50

ALLISON
Allison Acoustics, Inc.
7 Tech Circle
Natick, Mass. 01760

Allison: One

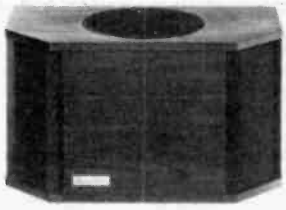
Price	$460
Dimensions	40H x 19W x 10¾D
Weight	67 lbs. (net)
Design	Floorstanding

Type Dynamic; acoustic suspension
Drivers Two 10" woofers; two 3½" midrange units; two 1" tweeters
Response Complete specifications available on request
Sensitivity 87 dB SPL at 1 meter at 1 watt
Crossover 350 Hz; 3.75 kHz
Impedance 8 ohms
Min. power 30 watts (14.75 dBW) per channel for 100 dB SPL
Max. power Depends on program material; 400-watt (26-dBW)/channel amps may be used with music input
Controls Mid- and high-frequency spectral balance switches
Features Stabilized Radiation Loading* enclosure design; provision for biamplifier drive; convex diaphragm mid and tweeter units; full warranty for 5 years (*covered by U.S. and foreign patents)

The Electronic Subwoofer®

Price $290
Dimensions 2H x 14¼W x 4⅜D
Weight 2 lbs. 5 oz. (net)
Design Bookshelf
Type Low-frequency equalizer and bandpass filter
Controls Turnover frequency; source/tape switch
Features Three low-frequency boost curves with turnover (+3 dB) points at 35.5 Hz, 41 Hz, and 48 Hz; infrasonic and ultrasonic filters slope at 18 dB/octave below 20 Hz and above 20 kHz; A-weighted S/N: better than 100 dB

Allison: Four



Price $220
Dimensions 11H x 19⅜W x 10D
Weight 23 lbs. 8 oz. (net)
Design Bookshelf
Type Dynamic; acoustic suspension
Drivers 8" woofer; two 1" tweeters
Response Complete specifications available on request
Sensitivity 87 dB SPL at 1 meter at 1 watt
Crossover 2 kHz
Impedance 8 ohms
Min. power 30 watts (14.75 dBW) per channel for 100 dB SPL
Max. power Depends on program material; 200-watt (23-dBW)/channel amps may be used with music input
Controls Combined mid/high-frequency spectral balance switch
Features Stabilized Radiation Loading* enclosure design; convex diaphragm tweeters; full warranty for 5 years (*covered by U.S. and foreign patents)

Allison: Six

Price $125
Dimensions 11¼H x 11¼W x 11¼D
Weight 17 lbs. (net)
Design Bookshelf
Type Dynamic; acoustic suspension
Drivers 8" woofer; 1" tweeter
Response Complete specifications available on request
Sensitivity 87 dB SPL at 1 meter at 1 watt
Crossover 2 kHz
Impedance 4 ohms
Min. power 15 watts (11.75 dBW) per channel re 97 dB SPL
Max. power 150 watts (21.8 dBW)
Controls High-frequency spectral balance switch
Features Stabilized Radiation Loading* enclosure design; convex diaphragm tweeter; full warranty for 5 years (*covered by U.S. and foreign patents)

Models also available

Allison: Two, $390; Allison: Three, $320; Allison: Five, $160

ALTEC LANSING
Altec Corp.
1515 S. Manchester Ave.
Anaheim, Calif. 92803

Nineteen

Price $899.95
Dimensions 39H x 30W x 21D
Weight 143 lbs. (net)
Design Floorstanding
Type Bass reflex; vented
Drivers 15" bass; compression driver mounted to sectoral horn with Tangerine™ Radial phase plug
Response 30 Hz to 20 kHz
Crossover 1.2 kHz
Impedance 8 ohms
Min. power 10 watts (10 dBW)
Max. power 65 watts (18 dBW)
Controls High/mid-frequency
Features Hand-rubbed oiled walnut or oak

Fourteen

Price $529.95
Dimensions 30H x 21W x 16½D
Weight 77 lbs. (net)
Design Floorstanding
Type Bass reflex; vented
Drivers 12" bass driver with radial phase plug; compression driver mounted to Mantaray constant-directivity horn
Response 35 Hz to 20 kHz
Crossover 1.5 kHz
Impedance 8 ohms
Min. power 10 watts (10 dBW)
Max. power 75 watts (18.75 dBW)
Controls High/mid-frequency attenuator
Features Hand-rubbed oiled walnut, acoustically transparent black knit grille; automatic power control to 200 watts (23 dBW)

Six

Price $349.95
Dimensions 25½H x 15½W x 13½D
Weight 39 lbs. (net)
Design Midsize
Type Vented
Drivers 10" bass; 5" midrange; high frequency LZT compression driver; radial phase plug; constant-directivity Mantaray horn
Response 60 Hz to 20 kHz, ±2.5 dB
Sensitivity 90 dB SPL at 1 meter at 1 watt
Crossover 700 Hz; 5 kHz
Impedance 8 ohms
Min. power 20 watts (13 dBW)
Max. power 200 watts (23 dBW)
Controls Automatic power control reduces power to prevent overload; midrange; tweeter
Features Finished in imported lacquered Endriana wood; anechoic damping of baffle with foam alloy

Four

Price $249.95
Dimensions 23H x 14⅝W x 12¼D
Weight 35 lbs. (net)
Design Midsize
Type Vented
Drivers 10" bass; high-frequency LZT compression driver; radial phase plug; constant-directivity horn
Response 60 Hz to 20 kHz, ±3 dB
Sensitivity 88 dB SPL at 1 meter at 1 watt
Crossover 2 kHz
Impedance 8 ohms
Min. power 20 watts (13 dBW)
Max. power 200 watts (23 dBW)
Controls Automatic power control reduces power to prevent overload; tweeter
Features Finished in imported lacquered Endriana wood; anechoic damping of baffle with foam alloy

SUBWOOFER SERIES

LF-2 Universal Subwoofer

Price $949.95
Dimensions 36H x 36W x 16D
Weight 84 lbs. (net)
Design Floorstanding
Type Vented
Drivers 12" bass driver
Response 20 Hz to 80 Hz, ±3 dB
Crossover 40 Hz; 60 Hz; 80 Hz
Impedance 8 ohms
Features Electronic crossover; high-power amplifier; new power control system: red light warns when power input is too high; power is automatically reduced; 80-watt amplifier built-in with selectable electronic crossover frequencies

Models also available

Eighteen, $899.95; Eight, $449.95; Santana II, $329.95; LF-1 Universal Subwoofer, $699.95

AMERICAN ACOUSTICS LAB
AAL Speaker Systems
629 W. Cermak Road
Chicago, Ill. 60616

IM-912

Price $498/pr.
Dimensions 26H x 16W x 11½D
Weight 41 lbs. (net)
Design Floorstanding or bookshelf
Type Bass reflex
Drivers 12" woofer; 4½" isolated midrange; 1" soft-dome tweeter
Response 35 Hz to 22 kHz
Crossover 500 Hz; 2 kHz
Impedance 8 ohms
Min. power 5 watts
Max. power 95 watts

IM-98

Price $258/pr.
Dimensions 20H x 12W x 9¼D
Weight 22 lbs. (net)
Type Bass reflex
Drivers 8" woofer; 1" soft-dome tweeter
Sensitivity 42 Hz to 22 kHz
Impedance 1.5 kHz
Min. power 8 ohms
Max. power 5 watts
Controls 45 watts

EQ-25 Subwoofer

Price	$249 ea.
Dimensions	16½H x 16W x 16D
Weight	50 lbs. (net)
Design	Floorstanding
Type	Bass reflex
Drivers	Two 8" woofers
Response	100 Hz to 250 Hz, ±3 dB
Impedance	8 ohms
Min. power	5 watts (7 dBW)
Max. power	100 watts (20 dBW)

EQ-15

Price	$398/pr.
Dimensions	28H x 19W x 11D
Weight	47 lbs. (net)
Design	Floorstanding
Type	Bass reflex
Drivers	15" woofer; 5¼" midrange; 2 phenolic ring tweeters
Response	2 Hz to 22 kHz, ±3 dB
Crossover	1 kHz; 5 kHz
Impedance	8 ohms
Min. power	5 watts
Max. power	65 watts

EQ-11

Price	270/pr.
Dimensions	23H x 14½W x 11D
Weight	35 lbs. (net)
Design	Bookshelf
Type	Bass reflex
Drivers	10" woofer; 2 phenollc ring tweeters
Response	27 Hz to 22 kHz, ±3 dB
Crossover	2.5 kHz
Impedance	8 ohms
Min. power	5 watts (7 dBW)
Max. power	50 watts (17 dBW)

EQ-7

Price	$150/pr.
Dimensions	12⅜H x 7⅞W x 7D
Weight	11 lbs. (net)
Design	Bookshelf
Type	Bass reflex
Drivers	6½" woofer; 2" phenollc ring tweeter
Response	50 Hz to 22 kHz, ±3 dB
Crossover	2.5 kHz
Impedance	8 ohms
Min. power	5 watts (7 dBW)
Max. power	25 watts (14 dBW)

Micro 100B

Price	$238/pr.
Dimensions	7¼H x 4½W x 4½D
Weight	5.5 lbs. (net)
Design	Mini or rear-deck car mounting
Type	Acoustic suspension
Drivers	4" woofer; 1" tweeter
Response	50 Hz to 20 kHz, ±3 dB
Crossover	4 kHz
Impedance	4 ohms
Min. power	5 watts (7 dBW)
Max. power	50 watts (17 dBW)

Models also available

IM-920, $598/pr.; IM-910, $438/pr.; EQ-21, $438/pr.; EQ-17, $370/pr.; EQ-13, $350/pr.; EQ-9, $178/pr.; Micro 100, $218/pr.

APATURE
Div. of ACR Industries
RFD 1, Route 2
Preston, Conn. 06360

R-10

Price	$299.95
Dimensions	26H x 13W x 12D
Weight	49 lbs. (net)
Design	Floorstanding
Type	Hybrid transmission line
Drivers	10" Bextrene woofer; ribbon cell midrange; flared horn ribbon tweeter
Response	32 Hz to 34 kHz, ± 2.5 dB
Sensitivity	92 dB SPL at 1 meter at 1 watt
Crossover	1.5 kHz; 7 kHz
Impedance	8 ohms
Min. power	15 watts (11.75 dBW)
Max. power	75 watts (18.75 dBW)
Controls	Midrange; tweeter (flat or high)
Features	Fast reaction, phase-aligned crossover network; handcrafted interlocked cabinet; high density Wilson art finish in koa wood

R-T

Price	$99.95
Dimensions	6H x 6W x 6D
Weight	5 lbs. (net)
Design	Add-on tweeter
Type	Tension sealed
Drivers	Flared horn ribbon tweeter
Response	Crossover to 34 kHz, ±1.5 dB
Sensitivity	92 dB SPL at 1 meter at 1 watt
Crossover	5.4 kHz or 9 kHz (selectable)
Impedance	8 ohms
Min. power	15 watts (11.75 dBW)
Max. power	120 watts (20.75 dBW)
Controls	Volume
Features	Fast-reaction crossover; fuse protection; handcrafted interlocked cabinet; high-density Wilson art finish in black or walnut

Models also available

R-8, $179.95

AR
Acoustic Research
10 American Drive
Norwood, Mass. 02062

AR-9 Vertical Speaker

Price	$800
Dimensions	52¾H x 15W x 15 13/16D
Weight	130 lbs.
Design	Floorstanding
Type	Acoustic suspension
Drivers	Two 12" woofers, facing sideways; 8" lower midrange; 1½" dome upper midrange; ¾" dome tweeter
Response	28 Hz to 25 kHz, ±2 dB re 87 dB SPL at 1 meter at 1 watt
Sensitivity	87 dB SPL at 1 meter at 1 watt
Crossover	200 Hz; 1.2 kHz; 7 kHz
Impedance	4 ohms
Min. power	15 watts (11.75 dBW) (may vary with room size)
Max. power	Safe on normal speech and music on amplifiers of up to 400 watts (26 dBW) continuous power per channel
Controls	Lower midrange; upper midrange; tweeter (3-position controls)
Features	Full 5-year warranty; designed with AR Acoustic Blanket® to prevent sound interference caused by cabinet reflectons, and with special woofer placement to minimize adverse room effects; has special bass extension circuitry in the crossover

AR-90 Vertical Speaker

Price	$600
Dimensions	43⅜H x 14½W x 15 13/16D
Weight	82 lbs. (net)
Design	Floorstanding
Type	Acoustic suspension
Drivers	Two 10" woofers, facing sideways; 8" lower midrange; 1½" upper midrange; ¾" tweeter
Response	32 Hz to 25 kHz, ±2 dB re 87 dB SPL at 1 meter at 1 watt
Sensitivity	87 dB SPL at 1 meter at 1 watt
Crossover	200 Hz; 1.2 kHz; 7 kHz
Impedance	4 ohms
Min. power	15 watts (11.75 dBW) (may vary with room size)
Max. power	Safe on normal speech and music on amplifiers of up to 300 watts (25 dBW) continuous power per channel
Controls	Lower midrange; upper midrange; high range (3-position controls)
Features	Full 5-year warranty on performance; designed with AR Acoustic Blanket® to prevent sound interference caused by cabinet reflections; special woofer placement to minimize adverse room effects

AR-91 Vertical Speaker

Price	$425
Dimensions	31½H x 14W x 11 7/16D
Weight	53 lbs. (net)
Design	Floorstanding
Type	Acoustic suspension
Drivers	12" woofer; 1½" midrange; ¾" tweeter
Response	35 Hz to 25 kHz, ±2 dB re 87 dB SPL at 1 meter at 1 watt
Sensitivity	87 dB SPL at 1 meter at 1 watt
Crossover	700 Hz; 7.5 kHz
Impedance	4 ohms
Min. power	15 watts (11.75 dBW) (may vary with room size)
Max. power	Safe on normal speech and music on amplifiers of up to 200 watts (23 dBW) continuous power per channel
Controls	Two 3-position switches for midrange and high-range control
Features	Full 5-year warranty on performance; designed with AR Acoustic Blanket® to prevent sound interference caused by cabinet reflections

AR-93 High-Tech Speaker

Price	$249
Dimensions	30⅝ x 14W x 10¾D
Weight	50 lbs. (net)
Design	Floorstanding
Type	Acoustic suspension
Drivers	Two 8" side-firing woofers; 8" midrange; 1¼" cone tweeter
Response	44 Hz to 22 kHz, ±2 dB re 87 dB SPL at 1 meter at 1 watt
Sensitivity	87 dB SPL at 1 meter at 1 watt
Crossover	350 Hz; 2 kHz
Impedance	6 ohms
Min. power	15 watts (11.75 dBW) (may vary with room size)
Max. power	125 watts (21 dBW)
Features	Full 5-year warranty on performance; designed with AR Acoustic Blanket® to prevent sound interference caused by the cabinet reflections; side-firing woofers eliminate interference from secondary reflections; finished in black acoustically transparent cloth

AR-25

Price	$240/pr. (sold only in pairs)
Dimensions	21½H x 11¾W x 7 21/32D
Weight	22 lbs. (net)
Design	Bookshelf
Type	Acoustic suspension

Drivers	8" woofer; 1¼" pressure high-range tweeter
Response	48 Hz to 22 kHz, ±2 dB re 86 dB SPL at 1 meter at 1 watt
Sensitivity	86 dB SPL at 1 meter at 1 watt
Crossover	2 kHz
Impedance	8 ohms
Min. power	15 watts (may vary with room size)
Max. power	Safe on normal speech and music with amplifiers of up to 100 watts (20 dBW) continuous power per channel
Controls	None
Features	Full 5-year warranty on performance

AR-18

Price	$83
Dimensions	16½H x 9⅝W x 6¼D
Weight	13 lbs. 8 oz. (net)
Design	Bookshelf
Type	Acoustic suspension
Drivers	8" woofer; 1¼" pressure tweeter
Response	62 Hz to 22 kHz, ±2 dB re 86 dB SPL at 1 meter at 1 watt
Sensitivity	86 dB SPL at 1 meter at 1 watt
Crossover	2 kHz
Impedance	8 ohms
Min. power	15 watts (may vary with room size)
Max. power	Safe on normal speech and music with amplifiers of up to 100 watts (20 dBW) continuous power per channel
Controls	None
Features	Full 5-year warranty on performance

Models also available

AR-94 High-Tech Speaker, $199; AR-92 Vertical Speaker, $325

AUDICO
Audico, Inc.
8900 Research Blvd.
Austin, Tex. 78758

SW-B Monolith TL Subwoofer

Price	$1,150
Dimensions	58H x 25W x 20D
Weight	250 lbs. (net)
Type	Transmission line
Drivers	Two 10" woofers
Response	14 Hz to 200 Hz, ±2 dB re 93 dB SPL at 1 meter at 1 watt
Crossover	120 Hz
Impedance	6 ohms
Min. power	15 watts (11.75 dBW)
Max. power	400 watts (26 dBW)
Features	Hand-tuned for optimum response; hand-rubbed wood veneer

A-10W

Price	$289
Dimensions	28H x 14W x 15D
Weight	60 lbs. (net)
Type	Vented
Drivers	10" woofer; 1½" midrange dome; 1" soft-dome tweeter
Response	39 Hz to 20 kHz, ±3 dB re 90 dB SPL at 1 meter at 1 watt
Crossover	1.2 kHz; 6 kHz
Impedance	8 ohms
Min. power	15 watts (11.75 dBW)
Max. power	125 watts (21 dBW)
Controls	Midrange; tweeter
Features	Mirror-image pairs; Mylar capacitors; hand-rubbed wood veneer

A-10SA

Price	$235
Dimensions	38H x 13½W x 9¾D
Weight	55 lbs. (net)
Type	Vented
Drivers	10" woofer; 1" soft-dome tweeter
Response	39 Hz to 20 kHz, ±2 dB re 90 dB SPL at 1 meter at 1 watt
Crossover	2.2 kHz
Impedance	8 ohms
Min. power	15 watts (11.75 dBW)
Max. power	100 watts (20 dBW)
Features	Mirror-image pairs; Mylar capacitors; hand-rubbed wood veneer

LF-A

Price	$104
Dimensions	16H x 10W x 8½D
Weight	30 lbs. (net)
Type	Vented
Drivers	8" bass/midrange driver; 2" tweeter
Response	56 Hz to 19 kHz, ±3 dB re 88 dB SPL at 1 meter at 1 watt
Crossover	2.5 kHz
Impedance	8 ohms
Min. power	15 watts (11.75 dBW)
Max. power	80 watts (19 dBW)
Features	Mirror-image pairs; Mylar capacitors; available in kit form wood veneer

Models also available

TDC-210, $489; A-10U, $239; LF-B, $172 (with stand)

AUDIO LAB CONSORT
Unitronex Corp.
1171 Landmeier Road
Elk Grove Village, Ill. 60007

AL-60

Price	$359
Dimensions	26 4/5H x 17 3/10W x 12 3/5D
Weight	61 lbs. 11 oz. (net)
Design	Floorstanding
Type	Acoustic suspension
Drivers	12" cone woofer; 7" cone midrange; 1" wide-dispersion phenolic dome tweeter
Response	32 Hz to 20 kHz
Crossover	300 Hz; 7 kHz
Impedance	8 ohms
Min. power	10 watts (10 dBW)
Max. power	140 watts (21.5 dBW)
Controls	Treble; midrange (3-position switch for normal or ±3 dB)
Features	Cabinet finished in real mahogany veneer with snap-on black acoustic front panel; ¾" high-density particle board; 1.5" thick polyurethane foam acoustic insulation throughout inside of cabinet; 10-year warranty; completely sealed midrange provides total acoustic isolation from woofer

AL-30

Price	$159
Dimensions	22 7/10H x 14W x 9 4/5D
Weight	30 lbs. (net)
Design	Bookshelf
Type	Passive radiator
Drivers	8" cone woofer; 8" passive radiator; 1" wide-dispersion dome tweeter
Response	55 Hz to 20 kHz
Crossover	4 kHz
Impedance	8 ohms (nominal)
Min. power	10 watts (10 dBW)
Max. power	60 watts (17.75 dBW)
Controls	Treble (3-position switch for normal or ±3 dB)
Features	Cabinet finished in real mahogany veneer with snap-on black acoustic front panel; ¾" high-density particle board; 1.5" thick polyurethane foam acoustic insulation throughout inside of cabinet; 10-year warranty

Models also available

AL-40, $259; AL-20, $129

AUDIOLOGIC
Randix Industries Ltd.
991 Broadway
Albany, N.Y. 12204

MX-901

Price	$119.95
Dimensions	10 3/16H x 6⅝W x 6¼D
Weight	5 lbs. 4 oz. (net)
Design	Bookshelf; mini
Type	Air suspension
Drivers	4" high-compliance woofer; 2½" dynamic midrange; 1" dome tweeter
Response	70 Hz to 19 kHz
Impedance	8 ohms
Max. power	45 watts (16.5 dBW)

Models also available

MX-650, $149.95

AUDIOMARKETING
Audiomarketing, Ltd.
652 Glenbrook Road
Stamford, Conn. 06906

Super Red Studio Monitor

Price	$1,350
Dimensions	47H x 30W x 17¾D
Weight	170 lbs. (net)
Design	Floorstanding
Type	Infinite baffle
Drivers	15" woofer with coaxial horn tweeter; 15" subwoofer
Response	40 Hz to 17 kHz, ±2 dB re 101 dB SPL at 1 meter at 1 watt
Sensitivity	100 dB SPL at 1 meter at 1 watt
Crossover	100 Hz; 3 kHz
Impedance	16 ohms
Min. power	5 watts (7 dBW)
Max. power	160 watts (22 dBW)
Controls	2 kHz shelving; 8 kHz shelving
Features	Mastering-lab frequency-dividing network

Little Red Studio Monitor

Price	$250
Dimensions	24H x 16W x 12D
Weight	45 lbs. (net)
Design	Floorstanding; bookshelf
Type	Acoustic suspension
Drivers	12" woofer; ⅝" dome/cone tweeter
Response	40 Hz to 18 kHz, ±2 dB re 92 dB SPL at 1 meter at 1 watt
Sensitivity	92 dB SPL at 1 meter at 1 watt
Crossover	2 kHz
Impedance	8 ohms
Min. power	10 watts (10 dBW)
Max. power	50 watts (17 dBW)
Controls	2 kHz peak/dip; 8 kHz shelving
Features	Frequency-dividing network

Models also available

Big Red Studio Monitor, $1,050

AUDIOMASTER
RCS Audio International, Inc.
1314 34th St., N.W.
Washington, D.C. 20007

MLS-4

Price	$275
Dimensions	24½H x 10¾W x 12½D
Weight	30 lbs. (net)
Design	Floorstanding
Type	Bass reflex
Drivers	8" Bextrene bass; 1" soft-dome tweeter
Response	50 Hz to 20 kHz, ±3 dB
Sensitivity	85 dB SPL at 1 meter at 1 watt
Crossover	3 kHz
Impedance	8 ohms
Min. power	15 watts (11.75 dBW)
Max. power	75 watts (18.75 dBW)
Controls	None
Features	Walnut-veneer cabinet

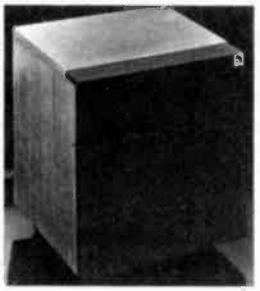
MLS-1

Price	$175
Dimensions	14½H x 9W x 7½D
Weight	12 lbs. (net)
Design	Bookshelf
Type	Acoustic suspension
Drivers	6" Bextrene bass; 1" soft-dome tweeter
Response	60 Hz to 20 kHz, ±4 dB
Sensitivity	84 dB SPL at 1 meter at 1 watt
Crossover	3 kHz
Impedance	8 ohms
Min. power	15 watts (11.75 dBW)
Max. power	60 watts (11.75 dBW)
Controls	None
Features	Walnut-veneer cabinet

Models also available
LS3/5A, $262.50

AUDIO PRO
Intersearch, Inc.
4720-Q Boston Way
Lanham, Md. 20801

A4-14



Price	$1,750/pr.
Dimensions	20¼H x 12⅛W x 10½D
Weight	35 lbs. (net)
Design	Floorstanding; bookshelf
Type	Biamplified, with built-in subwoofer
Drivers	Two 5" bass drivers; 4½" midrange; 1" dome tweeter
Response	30 Hz to 20 kHz, ±3 dB re 96 dB SPL at 1 meter at 1 watt
Sensitivity	96 dB SPL at 1 meter at 50 mV
Crossover	300 Hz; 2.5 kHz
Impedance	10K ohms
Controls	Volume; bass; bass blend; treble
Features	Automatic on/off; room-matching control compensates for placement in room to assure flat response at any location

B2-40

Price	$695
Dimensions	20¼H x 14¾W x 14¾D
Weight	40 lbs. (net)
Design	Floorstanding
Type	Subwoofer with built-in amplifier and variable crossover filters
Drivers	Two 7" cone drivers
Response	30 Hz to 0.2 kHz, +0, –3 dB re 100 dB SPL at 1 meter
Sensitivity	96 dB SPL at meter at 50 mV
Crossover	Variable
Impedance	10K ohms
Min. power	0.25μV (–66 dBW)
Controls	Volume; crossover frequencies
Features	Separate crossover frequencies for subwoofer and satellites; on/off signal actuated; ACE-bass subwoofer principle

Models also available
B2-50, $995; S2-7, $495/pr.

AUDIO PULSE
Audio Pulse Electronics, Inc.
4501 North Arden Drive
El Monte, Calif. 91731

AP-102

Price	$375/pr.
Dimensions	35H x 8¾W x 8¾D
Weight	40 lbs. (net)
Design	Floorstanding
Type	Ducted port
Drivers	Two 6" high-excursion woofers; two 2¼" cone tweeters (one faces the rear)
Response	40 Hz to 20 kHz
Impedance	8 ohms
Min. power	20 watts (13 dBW)
Max. power	100 watts (20 dBW)

AUDIO REPRODUCTION CO., LTD.
Import Audio, Ltd. (distributor)
13430 Clayton Road
St. Louis, Mo. 63131

202

Price	$1,595 (with stands)
Dimensions	25 7/10H x 12 7/10W x 14 1/10D
Design	Floorstanding
Type	Infinite baffle
Drivers	8" doped paper woofer/midrange; soft-dome tweeter
Impedance	8 ohms
Min. power	25 watts (14 dBW)
Max. power	150 watts (21.75 dBW)
Features	Black, walnut, or teak finishes

Models also available
101, $985 (with stands)

AVID
Avid Corp.
10 Tripps Lane
East Providence, R.I. 02914

330

Price	$450
Dimensions	30¼H x 17W x 10¼D
Weight	66 lbs. (net)
Design	Floorstanding
Type	Acoustic suspension
Drivers	12" woofer; 2" dome midrange; 1" dome tweeter
Response	35 Hz to 20 kHz, ±3 dB re 88 dB SPL at 1 meter at 1 watt
Sensitivity	88 dB SPL at 1 meter at 1 watt
Crossover	575 Hz; 5 kHz
Impedance	8 ohms
Min. power	15 watts (11.75 dBW)
Max. power	250 watts (24 dBW)
Controls	Midrange; tweeter
Features	Auto-reset overload protective circuit; full 5-year warranty; Minimum Diffraction Loudspeaker® design; magnetic fluids for midrange and tweeter

102a

Price	$175
Dimensions	25H x 15W x 9⅝D
Weight	38 lbs. (net)
Design	Bookshelf
Type	Acoustic suspension
Drivers	10" woofer; 1" dome tweeter
Response	44 Hz to 18 kHz, ±3 dB
Sensitivity	85 dB SPL at 1 meter at 1 watt
Crossover	2.2 kHz
Impedance	8 ohms
Min. power	15 watts (11.75 dBW)
Max. power	100 watts (20 dBW)
Controls	Tweeter control
Features	Fused tweeter; full 5-year warranty; Minimum Diffraction Loudspeaker® design

Models also available
230, $250; 110, $145; 80a, $99

AXIOM
Axiom Engineering Laboratories
9601 Owensmouth Ave., #6
Chatsworth, Calif. 91311

TLT-1a

Price	$508/pr. (West coast); 550/pr. (East coast)
Dimensions	38H x 13W x 13D
Weight	65 lbs. (net)
Design	Floorstanding
Type	Transmission line
Drivers	8" full range, damped cone; 1" vented dome tweeter
Response	35 Hz to 20 kHz, ±3 dB re 92 dB SPL at 1 meter at 1 watt
Sensitivity	92 dB SPL at meter at 1 watt
Crossover	4 kHz
Impedance	8 ohms
Min. power	15 watts (11.75 dBW)
Max. power	100 watts (20 dBW)
Controls	None
Features	Gold-plated input connectors; Monster Cable and 14-gauge silver-plated wire used to wire drivers internally; parquet pattern walnut-veneer top

Models also available
TLB-1, $370 (West Coast); $398 (East Coast)

BANG & OLUFSEN
Bang & Olufsen
515 Busse Road
Elk Grove Village, Ill. 60007

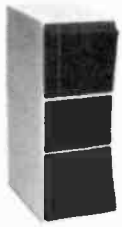
Beovox Phase-Link M100-2

Price $1,600/pr. (including stands)
Dimensions 29⅝H x 15⅝W x 12D
Weight 60 lbs. 8 oz. (net)
Type Vented
Drivers 12" bass; 4" phase-link filler driver; 2½" dome midrange; 1½" dome tweeter; ¾" dome supertweeter
Response 35 Hz to 22 kHz, ±4 dB
Crossover 500 Hz; 2.5 kHz; 8 kHz
Impedance 4 ohms
Min. power 20 watts (13 dBW)
Max. power 100 watts (20 dBW) continuous
Controls Tilt angle and height
Features Electronic protection circuit; linear phase response; rosewood veneer finish

Beovox Phase-Link S-75

Price $680/pr.
Dimensions 23⅛H x 21½W x 9¾D
Weight 24 lbs. 3 oz. (net)
Design Bookshelf
Type Pressure chamber
Drivers 10" woofer; 5" phase-link filler; 2" dome midrange; 1" dome tweeter
Response 42 Hz to 20 kHz, ±4 dB
Crossover 700 Hz; 4 kHz
Impedance 4 ohms
Min. power 20 watts (13 dBW)
Max. power 75 watts (18.75 dBW) continuous
Features Optional floor stands and wall-mount brackets; linear phase response/rosewood finish standard; oak, teak, or white optional

Beovox C-75



Price $500/pr.
Dimensions 12 3/16H x 4 3/16W x 7 13/16D
Weight 11 lbs. (net)
Design Mini
Type Log-line loading
Drivers Two 4" woofers; 1" dome tweeter
Response 75 Hz to 20 kHz, ±4 dB
Crossover 2.5 kHz
Impedance 6 ohms
Min. power 10 watts (10 dBW)
Max. power 70 watts (18.5 dBW)
Features Log-line loading to minimize environmentally caused acoustic problems from small rooms; linear phase response; black or brushed aluminum finish

Phase-Link P-30

Price $350/pr.
Dimensions 21¼H x 11½W x 4¼D
Weight 11 lbs. (net)
Design Panel
Type Pressure chamber
Drivers 6½" bass; 1" dome tweeter
Response 58 Hz to 20 kHz, ±4 dB
Crossover 3 kHz
Impedance 4 ohms
Min. power 10 watts (10 dBW) continuous
Max. power 30 watts (14.75 dBW) continuous
Features Wall-mounting panel speaker; linear phase response; rosewood finish standard; white or oak optional

S-30

Price $225/pr.
Dimensions 18¾H x 10¼W x 7¼D
Weight 11 lbs. (net)
Design Bookshelf
Type Acoustic suspension
Drivers 8" woofer; 1" dome tweeter
Response 75 Hz to 18 kHz, ±4 dB
Crossover 3 kHz
Impedance 4 to 8 ohms
Min. power 10 watts (10 dBW)
Max. power 30 watts (14.75 dBW)

Models also available

Beovox Phase-Link M-75, $980/pr. (including stands); Phase-Link P-45, $550/pr.; Phase-Link S-45/2, $395/pr.; C-30, $225/pr.

BELLES RESEARCH
Belles Research Corp.
A-1 Country Club Road
P.O. Box 65
East Rochester, N.Y. 14445

Belles 1

Price $375
Dimensions 33¾H x 15W x 17¼D
Weight 69 lbs. (net)
Design Floorstanding
Type Free-field system
Drivers 8" cone woofer; 10" cone passive radiator; 1" dome tweeter
Response 30 Hz to 20 kHz
Sensitivity 89 dB SPL at 1 meter at 1 watt
Crossover 2.7 kHz (18 dB/octave)
Impedance 8 ohms
Min. power 40 watts (16 dBW)
Max. power 200 watts (23 dBW)
Controls L-pad for high-frequency attenuation
Features Chamfered-edge baffle board for low diffraction; free-field suspended tweeter; rear-mounted passive radiator; binding post input terminals; system-protection fuse; walnut stand included

B.E.S. GEOSTATIC
Bertagni Electroacoustic Systems, Inc.
345 Fischer St.
Costa Mesa, Calif. 92626

SM-300

Price $549
Dimensions 53½H x 22W x 6¾D
Weight 63 lbs. (net)
Design Floorstanding
Type Pulsating diaphragm

Drivers Low-frequency dynamic acoustic coupler; mid-frequency dynamic acoustic coupler, high-frequency acoustic coupler, both with ferrous oil; piezoelectric tweeter
Response 30 Hz to 22 kHz, ±4 dB
Sensitivity 93 dB SPL at 1 meter at 1 watt
Crossover 500 Hz; 5 kHz; 10 kHz
Impedance 8 ohms
Min. power 25 watts (14 dBW)
Max. power 250 watts (24 dBW)
Controls Midrange; tweeter
Features 360-degree omnipolar dispersion; 1,750 sq. in. radiating surface; resettable circuit protector; biamplification

SM-255

Price $279
Dimensions 30¼H x 20W x 5¾D
Weight 34 lbs. (net)
Design Floorstanding
Type Pulsating diaphragm
Drivers Low-frequency dynamic acoustic coupler; high-frequency dynamic acoustic coupler with ferrous oil
Response 38 Hz to 19 kHz, ±5 dB
Sensitivity 91 dB SPL at 1 meter at 1 watt
Crossover 900 Hz
Impedance 8 ohms
Min. power 5 watts (7 dBW)
Max. power 180 watts (22.5 dBW)
Controls Tweeter
Features 360-degree omnipolar dispersion; 850 sq. in. radiating surface; resettable circuit protector

Models also available

SM-270, $389; SM-250, $199

BETA
Beta Sound, Inc.
14807 Venture Drive
Dallas, Texas 75234

Beta 075

Price $700
Dimensions 38¼H x 20¾W x 16½D
Weight 100 lbs. (net)
Design Floorstanding
Type Vented Thiele alignment bass section; mid- and high-horn loaded
Drivers 12" woofer; patented Beta midrange horn and compression driver; horn tweeter
Response 32 Hz to 18.5 kHz, ± 3 dB re 95 dB SPL at 1 meter at 1 watt
Sensitivity 95 dB SPL at 1 meter at 1 watt
Crossover 650 Hz; 4.8 kHz
Impedance 8 ohms
Min. power 15 watts (11.75 dBW)
Max. power 200 watts (23 dBW)
Controls None
Features Patented genuine walnut cabinet; limited 5-year transferable warranty; third-order crossover; available in black finish for professional use

Beta 045

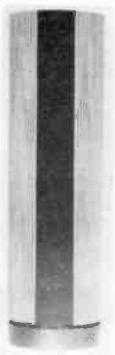
Price	$495
Dimensions	25¼H x 17¼W x 14¾D
Weight	70 lbs. (net)
Design	Floorstanding
Type	Vented Thiele alignment bass section; mid- and high-horn loaded
Drivers	12"woofer; patented Beta midrange horn and compression driver, horn tweeter
Response	45 Hz to 18.5 kHz, ±3 dB re 95 dB SPL at 1 meter at 1 watt
Sensitivity	95 dB SPL at 1 meter at 1 watt
Crossover	750 Hz; 4.8 kHz
Impedance	8 ohms
Min. power	15 watts (11.75 dBW)
Max. power	150 watts (21.75 dBW)
Controls	None
Features	Genuine walnut cabinet; limited 5-year transferable warranty; third-order crossover, optional riser; available in black finish for professional use

Models also available

Beta 065, $595

BEVERIDGE ELECTROSTATIC SPEAKER SYSTEMS
Harold Beveridge, Inc.
505 E. Montecito St.
Santa Barbara, Calif. 93103

System 3



Price	$3,900
Dimensions	78" x 21" diameter
Weight	360 lbs. (net)
Design	Floorstanding
Type	Electrostatic with dynamic subwoofer
Drivers	Electrostatic above 250 Hz; dynamic below 250 Hz
Response	28 Hz to 20 kHz, ±3 dB re 87 dB SPL at 1 meter at 1 watt
Sensitivity	86 dB SPL at 1 meter at 1 watt
Crossover	250 Hz
Impedance	8 ohms
Min. power	50 watts (17 dBW)
Max. power	300 watts (24.75 dBW)
Controls	Passive "Spectrum Slope" control included
Features	Cylindrical sound emission from a single line source, 200 Hz to 18 kHz; system may be biamped or used with one amp

Models also available

System 2SW-2, $7,700/pr. (including direct-drive tube amplifiers for electrostatics, electronic crossovers, and solid-state amplifiers for subwoofers)

B.I.C.
B.I.C./Avnet
South Service Road
Westbury, N.Y. 11590

TPR-600

Price	$419.95
Dimensions	41½H x 15¼W x 15¼D
Weight	77 lbs. (net)
Design	Floorstanding
Type	Venturi-loaded
Drivers	12" subwoofer; 1½" compression midrange; solid-state tweeter
Response	93 dB SPL at 1 meter at 1 watt
Impedance	6 to 8 ohms
Min. power	3 watts (4.75 dBW)
Max. power	130 watts (21 dBW)
Features	Total power radiation; non-critical speaker placement; finished on all four sides; see-through black grille supplied

TPR-200

Price	$249.95
Dimensions	32¾H x 11¼W x 11¼D
Weight	46 lbs. (net)
Design	Floorstanding
Type	Venturi-loaded
Drivers	8" subwoofer; 1½" compression midrange; solid-state tweeter
Response	90 dB SPL at 1 meter at 1 watt
Impedance	6 to 8 ohms
Min. power	5 watts (7 dBW)
Max. power	75 watts (18.75 dBW)
Features	Total power radiation; non-critical speaker placement; finished on all four sides; see-through black grille supplied

Models also available

TPR-400, $349.95; TPR-100, $129.95

BLACKMAX
BlackMax Systems, Inc.
P.O. Box 23335
Louisville, KY. 40223

ROCK MONITOR SERIES

Rock Monitor 12

Price	$499
Dimensions	48H x 15W x 10½D
Weight	60 lbs. (net)
Design	Floorstanding
Type	Slot-loaded column
Drivers	12" woofer; two 5" midrange drivers; 2" tweeter
Response	30 Hz to 20 kHz
Sensitivity	92 dB SPL at 1 meter at 1 watt
Crossover	1 kHz; 5 kHz
Impedance	8 ohms
Min. power	10 watts (10 dBW)
Max. power	200 watts (23 dBW)
Controls	Midrange; tweeter
Features	Circuit breaker; special tweeter-protection circuit

Rock Monitor 8

Price	$299
Dimensions	36H x 12W x 10½D
Weight	39 lbs. (net)
Design	Floorstanding
Type	Slot-loaded column
Drivers	8" woofer; 5" midrange; 2" tweeter
Response	40 Hz to 20 Hz
Sensitivity	92 dB SPL at 1 meter at 1 watt
Crossover	1.5 Hz; 5 kHz
Impedance	8 ohms
Min. power	10 watts (10 dBW)

Max. power	100 watts (20 dBW)
Controls	Midrange; tweeter
Features	Circuit breaker; special tweeter-protection circuit

Models also available

Rock Monitor 10, $399

BOSE
Bose Corp.
100 The Mountain Road
Framingham, Mass. 01701

901 Series IV

Price	$475 each (incl. equalizer)
Dimensions	12⅜H x 21W x 13D
Weight	35 lbs. (net)
Type	Acoustic Matrix®
Drivers	9 full-range drivers with helical voice coils
Response	Not reported due to reflective nature of product; conventional response measurements inadequate
Impedance	8 ohms
Min. power	10 watts (10 dBW)
Max. power	No limitation for non-commercial applications
Controls	Active equalizer for low- and high-frequency compensation controls
Features	Direct/Reflecting® design; active equalization

501

Price	$240
Dimensions	24H x 14½W x 14½D
Weight	48 lbs. (net)
Type	Acoustic suspension
Drivers	Two 3½" cone tweeters; 10" woofer
Response	Not reported due to reflective nature of product; conventional response measurements inadequate
Crossover	1.5 kHz and 3 kHz dual-frequency crossover system
Impedance	4 ohms
Min. power	20 watts (13 dBW)
Max. power	150 watts (21.75 dBW)
Controls	Direct-energy control adjusts ratio of reflected to direct sound for greater spatial balance
Features	Floor-standing Direct/Reflecting® speaker; uses a direct-radiating woofer and two tweeters for rear and side sound radiation; utilizes asymmetrical design

Interaudio Model 1

Price $168/pr.
Dimensions 14H x 9W x 7D
Weight 14 lbs. 8 oz. (net)
Type Ported
Drivers 6" woofer; 2" dome
Crossover 2.2 kHz
Impedance 8 ohms
Min. power 10 watts (10 dBW)
Max. power 60 watts (17.75 dBW)
Features Compact bookshelf designed for flat total power radiation, clarity, and detail

Models also available

601, $325; 301 Bookshelf Speaker, $130

BOSTON ACOUSTICS
Boston Acoustics, Inc.
130 Condor St.
Boston, Mass. 02128

A-200

Price $350
Dimensions 41H x 21W x 6⅜D
Weight 58 lbs. (net)
Design Floorstanding
Type Acoustic suspension
Drivers 10" woofer; 4 ½" midrange; 1" dome tweeter
Response 36 Hz to 20 kHz, ±3 dB re 90 dB SPL at 1 meter at 1 watt
Sensitivity 90 dB SPL at 1 meter at 1 watt
Crossover 450 Hz; 3 kHz
Impedance 8 ohms
Min. power 16 watts (12 dBW)
Max. power 300 watts (24.75 dBW)
Controls None
Features Designed to operate as part of a room by integrating with the wall and floor with simple and convenient placement; relatively flat impedence curve makes it an easy load to drive

A-100

Price $180
Dimensions 31½H x 16½W x 8D
Weight 44 lbs. (net)
Design Floorstanding; bookshelf
Type Acoustic suspension
Drivers 10" woofer; 1" dome tweeter
Response 39 Hz to 20 kHz, ±3 dB re 89 dB SPL at 1 meter at 1 watt
Sensitivity 89 dB SPL at 1 meter at 1 watt
Crossover 1.6 kHz
Impedance 8 ohms
Min. power 15 watts (11.75 dBW)
Max. power 150 watts (21.75 dBW)
Controls None
Features Also available in oak-veneer cabinet for $200; optional pedestal base; $15/pr.

Models also available

A-70, $130

BOZAK
Bozak, Inc.
587 Connecticut Ave.
Norwalk, Conn. 06854

CS-310B Concert Grand

Price Contemporary cabinet; $1,299; classic cabinet (CS-410CL), $1,399; Moorish cabinet (CS-410M), $1,425
Dimensions 52H x 36W x 19D
Weight 225 lbs. (net)
Design Floorstanding
Type Infinite baffle
Drivers Four 12" woofers; two 6½" midrange; eight 2" tweeters
Response 28 Hz to 20 kHz
Crossover 400 Hz; 2.5 kHz
Impedance 8 ohms (nominal)
Min. power 60 watts (17.75 dBW)
Max. power 300 watts (24.75 dBW)
Features Factory-equipped for conventional or biamp operation

CS-4000A Symphony No. 1

Price Modern cabinet, $799; classic cabinet, $899; moorish cabinet, $950
Dimensions 44½H x 26¼W x 15⅝D
Weight 165 lbs. (net)
Design Floorstanding
Type Infinite baffle
Drivers Two 12" variable density woofers; 6½" aluminum-cone midrange; eight 2" aluminum-cone tweeters
Response 35 Hz to 20 kHz
Crossover 400 Hz; 2.5 kHz
Impedance 8 ohms
Min. power 50 watts (17 dBW)
Max. power 200 wattts (23 dBW)
Features Factory-equipped for conventional or biamp operation

LS-400A

Price $349
Dimensions 25H x 18W x 13D
Weight 65 lbs. (net)
Design Floorstanding
Type Infinite baffle
Drivers 12" treated variable-density woofer; 6" aluminum-cone midrange; 1" soft-dome tweeter
Response 40 Hz to 20 kHz, ±3 dB re 90 dB SPL at 1 meter at 1 watt on axis
Sensitivity 87 dB SPL at 1 meter at 1 watt on axis
Crossover 500 Hz at 6 dB/octave; 3 kHz at 18 dB/octave
Impedance 8 ohms (nominal)
Min. power 10 watts (10 dBW)
Max. power 200 watts (23 dBW)
Controls 3-position contour switch
Features Crossover incorporates 6 dB/octave and 18 dB/octave slopes; driver impedance compensation

MB-80 Mini

Price $499.95/pr.
Dimensions 12½H x 8W x 7D
Weight 16 lbs. (net)
Design Bookshelf; mini
Type Acoustic Suspension
Drivers 6" aluminum-cone bass/midrange; 1" soft-dome tweeter
Response 80 Hz to 20 kHz, ±3 dB re 90 dB SPL at 1 meter at 1 watt on axis
Sensitivity 81 dB SPL at 1 meter at 1 watt on axis
Crossover 1.6 kHz
Impedance 8 ohms
Min. power 35 watts (15.5 dBW)
Max. power 250 watts (24 dBW)

B-1002 Bard

Price $179
Dimensions 21H x 12W x 18 diameter
Weight 25 lbs. (net)
Design Floorstanding
Type Infinite baffle
Drivers 8" aluminum-cone bass/midrange; 2" aluminum-cone tweeter
Response 50 Hz to 20 kHz
Crossover 1.8 kHz
Impedance 8 ohms (nominal)
Min. power 12 watts (10.75 dBW)
Max. power 60 watts (17.75 dBW)
Features Completely weatherproofed; also suitable for indoor use

Models also available

CS-4005A Symphony No. 2, Century cabinet, $799; CS-501A Concerto 7, $499; LS-250A, $219; LS-200A, $129

BRAUN
Adcom Co.
9 Jules Lane
New Brunswick, N.J. 08901

L-300

Price $449.95/pr.
Dimensions 10H x 6¼W x 6¾D
Weight 31 lbs./pr. (net)
Design Mini
Type Acoustic suspension minispeaker
Drivers 5⅛" high-compliance, long-throw woofer; 2" hemispherical dome midrange; ¾" hemispherical wide-dispersion dome
Response 35 Hz to kHz re 86 dB SPL at 1 meter at 1 watt
Sensitivity 86 dB SPL at 1 meter at 1 watt
Crossover 600 Hz; 3 kHz
Impedance 8 ohms
Min. power 10 watts (10 dBW)
Max. power 40/50 watts (16/17 dBW)
Features Computer-designed crossover

IC-1002

Price $360/pr.
Dimensions 13½H x 9W x 7D
Weight 15 lbs. 6 oz. (net)
Design Bookshelf
Type Acoustic suspension
Drivers 7" woofer; 2" cone midrange; ¾" dome tweeter
Response 38 Hz to 25 kHz
Sensitivity 86 dB SPL at 1 meter at 1 watt
Crossover 700 Hz; 5 kHz

Impedance 8 ohms
Min. power 15 watts (11.75 dBW)
Max. power 80 watts (19 dBW)
Features Curved corners, walnut cabinet with black grille

Output C

Price $269.95/pr.
Dimensions 6¾H x 4¼W x 4⅜D
Weight 14 lbs. (net)
Design Mini
Type Acoustic suspension minispeaker
Drivers 4" long-throw, high-compliance woofer; 1" hemispherical wide-dispersion dome tweeter
Response 50 Hz to 25 kHz, 90 dB SPL at 1 meter at 1 watt
Sensitivity 84 dB SPL at 1 meter at 1 watt
Crossover 1.5 kHz
Impedance 8 ohms
Min. power 10 watts (10 dBW)
Max. power 35/50 watts (15.5/17 dBW)
Features Aluminum cabinet; computer-designed filter network; the original miniature loudspeaker

Models also available

L-200, $289/pr.; IC-1004, $250; IC-1003, $212.50

B & W
Anglo-American Audio
Box 653
Buffalo, N.Y. 14240

802

Price $1,145
Dimensions 41H x 11¾W x 14½D
Weight 70 lbs. (net)
Design Floorstanding
Type Acoustic suspension
Drivers Woofer; midrange; tweeter
Response 55 Hz to 20 kHz, ±2 dB
Sensitivity 85 dB SPL at 1 meter at 1 watt
Crossover 400 Hz; 3 kHz
Impedance 8 ohms
Min. power 50 watts (17 dBW)
Features Electron overload protect circuit; optional top cover: $125

DM2/II

Price $545
Dimensions 28H x 10⅝W x 13D
Weight 48 lbs. 8 oz. (net)
Design Floorstanding
Type Woofer (vented port); midrange (transmission line)
Drivers Woofer; midrange; tweeter
Response 50 Hz to 18 kHz, ±3 dB
Sensitivity 85 dB SPL at 1 meter at 1 watt
Crossover 400 Hz; 3 kHz
Impedance 8 ohms
Min. power 25 watts (14 dBW)
Max. power 100 watts (20 dBW)
Features Fuse protection; includes floor stand

DM-12

Price $310
Dimensions 14H x 8¾W x 10½D
Weight 21 lbs. (net)
Design Floorstanding; bookshelf; mini
Type Acoustic suspension
Drivers Woofer; midrange; tweeter
Response 85 Hz to 20 kHz, ±2 dB
Sensitivity 85 dB SPL at 1 meter at 1 watt
Crossover 4.5 Hz
Impedance 8 ohms
Min. power 15 watts (11.75 dBW)
Features Automatic overload control

Models also available

801, $1,465; DM-7 Mk. 2, $625; DM-14, $445; DM-11, $205

BYERS
Stephens-Byers Corp.
2218 Old Middlefield Way
Mountain View, Calif. 94043

1031TC

Price $670
Dimensions 38H x 14W x 14D (bottom); 7H x 14W x 14D (top)
Weight 63 lbs. (net) (bottom); 19 lbs. (net) (top)
Design Floorstanding
Type Inductive ported bass; separate tweeter; 10" 4-layer cone woofer; 3" textile dome midrange; textile dome tweeter
Response 25 Hz to 22 kHz, ±3 dB re 89 dB SPL at 1 meter at 1 watt
Sensitivity 89 dB SPL at 1 meter at 1 watt
Crossover 900 Hz; 6 kHz
Impedance 8 ohms
Min. power 10 watts (10 dBW)
Max. power 350 watts (25.5 dBW)
Controls Continuous for frequency and room balance; midrange; tweeter
Features Component system for acoustic arrangements such as imaging, relative phasing, satellite or combined Mylar/air core filter sections or multi-amping option; low distortion; impedance corrective loading

501T

Price $175
Dimensions 34H x 7½W x 7½D
Weight 30 lbs. (net)
Design Floorstanding
Type Inductive ported tower
Drivers 5" long-throw woofer; 1" textile dome tweeter
Response 50 Hz to 20 kHz, ±3 dB re 89 dB SPL at 1 meter at 1 watt
Sensitivity 89 dB SPL at 1 meter at 1 watt
Crossover 1.5 kHz
Impedance 8 ohms
Min. power 5 watts (7 dBW)
Max. power 50 watts (17 dBW)
Controls Tweeter
Features Fused; Mylar/air core choke filters

Models also available

821TC, $515; 501R, $110

CAMBRIDGE/CYBERVOX
Hammond Industries, Inc.
155 Michael Drive
Syosset, N.Y. 11791

TL-200

Price $500
Dimensions 41½H x 13W x 17⅝D
Weight 82 lbs. (net)
Type Transmission line
Drivers 4 KEF bass; midrange; treble
Crossover 400 Hz; 3 kHz; 10 kHz
Impedance 8 ohms
Min. power 15 Watts (11.75 dBW)
Max. power 90 Watts (19.5 dBW)
Features Each pair matched electrically and visually

CAMBRIDGE PHYSICS
Cambridge Physics Corp.
26 Fox Road
Waltham, Mass. 02154

310

Price $349
Dimensions 26⅜H x 15¼W x 13D
Weight 50 lbs. (net)
Design Bookshelf
Type Acoustic suspension
Drivers 10" woofer; 4½" midrange; 1" dome tweeter
Response 30 Hz to 20 kHz, ±1.5 dB
Sensitivity 84 dB SPL at 1 meter at 1 watt
Crossover 520 Hz; 4 kHz
Impedance 8 ohms
Min. power 50 watts (17 dBW)
Max. power 200 watts (23 dBW)
Controls Midrange, tweeter
Features Liquid-coded midrange; specially designed surround smooths out midrange response

210

Price $209
Dimensions 24H x 14W x 12D
Weight 38 lbs. (net)
Design Bookshelf
Type Acoustic suspension
Drivers 10" woofer; 1⅜" midrange/tweeter
Response 38 Hz to 20 kHz, ±1.5 dB
Sensitivity 86 dB SPL at 1 meter at 1 watt
Crossover 950 Hz
Impedance 8 ohms
Min. power 35 watts (15.5 dBW)
Max. power 150 watts (21.75 dBW)
Controls Tweeter level; 2-position brilliance switch includes unique "vented-pole" system; brilliance switch allows for operation as a three-way system; full series crossover

Models also available

612, $1,500; 208, $144

CANTON
Adcom Co.
9 Jules Lane
New Brunswick, N.J. 08901

GLE-100

Price $499.95
Dimensions 13 3/5H x 22W x 11½D
Weight 36 lbs. (net)
Design Floorstanding
Type Acoustic suspension
Drivers 12" woofer; 1½" dome midrange; ¾" dome tweeter
Response 22 Hz to 30 kHz
Crossover 800 Hz; 2.6 kHz
Impedance 4/8 ohms
Min. power 20 watts (13 dBW)
Max. power 150 watts (21.75 dBW)
Features Mirror-imaged pairs; curved corners in walnut with brown grilles; German styling

Gamma 800L

Price $339.95
Dimensions 11H x 11W x 11D
Weight 22 lbs. (net)
Design Bookshelf
Type Acoustic suspension

Drivers	8" woofer; 1¼" dome midrange; ¾" dome tweeter
Features	Cube-shaped in black European styling

GLE-50

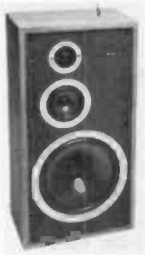
Price	$249.95
Dimensions	8 4/5H x 12 2/5W x 7 1/5D
Weight	17 lbs. (net)
Design	Bookshelf
Type	Acoustic suspension
Drivers	8" long-throw woofer on die-cast metal basket; 1 1/5" soft-dome midrange on die-cast alloy plate; 8/10" wide-dispersion tweeter on cast-alloy plate
Response	36 Hz to 30 kHz
Crossover	800 Hz; 22 kHz
Impedance	4 to 8 ohms
Min. power	20 watts (13 dBW)
Max. power	50/80 watts (17/19 dBW)
Features	Finished in genuine walnut veneer

CELESTION
Celestion Industries, Inc.
Kuniholm Drive, Box 521
Holliston, Mass. 01746

Ditton 551

Price	$525
Dimensions	28½H x 15½W x 13D
Weight	55 lbs. (net)
Type	Vented
Drivers	10" woofer; 2" dome midrange; 1" dome tweeter
Response	38 Hz to 20 kHz, ±3 dB re 85 dB SPL at 1 meter at 1 watt
Sensitivity	85 dB SPL at 1 meter at 1 watt
Crossover	600 Hz; 4.5 kHz
Impedance	8 ohms
Min. power	20 watts (13 dBW)
Max. power	140 watts (21.5 dBW)
Controls	Midrange and tweeter adjustable from +2 dB lift to 6 dB cut
Features	Fused tweeter; mirror-imaged pairs

Ditton 442



Price	$475
Dimensions	30H x 15⅜W x 11 7/16D
Weight	52 lbs. 13 oz. (net)
Type	Acoustic suspension
Drivers	12" woofer; 6" cone midrange; 1" dome tweeter
Response	45 Hz to 20 kHz, ±3 dB re 85.5 dB SPL at 1 meter at 1 watt
Crossover	600 Hz; 4.5 kHz
Impedance	8 ohms
Min. power	20 watts (13 dBW)
Max. power	120 watts (20.75 dBW)
Features	Fused tweeter; mirror-imaged pairs

Ditton 200

Price	$300
Dimensions	23¼H x 12¾W x 10¼D
Weight	25 lbs. 5 oz. (net)
Design	Bookshelf
Type	Passive radiator
Drivers	Two 8" cone woofers in tandem; 1" dome tweeter
Response	55 Hz to 20 kHz, ±3 dB re 87 dB SPL at 1 meter at 1 watt
Crossover	3 kHz
Impedance	8 ohms
Min. power	10 watts (10 dBW)
Max. power	80 watts (19 dBW)

CS-5

Price	$250
Dimensions	22½H x 13¼W x 11D
Weight	30 lbs. (net)
Design	Bookshelf
Type	Acoustic suspension
Drivers	10" cast woofer; 5" cone midrange; 1" dome tweeter
Response	55 Hz to 20 kHz, ±3 dB re 87 dB SPL at 1 meter at 1 watt
Crossover	750 Hz; 5 kHz
Impedance	4 to 8 ohms
Min. power	10 watts (10 dBW)
Max. power	80 watts (19 dBW)
Features	Walnut or vinyl finish

Ditton 130

Price	$200
Dimensions	19H x 9¾W x 9½D
Weight	17 lbs. 3 oz. (net)
Design	Bookshelf
Type	Acoustic suspension
Drivers	8" cone woofer; 1" dome tweeter
Response	60 Hz to 20 kHz, ±3 dB re 87 dB SPL at 1 meter at 1 watt
Crossover	3 kHz
Impedance	8 ohms
Min. power	10 watts (10 dBW)
Max. power	50 watts (17 dBW)
Features	Walnut vinyl cabinet

CS-3

Price	$150
Dimensions	19¼H x 9½W x 10¼D
Weight	18 lbs. (net)
Design	Bookshelf
Type	Acoustic suspension
Drivers	8" cone woofer; 1" dome tweeter
Response	62 Hz to 20 kHz, ±3 dB re 86 dB SPL at 1 meter at 1 watt
Sensitivity	86 dB SPL at 1 meter at 1 watt
Crossover	25 kHz
Impedance	4 to 8 ohms
Min. power	10 watts (10 dBW)
Max. power	50 watts (17 dBW)
Features	Walnut or vinyl finish

Models also available

Ditton 662, $789; Ditton 332, $380; CS-7, $340; Ditton 150, $250; UL-6, $250; Ditton 15XR, $199; 121, $105

CERWIN-VEGA
Cerwin-Vega
12250 Montague St.
Arleta, Calif. 91331

SR-2

Price	$3,400/pr.
Dimensions	52½H x 25W x 20D
Design	Floorstanding
Type	Vented reflex enclosure 18" stroker woofer; 12" mid-axial driver with acoustic filter
Response	28 Hz to 18 kHz, ±2 dB
Sensitivity	100 dB SPL at 1 meter at 1 watt
Crossover	150 Hz
Impedance	8 ohms
Min. power	350 watts (25.5 dBW)
Max. power	1000 watts (30 dBW)
Controls	Midrange; treble thermo-vapor suspension

S-1

Price	$435
Dimensions	25H x 14½W x 14D
Weight	55 lbs. (net)
Type	Ported reflex
Drivers	12" woofer; 6½" cone midrange; super-Dhorm tweeter
Response	28 Hz to 20 kHz, ±4 dB re 98 dB SPL at 1 meter at 1 watt
Crossover	300 Hz; 4 kHz
Impedance	8 ohms
Min. power	5 watts (7 dBW)
Max. power	200 watts (23 dBW) continuous
Controls	Midrange; tweeter
Features	Thermo-vapor suspension; includes DB-10 bass turbocharger with system pair

15SW

Price	$380
Type	Ported reflex
Drivers	15" woofer (direct-radiating) bass
Response	30 Hz to 250 Hz, ±4 dB re 100 dB; SPL at 1 meter at 1 watt
Crossover	250 Hz;
Impedance	8 ohms
Min. power	5 watts (7 dBW)
Max. power	150 watts (21.75 dBW)

A-10

Price	$202
Dimensions	24H x 13W x 11½D
Weight	38 lbs. (net)
Type	Ported reflex
Drivers	10" cone bass; 1 1/10" Dhorm tweeter
Response	38 Hz to 20 kHz, ±4 dB re 92 dB SPL at 1 meter at 1 watt
Crossover	2 kHz
Impedance	8 ohms
Min. power	5 watts (7 dBW)
Max. power	40 watts (16 dBW)
Controls	High-frequency level
Features	Circuit-breaker protection for high-frequency driver; black walnut-veneer finish

Models also available

316R, $499; 12TR, $470 (net); 313, $330; A-123, $310

CHARTWELL
Reference Monitor
International, Inc.
2380 C Camino Vida Roble
Carlsbad, Calif. 92008

PM-450 (Passive)

Price	$2,600/pr.
Dimensions	30H x 18W x 16¼D
Weight	70 lbs. 8 oz. (net)
Type	Bass reflex
Drivers	12" polypropylene woofer; 1¼" soft-dome tweeter
Response	40 Hz to 20 kHz, ±3 dB
Sensitivity	94 dB SPL at 1 meter at 1 watt
Crossover	2 kHz
Impedance	8 ohms
Min. power	30 watts (14.75 dBW)
Max. power	350 watts (25.5 dBW)
Features	Utilizes new low-coloration polypropylene cones

PM-210

Price	$920/pr.
Dimensions	26H x 13½W x 11¼D
Weight	33 lbs. (net)
Design	Bookshelf
Type	Bass reflex
Drivers	8" polypropylene bass/midrange; fabric-dome tweeter
Response	50 Hz to 20 kHz, ±3 dB
Sensitivity	89 dB SPL at 1 meter at 1 watt
Crossover	2.8 kHz
Impedance	8 ohms
Min. power	10 watts (10 dBW)
Max. power	100 watts (20 dBW)
Features	Utilizes new low-coloration cones

LS3/5A

Price	$599/pr.
Dimensions	12H x 7½W x 6¼D
Weight	11 lbs. 8 oz. (net)
Design	Mini
Type	Acoustic suspension
Drivers	4½" bass/midrange; dome tweeter
Response	60 Hz to 20 kHz, ±4 dB
Crossover	3 kHz
Impedance	15 ohms
Min. power	25 watts (14 dBW)
Max. power	25 watts (14 dBW)
Features	Designed by the BBC

Models also available

PM-410, $1,650/pr.; PM-110, $599/pr.

CIZEK
Cizek Audio Systems, Inc.
15 Stevens St.
Andover, Mass. 01810

KA-1 Classic

Price	$295
Dimensions	13 1/16H x 9W x 8¾D
Weight	40 lbs./pr. (net)
Design	Bookshelf
Type	Acoustic suspension
Drivers	6½" woofer; 1" hemispherical dome tweeter
Response	70 Hz to 20 kHz, ±3 dB re 88 dB SPL at 1 meter at 1 watt
Sensitivity	88 dB SPL at 1 meter at 1 watt
Crossover	1.5 kHz
Impedance	4 ohms
Min. power	15 watts (11.75 dBW)
Max. power	200 watts (23 dBW)
Features	Solid koa wood with Acuthane® baffle; acoustically transparent foam grille

SW-1 Sound Window

Price	$159/pr.
Dimensions	12H x 12W x 3½D
Weight	20 lbs./pr. (net)
Type	Acoustic suspension
Drivers	6½" woofer; 1¾" cone tweeter
Response	100 Hz to 17 kHz, ±3 dB re 88 dB SPL at 1 meter at 1 watt
Crossover	3 kHz
Impedance	4 ohms
Min. power	15 watts (11 dBW)
Max. power	100 watts (20 dBW)
Features	Solid Acuthane® with oak finish; accoustically transparent foam grille

3

Price	$115
Dimensions	19H x 11¾W x 7½D
Weight	27 lbs. (net)
Design	Bookshelf
Type	Acoustic suspension
Drivers	8" woofer; 1" hemispherical dome tweeter
Response	42 Hz to 17 kHz, ±2 dB re 88 dB SPL at 1 meter at 1 watt
Crossover	1.5 kHz
Impedance	4.25 ohms, ±0.5 ohms from 100 Hz to 15 kHz; with Q adjustment in the 0.8 position, impedance is 7.25 ohms.
Min. power	15 watts (11.75 dBW)
Max. power	200 watts (23 dBW)
Controls	Tweeter level; Q adjustment

CLARKE SYSTEMS
Clarke Systems, Inc.
359C Governor's Way
South Windsor, Conn. 06074

Precedent

Price	$299
Dimensions	31H x 15W x 14D
Weight	60 lbs. (net)
Design	Floorstanding
Type	Acoustic suspension
Drivers	Three 12" woofers; 4½" midrange; 1" dome tweeter
Response	35 Hz to 20 kHz, ±4 dB re 89 dB SPL at 1 meter at 1 watt
Sensitivity	89 dB SPL at 1 meter at 1 watt
Crossover	500 Hz; 4 kHz
Impedance	8 ohms
Min. power	20 watts (13 dBW)
Max. power	100 watts (20 dBW)
Controls	None
Features	All high-grade 5% Mylar film capacitors used in crossover (instead of conventional poor tolerance non-polar type); midrange unit loaded into its own subenclosure, which is selectively tuned, damped, and vented out rear of cabinet

Encore

Price	$185
Dimensions	22H x 12W x 12D
Weight	32 lbs. (net)
Design	Bookshelf
Type	Tuned port
Drivers	Two 8" woofers; 1" dome tweeter
Response	45 Hz to 20 kHz, ±4 dB re 89 dB SPL at 1 meter at 1 watt
Sensitivity	89 dB SPL at 1 meter at 1 watt
Crossover	3.5 kHz
Impedance	8 ohms
Min. power	15 watts (11.75 dBW)
Max. power	60 watts (18 dBW)
Controls	None
Features	5% test Mylar film crossover network

Tempo

Price	$109
Dimensions	17½H x 10W x 9¾D
Weight	21 lbs. (net)
Design	Bookshelf
Type	Tuned port
Drivers	Two 8" woofers; 1½" ring tweeter
Response	55 Hz to 18 kHz, ±4 dB re 90 dB SPL at 1 meter at 1 watt
Sensitivity	90 dB SPL at 1 meter at 1 watt
Crossover	5 kHz
Impedance	8 ohms
Min. power	10 watts (10 dBW)
Max. power	50 watts (17 dBW)
Controls	None
Features	Mylar film crossover

L-1

Price	$219
Dimensions	17H x 9W x 10¼D
Weight	29 lbs. (net)
Design	Bookshelf
Type	Transmission line
Drivers	6½" woofer; 1" Bextrene plastic dome tweeter
Response	50 Hz to 19 kHz, ±3 dB re 86 dB SPL at 1 meter at 1 watt
Sensitivity	86 dB SPL at 1 meter at 1 watt
Crossover	2.5 kHz
Impedance	7 ohms
Min. power	30 watts (14.75 dBW)
Max. power	70 watts (18.5 dBW)

Models also available

Premiere, $219; Prelude, $129

CONCEPT
CBS Retail Stores
1313 53rd St.
Emeryville, Calif. 94608

CEM

Price	$595
Dimensions	45H x 18W x 15½D
Weight	102 lbs. (net)
Design	Floorstanding
Type	Passive radiator
Drivers	Heil air-motion transformer; midrange/tweeter
Response	25 Hz to 23 kHz, ±3 dB
Crossover	1.3 kHz at 18 dB
Impedance	6 ohms
Min. power	25 watts (14 dBW)
Controls	Midrange; tweeter
Features	Room-resonance compensation control

CE-2

Price	$345
Dimensions	25½H x 14W x 14¼D
Weight	54 lbs. (net)
Type	Passive radiator
Drivers	10" cast woofer; Heil air-motion transformer
Response	35 Hz to 23 kHz, ±3 dB
Crossover	1.5 kHz at 18 dB
Impedance	6 ohms

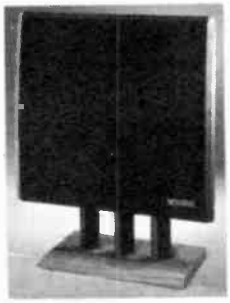
Min. power	20 watts (13 dBW)
Controls	Midrange; tweeter
Features	LED power indicator

Models also available

CE-1, $445

DAHLQUIST
Dahlquist, Inc.
601 Old Willets Path
Hauppauge, N.Y. 11787

DQ-10



Price	$500
Dimensions	31½H x 30½W x 9D
Weight	50 lbs. (net)
Design	On stands
Type	Phased array; acoustic suspension
Drivers	10" woofer; 5" midwoofer; 2" dome midrange; ¾" dome tweeter; piezoelectric supertweeter
Response	37 Hz to 27 kHz
Crossover	400 Hz; 1 kHz; 6 kHz; 12.5 kHz
Impedance	8 ohms
Min. power	60 watts (17.75 dBW)
Max. power	200 watts (23 dBW) with protective fuses
Controls	Continuously variable tweeter control for boost or cut slope
Features	Patented solutions to problems of inertial time delay and baffle edge diffraction

DQ-1W Low Bass Module

Price	$350
Dimensions	26H x 18½W x 14 4/5D
Weight	70 lbs. (net)
Design	Floorstanding
Type	Acoustic suspension
Drivers	13" woofer in heavy cast frame
Response	20 to 120 Hz
Crossover	Depends upon main system to which it is crossed over (external crossover required)
Impedance	8 ohms
Min. power	60 watts (17.75 dBW)
Max. power	200 watts (23 dBW) with protective fuse
Controls	None
Features	Unit typically adds an octave of accurate low bass response to speaker systems; available with black or white grille cloth; walnut or oak finish

Models also available

DQM-9, $600; DQM-7, $400

DALCO
Dalco Mfg. Co., Inc.
Speaker Works Div.
2nd & Westmoreland Sts.
Philadelphia, Pa. 19140

MW-BC II Subwoofer

Price	$749
Dimensions	24H x 30W x 21D
Weight	140 lbs. (net)
Design	Floorstanding
Type	Subwoofer
Drivers	Two 12" single voice-coil woofer
Response	20 Hz to 100 Hz, ±2.5 dB
Sensitivity	88 dB SPL at 1 meter at 1 watt
Crossover	100 Hz
Impedance	8 ohms
Min. power	15 watts (11.75 dBW)
Max. power	200 watts (23 dBW)
Controls	Two bypass switches
Features	Built-in passive crossover network

MW-Disco

Price	$459
Dimensions	30H x 20W x 14D
Weight	65 lbs. (net)
Design	Floorstanding
Type	Bass reflex
Drivers	15" woofer; 2" soft-dome (Hexacoil) midrange; piezoelectric tweeter
Response	60 Hz to 30 kHz, ± 5 dB
Sensitivity	98 dB SPL at 1 meter at 1 watt
Crossover	2 kHz; 5 kHz
Impedance	8 ohms
Min. power	2 watts (3 dBW)
Max. power	150 watts (21.75 dBW)
Controls	None
Features	Available in black or walnut finish

SW-3

Price	$199
Dimensions	22¼H x 13¼W x 10⅞D
Weight	38 lbs. (net)
Design	Bookshelf
Type	Acoustic suspension
Drivers	10" high-compliance woofer; 5" midrange; 1" soft-dome tweeter
Response	30 Hz to 20 kHz, ±3 dB
Sensitivity	89 dB SPL at 1 meter at 1 watt
Crossover	900 Hz; 45 kHz
Impedance	8 ohms
Min. power	8 watts (9 dBW)
Max. power	70 watts (18.5 dBW)
Controls	Midrange L-pad; tweeter L-pad

MW-II

Price	$185
Dimensions	12H x 7⅞W x 4¾D
Weight	16 lbs. (net)
Design	Mini
Type	Acoustic suspension
Drivers	6" high-compliance woofer; 1¼" soft-dome tweeter (Hexacoil)
Response	55 Hz to 30 kHz, ±3 dB
Sensitivity	93 dB SPL at 1 meter at 1 watt
Crossover	3 kHz
Impedance	8 ohms
Min. power	3 watts (4.75 dBW)
Max. power	125 watts (21 dBW)
Controls	None
Features	Metal housing; bracket-mountable

MW-1

Price	$129
Dimensions	9¼H x 5¾W x 4½D
Weight	12 lbs. (net)
Design	Mini
Type	Acoustic suspension
Drivers	4½" high-compliance woofer; 1" soft-dome tweeter
Response	80 Hz to 20 kHz, ±3 dB
Sensitivity	86 dB SPL at 1 meter at 1 watt
Crossover	4 kHz
Impedance	8 ohms
Min. power	5 watts (7 dBW)
Max. power	40 watts (16 dBW)
Controls	None
Features	Metal housing; bracket-mountable

Models also available

MW-III, $269; SW-4, $289; SW-1, $119; MW-BC I Subwoofer, $439

DECCA
Rocelco, Inc.
1669 Flint Road
Downsview, Ont. M3J 2J7

Supertweeter

Price	$249.50
Dimensions	4H x 4W x 5⅛D
Weight	5 lbs. (net)
Design	Add-on tweeter
Type	Ribbon tweeter in enclosure without horn
Drivers	Ribbon tweeter only (add-on to existing systems)
Response	7 kHz to 30 kHz
Crossover	7 kHz (built-in)
Impedance	8 ohms
Min. power	10 watts (10 dBW)
Max. power	30 watts (14.75 dBW)
Controls	None
Features	Driven element is ultra-light ribbon for fast transient response

Models also available

London Ribbon Tweeter, $199.50

DENNESEN
Dennesen Electrostatic, Inc.
Box 51
Beverly, Mass. 01915

ESL-110

Price	$300
Dimensions	18H x 7½W x 8D
Weight	14 lbs. (net)
Design	Bookshelf
Type	Electrostatic/dynamic hybrid
Drivers	Three electrostatic elements in vertical line source; 5" acoustic suspension Bextrene woofer
Response	50 Hz to 35 kHz, ±2 dB re 90 dB SPL at 1 meter at 1 watt
Sensitivity	90 dB SPL at 1 meter at 1 watt
Crossover	2.8 kHz
Impedance	8 ohms
Min. power	15 watts (11.75 dBW)
Max. power	100 watts (20 dBW)
Features	Electrostatic hybrid

ST

Price	$180
Dimensions	10H x 15W x 4D
Weight	20 lbs. (net)
Design	Panel
Type	Tweeter array
Drivers	8 electrostatic tweeters
Response	3.5 kHz to 35 kHz, ±½ dB
Sensitivity	91 dB SPL at 1 meter at 1 watt
Crossover	3.5 kHz; 4.5 kHz
Impedance	8 ohms
Min. power	15 watts (11.75 dBW)
Max. power	Unlimited
Controls	Selection roll-in of 3.5 or 4.5 kHz
Features	Open-air baffle; dipole

Models also available

180 "The Voice", $220

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

SC-101

Price	$350/pr.
Dimensions	16½H x 10W x 10D
Weight	15 lbs. (net)
Design	Bookshelf; mini
Type	Acoustic suspension
Drivers	8" woofer; 1" dome tweeter
Response	45 Hz to 20 kHz
Sensitivity	9 dB SPL at 1 meter at 1 watt
Crossover	3.5 kHz
Impedance	8 ohms
Min. power	10 watts (10 dBW)
Max. power	80 watts (19 dBW)

DESIGN ACOUSTICS
Design Acoustics, Inc.
2426 Amsler St.
Torrance, Calif. 90505

D-8

Price	$590
Dimensions	44H x 16½W x 12¾D
Weight	70 lbs. (net)
Design	Floorstanding
Type	Acoustic suspension/passive radiator (depending on low-frequency attenuation control setting)
Drivers	Two 10" long-throw woofers; 5" midrange driver; 5 high-frequency drivers (1 dome, 3 cones, 1 piezoelectric tweeter); passive radiator driven electrically as well as acoustically
Response	30 Hz to 17 kHz, ±2 dB
Sensitivity	94.5 dB SPL at 1 meter at 1 watt
Crossover	600 Hz; 1.5 kHz
Impedance	8 ohms
Min. power	15 watts (11.75 dBW)
Max. power	150 watts (21.75 dBW)
Controls	Woofers; midrange; tweeter
Features	Wide dispersion; novel woofer-level control; goes from acoustic suspension to passive radiator

D-6

Price	$390 (base included)
Dimensions	24½H x 16½W x 13¾D
Weight	50 lbs. (net)
Design	Floorstanding
Type	Vented; acoustic suspension
Drivers	10" long-throw woofer; 5" midrange driver; five 2½" cone tweeters
Response	30 Hz to 15 kHz, ±2 dB
Sensitivity	92 dB SPL at 1 meter at 1 watt
Crossover	800 Hz; 2 kHz

Impedance	8 ohms
Min. power	20 watts (13 dBW)
Max. power	100 watts (20 dBW)
Controls	Woofer; tweeter
Features	Flat power response; wide high-frequency dispersion; good efficiency

D-2

Price	$220
Dimensions	34H x 12½W x 12¼D
Weight	35 lbs. (net)
Design	Floorstanding
Type	Vented; acoustic suspension
Drivers	10" long-throw woofer; 1" dome tweeter
Response	40 Hz to 18 kHz, ±3.5 dB
Sensitivity	88 dB SPL at 1 meter at 1 watt
Crossover	1.5 kHz
Impedance	8 ohms
Min. power	20 watts (13 dBW)
Max. power	50 watts (17 dBW)
Controls	Tweeter
Features	Tilted tweeter to avoid "beaming" at high frequencies

LDM (Low Diffraction Miniature)

Price	$175
Dimensions	11¼H x 7⅜W x 5½D
Weight	9 lbs. (net)
Design	Mini
Type	Acoustic suspension
Drivers	5" woofer; 1" dome tweeter
Response	80 Hz to 16 kHz, ±1.5 dB
Sensitivity	85 dB SPL at 1 meter at 1 watt
Crossover	2.5 kHz
Impedance	4 ohms
Min. power	15 watts (11.75 dBW)
Max. power	50 watts (17 dBW)
Controls	Woofer; tweeter
Features	Beveled solid walnut baffle which reduces diffraction effects

Models also available

D-12A, $750 (walnut); D-4A, $345; D-3, $240; D-1W, $135; D-1A, $125

DIMENSION
Dimension by Custom Craft
2020 E. Orangethorpe Ave.
Anaheim, Calif. 92806

Mk-XII Subwoofer

Price	$445
Dimensions	24H x 16W x 12D
Weight	50 lbs. (net)
Design	Floorstanding
Type	Acoustic suspension
Drivers	12" bass
Response	30 Hz to 100 Hz, ±3 dB re 92 dB SPL at 1 meter at 1 watt
Sensitivity	92 dB SPL at 1 meter at 1 watt
Crossover	100 Hz
Impedance	8 ohms
Min. power	25 watts (14 dBW)
Max. power	150 watts (21.75 dBW)
Controls	2-position efficiency switch
Features	Walnut-veneer cabinet; passive combining network

Mk-VIII

Price	$199
Dimensions	14½H x 10W x 6½D
Weight	17 lbs. (net)
Design	Mini
Type	Acoustic suspension
Drivers	8" woofer; 4½" midrange; 1" tweeter
Response	57 Hz to 20 kHz, ±3 dB re 94 dB SPL at 1 meter at 1 watt
Sensitivity	94 dB SPL at 1 meter at 1 watt
Crossover	1.5 kHz; 4 kHz
Impedance	4 ohms
Min. power	10 watts (10 dBW)
Max. power	125 watts (21 dBW)
Features	American-walnut cabinet

Mk-II

Price	$110
Dimensions	7½H x 5¼W x 4½D
Weight	4 lbs. (net)
Design	Mini
Type	Acoustic suspension
Drivers	4½" long-excursion woofer; 1" dome tweeter
Response	89 Hz to 22 kHz, ±3 dB re 92 dB SPL at 1 meter at 1 watt
Sensitivity	92 dB SPL at 1 meter at 1 watt
Crossover	2.5 kHz
Impedance	4 ohms
Min. power	10 watts (10 dBW)
Max. power	75 watts (18.75 dBW)
Features	Available with mounting brackets as Mk-IIB for $125; American walnut cabinet

PR-8

Price	$79.95
Dimensions	22H x 13½W x 8⅞D
Weight	20 lbs. (net)
Design	Bookshelf
Type	Acoustic suspension
Drivers	8" woofer; 3" phenolic-ring tweeter
Response	65 Hz to 20 kHz re 94 dB SPL at 1 meter at 1 watt
Sensitivity	94 dB SPL at 1 meter at 1 watt
Crossover	2.5 kHz
Impedance	8 ohms
Min. power	10 watts (10 dBW)
Max. power	40 watts (16 dBW)

Models also available

Mk-XIV Subwoofer, $249; Mk-VI, $149; Mk-I, $87; Mk-IV, $49.95

DYNACO
Dynaco, Inc.
110 Shawmut Road
Canton, Mass. 02021

A-250

Price	$265
Dimensions	25H x 14¼W x 14¼D
Weight	39 lbs. (net)
Design	Bookshelf
Type	Acoustic suspension

Drivers	1" soft-cloth dome tweeter; 3" cone midrange; 10" rubber-edge cone woofer
Response	45 Hz to 20 kHz, ±3 dB re 89 dB SPL at 1 meter at 1 watt
Sensitivity	89 dB SPL at 1 meter at 1 watt
Crossover	300 Hz; 3.5 kHz
Impedance	8 ohms
Min. power	15 watts (11.75 dBW)
Max. power	110 watts (20.5 dBW)
Controls	Tweeter (+2 dB to –50 dB); midrange (+2 dB to –4 dB)
Features	Oiled-walnut veneer

A-100

Price	$179
Dimensions	8H x 12W x 6D
Design	Mini
Type	Passive radiator
Drivers	6" rubber-edge cone woofer; 6" passive radiator; 1" soft-cloth dome tweeter
Response	50 Hz to 20 kHz ±3 dB
Sensitivity	87 dB SPL at 1 meter 1 watt
Impedance	8 ohms

Models also available

A-350, $399; A-150, $165

ELECTRO-VOICE
Electro-Voice, Inc.
656 Cecil St.
Buchanan, Mich. 49107

Interface: D, Series II

Price	$927.25 ($95.50 for equalizer)
Dimensions	32H x 21¾W x 15½D
Weight	114 lbs. (net)
Design	Floorstanding
Type	Vented; equalized
Drivers	12" downward-firing woofer; 6½" vented midrange; radial horn tweeter
Response	23 Hz to 20 kHz; 28 Hz to 18 kHz, ±2.5 dB
Sensitivity	97 dB SPL at 1 meter at 1 watt
Crossover	40 Hz (acoustic); 350 Hz, 3 kHz (electrical)
Impedance	8 ohms
Min. power	1.5 watts (1.75 dBW) SPL
Max. power	500 watts (27 dBW) SPL
Controls	High-frequency slope (four position) and environment (quarter space/half space)
Features	Biamplification terminals; integral TS-1 time-variable turn-off circuit-tweeter protection with indicator light; walnut-veneer cabinet

Interface: B, Series III

Price	$349.95 ($95.50 for equalizer)
Dimensions	29¼H x 16W x 11D
Weight	42 lbs. (net)
Design	Floorstanding
Type	Vent substitute; equalized
Drivers	12" low-frequency radiator; 8" midrange/woofer; 1½" Super-Dome® tweeter with acoustic lens
Response	26 Hz to 20 kHz; 30 Hz to 18 kHz, ±2.5 dB
Sensitivity	92 dB SPL at 1 meter at 1 watt
Crossover	42 Hz (acoustic); 1.5 kHz (electrical)
Impedance	8 ohms
Min. power	3.6 watts (5.5 dBW) SPL
Max. power	250 watts (24 dBW) SPL
Controls	High-frequency slope on equalizer
Features	Walnut-veneer cabinet

Interface: A, Series III

Price	$274.95 ($95.50 for equalizer)
Dimensions	24½H x 15⅜W x 8¼D
Weight	30 lbs. (net)
Design	Bookshelf
Type	Vent substitute; equalized
Drivers	12" low-frequency radiator; 8" midrange/woofer; 1½" Super-Dome® tweeter with acoustic lens
Response	29 Hz to 20 kHz; 35 Hz to 18 kHz, ±2.5 dB
Sensitivity	92 dB SPL at 1 meter at 1 watt
Crossover	49 Hz (acoustic); 1.5 kHz (electrical)
Impedance	8 ohms
Min. power	3.6 watts (5.50 dBW)
Max. power	250 watts (24 dBW) SPL
Controls	High-frequency slope on equalizer
Features	Walnut-veneer cabinet

Musicaster IIA

Price	$204
Dimensions	21½H x 21½W x 8½D
Weight	31 lbs. (net)
Type	Vented
Drivers	12" dual-cone bass driver; horn tweeter
Response	80 Hz to 16 kHz, ±4 dB re 108 dB SPL at 1 meter at 1 watt
Crossover	4 kHz; 5 kHz
Impedance	8 ohms
Min. power	1 watt (0 dBW)
Max. power	20 watts (13 dBW)
Features	Weatherproof outdoor speaker

Sentry 100

Price	$200
Dimensions	17¼H x 12W x 11⅛D
Weight	28 lbs. (net)
Design	Rock-mount
Type	Vented
Drivers	8" woofer/midrange; Super-Dome® tweeter
Response	45 Hz to 18 kHz, ±3 dB re 91 dB SPL at 1 meter at 1 watt
Sensitivity	91 dB SPL at 1 meter at 1 watt
Crossover	2 kHz
Impedance	6 ohms
Min. power	3.6 watts (5.5 dBW)
Max. power	300 watts (24.75 dBW)
Controls	High-frequency control with boost-and-cut capability.
Features	Black vinyl utility cabinet designed for rack or wall mounting

Interface: 1, Series II

Price	$139.95
Dimensions	21¼H x 11⅜W x 9 11/16D
Weight	23 lbs. (net)
Design	Bookshelf
Type	Vented
Drivers	8" midrange/woofers; 1½" Super-Dome™ tweeter with acoustic lens
Response	47 Hz to 20 kHz; 56 Hz to 18 kHz, ±3 dB
Sensitivity	92 dB SPL at 1 meter at 1 watt
Crossover	76 Hz (acoustic); 1.5 kHz (electrical)
Impedance	8 ohms
Min. power	3.6 watts (5.5 dBW) SPL
Max. power	250 watts (24 dBW) SPL
Controls	High-frequency slope control
Features	Walnut-grained vinyl cabinet

Encore 33

Price	$135
Dimensions	21¼H x 11⅜W x 9 11/16D
Weight	20 lbs. (net)
Design	Bookshelf
Type	Acoustic suspension
Drivers	8" woofer; 2½" tweeter
Response	50 Hz to 1.8 kHz re 89 dB SPL at 1 meter at 1 watt
Sensitivity	89 dB SPL at 1 meter at 1 watt
Crossover	2.5 kHz
Impedance	8 ohms
Min. power	10 watts (10 dBW)
Max. power	150 watts (21.75 dBW)
Features	Simulated walnut-grain vinyl cabinet

Models also available

Sentry III, Series II, $999 (optional SEQ equalizer, $105); Interface: C, Series II, $494.95 ($95.50 for equalizer); Sentry V, $360 (optional SEQ equalizer, $105); Interface: 3, Series II, $239.95; Interface: 2, Series II, $189.95; Encore 77, $239

ENERGY
Energy Loudspeaker Corp.
161 Don Park Road
Markham, Ontario L3R 1C2

Energy Four

Price	$474.50
Dimensions	43H x 15W x 15D
Weight	100 lbs. (net)
Design	Floorstanding tower
Type	Bass reflex
Drivers	Shadow-Ribbed® tweeter ; 5" High Focal Drive® midrange ; 12" Symmetric Field Drive® woofer; 12" Linear Drive/Dual Suspension™ passive radiator
Response	26 Hz to 22.5 kHz, ±3 dB re 94.5 dB SPL at 1 meter at 1 watt
Sensitivity	94.5 dB SPL at 1 meter at 1 watt
Crossover	300 Hz; 35 kHz (18 dB/octave)
Impedance	8 ohms (nominal)
Min. power	20 watts (13 dBW)
Max. power	200 watts (23 dBW); 400 watts (26 dBW) 10% max clipping
Features	Large floorstanding tower; all unique hand-built component drivers; walnut-grain vinyl; dark brown sag-resistant open-weave fabric

Energy Two

Price	$269.50
Dimensions	26H x 13W x 11⅜D
Weight	40 lbs. (net)
Design	Floorstanding; bookshelf
Type	Bass reflex
Drivers	Shadow-Ribbed® tweeter; 8" Symmetric Field Drive® woofer; 12" Linear Drive/Dual Suspension™ passive radiator
Response	38 Hz to 22.5 kHz, ±3 dB re 92.5 dB SPL at 1 meter at 1 watt
Sensitivity	92.5 dB SPL at 1 meter at 1 watt
Crossover	2.2 kHz (18 dB/octave)

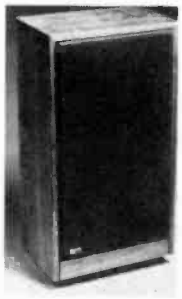
Impedance 8 ohms (nominal)
Min. power 15 watts (11.75 dBW)
Max. power 80 watts (19 dBW); 150 watts (21.75 dBW) 10% max clipping
Features Large bookshelf or floorstanding; all unique hand-built component drivers; walnut-grain vinyl; dark brown sag-resistant open-weave fabric

Models also available

Energy Three, $339.50; Energy One, $159.50;

EPI
Epicure Products, Inc.
25 Hale St.
Newburyport, Mass. 01950

M-200-C



Price $300
Dimensions 32¾H x 17W x 11D
Weight 60 lbs. (net)
Design Floorstanding
Type "Passive Piston" bass radiator
Drivers 8" high-efficiency woofer; 1" air-spring tweeter; 12" passive radiator
Response 36 Hz to 20 kHz, ±3 dB
Sensitivity 88 dB SPL at 1 meter at 1 watt
Crossover 1.8 kHz
Impedance 8 ohms
Min. power 15 watts (11.75 dBW) continuous
Max. power 125 watts (21 dBW)
Controls Three-position tweeter attenuator switch on front panel
Features Walnut-veneer cabinet; Passive Piston bass radiator

120-C

Price $175
Dimensions 25H x 15W x 11D
Weight 42 lbs. (net)
Design Floorstanding; bookshelf
Type Acoustic suspension
Drivers 1" tweeter; 10" woofer
Response 38 Hz to 20 kHz, ±3 dB
Sensitivity 87 dB SPL at 1 meter at 1 watt
Crossover 1.8 kHz
Impedance 8 ohms
Min. power 25 watts (14 dBW)
Max. power 80 watts (19 dBW)
Controls Three-position tweeter attenuator on front panel

70 C

Price $85
Dimensions 16H x 10½W x 7½D
Weight 17 lbs. 8 oz. (net)
Design Bookshelf
Type Acoustic suspension
Drivers 1" air-spring tweeter; 6" woofer
Response 58 Hz to 20 kHz, ±3 dB
Sensitivity 86
Crossover 1.8 kHz
Impedance 8 ohms
Min. power 10 watts (10 dBW)
Max. power 80 watts (19 dBW)

EPICURE
Epicure Products, Inc.
25 Hale St.
Newburyport, Mass. 01950

3.0 Series II

Price $475
Dimensions 41⅜H x 8½" square (at top) x 16½" square (at bottom)
Weight 61 lbs. (net)
Design Floorstanding
Type Acoustic suspension
Drivers 10" bass driver; 6" midrange; 1" tweeter
Response 32 Hz to 20 kHz, ±3 dB
Sensitivity 87 dB SPL at 1 meter at 1 watt
Crossover 475 Hz; 2 kHz
Impedance 4 ohms
Min. power 30 watts (14.75 dBW)
Max. power 100 watts (20 dBW) average; 500 watts (27 dBW) peak
Controls Three-position L-pad tweeter attenuator
Features Truncated pyramid cabinet for minimal diffraction; total system resonance control; new acoustic loading sphere tweeter

2.0

Price $300
Dimensions 34H x 10¾W x 12¾D
Weight 41 lbs. (net)
Design Floorstanding
Type Passive radiator
Drivers 6" bass driver; 8" passive radiator; 1" tweeter
Response 38 Hz to 20 kHz, ±3 dB
Sensitivity 86 dB SPL at 1 meter at 1 watt
Crossover 1.8 kHz
Impedance 4 ohms
Min. power 30 watts (14.75 dBW)
Max. power 100 watts (20 dBW)
Controls Three-position L-pad tweeter attenuator
Features Speaker mounts on an integral stand; foam on front baffle controls diffraction; new acoustic loading sphere tweeter

Models also available

500, $440; 1.0, $175

ESS
ESS, Inc.
9613 Oates Drive
Sacramento, Calif. 95827

Transar II System

Price $3,250
Dimensions 45H x 27½W x 15D (baffle);21H x 24W x 24D (subwoofer)
Design Floorstanding subwoofer; baffle panel
Drivers Heil air-motion transformer midrange/tweeter; multi-element Heil low-frequency transducer; separate subwoofer commode
Response 20.6 Hz to 20 kHz, ±3 dB

HEIL SERIES

AMT Monitor

Price $696
Dimensions 39¼H x 15 3/5W x 15 4/5D
Weight 113 lbs. (net)
Design Floorstanding
Type Passive radiator
Drivers Heil air-motion transformer midrange/tweeter; 12" Bextrene woofer
Response 30 Hz to 23 kHz, ±3 dB
Sensitivity 91 dB SPL at 1 meter at 1 watt
Crossover 800 Hz
Impedance 6 ohms
Max. power 400 watts (26 dBW)
Controls Presence; brilliance (continuously variable); attenuation from +3 dB to −6 dB from 800 Hz to 5 kHz
Features Oiled-walnut cabinets with black/brown grilles

AMT Bookshelf

Price $488
Dimensions 24H x 14W x 14D
Weight 65 lbs. (net)
Design Bookshelf
Type Passive radiator
Drivers Heil air-motion midrange/tweeter; 12" Bextrene woofer
Response 40 Hz to 23 kHz, ±3 dB
Sensitivity 91 dB SPL at 1 meter at 1 watt
Crossover 800 Hz
Impedance 6 ohms
Max. power 400 watts (26 dBW)
Controls Midrange presence; brilliance
Features Oiled-walnut cabinets with black/brown grilles

PERFORMANCE SERIES

PS-4A

Price $397
Dimensions 35H x 12½W x 12 1/10D
Weight 48 lbs. (net)
Design Floorstanding
Type Passive radiator
Drivers 10" cone woofer; Heil air-motion transformer midrange/tweeter
Response 35 Hz to 24 kHz, ±3 dB re 93 dB SPL at 1 meter at 1 watt
Sensitivity 93 dB SPL at 1 meter at 1 watt
Crossover 2 kHz
Impedance 6 ohms
Min. power 15 watts (11.75 dBW)
Max. power 160 watts (22 dBW)
Controls Brilliance (frequency range from 1.5 to 24 kHz; variability from −50 to +3 dB)
Features Walnut-grain vinyl

PS-8A

Price $211
Dimensions 22H x 12¼W x 10 3/5D
Weight 30 lbs. (net)
Design Bookshelf
Type Passive radiator
Drivers 8" cone woofer; Heil air-motion transformer midrange/tweeter
Response 50 Hz to 22 kHz, ±3 dB re 93 dB SPL at 1 meter at 1 watt
Sensitivity 93 dB SPL at 1 meter at 1 watt
Crossover 2.4 kHz
Impedance 6 ohms
Min. power 15 watts (10 dBW)
Max. power 100 watts (20 dBW)
Controls Brilliance (frequency range from 2 to 22 kHz)
Features Walnut-grain vinyl

TARGA SERIES

Targa 412T

Price $399
Dimensions 41¾H x 14¼W x 13½D
Weight 69 lbs. (net)

Design	Floorstanding
Type	Passive radiator Turbo Bass®
Drivers	12" woofer; 3½" midrange cone; 1" Mylar dome tweeter
Response	30 Hz to 20 kHz, ±4 dB re 91.5 dB SPL at 1 meter at 1 watt
Sensitivity	91.5 dB SPL at 1 meter at 1 watt
Crossover	800 Hz; 3 kHz
Impedance	8 ohms
Min. power	20 watts (13 dBW)
Max. power	175 watts (22.5 dBW)
Controls	Tweeter: +2 dB to –50 dB; midrange: +2 dB
Features	Tower design; Alagash birch-grained vinyl

Targa 310

Price	$249
Dimensions	25H x 14¼W x 13½D
Weight	45 lbs. (net)
Design	Bookshelf
Type	Passive radiator (Turbo Bass®)
Drivers	10" woofer cone; 3½" cone midrange; 1" Mylar dome tweeter
Response	45 Hz to 20 kHz, ±4 dB re 90.5 dB SPL at 1 meter at 1 watt
Sensitivity	90.5 dB SPL at 1 meter at 1 watt
Crossover	1 kHz; 3 kHz
Impedance	8 ohms
Min. power	20 watts (13 dBW)
Max. power	120 watts (20.75 dBW)
Controls	Tweeter: +3 dB to –50 dB; midrange: ±2 dB
Features	Bookshelf design; Alagash birch-grained vinyl

Targa 208

Price	$140
Dimensions	21H x 11¾W x 10D
Weight	25 lbs. (net)
Design	Bookshelf
Type	Tuned port
Drivers	8" cone woofer; 2" fiber-cone tweeter
Response	50 Hz to 20 kHz, ±4 dB re 90 dB SPL at 1 meter at 1 watt
Sensitivity	90 dB SPL at 1 meter at 1 watt
Crossover	2 kHz
Impedance	8 ohms
Min. power	10 watts (10 dBW)
Max. power	70 watts (18.5 dBW)
Controls	Tweeter: +3 dB to –50 dB
Features	Bookshelf design; Alagash birch-grained vinyl

ECLIPSE SERIES

PB-1500 Powered Bass Module

Price	$1,200
Dimensions	16H x 22½W x 23½D
Weight	90 lbs. (net)
Design	Low-profile subwoofer
Type	Dual acoustic suspension
Drivers	Two 10" woofers in separate acoustic suspension chambers
Sensitivity	94 dB SPL at 1 meter at 1 watt
Crossover	Selectable at control unit
Min. power	Unit self-powered with 2 x 100 watts rms
Controls	C-1500 bass system control (included in system) has 4 selectable crossover frequencies.
Features	Price includes separate C-1500 bass system control, which has active crossover and opto-electronic bass extension circuitry; controls enable matching with ADS minispeakers or other "satellites"; available as ADS SubSat 2300 system, which includes one pair ADS 400 minispeakers for $1,500; available in oak or walnut finish

Eclipse B122

Price	$346
Dimensions	25⅝H x 15¼W x 15D
Weight	51 lbs. (net)
Design	Bookshelf
Type	Passive radiator (rear-mounted)
Drivers	12" cone woofer; Heil air-motion transformer midrange/tweeter
Response	45 Hz to 22 kHz, ±3 dB re 91 dB SPL at 1 meter at 1 watt
Sensitivity	91 dB SPL at 1 meter at 1 watt
Crossover	1.5 kHz
Impedance	6 ohms
Min. power	20 watts (13 dBW)
Max. power	150 watts (21¾dBW)
Controls	Brilliance: +3 dB to –5 dB
Features	Bookshelf design; Alagash birch-grained vinyl

CLASSIC SERIES

Classic Pyramid

Price	$496
Dimensions	26¾H x 15½W x 15½D
Weight	61 lbs. (net)
Design	Floorstanding
Type	Tuned port
Drivers	Heil air-motion transformer midrange/tweeter; 10" woofer with resin-impregnated cone
Response	38 Hz to 24 kHz
Sensitivity	93 dB SPL at 1 meter at 1 watt
Crossover	1 Hz; 1 kHz
Impedance	6 ohms
Min. power	15 watts (11.75 dBW)
Max. power	250 watts (24 dBW)
Controls	Presence; brilliance
Features	Genuine walnut veneer with dark-brown grille

Classic Bookshelf

Price	$358
Dimensions	25H x 15W x 13½D
Weight	50 lbs. (net)
Design	Bookshelf
Type	Tuned port
Drivers	Heil air-motion transformer midrange/tweeter; 10" resin-impregnated cone woofer
Response	50 Hz to 23 kHz
Sensitivity	93 dB SPL at 1 meter at 1 watt
Crossover	1.5 kHz
Impedance	6 ohms
Min. power	15 watts (11.75 dBW)
Max. power	140 watts (21.5 dBW)
Controls	Brilliance shelving at 7.5 kHz
Features	Oiled walnut-veneer with dark-brown grille

Models also available

Model 10, $150; AMT 1C, $574; AMT 10C, $358; PS-5A, $278; PS-9A, $178; Targa 312, $299; Targa 210, $199; Eclipse M102, $496; Eclipse B102, $279; Classic Pedestal, $429

ESTranslator®
BTM Manufacturing Co.
2005 N. Lincoln Ave.
Pasadena, Calif. 91103

320

Price	$600
Dimensions	43½H x 21⅝W x 4½D (top); 9½D (bottom)
Weight	47 lbs.
Type	Electrostatic bipolar
Drivers	Two 10" cone woofers
Response	30 Hz to 22 kHz
Crossover	200 Hz; 1.2 kHz
Impedance	8 ohms
Min. power	35 watts (15.5 dBW)
Features	Double diaphragms; self-energizing bias

310

Price	$450
Dimensions	38H x 17⅝W x 4½D (top); 9½D (bottom)
Weight	32 lbs.
Type	Electrostatic bipolar
Drivers	12" cone woofer
Response	40 Hz to 22 kHz
Crossover	200 Hz; 1.2 kHz
Impedance	8 ohms
Min. power	35 watts (15.5 dBW)
Features	Double diaphragms; self-energizing bias

290

Price	$250
Dimensions	21¼H x 12⅝W x 4½D (top); 7½D (bottom)
Weight	14 lbs.
Type	Electrostatic bipolar
Drivers	8" cone woofer
Response	70 Hz to 22 kHz
Crossover	200 Hz; 1.2 kHz
Impedance	8 ohms
Min. power	25 watts (14 dBW)
Features	Double diaphragms; self-energizing bias

Models also available

Bass Console Labyrth, $900; Bass Console 1, $550 each; 400, $425; Bass Console 2, $400; 410, $350; 300, $300; Bass Console 3, $150

ETR
ETR, Inc.
P.O. Box 9056
Fresno, Calif. 93792

12" Tower

Price	$450
Dimensions	42H x 14W x 11⅞D
Weight	61 lbs. (net)
Design	Tower
Type	Passive radiator
Drivers	12" woofer; 5" midrange; 3" tweeter
Response	36 Hz to 20 kHz, ±4 dB re 96 dB SPL at 1 meter at 1 watt
Sensitivity	96 dB SPL at 1 meter at 1 watt
Crossover	1.5 kHz; 7 kHz
Impedance	8 ohms
Min. power	20 watts (13 dBW)
Max. power	225 watts (23.5 dBW)
Controls	Tweeter
Features	Front-mounted passive radiator; ferrofluid-damped; self-resetting circuit breaker

412

Price	$290
Dimensions	26H x 14½W x 11⅜D
Weight	40 lbs. (net)
Design	Bookshelf
Type	Passive radiator
Drivers	12" woofer; 5" midrange; 3" tweeter
Response	45 Hz to 20 kHz, ±4 dB re 94 dB SPL at 1 meter at 1 watt
Sensitivity	94 dB SPL at 1 meter at 1 watt
Crossover	1.5 kHz; 7 kHz
Impedance	8 ohms
Min. power	15 watts (11.75 dBW)
Max. power	190 watts (22.75 dBW)
Controls	Tweeter
Features	Rear-mounted passive radiator; ferrofluid-damped; self-resetting circuit breaker

310

Price	$175
Dimensions	23H x 12½W x 10⅝D
Weight	29 lbs. (net)
Design	Bookshelf
Type	Vented
Drivers	10" long-excursion woofer; 5" midrange; 3" tweeter
Response	57 Hz to 20 kHz, ±4 dB re 92.5 dB SPL at 1 meter at 1 watt

Sensitivity	92.5 dB SPL at 1 meter at 1 watt
Crossover	1.5 kHz; 7 kHz
Impedance	8 ohms
Min. power	10 watts (10 dBW)
Max. power	125 watts (21 dBW)
Controls	None
Features	Ferrofluid-damped; self-resetting circuit breaker

88

Price	$149/pr.
Dimensions	9⅞H x 6⅛W x 5D
Weight	16 lbs./pr. (net)
Design	Mini
Type	Acoustic suspension
Drivers	5" woofer with ferrofluid; 2½" tweeter with ferrofluid
Response	100 Hz to 20 kHz, ±4 dB re 86 dB SPL at 1 meter at 1 watt
Sensitivity	86 dB SPL at 1 meter at 1 watt
Crossover	4 kHz
Impedance	4 ohms
Min. power	10 watts (10 dBW)
Max. power	100 watts (20 dBW)
Controls	Tweeter level
Features	Ferrofluid damped; self-resetting circuit breaker

Models also available

10" Tower, $345; 410, $260; 280, $135

FISHER
Fisher Corp.
21314 Lassen St.
Chatsworth, Calif. 91311

STE-1200

Price	$895
Dimensions	35⅞H x 17¾W x 16D
Weight	112 lbs. 8 oz. (net)
Design	Floorstanding
Type	Bass reflex
Drivers	12" porous metal cone; 2¾" oxidized aluminum hard dome midrange; 1½" metal ring tweeter
Response	35 Hz to 35 kHz
Sensitivity	93 dB SPL at 1 meter at 1 watt
Crossover	500 Hz; 5 kHz
Impedance	8 ohms
Max. power	100 watts (20 dBW)
Controls	Midrange; treble (rotary type)

STE-1110

Price	$395
Dimensions	23½H x 15W x 12⅞D
Weight	41 lbs. (net)
Design	Floorstanding
Type	Bass reflex
Drivers	12" porous metal cone; 1¼" aluminum dome
Response	30 Hz to 25 kHz
Sensitivity	89 dB SPL at 1 meter at 1 watt
Crossover	2.5 kHz
Impedance	8 ohms
Max. power	50 watts (17 dBW)
Controls	Rotary-type crossover control

ST-450

Price	$329.95
Dimensions	27⅛H x 17W x 13½D
Weight	44 lbs. (net)
Type	Ported bass reflex
Drivers	12" woofer; two 5" midrange drivers; 3" tweeter
Response	45 Hz to 20 kHz, ±10 dB re 91 dB SPL at 1 meter at 1 watt
Crossover	1 kHz; 5 kHz
Impedance	8 ohms
Min. power	20 watts (13 dBW)
Max. power	100 watts (20 dBW)
Controls	Treble; midrange
Features	Circuit breaker

XP-95B

Price	$279.95
Dimensions	28H x 17½W x 12 7/8D
Weight	44 lbs. (net)
Type	Air suspension
Drivers	15" woofer; two 5" midranges; 3" flare-dome tweeter
Response	28 Hz to 20 kHz
Crossover	1 kHz; 5 kHz
Impedance	8 ohms
Min. power	8 watts (9 dBW) continuous
Max. power	75 watts (18.75 dBW) continuous
Controls	Tweeter; midrange
Features	Circuit breaker

ST-430

Price	$219.95
Dimensions	25½H x 16W x 12¾D
Weight	34 lbs. (net)
Type	Passive radiator
Drivers	10" woofer; 5" midrange; 3" tweeter
Response	50 Hz to 17 kHz, ±10 dB re 90 dB SPL at 1 meter at 1 watt
Crossover	1 kHz; 5 kHz
Impedance	8 ohms
Min. power	6.5 watts (8.25 dBW)
Max. power	50 watts (17 dBW)

MS-157

Price	$159.95
Dimensions	29¼H x 15⅝W x 11½D
Weight	26 lbs. (net)
Design	Bookshelf
Drivers	12" woofer; 5" midrange; 3" tweeter; 8" passive radiator
Response	40 Hz to 20 kHz
Sensitivity	92 dB SPL at 1 meter at 1 watt
Crossover	1 kHz; 5 kHz
Impedance	8 ohms
Min. power	8 watts (9 dBW)
Max. power	60 watts (17.75 dBW)
Features	High-efficiency design

MS-147

Price	$129.95
Dimensions	26¾H x 14⅝W x 11D
Weight	22 lbs. (net)
Design	Bookshelf
Drivers	10" woofer; 5" midrange; 3" tweeter; 8" passive radiator
Response	50 Hz to 17 kHz
Sensitivity	92 dB SPL at 1 meter at 1 watt
Crossover	1 kHz; 5 kHz
Impedance	8 ohms
Min. power	6.5 watts (8 dBW)
Max. power	45 watts (16.5 dBW)
Features	High-efficiency design

MS-127

Price	$89.95
Dimensions	24⅛H x 13⅝W x 9D
Weight	16 lbs. (net)
Design	Bookshelf
Drivers	8" woofer; 2" tweeter; 8" passive radiator
Response	60 Hz to 14 kHz
Sensitivity	91 dB SPL at 1 meter at 1 watt
Crossover	6 kHz
Impedance	8 ohms
Min. power	4 watts (6 dBW)
Max. power	30 watts (14.75 dBW)
Features	High-efficiency design

Models also available

STE-1150, $695; ST-460, $389.95; STE-1080, $295; ST-440, $259.95; STE-C5, $195; ST-420, $149.95; MS-137, $99.95; MS-117, $84.95

FRAZIER
Frazier, Inc.
1930 Valley View Lane
Dallas, Texas 75234

Eleven

Price	$1,500
Dimensions	55H x 30W x 18D
Weight	250 lbs.
Type	Modified Helmholtz tuned slot
Drivers	15" woofer; 12" woofer; four 4" midranges; 2 piezoelectric tweeters
Response	16 Hz to 25 kHz, ±5 dB re 107 dB SPL at 1 meter at 1 watt
Crossover	400 Hz; 4 kHz
Impedance	4 ohms
Min. power	1 watt (0 dBW) continuous
Max. power	100 watts (20 dBW) continuous
Controls	Tweeter; midrange
Features	Reproduces the lowest organ notes

Frazier's "Thing"

Price	$1,125
Dimensions	50H x 24W x 18D
Weight	175 lbs. (net)
Type	Modified Helmholtz tuned slot
Drivers	12" woofer; 10" woofer; 13¾" x 4½" exponential midrange horn; 2 piezoelectric tweeters
Response	20 Hz to 25 kHz, ±5 dB re 99 dB SPL at 1 meter at 1 watt
Crossover	800 Hz; 4 kHz
Impedance	4 ohms
Min. power	1 watt (0 dBW)
Max. power	80 watts (19 dBW)
Controls	Midrange; tweeter
Features	High-frequency piezoelectrics stacked for column effect; large tower

Mark V-A

Price	$425
Dimensions	25¾H x 14W x 12D
Weight	55 lbs. (net)
Type	Modified Helmholtz tuned slot
Drivers	12" woofer; two 4" midranges; piezoelectric tweeters
Response	35 Hz to 25 kHz, ±5 dB re 96 dB SPL at 1 meter at 1 watt
Crossover	500 Hz; 4 kHz
Impedance	8 ohms
Min. power	1 watt (0 dBW) continuous
Max. power	50 watts (17 dBW) continuous
Controls	Midrange; tweeter
Features	Super bookshelf or floor-standing system

DD-1

Price	$132
Dimensions	19H x 10½W x 12D
Weight	31 lbs. (net)
Type	Direct-coupled tweeter
Min. power	3 watts (4.75 dBW)
Max. power	75 watts (18.75 dBW)

Super Midget

Price	$60
Dimensions	15¾H x 6¾W x 9½D
Weight	13 lbs. (net)
Type	Modified Helmholtz tuned slot
Drivers	Driver
Response	50 Hz to 12 kHz, ±5 dB re 89 dB SPL at 1 meter at 1 watt
Crossover	None
Impedance	8 ohms
Min. power	1 watt (0 dBW) continuous
Max. power	10 watts (10 dBW) continuous
Controls	None
Features	May be used with car tape players

Models also available
Seven-A, $525; Concerto, $325; DD-2, $240; CAD-1, $105

FRIED
Fried Products Co.
7616 City Line Ave.
Philadelphia, Pa. 19151

Model T Subwoofer
Price $1,900 (assembled); $620 (kit)
Dimensions 21H x 44W x 24D
Weight 175 lbs. (net)
Design Floorstanding
Type Dual transmission lines
Drivers Two 10" high-flux plastic woofers
Response 20 Hz to 300 Hz, ±2 dB
Sensitivity 100 dB SPL at 1 meter at 1 watt
Crossover Variable
Impedance 8 ohms
Min. power 15 watts (11.75 dBW)
Max. power 400 watts (26 dBW)
Controls None
Features Two separate inputs: one for use with B/2 or C (first-order crossover); one for biamplification; 2-channel system

E
Price $1,300/pr. (assembled); $495/pr. (kit)
Dimensions 33H x 18½W x 15½D (bottom); 9½W x 6D (top)
Weight 55 lbs. (net)
Design Floorstanding
Type Pyramid; line-tunnel enclosure
Drivers 8" fast-attack woofer; 1" high-flux tweeter
Response 32 Hz to 20 kHz, ±3 dB
Sensitivity 95 dB SPL at 1 meter at 1 watt
Crossover 3.2 kHz
Impedance 8 ohms
Min. power 30 watts (14.75 dBW)
Max. power 1,000 watts
Controls None

C
Price $1,100/pr. (assembled); $440/pr. (kit)
Dimensions 13¼H x 6W (top); 10½W (bottom) x 6½D (top); 9D (bottom)
Weight 18 lbs. (net)
Design Mini
Type Vented; pyramidal shape
Drivers 6½" high-flux driver; 1" high-flux dome unit
Response 60 Hz to 22 kHz, ±2½ dB re 90 dB SPL at 1 meter at 1 watt
Sensitivity 88 dB SPL at 1 meter at 1 watt
Crossover 3.5 kHz
Impedance 8 ohms
Min. power 25 watts (14 dBW)
Max. power 300 watts (24.75 dBW)
Controls None
Features Used as top of Super Monitor

Model W


Price $395
Dimensions 25H x 14W x 13D
Weight 40 lbs. (net)
Design Bookshelf
Type Dynamic; line-tunnel enclosure
Drivers 8" high-force plasticized woofer; 4" high-force plasticized midrange; 1" high-force plasticized tweeter
Response 40 Hz to 21 kHz, ±2 dB re 90 dB SPL at 1 meter at 1 watt
Sensitivity 92 dB SPL at 1 meter at 1 watt
Crossover 750 Hz; 3.5 kHz
Impedance 8 ohms
Min. power 25 watts (14 dBW)
Max. power 200 watts (23 dBW)
Controls Impulse-perspective control
Features Tilt-back stand recommended

Q
Price $150
Dimensions 19¾H x 11⅜W x 9¼D
Weight 23 lbs. (net)
Design Bookshelf
Type Dynamic; line-tunnel enclosure
Drivers 8" woofer; 1" dome tweeter
Response 40 Hz to 20 kHz, ±2.5 dB
Sensitivity 86 dB SPL at 1 meter at 1 watt
Crossover 2.5 kHz
Impedance 8 ohms
Min. power 25 watts (14 dBW)
Max. power 200 watts (23 dBW)
Controls Impulse-perspective control
Features Tilt-back stand recommended

Models also available
Super Monitor, $4,000/pr. (assembled); $1,290/pr. (kit); O Subwoofer, $2,000/pr. (assembled); $620/pr. (kit); R/III, $590; B/2, $700/pr. (assembled); $330/pr. (kit); P, $190

FULTON
Fulton Electronics
4204 Brunswick Ave. N.
Minneapolis, Minn. 55422

Premiere
Price $5,500/pr.
Dimensions 60H x 25W x 22D
Weight 300 lbs. (net)
Design Floorstanding
Type Dynamic; acoustic suspension
Drivers Two 12" subwoofers; 12" midwoofer; 10" upper woofer; 8" midrange; three special tweeters
Response 13 Hz to 81 kHz, ±1 dB re 82 dB SPL at 1 meter at 1 watt
Sensitivity 82 dB SPL at 1 meter at 1 watt
Crossover 39 Hz; 122 Hz; 425 Hz; 2.4 kHz; 8 kHz; 26 kHz
Impedance 8 ohms
Min. power 50 watts (17 dBW)
Max. power 400 watts (26 dBW)
Controls Woofer; midrange; tweeter
Features American walnut side panels; black or brown grille cloth

Nuance
Price $595
Dimensions 34H x 14W x 13D
Weight 80 lbs. (net)
Design Floorstanding
Type Infinite baffle; acoustic suspension
Drivers 10" woofer; 5" midrange; 2 special tweeters
Response 34 Hz to 42 kHz, ±1.5 dB
Sensitivity 83 dB SPL at 1 meter at 1 watt
Crossover 760 Hz; 65 kHz; 15 kHz
Impedance 8 ohms
Min. power 28 watts (14.5 dBW)
Max. power 200 watts (23 dBW) (when properly fused)
Controls Tweeter; midrange; woofer
Features Phase-aligned; genuine American smoked-glass top; veneer cabinet; black or brown grille cloth

80
Price $209
Dimensions 17¾H x 9⅞W x 8½D
Weight 20 lbs. (net)
Design Bookshelf
Type Acoustic suspension
Drivers 8" woofer; two 2½" tweeters
Response 50 Hz to 22 kHz, ±2 dB
Sensitivity 85 dB SPL at 1 meter at 1 watt
Crossover 1.6 kHz
Impedance 8 ohms
Min. power 10 watts (10 dBW)
Max. power 60 watts (17.75 dBW)
Controls None
Features Genuine American-walnut veneer

Models also available
FMI Crescendo, $1,249; 100, $299

GC/AUDIOTEX
P.O. Box 60271
Terminal Annex
Rockford, Ill. 61101

94-1400
Price $99.95
Dimensions 24H x 15W x 9⅝D
Weight 29 lbs. (net)
Design Bookshelf
Type Acoustic suspension
Drivers 12" woofer; 1¾" tweeter; 4½" midrange
Response 35 Hz to 20 kHz
Crossover 2.5 kHz; 5 kHz
Impedance 8 ohms
Min. power 8 watts (9 dBW)
Max. power 45 watts (16.5 dBW)
Features Aluminum voice coil; multi-roll foam surround

94-1300
Price $69.95
Dimensions 20H x 12W x 9⅝D
Weight 16 lbs. (net)
Design Bookshelf
Type Acoustic suspension
Drivers 10" woofer; 1¾" tweeter
Response 40 Hz to 20 kHz
Crossover 5 kHz
Impedance 8 ohms
Min. power 5 watts (7 dBW)
Max. power 35 watts (15.5 dBW)
Features Aluminum voice coil; multi-roll foam surround

Models also available
94-1350, $89.95; 94-1200, $59.95

GENERAL SOUND
General Sound
2001 W. Cheryl Drive
Phoenix, Ariz. 85021

1011 The Bass-Extender™
Price $400
Dimensions 19H x 18W x 18D
Weight 54 lbs. (net)
Design Floorstanding
Type Tuned port
Drivers 10" dual voice coil woofer
Response 32 Hz to 250 Hz, ±5 dB re 90 dB SPL at 1 meter at 1 watt
Sensitivity 91 dB SPL at 1 meter at 1 watt
Impedance 8 ohms
Min. power 20 watts (13 dBW)
Max. power 200 watts (23 dBW)
Controls Dual satellite output level controls
Features Internal passive crossover; upward-firing 360-degree dispersion; mar-proof top; walnut finish

521/2/3

Price	$165 (walnut); $155 (black; white)
Dimensions	9H x 6W x 7½D
Weight	7 lbs. (net)
Design	Mini
Type	Acoustic suspension
Drivers	5¼" woofer; 1" dome tweeter
Response	100 Hz to 20 kHz, ±5 dB re 90 dB SPL at 1 meter at 1 watt
Sensitivity	87 dB SPL at 1 meter at 1 watt
Crossover	5.5 kHz
Impedance	4 ohms
Min. power	10 watts (10 dBW)
Max. power	50 watts (17 dBW)
Features	Time-Aligned®

Models also available

631/2/3, $225 (walnut); $210 (black; white); 421/2/3, $135 (walnut); $125 (black; white)

GENESIS
Genesis Physics Corp.
Newington Park
Newington, N.H. 03801

Genesis 3+

Price	$399
Dimensions	37½H x 14½W x 11½D
Weight	53 lbs. (net)
Design	Floorstanding
Type	Passive radiator
Drivers	8" woofer; 4" midrange; 1" tweeter
Response	28 Hz to 20 kHz, ±3 dB
Sensitivity	89 dB SPL at 1 meter at 1 watt
Crossover	800 Hz; 3 kHz
Impedance	6 ohms
Min. power	25 watts (14 dBW)
Max. power	200 watts (23 dBW)
Controls	Midrange; tweeter
Features	Mounting bases included; magnetic ferrofluid tweeter and midrange; full lifetime warranty to original owner

Genesis 2

Price	$219
Dimensions	26½H x 14½W x 11½D
Weight	37 lbs. (net)
Design	Bookshelf
Type	Passive radiator
Drivers	1" tweeter; 8" woofer
Response	28 Hz to 20 kHz, ±4 dB
Sensitivity	89 dB SPL at 1 meter at 1 watt
Crossover	45 Hz; 1.8 kHz
Impedance	8 ohms
Min. power	15 watts (11.75 dBW)
Max. power	150 watts (21.75 dBW)
Controls	Tweeter
Features	Magnetic fluid in tweeter; full lifetime warranty to original owner

Genesis V-6

Price	$119
Dimensions	18H x 10¼W x 7D
Weight	19 lbs. (net)
Design	Bookshelf
Type	Vented
Drivers	6½" woofer; 1" tweeter
Response	52 Hz to 20 kHz, ±4 dB
Sensitivity	88 dB SPL at 1 meter at 1 watt
Crossover	1.8 kHz
Impedance	8 ohms
Min. power	10 watts (10 dBW)
Max. power	75 watts (18.75 dBW)
Controls	None
Features	Magnetic fluid in tweeter

Models also available

410, $499 (includes stands); Genesis 2+, $299; Genesis 1+, $149

GLI
Integrated Sound Systems, Inc.
29-50 Northern Blvd.
Long Island City, N.Y. 11101

2+

Price	$850 ea.
Dimensions	37½H x 21½W x 22½D
Weight	135 lbs. (net)
Type	Bass reflex plus separate mid/high array
Drivers	Two 15" woofers; eight 4½" midrange drivers; four 3½" solid-state tweeters
Response	30 Hz to 25 kHz
Crossover	350 Hz; 7 kHz
Impedance	8 ohms
Min. power	10 watts (10 dBW)
Max. power	250 watts (24 dBW)
Features	Coil Guard® protection circuit; heavy-duty professional construction

MR-II

Price	$350
Dimensions	20H x 19W x 9D
Weight	27 lbs. (net)
Design	Bookshelf
Type	Passive radiator
Drivers	Four 5¼" mid/low drivers with 15" passive radiator; three solid-state tweeters
Response	48 Hz to 20 kHz, ±3 dB re 99 dB SPL at 1 meter at 1 watt
Sensitivity	99 dB SPL at 1 meter at 1 watt
Crossover	6 kHz
Impedance	8 ohms
Min. power	30 watts (14.75 dBW)
Max. power	150 watts (21.75 dBW)
Features	Coil Guard® protection circuit; walnut cabinet

Models also available

3+, $1,195 ea.; 1+, $735 ea.; FRA-2, $325

GOODMANS OF ENGLAND
Trusonic
10530 Lawson River Ave.
Fountain Valley, Calif. 92708

HE-1

Price	$480
Dimensions	34½H x 13½W x 14D
Weight	63 lbs. (net)
Design	Bookshelf
Type	Vented
Drivers	10" woofer; two 5" midrange drivers; 1" tweeter
Response	50 Hz to 20 kHz, ±5 dB
Sensitivity	93½ dB SPL at 1 meter at 1 watt
Crossover	1 kHz; 5 kHz
Impedance	8 ohms
Min. power	3.5 watts (5.5 dBW)
Max. power	120 watts (20.75 dBW)
Features	High-flux woofer; high-efficiency ferrofluid in tweeter; 9-element crossover; fuse-protected

Achromat Kappa

Price	$335
Dimensions	21¼H x 10¾W x 10½D
Weight	29 lbs. (net)
Design	Bookshelf
Type	Acoustic suspension
Drivers	8" bass woofer; 1" soft-dome tweeter
Response	45 Hz to 23 kHz, ±5 dB
Sensitivity	85 dB SPL at 1 meter at 1 watt
Crossover	2.4 kHz
Impedance	8 ohms
Min. power	20 watts (13 dBW)
Max. power	140 watts (21.5 dBW)
Features	Polymer cone long-throw woofer; 12-element crossover network; fuse protected

Achromat Beta

Price	$250
Dimensions	13¾H x 8¼W x 9D
Weight	17 lbs. (net)
Design	Bookshelf
Type	Acoustic suspension
Drivers	6½" woofer; 1" tweeter
Response	65 Hz to 23 kHz, ±5 dB re 85 dB SPL at 1 meter at 1 watt
Sensitivity	85 dB SPL at 1 meter at 1 watt
Crossover	3 kHz
Impedance	8 ohms
Min. power	18 watts (12.5 dBW)
Max. power	100 watts (20 dBW)
Features	Clear polymer long-throw woofer cone; 10-element crossover; fuse-protected

Models also available

Achromat Sigma, $480; HE-2, $420

GRAFYX-SP
Grafyx Audio Products, Inc.
310 Kirk Road
St. Charles, Ill. 60174

SP-Ten

Price	$229
Dimensions	28½H x 16W x 13¼D
Weight	52 lbs. (net)
Design	Bookshelf
Type	Tuned port
Drivers	10" rubber surround woofer; 1" flush-mounted, modified hard-dome tweeter
Response	28 Hz to 20 kHz, ±3 dB re 89 dB SPL
Sensitivity	89 dB SPL at 1 meter at 1 watt
Crossover	2 kHz
Impedance	8 ohms
Min. power	10 watts (10 dBW)
Max. power	150 watts (21.75 dBW)
Features	Impedance remains between 6 ohms and 9.5 ohms from 100 Hz to 1 MHz; tweeter voice-coil gap filled with Ferrofluid®; also available as "the Walnut SP-Ten," $259

SP-Six

Price	$139
Dimensions	20½H x 12W x 8D
Weight	25 lbs. (net)
Design	Bookshelf
Type	Tuned port
Drivers	6" rubber surround woofer; 1" flush-mounted, modified hard-dome tweeter
Response	42 Hz to 20 kHz, ±3 dB re 87 dB SPL at 1 meter at 1 watt
Sensitivity	87 dB SPL at 1 meter at 1 watt
Crossover	2 kHz
Impedance	8 ohms
Min. power	10 watts (10 dBW)
Max. power	75 watts (18.75 dBW)
Features	Impedance remains between 6 ohms and 8.5 ohms from 100 Hz to 1 MHz; tweeter voice-coil gap filled with Ferrofluid®

Models also available
SP-Eight, $179; SP-Six-Cone, $99

GREAT WHITE WHALE
Great White Whale Dist., Inc.
348 E. 84th St.
New York, N.Y. 10028

Point 4a
Price $1,250
Dimensions 42H x 19W x 11D
Weight 90 lbs. (net)
Design Floorstanding
Type Acoustic suspension; open air
Drivers Two 10" woofers; two 8" midbass; two 5" midranges; two 1¼" dome tweeters; two ribbon tweeters
Response 20 Hz to 30 kHz, ±2 dB re 89 dB SPL at 1 meter at 1 watt
Sensitivity 89 dB SPL at 1 meter at 1 watt
Crossover 80 Hz; 375 Hz; 3 kHz; 5 kHz
Impedance 4 ohms
Min. power 50 watts (17 dBW)
Max. power 200 watts (23 dBW)
Controls Midrange; tweeter (continuously variable from –3 dB to +3 dB)
Features Black grille cloth with oiled oak or walnut sides

Point 3a
Price $550
Dimensions 15H x 25W x 14D (woofer); 11¾H x 6¾W x 6¾D (satellites)
Weight 80 lbs. (net)
Design Bookshelf plus subwoofer
Type Acoustic suspension
Drivers Two 10" woofers; 5" midrange; ribbon tweeter
Response 20 Hz to 30 kHz, ±3 dB re 90 dB SPL at 1 meter at 1 watt
Crossover 150 Hz; 4.2 kHz
Impedance 8 ohms
Min. power 20 watts (13 dBW)
Max. power 200 watts (23 dBW)
Features System fusing; 2 satellites with woofer commode; woofers fire down to floor; black formica with oak or walnut formica trim

Models also available
Point 5a, $695

HARTKE
Hartke Systems
42 Orchard St.
Bloomfield, N.J. 07003

Model X
Price $700/pr.
Dimensions 19¾H x 12¾W x 10¾D
Weight 30 lbs. (net)
Design Bookshelf
Type Acoustic suspension
Drivers 8" aluminum cone full range woofer; 1" dome tweeter
Response 35 Hz to 25 kHz, ±1.5 dB
Sensitivity 88 dB SPL at 1 meter at 1 watt
Crossover 3.5 kHz
Impedance 8 ohms
Min. power 30 watts (14.75 dBW)
Max. power 100 watts (20 dBW)
Controls Tweeter level
Features Ultra quick transient attack

Tweeter Module
Price $225/pr.
Dimensions 5H x 5W x 2½D
Weight 2 lbs. (net)
Drivers 1⅞" aluminum-free edge cone dome tweeter

Response 5 kHz to 25 kHz, ±1.5 dB re 90 dB SPL at 1 meter at 1 watt
Crossover Optional
Impedance 8/16 ohms
Controls Tweeter level
Features Solid hardwood cabinet

Models also available
Pro-Mix Mini Reference Modules, $250/pr.

HARTLEY
Hartley Products Corp.
620 Island Road
Ramsey, N.J. 07446

Reference


Price $2,000
Dimensions 50¼H x 36W x 24D
Weight 300 lbs. (net)
Design Floorstanding
Type Magnetic suspension
Drivers 24" woofer; 10" midrange; 7" midrange/tweeter, 1" supertweeter
Response 16 Hz to 25 kHz
Crossover 250 Hz; 3 kHz; 7 kHz
Impedance 5 to 8 ohms
Min. power 25 watts (14 dBW)
Max. power 300 watts (24.75 dBW)
Controls None
Features Matched pairs

Concertmaster
Price $1,500
Dimensions 41½H x 29W x 18D
Weight 150 lbs. (net)
Design Floorstanding
Type Magnetic suspension
Drivers 18" woofer; 10" midrange; 7" midrange/tweeter; 1" supertweeter
Response 16 Hz to 25 kHz
Crossover 250 Hz; 3 kHz; 7 kHz
Impedance 5 to 8 ohms
Min. power 25 watts (14 dBW)
Max. power 300 watts (24.75 dBW)
Controls None
Features Matched pairs

SW-10 Subwoofer
Price $475
Dimensions 24H x 18W x 18D
Weight 70 lbs. (net)
Design Floorstanding
Type Air column
Drivers 10" polymer woofer
Response 25 Hz to 3.8 kHz, ±3 dB
Sensitivity 93 dB SPL at 1 meter at 1 watt
Impedance 6 ohms
Min. power 15 watts (11.75 dBW)
Max. power 100 watts (20 dBW)
Controls None
Features Tilt stands supplied

H-100
Price $160
Dimensions 21½H x 10½W x 10½D
Weight 30 lbs. (net)
Design Bookshelf
Type Air column
Drivers 8" long-throw woofer; 1½" air column; 2"low-mass cone tweeter
Response 50 Hz to 20 kHz, ±4 dB
Sensitivity 93 dB SPL at 1 meter at 1 watt
Crossover 2.3 kHz
Impedance 8 ohms
Min. power 5 watts (7 dBW)
Max. power 50 watts (17 dBW)
Controls None

Models also available
SPL-1, $1,550/pr. (4-piece system); H-300, $425; H-200, $275; ST-4, $175

HEATHKIT
Heath Co.
Benton Harbor, Mich. 49022

AS-1348
Price $349.95 (kit)
Dimensions 38H x 24W x 15D
Weight 100 lbs.
Type Acoustic suspension
Drivers 15" rear-facing woofer; two 4½" front-facing midranges; three 1" dome tweeters angle right, left, and ahead
Response 22 Hz to 22 kHz, –10 dB
Crossover 500 Hz; 3 kHz
Impedance 8 ohms
Min. power 8 watts (9 dBW)
Max. power 250 watts (24 dBW)
Controls "Room" switch to compensate for acoustic variances of listening areas and relationship of speaker to wall; two attenuation controls adjust for acoustics and source material

AS-1344
Price $149.95 (kit)
Dimensions 40H x 11W x 11D
Weight 45 lbs.
Type Acoustic suspension
Drivers Two 1" dome tweeters; two 6½" midrange/woofers
Response 35 Hz to 22 kHz, +0, –10 dB; 55 Hz to 20 kHz, ±3 dB
Crossover 4 kHz
Impedance 4 ohms
Min. power 10 watts (10 dBW)
Max. power 300 watts (24.75 dBW)
Controls Tweeter
Features 270-degree horizontal dispersion; individual woofer and tweeter fuses

AS-1342
Price $89.95 (kit)
Dimensions 22¼H x 12W x 10½D
Weight 20 lbs.
Type Bass reflex
Drivers 8" woofer; 2" x 6" horn tweeter
Response 40 Hz to 16 kHz, +0, –10 dB; 60 Hz to 14 kHz, ±3 dB
Crossover 2.5 kHz
Impedance 8 ohms
Min. power 5 watts (7 dBW)
Max. power 70 watts (18.5 dBW)
Controls Tweeter
Features Tweeter can be positioned for optimum dispersion with system mounted horizontally or vertically; individually fused drivers

Models also available
ASX-1383, $399.90; AS-1373, $189.95 (kit); AS-1363, $149.95 (kit)

HECO
Hammond Industries, Inc.
155 Michael Drive
Syosset, N.Y. 11791

D-100

Price	$350
Dimensions	31½H x 15¾W x 10¼D
Weight	75 lbs. (net)
Type	Dynamic
Drivers	14" woofer; four 4½" midranges; 2½" x 1¾" tweeter
Crossover	800 Hz; 2 kHz
Impedance	4 ohms
Max. power	200 watts (23 dBW)
Controls	Biamplification

HECO
Osawa & Co. (USA), Inc.
521 Fifth Ave.
New York, N.Y. 10017

Precision 400

Price	$599.95
Dimensions	26H x 15W x 10 4/5D
Weight	41 lbs. 12 oz. (net)
Design	Floorstanding
Type	Air suspension
Drivers	12" woofer; 2" dome midrange; ¾" dome tweeter
Response	20 Hz to 25 kHz
Sensitivity	91 dB SPL at 1 meter at 1 watt
Crossover	600 Hz; 3 kHz
Impedance	8 ohms
Min. power	10 watts (10 dBW)
Max. power	200 watt (23 dBW)
Controls	Midrange (environmental); high range (environmental)
Features	Charcoal or simulated walnut finish; compact size

Precision 200

Price	$379.95
Dimensions	18 2/5H x 11 3/5W x 9⅜D
Weight	27 lbs. 8 oz. (net)
Design	Floorstanding
Type	Air suspension
Drivers	9 1/5" woofer; 2" dome midrange; ¾" dome tweeter
Response	30 Hz to 25 kHz
Sensitivity	91 dB SPL at 1 meter at 1 watt
Crossover	700 Hz; 4 kHz
Impedance	8 ohms
Min. power	10 watts (10 dBW)
Max. power	140 watts (21.5 dBW)
Controls	Midrange (environmental); high range (environmental)
Features	Charcoal or simulated walnut finish; compact size

Models also available

Precision 300, $449.95; Precision 100, $339.95

HED
Cerwin Vega, Inc.
12250 Montague St.
Arleta, Calif. 91331

UT-12R

Price	$450
Dimensions	39½H x 15½W x 15D
Weight	75 lbs. (net)
Type	Ported reflex
Drivers	12" cone bass; two 6" cone midranges; 1" voice-coil horn tweeter
Response	32 Hz to 17 kHz, ±4 dB re 98 dB SPL at 1 meter at 1 watt

Crossover	700 Hz; 4 kHz
Impedance	8 ohms
Min. power	5 watts (7 dBW)
Max. power	80 watts (19 dBW)
Controls	Midrange; rear midrange; tweeter
Features	Circuit-breaker protection for tweeter; rear-reflecting driver

SW-12

Price	$322
Dimensions	15½H x 25½W x 15D
Weight	42 lbs. (net)
Type	Ported reflex
Drivers	12" cone bass
Response	38 Hz to 150 Hz, ±4 dB re 90 dB SPL at 1 meter at 1 watt
Crossover	150 Hz
Impedance	8 ohms
Min. power	5 watts (7 dBW)
Max. power	100 watts (20 dBW)

U-123

Price	$248
Dimensions	25H x 14¾W x 12¾D
Weight	52 lbs. (net)
Type	Ported reflex
Drivers	12" cone woofer; 6" cone midrange; 1" voice-coil horn tweeter
Response	45 Hz to 17 kHz, ±4 dB re 96 dB SPL at 1 meter at 1 watt
Crossover	700 Hz; 4 kHz
Impedance	8 ohms
Min. power	5 watts (7 dBW)
Max. power	60 watts (17.75 dBW)
Controls	Midrange; tweeter
Features	Tanglewood birch vinyl finish

U-10

Price	$196
Dimensions	24¾H x 13½W x 11D
Weight	36 lbs. (net)
Type	Ported reflex
Drivers	10" cone bass; 1" voice-coil Dhorm tweeter
Response	42 Hz to 20 kHz, ±4 dB re 94 dB SPL at 1 meter at 1 watt
Crossover	2 kHz
Impedance	8 ohms
Min. power	5 watts (7 dBW)
Max. power	40 watts (16 dBW)
Controls	Tweeter
Features	Tanglewood birch vinyl finish

Models also available

U-351, $432; U-321, $305; U-12, $224; U-6, $98

HEYBROOK
American Audio Components, Inc.
8621 179 St.
P.O. Box 570502
Miami, Fla. 33157

HB-3

Price	$988/pr.
Dimensions	24H x 12½W x 11D

Weight	45 lbs. (net)
Design	Floorstanding
Type	Closed box
Drivers	¾"soft-dome Audax high-frequency driver; 4½" cone Audax midrange driver;
Response	35 Hz to 20 kHz
Sensitivity	92 dB SPL at 1 meter at 1 watt
Crossover	800 Hz; 5.5 kHz
Impedance	8 ohms
Min. power	20 watts (13 dBW)
Max. power	125 watts (21 dBW)
Controls	Fixed at factory
Features	Acoustically matched mirror-imaged; factory matched; available only in teak and walnut; special attention to cabinet design and crossover colorations; recording studio monitors

Models also available

HB-2, $550/pr.

HITACHI
Hitachi Sales Corp. of America
401 W. Artesia Blvd.
Compton, Calif. 90220

HS-430

Price	$399.95
Dimensions	26¼H x 14½W x 14 15/16D
Weight	46 lbs. 3 oz. (net)
Design	Floorstanding
Type	Vented
Drivers	Woofer; midrange; tweeter
Response	35 Hz to 20 kHz, -15 dB re 92 dB SPL at 1 meter at 1 watt
Crossover	700 Hz; 4 kHz
Impedance	8 ohms
Max. power	120 watts (20.75 dBW)
Controls	Dual
Features	Three-way speaker system with exclusive Hitachi metal cone and patented gathered edge

HS-310

Price	$199.95
Dimensions	22⅝H x 12⅜W x 12 9/16D
Weight	25 lbs. 5 oz. (net)
Design	Floorstanding
Type	Bass reflex
Drivers	Woofer; midrange; tweeter
Response	35 Hz to 20 kHz, –15 dB re 91 dB SPL at 1 meter at 1 watt
Crossover	1 kHz; 4 kHz
Impedance	8 ohms

Max. power 100 watts (20 dBW)
Features Exclusive Hitachi metal cone and patented gathered edge

HSA-3120

Price $149.95
Dimensions 16H x 25½W x 12½D
Weight 38 lbs. 4 oz. (net)
Design Floorstanding
Type Vented
Drivers Woofer; midrange; tweeter
Response 40 Hz to 20 kHz
Impedance 8 ohms
Max. power 80 watts rms (19 dBW)
Features Ported enclosure design; fiberglass damped cabinet; rosewood grain vinyl wrapped wood product; black stretch fabric on removable grille

HSA-2080

Price $79.95
Dimensions 21⅞H x 13⅝W x 10½D
Weight 18 lbs. (net)
Type Bass reflex
Drivers Woofer; tweeter
Response 45 Hz to 20 kHz, –15 dB re 91 dB SPL at 1 meter at 1 watt
Crossover 2 kHz
Impedance 8 ohms
Max. power 50 watts (17 dBW)
Features Rosewood grain

Models also available

HS-330 Mk. II, $249.95; HS-3, $299.95/pr.; HSA-3100, $99.95

IMPACT
Unitronex Corp.
1171 Landmeier Rd.
Elk Grove, Ill. 60007

Impact 8

Price $399
Dimensions 26 4/5H x 17 3/10W x 12 3/5D
Weight 64 lbs. (net)
Design Floorstanding
Type Balanced; ducted-port
Drivers 12" woofer; 7" midrange; 2" x 5" horn tweeter
Response 30 Hz to 23 kHz
Sensitivity 105 dB SPL at 1 meter at 1 watt
Crossover 300 Hz; 7 kHz
Impedance 8 ohms (nominal)
Min. power 10 watts (10 dBW)
Max. power 150 watts (21.75 dBW)
Controls Tweeter; midrange (±3 dB) (3-position switches)
Features Selected-oak veneer cabinet; chocolate-brown double-knit polyester grilles; 10-year consumer warranty

Impact 4

Price $199
Dimensions 22 7/10H x 14W x 9 4/5D
Weight 31 lbs. (net)
Design Bookshelf
Type Balanced; ducted-port
Drivers 10" woofer/midrange; 2½" tonsil horn tweeter
Response 50 Hz to 20 kHz
Sensitivity 97 dB SPL at 1 meter at 1 watt
Crossover 2.5 kHz
Impedance 8 ohms (nominal)
Min. power 5 watts (7 dBW)
Max. power 70 watts (18.5 dBW)
Controls Tweeter (±3 dB, 3-position switch)
Features Selected oak-veneer cabinet; chocolate-brown double-knit polyester grilles; 10-year consumer warranty

Models also available

Impact 6, $299; Impact 2, $149

INFINITY
Infinity Systems, Inc.
7930 Deering Ave.
Canoga Park, Calif. 91304

Reference Standard 4.5

Price $3,900
Dimensions 64½H x 26½W x 14½D
Weight 190 lbs. (net)
Design Floorstanding
Drivers Four EMIT® tweeters; two EMIT® Infinity-Watkins dual-drive woofers with polypropylene cone; four electromagnetic-induction EMIT® midranges
Response 24 Hz to 32 kHz, ±3 dB
Crossover 150 Hz; 5 kHz
Impedance 4 ohms
Min. power 100 watts (20 dBW)
Max. power 500 watts (27 dBW)
Controls Separate crossover control unit to adjust output levels of woofers and midrange
Features Oak and oak veneer; brown grille

Reference Standard 2.5

Price $1,050
Dimensions 51H x 18W x 11D
Weight 117 lbs. (net)
Design Floorstanding
Drivers 12" Infinity-Watkins polypropylene woofer; EMIT® electromagnetic induction Infinity-Watkins midranges; two EMIT® tweeters
Response 30 Hz to 22 kHz, ±3 dB
Crossover 300 Hz; 5 kHz
Impedance 4 ohms
Min. power 100 watts (20 dBW)
Max. power 300 watts (24.75 dBW)
Controls Midrange; tweeter; biamp switch
Features Oak and oak veneer; brown grille; optional crossover unit

RSb

Price $275
Dimensions 25H x 14W x 10D
Design Bookshelf
Drivers 12" polypropylene midrange; EMIT® tweeter
Response 45 Hz to 32 kHz, ±3 dB
Crossover 600 Hz; 4 kHz
Impedance 4 ohms
Min. power 25 watts (14 dBW)
Max. power 150 watts (21.75 dBW)
Features Fused tweeter; oak-veneer box

RSe

Price $160
Design Bookshelf
Drivers 8" polypropylene woofer; EMIT® tweeter
Response 45 Hz to 34 kHz, ±2 dB
Crossover 3 kHz
Impedance 4 ohms
Min. power 10 watts (10 dBW)
Max. power 100 watts (20 dBW)
Features Oak-veneer cabinet; rotatable tweeter

Models also available

Reference Standard 1.5, Reference Studio Monitor, $347, RSa, $210

INNOTECH
Innotech Audio Systems
182 Henry St.
Brooklyn, N.Y. 11201

D-24

Price $427
Dimensions 36½H x 10½W x 15⅜D
Weight 55 lbs. (net)
Design Floorstanding
Type Asymmetric transmission line
Drivers Two 5" Bextrene woofers; 1 1½" Mylar dome midrange; 1" Mylar dome tweeter
Response 35 Hz to 20 kHz, ±3 dB
Sensitivity 86 dB SPL at 1 meter at 1 watt
Crossover 3.5 kHz; 7.5 kHz
Impedance 8 ohms
Min. power 35 watts (15.5 dBW)
Max. power 200 watts (23 dBW)
Controls Fuse protection
Features Asymmetrical geometry to eliminate creation of standing waves inside and outside of enclosure; narrow enclosure to allow full radiation of sound waves resulting in wide dispersion

INTEGRAL RESEARCH
Integral Research, Inc.
14807 Venture Drive
Dallas, Texas 75234

SL²

Price $299
Dimensions 34½H x 13¼W x 11⅞D
Weight 60 lbs. (net)
Design Floorstanding
Type Vented Thiele alignment
Drivers 10" woofer; 4½" midrange; 2" tweeter
Response 30 Hz to 18 kHz, ±3 dB re 90 dB SPL at 1 meter at 1 watt
Sensitivity 90 dB SPL at 1 meter at 1 watt
Crossover 850 Hz; 3.5 kHz
Impedance 8 ohms
Min. power 20 watts (13 dBW)
Max. power 85 watts (19.25 dBW) (continuous); 150 watts (21.75 dBW) (peak)
Controls None
Features Genuine walnut cabinet; straight-line dual porting; constant voltage crossover; mirror-image transducer alignment; dome high-frequency dispersion lens; 5-year limited transferable warranty

IONOVAC
American Audio Components, Inc.
8621 S.W. 179 St.
P.O. Box 570502
Miami, Fla. 33157

Corona

Price	$1,990/pr.
Dimensions	Depends on different installation
Weight	30 lbs. (net)
Response	6 kHz to 100 kHz, –3 dB
Sensitivity	105 dB SPL at 1 meter at 1 watt
Min. power	20 watts (13 dBW)
Controls	Selectable high-frequency crossover

JANIS
Janis Audio Associates, Inc.
2889 Roebling Ave.
Bronx, N.Y. 10461

W-1 Subwoofer

Price	$725 (walnut and oak); $825 (Brazilian rose)
Dimensions	17½H x 22W x 22D (floorstanding)
Weight	90 lbs.
Design	Floorstanding
Type	Slot-loaded
Drivers	15" dynamic
Response	30 to 100 Hz, ±1 dB re 85 dB SPL into hemispherical space
Crossover	External electronic crossover: 18 dB/octave at 100 Hz
Impedance	8 ohms
Min. power	60 watts (18 dBW) continuous
Max. power	200 watts (23 dBW) continuous; system is fused to protect against amplifier instability
Controls	Level (when used with Interphase crossover amp)
Features	Designed to extend bass response of high-quality wide-range speakers; harmonic distortion components of 1% or less; individual calibration report supplied with each speaker; to be used in biamplified mode (crossovers available)

Models also available
W-2 Subwoofer, $495

JANSZEN
Janszen Electrostatic by Soundmates
796 29th Ave., S.E.
Minneapolis, Minn. 55414

ZII

Price	$450
Dimensions	39H x 18W x 18D
Weight	62 lbs. (net)
Design	Floorstanding
Type	Dynamic electrostatic
Drivers	10" carbon-fiber die-cast woofer; 2 electrostatic bipolar tweeters with refraction lens
Response	45 Hz to 20 kHz, ±3 dB re 86 dB SPL at 1 meter at 1 watt
Sensitivity	86 dB SPL at 1 meter at 1 watt
Crossover	800 Hz
Impedance	4 ohms
Min. power	15 watts (11.75 dBW)
Max. power	100 watts (20 dBW)
Controls	Tweeter
Features	Wide dispersion, lowest distortion; contemporary design; excellent transient response; excellent power-handling; super-clean mids and highs

Z-30

Price	$450
Dimensions	37H x 13¼W x 13¼D
Weight	49 lbs. (net)
Design	Floorstanding
Type	Dynamic/electrostatic
Drivers	10" woofer; 2 electrostatic bipolar tweeters with refraction lens
Response	45 Hz to 20 kHz, ±3 dB re 86 dB SPL at 2 volts at 1 meter; 38 Hz to 30 kHz, ±6 dB
Sensitivity	86 dB SPL at 1 meter at 1 watt
Crossover	800 Hz
Impedance	4 ohms
Min. power	15 watts (11.75 dBW)
Max. power	100 watts (20 dBW)
Controls	Tweeters; midrange
Features	Bipolar radiation

Z-10

Price	$315
Dimensions	24H x 13¼W x 11D
Weight	41 lbs. (net)
Design	Bookshelf
Type	Dynamic/electrostatic
Drivers	10" woofer; 2 electrostatic tweeters
Response	28 Hz to 30 kHz, ±3 dB re 82 dB SPL at 2 volts at 1 meter; 28 Hz to 30 kHz, ±6 dB
Sensitivity	82 dB SPL at 1 meter at 1 watt
Crossover	800 Hz
Impedance	4 ohms
Min. power	20 watts (13 dBW)
Max. power	75 watts (18.75 dBW)
Controls	Tweeter
Features	Super-clean and smooth mids and highs; ultra-low distortion

Models also available
Z-40, $550; Z-20, $375

JBE
British Audio Corp.
229 Newtown Road
Plainview, N.Y. 11803

Diamond Three

Price	$945/pr.
Dimensions	21½H x 13W x 13D
Weight	48 lbs. (net)
Design	Floorstanding
Type	Infinite baffle
Drivers	8" bass; 4" mid-impregnated paper cone; ¾" dome tweeter
Response	20 Hz to 20 kHz, ±3 dB re 88 dB SPL at 1 meter at 1 watt
Sensitivity	86 dB SPL at 1 meter at 1 watt
Crossover	500 Hz; 5 kHz
Impedance	8 ohms
Min. power	10 watts (10 dBW)
Max. power	75 watts (18.75 dBW)
Controls	None

Diamond One

Price	$895/pr.
Dimensions	15½H x 17½W x 17½D
Weight	42 lbs. (net)
Design	Floorstanding
Type	Infinite baffle
Drivers	12" x 8" woofer
Response	20 Hz to 200 Hz, ±3 dB re 88 dB SPL at 1 meter at 1 watt
Impedance	8 ohms
Min. power	10 watts (10 dBW)
Max. power	100 watts (20 dBW)
Controls	None
Features	Passive baffle

Models also available
Diamond Two, $695/pr.

JBL
James B. Lansing Sound, Inc.
8500 Balboa Blvd.
Northridge, Calif. 91329

D-44000 Paragon

Price	$5,800 per system
Dimensions	35½H x 103⅝W x 24 1/6D
Weight	698 lbs. per system (net)
Design	Floorstanding complete stereo loudspeaker system
Type	Radial reflection
Drivers	Two 15" low-frequency radiators; two midrange compression drivers with horns; two high-frequency ring radiators
Sensitivity	95 dB
Crossover	500 Hz; 7 kHz
Impedance	8 ohms
Min. power	10 watts (10 dBW)
Max. power	200 watts (23 dBW)
Controls	Dual midrange; tweeter
Features	Special dispersion surface to recreate stereo image

L-300

Price	$1,395
Dimensions	31⅝H x 23W x 22½D
Weight	152 lbs. (net)
Design	Floorstanding
Type	Ducted port
Drivers	15" direct bass radiator; high-frequency compression midrange driver; ultra-high-frequency ring radiator
Crossover	800 Hz; 8.5 kHz
Impedance	8 ohms
Min. power	10 watts (10 dBW)
Max. power	400 watts (26 dBW) continuous
Controls	Tweeter; midrange
Features	Sensitivity: 93 dB SPL at 1 meter at 1 watt

L-222

Price	$975
Dimensions	48¼H x 20⅛W x 15⅜D
Weight	121 lbs. (net)
Design	Floorstanding
Type	Passive radiator
Drivers	14" direct bass radiator with 15" passive radiator; 5" direct midrange radiator with acoustic lens; ultra-high-frequency ring radiator
Crossover	800 Hz; 5 kHz
Impedance	8 ohms
Min. power	10 watts (10 dBW)
Max. power	400 watts (26 dBW)
Controls	Tweeter; midrange
Features	Sensitivity: 90 dB SPL at 1 meter at 1 watt

L-112

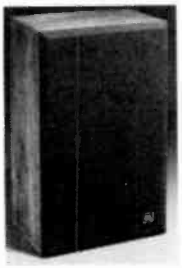
Price	$450
Dimensions	24½H x 14¼W x 13D
Weight	55 lbs. (net)
Design	Bookshelf
Type	Bass reflex
Drivers	12" direct bass radiator; 5" direct midrange radiator; 1" dome tweeter
Sensitivity	89 dB SPL at 1 meter at 1 watt
Crossover	1.1 kHz; 3.7 kHz
Impedance	8 ohms
Min. power	10 watts (10 dBW)
Max. power	300 watts (24.75 dBW)
Controls	Tweeter; midrange
Features	Designed in mirror-imaged pairs

4311WX

Price	$390

Dimensions	23½H x 14½W x 11¾D
Weight	49 lbs. (net)
Design	Bookshelf
Type	Bass reflex
Drivers	12" direct radiator woofer; 5" direct radiator midrange; 1½" direct radiator tweeter
Crossover	1.5 kHz; 6 kHz
Impedance	8 ohms
Min. power	10 watts (10 dBW)
Max. power	75 watts (18.75 dBW) (continuous program power)
Controls	Tweeter; midrange
Features	Sensitivity: 91 dB SPL at 1 meter at 1 watt

L-19



Price	$180
Dimensions	21H x 13W x 10D
Weight	29 lbs. (net)
Design	Bookshelf
Type	Bass reflex
Drivers	8" direct radiator woofer; 1½" direct radiator tweeter
Sensitivity	87 dB SPL at 1 meter at 1 watt
Crossover	2.5 kHz
Impedance	8 ohms
Min. power	10 watts (10 dBW)
Max. power	100 watts (20 dBW)
Controls	Tweeter
Features	Sensitivity: 87 dB SPL at 1 meter at 1 watt

RADIANCE SERIES

905VX-A

Price	$299.95
Dimensions	37¾H x 16¼W x 12¾D
Weight	59 lbs. (net)
Design	Floorstanding
Type	Passive radiator
Drivers	10" direct radiator woofer with 10" passive radiator; 5" direct radiator midrange; 3" direct radiator tweeter
Sensitivity	88 dB SPL at 1 meter at 1 watt
Crossover	600 Hz; 3 kHz
Impedance	4 ohms
Min. power	10 watts (10 dBW)
Max. power	250 watts (24 dBW)
Controls	Midrange; tweeter
Features	Walnut vinyl finish with brown grille

502VX-A

Price	$139.95
Dimensions	21½H x 13½W x 11 3/16D
Weight	27 lbs. 8 oz. (net)
Design	Bookshelf
Type	Bass reflex
Drivers	8" direct radiator woofer; 3" direct radiator tweeter
Sensitivity	86 dB SPL at 1 meter at 1 watt
Crossover	2 kHz
Impedance	4 ohms
Min. power	10 watts (10 dBW)
Max. power	80 watts (19 dBW)
Features	Walnut vinyl finish with brown grille

Models also available

L-212, $2,200 per system; L-220, $950; L-150, $650; L-110, $430; L-50, $350; L-40, $270; 902VX-A, $239.95; 702VX-A, $189.95

JENSEN
Jensen Sound Labs
4136 N. United Parkway
Schiller Park, Ill. 60176

System B

Price	$549.95
Dimensions	33¾H x 16½W x 11¾D (including base)
Weight	78 lbs. (net)
Type	Vented
Drivers	12" woofer; 6" lower midrange; 1¼" upper soft-dome midrange; 1" soft-dome main tweeter; 2" rear-firing tweeter
Response	27 Hz to 21 kHz, +2, -4 dB re 90 dB SPL at 1 meter at 1 watt
Crossover	300 Hz; 1.8 kHz; 8 kHz
Impedance	8 ohms
Min. power	9 watts (9.5 dBW)
Max. power	150 watts (21.75 dBW)
Controls	Tweeter; upper midrange
Features	Power-protection circuit; optimized power response; 5-year transferable warranty; oak veneer saddle base with variable tilt vertically aligned drivers; impedance-compensated crossover network

System C

Price	$399.95
Dimensions	24¾H x 14½W x 12½D
Weight	52 lbs. (net)
Design	Bookshelf
Type	Vented
Drivers	10" woofer; 2" soft-dome midrange; 1" soft-dome main tweeter; 2" cone rear-firing tweeter
Response	47 Hz to 21 kHz, +2, -4 dB
Sensitivity	87 dB SPL at 1 meter at 1 watt
Crossover	900 Hz; 5.5 kHz
Impedance	8 ohms
Min. power	9 watts (9.5 dBW)
Max. power	125 watts (21 dBW)
Controls	Tweeter; midrange (continuously variable)
Features	Power-protection circuit; optimized power response; 5-year transferable warranty; oak-veneer cabinet; impedance-compensated network

LS-5b

Price	$309.95
Dimensions	26H x 15¾W x 13⅝D
Weight	50 lbs. (net)
Design	Bookshelf
Type	Acoustic suspension
Drivers	12" woofer; two 3½" cone midrange drivers; 1" soft-dome tweeter
Response	50 Hz to 20 kHz, ±3 dB
Sensitivity	90 dB SPL at 1 meter at 1 watt
Crossover	1 kHz; 5 kHz
Impedance	8 ohms nominal
Min. power	10 watts (10 dBW) continuous
Max. power	90 watts (19.5 dBW) continuous
Controls	Tweeter; midrange
Features	Full 5-year transferable warranty

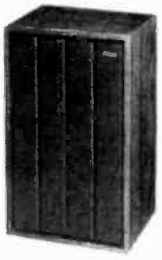
40

Price	$229.95
Dimensions	27H x 17W x 10¾D
Weight	30 lbs. (net)
Design	Bookshelf
Type	Acoustic suspension
Drivers	12" woofer; 3½" midrange; 2" cone tweeter
Response	50 Hz to 18 kHz, ±3 dB
Crossover	1.2 kHz; 4 kHz
Impedance	8 ohms
Min. power	10 watts (10 dBW)
Max. power	60 watts (17.75 dBW)
Controls	MF/HF (continuously variable)
Features	Vertically-aligned drivers; full 5-year transferable warranty

LS-3b

Price	$169.95
Dimensions	23H x 12⅞W x 10¼D
Weight	28 lbs. (net)
Design	Bookshelf
Type	Acoustic suspension
Drivers	10" woofer; 2" cone tweeter
Response	60 Hz to 18 kHz, ±3 dB
Sensitivity	88 dB SPL at 1 meter at 1 watt
Crossover	3.5 kHz
Impedance	8 ohms nominal
Min. power	10 watts (10 dBW) continuous
Max. power	60 watts (17.75 dBW) continuous
Controls	Tweeter
Features	Full 5-year transferable warranty

20



Price	$99.95
Dimensions	18½H x 11W x 8⅜D
Weight	18 lbs. (net)
Design	Bookshelf
Type	Acoustic suspension
Drivers	8" woofer; 2" direct-radiating tweeter
Response	70 Hz to 18 kHz, ±3 dB
Crossover	4 kHz
Impedance	8 ohms
Min. power	10 watts (10 dBW)
Max. power	40 watts (16 dBW)
Features	Full 5-year transferable warranty

Models also available

LS-6b, $399.95; 50, $299.95; LS-4b, $239.95; 30, $179.95; LS-2b, $109.95

JOHNSON SPEAKERS
Speakers and Associated Sound, Inc.
420 Austin Place
Bronx, N.Y. 10455

3-DM-2000/WDR-1M, "The Ultimus"

Price	$2,400/pr.
Dimensions	42¾H x 21¾W x 26D
Weight	160 lbs. (net)
Design	Floorstanding
Type	Acoustic suspension
Drivers	Top unit (pentagon): five midrange domes, three dome tweeters; bass unit #1: two 10" V-panel woofers; bass unit #2: 10" woofer
Response	18 Hz to 22 kHz, ±5 dB re 84 dB SPL at 1 meter at 1 watt
Sensitivity	84 dB SPL at 1 meter at 1 watt
Crossover	2.1 kHz; 5 kHz
Impedance	8 ohms
Min. power	50 watts (17 dBW)
Max. power	200 watts (23 dBW)
Controls	None
Features	Pentagon has 540-degree radiation pattern; tandem bass units have convex V-front cabinet facing corner with direct radiator unit looking into listening area

3-DM-2/WDR-4M, "The Statesman"

Price	$1,378/pr.
Dimensions	42¾H x 19¾W x 20D

Weight	100 lbs. (net)
Type	Acoustic suspenslon
Drivers	Top unit, "Pentagon": 5 midrange drivers; 5 tweeters; bass unit: four 8" woofers
Response	30 Hz to 20 kHz
Sensitivity	94 dB SPL at 1 meter at 1 watt
Crossover	2.4 kHz
Impedance	4 ohms
Min. power	25 watts (14 dBW)
Max. power	100 watts (20 dBW)
Controls	None
Features	Pentagon: 540-degree radiation pattern (360 horizontal, 180 vertical)

3DM-1/WHS-2, "The Diplomat"

Price	$650/pr.
Dimensions	27H x 24W x 18D
Weight	80 lbs. (net)
Design	Floorstanding
Type	Acoustic suspension
Drivers	Top unit, "Pentagon Junior": 4 full-range drivers, 1 tweeter; bass unit: two 10" woofers facing downwards
Response	30 Hz to 20 kHz
Sensitivity	90 dB SPL at 1 meter at 1 watt
Crossover	350 Hz; 5 kHz
Impedance	4 ohms
Min. power	20 watts (13 dBW)
Max. power	70 watts (18.5 dBW)
Controls	None
Features	Common woofer commode; speakers facing floor

Models also available

3-DM-2000/WDR-2H, "The President", $1,698/pr.; 3-DM-2000/WDR-1M, "The Ambassador", $1,210/pr.; 2-10 Andante, $250/pr.

JUMETITE
Jumetite Laboratories, Ltd.
1300 Richard St.
Vancouver, B.C. V6B 3G6

CR-610

Price	$1,445
Dimensions	66H x 15W x 15D
Weight	134 lbs. (net)
Design	Floorstandlng
Type	Acoustic suspension
Drivers	Two 10" long-excursion woofers; Hobrough license ribbon midrange
Response	34 Hz to 18 kHz, ±3 dB re 89 dB SPL at 1 meter at 1 watt
Sensitivity	89 dB SPL at 1 meter at 1 watt
Crossover	600 Hz
Impedance	8 ohms
Min. power	50 watts (17 dBW)
Max. power	250 watts (24 dBW)
Controls	None
Features	Essentially perfect transient response; biamp capability

JVC
U.S. JVC Corp.
Hi-Fi Division
58-75 Queens Midtown Expressway
Maspeth, N.Y. 11378

Zero 9

Price	$700
Dimensions	41¼H x 16 1/16W x 16⅛D
Weight	92 lbs. 6.4 oz. (net)
Type	Bass reflex
Drivers	Two 12" cone woofers; 3 15/16" dome cone midrange; 2 1/16" x 5/16" ribbon tweeter
Response	25 Hz to 50 kHz re 92 dB SPL at 1 meter at 1 watt
Crossover	450 Hz; 5.5 kHz
Impedance	6 ohms
Max. power	150 watts (21.75 dBW)
Controls	Midrange; tweeter

Zero 3

Price	$320
Dimensions	22 13/16H x 12⅝W x 13⅜D
Weight	39 lbs. 10 oz. (net)
Type	Bass reflex
Drivers	10" cone woofer; 2⅜" dome cone midrange; 2 1/16" x 5/16" ribbon tweeter
Response	40 Hz to 50 kHz re 91 dB SPL at 1 meter at 1 watt
Crossover	1.5 kHz; 7 kHz
Impedance	6 ohms
Max. power	75 watts (18.75 dBW)
Controls	Midrange; tweeter

SK-500 II

Price	$210/pr.
Dimensions	19⅝H x 12½W x 12⅛D
Weight	23 lbs. 3 oz. (net)
Type	Bass reflex
Drivers	10" woofer; 2⅜" cone tweeter
Response	40 Hz to 20 kHz re 92 dB SPL at 1 meter at 1 watt
Crossover	2 kHz
Impedance	8 ohms
Max. power	50 watts (17 dBW)

SK-700 II

Price	$180
Dimensions	22¼H x 13½W x 13⅛D
Weight	30 lbs. 14 oz. (net)
Type	Bass reflex
Drivers	10" cone woofer; 5" cone midrange; 1" dome tweeter
Response	35 Hz to 40 kHz re 93 dB SPL at 1 meter at 1 watt
Crossover	900 Hz; 9 kHz
Impedance	8 ohms
Max. power	70 watts (18.5 dBW)
Controls	Midrange; tweeter

SK-400 II

Price	$150/pr.
Dimensions	17⅜H x 10⅝W x 10¼D
Weight	17 lbs. 9 oz. (net)
Type	Bass reflex
Drivers	8" cone woofer; 2⅜" cone tweeter
Response	45 Hz to 20 kHz re 91 dB SPL at 1 meter at 1 watt
Crossover	2 kHz
Impedance	8 ohms
Max. power	40 watts (16 dBW)

Models also available

Zero 5, $400; SK-1000 II, $280; SK-600 II, $240/pr.; S-M3, $170/pr.

KEF
Intratec
P.O. Box 17414
Dulles International Airport
Washington, D.C. 20041

105 Series II

Price	$1,400
Dimensions	38H x 17 9/10W x 16 3/10D
Weight	80 lbs. (net)
Design	Floorstanding
Type	Coherent phase
Drivers	12" woofer; 5" cone midrange; 1½" dome tweeter
Response	30 Hz to 25 kHz, ±2 dB
Sensitivity	85 dB SPL at 1 meter at 1 watt
Impedance	8 ohms
Min. power	20 watts (13 dBW)
Max. power	200 watts (23 dBW)
Features	LED "Listening Window" power indicator; midrange/tweeter assembly can be rotated for best stereo placement; S-stop protection circuit; walnut, teak, black ash, or rosewood finishes

104aB

Price	$475
Dimensions	24 4/5H x 13W x 10 1/5D
Weight	36 lbs. (net)
Type	Reflex
Drivers	8" woofer; 9" x 13" drone; ¾" dome tweeter
Response	50 Hz to 20 kHz, ±2 dB
Sensitivity	83.5 dB SPL at 1 meter at 1 watt
Crossover	45 Hz; 3 kHz
Impedance	8 ohms
Min. power	15 watts (11.75 dBW)
Max. power	100 watts (20 dBW)
Controls	Midrange level
Features	Walnut or teak wood cabinet; optional stand

103.2

Price	$450
Dimensions	20H x 10 2/5W x 9½D
Weight	19 lbs. (net)
Design	Bookshelf
Type	Infinite baffle
Drivers	8" woofer; 1" tweeter
Response	60 Hz to 20 kHz, ±2 dB re 86 dB SPL at 1 meter at 1 watt
Sensitivity	86 dB SPL at 1 meter at 1 watt
Impedance	8 ohms
Max. power	150 watts (21.75 dBW)
Features	S-stop protection circuit; walnut, teak, black ash, and rosewood finishes

304
Price $350
Dimensions 26 7/10H x 11W x 12 2/5D
Weight 30 lbs. (net)
Type Infinite baffle
Drivers 8" woofer; 1" dome tweeter
Response 60 Hz to 20 kHz, ±3 dB re 87 dB SPL at 1 meter at 1 watt
Sensitivity 87 dB SPL at 1 meter at 1 watt
Impedance 8 ohms
Min. power 10 watts (10 dBW)
Max. power 100 watts (20 dBW)
Features Satin black finish; optional floor stand

101
Price $295
Dimensions 13 3/10H x 7 1/10W x 7 2/5D
Weight 12 lbs. 8 oz. (net)
Design Mini
Type Infinite baffle
Drivers 5" woofer; ¾" dome tweeter
Response 90 Hz to 30 kHz, ±2 dB
Sensitivity 81 dB SPL at 1 meter at 1 watt
Impedance 8 ohms
Min. power 20 watts (13 dBW)
Max. power 100 watts (20 dBW)
Features S-stop overload protector circuit automatically attenuates signal by 30 dB; optional floor stand

303
Price $225
Dimensions 20H x 10 2/5W x 9D
Weight 18 lbs. (net)
Design Bookshelf
Type Infinite baffle
Drivers 8" woofer; 1" dome tweeter
Response 70 Hz to 20 kHz, ±3 dB re 86 dB SPL at 1 meter at 1 watt
Sensitivity 86 dB SPL at 1 meter at 1 watt
Impedance 8 ohms
Min. power 10 watts (10 dBW)
Max. power 50 watts (17 dBW)
Features Satin black finish; optional floor stand

Models also available
Cantata, $725; Calinda, $395; Corelli, $250; 105.4, $1,050

KEITH MONKS
Keith Monks (Audio), U.S.A.
652 Glenbrook Road
Glenbrook, Conn. 06906

LS1-8
Price $414.60
Dimensions 8 9/10H x 14 4/5W x 9 4/5D
Design Bookshelf
Type Vented
Drivers 5½" woofer; two 2" cone tweeters
Impedance 600 ohms
Max. power 10 watts (10 dBW)
Controls On; off; volume
Features Integrated 10 watts power amplifier; 600-ohm balanced XLR input; bookshelf design

KENWOOD
Kenwood Electronics, Inc.
75 Seaview Drive
Secaucus, N.J. 07094

LS-1600
Price $550
Dimensions 27 15/16H x 15 11/32W x 12 23/32D
Weight 64 lbs. 14 oz. (net)
Type Vented
Drivers 13" woofer; 5⅛" midrange; high-frequency
Response 32 Hz to 20 kHz re 92 dB SPL at 1 meter at 1 watt
Crossover 900 Hz; 5 kHz
Impedance 8 ohms
Min. power 50 watts (17 dBW)
Max. power 120 watts (20.75 dBW)
Controls Mid/high frequency
Features Linear response

LS-1200
Price $365
Dimensions 25 19/32H x 13 25/32W x 12⅞D
Weight 47 lbs. 5 oz. (net)
Type Vented
Drivers 10" woofer; 4" midrange; 9/16" high-frequency driver
Response 35 Hz to 20 kHz re 90 dB SPL at 1 meter at 1 watt
Sensitivity 90 dB SPL at 1 meter at 1 watt
Crossover 1 kHz; 6 kHz
Impedance 8 ohms
Min. power 40 watts (16 dBW)
Max. power 100 watts (20 dBW)
Features Linear response

LS-408C

Price $330
Dimensions 29H x 16½W x 14⅜D
Weight 47 lbs. 8 oz. (net)
Design Bookshelf
Type Vented
Drivers 12" woofer; 4⅜" midrange; 1¾" tweeter
Response 30 Hz to 20 kHz re 91 dB SPL at 1 meter at 1 watt
Sensitivity 91 dB SPL at 1 meter at 1 watt
Crossover 2 kHz; 5 kHz
Impedance 8 ohms
Min. power 25 watts (14 dBW)
Max. power 160 watts (22 dBW)
Controls Mid/high frequency

LS-405C
Price $189
Dimensions 23¼H x 13W x 12¾D
Weight 26 lbs. (net)
Design Bookshelf
Type 10" woofer; 1¾" tweeter
Response 40 Hz to 20 kHz re 90 dB SPL at 1 meter at 1 watt
Sensitivity 90 dB SPL at 1 meter at 1 watt
Crossover 3 kHz
Impedance 8 ohms
Min. power 15 watts (11.75 dBW)
Max. power 100 watts (20 dBW)

LSK-300 B
Price $170/pr.
Dimensions 21H x 12½W x 9 1/16D
Weight 19 lbs. (net)
Type Air suspension
Drivers 8" woofer; 1¾" tweeter
Response 60 Hz to 20 kHz re 89 dB SPL at 1 meter at 1 watt
Crossover 2.5 kHz
Impedance 8 ohms
Min. power 10 watts (10 dBW)
Max. power 40 watts (16 dBW)

LSK-500 B
Price $160
Dimensions 24H x 14W x 10¾D
Weight 26 lbs. (net)
Type Air suspension
Drivers 12" woofer; 4 6/16" midrange; 1¾" tweeter
Response 50 Hz to 20 kHz re 92 dB SPL at 1 meter at 1 watt
Crossover 2.2 kHz; 10 kHz
Impedance 8 ohms
Min. power 10 watts (10 dBW)
Max. power 105 watts (20.25 dBW)

Models also available
LS-1900, $1,165; LS-407C, $275; LS-600 B, $250/pr.; LSK-400 B, $135; LSK-200 B, $142/pr.

KINETIC AUDIO
KA/Kinetic Audio International, Ltd.
6624 W. Irving Park Road
Chicago, Ill. 60634

Trapezium®
Price $1,999
Dimensions 60H x 16W x 20D
Weight 200 lbs. (net)
Design Floorstanding
Type Tapered acoustical trapezoidal line (TATL, patented)
Drivers 12" woofer; 12" non-pressed synthetic composition cone midwoofer; 6½" bextrene cone midtweeter; 2" dome, magnetic liquid, infinite line tweeter; 1¼" synthetic dome, magnetic liquid, infinite line supertweeter; ¾" synthetic dome, magnetic liquid, infinite line
Response 14 Hz to 22 kHz, ±1.5 dB re 90 dB
Sensitivity 90 dB SPL at 1 meter at 1 watt
Crossover 90 Hz; 1 kHz; 3 kHz; 7 kHz
Impedance 8 ohms
Min. power 45 watts (16.5 dBW)
Max. power 150 watts 921.75 dBW)
Controls Four level
Features Linear phase design; diffraction-less baffle; select-grade components used throughout, including predision polycarbonate-film capacitors on all tweeters

The Labyrinth®
Price $1,299
Dimensions 48H x 16W 18D
Weight 165 lbs. (net)
Design Floorstanding
Type 9' tapered acoustical trapezoidal line (TATL, patented)
Drivers 12" synthetic composition 6½" Bextrene cone precision cast aluminum frame plastic cone midtweeter; synthetic dome transmission line midtweeter; 1" dome supertweeter
Response 16 Hz to 22 kHz, ±2.5 dB re 91 dB SPL at 1 meter at 1 watt
Sensitivity 91 dB SPL at 1 meter at 1 watt
Crossover 90 Hz; 2 kHz; 7.5 kHz
Impedance 6 ohms (5 ohms min; 11 ohms max)
Min. power 35 watts (15.5 dBW) per channel into 8 ohms
Max. power 150 watts (21.75 dBW) per channel into 8 ohms (program material)
Controls 3 level controls (heavy-duty type)
Features May be bi- or triamped with linear phase design; electronic tweeters (14 terminals included for all possible connections applications); fuse protection; phase-coherent; magnetic-liquid tweeters; linear phase; mirror-matched walnut veneer and components

Impulse/CRM®

Price	$499
Dimensions	26H x 14½W x 14D
Weight	85 lbs. (net)
Design	Floorstanding; bookshelf
Type	Tapered acoustical trapezoidal line, linear-phase design
Drivers	12" cone woofer; 5" Bextrene cone midrange; 1¼" magnet liquid-cooled dome tweeter
Response	20 Hz to 22 kHz, ±3 dB re 90 dB SPL at 1 meter at 1 watt
Sensitivity	90 dB SPL at 1 meter at 1 watt
Crossover	175 Hz; 2 kHz
Impedance	8 ohms (5 ohms min; 14 ohms max)
Min. power	35 watts (15.5 dBW) per channel into 8 ohms
Max. power	150 watts (21.75 dBW) per channel into 8 ohms
Controls	T-pads (2)
Features	KA Var-I-Vent (adjusts system resonance); may be biamped; fuse protection; phase-corrected Linear Phased Array corrected; 7-lbs., 15-gauge wire choker coil used on woofer; third-order Butterworth network used on midrange

STAT®

Price	$399
Dimensions	17½H x 10½W x 9D
Weight	40 lbs.
Type	Tapered acoustical trapezoidal line
Drivers	Two 5" Bextrene midwoofers; 1¼" synthetic dome transmission line magnetic liquid tweeter
Response	34 Hz to 22 kHz, ±3 dB re 94 dB SPL at 1 meter at 1 watt
Crossover	2.5 kHz
Impedance	4 ohms
Min. power	10 watts (10 dBW) into 8 ohms
Max. power	200 watts (23 dBW) into 8 ohms
Controls	T-pads (heavy-duty wire wound)
Features	Fuse protection; phase-corrected mid/woofers have 3/4 chamber; with duel venting; can be installed as a car speaker system excursion and 25 oz. magnets; rack-mountable with optional ears; walnut veneer mirror-matched; components also mirror-matched; linear-phase design

Impulse/SW® Subwoofer

Price	$299
Dimensions	26H x 14½W x 14D
Weight	60 lbs. (net)
Design	Floorstanding
Type	Tapered acoustical trapezoidal line
Drivers	12" long excursion woofer with synthetic composition deep cone
Response	20 Hz to 2 kHz, ±2½ dB re 90 dB SPL at 1 meter at 1 watt
Sensitivity	90 dB SPL at 1 meter at 1 watt
Crossover	65 Hz; 100 Hz; 200 Hz or no internal crossover
Impedance	8 ohms
Min. power	25 watts (14 dBW)
Max. power	150 watts (21.75 dBW)
Features	Four built-in sets of terminals in back; biampable with or without electronic crossover; KA Var-I-Vent (adjusts air/mass loading)

IMP #200®

Price	$79
Dimensions	24H x 14½W x 9D
Weight	49 lbs. (net)
Design	Floorstanding; bookshelf
Type	Tapered acoustical line
Drivers	8" woofer; 1" magnet-liquid dome tweeter
Response	36 Hz to 22 kHz, ±2.5 dB re 94 dB SPL at 1 meter at 1 watt
Sensitivity	94 dB SPL at 1 meter at 1 watt
Crossover	1.8 kHz
Impedance	8 ohms
Min. power	10 watts (10 dBW)
Max. power	80 watts (19 dBW)
Controls	Level control
Features	Fuse protection

Models also available

Trapezium/SW Subwoofer, $1,299; Labyrinth/SW Subwoofer, $699; Trapezoid®, $699; Trapezoid®/SW Subwoofer, $399; Pulse #300®, $379; 711/NFM®, $17

KLEIN & HUMMEL
Gotham Audio Corp.
741 Washington St.
New York, N.Y. 10014

0-92

Price	$3,360
Dimensions	31½H x 17¼W x 11¾D
Weight	66 lbs. (net)
Design	Floorstanding
Type	Acoustic suspension
Drivers	4 cone
Response	50 Hz to 16 kHz, ±1.5 dB re 80 dB SPL at 1 meter at 1 watt
Crossover	500 Hz; 3 kHz
Min. power	Low frequency: 120 watts (20.75 dBW); mid frequency: 60 watts (17.75 dBW); high frequency: 60 watts (17.75 dBW)
Max. power	240 watts (23.75 dBW) (self-powered)
Controls	Woofer; tweeter
Features	Plug-in compensators for room placement; 0, 1, 2, or 3 surfaces

Models also available

OY, $1,140

KLH
KLH Research & Development Corp.
145 University Ave.
Westwood, Mass. 02090

KLH-2

Price	$725/pr. (including Analog Bass Computer™)
Dimensions	20H x 10¼W x 8½D
Weight	40 lbs. (net)
Design	Bookshelf
Type	Computer-controlled Butterworth sixth-order alignment
Drivers	8" die-cast bass unit, with natural polypropylene formed cones; 4½" midrange formed cone of natural polypropylene; 1" dome tweeter butyl-loaded synthetic soft dome
Response	38 Hz to 20 kHz, ±3 dB re 86 dB SPL at 1 meter at 1 watt
Sensitivity	85 dB SPL at 1 meter at 1 watt
Crossover	750 Hz; 3 kHz
Impedance	4 to 8 ohms
Min. power	40 watts (16 dBW)
Max. power	200 watts (23 dBW) (recommended for normal use)
Controls	Position; tape; in/out (on computer)
Features	Utilizes Analog Bass Computer® for extended bass response in conjunction with hi-flux motor system; proprietary drivers with natural polypropylene cones; optional stands available

KLH-150

Price	$380/pr.
Dimensions	21H x 10¼W x 8½D
Weight	23 lbs. (net)
Design	Freestanding; bookshelf
Type	Fourth-order Butterworth aligned vented enclosure
Drivers	8" polypropylene cone woofer with 20 oz. magnet; 4½" polypropylene cone midrange in separate enclosure; 1" soft butyl-loaded synthetic dome tweeter
Response	55 Hz to 18 kHz, ±3 dB re 90 dB SPL at 1 meter at 1 watt
Sensitivity	90 dB SPL at 1 meter at 1 watt
Crossover	500 Hz; 3.5 kHz
Impedance	4 to 8 ohms
Min. power	20 watts (13 dBW)
Max. power	75 watts (18.75 dBW)
Controls	None
Features	Supplied as mirror-image stereo pairs

KLH-160

Price	$250/pr.
Dimensions	19¼H x 10¼W x 8D
Weight	18 lbs. (net)
Design	Freestanding; bookshelf
Type	Second order, totally enclosed cabinet
Drivers	8" polypropylene cone woofer/midrange; 1" soft butyl-loaded synthetic dome tweeter
Response	70 Hz to 18 kHz, ±3 dB re 90 dB SPL at 1 meter at 1 watt
Sensitivity	90 dB SPL at 1 meter at 1 watt
Crossover	3 kHz
Impedance	4 to 8 ohms
Min. power	15 watts (11.75 dBW)
Max. power	50 watts (17 dBW)
Controls	None
Features	Supplied as mirror-image stereo pairs

337

Price	$199
Dimensions	24½H x 14½W x 11¼D
Weight	40 lbs. (net)
Design	Bookshelf
Type	Acoustic suspension
Drivers	12" woofer; 4" cone midrange; 2½" cone tweeter
Response	51 Hz to 18 kHz
Sensitivity	87 dB SPL at 1 meter at 1 watt
Crossover	900 Hz; 3.3 kHz
Impedance	8 ohms
Min. power	20 watts (13 dBW)
Max. power	100 watts (20 dBW)
Controls	Midrange; tweeter

317B

Price	$130
Dimensions	23H x 12W x 9¾D
Weight	29 lbs. (net)
Type	Acoustic suspension
Drivers	10" cone woofer; 1" soft-dome tweeter
Response	52 Hz to 22 kHz
Sensitivity	87 dB SPL at 1 meter at 1 watt
Crossover	1.2 kHz
Impedance	8 ohms
Min. power	15 watts (11.75 dBW)
Max. power	60 watts (17.75 dBW)

Models also available

KLH-1, $1,200/pr. (including Analog Bass Computer Computer® and stands); KLH-3, $495/pr. (including Analog Bass Computer™; KLH-4, $320/pr.; 319B, $230; 327, $179; 331B, $100

KLIPSCH
Klipsch & Associates
P.O. Box 688
Hope, Ark. 71801

Klipschorn

Price $1,293 (walnut oil, walnut lacquer); $1,600 (exotic woods); $1,024 (birch, raw, black); $912 (decorator model in birch, raw, black)
Dimensions 52H x 31¼W x 28½D (walnut and exotic woods); 50½H (birch, raw, black); 49¾H (decorator model)
Weight 180 to 240 lbs., depending on style
Design Floorstanding
Type Horn
Drivers 15" bass; compression midrange; compression high frequency
Response 35 Hz to 17 kHz, ±5 dB
Sensitivity 104 dB SPL at 4 feet at 1 watt
Crossover 400 Hz; 6 kHz
Impedance 8 ohms
Min. power 2 watts
Max. power 105 watts (20.25 dBW)
Controls None

La Scala

Price $722 (birch, raw, black); $768 (birch lacquer); $768 (birch lacquer-stained)
Dimensions 35¼H x 23¾W x 24½D
Weight 120 lbs.
Design Floorstanding
Type Horn
Drivers 15" bass; compression midrange; compression high frequency
Response 45 Hz to 17 kHz, ±5 dB
Sensitivity 104 dB SPL at 4 feet at 1 watt
Crossover 400 Hz; 6 kHz
Impedance 8 ohms
Min. power 2 watts
Max. power 105 watts (20.25 dBW)
Controls None

Heresy

Price $380 (walnut oil, walnut lacquer); $456 (exotic woods); $336 (birch, raw, black)
Dimensions 21⅜H x 15½W x 13⅛D
Weight 55 lbs.
Design Floorstanding
Type Closed box
Drivers 12" bass; compression midrange; compression high frequency
Response 50 Hz to 17 kHz, ±5 dB
Sensitivity 96 dB SPL at 4 feet at 1 watt
Crossover 700 Hz; 6 kHz
Impedance 8 ohms
Min. power 15 watts
Max. power 105 watts (20.25 dBW)
Controls None

Models also available

Belle Klipsch, $1,119 (walnut oil, walnut lacquer); $1,345 (exotic woods); Cornwall, $674 (walnut oil, walnut lacquer); $810 (exotic woods); $531 (birch, raw, black)

KM
KM Labaratories
342 Madison Ave.
New York, N.Y. 10173

205

Price $2,995
Dimensions 65H x 19½W x 33D
Weight 217 lbs. (net)
Design Floorstanding
Type Horn-loaded with integrated biamp and MFB
Drivers Two 12" woofers; compression type mid/tweeter horn
Response 30 Hz to 15 kHz, ±4 dB
Sensitivity 125 dB SPL at 1 meter at 1 watt
Crossover 600 Hz
Impedance 4 ohms
Controls Switched treble control (5-position, 2 dB steps)
Features 120 watts and 60 watts rms blamp with electronic crossover; a professional speaker

52

Price $695
Dimensions 10½H x 14W x 9½D
Weight 18 lbs. (net)
Design Bookshelf
Type Bass reflex integrated amplifier with MFB
Drivers 6½" woofer; 5" passive radiator; 1¼" dome tweeter
Response 38 Hz to 20 kHz, ±3 dB re 95 dB SPL at 1 meter at 1 watt
Sensitivity 775 mV
Crossover 2.2 kHz
Impedance 4 ohms
Controls Switched bass and treble (5-position, 2-dB steps)
Features Motional feedback around woofer; 60-watt (17.75-dBW) rms amplifier at 0.05% THD; permits easy cascading for sound reinforcement; max SPL: 105 dBA at 1 meter

KOSS
Koss Corp.
4129 Port Washington Ave. N.
Milwaukee, Wis. 53212

CM/1030

Price $456
Dimensions 39H x 16½W x 14½D
Weight 74 lbs. (net)
Design Floorstanding
Type Vented
Drivers 10" woofer; two 4½" midrange drivers; 1" tweeter; 1" supertweeter
Response 29 Hz to 19 kHz, –3 dB
Sensitivity 94 dB SPL at 1 meter at 1 watt
Crossover 400 Hz; 2.5 kHz; 6 kHz
Impedance 7 ohms
Min. power 15 watts (11.75 dBW)
Max. power 200 watts (23 dBW)
Controls Midrange; tweeter; supertweeter
Features Computer-maximized performance; parallel midrange system; pecan veneer

CM/1010

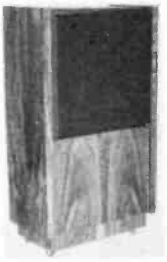
Price $247
Dimensions 28H x 15½W x 11D
Weight 44 lbs. (net)
Design Floorstanding
Type Passive radiator
Drivers 8" woofer; 1" tweeter
Response 35 Hz to 17.5 kHz, –3 dB (mass in place); 40 Hz to 17.5 kHz, –3 dB (mass removed)
Sensitivity 90 dB SPL at 1 meter at 1 watt
Crossover 2.5 kHz
Impedance 7 ohms
Min. power 15 watts (11.75 dBW)
Max. power 100 watts (20 dBW)
Controls Tweeter
Features Computer-maximized to feature a special mass alignment knob for critical adjustment of the passive radiator

Models also available

CM/1020, $352; CM/530, $175

KUSTOM ACOUSTICS
Kustom Acoustics, Inc.
6624 W. Irving Park Road
Chicago, Ill. 60634

Titan Labyrinth



Price $2,199
Dimensions 55H x 31W x 18D
Weight 385 lbs. (net)
Type Dual, 8' trapezoidal double helical transmission lines and tapered acoustical line (pat. pend.); two 12" rubber composition cone woofer; two 6" Bextrene cone midranges; two 1¼" ferrofluid synthetic dome tweeters; 1" dome magnetic liquid supertweeters
Response 14 Hz to 22 kHz, ±2½ dB re 96 dB SPL at 1 meter at 1 watt
Crossover 60 Hz; 1.2 kHz; 7.5 kHz
Impedance 4 ohms (3.2 ohms min.; 9 ohms max.)
Min. power 15 watts (3.2 dBW) per channel into 4 ohms
Max. power 300 watts (24.75 dBW) per channel into 4 ohms
Controls 4 level controls (front-mounted)
Features Complete with base and caster; 30 terminals allowing for bi- or triamped or four amplifiers with or without electronic crossovers; fuse protection; phase-corrected, mirror-matched walnut veneer and components, 2"-thick vibration-free side panels

Regency/CRM

Price $599
Dimensions 26H x 16W x 14D
Weight 95 lbs. (net)
Type TAL (Tapered Acoustical Line) with Var-I-Vent (for fine adjustment of air exchange) and optimum transducer diaphragm loading
Drivers 12" extended long-throw woofer, 34 oz. magnet; 6" plastic diaphragm midrange, 20 oz. magnet; 1¼" synthetic dome with infinite line tweeter
Response 18 Hz to 20 kHz, ±2.5 dB re 92 dB SPL at 1 meter at 1 watt

Crossover	90 Hz; 2 kHz
Impedance	8 ohms
Min. power	25 watts (14 dBW)
Max. power	250 watts (24 dBW)
Controls	Front-mounted L-pads with recessed knobs and fuse holders
Features	Standard with 12-post terminal cluster for single, bi- and/or triamped with or without electronic crossover; many veneers available

Models also available

Amp Eater One, $1,699; TAS Challenger, $1,199

LANCER
Lancer Electronics
10530 Lawson River Ave.
Fountain Valley, Calif. 92708

SC-8

Price	$359.50
Dimensions	28H x 18W x 13¼D
Weight	65 lbs. (net)
Design	Floorstanding
Type	Sealed
Drivers	Two 12" woofers; 5¼" dome midrange; 3½" dome tweeter
Response	20 Hz to 22 kHz re 92 dB SPL at 1 meter at 1 watt
Crossover	500 Hz; 4.5 kHz
Impedance	8 ohms
Min. power	8 watts (9 dBW)
Max. power	120 watts (20.75 dBW)
Controls	Midrange; tweeter
Features	Genuine walnut veneer and solid cabinets; front-mounted controls; black double-knit grille

SC-9T

Price	$249.50
Dimensions	38H x 12W x 12D
Weight	57 lbs. (net)
Design	Floorstanding
Type	Acoustic suspension
Drivers	10" woofer; 5" midrange; two dome tweeters
Response	20 Hz to 20 kHz re 89 dB SPL at 1 meter at 1 watt
Crossover	500 Hz; 4.5 kHz
Impedance	8 ohms
Min. power	10 watts (10 dBW)
Max. power	90 watts (19.5 dBW)
Controls	Midrange; tweeter
Features	Genuine oiled-walnut solid and veneer cabinets; front-mounted controls; black double-knit grille

SC-11

Price	$179.50
Dimensions	22¼H x 12½W x 10D
Weight	38 lbs. (net)
Design	Bookshelf
Type	Acoustic suspension
Drivers	10" woofer; 5" midrange; 2¼" tweeter
Response	20 Hz to 20 kHz re 90 dB SPL at 1 meter at 1 watt
Crossover	750 Hz; 6 kHz
Impedance	8 ohms
Min. power	10 watts (10 dBW)
Max. power	50 watts (10 dBW)
Controls	Midrange; tweeter
Features	Genuine oiled-walnut solid and veneer cabinets; front-mounted controls; tan double-knit grille

9535-2

Price	$99.50
Dimensions	25H x 14¼W x 11¾D
Weight	33 lbs. (net)
Design	Bookshelf
Type	Tubular; vented
Drivers	12" woofer; 2¼" tweeter
Response	30 Hz to 20 kHz re 93 dB SPL at 1 meter at 1 watt
Crossover	3 kHz
Impedance	8 ohms
Min. power	5 watts (7 dBW)
Max. power	50 watts (17 dBW)
Features	Genuine oiled-walnut cabinet; tan double-knit grille

9711

Price	$54.50
Dimensions	20¼H x 10W x 9½D
Weight	19 lbs. (net)
Design	Bookshelf
Type	Tubular; vented
Drivers	8" full-range driver
Response	45 Hz to 15 kHz re 90 dB SPL at 1 meter at 1 watt
Impedance	8 ohms
Min. power	3 watts (4.75 dBW)
Max. power	30 watts (14.75 dBW)
Features	Genuine oiled-walnut veneer cabinet; tan double-knit grille

Models also available

SC-7A, $299.50; SC-4A, $229.50; SC-10A, $149.50; 9534X, $69.50; SC-1, $34.50

LINN PRODUCTS LTD.
Audiophile Systems
5750 Rymark Court
Indianapolis, Ind. 46250

DMS Isobarik

Price	$3,740/pr.
Dimensions	30H x 15W x 16D
Weight	95 lbs. (net)
Design	Floorstanding
Type	Isobarik loading
Drivers	Two 9" x 12" woofers; two 5" midranges; two 1" dome tweeters
Response	16 Hz to 20 kHz, ±3 dB
Crossover	360 Hz; 3 kHz
Impedance	4 ohms
Min. power	50 watts (17 dBW)
Max. power	500 watts (27 dBW)
Features	Instantaneous dynamic range of 54 to 56 dB

K.A.N.

Price	$625/pr.
Dimensions	7½H x 6⅜W x 12D
Weight	11 lbs. (net)
Design	Bookshelf
Type	Acoustic suspension
Drivers	5" woofer; 1" dome tweeter
Response	70 Hz to 20 kHz, ±3 dB
Crossover	3 kHz
Impedance	8 ohms
Min. power	25 watts (14 dBW)
Max. power	150 watts (21.75 dBW)

Models also available

S.A.R.A. Isobarik, $1,470/pr.

LUXMAN
Lux Audio of America
160 Dupart St.
Plainview, N.Y. 11803

MS-10

Price	$220
Dimensions	21¼H x 9 27/32W x 10¼D
Weight	25 lbs. 5 oz. (net)
Design	Bookshelf
Drivers	8" bass/midrange Aramid cone; 1" polyester film dome tweeter
Response	50 Hz to 20 kHz
Crossover	3 kHz
Impedance	6 ohms
Max. power	60 watts (17.75 dBW)
Features	All wood cabinet

MIRAGE
Inception Audio Ltd.
21 Progress Ave., Unit 1
Scarborough, Ontario M1P 4S8

SM-4

Price	$600/pr.
Dimensions	25¼H x 12½W x 12½D
Weight	42 lbs. (net)
Design	Floorstanding
Type	Acoustic suspension
Drivers	8" Bextrene woofer; 1" soft-dome tweeter
Response	39 Hz to 23 kHz, ±2 dB
Sensitivity	87 dB SPL at 1 meter at 1 watt
Crossover	3 kHz
Impedance	8 ohms
Min. power	20 watts (13 dBW)
Max. power	100 watts (20 dBW)
Features	Linear phase; 13 elements PC-mounted; 6 dB/octave crossover

SM-Mini

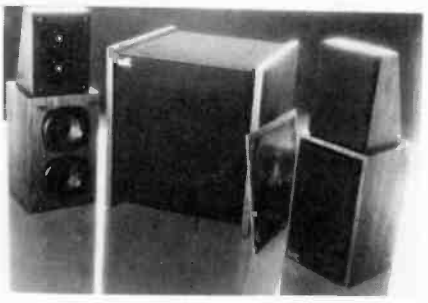
Price	$219/pr.
Dimensions	10¾H x 7W x 7½D
Weight	10 lbs. (net)
Design	Bookshelf; mini
Type	Acoustic suspension
Drivers	5" treated paper woofer; 1" dome tweeter
Response	85 Hz to 22 kHz, ±3 dB
Sensitivity	89 dB SPL at 1 meter at 1 watt
Crossover	3 kHz
Impedance	8 ohms
Min. power	10 watts (10 dBW)
Max. power	50 watts (17 dBW)

Models also available

SM-2, $400/pr.; SM-1, $300/pr.

M&K SOUND
Miller & Kreisel Sound Corp.
10391 Jefferson Blvd.
Culver City, Calif. 90230

Volkswoofer Subwoofer



Price	$465
Dimensions	18H x 16½W x 18D
Weight	61 lbs. without glass top; 66 lbs. with glass top
Design	Floorstanding
Type	Servo-feedback internal amp (60 watts)
Drivers	12" driver
Response	18 Hz to 100 Hz, ±3 dB
Crossover	100 Hz
Impedance	200 ohms
Min. power	7.5 watts (8.75 dBW)
Max. power	400 watts (26 dBW)
Controls	Level and room-matching control

Features Automatically biamps; built-in servo-control 60-watt amp; independent volume control; three switch-selectable room response settings; walnut veneers

Satellite-I

Price	$215
Dimensions	21H x 6¾W x 7¾D
Weight	45 lbs./pr. (net)
Design	Satellite
Type	Acoustic suspension
Drivers	Two 5" woofer/midrange; two 1" soft-dome tweeters
Response	55 Hz to 22 kHz, ±3 dB
Crossover	1.875 kHz
Impedance	4 ohms
Min. power	7.5 watts (8.75 dBW)
Max. power	400 watts (26 dBW)
Controls	Adjustable high-frequency contour

Features Very high dynamic range and efficiency; group-delay aligned for superb transients; multi-element phased array; adjustable to 10 variations of sound perspectives modeled on current German, English, and American speaker engineering practice

Models also available

Goliath II Cube Subwoofer, $250; Bottom End II Cube Subwoofer, $190

MAGNEPLANAR
Magnepan, Inc.
1645 9th St.
White Bear Lake, Minn. 55110

Tympani® 1-D

Price	$1,550/pr.
Dimensions	72H x 16W x 1D
Weight	160 lbs. (net)
Design	Panel
Type	Large area (planar) permanent magnet field with diaphragm
Drivers	Low-mass diaphragm (no conventional drivers)
Response	40 Hz to 20 kHz, ±3 dB
Sensitivity	87 dB SPL at 1 meter at 1 watt at 500 Hz
Crossover	1.2 kHz
Impedance	4 ohms
Min. power	30 watts (14.75 dBW)
Max. power	200 watts (23 dBW)
Controls	None

Features Mirror-imaged matched pairs; biamplifiable; available in off-white or black (matching feet included)

MG-IIA

Price	$895/pr.
Dimensions	72H x 22W x 1¾D
Weight	45 lbs. (net)
Design	Panel
Type	Planar
Drivers	Woofer-midrange; tweeter
Response	45 Hz to 16 kHz, ±4 dB
Sensitivity	87 dB SPL at 1 meter at 1 watt at 500 Hz
Crossover	2.1 kHz
Impedance	6 ohms
Min. power	30 watts (14.75 dBW)
Max. power	200 watts (23 dBW) continuous
Controls	None

Features Mirror-imaged matched pair; purely resistive load

Models also available

MG-I, $550/pr.; Smaller MG, $395/pr.

MARANTZ
Superscope, Inc.
20525 Nordhoff St.
Chatsworth, Calif. 91311

M-16

Price	$699
Dimensions	45H x 19W x 12¾D
Design	Floorstanding
Type	Acoustic suspension
Drivers	12" focused-field woofer with impedance control cap; 5" focused-field midrange with impedance-control cap; 1½" focused-field high-frequency LPF dome; 1" very high frequency LPF
Response	20 Hz to 28 kHz
Crossover	700 Hz; 2.4 kHz; 5.5 kHz
Impedance	8 ohms
Min. power	5 watts (7 dBW)
Max. power	250 watts (24 dBW)
Controls	Straightline L-pad for midrange, high, and very high

Features Smoked glass inset; finished on all sides; focused-field design; symmetrical mirror-image stereo pairs; controls located behind hinged doors

M-10

Price	$429
Dimensions	29½H x 16½W x 11¾D
Design	Floorstanding
Type	Acoustic suspension; vari-Q
Drivers	12" focused-field woofer with impedance-control cap; 5" focused-field midrange with impedance-control cap; 1½" high-frequency focused-field LPF dome
Response	25 Hz to 21 kHz
Crossover	750 Hz; 2.4 kHz
Impedance	8 ohms
Min. power	5 watts (7 dBW)
Max. power	200 watts (23 dBW)
Controls	L-pad level controls for midrange and high frequency

Features Focused-field design; symmetrical mirror-image stereo pairs; low stored energy; conjugate circuit crossover network; constant radiated power

Models also available

600, $599; 400, $299; 200, $189; M-2, $179

MARTIN
Eastman Sound Mfg. Co., Inc.
Rt. #295 & Harmony Road
Mickleton, N.J. 08056

TL-3050

Price	$599
Dimensions	35H x 11¾W x 14¾D
Weight	50 lbs. (net)
Design	Floorstanding
Type	Transmisssion line; vented
Drivers	10" butyl surround woofer; 5" cone midrange; 1" dome tweeter with ferrofluid
Response	32 Hz to 25 kHz, ±3 dB re 90 dB SPL at 1 meter at 1 watt
Sensitivity	92 dB SPL at 1 meter at 1 watt
Crossover	700 Hz; 3 kHz
Impedance	8 ohms
Min. power	25 watts (14 dBW)
Max. power	150 watts (21.75 dBW)
Controls	None

Features Super-tight deep bass; continuous-grain walnut-veneer cabinet

TL-2050

Price	$399
Dimensions	30H x 9¾W x 13¾D
Weight	35 lbs. (net)
Design	Floorstanding
Type	Transmission line; vented
Drivers	8" butyl surround woofer; 1" dome tweeter with ferrofluid
Response	36 Hz to 25 kHz, ±3 dB re 90 dB SPL at 1 meter at 1 watt
Sensitivity	92 dB SPL at 1 meter at 1 watt
Crossover	1.2 kHz
Impedance	8 ohms
Min. power	25 watts (14 dBW)
Max. power	100 watts (20 dBW)
Controls	None

Features Tight, well-defined deep bass from moderate-size enclosure; continuous-grain walnut-veneer enclosure

Gamma 420HE

Price	$299
Dimensions	34¼H x 13W x 10¾D
Weight	40 lbs. (net)
Design	Floorstanding
Type	Vented; dual bias port
Drivers	10" butyl surround low-bass woofer; 10" woofer; 4" treated-cone midrange; ⅝" tweeter
Response	32 Hz to 25 kHz, ±4 dB re 90 dB SPL at 1 meter at 1 watt
Sensitivity	94 dB SPL at 1 meter at 1 watt
Crossover	400 Hz; 900 Hz; 4.5 kHz
Impedance	6 ohms
Min. power	15 watts (11.75 dBW)
Max. power	80 watts (19 dBW)
Controls	None

Features Separate venting for each woofer; tower design gives big sound from minimum floor space

Gamma Monitor 2010

Price	$229
Dimensions	26¼H x 13W x 11D
Weight	36 lbs. (net)
Design	Floorstanding; bookshelf
Type	Vented; bias port
Drivers	10" butyl surround woofer; ⅝" dome tweeter with ferrofluid
Response	36 Hz to 22 kHz, ±4 dB re 90 dB SPL at 1 meter 1 watt
Sensitivity	90 dB SPL at 1 meter at 1 watt
Crossover	1.2 kHz
Impedance	8 ohms
Min. power	35 watts (15.5 dBW)
Max. power	85 watts (19.25 dBW)
Controls	None

Features Deep bass; smooth, wide bandwidth from moderate-size enclosure

Gamma 210HE

Price	$169
Dimensions	26¼H x 13W x 11D
Weight	30 lbs. (net)
Design	Bookshelf
Type	Vented; bias port

Drivers	10" woofer; ⅝" dome tweeter with ferrofluid
Response	40 Hz to 22 kHz, ±4 dB re 90 dB SPL at 1 meter at 1 watt
Sensitivity	94 dB SPL at 1 meter at 1 watt
Crossover	1.5 kHz
Impedance	8 ohms
Min. power	15 watts (11.75 dBW)
Max. power	60 watts (17.75dBW)
Controls	None
Features	High efficiency and excellent midrange for a 2-way system; walnut grain high-pressure laminate finish with finished front

Models also available

Gamma Monitor 3000MI, $299; TL-1650, $285; Gamma 310HE, $249; Gamma Monitor 2008MI, 179; TL-1450, $179; Gamma Monitor 2006MI, $159; Gamma 208HE, $139

MATRECS
Matrecs Industries
805 Woodman Ave.
Winslow, Ill. 61089

MA-106

Price	$99
Design	Bookshelf
Type	Acoustic suspension
Response	40 Hz to 20 kHz, ±3 dB
Crossover	5 kHz
Impedance	8 ohms
Min. power	5 watts (7 dBW)
Max. power	35 watts

Models also available

MA-216, $399; MA-206, $249; MA-156, $169; MA-136, $199; MA-126, $139; MA-86, $79

McINTOSH
McIntosh Loudspeaker Division
2 Chambers St.
Binghamton, N.Y. 13903

XR-14

Price	N/A
Dimensions	30¼H x 14¾W x 10D
Weight	52 lbs.
Type	Acoustic suspension
Drivers	10" woofer; 5" lower midrange; 1½" dome upper midrange; 1" dome tweeter
Response	20 Hz to 20 kHz
Sensitivity	89 dB SPL at 1 meter at 1 watt
Crossover	700 Hz; 1.4 kHz; 7 kHz
Impedance	8 ohms
Min. power	30 watts (14.75 dBW)
Max. power	100 watts (20 dBW)
Features	McIntosh environmental equalizer may be used

XR-6

Price	N/A
Dimensions	35 13/16H x 17½W x 13D
Weight	81 lbs.
Type	Acoustic suspension
Drivers	12" woofer; 8" lower midrange; 1½" dome upper midrange; 1" dome tweeter
Response	20 Hz to 20 kHz
Sensitivity	89 dB SPL at 1 meter at 1 watt
Crossover	250 Hz; 1.4 kHz; 7 kHz
Impedance	8 ohms
Min. power	30 watts (14.75 dBW)
Max. power	200 watts (23 dBW) peak
Features	McIntosh environmental equalizer may be used

XR-3

Price	N/A
Dimensions	27H x 12¾W x 12D
Weight	52 lbs.
Type	Acoustic suspension
Drivers	10" woofer; 5" lower midrange; 1½" dome upper midrange; two 2⅝" coaxial supertweeters
Response	20 Hz to 20 kHz
Sensitivity	89 dB SPL at 1 meter at 1 watt
Crossover	700 Hz; 1.4 kHz; 7 kHz
Impedance	8 ohms
Min. power	30 watts (14.75 dBW)
Max. power	200 watts (23 dBW) peak
Features	McIntosh environmental equalizer may be used

Models also available

XRT-20, ; XR-7, ; XR-5, ; ML-10C,

MCS® SERIES
J. C. Penney
1301 Ave. of the Americas
New York, N.Y. 10019

8320

Price	$200
Dimensions	24H x 13⅜W x 12¼D
Weight	27 lbs. 8 oz. (net)
Design	Floorstanding
Type	Linear-phase bass reflex
Drivers	10" cone woofer; 5" cone midrange; 2" cone tweeter
Response	32 Hz to 22 kHz, –2 dB re 92.5 dB SPL at 1 meter at 1 watt
Crossover	1.7 kHz; 5.5 kHz
Impedance	8 ohms
Min. power	5 watts (7 dBW)
Max. power	75 watts (18.75 dBW)
Controls	Tweeter
Features	Two thermal relays; removable front grille

8223

Price	$150
Dimensions	20½H x 12W x 9½D
Weight	17 lbs. (net)
Design	Floorstanding
Type	Bass reflex
Drivers	8" woofer; 3½" midrange; 2½" tweeter
Response	70 Hz to 20 kHz
Crossover	420 Hz; 2 kHz
Impedance	8 ohms
Min. power	5 watts (7 dBW)
Max. power	30 watts (15 dBW)
Features	Removable front grille cover

Models also available

8228, $399.95; 8330, $300; 8310, $239.90/pr.

MESA
Mesa Electronics Sales, Ltd.
2940 Malmo Drive
Arlington Heights, Ill. 60005

T-200

Price	$425
Dimensions	43H x 14½W x 13¾D
Weight	90 lbs. (net)
Design	Floorstanding
Type	Bass reciprocator
Drivers	3" Prismadome™ tweeter; 5" midrange; two 12" active woofers; 12" bass reciprocator
Response	40 Hz to 20 kHz
Sensitivity	92 dB SPL at 1 meter at 1 watt
Crossover	65 Hz; 900 Hz; 6 kHz
Impedance	8 ohms
Min. power	15 watts (11.75 dBW)
Max. power	200 watts (23 dBW)
Controls	Dual Vicom™ control; range (±5 dB through 11 detented positions)
Features	Built-in circuit breaker with automatic reset; 5-year limited warranty

125

Price	$305
Dimensions	27½H x 16W x 13D
Weight	55 lbs. (net)
Design	Floorstanding; bookshelf
Type	Bass reciprocator
Drivers	12" woofer; 12" bass reciprocator; 5" midrange; 3" Prismadome™ tweeter
Response	30 Hz to 22 kHz
Crossover	65 Hz; 900 Hz; 6 kHz
Impedance	8 ohms
Min. power	15 watts (11.75 dBW)
Max. power	125 watts (21 dBW)
Controls	Vicom™ tweeter; midrange (±5 dB range with 11 positions)
Features	Built-in circuit breaker with automatic reset; walnut-veneer cabinet; 5-year limited warranty

85

Price	$249
Dimensions	25¼H x 14¼W x 11¾D
Weight	45 lbs. (net)
Design	Floorstanding; bookshelf
Type	Bass reciprocator
Drivers	10" woofer; 12" bass reciprocator; 5" ferrofluid midrange; 3" Prismadome™ tweeter
Response	36 Hz to 22 kHz
Crossover	65 Hz; 900 Hz; 6 kHz
Impedance	8 ohms
Min. power	15 watts (11.75 dBW)
Max. power	85 watts (19.25 dBW)
Controls	Vicom™ tweeter; midrange (±5 dB range with 11 positions)
Features	Built-in circuit breaker with automatic reset; walnut-veneer cabinet; 5-year limited warranty

Mini-Mesa 75

Price	$175
Dimensions	16H x 9⅛W x 7½D
Weight	11 lbs. (net)
Design	Bookshelf; mini
Type	Acoustic suspension
Drivers	1" Prismadome™ soft-dome tweeter; 3½" midrange; 6½" rubber-surround woofer
Response	50 Hz to 25 kHz
Crossover	800 Hz; 4 kHz
Min. power	10 watts (10 dBW)
Max. power	90 watts (19.5 dBW)
Features	5-year limited warranty

Models also available

Disco-Duo, $449/set; Mesa Disco I, $399; MS-80 Subwoofer, $270; 65, $185; 45, $129

METEOR
Meteor Light & Sound Co.
155 Michael Drive
Syosset, N.Y. 11791

Super Sound Panel

Price	$949
Dimensions	39H x 51W x 6½D
Weight	130 lbs. (net)
Type	Dynamic
Drivers	Six 12" woofers; four 6" mid/high drivers; 7¼" x 2⅞" horn-compression tweeter
Crossover	2.5 kHz; 7 kHz
Impedance	12 ohms
Min. power	80 watts (19 dBW)
Max. power	300 watts (24.75 dBW) continuous

Features Fuse protection (spare fuse and changeover switch provided); automatic tweeter-protection unit

METRON
Cerwin Vega, Inc.
12250 Montague St.
Arleta, Calif. 91331

SUFT-FET-2

Price	$4,000/pr.
Dimensions	72H x 32W x 20D
Design	Floorstanding
Type	Dipole radiator; vented/ported reflex
Drivers	72 SUFT-FET in top of speaker; 8" midrange; 15" bass driver in bottom of speaker
Response	20 Hz to 25 kHz, ±2 dB
Sensitivity	90 dB SPL at 1 meter at 1 watt
Crossover	80 Hz; 200 Hz
Impedance	6 ohms
Min. power	350 watts (25.5 dBW)
Max. power	1000 watts (30 dBW)
Controls	Midrange, treble

MICRO-ACOUSTICS
Micro-Acoustics Corp.
8 Westchester Plaza
Elmsford, N.Y. 10523

FRM-1AX

Price	$235 (prices slightly higher in the west)
Dimensions	25¾H x 15⅜W x 12¾D
Weight	40 lbs. (net)
Design	Floorstanding
Type	Acoustic suspension
Drivers	Four 1¼" tweeters mounted in a Penta-Axis array; 1¼" supertweeter; 10" woofer with heavy-duty dynamic assembly
Response	30 Hz to 22 kHz, ±4 dB
Sensitivity	89 dB SPL at 1 meter at 1 watt
Crossover	1.5 kHz; 2 kHz
Impedance	8 ohms
Min. power	18 watts (12.5 dBW) (at 8 ohms) continuous
Max. power	180 watts (22.5 dBW) (at 8 ohms) continuous
Controls	Tweeter (adjusts center on-axis supertweeter); dispersion control (adjusts four surrounding off-axis tweeters simultaneously)
Features	Full 10-year warranty; tweeter-protection circuit

FRM-3AX

Price	$279/pr.
Dimensions	22H x 12⅝W x 9½D
Weight	24 lbs. 4 oz. (net)
Design	Bookshelf
Type	Dual-ducted
Drivers	Tweeter pivoted on vari-axis dispersion assembly; 8" operating into a twin-ducted port
Response	33 Hz to 20 kHz, ±4 dB
Sensitivity	91 dB SPL at 1 meter at 1 watt
Crossover	2.5 kHz
Impedance	8 ohms
Min. power	8 watts (9 dBW) (at 8 ohms) continuous
Max. power	80 watts (19 dBW) (at 8 ohms) continuous
Controls	High-frequency driver rotates for optimum dispersion
Features	Full 10-year warranty; tweeter-protection circuit

Models also available

FRM-2AX, $185 (prices slightly higher in the west); MS-1, $135/pr.

MISSION
Mission Electronics North America Corp.
89 Galaxie Blvd.
Resdale, Ontario M9W 6A4

Mission 770 Broadcast Monitor

Price $990/pr.

Models also available

Mission 730, $1,190/pr.; Mission 720, $850/pr.; Mission 710, $497/pr.

MITSUBISHI
Melco Sales, Inc.
3030 E. Victoria St.
Compton, Calif. 90221

MS-40

Price	$550
Dimensions	34⅝H x 15⅜W x 15 5/16D
Weight	77 lbs. (net)
Design	Floorstanding
Type	Acoustic suspension
Drivers	12" honeycomb cone woofer; 4" cone midrange; 1½" hybrid-dome tweeter
Response	25 Hz to 20 kHz re 87 dB SPL at 1 meter at 1 watt
Sensitivity	87 dB SPL at 1 meter at 1 watt
Crossover	600 Hz; 5 kHz
Impedance	6 ohms
Min. power	30 watts (14.75 dBW)
Max. power	150 watts (21.75 dBW)
Controls	Midrange; tweeter
Features	Overload projection with LED indicator; edgeless grille and cabinet design

MS-20

Price	$275
Dimensions	24¾H x 14⅝W x 11⅞D
Weight	40 lbs. (net)
Design	Bookshelf
Type	Acoustic suspension
Drivers	12" honeycomb cone woofer; 2" cone tweeter
Response	35 Hz to 20 kHz
Sensitivity	88 dB SPL at 1 meter at 1 watt
Crossover	1.5 kHz
Impedance	6 ohms
Min. power	25 watts (14 dBW)
Max. power	120 watts (20.75 dBW)
Controls	Tweeter
Features	Overload-protection circuit; edgeless cabinet and grille

Models also available

MS-30, $395; MS-10, $165

MOBILE AUDIO DEVELOPMENT CORP.
Mobile Audio Development Corp.
P.O. Box 7338
Arleta, Calif. 91331

MSTC-1

Price	$359
Dimensions	3H x 11¾W x 7D
Weight	16 lbs. (net)
Design	Wedge
Type	Acoustic suspension
Drivers	Two 6½" woofer/midranges; two 1" polycarbonate dome tweeters; two 2½" phenolic ambient midrange/tweeters
Response	35 Hz to 22 kHz, ±3 dB re 90 dB SPL at 1 meter at 1 watt
Sensitivity	90 dB SPL at 1 meter at 1 watt
Crossover	4.5 kHz
Impedance	4 ohms
Min. power	10 watts (10 dBW)
Max. power	100 watts (20 dBW)
Features	99% ambient cloth grilles; all hardware and templates included; walnut finish

MODULAR ACOUSTICS
C.C.L. Enterprises, Inc.
30682 San Antonio St.
Hayward, Calif. 94544

3800 Rollaway

Price	$640
Dimensions	42½H x 23¼W x 12¼D
Weight	105 lbs. (net)
Design	Floorstanding
Type	Infinite baffle
Drivers	Two 10" woofers; 8" mid-bass; 2" soft-dome midrange; 1" textile dome tweeter
Response	22 Hz to 20 kHz re 91 dB SPL at 1 meter at 1 watt
Sensitivity	91 dB SPL at 1 meter at 1 watt
Crossover	125 Hz; 700 Hz; 5 kHz
Impedance	4 ohms
Min. power	30 watts (14.75 dBW)
Max. power	300 watts (24.75 dBW)
Controls	Midrange; tweeter
Features	Roll-away casters

2000 Subwoofer

Price	$410
Dimensions	22¼H x 25½W x 15¼D
Weight	83 lbs. (net)
Design	Floorstanding
Type	Infinite baffle
Drivers	Two 10" woofers
Response	22 Hz to 150 kHz re 90 dB SPL at 1 meter at 1 watt
Sensitivity	90 dB SPL at 1 meter at 1 watt
Crossover	100 Hz
Impedance	8 ohms
Min. power	25 watts (14 dBW)
Max. power	300 watts (24.75 dBW)
Features	Casters are available

3200 "Z"

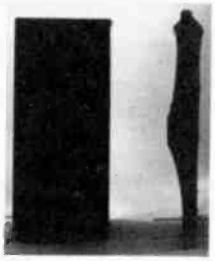
Price	$400
Dimensions	38¼H x 16W x 16D
Weight	66 lbs. (net)
Design	Floorstanding
Type	Air suspension
Drivers	10" woofer; 2" textile dome midrange; 1" textile dome
Response	35 Hz to 20 kHz re 89 dB SPL at 1 meter at 1 watt
Sensitivity	89 dB SPL at 1 meter at 1 watt
Crossover	700 Hz; 5 kHz
Impedance	8 ohms
Min. power	20 watts (13 dBW)
Max. power	100 watts (20 dBW)
Controls	Midrange; tweeter

Models also available

3400 Tower, $410; 2800, $410; 2200 Satellite, $154; 2600 Subwoofer, $250; 3000, $250

MONCRIEFF
Moncrieff
2449 Dwight Way
Berkeley, Calif. 94704

Moncrieff Lab Monitor



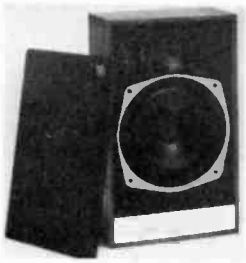
Price	$3,980/pr. (includes subwoofer and crossovers)
Dimensions	24H x 4W x 24D (panels)
Weight	50 lbs. (net)
Design	Floorstanding; panel
Type	Multidimensional sound generator
Drivers	Bookshelf-size subwoofer; separate placeable panels
Response	27 Hz to 30 kHz
Crossover	90 Hz; 8 kHz
Impedance	8 ohms
Min. power	15 watts (11.75 dBW)
Features	Very flexible room placement with wide stage and no hole in the middle, regardless of panel separation allows control over room modes; speakers and listening room aurally disappear, and are replaced by concert hall or stage; solid 3D projection of music

MORDAUNT-SHORT
Mordaunt-Short, Inc.
1919 Middle Country Road
Centereach, N.Y. 11720

Pageant Series 2

Price	$545/pr.
Dimensions	21H x 13W x 9D
Weight	21 lbs. (net)
Design	Floorstanding; bookshelf
Type	Bass reflex
Drivers	Woofer-midrange; synthetic-dome tweeter
Response	25 Hz to 25 kHz
Crossover	3.5 kHz
Impedance	8 ohms
Min. power	15 watts (11.75 dBW)
Max. power	100 watts (20 dBW)
Controls	Midrange; tweeter
Features	Walnut or teak wood finish; available with matching stands

Carnival Series 2



Price	$305/pr.
Dimensions	15¾H x 9½W x 5¾D
Weight	11 lbs. 9 oz. (net)
Design	Bookshelf
Type	Dynamic
Drivers	8" midrange; 2⅝" paper-cone tweeter
Response	85 Hz to 17 kHz, ±3 dB
Crossover	3.5 kHz
Impedance	8 ohms
Min. power	10 watts (10 dBW)
Max. power	80 watts (19 dBW)
Features	Walnut or teak wood finish

Models also available

Signifier, $1,740/pr. (including matching stand); Festival Series 2, $425/pr.

MOTOWN
Motown Sound Systems, Inc.
1301 N. Tustin Ave.
Anaheim, Calif. 92806

2532

Price	$219
Dimensions	26H x 15W x 10⅝D
Weight	36 lbs. (net)
Design	Bookshelf
Type	Laminar flow vent
Drivers	12" woofer; 5" midrange; 2½" tweeter
Response	35 Hz to 20 kHz
Sensitivity	94 dB SPL
Crossover	1 kHz; 4.2 kHz
Impedance	8 ohms
Min. power	10 watts (10 dBW)
Max. power	200 watts (23 dBW)
Controls	Midrange; tweeter
Features	Automatic reset safety master thermal protector; front-mounted controls

Models also available

2510, $159; 2508, $119

NEAL-FERROGRAPH
Neal-Ferrograph
652 Glenbrook Road
Glenbrook, Conn. 06906

S-23

Price	$411
Dimensions	17⅜H x 7½W x 11D
Weight	19 lbs. 8 oz. (net)
Design	Floorstanding
Type	Acoustic suspension with internal labyrinth
Drivers	Two 4" long-throw roll surround; 1" soft dome
Response	65 Hz to 20 kHz, ±4 dB re 90 dB SPL at 1 meter at 1 watt
Impedance	6 ohms (nominal)
Min. power	10 watts (10 dBW)
Max. power	35 watts (15.5 dBW)
Features	Walnut or teak veneer; crossover allows one woofer to switch over to midrange

NORDMENDE
Sterling Hi-Fidelity, Inc.
22-20 40th Ave.
Long Island City, N.Y. 11101

LB-26

Price	$100/pr.
Dimensions	9H x 6W x 5D
Weight	4 lbs. (net)
Type	Dynamic
Drivers	5" woofer; 1¾" tweeter
Response	50 Hz to 20 kHz
Impedance	4 to 8 ohms
Min. power	3 watts (4.75 dBW)
Max. power	15 watts (11.75 dBW)

LB-25

Price	$80/pr.
Dimensions	9H x 6W x 5D
Weight	3 lbs. 12 oz. (net)
Type	Dynamic
Drivers	5" full-range
Response	50 Hz to 15 kHz
Crossover	7.5 kHz
Impedance	4 to 8 ohms
Min. power	3 watts (4.75 dBW)
Max. power	15 watts (11.75 dBW)

NORMAN LABORATORIES
Norman Laboratories, Inc.
2278 Industrial Blvd.
Norman, Okla. 73069

Nine

Price	$500
Dimensions	45½H x 15½W x 15D
Weight	75 lbs. (net)
Design	Floorstanding
Type	Acoustic suspension
Drivers	Three 10" woofers; three 1" tweeters
Response	35 Hz to 20 kHz, ±3 dB (1.5 kHz to 20 kHz, ±2 dB)
Crossover	1.5 kHz
Impedance	4 ohms
Min. power	30 watts (14.75 dBW)
Max. power	250 watts (24 dBW) (program)
Controls	Tweeter; woofer
Features	Rear-firing third woofer operates in either acoustic or passive radiator mode for differing bass outputs; tweeter and woofer protection circuit breakers; magnetic damping fluid in tweeters

Eleven

Price	$260
Dimensions	23½H x 15½W x 12¼D
Weight	40 lbs. (net)
Design	Bookshelf
Type	Acoustic suspension
Drivers	10" woofer; two 1" tweeters
Response	40 Hz to 20 kHz, ±3 dB
Crossover	1.5 kHz
Impedance	8 ohms
Min. power	20 watts (13 dBW)
Max. power	150 watts (21.75 dBW) (program)
Controls	Tweeter (3-position)
Features	Tweeter and woofer protection circuit breakers; magnetic damping fluid in tweeter; extended pole-piece woofer

Models also available

System Twelve, $1,800; Ten, $350; Eight, $160

OHM ACOUSTICS
OHM Acoustics Corp.
241 Taaffe Place
Brooklyn, N.Y. 11205

I

Price	$775
Dimensions	33¼H x 15½W x 16D
Weight	76 lbs. (net)
Type	Vented with subwoofer
Drivers	12" subwoofer; 8" woofer; 2" low tweeter; two 1" dome tweeters
Response	32 Hz to 21 kHz, ±3.5 dB
Crossover	100 Hz; 2 kHz; 10 kHz
Impedance	4 ohms
Min. power	10 watts (10 dBW)
Max. power	1000 watts (30 dBW)
Controls	Four (1 for each tweeter and for 8" woofer)
Features	Walnut, oak, teak, and black cabinets; omnidirectional response

N-2 Subwoofer

Price	$385
Dimensions	15H x 16W x 15D
Weight	70 lbs. (net)

Type	Dual subwoofer with passive radiators
Drivers	Two 8" woofers; two 12" passive radiators
Response	32 Hz to 140 kHz, ±4 dB re 89 dB SPL at 1 meter at 1 watt
Crossover	140 Hz
Impedance	4 to 8 ohms
Min. power	10 watts (10 dBW)
Max. power	100 watts (20 dBW)
Controls	Level-matching
Features	Built-in passive crossover for both channels in one walnut-veneer enclosure

L

Price	$210
Dimensions	20H x 12W x 10D
Weight	33 lbs. 8 oz. (net)
Type	Vented
Drivers	8" woofer; 2" low tweeter; 2" high tweeter
Response	42 Hz to 20 Hz, ±4 dB
Crossover	1.7 kHz; 10 kHz
Impedance	4 to 8 ohms
Min. power	8 watts (9 dBW) for approx. 100 dB SPL at 1 meter
Max. power	100 watts (10 dBW)
Controls	Two (one for each tweeter)
Features	Quasi third-order Butterworth filter; optimally vented enclosure; oiled-walnut veneer

Models also available

F, $1,125; H, $395; C-2, $300; M, $145; E, $130

R.W. OLIVER
R.W. Oliver Electronics, Ltd.
580 E. Dobbie Ave., Section E
Winnipeg, Manitoba R2K 1G4

BM-1

Price	$229.95
Dimensions	15H x 20W x 20D
Weight	33 lbs. (net)
Design	Floorstanding
Type	Computer-designed bass reflex bass commode 8" high-power woofer
Response	35 Hz to 100 kHz, ±3 dB re 90 dB SPL at 1 meter at 1 watt
Sensitivity	90 dB SPL at 1 meter at 1 watt
Crossover	100 Hz
Impedance	8 ohms
Min. power	5 watts (7 dBW)
Max. power	50 watts (17 dBW)
Features	Chrome stand included; black laminate top; floor firing; end-table design; goes with Model One

Model 3

Price	$139.95
Dimensions	30H x 13W x 10D
Weight	42 lbs.
Type	Tuned ducted port
Drivers	Two high-power 10" woofers; 2" x 6" horn tweeter
Response	45 Hz to 20 kHz, ±3 dB re 90 dB SPL at 1 meter at 1 watt
Sensitivity	90 dB SPL at 1 meter at 1 watt
Crossover	3.5 kHz
Impedance	4 ohms
Min. power	10 watts (10 dBW)
Max. power	150 watts (22 dBW)
Features	Tailored response for disco and PA application; protective metal mesh under foam grille; compact

Models also available

Model 7, $279.95; Model Five, $199.95; Model One, $99.95

OLSON
Olson Electronics
260 S. Forge St.
Akron, Ohio 44327

SP-580 Pedestal Tower II

Price	$190
Dimensions	41¾H x 12⅜W x 12D
Weight	60 lbs.
Type	Acoustic suspension; dynamic
Drivers	Two 8" woofers; 1½" voice coil; two 5" midranges; 1" voice coil; two 2¼" tweeters
Response	50 Hz to 22 kHz
Crossover	600 Hz; 8 kHz
Impedance	8 ohms
Min. power	15 watts (11.75 dBW)
Max. power	135 watts (21.25 dBW)
Controls	Tweeter; midrange
Features	Two grilles; removable molded cloth; all drivers covered with steel mesh grille; cabinet is walnut-finished vinyl over ¾" thick particle board

SP-579 'Acoust-Aire IV"

Price	$90
Dimensions	22½H x 13½W x 10½D
Weight	20 lbs.
Type	Acoustic suspension; dynamic
Drivers	10" woofer; 1½" aluminum voice coil; 5" midrange; 1" voice coil; 2¼" tweeter with silicone cooled voice coil
Response	40 Hz to 22 kHz
Crossover	800 Hz; 10 kHz
Impedance	8 ohms
Min. power	10 watts (10 dBW)
Max. power	70 watts (18.5 dBW)
Controls	Tweeter; midrange
Features	Removable molded grille; steel mesh grilles over tweeter and midrange; walnut finish over ¾" particle board cabinet

Models also available

SP-585 'Acoust-Aire IV", $110

ONKYO
Onkyo U.S.A. Corp.
42-07 20th Ave.
Long Island City, N.Y. 11105

F-3000

Price	$349.95
Dimensions	26H x 16 7/16W x 26¾D
Weight	44 lbs. (net)
Design	Floorstanding
Type	Acoustic suspension
Drivers	11" planar woofer; 4" planar midrange; 2" x ¾" direct-drive membrane tweeters
Response	35 Hz to 70 kHz
Max. power	80 watts (19 dBW)
Features	Phase-Aligned Array® system

E-200

Price	$229.95
Dimensions	25½H x 16W x 12½D
Weight	40 lbs. 4 oz. (net)
Design	Floorstanding
Type	Air suspension
Drivers	11" woofer; 4" carbon-fiber midrange; direct-drive membrane tweeter
Response	35 Hz to 70 kHz
Max. power	100 watts (20 dBW)
Features	Rosewood vinyl finish

E-100

Price	$129.95
Dimensions	21H x 13⅜W x 21⅞D
Weight	25 lbs. 2 oz. (net)
Design	Floorstanding
Type	Air suspension
Drivers	8" cone woofer; 2" x ¾" direct drive membrane tweeter
Response	40 Hz to 70 kHz
Impedance	6 ohms
Max. power	80 watts (19 dBW)
Features	Rosewood vinyl finish

Models also available

F-5000, $499.95; M-240, $259; M-160, $174.95

OPTONICA
Sharp Electronics Corp.
10 Keystone Place
Paramus, N.J. 07652

CP-2121A

Price	$210
Dimensions	28¾H x 14½W x 12⅛D
Weight	33 lbs. (net)
Design	Floorstanding
Type	Passive radiator
Drivers	10" woofer; 3" cone tweeter
Response	40 Hz to 20 kHz
Crossover	1.2 kHz
Impedance	8 ohms
Min. power	10 watts (10 dBW)
Max. power	50 watts (17 dBW)
Features	Circuit breaker for tweeter

PETROFF LABS
Petroff Labs
11436 Victoria Ave.
Los Angeles, Calif. 90066

Matrix I

Price	$490/pr.
Dimensions	18H x 13½W x 9D
Weight	23 lbs. (net)
Design	Floorstanding
Type	Acoustic suspension
Drivers	8" polypropylene woofer; slot-chambered ribbon tweeter; slot-chambered ribbon ambient tweeter
Response	40 Hz to 40 kHz, ±2 dB re 88 dB SPL at 1 meter at 1 watt
Sensitivity	88 dB SPL at 1 meter at 1 watt
Crossover	2 kHz
Impedance	4 ohms
Min. power	50 watts (17 dBW)
Max. power	200 watts (23 dBW)
Controls	Tweeter level; matrix level

PHANTOM
Kindel Audio
1710 Newport Circle, Suite O
Santa Ana, Calif. 92703

Phantom

Price	$400 (West Coast); $425 (Midwest and East)
Dimensions	40H x 18W x 6¼D
Weight	47 lbs. (net)
Design	Floorstanding
Response	45 Hz to 22 kHz, ±2 dB re free-field environment; midrange axis at 2 meters
Crossover	1.3 kHz; 6.5 kHz
Impedance	5 ohms
Min. power	15 watts
Max. power	200 watts (23 dBW)

PHASE RESEARCH
Phase Research Corp.
3207 Oradell
Dallas, Texas 75220

"RT"

Price	N/A
Dimensions	42H x 13W x 12D
Weight	75 lbs. (net)
Design	Floorstanding
Type	Compression-line loading (patent pending) with R-3H line filter (patent pending)
Drivers	8" woofer; 1⅜" dome midrange-tweeter
Response	32 Hz to 20 kHz, ±2.5 dB re 89 dB SPL at 1 meter at 1 watt
Sensitivity	89 dB SPL at 1 meter at 1 watt
Crossover	1.5 kHz
Impedance	8 ohms
Min. power	20 watts (13 dBW)
Max. power	250 watts (24 dBW)
Controls	None
Features	Time-phased; mirror-imaged; low diffraction; fiberwood construction; multiple internal bracing; high power resistors; metalized Mylar capacitors; matched 2% tolerance level crossovers; walnut-veneer finish

Models also available

"R", N/A; "Little D", N/A

PHILIPS
Philips High Fidelity Laboratories, Ltd.
Interstate 40 & Straw Plains Pike
P.O. Box 6960
Knoxville, Tenn. 37814

RH-567

Price	$399.95
Dimensions	21¼H x 13W x 10¾D
Design	Bookshelf
Type	Acoustic suspension with blamplification
Drivers	10" high-compliance woofer; 2" dome midrange; 1" dome tweeter
Response	27 Hz to 20 kHz
Crossover	500 Hz; 3.5 kHz
Impedance	4 to 8 ohms
Min. power	Can be driven from preamp
Max. power	Internal amplifiers (60 watts)
Controls	Variable-input sensitivity control; automatic on/off switch; channel-selector switch; treble rolloff; variable cut
Features	Motional feedback system

AH-476

Price	$250
Dimensions	26H x 13¾W x 11⅛D
Weight	42 lbs. (net)
Design	Floorstanding
Type	Acoustic suspension
Drivers	10" high-compliance woofer; 2" dome midrange; 1" dome tweeter
Response	35 Hz to 20 kHz
Sensitivity	85 dB SPL at 1 meter at 1 watt
Crossover	1.5 kHz; 5.5 kHz
Impedance	8 ohms
Min. power	20 watts (13 dBW)
Max. power	60 watts (17.75 dBW)
Controls	Midrange
Features	Oiled-walnut-veneer finish with removable grille cloth

RH-541

Price	$200
Dimensions	11½H x 9W x 7D
Design	Bookshelf; mini
Type	Acoustic suspension with amplification
Drivers	6" high-compliance woofer; 1" dome tweeter
Response	35 Hz to 20 kHz
Crossover	1.4 kHz
Impedance	4 ohms
Min. power	Can be driven from preamp
Max. power	Internal amplifiers (30 watts)
Controls	Input sensitivity switch; automatic on/off switch; channel-selector switch
Features	Motional feedback system

Models also available

RH-544, $350; AH-477, $320; SJ-2932, $140; AH-475, $160; SJ-2930, $150/pr.

PIONEER
U.S. Pioneer Electronics Corp.
85 Oxford Drive
Moonachie, N.J. 07074

HPM-900

Price	$375.50
Dimensions	26⅜H x 15⅜W x 15½D
Weight	51 lbs. 8 oz. (net)
Design	Bookshelf
Type	Bass reflex
Drivers	12" cone woofer; 4" cone midrange; 1¾" cone tweeter; horn-loaded, high-polymer supertweeter
Response	30 Hz to 50 kHz
Sensitivity	92.5 dB SPL at 1 meter at 1 watt
Crossover	2.5 kHz; 5.5 kHz; 16 kHz
Impedance	8 ohms
Min. power	100 watts (20 dBW)
Max. power	200 watts (23 dBW)
Features	Walnut-veneer cabinet

HPM-700

Price	$275
Dimensions	24H x 13¾W x 12⅝D
Weight	32 lbs. (net)
Design	Bookshelf
Type	Bass reflex
Drivers	10" cone woofer; 4" cone midrange; 1¾" cone tweeter; horn-loaded, high-polymer supertweeter
Response	35 Hz to 50 kHz
Sensitivity	92.5 dB SPL at 1 meter at 1 watt
Crossover	1.7 kHz; 3 kHz; 16 kHz
Impedance	8 ohms
Min. power	60 watts (17.75 dBW)
Max. power	120 watts (20.75 dBW)
Features	Walnut-veneer cabinet

Promusica 120

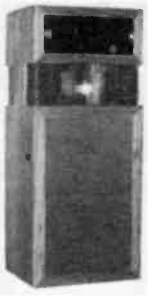
Price	$145
Dimensions	23H x 13W x 9¾D
Weight	26 lbs. (net)
Type	Bass reflex; port
Drivers	10" cone woofer; 5" cone midrange; 1⅞" cone tweeter
Response	30 Hz to 20 kHz
Crossover	1 kHz; 4 kHz
Impedance	8 ohms
Max. power	60 watts (17.75 dBW)

Models also available

HPM-150, $550; CS-99AA, $350; HPM-500, $195; Promusica 80, $99

PLASMATRONIC
Plasmatronic, Inc.
2460 Alamo, S.E., Suite 101
Albuquerque, N.M. 87106

Hill Type 1 Plasma System



Price	$8,000
Dimensions	57½H x 24½W x 20D
Weight	580 lbs./pr.
Type	Plasma
Drivers	Plasma; cone midrange; cone bass
Response	18 Hz to 30 kHz, ±3 dB re 107 dB SPL at 1 meter from one plasma driver
Crossover	130 Hz; 700 Hz
Impedance	8 ohms
Min. power	100 watts (20 dBW) (bass amp)
Max. power	300 watts (24.75 dBW) (bass amp)
Controls	Plasma level; crossover point
Features	Biamped with high amp crossover; VU meters; hi-lo balancing network

POLK
Polk Audio
1205 South Carey St.
Baltimore, Md. 21230

Real Time Array Model 12

Price	$384.95
Dimensions	45H x 19W x 15D (stand, 12H)
Weight	85 lbs. (net)
Design	Floorstanding
Type	Passive radiator

Drivers	Two 6½" plasticized bass/midrange drivers; 1" soft-dome (open-mounted) tweeter; 12" passive radiator
Response	27 Hz to 20.5 kHz, ±2 dB
Sensitivity	94 dB SPL at 1 meter at 1 watt
Crossover	50 Hz; 2 kHz
Impedance	6 ohms
Min. power	10 watts (10 dBW)
Max. power	500 watts (27 dBW)
Controls	Factory-calibrated
Features	Phase-coherent; choice of rosewood-vinyl or walnut-vinyl finish; plasticized drivers

LF-14 Subwoofer

Price	$269.95
Dimensions	38H x 16W x 11½D
Weight	88 lbs. (net)
Design	Floorstanding
Type	Passive radiator
Drivers	Two 6½" plasticized cones
Sensitivity	94 dB SPL at 1 meter at 1 watt
Crossover	Low efficiency: 60 Hz; high efficiency: 100 Hz (single channel mode); 150 Hz (common mode)
Impedance	6 ohms
Min. power	10 watts (10 dBW)
Max. power	500 watts (27 dBW)
Controls	Single/center-channel mode switch; low/high efficiency switch (single channel mode only)
Features	Center-channel mode couples channels acoustically, maintaining electrical separation; matches low- or high-efficiency speakers; choice of rosewood-vinyl or walnut-vinyl finishes

5A Bookshelf Monitor

Price	$149.95
Dimensions	21½H x 10½W x 8½D
Weight	29 lbs. (net)
Design	Floorstanding; bookshelf
Type	Passive radiator
Drivers	6½" midrange with 8" passive radiator; 1" dome tweeter
Response	40 Hz to 21 kHz, ±3 dB
Sensitivity	92 dB SPL at 1 meter at 1 watt
Crossover	60 Hz; 3 kHz
Impedance	8 ohms
Min. power	10 watts (10 dBW)
Max. power	60 watts (17.75 dBW)
Controls	Factory-calibrated
Features	Fused tweeter; optional stand; plasticized drivers

Models also available

10A Monitor System, $279.95; 7B Monitor System, $199.95; Mini Monitor, $124.95

PRESAGE
Presage Corp.
545 Chestnut Hill Ave.
Brookline, Mass. 02146

Presage 5

Price	$349.95
Dimensions	26H x 15W x 12½D
Weight	43 lbs. (net)
Design	Bookshelf
Type	Passive radiator
Drivers	8" woofer; 4½" cone midrange; 1" dome tweeter
Response	28 Hz to 20 kHz, ±3 dB
Crossover	470 Hz; 3.5 kHz
Impedance	8 ohms
Min. power	25 watts (14 dBW)
Max. power	150 watts (21.75 dBW) continuous
Controls	Tweeter; midrange

Presage 15

Price	$129.95 (walnut grained vinyl); $135 (oak or walnut veneer)
Dimensions	25¼H x 12½W x 12½D
Weight	23 lbs. (net)
Design	Bookshelf
Type	Bass reflex
Drivers	8" woofer; 2" phenolic dome tweeter
Response	60 Hz to 19 kHz, ±4 dB
Crossover	1.3 kHz
Impedance	8 ohms
Min. power	10 watts (10 dBW)
Max. power	60 watts (17.75 dBW) continuous
Controls	Tweeter level, ±6 dB

Models also available

Presage 4, $599.95; Presage 9, $199.95; Presage 17, $99.95

PSB
PSB Speakers
Box 144
St. Jacobs, Ont. NOB/2NO

Summit Subwoofer

Price	$550
Design	Floorstanding
Type	Bass reflex
Drivers	Two 8" woofers
Response	30 Hz to 150 kHz, ±3 dB
Crossover	Variable
Controls	3-position crossover; level matching

Summit Seven

Price	$350
Type	Acoustic suspension
Drivers	8" woofer; 1" dome tweeter
Crossover	2.5 kHz
Impedance	8 ohms
Features	Ferrofluid cooled tweeter; unique shape

New Passif I

Price	$235
Weight	30 lbs. (net)
Design	Floorstanding
Type	Passive radiator
Drivers	1" textile dome tweeter; 8" woofer; 8" passive radiator
Response	65 Hz to 20 kHz, ±2 dB
Crossover	1.5 kHz
Impedance	8 ohms
Min. power	15 watts (11.75 dBW)
Max. power	80 watts (19 dBW)
Features	Hickory vinyl veneer

New Avanté

Price	$180
Dimensions	22¼H x 11½W x 10½D
Design	Floorstanding
Type	Bass reflex
Drivers	8" woofer; 1" tweeter
Response	70 Hz to 20 kHz, ±2 dB
Crossover	1.5 kHz
Impedance	8 ohms
Min. power	15 watts (11.75 dBW)
Max. power	80 watts (19 dBW)

Models also available

Summit Ten, $575; PSB Subwoofer, $450; New Passif II, $295; New Avantini, $150; Avette, $125

QYSONIC
Motown Sound Systems
1301 N. Tustin Ave.
Anaheim, Calif. 92806

Array

Price	$500
Dimensions	47½H x 12½W x 8½D
Weight	55 lbs. (net)
Type	Critical Alignment®; laminar flow vent
Drivers	Two 8" woofers; 4½ midrange; 1" (polar) dome supertweeter
Response	28 Hz to 22 kHz, ±3 dB re 92 dB SPL at 1 meter at 1 watt
Sensitivity	92 dB SPL at 1 meter at 1 watt
Crossover	800 Hz; 3 kHz
Impedance	6 ohms
Min. power	30 watts (14.75 dBW)
Max. power	1140 watts (30.75 dBW)
Controls	Midrange; tweeter; polar supertweeter
Features	Wood stand included

Laug II Subwoofer System

Price	$319
Dimensions	33½H x 15W x 12D
Weight	50 lbs. (net)
Design	Floorstanding
Type	Critical Alignment®; bass unit
Drivers	Two 8" woofers
Response	28 Hz to 90 Hz; ±3 dB
Sensitivity	92 dB SPL at 1 meter at 1 watt
Crossover	90 Hz
Impedance	6 ohms
Min. power	30 watts (14.75 dBW)
Max. power	250 watts (24 dBW)
Features	Built-in passive crossover for satellites with rolloff at 90 Hz; 6 dB per octave

2530

Price	$189
Dimensions	25H x 14W x 10⅝D
Weight	35 lbs. (net)
Design	Bookshelf
Type	Laminar flow vent
Drivers	10" woofer; 5" midrange; 2½" tweeter
Response	40 Hz to 20 kHz
Sensitivity	94 dB SPL
Crossover	1 kHz; 4.2 kHz
Impedance	8 ohms
Min. power	10 watts (10 dBW)
Max. power	150 watts (21.75 dBW)
Controls	Midrange; tweeter
Features	Automatic reset safety master thermal protector; front-mounted controls

Models also available

BMF-21S, $1,250; Opus 80, $300; TAD II, $239; Spree II, $150; Micro, $109

REALISTIC
Radio Shack Corp.
1400 One Tandy Center
Ft. Worth, Texas 76102

Optimus T-200

Price	$259.95
Dimensions	34H x 12½W x 12½D
Weight	42 lbs. (net)
Design	Tower
Type	Acoustic suspension
Drivers	Two 10" woofers; 6½" midrange; 2" tweeter (with special horn assembly)

Response	50 Hz to 20 kHz
Crossover	800 Hz; 6 kHz
Impedance	8 ohms
Max. power	150 watts (21.75 dBW)
Controls	Midrange; treble
Features	Gradial slope crossovers; floor-standing tower enclosure; walnut veneer

Mach One

Price	$239.95
Dimensions	28⅜H x 17⅝W x 12D
Weight	65 lbs. (net)
Design	Floorstanding
Type	Acoustic suspension
Drivers	15" woofer; midrange; horn tweeter
Response	20 Hz to 25 kHz
Crossover	1 kHz; 5 kHz
Impedance	8 ohms
Min. power	25 watts (14 dBW)
Max. power	100 watts (20 dBW) peak
Controls	Midrange; tweeter
Features	Walnut-veneer cabinet

Nova-10

Price	$130
Dimensions	22H x 12¼W x 10¼D
Weight	25 lbs. 9 oz. (net)
Design	Bookshelf
Type	Passive radiator
Drivers	8" woofer; 8" passive radiator; 2½" tweeter
Response	80 Hz to 18 kHz
Crossover	3 kHz
Impedance	8 ohms
Max. power	50 watts (17 dBW)
Features	Genuine walnut veneer

Models also available

Optimus T-100, $179.95; Optimus 25, $150; Optimus 10, $140; T-70, $130; MC-2001, $100; Minimus-11, $80; MC-1401, $70; MC-1200, $60; MC-600, $40; Piezo Super Tweeter, $15

REFERENCE
CBS Retail Stores
1301 65th St.
Emeryville, Calif. 94608

115W

Price	$239.95
Dimensions	29 ¼H x 17⅞W x 15¾D
Weight	65 lbs. (net)
Type	Acoustic suspension
Drivers	15" dual volce-coil subwoofer
Response	22 Hz to 100 kHz, ±4 dB
Crossover	80 Hz
Impedance	8 ohms
Min. power	10 watts (10 dBW)
Max. power	200 watts (23 dBW)
Controls	Level controls for left and right tweeters
Features	Built-in low-pass filtering

206L

Price	$269.95/pr.
Dimensions	11¾H x 7½W x 7½D
Type	Acoustic suspension
Drivers	6" long-throw woofer; distributed-drive flat-plate tweeter
Response	80 Hz to 45 kHz, ±4 dB re 86 dB SPL at 1 meter at 1 watt
Crossover	5 kHz
Impedance	8 ohms
Min. power	10 watts (10 dBW)
Max. power	40 watts (16 dBW)
Controls	Preset

228L

Price	$129.95
Dimensions	26⅞H x 15W x 10¼D
Weight	30 lbs. (net)
Type	Acoustic suspension
Drivers	8" woofer; 8" passive radiator; 1" Mylar dome tweeter
Response	45 Hz to 20 kHz, ±4 dB
Crossover	3 kHz
Impedance	8 ohms
Min. power	10 watts (10 dBW)
Max. power	60 watts (17.75 dBW)
Controls	Preset
Features	Linear-phase design; fused tweeter

Models also available

312L, $269.96; 310L, $179.95; 204L, $179.95; 208L, $89.95

REGA RESEARCH LTD.
Import Audio, Ltd.
13430 Clayton Road
St. Louis, MO. 63131

RTX

Price	$2,200/pr. (with stands)
Dimensions	36⅞H x 14⅛W x 16 9/16D (on stands)
Weight	70 lbs. (net)
Design	Floorstanding
Type	Triangulated transmlssion line
Impedance	8 ohms
Min. power	40 watts (16 dBW)
Features	Cabinet material is laminated fiber-board coated with phenolic resln for rigidity

REVOX
Studor Revox America, Inc.
1425 Elm Hill Pike
Nashville, Tenn. 37210

Triton

Price	$1,599
Dimensions	30H x 41½W x 18 1/10D (sub-woofer cabinet); 18 9/10H x 12 2/5W x 7½D (bookshelf units)
Weight	219 lbs. (subwoofer); 11 lbs. 11 oz. (bookshelf units)
Design	Floorstanding subwoofer; book-shelf satellites
Drivers	Two 9 7/10" subwoofers; 6 9/10" low/mldrange; 1 1/5" dome mi-drange; ¾" dome tweeter
Response	30 Hz to 25 kHz
Crossover	150 Hz; 1.3 kHz; 3.2 kHz
Impedance	4 ohms
Min. power	20 watts (13 dBW)
Max. power	110 watts (20.5 dBW)
Features	Dual subwoofers are spring-lso-lated in sub-cablnet, so floorstandlng cabinet may be used even for turntable mounting

BX-350

Price	$395
Dimensions	20½H x 13 7/10W x 11 3/5D
Weight	30 lbs. 12 oz. (net)
Design	Floorstandlng
Type	Acoustic suspension
Drivers	Four 5" woofers; 1" domè tweeter
Response	30 Hz to 20 kHz
Sensitivity	84 dB SPL at 1 meter at 1 watt
Crossover	3.2 kHz
Impedance	4 ohms
Min. power	10 watts (10 dBW)
Max. power	80 watts (19 dBW)
Controls	3-position treble control
Features	Linear phase

Models also available

BX-4100, $1,199; BR-530, $399

REYNOLDS ADVANCE
Reynolds Advance Speaker Korp, Inc.
432 Lafayette Road
Hampton, N.H. 03842

C-2

Price	$350
Dimensions	35H x 15W x 11½D
Weight	55 lbs. (net)
Design	Floorstanding
Type	Passive radlator
Drivers	10" woofer; 12" passive radiator; 1" soft-dome tweeter
Response	22 Hz to 20 kHz, ±3 dB re 90 dB SPL at 1 meter at 1 watt
Sensitivity	90 dB SPL at 1 meter at 1 watt
Crossover	2 kHz
Impedance	6 ohms (nominal)
Min. power	20 watts (13 dBW)
Max. power	150 watts (17 dBW)
Features	Olled-walnut finish

Models also available

A-22, $450; A-2, $189; D-2, $99

ROGERS
Reference Monitor International, Inc.
2380 C Camino Vida Roble
Carlsbad, Calif. 92008

XA-75/L-35B Reference Monitor System

Price	$2,400
Dimensions	32½H x 16½W x 18D
Weight	78 lbs. (net)
Design	Floorstandlng
Type	Acoustic suspension
Drivers	12" woofer in each cabinet
Response	20 Hz to 150 Hz, ±3 dB re 96 dB SPL at 1 meter at 1 watt (sub-woofer); 45 Hz to 20 kHz, ±2 dB
Sensitivity	89 dB SPL at 1 meter at 1 watt
Crossover	150 Hz
Impedance	8 ohms
Min. power	50 watts (17 dBW)
Max. power	100 watts (20 dBW)
Features	Electronic crossover blamped sub-woofer system to be used with LS 3/5A a speakers

Compact Monitor

Price	$700/pr.
Dimensions	20H x 11W x 10¾D
Weight	25 lbs. (net)
Design	Bookshelf
Type	Acoustic suspension
Drivers	8" Bextrene woofer; 1" fabric dome tweeter

Response	50 Hz to 20 kHz, ±3 dB re 96 dB SPL at 1 meter at 1 watt
Sensitivity	89 dB SPL at 1 meter at 1 watt
Crossover	2.5 kHz
Impedance	8 ohms
Min. power	20 watts (13 dBW)
Max. power	80 watts (19 dBW)
Features	Utilizes new BBC profile cones

Models also available

LS5/8, $5,900/pr.; Monitor 2, $950/pr.; LS 3/5a BBC Monitor, $599/pr.

RSL
Rogersound Labs, Inc.
8381 Canoga Ave.
Canoga Park, Calif. 91304

6600H

Price	$574.50
Dimensions	46H x 18W x 11D
Weight	90 lbs. (net)
Design	Floorstanding
Type	Bass reflex
Drivers	Two 12" cone woofers; two 5" cone midranges; 2" x 5¼" horn tweeter
Response	25 Hz to 20 kHz
Sensitivity	96 dB SPL at 1 meter at 1 watt
Crossover	800 Hz; 5 kHz
Impedance	4 ohms
Min. power	10 watts (10 dBW)
Max. power	175 watts (225 dBW)
Controls	Midrange; tweeter
Features	Cabinet finish of genuine walnut; solid-state tweeter-protection circuit

Nevada

Price	$444 (black); $522 (walnut)
Dimensions	26½H x 17W x 13½D
Weight	63 lbs. (net)
Design	Floorstanding
Type	Acoustic suspension
Drivers	12" cone woofer; 8" cone woofer; 5" cone midrange; 2" x 5¼" horn tweeter
Response	29 Hz to 20 kHz
Sensitivity	90 dB SPL at 1 meter at 1 watt
Crossover	800 Hz; 5 kHz
Impedance	4 ohms
Min. power	10 watts (10 dBW)
Max. power	150 watts (21.75 dBW)
Controls	Midrange; tweeter
Features	Cabinet finish of genuine walnut or black lacquer; solid-state tweeter-protection circuit

Formula 60

Price	$234
Dimensions	38H x 15W x 11D
Weight	58 lbs. (net)
Design	Floorstanding
Type	Passive radiator
Drivers	12" cone woofer; 5" cone midrange; 2½" cone tweeter
Response	35 Hz to 30 kHz re 88 dB SPL at 1 meter at 1 watt
Sensitivity	88 dB SPL at 1 meter at 1 watt
Crossover	1.2 Hz; 4 kHz
Impedance	8 ohms
Min. power	10 watts (10 dBW)
Max. power	60 watts (17.75 dBW)
Controls	Midrange; tweeter
Features	Cabinet finish of walnut vinyl; fused protection

Formula 40

Price	$171 (vinyl); $192 (walnut)
Dimensions	23½H x 14¼W x 11¾D
Weight	45 lbs. (net)
Design	Bookshelf
Type	Bass reflex
Drivers	12" cone woofer; 5" cone midrange; 2½" cone tweeter
Response	40 Hz to 20 kHz re 88 dB SPL at 1 meter at 1 watt
Sensitivity	88 dB SPL at 1 meter at 1 watt
Crossover	1.2 Hz; 4 kHz
Impedance	8 ohms
Min. power	10 watts (10 dBW)
Max. power	60 watts (17.75 dBW)
Controls	Midrange; tweeter
Features	Cabinet finish of genuine walnut or walnut vinyl; fused protection

Models also available

Sierra, $409.50; Studio 3600, $210 (walnut); $185 (black); 3300 Monitor, $244.50 (black); $282 (walnut); Formula 20, $139.50; Formula 25, $115.50; Micron 100, $187.50/pr.

RTR
RTR Industries, Inc.
8116 Deering Ave.
Canoga Park, Calif. 91304

DR-1

Price	$1,495
Dimensions	49H x 16½W x 16½D
Weight	165 lbs. (net)
Design	Floorstanding
Type	Electrostatic/dynamic
Drivers	12" and 10" woofers; 14" diameter cylindrical electrostatic radiator
Response	30 Hz to 30 kHz, ±2 dB
Crossover	325 Hz
Impedance	8 ohms
Min. power	75 watts (18.75 dBW) for woofer section
Max. power	150 watts (21.75 dBW) for woofer section
Controls	Electrostatic volume; treble
Features	Internally contained power amp and electronic crossover control; direct-drive electrostatic radiator (325 Hz to 30 kHz range)

DAC/1

Price	$600
Dimensions	21¼H x 29½W x 28D
Weight	135 lbs. (net)
Design	Floorstanding
Type	Differential area coupler subwoofer
Drivers	12" active woofer; two 15" passive couplers
Response	16 Hz to 150 Hz, ±1.5 dB
Sensitivity	90 dB SPL at 1 meter at 1 watt
Crossover	120 Hz when used with PS/1; defeatable
Impedance	6 ohms
Min. power	40 watts (16 dBW)
Max. power	125 watts (21 dBW)
Controls	Low-pass defeat switch
Features	Differential area coupler enclosure

600D

Price	$600
Dimensions	48H x 16½W x 16½D
Weight	112 lbs. (net)
Design	Floorstanding
Type	Acoustic suspension
Drivers	Two 12" woofers; two 1½" soft-dome midranges; two 1" soft-dome tweeters
Response	32 Hz to 20 kHz, ±2 dB re 91.5 dB SPL at 1 meter at 1 watt
Sensitivity	91.5 dB SPL at 1 meter at 1 watt
Crossover	950 Hz; 10 kHz
Impedance	4 ohms
Min. power	25 watts (14 dBW)
Max. power	200 watts (23 dBW)
Controls	Midrange; tweeter
Features	Circuit breaker

ESR-6

Price	$275
Dimensions	14½H x 14½W x 12D
Weight	23 lbs. (net)
Design	Tweeter array
Type	Electrostatic tweeter array
Drivers	Six 3" x 6" HF-50 electrostatic panels
Response	1.5 kHz to 20 kHz, ±2 dB
Crossover	1.5 kHz
Impedance	8 ohms
Min. power	15 watts (11.75 dBW)
Max. power	60 watts (17.75 dBW)
Controls	Tweeter; woofer
Features	Circuit breaker

75D

Price	$250
Dimensions	25¼H x 14¼W x 11½D
Weight	48 lbs. (net)
Design	Bookshelf
Type	Acoustic suspension
Drivers	10" woofer; 1½" soft-dome midrange; 1" soft-dome tweeter
Response	40 Hz to 20 kHz, ±3 dB re 90.5 dB SPL at 1 meter at 1 watt
Sensitivity	90.5 dB SPL at 1 meter at 1 watt
Crossover	1.25 kHz; 10 kHz
Impedance	6 ohms
Min. power	20 watts (13 dBW)
Max. power	100 watts (20 dBW)
Controls	Midrange; tweeter
Features	Circuit breaker; Total Immersion Dampened woofer cone

Models also available

800D, $600; 300D, $400; PS/1, $325; G-200, $279; G-100, $229; G-080, $179; G-40, $129

SANSUI
Sansui Electronics Corp.
1250 Valley Brook Ave.
Lyndhurst, N.J. 07071

SP-L750

Price	$650
Dimensions	36⅝H x 16 23/32W x 13 25/32D (inludes casters)
Weight	55 lbs. 2 oz. (net)
Design	Floorstanding
Type	Bass reflex
Drivers	12 1/16" woofer; 2 15/16" horn tweeter; 1 9/16" horn supertweeter; 12 1/16" passive radiator
Response	30 Hz to 40 kHz
Sensitivity	94 dB SPL at 1 meter at 1 watt
Crossover	1.5 kHz; 12 kHz
Impedance	8 ohms
Max. power	200 watts (23 dBW)
Controls	Tweeter; supertweeter (3 positions each)
Features	Acoustic vents on horn tweeter to minimize phase disturbances; acoustic lens widens dispersion; caster rollers included

SP-X7900

Price	$310
Dimensions	26 27/32H x 17 5/32W x 9 31/32D
Weight	37 lbs. 4 oz. (net)
Design	Floorstanding
Type	Bass reflex
Drivers	16" woofer; 4¾" cone midrange; 6 1/16" x 2" horn tweeter; two 1 15/16" cone supertweeters
Response	30 Hz to 22 kHz
Sensitivity	97 dB SPL at 1 meter at 1 watt

Crossover 2 kHz; 7 kHz; 12 kHz
Impedance 8 ohms
Max. power 160 watts (22 dBW)
Controls 3-position sound-contour control
Features Simulated walnut grain finish; genuine wood Kumiko grille

SP-X6900

Price $260
Dimensions 24¾H x 14⅞W x 9 31/32D
Weight 29 lbs. 8 oz. (net)
Design Floorstanding
Type Bass reflex
Drivers 13" woofer; 4¾" cone midrange; 6 1/16" x 2" horn tweeter; two 1 15/16" cone supertweeters
Response 30 Hz to 22 kHz
Sensitivity 95 dB SPL at 1 meter at 1 watt
Crossover 2.5 kHz; 8 kHz; 16 kHz
Impedance 8 ohms
Max. power 130 watts (21.25 dBW)
Controls 3-position sound-contour control
Features Simulated walnut grain finish; genuine wood Kumiko grille

SELECT SERIES

SPA-3700

Price $180
Dimensions 24⅞H x 15⅞W x 12D
Design Bookshelf
Type Acoustic suspension
Drivers 12" woofer; 5½" cone midrange; oval piezoelectric tweeter
Response 30 Hz to 25 kHz
Impedance 8 ohms
Min. power 20 watts (13 dBW)
Max. power 100 watts (20 dBW)
Controls Midrange; tweeter

J SERIES

J-33

Price $450/pr.
Dimensions 16⅛H x 9 7/16W x 7⅞D
Weight 15 lbs. 6 oz. (net)
Design Bookshelf
Type Acoustic suspension
Drivers 8¼" cone woofer; 1" dome tweeter
Response 45 Hz to 20 kHz re 90 dB SPL at 1 meter at 1 watt
Sensitivity 90 dB SPL at 1 meter at 1 watt
Crossover 2 kHz
Impedance 6 ohms
Min. power 15 watts (11.75 dBW)
Max. power 60 watts (17.75 dBW)
Features Black piano finish

Models also available

SP-L550, $500; SP-X9900, $400; SP-X8900, $350; SP-M1, $250/pr.; SPA-2700, $260/pr.; SPA-700, $130/pr.; J-11, $290/pr.

SARAS
Saras of America
4150 Glencoe Ave.
Venice, Calif. 90291

ST-200

Price $600
Dimensions 42½H x 14½W x 13D
Weight 90 lbs. (net)
Design Floorstanding
Type Acoustic suspension
Drivers Two 10" woofers; 5" midrange; 1" convex tweeter
Response 30 Hz to 18 kHz, ±2.5 dB
Sensitivity 90 dB SPL at 1 meter at 1 watt
Crossover 500 Hz; 5 kHz
Impedance 8 ohms
Min. power 30 watts (14.75 dBW)
Max. power 150 watts (21.75 dBW)
Controls None
Features Time-alignment enclosure; third-order filters; LED power indicator; suspended grille-cloth panel

11

Price $220
Dimensions 24H x 13¾W x 11¼D
Weight 48 lbs. (net)
Type Acoustic suspension
Drivers 10" woofer; 1" convex tweeter
Response 35 Hz to 18 kHz, ±3.5 dB re 90 dB SPL at 1 meter at 1 watt
Crossover 1.8 ohms
Impedance 4 ohms
Controls None
Features No-diffraction cabinet

Models also available

30A, $350; 22, $270

SCOTT
H. H. Scott, Inc.
20 Commerce Way
Woburn, Mass. 01801

Pro 100B

Price $600
Dimensions 29¼H x 19W x 14½D
Weight 67 lbs. (net)
Type Air suspension
Drivers 15" woofer; two 4½" cone midranges; two 1" dome tweeters
Response 36 Hz to 20 kHz, ±4 dB re 94 dB SPL at 1 meter at 1 watt
Crossover 700 Hz; 3.5 kHz
Impedance 4 ohms
Min. power 20 watts (13 dBW)
Max. power 300 watts (24.75 dBW)
Controls Midrange; tweeter; top speaker adjustment
Features Bidirectional radiation; high-power construction woofer

S-188T

Price $250
Dimensions 33½H x 13W x 10½D
Weight 44 lbs. (net)
Type Air suspension
Drivers 10" woofer; 4½" midrange; 1" dome tweeter
Response 38 Hz to 20 kHz, ±4 dB re 95.4 dB SPL at 1 meter at 1 watt
Crossover 900 Hz; 3.5 kHz
Impedance 6 to 8 ohms
Min. power 10 watts (10 dBW)
Max. power 100 watts (20 dBW)
Controls Midrange; tweeter
Features Extra-long voice coil; high-power construction woofer

177BL

Price $150
Dimensions 21½H x 11W x 9⅛D
Weight 22 lbs. (net)
Design Bookshelf
Type Acoustic suspension
Drivers 8" woofer; 5" midrange; 1¾" tweeter
Response 50 Hz to 18 kHz, ±4 dB re 92.5 dB SPL at 1 meter at 1 watt
Crossover 1.2 Hz; 3.5 kHz
Impedance 6 to 8 ohms (controlled impedance)
Min. power 7 watts (8.5 dBW)
Max. power 80 watts (19 dBW)
Controls None
Features High power construction, direct dynamic range woofer with long voice coil; Scott-designed extended performance midrange; contemporary hickory finish; phenolic-ring tweeter

166B

Price $120
Dimensions 13H x 7 9/16W x 6½D
Weight 22 lbs. (net)
Type Acoustic suspension
Drivers 6½" woofer; 1" dome tweeter
Response 55 Hz to 20 kHz, ±4 dB re 92.5 dB SPL at 1 meter at 1 watt
Crossover 2.2 kHz
Impedance 7 ohms (max)
Min. power 10 watts (10 dBW)
Max. power 100 watts (20 dBW)
Features High-power woofer with voice coil wound around a bronze form; textile dome tweeter

Models also available

199T, $330; S-197B, $300; S-196W, $300; S-196B, $270; S-186B, $220; S-177B, $130; S-176B, $100

SEAS
The Speaker Works
Box 303
Canaan, N.H. 03741

Disco 47 Kit

Price $239
Type Vented
Drivers Two 12" woofers; two 5¼" midrange drivers; two 4½" tweeters; horn-loaded dome super tweeter
Response 40 Hz to 20 kHz
Sensitivity 100 dB SPL at 1 meter at 1 watt
Crossover 1 kHz; 3 kHz; 8 kHz
Impedance 8 ohms
Min. power 6 watts (7.75 dBW)
Max. power 160 watts (22 dBW)
Features Midrange/tweeter protection with warning lights; assembled cabinet with professional handles available

Models also available

603 Kit, $159; 253 Kit, $89; 223 Kit, $59

SHAHINIAN
Shahinian Acoustics, Ltd.
4 Selden Court
Selden, N.Y. 11784

Obelisk

Price $433 (walnut or oak); $445 (birch)
Dimensions 26¾H x 14W x 12D
Weight 50 lbs. (net)
Type Hybrid transmission line with passive radiator
Drivers 8" woofer; 4" x 1" Mylar dome tweeter
Response 35 Hz to 18.5 kHz, +2, −3 dB re 90 dB SPL at 1 meter at 1 watt
Crossover 2 kHz
Impedance 6 ohms
Min. power 25 watts (14 dBW)
Max. power 350 watts (25.5 dBW)
Controls None
Features Forty-eight" hybrid transmission line with 10" passive radiator

SHURE
Shure Bros., Inc.
222 Hartrey Ave.
Evanston, Ill. 60204

SR-112W

Price $378
Dimensions 16½H x 23⅞W x 15⅛D
Weight 46 lbs. (net)
Design Floorstanding

Type Front-ported bass reflex
Drivers Twin 8" woofers and radial horn with compression driver
Response 45 Hz to 16 kHz re 97 dB SPL at 1 meter at 1 watt
Sensitivity 97 dB SPL at 1 meter at 1 watt
Crossover 2.6 kHz
Impedance 8 ohms
Min. power 10 watts (10 dBW)
Max. power 100 watts (20 dBW)
Controls High-frequency attenuator
Features Optional wall-mounting bracket available

S.I.A.R.E.
S.I.A.R.E.
80 13th Ave.
Ronkonkoma, N.Y. 11779

Delta 400
Price $1,000
Dimensions 30H x 17¾W x 3¾D
Weight 75 lbs. (net)
Design Floorstanding
Type Vented
Drivers 9" long excursion woofer; 4¾" woven fiberglass cone midrange; 1" polyamide dome tweeter
Response 45 Hz to 25 kHz, ±2 dB
Sensitivity 89 dB SPL at 1 meter at 1 watt
Crossover 500 Hz; 4 kHz (12 dB/octave patented Mono-lithic design)
Impedance 8 ohms
Min. power 20 watts (13 dBW)
Max. power 100 watts (20 dBW)
Features Thiele-aligned fourth-order vented woofer enclosure; phase-aligned construction; "Acoustical Stabilizers" re-enforcement panels secured to inside surfaces to damp panel resonances contain patented "tube" & "neck" construction Helmholtz resonators to cancel midrange reflections in addition to usual sound-absorbent material; comes with a frequency response curve; measured performance is guaranteed for 10 years

Club 9
Price $689.95
Dimensions 38½H x 15¾W x 15½D
Weight 88 lbs. (net)
Design Floorstanding
Type Vented
Drivers 10" foam suspension woofer; 10" cambric suspension bass/midrange; 8" cambric suspension upper bass midrange; two modified ogive tweeters
Response 40 Hz to 18 kHz, ±4 dB
Sensitivity 100 dB SPL at 1 meter at 1 watt
Crossover 4 kHz (12/dB octave)
Impedance 4 ohms
Min. power 20 watts (13 dBW)
Max. power 150 watts (21.75 dBW)
Features Dissimilar yet complementary; 2 or more speakers operating in overlapping ranges designed to compensate for variations and in addition result in moving more air for better bass and better transient performance; tweeter uses reflecting/dispersion optimized design, pole piece extension, and encircling damping foam ring; exceptionally high efficiency; comes with a frequency response curve; measured performance is guaranteed for 10 years

DB-200
Price $269.95
Dimensions 26H x 13¾W x 12D
Weight 32 lbs. 3 oz. (net)
Design Bookshelf
Type Vented
Drivers 6½" foam suspension woofer; 6½" foam suspension bass/midrange; nomex dome tweeter
Response 50 Hz to 22 kHz, ± 4 dB
Sensitivity 91 dB SPL at 1 meter at 1 watt
Crossover 4 kHz (12 dB/octave)
Impedance 8 ohms
Min. power 10 watts (10 dBW)
Max. power 50 watts (17 dBW)
Features Dissimilar yet complementary; 2 or more speakers operating in overlapping ranges designed to compensate for variations and in addition result in moving more air for better bass and better transient performance; comes with a frequency-response curve; measured performance is guaranteed for 10 years

Models also available
Club 7, $469.95; DLK-200, $329.95; Club 5, $319.95

SNELL ACOUSTICS
Snell Acoustics
10 Prince Place
Newburyport, Mass. 01950

Type A
Price $940
Dimensions 46½H x 23¾W x 13D
Weight 97 lbs. (net)
Design Floorstanding
Type Acoustic suspension
Drivers 10" woofer; 4" midrange; 1" dome tweeter
Response 36 Hz to 18 kHz, ±1½ dB
Crossover 275 Hz; 2.5 kHz
Impedance 4 ohms
Min. power 80 watts (19 dBW)
Features Mirror-imaged pairs; biamped drivers individually fused biamplification possible

SONRISE
Sonrise Audio Systems
13620 N.E. 20th St., Suite A
Bellevue, Wash. 98005

The Revelation
Price $1,350/pr.
Dimensions 42H x 17¼W x 15D
Weight 104 lbs.
Type Acoustic suspension
Drivers Two 12" woofers; two 5" midrange drivers; two 1" soft-dome tweeters
Response 20 Hz to 20 kHz
Crossover 550 Hz; 5 kHz
Impedance 4 ohms
Min. power 30 watts (14.75 dBW)
Max. power 200 watts (23 dBW)
Features Genuine American solid-oak cabinet in rustic or golden finish

The Dayspring
Price $278/pr.
Dimensions 15¾H x 10½W x 7½D
Weight 21 lbs.
Type Acoustic suspension
Drivers 6" woofer; 1" cone tweeter
Response 38 Hz to 20 kHz
Crossover 1.5 kHz
Impedance 8 ohms
Min. power 15 watts (11.75 dBW)
Max. power 50 watts (17 dBW)
Features Genuine American solid-oak cabinet in rustic or golden finish

Models also available
The Charisma, $1,080/pr.; The Trinity, $700/pr.; The Spirit, $450/pr.

SONIC INTERNATIONAL
Sonic International Corp.
2515 N.E. Riverside Way
Portland, Ore. 97211

Studio Lab 150
Price $299.95
Dimensions 35H x 14½W x 14¾D
Weight 62 lbs. (net)
Design Floorstanding
Type Infinite baffle
Drivers 12" woofer; two 5" midranges; three 1¾" tweeters
Response 20 Hz to 20 kHz
Sensitivity 93 dB SPL at 1 meter at 1 watt
Crossover 1.8 kHz; 6 kHz
Impedance 8 ohms
Min. power 25 watts (14 dBW)
Max. power 200 watts (23 dBW)
Features Maximum dispersion isonic tweeter array; automatic speaker protector

S-6000 Subwoofer
Price $249.95
Dimensions 16¼H x 26W x 15D
Weight 39 lbs. (net)
Design Floorstanding
Type Ducted-port bass reflex
Drivers Two 10" woofers
Response 25 Hz to 400 Hz
Sensitivity 90 dB SPL at 1 meter at 1 watt
Crossover 100 Hz; 200 Hz; 400 Hz
Impedance 8 ohms
Min. power 25 watts (14 dBW)
Max. power 120 watts (20.75 dBW)
Features Dual-channel subwoofer; automatic speaker protector

MX-360
Price $159.95
Dimensions 23H x 13W x 10¼D
Weight 31 lbs. (net)
Design Floorstanding
Type Vented bass reflex
Drivers 10" woofer; 5" midrange; 1¾" phenolic tweeter
Response 25 Hz to 20 kHz
Sensitivity 92 dB SPL at 1 meter at 1 watt
Crossover 2 kHz; 4 kHz; 8 kHz
Impedance 8 ohms
Min. power 20 watts (13 dBW)
Max. power 150 watts (21.57 dBW)
Controls Midrange; tweeter
Features Automatic speaker protector

SL-110
Price $159.95
Dimensions 23H x 13W x 10¼D
Weight 31 lbs. (net)
Design Floorstanding
Type Acoustic suspension
Drivers 10" woofer; 5" midrange; 1¾" phenolic tweeter
Response 25 Hz to 20 kHz
Sensitivity 92 dB SPL at 1 meter at 1 watt
Crossover 2 kHz; 8 kHz
Impedance 8 ohms
Min. power 10 watts (10 dBW)
Max. power 120 watts (20.75 dBW)
Features Automatic speaker protector

Monitor Deluxe 3000
Price $129.95
Dimensions 23H x 13W x 10¼D
Weight 31 lbs. (net)
Design Floorstanding
Type Vented bass reflex
Drivers 10" woofer; 5" midrange; 1¾" phenolic tweeter
Response 20 Hz to 20 kHz
Sensitivity 92 dB SPL at 1 meter at 1 watt
Crossover 2 kHz; 8 kHz
Impedance 8 ohms
Min. power 20 watts (13 dBW)
Max. power 120 watts (20.75 dBW)
Features Dispersion screens; automatic speaker protector

Micro Sonic 3/5
Price $99.95/pr.
Dimensions 8½H x 5W x 4¾D
Weight 5 lbs. (net)
Design Mini
Type Acoustic suspension
Drivers 4½" mid-woofer; 2½" tweeter

Response 50 Hz to 20 kHz
Sensitivity 86 dB SPL at 1 meter at 1 watt
Crossover 4 kHz
Impedance 4 ohms
Min. power 10 watts (10 dBW)
Max. power 40 watts (16 dBW)
Features Accessory brackets for mounting; automatic speaker protector; available in woodgrain (MS-3) or black vinyl (MS-5) finish

Models also available

SL-120, $199.95; DB-10.6, $199.95; MX-540, $189.95; DB-10.4, $179.95; Monitor Deluxe 4000, $169.95; MX-180, $129.95; MS-7, $169.95/pr.; MS-9, $169.95/pr.; Monitor Deluxe 2000, $99.95

SONY
Sony Corp. of America
9 West 57th St.
New York, N.Y. 10019

APM-8

Price $16,000/pr.
Dimensions 43⅝H x 25⅝W x 17¾D
Weight 224 lbs. (net)
Design Floorstanding
Type Moving-coil planar radiators in vented enclosure
Drivers 15" equivalent, 4-coil node drive low-frequency driver; 6 7/10" equivalent, 4-point node drive low-midrange; 2 2/5" equivalent, 4-point node drive mid-high driver; 1 1/5" equivalent, 4-point node drive high-frequency driver
Response 25 Hz to 30 kHz
Sensitivity 92 dB SPL at 1 meter at 1 watt
Crossover 315 Hz; 1.2 kHz; 4.5 kHz
Impedance 8 ohms
Controls Low-midrange; high-midrange; high-frequency level attenuators
Features Accurate Piston Motion (APM) transducers; honey-comb carbon-fiber/aluminum planar diaphragms are node-driven by moving-coil drivers; SBMC-encapsulated crossover coils and capacitors

SS-G7X

Price $1,000
Dimensions 37H x 20W x 17½D
Weight 106 lbs. (net)
Type Bass reflex
Drivers 15" cone woofer; 4" midrange; 1⅜" tweeter
Response 30 Hz to 20 kHz re 94 dB SPL at 1 meter at 1 watt
Crossover 550 Hz; 4.5 kHz (each 12 dB/octave)
Impedance 8 ohms
Min. power 25 watts (14 dBW)
Max. power 200 watts (23 dBW)
Controls Tweeter; midrange
Features Phase-aligned speaker management; "AG" baffle board

SS-U50

Price $139.95

Dimensions 24⅜H x 13W x 12¼D
Weight 28 lbs. (net)

Design Floorstanding; bookshelf
Type Acoustic suspension
Drivers Ribbon tweeter; 8" woofer
Response 35 Hz to 50 kHz
Sensitivity 88 dB SPL at 1 meter at 1 watt
Crossover 5 kHz
Impedance 8 ohms
Min. power 20 watts (13 dBW)
Max. power 100 watts (20 dBW)
Features Walnut-grain vinyl; in-line drivers; optional floorstand available

Models also available

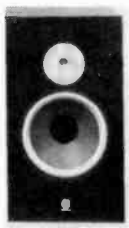
SS-U80, $460; SS-U70, $340; SS-5GX, $300; SS-U60, $179.95

SOUND DYNAMICS
Sound Dynamics Corp.
161 Don Park Road
Markham, Ontario L3R/1C2

120S

Price $359.50
Dimensions 33H x 16¾W x 13D
Weight 72 lbs. (net)
Design Floorstanding tower
Type Computer-tuned low-resonance bass reflex
Drivers 12" heavy-duty woofer with long-throw 1½" voice coil; felted cone; 1" horn-loaded; 5 2/5" cast-aluminum lens
Response 26 Hz to 20 kHz, ±3 dB
Sensitivity 101.5 dB SPL at 1 meter at 1 watt
Crossover 2.05 kHz
Impedance 8 ohms (nominal)
Min. power 12 watts (10.75 dBW)
Max. power 150 watts (21.75 dBW)
Controls L-pad variable through full range
Features "Floating bass port"; phase-corrected, precisely angled, floor-standing cabinet; hand-built component drivers; walnut vinyl finish

12S



Price $299.50
Dimensions 27H x 15⅛W x 12¾D
Weight 52 lbs. (net)
Design Floorstanding; bookshelf
Type Computer-tuned low-resonance bass reflex
Drivers 12" heavy-duty driver with long-throw 1.5" voice coil; 1" horn-loaded phenolic dome die-cast with 5 2/5" aluminum lens
Response 28 Hz to 20 kHz, ±3 dB re 101 dB SPL at 1 meter at 1 watt
Crossover 2.1 kHz
Impedance 8 ohms (nominal)
Min. power 10 watts (10 dBW)
Max. power 125 watts (21 dBW)
Controls L-pad variable through full range
Features Bookshelf design; hand-built component drivers; walnut-vinyl finish

Models also available

10S, $224.50; 100S, $179.50; 6S, $149.50; 15S, $449.50

SOUND-LAB
Sound-Lab, Inc.
5226 South, 300 West
Suite 2
Salt Lake City, Utah 84107

R-1

Price $1,397.50
Dimensions 50½H x 22W x 10D
Weight 50 lbs. (net)
Design Panel
Type Electrostatic
Drivers Five "Line Sources" angled to give 90-degree horizontal dispersion
Response 100 Hz to 25 kHz, ±1 dB re 88 dB SPL at 1 meter at 1 watt
Sensitivity 88 dB SPL at 1 meter at 1 watt
Crossover 100 Hz
Impedance 150 ohms
Min. power 100 watts (20 dBW)
Max. power 300 watts (24.75 dBW)
Controls Brilliance
Features Bi-ampable or can be used with internal passive (100 Hz) crossover; very wide dynamic range and dispersion; beautiful furniture

Models also available

R-2, $595

SOUND LAB
Vermont Wood Crafts, Inc.
P.O. Box 206
Depot Street
Proctorville, Vt. 05153

SL-4

Price $179.95
Dimensions 25H x 15W x 10¼D
Weight 36 lbs. (net)
Design Floorstanding
Type Bass reflex
Drivers 12" woofer; 5" midrange; 3" phenolic radiator tweeter; 3" piezoelectric supertweeter
Response 35 Hz to 20 kHz, ±3 dB
Sensitivity 95 dB SPL at 1 meter at 1 watt
Crossover 1.2 kHz; 5 kHz
Impedance 8 ohms
Min. power 8 watts (9 dBW)
Max. power 60 watts (17.75 dBW)
Controls Tweeter; midrange
Features Circuit breaker

SL-1

Price $79.95
Dimensions 20H x 12W x 8D
Weight 21 lbs. (net)
Design Bookshelf
Type Bass reflex
Drivers 8" woofer; 3" phenolic radiator tweeter
Response 40 Hz to 18 kHz, ±4 dB
Sensitivity 92 dB SPL at 1 meter at 1 watt
Crossover 2.5 kHz
Impedance 8 ohms
Min. power 5 watts (7 dBW)
Max. power 30 watts (14.75 dBW)

Models also available

SL-3, $119.95; SL-2, $99.95

SOUND RESEARCH
Sound Research, Inc.
1000 E. Del Amo Blvd.
Carson, Calif. 90746

Studio Monitor 1243

Price $519.95/pr.
Dimensions 25H x 14½D x 11⅞D
Weight 43 lbs. (net)
Design Floorstanding
Type Vented
Drivers Woofer; tweeter; midrange
Response 22 Hz to 22 kHz

Sensitivity 99 dB SPL at 1 meter at 1 watt
Crossover 800 Hz; 6 kHz
Min. power 125 watts (21 dBW)
Max. power 170 watts (22.25 dBW)
Controls Midrange and tweeter; TASP (total automatic speaker protection)
Features No buttons to push; genuine walnut hardwood finish; ideal for studio sound re-enforcement playback monitoring or home use

Monitor VIII

Price $299.95/pr.
Dimensions 22H x 12W x 9⅞D
Weight 30 lbs. (net)
Design Floorstanding
Type Vented
Drivers 8" woofer; tweeter
Response 30 Hz to 22 kHz
Sensitivity 96 dB SPL at 1 meter at 1 watt
Crossover 1.5 kHz (12 dB per octave)
Min. power 80 watts (19 dBW)
Max. power 125 watts (21 dBW)
Controls Tweeter; TASP (total automatic speaker protection)
Features Oak-grain vinyl finish

K-310

Price $219.95/pr.
Dimensions 22½H x 13W x 10⅝D
Weight 25 lbs. (net)
Design Floorstanding
Type Vented
Drivers 10" woofer; midrange; tweeter
Response 35 Hz to 20 kHz
Sensitivity 93 dB SPL at 1 meter at 1 watt
Crossover 1.2 kHz; 6 kHz (6 dB per octave)
Min. power 50 watts (17 dBW)
Max. power 80 watts (19 dBW)
Controls Midrange and tweeter; TASP (total automatic speaker protected)
Features Walnut wood grain vinyl finish

Models also available

Studio Monitor 843, $399.95/pr.; Monitor XII, $359.95/pr.; 1200 G, $289.95/pr.; K-412, $259.95/pr.; 1000G, $199.95/pr.; 800G, $179.95/pr.

SOUNDMATES
Soundmates, Inc.
796 29th Ave., S.E.
Minneapolis, Minn. 55414

S-2000

Price $299.95
Dimensions 26½H x 15½W x 13D
Weight 58 lbs. (net)
Design Bookshelf
Type Tuned port
Drivers 12" foam surround woofer; 4½" midrange; 1" tweeter
Response 30 Hz to 20 kHz, ±4 dB re 93.5 dB SPL at 1 meter at 1 watt
Sensitivity 93.5 dB SPL at 1 meter at 1 watt
Crossover 800 Hz; 3 kHz
Impedance 8 ohms
Min. power 10 watts (10 dBW)
Max. power 125 watts (21 dBW)
Controls None
Features Contemporary design; low distortion

1.000

Price $179.95
Dimensions 20H x 11W x 10½D
Weight 28 lbs. (net)
Design Bookshelf
Type Acoustic suspension
Drivers 8" butyl-surround woofer with 1.5" voice coil; 3" direct radiator tweeter with 0.5 lb. magnet
Response 35 Hz to 20 kHz
Sensitivity 93 dB SPL at 1 meter at 1 watt
Crossover 3 kHz
Impedance 8 ohms
Min. power 10 watts (10 dBW)
Max. power 60 watts (17.75 dBW)
Controls Tweeter level
Features Contemporary design

Models also available

1.500, $269.95; .375, $135; .125, $109.95

SOURCE
Sound Source
1435 Jacqueline Drive
Columbus, Ga. 31907

Monitor B

Price $350
Dimensions 32H x 15W x 12⅝D
Weight 56 lbs. (net)
Design Floorstanding; bookshelf
Type Acoustic suspension
Drivers 12" "Poly-Power-Pulse"® woofer; 5" midrange; 1" soft-dome tweeter
Response 28 Hz to 22 kHz, ±3 dB re 93 dB SPL at 1 meter at 1 watt
Sensitivity 93 dB SPL at 1 meter at 1 watt
Crossover 900 Hz: 5 kHz
Impedance 8 ohms
Min. power 5 watts (7 dBW)
Max. power 100 watts (20 dBW)
Controls Midrange and tweeter ambience network
Features Ambience control network; LED input power monitor; 5-year transferable warranty

SS-10W

Price $160
Dimensions 24⅝H x 15W x 10¾D
Weight 35 lbs. (net)
Design Bookshelf
Type Tube-vented
Drivers 10" woofer; 5" midrange; 2" cone tweeter
Response 44 Hz to 18 kHz, ±3 dB re 98 dB SPL at 1 meter at 1 watt
Sensitivity 98 dB SPL at 1 meter at 1 watt
Crossover 1.2 kHz (5 kHz)
Impedance 8 ohms
Min. power 5 watts (7 dBW)
Max. power 60 watts (17.75 dBW)
Features Fuse protection; removable grille panel

SIGNATURE SERIES

4a

Price $499
Dimensions 42H x 16W x 13D
Weight 95 lbs. (net)
Design Floorstanding
Type Rear-frequency time line, acoustically loaded to passive radiator
Drivers 12" woofer; 5" isolated midrange; 1" soft-dome tweeter
Response 20 Hz to 22 kHz, ±3 dB
Sensitivity 92 dB SPL at 1 meter at 1 watt
Crossover 500 Hz; 6 kHz
Impedance 8 ohms
Min. power 20 watts (13 dBW)
Max. power 200 watts (23 dBW)
Controls Tweeter; midrange
Features Walnut-veneer enclosure; fuse protection; 5-year transferable warranty

Models also available

Monitor A, $275; SS-12W, $200; 8W, $110; 1a, $250

SPEAKERLAB
Speakerlab, Inc.
735 N. Northlake Way
Seattle, Wash. 98103

SD-1000

Price $1,350 (assembled, oak); $1,090 (kit)
Dimensions 13H x 7½W x 7½D
Weight 200 lbs. (net)
Design Subwoofer/satellite
Type Acoustic suspension
Drivers 12" subwoofer; two 6" midbass/midranges; two 1" recessed dome tweeters
Sensitivity 94 dB SPL at 1 meter at 1 watt
Crossover 140 Hz; 2.5 kHz
Impedance 8 ohms
Min. power 15 watts (11.75 dBW)
Max. power 100 watts (20 dBW)
Controls 3-position tweeter level: 3 dB, 6 dB, 9 dB; subwoofer EQ
Features Subwoofer volume control; 130 watt subwoofer amplifier; variable electronic crossover available; crossover points: 40 Hz, 60 Hz, 80 Hz, 100 Hz, 120 Hz, 140 Hz, 180 Hz

SK

Price $799 (SKFW kit, $579)
Dimensions 50½H x 32¼W x 28D
Weight 220 lbs. (net)
Design Floorstanding
Type Folded horn
Drivers 15" woofer; 17" x 6" horn midrange; 4" x 8¾" Wave Aperture driver
Sensitivity 99 dB SPL at 1 meter at 1 watt
Crossover 400 Hz; 5 kHz
Impedance 8 ohms
Min. power 10 watts (10 dBW)
Max. power 250 watts (24 dBW)
Controls Midrange; tweeter (switchable)
Features Extremely wide dispersion Wave Aperture® tweeter; tweeter and midrange fluid-damped with Magnar®

S-3

Price $320 (vinyl kit, $199)
Dimensions 27¼H x 15½W x 11⅞D
Weight 62 lbs. (net)
Design Floorstanding
Type Acoustic suspension
Drivers 12" woofer; 6" midrange; 1" dome tweeter
Sensitivity 91 dB SPL at 1 meter at 1 watt
Crossover 600 Hz; 4 kHz
Impedance 8 ohms
Min. power 15 watts (11.75 dBW)
Max. power 200 watts (23 dBW)
Controls Midrange; tweeter
Features Polylam® double-layer woofer and midrange cone construction

S-1

Price $125 (vinyl kit, $85)
Dimensions 20¾H x 11¾W x 8¾D
Weight 31 lbs. (net)
Design Floorstanding; bookshelf
Type Acoustic suspension
Drivers 8" woofer; 1" recessed-dome tweeter
Sensitivity 92 dB SPL at 1 meter at 1 watt
Crossover 2.5 kHz
Impedance 8 ohms
Min. power 10 watts (10 dBW)
Max. power 75 watts (18.75 dBW)
Controls Tweeter; L-pad
Features Polylam® double-layer woofer cone construction

Speakerlab 0.1

Price $115 (vinyl kit, $79)
Dimensions 10H x 7W x 5D
Weight 10 lbs. (net)
Design Bookshelf
Type Acoustic suspension
Drivers 6" woofer; 1" dome tweeter
Sensitivity 88 dB SPL at 1 meter at 1 watt
Crossover 2.5 kHz
Impedance 4 or 8 ohms
Min. power 15 watts (11.75 dBW)
Max. power 50 watts (17 dBW)

Controls Tweeter; L-pad
Features Polylam® double-layer woofer cone construction

Models also available

S-50, $890; S-7 WA, $550 (vinyl kit, $349); S-6 WA, $409 (vinyl kit, $299); S-30, $359 (vinyl kit, $319); S-4, $355 (vinyl kit, $229); S-2.5, $245 (vinyl kit, $169); S-2, $185 (vinyl kit, $125)

SPECKMAN
J.W.S. Acoustic Design Corp.
11407A Route 14
Harvard, Ill. 60033

S-415 Titus

Price $1,025
Dimensions 36H x 15¼ dia. x 18 dia., with legs
Weight 75 lbs. (approx., depending on leg style)
Type Cylindrical Column of Air Effect® subchamber
Drivers 15" extended-range subwoofer; lower midrange; two 2" dome midranges; two 1" dome tweeters
Response 19 Hz to 20 KHz, ±2 dB re 91 dB SPL at 1 meter at 1 watt
Crossover 450 Hz; 2 kHz; 6 kHz
Impedance 8 ohms
Min. power 25 watts (14 dBW)
Max. power 250 watts (24 dBW)
Features Midnight-black flat smooth finish with interchangeable pecan legs; chain package available for hanging

S-15 Titus Subwoofer

Price $650
Dimensions 36H x 15¼ dia.; 48H x 18 dia., with legs
Weight 75 lbs. (approx., depending on leg styles)
Type Cylindrical Column of Air Effect® subchamber
Drivers 15" extended-range subwoofer
Response 19 Hz to 100 Hz, ±2 dB
Crossover Passive at 100 Hz
Impedance 8 ohms
Min. power 25 watts (14 dBW)
Max. power 250 watts (24 dBW)
Features Midnight-black flat smooth finish with interchangeable pecan legs; chain package available for hanging

S-310 Galatian Edition

Price $345
Dimensions 30H x 12½ dia.; 25½H x ¾ dia., with legs
Weight 34 lbs. (approx., depending on unit type)
Type Cylindrical Column of Air Effect® subchamber
Drivers 10" subwoofer; 4½" midrange; 1" dome tweeter
Response 29 Hz to 20 kHz, ±2.5 dB re 91 dB SPL at 1 meter at 1 watt
Crossover 650 Hz; 6.5 kHz
Impedance 8 ohms
Min. power 15 watts (11¾ dBW)
Max. power 125 watts (21 dBW)
Features Available in midnight-black flat smooth finish, pecan legs standard; Palamino (combination brass, light-tan fabric with Interchangeable pecan legs); mocha (same as Palomino except with dark-brown pile fabric); chrome (combination chrome or blacktone, trim rings, light silver blue fabric, interchangeable solid clear acrylic legs standard); chain package available for hanging

Models also available

S-412 Galatian Edition, $559; S-103, $195; S-82, $129

SPECO
Speco Division
Components Specialties, Inc.
1172 Route 109
Lindenhurst, N.Y. 11757

G15CF60

Price $140
Drivers 15" driver with 2" aluminum voice coil and 60-oz. ferrite magnet
Response 35 Hz to 2 kHz
Impedance 8 ohms
Max. power 200 watts (23 dBW)
Features Disco and professional applications

O-83

Price $48.95
Drivers 8" driver
Controls Level
Features Outdoor patio speaker; available in brown, beige, or white; 20' wire

SPECTRALINEAR
Ultralinear Loudspeakers
3228 E. 50th St.
Los Angeles, Calif. 90058

1260

Price $139.95
Dimensions 24¾H x 14½W x 9¼D
Weight 52 lbs. (net)/pr.
Design Bookshelf
Type Tuned phase Inverter
Drivers 12" passive radiator; 8" foam-edged suspension midrange; 4½" vertical aperature high-frequency radiator
Response 38 Hz to 18 kHz
Sensitivity 91 dB SPL at 1 meter at 1 watt
Crossover 2.7 kHz
Impedance 8 ohms
Min. power 5 watts (7 dBW)
Max. power 40 watts (16 dBW)

Models also available

1280, $179.95

SPENDOR
RCS Audio International, Inc.
1314 34th St., N.W.
Washington, D.C. 20007

SA-1 Mini Monitor

Price $550/pr. (walnut)
Dimensions 12H x 9W x 9D
Weight 16 lbs. (net)
Design Bookshelf
Type Dynamic
Drivers 6" Spendor woofer; Son Audax HD 12.8 D25 tweeter
Response 50 Hz to 20 kHz (70 Hz to 14 kHz, ±3 dB)
Crossover 3 kHz
Impedance 8 ohms
Min. power 20 watts (13 dBW)
Max. power 40 watts (16 dBW)
Controls None

Models also available

BC-3, $1,900/pr. (walnut); BC-1, $850/pr. (walnut)

SPICA
Spica
1570 Pacheco St., Suite E-16
Santa Fe, N.M. 87501

SC-50

Price $390/pr.
Dimensions 13¼H x 11W x 9¼D
Weight 10 lbs. 8 oz. (net)
Design Mini
Type Sealed box
Drivers 6½" long-throw woofer; 1" soft-dome tweeter
Response 56 Hz to 22 kHz, ±3 dB re 85 dB SPL at 1 meter at 1 watt
Sensitivity 85 dB SPL at 1 meter at 1 watt
Crossover 2.5 kHz
Impedance 4 ohms
Min. power 20 watts (13 dBW)
Max. power 100 watts (20 dBW)
Controls None
Features Semi-cylindrical enclosure

STAX
Stax Koygo, Inc.
940 E. Dominguez St.
Carson, Calif. 90746

ELS-8X

Price $7,200/pr.
Dimensions 75H x 30W x 3½D
Weight 332 lbs. (net)
Design Floorstanding
Type Electrostatic
Drivers 4 woofers; 2 full-range drivers; 2 tweeters
Response 35 Hz to 20 kHz
Sensitivity 79 dB at 400 Hz at 3 meters at 2 watts
Crossover 300 Hz
Impedance 8 ohms
Features Bias voltage power source

Models also available

ELS-4X, $4,800/pr.

STRELIOFF
Strelioff System Designs
5305 Tendilla Ave.
Woodland Hills, Calif. 91364

TS-1 Transducer System

Price $7,000/pr.
Dimensions 66H x 36W x 18D
Weight 210 lbs. (net)
Design Floorstanding
Type Acoustic suspension
Drivers Two 10" cast-aluminum frame woofers; six 1½" dome midranges; six 1" dome tweeters
Response 38 Hz to 18 kHz, ±4 dB re 87 dB SPL at 1 meter at 1 watt
Sensitivity 87 dB SPL at 1 meter at 1 watt
Crossover 800 Hz; 5 kHz
Impedance 5 ohms at 500 Hz
Min. power 100 watts (20 dBW)
Max. power 500 watts (27 dBW)
Controls Biamp; triamp; low-frequency roll-off (mode switches); 10 dB attenuation for each frequency range (rotary controls)
Features Custom finishes available

MX-1 Monitor System/PX-1 Passive Crossover

Price $2,000/pr. including PX-1
Dimensions 19H x 7½W x 7½D
Weight 29 lbs. (net)
Design Bookshelf
Type Exponentially loaded acoustic suspension
Drivers Two 5¼" cast-aluminum frame woofers; two 1½" dome midranges; two 1" dome tweeters
Response 70 Hz to 18 kHz, ±4 dB re 78 dB SPL at 1 meter at 1 watt

Sensitivity	78 dB SPL at 1 meter at 1 watt
Crossover	800 Hz; 5 kHz (crossover points variable)
Impedance	5 ohms at 500 Hz (variable with attenuation)
Min. power	50 watts (17 dBW)
Max. power	300 watts (24.75 dBW)
Controls	Switched attenuation and crossover points (4 ranges)
Features	Minimum 180-degree horizontal dispersion at specified response; custom finishes available

Models also available

TE-1 Transducer Bass Extender, $3,000/pr.; MS-1 Monitor System, $1,250/pr.; ME-1 Monitor Bass Extender, $1,250

SYMMETRY
Symmetry Audiophile Systems
101 Townsend St.
San Francisco, Calif. 94107

SW-1 Woofer

Price	$400
Dimensions	29H x 16W x 16D
Weight	50 lbs. (net)
Design	Floorstanding
Type	Thiele/Small-aligned closed box
Drivers	12" woofer
Response	29 Hz to 300 kHz, ±3 dB re 90 dB SPL at 1 meter at 1 watt
Sensitivity	90 dB SPL at 1 meter at 1 watt
Impedance	8 ohms
Min. power	45 watts (16.5 dBW)
Max. power	200 watts (23 dBW)
Controls	None
Features	Recommended for stereo woofer use; optimally aligned, optimally damped; system O-0.75; extremely fast transient response; internally wired with Monster Cable; available in koa, walnut, or oak

SYNERGISTICS
Maybern Co.
8116 Deering Ave.
Canoga Park, Calif. 91304

S-70 Tower

Price	$475
Dimensions	38H x 18W x 11D
Weight	69 lbs. (net)
Design	Floorstanding
Type	Passive Radiator
Drivers	12" passive radiator; 12" woofer; ½" soft-dome midrange; ribbon tweeter
Response	34 Hz to 30 kHz, ±3 dB
Sensitivity	91 dB SPL at 1 meter at 1 watt
Crossover	1.9 kHz; 9 kHz
Impedance	8 ohms
Min. power	15 watts (11.75 dBW)
Max. power	200 watts (23 dBW)
Controls	Tweeter; midrange
Features	Circuit breaker; ¾" high-density particle board finished with genuine hand-rubbed walnut veneer

S-50 Tower

Price	$300
Dimensions	30H x 14¼W x 11D
Weight	43 lbs. (net)
Design	Bookshelf
Type	Passive radiator
Drivers	12" passive radiator; two 6¼" woofers; 1" soft-dome tweeter
Response	38 Hz to 20 kHz, ±3 dB
Sensitivity	90 dB SPL at 1 meter at 1 watt
Crossover	2.9 kHz
Impedance	4 ohms
Min. power	15 watts (11.75 dBW)
Max. power	150 watts (21.75 dBW)
Controls	Tweeter
Features	Circuit-breaker protection

S-30

Price	$150
Dimensions	22½H x 13W x 10½D
Weight	26 lbs. (net)
Design	Bookshelf
Type	Passive radiator
Drivers	8" passive radiator; 6½" woofer; 1" soft-dome tweeter
Response	55 Hz to 20 kHz, ±3 dB
Sensitivity	90 dB SPL at 1 meter at 1 watt
Crossover	2 kHz
Impedance	8 ohms
Min. power	10 watts (10 dBW)
Max. power	60 watts (17.75 dBW)
Controls	Tweeter
Features	Circuit-breaker protection 22.

Models also available

S-92 Panels and Commode, $2,000; S-60 Tower, $375; S-40, $225; S-20, $100

TEAC
Teac Corp.
7733 Telegraph Road
Montebello, Calif. 90640

S-9

Price	N/A
Dimensions	12 3/16H x 17 11/16W x 11 15/16D
Weight	17 lbs. 10 oz. (net)
Design	Bookshelf
Type	Acoustic suspension
Response	65 Hz to 20 kHz, ±0.5 dB
Sensitivity	91 dB SPL at 1 meter at 1 watt
Crossover	3.5 kHz
Impedance	8 ohms
Min. power	30 watts (14.75 dBW)
Max. power	60 watts (17.75 dBW)
Controls	Variable at high range

TECHNICS
Panasonic Co.
1 Panasonic Way
Secaucus, N.J. 07094

SB-7070

Price	$450
Dimensions	40¾H x 17½W x 16¼D
Weight	72 lbs. 13 oz. (net)
Design	Floorstanding
Type	Bass reflex
Drivers	13¾" woofer; 6¼" mid-low; 4" mid-high; 1" dome tweeter
Response	30 Hz to 32 kHz re 92 dB SPL at 1 meter at 1 watt
Sensitivity	92 dB SPL at 1 meter at 1 watt
Crossover	350 Hz; 1.2 kHz; 4 kHz
Impedance	8 ohms
Max. power	180 watts (22.5 dBW) (music); 120 watts (20.75 dBW) (DIN)
Controls	Midrange; tweeter
Features	Linear-phase design; individual thermal relay protection for driver

SB-L100

Price	$160
Dimensions	24H x 11¾W x 10⅜D
Weight	24 lbs. (net)
Design	Floorstanding
Type	Vented
Drivers	10" woofer; radial horn tweeter
Response	43 Hz to 22 kHz re 89.5 dB SPL at 1 meter at 1 watt
Sensitivity	89.5 dB SPL at 1 meter at 1 watt
Crossover	3.2 kHz
Impedance	8 ohms
Max. power	75 watts (18.75 dBW) (music); 50 watts (17 dBW) (DIN)
Features	Linear-phase design; resettable thermal relay protects each driver

SB-F3

Price	$360/pr.
Dimensions	12 3/5H x 7W x 7½D
Weight	11 lbs. (net)
Design	Mini
Type	Acoustic suspension
Drivers	6 3/10" woofer; horn-type tweeter
Response	30 Hz to 20 kHz re 89 dB SPL at 1 meter at 1 watt
Sensitivity	89 dB SPL at 1 meter at 1 watt
Crossover	3 kHz
Impedance	6 ohms
Max. power	70 watts (18.5 dBW) (music)
Features	Linear-phase design; aluminum die-cast construction; resettable thermal-relay protection

Models also available

SB-6060, $350; SB-L300, $260; SB-L200, $210; SB-F1, $230/pr.; SB-L50, $200/pr.

THIEL
Thiel Audio Products Co.
4158 Georgetown Road
Lexington, Ky. 40511

03a

Price	$975/pr.
Dimensions	38H x 12W x 12D
Weight	64 lbs. (net)
Design	Floorstanding
Type	Electronically equalized
Drivers	10" woofer; 5" midrange; 1" dome tweeter
Response	30 Hz to 20 kHz, ±2 dB re 90 dB SPL at 1 meter at 1 watt
Sensitivity	90 dB SPL at 1 meter at 1 watt
Crossover	400 Hz; 4 kHz
Impedance	8 ohms
Min. power	20 watts (13 dBW)
Max. power	250 watts (24 dBW)
Features	Time and phase coherent

02

Price	$280/pr.
Dimensions	19H x 11W x 9½D
Weight	22 lbs. (net)
Design	Bookshelf
Type	Ported
Drivers	6½" woofer; 1" dome tweeter
Response	45 Hz to 20 kHz, ±2 dB re 92 dB SPL at 1 meter at 1 watt
Sensitivity	92 dB SPL at 1 meter at 1 watt
Crossover	2 kHz
Impedance	8 ohms
Min. power	10 watts (10 dBW)
Max. power	100 watts (20 dBW)

Models also available

04, $500/pr.

TRACER
BML Electronics, Inc.
5307 N. Ravenswood Ave.
Chicago, ILL. 60640

Sound Odyssey/Tracer 2001

Price	$1,100
Dimensions	64H x 26W x 8D
Weight	140 lbs. (net)
Type	Combination dual-phase coupling/ seventh-order Butterworth
Drivers	8½" woofer with two 5½" bass radiators; two solid-state tweeters
Response	35 Hz to 20 kHz, ±3 dB re 93 dB SPL at 1 meter at 1 watt
Crossover	450 Hz; 1.5 kHz; 4.5 kHz
Impedance	5 or 4 ohms
Min. power	40 watts (16 dBW)
Max. power	350 watts (25.5 dBW)
Features	Planar-column design; fuse-protected; 9' terminated transmission line; 7 tuned chambers

Reference 130

Price	$600
Dimensions	43H x 13W x 13D
Weight	75 lbs. (net)
Design	Floorstanding
Type	Vented
Controls	None
Features	Phase-corrective network

Sound Window/Tracer 1001

Price	$440
Dimensions	32H x 22W x 5D
Weight	40 lbs. (net)
Type	Active radiator (acoustic suspension transmission line)
Drivers	8" woofer with 8" active radiator; 3" VHF horn tweeter
Response	35 Hz to 20 kHz, ±3 dB re 94 dB SPL at 1 meter at 1 watt
Crossover	1.5 kHz
Impedance	4 to 6 ohms
Min. power	20 watts (13 dBW)
Max. power	150 watts (21.75 dBW)
Features	Planar-column design; 4 tuned chambers

Model Eleven

Price	$250
Dimensions	25H x 15W x 12D
Weight	44 lbs. (net)
Type	Passive radiator
Drivers	8" woofer with 10" passive radiator; 1¼" quasi-dome tweeter
Response	40 Hz to 20 kHz, ±5 dB re 92 dB SPL at 1 meter at 1 watt
Crossover	64 Hz; 3.5 kHz
Impedance	6 to 8 ohms
Min. power	12 watts (10.75 dBW)
Max. power	200 watts (23 dBW)
Features	Fuse-protected

Models also available

Sound Rack/Tracer 1501, $680; Sound Window/Tracer 1001A, $440; Reference 120, $400; Model Ten, $160

TRANSAUDIO
CBS Retail Stores
1301 65th St.
Emeryville, Calif. 94608

1012B

Price	$159.95

1011B

Price	$100
Dimensions	26H x 15½W x 10¼D
Weight	36 lbs. (net)
Type	Acoustic suspension
Drivers	12" woofer; 2½" cone tweeter
Response	40 Hz to 18 kHz, ±4 dB
Crossover	1.8 kHz
Impedance	8 ohms
Min. power	5 watts (7 dBW)
Max. power	60 watts (17.75 dBW)

1008A

Price	$49.95
Dimensions	18H x 11½W x 8½D
Weight	25 lbs. (net)
Type	Acoustic suspension
Drivers	8" woofer; 3" cone tweeter
Response	60 Hz to 16 kHz, ±5 dB
Crossover	2 kHz
Impedance	8 ohms
Min. power	5 watts (7 dBW)
Max. power	40 watts (16 dBW)

Models also available

1010B, $70

TRI-DELTA
Triangle Acoustics, Inc.
12721 S.W. 68th Lane
Miami, Fla. 33183

Tri-Delta III

Price	$398
Dimensions	29H x 34½W x 28¾D
Weight	60 lbs. (net)
Design	Floorstanding
Type	Air suspension
Drivers	Two 10" cone woofers; 5" cone midrange; 4" dome tweeter
Response	20 Hz to 23 kHz, ±3 dB re 90 dB SPL at 1 meter at 1 watt
Crossover	500 Hz; 5 kHz
Impedance	8 ohms
Min. power	15 watts (11.5 dBW)
Max. power	200 watts (23 dBW)
Controls	Switched fused
Features	Tetrahedron design; enclosure measures 33" on an edge

Tri-Delta IIA

Price	$312
Dimensions	27½H x 31⅝W x 25½D
Weight	40 lbs. (net)
Design	Floorstanding
Type	Air suspension; vented
Drivers	10" cone woofer; 5" cone midrange; 4" dome tweeter
Response	28 Hz to 25 kHz, ±3 dB re 93 dB SPL at 1 meter at 1 watt
Crossover	450 Hz; 3.5 kHz
Impedance	8 ohms
Min. power	10 watts (10 dBW)
Max. power	150 watts (21.75 dBW)
Controls	Two Tri-Acoustical Valves®
Features	Tetrahedron design; enclosure measures 30" on an edge; can be used in acoustic suspension or direct-reflecting applications

Models also available

Tri-Delta IIB, $350; Tri-Delta I, $259.95

ULTRALINEAR
Ultralinear Loudspeakers
3228 E. 50th St.
Los Angeles, Calif. 90058

428

Price	$399.95
Dimensions	39H x 15½W x 14½D
Weight	67 lbs. (net)
Type	Air suspension
Drivers	Two 12" foam-edge, air-suspension low-frequency drivers with high-temperature voice coils; 6" foam-suspension midrange in separate sealed enclosure; 2½" edge-treated high-frequency radiator; 2" x 5" quartz-controlled radiator
Response	25 Hz to 37.5 kHz re 93 dB SPL at 1 meter at 1 watt
Crossover	800 Hz; 2.7 kHz; 5 kHz
Impedance	4 ohms
Min. power	5 watts (7 dBW)
Max. power	190 watts (20.75 dBW)
Controls	Front-mounted midrange and high-frequency level controls
Features	Powertector® protection circuit (if too much power is applied to the loudspeaker for too long a time period, the speaker will shut itself off and an overload indicator light will illuminate; 10 to 20 seconds later the speaker will automatically reset and the overload indicator light will shut off, and no damage to the speakers or amplifier will have occurred)

288

Price	$339.95
Dimensions	26H x 15½W x 14½D
Weight	45 lbs. (net)
Type	Passive radiator
Drivers	12" long-excursion, air-suspension, low-frequency driver with large diameter high-temperature voice coil; 12" foam-edge rear-mounted passive radiator; 6" foam-suspension midrange in separate sealed enclosure; 1" high-output soft-dome high-frequency radiator; 2" x 5" quartz-controlled ultra-high-frequency exponential horn radiator
Min. power	5 watts (7 dBW)
Max. power	140 watts (22 dBW)

DW10A

Price	$299.95
Dimensions	34¾H x 14½W x 11¾D
Weight	47 lbs. (net)
Type	Air suspension
Drivers	Two 10" high-compliance, low-frequency drivers; 6" foam-suspension midrange in separate sealed enclosure; two 2½" edge-treated wide-dispersion high-frequency radiators
Response	29 Hz to 1.9 kHz re 93 dB SPL at 1 meter at 1 watt
Crossover	600 Hz; 3.5 kHz
Impedance	4 ohms
Min. power	5 watts (7 dBW)
Max. power	100 watts (20 dBW)
Features	Powertector® protection circuit (if too much power is applied to the loudspeaker for too long a time period, the speaker will shut itself off; 10 to 20 seconds later, the speaker will automatically reset, and no damage to the speakers or amplifier will have occurred)

82B

Price	$129.95
Dimensions	28⅛H x 11¾W x 9¼D
Weight	42 lbs./pr. (net)
Type	Air suspension
Drivers	8" high-compliance low-frequency driver; 3" high-frequency radiator
Response	40 Hz to 16.5 kHz re 91 dB SPL at 1 meter at 1 watt
Crossover	2.2 kHz
Impedance	8 ohms
Min. power	5 watts (7 dBW)
Max. power	35 watts (15.5 dBW)
Features	Powertector® protection circuit (if too much power is applied to the loudspeaker for too long a time period, the speaker will shut itself off; 10 to 20 seconds later, the speaker will automatically reset, and no damage to the speakers or amplifier will have occurred)

Models also available

155, $279.95; 238, $229.95; 99, $179.95

VANDERSTEIN
Vanderstein Audio
1018 S. Mooney Blvd.
Visalia, Calif. 93297

Two-A

Price	$470
Dimensions	36¾H x 16⅛W x 10¼D
Weight	55 lbs. (net)
Design	Floorstanding
Type	Passive radiator
Drivers	10" passive radiator; 8" woofer; 4" midrange; 1" dome tweeter
Response	32 Hz to 19.5 kHz, ±3 dB re 87 dB SPL at 1 meter at 1 watt
Sensitivity	87 dB SPL at 1 meter at 1 watt
Crossover	500 Hz; 4.5 kHz
Impedance	7.8 ohms
Min. power	40 watts (16 dBW)
Max. power	160 watts (22 dBW)
Controls	Midrange; tweeter
Features	Dimensional purity design

Models also available

Three, $900

VERIT
Wald Sound, Inc.
11131 Dora St.
Sun Valley, Calif. 91352

RLX Series

RLX-5A

Price	$459.95

Series II

514

Price	$289.95

Models also available

RLX-4A, $319.95; RLX-3A, $259.95; RLX-1A, $169.95; 512, $229.95; 510, $199.95; 508, $129.95

VISONIK HIFI
Visonik of America, Inc.
701 Heinz St.
Berkeley, Calif. 94710

D-5000

Price	$350
Dimensions	6¾H x 4⅛W x 4¼D
Weight	5 lbs. 8 oz. (net)
Design	Mini
Type	Acoustic suspension
Drivers	4" woofer; 1" soft-dome tweeter
Response	50 Hz to 25 kHz, +4, –8 dB
Sensitivity	90 dB SPL at 1 meter at 1 watt
Crossover	2.5 kHz
Impedance	4 ohms
Min. power	10 watts (10 dBW)
Max. power	50 watts (17 dBW)
Features	Recommended for auto use with Visonik automotive amplifier; optional bracket, $12.50

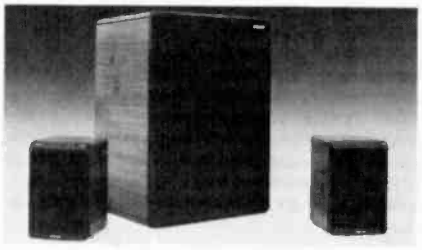
David 9000

Price	$300
Dimensions	14¾H x 9¾W x 9¼D
Weight	19 lbs. 12 oz. (net)
Design	Mini
Type	Air suspension
Drivers	7" woofer; 1½" midrange; ¾" tweeter
Response	35 Hz to 25 kHz, +4, –6 dB re 87 dB SPL at 1 meter at 1 watt
Sensitivity	91 dB SPL at 1 meter at 1 watt
Crossover	900 Hz; 4.5 kHz
Impedance	4 ohms
Min. power	20 watts (13 dBW)
Max. power	120 watts (20.75 dBW)

SUBWOOFER SERIES

SUB 2

Price	$300
Dimensions	19H x 14W x 11D
Weight	38 lbs. (net)
Design	Floorstanding
Type	Acoustic suspension
Drivers	10" dual voice-coil woofer
Response	24 Hz to 25 kHz, +4, –8 dB
Sensitivity	89 dB SPL at 1 meter at 1 watt



Crossover	150 Hz; 2.5 kHz
Impedance	4 ohms
Min. power	40 watts (16 dBW)
Max. power	240 watts (23.75 dBW)
Features	Mini subwoofer with built-in crossover

EURO SERIES

Euro 7

Price	$360
Dimensions	22H x 13½W x 9¼D
Weight	36 lbs. (net)
Design	Floorstanding
Type	Acoustic suspension
Drivers	Two 7" woofers; 1½" midrange; 3" tweeter
Response	30 Hz to 25 kHz, +4, –8 dB
Sensitivity	90 dB SPL at 1 meter at 1 watt
Crossover	900 Hz; 4.5 kHz
Impedance	4 ohms
Min. power	10 watts (10 dBW)
Max. power	80 watts (19 dBW)
Controls	None
Features	Vertical driver alignment

Mini-Euro

Price	$125
Dimensions	9⅝H x 6⅜W x 5½D
Weight	7 lbs. 8 oz. (net)
Design	Mini
Type	Acoustic suspension 4" woofer; 1" dome tweeter
Response	60 Hz to 20 kHz, +2, –4 dB
Sensitivity	88 dB SPL at 1 meter at 1 watt
Crossover	40 Hz
Impedance	4 ohms
Min. power	5 watts (7 dBW)
Max. power	6 watts (7.75 dBW)
Controls	None

Models also available

David 7000, $185; David 6000, $150; David 4000, $110; SUB 1, $400; Euro 5, $200

VMPS
VMPS Audio Products
Div. Itone Audio
7301 Rockway
El Cerrito, Calif. 94530

VMPS Super Tower II a/R

Price	$899 (black), $1,049 (rosewood) (kits); $1,499 (black) $1,699 (rosewood)(with ribbon super tweeter)
Dimensions	76H x 21½W x 17D
Weight	300 lbs. (net)
Design	Floorstanding
Type	Multiband bass (airtight)
Drivers	15" subwoofer; 15" passive radiator; 15" and 12" active lowbass; two 12" active midbass; four 5½" butyl-surround midranges in line source with five 1" soft-dome tweeters; ribbon super tweeter
Response	17 Hz to 50 kHz, –3 dB re 101 dB SPL at 1 meter at 1 watt
Sensitivity	101 dB SPL at 1 meter at 1 watt
Crossover	80 Hz; 200 Hz; 600 Hz; 4.5 kHz; 10 kHz
Impedance	6 ohms
Min. power	20 watts (13 dBW)
Max. power	500 watts (27 dBW)
Controls	None
Features	Biampable without external crossover

VMPS MiniTower II

Price	$439 (assembled); $289 (kit with assembled cabinet)
Dimensions	35H x 15W x 15D
Weight	75 lbs. (net)
Design	Floorstanding
Type	Multiband bass (airtight)
Drivers	12" subwoofer; 12" front bass driver; 5½" butyl-surround midrange; 1" soft-dome tweeter; 2" direct-radiator piezo supertweeter
Response	28 Hz to 30 kHz, –3 dB re 99 dB SPL at 1 meter at 1 watt
Sensitivity	99 dB SPL at 1 meter at 1 watt
Crossover	80 Hz; 600 Hz; 4.5 kHz; 12 kHz
Impedance	8 ohms
Min. power	20 watts (13 dBW)
Max. power	200 watts (23 dBW)
Controls	Midrange; tweeter; supertweeter (50 dB range)

Models also available

VMPS Super Tower, $859 (kit) (with assembled cabinet, $529; with ribbon supertweeter $969 assembled, $599 kit); VMPS Tower II, $599 (assembled); $399 (kit with assembled cabinet)

DICK WAGNER
Dick Wagner
5930 Penfield Ave.
Woodland Hills, Calif. 91367

DW-1

Price	$6,000/pr.
Dimensions	63H x 48W x 20D
Weight	160 lbs. (net)
Design	Floorstanding
Type	Sealed woofer; dipolar midrange
Drivers	Eight 12" woofers; sixteen 4" midrange drivers; four ribbon tweeters
Response	27 Hz to 19 kHz, ±5 dB re 87 dB SPL at 1 meter at 1 watt
Sensitivity	87 dB SPL at 1 meter at 1 watt
Crossover	550 Hz; 5.5 kHz (electronically variable triamp)
Impedance	8 ohms
Min. power	100 watts (20 dBW)
Max. power	1000 watts (30 dBW)
Controls	Continuously variable triamp
Features	Over 120 dB output with no distor-

tion or breakup; exceptional spatial field; passive crossover available

WHARFEDALE
Rank Hi-Fi, Inc.
20 Bushes Lane
Elmwood Park, N.J. 07407

Total Sound Recall Series

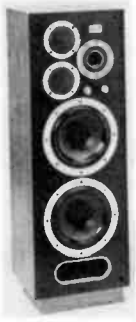
TSR-112

Price	$950
Dimensions	43H x 15W x 15½D
Weight	88 lbs. (net)
Design	Floorstanding
Type	Acoustic suspension
Drivers	Two 10" bass drivers; 8" midrange; 1" damped dome tweeter
Response	45 Hz to 20 kHz
Sensitivity	90 dB SPL at 1 meter at 1 watt
Crossover	100 Hz; 800 Hz; 3.5 kHz
Impedance	6 ohms
Min. power	15 watts
Max. power	190 watts
Controls	Upper control: 3 kHz to 20 kHz; lower control: 300 Hz to 3 kHz

Features Computer-optimized laser-assisted design; time-delay compensated; proprietary mineral-filled homo-polymer moving coil bass/midrange drivers; transmission line-loaded midrange; proprietary high-efficiency dome treble unit; environmental contour controls; aluminum diecast baskets; symmetrical left and right speakers; acoustically transparent grille; hand-finished in matched walnut veneer

Efficiency Series

E-90



Price	$925
Dimensions	45⅜H x 15 3/16W x 14¾D
Weight	110 lbs.
Type	Bass reflex
Drivers	Two low-mass 10" woofers; two 4" high-flux cone midrange drivers; 1" compression-drive horn tweeter
Response	43 Hz to 18 kHz, ±3 dB re 95 dB SPL at 1 meter at 1 watt
Crossover	1 kHz; 5 kHz
Impedance	8 ohms
Min. power	15 watts (11.75 dBW)
Max. power	280 watts (24.5 dBW)

Features Computer-optimized, high-power handling, high-efficiency transmission line, loaded midranges; horn-loaded tweeter; environmental contour controls; aluminum diecast baskets; acoustically transparent grille; hand-finished in matched walnut-veneer pairs

E-20

Price	$325
Dimensions	23H x 12W x 10D
Weight	25 lbs. (net)
Design	Floorstanding
Type	Bass reflex
Drivers	8" bass/midrange; 1" horn tweeter
Response	62 Hz to 18 kHz
Sensitivity	95 dB SPL at 1 meter at 1 watt
Impedance	8 ohms
Min. power	15 watts
Max. power	65 watts
Controls	Upper control: 3 kHz to 20 kHz (–4 dB to +2 dB)

Features Computer-optimized high-power handling, high-efficiency transmission-line-loaded midranges; horn-loaded tweeter; environmental contour controls; aluminum diecast baskets; acoustically transparent grille; hand-finished in matched walnut-veneer pairs

Laser Range Series

L-100

Price	$240
Dimensions	22H x 12W x 10D
Weight	27 lbs. (net)
Design	Floorstanding or bookshelf
Type	Acoustic suspension
Drivers	10" bass; 4" midrange; 3/4" dome tweeter
Response	55 Hz to 20 kHz
Sensitivity	88 dB SPL at 1 meter at 1 watt
Crossover	700 Hz; 3.5 kHz
Impedance	6 ohms
Min. power	15 watts
Max. power	105 watts

Features Computer-optimized, laser-assisted design; proprietory mineral-filled homo-polymer, bass midrange drivers; transmission-line-loaded midranges; aluminum voice coil former; special polamide dome tweeter; acoustically transparent grille; hand-finished in matched walnut veneer

L-40

Price	$105
Dimensions	14H x 10W x 9½D
Weight	10 lbs. (net)
Design	Floorstanding or bookshelf
Type	Acoustic suspension
Drivers	6.8" bass/midrange; 2" dome tweeter
Response	65 Hz to 18 kHz
Sensitivity	88 dB SPL at 1 meter at 1 watt
Crossover	3.5 kHz
Impedance	6 ohms
Min. power	15 watts
Max. power	65 watts

Features Computer-optimized, laser-assisted design; proprietory mineral-filled, homo-polymer bass/midrange drivers; transmission-line-loaded midrange; aluminum voice coil former; special polamide dome tweeter; acoustically transparent grille; hand-finished in matched walnut veneer

Models also available

TSR-110, $475; TSR-108, $375; E-70, $585; E-50, $485; E-30, $365; L-80, $185; L-60, $135

Dayton Wright
Alpha Group
7321 Victoria Park Ave., Unit 2
Markham, Ontario L3R/2Z8

XG-10

Price	$3,699/pr. (includes stands, transformer stand, and add-on ribbon tweeters)
Dimensions	42⅝H x 39W x 9½D
Weight	100 lbs.
Design	Floorstanding; panel
Type	Electrostatic
Drivers	Ten electrostatic full-range cells; one modified piezoelectric tweeter
Response	40 Hz to 35 kHz, ±4 dB re 82 dB SPL at 1 meter at 1 watt
Crossover	10 kHz
Impedance	2.5 ohms to 200 ohms
Min. power	75 watts (18.75 dBW)
Max. power	100 to 600 watts (20 to 27.75 dBW) continuous; varies with frequency
Controls	Tweeter level; bias; cell upper cut-off
Features	Three modes of use: normal plus two external tweeter crossover points (3 kHz or 10 kHz)

YAMAHA
Yamaha International Corp.
6600 Orangethorpe
Buena Park, Calif 90620

NS-1000

Price	$1,900/pr.
Dimensions	28H x 15½W x 14½D
Weight	85 lbs. 13 oz. (net)
Type	Acoustic suspension
Drivers	Woofer; beryllium dome midrange; beryllium dome tweeter
Response	40 Hz to 20 kHz
Crossover	500 Hz; 6 kHz
Impedance	8 ohms
Min. power	50 watts (17 dBW)
Max. power	100 watts (20 dBW)
Controls	Midrange; tweeter
Features	Ebony or black finish

NS-244

Price	$400/pr.
Dimensions	21H x 12½W x 11¾D
Weight	25 lbs. 5 oz. (net)
Type	Acoustic suspension
Drivers	10" cone woofer; 1¼" soft-dome tweeter
Response	50 Hz to 38 kHz
Crossover	2 kHz
Impedance	8 ohms
Min. power	30 watts (14.75 dBW)
Max. power	60 watts (17.75 dBW)
Controls	Level, +3 dB (max); –∞ (min)

NS-10M

Price	$310/pr.
Dimensions	15H x 8½W x 7⅞D
Weight	13 lbs. 3 oz. (net)
Type	Acoustic suspension
Drivers	7" cone woofer; 1⅜" soft-dome tweeter
Response	60 Hz to 20 kHz
Crossover	2 kHz
Impedance	8 ohms
Min. power	25 watts (14 dBW)
Max. power	50 watts (17 dBW)

Models also available

NS-1000M, $1,300/pr.; NS-690 Mk. II, $800/pr.; NS-590, $700/pr.; NS-344, $520/pr.; NS-8, $460/pr.; NS-6, $300/pr.; NS-4, $220/pr.

ZENITH
Zenith Radio Corp.
1000 Milwaukee Ave.
Glenview, Ill. 60025

MC-4000

Price	$224.95
Dimensions	28H x 17W x 12D
Weight	47 lbs. 1 oz. (net)
Design	Floorstanding
Type	Tuned port
Drivers	12" cone woofer; 5" cone midrange; 3½" horn tweeter
Response	35 Hz to 20 kHz
Sensitivity	91.5 dB SPL at 1 meter at 1 watt
Crossover	600 Hz; 2 kHz
Impedance	8 ohms
Min. power	5 watts (7 dBW);
Max. power	100 watts (20 dBW)
Controls	Treble; midrange
Features	Walnut veneer cabinet

Models also available

MC-3000, $249.95/pr.; MC-2500, $199.95/pr.

Speaker System Accessories

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

F-400 Floor Stand for Miniature Speakers
Price $35
Description Black metal floor stand for ADS-400 and other ADS miniature loudspeaker systems

ADS F800 Speaker Stands
Price $33
Description Black metal floor stands for ADS L-810, L-730, L-630, and L-620 speakers

ADS F-700 Speaker Stands
Price $32
Description Black floor stands for ADS L-710 and L-520 speakers

900 LPM Speaker Level Indicators
Price $50
Description Passive LED power level indicator for ADS L-910, L-910-II speakers

APATURE
Div. of ACR Industries
RFD 1, 2
Preston, Conn. 06360

Carbox
Price $24.95
Description A 12H x 8W x 7D hand-crafted interlocked 6" x 9" speaker enclosure, finished in high-density Wilson art laminate with removable acoustically transparent grilles

APRES
Après Audio, Ltd.
7 Revere Court
Suffern, N.Y. 10901

Audio Architects' FMC-1
Price $169.95
Description A wall-mounting speaker bracket constructed of high-grade steel capable of supporting weight far exceeding that of the average bookshelf speaker; swivels both horizontally and vertically, creating accurate imaging and dispersion characteristics; sturdy "rocking arms" can telescope to accept any size speaker in the bookshelf range; fully extended: 31H x 14D; fully enclosed 16H x 8D

AUDIOMARKETING
Audiomarketing, Ltd.
652 Glen Brook Road
Stamford, Conn. 06906

Time/Sync Frequency Dividing Network
Price $650
Description Electronic crossover for biamplifying Big and Super Red Monitor speakers or any other system; electronically corrects time and phase errors inherent in speaker systems; provides true acoustic and phase alignment

AXIOM
Axiom Engineering Laboratories
9601 Owensmouth Ave., #6
Chatsworth, Calif. 91311

PB-1
Price $44 (West Coast)/$50 (East Coast)
Description Pedestal-type loudspeaker stand; wood construction with birch and black vinyl finish; raises speaker 11½" off floor; made for Axiom TLB-1 loudspeaker, but can be used successfully with any brand speaker

B & W
Anglo American Audio
Box 653
Buffalo, N.Y. 14240

STAV-14
Price $95/pr.
Description Floor stands for DM-14

STAV-11
Price $86/pr.
Description Floor stands for DM-11

STAV-12
Price $76/pr.
Description Floor stands for DM-12

PLS/2
Price $65/pr.
Description Black angled stand for mounting DM2/II on floor

STAV/4
Price $65/pr.
Description Black metal stand for supporting DM-4 floor stand

WMK 4/5
Price $30/pr.
Description Wall-mount brackets for flush-mounting DM-4, DM-5, DM-11, or DM-12 to wall

CALIBRON
Horian Engineering, Inc.
Calibron Div.
600 Lake Emma Road
Lake Mary, Fla. 32746

SS-10 Speaker Stand
Price $20
Description Unique one-piece acoustically insulated speaker stand molded from high-impact injection molded thermoplastic resin; adjustable to accommodate all popular style speakers

CERWIN-VEGA
Cerwin-Vega, Inc.
12250 Montague Ave.
Arleta, Calif. 91331

DB-10 Bass Turbocharger
Price $90
Description Provides a performance curve that acts like a turbocharger in an audio system, boosting information in the 30 to 45 Hz range by 5 or 10 dB; acts as a rumble filter to remove undesirable infrasonic noise caused by warped records, turntable rumble, etc.; an invaluable accessory for enthusiasts who appreciate solid bass reproduction and system protection from infrasonic damage; allows a doubling of power-handling capacity of all Cerwin-Vega designed speakers

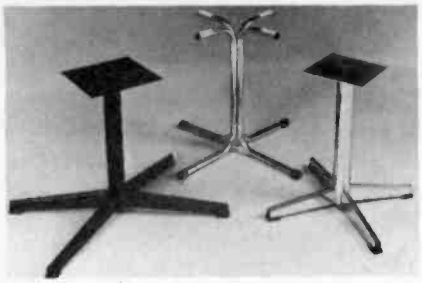
CLASSIC
Classic Research and Eng.
5070 E. 22nd St.
Tucson, Ariz. 85711

Grilles
Price $1 to $6
Description Grilles for most models of SEAS loudspeakers for mobile use

Classic Crossover
Price $10 to $39.95
Description Custom-design mobile crossovers

CURB
Devlin Audio International
South Strafford, Vt. 05070

Speaker Stands
Price Model 30, $69; model 20, $59; model 10, $49



Description Imported from Sweden; available in black (Model 30) or chrome (Models 10 and 20) steel; Model 10 raises the speaker 14" off the floor; Models 20 and 30, 13" off the floor; will support up to 100 lbs.

DAHLQUIST
Dahlquist, Inc.
601 Old Willets Path
Hauppauge, N.Y. 11787

DQ-LP1 Electronic Crossover
Price $350
Description Continously variable bass cutoff 40-400 Hz each channel; distortionless, passive upper passband; stereo and mixed bass outputs; bass level controls; bass equalizer for 5 dB rise at 20 Hz

DB SYSTEMS
DB Systems
P.O. Box 347
Jaffrey Center, N.H. 03454

DBP-8 Speaker Wire
Price $6.95, 10'; $11.95, 20'; $11.95, 30'
Description 12-gauge 2-conductor wire

GC/Audiotex
GC Electronics
400 South Wyman St.
Rockford, Ill. 61101

30-8710 The Controller® Speaker Selector Switch
Price $49.50
Description Allows hookup and independent control of up to 5 pairs of speakers; built-in amplifier overload protection; two stereo headphone jacks; rated 50 watts continuous per channel

30-8238/40 High Definition Speaker Cable
Price $9.65 (30-8238), 4 meters; $16 (30-8240), 7.5 meters
Description Eight pairs of insulated wires are braided and connected in parallel to reduce resistance to the minimum; very low inductive effect keeps signals clean; audibly improves high-frequency response, eliminates crosstalk and pickup of hum, A.C., and r.f.

30-5006 Speaker Selector Switch
Price $17.55
Description Select any of three stereo speaker systems or any combination of three simultaneously; internal screw terminals; resistive load protects amplifier; brushed aluminum and black metal cabinet

30-388 Speaker Selector Wall Switch
Price $12.85
Description Permits selection of up to three speaker pairs in any combination; speakers may be 8 or 16 ohms; fits standard electrical box or mounts in wall; all hardware supplied

30-367 Speaker Wall Jack
Price $2.95
Description Convenient wall plate with two speaker jacks that hook to amplifier to allow operation of speakers in any room; fits standard electrical box or into wall; phono pin jacks

30-364/72 Speaker Volume Controls
Price 30-364, mono, 8 ohms, $11.30; 30-372, stereo, 8 ohms, $13.20
Description Attractive wall-type speaker volume control; brushed brass finish; fits standard electrical box or may be wall-mounted; L-pad type; 10-watt rating; screw terminals

30-357 Tufflex® Acoustic Padding
Price $10.50
Description Sound-absorbent lining for speaker enclosures; dampens standing waves, eliminates resonances; superior to and safer than fiberglass sheets are 1" thick by 24"W and 55"L

30-353/54 Foam Speaker Grilles
Price 30-353, 17½H x 11½W x ¾D, $8.90; 30-354, 23½H x 17½W x ¾D, $12.45
Description Brown, foam grilles of flexible urethane; acoustically transparent; color goes all the way through so the grille can be cut without leaving an unpainted edge

HARTLEY
Hartley Products Corp.
620 Island Rd.
Ramsey, N.J. 07446

Reference Cable
Price $1/ft.
Description Ultra-low resistance, capacitance, and inductance cable; pure copper wire, #10 gauge with pearl-grey vinyl insulation

HERALD
Herald Electronics
6611 N. Lincoln Ave.
Chicago, Ill. 60645

S-988
Price $39.95
Description 6" x 9" speaker enclosure with adjustable mounting brackets; walnut or black

JBL
James B. Lansing Sound, Inc.
8500 Balboa Blvd.
Northridge, Calif. 91329

LB-1
Price $24
Description Loudspeaker base designed for bookshelf systems; walnut finish

LB-2
Price $20
Description Loudspeaker base designed for bookshelf systems; lacquered finish; available in red, blue, or gray

KINETIC AUDIO
KA/Kinetic Audio Intl., Ltd.
6624 W. Irving Park Road
Chicago, Ill. 60634

Bi-KAbles Speaker Cables
Price $89/pr.
Description For single biamplification; four KAbles per side; large gauge multi-stranded non-inductive and non-capacitive low resistance; high-performance pure copper dual speaker cable; color coded; 18' long x 8" each, with factory-mounted terminals on each ends

KAbles Speaker Cables
Price $49/pr.
Description Large gauge multi-stranded non-inductive and non-capacitive low resistance; high-performance pure copper dual speaker cable; color coded; 18' long x 4" each, with factory mounted terminals on each end

Speaker Stands
Price $49 (S-5); $59 (S-m); $69 (S-1)
Description Audio furniture: straight or tilt speaker stands; black lacquer finish; add 20% for walnut veneer edge-banding; comes in kit form or factory-assembled

MARSHALL
Marshall Electronics
Mogami Products Div.
P.O. Box 2027
Culver City, Calif. 90230

2477
Price $1.59/ft.
Description Mogami low-inductance speaker cable; minimizes distortion caused by eddy currents and skin effect

MESA
Mesa Electronics Sales, Ltd.
2940 Malmo Drive
Arlington Heights, Ill. 60005

SS-6 Speaker Stands
Price $24.95/pr.
Description Cannister type with telescoping tripod legs; black satin finish with aluminum trim rings

BR-30 Speaker Mounting Brackets
Price $12.95/pr.
Description For Mini-Mesa 30 speakers and other miniature speakers with sockets; includes bolts and washers

MITSUBISHI
Melco Sales, Inc.
3030 E. Victoria St.
Compton, Calif. 90221

MK-30 Speaker Stand
Price $55/pr.
Description Designed for use with the Mitsubishi Honeycomb Speaker Series; finished in flat black

MONSTER CABLE
Monster Cable Co.
101 Townsend St.
San Francisco, Calif. 94107

Monster Cable High-Definition Speaker Wire
Price MC-15/15 stereo pair, 15' ea., $25; MC-15/25 stereo pair, one 15' plus one 25', $30; MC-20/20 stereo pair, 20' ea., $30; MC-30/30 stereo pair, 30' ea., $45; MC-500 professional spool, custom cut and terminated by dealer or installer, 80¢/ft.
Description Heavy-gauge, dual, parallel conductor speaker cable designed to optimize the interface between amplifier and speaker; over 500 individual strands of copper in a flexible clear vinyl jacket

MR. AUDIO
Jasco Products Co., Tuc.
217 N.E. 46th
P.O. Box 466
Oklahoma City, Okla. 73101

1418-100
Price $10.76
Description 100', 18-gauge, clear speaker wire on plastic spool; also available in 250' length for $25.69

1424-100
Price $4.33
Description 100' 24-gauge clear speaker wire on plastic spool; also available in 25' ($1.53), 60' ($2.56), and 500' ($17.76) lengths

R.W. OLIVER
R.W. Oliver Electronic, Ltd.
580 Dobbie Ave., Section E
Winnipeg, Manitoba R2G 1K4

SS-2 speaker stand
Price $62.95/pr.
Description Chrome; 14 inches tall with 9" x 9" top plate; three legs to prevent toppling; holds 50 lbs.

PSB
PSB Speakers, Inc.
480 Dutton Drive
Waterloo, Ontario
Canada N2L 4C6

The PSB Speaker Stand
Price $50/pr.
Description Finished in black vinyl; tilts back speaker; 15 lbs./pr.

Smaller PSB Speaker Stand
Price $50/pr.
Description Finished in black vinyl; tilts back speaker; 15 lbs./pr.

REALISTIC
Radio Shack Corp.
1400 One Tandy Center
Ft. Worth, Texas 76102

40-1310 Add-on Piezoelectric Super Tweeter
Price $19.95
Description Connects in parallel to existing speaker system

40-125 Stereo Speaker Switch
Price $12.95
Description Controls 3 pairs of stereo speakers or 6 mono; 30 watts (14.75 dBW) peak

40-150 Wall-Mounting Brackets
Price $3.95/pr.
Description Supports any speaker up to 50 lbs.

40-1252 Acryllic Speaker Stands
Price $24.95/pr.

40-1253 Adjustable Wooden Speaker Stands
Price $24.95/pr.

40-1254 Steel Speaker Stands
Price $15.95/pr.
Description 3'

RUSSOUND
Russound/FMP, Inc.
P.O. Box 2369
Woburn, Mass. 01888

MP-3 Speaker Control
Price $149.95
Description Allows either of two power amplifier outputs to drive any of up to 4 sets of stereo speakers in any combination without causing the load impedance seen by the amplifier to fall below a safe minimum of 4 ohms; constant impedance L-pad controls are rated for 35 watts audio power or 70 watts peak music power each; the MP-3 can be used safely with high-powered amplifiers and/or low-efficiency loudspeakers

SWB-2 Speaker/Amplifier Selector Switch
Price $39.95
Description Connects up to three sets of stereo speakers to any amplifier and play any or all simultaneously; connects any two sound sources (amplifier or tape recorder, for example) to any set of speakers; maintains proper load impedance on amplifier regardless of number of speakers in use or their impedance ratings, and protects solid-state amplifier outputs from overload; attractive black metal case with white lettering; 2H x 7W x 3D

SD-1 Remote Speaker/ Earphone Volume Control
Price $79.95
Description Wall-mounted; 10-position rotary switch selects tapes on auto-transformer; 9 positions of attenuation

HP-1 Speaker/Amplifier Selection Center
Price $99.95
Description Connects 1 or 2 stereo amplifiers to up to 4 sets of speakers; any speaker pair may be switched to either source or off, and unit maintains safe minimum amplifier load of 4 ohms under all conditions; will handle power outputs on music up to 100 watts, and may be used with any combination of speaker impedances; includes two separate headphone jacks, each with normal/high power switch; all-metal case with black front panel, 4 3/16H x 8W x 4½D; available in rack-mount

VS-1 Speaker/Headphone Volume Control

Price $79.95
Description Lets you control listening volume at your chair rather than at the amplifier; switch selects speakers or headphones, and heavy-duty L-pad control allows the VS-1 to accept power output from amplifiers rated up to 150 watts per channel; red LED warns when power rating of control is approached so you can switch in power attenuator on front panel; all-metal case with semi-gloss black painted finish, 3H x 4 5/16W x 4½D

SD-4 Speaker Control
Price $279.95
Description Minimal insertion loss and internal power dissipation; this capacity results from the use of an additional auto transformer instead of a resistive L-pad; 10-position switch allows any selected power from the amplifier to be delivered to the speaker, with no power wasted as heat

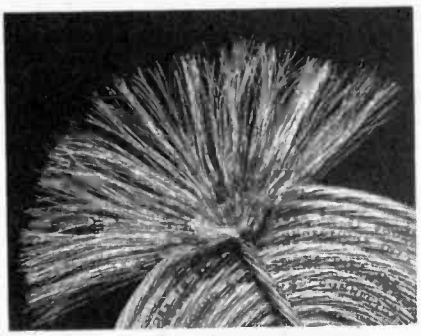
SANSUI
Sansui Electronics Corp.
1250 Valley Brook Ave.
Lyndhurst, N.J. 07071

PS-112C Speaker Cable
Price $100
Description Wide-range, high-efficiency speaker cable; low power loss; frequency response: ±0.5 dB from DC to 400 kHz; flat phase response (less than 10 degrees from DC to 300 kHz); formed on triaxial meshes; 2 conductors, 1 shield to improve high-frequency response; low reactance; ultra-wide, ultra-low inductance; DC to 400 kHz, ±0.5 dB/14 meters; impedance: 12 ohms

PS-107C Speaker Cable
Price $70
Description Similar to PS-112C

SOUND CONNECTORS®
Sound Connections International, Inc.
8415 Tangerine Place
Tampa, Fla. 33617

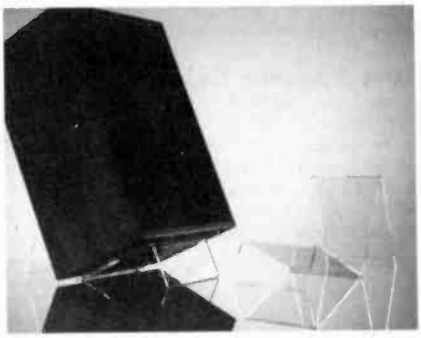
Speaker Wire #10-C
Price $1.10/ft.
Description 10-gauge purely drawn copper



speaker wire boasting 826 strands of copper; for optimum performance in coupling speakers to amplifiers; safe for use on any amp that uses standard speaker cables; can be used with car or home speakers

SOUNDSTANDS
Support Systems
2 Padre Parkway
Rohvert Park, Calif. 94928

1010



Price $29.95/pr.
Description SoundStands improve high-frequency dispersion of bookshelf speakers by canting them toward listeners' ears; by decoupling speakers from the floor, SoundStands help create more even bass response; they are formed of clear acrylic and will support up to 150 lbs.; installation requires neither tools nor speaker modification

SPECO
Speco Division
Components Specialties, Inc.
1172 Route 109
Lindenhurst, N.Y. 11757

HN3-2000 3-Way Crossover
Price $69
Description 8 ohms; 200 watts; frequency response: 20 Hz to 20 kHz; low range: 650 Hz at 12 dB/octave; high range: 5 kHz at 12 dB/octave

HN3-100 3-Way Crossover
Price $25.50
Description 8 ohms; 100 watts; frequency response: 20 Hz to 20 kHz; low range: 800 Hz at 12 dB/octave; high range: 5 kHz at 12 dB/octave; LC filter with 4 coils and 4 capacitors, low Range, 800 Hz (12 dB/oct); high range, 5 kHz (12 dB/oct); LC filter with 4 coils, 4 capacitors

HN3-60 3-Way Crossover
Price $17.50
Description 8 ohms; 60 watts; frequency response: 20 Hz to 20 kHz; low range: 700 Hz at 6 dB/octave; high range: 4 kHz at 6 dB/octave; LC filter with 2 coils and 3 capacitors, crossover freq; low range: 700 Hz (6 dB/octave); high range: 4 kHz (6 dB/octaves); LC filter with 2 coils, 3 capacitors

THUNDERFOOT
Thunderfoot Engineering
915 N. Mansfield Ave.
Los Angeles, Calif. 90038

GS-6 Speaker Stand
Price $34.95
Description 6" smoked glass; real ¼" plate-gray smoked glass; will hold up to ¼ ton per pair; all stands come with a specially formulated non-migrating, non-skid vinyl to protect speaker finish and prevent walking

GS-3
Price $24.95
Description 3" smoked glass; real ¼" plate-gray smoked glass; will hold up to ¼ ton per pair; all stands come with a specially formulated non-migrating, non-skid vinyl to protect speaker finish and prevent walking

SC-6
Price $19.95
Description 6" level steel stand with chrome finish; will hold up to ½ ton per pair; all stands come with a specially formulated non-migrating, non-skid vinyl to protect speaker finish and prevent walking

SC-3
Price $17.95
Description 3" steel stand with chrome finish; will hold up to ½ ton per pair; all stands come with a specially formulated non-migrating, non-skid vinyl to protect speaker finish and prevent walking

STA-6
Price $16.95
Description 6" angled steel stand with black oxide finish; will hold up to ½ ton per pair; all stands come with a specially formulated non-migrating, non-skid vinyl to protect speaker finish and prevent walking

St-6
Price $16.95
Description 6" level steel stand with black oxide finish; will hold up to ½ ton per pair; all stands come with a specially formulated non-migrating, non-skid vinyl to protect speaker finish and prevent walking

ST-3
Price $14.95
Description 3" steel stand with black oxide finish; will hold up to ½ ton per pair; all stands come with a specially formulated non-migrating, non-skid vinyl to protect speaker finish and prevent walking

SEA-6
Price $19.95/pr.
Description 6" angled steel stands with chrome finish; will hold up to ½ ton per pair; all stands come with a specially formulated non-migrating, non-skid vinyl to protect speaker finish and prevent walking

V-PODS
Audioplex, Inc.
P.O. Box 101
Maplewood, N.J. 07040

Speaker Stand
Price $24.95/pr.
Description Raises speakers 6" to improve bass response; tilts speakers 8 degrees to improve high-frequency dispersion; one-piece construction; hand-crafted from designer smoke-finish acrylic; holds 250 lbs.; no assembly necessary

WOODCRAFT
Inception Audio Ltd.
21 Progress Ave., Unit 1
Scarborough, Ontario M1P 4S8

SS-3
Price $39.95/pr.
Description Speaker stand for mini speakers; black finish with solid oak trim; 1 degree tilt; 20¼H x 11¾W x 10½D

SS-2
Price $29.95/pr.
Description Speaker stand; 3½ degree tilt; black finish with solid oak trim; 6¼H x 11¾W x 10½D

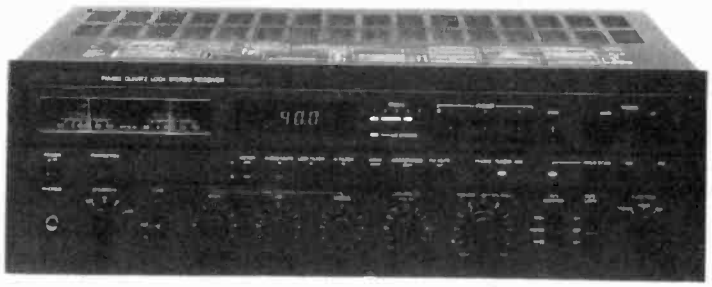
SS-1
Price $19.95/pr.
Description Speaker stand; 3½ degree tilt; black finish; 5¾H x 11¾W x 10½D

ZAPCO
Zeff Advanced Products
5018 Paradise Road
Modesto, Calif. 95351

NST-60 Noise-Suppressing Toroid
Price $10
Description Dynamic type; varies inductance for maximum filtering in quiet passages and low loss at high volume

by Edward J. Foster

The System Centerpiece



Purchasing a high-performance receiver depends on knowing which specs are meaningful

In most high-fidelity systems, the receiver stands in the center of the circle. It is a traffic cop, directing the signal you want to the loudspeaker. It is an artist, shading the tonal coloration to your preference via its filters and tone controls. It is a strongman, powering the speakers. It is a jeweler, handling the delicate signals from a phono cartridge, plucking them from the noise, equalizing them, coddling them, and raising them to the proper level. And it is the source of the sound that many listen to more frequently than any other—FM broadcasts.

Selection of a receiver, then, is a key decision when setting up your stereo system. What should you look for? We'll concentrate on the tuner portion of the receiver, since the details of amplification are covered elsewhere (see page 190). We'll also point out those specs that are most meaningful to you in your particular situation.

According to the Institute of High Fidelity, 15 specifications are required to adequately characterize tuner performance. Six of these pertain to mono reception only; three, to stereo only. The remainder are measured in both modes and so 21 specs are given in all. Frankly, not every manufacturer lists all 21. Besides the 21 "primary" characteristics, another dozen are listed in the text of the standard for "complete" disclosure.

Perhaps the most often cited specification is that of sensitivity, or the input signal required at the antenna terminals for "adequate" reception. The catch is in how "adequate" is defined. So-called "usable sensitivity" is the signal level required to assure that noise and harmonic-distortion components in the output are suppressed by 30 dB. The spec is given separately for the mono and stereo modes. If only one spec is given, it is most likely for mono reception—mono sensitivity always is much better than stereo sensitivity. In our opinion, this specification is merely a hangover from earlier standards in which the 30 dB point was a criterion of acceptability. Not even a tin-eared baboon would listen to a program with a 30 dB ratio between signal and distortion-plus-noise.

Of more importance is the "50 dB quieting sensitivity," or the signal level required in both stereo and mono to assure a 50 dB signal-to-noise

ratio (S/N) in the audio. (The stereo mode requires at least 22 dB more signal for quieting equivalent to that in mono.) The 50 dB quieting measurement does not take distortion into account. It merely denotes the signal level required for this degree of *noise* suppression. The technical reason for this is simple and reasonable. To achieve a 50 dB suppression of noise *and* harmonic distortion requires that the harmonic distortion itself should not exceed 0.316%, and the residual distortion of some tuners exceeds this. Such a tuner would never achieve the benchmark specified in terms of both noise *and* distortion.

Now, how reasonable is this specification? A distortion level of 0.3% is livable—probably most listeners wouldn't notice 0.5%—but an S/N of 50 dB is marginal at best. In short, residual noise bothers us more than does harmonic distortion.

Nonetheless, the distortion components *are* important; conceivably they could exceed several percent at an input level that achieves a 50 dB S/N. So, the standard calls for a measurement of total harmonic distortion plus noise (THD + N) at the input level corresponding to 50 dB quieting. Essentially, you are provided with *separate* measurements of quieting and harmonic distortion.

We heartily concur with this logical distinction between noise and distortion. However, we think that 50 dB quieting is inadequate for high-fidelity listening unless the material is of such overriding interest that you are willing to cope with the noise level. With 60 dB quieting, the program will be acceptable.

Generally, alternate- rather than adjacent-channel selectivity is more meaningful.

Distortion is often measured at only one midband frequency (1 kHz). But because distortion usually is least in the midband, it is helpful to know the distortion generated at other audio frequencies such as 100 Hz and 6 kHz. In general, distortion in stereo is greater than that in mono—especially at 6 kHz. The harmonic-distortion measurement is not made at frequencies above 6 kHz since the harmonics would lie outside the 15 kHz bandwidth of the tuner.

Frequency response and separation measurements should be made over the 30-Hz-to-15-kHz band at an input power level of 65 dBf. Usually, the frequency response of modern tuners is the same in both mono and stereo. It is also common to find the stereo separation greatest in the midband (500 Hz to 2 kHz) and least at the higher frequencies (greater than 10 kHz).

The output of a tuner may contain two ultrasonic signals when it is receiving a stereo broadcast. One of these is the 19 kHz "pilot" transmitted by the station; the other is a 38 kHz "subcarrier" that is generated within the tuner itself. These signals are not themselves audible, but can cause problems downstream—for example, with the Dolby circuitry in a tape recorder. The IHF standard calls for a lumped measurement of both (including all noise components above 200 Hz). This spec is called the "subcarrier-product ratio."

Two types of selectivity measurements are generally given. The "adjacent-channel" selectivity denotes how well the tuner discriminates against a transmission in the *next* channel—200 kHz away. The "alternate-channel" selectivity denotes the discrimination against a transmission *two* channels away (400 kHz). In any given listening area, the FCC does not make assignments on adjacent channels, so, generally speaking, the alternate-channel selectivity is the more meaningful of the two. However, there are instances—for example, if you wish to listen to a rather distant station at a frequency just 200 kHz removed from a local station—when adjacent-channel selectivity is important.

Selectivity is specified only in the mono mode, and it is a measure of

relative signal levels between the two transmissions at which the undesired station is suppressed by 30 dB. While we do not believe this to be a sufficient criterion of acceptability, it is the one specified by the standard nonetheless. The selectivity figure of 80 dB implies that the unwanted transmission can be 80 dB greater in level than the desired one and still be rejected by 30 dB.

Selectivity is dependent largely upon the IF bandwidth of the tuner. Narrowband tuners should have better selectivity (i.e., a numerically greater spec) than wideband tuners. However, improved selectivity usually is achieved at the expense of greater distortion and worse stereo separation. When reviewing the specs of a selectable-bandwidth tuner, be sure that each spec indicates the bandwidth that was used to make the measurement. Unless otherwise indicated, the specs probably denote the best of all worlds. One can assume that the distortion will be worse than spec in the narrow mode and that selectivity will be worse than claimed in the wideband (low-distortion) mode.

Capture ratio states the ability of the tuner to "capture" or lock onto the stronger of two signals in the *same* channel. "Interference" may come from a distant station broadcasting on the same frequency as the one you're listening to. Or, under multipath reception conditions it may come from the *same* transmitter as the one to which you're listening. Your antenna may be receiving the same transmission twice: once directly from the station and a second time from a radio wave reflection off a building, mountain, etc. The second signal arrives late and interferes with stereo reception especially.

Improving selectivity often increases distortion and decreases stereo separation.

According to the standard, the criterion of acceptability is a 30 dB rejection of the weaker signal—again, in our view, inadequate for high-quality audio. The capture ratio indicates how much stronger one signal must be than the other to reject it. Here, the *smaller* the number of dB, the better. As with selectivity, the IF bandwidth plays a role in establishing the capture ratio. Wideband tuners usually have a better (that is, a smaller) capture ratio than narrowband ones.

A tuner's ability to produce high fidelity results under multipath-reception conditions hinges on its ability to suppress amplitude modulation in the signal. Theoretically, an FM discriminator should respond only to changes in carrier frequency and should be totally immune to changes in signal strength (amplitude). In practice amplitude changes *do* elicit some response. The greater the AM suppression (in dB), the less AM-induced contamination in the output signal, and the better the tuner will perform under conditions of fading, multipath, airplane flutter, and slight mistuning of the receiver. The degree of AM suppression depends upon the input-signal strength. However, most manufacturers give only a single figure (if any), and the corresponding input-signal strength is often unknown.

The spurious-, image-, and IF-response ratios indicate the ability of the tuner to reject signals outside the FM band. In large measure, they characterize the selectivity of the tuner's "front end." The "image" response is the tuner's reaction to a signal 21.4 MHz (twice the IF frequency) above that to which it's tuned. The "IF-response" ratio denotes its response to a signal at the IF frequency (10.7 MHz), and the "spurious response" describes its ability to reject signals of all other frequencies. The greater these three numbers (in dB), the better.

Certain characteristics of a tuner are basic for quality reception; others depend upon your listening area. Frequency response, distortion, stereo separation, ultimate S/N, and pilot and subcarrier suppression all fall within the first group.

The frequency-response range of most FM broadcasting is 30 Hz to 15 kHz, and a good tuner should cover that band within a 1 dB tolerance. Sometimes, the 19 kHz pilot filter encroaches slightly upon the high end and depresses response at 15 kHz. And some circuit designs seem to purposely roll off the low end to minimize thumping sounds when tuning. But a tuner should handle at least the 50-Hz-to-14-kHz band within a 1 dB tolerance.

A stereo separation of, say, 30 dB from 100 Hz to 10 kHz should adequately preserve the imagery of the majority of program sources. Better separation in the midband doesn't hurt, but a fantastic figure at 1 kHz that deteriorates rapidly at other frequencies is no good either.

THD should be as low as possible of course, but it's unlikely that you will hear an awful lot of difference in program quality (due to this effect, at least) once the THD is under 0.3%. Usually stereo distortion is worse than that in mono, so concentrate on the stereo figure. If only one figure is specified, assume it's the mono distortion. In general, relatively low distortion at 6 kHz is indicative of a very well-designed tuner.

S/N establishes the maximum dynamic range that the tuner can handle even under strong-signal, multipath-free reception conditions. And, since the noise is measured with reference to the signal at 100% modulation, there is no "headroom." Thus, look for a 65, if not 70, dB S/N in mono. Usually, stereo S/N is several dB worse than that in mono.

Certain factors are basic for quality reception; others depend on your listening area.

Pilot and subcarrier suppression are important when taping off the air and using the Dolby noise reduction in the tape deck. These ultrasonic signals confuse the Dolby circuitry, since, if they are present during recording, the Dolby encoder will interpret them as "signal" and thus not boost the low-level, high-frequency signals as much as expected. Ultrasonic signals are not recorded, however, so when the Dolby playback circuitry processes the signal, the level is lower than it should be, and the high-frequency music signals are cut more than is suitable. Furthermore, these ultrasonic signals can intermodulate with the bias current and produce "birdies" in the recording. Most tape decks that incorporate Dolby also have a multiplex filter to reduce the pilot signal further, but the less pilot and subcarrier in the tuner's output, the better.

The relative importance of the remaining tuner specifications depends upon the reception conditions in your area. For example, if you live in a fringe area or want to receive a distant station, the tuner's sensitivity is important. We'd suggest you ignore the "usable sensitivity" spec and look at the 50-dB-quieting sensitivity.

If your favorite stations are local, tuner sensitivity is not likely to be important. But if you live in a metropolitan area with many closely-spaced stations, selectivity is important and in a fringe area good selectivity will be needed to listen to a distant station not that far off the frequency of a local one.

In mountainous regions or in cities where the signal is likely to be bounced from obstruction to obstruction, good (low) capture ratio and (high) AM-suppression specs are important to minimize multipath. While the best defense against multipath-induced distortion is a highly-directional, properly-oriented antenna, some tuners handle multiple signals better than others.

Good AM suppression minimizes the effects of airplane fading, ignition noise, and other electrical interference. And, if you live near an airport, you're best off with a tuner that has a notably good spurious- and IF-response ratio.

The final proof of performance comes with listening, and, if possible, you are best advised to try out a tuner in your home with your own antenna system before deciding to buy one. Reception conditions vary among areas; in the final analysis it is *your* satisfaction that counts.

Tuners

AIWA
Aiwa America
35 Oxford Dr.
Moonachie, N.J. 07074

AT-9700U
Price $520
Dimensions 6 3/16H x 18 9/16W x 14 13/16D
Weight 21 lbs. 3 oz. (net)
Sensitivity 15.3 dBf/35.3 dBf (50 dB)
S/N 80 dB/78 dB
Response 30 Hz to 15 kHz, +0.2, –0.5 dB/50 Hz to 15 kHz ±0.2 dB
THD 0.03% (1 kHz)/0.05% (1 kHz)
Separation 50 dB at (1 kHz)
Subcarrier 65 dB
Capt. ratio 1 dB
Selectivity 80 dB
Features Quartz PLL-MPX circuitry; quartz servo-lock; digital frequency readout; 10-point LED indicators; 3-point fine tuning; auto selectivity switch; built-in recording level oscillator; –40 to +13 dB peak meters

ST-R 3011
Price $200
Dimensions 8 5/16H x 2 13/16W x 9D
Weight 4 lbs. 14 oz. (net)
Sensitivity 18.2 dBf/38.2 dBf
S/N 73 dB/70 dB
Response 30 Hz to 15 kHz, ±0.5, –1.5 dB
THD 0.1% (1 kHz/0.25% (1 kHz)
Separation 45 dB
Capt. ratio 1.5 dB
Selectivity 70 dB
Features Five-point signal-strength indicator; digital readout; hi-blend circuit; FM muting/AFC combination; rack handles included

Models also available
ST-R50U, $265; AT-9300, $210

AKAI
Akai America, Ltd.
2139 E. Del Amo Blvd.
Compton, Calif. 90220

AT-V04


Price $279.95
Dimensions 3H x 17 3/10W x 13 1/10D
Weight 12 lbs.
Sensitivity 10 dBf/28 dBf
S/N 75 dB (mono)
Response 20 Hz to 15 kHz, ±0.5 dB
THD 0.09% (1 kHz)
Separation 54 dB, 0 Hz to 1 kHz
Subcarrier 80 dB
Capt. ratio 1.2 dB
Selectivity 75 dB

Models also available
AT-K03, $229.95

CROWN
Crown International
1718 W. Mishawaka Road
Elkhart, Ind. 46514

FM-1


Price $995
Dimensions 5¼H x 19W x 15D
Weight 15 lbs. 8 oz. (net)
Sensitivity 36 dBf at 50 dB (stereo)
S/N 65 dB at 65 dBf (stereo)
Response 30 Hz to 15 kHz, ±0.5 dB
THD 0.09% (stereo)
Separation 45 dB at 1 kHz; 35 dB at 10 kHz
Subcarrier 65 dB
Capt. ratio 2 dB at 65 dBf
Selectivity 75 dB at 25 dBf
Features Sensitivity: 10-8 dBf; image response ratio: 114 dB; spurious response ratio: 114 dB; antenna inputs: 300 ohms balanced, 75 ohms unbalanced; programmable memory for 5 stations; optional walnut-veneer cabinet

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

TU-530
Price $260
Dimensions 4H x 17⅜W x 14½D
Weight 13 lbs. (net)
Sensitivity 9.8 dBf for 65 dB quieting
S/N 79 dB/82 dB
Response 20 Hz to 15 kHz, ±0.8 dB (stereo)
THD 0.08% (100 Hz) (stereo)/0.06% (100 Hz) (mono)
Separation 55 dB at 1 kHz
Subcarrier 90 dB
Capt. ratio 1 dB
Selectivity 70 dB
Features LED tuning indicators

EDINBURGH WIRELESS CO.
Import Audio Ltd.
13430 Clayton Rd
St. Louis, Mo. 63131

SMT-2
Price $695
Response 30 Hz to 15 kHz
THD 0.7% at 100% modulation; 0.2% at 30% modulation (stereo)
Capt. ratio 1.5 dB
Selectivity 60 dB
Features Eight preset buttons on front panel; no scale on front at all—stations are preset on back only; stereo and center-tuning LED on front panel

EICO
EICO Electronics Instrument Co., Inc.
108 New South Road
Hicksville, N.Y. 11802

ST-3020
Price $209.95
S/N 45 dB
Response 20 Hz to 16 kHz
THD 0.8%

ST-4120
Price $159.95
S/N 45 dB
Response 20 Hz to 16 kHz
THD 1%

EUMIG
Eumig (U.S.A.), Inc.
Lake Success Business Park
225 Community Drive
Great Neck, N.Y. 11020

T-1000


Price $795
Dimensions 2½H x 19W x 12 4/5D
Weight 13 lbs. 1 oz. (net)
Sensitivity 18.3 dBf/38.3 dBf for 50 dB quieting (IHF-200)
S/N 70 dB/65 dB
Response 15 Hz to 16 kHz, +0.5, –1 dB
THD 1% (1 kHz)/0.08% (1 kHz)
Separation 50 dB at 1 kHz
Subcarrier 65 dB
Capt. ratio 0.8 dB
Selectivity 80 dB
Features Ten-preset memory with NiCad

battery for storage; 4-digit readout; pushbutton up/down tuning; muting with adjustable threshold; manual or auto tuning; narrow or wide-band switchable IF

FISHER
Fisher Corp.
21314 Lassen St.
Chatsworth, Calif. 91311

FM-2421

Price	$449.95
Dimensions	3½H x 17 1/3W x 13D
Weight	15 lbs. (net)
Sensitivity	13.2 dBf/35.9 dBf
S/N	75 dB/70 dB
Response	20 Hz to 15 kHz, ±1 dB
THD	0.1% (1 kHz)/0.15% (1 kHz)
Separation	46 dB (1 kHz); 36 dB (10 kHz)
Subcarrier	60 dB/70 dB
Capt. ratio	0.8 dB
Selectivity	75 dB
Features	Digital synthesizer; MPX filter; switchable IF bandwidth

FM-120

Price	$179.95
Dimensions	5H x 15¾W x 7½D
Weight	8 lbs. (net)
Sensitivity	14.14 dBf/20 dBf for 50 dB quieting
S/N	65 dB/60 dB
Response	20 Hz to 15 kHz, ±0.5 dB (stereo)/20 Hz to 15 kHz, ±0.5 dB (mono)
THD	0.4% (1 kHz) (stereo)/0.2% (1 kHz) (mono)
Separation	40 dB (1 kHz)
Subcarrier	60 dB
Capt. ratio	1 dB
Selectivity	60 dB
Features	LED signal-strength meter; stereo indicator light; center-of-channel LED indicator; FM muting and hi-blend switches

Models also available

FM-2121, $229.95; FM-440, $179.95

HARMAN KARDON
Harman Kardon
55 Ames Court
Plainview, N.Y. 11803

hk-715

Price	$369
Dimensions	2 9/10H x 15 1/5W x 12 3/5D
Weight	9 lbs. 4 oz. (net)
S/N	79 dB/77 dB
Response	1 Hz to 160 kHz, ±1½ dB
THD	0.07% (1 kHz)
Separation	50 dB (1 kHz)
Capt. ratio	1 dB
Selectivity	70 dB
Features	Digitally synthesized quartz-lock tuning; 8 memory stations; high blend; continuous scan; signal-strength LED

Models also available

HK-710, $229

HEATHKIT
Heath Co.
Benton Harbor, Mich. 49022

AJ-1600

Price	$399.95
Dimensions	5¾H x 19W x 14D
Weight	25 lbs. (net)
Sensitivity	1.8 μV/3.5 μV for 65 dB quieting
S/N	83 dB/75 dB
Response	20 Hz to 15 kHz, ±0.5 dB/20 Hz to 15 kHz, ±0.5 dB
THD	0.1% (1 kHz) (stereo)
Separation	45 dB (1 kHz)
Subcarrier	65 dB
Capt. ratio	1.2 dB
Selectivity	40 dB (wide)/80 dB (narrow)
Features	Optional Dolby ($40); EIA rack-mountable; optional oak cabinet ($30); signal/multipath meter; signal-strength meter; wide/narrow IF bandwidth; digital display; pilot canceling multiplex decoder; front panel 20 dB attenuator; blend mode

Models also available

AJ-1219, $149.95 (kit)

HITACHI
Hitachi Sales Corp. of America
401 W. Artesia Blvd.
Compton, Calif. 90220

FT-8000

Price	$449.95
Dimensions	3 1/16H x 17⅛W x 15 3/32D
Weight	13 lbs. 6 oz. (net)
Sensitivity	15.7 dBf/37.2 dBf
S/N	74 dB/69 dB
Response	20 Hz to 15 kHz, +0.5, −1.2 dB
THD	0.2% (100 Hz) (stereo)/0.1% (100 Hz) (mono)
Separation	50 dB (1 kHz)
Subcarrier	68 dB
Capt. ratio	1 dB
Selectivity	70 dB
Features	FM digital synthesizer tuner; quartz crystal frequency base; digital frequency readout; clock function; programmable 6-station memory; all-electronic front end; 70 dB image rejection; 85 dB IF rejection

FT-4400

Price	$249.95
Dimensions	3¼H x 17⅛W x 11 9/16D
Weight	9 lbs. 8 oz. (net)
Sensitivity	16.2 dBf/38.2 dBf (50 dB)
S/N	75 dB/68 dB
Response	30 Hz to 12 kHz, +0.5,−1 dB
THD	0.2% (100 Hz) (stereo)/10.06% (100 Hz) (mono)
Separation	50 dB to 1 kHz
Subcarrier	50 dB
Capt. ratio	1.5 dB
Selectivity	70 dB
Features	Digital quartz synthesized; 12 presets

Models also available

FT-5000, $299.95; FT-3400, $159.95

JVC
U.S. JVC Corp.
58-75 Queens Midtown Expressway
Maspeth, N.Y. 11378

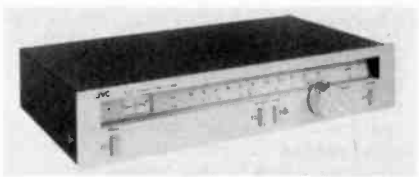
T-40P

Price	$300
Dimensions	4 5/16H x 16 9/16W x 11⅝D
Weight	7 lbs. (net)
Sensitivity	21.7 dBf/39.2 dBf (50 dB)
S/N	70 dB/65 dB
Response	20 Hz to 15 kHz, +0.5, −3 dB
THD	0.15% (1 kHz)/0.3% (1 kHz)
Separation	38 dB, 100 Hz to 10 kHz
Subcarrier	70 dB
Capt. ratio	1.5 dB
Selectivity	65 dB
Features	Quartz-PLL frequency synthesizer; 8 preset FM/AM stations; digital frequency display

T-X3

Price	$220
Dimensions	3½H x 18 11/16W x 14 5/16D
Weight	9 lbs. 14 oz. (net)
Sensitivity	16.3 dBf/31 dBf for 50 dB quieting
S/N	82 dB/78 dB
Response	30 Hz to 15 kHz, +0.3, −2 dB
THD	0.1% (11 kHz) (stereo)/0.08% (1 kHz) (mono)
Separation	50 dB (1 kHz)
Subcarrier	50 dB
Capt. ratio	70 dB
Selectivity	70 dB
Features	Phase-tracking loop detector; quieting slope control; PLL MPX with auto pilot canceller

T-V3



Price	$140
Dimensions	3½H x 16 9/16W x 12 1/16D
Weight	7 lbs. 8 oz. (net)
Sensitivity	17.2 dBf/38.3 dBf (50 dB)
S/N	70 dB/65 dB
THD	0.25% (1 kHz)/0.45% (1 kHz)
Separation	30 dB, 100 Hz to 10 kHz
Capt. ratio	1.5 dB
Selectivity	55 dB

Models also available

T-X5, $300; T-X1, $190

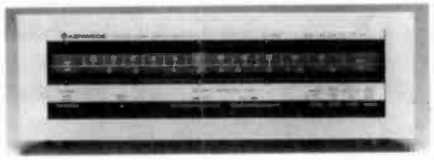
KENWOOD
Kenwood Electronics, Inc.
75 Seaview Drive
Secaucus, N.J. 07094

KT-917

Price	$1,000
Dimensions	18⅛H x 6 11/32W x 18 7/32D
Weight	15 lbs. (net)
Sensitivity	15.8 dBf/37.2 dBf

S/N	90 dB/84 dB
Response	10 Hz to 16 kHz, +0.2, –0.5 dB
THD	0.02% (100 Hz)/0.05% (10 kHz)
Separation	50 dB (50 Hz to 10 kHz)
Subcarrier	70 dB
Capt. ratio	0.8 dB
Selectivity	60 dB
Features	Distortion-detecting loop tuning system; pulse-count detector

KT-413



Price	$250
Dimensions	5 15/32H x 15¾W x11D
Weight	9 lbs. 5 oz. (net)
Sensitivity	17.2 dBf/37.2 dBf
S/N	77 dB/72 dB
Response	30 Hz to 15 kHz, +0.2, –2 dB
THD	0.1% (1 kHz)/0.15% (1 kHz)
Separation	40 dB (50 Hz to 10 kHz)
Subcarrier	50 dB
Capt. ratio	1 dB
Selectivity	60 dB
Features	Automatic sequential tuning

KT-80

Price	$209
Dimensions	3 1/16H x 17 5/16W x 13⅛D
Weight	9 lbs. 14 oz. (net)
Sensitivity	10.8 dBf for 65 dB quieting
S/N	83 dB/80 dB
Response	30 Hz to 15 kHz, ±0.2 dB (stereo)
THD	0.07% (1 kHz) (stereo)/0.07% (1 kHz) (mono)
Separation	40 dB, 50 Hz to 10 kHz
Subcarrier	65 dB
Capt. ratio	1.5 dB
Selectivity	75 dB
Features	Pulse-count detector

KT-60

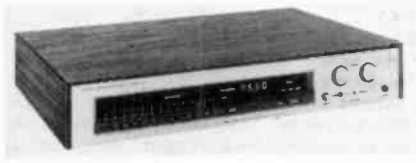
Price	$155
Dimensions	3 1/16H x 17 5/16W x 13 7/16D
Weight	9 lbs. (net)
Sensitivity	10.8 dBf for 65 dB quieting
S/N	77 dB/72 dB
Response	30 Hz to 15 kHz, +0.2 dB (stereo)
THD	0.15% (1 kHz) (stereo)/0.1% (1 kHz) (mono)
Separation	35 dB, 50 Hz to 10 kHz
Capt. ratio	1.5 dB
Selectivity	45 dB

Models also available

KT-815, $440; KT-615, $299; KT-313, $179

LUX
Lux Audio of America, Ltd.
160 Dupont St.
Plainview, N.Y. 11803

T-14



Price	$795
S/N	72 dB (mono)
Response	30 Hz to 15 kHz, ±1 dB
Features	Digital frequency synthesizer; digital readout; 12-station memory; manual or "autotune"

T-400

Price	$255
Dimensions	4 21/32H x 18 5/16W x 12 7/32D
Weight	10 lbs. 5 oz.
Sensitivity	15 dBf (mono) (50 dB)
S/N	75 dB (mono)
Response	30 Hz to 15 kHz, ±1 dB
THD	0.1% (100 Hz)/0.1% (1 kHz)
Separation	62 dB
Subcarrier	62 dB
Selectivity	65 dB
Features	LED signal-strength indicators; 440 Hz Dolby FM test tone; FM mute

Models also available

T-450, $395

MARANTZ
Marantz, Inc.
20525 Nordhoff St.
Chatsworth, Calif. 91311

ST-500 Computuner®

Price	$375
Dimensions	2⅞H x 16⅜W x 11¾D
Weight	12 lbs. 8 oz. (net)
Sensitivity	14.2 dBf/37.3 dBf for 65 dB quieting
S/N	80 dB/72 dB
Response	30 Hz to 15 kHz, ±0.5 dB (stereo)/30 Hz to 15 kHz, ±0.5 dB (mono)
THD	0.2% (1 kHz) (stereo)/0.3% (1 kHz) (mono)
Separation	48 dB (1 kHz)
Subcarrier	65 dB
Capt. ratio	0.9 dB
Selectivity	65 dB
Features	Quartz-locked frequency synthesized tuning; 14 electronic memory presets; electronic station search; step-selector switch; selectable FM IF bandwidth; PLL FM stereo demodulator with pilot canceller

ST-300

Price	$225
Dimensions	5¾H x 16⅜W x 9 9/16D
Weight	9 lbs. 14 oz. (net)
Sensitivity	14.2 dBf/37.3 dBf
S/N	75 dB/68 dB
Response	30 Hz to 15 kHz, +0.2, –1 dB/30 Hz to 15 kHz, +0.2, –1 dB
THD	0.15% (1 kHz)/0.25% (1 kHz)
Separation	45 dB (1 kHz)
Subcarrier	60 dB
Capt. ratio	1 dB
Selectivity	62 dB
Features	FM center-channel tuning meter; AM/FM signal-strength meter; Dolby de-emphasis network; MOSFET front end; PLL FM multiplex demodulator

Models also available

ST-400, $300

McINTOSH
McIntosh Laboratory, Inc.
2 Chambers St.
Binghamton, N.Y. 13907

MR-80

Price	N/A
Dimensions	4 3/16H x 14¾W x 13D
Weight	27 lbs. (net)
Sensitivity	13 dBf/30 dBf for 65 dB quieting
S/N	75 dB/75 dB
Response	20 Hz to 15 kHz, ±1 dB (stereo)/20 Hz to 15 kHz, ±1 dB (mono)
THD	0.2% dB (20 Hz to 15 kHz) (stereo)/0.2% (20 Hz to 15 kHz) (mono)
Separation	30 dB, 20 Hz to 15 kHz
Subcarrier	60 dB
Capt. ratio	1.5 dB
Selectivity	90 dB (narrow); 110 dB (super-narrow)
Features	Digital frequency display; "touch" controls; local/remote frequency scan

MX-117

Price	N/A
Dimensions	4 3/16H x 14¾W x 13D
Weight	24 lbs. (net)
Sensitivity	13 dBf/30 dBf for 65 dB quieting
S/N	70 dB/70 dB
Response	20 Hz to 15 kHz, ±0.5 dB (stereo)/20 Hz to 15 kHz, ±0.5 dB (mono)
THD	0.38% (1 kHz) (stereo)/0.18% (1 kHz) (mono)
Separation	30 dB, 30 Hz to 10 kHz
Subcarrier	60 dB
Capt. ratio	1.8 dB
Selectivity	70 dB
Features	Built-in phono preamp; 3 tone controls (±12 dB at 30 Hz, 750 Hz and 10 kHz); continuously variable loudness control

Models also available

MR-78

MCS® SERIES
J.C. Penney
1301 Ave. of the Americas
New York, N.Y. 10019

3705

Price	$189.95
Dimensions	4H x 18W x 13 3/5D
Weight	13 lbs. 1 oz. (net)
Sensitivity	17.3 dBf/39.2 dBf/9.84 dBf (usable sensitivity)
S/N	78 dB/74 dB
Response	30 Hz to 15 kHz, +1, –1.5 dB
THD	0.1% (1 kHz)/0.2% (1 kHz)
Separation	50 dB at 1 kHz
Subcarrier	60 dB
Capt. ratio	1 dB
Selectivity	60 dB
Features	FM muting; digital frequency display; LED signal-strength and tuning display

MERIDIAN
Anglo American Audio
P.O. Box 653
Buffalo, N.Y. 14240

104

Price	$555
Dimensions	2H x 5½W x 12D
Weight	4 lbs. (net)
Sensitivity	50 dBf (mono)
S/N	67 dB
Response	15 Hz to 15 kHz, ±0.5 dB
THD	0.1%
Separation	50 dB, 15 Hz to 15 kHz
Features	Dual-gate MOSFETs with double

balanced mixer in front end; 6-station preset and 1 standby AFC position; tune switch; usable sensitivity: 2.5 μV (mono)

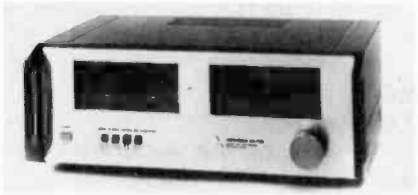
MICRO CPU®
Draco Labs, Inc.
1005 Washington St.
Grafton, Wisc. 53024

Micro CPU

Price	$1,000
Dimensions	6⅜H x 20W x 14 15/16D
Weight	34 lbs. (net)
Sensitivity	11.67 dBf/32.08 dBf
S/N	82 dB/75 dB
Response	20 Hz to 15 kHz, ±0.5 dB
THD	0.07% (1 kHz)
Separation	60 dB (1 kHz)
Subcarrier	80 dB
Capt. ratio	0.5 dB
Selectivity	85 dB
Features	Programmable station call-letters; 6-section varactor front end; digital detector; laser tuning; auto scan; self-testing

MITSUBISHI
Melco Sales, Inc.
3030 E. Victoria St.
Compton, Calif. 90221

DA-F20



Price	$430
Dimensions	6¾H x 16¾W x 10⅜D
Weight	14 lbs. 8 oz. (net)
Sensitivity	19 dBf/39.2 dBf
S/N	80 dB/75 dB
Response	30 Hz to 15 kHz, ±1 dB (mono and stereo)
THD	0.05% (1 kHz)/0.08% (1 kHz)
Separation	40 dB (10 kHz)
Subcarrier	70 dB
Capt. ratio	0.8 dB
Selectivity	75 dB/45 dB
Features	Quartz-PLL synthesizing tuner; digital frequency display; recording-level-checking signal output; multipath output; selectivity switch

Models also available
M-F01, $340

NAD
NAD (U.S.A.) Inc.
675 Canton St.
Norwood, Mass. 02062
P.O. Box 529
Lincoln, Mass. 01773

4080

Price	$315
Dimensions	5½H x 17 7/10W x 15 3/5D
Weight	24 lbs. (net)
Sensitivity	14.8 dBf/36.1 dBf
S/N	74 dB/70 dB
Response	30 Hz to 15 kHz, ±0.5 dB

THD	0.2% (1 kHz)/0.3% (1 kHz)
Separation	30 dB, 30 Hz to 15 kHz
Subcarrier	70 dB
Capt. ratio	1 dB
Selectivity	70 dB
Features	Multipath meter

Models also available
4020A, $198

NIKKO
Nikko Audio
320 Oser Ave
Hauppauge, N.Y. 11787

Gamma 40

Price	$450
Dimensions	2 4/5H x 19Wx 13D
Weight	13 lbs. 3 oz. (net)
Sensitivity	10.3 dBf/13.2 dBf for 65 dB quieting
S/N	78 dB/86 dB
Response	50 Hz to 15 kHz, ±0.5 dB (stereo)/ 50 Hz to 15 kHz, ±0.5 dB (mono)
THD	0.04% (1 kHz) (stereo)/0.02% (1 kHz) (mono)
Separation	45 dB, 100 Hz to 10 kHz
Capt. ratio	1 dB
Selectivity	75 dB
Features	Digital readout; T-lock tuning; adjustable IF band; record calibration circuit; 25 μs switch on rear

NT-790

Price	$180
Dimensions	3⅝H x 16½W x 12¾D
Weight	9 lbs. 14 oz. (net)
Sensitivity	11.2 dBf/16 dBf for 65 dB quieting
S/N	78 dB/70 dB
Response	50 Hz to 15 kHz, +0.5, −2 dB (stereo)/50 Hz to 15 kHz, +0.5, −2 dB (mono)
THD	0.15% (1 kHz) (stereo)/0.08% (1 kHz) (mono)
Separation	40 dB, 50 Hz to 10 kHz
Subcarrier	45 dB
Capt. ratio	1.5 dB
Selectivity	55 dB
Features	AM/FM; LED tuning indicators; high-blend switch; rack-mountable with optional kit

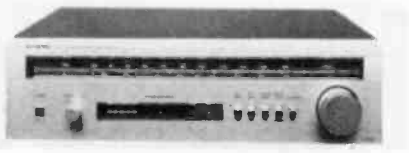
Models also available
Gamma 20, $379; NT-890, $220

ONKYO
Onkyo U.S.A. Corp.
42-07 20th Ave.
Long Island City, N.Y. 11105

T-909

Price	$950
Dimensions	3¼H x 17¾W x 13 15/16D
Weight	13 lbs. (net)
Sensitivity	14.7 dBf/36 dBf
S/N	80 dB/74 dB
Response	30 Hz to 16 kHz, +0.5, −2 dB
THD	0.08% (1 kHz)/0.15% (1 kHz)
Separation	40 dB, 100 Hz to 10 kHz
Subcarrier	70 dB
Capt. ratio	1.5 dB
Selectivity	80 dB
Features	Quartz-controlled digital synthesized FM tuner, 7 preset buttons; gold-plated output terminals

T-4090



Price	$339.95
Dimensions	4 15/16H x 16½W x 15¾D
Weight	13 lbs. (net)
Sensitivity	14.7 dBf/36 dBf
S/N	76 dB/68 dB
Response	30 Hz to 15 kHz, +0.5, −1.5 dB
THD	0.1%/0.25%
Separation	35 dB, 70 Hz to 10 kHz
Subcarrier	60 dB
Capt. ratio	1.3 dB
Selectivity	70 dB
Features	Quartz lock; human-touch sensor; LED function readout

Models also available
T-4040, $229.95; T-15, $134.95

OPTONICA
Sharp Electronics Corp.
10 Keystone Place
Paramus, N.J. 07652

ST-9405

Price	$1,000
Dimensions	3H x 16 9/10W x 15½D
Weight	15 lbs. 8 oz. (net)
Sensitivity	9.3 dBf for 65 dB quieting
S/N	75 dB
Response	30 Hz to 15 kHz, ±1.5 dB (stereo)/ 30 Hz to 15 kHz, ±1.5 dB (mono)
THD	0.3% (1 kHz) (stereo)/0.2% (1 kHz) (mono)
Separation	50 dB
Capt. ratio	1.2 dB
Selectivity	82 dB/35 dB (normal/wide)
Features	Microcomputer control of tuning (digital synthesizer); direct tune; zone-search station indicator; auto tune; 10 AM/10 FM presets; 2 level muting air checks

ST-7405

Price	$400
Dimensions	2 9/10H x 16 9/10W x 15D
Weight	13 lbs. 8 oz. (net)
Sensitivity	9.8 dBf
S/N	75 dB/70 dB
Response	35 Hz to 15 kHz, ±1.5 dB/35 Hz to 15 kHz, ±1.5 dB
THD	0.2% (1 kHz)/0.3% (1 kHz)
Separation	50 dB (1 kHz)
Capt. ratio	1.2 dB
Selectivity	80 dB
Features	Opto-lock tuning; digital frequency display; hi-blend; FM muting; multipath monitor switch; variable output; IF band selector with indicator; pilot canceller

Models also available
ST-4405, $250

PHASE LINEAR
Phase Linear Corp.
20121 48th Ave., W.
Lynnwood, Wash. 98036

5100 Series Two

Price	$450
Dimensions	3½H x 19W x 12D
Weight	10 lbs. (net)
Sensitivity	15.2 dBf/37.5 dBf
S/N	80 dB/75 dB
Response	20 Hz to 15 kHz, +0.2, –0.5 dB
THD	0.05% (1 kHz)
Separation	40 dB, 50 Hz to 10 kHz
Subcarrier	75 dB
Capt. ratio	1 dB
Selectivity	60 dB
Features	Digital PLL synthesized FM/AM 6-station memory; FM/AM auto/manual tuning

PHILIPS
Philips High Fidelity
Interstate 40 & Straw Plains Pike
P.O. Box 6960
Knoxville, Tenn. 37914

AH-180

Price	$559.95
Dimensions	2 3/5H x 19W x 13 3/10D
Sensitivity	1.8 mV/4.5 mV for 65 dB quieting
S/N	70 dB/60 dB
Response	20 Hz to 15 kHz, +0.5, –1 dB (stereo)
THD	0.10% (1 kHz) (stereo)/0.15% (1 kHz) (mono)
Separation	45 dB (1 kHz)
Subcarrier	60 dB
Capt. ratio	1.5 dB
Selectivity	70 dB
Features	Microprocessor controlled PLL frequency synthesis tuning with digital display; manual and automatic search; automatic key-in; 12-station preset memory tuning

PIONEER
U. S. Pioneer Electronics Corp.
85 Oxford Drive
Moonachie, N.J. 07074

TX-7800

Price	$350
Dimensions	6⅛H x 17 11/16W x 15⅜D
Weight	18 lbs. 5 oz. (net)
Sensitivity	15.5 dBf/37 dBf
S/N	83 dB/79 dB
Response	20 Hz to15 kHz, +0.2, –0.5 dB
THD	0.08% (100 Hz)/0.1% (100 Hz)
Separation	35 dB, 20 Hz to 10 kHz
Subcarrier	70 dB
Capt. ratio	1 dB
Selectivity	75 dB
Features	Servo-lock touch sensor

Models also available
TX-9800, $450; TX-6800, $200

REVOX
Studer Revox America, Inc.
1425 Elm Hill Pike
Nashville, Tenn. 37210

B-760

Price	$1,649
Dimensions	6H x 17¾W x 13¾D
Weight	26 lbs. 7 oz. (net)
Sensitivity	13.2 dBf/34.8 dBf (50 dB)
S/N	78 dB/74 dB
Response	30 to 15 kHz, ±1 dB (stereo)
THD	0.1% (mono)/0.25% (stereo)
Separation	42 dB (1 kHz)
Subcarrier	72 dB
Capt. ratio	2 dB
Selectivity	78 dB
Features	Digital frequency synthesizer (25 kHz increments), quartz-controlled to within 50 PPM accuracy; 15-station memory, pushbutton programmable; Dolby B card option; adjustable muting; multipath scope output; 7-digit LED display of station frequency and station number; non-volatile CMOS memory

ROGERS
Reference Monitor International, Inc.
2330 C Camino Vida Roble
Carlsbad, Calif. 92008

T-75

Price	$450
Dimensions	4½H x 14¼W x 11¼D
Weight	7 lbs. (net)
Sensitivity	1.5 dBf for 65 dB quieting
S/N	77 dB/66 dB
Response	20 Hz to 15 kHz, ±1 dB (stereo)/ 20 Hz to 15 kHz, ±1 dB (mono)
THD	0.7% (1 kHz) (stereo)/0.3% (1 kHz) (mono)
Separation	25 dB, 30 Hz to 15 kHz
Capt. ratio	1.5 dB
Features	Black, with walnut side panels

ROTEL
Rotel of America, Inc.
1055 Saw Mill River Rd.
Ardsley, N.Y. 10502

RT-2100

Price	$640
Dimensions	5¾H x 19¼W x 13⅛D
Weight	32 lbs. (net)
Sensitivity	9.3 dBf/36 dBf
S/N	80 dB/75 dB
Response	30 Hz to 15 kHz, ±0.2 dB (mono)
THD	0.05% (stereo/wide); 0.15% (stereo/narrow)
Separation	47 dB (1 kHz)
Subcarrier	80 dB
Capt. ratio	0.8 dB
Selectivity	80 dB
Features	Quartz phase lock; digital station readout; MOSFET front end; LED signal/multipath indicator; rack-mountable; Dolby

RT-1010

Price	$370
Sensitivity	15 dBf/36 dBf
S/N	76 dB/73 dB
Response	30 Hz to 15 kHz, –2 dB
THD	0.1%/0.3%
Separation	45 dB
Capt. ratio	1 dB
Selectivity	60 dB
Features	Digital synthesized quartz PLL; 7 presets; memory; auto/manual scan with temporary hold

Models also available
RT-2000, $460; RT-1000, $250; RT-550, $270

SAE
Scientific Audio Electronics, Inc.
701 E. Macy St.
Los Angeles, Calif. 90012

8000

Price	$800
Dimensions	5¼H x 19W x 10½D
Weight	20 lbs. (net)
Sensitivity	16.1 dBf/36.1 dBf
S/N	75 dB/71 dB
Response	30 Hz to 15 kHz, ±0.5 dB (mono and stereo)
THD	0.08% (1 kHz)/0.10% (1 kHz)
Separation	35 dB, 20 Hz to 15 kHz
Subcarrier	100 dB
Capt. ratio	1.5 dB
Selectivity	120 dB
Features	Digital readout; muting; MOSFET

SAE TWO SERIES

T-14

Price	$575
Dimensions	3½H x 18¼W x 14 3/10D
Weight	12 lbs.
Sensitivity	17.3 dBf/34.8 dBf
S/N	76 dB/70 dB
Response	30 Hz to 15 kHz, +0.5, –2 dB (mono and stereo)

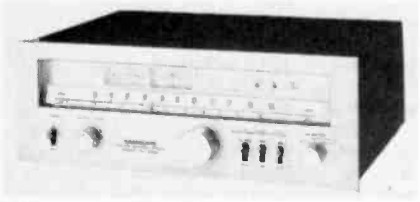
THD	0.08% (1 kHz)/0.15% (1 kHz)
Separation	40 dB, 50 Hz to 10 kHz
Subcarrier	65 dB
Capt. ratio	1 dB
Selectivity	70 dB
Features	Digital readout (frequency and clock); quartz-lock tuning; synthesized touch tuning; 5-station AM/FM memory; wide/narrow IF

Models also available

3200, $500; T-7, $400; T-3U, $275

SAMSUNG
Samsung Electronics America, Inc.
2707 Butterfield Road, Suite 270
Oak Brook, Ill. 60521

TU-3500



Price	$239.95
Dimensions	5½H x 16⅛W x 11¾D
Weight	17 lbs. (net)
Sensitivity	10.3 dBf/17.2 dBf for 65 dB quieting
S/N	65 dB/60 dB
Response	20 Hz to 15 kHz, ±1.5 dB (stereo)
THD	0.4% (stereo)/0.2% (mono)
Separation	40 dB (1 kHz)
Subcarrier	50 dB
Capt. ratio	1 dB
Selectivity	65 dB
Features	MOSFET FM front end; 5 FM IF stages with 3 ceramic filters; PLL MPX decoder; Dolby FM (25/75 μs de-emphasis); MPX noise-filter switch; FM muting switch; variable output level control; 3 LED indicators; signal-strength meter; FM center-tune meter; fixed and variable output jacks

Models also available

TU-3300, $139.95

SANSUI
Sansui Electronics Corp.
1250 Valley Brook Ave.
Lyndhurst, N.J. 07071

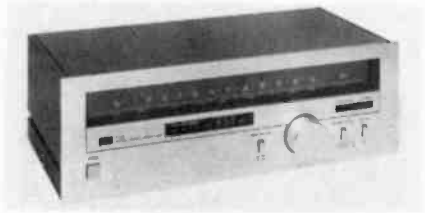
TU-X1

Price	$980
Dimensions	7 13/16H x 18 15/16W x 17¾D
Weight	35 lbs. 11 oz. (net)
Sensitivity	12.5 dBf/34 dBf
S/N	86 dB/83 dB
Response	20 Hz to 15 kHz, +0.2, –0.5 dB/20 Hz to 15 kHz, +0.2, –0.5 dB
THD	0.02% (1 kHz)/0.03% (1 kHz)
Separation	50 dB at 1 kHz
Subcarrier	70 dB
Capt. ratio	1 dB
Selectivity	80 dB
Features	Completely separate tuning, metering (4), and dual IF bandwidth selection for both FM and AM; selectable AM beat canceller; flat group delay RF and IF amplifiers; 7-gang tuning capacitor; record calibration tone

T-77

Price	$270
Dimensions	2 15/16H x 16 15/16W x 9⅜D
Weight	6 lbs. 6 oz. (net)
Sensitivity	15.5 dBf/37 dBf for 50 dB quieting
S/N	72 dB/70 dB
Response	30 Hz to 15 kHz, +1, –2 dB (stereo)/30 Hz to 15 kHz, +1, –2 dB (mono)
THD	0.25% (1 kHz) (stereo)/0.2% (1 kHz) (mono)
Separation	40 dB at 1 kHz
Subcarrier	35 dB
Capt. ratio	1 dB
Selectivity	60 dB
Features	Quartz-PLL digital synthesizer tuning with 8 FM/AM station presets and auto/manual search; LED signal-strength indicator; muting; available only as part of Sansui super combo series select systems

T-80



Price	$270
Dimensions	5 13/16H x 16 15/16W x 9 15/16D
Weight	10 lbs. 9 oz. (net)
Sensitivity	10.8 dBf/15/37 dBf (1 Hz)/15/37 dBf for 50 dB quieting
S/N	72 dB/68 dB (65 dBf)
Response	30 Hz to 15 kHz, +1, –2 dB (stereo)/30 Hz to 15 kHz, +1, –2 dB (mono)
THD	0.25% (1 kHz) (stereo)/0.2% (1 kHz) (mono)
Separation	40 dB (1 kHz)
Capt. ratio	1 dB
Selectivity	60 dB
Features	Digitally quartz-locked tuning with both digital and analog readouts; LED signal-strength/tuning indicators; noise canceller; FM muting

Models also available

TU-S9, $400; TU-S7B/TU-S7S, $320; TU-417, $275; TU-217, $190; T-60, $150

SANYO PLUS
Sanyo Electric, Inc.
Consumer Electronics Div.
1200 W. Artesia Blvd.
Compton, Calif. 90220

PLUS T-55

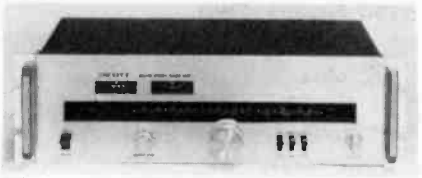
Price	$399.95
Dimensions	1¾H x 17⅛W x 10⅝D
Sensitivity	14.7 dBf/36.3 dBf
S/N	45 dB
Response	20 Hz to 16 kHz, +1, –2 dB
THD	0.15% (100 Hz)/0.3% (100 Hz)
Separation	42 dB, 1 kHz to 10 kHz
Capt. ratio	1.8/1.2 dB (wide/narrow)
Selectivity	35 dB
Features	Quartz-locked frequency synthesizer tuning; electronic frequency display; 6+6 pushbutton tuning; narrow/wide IF band selector; preset tuning and memory on; memory setting; black finish with rack-mount handles

Models also available

PLUS T-35, $349.95

SCOTT
H. H. Scott, Inc.
20 Commerce Way
Woburn, Mass. 01801

570T



Price	$250
Dimensions	5¼H x 17W x 11¾D
Weight	13 lbs. (net)
Sensitivity	16.1 dBf/35.6 dBf
S/N	75 dB/70 dB
Response	25 Hz to 15 kHz, ±2 dB (mono)
THD	0.1% (65 dBf)
Separation	50 dB (1 kHz)
Subcarrier	65 dB
Capt. ratio	1 dB
Selectivity	70 dB
Features	Switchable multiplex filter; muting switch; signal-strength and center-channel tuning meters

Models also available

530T, $200; 535T, $199.95; 515T, $150

SHERWOOD
Sherwood Electronic Labs
500 E. Carson Plaza Drive
Chicago, Ill. 60618

S-32 CP

Price	$290
Dimensions	5¼H x 17W x 12¾D
Weight	14 lbs. 8 oz. (net)
Sensitivity	9.84 dBf/1.7 μV
S/N	68 dB/74 dB
Response	20 Hz to 15 kHz, +1, –2 dB (mono and stereo)
THD	0.1% (100 Hz)/0.1% (1 kHz)
Separation	40 dB, 20 Hz to 10 kHz
Subcarrier	65 dB
Capt. ratio	1 dB
Selectivity	70 dB
Features	Certified performance (notarized certificate with each unit shows exact performance); linear-phase switchable de-emphasis; multiplex noise filter; twin tuning meters

SONY
Sony Industries
9 West 57th St.
New York, N.Y. 10019

ST-J88B

Price	$900
Dimensions	3⅛H x 18⅞W x 14½D
Weight	14 lbs. 9 oz. (net)
Sensitivity	10.3 dBf/36.1 dBf for 50 dB quieting
S/N	80 dB/75 dB
Response	30 Hz to 15 kHz, +0.2, –0.5 dB (stereo)/30 Hz to 15 kHz, +0.2, –0.5 dB (mono)
THD	0.07% (1 kHz) (stereo)/0.04% (1 kHz) (mono)
Separation	45 dB, 100 Hz to 10 kHz
Subcarrier	70 dB
Capt. ratio	1 dB
Selectivity	120 dB/65 dB
Features	Quartz frequency synthesis; FM only; rack-mount: dual bandwidth with 2 complete IF strips, each with matched discriminator; memory actually stores frequency; bandwidth, mono/stereo and mute settings for 7 stations

ST-A35

Price	$200
Dimensions	3¼H x 17W x 13⅝D
Weight	9 lbs. (net)
Sensitivity	10.8 dBf for 65 dB quieting
S/N	82 dB/77 dB
Response	30 Hz to 15 kHz, +0.3, –2 dB (stereo)/30 Hz to 15 kHz, +0.3, –2 dB (mono)
THD	0.12% (1 kHz) (stereo)/0.08% (1 kHz) (mono)
Separation	40 dB, 100 Hz to 10 kHz
Subcarrier	60 dB
Capt. ratio	1 dB
Selectivity	85 dB
Features	Acute servo-lock analog tuning; 4-gang FM front end; 3 dual-resonator uni-phase IF filters; hi blend, calibration tone; LED tuning aids

Models also available

ST-P7J, $500; ST-J60, $400; ST-J55, $300; ST-242, $165

SPECTRO ACOUSTICS
Spectro Acoustics, Inc.
4500 150th Ave., NE
Redmond, Wash. 98052

220R

Price	$600
Dimensions	3½H x 19W x 9D
Weight	14 lbs.
Sensitivity	50 dBf/34 dBf (75 ohms)
S/N	70 dB/65 dB
Response	30 Hz to 15 kHz ±1 dB
THD	0.15% (1 kHz)
Separation	32 dB, 50 Hz to 10 kHz
Subcarrier	80 dB
Capt. ratio	1.5 dB
Selectivity	75 dB
Features	High, low, and tuned tuning lights; built-in digital clock in tuner display; 12V auxiliary connector on back; fixed and variable outputs

TANDBERG
Tandberg of America, Inc.
Labriola Court
Armonk, N.Y. 10504

TPT-3001

Price	$1,500
Dimensions	3⅛H x 17W x 14D
Sensitivity	14.7 dBf/28.1 dBf
S/N	90 dB (mono)
Response	20 Hz to 15 kHz, ±1 dB
THD	0.03% (100 Hz)/0.1% (10 kHz)
Separation	50 dB, 100 Hz to 10 kHz
Subcarrier	95 dB
Capt. ratio	0.4 dB
Selectivity	125 dB
Features	Programmable FM preset; variable muting; 3-position IF selector

TEAC
Teac Corp. of America
7733 Telegraph Rd.
Montebello, Calif. 90640

T-9

Price	N/A
Dimensions	16⅛H x 3 9/16W x 12 11/16D
Weight	13 lbs. 4 oz. (net)
Sensitivity	10.8 dBf/37.5 dBf for 65 dB quieting
S/N	75 dB/70 dB
Response	30 Hz to 15 kHz, ±0.2 dB (stereo)
THD	0.1% (1 kHz) (stereo)/0.1% (1 kHz) (mono)
Separation	50 dB (1 kHz)
Capt. ratio	1 dB
Selectivity	0.08 dB at 1 kHz
Features	Auto channel selection and memory

TECHNICS
Technics by Panasonic
One Panasonic Way
Secaucus, N.J. 07094

ST-9030

Price	$460
Dimensions	4H x 19W x 14½D
Weight	16 lbs. (net)
Sensitivity	18.1 dBf/38.1 dBf
S/N	80 dB (mono)
Response	20 Hz to 18 kHz, +0.1, –0.5 dB (mono and stereo)
THD	0.08%/0.08% (1 kHz)
Separation	50 dB (1 kHz)
Subcarrier	70 dB
Capt. ratio	0.8 dB
Selectivity	90 dB
Features	Automatic switching between wideband and narrowband IF and detector; fixed and variable outputs; servo-tuning (AFC); pilot/subcarrier cancellation; manual or automatic high-blend noise canceller; linear signal-strength meter

ST-S7

Price	$370
Dimensions	2 3/32H x 16 15/16W x 12 7/32D
Weight	8 lbs. 12 oz. (net)
Sensitivity	10.8 dBf/37.2 dBf for 50 dB quieting
S/N	77 dB/72 dB
Response	5 Hz to 18 kHz, + 0.2, –0.5 dB (stereo)
THD	0.15% (1 kHz) (stereo)/0.1% (1 kHz) (mono)
Separation	55 dB at 1 kHz
Subcarrier	–70 dB
Capt. ratio	1 dB
Selectivity	85 dB
Features	24-hour programmable digital clock; record calibration switch; world's first DC tuner

ST-CO3

Price	$350
Dimensions	1 15/16H x 11 11/16W x 9 19/32D
Weight	6 lbs. 3 oz. (net)
Sensitivity	10.8 dBf/38.3 dBf for 50 dB quieting
S/N	77 dB/72 dB
Response	20 Hz to 20 kHz, + 0.5, –1.5 dB (stereo)
THD	0.15% (1 kHz) (stereo)/0.08% (1 kHz) (mono)
Separation	45 dB (1 kHz)
Subcarrier	–40 dB
Capt. ratio	1 dB
Selectivity	75 dB
Features	Quartz digital synthesizer AM/FM tuner with presets; pushbutton up/down electronic tuning; 2-color, 5-point signal-strength indicator; micro size

TOSHIBA
Toshiba America, Inc.
82 Totowa Rd.
Wayne, N.J. 07470

F15

Price	$359.95
Dimensions	10 1/10H x 2 1/10W x 7 7/10D
Weight	4 lbs. 13 oz. (net)
S/N	72 dB/68 dB
Response	20 Hz to 15 kHz, +0.2, –0.8 dB
THD	0.15%
Separation	45 dB
Capt. ratio	1 dB
Selectivity	75 dB
Features	Frequency synthesized; digital readout; 10 Station presets; FM only

T-10

Price	$249.95
Dimensions	10 1/10H x 2 1/10W x 9 2/5D
Weight	4 lbs. (net)
S/N	75 dB/72 dB
Response	30 Hz to 15 kHz, +0.2, –0.8 dB
THD	0.2% (1 kHz)
Separation	45 dB (1 kHz)
Capt. ratio	1 dB
Selectivity	75 dB
Features	LED signal-strength and tuning indicators; record calibration circuit; 1.8 μV FM sensitivity; also available in matte black, T-10B, $259.95

ST-335 Mk. II

Price	$179.95
Dimensions	16½H x 3 4/5W x 10 1/10D
Weight	7 lbs. 8 oz. (net)
S/N	73 dB/65 dB
Response	30 Hz to 15 kHz, ±1 dB
THD	0.2% (1 kHz)/0.4% (1 kHz)
Separation	40 dB (1 kHz)
Capt. ratio	1 dB
Selectivity	60 dB
Features	Matte black finish; LED signal-strength tuning indicators; record calibration signal; 2.0 μV FM sensitivity

Models also available

ST-665, $299.95; ST-445, $259.95; ST-335, $159.95

YAMAHA
Yamaha International Corp.
6600 Orangethorpe Ave.
Buena Park, Calif. 90620

T-2

Price	$750
Dimensions	2¾H x 17⅛W x 13¾D
Weight	15 lbs. (net)
Sensitivity	13.2 dBf/34.2 dBf
S/N	88 dB/85 dB
Response	30 Hz to 10 kHz, +0.3, –0.5 dB/10 Hz to 18 kHz, ±0.3 dB
THD	0.03% (100 Hz)/0.05% (100 Hz)
Separation	55 dB (1 kHz)
Subcarrier	72 dB
Capt. ratio	1 dB
Selectivity	100 dB

T-7

Price	$390
Dimensions	3¾H x 17⅛W x 13¼D
Weight	12 lbs. (net)
Sensitivity	9.8 dBf for 65 dB quieting
S/N	90 dB/85 dB
Response	10 Hz to 18 kHz, ±3 dB (stereo)
THD	0.04% (1 kHz) (stereo)/ 0.04% (1 kHz) (mono)
Separation	52 dB, DC to 10 kHz
Subcarrier	70 dB
Capt. ratio	1.5 dB
Selectivity	65 dB
Features	Motor drive preset stations; selectable IF modes; optimum tuning system; real-time direct DC NFB PLL MPX demodulator

Models also available

T-550, $190

Receivers

ADVENT
Advent Corp.
195 Albany St.
Cambridge, Mass. 02139

300

Price	$299
Dimensions	3½H x 15¾W x 9¼D
Weight	11 lbs. (net)
TUNER	
Sensitivity	16 dBf/35 dBf
S/N	73 dB/70 dB
Response	30 Hz to 15 kHz, ±1 dB
THD	0.15%/0.2% (400 Hz)
Separation	28 dB, 30 Hz to 10 kHz
Subcarrier	60 dB
Capt. ratio	1.6 dB
Selectivity	70 dB
AMPLIFIER	
Power	15 watts (11¾ dBW) continuous from 40 Hz to 20 kHz at no more than 0.5% THD
IM	0.15% at 15W
Response	20 Hz to 20 kHz, ±0.5 dB
Sensitivity	2.0 mV (phono); 100 mV (high level)
Overload	100 mV (phono)
S/N	80 dB (phono) re 10 mV input; 80 dB (aux) re 100 mV input (A-weighted)
Phono EQ	20 Hz to 20 kHz, ±0.5 dB
Bass	±10 dB at 100 Hz
Treble	±10 dB at 10 kHz
Features	No impedance interaction on phono input; infrasonic filter on phono input

AIWA
Aiwa America, Inc.
35 Oxford Drive
Moonachie, N.J. 07074

AX-7800U

Price	$520
Dimensions	4¼H x 20 1/16W x 17 5/16D
Weight	23 lbs. 1 oz. (net)
TUNER	
Sensitivity	17.2 dBf/37.2 dBf (50 dB)
S/N	75 dB/70 dB
THD	0.1% (1 kHz)/0.2% (1 kHz)
Separation	45 dB (1 kHz)
Selectivity	75 dB
AMPLIFIER	
Power	60 watts (17.75 dBW) continuous from 20 Hz to 20 kHz at no more than 0.05% THD
IM	0.05% at 60 watts
Response	10 Hz to 50 kHz, ±1 dB
S/N	80 dB (phono); 75 dB (tuner); 95 dB (aux)
Phono EQ	30 Hz to 15 kHz, ±0.5 dB
Features	Quartz-lock FM synthesized tuning; 6-station (AM/FM) preset controls; digital frequency readout; 9-point LED peak-indicator; selectable bass and treble frequency turnover; soft-touch mode selectors with individual LED indicators; DC amp; auto search; manual scan; automatic tuning

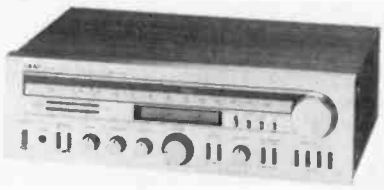
AX-7300

Price	$210
Dimensions	6⅛H x 16 9/16W x 15 1/16D
Weight	18 lbs. 13 oz. (net)
TUNER	
Sensitivity	17.2 dBf/38.1 dBf for 50 dB of quieting
S/N	70 dB/65 dB
THD	0.25% (1 kHz)/0.4% (1 kHz)
Separation	30 dB (1 kHz)
Selectivity	65 dB
AMPLIFIER	
Power	25 watts (14 dBW) continuous from 20 Hz to 20 kHz at no more than 0.08% THD
IM	0.08% at 25 watts
Response	20 Hz to 30 kHz, ±1 dB
S/N	72 dB (phono); 70 dB (tuner); 90 dB (aux)
Phono EQ	30 Hz to 15 kHz, ±0.5 dB
Features	Two-speaker speaker system capability; 3-point LED tuning; 5-point signal-strength meter; loudness; muting; AFC

Models also available
AX-550, $380; AX-7700V, $300

AKAI
Akai America, Ltd.
2139 E. Del Amo Blvd.
P.O. Box 6010
Compton, Calif. 90224

AA-R50



Price	$450
Dimensions	5 9/10H x 18 9/10W x 14 1/5D
Weight	25 lbs. (net)
TUNER	
S/N	75 dB
Response	50 Hz to 15 kHz, ±1 dB
THD	0.1% (1 kHz)
Separation	45 dB (1 kHz)
Subcarrier	55 dB
Capt. ratio	1 dB
Selectivity	75 dB
AMPLIFIER	
Power	62 watts (17.75 dBW) continuous from 10 Hz to 40 kHz into 8 ohms at no more than 0.04% THD
Response	5 Hz to 50 kHz, ±1 dB
Sensitivity	3 mV (phono); 150 mV (high level)
Overload	250 mV (phono)
S/N	75 dB (phono); 90 dB (aux)
Phono EQ	30 Hz to 15 kHz, ±1 dB
Bass	±10 dB at 100 Hz
Treble	±10 dB at 10 kHz

AA-R30

Price	$300
Dimensions	5 3/5H x 17 3/10W x 12 1/5D
Weight	20 lbs.
TUNER	
S/N	70 dB
Response	50 Hz to 15 kHz, ±1 dB
THD	0.3% (1 kHz)
Separation	80 dB
Subcarrier	45 dB
Capt. ratio	1.3 dB
Selectivity	60 dB
AMPLIFIER	
Power	38 watts (15.75 dBW) continuous from 10 Hz to 40 kHz into 8 ohms at no more than 0.05% THD
Response	5 Hz to 50 kHz, ±1 dB
Sensitivity	3 mV (phono); 150 mV (high level)
Overload	150 mV (phono)
S/N	75 dB (phono); 90 dB (aux)
Phono EQ	30 Hz to 15 kHz, ±1 dB
Bass	±9 dB at 100 Hz
Treble	±10 dB at 10 kHz

Models also available
AA-R40, $400; AA-R20, $250

AUDIO PRO
Intersearch, Inc.
4720-Q Boston Way
Lanham, Md. 20801

TA-150

Price	$1,295
Dimensions	4½H x 19½W x 10¼D
Weight	25 lbs. (net)
TUNER	
Sensitivity	17 dBf/37 dBf
S/N	70 dB/65 dB
Response	30 Hz to 15 kHz, ±1.5 dB/30 Hz to 15 kHz, ±1.5 dB
THD	0.2%/0.2%
Separation	35 dB, 60 Hz to 10 kHz
Subcarrier	65 dB
Capt. ratio	2 dB
Selectivity	80 dB
AMPLIFIER	
Power	75 watts (18.75 dBW) continuous from 20 Hz to 20 kHz at no more than 0.1% THD
IM	0.1% at 75 watts
Response	10 Hz to 100 kHz, +0, -3 dB
Sensitivity	1.8 mV (phono)
Overload	54 mV (phono)
S/N	70 dB (phono); 75 dB (aux)
Phono EQ	20 Hz to 30 kHz, ±0.5 dB
Bass	±12 dB at 100 Hz
Treble	±12 dB at 10 kHz
High filter	6 dB/octave above 9 kHz
Low filter	6 dB/octave below 50 Hz; 24 dB/octave below 12 Hz
Features	All electronic receiver with computer control; one knob controls all variable functions: volume, balance, bass, midrange, treble, tuning; 4-digit frequency readout; also available as TPA-150 "preceiver" at $995 without power amp but with headphone "preceiver" at $1,045 head amp available as plug-in module (replaces standard phono module)

AUDIOLOGIC
Radix Industries Ltd.
991 Broadway
Albany, N.Y. 12204

LXR-720
Price	$449.95
Dimensions	10H x 6¾W x 10¼D
Weight	15 lbs. 8 oz. (net)
TUNER	
Sensitivity	16.1 dBf for 65 dB quieting
S/N	30 dB
THD	2% (1 kHz) (stereo)/1% (1 kHz) (mono)
Separation	20 dB, 100 Hz to 10 kHz
Capt. ratio	4 dB
Selectivity	28 dB
AMPLIFIER	
Power	20 watts (13 dBW) continuous from 20 Hz to 20 kHz at no more than 0.5% THD
Response	15 Hz to 25 kHz, ±3 dB
Sensitivity	3 mV (phono); 150 mV (high level)
Overload	60 mV (phono)
S/N	70 dB (phono); 70 dB (tuner) (A-weighted)
Phono EQ	30 Hz to 15 kHz, ±3 dB
Features	Built-in 6-band graphic equalizer; A/B speaker selector; digital frequency tuning

BANG & OLUFSEN
Bang & Olufsen of America, Inc.
515 Busse Road
Elk Grove Village, Ill. 60007

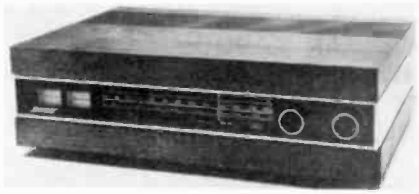
Beomaster 4400
Price	$925
Dimensions	3¾H x 22⅝W x 11D
Weight	22 lbs. (net)
TUNER	
Sensitivity	18 dBf/38 dBf
S/N	70 dB/67 dB
Response	30 Hz to 15 kHz, ±1.5 dB (mono and stereo)
THD	0.7%/0.7%
Separation	40 dB (1 kHz)
Subcarrier	100 dB
Capt. ratio	4 dB
Selectivity	58 dB
AMPLIFIER	
Power	70 watts (18.5 dBW) continuous from 20 Hz to 20 kHz at no more than 0.1% THD (4-ohm load)
IM	0.1% at 70 watts
Response	20 Hz to 35 kHz, ±1.5 dB
Sensitivity	2.2 mV (phono); 200 mV (high level)
Overload	80 mV (phono)
S/N	60 dB (phono); 65 dB (aux) (unweighted re 70 watts)
Bass	±12 dB at 40 Hz
Treble	±12 dB at 12.5 kHz
High filter	12 dB/octave above 7 kHz
Low filter	12 dB/octave below 60 Hz
Features	Six preset FM stations; varactor tuning; overload indicator; ambience recovery for rear speakers

Beomaster 1600


Price	$495
Dimensions	3¾H x 23¾W x 9½D
Weight	15 lbs. 12 oz. (net)
TUNER	
Sensitivity	19 dBf/38.9 dBf
S/N	70 dB/68 dB
Response	30 Hz to 15 kHz, ±1.5 dB (stereo)
THD	0.3%
Separation	40 dB, 1 kHz to 10 kHz
Subcarrier	66 dB
Capt. ratio	1.5 dB
Selectivity	3.5 dB
AMPLIFIER	
Power	20 watts (13 dBW) continuous from 20 Hz to 20 kHz at no more than 0.4% THD
IM	0.2%
Response	20 Hz to 20 kHz, ±1.5 dB
Sensitivity	0.55 mV (phono) (re 1W)
Overload	77 mV (phono)
S/N	79 dB (phono); 80 dB (aux)
Bass	±11 dB at 40 Hz
Treble	±11 dB at 12.5 kHz
Features	Unique clutched controls; 7 FM presets

Models also available
Beomaster 2400, $725

BOSE
Bose Corp.
100 Mountain Rd.
Framingham, Mass. 01701

Spatial Control® Receiver


Price	$860
Dimensions	6⅝H x 20½W x 16⅜D
Weight	36 lbs. 8 oz. (net)
TUNER	
Sensitivity	16.11 dBf/36.11 dBf (50 dB)
S/N	70 dB/65 dB (65 dBf)
Response	30 Hz to 15 kHz, +0.2, –1 dB
THD	0.1%/0.25% (65 dBf)
Separation	45 dB (1 kHz)
Capt. ratio	1.8 dB
Selectivity	70 dB
AMPLIFIER	
Power	100 watts (20 dBW) continuous from 20 Hz to 20 kHz at no more than 0.09% THD
IM	0.09%
Response	20 Hz to 20 kHz, +0.1, –0.5 dB
Sensitivity	2.0 mV (phono); 200 mV (aux & tape level)
Overload	145 mV (phono)
S/N	90 dB (amplifier); 83 dB (phono)
Phono EQ	20 Hz to 20 kHz, ±0.3 dB
Features	Spatial slide control allows 901 speaker owners to vary spaciousness of sound image from narrow to wide; 4 power amps, Bose 901 equalizer; special source and room compensation controls included; two separate amps for headphones

Models also available
550, $380

CALIBRE
CBS Retail Stores
1313 53rd St.
Emeryville, Calif. 94608

240
Price	$375
Dimensions	3½H x 17¾W x 12¾D
Weight	24 lbs. 8 oz. (net)
TUNER	
Sensitivity	14.2 dBf/37.2 dBf
S/N	72 dB/70 dB
Response	20 Hz to 20 kHz, ±0.5 dB (mono)
THD	0.1% (1 kHz)
Separation	50 dB (1 kHz)
Subcarrier	55 dB
Capt. ratio	1.5 dB
Selectivity	72 dB
AMPLIFIER	
Power	42 watts (16.25 dBW) continuous from 20 Hz to 20 kHz at no more than 0.05% THD
IM	0.05% at 1 watt
Response	20 Hz to 20 kHz, ±0.5 dB
Sensitivity	1.9 mV (phono); 250 mV (high level)
Overload	210 mV (phono)
S/N	80 dB (phono); 72 dB (tuner); 90 dB (aux)
Phono EQ	30 Hz to 15 kHz, ±0.5 dB
Bass	±10 dB at 100 Hz
Treble	±10 dB at 10 kHz
High filter	6 dB/octave above 8 kHz
Features	Dolby FM; pilot phase canceller; digital LED tuning; independent tape dubbing

Models also available
225, $280; 215, $230

CONCEPT
CBS Retail Stores
1313 53rd St.
Emeryville, Calif. 94608

CON 12.0D
Price	$850
Dimensions	7H x 20W x 17D
Weight	51 lbs.
TUNER	
Sensitivity	13.8 dBf/36.3 dBf
S/N	74 dB/72 dB
Response	30 Hz to 15 kHz, ±0.5 dB (stereo)/ 30 Hz to 15 kHz, ±0.5 dB (mono)
THD	0.1% (1 kHz)/0.1% (1 kHz)
Separation	50 dB (1 kHz)
Subcarrier	58 dB
Capt. ratio	0.8 dB
Selectivity	85 dB
AMPLIFIER	
Power	120 watts (20.75 dBW) continuous from 20 Hz to 20 kHz at no more than 0.03% THD
IM	0.02% at 120 watts
Response	20 Hz to 20 kHz, ±0.2 dB
Sensitivity	1.9 mV (phono); 160 mV (high level) (re 1W)
Overload	220 mV (phono)
S/N	84 dB (phono); 72 dB (tuner); 90 dB (aux)
Phono EQ	30 Hz to 15 kHz, ±0.2 dB
Bass	±10 dB at 100 Hz and 800 Hz
Treble	±10 dB at 1.6 kHz and 10 kHz
High filter	6 dB/octave above 7 kHz
Features	FM only; digital clock; auto scan with 6 memories; quartz synthesized tuner toroidal power transformer

Models also available
7.5D, $575; 4.5D, $450

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

DRA-600
Price	$540
Dimensions	4½H x 17⅜W x 15½D
Weight	25 lbs. (net)
TUNER	

Sensitivity	9.8 dB for 65 dB quieting
S/N	70 dB/75 dB
Response	20 Hz to 15 kHz, +0.2, –1.5 dB (stereo)
THD	0.3% (stereo)/0.15% (mono)
Separation	55 dB (1 kHz)
Subcarrier	80 dB
Capt. ratio	1 dB
Selectivity	60 dB
AMPLIFIER	
Power	60 watts (17.75 dBW) continuous from 20 Hz to 20 kHz at no more than 0.03% THD
IM	0.03% at 60 watts
Response	5 Hz to 100 kHz
Sensitivity	2.5 mV (phono); 150 mV (high level) (re 1W)
Overload	200 mV (phono)
S/N	88 dB (phono); 100 dB (tuner); 100 dB (aux)
Phono EQ	20 Hz to 20 kHz, ±0.2 dB
Bass	±10 dB at 100 Hz
Treble	±10 dB at 10 kHz
Low filter	6 dB/octave below 20 Hz
Features	Non-switching Class A; digitally synthesized tuning; 8 station presets

FISHER
Fisher Corp.
21314 Lassen St.
Chatsworth, Calif. 91311

RS-270

Price	$549.95
Dimensions	5¼H x 17 1/3W x 13¾D
Weight	29 lbs. (net)
TUNER	
Sensitivity	10.3 dBf/14.14 dBf for 50 dB quieting
S/N	75 dB/70 dB
Response	20 Hz to 15 kHz, ±0.5 dB (stereo)/20 Hz to 15 kHz, ±0.5 dB (mono)
THD	0.15% (1 kHz) (stereo)/0.1% (1 kHz) (mono)
Separation	50 dB (1 kHz)
Subcarrier	65 dB
Capt. ratio	0.8 dB
Selectivity	70 dB
AMPLIFIER	
Power	50 watts (17 dBW) continuous from 20 Hz to 20 kHz at no more than 0.02% THD
IM	0.02% at 50 watts
Response	20 Hz to 20 kHz, ±0.5 dB
Sensitivity	2.5 mV (phono); 150 mV (high level)
Overload	200 mV (phono moving magnet) 6 mV (phono moving coil)
S/N	80 dB (phono); 100 dB (tuner); 100 dB (aux) (A-weighted)
Phono EQ	20 Hz to 20 kHz, ±0.5 dB
Bass	±10 dB at 200/400 Hz
Treble	±10 dB at 3/6 kHz
High filter	6 dB/octave above 5 kHz
Low filter	12 dB/octave below 20 Hz
Features	Class A-II nonswitching amp; quartz PLL digital frequency synthesizer; 12-station memory presets (6 AM/6 FM); built-in moving-coil cartridge preamp

RS-2010

Price	$499.95
Dimensions	6¾H x 20¼W x 14¼D
Weight	36 lbs. (net)
TUNER	
Sensitivity	13.2 dBf/35.9 dBf
S/N	75 dB/70 dB
Response	20 Hz to 15 kHz, ±0.5 dB (mono and stereo)
THD	0.1%/0.2%
Separation	50 dB (1 kHz); 40 dB at 100 Hz and 10 kHz
Subcarrier	70 dB
Capt. ratio	0.8 dB
Selectivity	80 dB
AMPLIFIER	
Power	100 watts (20 dBW) continuous from 20 Hz to 20 kHz at no more than 0.09% THD
IM	0.09% at 100 watts
Response	20 Hz to 20 kHz, ±0.5 dB
Sensitivity	2 mV (phono); 150 mV (high level)
Overload	200 mV (phono)
S/N	76 dB (phono); 75 dB (tuner); 90 dB (aux)
Phono EQ	30 Hz to 15 kHz, ±0.5 dB
Bass	±10 dB at 50 Hz/250 Hz/1 kHz
Treble	±10 dB at 4.5 kHz/15 kHz (5-band graphic equalizer)
Low filter	18 dB/octave
Features	"Panel Logic" 12-function control system; power meters; Dolby de-emphasis switch; monitoring/dubbing for 2 tape decks

Models also available

RS-250, $449.95; RS-2004, $399.95; RS-240, $399.95; RS-2003, $349.95; TA-5000, $299.95; RS-2002, $279.95; MC-2500, $229.95

HARMAN KARDON
Harman Kardon
55 Ames Court
Plainview, N.Y. 11803

hk-680i

Price	$599
Weight	36 lbs.
TUNER	
Sensitivity	10.8 dBf (1.9 μV) (mono)
S/N	75 dB
Response	DC to 100 kHz, ±1.5 dB
THD	0.09% (1 kHz)
Separation	55 dB (1 kHz)
Capt. ratio	1.2 dB
Selectivity	80 dB
AMPLIFIER	
Power	60 watts (17.75 dBW) continuous from 20 Hz to 20 kHz at no more than 0.02% THD
IM	0.04% at 60 watts
Response	1 Hz to 100 kHz, ±1.5 dB
Sensitivity	2 mV (phono); 130 mV (high level)
Overload	2.25 mV (phono)
S/N	88 dB (phono); 100 dB (tuner); 100 dB (aux)
Phono EQ	20 Hz to 20 kHz, ±0.75 dB
Bass	±12 dB at 20 Hz
Treble	±12 dB at 20 kHz
High filter	12 dB/octave above 8 kHz
Low filter	12 dB/octave below 20 Hz
Features	Twin power supplies; digitally synthesized; quartz-lock tuning with 12-station memory; infrasonic and high-art filters; tone defeat; tape dubbing 1-2, 2-1

hk-350i

Price	$249
Weight	21 lbs.
TUNER	
Sensitivity	13.2 dBf (2.5 μV) (mono)
S/N	65 dB
Response	DC Hz to 60 kHz, ±1.5 dB
THD	0.3% (1 kHz)
Separation	40 dB (1 kHz)
Capt. ratio	2 dB
Selectivity	60 dB
AMPLIFIER	
Power	20 watts (13 dBW) continuous from 20 Hz to 20 kHz at no more than 0.09% THD
IM	0.09% at 20 watts
Response	3 Hz to 100 kHz, ±1.5 dB
Sensitivity	2 mV (phono); 180 mV (high level)
Overload	100 mV (phono)
S/N	85 dB (phono); 95 dB (tuner); 95 dB (aux)
Phono EQ	20 Hz to 20 kHz, ±1 dB
Bass	±12 dB at 20 Hz
Treble	±12 dB at 20 kHz
Features	High-current drive; phase lock loop; stereo blend control; FM muting

Models also available

hk-570i, $399; hk-460i, $329

HEATHKIT
Heath Co.
Benton Harbor, Mich. 49022

AR-1650B

Price	$780 (kit)
Dimensions	7H x 21¾W x 16⅞D
Weight	48 lbs.
TUNER	
Sensitivity	13.2 dBf/36.1 dBf (50 dB S/N); 10.3 dBf/16.1 dBf (usable)
S/N	80 dB/73 dB
Response	20 Hz to 15 kHz, ±0.5 dB/20 Hz to 15 kHz, ±0.5 dB
THD	0.1% (100 to 5 kHz)/0.1% (1 kHz) (65 dBf)
Separation	40 dB, 100 Hz to 6 kHz
Subcarrier	60 dB
Capt. ratio	1.5 dB
Selectivity	40 dB (wide)/80 dB (narrow)
AMPLIFIER	
Power	125 watts (21 dBW) continuous from 20 Hz to 20 kHz at no more than 0.05% THD
IM	0.05% at 125 watts
Response	20 Hz to 20 kHz, +0, –0.2 dB
Sensitivity	0.67 mV (phono); 67 mV (high level)
Overload	150 mV (phono)
S/N	65 dB (phono); 85 dB (aux)
Phono EQ	20 Hz to 20 kHz, ±0.2 dB
Bass	±12 dB at 50 Hz
Treble	±12 dB at 20 kHz
High filter	12 dB/octave above 7 kHz
Low filter	12 dB/octave below 30 Hz
Features	Digital display; pilot-canceling multiplex; midrange control (±6 dB at 1 kHz); loudness compensation; 2-tape-deck monitoring; preamp out/amp in; 75-ohm FM input with attenuator; tone control bypass switch; optional FM Dolby ($40); narrow/wide IF switch; PTS (precision tuning system); also available as AR-1650S, $760

AR-1219

Price	$229.95 (kit)
Dimensions	3⅞H x 17W x 13D
Weight	18 lbs.
TUNER	
Sensitivity	11.2 dBf (mono; 30 dB)
S/N	65 dB
Response	20 Hz to 15 kHz, ±1 dB
THD	0.5% (1 kHz)/0.75% (1 kHz)
Separation	35 dB
Subcarrier	60
Capt. ratio	2 dB
Selectivity	60 dB
AMPLIFIER	
Power	15 watts (11.75 dBW) continuous from 20 Hz to 20 kHz at no more than 0.5% THD
IM	0.5% at 15 watts
Response	7 Hz to 100 kHz, ±1 dB
Sensitivity	2 mV (phono): 190 mV (high level)
Overload	75 mV (phono)
S/N	60 dB (phono); 65 dB (aux)
Bass	±13 dB at 20 Hz

Treble	±14 dB at 20 kHz

Models also available

AR-1515, $499.95 (kit); AR-1429, $299.95 (kit)

HITACHI
Hitachi Sales Corp. of America
401 W. Artesia Blvd.
Compton, Calif. 90220

SR-8010

Price	$449.95
Dimensions	5¼H x 18⅛W x 14 3/16D
Weight	22 lbs. 5 oz.
TUNER	
Sensitivity	17 dBf/37 dBf
S/N	74 dB/68 dB
Response	30 Hz to 12 kHz, ±0.5 dB
THD	0.2% (100 Hz)/0.3% (100 Hz)
Separation	45 dB (1 kHz)
Subcarrier	50 dB
Capt. ratio	1 dB
Selectivity	75 dB
AMPLIFIER	
Power	50 watts (17 dBW) continuous from 20 Hz to 20 kHz at no more than 0.09% THD
IM	0.1% at 60 Hz and 7 kHz
Sensitivity	2.5 mV (phono); 47K ohms (high level)
Overload	250 mV (phono)
S/N	75 dB (phono); 90 dB (aux)
Bass	±10 dB at 100 Hz
Treble	±10 dB at 10 kHz
High filter	8 dB/octave above 10 kHz
Low filter	8 dB/octave below 50 Hz
Features	Class G Dynaharmony; LED power indicators; Vector tuning

SR-4010

Price	$229.95
Dimensions	4⅛H x 17⅛W x 10 15/16D
Weight	11 lbs. 4 oz. (net)
TUNER	
Sensitivity	17 dBf/37 dBf
S/N	75 dB/70 dB
Response	30 Hz to 12 kHz, ±2 dB
THD	0.3% (100 Hz) (stereo)/0.2% (100 Hz) (mono)
Separation	40 dB (1 kHz)
Subcarrier	50 dB
Capt. ratio	1 dB
Selectivity	76 dB
AMPLIFIER	
Power	25 watts (14 dBW) continuous from 20 Hz to 20 kHz at no more than 0.05% THD
Response	15 Hz to 30 kHz, ±2 dB
Sensitivity	3 mV (phono); 50K ohms (high level)
Overload	130 mV (phono)
S/N	75 dB (phono); 92 dB (tape)
Bass	±10 dB at 100 Hz
Treble	±8 dB at 10 kHz
Low filter	15 dB/octave below 10 Hz
Features	IC/FET low-distortion circuitry; LED tuning/power-level metering

Models also available

SR-6010, $299.95; SR-5010, $259.95; SR-2010, $199.95

JVC
JVC America, Inc.
58-75 Queens Midtown Expressway
Maspeth, N.Y. 11378

R-S77

Price	$530
Dimensions	4¾H x 18⅞W x 15D
Weight	23 lbs. 12 oz. (net)
TUNER	
Sensitivity	14.8 dBf/37.2 dBf for 50 dB quieting
S/N	80 dB/70 dB
Response	30 Hz to 15 kHz, +0.5, –0.8
THD	0.3% (1 kHz) (stereo)/0.15% (1 kHz) (mono)
Separation	45 dB (1 kHz)
Capt. ratio	1 dB
Selectivity	80 dB
AMPLIFIER	
Power	60 watts (17.75 dBW) continuous from 20 Hz to 20 kHz at no more than 0.005% THD
IM	0.004% at 60 watts
Response	5 Hz to 50 kHz, +0, –1 dB
Sensitivity	2.5 mV (phono); 180 mV (high level) (re 1W)
Overload	180 mV (phono)
S/N	75 dB (phono); 75 dB (aux) (IHF-weighted)
Phono EQ	20 Hz to 20 kHz, ±0.5 dB
Features	Super-A power amp; quartz synthesizer tuner for AM/FM; 6 FM/6 AM preset stations; 5-position tone controls: 40 Hz, 250 Hz, 1 kHz, 5 kHz, 15 kHz, ±12 dB

R-S33

Price	$330
Dimensions	4¾H x 17¾W x 13 9/16D
Weight	17 lbs. 12 oz. (net)
TUNER	
Sensitivity	14.8 dBf/38.3 dBf for 50 dB quieting
S/N	82 dB/70 dB
Response	30 Hz to 15 kHz, +0.5, –1 dB (mono)
THD	0.3% (1 kHz) (stereo)/0.15% (1 kHz) (mono)
Separation	45 dB (1 kHz)
Capt. ratio	1 dB
Selectivity	65 dB
AMPLIFIER	
Power	40 watts (16 dBW) continuous from 20 Hz to 20 kHz at no more than 0.007% THD
IM	0.007% at 40 watts
Response	5 Hz to 50 kHz, +0, –1 dB
Sensitivity	2.5 mV (phono); 150 mV (high level) (re 1W)
Overload	140 mV (phono)
S/N	75 dB (phono); 75 dB (aux) (IHF-weighted)
Phono EQ	20 Hz to 20 kHz, ±0.5 dB
Features	Super-A power amp; LED peak-power indicator; triple power protection; 5-position tone controls: 40 Hz, 250 Hz, 1 kHz, 5 kHz, ±12 dB

Models also available

R-S55, $400; R-S7, $300; R-S11, $250; R-S5, $220

KENWOOD
Kenwood Electronics, Inc.
75 Seaview Drive
Secaucus, N.J. 07094

KR-9050

Price	$1,150
Dimensions	6 31/32H x 23 11/16W x 18 5/16D
Weight	52 lbs. 14 oz. (net)
TUNER	
Sensitivity	14.1 dBf/36.1 dBf
S/N	83 dB/76 dB
Response	20 Hz to 15 kHz, ±0.5 dB
THD	0.07%/0.08%
Separation	40 dB (50 Hz to 10 kHz)
Subcarrier	73 dB
Capt. ratio	1 dB
Selectivity	60 dB
AMPLIFIER	
Power	200 watts (23 dBW) continuous from 20 Hz to 20 kHz at no more than 0.02% THD
IM	0.0045% at 200 watts
Response	DC to 280 kHz, –3 dB
Sensitivity	2.5 mV (phono); 200 mV (high level)
Overload	260 mV (phono)
S/N	91 dB (phono); 110 dB (tuner); 110 dB (aux)
Phono EQ	20 Hz to 20 kHz, ±0.2 dB
Bass	±12 dB at 100 Hz
Treble	±12 dB at 10 kHz
High filter	6 dB/octave above 5 kHz
Low filter	6 dB/octave below 18 Hz
Features	High-speed DC amp

KR-770

Price	$679
Dimensions	5¼H x 21 1/16W x 14⅜D
Weight	26 lbs. 8 oz. (net)
TUNER	
Sensitivity	9.8 dBf
S/N	74 dB/70 dB
Response	30 Hz to 15 kHz, ±0.5 dB (stereo)
THD	0.1% (1 kHz) (stereo)/0.09% (1 kHz) (mono)
Separation	37 dB, 50 Hz to 10 kHz
Subcarrier	65 dB
Capt. ratio	1 dB
Selectivity	65 dB
AMPLIFIER	
Power	80 watts (19 dBW) continuous from 20 Hz to 20 kHz at no more than 0.02% THD
IM	0.02% at 80 watts
Response	DC to 320 kHz
Sensitivity	2.5 mV (phono); 100 mV (high level) (re 1W)
Overload	240 mV (phono)
S/N	85 dB (phono)
Phono EQ	20 Hz to 20 kHz, ±0.3 dB
Bass	±12 dB at 10 Hz
Treble	±12 dB at 10 kHz
High filter	6 dB/octave above 5 kHz
Low filter	6 dB/octave below 18 Hz
Features	High-speed amplifier

KR-720

Price	$329
Dimensions	4 5/16H x 18 1/32W x 11 23/32D
Weight	17 lbs. 8 oz. (net)
TUNER	
Sensitivity	10.8 dBf for 65 dB quieting
S/N	76 dB/71 dB

Response	30 Hz to 15 kHz, +1, –1.5 dB (stereo)
THD	0.15% (1 kHz) (stereo)/0.1% (1 kHz) (mono)
Separation	35 dB, 50 Hz to 10 kHz
Subcarrier	50 dB
Capt. ratio	1 dB
Selectivity	52 dB
AMPLIFIER	
Power	40 watts (16 dBW) continuous from 20 Hz to 20 kHz at no more than 0.03% THD
IM	0.025% at 40 watts
Response	5 Hz to 250 kHz
Sensitivity	2.5 mV (phono); 150 mV (high level) (re 1W)
Overload	200 mV (phono)
S/N	80 dB (phono); 105 dB (aux)
Phono EQ	30 Hz to 15 kHz, ±0.4 dB
Bass	±8 dB at 100 Hz
Treble	±8 dB at 10 kHz
High filter	6 dB/octave above 5 kHz
Features	High-speed and zero switching amplifier

Models also available

KR-8050, $820; KR-750, $519; KR-730, $409; KR-80, $379; KR-710, $245

LUX
Lux Audio of America, Ltd.
160 Dupont St.
Plainview, N.Y. 11803

R-1120A

Price	$995
Dimensions	7⅛H x 19¼W x 16¼D
Weight	37 lbs. 6 oz.
TUNER	
Sensitivity	14.2 dBf/36.8 dBf
S/N	74 dB/70 dB
Response	30 Hz to 15 kHz, ±1 dB
THD	0.06%/0.15% (100 Hz)(wide); 0.6%/0.1% (1 kHz)(wide); 0.12%/0.2% (6 kHz)(wide); 0.2%/0.5% (1 kHz)(narrow)
Separation	45 dB (wide) (100 Hz); 48 dB (wide)(1 kHz); 40 dB (wide)(10 kHz); 30 dB (narrow)(1 kHz)
Subcarrier	70 dB
Capt. ratio	0.9 dB/1.9 dB (wide/narrow)
Selectivity	80 dB (narrow)(±400 kHz); 60 dB (narrow)(±300 kHz); 48 dB (wide)(±400 kHz)
AMPLIFIER	
Power	120 watts (20.75 dBW) continuous from 20 Hz to 20 kHz at no more than 0.02% THD
IM	0.02% at 120 watts, 8 ohms, both channels driven
Response	15 Hz to 100 kHz, ±1 dB
Sensitivity	0.18 mV (phono 1); 2.7 mV (phono 2); 180 mV (tuner, aux, monitors); 1.6V (main in)
Overload	160 mV (phono)(1 kHz)
S/N	86 dB (phono) (A-weighted); 100 dB (aux) (A-weighted re 120 watts)
Bass	±11 dB at 100 Hz
Treble	±13 dB at 10 kHz
High filter	12 dB/octave above 7 kHz
Low filter	12 dB/octave below 15 Hz or 70 Hz
Features	Dual turnover tone controls; LED peak indicators; electrostatic speaker outputs; closed locked-loop tuning

R-3055

Price	$595
Dimensions	7⅛H x 19¼W x 14D
Weight	34 lbs.
TUNER	
Sensitivity	14.1 dBf/36.8 dBf
S/N	74 dB/70 dB
Response	30 Hz to 15 kHz, ±1 dB
THD	0.1%/0.2% (1 kHz)
Separation	40 dB, 100 Hz to 10 kHz
Subcarrier	60 dB
Capt. ratio	1.3 dB
Selectivity	70 dB
AMPLIFIER	
Power	55 watts (17.5 dBW) continuous from 20 Hz to 20 kHz at no more than 0.05% THD
IM	0.05% at 55 watts
Response	10 Hz to 50 kHz, ±1 dB
Sensitivity	0.34 mV (phono); 20 mV (high level)
Overload	150 mV (phono)
S/N	66 dB (phono); 86 dB (aux) (unweighted re 55 watts)
Phono EQ	±0.3 dB
Bass	±10 dB at 100 Hz
Treble	±10 dB at 10 kHz
High filter	6 dB/octave above 7 kHz
Low filter	6 dB/octave below 70 Hz
Features	LED peak indicators; phase-linear IF

Models also available

R-1070, $795; R-3045, $495; R-3030, $395

MARANTZ
Marantz Co., Inc.
20525 Nordhoff St.
Chatsworth, Calif. 91311

SR-8000 Computuner Receiver

Price	$695
Dimensions	5½H x 18⅜W x 13⅞D
Weight	28 lbs. (net)
TUNER	
Sensitivity	1.7 μV/9.8 μV
S/N	80 dB/72 dB
Response	30 Hz to 15 kHz, ±0.5 dB (stereo)/30 Hz to 15 kHz, ±0.5 dB (mono)
THD	0.15% (1 kHz) (stereo)/0.2% (1 kHz) (mono)
Separation	45 dB (1 kHz)
Subcarrier	65 dB
Capt. ratio	1 dB
Selectivity	65 dB
AMPLIFIER	
Power	88 watts (19.5 dBW) continuous from 20 Hz to 20 kHz at no more than 0.05% THD into 4 ohms
IM	0.05% at 88 watts
Response	10 Hz to 70 kHz, ±1 dB
Sensitivity	2.7 mV (phono); 160 mV (high level) (re 1W)
Overload	225 mV (phono)
S/N	90 dB (phono); 98 dB (aux)
Phono EQ	20 Hz to 20 kHz, ±0.2 dB
Bass	±10 dB at 100 Hz
Treble	±10 dB at 10 kHz
High filter	6 dB/octave above 8 kHz
Low filter	6 dB/octave below 20 Hz
Features	Quartz-locked frequency synthesized tuning; 14 electronic memory presets; electronic station search; stepped LED power meters; midrange tone control; True Power™ DC amplifier; step-selector switch

SR-2000

Price	$325
Dimensions	5½H x 18⅜W x 12¾D
Weight	17 lbs. 6 oz. (net)
TUNER	
Sensitivity	14.2 dBf/37.3 dBf
S/N	75 dB/68 dB
Response	30 Hz to 15 kHz, +0.5, –1 dB/30 Hz to 15 kHz, +0.5, –1 dB
THD	0.15% (1 kHz)/0.25% (1 kHz)
Separation	45 dB (1 kHz)
Subcarrier	60 dB
Capt. ratio	1 dB
Selectivity	62 dB
AMPLIFIER	
Power	38 watts (16 dBW) continuous from 20 Hz to 20 kHz at no more than 0.08% THD into 4 ohms
IM	0.08% at 38 watts
Response	15 Hz to 50 kHz, ±1 dB
Sensitivity	2.7 mV (phono); 160 mV (high level)
Overload	130 mV (phono)
S/N	86 dB (phono); 98 dB (aux)
Phono EQ	20 Hz to 20 kHz, ±0.5 dB
Bass	±10 dB at 100 Hz
Treble	±10 dB at 10 kHz
Features	Dual power meters; True Power™ direct-coupled output amp; walnut-grain vinyl cabinet; dual-purpose tuning meters; midrange tone control; loudness switch; tape monitor

Models also available

SR-6000, $550; SR-4000, $415; SR-1000, $275

McINTOSH
McIntosh Laboratory, Inc.
2 Chambers St.
Binghamton, N.Y. 13907

MA-4100

Dimensions	4 5/16H x 17⅛W x 13½D
Weight	42 lbs. (net)
TUNER	
Sensitivity	13 dBf/30 dBf for 65 dB quieting
S/N	70 dB/70 dB
Response	20 Hz to 15 kHz, ±0.5 dB (stereo)/20 Hz to 15 kHz, ±0.5 dB (mono)
THD	0.38% (1 kHz) (stereo)/0.18% (1 kHz) (mono)
Separation	30 dB, 30 Hz to 10 kHz
Subcarrier	60 dB
Capt. ratio	1.8 dB
Selectivity	75 dB
AMPLIFIER	
Power	100 watts (20 dBW) continuous from 20 Hz to 20 kHz at no more than 0.05% THD
IM	0.05% at 100 watts
Response	20 Hz to 20 kHz, ±0.25 dB
Sensitivity	2 mV (phono); 250 mV (high level) (re 1W)
Overload	100 mV (phono)
S/N	90 dB (phono); 75 dB (tuner); 95 dB (aux) (IHF A-weighted)
Phono EQ	20 Hz to 20 kHz, ±0.5 dB
Features	Five tone controls: (±12 dB at 30 Hz, 150 Hz, 500 Hz, 1.5 kHz and 10 kHz); continuously variable loudness control; tape copy for 2 decks; LED power column with Power-Guard indication

MCS® SERIES
J.C. Penney
1301 Ave. of the Americas
New York, N.Y. 10019

3260

Price	$449.95
Dimensions	5⅞H x 19⅛W x 12¾D
Weight	24 lbs. 2 oz. (net)
TUNER	
Sensitivity	17.2 dBf (mono); 10.3 dBf (usable)
S/N	74 dB/68 dB
Response	30 Hz to 15 kHz, +1.3, –1.5 dB
THD	0.1% (1 kHz)/0.15% (1 kHz)
Separation	40 dB (100 Hz); 45 dB (1 kHz); 35 dB (10 kHz)
Subcarrier	65 dB
Capt. ratio	1 dB
Selectivity	70 dB
AMPLIFIER	
Power	60 watts (17.75 dBW) continuous from 20 Hz to 20 kHz at no more than 0.02% THD
IM	0.02% at 60 watts
Response	10 Hz to 40 kHz, ±1dB
Sensitivity	2.5 mV (phono); 150 mV (high level)
Overload	190 mV (phono)
S/N	77 dB (phono); 100 dB (aux)
Phono EQ	20 Hz to 20 kHz, ±0.3 dB
Bass	±12 dB at 100 Hz
Treble	±12 dB at 10 kHz
High filter	9 dB/octave above 10 kHz
Low filter	3 dB/octave below 15 Hz
Features	One-way tape dubbing; 2-way tape dubbing

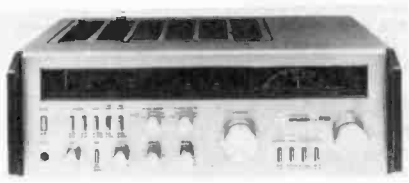
Models also available
3248, $349.95

MITSUBISHI
Melco Sales, Inc.
3030 E. Victoria St.
Compton, Calif. 90221

DA-R20

Price	$560
Dimensions	6¾H x 18½W x 16⅛D
Weight	31 lbs. (net)
TUNER	
Sensitivity	9.3 dBf for 65 dB quieting
S/N	84 dB/80 dB
Response	30 Hz to 16 kHz, +0.5, –1 dB (stereo)
THD	0.1% (1 kHz) (stereo)/0.08% (1 kHz) (mono)
Separation	42 dB, 100 Hz to 10 kHz
Subcarrier	60 dB
Capt. ratio	1.5 dB
Selectivity	60 dB/75 dB
AMPLIFIER	
Power	60 watts (17.75 dBW) continuous from 20 Hz to 20 kHz at no more than 0.02% THD
IM	0.01% at 30 watts
Response	10 Hz to 80 kHz, +0, –3 dB
Sensitivity	0.1 mV (MC); 2.5 mV (MM); 150 mV (high level) (re 1W)
Overload	7 mV (MC); 140 mV (MM)
S/N	94 dB (phono), 106 dB (aux) (A-weighted)
Phono EQ	20 Hz to 20 kHz, ±0.3 dB
Bass	±10 dB at 100 Hz
Treble	±10 dB at 10 kHz
High filter	12 dB/octave above 8 kHz
Low filter	12 dB/octave below 18 Hz
Features	Fluorescent digital frequency display; touch-sensitive lock tuning; 10-position loudness; separate record select and program select; MC head amp; DC power amp

DA-R10



Price	$390
Dimensions	6¾H x 18½W x 16⅛D
Weight	27 lbs. (net)
TUNER	
Sensitivity	9.3 dBf for 65 dB quieting
S/N	84 dB/80 dB
Response	30 Hz to 16 kHz, +0.5, –1 dB (stereo)
THD	0.1% (1 kHz) (stereo)/0.08% (1 kHz) (mono)
Separation	42 dB, 100 Hz to 10 kHz
Subcarrier	60 dB
Capt. ratio	1.5 dB
Selectivity	60 dB/75 dB
AMPLIFIER	
Power	45 watts (16.5 dBW) continuous from 20 Hz to 20 kHz at no more than 0.02% THD
IM	0.01% at 22.5 watts
Response	10 Hz to 80 kHz, +0, –3 dB
Sensitivity	2.5 mV (phono); 150 mB (high level) (re 1W)
Overload	140 mV (phono)
S/N	94 dB (phono); 106 dB (aux)
Phono EQ	20 Hz to 20 kHz, ±0.3 dB
Bass	±10 dB at 100 Hz
Treble	±10 dB at 10 kHz
High filter	12 dB/octave above 8 kHz
Low filter	12 dB/octave below 18 Hz
Features	Touch-sensitive lock tuning; separate program select and record select; 10-position loudness; DC power amp section

DA-C7 Tuner/Preamplifier

Price	$360
Dimensions	6¾H x 16¾W x 11½D
Weight	16 lbs. 8 oz. (net)
TUNER	
Sensitivity	20 dBf/40 dBf
S/N	76 dB/73 dB
Response	30 Hz to 16 kHz, +0.5, –1 dB
THD	0.08% (1 kHz)/0.1% (1 kHz)
Separation	45 dB at 1 kHz
Subcarrier	70 dB
Capt. ratio	1 dB
Selectivity	75 dB/50 dB (front-panel switched)
AMPLIFIER	
Response	10 Hz to 70 kHz, +0, –0.5 dB
Sensitivity	2.5 mV (phono); 150 mV (high level)
Overload	200 mV (phono)
S/N	75 dB (phono); 99 dB (tuner); 99 dB (aux) (rated input)
Phono EQ	20 Hz to 20 kHz, ±0.2 dB
Bass	±10 dB at 100 Hz
Treble	±10 dB at 10 kHz
Low filter	6 dB/octave below 18 Hz
Features	Two-way tape dubbing; 2 phono inputs; selectivity switch; pilot cancel; tone defeat; docking with DA-A7DC, A-10DC, A-15DC power amps

Models also available
DA-C20 Tuner/Preamplifier, $510; DA-R7, $295

NAD
NAD (U.S.A.), Inc.
675 Canton St.
Norwood, Mass. 02062
P.O. Box 529
Lincoln, Mass. 01773

NAD-7080

Price	$648
Dimensions	5 9/10H x 19 3/10W x 15 3/5D
Weight	42 lbs. (net)
TUNER	
Sensitivity	14.8 dBf/36.1 dBf
S/N	74 dB/70 dB
Response	30 Hz to 15 kHz, ±0.5 dB
THD	0.2% (1 kHz)/0.3% (1 kHz)
Separation	30 dB, 30 Hz to 15 kHz
Subcarrier	70 dB
Capt. ratio	1 dB
Selectivity	70 dB
AMPLIFIER	
Power	90 watts (19.5 dBW) continuous from 20 Hz to 20 kHz at no more than 0.03% THD
IM	0.03% at 90 watts
Response	5 Hz to 50 kHz, +0, –3 dB
Sensitivity	0.25 mV (phono); 20 mV (high level)
Overload	2 mV (phono)
S/N	90 dB (phono); 74 dB (tuner); 95 dB (aux)
Phono EQ	±0.3 dB (RIAA)
Bass	±10 dB at 50 Hz
Treble	±10 dB at 10 kHz
High filter	12 dB/octave above 8 kHz
Low filter	12 dB/octave below 20 Hz
Features	Two-way tape dubbing; independent selection of bass and treble turnover frequencies; high-speed output relay for speaker protection

NAD-7045

Price	$448
Dimensions	5½H x 17 7/10W x 15 3/5D
Weight	30 lbs. (net)
TUNER	
Sensitivity	16 dBf/38.3 dBf
S/N	72 dB/68 dB
Response	30 Hz to 15 kHz, ±0.5 dB
THD	0.2% (1 kHz)/0.3% (1 kHz)
Separation	30 dB
Subcarrier	70 dB
Capt. ratio	0.6 dB
Selectivity	30 dB
AMPLIFIER	
Power	45 watts (16.5 dBW) continuous from 20 Hz to 20 kHz at no more than 0.05% THD
IM	0.05% at 45 watts
Response	5 Hz to 45 kHz, +0, –3 dB
Sensitivity	0.4 mV (phono); 25 mV (high level)
Overload	20 mV (phono)
S/N	84 dB (phono); 72 dB (tuner); 92 dB (aux)
Phono EQ	±0.3 dB (RIAA)
Bass	±10 dB at 50 Hz
Treble	±10 dB at 10 kHz
High filter	6 dB/octave above 7 kHz
Low filter	12 dB/octave below 20 Hz
Features	Non-interactive preamp, stability down to 2 ohms

Models also available

NAD-7060, $530; 7020, $330

NAKAMICHI
Nakamichi U.S.A. Corp.
1101 Colorado Ave.
Santa Monica, Calif. 90401

730

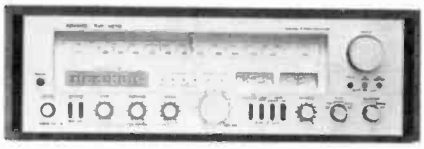
Price	$1,390
Dimensions	3½H x 19¾W x 14½D
Weight	38 lbs. (net)
TUNER	
Sensitivity	18.3 dBf/38.3 dBf
S/N	75 dB/68 dB
Response	30 Hz to 15 kHz, +0.5, –1.5 dB
THD	0.1%/0.15% (1 kHz)
Separation	45 dB (1 kHz)
Subcarrier	70 dB
Capt. ratio	1.5 dB
Selectivity	70 dB
AMPLIFIER	
Power	105 watts (20.25 dBW) continuous at 8 ohms from 5 Hz to 20 kHz at no more than 0.02% THD
IM	0.004% at 105 watts
Response	10 Hz to 30 kHz, ±0.3 dB
Sensitivity	2 mV (phono); 100 mV (high level)
Overload	120 mV (phono)
S/N	83 dB (phono); 94 dB (aux)
Phono EQ	30 Hz to 15 kHz, ±0.3 dB
Bass	±12 dB at 20 Hz
Treble	±12 dB at 20 kHz
Features	Motorized auto tuning with 4 preset FM stations; touch-sensitive controls; optional wireless remote control available at $215

Models also available

530, $690

NIKKO
Nikko Audio
320 Oser Ave.
Hauppauge, N.Y. 11787
Van Nuys, Calif. 91406

NR-1219



Price	$650
Dimensions	7H x 22W x 15D
Weight	38 lbs. (net)
TUNER	
Sensitivity	10.3 dBf/13.5 dBf for 65 dB quieting
S/N	81 dB/75 dB
Response	50 Hz to 15 kHz, +0.2, –0.8 dB (stereo)/50 Hz to 15 kHz, +0.2, –0.8 dB (mono)
THD	0.15% (1 kHz) (stereo)/0.07% (1 kHz) (mono)
Separation	35 dB, 100 Hz to 10 kHz
Subcarrier	65 dB
Capt. ratio	1.5 dB
Selectivity	75 dB
AMPLIFIER	
Power	100 watts (20 dBW) continuous from 20 Hz to 20 kHz at no more than 0.03% THD
IM	0.03% at 100 watts
Response	10 Hz to 40 kHz
Sensitivity	2.5 mV (phono); 150 mV (high level) (re 1W)
Overload	250 mV (phono)
S/N	84 dB (phono); 81 dB (tuner); 95 dB (aux)
Phono EQ	30 Hz to 15 kHz, ±0.2 dB
Bass	±10 dB at 70 Hz
Treble	±10 dB at 10 kHz
High filter	6 dB/octave above 10 kHz
Features	Midrange control; DC amplifier; LED power indicators I-lock tuning; touch-tuning lock system; DC amp; LED power display system; PLL dual-gate MOSFET FM; midrange control (± 6 dB at 1 kHz)

NR-519

Price	$240
Dimensions	5 3/5H x 17 4/5W x 17D
Weight	17 lbs. (net)
TUNER	
Sensitivity	12 dBf/15.2 dBf for 65 dB quieting
S/N	70 dB/60 dB
Response	50 Hz to 13 kHz, +0.5, –1 dB (stereo)/50 Hz to 13 kHz, +0.5, –1 dB (mono)
THD	0.3% (1 kHz) (stereo)/0.2% (1 kHz) (mono)
Separation	30 dB, 100 Hz to 10 kHz
Subcarrier	43 dB
Capt. ratio	1.8 dB
Selectivity	55 dB
AMPLIFIER	
Power	20 watts (13 dBW) continuous from 20 Hz to 20 kHz at no more than 0.08% THD
IM	0.08% at 20 watts
Response	10 Hz to 30 kHz
Sensitivity	2.5 mV (phono); 150 mV (high level) (re 1W)
Overload	130 mV (phono)
S/N	80 dB (phono); 70 dB (tuner); 90 dB (aux)
Phono EQ	30 Hz to 15 kHz, ±0.5 dB
Bass	±10 dB at 70 Hz
Treble	±10 dB at 10 kHz
Low filter	6 dB/octave below 20 Hz
Features	Circuit breakers

Models also available

NR-1019, $540; NR-819, $370; NR-719, $330

NYTECH AUDIO LTD.
Import Audio Ltd.
13430 Clayton Rd.
St. Louis, Mo. 63131

CTP-102 Tuner/Preamplifier

Price	$875
Dimensions	4⅝H x 8¼W x 13⅝D
Weight	6 lbs. 10 oz. (net)
TUNER	
S/N	60 dB (mono)
Response	30 Hz to 15 kHz (stereo)
THD	0.02%
Separation	40 dB
AMPLIFIER	
Overload	20 mV (MM); 150 mV (MC)
Features	One-way tape dubbing; output variable up to 2V; may be purchased with either moving-magnet or moving-coil phono input

Models also available

CTA-252XDII, $1,000

ONKYO
Onkyo U.S.A. Corp.
42-07 20th Ave.
Long Island City, N.Y. 11105

TX-7000

Price	$699.95
Dimensions	5¾H x 22⅝W x 18 3/16D
Weight	41 lbs. 12 oz. (net)
TUNER	
Sensitivity	9.8 dBf for 65 dB quieting
S/N	74 dB/68 dB
Response	30 Hz to 15 kHz, ±1.5 dB
THD	0.02% (at rated power)
Separation	40 dB (1 kHz)
Subcarrier	60 dB
Capt. ratio	1.3 dB
Selectivity	70 dB
AMPLIFIER	
Power	90 watts (19.5 dBW) continuous from 20 Hz to 20 kHz at no more than 0.02% THD
IM	0.02% at rated power
Response	10 Hz to 30 kHz, ±1 dB
Sensitivity	2.5 mV (phono); 150 mV (high level)
Overload	200 mV (phono)
S/N	86 dB (phono); 96 dB (aux)
Phono EQ	20 Hz to 20 kHz, ±0.3 dB
Bass	±12 dB at 100 Hz
Treble	±10 dB at 10 kHz
High filter	12 dB/octave above 6 kHz
Low filter	12 dB/octave below 10 Hz (subsonic)
Features	Digital readout; super servo; quartz-locked tuning; midrange control: ±5 dB at 1 kHz

TX-3000

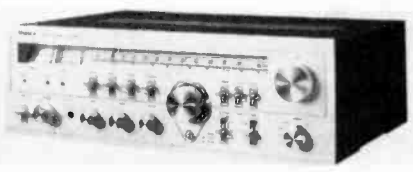
Price	$349.95
Dimensions	5⅛H x 18⅞W x 14 13/16D
Weight	25 lbs. 1 oz. (net)
TUNER	
Sensitivity	11.2 dBf for 65 dB quieting
S/N	70 dB/65 dB
Response	30 Hz to 15 kHz, ±1.5 dB
THD	0.04% (at rated power)
Separation	40 dB at 1 kHz
Subcarrier	40 dB
Capt. ratio	1.5 dB
Selectivity	60 dB
AMPLIFIER	
Power	45 watts (16.5 dBW) continuous from 20 Hz to 20 kHz at no more than 0.04% THD
IM	0.1% at 45 watts
Response	20 Hz to 30 kHz, ±1 dB
Sensitivity	2.5 mV (phono); 150 mV (high level)
Overload	180 mV (phono)
S/N	85 dB (phono); 95 dB (aux)
Phono EQ	20 Hz to 20 kHz, ±0.8 dB
Bass	±12 dB at 100 Hz
Treble	±12 dB at 10 kHz
High filter	6 dB/octave above 6 kHz
Features	Super servo; linear switching; servo-locked tuning

Models also available

TX-5000, $499.95; TX-2000, $254.95

OPTONICA
Sharp Electronics Corp.
10 Keystone Place
Paramus, N.J. 07652

SA-5402



Price	$470
Dimensions	6½H x 19 3/5W x 15 3/10D
Weight	30 lbs. 14 oz. (net)
TUNER	
Sensitivity	13.0 dBf/35.2 dBf
S/N	73 dB/68 dB
Response	35 Hz to 15 kHz, ±1.5 dB/35 Hz to 15 kHz, ±1.5 dB
THD	0.2% (1 kHz)/0.4% (1 kHz)
Separation	31 dB, 50 Hz to 10 kHz
Subcarrier	51 dB
Capt. ratio	1.2 dB
Selectivity	72 dB
AMPLIFIER	
Power	65 watts (18 dBW) continuous from 20 Hz to 20 kHz at no more than 0.035% THD
IM	0.01% at 65 watts
Response	10 Hz to 55 kHz, ±1.5 dB
Sensitivity	2.5 mV (phono); 150 mV (high level)
Overload	240 mV (phono)
S/N	76 dB (phono); 98 dB (aux)
Phono EQ	30 Hz to 20 kHz, ±0.3 dB
Bass	±10 dB at 100 Hz
Treble	±10 dB at 10 kHz
High filter	6 dB/octave above 7 kHz
Low filter	12 dB/octave below 30 Hz
Features	Five-way power protection; Opto-lock tuning; 2 phono inputs; 2-way tape dubbing; high blend; FM muting; 20 dB muting; air check calibrator

Models also available

SA-5202, $360; SA-5101, $260

PHILIPS
Philips High Fidelity Laboratories
Interstate 40 & Straw Plains Pike
P.O. Box 6960
Knoxville, Tenn. 37914

AH-797

Price	$399.95
Dimensions	6H x 20¾W x 15½D
Weight	35 lbs. (net)
TUNER	
Sensitivity	2.8 mV/30 mV
S/N	70 dB/65 dB
Response	15 Hz to 30 kHz, ±0.5 dB
THD	0.13%/0.15% (1 kHz)
Separation	45 dB (1 kHz)
Capt. ratio	1.6 dB
Selectivity	100 dB
AMPLIFIER	
Power	60 watts (17.75 dBW) continuous from 20 Hz to 20 kHz at no more than 0.03% THD
IM	0.04% at 60 watts
Response	15 Hz to 30 kHz, ±0.5 dB
Sensitivity	2.5 mV (phono); 150 mV (high level)
Overload	210 mV (phono)
S/N	70 dB (phono); 70 dB (tuner); 90 dB (aux)
Phono EQ	30 Hz to 15 kHz, ±0.5 dB
Bass	±10 dB at 50 Hz
Treble	±10 dB at 10 kHz
High filter	8 dB/octave above 10 kHz
Low filter	8 dB/octave below 50 Hz
Features	Also available in black as AH-7971; features translent muting; tape monitoring and dubbing; 6-speaker capability; ASNC circuitry tape monitoring and dubbing; six-speaker capability; ASNC circuitry

AH-794

Price	$199.95
Dimensions	5½H x 17¼W x 13¼D
Weight	21 lbs. (net)
TUNER	
Sensitivity	4 μV/50 μV
S/N	70 dB/70 dB
Response	20 Hz to 20 kHz, ±0.5 dB
THD	0.2%/0.3% (1 kHz)
Separation	42 dB (1 kHz)
Capt. ratio	1.8 dB
Selectivity	90 dB
AMPLIFIER	
Power	20 watts (13 dBW) continuous from 20 Hz to 20 kHz at no more than 0.08% THD
IM	0.07% at 20 watts
Response	20 Hz to 20 kHz, ±0.5 dB
Sensitivity	2.3 mV (phono); 30 mV (high level)
Overload	150 mV (phono)
S/N	70 dB (phono); 70 dB (tuner); 90 dB (aux)
Phono EQ	30 Hz to 15 kHz, ±0.5 dB
Bass	±15 dB at 50 Hz
Treble	±14 dB at 10 kHz
Features	Also available in black as AH-7941; transient muting; tape monitor; 4-speaker capability

Models also available

AH-796, $329.95; AH-795, $239.95

PIONEER
U. S. Pioneer Electronics Corp.
85 Oxford Drive
Moonachie, N.J. 07074

SX-3800

Price	$500
Dimensions	6 7/16H x 19 15/16W x 17 1/16D
Weight	35 lbs. 8 oz. (net)
TUNER	
Sensitivity	16.2 dBf/37 dBf
S/N	83 dB/78 dB
Response	20 Hz to 15 kHz, +0.2, -1.2 dB
THD	0.1% (100 Hz)
Separation	45 dB (1 kHz)
Subcarrier	50 dB
Capt. ratio	1 dB
Selectivity	75 dB
AMPLIFIER	
Power	60 watts (17.75 dBW) continuous from 20 Hz to 20 kHz at no more than 0.005% THD
IM	0.005% at 30 watts
Response	5 Hz to 200 kHz, +0, -3 dB
Sensitivity	2.5 mV (phono)
Overload	250 mV (phono)
S/N	115 dB (phono)
Bass	±4 dB at 100 Hz
Treble	±9 dB at 10 kHz
Low filter	6 dB/octave below 15 Hz
Features	Non-switching amp; quartz-lock tuning; Fluroscan meter

SX-780

Price	$375
Dimensions	5½H x 18⅞W x 12⅝D
Weight	24 lbs. 12 oz. (net)
TUNER	
Sensitivity	16.2 dBf/37 dBf
S/N	80 dB/72 dB
Response	30 Hz to 15 kHz, +0.2, -0.8 dB (mono)
THD	0.07%/0.15% (1 kHz)
Separation	35 dB, 30 Hz to 15 kHz
Subcarrier	55 dB
Capt. ratio	1 dB
Selectivity	75 dB
AMPLIFIER	
Power	45 watts (16.5 dBW) continuous from 20 Hz to 20 kHz at no more than 0.05% THD
IM	0.05% at 45 watts
Response	5 Hz to 80 kHz, ±1 dB
Sensitivity	2.5 mV (phono); 150 mV (high level)
Overload	200 mV (phono)
S/N	76 dB (phono); 80 dB (tuner); 95 dB (aux)
Phono EQ	20 Hz to 20 kHz, ±0.2 dB
Bass	+8, -7 dB at 100 Hz
Treble	+7, -6 dB at 10 kHz
High filter	6 dB/octave
Low filter	6 dB/octave below 15 Hz
Features	DC power amp; twin power meters

SX-3600

Price	$275
Dimensions	5 9/16H x 17 11/16W x 12 1/16D
Weight	18 lbs.
TUNER	
Sensitivity	16.1 dBf
S/N	78 dB/72 dB
Response	20 Hz to 15 kHz, +0.5, -1 dB
THD	0.1% (1 kHz)
Separation	40 dB
Subcarrier	40 dB
Capt. ratio	1 dB
Selectivity	60 dB
AMPLIFIER	
Power	30 watts (14.75 dBW) continuous from 20 Hz to 20 kHz at no more than 0.05% THD
IM	0.05%
Response	30 Hz to 15 kHz, ±0.3 dB
Sensitivity	2.5 mV (phono)
Overload	140 mV (phono)
S/N	76 dB (phono); 96 dB (aux)
Bass	±8 dB at 100 Hz
Treble	±8 dB at 10 kHz
Features	Low-noise equalizer; LED indicators; Fluroscan meter

Models also available

SX-3900, $800; SX-3700, $375; SX-680, $300; SX-580, $250; SX-3500, $225; SX-3400, $175

REALISTIC
Radio Shack Corp.
1400 One Tandy Center
Ft. Worth, Texas 76102

STA-2200

Price	$599.95
Dimensions	6½H x 18⅞W x 15¾D
TUNER	
Sensitivity	16.5 dBf for 65 dB quieting
S/N	68 dB
Response	20 Hz to 15 kHz, ±0.5 dB (stereo)
THD	0.3%
Separation	48 dB (1 kHz)
Subcarrier	60 dB
Capt. ratio	1.5 dB
Selectivity	68 dB
AMPLIFIER	
Power	60 watts (17.75 dBW) continuous from 20 Hz to 20 kHz at no more than 0.02% THD
IM	0.01% at 42 watts
Response	10 Hz to 85 kHz, ±2 dB
Sensitivity	2.2 mV (phono); 160 mV (high level)
Overload	200 mV (phono)
S/N	85 dB (phono); 99 dB (aux)
Bass	±10 dB at 50 or 100 Hz

Treble	±10 dB at 10 or 20 kHz
Features	MOSFET power output transistors; digital synthesized tuner; 6-station memory; digital clock; Dolby FM

STA-960

Price	$400
Dimensions	5⅞H x 19¼W x 14½D
TUNER	
Sensitivity	11.2 dBf for 65 dB quieting
S/N	65 dB
THD	0.4% (1 kHz) (stereo)
Separation	45 dB (1 kHz)
Capt. ratio	2 dB
Selectivity	50 dB
AMPLIFIER	
Power	50 watts (17 dBW) continuous from 20 Hz to 20 kHz at no more than 0.05% THD
IM	0.04% at 30 watts
Response	30 Hz to 20 kHz, ±1 dB
Sensitivity	2.5 mV (phono); 160 mV (high level) (re 1W)
Overload	150 mV (phono)
S/N	86 dB (phono); 99 dB (aux)
Phono EQ	Flat to 15 kHz, ±0.5 dB
Bass	±10 dB at 100 Hz
Treble	±10 dB at 10 kHz

STA-720

Price	$300
Dimensions	3⅛H x 16½W x 12¼D
TUNER	
Sensitivity	12.1 dBf for 65 dB quieting
S/N	70 dB
Separation	40 dB (1 kHz)
Capt. ratio	1 dB
Selectivity	65 dB
AMPLIFIER	
Power	25 watts (14 dBW) continuous from 20 Hz to 20 kHz at no more than 0.05% THD
IM	0.03% at 20 watts
Response	20 Hz to 20 kHz, ±1 dB
Sensitivity	2.5 mV (phono); 160 mV (high level) (re 1W)
Overload	140 mV (phono)
S/N	81 dB (phono); 70 dB (tuner); 93 dB (aux)
Phono EQ	Flat to 15 kHz, ±1 dB
Bass	±10 dB at 100 Hz
Treble	±10 dB at 10 kHz
Features	Digital readout tuning; LED signal level; LED function indicators

STA-530

Price	$200
Dimensions	5½H x 17⅜W x 12D
TUNER	
Sensitivity	11.25 dBf for 65 dB quieting
S/N	67 dB
Response	Flat to 15 kHz
THD	0.6% (1 kHz) (stereo)/0.5% (mono)
Separation	38 dB (1 kHz)
Subcarrier	67 dB
Capt. ratio	2 dB
Selectivity	70 dB
AMPLIFIER	
Power	16 watts (12 dBW) continuous from 20 Hz to 20 kHz at no more than 0.06% THD
Response	15 Hz to 25 kHz, ±2 dB
Sensitivity	2.2 mV (phono); 120 mV (high level) (re 1W)
Overload	130 mV (phono)
S/N	87 dB (phono); 67 dB (tuner); 75 dB (aux)
Phono EQ	Flat to 15 kHz, ±1 dB
Bass	±10 dB at 100 Hz
Treble	±10 dB at 10 kHz

Models also available

STA-2100D, $699.95; STA-2080, $500; STA-2250, $420; STA-820, $359.95; STA-11, $320; STA-100, $280; STA-7, $179.95; STA-430, $160; STA-2250, $420

REFERENCE
CBS Retail Stores
1313 53rd St.
Emeryville, Calif. 94608

450R

Price	$390
Dimensions	6H x 18½W x 13¾D
Weight	29 lbs. 8 oz. (net)
TUNER	
Sensitivity	13.5 dBf/35.9 dBf
S/N	72 dB
Response	30 Hz to 15 kHz, ±0.5 dB (mono)
THD	0.1%/0.15% (1 kHz)
Separation	44 dB, 100 Hz to 10 kHz
Subcarrier	55 dB
Capt. ratio	1.2 dB
Selectivity	70 dB
AMPLIFIER	
Power	45 watts (16.5 dBW) continuous from 20 Hz to 20 kHz at no more than 0.1% THD
IM	0.04% at 1 watt
Response	10 Hz to 50 kHz, ±0.5 dB
Sensitivity	2.0 mV (phono); 160 mV (high level)
Overload	200 mV (phono)
S/N	75 dB (phono); 72 dB (tuner); 80 dB (aux)
Phono EQ	30 Hz to 15 kHz, ±0.4 dB
Bass	±10 dB at 50 Hz and 100 Hz
Treble	±10 dB at 10 kHz and 20 kHz
High filter	6 dB/octave above 7 kHz
Features	Presence control; 4-tone turnovers; LED power display; pilot-canceling IC

240R

Price	$270
Dimensions	5¾H x 16¾W x 11¼D
Weight	21 lbs. (net)
TUNER	
Sensitivity	14.2 dBf/36.4 dBf
S/N	70 dB
Response	30 Hz to 15 kHz, ±0.5 dB
THD	0.22%/0.45% (1 kHz)
Separation	40 dB, 100 Hz to 10 kHz
Subcarrier	55 dB
Capt. ratio	1.9 dB
Selectivity	68 dB
AMPLIFIER	
Power	24 watts (13.75 dBW) continuous from 20 Hz to 20 kHz at no more than 0.15% THD
IM	0.05% at 1 watt
Response	20 Hz to 30 kHz, ±0.5 dB
Sensitivity	2 mV (phono); 220 mV (high level)
Overload	120 mV (phono)
S/N	72 dB (phono); 70 dB (tuner); 78 dB (aux)
Phono EQ	30 Hz to 15 kHz, ±0.5 dB
Bass	±10 dB at 100 Hz
Treble	±10 dB at 10 kHz
High filter	6 dB/octave above 10 kHz
Features	Two tape monitors; LED overload indicator

Models also available

650 FETR, $480; 300R, $320; 180R, $230

REVOX
Studer/Revox America, Inc.
1425 Elm Hill Pike
Nashville, Tenn. 37210

B-780

Price	$2,699
Dimensions	6H x 17 4/5W x 16½D
Weight	37 lbs. 8 oz. (net)
TUNER	
Sensitivity	13.2 dBf/34.8 dBf for 50 dB quieting
S/N	78 dB/74 dB
Response	30 Hz to 15 kHz, ±1 dB (stereo)/ 30 Hz to 15 kHz, ±1 dB (mono)
THD	0.25% (1 kHz) (stereo)/0.1% (1 kHz) (mono)
Separation	42 dB (1 kHz)
Subcarrier	72 dB
Capt. ratio	2 dB
Selectivity	78 dB
AMPLIFIER	
Power	70 watts (18.5 dBW) continuous from 20 Hz to 20 kHz at no more than 0.05% THD
IM	0.03% at 70 watts
Response	20 Hz to 20 kHz, +0, –0.7 dB
Sensitivity	3 mV (phono); 150 mV (high level) (re 70W)
Overload	Greater than 30 dB (phono or aux)
S/N	82 dB (phono); 90 dB (tuner); 90 dB (aux) (unweighted re 70W at 8 ohms)
Phono EQ	20 Hz to 20 kHz, ±0.5 dB
Bass	±8 dB at 120 Hz
Treble	±8 dB at 8 kHz
High filter	12 dB/octave above 8 kHz
Low filter	12 dB/octave below 50 Hz
Features	Digital synthesis tuning (25 kHz increments) with 18-station memory and last-station recall; independent 2-deck, 2-way dubbing record selector; pre-main jacks; calibrated signal-strength meter; presence control: ±8 dB at 3 kHz

ROTEL
Rotel of America, Inc.
1055 Saw Mill River Road
Ardsley, N.Y. 10502

RX-2001

Price	$750
Dimensions	6H x 19¼W x 13¾D
TUNER	
Sensitivity	9.3 dBf/36 dBf
S/N	75 dB/70 dB
Response	30 Hz to 15 kHz, ±0.5 dB
THD	0.02% (20 Hz to 20 kHz)
Separation	40 dB (1 kHz)
Subcarrier	75 dB
Capt. ratio	1.5 dB
Selectivity	75 dB
AMPLIFIER	
Power	65 watts (18.5 dBW) continuous at no more than 0.02% THD
IM	0.03% at 95 watts
Response	5 Hz to 100 kHz, ±0.3 dB
Sensitivity	2.5 mV (phono); 150 mV (high level)
Overload	350 mV (phono)
S/N	75 dB (phono); 95 dB (tuner); 95 dB (aux)
Phono EQ	30 Hz to 15 kHz, ±0.2 dB
Bass	±10 dB at 25 Hz
Treble	±10 dB at 20 kHz
High filter	12 dB/octave above 8 kHz
Low filter	12 dB/octave below 15 Hz
Features	FM PLL MPX; LED peak indicator; digital station readout; audio muting: −15 dB; full tape dubbing; FM de-emphasis switch for Dolby 25 ms; built-in moving-coil head amp; rack-mount design; DC NF phono equalization and NF tone-control amp

RX-1010

Price	$570
Dimensions	5H x 17W x 12D
Weight	23 lbs. (net)
TUNER	
Sensitivity	10.8 dBf
S/N	75 dB/73 dB
Response	30 Hz to 15 kHz, ±0.5 dB (stereo)
THD	0.01% (stereo)
Separation	40 dB, 100 Hz to 10 kHz
Subcarrier	40 dB
Capt. ratio	1.2 dB
AMPLIFIER	
Power	60 watts (17 dBW)
IM	0.02%
Sensitivity	2.5 mV (phono)
Overload	320 mV (phono)
S/N	76 dB (phono); 98 dB (tuner); 98 dB (aux)
Features	Quartz-PLL synthesized; 7-station preset with memory; auto/manual scan with temp. hold; LED station readout; hi-blend; multipath; muting; tape dubbing; slimline design

RX-504

Price	$350
Dimensions	5H x 17W x 13D
Weight	20 lbs. (net)
TUNER	
Sensitivity	15.5 dBf/37 dBf
S/N	70 dB/65 dB
Response	30 Hz to 15 kHz, +1, −3 dB
THD	0.04%
Separation	45 dB (1 kHz)
Subcarrier	60 dB
Capt. ratio	1.5 dB
Selectivity	50 dB
AMPLIFIER	
Power	40 watts (16 dBW) continuous from 20 Hz to 20 kHz at no more than 0.04% THD
IM	0.05% at 40 watts
Sensitivity	2.5 mV (phono); 150 mV (high level)
Overload	180 mV (phono)
S/N	70 dB (phono); 85 dB (tuner); 88 dB (aux)
Phono EQ	30 Hz to 15 kHz
Bass	±10 dB at 25 Hz
Treble	±10 dB at 20 kHz
Low filter	12 dB/octave below 15 Hz
Features	Dual power meters; dual function tuning meter

RX-404

Price	$290
Dimensions	5H x 17W x 12D
Weight	16 lbs. (net)
TUNER	
Sensitivity	16 dBf/37.7 dBf
S/N	70 dB/65 dB
Response	30 Hz to 15 kHz, +1, −3 dB
THD	0.06%
Separation	40 dB (1 kHz)
Subcarrier	55 dB
Capt. ratio	2 dB
Selectivity	50 dB
AMPLIFIER	
Power	30 watts (14.75 dBW) continuous from 20 Hz to 20 kHz at no more than 0.06% THD
IM	0.1% at 30 watts
Response	30 Hz to 15 kHz, +1, −3 dB
Sensitivity	2.5 mV (phono); 150 mV (high level)
Overload	150 mV (phono)
S/N	68 dB (phono); 85 dB (tuner); 85 dB (aux)
Phono EQ	30 Hz to 15 kHz
Bass	±10 dB at 25 Hz
Treble	±10 dB at 20 kHz
Low filter	12 dB/octave below 15 Hz
Features	Right and left channel power meters; dual function signal-strength meters

Models also available

RX-2002, $850; RX-604, $400; RX-1000, $300

SAE TWO
Scientific Audio Electronics, Inc.
701 East Macy St.
Los Angeles, Calif. 90012

R-18

Price	$1,500
Dimensions	6½H x 22W x 18D
Weight	55 lbs.
TUNER	
Sensitivity	17.3 dBf/34.7 dBf
S/N	76 dB/70 dB
Response	30 Hz to 15 kHz, +0.5, −2 dB/30 Hz to 15 kHz, +0.5, −2 dB
THD	0.08% (1 kHz)/0.15% (1 kHz)
Separation	40 dB, 50 Hz to 15 kHz
Subcarrier	65 dB
Capt. ratio	1 dB
Selectivity	70 dB
AMPLIFIER	
Power	180 watts (22.5 dBW) continuous from 20 Hz to 20 kHz at no more than 0.05% THD
IM	0.05% at 180 watts
Response	20 Hz to 20 kHz, ±0.5 dB
Sensitivity	2.5 mV (phono); 150 mV (high level)
Overload	150 to 300 mV (phono)
S/N	94 dB (phono); 100 dB (aux)
Phono EQ	20 Hz to 20 kHz, ±0.5 dB
Low filter	6 dB/octave below 30 Hz
Features	Digital readout; quartz-lock touch tuning; parametric equalizer; 5-station AM/FM memory; bar-graph display of signal strength, multipath, tape out, and power

R-6

Price	$675
Dimensions	5¼H x 18¼W x 17 3/5D
Weight	30 lbs.
TUNER	
Sensitivity	17.3 dBf/37.3 dBf
S/N	72 dB/63 dB
Response	30 Hz to 15 kHz, +1, −2 dB (mono and stereo)
THD	0.15% (1 kHz)/0.25% (1 kHz)
Separation	40 dB, 100 Hz to 10 kHz
Subcarrier	60 dB
Capt. ratio	2 dB
Selectivity	65 dB
AMPLIFIER	
Power	60 watts (17.75 dBW) continuous from 20 Hz to 20 kHz at no more than 0.05% THD
IM	0.05% at 60 watts
Response	20 Hz to 20 kHz, ±0.5 dB
Sensitivity	2.5 mV (phono); 150 mV (high level)
Overload	200 mV (phono)
S/N	86 dB (phono); 95 dB (aux)
Phono EQ	20 Hz to 20 kHz, ±0.5 dB
Bass	±10 dB at 100 Hz
Treble	±10 dB at 10 kHz
Low filter	6 dB/octave below 30 Hz
Features	Digital readout; midrange control: ±10 dB at 1 kHz; quartz-lock tuning; bar-graph display of signal strength, multipath, tape output, and power

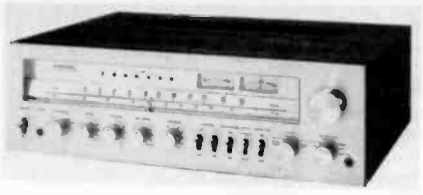
Models also available

R-12, $1,200; R-9, $850

SAMSUNG
Samsung Electronics America, Inc.
2707 Butterfield Road, Suite 270
Oak Brook, Ill. 60521

SS-3500

Price	$339.95
Dimensions	5½H x 18⅞W x 14⅛D
Weight	32 lbs. (net)
TUNER	
Sensitivity	10.3 dBf/17.2 dBf for 65 dB quieting
S/N	65 dB/60 dB



Response	20 Hz to 15 kHz, ±1.5 dB (stereo)
THD	0.4% (stereo)/0.2% (mono)
Separation	45 dB (1 kHz)
Subcarrier	50 dB
Capt. ratio	1 dB
Selectivity	65 dB
AMPLIFIER	
Power	45 watts (16.5 dBW) continuous from 20 Hz to 20 kHz at no more than 0.05% THD
IM	0.05% at 45 watts
Response	20 Hz to 20 kHz, ±0.5 dB
Sensitivity	2.5 mV (phono); 150 mV (high level) (re 1W)
Overload	150 mV (phono)
S/N	85 dB (phono); 90 dB (aux) (IHF A-weighted)
Phono EQ	20 Hz to 20 kHz, ±0.5 dB
Bass	±10 dB at 100 Hz
Treble	±10 dB at 10 kHz
High filter	9 dB/octave above 6 kHz
Low filter	9 dB/octave below 60 Hz

Features MOSFET FM front end; 5 FM IF stages with 3 ceramic filters; automatic speaker protection circuit; 2 tape monitors with 2-way dubbing; 2 phono inputs; mike input; 6 function LED indicators signal-strength meter; FM center-tuning meter; mono-stereo mode switch; A,B, A+B speaker selection; headphone jack; FM mute switch; walnut-vinyl cabinet; separable amp and preamp

Models also available

SS-3350, $239.95

SANSUI
Sansui Electronics Corp.
1250 Valley Brook Ave.
Lyndhurst, N.J. 07071

G-7700

Price	$800
Dimensions	7 3/16H x 19 15/16W x 16⅝D
Weight	39 lbs. 11 oz. (net)
TUNER	
Sensitivity	14 dBf/36 dBf
S/N	76 dB/71 dB
Response	30 Hz to 15 kHz, +0.5, −1 dB/30 Hz to 15 kHz, +0.5, −1 dB
THD	0.1% (1 kHz)/0.15 (1 kHz)
Separation	42 dB (1 kHz)
Subcarrier	40 dB
Capt. ratio	1 dB
Selectivity	70 dB
AMPLIFIER	
Power	120 watts (20.75 dBW) continuous from 20 Hz to 20 kHz at no more than 0.025% THD
IM	0.025% at 120 watts
Response	DC to 200 kHz, +0, −3 dB
Sensitivity	2.5 mV (phono); 150 mV (hign level)
Overload	250 mV (phono)
S/N	78 dB (phono); 95 dB (tuner); 95 dB (aux)
Phono EQ	20 Hz to 20 kHz, ±0.2 dB
Bass	±10 dB at 50 Hz
Treble	±10 dB at 10 kHz
High filter	6 dB/octave above 10 kHz
Low filter	6 dB/octave below 16 Hz

Features Patented digitally quartz-locked tuning system; 15-segment peak-power level LED display; Dolby FM de-emphasis; 2 phono inputs; 2 tape inputs; 2-system speaker; mike mixing input; slew rate: 60 volts μs; 1.4μs microsecond rise time

5900Z

Price	$600
Dimensions	5 7/16H x 19⅛W x 12⅜D
Weight	20 lbs. 14 oz. (net)
TUNER	
Sensitivity	15 dBf/37 dBf for 50 dB quieting
S/N	76 dB/70 dB at 65 dBf
Response	30 Hz to 15 kHz, +0.5, −1 dB (stereo)/30 Hz to 15 kHz, +0.5, −1 dB (mono)
THD	0.18% (1 kHz) (stereo)/0.15% (1 kHz) (mono)
Separation	40 dB at 1 kHz
Subcarrier	30 dB
Capt. ratio	1 dB
Selectivity	60 dB
AMPLIFIER	
Power	75 watts (18.75 dBW) continuous from 20 Hz to 20 kHz at no more than 0.03% THD
IM	0.03% at 75 watts
Response	5 Hz to 100 kHz, +0, −3 dB
Sensitivity	2.5 mV (phono); 150 mV (high level) (re 1W)
Overload	180 mV (phono)
S/N	80 dB (phono); 95 dB (aux) (A-weighted)
Phono EQ	20 Hz to 20 kHz, ±0.2 dB
Bass	±10 dB at 50 Hz
Treble	±10 dB at 10 kHz
High filter	6 dB/octave above 5 kHz

Features Digital synthesizer tuner; DC-servo power amp; digital/analog tuning display; LED power-level display; 6 AM/6 FM station presets; touch volume control and tuning; LED signal-strength indicator; 2 muting levels; 2-system speaker selector

R-50

Price	$300
Dimensions	5 13/16H x 16 15/16W x 9 15/16D
Weight	14 lbs. 12 oz. (net)
TUNER	
Sensitivity	17 dBf/38 dBf for 50 dB quieting
S/N	72 dB/67 dB
Response	30 Hz to 15 kHz, +2, −3 dB (stereo)/30 Hz to 15 kHz, +2, −3 dB (mono)
THD	0.8% (1 kHz) (stereo)/0.5% (1 kHz) (mono)
Separation	35 dB at 1 kHz
Capt. ratio	1 dB
Selectivity	55 dB
AMPLIFIER	
Power	45 watts (16.5 dBW) continuous from 30 Hz to 20 kHz at no more than 0.09% THD
IM	0.09% at 45 watts
Response	10 Hz to 50 kHz, +1, −3 dB
Sensitivity	2.5 mV (phono); 150 mV (high level) (re 1W)
Overload	100 mV (phono)
S/N	73 dB (phono); 90 dB (aux) (A-weighted)
Phono EQ	30 Hz to 15 kHz, +1, −3 dB

Features LED peak power/signal strength/center-tune displays; 2-way tape dubbing and 2-system speaker select; switchable FM muting; hi-cut filter; loudness control

Models also available

G-9700, $1,100; G-6700, $730; 4900Z, $490; R-70, $400; 3900, $390; R-30, $230

SANYO
Sanyo Electric Co.
1200 W. Artesia Blvd.
Compton, Calif. 90220

2050

Price	$349.95
Dimensions	5¼H x 17¼W x 10⅝D
TUNER	
S/N	75 dB/70 dB
Response	10 Hz to 40 kHz, ±0.2 dB
THD	0.2% at 1 kHz
Separation	45 dB (1 kHz)
Capt. ratio	1.5 dB
Selectivity	70 dB
AMPLIFIER	
Power	50 watts (17 dBW) continuous from 20 Hz to 20 kHz at no more than 0.04% THD
Response	10 Hz to 40 kHz, ±0.2 dB
Sensitivity	2.5/150 mV (phono)
Overload	2.5/150 mV (phono)
S/N	78 dB (phono); 70 dB (tuner); 95 dB (aux)
High filter	6 dB/octave above 8 kHz
Low filter	6 dB/octave below 30 Hz

Features Sampling quartz-locked tuner circuitry; dual tuning meters; dual-gate MOSFET RF amplifier; combined muting/mode switch; two tape deck inputs with dubbing; hybrid IC power stage; 4-way output protection

PLUS SERIES

PLUS 200

Price	$999.95
TUNER	
Sensitivity	13.5 dBf/36.3 dBf
S/N	83 dB/78 dB
Response	20 Hz to 15 kHz, +0.5, −1 dB
THD	0.15% (100 Hz)/0.3% (100 Hz)
Separation	35/45 dB, 1 kHz to 10 kHz
Capt. ratio	1.8 dB
AMPLIFIER	
Power	400 watts (26 dBW) continuous from 20 Hz to 20 kHz at no more than 0.009% THD
Response	7 Hz to 100 kHz, +0, −1 dB
Sensitivity	2.5 mV (phono); 150 mV (high level)
Overload	250 mV (phono)
S/N	97 dB (phono); 83 dB (tuner); 95 dB (aux)
Bass	±10 dB at 100 Hz

Treble	±10 dB at 10 kHz
High filter	6 dB/octave above 8 kHz

Features Sampling quartz-locked tuning system; separate tuner/preamp and power amp sections; digital-plus-analog and digital frequency display; ring emitter transistors in output stage for ultra-high 170V/μs slew rate; selectable wide/narrow IF bandwidth; preamp for moving-coil phono cartridges; peak-power indicators with 12 LEDs per channel; selectable FM de-emphasis for Dolby decoding; separate tape monitor and dubbing switches for bidirectional tape copying while monitoring another source

PLUS 75

Price	$609.95
Dimensions	5¼H x 18⅞W x 11½D
TUNER	
Sensitivity	13.7 dBf/37 dBf
S/N	75 dB/70 dB
Response	20 Hz to 15 kHz, +1, −2 dB
THD	0.2% (100 Hz)/0.35% (100 Hz)
Separation	45 dB, 1 kHz to 10 kHz
Capt. ratio	1.2 dB
Selectivity	75 dB
AMPLIFIER	
Power	150 watts (21.75 dBW) continuous from 20 Hz to 20 kHz at no more than 0.03% THD
IM	0.03% (60 Hz and 7 kHz)
Response	7 Hz to 100 kHz, +0, −1 dB
Sensitivity	2.5 mV (phono); 150 mV (high level)
Overload	200 mV (phono)
S/N	97 dB (phono); 45 dB (tuner); 95 dB (aux)
Bass	±10 dB at 100 Hz
Treble	±10 dB at 10 kHz
High filter	6 dB/octave above 8 kHz
Low filter	12 dB/octave below 30 Hz

Features Sampling quartz-locked tuning system; LED signal indicators; dual-gate MOSFET RF amplifier; advanced IF design; switchable FM muting; Dolby FM de-emphasis switch; phono preamplifier with moving-coil cartridge capability; 3-band discrete tone equalizer with defeat; LED power indicators

Models also available

2033, $319.95; 2016, $219.95; PLUS 130, $829.95; PLUS 55, $449.95

SCOTT
H. H. Scott, Inc.
20 Commerce Way
Woburn, Mass. 01801

380R

Price	$600
Dimensions	6H x 20¾W x 13¾D
Weight	38 lbs. (net)
TUNER	
Sensitivity	15.6 dBf/35.6 dBf
S/N	80 dB/75 dB
Response	25 Hz to 15 kHz, ±2 dB (mono)
THD	0.1% (mono)
Separation	50 dB (1 kHz)
Subcarrier	74 dB
Capt. ratio	1 dB
Selectivity	80 dB
AMPLIFIER	
Power	85 watts (19.25 dBW) continuous from 20 Hz to 20 kHz at no more than 0.03% THD
IM	0.03% at 85 watts
Response	10 Hz to 40 kHz, ±1 dB
Sensitivity	2.5 mV (phono); 5 mV (high level)
Overload	300/600 mV (phono)
S/N	90 dB (phono); 95 dB (tuner); 95 dB (aux)
Phono EQ	20 Hz to 20 kHz, ±0.5 dB
Bass	±10 dB at 100 Hz
Treble	±10 dB at 10 kHz
High filter	12 dB/octave above 8 kHz and 12 kHz
Low filter	12 dB/octave below 18 Hz and 40 Hz

Features Switchable voltage; bass/mid-drange/treble tone controls; active filters; 2 phono inputs; power meters

375R

Price	$459.95
TUNER	
Response	20 Hz to 15 kHz, ±2 dB (stereo)
THD	0.2% (stereo)/0.1% (mono)
Separation	50 dB (1 kHz)
Capt. ratio	1.2 dB
Selectivity	72 dB (FM)/45 dB (AM)
AMPLIFIER	
Power	65 watts (18 dBW) continuous into 8 ohms from 20 Hz to 20 kHz at no more than 0.05% THD
IM	0.05%
Response	10 Hz to 40 kHz, ±0.7 dB
Sensitivity	2.5 mV (phono)
Overload	200 mV (phono)
S/N	75 dB (phono)
Phono EQ	20 Hz to 20 kHz, ±0.7 dB
Bass	±10 dB at 100 Hz
Treble	±10 dB at 10 kHz
High filter	6 dB/octave above 9 kHz
Low filter	12 dB/octave below 18 Hz

Features Dual fluorescent wide-range output power-level meters calibrated in watts and dBW; fluorescent display for center-channel, signal-strength, and stereo indicator; fluorescent digital frequency readout; LED safety protection indication; high and subsonic filters; full DC designed OCL power amplifier with fully complementary output stages

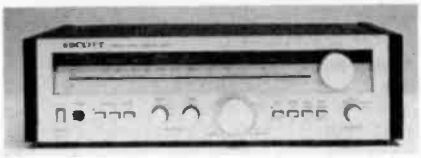
355R

Price	$379.95
TUNER	
S/N	71 dB/66 dB
Response	20 Hz to 15 kHz, ±2 dB (stereo)
THD	0.3% (stereo)/0.15% (mono)
Separation	50 dB (1 kHz)
Capt. ratio	1.5 dB
Selectivity	65 dB (FM)/45 dB (AM)
AMPLIFIER	
Power	45 watts (16.5 dBW) continuous into 8 ohms from 20 Hz to 20 kHz at no more than 0.08% THD
IM	0.08% at 45 watts
Response	10 Hz to 40 kHz, ±0.8 dB
Sensitivity	25 mV (phono) (re 1W)
Overload	180 mV (phono)
S/N	75 dB (phono)
Phono EQ	20 Hz to 20 kHz, ±0.8 dB
Bass	±10 dB at 100 Hz
Treble	±10 dB at 10 kHz
High filter	6 dB/octave above 9 kHz
Low filter	12 dB/octave below 18 Hz

Features Dual fluorescent wide-range output power-level meters calibrated in watts and dBW; 5-LED digital IC controlled signal-strength indicator; 3-LED center-tuning indicators on dial pointer; LED safety-protection indicator; LED stereo indicator; 2 tape monitors; high and subsonic filters; bass/mid-drange/treble tone controls; full DC designed OCL power amplifier with fully complementary output stages

335R

Price	$279.95
Dimensions	5H x 18W x 10½D
TUNER	
S/N	70 dB/65 dB
Response	30 Hz to 15 kHz, ±2 dB (stereo)



THD	0.3% (stereo)/0.15% (mono) (at 65 dBf)
Separation	45 dB (1 kHz)
Capt. ratio	1.5 dB
Selectivity	45 dB (AM)
AMPLIFIER	
Power	27 watts (14.25 dBW) continuous into 8 ohms from 20 Hz to 20 kHz at no more than 0.08% THD
IM	0.08% at 27 watts
Response	10 Hz to 40 kHz, ±1 dB
Sensitivity	2.5 mV (phono) (re 1W)
Overload	150 mV (phono)
S/N	75 dB (phono)
Phono EQ	20 Hz to 20 kHz, ±1 dB
Bass	±10 dB at 100 Hz
Treble	±10 dB at 10 kHz
Low filter	12 dB/octave below 18 Hz

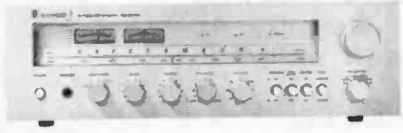
Features 12-LED logarithmic output-power indicator; 5-LED digital IC-controlled signal-strength indicator; 3-LED center-tuning indicator on dial pointer; LED stereo indicator; subsonic filter; full DC-designed OCL power amplifier with fully complementary output stages

Models also available

390R, $775; 370R, $500; 350R, $400; 330R, $280; 325R, $229.95

SHERWOOD
Sherwood
2318 E. Del Amo Blvd.
Carson, Calif. 90745

S-7450CP



Price	$350
Dimensions	5 11/16H x 18W x 14D
Weight	22 lbs. (net)
TUNER	
Sensitivity	10.33 dBf/1.8 μV (IHF)
S/N	66 dB/70 dB
Response	20 Hz to 15 kHz, +1, −1.5 dB (mono and stereo)
THD	0.15% (1 kHz)/0.25% (1 kHz)
Separation	30 dB, 20 Hz to 10 kHz
Subcarrier	50 dB
Capt. ratio	1 dB
Selectivity	60 dB
AMPLIFIER	
Power	35 watts (15.5 dBW) continuous from 20 Hz to 20 kHz at no more than 0.2% THD
IM	0.2% at 30 watts
Response	30 Hz to 20 kHz, ±0.5 dB
Sensitivity	2.5 mV (phono); 160 mV (high level)
Overload	140 mV (phono)

S/N	92 dB (phono); 70 dB (tuner); 95 dB (aux)
Phono EQ	30 Hz to 20 kHz, ±0.5 dB
Bass	±14 dB at 50 Hz
Treble	±12 dB at 15 kHz
High filter	12 dB/octave above 7 kHz
Features	Certified performance: notarized certificate with each unit shows exact performance; linear-phase IF; built-in infrasonic filter; detented tone and balance controls

S-7150CP

Price	$230
Dimensions	5⅜H x 17W x 12⅜D
Weight	18 lbs. (net)
TUNER	
Sensitivity	10.8 dBf/ 1.9 μV (IHF)
S/N	66 dB/70 dB
Response	20 Hz to 15 kHz, +1, -2 dB (mono and stereo)
THD	0.15% (1 kHz)/0.25% (1 kHz)
Separation	30 dB, 20 Hz to 10 kHz
Subcarrier	50 dB
Capt. ratio	1.2 dB
Selectivity	60 dB
AMPLIFIER	
Power	18 watts (12.5 dBW) continuous from 20 Hz to 20 kHz at no more than 0.2% THD
IM	0.2% at 15 watts
Response	30 Hz to 20 kHz, ±0.5 dB
Sensitivity	2.5 mV (phono); 150 mV (high level)
Overload	140 mV (phono)
S/N	91 dB (phono); 70 dB (tuner); 95 dB (aux)
Phono EQ	30 Hz to 20 kHz, ±0.5 dB
Bass	±12 dB at 50 Hz
Treble	±10 dB at 15 kHz
Features	Certified performance: notarized certificate with each unit shows exact performance; linear-phase IF; built-in infrasonic filter

Models also available

S-7650CP, $425; S-7250CP, $290

SONY
Sony Industries
9 West 57th St.
New York, N.Y. 10019

STR-V55

Price	$520
Dimensions	5¼H x 17W x 14⅞D
Weight	15 lbs. (net)
TUNER	
Sensitivity	10.3 dBf for 65 dB quieting
S/N	75 dB/70 dB
Response	30 Hz to 15 kHz, +0.5, -1.5 dB (stereo)/30 Hz to 15 kHz, +0.5, -1.5 dB (mono)
THD	0.15% (1 kHz) (stereo)/0.10% (1 kHz) (mono)
Separation	35 dB, 100 Hz to 10 kHz
Subcarrier	40 dB
Capt. ratio	1 dB
Selectivity	80 dB
AMPLIFIER	
Power	55 watts (17.5 dBW) continuous from 20 Hz to 20 kHz at no more than 0.02% THD
IM	0.02% at 55 watts
Response	DC to 40 kHz, +0, -1 dB
Sensitivity	2.5 mV (MM) 0.25 mV (MC); 150 mV (high level)
Overload	200 mV (MM); 20 mV (MC)
S/N	86 dB (MM); 77 mV (MC); 95 dB (aux) (A-weighted)
Phono EQ	±0.5 dB
Bass	±10 dB at 50 Hz
Treble	±10 dB at 20 kHz
Low filter	12 dB/octave below 15 Hz
Features	MC pre-preamp; pulse power supply; digital frequency synthesis tuning; 8 station preset with scan features; triple electronic protection; pre-out, main-in jacks

STR-V15

Price	$220
Dimensions	4½H x 17W x 12⅜D
Weight	12 lbs. 7 oz. (net)
TUNER	
Sensitivity	10.3 dBf for 65 dB quieting
S/N	75 dB/70 dB
THD	0.3% (1 kHz) (stereo)/0.2% (1 kHz) (mono)
Separation	45 dB (1 kHz)
Capt. ratio	1.5 dB
Selectivity	60 dB
AMPLIFIER	
Power	22 watts (13.5 dBW) continuous from 20 Hz to 20 kHz at no more than 0.08% THD
IM	0.08% at 22 watts
Response	20 Hz to 20 kHz, ±1 dB
Sensitivity	2.5 mV (phono)
S/N	81 dB (phono) re 5 mV; 90 dB (aux) (A-weighted)
Phono EQ	±0.5 dB
Bass	±10 dB at 50 Hz
Treble	±10 dB at 20 kHz
Features	Electronic centering tuning; 5-station preset, each with LED FM dial indicator; FM muting; 4-way speaker selector; LED FM tuning and signal-strength indicators

Models also available

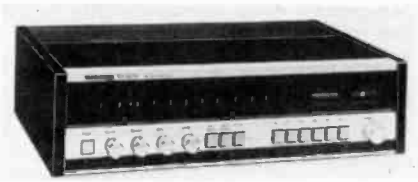
STR-V45, $420; STR-V35, $320; STR-V25, $270

TANDBERG
Tandberg of America, Inc.
Labriola Court
Armonk, N.Y. 10504

TR-2080

Price	$1,200
Dimensions	6H x 20⅛W x 13⅞D
Weight	27 lbs. 3 oz. (net)
TUNER	
Sensitivity	14.8 dBf/32 dBf
S/N	78 dB/75 dB
Response	20 Hz to 15 kHz, ±0.75 dB (mono and stereo)
THD	0.5%, 30 Hz to 15 kHz (mono and stereo)
Separation	40 dB, 100 Hz to 10 kHz
Subcarrier	60 dB
Capt. ratio	0.9 dB
Selectivity	80 dB
AMPLIFIER	
Power	80 watts (19 dBW) continuous from 20 Hz to 20 kHz at no more than 0.05% THD
IM	0.05% at 80 watts
Response	6 Hz to 80 kHz, ±0.75 dB
Sensitivity	2.2 mV (phono); 10 mV (high level) (adjustable)
Overload	120-500 mV (phono) (adjustable)
S/N	88 dB (phono); 98 dB (aux)
Phono EQ	20 Hz to 20 kHz, ±0.25 dB
Bass	±15 dB at 50 Hz
Treble	±15 dB at 10 kHz
High filter	12 dB/octave above 9 kHz and 6 dB/octave above 8 kHz
Low filter	12 dB/octave below 30 Hz
Features	Electronic switching; tape-contouring control system; midrange control: ±7 dB at 1 kHz; rosewood cabinet

TR-2030



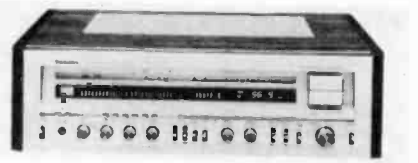
Price	$500
Dimensions	5⅝H x 20⅛W x 13 13/16D
Weight	22 lbs. (net)
TUNER	
Sensitivity	16.2 dBf/35 dBf (50 dB)
S/N	76 dB/74 dB
Response	20 Hz to 15 kHz, ±0.75 dB (mono and stereo)
THD	0.4%/0.5% (both 30 Hz to 15 kHz)
Separation	40 dB, 100 Hz to 10 kHz
Subcarrier	60 dB
Capt. ratio	1.5 dB
Selectivity	80 dB
AMPLIFIER	
IM	0.09% at 30 watts
Response	8 Hz to 50 kHz, ±0.75 dB
Sensitivity	2.3 mV (phono)
Overload	90 mV (phono)
S/N	86 dB (phono); 94 dB (aux)
Phono EQ	20 Hz to 20 kHz, ±0.05 dB
Bass	±15 dB at 50 Hz
Treble	±15 dB at 10 kHz
High filter	12 dB/octave above 8 kHz
Low filter	12 dB/octave below 70 Hz
Features	Time-delayed AFC and muting on all FM functions; electronic muting on all mode switching; all units DC control varactor diode tuning; rosewood cabinet standard; 5 FM presets

Models also available

TR-2060, $800; TR-2045, $650

TECHNICS
Technics by Panasonic
One Panasonic Way
Secaucus, N.Y. 07094

SA-818



Price	$850
Dimensions	6 25/32H x 22 9/32W x 15 19/32D
Weight	40 lbs. 12 oz. (net)
TUNER	
Sensitivity	10.3 dBf/36.2 dBf for 50 dB quieting
S/N	76 dB/72 dB
Response	20 Hz to 15 kHz, +0.2, –0.8 dB (stereo)
THD	0.15% (1 kHz) (stereo)/0.1% (1 kHz) (mono)
Separation	45 dB at 1 kHz
Subcarrier	–65 dB
Capt. ratio	1.2 dB
Selectivity	65 dB (wide); 85 dB (narrow)
AMPLIFIER	
Power	110 watts (20.5 dBW) continuous from 20 Hz to 20 kHz at no more than 0.005% THD
IM	0.005% at 110 watts
Response	5 Hz to 100 kHz, ±–3 dB
Sensitivity	2.5 mV (phono); 150 mV (high level)
Overload	190 mV (phono)
S/N	82 dB (phono); 100 dB (tuner); 100 dB (aux) (IHF A-weighted)
Phono EQ	20 Hz to 20 kHz, +0, –0.3 dB
Bass	±10 dB at 50 Hz
Treble	±10 dB at 20 kHz
High filter	6 dB/octave above 7 kHz
Low filter	6 dB/octave below 70 Hz
Features	Wide, narrow IF band; selectable FM de-emphasis; –20 dB muting; FM high blend; midrange control

SA-404

Price	$350
Dimensions	6 5/16H x 18 29/32W x 11 17/32D
Weight	18 lbs. 8 oz. (net)
TUNER	
Sensitivity	10.8 dBf/37.2 dBf for 50 dB quieting
S/N	75 dB/70 dB
Response	20 Hz to 15 kHz, +1, –2 dB (stereo)
THD	0.3% (1 kHz) (stereo)/0.15% (1 kHz) (mono)
Separation	45 dB at 1 kHz
Subcarrier	–40 dB
Capt. ratio	1.2 dB
Selectivity	70 dB
AMPLIFIER	
Power	50 watts (17 dBW) continuous from 20 Hz to 20 kHz at no more than 0.04% THD
IM	0.04% at 50 watts
Response	7 Hz to 45 kHz, ±1 dB
Sensitivity	2.5 mV (phono); 150 mV (high level)
Overload	150 mV (phono)
S/N	80 dB (phono); 95 dB (tuner); 95 dB (aux) (IHF A-weighted)
Bass	±10 dB at 50 Hz
Treble	±10 dB at 20 kHz
High filter	6 dB/octave above 7 kHz
Low filter	6 dB/octave below 100 Hz
Features	FM active sensor; program indicators; low/high boost/cut function; 3-color, 11-point LED power indicators

SA-202

Price	$220
Dimensions	5⅞H x 18¼W x 10⅞D
Weight	15 lbs. 6 oz. (net)
TUNER	
Sensitivity	10.8 dBf/38.3 dBf for 50 dB quieting
S/N	75 dB/70 dB
Response	20 Hz to 15 kHz, +1, –2 dB (stereo)
THD	0.3% (1 kHz) (stereo)/0.18% (1 kHz) (mono)
Separation	45 dB at 1 kHz
Subcarrier	–40 dB
Capt. ratio	1.2 dB
Selectivity	65 dB
AMPLIFIER	
Power	30 watts (14.75 dBW) continuous from 30 Hz to 20 kHz at no more than 0.04% THD
IM	0.04% at 30 watts
Response	7 Hz to 45 kHz, ±1 dB
Sensitivity	2.5 mV (phono); 150 mV (high level)
Overload	130 mV (phono)
S/N	78 dB (phono); 95 dB (tuner); 95 dB (aux) (IHF A-weighted)
Bass	±10 dB at 50 Hz
Treble	±10 dB at 20 kHz
Features	Five-position, 2-color LED signal-strength indicator; FM stereo LED indicator

Models also available

SA-616, $680; SA-505, $420; SA-303, $290; SA-101, $180

TOSHIBA
Toshiba America, Inc.
82 Totowa Rd.
Wayne, N.J. 07470

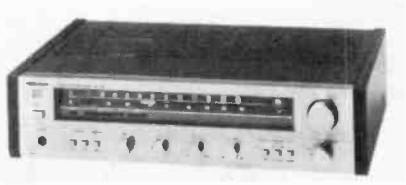
SA-7150

Price	$1,100
Dimensions	79 6/10H x 21 3/5W x 19 7/10D
Weight	59 lbs. 6 oz. (net)
TUNER	
Sensitivity	14.7 dBf/37.6 dBf for 65 dB quieting
S/N	75 dB/70 dB
Response	10 Hz to 50 kHz/20 Hz to 15 kHz, +0.5, –1.5 dB
THD	0.10/0.08%
Separation	50 dB
Subcarrier	80 dB
Capt. ratio	1 dB
Selectivity	80 dB
AMPLIFIER	
Power	150 watts (21.8 dBW) continuous from 20 Hz to 20 kHz at no more than 0.05% THD
IM	0.05% at 150 watts
Response	5 Hz to 50 kHz, ±0.5 dB
Sensitivity	2.5 mV (phono); 150 mV (high level)
Overload	350 mV (phono)
S/N	92 dB (phono); 75 dB (tuner); 95 dB (aux)
Phono EQ	30 Hz to 15 kHz, ±0.2 dB
Bass	±10 dB at 80 Hz
Treble	±10 dB at 10 kHz
High filter	6 dB/octave above 7 kHz
Low filter	6 dB/octave below 20 Hz
Features	Digitally synthesized tuner section; Dolby FM; selectable cartridge loads; dual power supplies

SA-5000

Price	$379.95
Dimensions	4 3/5H x 17 7/10W x 14 3/5D
Weight	20 lbs. 4 oz. (net)
TUNER	
Sensitivity	16.3 dBf/38.3 dBf
S/N	78 dB/72 dB
Response	20 Hz to 15 kHz, +0.5, –2 dB
THD	0.08% (1 kHz) (stereo)/0.15% (1 kHz) (mono)
Separation	45 dB at 1 kHz
Subcarrier	50 dB
Capt. ratio	1 dB
Selectivity	75 dB
AMPLIFIER	
Power	50 watts (17 dBW) continuous from 20 Hz to 20 kHz at no more than 0.03% THD
IM	0.03% at 50 watts
Response	10 Hz to 60 kHz, +1, –2 dB
Sensitivity	2.5 mV (phono)
Overload	240 mV (phono)
S/N	90 dB (phono); 95 dB (aux)
Phono EQ	20 Hz to 15 kHz, ±0.3 dB
Bass	±10 dB at 100 Hz
Treble	±10 dB at 10 kHz
Low filter	6 dB/octave below 16 Hz
Features	DC power amplifier; infrasonic filter; tone-defeat switch; 2 tape monitors with dubbing; servo-locked FM tuner; audio fade in/out switch; LED signal-strength and center-tune indicators; high FT power devices

SA-2500



Price	$249.95
Dimensions	4 3/5H x 17 7/10W x 13 4/5D
Weight	17 lbs. 9 oz. (net)
TUNER	
Sensitivity	16.3 dBf/38.3 dBf for 65 dB quieting
S/N	78 dB/72 dB
Response	20 Hz to 15 kHz, +0.5, –2 dB (stereo)
THD	0.15% (1 kHz) (stereo)/0.08% (1 kHz) (mono)
Separation	40 dB
Subcarrier	50 dB
Capt. ratio	1 dB
Selectivity	65 dB
AMPLIFIER	
Power	25 watts (14 dBW) continuous from 20 Hz to 26 kHz at no more than 0.05% THD
IM	0.05% at 25 watts
Response	10 Hz to 50 kHz, ±1 dB
Sensitivity	2.5 mV (phono)
Overload	180 mV (phono)
S/N	86 dB (phono); 90 dB (aux)
Phono EQ	20 Hz to 15 kHz, ±0.5 dB
Bass	±10 dB at 100 Hz
Treble	±10 dB at 10 kHz
Low filter	6 dB/octave below 16 Hz
Features	DC power amplifier; infrasonic filter; LED signal-strength and center-tune indicators; linear tuning scale

Models also available

SA-850, $519.95; SA-3500, $299.95; SA-725, $249.95

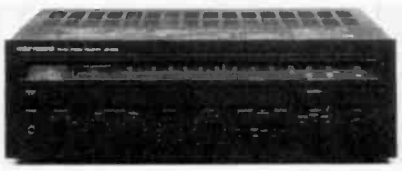
VECTOR RESEARCH
Vector Research
20600 Nordhoff St.
Chatsworth, Calif. 91311

VRX-9000

Price	$750
Dimensions	5 9/16H x 17 15/16W x 14½D
Weight	30 lbs. 10 oz. (net)
TUNER	
Sensitivity	3.1 μV (15 dBf) for 50 dB quieting (mono)
S/N	75 dB/70 dB
Response	20 Hz to 15 kHz, ±1 dB (stereo)

THD	1.5% (stereo)/0.8% (mono)
Separation	46 dB (1 kHz)
Subcarrier	65 dB
Capt. ratio	1 dB
Selectivity	65 dB
AMPLIFIER	
Power	80 watts (19 dBW) continuous
IM	0.05%
Response	10 Hz to 50 kHz, ±0.5 dB
Sensitivity	2.5 mV (phono)
Overload	180 mV (phono)
S/N	82 dB (phono)
Phono EQ	20 Hz to 20 kHz, ±0.5 dB
Bass	±10 dB at 100 Hz
Treble	±10 dB at 10 kHz
High filter	12 dB/octave above 14 kHz
Low filter	12 dB/octave below 20 Hz
Features	Digitally synthesized tuner; 12 presets; autoscan; midrange control; variable loudness; optional 19" rack-mounting handles

VR-2500



Price	$235
Dimensions	5 9/16H x 17 15/16W x 14½D
TUNER	
Sensitivity	3.1 μV (15 dBf) for 50 dB quieting
S/N	78 dB/71 dB
Response	30 Hz to 15 kHz, ±1 dB (stereo)
THD	0.25% (stereo)/0.1% (mono)
Separation	40 dB (1 kHz)
Subcarrier	50 dB
Capt. ratio	1.2 dB
Selectivity	55 dB
AMPLIFIER	
Power	22 watts (13.5 dBW) continuous
IM	0.2%
Response	10 Hz to 50 kHz, ±0.5 dB
Sensitivity	2.5 mV (phono)
Overload	180 mV (phono)
S/N	82 dB (phono)
Phono EQ	20 Hz to 20 kHz, ±0.5 dB
Bass	±10 dB at 100 Hz
Treble	±10 dB at 10 kHz
Features	Optional 19" rack-mounting handles

Models also available

VR-7000, $550; VR-5000, $400

YAMAHA
Yamaha International Corp.
6600 Orangethorpe Ave.
Buena Park, Calif. 90620

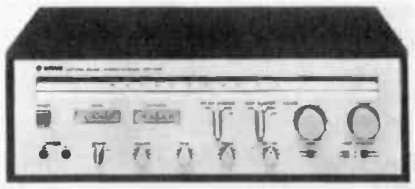
CR-3020

Price	$1,500
Dimensions	7½H x 24¾W x 19½D
Weight	82 lbs. (net)
TUNER	
Sensitivity	15.3 dBf/37.2 dBf
S/N	80 dB/75 dB
Response	50 Hz to 10 kHz, ±0.3 dB/30 Hz to 15 kHz, ±0.5 dB
THD	0.07%/0.09% (100 Hz)
Separation	52 dB (1 kHz)
Subcarrier	70 dB
Capt. ratio	1 dB
Selectivity	85 dB
AMPLIFIER	
Power	160 watts (22 dBW) continuous from 20 Hz to 20 kHz at no more than 0.05% THD
IM	0.02% at 80 watts
Response	5 Hz to 100 kHz, ±2 dB
Sensitivity	2 mV (phono); 120 mV (high level)
Overload	310 mV (phono)
S/N	96 dB (phono); 100 dB (aux)
Phono EQ	20 Hz to 20 kHz, ±0.2 dB
Bass	±15 dB at 50 Hz
Treble	±12 dB at 20 kHz
High filter	12 dB/octave above 8 kHz or 12 kHz
Low filter	12 dB/octave below 15 Hz or 70 Hz
Features	Built-in head amp; NFB PLL MPX; auto DX; independent recording and audition

CR-2040

Price	$860
Dimensions	6 9/16H x 22 13/16W x 16D
Weight	44 lbs. 14 oz. (net)
TUNER	
Sensitivity	15.3 dBf/36.1 dBf
S/N	90 dB/84 dB
Response	50 Hz to 10 kHz, ±0.4 dB/30 Hz to 15 kHz, +0.4, –1 dB
THD	0.07% (100 Hz)/0.09% (100 Hz)
Separation	50 dB, 50 Hz to 10 kHz
Subcarrier	70 dB
Capt. ratio	1.5 dB
Selectivity	82 dB
AMPLIFIER	
Power	120 watts (20.75 dBW) continuous from 20 Hz to 20 kHz at no more than 0.02% THD
IM	0.02% at 120 watts
Response	20 Hz to 20 kHz, ±0.2 dB
Sensitivity	2.5 mV (phono); 270 mV (high level)
Overload	270 mV (phono)
S/N	9.5 dB (phono); 90 dB (tuner); 100 dB (aux)
Phono EQ	20 Hz to 20 kHz, ±0.2 dB
Bass	±10 dB at 100 to 500 Hz (continuously variable)
Treble	±10 dB at 2 to 8 kHz (continuously variable)
High filter	6 dB/octave above 10 kHz; 6 dB/octave above 6 kHz
Low filter	12 dB/octave below 25 Hz
Features	Auto local/DX mode selection; built-in moving-coil head amp; presence control: ± 6 dB from 1 to 5 kHz (continuously variable)

CR-440



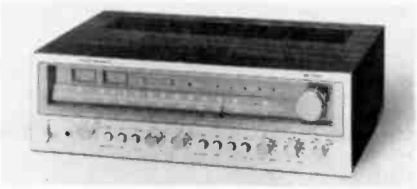
Price	$320
Dimensions	6⅜H x 17¾W 12 ⅞D
Weight	20 lbs. (net)
TUNER	
Sensitivity	10.3 dBf for 65 dB quieting
S/N	80 dB/76 dB
Response	30 Hz to 15 kHz, ±1.5 dB (stereo)
THD	0.2% (1 kHz) (stereo)/0.15% (1 kHz) (mono)
Separation	45 dB (1 kHz)
Subcarrier	55 dB
Capt. ratio	1.5 dB
Selectivity	65 dB
AMPLIFIER	
Power	30 watts (14.75 dBW) continuous from 20 Hz to 20 kHz, at no more than 0.02% THD
IM	0.01% at 15 watts
Sensitivity	2.5 mV (phono); 120 mV (high level) (re 1W)
Overload	140 mV (phono)
S/N	78 dB (phono); 85 dB (tuner); 85 dB (aux) (new IHF A-weighted)
Phono EQ	20 Hz to 20 kHz, ±0.5 dB
Bass	±10 dB at 350 Hz
Treble	±10 dB at 3.5 kHz
Low filter	12 dB/octave below 25 Hz
Features	Continuous-loudness control; recording-out selector; 2 headphone jacks

Models also available

CR-1040, $660; CR-840, $495; CR-640, $395; CR-240, $250

ZENITH
Zenith Radio Corp.
1000 Milwaukee Ave.
Glenview, Ill. 60025

MC-7030



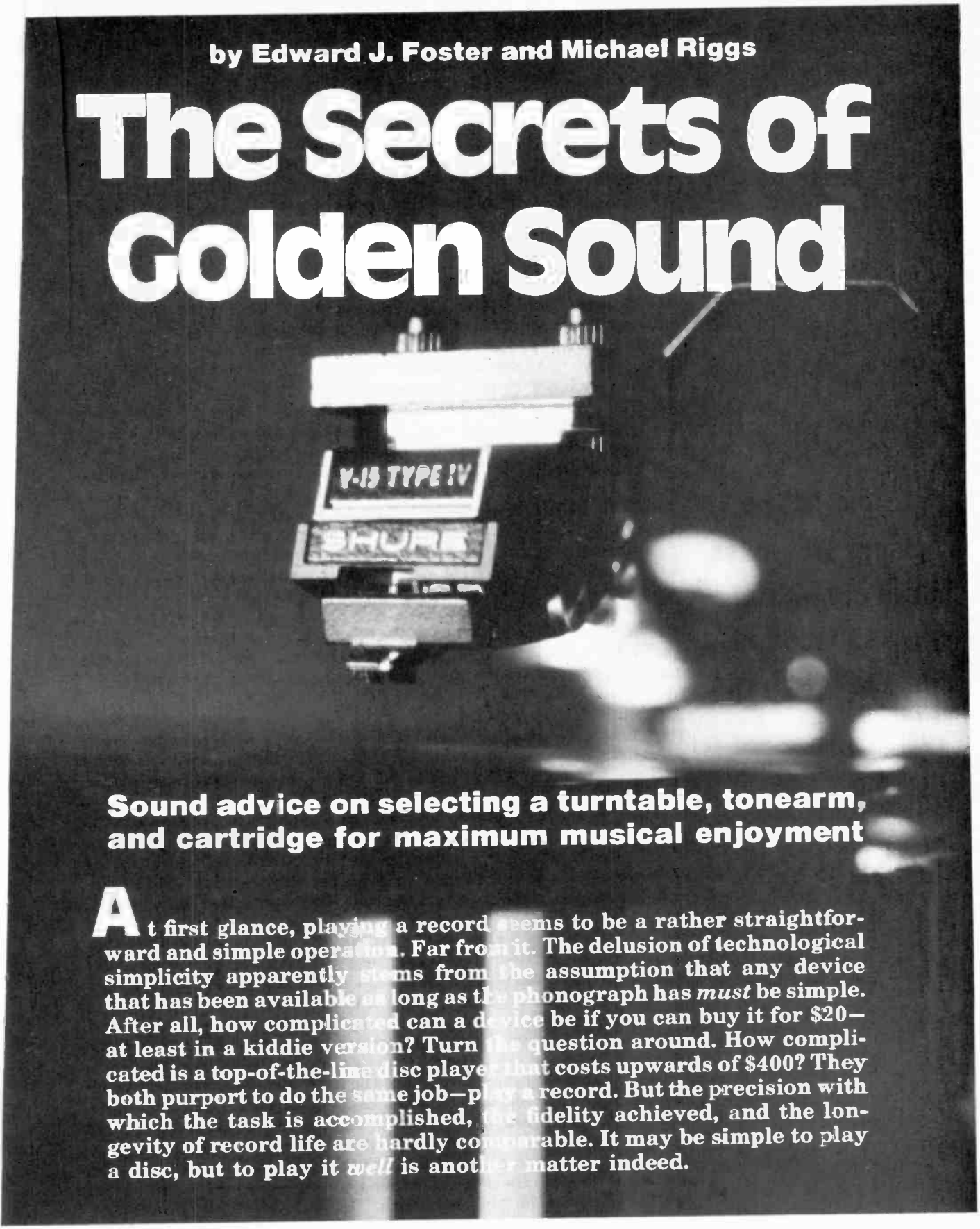
Price	$229.95
Dimensions	5 3/10H x 18 1/10W x 11 4/5D
Weight	19 lbs. 2 oz. (net)
TUNER	
Sensitivity	17.2 dBf/39.2 dBf for 50 dB quieting; 10.8 dBf/20.8 dBf (usable)
S/N	70 dB/65 dB
Response	30 Hz to 15 kHz, ±1 dB (stereo)/30 Hz to 15 kHz, ±1 dB (mono)
THD	0.5% (1 kHz) (stereo)/0.3% (1 kHz) (mono)
Separation	40 dB at 1 kHz
Subcarrier	50 dB
Capt. ratio	1 dB
Selectivity	60 dB
AMPLIFIER	
Power	15 watts (11.75 dBW) continuous from 20 Hz to 20 kHz at no more than 0.4% THD
IM	0.4% at 15 watts
Response	20 Hz to 20 kHz, ±1 dB
Sensitivity	0.65 mV (phono); 39 mV (high level) (re 1W)
Overload	125 mV (photo)
S/N	65 dB (phono); 65 dB (tuner); 75 dB (aux) (A-weighted)
Phono EQ	30 Hz to 15 kHz, ±1 dB
Bass	±10 dB at 100 Hz
Treble	±10 dB at 10 kHz
High filter	6 dB/octave above 5 kHz
Low filter	6 dB/octave below 100 Hz
Features	Loudness switch; FM mute; mono/stereo switch; 4-position rotary speaker switch; FM AFC switch; 25μsec de-emphasis switch; detent controls; flywheel tuning; FM center-tune meter; AM/FM signal-strength meter

Models also available

MC-7051, $359.95; MC7041, $279.95

by Edward J. Foster and Michael Riggs

The Secrets of Golden Sound



Sound advice on selecting a turntable, tonearm, and cartridge for maximum musical enjoyment

At first glance, playing a record seems to be a rather straightforward and simple operation. Far from it. The delusion of technological simplicity apparently stems from the assumption that any device that has been available as long as the phonograph has *must* be simple. After all, how complicated can a device be if you can buy it for $20—at least in a kiddie version? Turn the question around. How complicated is a top-of-the-line disc player that costs upwards of $400? They both purport to do the same job—play a record. But the precision with which the task is accomplished, the fidelity achieved, and the longevity of record life are hardly comparable. It may be simple to play a disc, but to play it *well* is another matter indeed.

A record-playing system consists of a turntable, a tonearm, and a cartridge (or pickup). They all interrelate, especially the tonearm and the cartridge, and the total system will be no better than its weakest link. But if we were to pick the *most* critical element—the heart of the system, so to speak—it would have to be the cartridge.

The cartridge is the transducer, the device that converts the mechanical "wiggles" of the groove into a useful electrical signal. And transducers are inherently complex, combining both mechanical and electrical technologies.

The cartridge is made up of two principal parts: the stylus (including its suspension), and the actual generating element that produces the electrical output.

Several techniques have been used for the generator itself. There are piezoelectric cartridges that use materials such as barium titanate, which generate a voltage across themselves whenever they are stressed. This type of cartridge produces a relatively high output voltage, but it is not particularly conducive to smooth response and low record wear. Piezoelectric cartridges are seldom used in truly high-fidelity systems. There are strain-gauge pickups that rely upon a linear change of the element's resistance to do the transducing. There are electret pickups that accomplish the energy conversion by means of an element similar to that in many microphones. But far and away the most common transducer is the electromagnetic type.

Simply providing low mass is not enough; the stylus shank must be rigid.

Electromagnetic transducers all function according to one of two basic (and related) principles: A) A voltage will be produced across any stationary electrical conductor that experiences a changing magnetic field; or B) A voltage will be produced across a conductor that moves through a stationary magnetic field, "cutting" the "lines of force."

These same principles are used in dynamic and ribbon microphones and, on a grossly larger scale, in every power-generating station in the world. The same principles, operating in reverse, form the basis for the operation of dynamic loudspeakers, buzzers, motors, and the like.

Although the underlying physical principles of all electromagnetic transducers are identical, there are several ways in which to apply them when designing a phono pickup. Ultimately, the design goal is the same: to convert the mechanical motion of the stylus into a useful electrical output.

One approach is to couple the stylus to movable coils of wire within the pickup. The coils are immersed in a strong permanent magnetic field that is generated by a magnet, also within the pickup. As the stylus moves the coils through the magnetic field, they cut the "lines of force" and so generate a voltage across the ends of the coils. These are called "moving coil" cartridges.

The major technological problem is that of generating a useful output level without excessively increasing the mass of the moving system. Very few turns of wire can be used, meaning that the output voltage (which is proportional to the number of turns of wire, as well as to the strength of the magnetic field and to the velocity of the motion) is low. So is the impedance. Thus, external transformers are frequently used to boost the output voltage and impedance.

Most electromagnetic pickups use the fixed-coil principle. Even here, there is more than one way to skin a cat. The earliest magnetic pickups were based on a "variable reluctance" design. The stylus assembly was connected to a small piece of high-permeability iron (more properly an alloy of iron and other elements). The coils and the magnet were permanently affixed in the housing in such a way that the movable iron piece was made part of the "magnetic path." As the stylus tracked the groove

and moved the iron, the magnetic flux was modulated, or changed in strength, proportionally. The change in magnetic flux through the coils generated the voltage.

In effect, the motion of the iron varied the reluctance (equivalent in magnetic circuits to resistance) of the magnetic path, thus changing the flux (equivalent to current in an electrical circuit). In some designs, it is more convenient to think of the permanent magnet as inducing a "magnetic moment" into the moving iron, which in turn sets up its own varying field through the coils, thus inducing the voltage by its motion. Either way, such cartridges are of the "moving-iron" type and are very much in use today. The advantage of the moving-iron approach is that a relatively large and powerful permanent magnet can be used, and many turns can be put on the coil, since neither is part of the moving system.

The other popular magnetic cartridge design uses a "moving magnet." As the name implies, the stylus is physically connected to a magnet that moves within the pickup. The coils are stationary and so can have many turns for good sensitivity. The magnet, of course, must be small, but with the new rare-earth materials—many times more powerful than the old alnico materials—the moving magnet design is being used in some of the very best pickups.

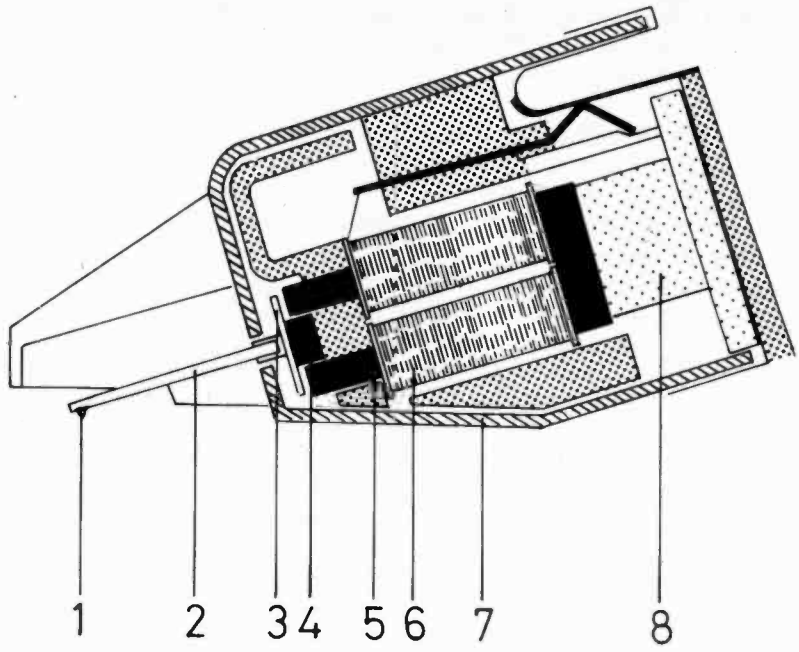
You've probably guessed from the foregoing that the moving system has to be pretty light. You're right. The idea is to keep the tracking force as low as possible, to provide maximum record (and stylus) life. But a low tracking force means that the maximum force that the record groove walls can exert on the stylus is necessarily low too. In fact, the maximum vertical modulation force—even under ideal circumstances—cannot exceed the tracking force or the stylus will lose contact with the groove, increasing distortion and record wear. And this, remember, is under ideal circumstances. In practice, mistracking will occur at even lower exertions.

Flat response in a cartridge depends on properly adjusted resonant points and damping.

These groove wall forces are the only ones available to accelerate the mass of the stylus, the shank, and the moving element within the cartridge; in effect, they constitute the "engine" that powers the stylus. You know that the more massive your automobile is, the more powerful the engine needed to accelerate to highway speeds—and conversely, the less powerful the engine, the lighter the car should be if it is to operate efficiently. If we want to keep the tracking force down in the 1-gram region, we've got a pretty weak engine, so the "car" had better indeed be light. Obviously, it is, but the acceleration conditions are severe nonetheless. To track a 15-kHz signal the stylus must move the assembly back and forth 15,000 times a second, alternately racing in one direction, braking to a halt, accelerating in reverse, etc. The development of lightweight, rigid stylus assemblies, with extremely low effective mass, has been the paramount breakthrough in recent topnotch pickup design.

Simply providing low mass is not enough. The stylus shank must be rigid so that it doesn't flex under the acceleration stresses. If it did, the moving element inside would not accurately follow the motion of the tip and distortion would ensue. The mechanical design of the shank is extremely important. The shank is frequently a hollow tapered tube—hollow to keep the mass low; tapered to maximize rigidity in the lightweight structure. Such a device is very difficult to fabricate and therefore expensive.

In addition, the stylus assembly must be suspended so that it is free to move, but is supplied with a sufficient restoring force (or spring) to return it to its neutral position. The mass of the assembly and the compliance (springiness) of the suspension form a mechanical resonance, much like that created by a weight on a spring. If uncontrolled, the resonance would



A cross section of a typical moving-iron cartridge shows its principal elements: 1) diamond stylus; 2) low-mass cantilever; 3) moving iron; 4) block suspension; 5) pole pieces; 6) induction coils; 7) mu-metal screen; 8) magnet.

produce a peak in the response curve; under extreme conditions it could even emboss its own characteristic resonant imprint on the record being played. The stylus assembly must therefore be damped to keep the resonance under control, and the resonant point itself must be placed at the upper end of the spectrum, since the output will fall off above the resonance.

The final major element in a phono pickup is the stylus itself. Actually we might have considered this the first element, for here is where it all starts—where the diamond meets the groove. All high-fidelity styli are now diamonds because of the need of extreme hardness. A diamond not only contributes to long stylus life, but increases record life as well. Few factors will contribute to shortened record life as much as a worn stylus.

Diamond styli come in all sizes and shapes. The early ones were conical, with a rounded point to the cone (at least theoretically). Frequently, they are called "spherical" styli, because their cross section is circular. Conical styli are available in a variety of radii. Old 78s are played with styli 3 mils (0.003 inch) in diameter. With the advent of the microgroove LP record, stylus diameter dropped to 1 mil (0.001 inch). But because the record itself is cut with a sharp-edged stylus, roughly of triangular cross section, the spherical "ball" does not conform well to the original cut—especially at high frequencies and on the inner grooves of the record. This tends to cause "tracing" distortion; the "ball" contacts the groove in two places cut at two different times. A triangular-shaped reproducing stylus would be ideal, but isn't practical, since it would be very likely to cut up the record. Conical styli with smaller diameters are also an improvement, and types are available with 0.7-mil (0.0007-inch) and 0.5-mil (0.0005-inch) diameters. Unfortunately, small-diameter styli ride lower in the groove, increasing susceptibility to the type of noise caused by extraneous foreign matter. Also, the reduced area of surface contact increases the effective pressure on the groove walls and decreases record life for a given tracking force.

The elliptical stylus found on most modern high-fidelity pickups seeks to achieve a very small contact radius for reduced tracing distortion with-

out allowing the stylus to bottom in the groove. To do this, the diamond is ground with two radii, a narrow one (approximately 0.0002 inch), which is oriented along the record radius and does the tracing, and a wide one (approximately 0.0007 inch), oriented along the direction of the groove to support the stylus and keep it from riding along the bottom. Needless to say, grinding a tiny diamond with two different radii and orienting it precisely on the shank makes elliptical styli substantially more expensive than conicals.

With the advent of CD-4, there arose a need to trace frequencies out to 50 kHz. Because even an elliptical stylus is marginal in tracing ability at 50 kHz, the Shibata stylus was developed to provide the extremely narrow tracing radii necessary for ultra-short wavelength reproduction, while increasing the contact area with the disc to reduce wear. The combination of a reduced tracing radius, the need for increased tracking force to handle the 50-kHz accelerations, and the inherent delicacy of the short-wavelength groove modulation made the development of a new stylus geometry difficult but imperative.

The Shibata stylus approximates the triangular shape of the cutting stylus even more closely than does the elliptical form. In the vertical plane the Shibata stylus is approximately parabolic in shape. This gives a greater contact area with the groove walls than does an elliptical stylus, spreading out the tracking force and reducing the pressure against the disc.

The susceptibility to hum pickup is always a consideration in magnetic cartridge design. Magnetic fields of 60 Hz are always present, from power lines, transformers, and the turntable motors themselves. A magnetic pickup, essentially a magnetic antenna, must be designed to minimize susceptibility to hum. The use of balanced pickup coils and correct magnetic shielding has largely eliminated hum pickup from the better cartridges.

Each turntable drive system has some strengths and weaknesses; focus on results.

Achieving flat frequency response in a cartridge is largely a matter of carefully adjusting resonant points and damping. The electrical resonance of the cartridge inductance must be balanced with the capacitance, and the mechanical resonance of the stylus mass with the compliance of its suspension and that of the groove walls. Flat response and good separation demand painstaking control of the manufacturing process to achieve exact orientation of the coils vis-à-vis the moving assembly and the proper orientation of the stylus tip to the shank, as well as superior design to ensure the optimum location of the stylus pivot and suspension and minimal electrical interaction of the coils.

Add to these requirements the need for low-distortion reproduction and the pickup manufacturer must match the vertical tracking angle of the cutter head, select and orient the stylus to minimize tracing distortion, assure linearity in the suspension and magnetic circuit, and design a pivot point that does not shift at high modulation levels. And all this must be done with an extremely delicate, low-mass assembly, capable of tracking the wildly undulating grooves of a modern stereo record at a low tracking force.

Indeed, the design task is formidable, but it represents a challenge in achieving improved performance. Had the task been simple, perfection would have been attained long ago.

Aside from the pickup itself, the tonearm is the next most critical component in a disc-playing system. Actually, the tonearm and cartridge interrelate to such an extent that they should be treated as a unit. A good pickup cannot perform in a poor arm, and a good arm is wasted on a sluggish cartridge. The key here is to match the effective mass of the tonearm with the compliance of the pickup stylus. In this relationship, another

mechanical resonance is experienced, this one at a low frequency, which affects the bass response of the system and its ability to track warped records.

The desirable condition is to situate the resonance below the audio range (below 20 Hz) but above the warp region. Most warps occur in the region between ½ Hz and 7 Hz. Thus, the optimum frequency for the tonearm/cartridge resonance is about 10 Hz. Here it will have minimal effect on the bass response and still be unlikely to be excited by warps. A high-compliance cartridge (read "expensive"), mounted in a high-mass arm (read "cheap"), will resonate at too low a frequency. It will probably not track certain record warps (and they're all too prevalent). The entire stylus will simply be tossed out of the groove. A low-compliance cartridge in an expensive low-mass arm will resonate at too high a frequency and yield exaggerated bass. Such a cartridge would be better off in a cheaper, high-mass arm.

The ideal is a high-compliance cartridge in a low-mass arm. The resonant point will be well placed, and the high compliance will provide better tracking ability at low tracking force. However, tonearm manufacturers seldom specify the effective mass. You're most likely to get a hint from the arm's price, and the range of tracking force over which it is recommended for use. The lighter the recommended force, the less the mass is *likely* to be. Many cartridge manufacturers will also answer your inquiry regarding recommended arm/cartridge pairings.

No standard test exists for acoustic and mechnical feedback, so try "kicking the tires."

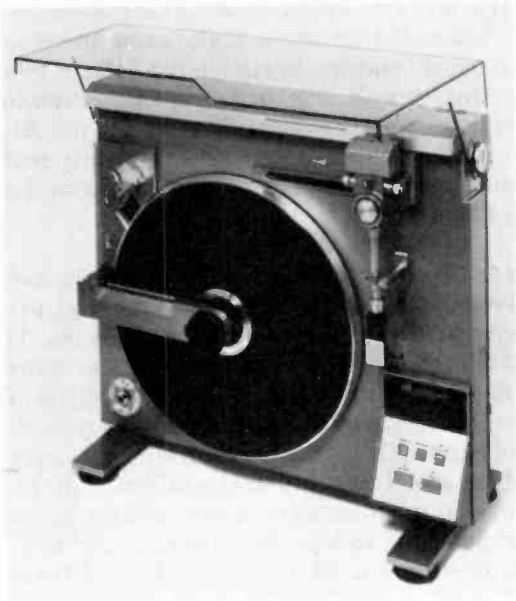
Although the arm/cartridge resonance cannot be avoided, the severity of the resulting response peak can be lessened by judicious damping. The damping can be applied in more than one way: Some arms are damped with a viscous fluid at the pivot; others are fabricated from material which itself is damped.

The actual function of the arm, of course, is to hold the cartridge and guide it across the record. The most convenient, and by far the most popular, approach is to support the arm on a pivot located beyond the area of the record. Mounted in this manner, a straight arm would sweep the cartridge (and stylus) in an arc around the pivot. But in the record mastering room, the cutter head traverses the record on a lead screw directly along the radius of the record blank. Thus, the straight, pivoted playback arm does not guide the cartridge in a manner corresponding precisely to that of the cutter head. The degree of misalignment, called "lateral tracking angle error," leads to increased distortion.

By offsetting the cartridge by some angle to the arm and locating the pivot so that the stylus overhangs the center of the record by an appropriate amount, the maximum tracking angle error, at any point along the radius, can be greatly reduced over that of a straight arm of corresponding length. Thus, most pivoted arms use an offset, generally achieved by forming the arm into an "S" curve.

The offset arm introduces its own eccentricities. It can be shown mathematically that an overhanging, offset, pivoted arm has a tendency to ride or "skate" into the center of a rotating record. This skating force is small, but with modern, light-tracking cartridges, it can appreciably upset the balance between the forces on the two groove walls. Extra force is applied to the inner wall (left channel), and less to the outer wall (right channel). To compensate for this force, most high-quality tonearms incorporate an antiskating control that applies a counterforce in the outward direction. Since the precise amount of force required depends upon the friction between the stylus and the groove, the antiskating control should be adjustable for tracking force and stylus type.

Radial-tracking designs bypass the pivoted arm entirely and transport the cartridge along the radius of the disc. Tracking error is zero, and



Tangential-tracking turntables are appearing in increasing numbers. The advantage of this design is that the tracking error is always 0 degrees, thus eliminating one possible source of distortion. Mitsubishi's LT-5V (shown) is the first to appear in a vertical configuration.

there is no need for an antiskating force. On the other hand, with the light tracking forces in use it is impossible for the cartridge to drag itself along the support. Here is where the design complexity comes in: A servo-type drive system must be used to sense the location of the cartridge and mechanically drive it to follow the record groove.

The weight of the typical cartridge and arm obviously far exceeds the desired tracking force; thus it must be balanced out. Most high-quality arms use a counterweight to the rear of the pivot to accomplish the balance and adjust to the desired tracking force. The counterweight is often isolated from the arm by a soft rubberlike material that serves to decouple the weight from the tonearm in the resonance region, which minimizes its addition to the effective tonearm mass.

With today's reduced tracking forces, it is imperative that the arm respond freely to the most minute forces lest the cartridge be held back in its slow motion across the disc. In pivoted arms this means top-quality bearings and/or knife edges; in straight-tracking arms it means high-gain, stable servo systems that will drive the cartridge smoothly and precisely in accordance with the groove location.

A turntable's primary task is to spin records at a constant, exact speed. There are three common methods of achieving that goal: rim drive, belt drive, and direct drive. Rim-drive mechanisms employ a high-speed motor (about 1,800 rpm, usually) coupled to a small rubber wheel that contacts the inner rim of the platter. Some good turntables have been made this way, but it's not easy. The main problem is audible low-frequency motor noise, also called rumble. Those wheels provide only limited attenuation of the motor vibration, which itself tends to be at frequencies well into the audible band. These days, rim drive turns up mostly in applications that require high torque for quick startups and in low-end home models.

Belt drive is another old-timer. For many years, all of the best manual turntables used this system, and a good many still do. A fairly low-speed motor is coupled to the platter by means of an elastic belt, which does an excellent job of isolating the platter from motor vibration. And, because the motor turns more slowly than those used in rim-drive turntables, what rumble there is is lower in frequency and more likely to be below the audible range. Belt drive has displaced rim drive as the most common motor system for high-quality automatic turntables and changers.

The relative newcomer on the block is direct drive: The platter attaches directly to the spindle of a motor that turns at the same speed as the platter. For this technique to work, motor vibration must be kept to a minimum to prevent objectionable rumble. Fortunately, what rumble does appear tends to be at very low, mostly infrasonic, frequencies. Although this system is used primarily in top-line turntables, its only real advantage over belt drive is higher torque (which has won it a niche in the professional market beside the rim drives).

Although each drive system tends to have some generic strengths and weaknesses, both excellent and mediocre turntables can be built with any of them. When shopping, focus on results. You want three things: 1) speed accuracy, 2) low wow and flutter, and 3) low rumble. The first is the most easily achieved. So long as the turntable runs within about ½% of the desired speed, you are unlikely to hear anything amiss. The only models you might expect to have problems with are the few rim- and belt-drive units with induction motors, whose speed depends on the AC line voltage. Line voltage fluctuates too much in most areas to insure correct speed with such motors, which are superseded today. Synchronous and electronically controlled motors, such as are used in almost all good turntables, do not suffer from this flaw and can generally be relied upon without question.

If you have reason to be especially concerned about absolute pitch accuracy (e.g., if you want to be able to "tune" records to your own instrument), you may want a model with a speed control and a strobe speed indicator. A range of 6% above and below the basic pitch, or about a semitone, should be adequate for most applications.

Wow and flutter are very short-term speed variations caused by inevitable imperfections in turntable bearings and motors. They do not affect the turntable's basic long-term speed accuracy, but they are often audible. Wow, which comprises slow variations, is heard as pitch instability—a sourness in sustained tones. It is especially noticeable on held piano tones. (Most audible wow results not from inadequate turntable mechanisms, but from records with off-center spindle holes or warps.) Flutter occurs at higher frequencies and generally is heard as a coarsening of the sound.

Unfortunately, most manufacturers use different standards to measure their wow and flutter specifications. Thus numbers derived with one are not directly comparable to those obtained by other methods. Unless the specifications for two components indicate the same measurement methods (and many don't say), you cannot safely make a direct comparison. Nonetheless, you should expect to see wow and flutter figures below 0.1% for acceptability and below 0.05% for premium equipment. Rumble should be less than -60 dB.

Acoustic and mechanical feedback are among the worst problems in disc playback. Acoustic feedback occurs when sound from the loudspeakers is picked up from the air by the turntable base and transmitted through the stylus back into the system and out the speakers. Mechanical feedback is transmitted through solid objects, such as the floor and walls of the listening room. At their worst, when the sound level in the room at the feedback frequencies is high enough to support sustained oscillation in the system, these effects can cause piercing howls. Feedback that severe is rare, but the frequency and transient response of the system may begin to deteriorate at sound levels as much as 30 dB below those required for actual "howl-back." The subjective effects include muddy bass and poor definition.

A turntable suspension isolates the tonearm and cartridge from external vibration and thereby prevents feedback. Two basic approaches (with

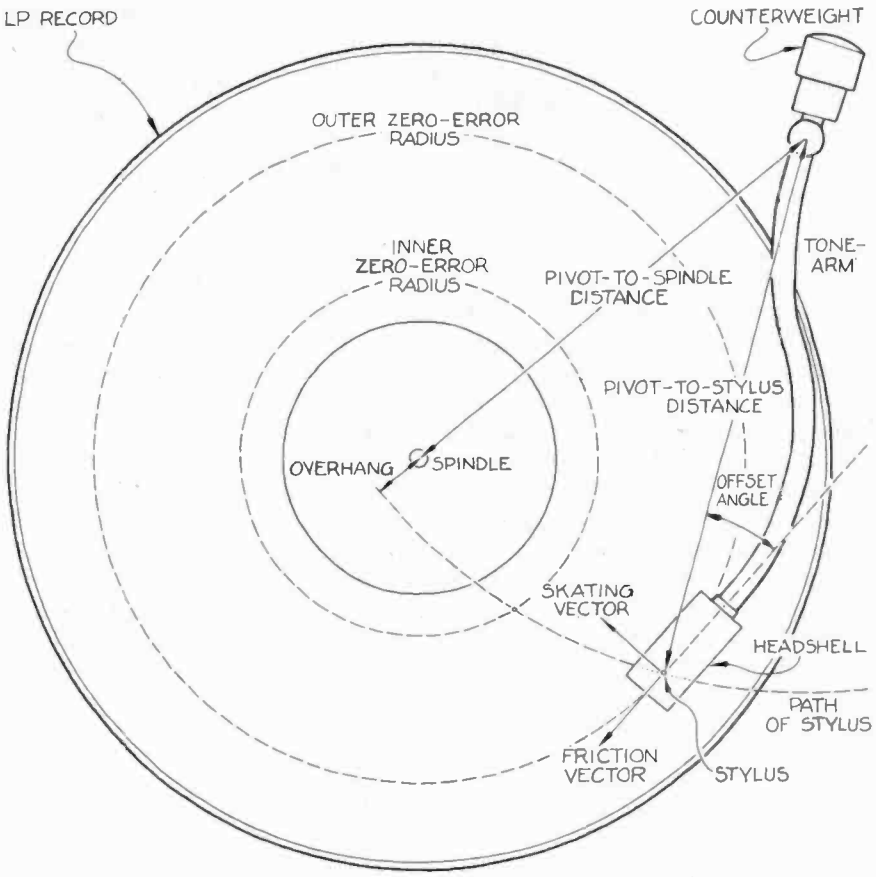
Alternatives in Tonearm Design

For a stylus to produce minimum distortion, its axis must lie along the goove it is playing. The only way to maintain this ideal alignment over an entire record side is to use a tangentially tracking tonearm, one that moves in a straight line across the disc. Such arms have traditionally been rather complex, and the few that have appeared in the past have usually been dogged by reliability problems and high prices. Contemporary technology makes straightline arms more feasible, however, and they seem to be enjoying a renaissance.

Even so, the alternative is far simpler, exceedingly reliable, and not necessarily expensive to build or buy. The pivoted arms most of us use can be quite good, but they are a compromise in that the stylus axis can be tangent to the groove at only two distances from the center of the disc. If the arm is not properly designed and set up, it may be tangent at only one radius or even none.

To do the job right, a designer must consider three parameters: effective arm length (pivot-to-stylus distance), "offset angle," and stylus "overhang." Provided everything else is done right, the greater the effective arm length, the lower the maximum lateral tracking angle error. Of course, it's not really practical to make an extremely long tonearm, and the designer must also be concerned with effective mass, which goes up rapidly as arm length is increased. Usually, he settles on about nine inches.

With length decided, it is possible to calculate, for given outer and inner disc radii (i.e., where the side begins and ends), the offset angle and overhang that will yield the lowest distortion across the record. One difficulty is that the radii, especially the inner radii, of discs vary from one to another,



a number of variations on each) to accomplish this are currently in use. One attaches tonearm, platter, and drive motor rigidly to the base, which is supported by resilient, shock-absorbing feet. Such feet can do a good job of fending off mechanical feedback, but their effectiveness against acoustic feedback is limited. For that reason, some manufacturers have begun using materials (often dense "concrete") in their turntable bases to reduce the influence of airborne vibration. This technique is not a complete cure, but it can help.

Properly executed, the second isolation method can provide an excellent barrier to both mechanical and acoustic feedback. It involves mounting the tonearm and platter on a subchassis, which floats on springs attached to the base. The best of these systems use springs compliant enough to get the resonance frequency down to 4 Hz or below. The only drawback is that the turntable can be sensitive to footfalls, which produce very low frequency resonances. Cures for this problem include damping the suspension springs, setting the turntable on a strut-mounted wall shelf or a heavy, rigid table (a good idea, in any case), and using a set of accessory insulating feet.

Unfortunately, there is no standard test for acoustic and mechanical isolation. (If there were, it might stimulate manufacturers to design better suspensions for their products, many of which are decidedly mediocre in this respect.) You can, however, find out something just by kicking the tires a bit. Some years ago, a prominent manufacturer demonstrated the effectiveness of its turntable's suspension by pounding on the table's top plate with a hammer while a record played on undisturbed.

You're not likely to make it very far into an audio store carrying a mallet, but you can thump on turntable bases with your knuckles and listen

which means that any "optimum" geometry will not be truly ideal for most records. The best one can hope for is a reasonable approximation. That, however, is better than nothing, and 2.6 and 4.8 inches have become the generally accepted magic numbers for the target radii.

With everything else fixed, offset angle and overhang become critical. The offset angle is the angle of the headshell relative to a straight line between the stylus and the pivot. The stylus shank relative to a straight line between the stylus and the pivot. The or by bending the tube into an S or J shape. A straight tube provides the lowest mass and highest rigidity for a given effective length but will not accept the virtually standard detachable headshell originated by SME (which uses the same connector as the integrated cartridge/headshell combinations that have been appearing lately). Most J- and S-shaped arms do. (That's why they're built that way.) But a J-shaped arm, besides being more massive than an equivalent straight arm, is unbalanced laterally and may require a lateral counterweight to prevent excessive friction. A properly designed S-shaped arm will be laterally balanced (that's the reason for the extra curve), but it tends to be even more massive than a J-shaped arm. As with anything else, don't be too concerned about how the design goal is achieved, so long as it's well done and fits your needs.

Overhang is the difference between the distance from pivot to stylus and that from pivot to spindle. Obviously, changing the overhang of a cartridge also changes the effective arm length, which changes the optimum offset angle, and so on. These things all interact. The problem is solvable, though, and if the designer has done his homework and you follow his instructions meticulously, all will be well.

Many tonearms, however, are designed incorrectly or come with incorrect instructions or both. In the absence of any other guide, it's probably best to follow the manufacturer's instructions. But there are several alignment aids on the market that can help you set up any arm the way it really should be, almost without regard to how badly the manufacturer has bungled his end of the job. Until the industry cleans up its act, a device such as DB Systems' Phono Alignment Protractor or Cart-A-Lign's phono alignment device is sure to be a good investment.

to the results. Try it first with a record playing, and observe whether the tonearm continues to track steadily. Then turn off the player, leaving the stylus resting in the groove, and tap some more. Ideally, you should hear a dull thud from the base and little or no sound from the loudspeakers. If the showroom has wood floors, you might also try jumping up and down while a record plays to see whether the tonearm jumps with you. These tests certainly aren't scientific, but they're better than nothing.

As with any other component, your buying decision must be based in part on what you want the unit to do for you. The contemporary single-play turntable market offers many degrees of automation, ranging from completely manual designs, which require you to set the stylus down in the groove at the beginning of a record and to remove it at the end, to designs so automatic that you can program them to play certain tracks of a disc in a certain order, to repeat them, and so forth. Although the uppermost reaches of performance remain the province of manual turntables, there is little reason for most people to eschew automatics and changers. There is nothing inherently bad about automatic operation; the best of the breed are really very fine. Even changers have evolved to the point where their performance rivals some fine single-play models.

If you decide to go with a manual anyway, you still will have to decide whether you want an integrated system or separates. Theoretically, it should be possible to get better performance with an integrated turntable/arm unit, because the designer can tune the whole system for optimum performance. In practice, however, some of the finest ensembles result from the mating of separate arms and turntables. Aside from the premium price you pay for separates, it takes a seasoned enthusiast or knowledgeable dealer to make the correct match and install the arm properly.

Automatic turntables are not inherently bad; some rival single-play models.

There is also the question of features. Most turntables and tonearms include a damped cueing system that enables the user to lift and set down the stylus without going through the risky business of moving the tonearm by hand. Some arms include adjustments for height, enabling you to optimize the vertical tracking angle of your cartridge, and for lateral tilt of the cartridge. Getting these angles set just right should reduce record and stylus wear and offers at least theoretical performance advantages, but whether this kind of fine tuning makes a significant audible difference is a matter of dispute. The available evidence seems to indicate that, provided these angles are not too far off, it doesn't much matter.

If you change cartridges often, you probably will want a tonearm with either a detachable headshell or arm tube. The latter has been gaining favor of late because it puts the relatively heavy connector assembly near the pivot, where it will make a smaller contribution to the arm's effective mass.

Turntables are beginning to sport some fancy speed-regulating mechanisms—quartz lock, phase-lock loop, and so forth. These will yield better numbers, but most listeners probably won't hear the difference. Some manufacturers use an integrated circuit computer called a microprocessor for this function. One turntable so equipped allows its LED speed readout to be switched to a timer mode—a real boon for the inveterate tapester. Other manufacturers are bringing out turntables with remote control or elaborate programmable track-selection and record-handling facilities.

In the future, we can expect computer technology, in the form of programmable microprocessors, to find its way into more and more turntables. They are the harbingers of the fully digital future, which eventually will displace the analog disc and banish forever most of the problems we have discussed here. **HF**

Phono Equipment

Tonearms

ADC
Audio Dynamics Corp.
Pickett District Road
New Milford, Conn. 06776

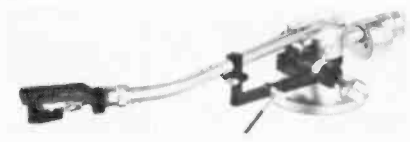
LMF-1

Price	$205
Length	9 1/3", pivot to stylus
Friction	Less than 2 mg
Eff. mass	5.5 grams
Cart. mass	4 to 11 grams
VTF range	0 to 1.5 gram
Cable capac.	220 pF
Resonance	11 Hz (with ADC ZLM Improved cartridge)
Track. error	0 degree at 3.2"
Headshell	Fixed
Cueing	Two-way
Features	Tapered carbon-fiber arm with a low-mass-to-high-tensile-strength ratio; hand-picked stainless steel instrument bearings, micron-polished for virtually frictionless movement; compatible with all high quality magnetic cartridges between 4 and 11 grams in weight

Models also available
ALT-1, $149.95

AUDIO-TECHNICA
Audio Technica U.S., Inc.
1221 Commerce Drive
Stow, Ohio 44224

AT-1010



Price	$350
Length	9½", pivot to stylus
Eff. mass	10 grams
Cart. mass	4 to 14 grams
VTF range	0 to 2.5 grams
Resonance	10 Hz (with AT-14Sa cartridge)
Track. error	1.5 degree
Headshell	Removable
Cueing	Yes
Features	Dynamic Tracing System eliminates change in tracking force as groove modulation varies; adjustable damping and lateral balance; interchangeable die-cast magnesium headshell

AT-1005

Price	$90
Length	9½", pivot to stylus
Eff. mass	20 grams
Cart. mass	5 to 24 grams
VTF range	0 to 3 grams
Resonance	11 Hz (with AT-14Sa cartridge)
Track. error	1 degree, 30 min
Headshell	Removable
Features	Optional AT-L2 hydraulic lift, $17; extra AT-S headshell available separately at $8

Models also available
ATP-16T, $150; ATP-12T, $150

CONNOISSEUR
Hervic Electronics, Inc.
18750 Oxnard St., #406
Tarzana, Calif. 91356

SAU-4

Price	$160
Length	8 7/16", pivot to stylus
Friction	10 mg
Eff. mass	4 grams
VTF range	0 to 4 grams
Cable capac.	400 pF
Track. error	0 degree at 2 2/5" radius
Headshell	Removable
Cueing	Yes
Features	Viscous-damped unipivot with pendant balance antiskate weighted (graduated); built-in cueing damped in both directions; spirit level; plug-in audio cables

Models also available
SAU-2, $95

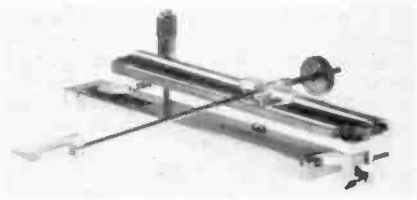
DECCA
Rocelco, Inc.
1669 Flint Road
Downsview, Ontario M3J 2J7
Canada

Decca International

Price	$149.50
Length	9½", pivot to stylus
Friction	11¼ to 3.5 mg
Eff. mass	9 grams
VTF range	0 to 3.5 grams
Resonance	10 Hz (with Decca Gold or Plum cartridge)
Track. error	0 degree at 2.4" radius
Headshell	Removable
Cueing	No
Features	Jeweled unipivot bearing; magnetic antiskating; magnetic suspension; silicon viscous-damped

DENNESEN
Dennesen Electrostatics
P.O. Box 51
Beverly, Mass. 01915

ABLT-I



Price	$1,250
Length	7½", pivot to stylus
Friction	0 mg
Eff. mass	Variable
Cart. mass	4 to 11 grams
VTF range	0 to 3 grams
Cable capac.	75 pF
Resonance	11.5 Hz (with most cartridges by varying counterweights)
Track. error	0 degree
Headshell	Fixed
Cueing	Yes
Features	Air-bearing; straight-line tracking

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

DA-401

Price	$360
Length	9⅝", pivot to stylus
Friction	25 mg
Eff. mass	6 grams
Cart. mass	4 to 10 grams
VTF range	0 to 2 grams
Cable capac.	40 pF
Resonance	10 Hz (with DL-303 cartridge)
Track. error	2 degrees at 2⅜" radius
Headshell	Removable
Cueing	Yes
Features	Contoured magnetic non-contact antiskating; all electrical connections gold-plated; static balanced; dynamic damping

Models also available
DA-307, $275

FIDELITY RESEARCH OF AMERICA
Fidelity Research, Inc.
P.O. Box 5242
Ventura, Calif. 98003

FR-66ss (silver)

Price $1,300
Length 12", pivot to stylus
Friction 5 mg
Eff. mass 38 grams (with FR/S-3 headshell)
VTF range 0 to 5 grams
Resonance 6.7 Hz (with FR-Mk. 2 or FR-1 Mk. 3F cartridge and FR/S-3 headshell)
Track. error +1 degree, 40 min to 0.36 degree, 36 mln
Headshell Removable
Features Silver wire in tonearm from headshell attachment to bottom of pillar post

FR-64ss (silver)

Price $640
Length 9½", pivot to stylus
Friction 5 mg
Eff. mass 30 grams (with FR-1 Mk. 2 or FR-1 Mk. 3F cartridge and FR/S-3 headshell)
VTF range 0 to 5 grams
Resonance 7 Hz (with FR-1 Mk. 2 or FR-1 Mk. 3F cartridge)
Track. error +1 degree, 40 min to –1 degree, 20 min
Headshell Removable
Features Nonmagnetic stainless steel construction; gold-plated output connectors; stylus force set by linear dynamic balance spring with 0.5 gram adjustment; accessories available include a heavy stabilizer (nonadjustable) and adjustable arm stabilized for changing stylus tracking angle while playing record; also available as Model FR-64ss for $640 with silver wire inside tonearm from headshell attachment to bottom of pillar post

Models also available

FR-14, $400; FR-12, $400

FULTON
Fulton Electronics
4204 Brunswick Ave. North
Minneapolis, Minn. 55422

Fulton Tonearm

Price $1,295
Length 9¼", pivot to stylus
Cart. mass 2.5 to 10 grams
VTF range 0 to 4 grams
Cable capac. 58 pF
Resonance 9 Hz (with Fulton cartridge)
Headshell No headshell; unique design
Cueing No

GRACE
Sumiko, Inc.
Box 5046
Berkeley, Calif. 94705

G-1040

Price $300
Length 9½", pivot to stylus
Friction 10 mg
Eff. mass 9.5 grams
Cart. mass 4 to 12 grams
VTF range 0 to 3 grams
Cable capac. 100 pF
Resonance 10 Hz (with Grace F-9L cartridge)
Track. error 1.5 degree
Headshell Removable; universal

G-714

Price $275
Length 9½", pivot to stylus
Friction 3 mg
Eff. mass 7 grams
Cart. mass 4 to 14 grams
VTF range 0 to 3.3 grams
Cable capac. 100 pF
Resonance 10 Hz (with Supex SD-900/E+ cartridge)
Track. error 1.5 degree
Headshell Removable; proprietary
Cueing Yes
Features Unipivot, oil-damped, wooden (teak) tonearm

Models also available

G-704, $275; G-707, $190 (black, $200); G-747, $275

KEITH MONKS
Keith Monks Audio (USA)
652 Glenbrook Road
Glenbrook, Conn. 06906

M-9BA Mk. III

Price $241.80
Length 9", pivot to stylus
Friction 4 mg lateral and vertical
Eff. mass 6 grams/cartridge tracking at 1 gram
VTF range 0.5 to 2.5 grams
Resonance 13 Hz (with 6-gram cartridge mass at 25 CU; dynamic compliance at 1 gram pressure)
Track. error 0 degree at 2.375" radius
Headshell Fixed
Features No wires thru pivot point; top arm removes completely to allow easy change of cartridges with interchangeable prebalanced arms

LINN PRODUCTS
Audiophile Systems
5750 Rymark Court
Indianapolis, Ind. 46250

LV-II

Price $650
Length 9", pivot to stylus
Eff. mass 12 grams
Cart. mass 2 to 12 grams
VTF range 0 to 3 grams
Cable capac. 78 pF
Headshell Fixed
Cueing Yes

LUSTRE
Sumiko, Inc.
Box 5046
Berkeley, Calif. 94705

GST-801

Price $500
Length 9¾", pivot to stylus
Friction 5 mg
Eff. mass 9.5 grams
Cart. mass 4 to 16 grams
VTF range 0 to 2.5 grams
Cable capac. 100 pF
Resonance 10 Hz
Track. error 1.1 degree at inner radius
Headshell Removable
Cueing Yes
Features Dynamic balance; magnetic flux stylus force and antiskate application; magnesium headshell adjustable about the azimuth; stainless steel, internally damped arm tube; helicoid vertical tracking angle adjustment

LUXMAN
Lux Audio of America, Ltd.
160 Dupont St.
Plainview, N.Y. 11803

TA-1

Price $160
Length 15", pivot to stylus
Features Removable tube close to pivot

MAGNEPAN
Magnepan, Inc.
1645 9th St.
White Bear Lake, Minn. 55110

Unitrac I®

Price $295
Length 9.5", pivot to stylus
Friction Less than 5 mg
Eff. mass 8 grams
Cart. mass 3 to 12 grams
VTF range 0 to 3 grams
Cable capac. 110 pF
Resonance 5 to 12 Hz (typical)
Track. error 1.77 degree at 6" radius
Headshell Removable
Cueing Yes
Features Adjustable vertical tracking angle while listening; stable, undamped unipivot design; low-inertia, high-stability, high-rigidity design

MICHELL ENGINEERING
J. A. Michell Engineering, Ltd.
5930 Penfield Ave.
Woodland Hills, Calif. 91367

Focus

Price $275
Length 9 3/10", pivot to stylus
Eff. mass 5 grams
Cart. mass 2 to 14 grams
VTF range ⅛ to 6 grams
Cable capac. 165 pF
Resonance 8 Hz (with Koetsu cartridge)
Track. error 0.5 degree at 8" radius
Headshell Removable
Cueing Yes
Features 23.75 degrees headshell offset angle; fixed pivot to stylus length; double aluminum tube (concentric); triple-vane damping in vertical plane on unipivot; idealized geometry

MICRO SEIKI
Great American Sound
20940 Lassen St.
Los Angeles, Calif. 90060

MAX-282

Price $1,000
Length 11.1", pivot to stylus
Friction 5 mg horizontal and vertical
Cart. mass 4 to 20 grams
VTF range 0 to 3 grams
Track. error 1.2 degree
Headshell Fixed, removable, proprietary, or universal
Cueing Yes
Features Full 4-point gimbal suspension; solid-silver triple-sealed output cable; variable dampening; interchangeable tonearm tubes; 4 lbs. stabilizer

Models also available

CF-XI, $225; MAX-701, $145

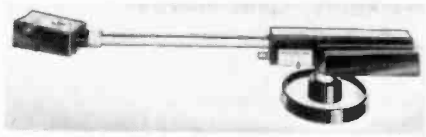
MISSION
Mission Electronics North America Corp.
89 Galaxie Blvd.
Resdale, Ontario M9W 6A4

Mission 774
Price $347

REGA RESEARCH LTD.
Import Audio Ltd.
13430 Clayton Road
St. Louis, Mo. 63131

R-200
Price $150
Length 9½", pivot to stylus
Friction 10 mg
Eff. mass 16 grams
VTF range 0.1 to 3 grams
Headshell Removable
Cueing Yes
Features Strict rigidity at critical points; arm cable matched for arm

SHURE
Shure Bros, Inc.
222 Hartrey Ave.
Evanston, Ill. 60204

M232


Price $52
Length 8¼", pivot to stylus
VTF range 1.5 or more grams
Headshell Removable
Cueing No
Features For 12" recordings; full range of adjustments for static and dynamic balance, cartridge overhang, arm height, etc.

SIGNET
Signet Co.
4701 Hudson Drive
Stow, Ohio 44224

XK-50


Price $400
Length 9 29/64", pivot to stylus
Cart. mass 4 to 11 grams
VTF range 0.1 to 1.6 gram
Cable capac. 75 pF
Resonance 10 Hz (with high-compliance cartridge)
Track. error ±1 degree
Headshell Fixed
Cueing Yes
Features Signetrace® damped planar tracking; detachable pipe at pivot; gold-plated electrical contacts; sterling-silver wiring with Teflon coating

SME
Shure Bros. Inc.
222 Hartrey Ave.
Evanston, Ill. 60204

3009 Series III-S
Price $240
Length 9", pivot to stylus
Friction 20 mg
Eff. mass 5 grams
Cart. mass 0.2 to 13.7 grams
VTF range 0 to 2.5 grams
Cable capac. 60 pF
Resonance 11 to 12 Hz (with V15 Type IV cartridge)
Track. error 1.5 degrees at 5.5 inch radius
Headshell Removable
Cueing Yes
Features Detachable cartridge-carrying arm; sliding weight adjustments; fluid damper optional

Models also available
3009 Series III, $294; 3009 Series II Improved, $177

STAX
Stax Koygo, Inc.
940 E. Dominguez St.
Carson, Calif. 90746

UA-90
Price $520
Length 12¼", pivot to stylus
Friction 10 mg
Cart. mass 4 to 17 grams
Resonance 5 Hz
Headshell Fixed
Cueing Yes
Features Straight carbon-fiber arm; high sensitivity; excellent tracking

UA-70
Price $290
Length 12¼", pivot to stylus
Friction 5 mg
Cart. mass 0 to 15 grams
Resonance 5 Hz
Headshell Universal
Cueing Yes
Features High sensitivity; excellent tracking; metal tubular arm

UA-7
Price $260
Length 9 2/5", pivot to stylus
Friction 5 mg
Cart. mass 2 to 16 grams
Resonance 7 Hz
Headshell Universal
Cueing Yes
Features High sensitivity; excellent tracking; metal arm

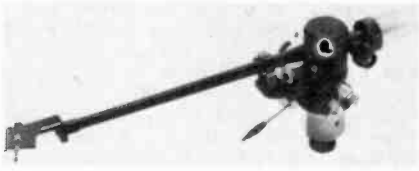
Models also available
UA-9, $480; UA-7cf, $335

SUMIKO
Sumiko, Inc.
P.O. Box 5046
Berkeley, Calif. 94705

THE ARM
Price $1,200
Length 8.19", pivot to stylus
Friction 10 mg
Eff. mass 4.5 grams
VTF range 0 to 3 grams
Resonance 10 Hz (with 5.5 cartridge)
Track. error 1.25 degree at 60" radius
Headshell Fixed
Features Dynamic balance type; variable mass counterweight is internally decoupled; inner wires of special silver-coated copper

ULTRACRAFT
Osawa & Co. (U.S.A.), Inc.
521 Fifth Ave.
New York, N.Y. 10017

AC-3000 Mk II
Price $500
Length 9½", pivot to stylus
Cart. mass 6 to 12.5 grams
VTF range 0 to 2 grams
Track. error 1 degree
Headshell Fixed
Cueing Yes
Features Adjustable oil-damped single-needle-point support system; interchangeable plug-in, low-mass arm stem (incl. cartridge mounting); height-adjustable cueing lever; compatible with all high-quality cartridges; easily installed on most single-play turntables; black anodized brass

AC-30


Price $299.95
Length 9½", pivot to stylus
Cart. mass 6 to 12 grams
VTF range 0 to 2 grams
Cable capac. 210 pF
Track. error 1 degree
Headshell Fixed
Cueing Yes
Features Adjustable, oil-damped single-needle-point support system; compatible with all high quality cartridges; easily installed on most single-play turntables

Models also available
AC-300 Mk II, $399.95

VA Systems
VA Systems, Inc.
Box 315
Savage, Minn. 55378

Record Tracing Instrument
Price $2,850
Length 7½", pivot to stylus
VTF range 0.1 to 6 grams
Cable capac. 36 pF
Resonance 10 Hz (with Denon 103D cartridge)
Track. error 0 degree at 7½" radius
Headshell Removable; proprietary
Cueing Yes
Features Precision straight-line tracking, servo-drive arm; remote vertical-tracking angle; remote tracking force; remote cartridge azimuth; arm overhang adjustment

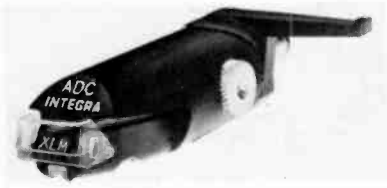
Phono Cartridges

ADC
Audio Dynamics Corp.
Pickett District Road
New Milford, Conn. 06776

Astrion

Price	$185
Type	Induced Magnet
Stylus	Square-nude elliptical (extended contact); 0.0015" x 0.00025"
Track. force	1.2 to ±0.2 gram
Output	0.9 mV at 1 cm/sec at 1 kHz
Response	20 Hz to 20 kHz, ±1 dB
Separation	30 dB at 1 kHz (or from 20 Hz to 10 kHz)
Vert. angle	20 degrees
Recom. load	47K ohms; 300 pF
Features	Laser-etched solid-sapphire cantilever Orbital Pivot™ suspension system; micromachined armature without wires, adhesives, or governors

XLM Mk. III Integra



Price	$120
Weight	5.75 grams
Type	Induced magnet
Stylus	Nude elliptical; 0.2 x 0.7 mil
Track. force	1.2, ±0.3 grams
Compliance	32 x 10^{-6} cm/dyne lateral
Output	1 mV at 1 cm/sec at 1 kHz
Response	10 Hz to 20 kHz, ±1 dB; 20 kHz to 24 kHz, ±1.5 dB
Separation	28 dB (1 kHz); 18 dB (10 kHz)
Vert. angle	Adjustable
Recom. load	47K ohms; 275 pF
Features	Carbon-fiber headshell; calibrated overhang adjustment

QLM 36 Mk. III

Price	$80
Weight	5.75 grams
Type	Induced magnet
Stylus	Diasa elliptical; 0.3 x 0.7 mil
Track. force	0.75 to 1.5 gram
Compliance	32 x 10^{-6} cm/dyne lateral
Output	1.1 mV at 1 cm/sec at 1 kHz
Response	15 Hz to 20 kHz, ±2 dB
Separation	26 dB (1 kHz); 15 dB (10 kHz)
Vert. angle	20 degrees
Recom. load	47K ohms; 275 pF
Features	Diamond tip bonded to a sapphire base for lower cost while maintaining all qualities necessary for wide frequency response and separation; effective moving mass: 0.48 mg

QLM 30 Mk. III

Price	$35
Weight	5.75 grams
Type	Induced magnet
Stylus	Spherical; 0.7 mil
Track. force	3 to 5 grams
Compliance	7 x 10^{-6} cm/dyne lateral
Output	1.5 mV at 1 cm/sec at 1 kHz
Response	20 Hz to 18 kHz, ±3 dB
Separation	18 dB (1 kHz)
Vert. angle	20 degrees
Recom. load	47K ohms; 275 pF
Features	Effective moving mass: 1.63 mg

Models also available

ZLM Improved, $135; XLM Mk III Improved, $110; XLM Mk II Integra, $110; XLM Mk I Intergra, $69.95; QLM 34 Mk III, $65; QML 33 Mk III, $55; QLM 32 Mk III, $50

ADCOM
Adcom
9 Jules Lane
New Brunswick, N.J. 08901

XC Linetrace

Price	$240
Weight	4.7 grams
Type	Moving coil
Stylus	0.25 x 1.5 mil
Track. force	1.8 to 2.3 grams
Compliance	13 lateral; 11 vertical
Output	2.5 mV at 5 cm/sec
Response	20 Hz to 20 kHz, ±1 dB
Separation	28 dB (1 kHz)
Vert. angle	20 degrees
Recom. load	47K ohms (non-critical)
Features	Thin wall, large diameter aluminum cantilever for best stiffness-to-weight ratio; high-output version featuring Crosscoil™ armature

XC Elliptical

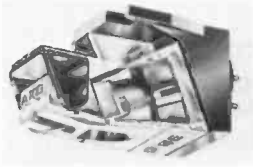
Price	$200
Weight	4.7 grams
Type	Moving coil
Stylus	Elliptical; 0.3 x 0.7 mils
Track. force	1.8 to 2.3 grams
Compliance	13 lateral; 11 vertical
Output	2.5 mV at 5 cm/sec
Response	20 Hz to 20 kHz, ±1 dB
Separation	28 dB (1 kHz)
Vert. angle	20 degrees
Recom. load	47K ohms; (non-critical)
Features	Thin wall, large diameter aluminum cantilever for best stiffness-to-weight ratio; high-output version featuring Crosscoil™ armature

Models also available

LC Elliptical, $160; LC Linetrace, $200

AKG
AKG Acoustics, Inc.
77 Selleck St.
Stamford, Conn. 06902

P-8ES



Price	$165
Type	Moving iron
Stylus	Elliptical; 0.2 x 0.7 mil
Track. force	0.75 to 1.25 gram
Compliance	35 x 10^{-6} cm/dyne lateral; 35 x 10^{-6} cm/dyne vertical
Output	3.75 mV at 5 cm/sec at 1 kHz
Response	10 Hz to 28 kHz
Separation	30 dB at 1 kHz
Vert. angle	20 degrees
Recom. load	47K; 470 pF
Features	Individual response and separation curve; employs patented transversal suspension

P-6E

Price	$60
Type	Moving iron
Stylus	Elliptical; 0.4 x 0.8 mil
Track. force	1.5 to 2 mils
Compliance	20 x 10^{-6} cm/dyne lateral; 20 x 10^{-6} cm/dyne vertical
Output	6.25 mV at 5 cm/sec at 1 kHz
Response	20 Hz to 20 kHz
Separation	25 dB at 1 kHz
Vert. angle	20 degrees
Recom. load	47K; 470 pF
Features	Employs patented transversal suspension

Models also available

P-8E, $115; P-7E, $80; P-6R, $50

ANDANTE
Sumiko, Inc.
Box 5046
Berkeley, Calif. 94705

E

Price	$90
Type	Moving magnet
Stylus	Elliptical; 0.2 x 0.8 mil
Track. force	1 to 1.9 gram
Compliance	20 x 10^{-6} cm/dyne lateral; 18 x 10^{-6} cm/dyne vertical
Output	4 mV at 5 cm/sec at 1 kHz
Response	12 Hz to 30 kHz, ±5 dB
Separation	30 dB (1 kHz)
Vert. angle	20 degrees
Recom. load	47K ohms; 250 pF

Models also available

S, $65

AUDIO-TECHNICA
Audio Technica U.S., Inc.
1221 Commerce Drive
Stow, Ohio 44224

AT-32

Price	$300
Weight	6.8 grams
Type	Moving coil
Stylus	Nude-mounted elliptical; 0.2 x 0.7 mil on 0.12mm square shank
Track. force	1 to 2 grams
Output	0.4 mV at 5 cm/sec at 1 kHz
Response	10 Hz to 24 kHz
Separation	30 dB at 1 kHz (or from 20 dB at 10 kHz)
Recom. load	17K ohms
Features	Beryllium cantilever; samarium-cobalt magnet

AT-20SS

Price	$250
Weight	8 grams
Type	Dual moving magnet
Stylus	Shibata Plus; nude square shank
Track. force	0.75 to 1.75 gram
Output	2.7 mV at 5 cm/sec at 1 kHz
Response	5 Hz to 50 kHz
Separation	35 dB at 1 kHz (25 dB at 10 kHz)
Vert. angle	20 degrees
Recom. load	47K ohms; 100 pF
Features	Hand-selected version of AT-15SS; availability limited

AT-22

Price	$200
Weight	8.5 grams
Type	Moving magnet with toroidal coils
Stylus	Nude-mounted elliptical; 0.2 x 0.7 mil on 0.09mm square shank
Track. force	0.9 to 1.7 gram
Output	2.2 mV at 5 cm/sec at 1 kHz
Response	15 Hz to 23 kHz
Separation	30 dB at 1 kHz (or from 2 dB at 10 kHz)
Recom. load	47K ohms; 100 to 200 pF
Features	Beryllium cantilever

AT-140 LC

Price	$175
Weight	6.5 grams
Type	Moving magnet
Stylus	Linear contact on 0.15mm nude-mounted square shank
Track. force	0.8 to 1.8 gram
Output	5 mV at 5 cm/sec at 1 kHz
Response	5 Hz to 32 kHz
Separation	30 dB at 1 kHz (or from 20 Hz to 10 kHz)
Vert. angle	20 degrees
Recom. load	47K ohms; 100 to 200 pF
Features	Para-toroidal coil construction; unified 2-ply laminated coil core and pole pieces

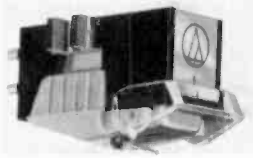
AT-125 LC

Price	$130
Weight	6.5 grams
Type	Moving magnet
Stylus	Linear contact
Track. force	1 to 1.8 gram
Output	5 mV at 5 cm/sec at 1 kHz
Response	15 Hz to 28 kHz
Separation	29 dB at 1 kHz (or from 20 Hz to 10 kHz)
Vert. angle	20 degrees
Recom. load	47K ohms; 100 to 200 pF
Features	Also available premounted on LS-12 headshell AT-125 LC/H for $145

AT-13Ea

Price	$100
Weight	7 grams
Type	Dual moving magnet
Stylus	Elliptical nude square shank; 0.2 x 0.7 mil
Track. force	0.75 to 1.75 gram
Output	4.2 mV at 5 cm/sec at 1 kHz
Response	10 Hz to 30 kHz
Separation	30 dB at 1 kHz (or from 20 dB at 10 kHz)
Vert. angle	20 degrees
Recom. load	47K ohms; 100 pF

AT-12XE



Price	$85
Weight	5.5 grams
Type	Dual moving magnet
Stylus	Nude elliptical; 0.3 x 0.7 mil
Track. force	1 to 1.75 gram
Output	4.2 mV at 5 cm/sec at 1 kHz
Response	15 Hz to 28 kHz
Separation	28 dB at 1 kHz (or from 19 dB at 10 kHz)
Vert. angle	20 degrees
Recom. load	47K ohms; 100 pF
Features	Built-in flip stylus guard

AT-12E

Price	$70
Weight	5.5 grams
Type	Dual moving magnet
Stylus	Elliptical; 0.4 x 0.7 mil
Track. force	1 to 2 grams
Output	4.2 mV at 5 cm/sec at 1 kHz
Response	15 Hz to 26 kHz
Separation	27 dB at 1 kHz (or from 18 dB at 10 kHz)
Vert. angle	20 degrees
Recom. load	47K ohms; 100 pF

ATP-2

Price	$60
Weight	7.2 grams
Type	Dual moving magnet
Stylus	Elliptical; 0.4 x 0.7 mil
Track. force	3 to 5 grams
Output	5.3 mV at 5 cm/sec at 1 kHz
Response	15 Hz to 22 kHz
Separation	23 dB at 1 kHz (or from 17 dB at 10 kHz)
Recom. load	47K ohms; 100 pF
Features	High-visibility coating on cantilever tip eases cueing in poor light

AT-71E

Price	$50
Weight	5.5 grams
Type	Moving magnet
Stylus	0.4 x 0.7 mil
Track. force	1 to 2 grams
Output	3.5 mV at 5 cm/sec at 7 kHz
Response	20 Hz to 22 kHz
Separation	22 dB at 7 kHz
Vert. angle	20 degrees
Recom. load	47K ohms; 100-200 pF

AT-70

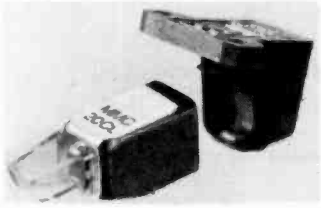
Price	$40
Weight	5.5 grams
Type	Moving magnet
Stylus	Uniradial; 0.7 mil
Track. force	1.5 to 2.5 grams
Output	3.5 mV at 5 cm/sec at 1 kHz
Response	20 Hz to 20 kHz
Separation	20 dB at 1 kHz
Vert. angle	20 degrees
Recom. load	47K ohms; 100 to 200 pF

Models also available

AT-25, $275; AT-24, $250; AT-23a, $225; AT-155 LC, $225; AT-15SS, $200; AT-15XE, $175; AT-14Sa, $150; AT-30E, $125; AT-12Sa, $120; AT-130E, $120; AT-120E, $90; ATP-3, $80; AT-110E, $65; AT-11E, $60; AT-11, $50; AT-105, $50; ATP-1 Cartridge, $45; AT-10, $40

BANG & OLUFSEN
Bang & Olufsen of America, Inc.
515 Busse Road
Elk Grove Village, Ill. 60007

MMC-20CL



Price	$240
Weight	4 grams (5.5 grams with mounting bracket)
Type	Moving micro-cross
Stylus	Contact line naked diamond
Track. force	1 gram
Compliance	40 lateral; 30 vertical
Output	2.12 mV at 5 cm/sec at 1 kHz
Response	20 Hz to 20 kHz, ±1 dB
Separation	30 dB at 1 kHz
Vert. angle	20 degrees
Recom. load	47K ohms; 220 pF
Features	Very low effective tip mass (0.3 mg) for less record wear; single crystal sapphire cantilever for maximum rigidity; see-through stylus guard; resonance graph included

MMC-10E

Price	$55
Weight	4 grams (5.5 grams with mounting bracket)
Type	Moving iron
Stylus	Ellipse; 5 x 15 micrometers
Track. force	1.5 gram
Output	2.12 mV at 5 cm/sec
Response	20 Hz to 20 kHz, ±3 dB
Separation	20 dB at 1 kHz
Vert. angle	20 degrees
Recom. load	47K ohms
Features	0.5 mg effective tip mass

Models also available

MMC-20EN, $140; MMC-20E, $90

CONCORD
Concord Electronics
6025 Yolanda Ave.
Tarzana, Calif. 91356

CMC-400

Price	$179.95
Weight	2.3 grams
Type	Moving coil
Stylus	Nude-mounted line contact diamond; 1.57 x 0.26 mil
Track. force	1 to 1.5 gram
Compliance	36 x 10^{-6} cm/dyne static; 11 x 10^{-6} cm/dyne dynamic
Output	0.2 mV at 5 cm/sec at 1 kHz
Response	10 Hz to 50 kHz
Separation	32 dB at 1 kHz
Vert. angle	20 degrees
Recom. load	40 to 100 ohms
Features	Low mass for straight or curved tonearms; removable stylus; requires head amp or recommended Concord CT-40 step-up transformer ($109.95)

CIM-50

Price	$39.95
Weight	6.2 grams
Type	Induced magnet
Stylus	Conical diamond; 0.65 mil
Track. force	1.5 to 2.5 grams
Compliance	27 x 10^{-6} cm/dyne (static); 9 x 10^{-6} cm/dyne (dynamic)
Output	3.5 mV at 5 cm/sec at 1 kHz
Response	10 Hz to 20 kHz
Separation	26 dB at 1 kHz
Vert. angle	20 degrees
Recom. load	30K to 100K ohms
Features	Low mass; ideal for straight-type tonearms

Models also available

CMC-300, $169.95; , $99.95; CIM-60, $49.95

DECCA
Rocelco, Inc.
1669 Flint Road
Downsview, Ontario M3J 2J7
Canada

Mk. V1 Gold

Price $199.50
Type Moving Iron
Stylus Elliptical; 0.6 x 0.3 mil
Track. force 1.5 gram
Compliance 15 x 10^{-6} cm/dyne lateral; 7.5 x 10^{-6} cm/dyne vertical
Output 5 mV at 5 cm/sec
Response 20 Hz to 20 kHz
Separation 20 dB (1 kHz)
Vert. angle 15 degrees
Recom. load 50K ohms; 250 to 300 pF
Features "Positive Scanning" no-cantilever suspension system for improved transient response

Models also available

Decca Mk. V1 Plum, $149.50

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

DL-303

Price $385
Weight 5.8 grams
Type Moving coil
Stylus Elliptical; 0.1 x 0.05 mil
Track. force 1 to 1.4 gram
Compliance 13 x 10^{-6} cm/dyne vertical at 100 Hz
Output 0.2 mV at 50 cm/sec at 1 kHz
Response 20 Hz to 70 kHz
Separation 28 dB (1 kHz)
Recom. load 0.1K ohms; 100 pF
Features Tapered double-construction cantilever; samarium cobalt magnet; one-point suspension system

DL-103s

Price $186
Weight 7.8 grams
Type Moving coil
Stylus Modified Shibata
Track. force 1.5 to 2.1 grams
Compliance 8 x 10^{-6} cm/dyne lateral
Output 0.3 mV at 5 cm/sec at 1 kHz
Response 20 Hz to 60 kHz
Separation 25 dB (1 kHz)
Recom. load 40 ohms or more

Models also available

DL-103D, $267; DL-301, $150; DL-103, $140

DUAL
United Audio Products, Inc.
120 South Columbus Ave.
Mt. Vernon, N.Y. 10553

ULM-60E

Price $150
Weight 2.5 grams
Type Moving magnet
Stylus Biradial; 6 x 18 mils
Track. force 0.5 to 1.25 gram
Compliance 30 x 10^{-6} cm/dyne lateral; 35 x 10^{-6} cm/dyne vertical
Output 0.7 mV at 1 cm/sec at 1 kHz
Response 10 Hz to 30 kHz
Separation 28 dB (1 kHz)
Vert. angle 20 degrees
Recom. load 47K ohms; 400 pF
Features Cartridge with mounting hardware weighs 2.5 grams

Models also available

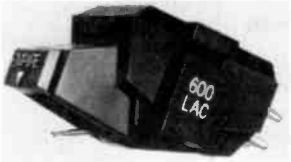
ULM-55E, $110; ULM-50E, $60

EMPIRE
Empire Scientific Corp.
1055 Stewart Ave.
Garden City, N.Y. 11530

EDR.9

Price $200
Weight 5.2 grams
Type Moving Iron
Stylus L.A.C.; 0.3 x 3 mils
Track. force 1 to 2 grams
Compliance 28 x 10^{-6} cm/dyne lateral; 28 x 10^{-6} cm/dyne vertical (static)
Output 4.5 mV at 5 cm/sec at 1 kHz
Response 20 Hz to 35 kHz, ±1¾ dB
Separation 30 dB (or from 500 Hz to 15 kHz)
Vert. angle 20 degrees
Recom. load 47K ohms; 150 pF
Features Inertially damped tuned stylus; insensitive to capacitance load

600 LAC



Price $175
Weight 5.3 grams
Type Moving iron
Stylus L.A.C.; 0.3 x 3 mils
Track. force 1 to 2 grams
Compliance 28.5 x 10^{-6} cm/dyne lateral; 28.5 x 10^{-6} cm/dyne vertical (static)
Output 4 mV at 3.54 cm/sec at 1 kHz
Response 20 Hz to 28 kHz, ±1¾ dB
Separation 30 dB at 1 kHz
Vert. angle 20 degrees
Recom. load 47K ohms; 150 pF
Features Inertially damped tuned stylus; samarium cobalt magnets; boron vapored aluminum cantilever

2000Z

Price $150
Weight 7 grams
Type Moving Iron (variable reluctance)
Stylus Elliptical; 0.2 x 0.7 mil
Track. force 0.75 to 1.25 gram
Compliance 30 x 10^{-6} cm/dyne lateral; 30 x 10^{-6} cm/dyne vertical (static)
Output 3 mV at 3.54 cm/sec at 1 kHz
Response 20 Hz to 20 kHz, ±1 dB
Separation 30 dB from 500 Hz to 15 kHz; 20 dB from 20 to 500 Hz; 25 dB from 15 to 20 kHz
Vert. angle 20 degrees
Recom. load 47K ohms; 300 pF
Features Ultra-low tip mass; low IM distortion; tapered cantilever

200E

Price $60
Weight 5.3 grams
Type Moving iron
Stylus Elliptical; 0.3 x 0.7 mil
Track. force 2 to 4 grams
Compliance 19 x 10^{-6} cm/dyne lateral; 19 x 10 cm/dyne vertical (static)
Output 5.5 mV at 3.54 cm/sec at 1 kHz
Response 20 Hz to 20 kHz, ±3 dB
Separation 25 dB (1 kHz)
Vert. angle 20 degrees
Recom. load 47K ohms; 250 pF
Features Samarium cobalt magnets; captured nut mounting system

Models also available

500 ID, $125; 400 TC, $100; 2000E/III, $85; 300 ME, $70; 100S, $40

EMT
Gotham Audio Corp.
741 Washington St.
New York, N.Y. 10014

XSD-15

Price $450
Weight 21 grams
Type Moving coil
Stylus Conical; 0.6 mil
Track. force 2 to 3 grams
Compliance 12 x 10^{-6} cm/dyne lateral
Output 0.15 mV at 1 cm/sec at 1 kHz
Response 20 Hz to 20 kHz
Separation 25 dB (1 kHz)
Vert. angle 15 degrees
Recom. load 0.8K ohms
Features Frequency intermodulation less than 0.5%

FIDELITY RESEARCH
Fidelity Research, Inc.
P.O. Box 5242
Ventura, Calif. 93003

FR-1 Mk. 7

Price $660
Type Moving coil
Stylus Elliptical (long-line contact)
Track. force 2.5 grams
Compliance 6.5 lateral; 10^{-6} cm/dyne vertical
Output 0.2 mV at 5 cm/sec at 1 kHz
Response 10 Hz to 45 kHz, ±2 dB
Separation 20 dB from 20 Hz to 200 Hz; –28 dB from 200 Hz to 10 kHz
Vert. angle 15 degrees
Recom. load 3 ohms impedance
Features Moving coil built on back of cantilever; cartridge built into its own headshell; mounts into universal headshell; FR-1 Mk. 7 cartridge and headshell combined weight 30 grams

Models also available

MC-201, N/A; FR-1 Mk3F, $230; FR-1 Mk2, $150

FULTON
Fulton Electronics
4204 Brunswick Ave. N.
Minneapolis, Minn. 55422

Fulton High Performance

Price $350
Weight 5 grams
Type Moving coil
Stylus Conical; 0.65 mil
Track. force 1.5 to 1.75 gram
Compliance 12 cm/dyne lateral; 10 cm/dyne vertical
Output 0.33 mV at 5 cm/sec at 1 kHz
Response 10 Hz to 60 kHz, ±0.5 dB
Separation 34 dB (1 kHz)
Vert. angle 20 degrees
Recom. load 4 ohms trans. or 47K ohms; 30 pF

GOLDRING
Hervic Electronics, Inc.
18750 Oxnard St., #406
Tarzana, Calif. 91356

G-900SE2

Price $160
Weight 4 grams
Type Moving magnet
Stylus Elliptical; 7 x 2 mils

Track. force 0.75 to 1.5 gram
Compliance 40 lateral; 20 vertical
Output 4.5 mV at 5 cm/sec at 1 kHz
Response 20 Hz to 20 kHz, ±2 dB
Separation 25 dB (nominal) kHz
Vert. angle 24 degrees
Recom. load 47K ohms; 150 to 200 pF
Features Low mass: 4 grams; designed for low-mass tonearms (under 4 grams)

820 Super E

Price $85
Weight 7 grams
Type Moving magnet
Stylus Biradial; 0.3 x 0.7 mil
Track. force 0.6 to 1.75 gram
Compliance 30 cm lateral
Output 4 mV at 5 cm/sec
Response 10 Hz to 25 kHz
Separation 25 dB (1 kHz)
Recom. load 47 to 100K ohms; 200 to 400 pF
Features Hum-shielded; tie wire minimizes fore/aft cantilever movement

820

Price $50
Weight 7 grams
Type Moving magnet
Stylus 0.6 mil
Track. force 1.5 to 4 grams
Compliance 20 cm lateral
Output 5 mV at 5 cm/sec
Response 20 Hz to 20 kHz
Separation 20 dB (1 kHz)
Recom. load 47 to 100K ohms; 200 to 400 pF
Features Special polymer cantilever suspension; tie-wire cantilever restraint

850

Price $30
Weight 7 grams
Type Moving magnet
Stylus 0.7 mil
Track. force 2.5 to 4 grams
Compliance 15 cm lateral
Output 8 mV at 5 cm/sec
Response 20 Hz to 18 kHz
Separation 20 dB at 1 kHz
Recom. load 47 to 100K ohms; 200 to 400 pF
Features Shielded from hum

Models also available

G-900E, $95; 800 Super E, $87; G-820 DJ, $85; 820 E, $60; 800 E, $70; 800, $40; 800 H, $40

GRACE
Sumiko, Inc.
Box 5046
Berkeley, Calif. 94705

SF-90

Price $250
Type Moving magnet
Stylus Advanced Luminal Trace; 0.2 x 0.7 mil
Track. force 1 to 1.5 gram
Compliance 20 x 10^{-6} cm/dyne lateral; 20 x 10^{-6} cm/dyne vertical
Output 5.5 mV at 5.0 cm/sec at 1 kHz
Response 10 Hz to 40 kHz, ±3 dB
Separation 30 dB (1 kHz)
Vert. angle 22 degrees
Recom. load 47K ohms; 250 pF
Features Integrated cartridge and headshell with low-mass Advanced Luminal Trace stylus permits an effective tip mass of 0.3 mg for lower record wear and longer stylus life

F-9E

Price $169
Weight 6 grams
Type Moving magnet
Stylus Elliptical; 0.3 x 0.7 mil
Track. force 1.25 to 2 grams
Compliance 25 x 10^{-6} cm/dyne lateral; 25 x 10^{-6} cm/dyne vertical
Output 3.5 mV at 5 cm/sec at 1 kHz
Response 10 Hz to 45 kHz, ±0.5 dB
Separation 30 dB (1 kHz)
Recom. load 47K ohms, 100K ohms; 100pF

Models also available

F-9L, $160; F-8L, $110

HERVIC
Hervic Electronics, Inc.
18750 Oxnard St., #406
Tarzana, Calif. 91356

G-900 SE Mk. 2

Price $160
Weight 4 grams
Type Moving magnet
Stylus Elliptical; 0.7 x 0.2 mil
Track. force 0.75 to 1.5 gram
Compliance 40 cm lateral; 20 vertical
Output 4.5 mV at 5 cm/sec at 1 kHz
Response 20 Hz to 20 kHz, ±2 dB
Separation 25 dB
Vert. angle 24 degrees
Recom. load 47K ohms; 150 to 250 pF

Models also available

G-900E, $95

JVC
US JVC Corp.
58-75 Queens Midtown Expressway
Maspeth, N.Y. 11378

MC-2E

Price $199.95
Type Moving coil
Stylus Elliptical; 0.07 x 0.14 mil
Track. force 1.3 to 1.7 gram
Compliance 8 x 10^{-6} cm/dyne lateral
Output 0.2 mV at 5 cm/sec at 1 kHz
Response 10 Hz to 25 kHz
Separation 25 dB (1 kHz)
Recom. load 30 ohms

KOETSU
Sumiko, Inc.
Box 5046
Berkley, Calif. 94705

MC ONE

Price $1,000
Type Moving coil
Stylus Line contact; 0.3 x 0.8 mil
Track. force 1.5 gm
Compliance 15 x 10^{-6} cm/dyne lateral; 15 x 10^{-6} cm/dyne vertical
Output 0.4 mV
Response 5 Hz to 60 kHz
Separation 30 dB (1 kHz)
Vert. angle 20 degrees
Features Custom-made moving-coil cartridge; special boron/aluminum cantilever

LINN PRODUCTS
Audiophile Systems
5750 Rymark Court
Indianapolis, Ind. 46250

Linn-Asak DC-2100K

Price $450
Weight 6 grams
Type Moving coil
Stylus Elliptical; 0.2 to 0.8 mil
Track. force 1.5 to 1.9 grams
Compliance 12 x 10^{-6} cm/dyne lateral
Output 0.2 mV at 5 cm/sec at 1 kHz
Response 10 Hz to 5 kHz, ±3 dB
Separation 27 dB (1 kHz)
Vert. angle 20 degrees
Recom. load 3.5 ohms

MICRO-ACOUSTICS
Micro-Acoustics Corp.
8 Westchester Plaza
Elmsford, N.Y. 10523

630

Price $250
Weight 2.5 to 4 grams (adjustable with Vari-Balance)
Type Direct-coupled
Stylus Micro-Point II
Track. force 0.7 to 1.4 gram
Output 3.5 mV at 3.54 cm/sec at 1 kHz
Response 5 Hz to 20 kHz, ±1 dB
Separation 30 dB (1 kHz)
Vert. angle 19 degrees
Recom. load 5K to 100K ohms; 25 to 1,500 pF (not critical)
Features Micro-fine beryllium cantilever; iridium-platinum axial damper; carbon-fiber construction; warp track; universal match micro circuit; dynamic feedback dampers

2002-E

Price $125
Weight 4 grams
Type Direct-coupled electret
Stylus Elliptical; 0.2 x 0.7 mil
Track. force 0.7 to 1.4 grams
Compliance 27 x 10^{-6} cm/dyne lateral; 25 x 10^{-6} cm/dyne vertical
Output 3.5 mV at 5 cm/sec
Response 5 Hz to 20 kHz, ±1.5 dB
Separation 30 dB (1 kHz)
Vert. angle 19 degrees
Recom. load 10 to 100K ohms; 100 to 1,500 pF (not critical)
Features Full 2-year warranty; patented electret design; low mass

Models also available

530-MP, $200; 3002, $150; 382, $120; 282-E, $100

MISSION
Mission Electronics North America Corp.
89 Galaxie Blvd.
Resdale, Ontario M9W 6A4

Mission 773

Price $347

NAD
NAD (USA), Inc.
Mackintosh Lane
P.O. Box 529
Lincoln, Mass. 01773

9000

Price $160
Weight 6 grams
Type Moving coil
Stylus 0.4 x 0.7 mil
Track. force 1.5, ±0.3 grams
Output 1.8 mV at 3.54 cm/sec at 1 kHz
Response 20 Hz to 20 kHz, ±2 dB
Separation 20 dB (1 kHz)
Recom. load 47K ohms; less than 1,000 pF (non-critical)
Features Low mass (under 6 grams); requires no head amp

NAGATRON
Nagatronics Corp.
P.O. Box 509
Baldwin, N.Y. 11510

9600

Price $225
Weight 7.6 grams
Type Induced magnet
Stylus Semi-line contact super elliptical
Track. force 0.9 to 1.3 grams (1.1 optimum)
Compliance 15 x 10⁻⁶ cm/dyne (100 Hz) lateral; 15 x 10⁻⁶ cm/dyne (100 Hz) vertical
Output 2 mV at 5 cm/sec at 1 kHz
Response 20 Hz to 30 kHz
Separation 27 dB (1 kHz)
Vert. angle 20 degrees, ±4 degrees
Recom. load 29K ohms
Features Triangular stylus; boron cantilever; effective mass 0.031; aluminum-magnesium alloy body

360 CE

Price $135
Weight 6.1 grams
Type Induced magnet
Stylus Elliptical; 0.3 x 0.7 mil
Track. force 1.7 grams
Compliance 9 x 10⁻⁶ cm/dyne (100 Hz) lateral; 9 x 10⁻⁶ cm/dyne (100 Hz) vertical
Output 4 mV at 5 cm/sec at 1 kHz
Response 10 Hz to 25 kHz, ±2.5 dB
Separation 25 dB (1 kHz)
Vert. angle 22 degrees
Recom. load 50K ohms; 350 pF
Features Solid carbon-fiber cantilever

210 E

Price $84
Weight 5.8 grams
Type Induced magnet
Stylus Elliptical; 0.3 x 0.7 mil
Track. force 1.75 gram
Compliance 8 x 10⁻⁶ cm/dyne (100 Hz) lateral; 8 x 10⁻⁶ cm/dyne (100 Hz) vertical
Output 4 mV at 5 cm/sec at 1 kHz
Response 10 Hz to 25 kHz
Separation 25 dB (1 kHz)
Vert. angle 22 degrees
Recom. load 50K ohms; 350 pF
Features UT-58 cantilever

244 DE

Price $64
Weight 5.7 grams
Type Induced magnet
Stylus Elliptical; 0.3 x 0.7 mil
Track. force 1.5 to 2 grams
Compliance 8 x 10⁻⁶ cm/dyne lateral; 8 x 10⁻⁶ cm/dyne vertical
Output 4 mV at 5 cm/sec at 1 kHz
Response 20 Hz to 25 kHz
Separation 25 dB (1 kHz)
Vert. angle 22 degrees
Recom. load 50K ohms; 350 pF
Features VI-58 aluminum cantilever

200 S

Price $45
Weight 5.7 grams
Type Induced magnet
Stylus Equiradial; 0.5 mil
Track. force 1.75 gram
Compliance 8 x 10⁻⁶ cm/dyne (100 Hz) lateral; 8 x 10⁻⁶ cm/dyne (100 Hz) vertical
Output 4 mV at 5 cm/sec at 1 kHz
Response 10 Hz to 25 kHz
Separation 25 dB (1 kHz)
Vert. angle 22 degrees
Recom. load 50K ohms; 350 pF
Features UT-58 cantilever

Models also available

HV-9100, $275; 360 CEX, $165; 220 CE, $120; 350 E, $95; 344 DE, $70; 300DJ, $65; 340 S, $55; 195 IE, $55; 185 E, $45; 175 IS, $42.50; 165 S, $35

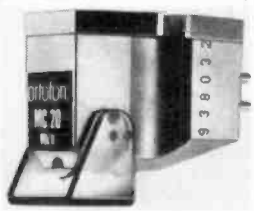
ONKYO
Onkyo U.S.A. Corp.
42-07 20th Ave.
Long Island City, N.Y. 11105

MC-100

Price $170
Type Moving coil
Track. force 1.6 to 2 grams
Compliance 8.5 x 10⁻⁶ cm/dyne (100 Hz) lateral
Output 0.4 mV at 5 cm/sec at 1 kHz
Response 20 Hz to 50 kHz
Separation 28 dB (1 kHz)
Recom. load 24, ±20Ω
Features Carbon fiber with Duralumin; 3-layer cantilever; hand-made; computer-assisted design

ORTOFON
Tannoy-Ortofon, Inc.
122 Dupont St.
Plainview, N.Y. 11803

MC-20 Mk.-II



Price $350
Weight 7 grams
Type Moving coil
Stylus Fine line; 1.4 x 0.07 mil
Track. force 1.7 gram

Concorde 30

Price $180
Weight 6.5 grams
Compliance 12 lateral; 12 vertical
Output 0.09 mV at 5 cm/sec at 1 kHz
Response 20 Hz to 20 kHz, ±1 dB
Separation 25 dB (1 kHz) (or from 15 Hz to 15 kHz)
Vert. angle 20 degrees
Type Moving magnet
Stylus Fine line
Track. force 1.2 to 1.8 gram
Compliance 25 x 10⁻⁶ cm/dyne lateral; 28 x 10⁻⁶ cm/dyne vertical
Output 3 mV at 5 cm/sec at 1 kHz
Response 20 Hz to 25 kHz
Separation 25 dB (1 kHz)
Vert. angle 20 degrees
Recom. load 47K ohms; 400 pF
Features Cartridge/headshell combination with total weight of 6.5 grams; variable magnetic shunt principle

LM-20H

Price $165
Type Moving magnet
Stylus Fine line
Track. force 0.8 to 1.2 gram
Compliance 35 x 10⁻⁶ cm/dyne lateral; 40 x 10⁻⁶ cm/dyne vertical
Output 3 mV at 5 cm/sec at 1 kHz
Response 20 Hz to 20 kHz
Separation 25 dB (1 kHz)
Vert. angle 20 degrees
Recom. load 47K ohms; 400 pF
Features Ultra-high compliance for use with extremely low-mass tonearms only; variable magnetic shunt principle; low-mass design with total weight of 2.6 grams

LM-20

Price $125
Type Moving magnet
Stylus Fine line
Track. force 1.5 to 2.1 grams
Compliance 15 x 10⁻⁶ cm/dyne lateral; 22 x 10⁻⁶ cm/dyne vertical
Output 3.5 mV at 5 cm/sec at 1 kHz
Response 20 Hz to 20 kHz
Separation 25 dB (1 kHz)
Vert. angle 20 degrees
Recom. load 47K ohms; 400 pF
Features Variable magnetic shunt principle; low-mass design with total weight of 2.6 grams

VMS-20E Mk. II

Price $100
Type Moving magnet
Stylus Elliptical; 0.3 x 0.7 mil
Track. force 0.75 to 1.5 gram
Compliance 40 x 10⁻⁶ cm/dyne lateral; 30 x 10⁻⁶ cm/dyne vertical
Output 5 mV at 5 cm/sec at 1 kHz
Response 20 Hz to 20 kHz, ±1 dB
Separation 25 dB (1 kHz)
Vert. angle 20 degrees
Recom. load 47K ohms; 190 to 400 pF
Features Variable magnetic shunt principle; removable capacitance-matching device

FF-15XE Mk. II

Price $50
Type Moving magnet
Stylus Elliptical; 0.3 x 0.7 mil
Track. force 1.5 to 3 grams
Compliance 20 x 10⁻⁶ cm/dyne lateral; 20 x 10⁻⁶ cm/dyne vertical
Output 5 mV at 5 cm/sec at 1 kHz
Response 20 Hz to 20 kHz, ±1 dB
Separation 20 dB (1 kHz)
Vert. angle 20 degrees
Recom. load 47K ohms; 400 pF
Features Variable magnetic shunt principle

Models also available

MC-30, $650; MC-20, $215; LM-

30, $160; LM-30H, $160; MC-10, $165; Concorde 20, $145; FF-15E Mk. II, $65; Concorde 10, $100

OSAWA
Osawa & Co. (USA), Inc.
521 Fifth Ave.
New York, N.Y. 10017

MP-50

Price $229.95 (unmounted); $249.95 (mounted in magnesium headshell)
Weight 9 grams
Type Induced magnet
Stylus Triangle-tip, super elliptical
Track. force 1.1 to 1.5 grams
Compliance 12 x 10^{-6} cm/dyne dynamic; 24 x 10^{-6} cm/dyne static
Output 2.5 mV at 5 cm/sec at 1 kHz
Response 20 Hz to 28 kHz, ±1 dB
Separation 27 dB (1 kHz)
Vert. angle 20 degrees
Recom. load 100 pF
Features Body is impacted aluminum; stylus assembly is held firmly in place by two Allen fasteners; boron cantilever

MP-15

Price $99.95 (unmounted); $119.95 (mounted in Osawa high performance headshell)
Weight 7.8 grams
Type Induced magnet
Stylus Elliptical diamond; 0.3 x 0.7 mil
Track. force 1.5 to 2 grams
Compliance 8 x 10^{-6} cm/dyne dynamic; 20 x 10^{-6} cm/dyne static
Output 4.5 mV at 1 kHz
Response 20 Hz to 20 kHz; ±1 dB
Separation 24 dB (1 kHz)
Vert. angle 20 degrees
Recom. load 100 pF
Features Body is a high-rigidity plastic casting reinforced with fiberglass; oversize mounting surface ensures rigid coupling to tonearm headshell

MP-10

Price $59.95 (unmounted); $79.95 (mounted in magnesium headshell)
Weight 6.8 grams
Type Induced magnet
Stylus Conical; 0.5 mils
Track. force 2 to 2.5 grams
Compliance 7 x 10^{-6} cm/dyne dynamic; 20 x 10^{-6} cm/dyne static
Output 5 mV at 5 cm/sec at 1 kHz
Response 20 Hz to 20 kHz, ±1 dB
Separation 22 dB (1 kHz)
Vert. angle 20 degrees
Recom. load 100 pF
Features Body is injection-molded ABS plastic; oversize mounting surface ensures rigid coupling to tonearm headshell

OS-201

Price $59.95
Weight 7.4 grams
Type Induced magnet
Stylus Elliptical; 0.3 x 0.7 mils
Track. force 1.75 to 2.5 grams
Output 2.8 mV at 5 cm/sec at 1 kHz
Response 20 Hz to 22 kHz, ±1.5 dB
Separation 20 dB (1 kHz)
Recom. load 47K ohms
Features Aluminum A-2024T cantilever; bonded elliptical diamond tip

Models also available

MP-30, $149.95 (unmounted); $169.95 (mounted in magnesium headshell); MP-20, $119.95 (unmounted); $139.95 (mounted in Osawa high performance headshell); MP-11, $79.95 (unmounted); $99.95 (premounted in magnesium headshell); OS-101, $39.95

PICKERING
Pickering & Company, Inc
101 Sunnyside Blvd.
Plainview, N.Y. 11803

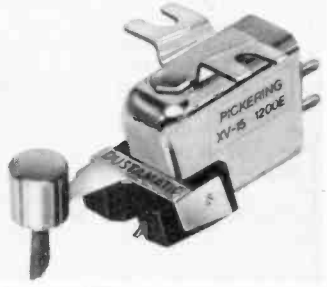
XL2-7500S

Price $250
Weight 5.5 grams
Type Moving magnet
Stylus Stereohedron; 0.3 x 2.8 mils
Track. force 0.5 to 1.5 grams
Output 0.06 mV at 1 cm/sec
Response 10 Hz to 50 kHz
Separation 35 dB
Recom. load 100 ohms; up to 1,000 pF
Features Customer-replaceable stylus; low dynamic tip mass; lighter weight than moving-coil designs; high-compliance stylus

XUV-4500Q

Price $150
Weight 5.5 grams
Type Moving magnet
Stylus Quadrahedron
Track. force 0.5 to 1.5 gram
Response 10 Hz to 50 kHz, ±1.5 dB
Separation 35 dB (1 kHz)
Features CD-4 cartridge

XV-15/1200E



Price $92
Weight 5.5 grams
Type Moving iron
Stylus Elliptical; 0.2 x 0.7 mil
Track. force 0.5 to 1.25 gram
Response 10 Hz to 30 kHz, ±1.5 dB
Separation 35 dB (1 kHz)

Models also available

XSV/5000, $200; XSV/4000, $160; XSV-3000, $115; XV-15/750E, $74.75; XV-15/625DJ, $69.50; XV-15/625E, $169

PREMIER
Sumiko, Inc.
P.O. Box 5046
Berkeley, Calif. 94705

LME

Price $149
Type Moving coil
Stylus Elliptical; 0.3 x 0.8 mil
Track. force 1.3 to 2 grams
Compliance 18 x 10^{-6} cm/dyne lateral; 18 x 10^{-6} cm/dyne vertical
Output 0.35 mV at 5 cm/sec at 1 kHz
Response 10 Hz to 36 kHz, ±2.0 dB
Separation 30 dB (1 kHz)
Features Low-mass factory-replaceable stylus

Models also available

LMS, $109

REALISTIC
Radio Shack Corp.
1400 One Tandy Center
Ft. Worth, Texas 76102

RXT-4

Price $49.95
Type Moving magnet
Stylus Biradial; 5 x 18 microns
Track. force ¾ to 1½ grams
Response 20 Hz to 20 kHz
Separation 25 dB (1 kHz)
Features Dynamic stabilizer with installation kit, screwdriver, and stylus cleaning brush

Models also available

Realistic/Shure R 1000 EDT, $39.95; Realistic/Shure R 47 EDT, $27.95

REGA RESEARCH LTD.
Import Audio Ltd.
13430 Clayton Road
St. Louis, Mo. 63131

Rega

Price $90
Type Moving magnet
Track. force 1 to 2 grams (recommended 1.75)
Features User-replaceable stylus ($60); very uncritical as to arm type or mass

SATIN
Osawa & Co. (USA), Inc.
521 Fifth Ave.
New York, N.Y. 10017

117S

Price $249.95
Weight 9.2 grams
Type Moving coil
Stylus Nude elliptical; 0.2 x 0.9 mil
Track. force 1 to 2 grams
Output 2.5 mV (5 cm/sec at 1 kHz)
Response 15 Hz to 30 kHz
Separation 30 dB (1 kHz)
Recom. load 47K ohms
Features User-replaceable stylus; no transformer or pre-preamplifier needed

117-Z

Price $99.95
Stylus Bonded conical; 0.5 mil
Track. force 1 to 2.2 grams
Output 3.0 mV (5 cm/sec at 1 kHz)
Response 20 Hz to 20 kHz
Separation 20 dB (1 kHz)

Recom. load 47K ohms
Features User-replaceable stylus; no transformer or pre-preamplifier needed

Models also available

M-117G, $179.95; 117-ZE, $129.95

SHURE
Shure Bros. Inc.
222 Hartrey Ave.
Evanston, Ill. 60204

V15 Type IV

Price $165
Weight 6.4 grams
Type Moving magnet
Stylus Hyperelliptical
Track. force 0.75 to 1.25 gram
Output 4 mV at 5 cm/sec peak velocity at 1 kHz
Response 10 Hz to 25 kHz
Separation 25 dB (1 kHz); 15 dB (10 kHz)
Recom. load 47K ohms; 250 pF
Features Viscous-damped dynamic stabilizer; totally new computer-designed moving system; trackability (cm/sec peak velocity) at 1 gram: 29 at 400 Hz, 42 at 1 kHz, 37 at 10 kHz

V15 Type III

Price $103
Weight 6.3 grams
Type Moving magnet
Stylus Biradial elliptical; 0.2 x 0.7 mil
Track. force 0.75 to 1.25 gram
Output 3.5 mV at 5 cm/sec peak velocity at 1 kHz
Response 10 Hz to 25 kHz
Separation 25 dB (1 kHz); 15 dB (10 kHz)
Recom. load 47K ohms; 450 pF
Features Trackability (cm/sec peak velocity) at 1 gram: 26 at 400 Hz, 38 at 1 kHz, 26 at 10 kHz

M-97EJ

Price $88
Weight 6.4 grams
Type Moving magnet
Stylus Biradial elliptical; 0.4 x 0.7 mil
Track. force 1.5 to 3 grams
Output 4 mV at 5 cm/sec at 1 kHz
Response 20 Hz to 20 kHz
Separation 20 dB (1 kHz)
Recom. load 47K ohms; 250 pF
Features Viscous-damped dynamic stabilizer; Side-Guard stylus deflector; telescoped shank; trackability (cm/sec peak velocity) at 2 grams: 30 at 400 Hz, 41 at 1 kHz, 34 at 10 kHz

M-75ED Type 2

Price $72.95
Weight 6.2 grams
Type Moving magnet
Stylus Biradial elliptical; 0.2 x 0.7 mil
Track. force 0.75 to 1.5 gram
Output 5 mV at 5 cm/sec peak velocity at 1 kHz
Response 20 Hz to 20 kHz
Separation 25 dB (1 kHz)
Recom. load 47K ohms; 450 pF
Features Trackability (cm/sec peak velocity) at 1 gram: 22 at 400 Hz, 33 at 1 kHz, 19 at 10 kHz

M-91GD

Price $61.50
Weight 5.8 grams
Type Moving magnet
Stylus Spherical; 0.6 mil
Track. force 0.75 to 1.5 gram
Output 5 mV at 5 cm/sec peak velocity at 1 kHz
Response 20 Hz to 20 kHz
Separation 25 dB at 1 kHz
Recom. load 47K ohms; 450 pF
Features Trackability (cm/sec peak velocity) at 1 gram: 22 at 400 Hz, 33 at 1 kHz, 19 at 10 kHz

M97HE

Price $112
Weight 6.4 grams
Type Moving magnet
Stylus Hyperelliptical
Track. force 0.75 to 1.5 gram
Output 4 mV at 5 cm/sec at 1 kHz
Response 20 Hz to 20 kHz
Separation 25 dB at 1 kHz
Recom. load 47K ohms; 250 pF
Features Viscous-damped dynamic stabilizer; Side-Guard stylus deflector; telescoped shank; trackability (cm/sec peak velocity) at 1 gram: 24 at 400 Hz, 35 at 1 kHz, 25 at 10 kHz

SC-39B

Price $60
Weight 6.3 grams
Type Moving magnet
Stylus Spherical; 0.7 mil
Track. force 1.5 to 3 grams
Output 4 mV at 5 cm/sec peak velocity at 1 kHz
Response 20 Hz to 20 kHz
Separation 20 dB (1 kHz)
Recom. load 47K ohms; 250 pF
Features Professional studio/broadcast cartridge; Masar® tip; Side-Guard stylus deflector; trackability (cm/sec peak velocity) at 2 grams: 30 at 400 Hz, 40 at 1 kHz, 35 at 10 kHz

M-70EJ

Price $48.95
Weight 5.8 grams
Type Moving magnet
Stylus Biradial elliptical; 0.4 x 0.7 mil
Track. force 1.5 to 3 grams
Output 6.2 mV at 5 cm/sec peak velocity at 1 kHz
Response 20 Hz to 20 kHz
Separation 20 dB (1 kHz)
Recom. load 47K ohms; 450 pF
Features Trackability (cm/sec peak velocity) at 2 grams: 19 at 400 Hz, 26 at 1 kHz, 12 at 10 kHz

M-44G

Price $34.95
Weight 6.5 grams
Type Moving magnet
Stylus Spherical; 0.6 mil
Track. force 0.75 to 1.5 gram
Output 6.2 mV at 5 cm/sec peak velocity at 1 kHz
Response 20 Hz to 20 kHz
Separation 20 dB (1 kHz)
Recom. load 47K ohms; 450 pF

Models also available

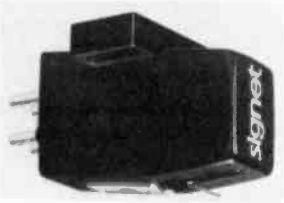
V15 IV-G, $159; M-97HE-AH, $120; SC39ED, $100; M95HE, 97.50; V15 Type III-G, $96.75; M24H, $96.50; M97GD, $88; M95ED, $84.50; M97B, $81; M91ED, $72.95; SC39EJ, $70; M95EJ, $67.50; M91E, $66.95; M75EJ Type 2, $61.50; M93E, $55.95; M75G Type 2, $54.50; M72EJ, $51; M75B Type 2, $48.95; M72B, $45.70; M75ECS, $44.50; M55E, $45.95; M75-6S, $41.95; M44E, $39.95; M44-7, $34.95; M75CS, $32.95; M44C, $32.50; SC35C, $30.25; M3D, $25.95

SIGNET
Signet Co.
4701 Hudson Drive
Stow, Ohio 44224

Mk-112E

Price $325
Weight 15 grams
Type Moving coil
Stylus Elliptical; 0.2 x 0.7 mil
Track. force 1 to 2 grams
Output 0.4 mV at 0.7 cm/sec at 1 kHz
Response 5 Hz to 50 kHz
Separation 30 dB (1 kHz) (or from 20 Hz to 10 kHz)
Vert. angle 20 degrees
Recom. load 47K ohms; 100 pF
Features Integrated headshell version of Mk-111E; attaches directly to most Japanese and European tonearms; calibrated overhang adjustable from 47 to 55mm; accessory Mk-10T ($95) or Mk-12T ($300) matching transformer available for use with magnetic phono inputs

TK-9E



Price $275
Weight 7.5 grams
Type Dual moving magnet
Stylus Elliptical; 0.2 x 0.7 mil
Track. force 0.75 to 1.5 gram
Output 2.2 mV at 5 cm/sec at 1 kHz
Response 10 Hz to 25 kHz
Separation 35 dB (1 kHz) (or 25 dB at 10 kHz)
Vert. angle 20 degrees
Recom. load 47K ohms; 270 pF
Features Toroidal coils; user-replaceable stylus; Beryllium cantilever

TK-7SU

Price $190
Weight 6.8 grams
Type Dual moving magnet
Stylus Shibata
Track. force 0.75 to 1.75 gram
Output 2.7 mV at 5 cm/sec at 1 kHz
Response 5 Hz to 45 kHz
Separation 30 dB at 1 kHz (or 23 dB at 10 kHz)
Vert. angle 20 degrees
Recom. load 47K ohms; 270 pF
Features Patented dual-magnet micro-mass moving system; miniaturized diamond; micro-mass tapered tube cantilever; 14 accessory styli permit experimentation with combination of boron, beryllium, titanium, carbon-fiber and aluminum cantilevers; spherical, elliptical, and Shibata tips in all TK Series cartridges

TK-5E

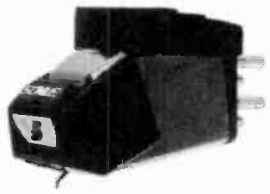
Price $100
Weight 6.8 grams
Type Dual moving magnet
Stylus Elliptical; 0.2 x 0.7 mil
Track. force 0.75 to 1.75 gram
Output 4.2 mV at 5 cm/sec at 1 kHz
Response 10 Hz to 30 kHz
Separation 25 dB (1 kHz) (or 20 dB at 10 kHz)
Vert. angle 20 degrees
Recom. load 47K ohms; 270 pF
Features Fourteen accessory styli permit experimentation with combination of boron, beryllium, titanium, carbon-fiber, and aluminum cantilevers

Models also available

Mk-111E, $300; TK-9LC, $295; TK-7E, $170; TK-3E, $60; TK-1E/H, $45; TK-1E, $40

SONUS
Sonic Research, Inc.
27 Sugar Hollow Road
Danbury, Conn. 06810

Dimension 5



Price	$250
Weight	5.5 grams
Type	Moving iron
Stylus	Lambda (cutting stylus shape)
Track. force	1 to 1.5 gram
Compliance	50 x 10^{-6} cm/dyne lateral; 50 x 10^{-6} cm/dyne vertical
Output	0.8 mV cm/sec
Response	10 Hz to 16 kHz, ±1 dB; 16 kHz to 20 kHz, +2, −1 dB; 20 kHz to 40 kHz, ±3 dB
Separation	30 dB (1 kHz), 20 dB, 20 Hz to 20 kHz
Vert. angle	20 degrees (nominal)
Recom. load	47K ohms; 400 pF (max)
Features	Integrated cantilever; unipivot suspension; micro-machined armature

Green Cartridge Series II Gold

Price	$155
Weight	5.5 grams
Type	Moving Iron
Stylus	Spherical
Track. force	1 to 1.5 grams
Compliance	50 x 10^{-6} lateral; 50 x 10^{-6} vertical
Output	4 mV at 5 cm/sec at 1 kHz
Response	5 Hz to 20 kHz, +2, −1 dB
Separation	30 dB (1 kHz); 20 dB, 20 Hz to 20 kHz
Vert. angle	20 degrees
Recom. load	47K ohms; 400 pF (max)
Features	Special calibration available upon request

Black A

Price	$80
Weight	5.5 grams
Type	Moving Iron
Stylus	Elliptical
Track. force	1.5 to 2 grams
Compliance	30 x 10^{-6} cms/dyne lateral; 30 x 10^{-6} cms/dyne vertical
Output	1.0 mV cm/sec
Response	10 Hz to 10 kHz, ±1 dB; 10 kHz to 20 kHz, +2, −1 dB
Separation	25 dB (1 kHz); 20 dB, 20 Hz to 20 kHz
Vert. angle	20 degrees
Recom. load	47K ohms; 400 pF (max)
Features	Unipivot suspension

Models also available

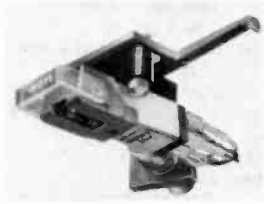
Blue Cartridge Series II Gold, $165; Red Cartridge Series II Gold, $160; "P" Cartridge Series II Silver, $100; "E" Cartridge Series II Silver, $95; Black C, $70; Bronze, $130

SONY
Sony Industries
9 W. 57th St.
New York, N.Y. 10019

XL-55 Pro

Price	$300
Weight	22 grams
Type	Moving coil
Stylus	Elliptical; 0.3 x 0.8 mil
Track. force	1.5 to 2.5 grams
Compliance	15 x 10^{-6} cm/dyne vertical
Output	0.2 mV at 5 cm/sec at 1 kHz
Response	10 Hz to 50 kHz
Separation	30 dB at 1 kHz
Recom. load	40K ohms
Features	Sony figure-8 coil; air core; composite-construction cantilever (aluminum, beryllium, and carbon fiber); magnesium integrated headshell; tracks 1812 in biotracer

VL-7



Price	$80
Weight	4.9 grams
Type	Moving magnet
Stylus	Elliptical; 3 x 8 mils
Track. force	1 to 2 grams
Compliance	15 x 10^{-6} cm/dyne vertical
Output	3.5 mV at 5 cm/sec at 1 kHz
Response	10 Hz to 25 kHz
Separation	25 dB at 1 kHz
Recom. load	50 to 100K ohms
Features	Special cantilever construction of carbon-fiber and tempered aluminum to dissipate high-frequency resonance

Models also available

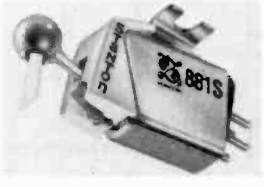
XL-44L, $180; XL-33, $100; VL-5, $40

STANTON
Stanton Magnetics, Inc.
Terminal Drive
Plainview, N.Y. 11803

980LZS

Price	$250
Weight	5.5 grams
Type	Low impedance
Stylus	Stereohedron; 0.3 x 2.8 mils
Track. force	0.5 to 1.5 grams
Output	0.06 mV
Response	10 Hz to 50 kHz
Separation	35 dB (1 kHz)
Recom. load	100 ohms; up to 1,000 pF
Features	Customer-replaceable stylus; high-compliance stylus; low dynamic tip mass; 10 μs rise time

881S



Price	$170
Weight	5.7 grams
Type	Moving magnet
Stylus	Stereohedron; 0.3 x 2.8 mils
Track. force	0.75 to 1.25 gram
Output	0.9 mV at 1 cm/sec at 1 kHz
Response	10 Hz to 20 kHz, ±1.5 dB (individually calibrated)
Separation	35 dB (1 kHz)
Recom. load	47K ohms; 275 pF

681SE

Price	$87.50
Weight	5.5 grams
Type	Moving iron
Stylus	Elliptical; 0.4 x 0.7 mil
Track. force	2 to 4 grams
Output	1.1 mV at 1 cm/sec at 1 kHz
Response	20 Hz to 20 kHz (individually calibrated)
Separation	35 dB (1 kHz)
Recom. load	47K ohms; 275 pF

500EE

Price	$42.50
Type	Moving magnet
Stylus	Elliptical; 0.3 x 0.7 mil
Track. force	1 to 2 grams
Output	1 mV at 1 cm/sec at 1 kHz
Response	20 Hz to 20 kHz, ±3 dB
Separation	35 dB (1 kHz)
Recom. load	47K ohms; 275 pF

Models also available

881E, $150; 880S, $140; 681EEE (S Type), $125; 880E, $120; 681EEE, $105; 680-SL, $98.50; 681EE, $87.50; 681A, $80; 780/Q, $75; 600E, $56.50; 600A, $51.50; 500AA, $36.75; 500E, $36.75; 500A, $36.75; 500AL, $31.50

STAX
Stax Koygo, Inc.
940 E. Dominguez St.
Carson, Calif. 90746

CT-Y/2

Price	$560
Weight	16 grams
Type	Electrostatic
Stylus	0.8 x 0.3mm (elliptical diamond)
Track. force	1 gram
Compliance	Vertical (10 x 10^{-6} cm/dyne)
Output	300 mV
Response	10 Hz to 30 kHz
Separation	20 dB
Features	Condensor cartridge powered by electret

SUPEX
Sumiko, Inc.
Box 5046
Berkeley, Calif. 94705

SDX-1000

Price	$500
Type	Moving coil
Stylus	Vital; 0.3 x 0.7 mil
Track. force	1.5 to 2 grams
Compliance	9 x 10^{-6} lateral; 9 x 10^{-6} vertical
Output	0.2 mV at 5 cm/sec at 1 kHz
Response	20 Hz to 45 kHz, ±2 dB
Separation	30 dB at 1 kHz
Vert. angle	20 degrees
Features	Silver-clad copper coil wires; bimorphic temperature-compensating damper; 50% reduced diamond mass

SD-900/E+ Improved Super Cartridge

Price $225
Type Moving coil
Stylus Vital; 0.3 x 0.7 mil
Track. force 1.2 to 1.7 grams
Compliance 20 x 10^{-6} cm/dyne lateral; 20 x 10^{-6} cm/dyne vertical
Output 0.2 mV at 5 cm/sec at 1 kHz
Response 10 Hz to 50 kHz, ±3 dB
Separation 30 dB (1 kHz)
Vert. angle 20 degrees
Features Requires step-up transformer

SM-100/Mk. II

Price $70
Type Moving magnet
Stylus Elliptical; 0.3 x 0.8 mil
Track. force 1 to 2 grams
Compliance 25 x 10^{-6} cm/dyne lateral; 20 x 10^{-6} cm/dyne vertical
Output 2.5 mV at 5 cm/sec at 1 kHz
Response 18 Hz to 22 kHz, ±2 dB
Separation 32 dB (1 kHz)
Vert. angle 20 degrees
Recom. load 47K ohms; 300 pF

Models also available

SD-900/Mk. II, $350; SD-901/E+ Super, $175; SM-100/Mk. III, $90

TECTRON
Alpha Group, Inc.
7321 Victoria Park Ave., Unit 2
Markham, Ontario L3R 2Z8

TC-10

Price $199.95
Weight 8.5 grams
Type Moving coil
Stylus 0.3 x 0.8 mil 0.15 Solid Diamond
Track. force 1.5, ± 0.2g
Compliance 15 lateral; 10^{-6} vertical
Output 0.2 mV at 5cm/sec at 1 kHz
Response 10 Hz to 50 kHz
Separation 25 dB (1 kHz)
Vert. angle 45 degrees
Features Pre-mounted on headshell; stylus cleaner fluid included; 5-year exchange on cartridge body

T-211E

Price $99.95
Weight 6.2 grams
Type Moving magnet
Stylus 0.3 x 0.7 mil
Track. force 1.5 to 2.5 grams
Compliance 12 lateral; 10^{-6} vertical
Output 4 mV at 5 cm/sec at 1 kHz
Response 20 Hz to 20 kHz
Separation 25 dB (1 kHz)
Features Premounted on headshell; stylus cleaner fluid included; 5-year exchange on cartridge body

T-812H

Price N/A
Weight 6 grams
Type Moving magnet
Stylus 0.5 mil
Track. force 2 to 3.5 grams
Compliance 10 lateral; 10^{-6} vertical
Output 10 mV at 5 cm/sec at 1 kHz
Response 20 Hz to 20 kHz
Separation 23 dB (1 kHz)
Features Premounted on headshell; stylus cleaner fluid included; 5-year exchange on cartridge body

Models also available

T-71255, $179.95; T-712E, $139.95; T-211S, $84.95; T-812C, N/A; T-812E, N/A; T-712S, N/A; T-712H, N/A; T-512E, N/A; T-512S, N/A; T-512SS, N/A

THORENS
Epicure Products, Inc.
25 Hale St.
Newburyport, Mass. 01950

TMC-63, TMC-70

Price $465
Type Moving coil
Stylus Fine line; 0.3 mil
Track. force 2 to 3 grams
Compliance 12 x 10^{-6} cm/dyne lateral; 12 x 10^{-6} cm/dyne vertical
Output 0.25 mV at 1 cm/sec at 1 kHz
Response 20 Hz to 20 kHz, ±2 dB
Separation 25 dB (1 kHz)
Vert. angle 20 degrees
Recom. load 22 ohms
Features The TMC-63 is mounted in Thorens plug-in arm for TD-126 Mk. III; TMC-70 is mounted in Thorens plug-in arm for TD-110, TD-115

Models also available

TPO-63, TPO-70, $175

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

MC-7

Price $120
Weight 5.7 grams
Type Moving coil
Stylus Elliptical
Track. force 1.2 to 1.8 grams
Compliance 35 x 10^{-6} to cm/dyne lateral; 15 x 10^{-6} cm/dyne vertical
Output 0.3 mV at 5 cm/sec at 1 kHz
Response 10 Hz to 20 kHz
Separation 28 dB (1 kHz); 20 dB, 20 Hz to 20 kHz
Vert. angle 20 degrees
Recom. load 100 ohms
Features Sendust-core armature

Models also available

MC-1X, $270 (unmounted; MC-1S, $220)

Turntables

ADC
BSR (USA) Ltd.
Route 303
Blauvelt, N.Y. 10913

Accutrac 3500RVC*

Price $400
Dimensions 6¾H x 17¾W x 16D
Weight 16 lbs. 8 oz. (net)
Type Changer
Speeds 33; 45
Speed adj. ±3%
Motor type 24-pole, 300-rpm synchronous AC
Drive type Belt
Rumble –66 dB (DIN B)
Wow/flutter 0.4% (WRMS)
Cueing Yes
Track. force 0 to 4 grams
Antiskating 0 to 4 grams
Resonance 10 to 12 Hz (with ADC LMA-3 cartridge)
Headshell Fixed
Features Computerized memory bank for electronic track selection (6 records); wireless remote control including volume; Accuglide® transport system

3001

Price $249.95 (tonearm not included)
Dimensions 3H x 18⅜W x 14¼D
Weight 22 lbs. (net)
Type Manual
Speeds 33 1/3; 45
Speed adj. ±5% (with strobe)
Motor type Electronically-controlled DC brushless motor
Drive type Direct
Rumble –70 dB (DIN B)
Wow/flutter 0.03% (DIN-weighted)
Features Universal tonearm mounting capability; 3 lbs. 2 oz. dynamically balanced die-cast aluminum platter

Models also available

1700DD, $280; 1600DD, $230; 1510FG, 190

AIWA
Aiwa America
350 Oxford Drive
Moonachie, N.J. 07074

LP-3000

Price $1,000

Dimensions	5 15/16H x 18 15/16W x 17 5/16D
Weight	33 lbs. 3 oz. (net)
Type	Fully automatic
Speeds	33 1/3; 45
Speed adj.	±6%
Motor type	Pulse synthesizer quartz-PLL servo
Drive type	Direct
Rumble	–75 dB (DIN B)
Wow/flutter	0.025% (WRMS) (JIS)
Cueing	Yes
Track. force	0 to 3 grams
Track. error	0 degree
Headshell	Removable
Features	Straight-line tracking; linear trace arm; automatic programming; auto repeat forward and back skipping; cue and review; pause; optional remote control; quartz-locked speed control

AP-D30H

Price	$220
Dimensions	4⅞H x 16¾W x 14⅜D
Weight	15 lbs. 3 oz. (net)
Type	Semiautomatic
Speeds	33 1/3; 45
Speed adj.	±3%
Motor type	2-phase, 10-pole DC servomotor
Drive type	Direct
Wow/flutter	0.035%
Cueing	Yes
Track. force	0 to 4 grams
Antiskating	Yes
Track. error	+3, –1.5 degrees
Headshell	Removable
Cart. mass	3.5 to 8 grams
Features	Unique space-saving design; multi-voltage linear torque motor; high sensitivity S-shaped tonearm; rec sync operation; damped cueing; free-stop dust cover; stroboscope design for easy reading

Models also available

AP-2600, $400; AP-D50U, $350

AKAI
Akai America, Ltd.
2139 E. Del Amo Blvd.
P.O. Box 6010
Compton, Calif. 90224

AP-307

Price	$280
Dimensions	6 3/10H x 17 3/5W x 14D
Weight	19 lbs. (net)
Type	Fully automatic
Speeds	33 1/3; 45
Speed adj.	±2.5%
Motor type	Quartz lock
Drive type	Direct; quartz lock; fully automatic
Rumble	–70 dB (DIN B)
Wow/flutter	0.035% (DIN)

AP-D40

Price	$169.95
Dimensions	5½H x 17 3/10W x 5 9/10D
Weight	12 lbs. (net)
Type	Fully automatic
Speeds	33 1/3; 45
Speed adj.	±5%
Motor type	DC servo
Drive type	Direct
Wow/flutter	0.047% (DIN); 0.033% (JIS)
Cueing	Yes
Antiskating	Yes

Models also available

AP-Q60, $219.95; AP-207, $200; AP-Q50, $189.95; AP-D30, $150; AP-B10C, $100; AP-B20, $99.95

AUDIOLOGIC
Randix Industries Ltd.
991 Broadway
Albany, N.Y. 12204

LX-500

Price	$89.95
Dimensions	6½H x 17W x 14D
Weight	11 lbs. 8 oz. (net)
Type	Fully automatic
Speeds	33 1/3; 45; 78 rpm
Motor type	4-pole synchronous
Drive type	Idler rim drive
Cueing	Yes
Track. force	2 to 5 grams
Antiskating	Adjustable
Headshell	Fixed

AUDIONICS
Audionics of Oregon
Suite 200, Computran Bldg.
5150 S.W. Griffith Drive
Beaverton, Ore. 97005

LK-1

Price	$697
Type	Manual
Speeds	33 1/3; 45
Speed adj.	±10%
Motor type	DC brushless Hall-Effect
Rumble	–70 dB
Wow/flutter	0.05%
Features	Base, platter and acoustic canopy all made from Resanon, a non-resonant urethane that is antistatic; comes without tonearm

BANG & OLUFSEN
Bang & Olufsen of America, Inc.
515 Busse Road
Elk Grove Village, Ill. 60007

Beogram 4004

Price	$895
Dimensions	4H x 19W x 14¾D
Weight	24 lbs. 3 oz. (net)
Type	Fully automatic
Speeds	33 1/3; 45
Speed adj.	±3%
Motor type	Tach DC for platter; separate DC servo for tonearm
Drive type	Belt
Rumble	–65 dB dB (DIN B)
Wow/flutter	0.025% (WRMS)
Cueing	Yes
Track. force	0 to 2 grams
Cable capac.	150 pF
Antiskating	Not applicable; tangential tracking
Resonance	13 Hz (with MMC-20EN cartridge)
Track. error	0.04 degree
Headshell	None
Features	Price includes MMC-20EN cartridge, base, and dust cover; opto-electronically controlled tangentially-tracking tonearm; pendulum/leaf-spring suspension

Beogram 1700

Price	$395
Dimensions	3½H x 17¼W x 13D
Weight	3 lbs. 13 oz. (net)
Type	Fully automatic
Speeds	33; 45
Speed adj.	±3%
Motor type	Servo-controlled DC
Drive type	Belt
Rumble	–62 dB (DIN)
Wow/flutter	+0.045%
Track. force	1 to 1.5 gram
Cable capac.	120 pF
Antiskating	Yes
Track. error	0.126 degree/cm
Features	Includes MMC-20EN cartridge

Models also available

Beogram 3400, $495; Beogram 1600, $325

B.I.C.
B.I.C./Avnet
South Service Road
Westbury, N.Y. 11590

80Z

Price	$239.95
Dimensions	6¾H x 18¾W x 15¼D
Weight	21 lbs. (net)
Type	Changer
Speeds	33 1/3; 45
Speed adj.	±3%
Motor type	24-pole synchronous AC servo
Drive type	Belt
Rumble	–70 dB (DIN B)
Wow/flutter	0.05% (WRMS)
Eff. arm mass	12 grams
Cueing	Yes
Track. force	0 to 3 grams
Cable capac.	125 pF
Antiskating	0 to 3 grams
Resonance	12 Hz (with Shure M-91ED cartridge)
Track. error	0.27 degree
Headshell	Removable
Cart. mass	0 to 9 grams
Features	Digital drive system with readout; integrated removable headshell/tonearm; jeweled tonearm bearings

Micro 350

Price	$129.95
Dimensions	6½H x 16W x 14D
Weight	13 lbs. (net)
Type	Changer
Speeds	33 1/3; 45
Speed adj.	±3%
Motor type	24-pole, 300-rpm synchronous
Drive type	Belt

Rumble	–64 dB (DIN B)
Wow/flutter	0.08% (DIN)
Eff. arm mass	8 grams
Cueing	Yes
Track. force	0 to 4 grams
Cable capac.	125 pF
Antiskating	Yes
Resonance	14 Hz (with M-84 cartridge)
Headshell	Fixed
Cart. mass	0 to 9 grams
Features	Micro mass tonearm system; machined strobe turntable with variable speed

Models also available

60Z, $179.95; 40Z, $149.95; Micro 250, $109.95; Micro 150X, $99.95

BSR
BSR (USA), Ltd.
Route 303
Blauvelt, N.Y. 10913

XR-50

Price	$200
Dimensions	17 13/16H x 14½W x 6¾D
Weight	14 lbs. (net)
Type	Changer
Speeds	33 1/3; 45
Motor type	AC synchronous
Drive type	Belt
Rumble	–66 dB
Wow/flutter	0.04%
Cueing	Yes
Track. force	2 to 4 grams
Antiskating	0 to 4 grams
Resonance	10 to 12 Hz (with ADC QLM-32 cartridge supplied)
Headshell	Fixed
Features	Infrared total remote including volume control select records in desired order; Accuglide® record transport system

PRO SERIES

PRO 300

Price	$299.95
Type	Fully automatic
Speeds	33 1/3; 45
Speed adj.	Quartz-phase FG DC
Cueing	Yes
Features	QTX-3 remote control; multi-function digital display

QUANTA SERIES

60MX

Price	$89.95
Type	Fully automatic
Speeds	33 1/3; 45
Motor type	4-pole dynamically balanced
Cueing	Yes
Features	J-type tonearm; comes with ADC QLM 30 Mk. IIIB cartridge

Models also available

PRO 200, $249.95; 450-SX, $100; 400, $100; 70MX, $109.95; 50MX, $79.95; 25CX, $64.95

CALIBRE
CBS Retail Stores
1301 65th St.
Emeryville, Calif. 94608

360

Price	$195
Dimensions	7H x 17¼W x 13½D
Type	Semiautomatic
Speeds	33 1/3; 45
Speed adj.	±5% (strobe)
Motor type	DC servo
Drive type	Direct
Rumble	–70 dB (DIN B)
Wow/flutter	0.035% (DIN)
Track. force	0 to 3 grams
Track. error	0.2 degree
Features	Adjustable antiskate; auto shutoff

Models also available

330, $145

CONCEPT
CBS Retail Stores
1301 65th St.
Emeryville, Calif. 94608

2QD

Price	$295
Dimensions	5⅞H x 17¾W x 14½D
Weight	24 lbs. 5 oz. (net)
Type	Fully automatic
Speeds	33 1/3; 45
Speed adj.	±6% (LED strobe)
Motor type	DC servo
Drive type	Direct
Rumble	–70 (DIN B)
Wow/flutter	0.025% (DIN)
Cueing	Yes
Track. force	0 to 3 grams
Antiskating	Adjustable
Track. error	0.5 degree
Headshell	Proprietary

CONNOISSEUR
Hervic Electronics, Inc.
18750 Oxnard St., #406
Tarzana, Calif. 91356

BD-103/SAU-4

Price	$420
Dimensions	6½H x 18W x 15D
Weight	25 lbs. (net)
Type	Semiautomatic
Speeds	33 1/3; 45; 78
Speed adj.	±5%
Motor type	Low voltage (with strobe) DC servo with servo amplifier (6 transistors and 1 zener diode)
Drive type	Belt
Rumble	–75 dB (DIN)
Wow/flutter	0.055% (DIN)
Eff. arm mass	8 to 12 grams (adjustable)
Cueing	Yes
Track. force	0 to 4 grams
Cable capac.	400 pF
Antiskating	0 to 4 grams
Headshell	Removable
Features	External power supply; all-electric cueing; cue-defeat switch; comes with SAU-4 tonearm

BD-2A

Price	$220
Dimensions	5½H x 18W x 15D
Weight	22 lbs. (net)
Type	Semiautomatic
Speeds	33 1/3; 45
Motor type	16-pole AC synchronous
Drive type	Belt
Rumble	–65 dB (DIN)
Wow/flutter	0.065% (DIN)
Eff. arm mass	4 to 6 grams (adjustable)
Cueing	Yes
Track. force	25 to 6 grams
Cable capac.	400 pF
Antiskating	0.75 to 3 grams
Headshell	Removable
Features	Also available with smaller dust cover, $190

Models also available

BD-102/SAU-4, $310; BD-103, $285 (tonearm not included); BD-102/SAU-2, $265; BD-101, $200; BD-1 Transport, $85

MITCHELL A. COTTER
Mitchell A. Cotter Company, Inc.
35 Beechwood Ave.
Mt. Vernon, N.Y. 10553

B-1 Turntable Base

Price	$2,300
Dimensions	7H x 24W x 20D
Weight	125 lbs. (net)
Type	Manual
Speeds	33; 45
Speed adj.	±6%
Motor type	AC servo
Drive type	Direct
Features	Laminate dead-plate structure eliminates mechanical and acoustic feedback

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

DP-80

Price	$860

Dimensions	5 3/5" x 15" (diameter)
Weight	24 lbs. (net)
Type	Deck only; no base, cover, or tonearm
Speeds	33; 45
Speed adj.	±5%
Motor type	AC servo quartz
Drive type	Direct
Rumble	–80 dB (DIN B)
Wow/flutter	0.015% (WRMS)
Features	Dual section resonance-cancelling platter

DP-75

Price	$520
Dimensions	5 3/5" x 15"
Weight	22 lbs. (net)
Type	Deck only; no base, arm, or dust cover
Speeds	33; 45
Motor type	AC servo quartz
Drive type	Direct
Rumble	–80 dB (DIN B)
Wow/flutter	0.015% (WRMS)
Features	Dual section resonance-cancelling platter

DP-30L

Price	$290
Dimensions	4H x 13 4/5W x 15 9/10D
Weight	19 lbs. (net)
Type	Semiautomatic
Speeds	33 1/3; 45
Speed adj.	±3%
Motor type	AC servo-controlled
Drive type	Direct
Rumble	–75 dB (weighted per DIN-B standard)
Wow/flutter	<0.018% (weighted per Denon standard; magnetic pulse wheel)
Cueing	Yes
Track. force	0 to 3 grams
Cable capac.	75 pF
Antiskating	0 to 3 grams
Resonance	9 Hz (with Denon DL-103 cartridge)
Track. error	Within 30 degrees (for effective length of 8 3/5")
Headshell	Removable
Cart. mass	5 to 10 grams
Features	Arm lifter servo-controled; noncontact record end sensor; "large specific mass" base utilized; front panel controls outside of dust cover

Models also available

DP-60L, $585; DP-40F, $535; DP-1200, $375; DP-1250, $340

DUAL
United Audio Products
120 S. Columbus Ave.
Mt. Vernon, N.Y. 10553

650RC

Price	$419.95
Dimensions	16½H x 14½W x 5 1/5D
Weight	20 lbs. (net)
Type	Fully automatic
Speeds	33 1/3; 45
Speed adj.	±10% (strobe)
Motor type	CMOS DC electronic
Drive type	Direct
Rumble	–75 dB (DIN B)
Wow/flutter	0.03% (WRMS)
Eff. arm mass	5.5 grams
Cueing	Yes
Track. force	0.25 to 3 grams
Antiskating	0 to 3 grams
Resonance	7.8 Hz (with Ortofon ULM-55E cartridge)
Track. error	0.16 degree
Headshell	Removable
Features	Low-mass tonearm (8 grams with ULM-55E); tunable antiresonator counterweight; optional remote control

1264

Price	$279.95
Dimensions	16½H x 14½W x 7¼D
Weight	18 lbs. (net)
Type	Changer
Speeds	33 1/3; 45
Speed adj.	±6% (strobe)
Motor type	High-torque synchronous
Drive type	Belt
Rumble	–70 dB (DIN B)
Wow/flutter	0.04% (WRMS)
Eff. arm mass	5.5 grams
Cueing	Yes
Track. force	0.25 to 3 grams
Antiskating	0 to 3 grams
Resonance	7.8 Hz (with Ortofon ULM-55E cartridge)
Track. error	0.16 degree/cm
Headshell	Removable
Features	Low-mass tonearm (8 grams with ULM-55E); tunable antiresonator counterweight

1257

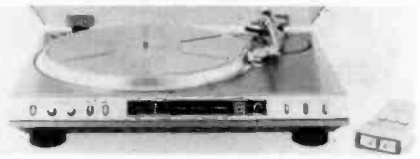
Price	$189.95
Dimensions	16½H x 14½W x 7¼D
Weight	17 lbs. (net)
Type	Changer
Speeds	33 1/3; 45
Speed adj.	±6% (strobe)
Motor type	High-torque synchronous
Drive type	Belt
Rumble	–68 dB (DIN B)
Wow/flutter	0.05% (WRMS)
Eff. arm mass	5.5 grams
Cueing	Yes
Track. force	0.25 to 3 grams
Antiskating	0 to 3 grams
Resonance	7.8 Hz (with Ortofon ULM-50E cartridge)
Track. error	0.16 degree/cm
Headshell	Removable
Features	Low-mass tonearm (8 grams with ULM-50E cartridge)

Models also available

7310, $579.95; 7140, $499.95; 622, $329.95; 606, $299.95; 522, $235; 506, $199.95

FISHER
Fisher Corp.
21314 Lassen St.
Chatsworth, Calif. 91311

MT-6360



Price	$349.95
Dimensions	6H x 17 1/3W x 14½D
Weight	18 lbs. 6 oz. (net)
Type	Fully automatic
Speeds	33 1/3; 45
Speed adj.	±6%
Motor type	120-pole linear AC servo
Drive type	Direct
Rumble	–70 dB (DIN B-weighted)
Wow/flutter	0.035% (WRMS-weighted)
Eff. arm mass	18 grams
Cueing	Yes
Track. force	2 grams
Antiskating	Yes
Resonance	8 Hz (with MG-100S cartridge)
Track. error	±1.5 degree
Headshell	Fixed
Features	Fully wireless remote control and track selection ability; front-panel operation

MT-6330

Price	$189.95 ($219.95 with cartridge)
Dimensions	6H x 17 1/3W x 14½D
Weight	17 lbs. (net)
Type	Semiautomatic
Speeds	33 1/3; 45
Speed adj.	±3% (strobe)
Motor type	120-pole linear motor
Drive type	Direct
Rumble	–70 dB (DIN B)
Wow/flutter	0.035% (WRMS)
Cueing	Yes
Track. force	0.6 to 3.5 grams
Antiskating	0.6 to 3.5 grams
Resonance	10 Hz (with Audio-Technica M6-35V cartridge)
Track. error	±1.8 degree
Headshell	Removable
Features	Front-panel controls; built-in strobe

Models also available

MT-6455, $279.95; MT-6435, $249.95; MT-6335, $249.95 ($279.95 with cartridge); MT-6430, $189.95; MT-6117, $119.95; MT-6320, $169.95 ($199.95 with cartridge); MT-6310, $119.95 ($149.95 with cartridge)

GARRARD
Garrard U.S.A., Inc.
85 Sherwood Ave.
Farmingdale, N.Y. 11735

DDQ-650

Price	$265
Dimensions	6⅛H x 17¾W x 14⅜D
Type	Semiautomatic
Speeds	33 1/3; 45
Speed adj.	±3%
Motor type	Brushless, slotless
Drive type	Direct
Rumble	–72 dB (DIN B-weighted)
Wow/flutter	0.03% (WRMS-weighted)
Eff. arm mass	9.5 grams
Cueing	Yes
Track. force	0.75 to 3 grams
Antiskating	Yes
Track. error	0.38 degree per 1 in.
Headshell	Removable; proprietary
Cart. mass	2.5 to 8 grams
Features	Electronic front controls; quartz-locked; Delglide® auto mechanism; antiresonance base; available with Pickering XV15-625E cartridge for $334; 3-year warranty

GT-355 AP

Price	$219.95
Dimensions	5⅝H x 17¾W x 14⅜D
Type	Fully automatic
Speeds	33 1/3; 45
Speed adj.	±3%
Motor type	DC servo
Drive type	Belt
Rumble	–68 dB (DIN B-weighted)

Wow/flutter 0.06% (WRMS-weighted)
Eff. arm mass 9.5 grams
Cueing Yes
Track. force 0.75 to 3 grams
Antiskating Yes
Track. error 0.38 degree per 1"
Headshell Removable; proprietary
Cart. mass 4 to 9 grams
Features Front controls; self-aligning headshell; Delglide® auto mechanism; 3-year warranty; available with Pickering XU15-625E cartridge for $288.95

DD-450

Price $209.95
Dimensions 6⅛H x 17¾W x 14⅜D
Type Semiautomatic
Speeds 33 1/3; 45
Speed adj. ±3%
Motor type Brushless, slotless
Drive type Direct
Rumble –73 dB (DIN B-weighted)
Wow/flutter 0.035% (WRMS-weighted)
Eff. arm mass 9.5 grams
Cueing Yes
Track. force 0.75 to 3 grams
Antiskating Yes
Track. error 0.38 degree per 1"
Headshell Removable; proprietary
Cart. mass 4 to 9 grams
Features Front controls; self-aligning headshell; Delglide® auto mechanism; 3-year warranty; available with Pickering XV15-625E cartridge for $278.95

GT-120 AP

Price $99.95
Dimensions 6⅜H x 16⅛W x 13½D
Type Fully automatic
Speeds 33 1/3; 45
Motor type 4-pole induction
Drive type Belt
Rumble –59 dB (DIN B-weighted)
Wow/flutter 0.10% (WRMS)
Eff. arm mass 7 grams
Cueing Yes
Track. force 2 to 6 grams
Antiskating Yes
Headshell Removable; proprietary
Cart. mass 4 to 8 grams
Features Low-mass arm; detachable headshell; Delglide® auto mechanism; 3-year warranty; available with Pickering UF15-ATE4 cartridge for $134.90

Models also available

DDQ-550, $239.95; DD-455, $219.95; GT-355, $239.95; 255, $209.95; GT-255 AP, $189.95; GT-12 Mk. II, $109.95

HARMAN KARDON
Harman Kardon, Inc.
55 Ames Court
Plainview, N.Y. 11803

ST-8

Price $399
Dimensions 6¾H x 16½W x 16¼D
Weight 23 lbs.
Type Semiautomatic
Speeds 33 1/3; 45
Speed adj. ±5.5%
Motor type Brushless DC Pabst (Hall-Effect)
Drive type Belt
Rumble –68 dB (DIN B-weighted)
Wow/flutter 0.04% (NAB-weighted)
Eff. arm mass 6 grams
Cueing Yes
Track. force 0.25 to 2.5 grams
Antiskating None
Resonance 11 Hz (with Ortofon LM20, LM-30 cartridges)
Track. error 0 degree
Headshell Removable
Features Straight-line tracking; touch and pitch controls; built-in level; adjustable feet; bubble level; strobe; automatic liftoff; Rolamite pivot bearings; skating force; stylus overhang

Models also available

ST-5, $299

HITACHI
Hitachi Sales Corp. of America
406 W. Artesia Blvd.
Compton, Calif. 90220

HT-860

Price $699.95
Dimensions 6H x 19W x 16¼D
Weight 30 lbs. 13 oz. (net)
Type Fully automatic
Speeds 33 1/3; 45
Speed adj. ±9.9%
Motor type Brushless, slotless, coreless, DC servo unitorque
Drive type Direct
Rumble –78 dB (DIN B-weighted)
Wow/flutter 0.025% (WRMS)
Cueing Yes
Track. force 0 to 3 grams
Track. error 2 degrees
Headshell Removable
Cart. mass 4 to 10 grams
Features Fully automatic quartz-locked unitorque DD turntable with variable pitch control; digital display; optical record-size/arm return sensing and front-panel soft-touch IC-logic controls

HT-466

Price $239.95
Dimensions 5 1/32H x 17⅛W x 14¾D
Weight 13 lbs. 3 oz. (net)
Type Fully automatic
Speeds 33 1/3; 45
Motor type Brushless, slotless, coreless unitorque motor
Drive type Direct
Rumble –78 dB (DIN B-weighted)
Wow/flutter 0.025% (WRMS)
Track. force 0 to 3 grams
Track. error 2 degrees
Headshell Removable
Cart. mass 4 to 10 grams
Features Quartz; photo sensor

HT-464

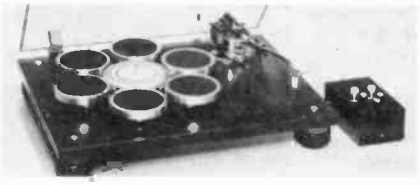
Price $199.95
Dimensions 5H x 17⅛W x 14¾D
Weight 12 lbs. 2 oz. (net)
Type Fully automatic
Speeds 33 1/3; 45
Speed adj. ±3% (33 1/3); ±5% (45)
Motor type Brushless, slotless, coreless unitorque motor
Drive type Direct
Rumble –77 dB (DIN B-weighted)
Wow/flutter 0.03% (WRMS)
Track. force 0 to 3 grams
Track. error 2 degrees
Cart. mass 4 to 10 grams
Features Photo sensor

Models also available

HT-660, $349.95; HT-561, $349.95; HT-41S, $169.95; HT 40S, $139.95; HT-324, $109.95

JBE
British Audio Corp.
229 Newtown Road
Plainview, N.Y. 11803

Series 3



Price $795
Dimensions 6½H x 17W x 13D
Weight 32 lbs. (net)
Type Manual
Speeds 33; 45
Speed adj. ±5%
Motor type 24-slot 8-pole stator electronic
Drive type Direct
Rumble –73 dB
Wow/flutter 0.07%
Features Heavy slate base for mass stability and mass damping; nonresonant platter; audibly superior sound

JVC
JVC America Co.
58-75 Queens Midtown Expressway
Maspeth, N.Y. 11378

QL-Y5F

Price $430
Dimensions 6⅝H x 18⅞W x 17 3/16D
Weight 23 lbs. 1 oz. (net)
Type Fully automatic
Speeds 33 1/3; 45
Motor type Coreless DC servomotor
Drive type Direct
Wow/flutter 0.025% (WRMS)
Cueing Yes
Track. force 0 to 3 grams
Antiskating Yes
Track. error 1 degree, 48 min
Headshell Universal
Features Electro-dynamic servo tonearm; electronic Q-damping, tracking force, and antiskate control

QL-50

Price $250
Dimensions 6½H x 19W x 15⅞D
Type Manual (without arm)
Speeds 33 1/3; 45
Motor type DC servo quartz-lock
Drive type Direct
Rumble –78 dB (DIN B-weighted)
Wow/flutter 0.025% (WRMS)

L-A55

Price $150
Dimensions 5⅛H x 17¼W x 14 15/16D
Weight 12 lbs. 1 oz. (net)
Type Semiautomatic
Speeds 33 1/3; 45
Motor type Coreless, DC servo
Drive type Direct
Rumble –75 dB (DIN B-weighted)
Wow/flutter 0.03% (WRMS)

Cueing	Yes
Track. force	0 to 3 grams
Track. error	+4 degrees; –0 degree, 36 min
Headshell	Removable

Models also available

QL-F6, $400; QL-Y3F, $360; QL-A5, $220; L-F66, $180; L-All, $110

KENWOOD
Kenwood Electronics
75 Seaview Drive
Secaucus, N.J. 07094

L-07D

Price	$1,700
Dimensions	6 5/16H x 21⅞W x 18½D
Weight	68 lbs. 13 oz. (net)
Type	Manual
Speeds	33 1/3; 45
Motor type	Quartz PLL coreless, slotless DC
Drive type	Direct
Rumble	–94 dB (DIN)
Wow/flutter	0.02% (WRMS)
Cueing	Yes
Track. force	1 to 9 grams
Antiskating	Yes
Track. error	–1 degree, 11 min
Headshell	Removable; universal

KD-5100

Price	$349
Dimensions	5 9/16H x 18½W x 16D
Weight	19 lbs. 12 oz. (net)
Type	Fully automatic
Speeds	33 1/3; 45
Motor type	Quartz PLL DC servo
Drive type	Direct
Rumble	–75 dB
Wow/flutter	0.03% (WRMS)
Cueing	Yes
Track. force	0 to 3 grams
Antiskating	Yes
Track. error	+3 degrees
Headshell	Removable

KD-3100

Price	$199
Dimensions	5½H x 17 5/16W x 14¾D
Weight	15 lbs. 9 oz. (net)
Type	Semiautomatic
Speeds	33; 45
Speed adj.	±3%
Motor type	FG servo
Drive type	Direct
Rumble	–71 dB
Wow/flutter	0.03% (DIN)
Cueing	Yes
Track. force	0 to 3 grams
Antiskating	0 to 3 grams
Track. error	1.5 degree
Headshell	Removable
Features	Uses antiresonance base

Models also available

KD-850, $595; KD-650, $400; KD-600, $350 (tonearm not included); KD-4100, $259; KD-2100, $185; KD-1600, $135

KM
KM Laboratories
342 Madison Ave.
New York, N.Y. 10173

Audio Linear

Price	$349
Dimensions	17½H x 14½W x 6D
Weight	20 lbs. (net)
Type	Manual
Speeds	33 1/3; 45
Motor type	Synchronous
Drive type	Belt
Rumble	–70 dB (DIN)
Wow/flutter	0.06% (DIN)
Cueing	Yes
Track. force	0.25 to 2.5 grams
Cable capac.	75 pF
Antiskating	Yes
Resonance	8.3 Hz (with Koetsu cartridge)
Track. error	¾ degree at 4" radius
Headshell	Removable; proprietary; universal
Features	Combines aesthetics and engineering; SME arm optional

LINN PRODUCTS, LTD.
Audiophile Systems
5750 Rymark Court
Indianapolis, Ind. 46250

Linn-Sondek LP-12

Price	$960
Dimensions	5½H x 17½W x 14D
Weight	25 lbs. (net)
Type	Manual
Speeds	33 1/3 (45 adapter available)
Speed adj.	None
Motor type	24-pole synchronous
Drive type	Belt
Rumble	–60 dB (unweighted)
Wow/flutter	0.04% (WRMS)
Features	Single-point oil-bath bearing; sold without tonearm

LUX
Lux Audio
160 Dupont St.
Plainview, N.Y. 11803

PD-555

Price	$2,895
Dimensions	6⅞H x 26⅛W x 15 7/16D
Weight	73 lbs. 11 oz. (net)
Type	No arm
Speeds	33 1/3; 45; 78
Speed adj.	±2.5%
Motor type	Brushless, slotless DC servo
Drive type	Belt
Wow/flutter	0.03% (WRMS)
Cueing	No
Features	Exclusive disc stabilizers; 18-lb. plaster; 2 tonearm capability

PD-441

Price	$675
Dimensions	6¼H x 18¾W x 15½D
Weight	42 lbs. 14 oz.
Type	Manual (no arm)
Speeds	33 1/3; 45
Speed adj.	None
Motor type	Quartz-lock, DC brushless servo, load-free
Drive type	Direct
Rumble	-75 dB
Wow/flutter	0.025% (WRMS)
Features	Sold without tonearm; detachable hinged clear lucite dust cover; lock indicator; double shock-absorbing insulators (height-adjustable)

Models also available

PD-277, $395

MARANTZ
Marantz, Inc.
20525 Nordhoff St.
Chatsworth, Calif. 91311

6370Q

Price	$470
Dimensions	5¾H x 18⅝W x 15D
Weight	18 lbs. 11 oz. (net)
Type	Semiautomatic
Speeds	33 1/3; 45
Speed adj.	±6%
Motor type	Quartz-locked DC servo
Drive type	Direct
Rumble	–70 dB (NAB)
Wow/flutter	0.02% (WRMS)
Eff. arm mass	17.5 grams
Cueing	Yes
Track. force	0 to 3 grams
Antiskating	0 to 4 grams
Resonance	7.7 Hz (with V15 Type III cartridge)
Track. error	0.07 degree/cm
Headshell	Removable
Features	Quartz-locked at any speed; digital speed readout of rpm or percentage change from standard speed; oil-damped arm; low-distortion tonearm; separate motor for armlift and return; dust cover and base; shock-absorbent feet

TT-2000

Price	$200
Dimensions	5½H x 17⅜W x 15D
Weight	16 lbs. 8 oz. (net)
Type	Semiautomatic
Speeds	33 1/3; 45
Speed adj.	±4%
Motor type	Coreless 8-pole DC servo
Drive type	Direct
Rumble	–72 dB (DIN B-weighted)
Wow/flutter	0.03% (WRMS)
Eff. arm mass	12 grams
Cueing	Yes
Track. force	0 to 4 grams
Antiskating	0 to 4 grams
Resonance	10 Hz (with Shure V15 Type IV cartridge)
Track. error	0.22 degree/cm
Headshell	Removable

Features Low-distortion straight-line tonearm; front-panel controls; dust cover and base; shock-absorbent feet

Models also available

TT6000, $310; TT-4000, $250; 6025, $130

MCS® SERIES
J.C. Penney
1301 Ave. of the Americas
New York, N.Y. 10019

6700

Price	$230
Dimensions	6 15/16H x 17¾W x 14½D
Weight	21 lbs. (net)
Type	Changer
Speeds	33 1/3; 45
Speed adj.	±6%
Motor type	DC servo
Drive type	Direct
Rumble	–70 dB (DIN B-weighted)
Wow/flutter	0.04% (JIS)
Cueing	Yes
Track. force	0 to 3 grams
Antiskating	0 to 3 grams
Track. error	3.5 degrees
Headshell	Removable
Features	Hinged dust cover; 45 rpm adapter; Audio-Technica cartridge

Models also available

6602, $180; 6502, $130

MICHELL ENGINEERING
Dick Wagner (distributor)
5930 Penfield Ave.
Woodland Hills, Calif. 91367

Prisma

Price	$950
Dimensions	9H x 21W x 15D
Weight	27 lbs. (net)
Type	Manual
Speeds	33 1/3; 45
Speed adj.	±10%
Motor type	Pancake-type DC brushless servo
Drive type	Belt
Rumble	–51 dB (DIN B-weighted); –80 dB (unweighted)
Wow/flutter	0.02% (DIN B-weighted)
Eff. arm mass	5 grams
Cueing	Yes
Track. force	0.2 to 6 grams
Cable capac.	165 pF
Antiskating	Yes
Resonance	8 Hz (with Koetsu cartridge)
Track. error	1.2 degree
Headshell	Removable
Cart. mass	2 to 14 grams
Features	0.7" thick clear lucite base; 6:1 strobe; record floats on platter weights (no static); virtually total speed-variation adjustability from 33 through 45; available without arm at $750; entire drive unit replaceable in 30 seconds

Models also available

Hydraulic Reference, $750; Focus One, $650

MICRO SEIKI
P.O. Box 60271
Terminal Annex
Los Angeles, Calif. 90060

RX-5000

Price	$3,500
Weight	135 lbs. (net)
Speeds	33 1/3; 45
Speed adj.	±6%
Drive type	Belt
Rumble	–80 dB
Wow/flutter	0.015%
Features	Copper platter 35 lbs.; oil-bath bearings; solid zinc frame; remote electronics; digital speed readout

DQX-1000

Price	$900
Dimensions	5H x 17½W x 17½D
Weight	40 lbs. (net)
Speeds	33 1/3; 45
Speed adj.	±6%
Motor type	Quartz-lock PLL
Drive type	Direct
Rumble	–75 dB
Wow/flutter	0.02%
Cueing	No
Features	Capacity for 3 separate tonearms; remote electronics

DQ-3

Price	$500
Dimensions	6¼H x 18⅜W x 15⅜D
Weight	20 lbs.
Type	Manual
Speeds	33 1/3; 45
Motor type	DC servo, quartz-locked
Drive type	Direct
Rumble	–75 dB (DIN B-weighted)
Wow/flutter	0.025%
Cueing	Yes
Track. force	0 to 3 grams
Antiskating	0 to 3 grams
Track. error	1.5 degree
Headshell	Removable
Features	CF-1 carbon-fiber tonearm with variable mass

DD-31

Price	$375
Dimensions	6⅛H x 18⅜W x 14¾D
Weight	17 lbs.
Type	Semiautomatic
Speeds	33 1/3; 45
Speed adj.	±6%
Motor type	DC servo
Drive type	Direct
Rumble	–75 dB (DIN B-weighted)
Wow/flutter	0.03%
Cueing	Yes
Track. force	0 to 3 grams
Antiskating	0 to 3 grams
Track. error	1.5 degree
Headshell	Removable
Features	Low-mass straight tonearm with carbon-fiber headshell

Models also available

RX-3000, $2,200; BL-91L, $1,200; BL-91, $750; DQX-500, $600; DQ-44, $450; BL-51, $450; DD-24, $275; MB-14, $190

MITSUBISHI AUDIO SYSTEMS
Melco Sales, Inc.
3030 E. Victoria
Compton, Calif. 90221

LT-30

Price	$690
Dimensions	5¾H x 19⅛W x 16¼D
Weight	33 lbs. (net)
Type	Fully automatic
Speeds	33; 45
Motor type	Quartz PLL DC servo
Drive type	Direct
Rumble	–78 dB (DIN B-weighted)
Wow/flutter	0.025% (WRMS)
Eff. arm mass	12 grams
Cueing	Yes
Track. force	0 to 3 grams
Antiskating	No
Track. error	0.05 degree at any radius
Headshell	Removable; universal
Cart. mass	4 to 20 grams
Features	Linear tracking; LSI logic control of auto functions; auto disc size and speed sensing

LT-5V

Price	$450
Dimensions	17H x 18⅜W x 7⅞D
Weight	27 lbs. 8 oz. (net)
Type	Fully automatic
Speeds	33; 45
Speed adj.	±3%
Motor type	PLL DC Servo
Drive type	Belt
Rumble	–76 dB (DIN B-weighted)
Wow/flutter	0.045% (WRMS)
Cueing	Yes
Track. force	0 to 3 grams
Antiskating	No
Track. error	0.1 degree at any radius
Headshell	Removable; universal
Cart. mass	4 to 14 grams
Features	Vertical format; linear tracking; LSI logic control of auto functions; auto disc size and speed sensing

Models also available

DP-EC7, $300; DP-5, $220

NAD
NAD (USA), Inc.
Mackintosh Lane
P.O. Box 529
Lincoln, Mass. 01773

NAD-5040

Price	$212
Dimensions	6H x 18½W x 15D
Weight	12 lbs. 8 oz. (net)
Type	Semiautomatic
Speeds	33 1/3; 45
Speed adj.	±6%
Motor type	Frequency generator DC servo

Drive type Belt
Rumble –67 dB (DIN B-weighted)
Wow/flutter 0.05% (WRMS)
Cueing Yes
Track. force 0 to 3.5 grams
Antiskating 0 to 3 grams
Track. error 0.2/cm (0.5")
Headshell Removable
Features Aluminum low-resonance arm; carbon-fiber headshell

Models also available

NAD-5080, $250; NAD-5020, $177

ONKYO
Onkyo U.S.A. Corp.
42-07 20th Ave.
Long Island, N.Y. 11105

CP-1280F

Price $449.95
Dimensions 6⅜H x 18⅞W x 16 1/16D
Weight 25 lbs. 5 oz. (net)
Type Fully automatic
Speeds 33; 45
Drive type Direct
Wow/flutter 0.025%
Cueing Yes
Antiskating Yes
Headshell ADC type
Cart. mass 4 to 11 grams
Features Micro-computer controlled tonearm; dual motor quartz system

CP-1015A

Price $159.95
Dimensions 5½H x 16½W x 14½D
Weight 12 lbs. 1 oz. (net)
Type Semiautomatic
Speeds 33 1/3; 45
Motor type Brushless servo DC
Drive type Direct
Wow/flutter 0.035%
Cueing Yes
Antiskating Yes
Headshell ADC type
Cart. mass 5 to 9 grams
Features Straight-line, low-mass tonearm; tracking-force readout

Models also available

CP-1030F, $314.95; CP-1020 F, $219.95; CP-1010A, $144.95; CP-1260F, N/A

OPTONICA
Sharp Electronics Corp.
10 Keystone Place
Paramus, N.J. 07652

RP-9705

Price $950
Dimensions 5 3/10H x 18 9/10W x 17 3/10D
Weight 24 lbs. 5 oz. (net)
Type Fully automatic
Speeds 33; 45
Speed adj. ±4%

Motor type Coreless DC quartz locked
Drive type Direct
Rumble –70 dB (DIN B-weighted)
Wow/flutter 0.028% (WRMS)
Cueing Yes
Track. force 1 to 4 grams
Cable capac. 150 pF
Antiskating Yes
Headshell Removable
Cart. mass 4 to 11 grams
Features APMS (Automatic Programmable Music Selector); infrared remote; glass dust cover; dual arm system

Models also available

RP-7705, $320; RP-4705, $220

PHASE LINEAR
Phase Linear Corp.
20121 48th Ave. W.
Lynnwood, Wash. 98036

8000 Series Two

Price $750
Dimensions 6H x 19 2/5W x 17½D
Weight 26 lbs. 8 oz. (net)
Type Fully automatic, auto repeat, manual
Speeds 33 1/3; 45
Motor type DC (totally enclosed)
Drive type Direct quartz-locked PLL Hall-effect
Rumble –78 dB (DIN B)
Wow/flutter 0.013%
Cueing Yes
Track. force 0 to 5 grams
Track. error 0 degree
Headshell Removable
Features Linear motor; tangential tracking tonearm; speed deviation less than 0.002%; all controls accessible with dust cover closed

PHILIPS
Philips High Fidelity Laboratories
Interstate 40 & Straw Plains Pike
P.O. Box 6960
Knoxville, Tenn. 37914

AF-977

Price $379.95
Dimensions 5½H x 16½W x 13¾D
Weight 13 lbs. 3 oz. (net)
Type Fully automatic
Speeds 33 1/3; 45
Speed adj. ±3%
Motor type DC controlled, PLL quartz
Drive type Belt (direct control with tachometer)
Rumble –73 dB (DIN B)
Wow/flutter .025% (WRMS)
Eff. arm mass 16.5 grams
Cueing Yes
Track. force 0 to 3 grams
Antiskating 0 to 3 grams
Resonance 10 Hz (with test cartridge)
Track. error 9 degrees/cm
Headshell Removable
Features Digital readout; floating subchassis; built-in stylus force gauge; touch controls

AF-729

Price $199.95
Dimensions 15½H x 16½W x 13¾D
Weight 13 lbs. (net)
Type Fully automatic
Speeds 33 1/3; 45
Speed adj. ±3%
Motor type DC with closed-loop speed control
Drive type Belt
Rumble –65 dB (DIN B-weighted)
Wow/flutter 0.05% (WRMS)
Eff. arm mass 16.5 grams
Cueing Yes
Track. force 0 to 3 grams
Antiskating Yes
Resonance 10 Hz (with test cartridge)
Track. error 0 degree, 9 cm/min
Headshell Removable
Features Front-mounted controls; LED speed indication; pitch controls, direct-read stylus-force gauge

Models also available

AF-829, $279.95; AF-887, $239.95; AF-777, $184.95; 677, $169.95; 685, $119.95

PIONEER
U.S. Pioneer Electronics Corp.
85 Oxford Drive
Moonachie, N.J. 07074

PL-630

Price $449
Dimensions 5¾H x 18½W x 16½D
Weight 26 lbs. 8 oz. (net)
Type Automatic repeat
Speeds 33 1/3; 45
Speed adj. ±6%
Motor type Quartz PLL Hall-Effect
Drive type Direct
Rumble 75 dB (DIN B-weighted)
Wow/flutter 0.025% (WRMS)
Track. force 0 to 4 grams
Antiskating Yes
Features Anti-feedback cabinet and coaxial suspension; static-balanced S-shaped tonearm with 4-point gimbal support; magnesium die-cast headshell; quick stop, quick play; LED function indicators

PL-600

Price $399
Dimensions 5½H x 17 15/16W x 15⅛D
Weight 24 lbs. (net)
Type Semiautomatic
Speeds 33 1/3; 45
Motor type Quartz PLL Hall-effect
Drive type Direct
Wow/flutter 0.025%
Antiskating Yes
Cart. mass 4 to 9 grams
Features Separate motor for automatic functions; S-shape pipe arm; front-panel controls; S/N ratio: 78 dB

PL-500

Price	$299
Dimensions	5½H x 17 15/16W x 15 3/16D
Weight	20 lbs. (net)
Type	Semiautomatic
Speeds	33 1/3; 45
Motor type	Quartz PLL Hall-Effect
Drive type	Direct
Wow/flutter	0.025%
Antiskating	Yes
Cart. mass	4 to 10 grams
Features	S-shape pipe arm; coaxial suspension; S/N ratio: 75 dB

PL-100

Price	$119
Dimensions	3¾H x 16 9/16W x 14⅜D
Weight	11 lbs. (net)
Type	Semiautomatic
Speeds	33 1/3; 45
Motor type	DC/FG servo
Drive type	Direct
Wow/flutter	0.045%
Antiskating	Yes
Cart. mass	4 to 9 grams
Features	S-shape pipe arm; oil-damped cue mechanism; S/N ratio: 70 dB

REALISTIC
Radio Shack Corp.
1400 One Tandy Center
Ft. Worth, Texas 76102

LAB-420

Price	$219.95
Dimensions	5⅝H x 17 11/16W x 13 13/32D
Type	Fully automatic
Speeds	33 1/3; 45
Speed adj.	±4%
Motor type	20-pole brushless DC servomotor
Drive type	Direct
Rumble	–63 dB (DIN B-weighted)
Wow/flutter	0.03% (WRMS)
Cueing	Yes
Track. force	¾ to 1½ grams
Antiskating	Yes
Headshell	Universal
Features	Programmable repeat; comes with cartridge; adjustable speed fine tuning with strobe

LAB-220

Price	$139.95
Type	Fully automatic
Speeds	33 1/3; 45
Speed adj.	±3%
Motor type	24-pole motor; 300 rpm
Drive type	Belt
Rumble	–65 dB (DIN B-weighted)
Wow/flutter	0.06% (WRMS)
Cueing	Yes
Track. force	1½ to 3 grams
Antiskating	Yes
Features	Strobe light; solid-state speed control; comes with cartridge

Models also available

LAB-390, $169.95; LAB-270, $139.95; Lab 58, $99.95; LAB-120, $89.95

REFERENCE
CBS Retail Stores
1301 65th St.
Emeryville, Calif. 94608

620T

Price	$249.95
Dimensions	6 1/10H x 18W x 13 1/5D
Type	Semiautomatic
Speeds	33 1/3; 45
Speed adj.	±3% (strobe)
Motor type	2-pole, DC servo
Drive type	Direct
Rumble	–70 dB (DIN B-weighted)
Cueing	No
Track. force	0 to 3 grams
Features	Adjustable antiskate; automatic shutoff

Models also available

510T, $139.95

REGA
Import Audio
13430 Clayton Rd.
St. Louis, Mo. 63131

Planar 3

Price	$530 (with arm); $395 (without arm)
Dimensions	4⅞H x 17 9/16W x 13 15/16D
Weight	15 lbs. 5 oz. (net)
Type	Manual
Speeds	33 1/3; 45
Motor type	24-pole synchronous
Drive type	Belt
Cueing	Yes
Track. force	0 to 3 grams
Antiskating	0 to 3 grams
Track. error	1.5 degree
Headshell	Removable
Features	Precision-ground glass platter; includes base, dust cover, and felt mat for records

Models also available

Planar 2, $410 (with arm); $295 (without arm)

REVOX
Studer ReVox America, Inc.
1425 Elm Hill Pike
Nashville, Tenn. 37210

B-790

Price	$899 (with cartridge)
Dimensions	5⅝H x 17¾W x 15D
Weight	24 lbs. 4 oz. (net)
Type	Fully automatic
Speeds	33 1/3; 45
Speed adj.	±7%
Motor type	Quartz-controlled PLL servo
Drive type	Direct
Rumble	–68 dB (DIN)
Wow/flutter	0.05%
Eff. arm mass	1 gram
Cueing	Yes
Track. force	0.8 to 2 grams
Antiskating	Not required
Resonance	12 to 15 Hz (with Ortofon cartridge)
Track. error	0.5 degree
Headshell	No headshell used due to true tangential-tracking design
Features	True tangential tracking with opto-electronic servo control; radical 4-cm tonearm has negligible mass; digital speed display

Models also available

B-795, $599

ROTEL
Rotel of America, Inc.
1055 Saw Mill River Road
Ardsley, N.Y. 10502

RP-1010

Price	$320
Dimensions	5H x 17½W x 14D
Weight	17 lbs. 8 oz. (net)
Type	Fully automatic
Speeds	33 1/3; 45
Motor type	Quartz-lock PLL
Drive type	Direct
Rumble	–72 dB (DIN B-weighted)
Wow/flutter	0.025%
Eff. arm mass	7 grams
Cueing	Yes
Track. force	0.70 to 3 grams
Antiskating	Yes
Track. error	2.2 degrees at 1" radius
Headshell	Removable
Features	Two motors; front panel control; carbon-fiber stralght arm; glass-fiber headshell; strobe; rosewood finish

Models also available

RP-1001, $210; RP-550, $170

SANSUI
Sansui Electronics Corp.
1250 Valley Brook Ave.
Lyndhurst, N.J. 07071

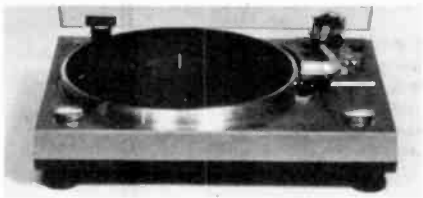
XR-Q11

Price	$650
Dimensions	5⅝H x 19W x 16 9/16D
Weight	27 lbs. 8 oz. (net)
Type	Fully automatic
Speeds	33 1/3; 45
Motor type	20-pole/30-slot DC brushless quartz servo-controlled
Drive type	Direct
Rumble	–78 dB (DIN B-weighted)
Wow/flutter	0.015% (WRMS)
Cueing	Yes
Track. force	0.5 gram
Antiskating	Yes
Headshell	Fixed; proprietary
Cart. mass	4 to 10 grams
Features	Computerized track sequence selection; Dyna-optimum balanced tonearm; double suspension base

FR-D4

Price $240
Dimensions 5¼H x 17 5/16W x 5 15/16D
Weight 13 lbs. 14 lbs. (net)
Type Fully automatic
Speeds 33 1/3; 45
Speed adj. ±3%
Motor type 20-pole, 30-slot, high-torque saturable-core DC brushless servomotor
Drive type Direct
Rumble –72 dB
Wow/flutter 0.028% (WRMS)
Eff. arm mass 4 to 10 grams
Cueing Yes
Track. force +0.5 gram
Antiskating Yes
Headshell Removable
Features CPU computer-controlled; DOB tonearm; front controls; strobe; dust cover; gold-plated connectors; direct-readout

P-50



Price $140
Type Semiautomatic
Speeds 33 1/3; 45
Drive type Belt
Rumble –60 dB (DIN B-weighted)
Wow/flutter 0.06% (WRMS)
Cueing Yes
Features S-shaped tonearm with 2-point gimbal support; aluminum die-cast platter; dust cover

Models also available

XR-Q9, $500; FR-Q5, $340; FR-D3, $190

SANYO
Sanyo Electric Inc.
Consumer Electronics Div.
1200 W. Artesia Blvd.
Compton, Calif. 90220

TP-1030

Price $199.95
Dimensions 6½H x 18¾W x 15D
Type Fully automatic
Speeds 33 1/3; 45
Speed adj. Pitch control (with strobe)
Motor type Brushless platter motor; DC tonearm motor
Drive type Direct
Rumble –70 dB
Wow/flutter 0.03%
Cueing Viscous-damped
Track. force 0 to 3 grams
Antiskating Adjustable; calibrated
Track. error ±15 degrees
Headshell Removable
Features Electronic speed control; lateral counterbalance; stylus mirror

PLUS SERIES

Plus Q-50

Price $359.95
Dimensions 6H x 17⅜W x 14⅝D
Type Fully automatic
Speeds 33 1/3; 45

Speed adj. Pitch control
Motor type 20-pole, 30-slot brushless platter motor; DC tonearm motor
Drive type Direct
Rumble –73 dB
Wow/flutter 0.025%
Eff. arm mass 15.4 grams
Cueing Yes
Track. force 0 to 3 grams
Antiskating Adjustable; calibrated
Track. error ±1.5 degree
Headshell Removable
Features High-density platter; high-torque motor; carbon-fiber headshell; disc-size selector; cue control; suspension/isolation system

Models also available

TP-1012/A, $159.95; TP-1010, $139.95; TP-1005/A, $109.95; Plus Q-60, $619.95; Plus Q-40, $249.95; Plus Q-25, $209.95

H. H. SCOTT
H. H. Scott, Inc.
20 Commerce Way
Woburn, Mass. 01801

PS-97XV

Price $260
Dimensions 5½H x 17¼W x 13¾D
Weight 21 lbs. (net)
Type Automatic repeat
Speeds 33 1/3; 45
Speed adj. ±3%; quartz-lock
Motor type 72-pole FG AC servomotor
Drive type Direct
Wow/flutter 0.03% (WRMS)
Eff. arm mass 15.6 grams
Cueing Yes
Track. force 1 to 3 grams
Antiskating 0 to 3 grams
Resonance 8.5 Hz
Headshell Removable
Features Quartz synthesizer speed lock with indicator; strobe light with adjustable speed control; record-size selector and spare headshell holder

PS-18

Price $129.95
Dimensions 5¼H x 17¼W x 15¼D
Weight 12 lbs. (net)
Type Semiatuomatic
Speeds 33 1/3; 45
Motor type 4-pole synchronous
Drive type Belt
Rumble –52 dB
Wow/flutter 0.07%
Cueing Yes
Track. force 1.5 to 4 grams
Antiskating Yes
Headshell Removable
Features Straight, low-mass tonearm; low capacitance phono cables; low 'Q' compression base; antiresonance arm counterweight; up-front user controls

Models also available

PS-77XV, $235; PS-78, $219.95; PS-87A, $210; PS-67A, $200; PS-68, $179.95; PS-48, $149.95; PS-47A, $140

SHERWOOD
Sherwood Electronics Labs
500 E. Carson Plaza Drive
Carson, Calif. 90745

ST-80Z

Price $149.95
Dimensions 5¼H x 18W x 14½D
Weight 18 lbs. (net)
Type Semiautomatic
Speeds 33 1/3; 45
Speed adj. ±3%
Motor type FG DC servo
Drive type Belt
Wow/flutter 0.06% (JIS WRMS)
Cueing Yes
Track. force 0 to 4 grams
Antiskating Yes
Track. error 4.2 degrees
Headshell Removable
Cart. mass 5 to 8½ grams
Features Speed adjust with straight arm; strobe; cueing in both directions

Models also available

ST-801, $119.95

SONY
Sony Corp. of America
9 West 57th St.
New York, N.Y. 10019

Audio Lab PS-B80

Price $1,800
Dimensions 7 15/16H x 19 15/16W x 16 15/16D
Weight 33 lbs. (net)
Type Fully automatic
Speeds 33 1/3; 45
Motor type Sony BSL-Magnedisc servo
Drive type Direct
Rumble –78 dB (DIN B-weighted)
Wow/flutter 0.02% (WRMS)
Eff. arm mass Electronically variable
Cueing Yes
Track. force 0.5 to 3 grams
Cable capac. 45 pF
Antiskating 0.5 to 3 grams
Resonance Electronically optimized
Headshell Removable
Cart. mass 1 to 19 grams
Features Active critical tracking biotracer arm uses vertical and horizontal motors; microprocessor-controlled to automatically critically optimize arm for each cartridge

PS-P7X

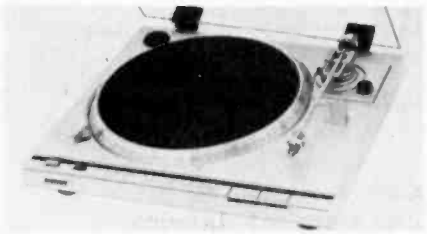
Price $450
Dimensions 4⅜H x 17W x 13⅝D
Weight 20 lbs. 13 oz. (net)
Type Semiautomatic
Speeds 33 1/3; 45
Motor type Sony BSL Magnedisc servo
Drive type Direct
Rumble –75 dB (DIN B-weighted)

Wow/flutter 0.025% (WRMS)
Cueing Yes
Track. force 0 to 3 grams
Cable capac. 100 pF
Antiskating 0 to 3 grams
Headshell Removable
Features Micro turntable; all controls front-mounted; separate tonearm; electromagnetic braking; quartz lock; SBMC chasis; magnedisc servo

PS-T33

Price $170
Dimensions 5⅝H x 17W x 14⅜D
Weight 14 lbs. 2 oz. (net)
Type Fully automatic
Speeds 33 1/3; 45
Speed adj. ±4%
Motor type Sony BSL Magnedisc servo
Drive type Direct
Rumble –75 dB (DIN B-weighted)
Wow/flutter 0.025% (WRMS)
Eff. arm mass 8 grams
Cueing Yes
Track. force 0 to 3 grams
Cable capac. 108 pF
Antiskating Yes
Resonance 7 to 12 Hz (with most cartridges)
Track. error 3 degrees
Headshell Proprietary
Cart. mass 2½ to 10 grams
Features SBMC cabinet reduces feedback; straight reinforced low-mass arm; automatic mechanism with safety clutch

PS-T22



Price $150
Dimensions 5⅛H x 17W x 14⅜D
Weight 13 lbs. 8 oz. (net)
Type Semiautomatic
Speeds 33 1/3; 45
Speed adj. ±4%
Motor type Sony BSL Magnedisc servo
Drive type Direct
Rumble –75 dB (DIN B-weighted)
Wow/flutter 0.025% (WRMS)
Eff. arm mass 8 grams
Cueing Yes
Track. force 0 to 3 grams
Cable capac. 108 pF
Antiskating Yes
Track. error 3 degrees
Headshell Proprietary
Cart. mass 2½ to 10 grams
Features Variable pitch with strobe; tonearm safety clutch; gold-plated headshell contacts; aircraft alloy low-mass tonearm

Models also available

PS-X55, $270; PS-X45, $200

STANTON GYROPOISE
Stanton Magnetics, Inc.
200 Terminal Drive
Plainview, N.Y. 11803

800 5A/881S

Price $500
Dimensions 14¼H x 16¾W x 6D
Weight 15 lbs. 8 oz. (net)
Type Semiautomatic
Speeds 33 1/3; 45
Motor type 24-pole synchronous, high-torque
Drive type Belt
Rumble –70 (DIN B)
Wow/flutter 0.07% (DIN B)
Cueing Yes
Track. force 0 to 4 grams
Antiskating 0 to 4 grams
Track. error ±1.2 degree (max)
Headshell Removable
Features Includes 881S cartridge; Gyropoise, frictionless, magnetic suspension; unipoise, single point tonearm suspension

8005M/881S

Price $450
Type Manual
Features Includes 881S cartridge

Models also available

8005A/681EEE, $440; 8005M/681EEE, $390; 8005A, $350; 8005M, $300

TEAC
Teac Corp. of America
7733 Telegraph Road
Montebello, Calif. 90640

P-9

Price N/A
Dimensions 17 1/3H x 14½W x 5 15/16D
Weight 19 lbs. 12 oz. (net)
Speeds 33 1/3; 45
Motor type PLL quartz lock
Drive type Direct
Rumble –63 dB (DIN)
Wow/flutter 0.045%
Eff. arm mass 1.5 grams
Cueing Yes
Track. force 0 to 4 grams
Antiskating Yes
Headshell Removable

TECHNICS
Panasonic Co.
1 Panasonic Way
Secaucus, N.J. 07094

SP-10 Mk. II

Price $950
Dimensions 4H x 14½W x 14½D
Weight 21 lbs. (net)
Type Manual
Speeds 33 1/3; 45; 78
Speed adj. None
Motor type DC servo, quartz phase-locked
Drive type Direct
Rumble 78 dB (DIN B-weighted)
Wow/flutter 0.025% (WRMS)
Features Sold without tonearm; builds up to full speed in 0.25 sec; stop time (dual braking) is 0.3 sec; remote control; separate power supply; overall speed accuracy of +0.002% (±0.036 sec in ½ hour); high torque (5 kg cm or 4.3 lbs. in)

SP-15

Price $650
Dimensions 3 21/32H x 13¾W x 14 41/64D
Weight 13 lbs. 11 oz. (net)
Type Manual
Speeds 33 1/3; 45; 78
Speed adj. ±9.9%
Motor type Brushless DC
Drive type Direct
Rumble –78 dB (DIN B-weighted) (IEC); –56 dB (DIN A-weighted)
Wow/flutter 0.025% (JIS) (WRMS); ±0.035% peak (IEC)
Features Digitally displayed quartz synthesizer pitch control in 0.1% steps; high torque; 0.4 sec start/stop time; electronic/mechanical breaking with quick release; pulsed power supply prevents hum induction; rubber-damped platter underside

SL-1200 Mk. 2

Price $350

Dimensions 6 19/64H x 17 27/32W x 14 11/64D
Weight 24 lbs. 5 oz. (net)
Type Manual
Speeds 33 1/3; 45
Speed adj. ±8%
Motor type Brushless DC
Drive type Direct
Rumble –78 dB (DIN B-weighted) (IEC); –56 dB (DIN A-weighted)
Wow/flutter 0.25% (JIS); ±0.035% peak (DIN A-weighted)
Eff. arm mass 12 grams
Cueing Yes
Track. force 0 to 2.5 grams
Antiskating 0 to 2.5 grams
Resonance 7 to 11
Track. error +0 degrees, 32 min at inner groove; +2 degrees, 32 min at outer groove
Headshell Removable
Features Continuous, quartz-locked pitch adjustment; rubber base material for acoustic isolation; underside damping mat on platter; high torque for fast starts; pop-up stylus illuminator; designed for disco use; arm-height adjustment

SL-Q3

Price $220
Dimensions 5 7/64H x 16 59/64W x 14 49/64D
Weight 15 lbs. 11 oz. (net)
Type Automatic repeat
Speeds 33 1/3; 45
Speed adj. ±0%
Motor type Brushless DC
Drive type Direct
Rumble –78 dB (DIN B-weighted) (IEC); –56 dB (DIN A-weighted)
Wow/flutter 0.05% (JIS); ±0.035 peak (IEC)
Eff. arm mass 12 grams
Cueing Yes
Track. force 0 to 2.5 grams
Antiskating 0 to 2.5 grams
Track. error 0 degree, 32 min at inner grove; 2 degrees, 32 min at outer groove
Headshell Removable
Features Quartz, phase-locked design; front-panel controls; nonresonant base

SL-B3

Price $150
Dimensions 4 31/32H x 16 59/64W x 14 49/64D
Weight 10 lbs. 2 oz. (net)
Type Automatic repeat
Speeds 33 1/3; 45
Speed adj. ±3%
Motor type Servo DC
Drive type Belt
Rumble –70 dB (DIN B-weighted)
Wow/flutter 0.045% rms (JIS); ±0.06% peak (IEC)
Eff. arm mass 12 grams
Cueing Yes
Track. force 0 to 3 grams
Antiskating 0 to 3 grams
Track. error 0 degree, 32 min at inner groove; 2 degrees, 32 min at outer groove
Headshell Removable
Features Front-panel controls; electronic speed switching and variation

Models also available

SL-10, $600; SL-1600 Mk 2, $420;

SP-25, $370; SL-1700 Mk 2, $370; SL-1800 Mk. 2, $320; SL-D33, $270; SL-D5, $230; SL-Q2, $190; SL-B5, $190; SL-D3, $170; SL-D2, $150; SL-B2, $130; SL-D1, $125; SL-B1, $100

THORENS
Epicure Products, Inc.
25 Hale St.
Newburyport, Mass. 01950

"The Reference"
Price Approx. $15,000 depending on options
Dimensions 14H x 20W x 14D
Weight 200 lbs. (net)
Type Manual
Speeds 33 1/3; 45; 78
Speed adj. ±6%
Motor type Synchronous
Drive type Belt
Rumble –84 dB (DIN A-weighted) (measured with Thorens RMK adapter)
Wow/flutter 0.02% (DIN)
Features Custom-made to customer specification; can be supplied with many different tonearms

TD-126C Mk. III
Price $800
Dimensions 6¾H x 19⅞W x 15½D
Weight 33 lbs. (net)
Type Semiautomatic
Speeds 33 1/3; 45; 78
Speed adj. ±6%
Motor type DC servo controlled
Drive type Belt
Rumble –72 dB (DIN)
Wow/flutter 0.035% (DIN)
Eff. arm mass 7.5 grams
Cueing Yes
Track. force 0.5 to 3 grams
Cable capac. 190 pF
Antiskating Magnetic system
Resonance 10 Hz (with Thorens TMC-63 cartridge)
Track. error 0.18 degree/cm radius
Headshell Removable
Cart. mass 3 to 7 grams
Features Automatic Pitch Control (APC) corrects turntable speed with changes on load on turntable; automatic cue-up and shut-off at end of record play

TD-160B Mk. II
Price $295 (tonearm not included)
Dimensions 6H x 17W x 14 3/16D
Weight 19 lbs. (net)
Type Manual
Speeds 33 1/3; 45
Motor type AC 16-pole synchronous
Drive type Belt
Rumble –70 dB (DIN)
Wow/flutter 0.04% (DIN)
Features Blank tonearm board for custom installation; extra predrilled accessory boards available

Models also available
TD-126B Mk. III, $645 (tonearm not included); TD-115, $435; TD-160 Super, $395 (tonearm not included); TD-110, $350; TD-105, $335; TD-104, $270

TOSHIBA
Toshiba America, Inc.
82 Totowa Road
Wayne, N.J. 07470

SR-Q200
Price $222.95
Dimensions 4 9/10H x 16 3/5W x 15D
Weight 12 lbs. 1 oz. (net)
Type Fully automatic
Speeds 33; 45
Motor type Slotless, coreless, quartz-locked
Drive type Direct
Rumble –75 dB (DIN B-weighted)
Wow/flutter 0.025%
Cueing Yes
Track. force 0.25 to 3 grams
Cable capac. 100 pF
Antiskating Yes
Track. error ±2 degrees
Headshell Removable; proprietary
Features Straight tonearm; unit automatically sets record speed; acoustic isolation feet

SR-F200
Price $179.95
Dimensions 4 9/10H x 16 3/5W x 15D
Weight 12 lbs. 1 oz. (net)
Type Fully automatic
Speeds 33 1/3; 45
Speed adj. ±3%
Motor type Slotless, coreless DC servo
Drive type Direct
Rumble –73 dB (DIN B-weighted)
Wow/flutter 0.028%
Cueing Yes
Track. force 0.25 to 3 grams
Cable capac. 100 pF
Antiskating Yes
Track. error ±2 degrees
Headshell Removable; proprietary
Features Automatically selects turntable speed; acoustic isolation feet; straight tonearm

Models also available
SR-Q300, $299.95; SR-Q-100, $199.95; SR-A200, $149.95; SR-F100, $139.95; SR-A100, $114.95

YAMAHA
Yamaha International Corp.
6600 Orangethorpe Ave.
Buena Park, Calif. 90620

PX-2
Price $900
Dimensions 66⅛H x 19⅜W x 16⅞D
Weight 37 lbs. (net)
Type Fully automatic
Speeds 33 1/3; 45
Motor type 4-phase, 8-pole coreless DC Hall-Effect
Drive type Direct
Rumble –80 dB (DIN B-weighted)
Wow/flutter 0.01% (WRMS)
Eff. arm mass 16 to 18 grams
Cueing Yes
Track. force 0 to 2.5 grams
Cable capac. 130 pF
Resonance 12 Hz (with Yamaha MC-1S cartridge)
Track. error 0.15 degree
Headshell Universal
Features Linear-tracking straight tonearm

P-450
Price $180
Dimensions 5⅛H x 17⅜W x 14⅝D
Weight 11 lbs. (net)
Type Fully automatic
Speeds 33 1/3; 45
Speed adj. ±3%
Motor type FG servo
Drive type Belt
Rumble –70 dB (DIN B-weighted)
Wow/flutter 0.04% (WRMS)
Eff. arm mass 11 grams
Cueing Yes
Track. force 0 to 3 grams
Cable capac. 100 pF
Antiskating Yes
Resonance 12 Hz (with Shure V15 Type III cartridge)
Track. error 1 degree
Headshell Removable
Features Optimum mass straight tonearm; pitch control and strobe

Models also available
P-750, $260; P-550, $220; P-350, $140

ZENITH
Zenith Radio Corp.
1000 Milwaukee Ave.
Glenview, Ill. 60025

MC-9050
Price $249.95
Dimensions 6H x 19W x 14¾D
Weight 12 lbs. (net)
Type Semiautomatic
Speeds 33 1/3; 45
Speed adj. ±3%
Motor type Brushless, slotless, coreless DC servomotor
Drive type Direct
Rumble –70 dB (DIN)
Wow/flutter 0.03% (DIN)
Cueing Yes
Track. force 0 to 4 grams
Antiskating 0 to 3 grams
Track. error +2 degrees, 30 min; 1 degree, 40 min
Headshell Removable
Features Front-panel controls; low center of gravity tonearm; Shure magnetic cartridge; damped cue; strobe; low resonance construction, removable dust cover

MC-9030
Price $149.95
Dimensions 7⅜H x 16⅛W x 14⅛D
Type Changer
Speeds 33 1/3; 45
Motor type 4-pole, high-torque induction
Drive type Belt
Rumble –50 dB (DIN)
Wow/flutter 0.20% (DIN)
Cueing Yes
Track. force 0 to 4 grams
Antiskating 0 to 4 grams
Track. error ±3 degrees
Headshell Removable
Features Belt-drive, 4-pole, high-torque induction motor; automatic operation; single and multiple-play capability; Shure magnetic-elliptical diamond stylus cartridge

MC-9035
Price $139.95
Dimensions 6 2/3H x 16¼W x 15¼D
Type Changer
Speeds 33 1/3; 45
Speed adj. ±3%
Motor type 24-pole synchronous with capacitive phase shift
Drive type Belt
Rumble –60 dB (DIN)
Wow/flutter 0.08% (DIN)
Cueing Yes
Track. force 0 to 4 grams
Antiskating 0 to 4 grams
Track. error ±3 degrees
Headshell Fixed
Features Automatic operation; strobe and pitch control; single and multiple-play record capability; Shure magnetic cartridge

Models also available
MC-9025, $109.95; MC-9020, $99.95

Phono & Phono Care Accessories

ACE AUDIO
Ace Audio Co.
532 Fifth St.
East Northport, N.Y. 11731

4000 Subsonic Filter
Price $92.50 (wired)/$66.50 (kit); 220V models, add $6.50
Description Sharp-cutoff filter (18 dB/octave below 20 Hz) eliminates effects of record warps, tonearm/cartridge resonances, accidental stylus drops, and infrasonic rumble; circuitry has low-noise unity-gain IC op-amp with full feedback; Class A operation; self-contained power supply; high-input impedance, low-output impedance; distortion: 0.002%

ADC
Audio Dynamics Corp.
Pickett District Road
New Milford, Conn. 06776

Pro/Grip
Price $24.95
Description Disc stabilizer: minimizes warp on all records; fits all fixed spindle turntables

ADCOM
Adcom
9 Jules Lane
New Brunswick, N.J. 08901

Adcom Electronic Static Eliminator
Price $19.95
Description "State of the Art" piezoelectronic static-eliminating instrument; dual-emission chambers for wider dispersion and damped trigger for consistent effectiveness

Models also available
Adcom Record Care System, $19.95; Adcom Carbon-Fiber Record Sweep, $14.95

ADD 'N STAC
Royal Sound Co., Inc.
200 Industrial Way W.
Eatontown, N.J. 07724

Record Add 'N Stac
Price $12
Description Plastic storage unit holds up to thirty 12" LP records in Philips-type boxes; interlocking features permit units to be snapped together in any configuration as the need for additional storage space arises; available in decorator black; predrilled holes in the back of every module facilitate hanging

AUDIO GROOME
Empire Scientific Corp.
1055 Stewart Ave.
Garden City, N.Y. 11530

Dry System Kit
Price $79.95
Description Three record-care accessories packaged in a covered mahogany base; kit includes the Audio Groome Static Eliminator, Dust Eliminator, and Stylus Cleaning Fluid with brush; also included are a standard universal headshell, screwdriver, hardware, and a storage slot for a second headshell; cover is vinyl laminate

Disco-Film
Price $14.95
Description Gel-like non-toxic chemical is applied directly to the record surface; dry film is peeled off, removing surface dirt; one container does 40 sides (20 LPs)

Models also available
Static Eliminator, $39.95; Carbon Fiber Headshell, $14.95; Anti-Static Mat, $8.95; High-Definition Silver Cartridge Connectors, $7.95; Stylus Cleaning Fluid and Brush, $3.95; Anti-Static, Anti-Dust Record Sleeves, $2.50 (package of 10)

AUDIO-TECHNICA
Audio Technica U.S., Inc.
1221 Commerce Drive
Stow, Ohio 44224

AT-650 Moving-Coil Transformer
Price $250
Description Passive transformer; no batteries or power supply required; variable impedance: 3, 20, 40 ohms and pass; frequency response: 10 Hz to 100 kHz; output impedance: 47K ohms; THD: 0.05% at 1 mV

AT-6002 Autocleanica®
Price $12.95
Description Disc-cleaning system with soft carbon-conductive brush and plush pad to loosen groove dirt; small arm on weighted base may be placed on motorboard; compatible with most manual turntables or automatics when in manual mode; replacement pad and brush available (AT-602, $2.95)

AT-641 Cable Connectors
Price $7.95
Description Two gold-plated female phono feed-through cable connectors; extends length of other AT cables

Models also available
AT-630 Moving-Coil Transformer, $95; AT-6005 Pneumatic Tonearm Lift, $29.95; AT-620 Super Conductivity Cable Set, $29.95; PDO-II, $28.95; AT-605 Audio Insulator System, $26.95; AT-6006a Safety Raiser®, $22.95; AT-618 Disc Stabilizer, $22.95; Universal Headshells, AT-S ($8); AT-N, AT-D ($12); AT-MS ($24.95); AT-622 Universal Tonearm Cable, $19.95; AT-6012 Sonic Broom®, $12.95; LS-1 Lifesaver® System, $12.95; AT-610a Cable set, $9.95; AT-6010a Disk Whisk, $7.95; AT-609 Headshell Wire Set, $6.95; AT-617 Sonic Tonic, $6.95; AT-607 Stylus Cleaning Formula, $3.95; AT-608 Record Care Formula, $2.50

BIB AUDIOPHILE EDITION
Bib Hi-Fi Accessories, Inc.
1751 Jay Ell Drive
Richardson, Texas 75081

Groov-Stat Electronic 3000-AE
Price $34.95
Description Static reducer; pushbutton control; audible and visible signal; emits powerful beam of positive ions to neutralize negatively charged records thereby eliminating static

Models also available
Groov-Kleen 101-AE, $14.95; Record Valet 110-AE, $14.95; Stylus Cleaner 112-AE, $1.95

CALIBRON
Horian Engineering, Inc.
Calibron Div.
600 Lake Emma Road
Lake Mary, Fla. 32746

MR-600 Protek I
Price $16
Description Micro-bristle filtration (patented); 4 different cleaning sections are precisely positioned to delicately remove all contaminants from the record surface; lint, dust, dirt, and smudge deposits are carefully filtered through each cleaning section by micro bristles.

Models also available
CS-303 Clean-Sweep Total System, $7; RP-200 Record Protector, $5; CS-100 Clean-Sweep Record Purifier, $4; CS-150 Clean-Sweep Stylus Care, $3; RO-50 Designers Deluxe Record Organizer, $4

CART-A-LIGN
Cart-A-Lign Research Corp.
60 E. 42nd St., Suite 411
New York, N.Y. 10165

Cart-A-Lign
Price $29.95
Description A unique cartridge/stylus alignment device to correct lateral tracking error; precision-engraved acrylic mirror is used to sight and align the stylus shaft to ±0.1 degree using Baerwald radii; also used to adjust azimuth and to set stylus overhang using inventors' discovery, the "Fixed Overhang Point"; kit comes complete with illustrated instruction booklet, optical quality magnifying lens, penlight, jewelers screwdriver, and storage box

MITCHELL A. COTTER
Mitchell A. Cotter Company, Inc.
35 Beechwood Ave.
Mt. Vernon, N.Y. 10553

B-2 Turntable Isolation Platform
Price $200/$220
Description Five-layer laminate structure 20" x 16" of 3 different materials that decouple the turntable placed on it from floor vibrations and eliminates acoustic excitation of the turntable base

Models also available
MK-2 Moving-Coil Pickup Transformer, $550 (Type S, P, PP, X); $650 (Type L); PSC-2 Phono Signal Conditioner, $550

DB SYSTEMS
DB Systems
P.O. Box 347
Jaffrey Center, N.H. 03454

DBP-6 Phono Equalization Kit
Price $29.95
Description Allows adding capacitance from 100 to 400 pF on phono input of any preamp or

receiver in a few seconds; changes in capacitance can be made quickly; 100-ohm load provided for experimentation with "Y" adapters, a set of phono plugs with polystyrene capacitors wired-in to give added capacitance of 100, 150, 200, 300, and 400 pF, metal film resistors for a 100-ohm load, and a pair of spare plugs

Models also available

DB-7 Precision Phase Inverter, $159.95; DBP-11 Capacitance Loading Switching Box, $79.95; DBP-10 Phono Alignment Protractor, $19.95

DECCA
Rocelco, Inc.
1669 Flint Rd.
Downsview, Ontario M3J 2J7

Decca "Zero Ohms" Record Brush

Price $19.95
Description Consists of one million conductive carbon-fiber bristles, each 8 to 9 microns thick; bristles enter record grooves to remove dust and static; uses no fluids; features zero ohm resistance between bristles and grip, assuring total static discharge

Models also available

Decca Record Cleaner, $16.95; Decca Microbe, $14.95; Diplomat Deluxe Record Brush, $24.95

DENNESEN
Dennesen Electronics
P.O. Box 51
Beverly, Mass. 01915

Soundtractor

Price $35 (plastic); $100 (metal)
Description Protractor for correctly aligning phono cartridges in tonearms within 0.001"; allows measurement of relative changes in vertical tracking angle

DISCWASHER
Discwasher Group
1407 N. Providence Road
Columbia, Mo. 65201

DiscFoot

Price $25
Description Turntable isolation system consisting of four isolation pads, four furniture-protective pads, four platform caps for attachment to turntable feet, and four special damping sections to adapt units to certain turntables; single feet available for $7 each

Zerostat

Price $23

Description Antistatic gun

D4 Fluid

Price $2.50 (1¼ oz.); $10 (6 oz.); $17 (16 oz.)
Description Special fluid used with DiscWasher brush removes micro-dust, fingerprints, tobacco smoke; eliminates destructive biological growth; leaves no residue

Models also available

DiscKeeper, $75; DiscKit, $55; Discwasher System, $16.50; DiscOrganizer, $15; D-Stat II, $8.50; Gold-Ens, $10 (1.9'); $11 (3.7'); $12.50 (7'); SC-2 Stylus cleaner, $8.50

DISK MAT
Osawa & Co. (USA), Inc.
521 Fifth Ave.
New York, N.Y. 10175

SE-22

Price $29.95
Description High-mass turntable mat reduces noise transfer from motor; minimizes feedback; lessens wow and flutter; reduces rumble; designed for direct-drive turntables

FALCON
Falcon Safety Products, Inc.
1065 Bristol Road
Mountainside, N.J. 07092

Dust Fighters (FGK)

Price $25.45
Description Variable-controlled air-gun products in one kit; includes Dust-Off with trigger assembly, one refill, Pocket Dust-Off, plus flexible extension nozzle

Models also available

Dust-Off (FG), $17; $3.50 for refills; Dust-Off Junior (FGJ), $3.65; Dust-Off Extension Nozzle (FGN), $3.50; Pocket Dust-Off (FGP), $1.95

FIDELITONE
Fidelitone, Inc.
3001 Malmo Rd.
Arlington Heights, Ill. 60005

3052 Intensive Care Kit

Price $16.98
Description Contains Fidelistat, antistatic fluid; disc jockey and stylus cleaner

Models also available

3056 Spin-and-Clean Record Washer, $15.98; 3131B Record Conditioner, $10.95; 3045 Disc Jockey, $6.98; 3044 Fidelistat Plus Record Cleaner, $5.98; 3048 Fuzz, $3.98; 3049 Stylus Cleaner, $2.98

FIDELITY RESEARCH
Fidelity Research of America
P.O. Box 5242
Ventura, Calif. 93003

AGT-5X Moving-Coil Transformer

Price $1,825
Description Pure silver toroidal transformer for use with all moving coils having a three to ten ohm input impedance; finished in oxidized black; output cables from transformer to preamp input are pure silver, conductor and shield; ground also pure silver terminating in gold-plated shoe

Models also available

B-60 Vertical Tracking Adjustment Device, $450; FRT-3G Step-Up Transformer, $250; AGC-1 Pure Silver Audio Cable, $205

GARRARD
Garrard U.S.A. Inc.
85 Sherwood Ave.
Farmingdale, N.Y. 11735

Dustmaster

Price $19.95
Description Ultra low-mass record-cleaning device; 40,000 carbon fibers remove micro-dust from record grooves without fluid; attaches by way of self-stick pad; built-in arm rest and finger lift; black with chrome accents

GC/AUDIOTEX
GC Electronics
400 S. Wyman St.
Rockford, Ill. 61101

30-8555 Audio Component Isolators

Price $18.50
Description Set of 4 rubber cushions with bubble-type level included; absorbs vibration when under turntable to prevent mechanical feedback and stylus groove-jumping; also works under speakers to reduce vibration that can cause turntable movement, as well as to prevent sound from traveling along walls and floors

Models also available

30-8600 Audio Maid En-Stat, $10

GOLDRING
Hervic Electronics, Inc.
18750 Oxnard St., #406
Tarzana, Calif. 91356

Carbon-Fiber Sweep Arm

Price $30
Description Looking like a tonearm, this has a peel-off sticky bottom that adheres to most surfaces; outer end of the arm has a carbon-fiber brush to take care of dust and static during play; will fit under most dust covers; has adjustable counterweight

Models also available

Ex-Static Carbon-Fiber Platter Pad, $15; Ex-Static Carbon Fiber Record Brush, $15

HAMMOND
Hammond Industries, Inc.
155 Michael Drive
Syosset, N.Y. 11791

AK-5 360 Degree Turntable Level

Price $13.95
Description Clear lucite spirit level measuring 3" square and having lateral and longitudinal index lines; by accurately leveling turntables, record and stylus wear is reduced

HERVIC
Hervic Electronics, Inc.
18750 Oxnard St. #406
Tarzana, Calif. 91356

Antistat

Price $20
Description Generator record brush; piezoelectric element ionizes air to break dust's static bond, then removes dirt from disc; no batteries; non-nuclear

KEITH MONKS
Keith Monks Audio
652 Glenbrook Rd.
Glenbrook, Conn. 06906

Record Sweeper
Price $27.50
Description Grounded brush rests lightly on record surface removing dust and static while record plays; adjustable height and tracking weight; uses nonresonating animal hair in brush and copper wires to pick off static without touching record surface

Models also available
Record Cleaning Machine, $2078.40; Pivot Sweeper, $23.70; Damped Leveling Kit, $22; Record Weight, $14.60; Record Care Kit, $7.60

KINETIC BARRIER
Fulton Electronics
4204 Brunswick Ave. North
Minneapolis, Minn. 55422

Record Matte
Price $59
Description The ideal foundation for your phonograph records, this "turntable matte" is a linear, high-order device that meaningfully supresses spurious resonances afflicting the record signal; 11¼" in diameter; 3/16" thick

MARSHALL
Marshall Electronics, Inc.
Mogami Product Div.
P.O. Box 2027
Culver City, Calif. 90230

2505/2497
Price $49.95
Description Mogami 1-meter stereo cable with gold RCA plugs; features low inductance, low DC resistance, and low capacitance; gold is plated directly over brass to lower 1M distortion

MICRO-SEIKI
P.O. Box 60271
Terminal Annex
Los Angeles, Calif. 90060

CU-180 Turntable Mat
Price $150
Description Solid copper; use in place of rubber mat for transient response

Models also available
NSB-100 Shock Absorbing Feet, $105 (set of 4); MSB-6 Shock Absorbing Feet, $35 (set of 4); NCS-9 Cartridge Wires, $10 (set of 4)

MITCHELL ENGINEERING
Dick Wagner
5930 Penfield Ave.
Woodland Hills, Calif. 91367

Record Clamp
Price $35
Description Suede-covered spindle clamp with strobe markings; fits any standard turntable spindle; holds record flat, removes small warps

Models also available
Carbon Wire Sweep Arm, $20; Directtree, $148.50

MONSTER CABLE
Monster Cable Co.
101 Townsend St.
San Francisco, Calif. 94109

Platter Pad II
Price $35
Description High-density platter mat newly improved by increased antiresonant material; flat surface assures intimate record contact to prevent resonance from air trapped between record and mat; sonically isolates record from turntable resonance and external vibrations while tightly coupling record to platter

Models also available
Orsonic AV-1 Universal Headshell, $25; Orsonic DS-250 Record Weight, $25

MR. AUDIO
Jasco Products Co., Inc.
217 N.E. 46th
P.O. Box 466
Oklahoma City, Okla. 73101

1292
Price $1.42
Description Adapter ¼"

NAGAOKA
Osawa & Co. (USA), Inc.
521 Fifth Ave.
New York, N.Y.10017

N-103 Kilavolt Static Eliminator
Price $49.95
Description Battery-powered static eliminator directs ions onto record surface, eliminating electrostatic charge; has LED "on"/battery check; 1½ V battery included

OR-202 Disk Cleaner Kit
Price $19.99
Description For hard-to-remove groove deposits, this kit contains a non-aerosol antistatic cleaning spray and a specially napped large velvet pad for complete record restoration

PL-1 Player Level
Price $9.99
Description Lucite bubble-level gauge helps assure proper leveling when placed on the turntable platter

Models also available
GL-602, $99.99; GL-601, $42.99; MG-704 Headshell, $24.99; AL-702 Headshell, $19.99; PM-115 Phono Connector Cables, $17.99; N-10 Stat 10 Spray, $16.99; N-101 Stat Tissue, $11.99; AG-99L Cartridge Lead Wires, $6.99; BN-7B, $6.99; CU-99L Cartridge Lead Wires, $5.99; AG-99 Cartridge Lead Wires, $5.99; CU-99 Cartridge Lead Wires, $4.99; BN-7S Screw/Nut Set, $4.99; VC-1 Record Cleaning Brush, $4.99; HC-1 Hi Clean Stylus Cleaning Fluid, $3.49; N-102 Anti-Static Record Sleeves, $2.99; SB-1 Stylus Brush, $2.49

NEAL-FERROGRAPH
Neal-Ferrograph
652 Glenbrook Road
Glenbrook, Conn. 06906

Record Cleaning Machine, Mk. IV
Price $850
Description Consumer version of the world-famous Keith Monks Professional Record Cleaning Machine

PERMOSTAT by STANTON
Stanton Magnetics, Inc.
200 Terminal Drive
Plainview, N.Y. 11803

Permostat by Stanton
Price $19.95 (kit); $15.95 (refill kit)
Description Fluid; eliminates static electricity permanently; each kit provides protection for 25 records (both sides)

PICKWICK
Pickwick Manufacturing Div.
7500 Excelsior Blvd.
Minneapolis, Minn 55426

1230
Price $7.99
Description 30-capacity vinyl-covered LP carrying case with dust-free aluminum valance and 4-color wrap

Models also available
750, $5.99

PIXOFF
Sonic Research, Inc.
27 Sugar Hollow Road
Danbury, Conn. 06810

Pixoff Record Cleaner
Price $17.50
Description Dry-cleaner for phono records; roller-type device uses roll of special Latex tape to clean discs; new tape surface exposed by cutting and peeling off dirty layer

QUIETONE
Hammond Industries, Inc.
155 Michael Drive
Syosset, N.Y. 11971

AK-4B Quietone Record Care Aerosol Spray
Price $7.95
Description Complete record-care kit in a can; renders discs static-free for the life of the record; lubricates and preserves records and styli, increasing their life up to five times; solvent loosens and dislodges compacted micro-dust thereby restoring old and noisy records; 4 oz.

RACK FACTORY
The Rack Factory
205 E. LaChapelle
San Antonio, Texas 78204

RRS-90
Price $29.95
Description Solid-oak album rack holds 100 albums; hand-rubbed oil finish; clear finish available

REALISTIC
Radio Shack Corp.
1400 One Tandy Center
Ft. Worth, Texas 76102

Turntable Lamp
Price $9.95
Description Reduces chance of accidental damage to tonearm, cartridge, discs; easily attaches to dust cover, turns on/off as cover is lifted or closed

Antistatic, Antiresonance Turntable Mat
Price $4.95
Description Disc-O-Mat cuts audible "crackles and pops"; reduces dust attraction on record surface; highly conductive carbon-impregnated foam

Hydro-Stor Cylinder
Price $4.95
Description Velvet-covered cleaner protects disc and stylus for noise-free listening; 4¼" x 1⅛" diameter; with exclusive cleaning fluid

Models also available
Discotron Electronic Static Eliminator, $14.95; Disc Sweeper, $9.95; Hydro-Stor® Record-Care System, $9.95; Professional Stylus Brush, $8.95; Strobe Disk, 59¢; Stylus Force Gauge, $1.99; Antistatic Record Sleeves, $4.29; Turntable T-Level, $2.99; Stylus Microscope, $1.99; Replacement Headshell, $4.99; Record Clean Cylinder, $4.95; Carbon Fiber Brush, $9.95; Record Clamp, $4.95; Record Sleeves, $219/pkg.; Record Rack, $2.99

RECOTON
Recoton
46-23 Crane St.
Long Island City, N.Y. 11101

BBM-68
Price $24.99
Description Black Magic audio stabilizers; especially designed to prevent shock and vibration from interfering with turntable performance

Models also available
RBM 62, $19.95; Clean Sound II Record Cleaning System, $15; RBM60, $7.99; RBM 63, $7.49

REFERENCE
Reference Monitor International, Inc.
2380 C Camino Vida Roble
Carlsbad, Calif.

Spectra Disc Cushion
Price $55
Description Triple layers of elastomers; surface is flat, with properties that hold disc to cushion

Models also available
Staticleaner Carbon-Fiber Disc Sweep, $39.90; Statibrush Carbon-Fiber Disc Cleaner, $19.95

ROBINS
Robins Industries Corp.
75 Austin Blvd.
Commack, N.Y. 11725

40-000 Robolite Phono Light
Price $20
Description Light turns on when dust cover is raised, off when lowered; swiveling of light directs beam; complete with 6-foot cord; no batteries needed; draws only 3 watts; also available as model 40-002, battery-operated (2 D cells, not supplied), 3 foot cord, $21

SCOTCH
3M Company
Magnetic Audio/Video Products Div.
3M Center
St. Paul, Minn. 55101

Dustguard Turntable Mat
Price $5.99
Description Antistatic mat of special conductive foam drains off static charges generated when record is pulled out of its sleeve; strobe pattern included

SHURE
Shure Bros., Inc.
222 Hartrey Ave.
Evanston, Ill. 60204

SFG-2 Stylus Force Gauge
Price $6.30
Description Precision stylus force gauge permits precise setting of stylus force to maintain optimum trackability and to sharply reduce wear on records and stylus tip; detects excessive or insufficient tracking force

Models also available
F.D.200 Fluid Damper, $59.50; F.D.IIIS Fluid Damper, $44.50

SIGNET
Signet
4701 Hudson Drive
Stow, Ohio 44224

SK-401 Cable Assembly
Price $24.95
Description Maximum transfer high-conductivity cable assembly; gold-plated stereo phono to stereo phono connectors

Models also available
SK-503 Disc Stabilizer, $22.95; SK-501 Tonearm Lift, $22.95; SK-405 Headshell Wire Set, $7.95; SK-303 Damping Compound, $6.94; SK-301 Stylus-Cleaning Formula, $3.95

SOUND GUARD®
Sound Guard
348 S.W. 13th Ave.
Pompano Beach, Fla. 33060

Record-Preservation Kit
Price $9.99
Description Contains 2 oz. bottle of Sound Guard® preservative, a dry lubricant that reduces record wear without interfering with sound fidelity, along with a velvet buffer pad and non-aerosol pump sprayer; one application recommended per 25 plays; one 2 oz. bottle protects about 25 LPs

Models also available
Total Record Care System, $16.99; Record Cleaning Kit, $9.99; Stylus Care Kit, $9.99; Record Care Work Pad, $7.99; Record Buffer, $3.99; Static Detector, $1.99

STANTON
Stanton Magnetics, Inc.
200 Terminal Drive
Plainview, N.Y. 11883

Stylus Cleaning Kit
Price $10.95
Description Kit contains an unsurpassed cleaning fluid designed exclusively for stylus cleaning; comes with complete set of cleaning tools, stylus cleaning fluid, 1 oz. for $2.50

STATFREE®
Charleswater Products, Inc.
87 Crescent Rd.
Needham, Mass. 02194

Statfree® Record Mat
Price $4.95
Description Electrically conductive turntable mat dissipates static electricity to prevent dust attraction, "hot spots", sound distortion and interference; cushion foam, ⅛" thick, weight: 50 grams

VAC-O-REC
Robins Industries Corp.
75 Austin Blvd.
Commack, N.Y. 11725

Vac-O-Rec 1100
Price $49.95
Description Uses metalized Mylar brush to discharge electricity

Models also available
Vac-O-Rec 100, 34.95

WATTS
Cecil E. Watts, Ltd.
Empire Scientific Corp. (distributor)
1055 Stewart Ave.
Garden City, N.Y. 11530

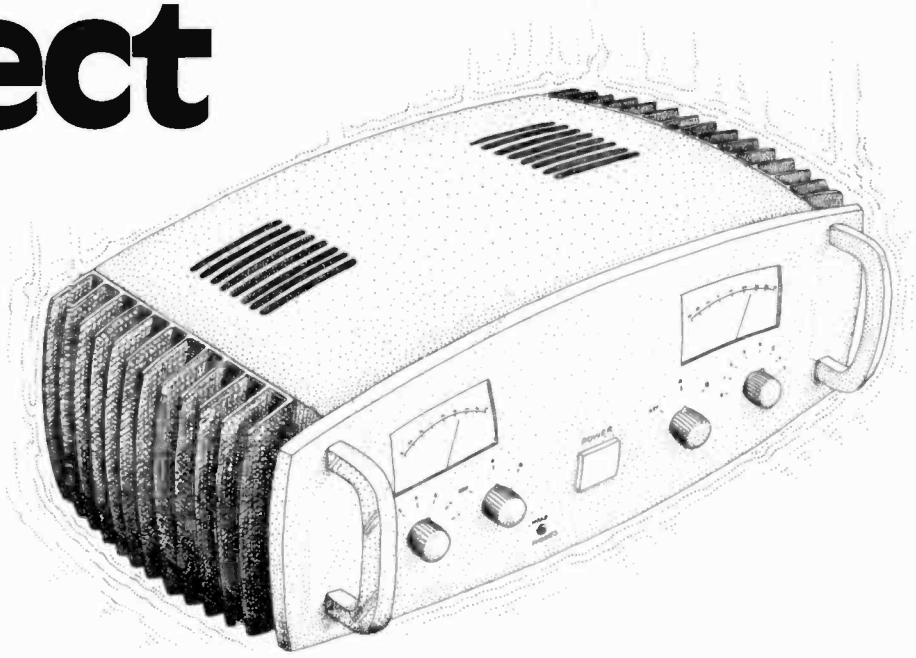
X-Static
Price $32.95
Description Designed to generate uniform field of charged particles to neutralize static charges on records; no power needed

HiFi Parastat
Price $22.95
Description Record-cleaning device designed to maintain new records in like-new condition; sold with stylus cleaner

Parastat
Price $21.95
Description Record-cleaning and static-control device; moisture controls static charges while 2 plush pads lift and remove dust and debris from record grooves; does not leave wet residue behind

Models also available
Record and Stylus Care Kit, $13.95; Dust Bug, $9.95; Parostatic Preener, $7.95; Humid Mop Kit, $6.95; Wash Brush, $6.95; Anti-Static Fluid, $3.95; Stylus Cleaner, $3.95

Pick the Perfect Amp



Simple tips for sifting through the endless variety of models and claims

by Michael Riggs

Selecting an amplifier that will meet your needs is both easier and more difficult than ever before. It's easier because today's equipment is so good with respect to all the traditional criteria (frequency response, distortion, and so forth), and because power remains relatively cheap, despite inflation. The difficulty for the consumer lies in the seemingly endless variety of amplifiers currently available, some employing new technologies, others with distinctive convenience features, all claiming to be the best choice for somebody. The guidelines you find in this article are designed to help you make the selection process less confusing—more rational and enjoyable, and likelier to result in a wise investment.

Audio amplification is derived from two basic functional components: a preamplifier and a power amplifier. The preamp, as usually defined, is the system's control center. It provides inputs for various sources, some means for switching between them, volume and balance controls, enough gain to boost weak signals (such as those from a phono cartridge) to a level suitable for input to the power amp, and RIAA equalization for disc inputs. The preamp usually performs several other functions as well—tone control, power switching, tape dubbing, and the like—but they're icing on the cake, and the kind of icing depends on the cook.

Power amplifiers are more consistent from model to model. They may do one or two other things, but their central function is to use the fluctuating output voltage of the preamp to determine how much of the power from the amp's own power supply section will be available at any given instant. The principal feature distinguishing power amps is the amount of clean power they can generate.

The shopper's first task is to decide how he wants these components packaged. The most popular configuration is the receiver—a preamp, amp, and tuner in a single box. This approach has many advantages, the

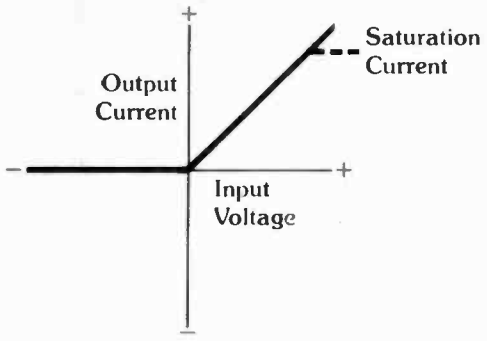


Fig. 1A

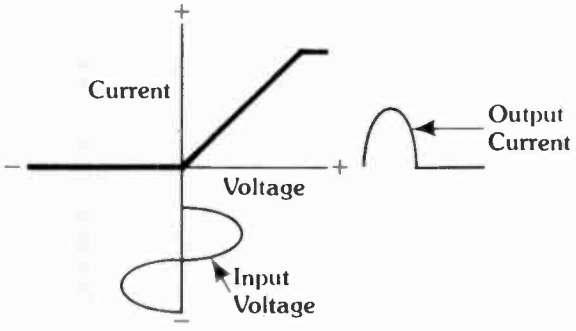


Fig. 1B

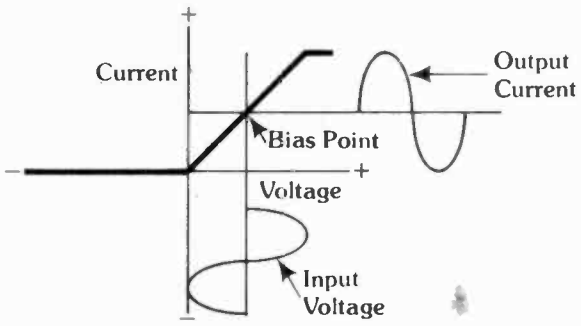


Fig. 1C

Fig. 1—The transfer function of an idealized tube or transistor is shown by the solid line of 1A. The current is a linear function of the input voltage, increasing in direct proportion to the increase in voltage. However, current can flow only in one direction (in this case, the positive direction). No current can flow only in one direction (in this case, the positive direction). No current flows when the input voltage is negative. At some point the device "saturates" and a further increase in input voltage does not cause a corresponding increase in output current.

An AC sine wave applied directly to such a device would be severely distorted. The negative half-cycle would be cut off as shown in 1B. The output current is the "reflection" of the input voltage in the transfer function. Just as a curved mirror distorts a visual image, curvature of the transfer function causes a distorted output.

By biasing the transistor halfway into its linear region with a DC voltage, the sine wave can be amplified without distortion, as in 1C. Note that a sine wave of greater amplitude would enter the saturation and cutoff regions and would be clipped in its extremities.

foremost being economy. A component's cabinet and power supply typically constitute a significant portion of its expense. Reducing their number from three to one results in a tidy saving, and in this age of integrated circuits, three-in-one design does not imply inferior performance. In fact, because the designer determines the characteristics of all the electronics, he can optimize the parts for one another. A single housing also reduces the number of external connections and, therefore, the likelihood of radio-frequency interference. Unless you want either more flexibility or a state-of-the-art circuit design that comes only in separate form, an amplifier as part of a receiver probably is your best buy.

The next step on the ladder is the integrated amplifier: a preamp and amp on the same chassis, but without a tuner. Consider this format if you find yourself admiring one receiver's tuning section and another's amplifying prowess—or if you just don't care about listening to the radio. Also, integrated amplifiers often have more elaborate control features than receivers in the same power class and sometimes more advanced circuitry.

The ultimate in flexibility is a separate amp and preamp: Separates let you come as close as possible to getting exactly the features and performance you want, along with the latest technological innovations and refinements. They also cost the most. A measure of technical sophistication can be a big help here and may save you from paying a premium for performance identical or inferior to that available at a more modest price. Expect to do some homework before you buy.

Next, you must decide how much power you need. Unfortunately, there is no single criterion. The basic factors you must consider are the efficiency of your loudspeakers, the size and "liveness" of your listening

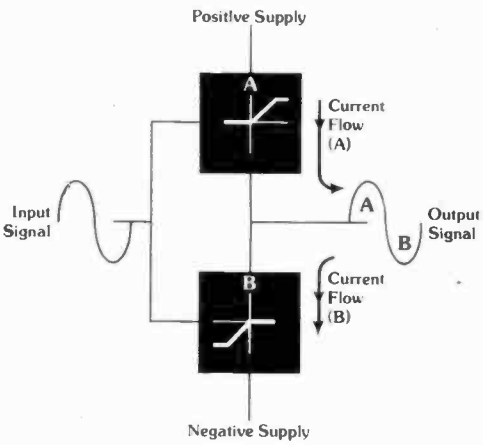


Fig. 2

Fig. 2—A Class B push-pull stage uses two transistors. During the positive half-cycle of the signal, device A conducts a current, proportional to the signal level, from the positive supply to the load. During the negative half-cycle, device A cuts off, but device B conducts the current from th load to the negative supply. The current always flows in the same direction through the transistors, but alternates in polarity through the load. The transfer function of each device is shown within the block.

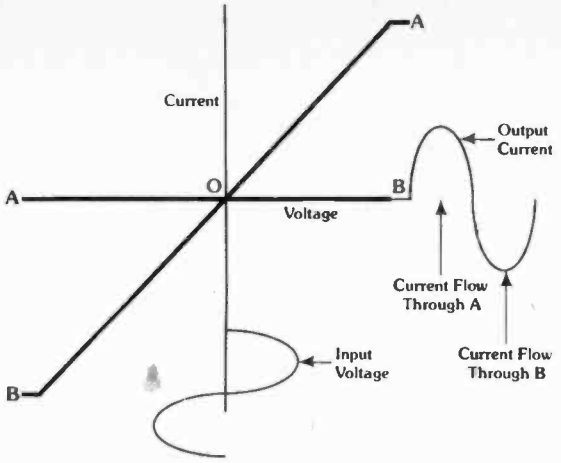


Fig. 3—The composite transfer function of an idealized Class B push-pull amplifier (shown as the curve B-O-A) is constructed by piercing together the transfer function for device A (shown as the curve A-O-A) with that of B (shown as B-O-B).

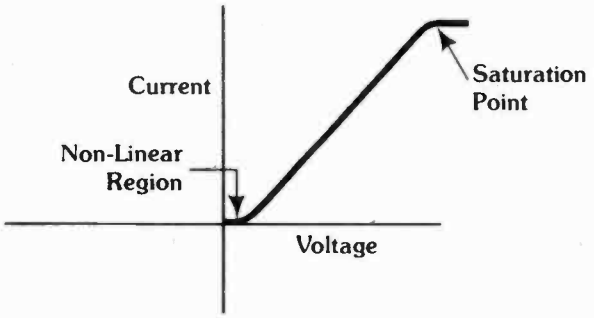


Fig. 4A

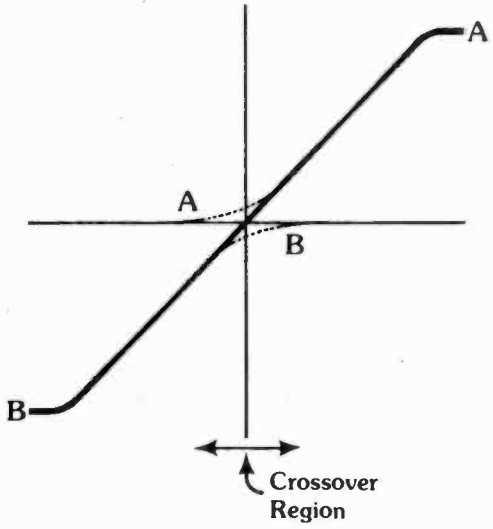


Fig. 4B

Fig. 4—The transfer function of a real transistor is nonlinear at small input voltages. This is shown by the hook in the curve of 4A. A practical push-pull amplifier operates in Class AB. Each of the transistors is biased slightly into the conducting region, effectively shifting the A curve to the left and the B curve to the right. The composite transfer function is shown in 4B and is linear overall, even though each device by itself is nonlinear. Crossover distortion occurs if the characteristics of the devices do not mate well in the crossover region.

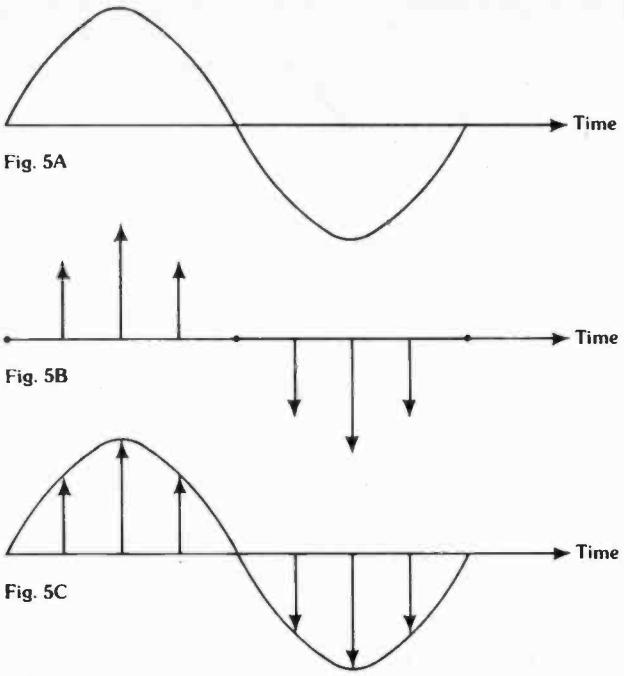


Fig. 5—It can be shown mathematically that a waveshape (5A) can be perfectly characterized merely by samples taken at frequent enough intervals (5B). The original wave can be restored by a low-pass filter that averages the samples into a smooth curve (5C).

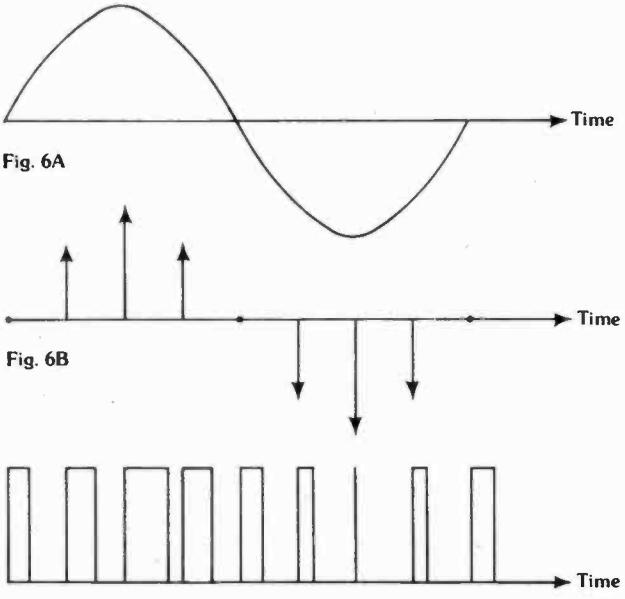


Fig. 6C

Fig. 6—In a Class D, or "switching" amplifier, the audio signal, represented by 6A, is first sampled as shown in 6B. The amplitude of each sample is next converted to a pulse of constant amplitude whose width or duration represents the amplitude of the original sample (6C). In the figure, the maximum negative portion of the wave is represented by a pulse of zero duration, while the maximum positive amplitude is represented by a pulse of maximum duration. Zero amplitude is represented by a pulse of one-half the maximum duration. These unidirectional pulses can now be used to switch on the output transistors for precisely defined times.

room, and your listening habits.

A few horn-loaded loudspeakers have efficiences of 20% or so and will produce ear-shattering levels in a typical living room with a 10-watt amplifier. They are the exception, however. The efficiencies of most high-quality domestic speaker systems hover around ½%, which means only that much of the amplifier's output is converted into sound in the room; the rest just warms up the speaker's voice coils. The practical result is that, if you want to play orchestral music at realistic levels in your home, there probably will be moments when you ask your amplifier for more power than it can provide, and it will clip. Clipping causes distortion, some compression of the musical waveform, and, in some amplifiers, a raspy or crackling noise. A little of this is usually tolerable, but if it happens too often, the sound will be harsh and lifeless, and your tweeters may be stressed literally to death by the resulting high-order harmonic distortion components.

The three palliatives for excessive clipping are lower volume, higher power, and more efficient loudspeakers. These are all tied together, though not in the most obvious way. Twice the power (or twice the efficiency) will not double the volume. The sensitivity of our ears is logarithmic, so for the subjective loudness to be doubled, acoustic power in your room must be increased by a factor of 10 or so. To reflect this effect, a logarithmic unit of measure called the decibel or dB, has been developed. The smallest perceptible loudness change is 1 dB, and a subjective doubling in loudness is equal to 10 dB (actually 1 bel, or Bell—named after Alexander Graham—and later divided into 10 deci-Bells).

Conventions have also been established for using the dB as a unit for sound pressure level (dB SPL) and for electrical power (dBW). In this system, 1 watt equals 0 dBW. Since every doubling of power is a 3-dB increase and a tenfold increase adds 10 dB, 2 watts is 3 dBW, 4 watts is 6 dBW, 40 watts is 16 dBW, and so on. By expressing loudspeaker efficiency—or, more correctly, sensitivity—in dB SPL, we can relate speaker output directly to amplifier power output. Consider a loudspeaker that produces 83 dB SPL from a 0 dBW (1 watt) input. For such a loudspeaker to produce 86 dB SPL, the output from the amplifier would have to be 3 dBW, or 2 watts. A 3-dB change in power input from the amplifier makes a 3-dB SPL change in the speaker's output. Comparing this hypothetical speaker to another model with a sensitivity of 80 dB SPL, we see that the latter requires a power input of 3 dBW (2 watts) just to provide that original loudness level of 83 dB SPL and an additional 3 dB—6 dBW total, or 4 watts—to reach 86 dB SPL. If such low wattage numbers seem small in terms of today's high-powered amps, remember that 3 dB more than 100 watts (20 dBW) is 200 watts (23 dBW), and 3 dB more than that is 400 watts (26 dBW). Those last few dB can be mighty expensive.

Your listening room and musical tastes are the final pieces to the puzzle. Take, for example, the more efficient of the two loudspeakers just discussed. To play loudly without distortion in a typical living room of 2,400 cubic feet, it probably would need an amplifier capable of 16 to 20 dBW (40 to 100 watts). For a room twice or half that size, add or subtract 3 dB. Similarly, there might be a 6-dB spread from a very live, reverberant room, which would require less power, to a very dead, absorptive one, which would require more. And again, a 3-dB change in the average listening level—little more than a touchup, to the ear—will halve or double your power requirements.

Many people, especially those with efficient loudspeakers, testy neighbors, or a taste for moderate listening levels, never need more than 13 dBW (20 watts) per channel, and most will find about 18 dBW (63 watts) adequate. Again, the law of diminishing returns begins to cut in rather sharply above 20 dBW (100 watts) for most listeners.

The 6 Main Amplifier Classes

Each channel of a stereo amplifier has two halves; one handles the positive-going portion of the signal (the top half of a sine wave), and the other the negative-going portion. There are a number of different ways of using transistors to make this work, and these are the basis of the amplifier class system.

Class A amplifiers are designed so that constant DC bias equal to the amplifier's maximum output flows through each output transistor. With no input signal, these bias currents are balanced, and there is no output. If a positive-going signal enters the amplifier, its positive-going side will begin to conduct more current, while the amount conducted by the other transistor decreases accordingly. This unbalanced condition results in a current flow through the loudspeaker. As the input reverses direction, so does the current flow. The advantage of Class A operation is its extreme linearity and freedom from the "crossover distortion" that occurs whenever a transistor is turned on. In a Class A circuit, neither transistor is ever turned all the way off, which means, of course, that neither ever has to be turned on. Unfortunately, this mode of operation is very inefficient and generates large amounts of heat, and therefore it requires the use of large, heavy heat sinks. Consequently, Class A amplifiers tend to be low-power, expensive, or both.

Class B amplifiers take the opposite

approach. No current flows through either transistor unless a signal is present. This type of circuit is about 50% more efficient than Class A and runs very cool under most operating conditions, but it may generate significant amounts of crossover distortion.

The overwhelming majority of commercially available audio amplifiers strike a compromise, running Class A for very small signals and Class B for large signals. Class AB operation, as it is known, is slightly less efficient than Class B, but the reduction in crossover distortion is dramatic. There also are a number of proprietary circuits that seek to combine the virtues of Classes A and B (Technics' Class A Plus and Pioneer's non-switching amplifier, as examples) by ingenious variations on the basic configurations.

Class D amplification, which can be almost 100% efficient and essentially distortion-free, is really a form of digital operation that enables transistors to work the way they really want to—as switches. The output of a pure Class D amplifier is a very high-frequency pulse train smoothed into an exact replica of the input by a low-pass filter. Unfortunately, this scheme is difficult and expensive to implement, and only a couple of true switching amps have ever been available. However, a number of hybrids with highly efficient switching power supplies and conventional Class AB output stages are coming out.

Hitachi's Class G uses separate power supplies and output transistors to handle low- and high-level signals. Most of the time, the low-power amp carries the load, but when a big surge comes along, it passes the burden to its big brother. In all other respects, it is like a conventional Class AB amplifier with plenty of dynamic headroom. However, Class G is said to be substantially more efficient than strict AB operation. There is more potential for crossover distortion, but this does not seem to occur in practice.

Soundcraftsmen's Class H design is in a similar vein, except that it uses only one power supply and output stage. The trick is to run the power supply at a relatively low voltage until a musical peak appears, at which point the supply jumps up momentarily to catch it. The advantages are the same: high efficiency and dynamic headroom.

The lost letters, C, E, and F, are attached to modes of amplification that for one reason or another are not suitable for audio use. Also, at least one model—Carver Corporation's very light, very efficient M-400 "magnetic" amplifier—doesn't really fit into any of these classifications. M.R.

Amplifier power can be rated in more than one way. In addition to the standard FTC continuous power rating for an 8-ohm load, there are the amplifier's output capability into other load impedances (4 ohms and below, especially) and its IHF dynamic headroom rating. The latter expresses the short-term output capability in dB above its continuous rating. Such a figure more accurately represents the amp's ability to deliver power when playing music, which consists almost entirely of transients, rather than continuous tones. Consider, for example, an amplifier rated at 100 watts per channel (20 dBW) with a 3 dB dynamic headroom and one rated at 200 watts (23 dBW) with no dynamic headroom. On most music, both will deliver up to 23 dBW even though the second amp looks twice as powerful in the FTC figure, which the law requires must be the most prominently displayed in advertising.

Another important consideration is how well an amplifier can drive loads more demanding than an 8-ohm resistor. Most "8-ohm" loudspeakers have nominal impedances of 6 ohms, and a few dip down to 4 ohms. The lowest impedance of a loudspeaker rated at 4 ohms may actually lie below 2 ohms over a significant portion of the audio band. Impedances that low make severe demands on an amplifier's output transistors. By comparison to the standard 8-ohm test resistor, a 4-ohm load allows twice as much current to flow from a given output voltage (all other factors remaining equal), and a 2-ohm load allows twice again as much. More current means more power but also more amp-killing heat.

On top of this, almost all loudspeakers are at least somewhat reactive: Their impedances are not pure resistances, but include capacitive and inductive components that tend to store energy and throw it back at the amplifier. A few amps can take this kind of abuse and survive because special care has been taken with their design in this respect. But most depend on protection circuits to sense dangerous situations. These circuits differ substantially from model to model in how easily they are activated and in the seriousness of their side effects. Some trigger infrequently and have negligible side effects; others come on strong very early and generate spurious high-frequency pulses that can, in some very bad cases, destroy tweeters.

It's hard to tell much about an amplifier's protection circuits from the outside, but there is a quick and dirty way of evaluating how well a unit will stand up to difficult loads. Look at its 4-ohm power ratings. If you have 8-ohm speakers, you want an amplifier that can deliver at least as much power into 4 ohms as into 8. Owners of 4-ohm or otherwise difficult loudspeakers should look for at least 30 to 40% more output capability into 4 ohms than into 8. If you're interested in an amplifier that doesn't include a 4-ohm rating in its specifications, write the manufacturer and ask. If it refuses to answer or is evasive, forget that model.

Some of the finer points of amplifier design are reflected in the conventional specifications: frequency response, distortion, noise, and so forth. In general, it's safe to say that the battle has been won in these areas.

Few modern amplifiers contribute significant amounts of noise, although some tube preamps still have problems. Look for a signal-to-noise ratio of 70 dB or better measured in accordance with the new IHF standard. Distortion is even less of a concern; forget about anything below 0.5%. This includes dynamic intermodulation distortion (also known as TIM, TID, DIM, and SID), which has been all the rage for the last year or two but now seems to be losing what following it had among engineers. And that implies that you can pretty much ignore slew rate specifications, though a preamp with a high slew rate may tend to resist RFI better than a slower preamp.

While we're at it, we might as well dispense with a few other trendy concerns. Negative feedback, properly employed, is beneficial; it cer-

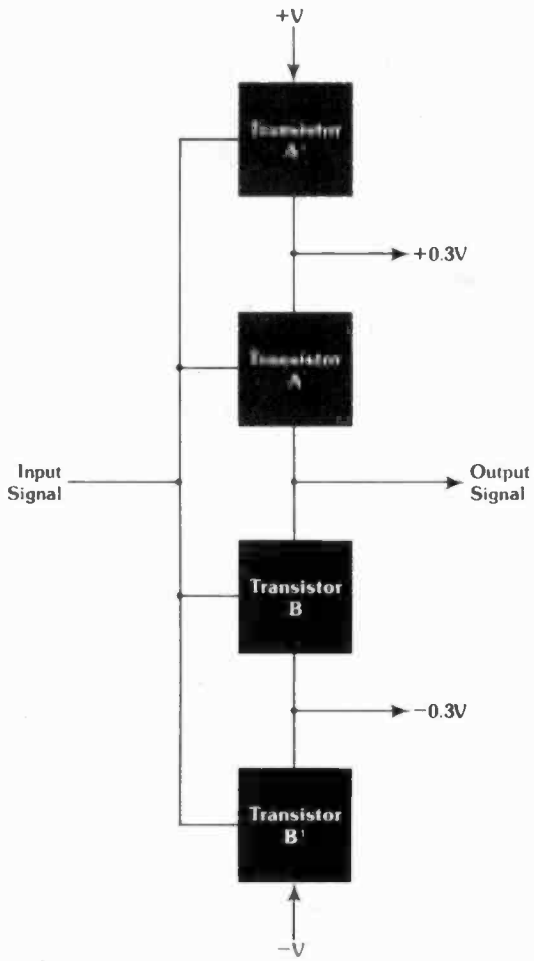


Fig. 7—Hitachi's Class G configuration uses two sets of power supplies and two sets of output transistors. The inner set, represented by transistors A and B, constitutes a Class AB low-power amplifier fed from power supplies of + 0.3V and -0.3V. At the signal level that would induce clipping, transistors A' and B' conduct from the high-voltage supplies + V and -V.

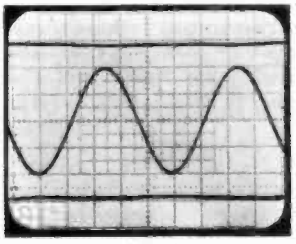


FIG. 1

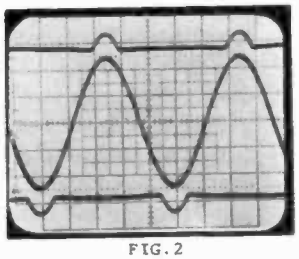


FIG. 2

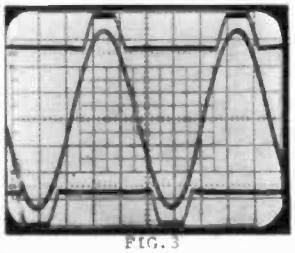


FIG. 3

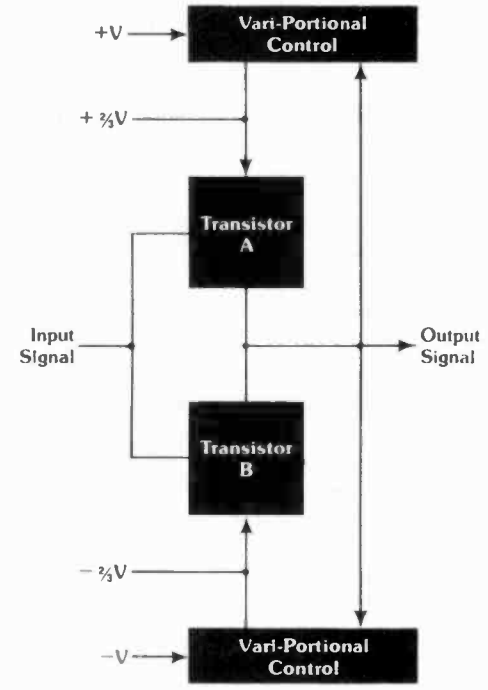


Fig. 8—Soundcraftsmen's Class H configuration also uses two sets of power supplies (+ ⅓V and -⅓V and + V and -V). However, only one pair of output transistors is used. At high signal levels, the Vari-Portional control circuit increases the power supply levels above the ⅓V point to be closer to the high voltage supplies. The action is shown in the photographs. Output levels much less than ± ⅓V do not require the high-voltage supply (Photo 1), but as the output level approaches ± ⅓V the Vari-Portional control dynamically increases the voltage to make room for it (Photo 2). At very high signal levels, the voltage is increased to ± V, as shown in Photo 3.

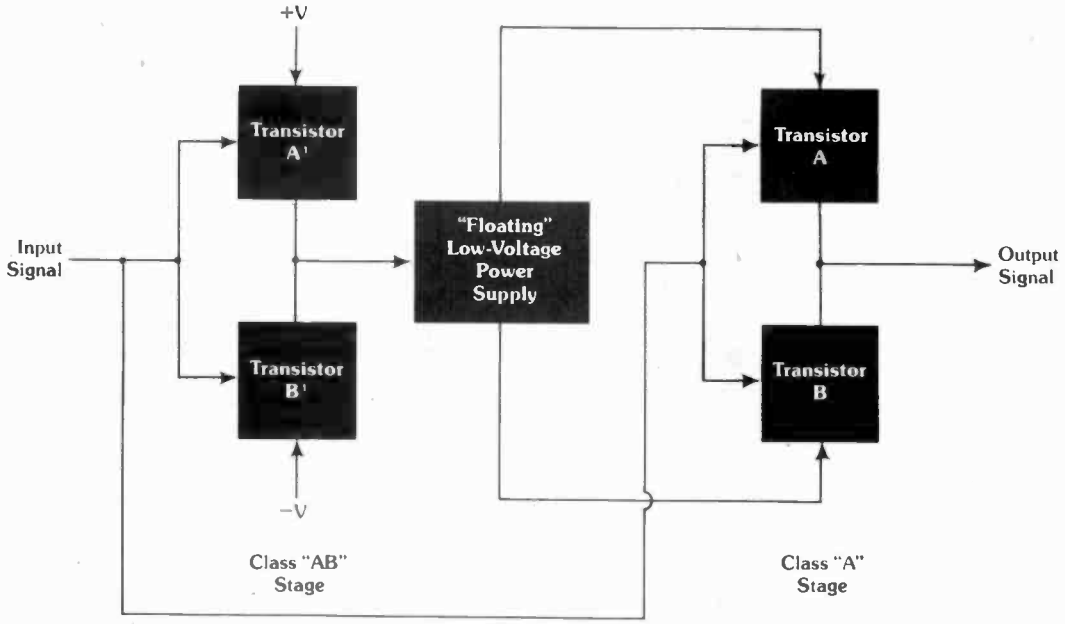


Fig. 9—The Technics Class A + design is basically two amplifiers in one. A Class A output stage, shown as transistors A and B, is controlled by the input signal and feeds the load. A floating 5-volt power supply maintrains these transistors in conduction throughout the signal cycle. A Class AB power amplifier, shown as transistors A' and B', is powered by a conventional supply and is also controlled by the input signal. The output of the Class AB amplifier is used to force the floating power supply to follow the input signal and so maintain the voltage level at the Class A stage sufficiently high to generate a large output power.

Do Tubes Sound Better?

Among the last decade's many audio developments, the resurrection of the vacuum tube must count as the most surprising. Tubes are bulky and fragile; they are relatively noisy and generate significant amounts of heat; and they wear out quickly. When used in a power amplifier, they generally require large, expensive output transformers to match them to loudspeaker loads. And the power consumed by their heater elements—which can exceed that needed for amplification itself—has to be counted an anomaly in this age of energy conservation. In all these respects, transistors hold the advantage.

Even so, there are enough audiotainly is not a demon to be avoided at all costs. Other things not to worry about include phase shift and response at frequencies well beyond the limits of the audio band. In fact, there are good arguments for limiting an amplifier's frequency response below 20 Hz and above 20 kHz. A sharp infrasonic filter (12 dB or more per octave) will remove power-robbing, distortion-inducing record-warp signals and other ultralow-frequency garbage without in any other way making its presence known. Ultrasonic filters are more of a luxury item, but besides eliminating even the remotest possibility of TIM in later stages, they can help combat RFI by stripping the RF off the signal before it can be demodulated into audio.

Flat frequency response is important within the audio band. Power amps and the high-level sections of preamps are generally very close to dead flat from 20 Hz to 20 kHz. Phono preamps, which incorporate a fairly elaborate equalization network to compensate for RIAA disc preemphasis, may be more loosely specified. A tolerance of ½ dB is acceptable; ¼ dB or better is common in the specs for expensive gear. The ear detects frequency-response differences very readily, so it is surprising that some otherwise excellent and pricey preamps have sloppy phono EQ.

A couple of other characteristics of the phono input deserve mention. Input impedance can have a strong effect on the system's frequency response when a phono cartridge is attached. Most pickups behave electrically like a filter, which must be terminated with a certain resistance and capacitance to achieve the flattest response possible. Industry standards require the phono preamp to provide a resistance of 47,000 ohms in parallel with an unspecified capacitance. The new IHF standards call for the manufacturer to state both the resistance and capacitance of the phono input if it presents a classic, well-defined input impedance to the cartridge. If the impedance is complex—that is, if its values vary with fre-

quency—only the resistive value (at 1 kHz) is to be listed. Unless you plan to use a pickup known to be insensitive to preamp load characteristics—and most moving-coil models, among others, are—look for a classic input impedance with a low capacitive component, preferably no more than 100 picofarads or so. This will facilitate matching with a wide variety of cartridges and tonearms since adding capacitance is easy (some preamps even provide switchable capacitance). Subtracting it is virtually impossible.

Another important preamp specification is phono overload. Most phono sections will take at least 100 mV at 1 kHz, which is plenty. There's nothing wrong with having more (as long as S/N ratio has not been sacrificed to get it), but it's gilding the lily.

The last factor involved is not really a specification, but a design approach. Direct-coupled (DC) amplifiers use no capacitors in their feedback loops or signal paths—except, perhaps, at the input to block out potentially hazardous direct-current signals. Such amplifiers have one real and two imaginary advantages. The imaginary ones are low TIM and low phase shift. TIM has nothing to do with whether or not an amplifier is direct coupled; a DC amp will exhibit less phase shift than its capacitor-coupled brethren, but the difference is far from large enough to be audible. The real advantage of DC design is more graceful recovery from overload, and that tends to make clipping less conspicuous.

All that's left are the convenience features. Of course, they often make all the difference when you require specific functions. A good example is the head amp, or pre-preamp, which is showing up more and more often as a built-in feature to accommodate low-output moving-coil pickups. Another is tone controls. Preamps are especially diverse in their approaches to frequency response manipulation: Some avoid the whole issue, many others use the familiar Baxandall bass and treble controls, and others go whole hog with five- and even ten-band equalizers. Some of these devices can be used for loudness compensation, substituting for the usual separate loudness equalizer, which boosts bass and, sometimes, treble according to a formula intended to offset the ear's diminished sensitivity to some frequencies at low listening levels. Here, again, specific characteristics are all over the lot; but if the compensation is important to you, separate loudness and volume knobs are helpful in adjusting the compensation for your speakers' efficiency.

Among the more mundane preamp features are headphone outputs and muting switches, some of which kill the output altogether, though most cut it back by about 20 dB. Most preamps also have at least one tape monitor (some as many as three), usually with a tape-dub feature that makes interdeck copying possible without replugging leads and often without tying up your main listening signal path. In addition, some have an external-processor loop for patching in gadgets that would otherwise clutter up tape-monitor loops. Generally each tape or processor output should have a buffer amplifier or resistor to prevent distortion in the main path when the devices connected to them are turned off; occasionally the same objective is served without additional electronics by making these outputs defeatable.

Power meters, though popular, are of dubious value. In general, only the LED or "bar-graph" displays are fast enough to provide an accurate indication of the amp's power output on short-duration peaks, and even these displays usually are inaccurate for anything but an 8-ohm load. Their only useful function is to warn of amplifier overload—a task that can be performed by a single indicator light for each channel. If you have a choice between metered and unmetered versions of an amplifier, you're probably better off buying the latter and pocketing the price difference, which can be substantial. **HF**

philes convinced that tubes somehow sound better than transistors to keep a small number of manufacturers of tube gear (Audio Research and Lux, most prominently) in business. Is it true? Do tubes sound better, and if so, why?

In fact, tubes do have a couple of points in their favor. Their characteristic distortion spectrum is softer than that of bipolar transistors; that is, they generate a lower proportion of high, odd-order harmonics, which tend to be more offensive to the ear than even-order products. As a result, they clip more gracefully than transistors and therefore generally with less danger to tweeters. Also, tube amplifiers' output transformers insure an optimum match to the loudspeaker being driven. And tubes, like the new power MOS FETs, are not subject to the self-destructive thermal runaway that makes current-limiting protection circuitry necessary in most bipolar transistor amps.

But what about preamps—which are seldom, if ever, overloaded and don't have to drive loudspeakers? Tube preamps are more popular than tube power amps, despite the fact that transistor preamps usually have lower noise and overall distortion and more accurate RIAA equalization. And audiophiles more often use tube preamps with transistor power amps, even though purely technical considerations suggest the opposite arrangement. Nor is this the only contradiction. Infinity and Audionics recently introduced hybrid power amps, using each type of device in the place of the circuit where it is said to be most appropriate. Curiously, one uses tubes at the input and transistors at the output, while the other reverses their positions.

If none of this seems to make sense, recent experiments conducted independently by researchers in England, Canada, and the U.S. indicate that there is no reason why it should. The debate between bottled and canned power continues, but the audible distinction—if it exists at all—is vanishingly small in the context of concerns like cartridge/preamp or amplifier/speaker matching. M.R.

Amplifiers

(including Power Amps, Preamps, and Integrated Amps)

ACOUSTAT
Acoustat Corp.
3101 S.W. 1st Terrace
Ft. Lauderdale, Fla. 33315

MRP-1 Preamplifier

Price	$1,050
Dimensions	5¼H x 19W x 12D
Weight	14 lbs. 8 oz. (net)
Inputs	3 phono; tape; tuner; 2 aux
Response	20 Hz to 20 kHz, ±0.4 dB
Output	13V (at clipping) (rms)
THD	0.002% (3V)
IM	0.002% (3V)
Sensitivity	1 mV (phono); 500 mV (high level)
Overload	120 mV (phono)
Phono EQ	20 Hz to 20 kHz, ±0.4 dB
Features	One-way tape dubbing; integral head amp included

ADC
Audio Dynamics Corp.
Pickett District Road
New Milford, Conn. 06776

B-100 Tube Preamplifier (Designer Series)

Price	$1,199
Dimensions	3½H x 19W x 13D
Weight	22 lbs. (net)
Inputs	3 phono; 2 tape; 3 aux
Response	2 Hz to 100 kHz ±3 dB
Output	10V (at clipping)
THD	0.2% (2V)
IM	0.2% (2V)
Overload	150 mV
Phono EQ	30 Hz to 15 kHz, ±0.1 dB
Low filter	6 dB/octave below 20 Hz
Features	Two-way tape dubbing; moving-coil input; magnetic-phono input with adjustable load capacitance and impedance

ADCOM
Adcom
9 Jules Lane
New Brunswick, N.J. 08901

GFA-1 Power Amplifier

Price	$400
Dimensions	10½H x 8½W x 6½D
Weight	25 lbs. (net)
Power	200 watts (23 dBW) continuous into 8 ohms from 20 Hz to 20 kHz at no more than 0.05% THD
IM	0.1%

Response	20 Hz to 20 kHz, ±0.25 dB
S/N	–90 dB (A-weighted re 1 watt)
Features	Fully complementary; bridged mode; uses toroidal transformer dual power supplies; built-in fan; thermal overload protection; damping factor, 200; slew rate, 80V/ms; finished in black; 19" rack panel (black) available for $60

Models also available

GFP-1 Preamplifier, $299.95

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

Power Plate 1000 One-Kilowatt Biamplifier Module

Price	$2,500/pr. (incl. C-2000 Biamp Control)
Dimensions	17H x 20¼W x 4D
Weight	40 lbs. (net)
Power	500 watts (27 dBW) continuous into 4 ohms from 20 Hz to 20 kHz at no more than 0.05% THD
IM	0.05%
Response	5 Hz to 100 kHz, ±0.2 dB
S/N	90 dB (A-weighted re 500 watts)
Features	Part of ADS B-2000 Two-Kilowatt Stereo Blamplification System; price includes separate ADS C-2000 Biamplifier System Control, which has custom-tailored electronic crossovers and opto-electronic Dynamic Bass Extender circuitry; amplifier designed to fit into special compartments on ADS L-2030 and L-1530 Professional Monitors; may also be used with ADS L-910; two-channel design for use at single speaker

AGI
Audio General, Inc.
1631 Easton Road
Willow Grove, Pa. 19090

511A Preamplifier

Price	$565
Dimensions	5¼H x 14W x 10D
Weight	13 lbs. (net)
Inputs	Phono; 2 tape; tuner; aux
Response	20 Hz to 20 kHz, ±0.1 dB
Output	5V
THD	0.005%
IM	0.005%
Sensitivity	5.1 mV (phono); 230 mV (high level)
Overload	160 mV (phono)
Phono EQ	20 Hz to 20 kHz, ±0.25 dB
High filter	12 dB/octave at user-specified frequency
Low filter	12 dB/octave at user-specified frequency
Features	Two-way tape dubbing; "Tone Send" button for external equalizer; 250V/μs phono slew rate; optional high-gain phono at no extra charge; optional filter, $50

AIWA
Aiwa America
35 Oxford Dr.
Moonachie, N.J. 07074

AA-8700U Integrated Amplifier

Price	$550
Dimensions	6 3/16H x 18 9/16W x 14 13/15D
Weight	38 lbs. 6 oz. (net)
Inputs	2 phono; tape; tuner; aux
Power	75 watts (18.75 dBW) continuous into 8 ohms from 20 Hz to 20 kHz at no more than 0.02% THD
IM	0.02% at 75 watts
Response	5 Hz to 100 kHz, +0, –3 dB
Sensitivity	2.5 mV (MM); 220 mV (MC); 150 mV (high level)
Overload	280 mV (phono)
S/N	83 dB (phono); 100 dB (aux) (IHF A-weighted re 75 watts short-circuited)
Phono EQ	30 Hz to 15 kHz, ±0.2 dB
Bass	±8 dB at 200 or 400 Hz
Treble	±10 dB at 2.5 kHz or 5 kHz
High filter	12 dB/octave above 10 kHz
Low filter	12 dB/octave below 30 Hz
Features	One-way tape dubbing; two-way tape dubbing; separable power and preamp; built-in moving-coil head amp; 2-position frequency turnover switches for bass and treble; 2-system tape dubbing; –20 dB muting; 3-position tape monitoring; DC amplifier; peak-reading power meters

SAP-50U Power Amplifier

Price	$230
Dimensions	2 13/16H x 9⅞W x 11 1/16D
Weight	11 lbs. 14 oz. (net)
Power	50 watts (17 dBW) continuous into 8 ohms from 20 Hz to 20 kHz at no more than 0.02% THD
IM	0.01% at 50 watts
Response	10 Hz to 100 kHz, –3 dB
S/N	115 dB
Features	DC amplifier; 9-point logarithmic peak-power LED indicator; A/B speaker selector; stereo headphone jack

SAC-50U Preamplifier

Price	$145
Dimensions	2 13/16H x 9⅞W x 10 3/16D
Weight	4 lbs. 14 oz. (net)
Response	10 Hz to 100 kHz, ±3 dB
Output	0.9V (at clipping)
THD	0.008%
Sensitivity	0.25 mV (MM) 2.5 (MC); 150 mV (high level)
Phono EQ	20 Hz to 20 kHz, ±0.2 dB

Bass ±10 dB at 50 Hz
Treble ±10 dB at 20 kHz
Low filter 6 dB/octave below 30 Hz
Features One-way tape dubbing; click-stop tone controls; defeatable –20 dB muting; mode indicator LEDs; loudness control; MM/MC selector switch; 2 tape deck inputs; muting relay circuit

Models also available

AA-8300U Integrated Amplifier, $300; SAP 30U Power Amplifier, $215; SAA-30U Integrated Amplifier, $160; AA-16BH Power Amplifier, $150; SAC-30U Preamplifier, $140

AKAI
Akai America, Ltd.
2139 E. Del Amo Blvd.
Compton, Calif. 90220

AM-U06 Integrated Amplifier

Price $350
Dimensions 4 1/10H x 17 3/10W x 12D
Weight 18 lbs. (net)
Power 68 watts (18.25 dBW) continuous into 8 ohms from 20 Hz to 20 kHz at no more than 0.008% THD
S/N 84 dB (phono); 97 dB (aux) (IHF-weighted)
Bass ±8 dB at 100 Hz
Treble ±8 dB at 10 kHz

Models also available

AM-U04 Integrated Amplifier, $280; AM-U03 Integrated Amplifier, $230

APT
Apt Corp.
147 Sidney St.
Cambridge, Mass. 02139

1 Power Amplifier

Price $641 (East Coast); $656 (West Coast)
Dimensions 3⅛H x 17½W x 11D
Weight 26 lbs. (net)
Power 100 watts (20 dBW) continuous into 4 or 8 ohms from 20 Hz to 20 kHz at no more than 0.02% THD
IM 0.02% at 100 watts
Response 20 Hz to 20 kHz, ±0.1 dB
S/N 100 dB
Features Adaptable to widest range of loads through load switch; (+3 dB); unique dynamic headroom signal and distortion display; has large output stage-safe area so no conventional safe-area protection is needed

Holman Preamplifier

Price $493 (East Coast); $502 (West Coast)
Dimensions 3⅛H x 15 1/32W x 8 1/5D
Weight 12 lbs.
Inputs 2 phono; 2 tape; tuner; 2 aux
Response 20 Hz to 20 kHz, ±0.5 dB
Output 2V
THD 0.01%
IM 0.01%
Sensitivity 1.25 mV (phono); 80 mV (high level)
Overload 130 mV (phono)
Phono EQ 30 Hz to 15 kHz, ±0.2 dB
Bass ±15 dB at 20 Hz
Treble ±10 dB at 20 kHz
High filter 12 dB/octave above 40 kHz
Low filter 18 dB/octave below 15 Hz
Features Two-way tape dubbing; ultrasonic filter; mono/stereo/difference mode control; cartridge termination resistance and capacitance; anti-crosstalk switching

AUDIO DESIGN
Inception Audio Ltd.
21 Progress Ave., Unit 1
Scarborough, Ontario M1P 4S8

PA-100 Power Amplifier

Price $550
Dimensions 4½H x 18W x 11½D
Weight 33 lbs. (net)
Power 100 watts (20 dBW) continuous into 8 ohms from 5 Hz to 50 kHz at no more than 0.05% THD
IM 0.05% at 100 watts
Response 5 Hz to 60 kHz, ±0.5 dB
S/N 100 dB (unweighted re 100 watts)
Features Mono operation for 350 watts (25.5 dBW) at 8 ohms

Models also available

PM-100 Preamplifier, $495

AUDIO RESEARCH
Audio Research Corp.
6801 Shingle Creek Parkway
Minneapolis, Minn. 55430

D-125 Power Amplifier

Price $2,950
Dimensions 10½H x 19W x 17¼D
Weight 85 lbs. (net)
Power 125 watts (21 dBW) continuous into 8 ohms from 20 Hz to 20 kHz at no more than 0.1% THD
IM 0.1% at 125 watts
Response 1 Hz to 50 kHz, ±1 dB
S/N 100 dB (unweighted re 125 watts)
Features Fans; industrial-grade components and construction; LED level indicators for clipping; defeatable 5-Hz subsonic filter

MCP-22 Preamplifier

Price $1,800
Dimensions 5¼H x 19W x 10¼D
Weight 22 lbs. (net)
Inputs 3 phono
Response 0.1 Hz to 250 kHz, ±3 dB
Output 50V (at clipping)
THD 0.02%
IM 0.01%
Overload 400 mV (phono)
Phono EQ 20 Hz to 40 kHz, ±0.25 dB
Features Moving-coil preamplifier; interfaces with aux of preamp; variable impedance and capacitance for moving-coil cartridges

Models also available

D-350B Power Amplifier, $4,400; D-79 Power Amplifier, $3,700; D-110B Power Amplifier, $3,250; D-120 Power Amplifier, $1795; D-100B Power Amplifier, $1,695; D-52B Power Amplifier, $1,395; MCP-22 Preamplifier, $1,800; SP-6B Preamplifier, $1,495; SP-4A Preamplifier, $1,395; SP-5 Preamplifier, $1,095

AUDIO SCIENTIFIC by SUPEREX
Superex Electronics Corp.
151 Ludlow St.
Yonkers, N.Y. 10705

1560 Power Amplifier

Price $750
Dimensions 5H x 19W x 12D
Power 85 watts (19.25 dBW) continuous into 8 ohms from 8 Hz to 150 kHz at no more than 0.1% THD
IM 0.1% at 85 watts
Response 8 Hz to 150 kHz, ±0.5 dB
S/N 115 dB (A-weighted re 85 watts)
Features Class A design; 3.4 dB clipping headroom; relay/fuse protection; 12 LED level indicators per channel.

AUDIONICS
Audionics of Oregon
Suite 200, Computran Bldg.
5150 S.W. Griffith Drive
Beaverton, Ore. 97005

BA-150 Power Amplifier

Price $3,250
Dimensions 10½H x 19W x 14D
Weight 85 lbs. (net)
Power 150 watts (21.75 dBW) continuous into 4, 8, or 16 ohms from 30 Hz to 30 kHz at no more than 0.25% THD (depends upon switchable feedback setting)
IM 0.25% at 150 watts
Response 30 Hz to 30 kHz, ±1 dB
S/N 90 dB (weighted re 150 watts)
Features Hybrid analog/digital design with patented tube output stage allowing cool operation; all bias functions controlled by digital computer

RS-1 Preamplifier

Price $749
Dimensions 3½H x 19W x 8D
Weight 14 lbs. (net)
Inputs 2 tape
Response 20 Hz to 20 kHz, ±0.2 dB
Output 7V (at clipping)
THD 0.01% (5V)
IM 0.01% (5V)
Sensitivity 1.5 mV (phono); 75 mV (high level)
Overload 190 mV (phono)
Phono EQ 20 Hz to 20 kHz, ±0.2 dB
Low filter 18 dB/octave below 20 Hz
Features One-way tape dubbing; two-way tape dubbing; axial tilt crosstalk elimination; Class A; straight-line

Models also available

CC-2 Power Amplifier, $495 (with peak-reading LEDs and handles); BT-2 Preamplifier, $479

BEDINI
Bedini Electronics, Inc.
Div. Audio Gold
13000 San Fernando Road, Unit E
Sylmar, Calif. 91342

200/200 Power Amplifier

Price $3,750
Dimensions 8¾H x 19W x 23D
Weight 115 lbs. (net)
Power 200 watts (23 dBW) continuous into 8 ohms from 0.5 Hz to 20 kHz at no more than 0.1% THD
IM 0.1% at 200 watts
Response 0.5 Hz to 100 kHz, ±0.5 dB
S/N 83 dB (unweighted re 200 watts)
Features Class A; uses positive feedback

Models also available

45/45 Power Amplifier, $1,200

BELLES
Belles Research Corp.
A-1 Country Club Road
P.O. Box 65
E. Rochester, N.Y. 14445

Belles A Power Amplifier

Price $1,695
Dimensions 11H x 19W x 16D (maximum dimensions)
Weight 69 lbs. 4 oz. (net)
Power 70 watts (18.5 dBW) continuous into 8 ohms from 20 Hz to 20 kHz at no more than 0.04% THD
Response 1 Hz to 100 kHz; +0, −1.5 dB
Features Pure Class A operation; 2 independent power supplies; thermal protection; discrete, pure complementary circuit design

BEVERIDGE
Harold Beveridge, Inc.
505 E. Montecito
Santa Barbara, Calif. 93103

RM-1/RM-2 Preamplifier

Price $2,500
Dimensions 3½H x 19W x 9¼D
Weight 49 lbs. (net)
Inputs 2 phono; 2 tape; tuner; aux
Response 0.15 Hz to 600 kHz, ±0.05 dB
Output 1V
THD 0.03%
IM 0.03%
Sensitivity 20 mV (phono); 100 mV (high level)
Overload 1,000 mV (phono)
Phono EQ 0.15 Hz to 100 kHz, ±0.05 dB
High filter 6/12/18 dB/octave above 20 kHz, (progressive)
Low filter 1/36 dB/octave below 20 Hz (progressive)
Features Two-way tape dubbing; separate power supply

BOZAK
Bozak, Inc.
P.O. Box 1166
Darien, Conn. 06820

929 Power Amplifier

Price $925
Dimensions 7H x 17¾W x 12D
Weight 46 lbs. (net)
Power 150 watts (21.75 dBW) continuous into 8 ohms from 20 Hz to 20 kHz at no more than 0.06 THD
IM 0.2% at any wattage below 150 watts
Response 20 Hz to 20 kHz, ±0.1 dB
S/N 100 dB (unweighted re 150 watts)
Features DC protection; input-level controls; thermal protection; all-silicon circuitry; direct-reading power meters; slew rate: 25V/μs

919 Preamplifier

Price $875
Dimensions 7H x 17¾W x 10½D
Weight 28 lbs. (net)
Inputs 2 phono; 4 tape; tuner; mike; aux
Response 20 Hz to 20 kHz, ±0.25 dB
Output 10V
THD 0.1%
IM 0.1%
Sensitivity 2 mV (phono); 80 mV (high level)
Overload 80 mV (phono)
Phono EQ 30 Hz to 15 kHz, ±0.5 dB
Bass ±8 dB at 80 Hz
Midrange ±6 dB at 2.5 kHz
Treble ±16 dB at 12 kHz
High filter 12 dB/octave above 6 kHz
Low filter 12 dB/octave below 85 Hz
Features Input mixing for three inputs; cue facilities; selectable time-control turnovers; all-silicon discrete circuitry

Models also available

939 Power Amplifier, $525; 909 Preamplifier, $490; CMA-10-2DL Stereo Mixer/Preamplifier, $825

BRYSTON
Bryston Vermont (Distributor)
RFD 4, Berlin
Montepelier, Vt. 05602

3B Power Amplifier

Price $900
Dimensions 5¼H x 19W x 9D
Weight 35 lbs. (net)
Power 100 watts (20 dBW) continuous into 8 ohms from 20 Hz to 20 kHz at no more than 0.02% THD
IM 0.02% from 10 mW to 100 watts
Response 1 Hz to 100 kHz
S/N 100 dB
Features 400 watts bridged into 8 ohms (bridging switch); 500-sq. in. heat sink (over 1,000 sq. in. with chassis); no-fail LED pilot light; red LED clipping indicators

1B Preamplifier

Price $700
Dimensions 3½H x 19W x 10D
Weight 17 lbs. (net)
Inputs 2 phono; 2 tape
Response 0.5 Hz to 50 kHz, ±1 dB
Output 20V (max)
THD 0.005%
IM 0.005%
Sensitivity 0.5 mV (phono); 100 mV (high level)
Overload 300 mV (phono)
Phono EQ 20 Hz to 20 kHz, ±0.1 dB
Low filter 6 dB/octave below 31.7 Hz
Features One-way tape dubbing; separate tape selector output

Models also available

2B Power Amplifier, $525; 4B Power Amplifier, $1,400

CARVER
Carver Corp.
1214 Highway 99
Everett, Wash. 98072

C-4000 Preamplifier

Price $898
Dimensions 6¼H x 19W x 8D
Weight 10 lbs.
Inputs 2 phono; 2 tape; 1 tuner; 2 aux
Response 5 Hz to 200 kHz, ±0.1 dB
Output 2.5V
THD 0.02%
IM 0.01%
Sensitivity 0.85 mV (phono); 50 mV (high level)
Overload 150 mV (phono)
Phono EQ 20 Hz to 20 kHz, ±0.25 dB
Bass 40 Hz
Midrange Turnover or loudness control (selectable)
Treble 2 kHz or 8 kHz turnover (selectable)
Features One-way tape dubbing; two-way tape dubbing; sonic hologram generator; peak-unlimiter; auto correlator; 3-channel time delay with 25-watt amplifier

M-400 Power Amplifier

Price $349
Dimensions 6¾H x 6¾W x 6¾D
Weight 9 lbs.
Power 200 watts (23 dBW) into 8 ohms from 20 Hz to 20 kHz at no more than 0.05% THD

IM 0.06% at 200 watts
Response 1 Hz to 250 kHz, ±0.25 dB
S/N 100 dB (A-weighted re 200 watts)
Features Moving LED displays with VU ballistics; 50-dB dynamic range

Models also available

C-500 Power Amplifier, $722

CROWN
Crown International
1718 W. Mishawaka Road
Elkhart, Ind. 46514

PSA-2 Power Amplifier

Price $1,649
Dimensions 7H x 19W x 14¾D
Weight 57 lbs. (net)
Power 220 watts (23.5 dBW) continuous into 8 ohms from 20 Hz to 20 kHz at no more than 0.05% THD
IM 0.01% at 220 watts
Response 20 Hz to 20 kHz, ±0.1 dB
S/N 115 dB (A-weighted re 220 watts)
Features IOC® Music Distortion Indicator; signal presence indicator; standby LED indicator; power on indicator; balanced inputs (high "Z"); high pass and low pass filters (switchable in or out and frequency rolloff points can be changed to make the PSA-2 a true biamplifier); test tone generator (50 pulses per second); limiter compressor (with variable threshold); 5-second delay; low-frequency protection (DC to 10 Hz) mono dual switch; chassis/circuit ground separation (with removal of ground strap); unbalanced input-overrides balanced input (high "Z"); 2-speed fan

Straight Line One Preamplifier

Price $599
Dimensions 3½H x 19W x 7¾D
Weight 10 lbs. (net)
Inputs Phono; 2 tape; tuner; aux
Response 10 Hz to 20 kHz, ±0.1 dB
Output 10V
THD 0.0003%
IM 0.00055%
Sensitivity 2.5 mV (phono) (adjustable ±10 dB)
Overload 33 to 330 mV (phono) (depending on gain)
Phono EQ ±0.5 dB (RIAA)
Low filter 18 dB/octave below 30 Hz
Features Separate phono preamp module; precision-stepped gain control in 2 dB steps; preamp overload; indicators; precision-stepped rotary balance control; handles standard; walnut or rosewood optional; available in black or silver finish (optional)

Models also available

M-2000 Power Amplifier, $4,790; DL-2 Preamplifier, $2,495; M-600 Mono Power Amplifier, $2,395; SA-2 Power Amplifier, $1,595; DC-300A Power Amplifier, $1,049; D-150A Power Amplifier, $669; Power Line One Power Amplifier, $499; IC-150A Preamplifier, $529; D-75 Power Amplifier, $499

DB SYSTEMS
DB Systems
P.O. Box 347
Jaffrey Center, N.H. 03454

DBR-15A Preamplifier

Price	$699.95 (requires DB-2 power supply, $62)
Dimensions	3½H x 9½W x 7D
Weight	5 lbs. (net)
Inputs	2 aux
Response	2 Hz to 50 kHz, +0, –1 dB
Output	10V
THD	0.0008%
IM	0.001%
Sensitivity	1.8 mV (phono); 120 mV (high level)
Overload	150 mV (phono)
Phono EQ	10 Hz to 40 kHz, ±0.07 dB
Bass	±15 dB at 50/150/400 Hz
Treble	±15 dB at 1.5/3.5/7.5 kHz
High filter	6 dB/octave above 5/10 kHz
Low filter	6 dB/octave below 20/30 Hz
Features	One-way tape dubbing

DB-6 Power Amplifier

Price	$495
Dimensions	5H x 16W x 12¾D
Weight	18 lbs. (net)
Power	40 watts (16 dBW) continuous into 8 ohms from 20 Hz to 20 kHz at no more than 0.003% THD
IM	0.002% at 40 watts
Response	20 Hz to 20 kHz, +0, –1 dB
S/N	113 dB (A-weighted re IV)
Features	0.04% TIM; also available at $650 as DB-6M bridged mono version

DB-4A Pre-Preamplifier

Price	$150
Dimensions	2¼H x 6¼W x 4½D
Weight	1 lb. (net)
Inputs	Moving-coil cartridge
Response	10 Hz to 100 kHz, +0, –0.1 dB
Output	1V (max)
THD	0.0008%
IM	0.001%
Features	Three gain settings

Models also available

DB-6M Mono Power Amplifier, $525; DB-1A Preamplifier, $399.95 (requires DB-2 power supply, $62)

DENNESEN
Dennesen Electronics
P.O. Box 51
Beverly, Mass. 01915

DM-73S Power Amplifier

Price	$1,000
Dimensions	8H x 14W x 14D
Weight	50 lbs. (net)
Power	35 watts (15.5 dBW) continuous into 8 ohms from 20 Hz to 20 kHz at no more than 0.1% THD
IM	0.05%
Response	20 Hz to 20 kHz
Features	Tube design

Sirius Preamplifier

Price	$350
Dimensions	1¾H x 19W x 6D
Weight	5 lbs. (net)
Inputs	Phono; tape; tuner; aux
Response	0 Hz to 100 kHz, ±0.1 dB
Output	5V
THD	0.001%
IM	0.001%
Overload	3V at 20 kHz (phono)
Phono EQ	±0.1 dB (RIAA)
Features	One-way tape dubbing; plug-in crossover (2 or 3 way) available; 40 or 60 dB selectable phono gain

Models also available

DM IV Power Amplifier, $700; Antares Power Amplifier, $450

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

POA-3000 Power Amplifier

Price	$2,300
Dimensions	7½H x 20W x 18½D
Weight	75 lbs. (net)
Power	180 watts (22.5 dBW) continuous into 8 ohms from 20 Hz to 20 kHz at no more than 0.003% THD
IM	0.005% at 180 watts
Response	10 Hz to 100 kHz, ±3 dB
S/N	122 dB (A-weighted)
Features	Class A; DC-coupled; separate power supply per channel; slew rate: 300V/μs

PRA-2000 Preamplifier

Price	$1,300
Dimensions	5¼H x 18¼W x 14¼D
Weight	24 lbs. 2 oz. (net)
Inputs	3 phono; 2 tape; tuner; aux
Response	10 Hz to 500 kHz, ±0.5 dB
Output	23V (at clipping) or re 150 mV input
THD	0.003% (2V)
IM	0.002% (2V)
Sensitivity	2.5 mV (MM) 0.125 mV (MC); 150 mV (high level)
Overload	380 mV (phono)
Phono EQ	20 Hz to 100 kHz, ±0.2 dB
Low filter	12 dB/octave below 16 Hz
Features	Two-way tape dubbing; non-feedback DC-coupled electronic switching

PMA-500 Integrated Amplifier

Price	$595
Dimensions	5¼H x 17⅜W x 16¼D
Weight	30 lbs. (net)
Inputs	2 phono; 2 tape; tuner; aux
Power	100 watts (20 dBW) continuous into 8 ohms from 20 Hz to 20 kHz at no more than 0.005% THD
IM	0.008% at 100 watts
Response	1 Hz to 400 kHz, ±1.5 dB
Sensitivity	2.5 mV (MM) 0.125 mV (MC); 150 mV (high level)
Overload	350 mV (phono)
S/N	90 dB (phono); 108 dB (aux)
Phono EQ	20 Hz to 100 kHz, ±0.2 dB
Bass	±8 dB at 100 Hz
Treble	±8 dB at 10 kHz
Low filter	6 dB/octave below 20 Hz
Features	Two-way tape dubbing; separable power and preamp; non-switching Class A; completely DC-coupled

Models also available

PMA-630 Integrated Amplifier, $450; PMA-530 Integrated Amplifier, $390

DYNACO/DYNAKIT
Dynaco, Inc.
P.O. Box 612
Needham, Mass. 02198

ST-420 Power Amplifier

Price	$750
Dimensions	7H x 15W x 8D
Weight	50 lbs. (net)
Power	200 watts (23 dBW) Continuous into 8 ohms from 20 Hz to 20 kHz at no more than 0.05% THD
IM	0.05%
Response	10 Hz to 25 kHz, +0,–1
S/N	–102 dB
Features	Rack-mountable; fan cooling; stable with virtually any load

PAT-10 Preamplifier

Price	$400
Dimensions	3H x 16W x 8D
Weight	25 lbs. (net)
Inputs	2 phono; 2 tape; 2 aux
Response	10 Hz to 75 kHz, +0, –1 dB
Output	20V (at clipping) or re 10 ohm input
THD	0.008%
IM	0.01%
Sensitivity	2 mV (phono); 400 mV (high level)
Overload	300 mV (phono)
Phono EQ	20 Hz to 20 kHz, +0.25 dB
Bass	±15 dB at 50 Hz
Midrange	±15 dB at 1.5 kHz
Treble	±15 dB at 10 kHz
High filter	6 dB/octave above 10 kHz
Low filter	12 dB/octave below 18 Hz
Features	Two-way tape dubbing; dynacounter loudness control; midrange presence control

EICO
EICO Electronics Instrument Co., Inc.
108 New South Road
Hicksville, N.Y. 11802

SA-3080

Price	$269.95
Power	80 watts (19 dBW) continuous

SA-4160

Price	$239.95
Power	60 watts (17.75 dBW) continuous

SA-4130

Price	$199.95
Power	30 watts (14.75 dBW) continuous

ESOTERIC AUDIO RESEARCH
American Audio Components, Inc.
8621 S.W. 179 St.
P.O. Box 570502
Miami, Fla. 33157

E.A.R. 518 Stereo Tube Amplifier

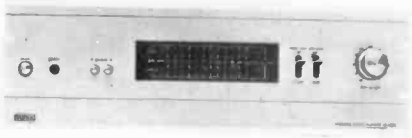
Price	$2,295
Dimensions	5½H x 19W x 15D
Weight	77 lbs. (net)
Power	100 watts (20 dBW) continuous into 4/8/16 ohms from 20 Hz to 20 kHz at no more than 0.3% THD
IM	0.3% at 100 watts
Response	3 Hz to 80 kHz, +0, –3 dB
S/N	94 dB at rated power
Features	Two independent 100-watt amplifiers housed in one unit with a common cord; can easily be adapted to mono-amp configuration with a rated output of 200 watts

Models also available

E.A.R. 529 Mono Tube Amplifier, $2,695; E.A.R. 509 Mono Tube Amplifier, $995

EUMIG
Eumig USA, Inc.
Lake Success Business Park
225 Community Drive
Great Neck, N.Y. 11020

M-1000 Power Amplifier



Price	$795
Dimensions	5 1/5H x 19W x 14 4/5D
Weight	38 lbs. 18 oz. (net)
Power	100 watts (20 dBW) continuous into 8 ohms from 20 Hz to 20 kHz at no more than 0.025% THD
IM	0.025% at 100 watts
Response	DC to 300 kHz, –3 dB
S/N	95 dB dB (A-weighted re 100 watts)
Features	Slew rate of 35V/μs; dual 12-segment peak-power LED display with switchable 10:1 attenuator; 30 dB muting switch; 2-system speaker selector with headphone jack; champagne or matte-black finish; rack-mountable

C-1000 Preamplifier

Price	$580
Dimensions	2½H x 19W x 12 4/5D
Weight	14 lbs. 12 oz. (net)
Inputs	2 (1 moving-coil, 1 moving-magnet) phono; 2 tape; tuner; aux
Response	5 Hz to 70 kHz, ±3 B
Output	1V (nominal); 5V (max)
THD	0.015%
IM	0.015%
Sensitivity	2.5 mV (MM, 47K ohms); 250 μV (MC, 150 ohms) (phono)
Overload	200 mV (MM); 10 mV (MC) (phono)
Phono EQ	20 Hz to 20 kHz, ±0.5 dB
Bass	±12 dB at 20 Hz
Treble	+12, –16 dB at 20 kHz
High filter	12 dB/octave above 12 or 8 kHz (switchable)
Low filter	12 dB/octave below 70 or 15 Hz (switchable)
Features	Full 2-way tape dubbing; champagne or matte-black; tone-defeat switch; straight DC from AUX input; switch provision for insert of external equalizer; loudness contour and low-boost (switchable)

FISHER
Fisher Corp.
21314 Lassen St.
Chatsworth, Calif. 91311

CA-2420 Integrated Amplifier

Price	$549.95
Dimensions	5¼H x 17 1/3W x 13D
Weight	24 lbs. (net)
Inputs	2 phono; 2 tape; tuner; aux
Power	80 watts (19 dBW) continuous into 8 ohms from 20 Hz to 20 kHz at no more than 0.02% THD
IM	0.02% at 80 watts
Response	20 Hz to 20 kHz, ±0.05 dB
Sensitivity	2.5 mV (phono); 60 μV (phono moving coil)
Overload	230 mV (phono); 6 mV (phono moving coil)
S/N	100 dB (aux); 65 dB (phono moving coil) (A-weighted re 80 watts)
Phono EQ	20 Hz to 20 kHz, ±0.5 dB
Low filter	12 dB/octave below 20 Hz
Features	Two-way tape dubbing; separable power and preamp; 5-band graphic equalizer ±10 dB at 50 Hz, 250 Hz, 1 kHz, 4.5 kHz, 15 kHz); large power meters; 5-position tape selector

BA-6000 Power Amplifier

Price	$499.95
Dimensions	5¼H x 17 1/3W x 12⅝D
Weight	31 lbs. (net)
Power	100 watts (20 dBW) continuous into 8 ohms from 20 Hz to 20 kHz at no more than 0.01% THD
IM	0.01% at 100 watts
Response	20 Hz to 20 kHz
S/N	110 dB (A-weighted re 100 watts)
Features	Large illuminated power meters with LED peak indicators; 4-position speaker selector switch; input level control; 3-position meter range switch

CA-2320 Integrated Amplifier

Price	$399.95
Inputs	2 phono; tuner; aux
IM	0.02% at 60 watts
Response	20 Hz to 20 kHz, ±0.5 dB
Sensitivity	25 mV (phono); 60 μV (phono moving coil)
Overload	230 mV (phono); 6 mV (phono moving coil)
S/N	80 dB (phono); 100 dB (aux); 65 dB (phono moving coil) (A-weighted re 60 watts)
Phono EQ	20 Hz to 20 kHz, ±0.5 dB
Bass	±10 dB at 100 Hz
Treble	±10 dB at 100 kHz
Low filter	6 dB/octave below 20 Hz
Features	Two-way tape dubbing; separable power and preamp; 5-position tape selector; infrasonic filter; moving-coil cartridge input

Models also available

CA-2220 Integrated Amplifier, $399.95; BA-3000 Power Amplifier, $379.95; CA-2120 Integrated Amplifier, $329.95; CA-660 Integrated Amplifier, $229.95; CA-120 Integrated Amplifier, $249.95

GLI
Integrated Sound Systems, Inc.
29-50 Northern Blvd.
Long Island City, N.Y. 11101

3990 Preamplifier

Price	$850
Dimensions	7H x 19W x 4D
Weight	15 lbs. (net)
Inputs	3 phono; 3 aux
Output	12V (at 10 ohms clipping)
THD	0.01%
IM	0.01%
Sensitivity	2 mV (phono); 500 mV (high level)
Overload	320 mV (phono)
Phono EQ	20 Hz to 20 kHz, ±0.25 dB
Low filter	18 dB/octave below 18 Hz (infrasonic on phono input)
Features	Mixing of all inputs; mike talkover; complete input cueing

SA-2125 Power Amplifier

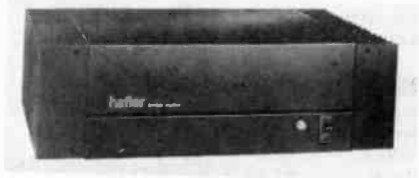
Price	$795
Dimensions	5¼H x 19W x 15D
Weight	27 lbs. 8 oz. (net)
Power	120 watts (21 dBW) continuous into 8 ohms from 20 Hz to 20 kHz at no more than 0.1% THD
IM	0.1% at 120 watts
Response	20 Hz to 20 kHz, ±0.25 dB
S/N	100 dB (unweighted re 100 watts)
Features	Circuit breakers for each channel; plug-in circuit boards; cooling fan; clipping lights; thermal overload light and auto reset

Models also available

PMX-9000 Preamplifier, $435; 1010 Preamplifier/Processor, $350

HAFLER
David Hafler Co.
5817 Roosevelt Ave.
Pennsauken, N.J. 08109

DH-200 Power Amplifier



Price	$329.95 (kit); $429.95 (assembled)
Dimensions	5⅛H x 16W x 10½D
Weight	26 lbs. (net)
Power	100 watts (20 dBW) continuous into 8 ohms from 20 Hz to 20 kHz at no more than 0.02% THD
IM	0.005% at 100 watts
Response	10 Hz to 40 kHz, ±0.5 dB
S/N	100 dB (unweighted re 100 watts)
Features	MOSFET output stage; rack-mountable; mono strapable 300W into 8 ohms

DH-101 Preamplifier

Price	$199.95 (kit); $299.95 (assembled)
Dimensions	3¼H x 13¾W x 8½D
Weight	8 lbs. (net)
Inputs	2 phono; 2 tape; tuner; aux
Response	20 Hz to 20 kHz, +0, –0.25 dB
Output	3V
THD	0.001%
IM	0.002% (3V)
Sensitivity	10 mV (phono); 50 mV (high level) re 0.5V
Overload	180 mV (phono)
Phono EQ	40 Hz to 15 kHz, ±0.5 dB
Bass	±12 dB at 50 Hz
Treble	±10 dB at 20 kHz
Features	One-way tape dubbing; two-way tape dubbing; accessory moving coil pre-preamp; accessory rack-mount kit; black knob set and wooden cabinet

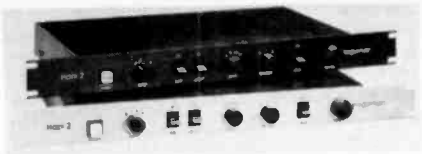
Models also available

DH-300 Power Amplifier, $449.95

HAPI
Hegeman Audio Products, Inc.
176 Linden Ave.
Glen Ridge, N.J. 07028

HAPI Two Preamplifier

Price	$900
Dimensions	1¾H x 19W x 9D
Weight	5 lbs.
Inputs	Phono; tape; tuner; aux
Response	2 Hz to 350 kHz
Output	6V (rms)
THD	0.03%
IM	0.03%
Sensitivity	2 mV (phono); 100 mV (high level)



Overload	300 mV (phono)
Phono EQ	2 Hz to 100 kHz, ±0.1 dB
Features	One-way tape dubbing

Models also available

HAPI One Preamplifier Control Unit, $720

HARMAN KARDON
Harman Kardon
55 Ames Court
Plainview, N.Y. 11803

hk-770 Power Amplifier

Price	$399
Dimensions	2 9/10H x 15 1/5W x 12 3/5D
Weight	22 lbs. 3 oz. (net)
Power	65 watts (18 dBW) continuous
IM	0.01%
Response	1 Hz to 250 kHz, ±3 dB
S/N	123 dB
Features	Two separate 2-stage toroidal power supplies; 12 LED power displays; gold-relay speaker switching display; sensitivity switch

hk-750 Integrated Amplifier

Price	$329
Power	45 watts (16.5 dBW) continuous
IM	0.05%
Response	1 Hz to 150 kHz, -3 dB
Overload	150 mV (phono)
Features	2 tape copy switches; 2 tape monitor switches; 5 LEDs; subsonic and high-cut filter

hk-725 Preamplifier

Price	$279
Dimensions	2 9/10H x 15 1/5W x 12 3/5D
Weight	9 lbs. 5 oz. (net)
Response	20 Hz to 20 kHz
THD	0.009%
IM	0.009% (2 V)
Sensitivity	2.3 mV (phono)
Overload	250 mV (phono)
Features	Two-way tape dubbing; tone control; tone defeat; 12-wiper volume control; subsonic and high-cut filters

HEATHKIT
Heath Co.
Benton Harbor, Mich. 49022

AA-1640 Power Amplifier

Price	$479.95 (kit)
Dimensions	7¼H x 19W x 18D
Weight	58 lbs.
Power	200 watts (23 dBW) continuous into 8 ohms from 20 Hz to 20 kHz at no more than 0.1% THD
IM	0.1% at 200 watts
Response	7 Hz to 50 kHz, -1 dB
S/N	100 dB at 200 watts
Features	Optional peak-responding meters

AP-1800 Preamplifier

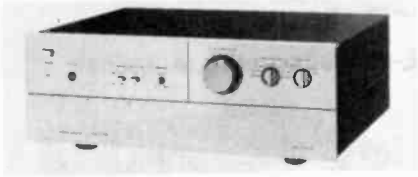
Price	$349.95 (kit)
Dimensions	5¼H x 19W X 11¼D
Weight	20 lbs.
Inputs	3 phono; 2 tape; 1 tuner; 2 aux
Response	20 Hz to 20 kHz, ±0.2 dB
Output	9V
THD	0.03%
IM	0.02%
Sensitivity	100 μV/200 μV/400 μV (selectable); (phono); 200 mV (high level)
Overload	200 mV (phono)
Bass	±12 dB at 20 Hz
Treble	±12 dB at 20 kHz
High filter	12 dB/octave above 6/12 kHz (selectable)
Low filter	12 dB/octave below 20/50 Hz (selectable)

Models also available

AA-1600 Power Amplifier, $329.95 (kit); AA-1515 Power Amplifier, $279.95 (kit); AP-1615 Preamplifier, $119.95 (kit)

HITACHI
Hitachi Sales Corp. of America
401 W. Artesia Blvd.
Compton, Calif. 90220

HA-7700 Integrated Amplifier



Price	$599.95
Dimensions	6½H x 17 ⅛W x 15 1/16D
Weight	35 lbs. 3 oz. (net)
Power	65 watts (18 dBW) continuous into 8 ohms from 20 Hz to 20 kHz at no more than 0.01% THD
Sensitivity	2.5 mV (phono)
S/N	86 dB (phono); 100 dB (aux)
Bass	±8 dB at 100 Hz
Treble	±8 dB at 10 kHz

HMA-7500 Mk. II Power Amplifier

Price	$550
Dimensions	6½H x 18⅞W x 14D
Weight	33 lbs. (net)
Power	75 watts (18.75 dBW) continuous into 8 ohms from 5 Hz to 100 kHz at no more than 0.005% THD
IM	0.003% at 40 watts
Response	20 Hz to 20 kHz
S/N	120 dB (IHF A-weighted)
Features	Power MOSFET output devices; power meters; A & B speakers

HCA-7500 Mk. II Preamplifier

Price	$350
Dimensions	6½H x 18⅞W x 13¾D
Weight	17 lbs. 10 oz. (net)
Inputs	2 phono; 2 tape; tuner; aux
Response	20 Hz to 20 kHz, ±0.02 dB
Output	1V
THD	0.005%
IM	0.005%
Sensitivity	2 mV (phono)
Bass	±10 dB at 50 Hz
Treble	±10 dB at 10 kHz
High filter	6 dB/octave above 8 kHz
Low filter	12 dB/octave below 15 Hz
Features	Two-way tape dubbing; adjustable cartridge load

Models also available

HA-5700 Integrated Amplifier, $399.95; HMA-6500 Power Amplifier, $329.95; HA-3700 Integrated Amplifier, $199.95; HCA-6500 Preamplifier, $179.95; HA-2700 Integrated Amplifier, $169.95

JANIS
Janis Audio Associates
2889 Roebling Ave.
Bronx, N.Y. 10461

Interphase-1A

Price	$565
Dimensions	5H x 10½W x 14D
Weight	20 lbs.
Power	60 watts (17.75 dBW) continuous into 8 ohms from 20 Hz at no more than 0.05% THD
Response	3 Hz
S/N	90 dB (unweighted)
Features	Internal crossover for subwoofers; 100 Hz, 18 dB per octave; continuous variable phase of output, comparator feature for balancing subwoofers; upper limit of response controlled by crossover

JVC
U.S. JVC Corp.
58-75 Queens Midtown Expressway
Maspeth, N.Y. 11378

EQ-7070 Preamplifier

Price	$950
Dimensions	2½H x 16½W x 14⅞D
Weight	16 lbs. 8 oz.
Inputs	5 phono; 2 tape; tuner; aux
Output	15V
THD	0.003%
Sensitivity	1.8 mV (phono); 160 mV (high level)
Overload	300 mV (phono)
Phono EQ	20 Hz to 20 kHz, ±0.2 dB

A-X9 Integrated Amplifier

Price	$900
Dimensions	6¼H x 17¾W x 16⅝D
Weight	36 lbs. 8 oz. (net)
Inputs	2 phono; 2 tape; tuner; aux
Power	100 watts (20 dBW) continuous into 8 ohms from 20 Hz to 20 kHz at no more than 0.005% THD
IM	0.002% at 100 watts
Response	DC to 200 kHz, +0, -3 dB
Sensitivity	2.5 mV (phono); 200 mV (high level)
Overload	350 mV (phono)
S/N	85 dB (phono); 110 dB (aux) (IHF A-weighted)
Phono EQ	20 Hz to 20 kHz, ±0.2 dB
Bass	±8 dB at 100 Hz
Treble	±8 dB at 10 kHz
Low filter	6 dB/octave below 18 Hz
Features	Two-way tape dubbing; super-A amp; input for moving-coil and moving-magnet cartridges

Models also available

A-X5 Integrated Amplifier, $450; A-X4 Integrated Amplifier, $400; A-X3 Integrated Amplifier, $350; A-X2 Integrated Amplifier, 250; A-X1 Integrated Amplifier, $210; A-S3 Integrated Amplifier, $150

KENWOOD
Kenwood Electronics, Inc.
75 Seaview Drive
Secaucus, N.J. 07094

KA-907 Integrated Amplifier

Price	$1,000
Dimensions	6 11/32H x 18⅛W x 18 7/32D
Weight	56 lbs. 14 oz. (net)
Inputs	3 phono; 2 tape; tuner; aux
Power	150 watts (21.75 dBW) continuous into 8 ohms from 20 Hz to 20 kHz at no more than 0.01% THD
IM	0.0045% at 150 watts
Response	DC to 400 kHz, -3 dB
Sensitivity	2.5 mV (phono); 200 mV (high level)
Overload	230 mV (phono)
S/N	96 dB (phono); 105 dB (aux)

Phono EQ	20 Hz to 20 kHz, ±0.2 dB
Bass	±7.5 dB at 150 Hz
Treble	±7.5 dB at 3 kHz
High filter	12 dB/octave above 8 kHz
Low filter	6 dB/octave below 18 Hz
Features	Two-way tape dubbing; separable power and preamp; high-speed DC amp; dual power supply

L-07C Mark Two Preamplifier

Price	$900
Dimensions	3 15/16H x 18 19/32W x 13⅜D
Weight	20 lbs. (net)
Inputs	2 phono; 2 tape; tuner; aux
Sensitivity	2.5 mV (phono); 140 mV (high level)
Overload	450 mV (phono)
Phono EQ	20 Hz to 20 kHz, ±0.2 dB
Bass	±7.5 dB at 100 Hz
Treble	±7.5 dB at 10 kHz
Low filter	12 dB/octave below 18 Hz
Features	Two-way dubbing

L-05M Mark Two Power Amplifier

Price	$425
Dimensions	6 3/32H x 7⅞W x 15 11/32D
Weight	N/A
Power	100 watts (20 dBW) continuous into 8 ohms from 20 Hz to 20 kHz at no more than 0.005% THD
IM	0.001% at 100 watts
Response	DC to 600 kHz, ±3 dB
Features	High-speed design

Models also available

L-09M Mono Power Amplifier, $700; KA-801 Integrated Amplifier, $699; L-07M Mark Two Mono Power Amplifier, $600; KA-701 Integrated Amplifier, $499; KA-601 Integrated Amplifier, $399; KA-501 Integrated Amplifier, $375; KA-80 Integrated Amplifier, $310; KA-305 Integrated Amplifier, $199; KA-60 Integrated Amplifier, $199

KM
KM Laboratories
342 Madison Ave.
New York, N.Y. 10173

SP-100

Price	$699 (options extra)
Dimensions	2⅜H x 19W x 10½D
Weight	9 lbs. 11 oz. (net)
Inputs	2 phono; 2 tape; 2 tuner; aux
Response	0.5 Hz to 500 kHz, ±1 dB
Output	16V (rms) (at clipping)
THD	0.001% (2V)
IM	0.001% (2V)
Sensitivity	2.5 mV (phono); 500 mV (high level)
Overload	420 mV (phono)
Phono EQ	20 Hz to 20 kHz, ±0.1 dB
Low filter	6 dB/octave below 16 Hz
Features	One-way tape dubbing; two-way tape dubbing; optional moving coil, stereo spare processing, and subwoofer outputs; –3 dB at 115 Hz separate gain, phone amp, FET, and cascoder circuitry option

LUXMAN
Lux Audio of America, Ltd.
160 Dupont St.
Plainview, N.Y. 11803

M-4000A Power Amplifier

Price	$1,495
Dimensions	7 1/5H x 19 3/5W x 15 1/5D
Weight	66 lbs. (net)
Power	180 watts (22.5 dBW) continuous into 8 ohms from 20 Hz to 20 kHz at no more than 0.008% THD
IM	0.008% at 180 watts
Response	3 Hz to 100 kHz, ±1 dB
S/N	115 dB (A-weighted re inputs short-circuited watts)
Features	Class A operation up to 50 watts; Duo Beta circuitry; LED power indicator; rosewood cabinet

C-5000A Preamplifier

Price	$1,395
Dimensions	7 1/5H x 19 9/10W x 14D
Weight	25 lbs. 2 oz. (net)
Inputs	2 phono; 3 tape; 1 tuner; 2 aux
THD	0.005% (2 V)
IM	0.002% (2 V)
Sensitivity	2.2 mV (phono); 145 mV (high level)
Features	Duo Beta circuitry; rosewood cabinet; 6-, 12-, and 18/dB per octave rolloff filter; versatile tone controls

L-580 integrated Amplifier

Price	$795
Dimensions	7 1/5H x 18 3/5W x 15 1/10D
Inputs	2 phono; 2 tape; 1 tuner; 2 aux
Power	100 watts (20 dBW) continuous into 8 ohms from 20 Hz to 20 kHz at no more than 0.03% THD
IM	0.08% at 100 watts
Response	20 Hz to 20 kHz, ±0.3 dB
Sensitivity	1.5 mV (phono); 220 mV (high level)
S/N	80 dB (phono); 100 dB (aux) (A-weighted)
Features	One-way tape dubbing; two-way tape dubbing; separable power and preamp; Duo Beta circuitry; wood cabinet; LED power readout

Models also available

M-120A Power Amplifier, $625; L-480 Integrated Amplifier, $495; C120A Preamplifier, $445; L-450 Integrated Amplifier, $395

MARANTZ
Marantz Co., Inc.
20525 Nordhoff St.
Chatsworth, Calif. 91311

PM-700 Integrated Amplifier/ Equalizer

Price	$450
Dimensions	5¾H x 16⅜W x 13D
Weight	20 lbs. 14 oz. (net)
Inputs	2 phono; 2 tape; tuner; aux
Power	87 watts (19.5 dBW) continuous into 4 ohms from 20 Hz to 20 kHz at no more than 0.05% THD
IM	0.05% at 87 watts
Response	10 Hz to 70 kHz, ±1 dB
Sensitivity	2.8 mV (phono); 150 mV (high level)
Overload	220 mV (phono)
S/N	92 dB (phono); 98 dB (aux) (IHF A-weighted re 87 watts)
Phono EQ	20 Hz to 20 kHz, ±0.2 dB
High filter	6 dB/octave above 9 kHz
Low filter	6 dB/octave below 20 Hz
Features	One-way tape dubbing; two-way tape dubbing; dual LED power meters; dual 5-band graphic equalizer; true power DC amplifier; MC head amp; independent record mode selector; detented volume control

Models also available

PM-300 Integrated Amplifier/ Equalizer, $225

McINTOSH
McIntosh Laboratory, Inc.
2 Chambers St.
Binghampton, N.Y. 13903

MC-2300 Power Amplifier

Price	N/A
Dimensions	10½H x 19W x 17D
Weight	128 lbs.
Power	300 watts (24.75 dBW) continuous into 0.5, 1, 2, 4, 8, 16 ohms from 20 Hz to 20 kHz at no more than 0.15% THD
IM	0.15% max, 250 mW to rated power
Response	20 Hz to 20 kHz, ±0.25 dB (12 Hz to 35 kHz, +0, –1.5 dB)
S/N	90 dB (unweighted re 300 watts)
Features	Full power output for 0.5, 1, 2, 4, 8, and 16 ohms; switchable for 600-watt mono operation; peak-responding output meters; relay rack-mounting

C-32 Preamplifier

Price	N/A
Dimensions	5H x 16W x 13D
Weight	27 lbs.
Inputs	2 phono; 3 tape; tuner; aux
Response	20 Hz to 20 kHz, +0, –0.25 dB (10 Hz to 100 kHz, ±0.5 dB)
Output	2.5V (10V max)
THD	0.05%
IM	0.05%
Sensitivity	2 mV (phono); 250 mV (high level)
Overload	100 mV (phono)
Phono EQ	20 Hz to 20 kHz, ±0.25 dB
High filter	12 dB/octave above 7 kHz
Low filter	12 dB/octave below 50 Hz
Features	Three-way tape dubbing; separate listen and record channels; volume expander; 12-watt-per-channel headphone-monitor amplifier; precision-tracking step attenuator volume control; loudness contour; 5-band equalizer: (±12 dB at 30 Hz, 150 Hz, 500 Hz, 1.5 kHz, 10 kHz); electronic switching; Panloc mounting; turntable actuated system on/off power control circuit

MA-6200 Integrated Amplifier

Price	N/A
Dimensions	5 7/16H x 16W x 13D
Weight	30 lbs.
Inputs	2 phono; 1 tuner; 2 aux
Power	75 watts (19 dBW) continuous into 8 ohms from 20 Hz to 20 kHz at no more than 0.05% THD
IM	0.05% max, 250 mW to rated power
Response	20 Hz to 20 kHz, +0, –0.5 dB
Sensitivity	2 mV (phono); 250 mV (high level)
S/N	85 dB (phono); 100 dB (aux) (A-weighted re 75 watts)
Phono EQ	20 Hz to 20 kHz, ±0.5 dB
Features	Two-way tape dubbing; separable power and preamp; Power-Guard clipping-prevention circuit; output limit indicators; heavy duty, time-controlled speaker relay; turntable-actuated system on/off power control circuit; 5-band equalizer: (±12 dB at 30 Hz, 150 Hz, 500 Hz, 1.5 kHz, 10 kHz)

Models also available

MC-2500, ; MC-2200 Power Amplifier, ; MC-2125 Power Amplifier, ; MC-2120 Power Amplifier, ; MC-502 Power Amplifier, ; C-504, ; C-29 Professional Preamplifier, ; C-27 Preamplifier,

MCS® SERIES
J.C. Penney
1301 Ave. of the Americas
New York, N.Y. 10019

3850 Integrated Amplifier

Price	$239.95
Dimensions	4H x 17 7/10W x 13 2/5D
Weight	26 lbs. 6 oz. (net)
Power	45 watts (16.5 dBW) continuous from 20 Hz to 20 kHz at no more than 0.03% THD
IM	0.03% at 45 watts
Response	20 Hz to 40 kHz, ±1 dB
Sensitivity	2.5 mV (phono); 150 mV (high level) (47K ohms)
Overload	200 mV (phono)
S/N	75 dB (phono); 95 dB (tuner); 95 dB (aux)
Phono EQ	20 Hz to 20 kHz, ±0.5 dB
Bass	±9 dB at 100 Hz
Treble	±9 dB at 10 kHz
High filter	6 dB/octave above 7 kHz
Low filter	6 dB/octave below 15 Hz
Features	Twelve-segment LED digital power display; dual power protection system; recording source selector; muting switch; loudness control; full 3-year warranty

MERIDIAN
Anglo-American Audio
P.O. Box 653
Buffalo, N.Y. 14240

103D Power Amplifier

Price	$699
Dimensions	4H x 11W x 12D
Weight	26 lbs. (net)
Power	45 watts (16.5 dBW) continuous into 8 ohms from 20 Hz to 20 kHz at no more than 0.1% THD
IM	0.1% at 35 watts
Response	20 Hz to 20 kHz
S/N	90 dB (CCIR-weighted)
Features	Separate power supplies, one for each channel

101 Preamplifier

Price	$483
Dimensions	2H x 5½W x 12½D
Weight	4 lbs. (net)
Inputs	Phono; tape; tuner
Response	5 Hz to 50 kHz, ±0.5 dB
Output	775 mV
THD	0.01%
IM	0.01%
Sensitivity	1.4 mV (phono); 450 mV (high level)
Overload	160 mV (phono)
Phono EQ	20 Hz to 20 kHz, ±0.5 dB
Features	One-way tape dubbing; choice of input modules to optimize phono cartridge response

Models also available

103 Power Amplifier, $485; 105 Power Amplifier, $449

METEOR
Hammond Industries, Inc.
155 Michael Drive
Syossett, N.Y. 11791

Powermaster/90 Power Amplifier

Price	$499
Dimensions	5¼H x 19W x 13½D
Weight	20 lbs. (net)
Power	85 watts (19.25 dBW) continuous into 8 ohms from 20 Hz to 20 kHz at no more than 0.09% THD
Response	20 Hz to 20 kHz, ±0.5 dB
S/N	85 dB (unweighted re 85 watts)
Features	Rack-mount style with handles; front-panel output circuit breakers

Clubman 1-1M Preamplifier

Price	$249
Dimensions	11H x 9¼W x 7D
Weight	7 lbs. (net)
Inputs	2 phono; mike; 2 aux
Response	20 Hz to 20 kHz, ±1 dB
Output	1.5 V re 5 mV input (phono)
THD	0.15%
Sensitivity	5 mV (phono); 320 mV (high level)
Low filter	6 dB/octave below 40 Hz
Features	Output meters; mixing with cross-fade; headphone cue

Models also available

Powermaster 75 Power Amplifier, $449; Clubman 3-3 Preamplifier,

METRON
Cerwin-Vega, Inc.
12250 Montague St.
Arleta, Calif. 91331

A-4000 Power Amplifier

Price	$1,600
Dimensions	7½H x 19W x 18½D
Weight	80 lbs.
Power	350 watts (25.5 dBW) continuous into 8 ohms from 20 Hz to 20 kHz at no more than 0.02% THD
IM	0.020% at 350 watts
Response	5 Hz to 100 kHz, −1, +0 dB at 1 watt
S/N	110 dB (unweighted)
Features	Sample-and-hold peak-reading meters; step attenuator controls; forced-air cooling

PR-1 Preamplifier

Price	$500
Dimensions	2¾H x 19W x 14D
Weight	15 lbs.
Inputs	2 phono; 2 tape; tuner; mike; aux
Response	5 Hz to 200 kHz, +0, −3 dB
Output	2V, outputs 1 and 2; 3V, output 3
THD	0.005%
IM	0.005%
Sensitivity	2 mV (phono); 250 mV (high level)
Overload	230 mV (phono)
Phono EQ	30 Hz to 15 kHz, ±0.2 dB
Bass	±10 dB at 50 Hz
Treble	±10 dB at 10 kHz
Low filter	18 dB/octave below 20 Hz
Features	Precision-step attenuators on all controls; complete two-way tape dubbing capability; muting switch

Models also available

M-200 Power Amplifier, $600

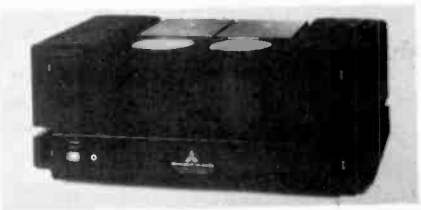
MITCHELL A. COTTER
Mitchell A. Cotter Company, Inc.
35 Beechwood Ave.
Mt. Vernon, N.Y. 10553

CU-2 Master Control Unit

Price	$2,500
Dimensions	4H x 17W x 9D
Weight	8 lbs. (net)
Inputs	2 phono; 2 aux
Output	9V (at clipping)
Sensitivity	40 mV (high level)
Features	Absolute phase reverse for each channel

MITSUBISHI
Melco Sales, Inc.
3030 E. Victoria
Compton, Calif. 90221

DA-A15DC Power Amplifier



Price	$700
Dimensions	6¾H x 16¾W x 11¼D
Weight	39 lbs. (net)
Power	150 watts (21.75 dBW) continuous into 8 ohms from 20 Hz to 20 kHz at no more than 0.01% THD
IM	0.008% at 150 watts
Response	20 Hz to 20 kHz, ±0.1 dB
S/N	123 dB (A-weighted re 150 watts)
Features	Dual monaural construction; completely separate right- and left-channel power amp will dock with preamp to provide integrated-amp configuration; DC amplifier

DA-P20 Preamplifier

Price	$30
Dimensions	6¼H x 16¾W x 8D
Weight	11 lbs. (net)
Inputs	2 phono; tape; tuner; aux
Response	1V (rated); 18V (max)
THD	0.002%
IM	0.002%
Sensitivity	2.3 mV (phono); 150 mV (high level)
Overload	290 mV (phono)
Phono EQ	20 Hz to 20 kHz, ±0.2 dB
Bass	±10 dB at 100 Hz
Treble	±10 dB at 10 kHz
Low filter	6 dB/octave below 18 Hz
Features	Two-way tape dubbing; dual monaural construction; can be docked with preamp to provide integrated-amp configuration; built-in moving-coil head amp

Models also available

M-A01 Micro Power Amplifier, $500; DA-A10DC Power Amplifier, $470; M-PO1 Micro Preamplifier, $370; DA-A7DC Power Amplifier, $330

MTI
Micro-Tech, Inc.
1802 W. Grant Road
Tucson, Ariz. 85705

MTI-245 Power Amplifier

Price	$595
Dimensions	1¾H x 12¾W x 6½D
Weight	18 lbs. (net)
Power	40 watts (16 dBW) continuous into 8 ohms from 20 Hz to 20 kHz at no more than 0.05% THD
IM	0.05% at 1 watts
Response	15 Hz to 70 kHz, +0, –3 dB
S/N	101 dB (unweighted re 40 watts)
Features	LED power display; 4.5 dB (IHF) dynamic headroom; separate power supply included; additional power supply capacitor pack optional

MTI-200 Preamplifier

Price	$445
Dimensions	1¾H x 12¾W x 6½D
Weight	6 lbs. (net)
Inputs	2 phono; tape; aux
Output	9V (at clipping)
THD	0.01% (2V)
IM	0.01% (2V)
Sensitivity	7/26 mV (phono)
Overload	30/110 mV (phono) (dual gain)
Phono EQ	20 Hz to 20 kHz, ±0.1 dB
Features	Input capacitance selection for cartridge loading; self-matching moving-coil amp; passive high-level switching and volume control

Models also available

MTI-500 Preamplifier, $895; MXR, MXR Innovations, Inc.; MOD 140 System Preamplifier, $460; MOD 139 Linear Preamplifier, $330

NAD
NAD (USA), Inc.
Mackintosh Lane
P.O. Box 529
Lincoln, Mass. 01773

NAD-3080 Integrated Amplifier

Price	$535
Dimensions	5½H x 19 1/3W x 15 3/5D
Weight	35 lbs. (net)
Inputs	Phono; tape; tuner; mike; aux
Power	90 watts (19.5 dBW) continuous into 8 ohms from 20 Hz to 20 kHz at no more than 0.03% THD
IM	0.03% at 90 watts
Response	5 Hz to 50 kHz, +0, –3 dB
Sensitivity	0.5 mV (phono); 30 mV (high level) (IHF A-weighted)
Overload	200 mV (phono) (1 kHz)
S/N	82 dB (phono); 80 dB (aux) (IHF A-weighted)
Phono EQ	20 Hz to 20 kHz, ±0.3 dB
Bass	±11 or 13 dB at 50 Hz
Treble	±6 or 9 dB at 10 kHz
High filter	12 dB/octave above 8 kHz
Low filter	12 dB/octave below 20 Hz
Features	Two-way tape dubbing; separable power and preamp; non-interactive preamp; independent selection of bass and treble turnover frequencies; output relay for speaker protection; infrasonic filter; stability down to 2 ohms

Models also available

NAD-3060 Integrated Amplifier, $425; NAD-3040 Integrated Amplifier, $398; NAD-3045 Integrated Amplifier, $350; NAD-3020 Integrated Amplifier, $198

NAGATRON
Nagatronics Corp.
2280 Grand Ave.
Baldwin, N.Y. 11510

AG-9200Z Coupler

Price	$325
Dimensions	2⅛H x 3W x 6½D
Weight	1 lb. 4 oz. (net)
Inputs	Phono
Response	5 Hz to 1,000 kHz, ±0.5 dB
THD	0.0001% (5 mV)
IM	0.0001% (5 mV)
Overload	300 mV (phono)
Features	Moving-coil preamp; 99.99% chemically pure silver torodial windings in triple mu-metal shielding

NAGRA
Nagra Magnetic Recorders, Inc.
19 W. 44th St.
New York, N.Y. 10036

DSM Portable Power Amplifier

Price	$1,459
Dimensions	9½H x 10½W x 5¼D
Weight	14 lbs.
Power	15 watts (11.75 dBW) continuous into 8 ohms from 60 Hz to 16 kHz at no more than 0.3% THD
Response	60 Hz to 20 kHz, +0, –3 dB

NAIM AUDIO
Audiophile Systems
5750 Rymark Court
Indianapolis, Ind. 46250

NAP-250 Power Amplifier

Price	$2,250
Dimensions	5H x 17W x 12D
Weight	25 lbs. (net)
Power	70 watts (18.5 dBW) continuous into 8 ohms from 20 Hz to 20 kHz at no more than 0.02% THD
IM	0.02% at 0.1 to 70 watts
Response	5 Hz to 40 kHz, ±3 dB
Features	Will not limit slew rate between 5 Hz and 40 kHz; able to drive reactive loads from ±90° at no appreciable change in distortion

PNAG Moving-Coil Preamplifier

Price	$300
Dimensions	2H x 5W x 3D
Weight	3 lbs. (net)
Inputs	Phono
Response	20 Hz to 20 kHz, ±0.5 dB
Output	2V
THD	0.02%
IM	0.02%
Sensitivity	0.1 mV (phono)
Overload	10 mV (phono)

Models also available

NAB-300, $2,250; NAC-32, $1,050; NAC-12, $735; NAP-110 Power Amplifier, $690; NAC-42 Preamplifier, $530

NIKKO
Nikko Audio
320 Oser Ave.
Hauppauge, N.Y. 11787

Alpha 220 Power Amplifier

Price	$500
Dimensions	5 2/5H x 18 9/10W x 13½D
Weight	29 lbs. 4 oz. (net)
Power	120 watts (20.75 dBW) continuous into 8 ohms from 20 Hz to 20 kHz at no more than 0.008% THD
IM	0.008% at 120 watts
Response	5 Hz to 100 kHz, ±0, –.5 dB
S/N	115 dB
Features	High-speed DC servo non-switching amp; power-indicating LEDs; headphone jack

NA-890

Price	$330
Dimensions	5½H x 16½W x 13 3/16D
Weight	24 lbs. 3 oz. (net)
Inputs	Phono; 2 tape; tuner; aux
Power	70 watts (18.5 dBW) continuous into 8 ohms from 20 Hz to 20 kHz at no more than 0.04% THD
IM	0.04% at 70 watts
Response	5 Hz to 40 kHz
Sensitivity	2.3 mV (phono); 150 mV (high level)
Overload	220 mV (phono)
S/N	85 dB (phono); 100 dB (aux)
Phono EQ	30 Hz to 15 kHz, ±0.2 dB
Bass	±10 dB at 70 Hz
Treble	±10 dB at 10 kHz
High filter	–6 dB/octave above 7 kHz
Low filter	–6 dB/octave below 20 Hz
Features	Two-way tape dubbing; power meters with range switch; rack-mountable with optional kit; circuit-breaker protection

Models also available

Alpha VI Power Amplifier, $1,400; Alpha 440, $950; Alpha III, $500; Beta 40, $450; NA-790, $280; Beta 20, $279; NA-690, $250; NA-590, $220

NYTECH AUDIO LTD.
Import Audio Ltd.
13430 Clayton Road
St. Louis, Mo. 63131

CPA-602

Price	$695
Dimensions	3H x 82/5W x 13 4/5D
Weight	11 lbs. (net)
Power	50 watts (17 dBW) continuous into 8 ohms at no more than 0.03% THD
S/N	90 dB
Features	Compact design; very high transient power capability; low external magnetic field

ONKYO
Onkyo U.S.A. Corp.
42-07 20th Ave.
Long Island City, N.Y. 11105

M-5060 Power Amplifier

Price $795.95
Dimensions 6⅞H x 17¾W x 15¾D
Weight 39 lbs. 3 oz. (net)
Power 120 watts (20.75 dBW) continuous into 8 ohms from 20 Hz to 20 kHz at no more than 0.005% THD
IM 0.005% at 120 watts
Response 1 Hz to 100 kHz, +0 dB, −1.5
S/N 94 dB
Features Dual super servo; liner switching

A-7090 Integrated Amplifier

Price $699.95
Dimensions 6⅛H x 16½W x 16 3/16D
Weight 39 lbs. 9 oz. (net)
Inputs 2 phono; 2 tape; tuner; aux
Power 110 watts (20.5 dBW) continuous into 8 ohms from 20 Hz to 20 kHz at no more than 0.018% THD
IM 0.018% at 110 watts
Response 5 Hz to 80 kHz, ±1 dB
Sensitivity 2.5 mV (phono)
Overload 250 mV (phono)
S/N 78 dB (phono); 90 dB (aux)
Phono EQ 20 Hz to 20 kHz, ±0.2 dB
Bass ±10 dB at 100/400 Hz
Treble ±10 dB at 2/10 kHz
High filter 12 dB/octave above 6 kHz
Low filter 12 dB/octave below 15 Hz
Features Two-way tape dubbing; super servo; moving-coil head amp; peak LED

P-3060 Preamplifier

Price $549.95
Dimensions 3 15/16H x 17¾W x 16D
Weight 15 lbs. 12 oz. (net)
Inputs 2 phono; tape; tuner; aux
Response 0.8 Hz to 170 kHz, +0, −3
THD 0.003%
Features Dual super servo; full MC/MM cartridge compatibility

Models also available

M-505 Power Amplifier, $580; A-7070 Integrated Amplifier, $429.95; P-303 Preamplifier, $409.95; A-7040 Integrated Amplifier, $299.95; A-15 Integrated Amplifier, $169.95

OPTONICA
Optonica
10 Keystone Place
Paramus, N.J. 07652

SX-9305 Power Amplifier

Price $850
Dimensions 2⅞H x 16⅞W x 17 11/16D
Weight 33 lbs. (net)
Power 100 watts (20 dBW) continuous into 8 ohms from 20 Hz to 20 kHz at no more than 0.005% THD
IM 0.005% at 100W
Response DC to 100 kHz, +0, −3 dB
S/N 115 dB (A-weighted re rated power)
Features Three-color digitron audio spectrum display; 3-color digitron power output meters; 2-color LED power protection indicator; switchable output load selector

SO-9205 Preamplifier

Price $350
Dimensions 2⅞H x 16⅞W x 15D
Weight 14 lbs. 13 oz. (net)
Inputs 3 phono; 2 tape; tuner; aux
Response 3 Hz to 100 kHz, +0, −1.5 dB
Output 1V
THD 0.003%
IM 0.001%
Sensitivity 3 mV (phono); 150 mV (high level)
Overload 300 mV (phono); 27 mV (phono moving coil)
Phono EQ 20 Hz to 20 kHz, ±0.2 dB
Bass ±10 dB at 100 Hz
Treble ±10 dB at 20 kHz
High filter 6 dB/octave above 8/15 kHz
Low filter 6 dB/octave below 15/30 Hz (infrasonic)
Features Two-way tape dubbing; slimline; built-in MC head amp; 3-position IMP selector and 3-position CAP selector for phono 2

SM-4305 Integrated Amplifier

Price $270
Dimensions 2⅞H x 16⅞W x 15D
Weight 20 lbs. 14 oz. (net)
Inputs Phono; 2 tape; tuner; aux
Power 40 watts (16 dBW) continuous into 8 ohms from 20 Hz to 20 kHz at no more than 0.02% THD
IM 0.005% at 20W
Response 8 Hz to 70 kHz, ±3 dB
Sensitivity 2.9 mV (phono); 150 mV (high level)
Overload 250 mV (phono)
S/N 85 dB (phono) (re 10 mV input); 89 dB (aux) (A-weighted re rated power)
Phono EQ 20 Hz to 20 kHz, ±0.4 dB
Bass ±10 dB at 100 Hz
Treble ±10 dB at 10 kHz
High filter 6 dB/octave above 7 kHz
Low filter 6 dB/octave below 30 Hz
Features Two-way tape dubbing; separable power and preamp; slimline; operation indicators; audio muting; loudness; detent volume control

Models also available

SM-7305 Integrated Amplifier, $440

PHASE LINEAR
Phase Linear Corp.
20181 48th Ave., West
Lynnwood, Wash. 98036

D-500 Series Two Power Amplifier

Price $1,600
Dimensions 7H x 19W x 15D
Weight 65 lbs. (net)
Power 505 watts per channel (27 dBW) continuous into 8 ohms from 20 Hz to 20 kHz at no more than 0.09% THD
IM 0.09% at 505 watts
Response 12 Hz to 40 kHz, ±1 dB
S/N 110 dB (A-weighted re 505 watts)
Features Input sensitivity controls; power switch; LED meters; high/low impedance switch; high-temperature LED; high-frequency limiters

4000 Series Two Preamplifier

Price $775
Dimensions 7H x 19W x 10D
Weight 18 lbs. (net)
Inputs 2 phono; 2 tape; tuner; aux
Response 20 Hz to 20 kHz, ±0.4 dB
Output 2V (rms)
THD 0.04%
IM 0.04%
Sensitivity 2 mV (phono); 200 mV (high level)
Overload 100 mV (phono)
Phono EQ 20 Hz to 20 kHz, ±0.4 dB
Bass ±13 dB at 20 Hz
Treble ±14 dB at 20 kHz
Low filter 24 dB/octave below 15 Hz
Features One-way tape dubbing; two-way tape dubbing; correlator noise reduction; dynamic-range expander; muting

Models also available

700 Series Two Power Amplifier, $1,000; 400 Series Two Power Amplifier, $750; 300 Series Two Power Amplifier, $550

PHILIPS
Philips High Fidelity Laboratories
Interstate 40 & Straw Plains Pike
P.O. Box 6960
Knoxville, Tenn. 37914

AH-380 Power Amplifier

Price $469.95
Dimensions 4H x 19W x 13 3/10D
Power 100 watts (20 dBW) continuous into 8 ohms from 20 Hz to 20 kHz at no more than 0.05% THD
IM 0.01% at 70 watts
Response 0 Hz to 200 kHz, ±3 dB
S/N 100 dB
Features Extended low-end; dB/watt meters; high-speed drivers; quadruple safety protection with self-checking fault indicator

AH-280 Preamplifier

Price $369.95
Dimensions 2½H x 19W x 13 2/10D
Inputs 2 phono; 2 tape; 2 tuner; 2 mike; 2 aux
Response 10 Hz to 200 kHz, ±2 dB
Output 12.5V (at clipping) or re 600 ohms input
THD 0.005%
Sensitivity 2 mV (phono)
Overload 240 mV (phono)
Bass ±10 dB at 250 Hz; ±12 dB at 500 Hz
Treble ±10 dB at 2.5 kHz; ±9 dB at 5 kHz
High filter 12 dB/octave above 8 kHz
Low filter 6 dB/octave below 10 Hz
Features One-way tape dubbing; two-way tape dubbing; direct, switchable and 10-dB outputs; leakage-cancelled low-noise power supply

PICKERING
Pickering & Co., Inc.
101 Sunnyside Blvd.
Plainview, N.Y. 11803

PP-1 Phono Preamplifier

Price $30
Dimensions 2H x 3½W x 4½D
Weight 1 lb. (net)
Inputs Phono
Response 20 Hz to 20 kHz, ±1.5 dB
Output 2.5V
THD 0.25%
IM 0.20%
Sensitivity 6 mV
Overload 35 mV (1 kHz)
Phono EQ 20 Hz to 20 kHz, ±1.5 dB
Low filter 5 dB/octave below 100 Hz

Features Equivalent input noise: 109 dB; interchannel crosstalk better than 60 dB

PIONEER
U.S. Pioneer Electronics Corp.
85 Oxford Drive
Moonachie, N.J. 07074

SPEC-2 Power Amplifier

Price $995
Dimensions 7¼H x 18⅞W x 17½D
Weight 54 lbs. (net)
Power 250 watts (24 dBW) continuous into 8 ohms from 20 Hz to 20 kHz at no more than 0.1% THD
IM 0.1% at 250 watts
Response 5 Hz to 80 kHz, +0, −1 dB
S/N 110 dB (A-weighted re 250 watts)
Features Twin power meters; level controls; toroidal transformer; dual power supply

SPEC-1 Preamplifier

Price $650
Dimensions 7¼H x 18⅞W x 14⅜D
Weight 24 lbs. 10 oz. (net)
Inputs 2 phono; 2 tape; tuner; mike; 2 aux
Response 10 Hz to 70 kHz, ±0.5 dB
Output 2V (rated); 7V (max)
THD 0.03%
Sensitivity 2.5 mV (phono); 150 mV (high level)
Overload 500 mV (phono)
Phono EQ 30 Hz to 15 kHz, ±0.2 dB
Bass ±7.5 dB at 100 Hz (±4.5 dB at 50 Hz) (switchable)
Treble ±7.5 dB at 10 kHz (±4.5 dB at 20 kHz) (switchable)
High filter 12 dB/octave above 8/12 kHz (switchable)
Low filter 12 dB/octave below 15/30 Hz (switchable)
Features Two-way tape dubbing; mike mixing; speaker selection

SA-6800 Integrated Amplifier

Price $300
Dimensions 5 15/16H x 17¾W x 10 11/16D
Weight 18 lbs. (net)
Inputs Phono; 2 tape; tuner; aux
Power 45 watts (16.5 dBW) continuous into 8 ohms from 20 Hz to 20 kHz at no more than 0.03% THD
IM 0.03% at 45 watts
Response 30 Hz to 15 kHz, ±0.3 dB
Overload 180 mV (phono)
Phono EQ 30 Hz to 15 kHz, ±0.3 dB
Bass ±7.5 dB at 100 Hz
Treble ±7.5 dB at 10 kHz
Low filter 6 dB/octave below 15 Hz
Features One-way tape dubbing; Fluroscan power meters; DC power

Models also available

SPEC-4 Power Amplifier, $795; SA-9800 Integrated Amplifier, $750; SA-8800 Integrated Amplifier, $550; SA-7800 Integrated Amplifier, $450; SA-5800 Integrated Amplifier, $200

PLASMATRONICS
Plasmatronics, Inc.
2460 Alamo S.E., Suite 101
Albuquerque, N.M. 87106

Hill Type A Power Amplifier

Price $3,750
Dimensions 12¾H x 17½W x 17½D
Weight 75 lbs. (net)
Power 150 watts (21.75 dBW) continuous into 8 ohms from 10 Hz to 100 kHz at no more than 0.1% THD
IM Negligible
Response 3 Hz to 250 kHz, ±3 dB
S/N 80 dB (unweighted re 200 Watts)
Features All vacuum tube, direct-coupled output (no transformers or capacitors; Class A or Class AB selectable; circuit cancels tube nonlinearities with minimal feedback; TIM virtually nonexistant

P.S. AUDIO
P.S. Audio
1529 C. Stowell Center Plaza
Santa Maria, Calif. 93454

1 Power Amplifier

Price $379.95
Dimensions 7H x 19W x 8D
Weight 25 lbs.
Power 80 watts (19 dBW) continuous into 8 ohms from 2 Hz to 150 kHz at no more than 0.1% THD
IM 0.1% at 80 watts
Response 2 Hz to 150 kHz, ±0.5 dB
S/N 100 dB (IHF A-weighted)
Features Dual-Dash mono power supply (patent pending); linearized amplifier

Models also available

PS III, $237; PS IIa, $120

REVOX
Studer Revox America, Inc.
1425 Elm Hill Pike
Nashville, Tenn. 37210

B-750 Mk. II Integrated

Amplifier

Price $999
Dimensions 6H x 17¾W x 13⅝D
Weight 28 lbs. 10 oz. (net)
Inputs 2 phono (1 optional); 2 tape; tuner; 2 aux (1 changeable to phono #2)
Power 75 watts (18.75 dBW) continuous into 8 ohms from 20 Hz to 20 kHz at no more than 0.05% THD and at any power level
IM 0.04% at any power level
Response 20 Hz to 20 kHz, ±0.5 dB
Sensitivity 1.5 to 7 mV variable (phono)
Overload 30 dB
S/N 82 dB (phono); 90 dB (aux) (A-weighted re 5 V phono input)
Phono EQ 20 Hz to 20 kHz, ±0.5 dB
Bass ±8 dB at 120 Hz
Midrange ±8 dB at 3 kHz
Treble ±8 dB at 8 kHz
High filter 12 dB/octave above 8 kHz
Low filter 12 dB/octave below 50 Hz
Features Two-way tape dubbing; separable power amp and preamp; tone-control defeats; separate power supplies; short and overload protection; turn-on delay for transient suppression.

RG DYNAMICS
RG Dynamics, Inc.
4448 W. Howard St.
Skokie, Ill. 60076

RGD-3W Preamplifier

Price $595
Dimensions 3½H x 18W x 12D
Weight 14 lbs. (net)
Inputs 2 phono; 2 tape; tuner; aux: external processor
Response 20 Hz to 20 kHz, ±0.05 dB; 0.5 Hz to 170 kHz, +3 dB
Output 7V (max at 1 kHz)
THD 0.02% at rated output, 20 Hz to 20 kHz
IM 0.02% at 60 Hz and 7 kHz, mixed 1:1 at rated output
Sensitivity 2 mV (phono); 200 mV (high level)
Overload 200 mV (phono) (1 kHz) (sine wave)
Phono EQ 20 Hz to 20 kHz, ±0.05 dB
Bass ±14 dB at 20 Hz
Midrange None
Treble ±14 dB at 15 kHz
High filter None
Low filter 12 dB/octave below 20 Hz
Features Two-way tape dubbing; each phono input has independently adjustable input capacity for proper matching of any cartridge; 32-step precision volume control; true center "flat" positions on tone controls; selector section provides for any combination of source and/or tape with the selected mode clearly indicated by an LED display; tone-defeat switch (also available as model RGD 3B standard rack panel; $615 model RGD 3BW 17" black panel with walnut ends)

ROGERS
Reference Monitor International, Inc.
2330 C Camino Vida Roble
Carlsbad, Calif. 92008

A-100 Integrated Amplifier

Price $980
Dimensions 4½H x 14¼W x 11¼D
Weight 21 lbs. 8 oz. (net)
Inputs Phono; 2 tape; tuner; aux
Power 55 watts (17.5 dBW) continuous into 8 ohms from 20 Hz to 20 kHz at no more than 0.01% THD
IM 0.01% at 55 watts
Response 20 Hz to 20 kHz, ±1 dB
Sensitivity 1.8 mV (phono)
Overload 150 mV (phono)
S/N 74 dB (phono); 80 dB (aux) (A-weighted re 55 watts)
Phono EQ 20 Hz to 20 kHz, ±1 dB
Bass ±15 dB at 50 Hz
Treble ±15 dB at 10 kHz
High filter Up to 18 dB/octave above 6 or 9 kHz (variable)
Low filter 18 dB/octave below 20 Hz
Features One-way tape dubbing; damping factor: greater than 60 from 20 Hz to 30 kHz

Models also available

A-75 Integrated Amplifier, $750

ROTEL
Rotel of America, Inc.
1055 Saw Mill River Road
Ardsley, N.Y. 10502

RC-5000 Preamplifier

Price	$1,600
Dimensions	9½H x 19½W x 17½D
Weight	33 lbs. (net)
Inputs	3 phono; 3 tape; tuner; 2 mike; 2 aux
Response	3 Hz to 30 kHz, ±0.5 dB
Output	1V
THD	0.003%
IM	0.003%
Sensitivity	2, 4, 8 mV (phono) (switchable); 150 mV (high level)
Overload	500 mV (phono)
Phono EQ	10 Hz to 30 kHz, ±0.2 dB (RIAA)
Bass	±10 dB at 100 Hz
Midrange	±10 dB at 5 kHz
Treble	±10 dB at 10 kHz
High filter	12 dB/octave above 7.4/2.4 kHz (switchable)
Low filter	12 dB/octave below 60/15 Hz (switchable)

Features Three-way tape dubbing; phono 1 adjustable sensitivity, impedance and gain; tape 3 input on front; phono 3 moving-coil cartridge; full 10-band octave equalizer; DC configuration

RA-2040 Integrated Amplifier

Price	$880
Dimensions	5¾H x 19¼W x 16¼D
Weight	48 lbs. 8 oz. (net)
Inputs	3 phono; 2 tape; tuner; aux
Power	120 watts (20.75 dBW) continuous into 8 ohms from 20 Hz to 20 kHz at no more than 0.01% THD
IM	0.01% at 120 watts
Response	DC to 200 kHz, ±3 dB
Sensitivity	2 mV (phono); 150 mV (high level)
Overload	450 mV (phono)
S/N	80 dB (phono); 100 dB (aux) (A-weighted re 120 watts)
Phono EQ	20 Hz to 20 kHz, ±0.2 dB
Bass	±10 dB at 100 Hz
Treble	±10 dB at 10 kHz
High filter	12 dB/octave above 24 kHz
Low filter	12 dB/octave below 15 Hz

Features Two-way tape dubbing; separable power and preamp; DC amp configuration; Class AB; bar-chart LED power indicators; moving-coil head amp; variable additional capacitance and impedance on phono 1

RB-1010 Power Amplifier

Price	$520
Dimensions	5H x 17W x 12D
Weight	30 lbs. (net)
Power	100 watts (20 dBW) continuous into 8 ohms from 20 Hz to 20 kHz at no more than 0.006% THD
IM	0.006%
Response	DC to 100 kHz, ±3 dB
S/N	110 dB (A-weighted re 100 watts)

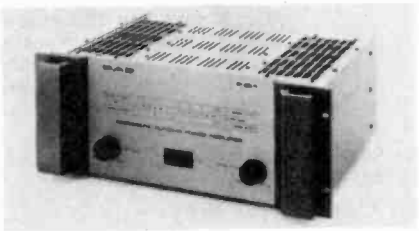
Features DC configuration; non-switching amp; quick response; LED power indicators (In dB); ASO protection circuitry; slimline design

Models also available

RB-5000 Power Amplifier, $2,700; RA-2030 Integrated Amplifier, $680; RB-2000 Power Amplifier, $610; RC-2000 Preamplifier, $530; RA-2020 Integrated Amplifier, $485; RA-1010 Integrated Amplifier, $430; RA-1000 Integrated Amplifier/Equalizer, $360; RC-1010, $350; RB-1000 Power Amplifier, $320; RC-1000 Preamplifier/Equalizer, $320

SAE
Scientific Audio Electronics, Inc.
710 E. Macy St.
Los Angeles, Calif. 90012

X-25A Power Amplifier



Price	$1,200
Dimensions	7H x 19W x 12D
Weight	50 lbs.
Power	250 watts (24 dBW) continuous into 8 ohms from 20 Hz to 20 kHz at no more than 0.02% THD
IM	0.02% at 250 watts
Response	20 Hz to 20 kHz, ±0.2 dB
S/N	110 dB (unweighted re 250 watts)

Features Class A; hypersonic output; fully complementary design

2100 Preamplifier

Price	$1,125
Dimensions	7H x 19W x 7D
Weight	20 lbs.
Inputs	2 phono; 3 tape; tuner; 2 aux
Response	20 Hz to 20 kHz, ±0.25 dB
Output	2.5V
THD	0.005%
IM	0.005%
Sensitivity	1.4 to 2.8 mV (phono); 120 mV (high level)
Overload	100 to 200 mV (phono)
Phono EQ	20 Hz to 20 kHz, ±0.25 dB
Low filter	12/6 dB/octave below 30/100 Hz (switchable)

Features Two-way tape dubbing; external processor; phono gain controls; speaker switching; parametric EQ; stepped volume control

2100L Preamplifier

Price	$975
Dimensions	7H x 19W x 7D
Weight	20 lbs.
Inputs	2 phono; 3 tape; tuner; 2 aux
Response	20 Hz to 20 kHz, ±0.25 dB
Output	2.5V
THD	0.005%
IM	0.005%
Sensitivity	1.4 to 2.8 mV (phono); 120 mV (high level)
Overload	100 to 200 mV (phono)
Phono EQ	20 Hz to 20 kHz, ±0.25 dB
Low filter	12/6 dB/octave below 30/100 Hz (switchable)

Features Two-way tape dubbing; LED level display; external processor; speaker switching; phono gain controls; stepped volume controls

SAE TWO Series

A-14 Integrated Amplifier

Price	$750
Dimensions	5¼H x 17½W X 13 4/5D
Inputs	2 phono; 2 tape; 1 tuner; 2 aux
Power	140 watts (21.5 dBW) continuous into 8 ohms from 20 Hz to 20 kHz at no more than 0.05% THD
IM	0.05% at 140 watts
Response	20 Hz to 20 kHz, ±0.25 dB
Sensitivity	2.5 mV (phono); 150 mV (high level)
Overload	200 mV (phono)
S/N	94 dB (phono); 100 dB (aux) (unweighted re 140 watts)
Phono EQ	50 Hz to 15 kHz, ±0.25 dB
Low filter	6 dB/octave below 30 Hz

Features Two-way tape dubbing; separable power and preamp; parametric equalizer; bar-graph display; moving-coil input

Models also available

2600 Power Amplifier, $1,600; 2401 Power Amplifier, $1,050; X-15A Power Amplifier, N/A; 2300 Power Amplifier, $775; X-10A Power Amplifier, $650; 2200 Power Amplifier, $550; 2900 Preamplifier, $550; 3100 Power Amplifier, $350; 2100L Preamplifier, $800; 3000 Preamplifier, $350; A-7 Integrated Amplifier, $450

SAMSUNG
Samsung Electronics America, Inc.
2707 Butterfield Road, Suite 270
Oak Brook, Ill. 60521

SA-35000 Integrated Amplifier

Price	$239.95
Dimensions	5½H x 16⅛W x 11¾D
Weight	27 lbs. (net)
Inputs	2 phono; 2 tape; tuner; mike; aux
Power	45 watts (16.5 dBW) continuous into 8 ohms from 20 Hz to 20 kHz at no more than 0.05% THD
IM	0.05% at 45 watts
Response	20 Hz to 20 kHz, ±0.5 dB
Sensitivity	2.5 mV (phono); 150 mV (high level)
Overload	200 mV (phono)
S/N	75 dB (phono); 90 dB (aux)
Phono EQ	15 Hz to 50 kHz, ±0.5 dB
Bass	±10 dB at 100 Hz
Treble	±10 dB at 10 kHz
High filter	9 dB/octave above 6 kHz
Low filter	9 dB/octave below 60 Hz

Features Two-way tape dubbing; separable power and preamp; mike-level control; -20 dB muting; stereo normal, reverse, L + R, L, R mode switch; tone defeat; automatic speaker-protection circuit; headphone jack; loudness control; A,B, A+B speaker selection

Models also available

SA-3300 Integrated Amplifier, $149.95

SANSUI
Sansui Electronics Corp.
1250 Valley Brook Ave.
Lyndhurst, N.J. 07071

BA-F1 Power Amplifier

Price	$665
Dimensions	7 3/8H x 19W x 17¾D
Weight	44 lbs. 15 oz. (net)
Power	110 watts (20.5 dBW) continuous into 8 ohms from 10 Hz to 20 kHz at no more than 0.008% THD
IM	0.008% at 110 watts
Response	DC to 600 kHz, +0, -3 dB
S/N	125 dB (A-weighted re 110 watts)

Features Slew rate of 200V/μs; 0.5 μs rise time; Diamond Differential DC drive circuit; dual peak-power meters; detachable rack-mounting handles

CA-F1 Preamplifier

Price $495
Dimensions 2⅜H x 19W x 17⅛D
Weight 13 lbs. 6 oz. (net)
Inputs 2 phono (moving coil, moving magnet); 2 tape; tuner; aux
Response 5 Hz to 600 kHz, +0, −3 dB
Output 1V (nominal); 10V (max)
THD 0.005%
Sensitivity 2.5 mV (MM) 0.1 (MC) (phono); 150 mV (high level)
Overload 350 mV (MM), 24 mV (MC) (phono)
Phono EQ 20 Hz to 20 kHz, ±0.2 dB
Bass ±7 dB at 50 Hz
Treble ±7 dB at 15 kHz
Low filter 6 dB/octave below 16 Hz
Features Slew rate of 50V/μs; 0.6μs rise time; Diamond Differential DC phono equalizer; dual outputs; click-stop tone controls; switchable loudness contour; detachable rack-mounting handles

AU-D5B/AU-D5S Integrated Amplifier

Price $390
Dimensions 5 13/16H x 18 13/16W x 13 21/32D (B); 5 13/16H x 16 15/16W x 12⅞D (S)
Weight 23 lbs. 8 oz. (B); 22 lbs. 6 oz. (S) (net)
Inputs 2 phono; 2 tape; tuner; aux
Power 65 watts (18 dBW) continuous into 8 ohms from 20 Hz to 20 kHz at no more than 0.015% THD
IM 0.015% at 65 watts
Response 0 Hz to 300 kHz, +0, −3 dB
Sensitivity 2.5/0.2 mV (phono); 200 mV (high level)
Overload 250 mV (MM) (phono)
S/N 86 dB (MM) (phono); 110 dB (aux) (A-weighted re 65 watts)
Features One-way tape dubbing; two-way tape dubbing; linear-A output stage with DD/DC driver; MC pre-preamp; 4 tone controls; black (rack-mount) or silver finish; 2-system speaker select

Models also available

AU-X1 Integrated Amplifier, $1,450; AU-D11 Integrated Amplifier, $1,000; AU-D9 Integrated Amplifier, $650; AU-D7B/AU-D7S Integrated Amplifier, $480; AU-417 Integrated Amplifier, $395; A-80 Integrated Amplifier, $320; B-77 Power Amplifier, $300; AU-217-II Integrated Amplifier, $230; C-77 Preamplifier, $200; A-60 Integrated Amplifier, $230; AU-117-II Integrated Amplifier, $190; A-40 Integrated Amplifier, $180

SANYO
Sanyo Electric, Inc.
1200 W. Artesia Blvd.
Compton, Calif. 90220

Plus A-75 Integrated Amplifier

Price $509.95
Dimensions 5¼H x 17⅜W x 10⅝D
Inputs Phono; tape; tuner; mike; aux
Power 75 watts (18.75 dBW) continuous into 4 or 8 ohms from 20 Hz to 20 kHz at no more than 0.009% THD
IM 0.009% at 75 watts
Sensitivity 2.5 mV (phono)
S/N 97 dB (phono); 95 dB (aux) (IHF A-weighted)
Bass ±10 dB at 400 Hz and 2.5 kHz
Treble ±10 dB at 10 kHz
Low filter 12 dB/octave below 15 Hz
Features One-way tape dubbing; two-way tape dubbing; continuously variable loudness compensation; 12-stage LED input and output meters; triple turnover bass and treble controls

Plus P55 Power Amplifier

Price $449.95
Dimensions 3½H x 17⅜W x 10⅝D
Weight 26 lbs. (net)
Power 100 watts (20 dBW) continuous into 4 or 8 ohms from 20 Hz to 20 kHz at no more than 0.009% THD
Response 7 Hz to 100 kHz, +0, −1 dB
S/N 100 dB (IHF A-weighted)
Features Left and right channel LED peak-power indicators with 12-segment display range selector; 200 watts available in mono mode; 150-microvolts slew rate; fluid connection radiator

Models also available

Plus A35 Integrated Amplifier, $349.95; DCA-611 Integrated Amplifier, $319.95; Plus C55 Preamplifier, $299.95; DCA-411 Integrated Amplifier, $229.95; DCA-311 Integrated Amplifier, $209.95

SCOTT
H. H. Scott, Inc.
20 Commerce Way
Woburn, Mass. 01801

480A Integrated Amplifier

Price $500
Dimensions 5¼H x 17W x 14¼D
Weight 29 lbs. (net)
Inputs 2 phono; 2 tape; tuner; aux
Power 85 watts (19.5 dBW) continuous into 8 ohms from 20 Hz to 20 kHz at no more than 0.03% THD
IM 0.03% at 85 watts
Response 10 Hz to 40 kHz, ±1 dB
Sensitivity 2.5 mV (phono 1); 2.5/50 mV (phono 2)
Overload 180/360 mV (phono)
S/N 90 dB (phono); 95 dB (aux)
Phono EQ 20 Hz to 20 kHz, ±0.5 dB
Bass ±10 dB at 100 Hz
Midrange ±6 dB at 1 kHz
Treble ±10 dB at 10 kHz
High filter 12 dB/octave above 8 kHz
Low filter 12 dB/octave below 18 Hz
Features Two-way tape dubbing; 2 independent phono preamps and separate recording and input selector for simultaneous recording and listening from any two sources; volume attenuator; variable impedance and capacitance selection; active Infrasonic and high filters; accessory input switch

Alpha 1 Preamplifier

Price $400
Dimensions 5⅛H x 19W x 12½D
Weight 15 lbs. (net)
Inputs 2 phono; 2 tape; tuner; 2 mike; 2 aux
Response 15 Hz to 35 kHz, ±0.25 dB
Output 2.5V
THD 0.1%
IM 0.1%
Sensitivity 2.5 mV (phono); 9 mV (high level)
Overload 125/450 mV (phono)
Phono EQ 20 Hz to 20 kHz, ±0.25 dB
Bass ±7 dB at 50 Hz (100 Hz position); ±11 dB at 100 Hz (300 Hz position)
Midrange ±7 dB at 1 kHz
Treble ±11 dB at 10 kHz (3 kHz position); ±7 dB at 20 kHz (8 kHz position)
High filter 12 dB/octave above 8 kHz (or 12 kHz)
Low filter 12 dB/octave below 40 Hz (or 80 Hz)
Features Two-way tape dubbing; −20 dB muting; contour and bypass functions; bass, treble, and midrange controls with switchable 4-position turnover points; 4-position filters

Alpha 6 Power Amplifier

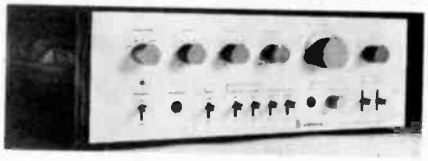
Price $400
Dimensions 5⅛H x 19W x 12½D
Weight 40 lbs. (net)
Power 60 watts (17.75 dBW) continuous into 8 ohms from 20 Hz to 20 kHz at no more than 0.1% THD
IM 0.1% at 60 watts
Response 10 Hz to 50 kHz, ±0.25 dB
S/N 100 dB (A-weighted re 60 watts)
Features Two logarithmic power meters; speaker switching for 2 sets of speakers; separate channel-level controls

Models also available

460A Integrated Amplifier, $430; 440A Integrated Amplifier, $350; 435A Integrated Amplifier, $269.95; 420A Integrated Amplifier, $250; 430A Integrated Amplifier, $224.95; 415A Integrated Amplifier, $229.95; 410A Integrated Amplifier, $199.95; 405A Integrated Amplifier, $150

SHERWOOD
Sherwood
4300 North California Ave.
Chicago, Ill. 60618

S-702CP Integrated Amplifier



Price $325
Dimensions 5½H x 17¼W x 12¾D
Weight 30 lbs. (net)
Inputs 2 phono; 2 tape; tuner; mike; 2 aux
Power 65 watts (18 dBW) continuous into 8 ohms from 20 Hz to 20 kHz at no more than 0.2% THD
IM 0.2% at 60 watts
Response 5 Hz to 110 kHz, ±1 dB
Sensitivity 2.5 mV (phono); 160 mV (high level)
Overload 200 mV (phono)
S/N 80 dB (phono); 95 dB (aux) (IHF A-weighted re input sensitivity)
Phono EQ 30 Hz to 20 kHz, ±0.5 dB
Bass ±14 dB at 50 Hz (detented)
Treble ±12 dB at 15 kHz (detented)
High filter 12 dB/octave above 7 kHz
Low filter 12 dB/octave below 20 Hz
Features Two-way tape dubbing; separable power and preamp; mike mixing; 3 protection circuits; tone defeat; loudness; certified performance (notarized certificate with each unit for exact performance)

Models also available

S-402CP Integrated Amplifier, $225

SHURE
Shure Brothers, Inc.
222 Hartrey Ave.
Evanston, Ill. 60025

SR-105A Power Amplifier

Price $645
Dimensions 7H x 19W x 10⅝D
Weight 34 lbs. 8 oz. (net)
Power 200 watts (23 dBW) continuous into 4 ohms from 20 Hz to 20 kHz at no more than 2% THD
Response 20 Hz to 20 kHz, ±1.5 dB
Features Single-channel unit; transformer-coupled; constant-voltage 70V output also available; rack-mount; optional A105A carrying case, $83.75

Models also available

SR-105B Power Amplifier, $595

SONY
Sony Industries
9 W. 57th St.
New York, N.Y. 10019

TA-E88B Preamplifier

Price $1,300
Dimensions 3⅛H x 18⅞W x 14½D
Weight 20 lbs. (net)
Inputs 2 phono; 2 tape; tuner; aux
Response DC to 500 kHz, +0, –1 dB
Output 1.5V
THD 0.002% at 10V out
IM 0.002% at 10V out
Sensitivity 2.5 mV (phono); 150 mV (high level)
Phono EQ ±0.2 dB (RIAA)
Low filter 12 dB/octave below 15 Hz
Features Dual mono construction; moving-coil capability

TA-N88B Power Amplifier

Price $1,050
Dimensions 3⅛H x 18⅞W x 14½D
Weight 24 lbs. 3 oz. (net)
Power 160 watts (22 dBW) continuous into 8 ohms from 20 Hz to 20 kHz at no more than 0.5% THD
IM 0.1% at 22 watts
Response 5 Hz to 40 kHz, +05, –1 dB
S/N 110 dB (IHF A-weighted)
Features High-efficiency, high-power pulse width modulation circuitry with vertical FET power-switching stage: pulse-locked power supply; 3 stages of amplifier/speaker-protection circuitry

TA-F45 Integrated Amplifier

Price $300
Dimensions 3¼H x 17W x 13¼D
Weight 9 lbs. 7 oz. (net)
Inputs 2 phono; 2 tape; tuner; aux
Power 50 watts (17 dBW) continuous into 8 ohms from 20 Hz to 20 kHz at no more than 0.008% THD
IM 0.008% at 50 watts
Response 5 Hz to 70 kHz +0, –1 dB
Sensitivity 2.5 mV (MM); 0.17 mV (MC); 150 mV (high level) 150 mV (MM); 11 mV (MC)
S/N 96 dB (phono); 104 dB (aux) (A-weighted re 50 watts)
Phono EQ ±0.02 dB (RIAA)
Bass ±10 dB at 100 Hz
Treble ±10 dB at 10 kHz
Low filter 6 dB/octave below 15 Hz
Features Two-way tape dubbing; pulse power supply; heat pipes; DC amp; tone bypass; MC input; cartridge loading

Models also available

TA-P7F Integrated Amplifier, N/A; TA-E86B Preamplifier, $1,300; TA-F70 Integrated Amplifier, $725; TA-N86B Power Amplifier, $600; TA-F55 Integrated Amplifier, $400; TA-F35 Integrated Amplifier, $220; TA-242 Integrated Amplifier, $170

SOUNDCRAFTSMEN
Soundcraftsmen, Inc.
2200 S. Ritchey
Santa Ana, Calif. 92705

EA-5003 Power Amplifier/ Equalizer

Price $949
Dimensions 7H x 19W x 15D
Weight 54 lbs. (net)
Power 250 watts (24 dBW) continuous into 8 ohms from 20 Hz to 20 kHz at no more than 0.05% THD
IM 0.05% at 250 watts
Response 20 Hz to 20 kHz, ±0.25 dB
S/N 105 dB
Features Ten-band stereo; input-level controls; clipping indicators; Class H circuitry

SP-4000 Preamplifier

Price $399
Dimensions 5¼H x 19W x 11D
Weight 20 lbs. (net)
Inputs 2 phono; 2 tape; tuner; aux
Response 5 Hz to 100 kHz, ±0.25 dB
Output 10V (at clipping)
THD 0.01% (1V)
IM 0.01% (1V)
Sensitivity 2.8 mV (phono); 180 mV (high level)
Overload 200 mV (phono)
Phono EQ 20 Hz to 20 kHz, ±0.25 dB
Low filter 12 dB/octave below 15 Hz
Features Two-way tape dubbing; 3 signal-processing loops; headphone amps; rack-mount front panel with walnut end panels

Models also available

MA-5002 Power Amplifier, $799; RA-7501 Power Amplifier, $799; SP-4002 Preamplifier/Equalizer, $699; PA-5001 Power Amplifier, $649; SP-4001 Preamplifier, $549

SOURCE ENGINEERING
Source Engineering
Box 506
Wilmington, Mass. 01887

Specialist Preamplifier

Price $519
Dimensions 2H x 17½W x 12D (rack-mount version, 1¾H)
Weight 6 lbs. (net)
Inputs 2 phono; tape; tuner; aux; mono aux
Response 20 Hz to 70 kHz, ±0.5 dB
Output 1/3.2V (switchable)
THD 0.1%
IM 0.1%
Sensitivity 3.5 mV (phono); 316 mV (high level)
Overload 75 mV (1 kHz); 300 mV (8 kHz) (phono)
Phono EQ 20 Hz to 20 kHz, ±0.5 dB
Bass None
Midrange None
Treble +0, –14 dB at 10 kHz (mono only)
High filter 50 dB/octave above 7/3 kHz (mono only)
Low filter 24 dB/octave below 25/140 Hz (mono only)
Features Mono disc EQ options to suit most LP, 45, and 78 rpm records; stereo volume expander (like VRE); mono noise-reduction system (like Source Noise Suppressor); constant-power balance control; headphone jack (30 mW into 600 ohms each channel); 3 LED display (red, yellow, green) for noise reduction

Models also available

PNS Preamplifier Noise Suppressor, $419

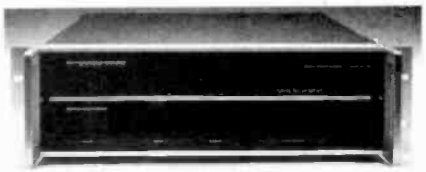
SPATIAL COHERENCE
Spatial, Inc.
1270 Lawrence Station Road
Sunnyvale, Calif. 94086

TVA-1 Preamplifier

Price $1,395
Dimensions 3⅜H x 19W x 14D
Weight 18 lbs. (net)
Inputs 2 phono; 2 tape; 2 aux
Response 10 Hz to 40 kHz, ±0.25 dB
Output 8V (at clipping)
THD 0.04%
Sensitivity 0.6 mV (phono); 0.06 mV (high level)
Overload 200 mV (phono)
Phono EQ 20 Hz to 20 kHz, ±0.25 dB
Bass +12, –0 dB at 20 Hz
Treble ±8 dB at 3.5 kHz (spectrum tilt)
Low filter 6 dB/octave below 20 Hz
Features Two-way tape dubbing; TFET amplifier technology; low-noise; superior imaging

SPECTRAL
Spectral Audio Associates
1014 Morse Ave., Suite 12
Sunnyvale, Calif. 94086

CPU-One Power Amplifier



Price $3,950
Dimensions 6¾H x 19½W x 22D
Weight 87 lbs. (net)
Power 75 watts (18.75 dBW) continuous into 8 ohms from DC to 10 MHz
Response DC to 10 MHz
Features Pure Class A operation; microprocessor control; FET hybrid front end; power MOSFET output status; output and speed displays; 2,000V/µs slew rate in strapped configuration

MS-One Series 3 Preamplifier

Price $2,495
Dimensions 2½H x 21W x 11D
Weight 34 lbs. (net)
Response 0.3 Hz to 3 MHz, ±1.5 dB
Output 12V
Overload 300 mV (phono) at 1 kHz
Phono EQ 20 Hz to 20 kHz, ±0.05 dB
Features Gain: 75 dB; slew rate: 400V/µs; dual mono construction; includes MS-100 AC sequencer

SPECTRO ACOUSTICS
Spectro Acoustics, Inc.
3200 George Washington Way
Richland, Wash. 99352

500-SR Amplifier

Price $800
Dimensions 7H x 19W x 12D
Weight 40 lbs.
Power 250 watts (23.75 dBW) continuous into 8 ohms from 20 Hz to 20 kHz at no more than 0.15% THD
IM 0.15% at 250 watts
Response 10 Hz to 40 kHz, ±1 dB
S/N 107 dB (A-weighted re 250 watts)
Features Gain controls; LED power-level readouts; modular construction; Class AB circuitry; standard EIA rack-mount; optional solid oak or walnut end panels

217R Preamplifier

Price $300
Dimensions 3½H x 19W x 7½D
Weight 10 lbs.
Inputs 2 phono; 2 tape; tuner; aux
Response 5 Hz to 100 kHz, ±1 dB
Output 2V
THD 0.05%
IM 0.0075%
Sensitivity 3/10 mV (phono) (switchable); 300 mV (high level)
Overload 100/300 mV (phono) (switchable)

Phono EQ	20 Hz to 20 kHz, ±0.5 dB
Low filter	18 dB/octave below 10 Hz (–3 dB at 20 Hz)

Features Straight-line design (no tone controls); two-way tape dubbing; capacitive and resistive cartridge loading; IC circuitry in phono and output stages; optional solid oak or walnut end panels; headphone jack

Models also available

500R Power Amplifier, $700; 200SR Power Amplifier, $600; 200R Power Amplifier, $500

STANTON
Stanton Magnetics, Inc.
Terminal Drive
Plainview, N.Y. 11803

310 Preamplifier

Price	$240
Dimensions	2¼H x 5W x 7¼D
Weight	5 lbs. 12 oz. (net)
Inputs	Phono
Response	20 Hz to 20 kHz, ±0.5 dB
Output	+20 dBM max
THD	0.05% at 20 dBM

STAX
Stax Koygo, Inc.
940 E. Dominguez St.
Carson, Calif. 90746

CAY Preamplifier

Price	$1,650
Dimensions	3½H x 17W x 15D
Weight	13 lbs. (net)
Inputs	Phono; tape; tuner; mike; aux
Response	20 Hz to 20 kHz, ±0.3 dB
THD	0.003% (3V)
Sensitivity	1.2 mV (phono)
Features	Semi-supershunt power circuit

DA-80 Power Amplifier

Price	$1,300
Dimensions	16½H x 17½W x 6½D
Weight	43 lbs.
Power	45 watts (16.5 dBW) continuous into 8 ohms from DC to 25 kHz at no more than 0.0018% THD
IM	0.01% at 0.25 watt
Response	3 Hz to 500 kHz, ±3 dB
S/N	100 dB (A-weighted re 10 mV)
Features	Pure Class A DC design

STRELIOFF
Strelioff Systems Designs
5305 Tendilla Ave.
Woodland Hills, Calif. 91364

DC-1 200/200 Power Amplifier

Price	$2,500
Dimensions	7H x 19W x 12D
Weight	55 lbs. (net)
Power	200 watts (23 dBW) continuous into 8 ohms from 20 Hz to 20 kHz at no more than 1% THD
IM	1% at 200 watts
Response	10 Hz to 25 kHz, ±1 dB
S/N	98 dB (unweighted re 200 watts)

Features Class AB circuit design employs only discrete devices; 220 joule power supply; fully modular chassis design to facilitate servicing and circuit updating; no VI limiting

PA-1/RS-1 Preamplifier

Price	$1,250 (PA-1); $1,000 (RS-1)
Dimensions	3½H x 19W x 13¾D (PA-1); 3½H x 19W x 9½D (RS-1)
Weight	25 lbs. (net) (both units)
Inputs	2 phono; 2 tape; tuner; 2 aux; signal-processor loop
Response	10 Hz to 50 kHz, ±1 dB
Output	20V (rms min. driving 600 ohms)
THD	0.10% (10V rms driving 600 ohms)
IM	0.10% (10V rms driving 600 ohms)
Sensitivity	0.5 mV (phono); 50 mV (high level)
Overload	250 mV at 1 kHz (phono)
Phono EQ	20 Hz to 20 kHz, ±1 dB

Features Two-way tape dubbing; two fully independent phono sections with variable impedence matching; variable attenuation for tuner and aux inputs; design employs only discrete devices on modular plug-in circuit boards to facilitate servicing and updating; all AC functions isolated within RS-1 chassis

Models also available

DC 1 400/400 Power Amplifier, $3,500; DC 1 100/100 Power Amplifier, $2,000; DC-1 50/50 Power Amplifier, $750

STUDIO
Professional Systems
Engineering, Inc.
2021 W. County Road
St. Paul, Minn. 55113

Studio II Power Amplifier

Price	$650
Dimensions	3 ½H x 18W x 9½D
Weight	33 lbs. (net)
Power	80 watts (19 dBW) continuous into 8 ohms from 15 Hz to 25 kHz at no more than 0.02% THD
Response	4 Hz to 30 kHz, ±1 dB
S/N	100 dB (unweighted re 80 watts)
Features	Bridging switch; rack-mount optional

TEAC
Teac Corp.
7733 Telegraph Road
Montebello, Calif. 90640

MA-7 Power Amplifier

Price	$830
Power	150 watts (21.75 dBW) continuous into 8 ohms from 10 Hz to 20 kHz at no more than 0.03% THD
IM	0.003% at 150 watts
Response	DC to 300 kHz, ±3 dB
S/N	121 dBV (A-weighted re 150 watts)

Features Two mono amps on one chassis; slew rate of +170V; output bandwidth, 350 kHz (IHF: –3 dB); low drift output, ±50 mV or less; equivalent input noise of –121 dBV (at short input, A-weighted); input sensitivity of 150W re 1V

PA-7 Preamplifier

Price	$750
Inputs	2 phono; 2 tape; tuner; mike; aux
Response	0.5 Hz to 100 kHz, ±1 dB
Output	1V (18V max)
THD	0.03%
IM	0.003%
Sensitivity	200V (MM); 0.54 mV (MC)
Overload	270 mV at 1 kHz (phono)
Phono EQ	5 Hz to 20 kHz, ±1 dB
Bass	±10 dB at 200 Hz
Treble	±10 dB at 10 kHz
High filter	18 dB/octave (Infrasonic)

Features Two-way tape dubbing; S/N: –159 dBV; direct-coupled servo amp; slew rate: ± 100V/μs

A-9 Integrated Amplifier

Price	N/A
Dimensions	16⅛H x 3 9/16W x 13 1/16D
Weight	16 lbs. 8 oz. (net)
Inputs	Phono; tape; tuner; aux
Power	60 watts(17.75 dBW) continuous into 8 ohms from 20 Hz to 80 kHz at no more than 0.1% THD
Response	20 Hz to 20 kHz, ±0.5 dB
S/N	83 dB (phono); 91 dB (aux) (IHF-weighted)
Bass	±10 dB at 100 Hz
Treble	±10 dB at 10 kHz

TECHNICS
Panasonic Co.
One Panasonic Way
Secaucus, N.J. 07094

SU-V8 Integrated Amplifier

Price	$580
Dimensions	6 1/32H x 16 15/16W x 15 9/16D
Weight	33 lbs. 1 oz. (net)
Inputs	Phono; tape; tuner; aux
Power	110 watts (20.5 dBW) continuous into 8 ohms from 20 Hz to 20 kHz at no more than 0.005% THD
IM	0.005% at 110 watts
Response	DC to 150 kHz, –3 dB
Sensitivity	2.5 mV (phono); 150 mV (high level)
Overload	160 mV (phono)
S/N	88 dB (phono); 106 dB (aux)
Phono EQ	±0.3 dB
Bass	±7 dB at 106 Hz
Treble	±10 dB at 20 kHz
High filter	6 dB/octave above 7 kHz
Low filter	12 dB/octave below 20 Hz

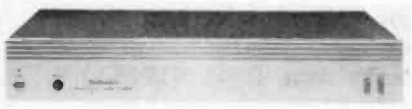
Features Two-way tape dubbing; super bass control; +10, –0 dB at 30 kHz; turnovers at 75 and 150 Hz; audio muting: –20 dB

SU-9070 Preamplifier

Price	$460
Dimensions	4H x 19W x 14½D
Weight	15 lbs. 14 oz. (net)
Inputs	3 phono (1 moving-coil, 2 moving-magnet); 3 tape; tuner; aux
Response	DC to 100 kHz, +0, –1 dB; 20 Hz to 20 kHz, +0, –0.1 dB
Output	1V (20V max)
THD	0.004% (up to 20V)
Sensitivity	2.5 mV (MM), 60 microvolts (MC) (phono); 150 mV (high level)
Overload	380 mV (MM); 9 mV (MC) (phono)
Phono EQ	20 Hz to 20 kHz, ±0.2 dB
Low filter	12 dB/octave below 20 Hz

Features Three-way tape dubbing; DC circuitry; direct input for magnetic cartridge; 6-gang volume control; rack-mountable

SE-A808



Price	$210
Dimensions	2 15/16H x 16 15/16W x 11 1/32D
Weight	15 lbs. (net)
Power	40 watts (16 dBW) continuous into 8 ohms from 20 Hz to 20 kHz at no more than 0.02% THD
IM	0.02% at 40 watts

Response 5 Hz to 60 kHz, –1 dB
S/N 108 dB (IHF A-weighted re 40 watts)
Features Mono operation possible at 90 watts (19.5 dBW)

Models also available

SE-9060 Power Amplifier, $460; SU-V6 Integrated Amplifier, $420; SE-C01 Micro Power Amplifier, $380; SU-C03 Integrated Amplifier, $340; SU-V4 Integrated Amp, $320; SU-CO1 Micro Preamplifier, $270; SU-V2, $210; SU-21, $160

THRESHOLD
Threshold Corp.
1832 Tribute Road, #E
Sacramento, Calif. 95815

Stasis 1 Power Amplifier

Price $3,500
Dimensions 8 47/64H x 19W x 17 27/64D
Weight 96 lbs. (net)
Power 200 watts (23 dBW) continuous into 8 ohms from 20 Hz to 20 kHz
IM 0.1% at 200 watts
Response 20 Hz to 20 kHz, ±0 dB
S/N 106 dB (unweighted re 200 watts)
Features Signal amplifier operated under conditions at constant voltage/constant current, and without overall loop feedback

SL-10 Preamplifier

Price $1,090
Dimensions 2⅝H x 19W x 8D
Weight 18 lbs. 4 oz. (net)
Inputs Phono; tape; tuner; aux
Response DC to 500 kHz, +0, –3 dB
Output 5V
THD 0.006%
IM 0.008%
Overload 320 mV (phono)
Phono EQ 20 Hz to 20 kHz, ±0.5 dB
Features Cascode/Class A design; internal MC preamp; external power supply

Models also available

Stasis 2 Power Amplifier, $2,450; Stasis 3 Power Amplifier, $1,675; CAS-2 Power Amplifier, $990

TOSHIBA
Toshiba America, Inc.
82 Totowa Road
Wayne, N.J. 07470

SC-665 Power Amplifier

Price $349.95
Dimensions 3 4/5H x 16½W x 13 9/10D
Weight 18 lbs. 11 oz. (net)
Power 65 watts (18 dBW) continuous into 8 ohms from 20 Hz to 20 kHz at no more than 0.02% THD
IM 0.02% at 65 watts
Response DC to 80 kHz, ±1 dB
S/N 117 dB (IHF A-weighted)
Features Peak-reading meters; speaker switching for 2 pairs; DC amplifier; infrasonic filter

SB-445 Integrated Amplifier

Price $259.95
Dimensions 5 4/5H x 16 3/5W x 10 1/10D
Weight 14 lbs. 8 oz. (net)
Inputs Phono; tape; tuner; mike; aux
Power 45 watts (16.5 dBW) continuous into 8 ohms from 20 Hz to 20 kHz at no more than 0.06% THD
IM 0.06% at 45 watts
Response 5 Hz to 100 kHz, ±3 dB
Sensitivity 2.5 mV (phono); 150 mV (high level)
Overload 150 mV (phono)
S/N 70 dB (phono); 90 dB (aux)
Phono EQ 20 Hz to 15 kHz, ±0.5 dB
Bass ±10 dB at 68 Hz
Treble ±10 dB at 20 kHz
Features Peak LED output indicators; audio fade in/out control

SY-665 Preamplifier

Price $199.95
Dimensions 3 4/5H x 16½W x 9 3/10D
Weight 7 lbs. 8 oz. (net)
Inputs 0.12 mV (phono); 150 mV (tape); 150 mV (tuner); 1 mV (mike); 150 mV (aux)
Response 7 Hz to 40 kHz, ±1 dB
Output 1V
THD 0.01%
IM 0.01% (1V)
Sensitivity 2.5 mV (phono); 150 mV (high level)
Overload 250 mV (phono)
Phono EQ 20 Hz to 20 kHz, ±0.3 dB
Bass ±10 dB at 100 Hz
Treble ±8 dB at 10 kHz
Low filter 6 dB/octave below 16 Hz
Features One-way tape dubbing; built-in MC head amp

Models also available

M-15 Power Amplifier, $339.95; C-15 Preamplifier, $299.95; SC-335 Power Amplifier, $179.95; SY-335 Preamplifier, $119.95

VA SYSTEMS
VA Systems, Inc.
Box 315
Savage, Minn. 55378

Model Two Power Amplifier

Price $1,325
Dimensions 7H x 19W x 14D
Weight 46 lbs. (net)
Power 200 watts (23 dBW) continuous into 8 ohms from 20 Hz to 100 kHz
S/N 88 dB
Features Remote power switch; DC relay speaker protection; forced-air cooling; capable of driving low-impedance speakers

Model Six Preamplifier

Price $625
Dimensions 3½H x 17W x 9D
Weight 9 lbs. (net)
Inputs Phono; tuner; reserve 1; reserve 2; 2 tape monitors
Response 20 Hz to 100 kHz, ±0.5 dB
Output 12V (peak)
Phono EQ 20 Hz to 20 kHz, ±0.5 dB
Features Fully buffered inputs and outputs; digitally controlled switching; switchable phono input matching

Models also available

Model Three Power Amplifier, $975; Model Seven Preamplifier, $950

YAMAHA
Yamaha International Corp.
6600 Orangethorpe
Buena Park, Calif. 90620

M-2 Power Amplifier

Price $1,200
Dimensions 7 3/16H x 17⅛W x 14¼D
Weight 50 lbs. (net)
Power 240 watts (23.75 dBW) continuous into 8 ohms from 20 Hz to 20 kHz at no more than 0.005% THD
IM 0.002% at 120 watts
Response 10 Hz to 100 kHz, ±0.5 dB
S/N 123 dB (A-weighted re 240 watts)
Features DC amplifier; peak-level meters; level control

C-2a Preamplifier

Price $950
Dimensions 2⅞H x 17W x 12 9/16D
Weight 17 lbs. (net)
Inputs 2 phono (1 moving-coil, 1 moving magnet); 2 tape; tuner; aux
Response 10 Hz to 100 kHz, ±0.2 dB
Output 2V
THD 0.003%
IM 0.003%
Sensitivity 2.5 mV (phono); 150 mV (high level)
Overload 350 mV (phono)
Phono EQ 20 Hz to 20 kHz, ±0.2 dB
Bass ±10 dB at 20 Hz
Treble ±10 dB at 50 kHz
Low filter 12 dB/octave below 15 Hz
Features Two-way tape dubbing; moving-coil cartridge head amp; selectable cartridge load, resistance and capacitance

M-4 Power Amplifier

Price $650
Dimensions 5¾H x 17⅛W x 14¾D
Weight 41 lbs. (net)
Power 120 watts (20.75 dBW) continuous into 8 ohms from 20 Hz to 20 kHz at no more than 0.005% THD
IM 0.002% at 60 watts
Response 10 Hz to 100 kHz, ±0.5 dB
S/N 118 dB (A-weighted re 120 watts)
Features Peak-level meters; level control; DC amp

A-1 Integrated Amplifier

Price $630
Dimensions 4⅝H x 17⅛W x 15D
Weight 35 lbs. (net)
Inputs 2 phono; tape; tuner; aux
Power 70 watts (18.5 dBW) continuous into 8 ohms from 20 Hz to 20 kHz at no more than 0.05% THD
IM 0.003% at 35 watts
Response 20 Hz to 20 kHz, +0, –2 dB
Sensitivity 2.5 mV (phono); 200 mV (high level)
Overload 230 mV (phono)
S/N 97 dB (phono); 105 dB (aux)
Phono EQ 20 Hz to 20 kHz, ±0.2 dB
Bass ±10 dB at 20 Hz
Treble ±10 dB at 20 kHz
Features Built-in head amplifier

Models also available

C-4 Preamplifier, $550; C-6 Preamplifier, $450; A-550 Integrated Amplifier, $250; A-450 Integrated Amplifier, $195

Car Stereo Survival Kit

by Bennett Evans

A complete guide to key information on buying a car stereo system

The hardest part of buying car sound equipment today is knowing where to begin. Three primary considerations—how much to spend, where to spend it, and what to spend it on—are so interrelated that you can't answer any one of them until you've at least partially answered the others.

For example, a $40 radio will give you "music" in your car, but a $1,000 system will give you *music*—reproduction that, in some cases, will rival that of a home stereo system. Other than the basic economic considerations of how much you can afford, what factors are important in deciding how much to spend?

First, ask yourself how fussy you are about quality sound. If you prefer playing the new digital and direct-to-disc releases on your home system, it's doubtful that a $40 car system will satisfy you. Next, consider your car; the quieter it is, the better a good sound system will sound in it (and the worse a poor system will sound). Also, how long do you plan to keep your car? Remember that it's unlikely you'll recover the full cost of your system when you trade it in. Bascially, don't put a $1,000 system in a car if you expect to sell or trade it in six months unless there are special reasons for doing so. (Some people remove the original radio and speakers that come with the car and then, prior to reselling the car, reinstall them. But custom installations often leave speaker cutouts and mounting holes that are difficult to cover up.)

The bigger the car, the more room you'll have for car stereo equipment and the more choices you'll have as to where and how you'll mount the speakers. Installing a separate component amp, preamp, tuner, and tape deck makes more sense in a van than in a sports car or subcompact.

Where you live and the kind of music you listen to make a difference, too. If you often park your car on city streets, you might pick less ostentatious equipment—components that are less likely to be noticed by potential thieves. If you're selective about what music you hear (particularly if your tastes run to jazz, classical, or non-top-forty rock), you'll find tape almost a necessity. And if you plan to rely mainly on FM, pick a tuner that has good multipath rejection (especially in cities) and/or can clearly receive a greater number of stations (in the country, as a rule). The list is long, and you yourself can add additional requirements.

What kind of dealer can give you the most for your money? "Most" is relative: The most of *what*? More equipment? Better service? Better installations? Lower prices usually mean less service, since "free" services come out of a dealer's profits. But be sure to factor in other system costs such as installation. For example, the end cost might be less from a dealer who charges for both equipment and installation than from one who includes the cost of "free installation" in the price of the equipment.

Also consider buying components where the price is lowest, and then

hiring an installer yourself. This approach, however, has at least one potential pitfall—divided responsibility. If your system doesn't function correctly, your dealer may blame the installer; the installer will blame the equipment. Even in a clear case of equipment failure, where the dealer agrees to exchange the defective piece, most installers will charge for removing and reinstalling the gear.

Car-sound equipment can be found almost anywhere: car-sound specialists, hi-fi stores, department stores, mail-order houses, car dealerships, garages, even a few small-town general stores. Each will offer something slightly different.

Car-sound specialists usually provide the most comprehensive service: They'll install your equipment and service it themselves once it goes out of warranty. Hi-fi stores offer a similar service, though they usually farm out the installation to servicemen they trust. Larger department stores *may* have service departments; most often, however, installations are made through outside contractors.

What car dealerships lack in expertise with electronics, they often make up for in experience with installation in their own makes of cars. And buying a dealer-installed system may enable you to finance your car stereo as part of the total cost of the car.

Mail-order companies are a special case. They make good sense if car stereo dealers are not easily accessible. The obvious disadvantage of mail order is that you'll be buying merchandise without actually seeing it. As you might expect, mail-order operations run the full gamut of quality. One that is respected nationally is Crutchfield of Charlottesville, Va.

Whatever your preference, it's the quality of the particular dealer that really matters. Query friends and the people with whom you work—where their car systems were bought and if they're satisfied. The same holds true for installers. Be sure you see samples of their handiwork before assigning the job.

Buying all your equipment in one place isn't as simple as it sounds. Few outlets carry all brands and models, so you may find yourself torn between the dealer of your choice and the equipment you want most. In general, the quality of equipment is commensurate with the quality of the dealer who carries it. If a dealer you trust doesn't carry the exact brand and model you want but has something demonstrably equivalent, give his suggestion serious thought. But beware of the dealer who refers to all of the brands he does not carry as "junk."

Beware of the dealer who refers to brands he doesn't carry as "junk."

Selecting any system requires homework. The contents of this magazine, especially the buying guide sections, should give you a good idea of what's available. Further information may always be obtained from manufacturers. Also, ask around to see which brands have good reputations among your fellow audiophiles—especially those in your area who are dealing with the same road and reception conditions that you will be. Determine which features you need. Then put your system together on paper.

Budgeting car hi-fi is somewhat harder than budgeting hi-fi for the home, even though the range of system costs is narrower. First, there's the psychological tendency to balk at spending, say, $400 or more for a box no larger than a hardcover book. Also, it's generally more practical to purchase your entire car stereo system at one time—something that is not always the case with home systems.

You must also remember that the length of time you will own the car determines the useful life of the system—for you, at least. The formula I've always followed is to amortize the cost of the system: multiply the amount you're willing to spend per year by the number of years you expect to own the car (e.g., $150 per year for 5 years totals $750). Use this as

a rough budgeting figure and select a system accordingly.

The variety of designs and features available seems endless. Let's examine them in greater detail. First, a look at the pros and cons of your basic choice: radio and/or tape.

Radio and tape basically perform two different jobs. Radio lets you hear whatever's on the air in your vicinity. That includes not only music but also sports, weather, and traffic conditions (rather important, when you're on the road), and occasionally drama. And even if all you listen to is music, radio gives you something tape cannot—surprises. Turn on the radio, and you may hear music you've never heard before. On the other hand, tape lets you hear what you want to hear at any given moment. And that often includes music that you couldn't find on the air after a year's listening.

Each format has its disadvantages. Radio fades out as you get further from the station or drive through hilly terrain. It is also subject to interference from multipath and your car's ignition system. With tape you must take the time to record properly in the first place. In addition tape must be handled carefully to make sure it doesn't get baked in the car by heat from the sun.

Each format has disadvantages: radio fades; tape requires a great deal of care.

Most of you will probably prefer a single in-dash unit—all controls are usually within easy reach of the driver and it is less subject to theft than other types of units. The design is a good starting point for those who plan to add an external amp or equalizer at a later date. Other design options range from under-dash tape-only units ($50 to $250) to component systems with separate amplifier, preamp, tape deck, and tuner, which can add up to thousands of dollars.

Under-dash radio units are basically designed to supplement existing radios (that's why they offer FM but not AM). They tend to have low power (approximately 5 watts per channel), offer few convenience features, and reduce leg room under the dash (especially with cars that have bench seats). Because under-dash tape players are easier to steal than in-dash units, you should take certain precautions. Use a slide-in mount, and remember to lock the unit in the trunk or take it with you when you leave the car. Slide mounts also enable you to move a unit from car to car if you own more cars than sound systems.

Components are another story. They offer premium specs and greater flexibility: You can buy them one at a time and mix brands within a system. But component systems take up more room and are even more obvious and tempting targets for theft than under-dash units. (A few companies offer component mounting racks, which are designed for quick removal, so that you can keep your system out of sight.) And because controls are spread out over several components rather than centralized, it takes longer for you to learn to operate the system by "feel." On the whole, components make more sense in vehicles like vans, where there's more room.

In-dash radio/cassette combinations come in several varieties. The most common (and least expensive) is the type with a low-powered built-in amplifier (usually 2 to 5 watts per channel). Higher-powered (and higher-priced) units usually have their power amplifier sections on separate chassis, which can be placed anywhere out of the way and where there's sufficient air circulation for proper cooling. The third variety essentially gives you a tuner section that generates only preamp-level signals. These can be used with external power amps—not necessarily from the same manufacturer.

If the main unit has a built-in electronic crossover, you can biamplify your system, feeding woofers and tweeters from their own individual amplifiers. This has certain advantages. You can start with a low-powered

amplifier, and then, by adding a higher-powered amp for the woofers, expand to a biamped system later. You can also take the higher-powered amp with you when you sell your car; it won't be missed because the system will still operate.

Of all the buttons, knobs, and switches on car stereo units, certainly those devoted to station-finding are the most basic and prevalent. Push-button tuning is the oldest design. You simply tune to your favorite station, pull out and push in one of the buttons, and from then on, pushing that button will recall that particular station at any time in the future.

The number of stations you can preset varies widely. In the old, AM-only days it was simple: You had five buttons for five AM stations. With the advent of FM, some sets split the function of the buttons between AM and FM, usually two of one and three of another. Today, many sets allow selection of up to five AM or FM stations depending upon which band has been independently selected. The newest versions bring in one AM *and* one FM station (according to the band selected). Most such radios have five buttons; at least one company offers a seven-button, fourteen-station model.

Presets are fine when you're driving within a limited area where you are familiar with the stations. For those instances where you're unfamiliar with what's available on the air, many of today's models offer two auto-tuning modes. In "scan," as it is commonly called, the set tunes to the next strong station, locks onto it for about five seconds, and then advances to the next station, unless you stop its action. In the "seek" mode, the radio tunes to the next strong station and stays there until you tell it to move on. But some seek-and-scan modes require such strong signals to stop the search that many stations that would provide fine mono reception are missed. So the receiver should also have some form of manual tuning.

Finding a station is one thing; accurately tuning it in is another.

Conventional "analog" dials are the most prevalent, although digital readouts are becoming increasingly common. Digital readouts have the distinct advantage of legibly displaying the station frequency without taking up much of the limited panel space. Other than that, their convenience depends upon the way you think of stations you're trying to tune in. If you think along the lines of "99.5," you'll probably prefer a digital dial; if your reference method is "just above the middle" or "around 100," you may prefer the analog type.

The issue of legibility is being addressed in new approaches to analog dials. On some, the numbers on the FM scale are larger than those on AM. Other models include dials that change colors when you switch between AM and FM, and circular dials which make pointer position easier to gauge at a glance.

To keep digital displays sufficiently bright for daytime visibility but not too bright at night, many units incorporate manual or automatic display dimmers. Some connect to the car's dashboard light dimmer. Most digital displays double as digital clocks and, in fact, always show the time unless you're tuning in a station or push a frequency display switch of some type. (Clocks too have become more sophisticated: some display elapsed time; at least one has an alarm clock function.)

Finding a station is one thing; accurately tuning it in is another. Among the variety of techniques in use today is digital frequency synthesis. Often it tunes only to those frequencies on which stations actually operate, skipping all the frequencies in between. FM stations are allocated frequencies no closer than 200 kHz apart. In theory, then, with a digitally-synthesized tuner you should only be able to mistune a station by such a large amount—200 kHz—that you would readily notice it. However, it is possible for the synthesizing circuitry to be inaccurately set, causing stations *always* to be mistuned.

Features you must have determine the difficulty of getting your dream system.

Many radios also have quartz-lock systems to maintain tuning accuracy; others have that old standby, AFC (automatic frequency control), to prevent drift (and, sometimes, to correct very mild mistuning). An AFC defeat switch is useful if you want to select a weak station that is located near a much stronger one. Other useful controls for selecting or suppressing weak stations are local/distant switches, stereo/mono or blend switches, and circuits that manually or automatically change the receiver's characteristics to match signal strength. Local/distant switches change the tuner's sensitivity to prevent overload.

As you may know, it requires a significantly stronger signal to provide clear stereo reception than is necessary for mono. And while most stereo FM radios automatically switch to mono when the signal drops to a certain level, a stereo/mono switch is a useful option. You can switch to mono to clean up signals that are strong but distorted by multipath, or a signal whose strength is fluctuating and causing reception to alternate rapidly between stereo and mono.

Most noise and distortion on stereo FM signals occur at high frequencies. Blending the left and right channels at those frequencies can clean up the signal without completely destroying the stereo illusion. Manual hi-blend switches are still hard to find in car stereo equipment, although automatic hi-blend circuits, which gradually reduce separation at all frequencies as a signal strength is lost, are increasingly common. (Clarion, Craig, Kenwood, Marantz, and Sanyo are among those offering them. Marantz's system also adjusts the receiver's selectivity to match the signal strength. And Sanyo has a circuit that gradually cuts high-frequency response in addition to its separation-reduction circuit.)

Most of these circuits are designed to help you follow a weakening signal right down to the last microvolt. If you prefer the choice of switching over to clean signal when your current station starts deteriorating, consider some of the features found in Kenwood's new car stereo line. One function switches automatically to a stronger signal when the current station grows unlistenable; another turns on the tape deck. (Both features are defeatable.)

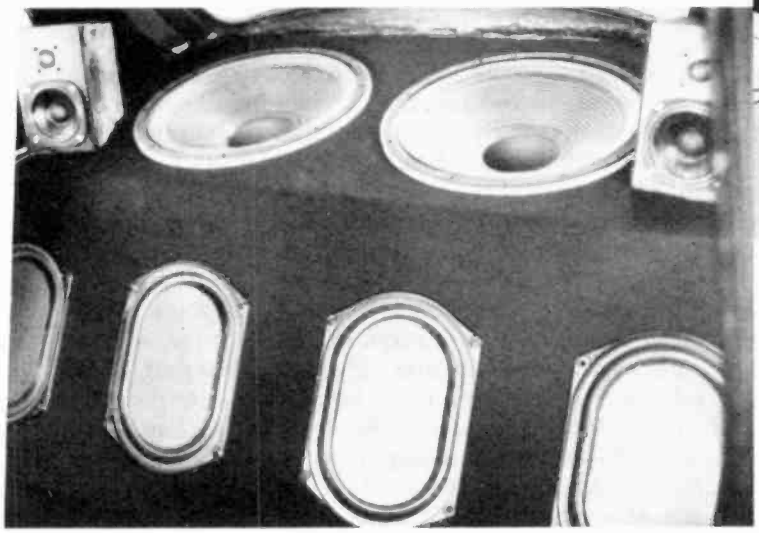
Muting blanks out the roar of interstation FM noise. But it also suppresses weak signals. Switchable FM muting gives you the option of listening to these stations while controlling a problem that plagues car receivers: When a station's signal strength is just at the point that triggers the muting circuit, minor signal variations (which always occur on the road) often cause the unit to rapidly and continually mute and unmute. This results in reception going on and off, which is extremely irritating. One innovative solution is offered by Sanyo's new Soft Muting Circuit (SMC), which reduces volume gradually when the signal falls below the muting level rather than cutting it off sharply.

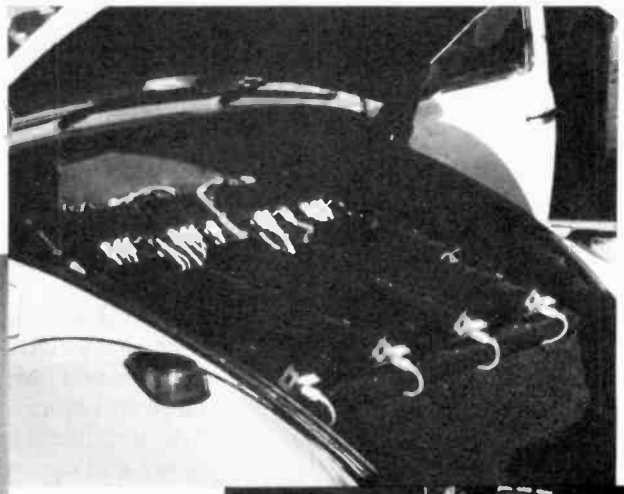
Most systems switch from radio to tape as soon as you push a tape in and vice versa when the tape is ejected either manually or automatically. The easier it is to load the tape, the better, especially if you're driving and trying to load at the same time. Check this point before buying. Some decks have tapered openings that funnel the tape into the slot. A few even have powered systems that pull the tape out of your hands and load it for you.

Leaving the deck in "play" when the power is off can create flat spots on the pinch roller, which in turn leads to increased wow and flutter. So make sure your deck ejects the tape automatically when power is shut off or issues a warning signal to remind you to manually remove the tape.

Some decks also eject the tape at the end of a side; others rewind and repeat the side automatically. Many switch automatically into play when you release the fast-forward or rewind buttons. Others have locking fast-forward and rewind, eliminating the need to keep your finger on the

Photos by Audiomobile





Ear-shattering excellence is the only way to describe this 1,000-watt super system. Audiomobile (of Santa Anta, Calif.) assembled this system with a tuner/tape deck, preamp control unit, 10-band equalizer, and 4 electronic crossovers; used two 100-watt-per-channel amps, six 50-watt amps, and two 20-watt amps; and rounded out the sound with two 15" subwoofers, four 8" x 13" Planar midbasses, and four corner satellites, each incorporating a 4½" midrange and 1" tweeter. The amps are mounted under the front hood. The gear costs $8,000; the labor, $8,000 more.

buttons. And several of the newer decks have music-sensor systems which can fast-wind to the beginning of a particular song. Auto-reverse is another handy (and increasingly common) convenience. It's almost always accompanied by a manual reverse switch and a tape direction indicator.

As an increasing number of home stereo owners look toward car stereo as an extension of their home systems, car component manufacturers are recognizing the fact that most cassettes—whether recorded commercially or at home—have been recorded with Dolby noise reduction. Consequently, car decks with Dolby circuitry for tape (and even FM) are becoming increasingly common.

Further evidence of the recognition of increasing sophistication of car stereo buyers is reflected in the tape-equalization switches found on many decks. The most common option is CrO_2. So-called "metal" positions are essentially meaningless on playback-only decks, such as car units, since the equalization is identical to that required for CrO_2 tapes.

Among the general-purpose controls you'll find are those for "tone." These vary from a simple hi-cut switch to built-in multi-band equalizers. Loudness controls sometimes have defeat switches; volume controls occasionally have attenuator switches that let you flick the volume down (about 20 dB) fast.

Many of the other general-purpose extras you'll find are of varying import. Antenna switch terminals are handy if you get a power antenna; they raise and lower the antenna as you turn the radio on and off. Indicator lights show which switches (Dolby, FM/AM, etc.) are in use. Output level displays with flashing LEDs give you information you rarely need—and in a form that can take your eyes off the road.

It should be obvious that you can buy just about anything you want in car stereo. The reason for spelling out so many features is to help you judge those you require, those you wouldn't mind getting, and those you just don't want to pay for.

The difficulty of obtaining your dream system increases directly with

the number of features you feel you *must* have. For one thing, few systems will have precisely the combination of features that you want. Odds are even lower that a single dealer in your area will have that complete system. And beware of those manufacturers that trade off performance against features: You may have a choice of either high-end units with fair performance and a slew of features, or high-end models with better performance but fewer gadgets. To our ears, the best general selection criteria are 10 to 20 *clear* watts (per two speakers).

The existence of component systems suggests that not all extras are necessarily built into the main stereo unit. Boosters and equalizers are favorite add-ons. Equalizers are usually incorporated into boosters, but more and more are designed with preamp-level input and output for use with amplifiers instead. Those with three to five bands are rather simple to set and can serve as "super" tone controls. Seven-to-ten band equalizers, though, are better used to precisely set your system's frequency response and then left alone.

If your speaker system includes rear as well as front drivers, you'll need a fader to control relative volume levels. Faders are available as accessories if your set doesn't have one. With rear speakers you might also want to use a delay system (such as those made by Alpine, Sound Concepts, and Fujitsu Ten). And if electrical interference is a problem, numerous suppressors are available. Buy one from a specialist who guarantees his installation, though. Most suppressors alleviate specific types of interference and are less effective against other types.

Placement problems make selecting a speaker for your car quite difficult.

Getting the right speaker for your home stereo system is sometimes a problem; selecting the best one for your *car* is rarely simple. The bottleneck is placement. A car is not a larger, easily defined space. It's a tiny, oddly shaped area where speaker boxes (if any) must be small and where, most often, the interior surfaces serve as speaker baffles.

Your options for installation, in most cases, are limited to the dashboard, the "kick panels" below the dash, the doors, and the parcel shelf or rear deck above the trunk. Rear-deck installations are popular because many cars come with rear-deck openings precut for speakers, and because trunks enclose large areas that make good low-bass enclosures.

But there are several sonic disadvantages to this arrangement. First, the sound comes from behind the listeners, which many find unnatural (though I'm constantly surprised at how many do not) and, if the car is full, it also means that speakers playing loud enough to be clearly heard from the front seat will be practically deafening to rear-seat passengers whose ears are only a few inches away from the speakers.

It's less of a disadvantage than it might appear that most rear-deck speakers fire straight up rather than directly into the listening space. The angled glass of the rear window usually makes a good sound reflector; the main problem is a frequency notch at around 700 Hz, which is caused by cancellations between reflected waves and those spilling directly from the speakers. Speakers such as Advent's EQ-1 have built-in amplifiers with a 700-Hz boost to compensate for this. But the rear deck also happens to be one of the few places in a car where there is room to mount one of the excellent mini-speaker boxes now available, and those speakers can be aimed forward to eliminate the 700-Hz notch.

On the negative side, such installations may reduce rear visibility in some cases, and if improperly fastened, speakers may tear loose in a crash and injure passengers. Theft is more probable: Sitting up on brackets, mini-speakers are all too visible and easier therefore to steal.

Whichever speakers you select, make sure that grilles and mounting hardware are non-reflective; chrome trim (or even glossy black) may reflect in the rear window and distract you.

The most common mounts in the front of any car or van are in the dash and in the doors. Don't expect much bass from in-dash speakers. Dash space is limited, so speakers that fit that space are usually small—often 4″ by 10″ (oval) or 3½″ (round). And most dashboards are open at the bottom, which allows some rear low frequencies to emerge and cancel the corresponding front waves. (Mini speakers slung below the dash avoid these problems, but few cars can spare the leg room.) Dash-mounted speakers do have one definite advantage: They place the sound in front, where most listeners (myself included) feel it definitely belongs.

Speakers installed in the kick panels below the dash are also out front. But when mounted that low, much of their high-frequency output is directed toward, and lost in, the soft, sound-absorbent surfaces of the car's rugs and upholstery, the listeners' clothes, and the listeners' legs. And there may be no hollows behind the kick panels to act as enclosures: On many cars the kick panels lead directly into the fender wells, the engine compartment, or other environments unsuitable for unprotected speakers. Mounted in the doors, speakers may be in front of the listener, abreast of him, or even slightly behind him. Speaker location may be primarily dependent upon such factors as the location of window-crank and door-lock mechanisms—often invisible until the installer dismantles the door.

Do doors make good enclosures? Yes and no. On the one hand, they offer fairly large spaces (relative to the size of the car) that will give fairly decent bass. On the other hand, one side of that "enclosure" is tinny sheet-metal—no prize, acoustically. And speakers can be easily damaged by rain that leaks down the window channels or by the repeated jolts when doors are slammed. Essentially, there's no perfect place for speakers. Decide where your speakers will fit before buying them.

Single cone drivers can't do full justice to high and low frequencies.

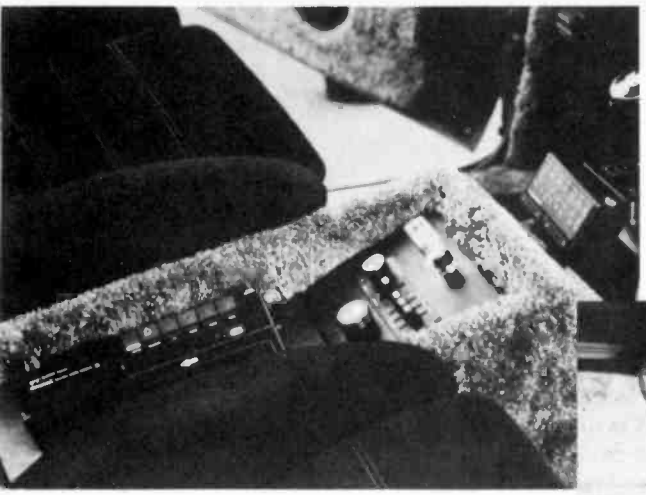
You'll have several formats to choose from: mini-speakers, "surface-mounts," and "flush-mounts." All designs, especially the flush-mounts, are available in a variety of sizes.

The most common size for rear-deck mounting is 6″ x 9″, though some newer cars are designed for smaller sizes (4″ x 10″, 6″ x 8″, or 5″ x 7″). Many 6″ x 9″ speakers are actually round speakers of other sizes in 6″ x 9″ mounting plates—some designers feel standing waves in oval speakers cause response irregularities. In-dash speakers are usually 3½″ round or 4″ x 6″ oval types. In-door speakers are usually round, from 3½″ to 6¼″ in diameter, with 5″ and 5¼″ models most common.

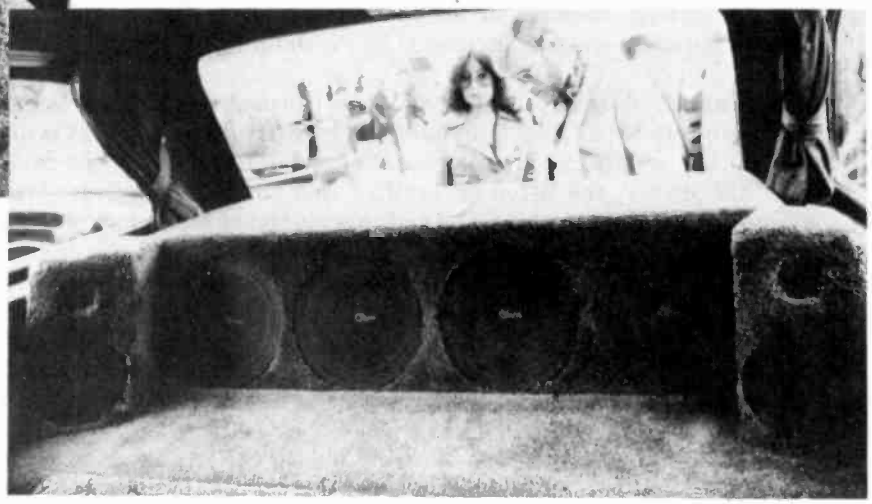
In general, the bigger the speaker, the better its bass. But the bigger the speaker, the harder a job you'll have finding a mounting spot for it. Magnet weights affect bass but not exactly the way the ads might lead you to believe. Your ear is the final judge—often a speaker with a 10-oz. magnet has more bass than a similar 20-oz. model.

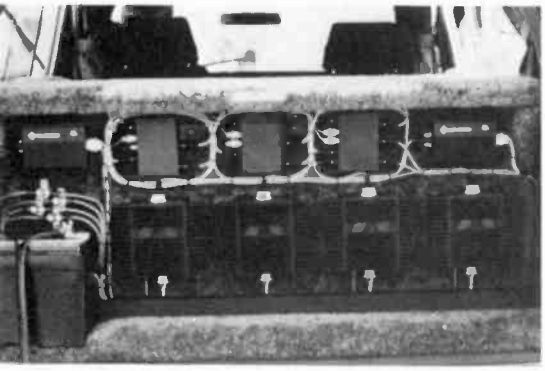
Today hardly anyone buys a single speaker for his or her car. Most people buy speaker *systems*—a woofer, tweeter, and possibly a few drivers in between. Why is the single-cone wide-range driver in disfavor? The reasons are the same as those for home systems. No single speaker can do full justice to the high and low frequencies that music demands.

The most popular hi-fi car speakers are the two-way, woofer/tweeter systems. However, three-way systems with added midrange drivers and other speakers up to five-way are available. Theoretically, each additional driver improves response slightly. In practice, it's the law of diminishing returns—the audible improvement of each succeeding speaker is slightly less than that offered by the preceding speaker. Some designers feel that additional drivers are more likely to interfere with the sound than to improve it, a major reason for the popularity of two-way systems in a car.



Photos by Audiomobile





A real cosmic "kicker" system is what the customer ordered, and what custom Dreams 'N' Musical Themes, Ltd., in West Los Angeles installed in this International Harvester 4 x 4 wagon. It is triamplified (four 100-watt and two 20-watt speakers) with front and rear biamplified satellites (7" midrange, 1" tweeters) and a subwoofer array of four 10" subwoofers in acoustic suspension. Other elements include a separate tuner and tape deck, with a backup tuner/tape deck in the dash, a preamp control, and three electronic crossovers. Cost: about $6,000 for the parts; $5,000 for the labor.

Most multidriver systems are coaxial, with tweeters (plus midrange and supertweeter drivers, if any) mounted in front of the woofers to enable the owner to mount the system in a single hole. "Separate"—individually-mounted drivers—make your installations more complex. Mounting individual speakers too far apart will audibly split the sound. Some manufacturers recommend putting the woofers in the back of the car and the tweeters in the front; but think twice—would you set up your home hi-fi set that way? This setup makes sense only if the crossover between the drivers occurs at a low frequency—preferably at 100 Hz. In reality, the only speakers to cross over at 100 Hz are subwoofers, which are often sold with their own amplifiers and electronic crossovers.

Sometimes your woofer and your tweeter can be individually powered; if both your stereo system's electronics and the speakers provide for "biamping," you can drive the woofers and tweeters separately. (Separates can always be biamped, of course.) This reduces distortion somewhat and ensures that the woofer, which requires more power, can receive it; the tweeter, on the other hand, gets only the more moderate power it requires. Again, this subtle improvement is as expensive as that of home systems.

Whichever speaker and amp you select, make sure the speaker has the proper power rating. Don't overcautiously select a speaker with a much higher power-handling capacity than you need—you'll gain nothing from the extra expense.

What I've omitted from this shopping guide is perhaps the most important of all: mounting considerations. Not all in-dash slots are the same size; not all "same size" speakers require the same mounting depth. And no matter how great the package—performance, price, and features—tempts you, it's all useless if it won't fit your car.

If knowing where to begin is difficult, knowing where to end is easy: at that point when your system is purchased, installed, and you're cruising off with a song in your ear. **HF**

Car Stereo Systems

Radios, Tape Players & Radio/Tape Players

AFCO
AFCO Electronics
471 Roland Way
P.O. Box 2648
Oakland, Calif. 94621

IDC-750A Radio/Tape Player

Price	$199
Dimensions	1 13/16H x 7W x 5⅛D
Mounting	In dash
Format	Cassette
Auto reverse	Yes
Fast-forward	Yes (locking)
Rewind	Yes (locking)
Controls	Fader; balance
S/N ratio	40 dB (with N/R)
Output	6 watts (7.75 dBW) per channel continuous into 4 ohms from 50 Hz to 10 kHz with no more than 10% THD
RADIO	
Format	Stereo
FM loc/DX	Yes
FM AFC	Yes
Stereo/mono	No
Digital read.	No
Features	Dial-light dimmer; antenna switch; also available in black

ALPINE
Alpine Electronics of America, Inc.
3102 Kashiwa St.
Torrance, Calif. 90505

7307 Radio/Tape Player

Price	$379.95
Dimensions	2H x 7⅛W x 5¾D
Mounting	In dash
Format	Cassette
Auto reverse	No
Fast-forward	Yes
Rewind	Yes
Eject	Power-off; end-of-tape
Controls	Bass; treble
N/R system	Dolby (FM and tape)
Play. resp.	40 Hz to 16 kHz, ±3 dB
S/N ratio	65 dB (with N/R)/55 dB (without N/R)
S/N ref. lvl.	–10 dB
Output	Preamp; external amp required
RADIO	
Format	Stereo
FM select.	75 dB
FM loc/DX	Yes (auto)
FM AFC	Yes (auto)
Stereo/mono	Yes (auto)
Digital read.	No
Pushbuttons	Up to 4 AM/4 FM
Features	Metal/CrO_2 switch; music sensor; feather-touch controls; cassette glide

Models also available
7206 Radio/Tape Player, $399.95; 7123 Radio/Tape Player, $319.95; 7217 Radio/Tape Player, $219.95

AMERICAN AUDIO
American Audio Corp.
337 Allerton Ave.
S. San Francisco, Calif. 94080

3705 Munich

Price	$219.95
Dimensions	1¾H x 7⅛W x 5⅜D
Mounting	In dash
Format	Cassette
Auto reverse	Yes
Fast-forward	Yes (locking)
Rewind	Yes (locking)
Controls	Balance; fader
RADIO	
Format	Mono; stereo; AM/FM
Tuning	Manual
FM loc/DX	No
FM AFC	Yes
Stereo/mono	Yes
Digital read.	No
Pushbuttons	2 AM/3 FM
Features	Auto reverse; 5-station preset tuning; loudness contour; adjustable shafts and short chassis

505 St. Louis Tape Player

Price	$37.95
Dimensions	2H x 4½W x 6⅛D
Mounting	Under dash
Format	Cassette
Auto reverse	No
Fast-forward	Yes
Controls	Balance
RADIO	
Features	Auto stop; slide-control volume, tone, and balance

Models also available
4605 Los Angeles Radio/Tape Player, $199.95; 3600 Vienna Radio/Tape Player, $157.95; 2405 Chicago Radio/Tape Player, $146.95; 2255 Atlanta Radio/Tape Player, $146.95; 2500 Zurich Radio/Tape Player, $136.95; 1200 Athens Radio/Tape Player, $125.95; 1655 Dallas Radio/Tape Player, $104.95; 1705 Seattle Radio/Tape Player, $94.95; 1100 Florence Radio/Tape Player, $94.95

AUDIOVOX
Audiovox Corp.
150 Marcus Blvd.
Hauppauge, N.Y. 11787

Hi-Comp HCC-1025 Radio/Tape Player

Price	$380
Dimensions	2¾H x 7W x 5½D
Mounting	In dash
Format	Cassette
Auto reverse	Yes
Fast-forward	Yes
Rewind	Yes
Controls	Bass; treble
N/R system	Dolby
Play. resp.	40 Hz to 15 kHz, ±3 dB
S/N ratio	59 dB (with/NR)/50 dB (without/NR)
Output	20 watts (13 dBW) per channel continuous into 4 ohms with no more than 10% THD
RADIO	
Format	Stereo
FM sens.	3 mV for 50 dB quieting
FM select.	70 dB
FM loc/DX	Yes
FM AFC	Yes
Stereo/mono	Yes
Digital read.	No
Features	Tape EQ switch; FM muting

Models also available
ID-685 Radio/Tape Player, $260; HI-Comp HCC-550 Radio/Tape Player, $220; Audiovox ID-605A Radio/Tape Player, $120; ID-950 Radio/Tape Player, N/A

AUTOTEK
Autotek Electronics Corp.
1447 N. Carolan Ave.
Burlingame, Calif. 94010

CSR-3200 Radio/Tape Player

Price	$319.95
Dimensions	2H x 7⅛W x 5¼D
Mounting	In dash
Format	Cassette
Auto reverse	Yes
Fast-forward	Yes
Rewind	Yes
Eject	Manual
Controls	Bass; treble
N/R system	Dolby
Play. resp.	28 Hz to 16 kHz, ±3 dB
S/N ratio	51 dB (with N/R)/45 dB (without N/R)
S/N ref. lvl.	1 kHz (–10 dB)

THD	1.8%
THD ref. lvl.	333 (1 kHz, –10 dB)
Output	5 watts (7 dBW) per channel continuous into 4 ohms at 1 kHz with no more than 10% THD
RADIO	
Format	Stereo
FM sens.	5 microvolts for 50 dB quieting
FM select.	70 dB
Tuning	Manual
FM loc/DX	Yes
FM AFC	Yes
Stereo/mono	Yes
Digital read.	No
Pushbuttons	5 AM/5 FM
Features	Sendust head; preamp out with level adjust (100 mV to 1V); locking tape controls; shaft adjust range: 5⅛" to 6 5/16"; FM bandwidth: 22 Hz to 14 kHz, –6 dB (75 μs pre-emphasis); auto replay from fast wind modes

Models also available

CSR-2000 Radio/Tape Player, $189.95; CSR-1200 Radio/Tape Player, $139.95; CSR-1100 Radio/Tape Player, $109.95

B.I.C.
B.I.C./Avnet
South Service Road
Westbury, N.Y. 11590

C-1 Two-Speed Tape Player

Price	$199.95
Dimensions	2½H x 6½W x 8D
Mounting	Under dash
Format	Cassette
Auto reverse	No
Fast-forward	Yes
Rewind	Yes
Controls	Bass; treble; balance; loudness
N/R system	Dolby
Play. resp.	35 Hz to 15 kHz, ±3 dB at 1⅞; 20 Hz to 20 kHz, ±3 dB at 3¾ (playback only) (70 μs)
S/N ratio	58 dB (with NR)/58dB (without NR) (playback only)
S/N ref. lvl.	0 dB
THD	1.1%
THD ref. lvl.	1W (1 kHz)
Output	12 watts (10.75 dBW) per channel continuous into 4 ohms from 50 Hz to 16 kHz with no more than 1.5% THD
RADIO	
Features	Two speeds (1⅞ ips, 3¾ ips); preamp out (2 RCA jacks, 1.4V rms into 600 ohms); 70 μs/120 μs switch

BLAUPUNKT
Blaupunkt Div.
Robert Bosch Sales Corp.
2800 S. 25th Ave.
Broadview, Ill. 60153

Essen-CRUS Radio/Tape Player

Price	$250.60
Dimensions	1¾H x 7W x 5¼D
Mounting	In dash
Format	Cassette
Auto reverse	No
Fast-forward	Yes
Rewind	Yes
Eject	Automatic; power-off; end-of-tape
Controls	Variable tone
N/R system	ASU
S/N ratio	30 dB (without N/R)
S/N ref. lvl.	1μV
THD	2%
THD ref. lvl.	1W
Output	9 watts (9.5 dBW) per channel continuous into 4 ohms with no more than 2% THD
RADIO	
Format	Stereo
FM sens.	5 dBf/5 dBf for 30 dB quieting
Tuning	Manual
FM loc/DX	No
FM AFC	Yes
Stereo/mono	Yes
Digital read.	No
Pushbuttons	AM/FM
Features	DIN-sized chassis and nosepiece; stereo/mono switch

Models also available

Berlin 8000, $1,400; Berlin Electronic Radio/Tape Player, $1,239.60; CR-3001, $630; CR-5001 Radio/Tape Player, $450; CR-2001 Radio/Tape Player, $350.90; CR-4000 Radio/Tape Player, $344; CR-2000D Radio/Tape Player, $303.40; CR-4095 Radio/Tape Player, $238.50; CR-2000 Radio/Tape Player, $275.10; Frankfort US Stereo Radio, $218; CR-8000 Radio/Tape Player, $192.40; Frankfurt US Mono Radio, $128.40

BOMAN
Boman Industries
9300 Hall Road
Downey, Calif. 90241

Mach 90 Radio/Tape Player

Price	$349.95
Dimensions	3H x 7⅛W x 5⅛D
Mounting	In dash
Format	Cassette
Auto reverse	Yes
Fast-forward	Yes
Rewind	Yes
Controls	Treble
N/R system	None
Output	18 watts (12.5 dBW) per channel continuous into 4 or 8 ohms from 40 Hz to 13 kHz with no more than 1.0% THD
RADIO	
Format	FM Stereo
FM loc/DX	Yes
FM AFC	No
Stereo/mono	No
Digital read.	Frequency and clock
Pushbuttons	5 AM/5 FM
Features	Graphic EQ; frequency scan/seek control

BM-1312 Tape Player

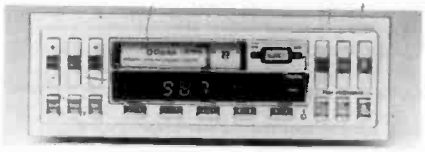
Price	$39.95
Dimensions	1⅞H x 4¾W x 6⅛D
Mounting	Under dash
Format	Cassette
Auto reverse	No
Fast-forward	Yes
Rewind	No
Controls	Treble; balance
N/R system	None
S/N ratio	35 dB (without NR)
S/N ref. lvl.	SRL
Output	4 watts (6 dBW) per channel continuous into 4 or 8 ohms from 150 Hz to 10 kHz with no more than 10% THD
RADIO	
Features	Side-loading

Models also available

Mach 80 Radio/Tape Player, $329.95; Mach 50 Radio/Tape Player, $199.95; Mach 40 Radio/Tape Player, $139.95; SS-1490 Radio/Tape Player, $199.95; SS-1280 Radio/Tape Player, $199.95; SS-1500 Radio/Tape Player, $179.95; SS-1470 Radio/Tape Player, $179.95; SS-1457 Radio/Tape Player, $179.95; SS-1300 Radio/Tape Player, $179.95; SS-1260 Radio/Tape Player, $179.95; SS-1450 Radio/Tape Player, $119.95; SS-1240 Radio/Tape Player, $119.95; XDI-80-RC, $119.95; SS-1430 Radio/Tape Player, $79.95; SS-1220 Radio/Tape Player, $79.95; AP-16 Tape Player, $29.95

CLARION
Clarion Corp. of America
5500 Rosecrans Ave.
Lawndale, Calif. 90260

PE-959A Radio/Tape Player



Price	$899.95
Dimensions	2H x 7W x 5¾D
Mounting	In dash
Format	Cassette
Auto reverse	Yes
Fast-forward	Yes (locking)
Rewind	Yes (locking)
Controls	Bass; treble; balance; fader
N/R system	Dolby
Play. resp.	40 Hz to 20 kHz, ±3 dB
S/N ratio	63 dB (with N/R)/59 dB (without N/R)
RADIO	
Format	Mono; stereo; AM/FM
Tuning	Scan; seek
FM loc/DX	Yes
FM AFC	Yes
Stereo/mono	Yes
Digital read.	Frequency; clock
Pushbuttons	5 AM/5 FM
Features	Programable; makes up to 10 station changes automatically by time; totally electronic controls; mount in any car

PE-838A Tape Player

Price	$231.50
Dimensions	2H x 7½W x 6½D
Mounting	Under dash
Format	Cassette
Auto reverse	Yes
Fast-forward	Yes
Rewind	Yes
Controls	Bass; treble
N/R system	Dolby B
Play. resp.	40 Hz to 15 kHz, ±3 dB

S/N ratio	58 dB (with N/R)/50 dB (without N/R)
Output	10 watts (10 dBW) per channel continuous into 4 or 8 ohms from 40 Hz to 15 kHz with no more than 1%
Features	Wow and flutter: 0.12% (WRMS); 4-way balance controls; 2/4 speaker switch

Models also available

PE-956B Radio/Tape Player, $499.95; PE-958A Radio/Tape Player, $459.95; PE-751C Radio/Tape Player, $389.95; PE-758B Radio/Tape Player, $272.50; PE-765A Radio/Tape Player, $272.50; PE-550A Radio/Tape Player, $254.95; PE-684A Radio/Tape Player, $258.95; PE-554A Radio/Tape Player, $148.95; PE-453A Tape Player, $126.95

COBRA
Dynascan Corp.
6460 West Cortland
Chicago, Ill. 60635

221 GTL Radio/Tape Player

Price	$329.95
Dimensions	2¾H x 7¼W x 5¼D
Mounting	In dash
Format	Cassette
Auto reverse	Yes
Fast-forward	Yes
Rewind	Yes
Controls	Bass; treble; balance; fader
S/N ratio	40 dB (without NR)
S/N ref. lvl.	1V input with 400 Hz at 100% modulation
THD	10%
Output	12 watts (10.75 dBW) per channel continuous into 4 ohms
RADIO	
Format	Stereo
FM sens.	1.9 μV for 50 dB quieting
FM select.	60 dB
FM loc/DX	Yes
FM AFC	Yes
Stereo/mono	Yes
Digital read.	Frequency; clock
Pushbuttons	5 AM/5 FM

Models also available

222 GTL Radio/Tape Player, $299.95; 99 GTL Radio/Tape Player, $199.95; 98 GTL Radio/Tape Player, $189.95; 105 GTL Radio/Tape Player, $179.95; 118 GTL Radio/Tape Player, $179.95; 97 GTL Radio/Tape Player, $149.95; 94 GTL Radio/Tape Player, $99.95; 93 GTL Radio/Tape Player, $99.95

COLT
Colt Communications, Inc.
6252 W. Oaktan St.
Morton Grove, Ill. 60053

911T Radio/Tape Player

Price	$149.95
Dimensions	2¾H x 7⅛W x 5⅛D
Mounting	In dash
Format	Cassette
Auto reverse	No
Fast-forward	Yes
Rewind	Yes
S/N ratio	50 dB (with NR)
Output	45 watts (16.5 dBW) per channel continuous into 4 ohms from 100 Hz to 10 kHz with no more than 5% THD
RADIO	
Format	Stereo
FM sens.	5 μV for 50 dB quieting
FM select.	50 dB (400 Hz)
FM loc/DX	Yes
FM AFC	Yes (auto)
Stereo/mono	Yes
Digital read.	Frequency; clock
Pushbuttons	No

Models also available

411T Radio/Tape Player, $149.95; 611T Radio/Tape Player, $179.95; 311T Radio/Tape Player, $99.95

CONCORD
Concord Electronics
6025 Yolanda Ave.
Tarzana, Calif. 91356

HPL-515 Radio/Tape Player

Price	$429.95
Dimensions	2H x 7⅛W x 6½D
Mounting	In dash
Format	Cassette
Auto reverse	No
Fast-forward	Yes (locking)
Rewind	Yes (locking)
Eject	Automatic; power-off; end-of-tape
Controls	Bass; treble
N/R system	Dolby
Play. resp.	30 Hz to 20 kHz, ±2 dB
S/N ratio	56 dB (with N/R)/48 dB (without N/R)
S/N ref. lvl.	Rated output
THD	0.8%
THD ref. lvl.	Rated output
Output	12 watts (10.75 dBW) per channel continuous into 4 ohms from 30 Hz to 20 kHz with no more than 0.8% THD (both channels driven)
RADIO	
Format	Stereo
FM sens.	2 microvolts for 50 dB quieting
FM select.	70 dB
FM loc/DX	Yes (auto)
FM AFC	Yes
Stereo/mono	Yes (hi-blend)
Digital read.	Yes
Pushbuttons	None
Features	X-cut senalloy head; quartz-controlled clock; automatic frequency readout when tuning discrete bass and treble equalizers for 40 Hz/80 Hz/120 Hz and 1 kHz/3.5 kHz/10 kHz; biamp switch activates 2.5 kHz crossover; biamp level control (front to rear); auto eject at tape end and power off; DC servomotor; variable speed control ±5%; loudness contour; 70 and 120-μsec tape EQ; FM muting; 4 preamp outputs

Models also available

HPL-510 Radio/Tape Player, $399.95; HPL-506 Tuner/Tape Player, $369.95; HPL-505 Tuner/Tape Player, $329.95; HPL-115 Radio/Tape Player, $339.95; HPL-112 Radio/Tape Player, $279.95; HPL-101 Radio/Tape Player, $239.95

CRAIG
Craig Corp.
921 W. Artesia Blvd.
Compton, Calif. 90220

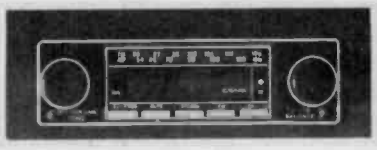
T-687 Radio/Tape Player/Amplifier

Price	$599.95
Dimensions	2¾H x 7¼W x 5D (tuner/deck); 1⅝H x 7½W x 6D (amp)
Mounting	In dash
Format	Cassette
Auto reverse	Yes
Fast-forward	Yes
Rewind	Yes
Controls	Bass; treble; fader; loudness
N/R system	Dolby and Dolby FM
Play. resp.	40 Hz to 15 kHz, ±3 dB
S/N ratio	60 dB (with NR)/55 dB (without NR)
S/N ref. lvl.	200 nWb/m
THD ref. lvl.	12.5W at 1 kHz (4 channels driven)
Output	12.5 watts (11 dBW) per channel continuous into 4 ohms from 35 Hz to 20 kHz with no more than 1% THD
RADIO	
Format	Stereo
FM sens.	25.2 dBf for 50 dB quieting
FM select.	60 dB
Tuning	Electronic
FM loc/DX	Yes
FM AFC	Yes
Stereo/mono	Yes
Digital read.	Frequency; clock
Pushbuttons	5 AM/5 FM
Features	EQ for regular and metal tape; Sendust head

T-103 Tape Player

Price	$119.95
Dimensions	1⅞H x 5½W x 5 9/16D
Mounting	Under dash
Format	Cassette
Auto reverse	Yes
Fast-forward	Yes (locking)
Rewind	Yes
Eject	Pushbutton
Controls	Bass; treble
Play. resp.	45 Hz to 10 kHz, ±3 dB
S/N ratio	50 dB (without NR)
S/N ref. lvl.	200 nWb/m
Output	4 watts (6 dBW) per channel continuous into 4 ohms from 150 Hz to 20 kHz with no more than 5% THD

T-621 Radio/Tape Player



Price	$99.95
Dimensions	1¾H x 6 5/16W x 4 13/16D
Mounting	In dash
Format	Cassette
Auto reverse	No
Fast-forward	Yes
Controls	Balance
Play. resp.	50 Hz to 14 kHz, +0, –6 dB
S/N ratio	45 dB (without N/R)
S/N ref. lvl.	200 nWb/m
THD	1%
THD ref. lvl.	65 dBf
Output	4 watts (6 dBW) per channel continuous into 4 ohms from 100 Hz to 20 kHz with no more than 5% THD
RADIO	
Format	Stereo AM/FM
FM sens.	22.7 dBf/23.2 dBf for 50 dB quieting
FM select.	70 dB
Tuning	Manual
FM loc/DX	Yes
FM AFC	Yes
Stereo/mono	Yes
Features	Small chassis for hard to fit import cars; adjustable shafts fit most imports

Models also available

T-634 Radio/Tape Player, $279.95; T-690 Radio/Tape Deck, $259.95; T-619 Radio/Tape Deck, $229.95; R-200 Radio/Tape Player, $219.95; T-638 Radio/Tape Player, $219.95; T-689, $189.95; S-632 Radio/Tape Player, $179.95; T-614 Radio/Tape Player, $169.95; T-681A Radio/Tape Player, $159.95; T-618 Radio/Tape Player, $159.95; T-608 Radio/Tape Player, $132.95; T-639 Radio/Tape Player, $129.95; T-617 Radio/Tape Player, $129.95; T-610 Radio/Tape Player, $119.95; S-609 Radio/Tape Player, $119.95

DAYTRON
Daytron Electronics Div.
Daewood (America) Corp.
100 Daewood Place.
Carlstadt, N.J. 07072

DW-717 Radio/Tape Player

Price $119.95
Dimensions 1¾H x 7⅛W x 4½D
Mounting In dash
Format Cassette
Auto reverse No
Fast-forward Yes
Rewind No
Controls Midrange
Play. resp. 100 Hz to 8 kHz, ±3 dB
S/N ratio 35 dB (with NR)
S/N ref. lvl. 50 mW
THD 1%
Output 4 watts (6 dBW) per channel continuous into 8 ohms from 100 Hz to 8 kHz with no more than 10% THD

RADIO
Format Stereo
FM sens. 3 μV for 50 dB quieting
FM loc/DX Yes
FM AFC Yes
Stereo/mono No
Digital read. No
Features Muting

EICO
EICO Auto Sound Div.
EICO Electronic Instruments Co., Inc.
108 New South Road
Hicksville, N.Y. 11802

C-225 Radio/Tape Player

Price $89.95
Mounting In dash
Format Cassette
Auto reverse Yes
Fast-forward Yes
Rewind Yes
Controls Bass; treble; midrange
Output 6 watts (7.75 dBW) per channel continuous into 4 to 8 ohms from 50 Hz to 10 kHz with no more than 3% THD

RADIO
Format Stereo
FM sens. 5 μV for 50 dB quieting
FM loc/DX Yes
FM AFC Yes
Stereo/mono Yes
Digital read. No
Features Muting

Models also available

C-220 Radio/Tape Player, $69.95; C-250 Radio/Tape Player, $49.95; C-215 Radio/Tape Player, $49.95

FULTRON
Arthur Fulmer
122 Gayoso at 2nd
Memphis, Tenn. 38103

16-6800 Radio/Tape Player

Price $399.95
Dimensions 2¾H x 7W x 5⅞D
Mounting In dash
Format Cassette
Auto reverse Yes
Fast-forward Yes (locking)
Rewind Yes (locking)
Eject Automatic; end-of-tape
Controls Treble boost; bass boost
N/R system Yes
Play. resp. 30 Hz to 18 kHz, ±3 dB
Output 9 watts (9.5 dBW) per channel into 4 ohms with no more than 1% THD

RADIO
Format Stereo
Tuning Scan
FM loc/DX Yes
FM AFC Yes
Stereo/mono Yes
Digital read. Yes
Pushbuttons 7 AM/7 FM
Features Touch-sensitive electronic controls; lifetime warranty

15-0739 Tape Player

Price $49.95
Dimensions 2¼H x 5⅜W x 6¾D
Mounting Under dash
Format 8-track
Auto reverse No
Fast-forward No
Rewind No
Controls Tone; balance
Play. resp. 45 Hz to 11 kHz, ±3 dB
Output 2 watts (3 dBW) per channel continuous into 4 ohms from 45 Hz to 11 kHz with no more than 1% THD

Models also available

16-6615 Radio/Tape Player, $229; 16-6500 Radio/Tape Player, $209.95; 16-6300 Radio/Tape Player, $179.95; 16-6100 Radio/Tape Player, $179.95; 16-5200 Radio/Tape Player, $149.95; 16-4505/4515 Radio/Tape Player, $149.95; 16-5600 Radio/Tape Player, $119.95; 16-5300 Radio/Tape Player, $99.95; 16-5000 Radio/Tape Player, $99.95; 16-4200 Radio/Tape Player, $99.95; 16-3200 Radio/Tape Player, $69.95; 16-2200 Radio/Tape Player, $44.95; 15-0738 Tape Player, $49.95; 15-0737 Tape Player, $49.95

GRUNDIG AUTOSOUND
GR Electronics
635 Madison Ave.
New York, N.Y. 10022

GCM-4650 Radio/Tape Player

Price $179
Dimensions 1¾H x 7W x 5⅛D
Mounting In dash
Format Cassette
Auto reverse No
Fast-forward Yes (locking)
Rewind Yes (locking)
Eject Automatic; power-off; end-of-tape
Controls Bass; treble; balance
N/R system No
Play. resp. 40 Hz to 12 kHz, –6 dB
S/N ratio 60 dB (with N/R)
Output 7 watts (8.5 dBW) per channel

RADIO
Format Stereo
Tuning Manual
FM loc/DX Yes
FM AFC Yes
Digital read. No
Features Adjustable shafts; auto eject; FM muting; aux out; front-load DIN

Models also available

GCM-9200 Radio/Tape Player, $390; GCP-9300 Radio/Tape Player, $334; GCM-8200 Radio/Tape Player/Equalizer, $292; GCM-8100 Radio/Tape Player, $250; GEM-5000 Radio/Tape Player, $146

HANDIC
Handic U.S.A., Inc.
15945 N.W. 57th Ave.
Hialeah, Fla. 33014

Napoli Radio/Tape Player

Price $319.95
Dimensions 1⅝H x 6⅞W x 5½D
Mounting In dash
Format Cassette
Auto reverse No
Fast-forward Yes
Rewind Yes
Controls Bass; treble
N/R system Built-in
Play. resp. 50 Hz to 10 kHz, ±3 dB
S/N ratio 48 dB (without NR)
Output 6 watts (7.8 dBW) per channel continuous into 4 ohms from 50 Hz to 10 kHz with no more than 10% THD

RADIO
Format Stereo
FM sens. 2 mV for 50 dB quieting
FM select. 35 dB
FM loc/DX Yes
FM AFC Yes
Stereo/mono Yes
Digital read. No
Features Automatic electronic tuning scan; memory function for automatic and manual tuned stations

Models also available

Monte Carlo Radio/Tape Player, $489.95; El Paso Radio/Tape Player, $179.95; Joplin I Radio/Tape Player, $112.95; Dixie-8 Radio/Tape Player, $112.95

HI COMP
Audiovox Corp.
150 Marcus Blvd.
Hauppauge, N.Y. 11787

HCC-500 Radio/Tape Player

Price $150
Dimensions 1¼H x 6¼W x 4½D
Mounting In dash
Format Cassette
Auto reverse No
Fast-forward Yes (locking)

Rewind	No
Controls	Balance
Play. resp.	50 Hz to 10 kHz, ±3 dB
S/N ratio	50 dB (without N/R)
Output	5 watts (7 dBW)
RADIO	
Format	Stereo; AM/FM
FM sens.	17.2 dBf/20.7 dBf for 50 dB quieting
FM select.	60 dB
Tuning	Manual
FM loc/DX	Yes
FM AFC	Yes
Stereo/mono	No
Digital read.	No
Features	"500" nosepiece designed for import cars; low-distortion preamp output jacks

JENSEN
Jensen Sound Laboratories
4136 North United Parkway
Schiller Park, Ill. 60176

R-406 Radio/Tape Player

Price	$289.95
Dimensions	1⅜H x 7W x 1¾D
Mounting	In dash
Format	Cassette
Auto reverse	Yes
Fast-forward	Yes (locking)
Rewind	Yes (locking)
Controls	Bass; treble; balance; fader
N/R system	None
S/N ratio	65 dB (without N/R)
THD	0.5% at 65 dBf (1 kHz)
Output	2 watts (3 dBW) per channel continuous into 8 ohms from 85 Hz to 16 kHz with no more than 1% THD
RADIO	
Format	Stereo; FM only
FM sens.	14.8 dBf/19.2 dBF for 50 dB quieting
FM select.	60 dB
Tuning	Manual
FM loc/DX	Yes (automatic)
FM AFC	Yes (built-in)
Stereo/mono	Yes
Digital read.	No
Pushbuttons	5 AM/5 FM
Features	Auto reverse; automatic play after rewinding; FM muting; loudness mono/stereo: adjustable shafts and DIN-size chassis for easy installation; separate bass and treble controls; 4-way fader; Sendust tape head

Models also available

R-430 Radio/Tape Player, $469.95; R-420 Radio/Tape Player, $369.95; R-410 Radio/Tape Player, $299.95; R-405 Radio/Tape Players, $279.95; R-402 Radio/Tape Player, $239.95; R-400 Radio/Tape Player, $199.95

JET SOUND LABS
Car Tapes, Inc./Jet Sound Labs
1000 E. Del Amo Blvd.
Carson, Calif. 90746

JS-6200 Radio/Tape Player

Price	$299.95
Dimensions	2¼H x 7W x 4⅞D
Mounting	In dash
Format	Cassette
Auto reverse	Yes (locking)
Fast-forward	Yes (locking)
Rewind	Yes
Controls	Bass; treble; fader
N/R system	None
Play. resp.	25 Hz to 20 kHz, ±2 dB
S/N ratio	55 dB (without N/R)
S/N ref. lvl.	1 mV
THD	1%
THD ref. lvl.	12W
Output	18 watts (12.5 dBW) per channel continuous into 8 ohms from 25 Hz to 20 kHz with no more than 1.2% THD
RADIO	
Format	Stereo
FM sens.	1.5 µV for 50 dB quieting
FM select.	70 dB
Tuning	Manual; scan; seek
FM loc/DX	Yes
FM AFC	Yes
Stereo/mono	Yes
Digital read.	Frequency; clock (in door)
Pushbuttons	5 AM/5 FM
Features	Electronic digital tuning with microprocessor

JS-600 Tape Player

Price	$89.95
Dimensions	2⅛H x 6⅞W x 6⅝D
Mounting	Under dash
Format	Cassette
Auto reverse	Yes
Fast-forward	Yes (locking)
Rewind	Yes (locking)
N/R system	None
Play. resp.	33 Hz to 12 kHz, ±2 dB
S/N ratio	50 dB (without N/R)
S/N ref. lvl.	1 mV
THD	1%
THD ref. lvl.	3.5W
Output	5 watts (7 dBW) per channel continuous into 8 ohms from 33 Hz to 12 kHz with no more than 3% THD
Features	Tape-direction lights; front-loading tape

Models also available

JS-9700 Radio/Tape Player, $179.95; JS-8002 Radio/Tape Player, $159.95; JS-9400 Radio/Tape Player, $159.95; JS-3500 Radio/Tape Player, $119.95; JS-9350 Radio/Tape Player, $99.95; JS-8250 Radio/Tape Player, $99.95

KENWOOD
Kenwood Electronics, Inc.
1315 E. Watsoncenter Road
Carson, Calif. 90745

KRC-711 Radio/Tape Player

Price	$449
Dimensions	2¾H x 7 3/16W x 5 5/16D
Mounting	In dash
Format	Cassette
Auto reverse	Yes
Fast-forward	Yes
Rewind	Yes
Controls	Bass; treble
N/R system	Dolby; ANRC
Play. resp.	30 Hz to 14 kHz, ±3 dB
S/N ratio	60 dB (with N/R)
S/N ref. lvl.	160 nWb/m
THD	1%
THD ref. lvl.	160 nWb/m
Output	4 watts (6 dBW) per channel continuous into 4 ohms from 30 Hz to 20 kHz with no more than 1% THD (front); 13.5 watts, 11.2 per channel (rear)
RADIO	
Format	Stereo
FM sens.	2.3 mV for 50 dB quieting
FM select.	65 dB
Stereo/mono	Yes
Digital read.	Yes
Features	Automatic noise-reduction circuit; stereo and mono switched automatically; clock; synthesizer; key-off eject cassette standby

KTC-767 Tuner/Preamp

Price	$299
Dimensions	2⅛H x 6 11/16W x 6½D
Mounting	Under dash
Controls	Bass; treble; fader; loudness
N/R system	ANRC (auto noise reduction circuit)
Play. resp.	30 Hz to 15 kHz, ±3 dB
Output	Preamp; external amp required.
RADIO	
Format	Stereo
FM sens.	2.2 mV for 50 dB quieting
Digital read.	Yes
Pushbuttons	12-station preset
Features	Quartz-synthesized tuner; ABSS (auto broadcast sensor system) clock; digital/seek/scan switch; capture ratio: 1.5 dB

KXC-757 Tape Player

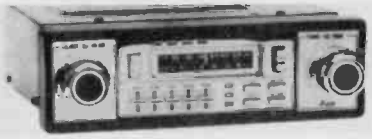
Price	$269
Dimensions	2⅛H x 6 11/16W x 6½D
Format	Cassette
Auto reverse	Yes
Fast-forward	Yes
Rewind	Yes
Controls	Bass; treble
N/R system	Dolby
Play. resp.	30 Hz to 16 kHz, ±3 dB
S/N ratio	60 dB (with N/R)/52 (without N/R)
S/N ref. lvl.	160 nWb/m
THD	1%
THD ref. lvl.	160 nWb/m
RADIO	

Models also available

KRC-721 Radio/Tape Player, $399; KRC-511 Radio/Tape Player, $379; KRC-311 Radio/Tape Player, $269

KRACO
Kraco Enterprises, Inc.
505 E. Euclid Ave.
Compton, Calif. 90224

KGE-801 Radio/Tape Player/Equalizer



Price	$199.95
Dimensions	2H x 7 1/12W x 4 11/12D
Mounting	In dash/under dash
Format	Cassette
Auto reverse	No
Fast-forward	Yes
Rewind	No
Controls	Fader
Output	20 watts (13 dBW) per channel
RADIO	
Format	Stereo
Tuning	Manual
FM loc/DX	Yes
Stereo/mono	Yes
Digital read.	No
Features	Built-in graphic equalizer and weather band; auto stop

KS-970 Tape Player

Price	$69.95
Mounting	Under dash
Format	Cassette
Auto reverse	Yes
Fast-forward	Yes
Rewind	Yes
Controls	Tone; balance
Play. resp.	50 Hz to 10 kHz, ±5 dB
S/N ratio	40 dB (without N/R)
S/N ref. lvl.	0 dB
Output	5 watts (7 dBW) per channel continuous into 4 ohms from 20 Hz to 10 kHz with no more than 10% THD
Features	Automatic play after rewind; auto stop; eject

Models also available

LED-501 Radio/Tape Player, $249.95; KGE 800 Radio/Tape Player/Equalizer, $199.95; KID-589 Radio/Tape Player, $199.95; KID-588 Radio/Tape Player, $159.95; KXI-87 Radio/Tape Player, $169.95; KID-566 Radio/Tape Player, $129.95; KXI-85 Radio/Tape Player, $129.95

LAKE
Lake Communications
5743 Howard St.
Niles, Ill. 60648

1290 Radio/Tape Player

Price	$189.95
Dimensions	2 1/6H x 7 1/12W x 4¾D
Mounting	In dash
Format	Cassette
Auto reverse	No
Fast-forward	Yes
Rewind	No
Controls	Treble
N/R system	None
Output	6 watts (7.75 dBW) per channel continuous into 8 ohms
RADIO	
Format	Stereo
FM loc/DX	Yes
FM AFC	Yes (auto)
Stereo/mono	No
Digital read.	No
Pushbuttons	2 AM/5 FM
Features	FM mute

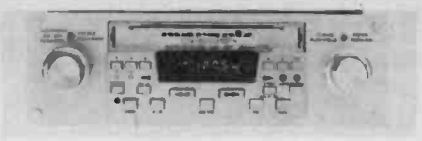
Models also available

6300 Radio/Tape Player/Equalizer, $269.95; 5500 Radio/Tape Player/Equalizer, $249.95; FX-008 Radio/Dual-Mode Tape Player, $199.95; 8700 Radio/Tape Player, $189.95; 2200 Radio/Tape Player, $179.95; X-90 Radio/Tape Player, $119.95; 8300 Radio/Tape Player, $99.95; 770 Radio/Tape Player, $99.95; 700 Radio/Tape Player, $99.95

MARANTZ
Marantz Co., Inc.
20525 Nordhoff St.
Chatsworth, Calif. 91311

CAR-427 Computuner® Radio/ Preamp/Tape Player

Price	$625
Dimensions	2 9/16H x 7⅛W x 5⅛D
Mounting	In dash
Format	Cassette
Auto reverse	Yes (locking)
Fast-forward	Yes (locking)
Rewind	Yes (locking)
Eject	Power-off



Controls	Bass; treble; midrange
N/R system	Double Dolby
Play. resp.	40 Hz to 15 kHz, ±3 dB
S/N ratio	58 dB (with N/R)/50 (without N/R)
S/N ref. lvl.	250 nWb/m
THD	0.5%
THD ref. lvl.	–20 VU
Output	775 mV (preamp)
RADIO	
Format	Stereo
FM sens.	15 mV (35 dBf) for 50 dB quieting (stereo)
FM select.	65 dB (±400 kHz)
Tuning	Search
FM loc/DX	Yes
FM AFC	Yes
Stereo/mono	Yes
Digital read.	Frequency; clock
Pushbuttons	5 AM/5 FM
Features	Vacuum fluorescent LED display presets; Sendust head; metal-tape capability; FM impulse noise blanker; Atmospheric Interference Rejection for noise attenuation; stations may be preset; quartz-locked synthesized tuning; 10 electronic memory presets; synthesized tuning

Models also available

CAR-400 Computuner® Radio/Tape Player, $500; CAR-410 Computuner® Radio/Tape Player, $390; CAR-302 Radio/Tape Player, $300; CAR-301 Radio/Preamp/Tape Player, $270; CAR-330 Radio/Amp/Tape Player, $250; CAR-300 Radio/Tape Player, $220

MARUME
Marume Corp.
7022 Alondra Blvd.
Paramount, Calif. 90723

MP-550 Radio/Tape Player

Price	$149.95
Dimensions	1¾H x 5⅛W x 6⅞D
Mounting	In dash
Format	Cassette
Auto reverse	No
Fast-forward	Yes (locking)
Rewind	No
Controls	Bass; treble; balance; fader
N/R system	None
Output	10 watts (10 dBW) per channel continuous into 4 ohms with no more than 3% THD
RADIO	
Format	Mono; stereo; AM/FM
Tuning	Manual
FM loc/DX	Yes
FM AFC	No
Stereo/mono	Yes
Digital read.	No
Pushbuttons	AM/FM

Models also available

MP-544 Radio/Tape Player, $169.95; M-7700 Radio/Tape Player, $119.95; M-5200, $69.95

METRO
Metro Sound
10615 Vanover St.
N. Hollywood, Calif. 91605

MS-9655 Radio/Tape Player

Price	$499.95
Dimensions	7H x 2¾W x 5 7/8D
Mounting	In dash
Format	Cassette
Auto reverse	Yes
Fast-forward	Yes
Rewind	Yes
Output	12 watts (10.75 dBW) per channel continuous into 4 ohms at 1 kHz with no more than 1% THD
RADIO	
FM loc/DX	Yes
Stereo/mono	Yes
Pushbuttons	5 AM/5 FM

Models also available

MS-7750DB Radio/Tape Player, $269.95; MS-7700 Radio/Tape Player, $249.95; MS-7360 Radio/Tape Player, $149.95

MIDLAND
Midland International
1900 Johnson Drive at State Line Road
Shawnee Missori, Kans. 66205

67-390 Radio/Tape Player

Price	$299.95
Dimensions	1 11/16H x 6 11/16W x 5⅛D
Format	Cassette
Auto reverse	Yes
Fast-forward	Yes (locking)
Rewind	Yes (locking)
Controls	Bass; treble; balance; fader
N/R system	Dolby
Play. resp.	40 Hz to 14 kHz, ±6 dB
S/N ratio	50 dB (without N/R)
S/N ref. lvl.	333 Hz
Output	15 watts (11.75 dBW) per channel continuous into 4 ohms from 100 Hz to 25 kHz with no more than 10% THD
RADIO	
Format	Stereo AM/FM
FM select.	60 dB
Tuning	Scan
FM loc/DX	Yes
FM AFC	Yes
Stereo/mono	Yes
Digital read.	Yes

65-501 Tape Player

Price	$34.95
Dimensions	2H x 5⅝W x 7¼D
Mounting	Under dash
Format	8-track
Auto reverse	No
Fast-forward	No
Rewind	No
Controls	Balance
S/N ratio	40 dB (without N/R)
THD	5%
Output	2.5 watts (4 dBW) per channel continuous with no more than 10% THD
Features	Auto stop; tape-end indicator

Models also available

67-475 Radio/Tape Player, $169.95; 67-470 Radio/Tape Player, $149.95; 67-557 Radio/Tape Player, $129.95; 67-463 Radio/Tape Player, $129.95; 67-350 Radio/Tape Player, $129.95; 67-465 Radio/Tape Player, $129.95; 67-460 Radio/Tape Player, $129.95; 67-456 Radio/Tape Player, $99.95; 67-533 Radio/Tape Player, $79.95; 67-300 Radio/Tape Player, $79.95; 67-434 Radio/Tape Player, $79.95; 65-401 Tape Player, $34.95

MITSUBISHI
Melco Sales, Inc.
3030 E. Victoria
Compton, Calif. 90221

CZ-747 Radio/Tape Player

Price	$459.95
Dimensions	2H x 7⅛W x 4¾D
Mounting	In dash
Format	Cassette
Auto reverse	Yes
Fast-forward	Yes
Rewind	Yes
Controls	Bass; treble
N/R system	Dolby
Play. resp.	50 Hz to 12 kHz, ±3 dB
S/N ratio	60 dB (with N/R)/55 dB (without N/R)
S/N ref. lvl.	1W
THD	0.3%
THD ref. lvl.	1W
RADIO	
Format	Stereo
FM sens.	2 mV for 50 dB quieting
FM select.	70 dB
FM loc/DX	Yes
FM AFC	Yes
Stereo/mono	Yes
Digital read.	Yes
Pushbuttons	5 AM/5 FM
Features	Sendust head; clock

CJ-22 Tuner

Price	$259.95
Dimensions	1 4/5H x 5½W x 6 1/5D
RADIO	
Format	Stereo
FM sens.	3 mV for 50 dB quieting
FM select.	65 dB
FM loc/DX	Yes
FM AFC	Yes
Stereo/mono	Yes
Digital read.	Yes
Pushbuttons	5 AM/5 FM

GX-102 Tape Player

Price	$149.95
Dimensions	1 4/5H x 5½W x 6⅛D
Mounting	Under dash
Format	Cassette
Auto reverse	Yes
Fast-forward	Yes
Rewind	Yes
Controls	Bass; treble
S/N ratio	45 dB (without N/R)
S/N ref. lvl.	1W
THD	1%
THD ref. lvl.	1W
Output	4 watts (6 dBW) per channel continuous into 4 ohms with no more than 1% THD
Features	Hard permalloy head for CrO_2 tape; low-level DIN connector

Models also available

RX-2 Radio/Tape Player, $399.95; CZ-692 Radio/Tape Player, $299.95; RX-79 Radio/Tape Player, $259.95; RX-752 Radio/Tape Player, $219.95; RX-73 Radio/Tape Player, $179.95; RX-103 Radio/Tape Player, $159.95; CJ-20 Radio, $139.95; CX-21 Tape Player, $139.95; RX-723 Radio/Tape Player, $139.95; CX-20 Tape Player, $99.95; GX-101 Tape Player, $99.95

NORTH STAR
North Star Electronics, Inc.
845 Sandhill Ave.
Carson, Calif. 90746

NS-3040E Radio/Tape Player

Price	$199.50
Dimensions	1 3/5H x 6 7/10W x 5 2/5D
Mounting	In dash
Format	Cassette
Auto reverse	Yes
Fast-forward	Yes
Rewind	Yes
Controls	Bass; treble; balance
THD	10%
THD ref. lvl.	15
Output	15 watts (11.75 dBW) per channel continuous into 4 ohms from 20 Hz to 20 kHz with no more than 10% THD
RADIO	
Format	Stereo; AM/FM
FM sens.	26 dBf for 50 dB quieting
FM select.	25 dB
Tuning	Manual
FM loc/DX	Yes
FM AFC	Yes
Stereo/mono	No
Digital read.	No
Pushbuttons	AM/FM
Features	Separate bass and treble controls; European look

NUSOUND
Nusound Div.
Jin Yung America
5219 Cramer Ave.
N. Hollywood, Calif. 91601

JCS-720 Radio/Tape Player

Price	$159.95
Dimensions	2H x 7 1/16W x 5⅞D
Mounting	In dash
Format	Cassette
Auto reverse	No
Fast-forward	Yes (locking)
Rewind	No
Eject	Manual
Controls	Balance; tone; volume
Play. resp.	40 Hz to 10 kHz
S/N ratio	45 dB (without N/R)
THD	0.5% (1 kHz)
Output	7 watts (8.5 dBW) per channel continuous into 4 ohms with no more than 1% THD (at 1 kHz)
RADIO	
Format	Stereo; AM/FM/MPX
FM sens.	5 μV for 30 dB quieting
Tuning	Manual
FM loc/DX	Yes
FM AFC	No
Stereo/mono	Yes
Digital read.	Frequency; clock
Features	Clock/hours/mins. switch; DIN-size nosepiece

Models also available

JCS-607 Radio/Tape Player, $149.95; JCS-606 Radio/Tape Player, $139.95; JCS-520 Radio/Tape Player, $79.95; JCS-505 Radio/Tape Player, $69.95; JCS-420 Radio/Tape Player, $69.95; JCS-510 Tape Player, $89.95; JCS-506 Radio/Tape Player, $69.95

PACE/ALTUS
Pathcom, Inc.
24105 S. Frampton Ave.
Harbor City, Calif. 90710

EPC-3790 Radio/Tape Player

Price	$319.95
Dimensions	1¾H x 7W x 5 3/20D
Mounting	In dash
Format	Cassette
Auto reverse	Yes
Fast-forward	Yes
Rewind	Yes
Controls	Bass; treble; fader
N/R system	None
S/N ratio	45 dB (without N/R)
THD	0.2%
Output	12 watts (10.75 dBW) per channel continuous into 8 ohms
RADIO	
Format	Stereo
FM sens.	2 mV for 50 dB quieting
FM select.	75 dB
FM loc/DX	Yes
FM AFC	Yes
Stereo/mono	No
Digital read.	Yes
Pushbuttons	5 AM/5 FM
Features	Electronic tuner with memory; seek and scan; high impedance preamp outputs

AUM-3322B Radio

Price	$119.95
Dimensions	1 2/3H x 6½W x 4 1/3D
Mounting	In dash
RADIO	
Format	Stereo
FM loc/DX	Yes
Pushbuttons	5 AM/5 FM

Models also available

ELR-3742 Radio/Tape Player, $319.95; CLA-3740 Radio/Tape Player, $319.95; ARD-3728 Radio/Tape Player, $235.95; CPR-3783 Radio/Tape Player, $214.95; RCD-3349 Radio/Tape Player, $214.95; RED-3335 Radio/Tape Player, $214.95; CXT-9520 Radio/Tape Player, $199.95; ARC-3730 Radio/Tape Player, $179.95; CXR-2376 Radio/Tape Player, $179.95; NPB-2408 Radio/Tape Player, $159.95; SMC-3374 Radio/Tape Player, $134.95; UPX-3768 Radio/Tape Player, $119.95; GVM-3323 Radio, $119.95; IDC-3773 Radio/Tape Player, $119.95; GVF-3311 Radio, $99.95; UAF-3310B Radio, $99.95; MEX-3767 Radio/Tape Player, $99.95; XMC-3763 Radio/Tape Player, $99.95; UP-3305 Radio, $69.95; TMA-3302 Radio, $39.95

PANASONIC
Panasonic Auto Products
One Panasonic Way
Secaucus, N.J. 07094

RM-610 "Cockpit" Radio/Tape Player System

Price	$999.95
Dimensions	27¾H x 9 1/16W x 1½D
Mounting	Overhead
Format	Cassette
Auto reverse	Yes
Fast-forward	Yes
Rewind	Yes
Eject	End-of-tape
Controls	Bass; treble; balance; fader
N/R system	Dolby; INQ (impulse noise quieting)
Play. resp.	60 Hz to 20 kHz
S/N ratio	60 dB (with N/R)/52 dB (without N/R)
S/N ref. lvl.	82 dB
THD	0.07%
THD ref. lvl.	–3 dB (rated power, 1 kHz)
Output	30 watts (14.75 dBW) per channel

	continuous into 4 ohms from 20 Hz to 20 kHz with no more than 0.5% THD
RADIO	
Format	Stereo
FM sens.	2.2 microvolts for 50 dB quieting
Tuning	Scan
FM loc/DX	Yes
FM AFC	Yes
Stereo/mono	Yes
Digital read.	No
Pushbuttons	3 FM
Features	Normal/CrO_2 switch; overhead dome light

SUPREME SERIES

CQ-S740 Radio/Tape Player

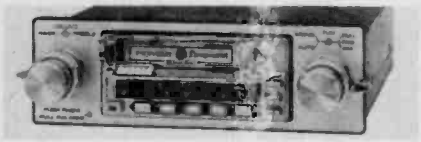
Price	$249.95
Format	Cassette
Auto reverse	Yes
Controls	Bass; treble; balance
N/R system	Dolby
RADIO	
Format	Stereo; AM/FM
FM sens.	19 dBf for 50 dB quieting
FM select.	55 dB
Tuning	Manual
FM loc/DX	No
FM AFC	Yes
Stereo/mono	No
Digital read.	No
Pushbuttons	5 AM/5 FM
Features	Metal CrO_2, or normal tape selector; FM optimizer

Models also available

CQ-8530 "Classic" Radio/Tape Player, $449.95; CQ-S710 Radio/Tape Player, $229.95; CQ-S700 Radio/Tape Player, $209.95; CQ-S680 Radio/Tape Player, $189.95; CQ-S900 Radio/Tape Player, N/A; CQ-S820 Radio/Tape Player, N/A

PIONEER
Pioneer Electronics of America
1925 E. Dominguez St.
Long Beach, Calif. 90810

KEX-20 Radio/Tape Player



Price	$299.95
Mounting	In dash
Format	Cassette
Auto reverse	Yes
Fast-forward	Yes (locking)
Rewind	Yes (locking)
Controls	Bass; treble
N/R system	Dolby (tape); PNS
Output	Separate amp required
RADIO	
Tuning	Feather-touch
Stereo/mono	Yes (auto)
Pushbuttons	5 AM/10 FM (electric)
Features	Metal-chrome tape position; auto FM muting; auto replay; LED tape-direction and AM/FM indicators

KP-707G Tape Player

Price	$199.95
Dimensions	2H x 6W x 6⅛D
Mounting	Under dash
Format	Cassette
Auto reverse	Yes
Fast-forward	Yes
Rewind	Yes
Controls	Bass; treble; balance (detents)
N/R system	Dolby
Play. resp.	30 Hz to 15 kHz, ±3 dB
S/N ratio	60 dB (with NR)/52 dB (without NR)
Output	Requires separate power amp
RADIO	
Features	Feather-touch tape controls; ATSC (auto tape slack canceller); ferrite head; tape selector (CrO_2); electronically governed motor

GX-5050 Radio

Price	$129.95
Dimensions	2H x 7⅛W x 5⅛D
Mounting	In dash
Output	4 watts (6 dBW) per channel
RADIO	
Format	Stereo
FM sens.	14.3 dBf
FM select.	74 dB
FM loc/DX	Yes
FM AFC	No
Stereo/mono	No
Digital read.	No
Pushbuttons	5 AM/5 FM
Features	Supertuner; PLL demodulator; muting

Models also available

KE-5000 Radio/Tape Player, $349.95; KE-3000 Radio/Tape Player, $299.95; KE-2002 Radio/Tape Player, $299.95; KPX-9500 Radio/Tape Player, $299.95; KPX-9000 Radio/Tape Player, $219.95; KP-8000 Radio/Tape Player, $219.95; KP-6500 Radio/Tape Player, $219.95; KP-8500 Radio/Tape Player, $199.95; KP-500 Radio/Tape Player, $189.95; KP-3500 Radio/Tape Player, $179.95; TP-900 Radio/Tape Player, $179.95; KPX-600 Radio/Tape Player, $169.95; TP-7007 Radio/Tape Player, $149.95; KP-250 Radio/Tape Player, $144.95; KP-88G Tape Player, $139.95; KP-77G Tape Player, $139.95; KP-575 Tape Player, $129.95; TP-6006 Radio/Tape Player, $129.95; GX-4040 Radio, $119.95; KP-373 Tape Player, $114.95; KP-66G Tape Player, $109.95; TP-727 Tape Player, $104.95; KP-272 Tape Player, $89.95

RCA
RCA Special Products Div.
2000 Clements Bridge Road
Deptford, N.J. 08096

12R812 Radio/Tape Player

Price	$333.75
Dimensions	3H x 7 1/16W 5¼D
Mounting	In dash
Format	Cassette
Auto reverse	Yes
Fast-forward	Yes (locking)
Rewind	Yes (locking)
Controls	Fader; balance
N/R system	None
Play. resp.	30 Hz to 10 kHz
Output	5.5 watts (7.5 dBW) per channel continuous into 4 ohms with no more than 10% THD
RADIO	
Format	Stereo
FM sens.	2 mV/6 mV for 30 dB quieting
Tuning	Manual; scan
FM loc/DX	Yes
Stereo/mono	Yes
Digital read.	Yes
Pushbuttons	5 AM/5 FM
Features	Electronic memory "touch" station selector; electronic scan; radio/clock switch; display dimmer switch

12R612 Radio

Price	$99.30
Dimensions	1 9/16H x 7 1/16W x 4½D
Mounting	In dash
Controls	Balance; fader; tone
Play. resp.	30 Hz to 10 kHz
Output	5.9 watts (7.5 dBW) per channel continuous into 4 ohms with no more than 10% THD
RADIO	
Format	Stereo
Tuning	Manual
FM loc/DX	Yes
FM AFC	Yes
Stereo/mono	No
Digital read.	No
Pushbuttons	5 AM/5 FM
Features	Automatic power antenna activator lead

12R206 Tape Player

Price	$53.25
Dimensions	2H x 5¼W x 6½D
Mounting	Under dash
Format	Cassette
Auto reverse	No
Fast-forward	Yes
Rewind	Yes
Eject	End-of-tape
Controls	Balance; tone
N/R system	None
Output	4.5 watts (6.5 dBW) per channel continuous into 4 ohms with no more than 10% THD

12R905 FM Converter

Price	$22.50
Dimensions	1⅛H x 4⅜W x 5½D
RADIO	
Tuning	Manual
FM loc/DX	No
FM AFC	No
Stereo/mono	No
Digital read.	No
Features	Hardware and installation instructions included

Models also available

12R712 Radio/Tape Player, $297.70; 12R807 Radio/Tape Player, $225.70; 12R806 Radio/Tape Player, $164.20; 20C505 Radio/Tape Player, $137.15; 12R704 Radio/Tape Player, $126.35; 12R809 Radio Tape Player, $105.95; 12R711 Radio/Tape Player, $93.90; 12R808 Radio/Tape Player, $90.95; 12R611 Radio, $81.25; 12R0903 Tape Player, $41.50; 12R305 Tape Player, $46

REALISTIC
Radio Shack Corp.
1400 One Tandy Center
Ft. Worth, Texas 76102

12-1889 Tape Player

Price	$180
Mounting	In dash/under dash
Format	Cassette
Auto reverse	No
Fast-forward	Yes (locking)
Rewind	Yes (locking)

Eject	Power-off
Output	7 watts (8.5 dBW)
RADIO	
Format	AM/FM
Features	Includes speaker cables and mounting hardware; LED dimmer switch; stereo/mono switch; LED time and station readout

12-1886 Hi Power Radio/Tape Player

Price	$179.95
Dimensions	2⅜H x 7W x 6¼D
Mounting	In dash/under dash
Format	Cassette
Auto reverse	No
Fast-forward	Yes
Rewind	Yes
Eject	Automatic; key-off
Controls	Treble
Play. resp.	75 Hz to 13 kHz, ±3 dB
S/N ratio	55 dB (without N/R)
S/N ref. lvl.	1W
THD	10%
THD ref. lvl.	15W
Output	12 watts (10.75 dBW)
RADIO	
Format	Stereo
FM sens.	5.5 μV for 50 dB quieting
FM select.	55 dB
FM loc/DX	No
FM AFC	Yes
Stereo/mono	Yes
Features	Includes speaker cables and hardware

Models also available

12-1887 Hi Power Radio/Tape Player, $179.95; 12-1891 Radio/Tape Player, $130; 12-1892 Tape Player, $100; 12-1885 Radio/Tape Player, $99.95; 12-1884 Radio/Tape Player, $99.95; 12-1809 Hi Power Tape Player, $99.95; 12-1805 Tape Player, $70; 12-1806 Tape Player, $70; 12-1803 Tape Player, $60; 12-1801 Tape Player, $45

ROYAL SOUND
Royal Sound Co., Inc.
200 Industrial Way West
Eatontown, N.J. 07724

RS-2510 Radio/Tape Player

Price	$300
Dimensions	1 7/10H x 7W x 6D
Mounting	In dash
Format	Cassette
Auto reverse	Yes
Fast-forward	Yes (locking)
Rewind	Yes (locking)
Controls	Bass; treble
N/R system	dbx
Play. resp.	35 Hz to 125 kHz, ±3 dB
S/N ratio	60 dB (without N/R)
S/N ref. lvl.	1W
THD	1%
THD ref. lvl.	9W (rms)
Output	20 watts (13 dBW) per channel continuous into 4 ohms with no more than 10% THD
RADIO	
Format	Stereo
FM sens.	1.4 microvolts for 30 dB quieting
FM select.	60 dB
Tuning	Manual
FM loc/DX	No
FM AFC	Yes (defeatable)
Stereo/mono	Yes
Digital read.	No
Features	High and low impedance; preamp out; FM muting

Models also available

RS-2010N Radio/Tape Player, $150

SAMSONIC
Samsonic Trading Co., Inc.
156 W. 28th St.
New York, N.Y. 10001

9005 Radio/Tape Player

Price	$36
Mounting	In dash
Format	Cassette
RADIO	
Format	Mono
Features	Short chassis

Models also available

6011 Radio/Tape Player, $35

SAMSUNG
Samsung Electronics America, Inc.
2707 Butterfield Road, Suite 270
Oak Brook, Ill. 60521

KR-3630 Radio/Tape Player

Price	$99.95
Dimensions	2 3/64H x 6 7/32W x 5 32/64D
Mounting	In dash
Format	8-track
Auto reverse	No
Fast-forward	No
Rewind	No
Controls	Balance; tone
Output	4 watts (6 dBW) per channel continuous into 4 ohms with no more than 5% THD
RADIO	
Format	Stereo; AM/FM
Tuning	Manual
FM loc/DX	No
FM AFC	Yes
Stereo/mono	No
Digital read.	No
Features	Four LED track indicators; stereo LED indicator; adjustable shaft; dial in door

Models also available

KC-3725 Radio/Tape Player w/ PB-215 Power Booster, $319.95; KC-3650 Radio/Tape Player, $109.95

SANYO
Sanyo Electric, Inc.
1200 West Artesia Blvd.
Compton, Calif. 90220

FT-1498 Radio/Tape Player

Price	$329.95
Dimensions	3H x 7W x 6D
Mounting	In dash
Format	Cassette
Auto reverse	Yes
Fast-forward	Yes
Rewind	Yes
N/R system	Dolby
S/N ratio	62 dB (without N/R)
THD ref. lvl.	11W (10.5 dBW) woofer; 2.5W (3.8 dBW) tweeter
Output	17 watts (12.3 dBW) per channel
RADIO	
Format	Stereo
FM sens.	1.5 μV for 14.8 dB quieting
FM select.	60 dB
Tuning	Electronic
FM loc/DX	Yes
FM AFC	Yes
Digital read.	Frequency; clock; calendar
Pushbuttons	10 (with memory)
Features	Wow and flutter: 1%; Sendust alloy heads; biamplified power section; clock/calendar works with ignition off; automatic FM muting; "Head" switch for all tapes

F-8701A Radio

Price	$129.95
Dimensions	2H x 7¼W x 6D
Mounting	In dash
Controls	Bass; treble;
Play. resp.	30 Hz to 12 kHz
Output	4 watts (6 dBW) per channel
RADIO	
Format	Stereo
FM sens.	2 microvolts for 50 dB quieting
FM select.	60 dB
FM loc/DX	Yes
Stereo/mono	Yes

FT-606 Tape Player

Price	$89.95
Dimensions	2¼H x 6⅞W x 6⅞D
Mounting	Under dash
Format	Cassette
Auto reverse	Yes
Fast-forward	Yes
Rewind	Yes
Controls	Bass; treble
Play. resp.	30 Hz to 12 kHz
S/N ratio	50 dB (without N/R)
Output	4 watts
RADIO	
Format	Stereo FM only
FM sens.	2.5 μV for 50 dB quieting
FM select.	55 dB
FM loc/DX	Yes
FM AFC	Yes
Features	Wow and flutter: 3%

Models also available

FT-2200 Radio/Tape Player, $349.95; FT-2400 Radio/Tape Player, $349.95; FT-1496 Radio/Tape Player, $289.95; FT-1670 Radio/Tape Player, $219.95; FT-1495 Radio/Tape Player, $239.95; FT-1490-2 Radio/Tape Player, $219.95; FT-690 Radio/Tape Player, $219.95; FT-646 Radio/Tape Player, $219.95; FT-4700 Radio/Tape Player, $229.95; FT-C16 Radio/Tape Player, $219.95; FT-435 Radio/Tape Player, $169.95; FT-4660 Radio/Tape Player, $169.95; FT-C14-Radio/Tape Player, $199.95; FT-645 Radio/Tape Player, $199.95; FT-412 Radio/Tape Player, $179.95; FT-4620 Radio/Tape Player, $149.95; FT-415 Radio/Tape Player, $169.95; FT-1877 Radio/Tape Player, $169.95; FT-417 Radio/

Tape Player, $149.95; FT-C10 Radio/Tape Player, $169.95; FT-874 Radio/Tape Player, $99.95 to $119.95; FT-482 Radio/Tape Player, $179.95; FT-C8 Radio/Tape Player, $159.95; FT-7 Radio/Tape Player, $149.95; FT-1400 Radio/Tape Player, $139.95; FT-C6 Radio/Tape Player, $109.95; FT-1004 Radio/Tape Player, $59.97 to $79.95; FT-8705A Radio, $99.95; FT-C4 Radio/Tape Player, $99.95; FT-604 Tape Player, $89.95; FT-1002 Tape Player, Open to dealer pricing; FT-603 Tape Player, $64.97 to $74.97; FT-C2 Radio/Tape Player, $89.95; FT-9500 Radio/Tape Player, $49.97 to $69.97; FT-601 Tape Player, $44.97 to $54.97; FT-9 Radio/Tape Player, $209.95; FT-150 Tape Player, N/A

SHARP
Sharp Electronics Corp.
10 Keystone Place
Paramus, N.J. 07652

RG-3550 Radio/Tape Player

Price	$219
Dimensions	2H x 9 1/5W x 5½D
Mounting	In dash
Format	Cassette
Auto reverse	No
Fast-forward	Yes
Rewind	Yes
Eject	Automatic; power-off; end-of-tape
Controls	Fader
Play. resp.	50 Hz to 10 kHz, –6 dB
S/N ratio	50 dB (without N/R)
S/N ref. lvl.	250 nWb/m
Output	5 watts (7 dBW) per channel continuous into 4 ohms with no more than 10% THD
RADIO	
Format	Stereo
FM sens.	3 microvolts for 30 dB quieting
Tuning	Manual
FM loc/DX	Yes
FM AFC	No
Stereo/mono	No
Digital read.	No
Features	APSS (Auto Program Search System)

Models also available

RG-3400 Radio/Tape Player, $189; RG-3200 Radio/Tape Player, $169

SONY
Sony Industries
9 W. 57th St.
New York, N.Y. 10016

XR-77 Radio/Tape Player

Price	$449.95
Dimensions	2½H x 7W x 6D
Mounting	In dash
Format	Cassette
Auto reverse	No
Fast-forward	Yes (locking)
Rewind	Yes (locking)
Eject	Automatic; power-off; end-of-tape
Controls	Bass; treble; balance; fader; tape EQ switch; loudness switch
N/R system	Dolby
Play. resp.	30 Hz to 18 kHz, ±3 dB
S/N ratio	66 dB (with N/R)/57 dB (without N/R)
S/N ref. lvl.	Ad hoc (IHF standard)
THD	0.02%
THD ref. lvl.	5 watts at 11 kHz
Output	12 watts (10.75 dBW) per channel continuous into 4 ohms from 50 Hz to 50 kHz with no more than 0.5% THD
RADIO	
Format	AM/FM
FM sens.	13 dBf/18 dBf for 50 dB quieting
FM select.	75 dB
Tuning	Manual; scan
FM loc/DX	Yes
FM AFC	Yes
Stereo/mono	Yes
Digital read.	Frequency; clock
Pushbuttons	5 AM/5 FM
Features	Quartz frequency synthesis tuning; microprocessor control; may be safely operated into 2-ohm loads; AMS (Automatic Music Sensor); metal tape capability

XT-1 Tuner

Price	$329.95
Dimensions	1 7/16H x 5¾W x 7D
Mounting	In dash
N/R system	INS
Output	External amp required
RADIO	
Format	Stereo
FM sens.	3 mV for 50 dB quieting
FM select.	92 dB
Tuning	Manual; seek
FM loc/DX	No
Stereo/mono	No
Digital read.	Yes
Pushbuttons	10 FM (memory preset)
Features	Quartz-locked PLL synthesizer P.A.R.S. (Programable Automatic Reception System)

XK-M11 Tape Player

Price	$259.95
Dimensions	1¾H x 5¾W x 8¼D
Mounting	In dash/under dash
Format	Cassette
Auto reverse	Yes
Fast-forward	Yes
Rewind	Yes
Eject	Power-off
Controls	Bass; treble; tape EQ selector
N/R system	Dolby
Play. resp.	40 Hz to 12 kHz
S/N ratio	59 dB (with N/R)/51 dB (without N/R)
THD	0.2% (WRMS)
Output	6 watts (7.75 dBW) per channel continuous into 4 ohms
Features	Metal and CrO_2 tape capability; preamp output with fader; preamp output level: 775 mV/10K ohms

Models also available

XR-70 Radio/Tape Player, $374.95; XR-50 Radio/Tape Player, $275; XK-23 Tape Player, $249.95; GD-R41 Tape Player, $209.95; XK-21 Tape Player, $199.95; XT-22 Tuner, $159.95

SPARKOMATIC
Sparkomatic
645 Madison Ave.
Pan Ocean Bldg.
New York, N.Y. 10022

SR-303 Radio/Tape Player

Price	$159.95
Dimensions	1¾H x 6 11/16W x 4 13/16D
Mounting	In dash
Format	Cassette
Auto reverse	Yes
Fast-forward	Yes (locking)
Rewind	Yes (locking)
Controls	Bass; treble; balance; fader
Play. resp.	60 Hz to 12 kHz
THD	10%
Output	10 watts (10 dBW) per channel continuous into 4 to 8 ohms from 60 Hz to 12 kHz with no more than 10% THD
RADIO	
Format	Stereo
FM loc/DX	Yes
FM AFC	Yes
Stereo/mono	Yes
Digital read.	No
Features	Auto key-off

SR-120 Radio

Price	$79.95
Dimensions	1¾H x 7W x 4 11/16D
Mounting	In dash
Auto reverse	No
Fast-forward	No
Rewind	No
Controls	Tone
Output	9 watts (9.5 dBW) per channel continuous into 8 ohms from 75 Hz to 10 kHz with no more than 10% THD; 7.5 watts (8.75 dBW) per channel continuous into 8 ohms from 75 Hz to 10 kHz with no more than 1% THD
RADIO	
Format	Stereo
FM sens.	8 mV for 50 dB quieting
FM select.	50 dB
FM loc/DX	Yes
FM AFC	Yes
Stereo/mono	Yes
Digital read.	No
Pushbuttons	5 AM/5 FM

SS-200 Tape Player

Price	$29.95
Dimensions	1¾H x 4 5/16W x 6 1/16D
Mounting	Under dash
Format	Cassette
Auto reverse	No
Fast-forward	Yes
Rewind	No
Controls	Tone (high/low)
S/N ratio	30 dB (without N/R)
Output	3 watts (4.75 dBW) per channel continuous into 8 ohms from 100 Hz to 8 kHz with no more than 10% THD
RADIO	
FM loc/DX	No
FM AFC	No
Stereo/mono	No
Digital read.	No
Features	Dual volume controls; auto end-of-tape stop

Models also available

SR-3400 Radio/Tape Player, $269.95; SR-2400 Radio/Tape Player, $269.95; SR-3300, $249.95; SR-340 Radio/Tape

Player, $239.95; SR-240 Radio/Tape Player, $239.95; SR-330 Radio/Tape Player, $219.95; SR-3100 Radio/Tape Player, $219.95; SR-2100 Radio/Tape Player, $219.95; SR-310 Radio/Tape Player, $189.95; SR-210 Radio/Tape Player, $189.95; SR-302 Radio/Tape Player, $159.95; SR-202 Radio/Tape Player, $159.95; SR-301 Radio/Tape Player, $119.95; SR-201 Radio/Tape Player, $119.95; SR-300 Radio/Tape Player, $89.95; SR-200 Radio/Tape Player, $89.95; SS-100 Tape Player, $29.95

TANCREDI
Tancredi Div.
Kologel Co., Ltd.
2318 E. Del Amo Blvd.
Compton, Calif. 90220

TC-7000 Radio/Tape Player

Price	$289.95
Dimensions	1¾H x 6¼W x 4¾D
Mounting	In dash
Format	Cassette
Auto reverse	Yes
Fast-forward	Yes
Rewind	Yes
Controls	Bass; treble
N/R system	Noise-control circuit
Play. resp.	20 Hz to 20 kHz, ±3 dB
S/N ratio	60 dB (with NR)
S/N ref. lvl.	1W output
THD	0.6%
THD ref. lvl.	1W output
Output	15 watts (11.75 dBW) per channel continuous into 4 ohms from 20 Hz to 20 kHz with no more than 1% THD
RADIO	
Format	Stereo
FM sens.	1.4 μV for 50 dB quieting
FM select.	74 dB
Tuning	Electronic
FM loc/DX	Yes
FM AFC	Yes
Stereo/mono	Yes
Digital read.	Yes
Pushbuttons	5 AM/5 FM

Models also available

TC-6050 Radio/Tape Player, $189.95; TC-6020 Radio/Tape Player, $169.95; TC-5030 Radio/Tape Player, $139.95; TC-2050 Tape Player, $139.95; TC-5010 Radio/Tape Player, $129.95; TC-1150 Tape Player, $109.95; TC-1050 Tape Player, $89.95

TEN
Fujitsu Ten Corp. of America
19281 Pacific Gateway Drive
Torrance, Calif. 90502

GP-7881 Radio/Tape Player

Price	$250
Dimensions	2 25/32H x 7 1/16W x 5 5/16D
Mounting	In dash
Format	Cassette
Auto reverse	Yes
Fast-forward	Yes
Rewind	Yes
Controls	Bass; treble
N/R system	Dolby
Play. resp.	40 Hz to 14 kHz, ±6 dB
S/N ratio	65 dB (with N/R)/55 dB (without N/R)
S/N ref. lvl.	1W
THD	0.4%
THD ref. lvl.	0.5W
Output	6 watts (7.75 dBW) per channel continuous into 4 ohms from 40 Hz to 14 kHz with no more than 10% THD
RADIO	
Format	Stereo
FM sens.	8 mV for 50 dB quieting
FM select.	64 dB
FM loc/DX	Yes
FM AFC	Yes (auto)
Stereo/mono	Yes (auto)
Digital read.	No
Pushbuttons	5 AM/5 FM
Features	Built-in noise blanker

Models also available

EP-820 Radio/Tape Player, $599.95; DP-644 Radio/Tape Player, $249.95; GD-1010 Radio/Tape Player, $225; OP-7874 Radio/Tape Player, $184.95; DP-1006 Radio/Tape Player, $179.95; DP-7872 Radio/Tape Player, $175; DP-7871, $175.95

TMK
TMK Electronics
Div. Toyomenka (America), Inc.
361 Country Ave.
Secaucus, N.J. 07094

TMK-604 Radio/Tape Player

Price	$199.95
Dimensions	1¾H x 6 15/16W x 5⅛D
Mounting	In dash
Format	Cassette
Auto reverse	No
Fast-forward	Yes
Rewind	No
Controls	Tone
N/R system	None
Play. resp.	100 Hz to 8 kHz, ±3 dB
S/N ratio	40 dB (without N/R)
S/N ref. lvl.	500 mW
THD	3%
THD ref. lvl.	500 mW
Output	3.5 watts (5.5 dBW) per channel continuous into 4 ohms from 100 Hz to 8 kHz with no more than 10% THD
RADIO	
Format	Stereo
FM sens.	20 microvolts from 50 dB quieting
FM loc/DX	Yes
FM AFC	Yes
Stereo/mono	Yes
Digital read.	Yes (frequency and time)
Features	Automatic end-of-tape eject

Models also available

TMK-541 Radio/Tape Player, $189.95; TMK-521 Radio/Tape Player, $159.95; TMK-501 Radio/Tape Player, $119.95; TMK-511 Radio/Tape Player, $99.95

Amplifiers & Power Boosters

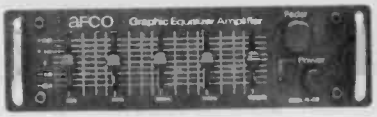
ADS
Analog & Digital Systems, Inc.
One Progress Way
Wilmington, Mass. 01887

Power Plate 100 Amplifier

Price	$300
Design	Amp/equalizer
Dimensions	1 15/16H x 12¼W x 6¼D
Mounting	Under seat/in trunk
Power	50 watts (17 dBW) per channel continuous into 4 ohms from 20 Hz to 20 kHz with no more than 0.08% THD
Response	30 Hz to 20 kHz, ±0.5 dB
S/N	90 dB
Controls	Equalizer: 1 band, 3 positions (30 Hz to 80 Hz); EQ bypass
Features	Built-in preamplifier, equalizer, speaker, and amplifier protection; remote power "on"; slimline design for easy mounting

AFCO
AFCO electronics
P.O. Box 2648
471 Roland Way
Oakland, Calif. 94621

PB-30E Equalizer/Amplifier



Price	$79.95
Dimensions	1¾H x 6½W x 5 11/12D
Mounting	In dash/under dash
Power	16 watts (11.75 dBW) per channel continuous into 4 ohms from 20 Hz to 20 kHz with no more than 1% THD
Features	Fader; power indicator light; 5-band equalizer

Models also available

PB-40E Equalizer/Amplifier, $99.95

ALPINE
Alpine Electronics of America, Inc.
3102 Kashiwa St.
Torrance, Calif. 90505

3002 Amplifier

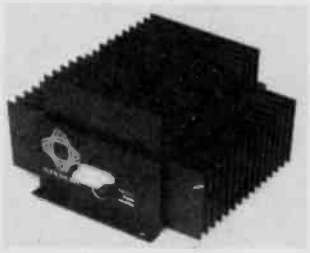
Price $ 239.95
Dimensions 2 27/32H x 8W x 7¾D
Mounting Under dash
Power 50 watts (17 dBW) per channel continuous into 4 ohms from 10 Hz to 60 kHz with no more than 0.2% THD
Response 10 Hz to 60 kHz
Features Auto remote-power "on" switch; input-sensitivity control; preamp out; speaker out

Models also available

3007 Equalizer/Amplifier, $169.95

AUDIOMOBILE
Audiomobile Corp.
3500 S. Susan St.
Santa Ana, Calif. 92704

SA-1000 Amplifier



Price $369.95
Design Power amp
Dimensions 4¼H x 7¾W x 7⅝D
Mounting Under dash/in trunk
Power 50 watts (17 dBW) per channel continuous into 4 ohms from 20 Hz to 20 kHz with no more than 0.2% THD
IM 0.20% (50 watts)
Response 10 Hz to 100 kHz, ±1 dB
S/N 100 dB
Features 300W regulated switching power supply; turn-on delay for transient protection; amplifier protection circuitry; shielded toroidal power transformer

Models also available

SA-2000 Amplifier, $495.95; SA-400 Amplifier, $149.95; SP-300 Preamplifier, $199.95

AUDIOVOX
Audiovox Corp.
150 Marcus Blvd.
Hauppauge, N.Y. 11787

HI-COMP HCB-830 Amplifier

Price $200
Dimensions 3½H x 7W x 8¼D
Mounting Under dash
Power 30 watts (14.75 dBW) per channel continuous into 4 ohms from 15 Hz to 20 kHz with no more than 0.3% THD
Features Direct-coupled complementary OTL circuitry; 4 separate 30W amps; high- and low-level inputs; response: 15 Hz to 15 kHz, ±1 dB

Models also available

HI-COMP HCE-750 Semi-Parametric Equalizer/Preamp, $150; AMP-550 Amplifier/Equalizer, $72

AUTOTEK
Autotek Corp.
1447 N. Carolan Ave.
Burlingame, Calif. 94010

EQL-200 Booster/Equalizer

Price $109.95
Dimensions 2⅛H x 5 5/16W x 7D
Mounting Under dash
Power 20 watts (13 dBW) per channel continuous into 4 ohms from 50 Hz to 15 kHz with no more than 5% THD
Controls Equalizer (5 bands: 60 Hz, 250 Hz, 1 kHz, 3.5 kHz, 10 kHz)
Outputs 4 (speaker)
Meters LED peak
Features Fader; output speaker protection; BTL output; one-year parts and labor warranty

BLAUPUNKT
Blaupunkt Car Radio Div.
Robert Bosch Corp.
2800 South 25th Ave.
Broadview, Ill. 60153

BEA-200 Amplifier/Equalizer

Price $232.70
Design Amp/equalizer
Dimensions 1 3/5H x 7½W x 5½D
Mounting Under dash
Power 15 watts (11.75 dBW) per channel continuous into 4 ohms from 30 Hz to 40 kHz with no more than 1% THD
Response 50 Hz to 30 kHz, ±3 dB
S/N 67.5 dB
Controls Bass; treble; high filter; low filter; equalizer (5 bands; 60 Hz, 250 Hz, 1 kHz, 3.5 kHz, 12 kHz)
Outputs 4K
Features Built-in 5-band equalizer; front/rear fader; tone-defeat switch; reverb unit with delay and gain controls

Models also available

BEA-100 Amplifier/Equalizer, $143.90; BEA-50, $92.50

BOMAN
Boman Industries
9300 Hall Road
Downey, Calif. 90241

EQA-25 Amplifier/Equalizer

Price $59.95
Dimensions 1⅝H x 4W x 4⅞D
Mounting Under dash
Power 15 watts (11.75 dBW) per channel continuous into 4 ohms from 20 Hz to 20 kHz
Features Built-in 3-band equalizer

Models also available

EQA-60 Amplifier/Equalizer, $119.95; EQA-30 Amplifier/Equalizer, $79.95

BOSE
Bose Corp.
100 The Mountain Road
Framingham, Mass. 01701

1401 System

Price $328.95 (includes 4 speakers and booster/equalizer)
Dimensions 1½H x 10W x 5D (booster/equalizer)
Mounting Under dash
Power 50 watts (17 dBW) per channel continuous into 0.45 ohms from 40 Hz to 17 kHz with no more than 0.09% THD
Features IM 0.04% (20W); response, 40 Hz to 17 kHz, ±1 dB; S/N 70 dB (IHF A-weighted re 1W); unit must be used with Bose speakers; complete system includes 2 Direct/Reflecting®grilles, 2 accessory grilles, 4 drivers, and 100-watt booster/equalizer with active electronic equalization; Bose Spatial Control™ system controls 4 separate amplifiers for active control of each speaker; Direct/Deflecting® grilles with adjustable energy control for a combination of reflected and direct sound and greater spaciousness; designed specifically for the car environment

CAR-FI
Car-Fi International
152 West Cypress Ave.
Burbank, Calif. 91502

EPA-7200 Amplifier

Price $479.95
Dimensions 3½H x 6W x 15D
Mounting Trunk
Power 100 watts (20 dBW) per channel continuous into 1, 2, 4 or 8 ohms from 20 Hz to 20 kHz with no more than 0.5% THD
Features Selectable impedance at output; reverse polarity; short circuit and overload protected

EPR-100 Preamplifier

Price $79.95
Dimensions 1½H x 2 1/10W x 4D
Mounting In dash/under dash
Controls Volume
Features Adjustable input sensitivity from 20 mV to 3.5V; 50 dB isolation of input/output grounds

Models also available

EQL-5500 Preamplifier/Equalizer, $349.95; EPX-3100 Amplifier/Crossover, $219.95; EPA-7000 Amplifier, $299.95; EQA-311 Amplifier/Equalizer, $199.95

CLARION
Clarion Corp. of America
5500 Rosecrans Ave.
Lawndale, Calif. 90260

100-EQB-3 Booster/Equalizer

Price $119.50

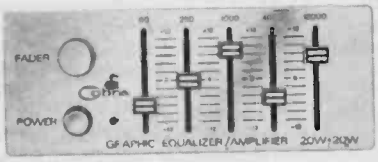
Dimensions	1⅞H x 5½W x 6½D
Mounting	Under dash
Power	15 watts (11.75 dBW) per channel continuous into 8 ohms from 40 Hz to 20 kHz with no more than 1% THD
IM	1% (15 watts)
Response	20 Hz to 20 kHz, ±3 dB
Controls	Equalizer (5 bands: 60 Hz, 250 Hz, 1 kHz, 3.5 kHz, 10 kHz); fader
Features	LED power indicator; slide controls; on/off switch

Models also available

300-EQ13-2 Booster/Equalizer, $199.95; 150EQB2 Amplifier, $159.95; GA-302E Amplifier, $129.95; GA-301E Amplifier, $56.95

COBRA
Dynascan Corp.
6460 West Cortland
Chicago, Ill. 60635

GEA 40-5 Equalizer/Amplifier



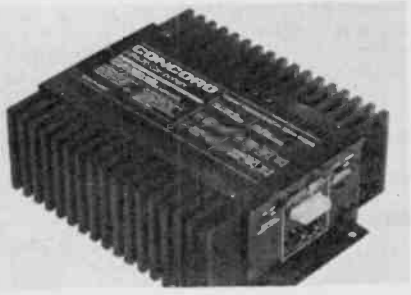
Price	$89.95
Dimensions	2H x 5⅜W x 6D
Mounting	Under dash
Power	20 watts (13 dBW) per channel
Controls	Fader
Features	Built-in 5-band equalizer; LED power "on" indicator; on/off power bypass switch

Models also available

GEA 60-7 Equalizer/Amplifier, $159.95

CONCORD
Westland International
20121 Ventura Blvd.
Suite 320
Woodland Hills, Calif. 91364

HPA-70 Amplifier



Price	$369.95
Dimensions	3½H x 9W x 8D
Mounting	Trunk
Power	70 watts (18.5 dBW) per channel continuous into 4 ohms from 20 Hz to 20 kHz with no more than 0.5% THD
IM	0.025% (50W)
Response	20 Hz to 20 kHz, ±0.15 dB
S/N	90 dB
Controls	Equalizer (all bands; dynamic compliance)
Outputs	Speaker
Features	Impedance selector; dynamic compliance on/off; ISA slo-blo fuse speaker protection; relay thermal overload protection; remote on/off

Models also available

HPA-60 Amplifier/Equalizer, $179.95; HPA-45 Amplifier, $139.95

CRAIG
Craig Corp.
921 W. Artesia Blvd.
Compton, Calif. 90220

R-55 1 Equalizer/Ambience Expander

Price	$149.99
Response	20 Hz to 20 kHz, ±0.5 dB
Controls	Delta control for front/back balancing; tri-amp/biamp level controls
Outputs	6
Features	LED level meters; left, right and ambience channels; 7-band graphic equalizer; fixed 30 ms delay

Models also available

R-550 Equalizer, $79.95; R-511 Preamp/Power Amp, $179.95; R-510 Preamp/Power Amp, $129.95

DAYTRON
Daytron Electronics Div.
Daewoo (America) Corp.
100 Daewoo Pl.
Carlstadt, N.J. 07072

DPB-779 Amplifier

Price	$69.99
Dimensions	1⅝H x 4¾W x 6¼D
Mounting	Under dash
Power	25 watts (14 dBW) per channel continuous into 8 ohms from 80 Hz to 8 kHz with no more than 10% THD
Controls	Bass; treble

EICO
EICO Autosound Div.
EICO Electronic Instrument Co., Inc.
108 New South Road
Hicksville, N.Y. 11802

R-502 Preamp/Power Amp/ Booster

Price	$69.95
Dimensions	2⅜H x 8½W x 5⅜D
Mounting	Under dash; trunk
Power	25 watts (14 dBW) per channel continuous into 4 ohms from 50 Hz to 15 kHz with no more than 1% THD
Response	30 Hz to 20 kHz, +0, –3 dB
S/N	75 dB
Features	Low-level, line-level, or speaker-level differential inputs; speaker output push-type terminals

Models also available

C-290 Amplifier/Equalizer, $44.95; R-501 Preamp/Power Amp/ Booster, $39.95

FINCO
The Finney Company
34 W. Interstate St.
Bedford, Ohio 44146

Stereo I Booster

Price	$25.95
Design	Booster
Dimensions	1¼H x 2½W x 1¼D
Mounting	Under dash
Features	Increases signal up to 3 times; "on" indicator light

Models also available

Stereo II Booster, $39.95

FULTRON
Arthur Fulmer, Inc.
122 Gayoso
Memphis, Tenn. 38103

15-0732 Equalizer/Amplifier

Price	$99.95
Design	Amp/Equalizer
Dimensions	1¾H x 5½W x 6⅛D
Mounting	Under dash
Power	30 watts (14.75 dBW) per channel continuous into 8 ohms from 45 Hz to 15 kHz with no more than 10% THD
Features	Fader; 7-band equalizer

Models also available

15-0720 Amplifier, $49.95

GRUNDIG
GR Electronics
635 Madison Ave.
New York, N.Y. 10022

ESO-70 Amplifier

Price	$186
Dimensions	2½H x 5½W x 8D
Mounting	Under dash/in trunk
Power	35 watts (15.5 dBW) per channel continuous into 4 ohms from 20 Hz to 20 kHz with no more than 0.2% THD
IM	0.2% (35 watts)
Response	10 Hz to 50 kHz, +0, –1 dB
S/N	95 dB
Features	Damping factor: 300; input sensitivity(line): 1.2V; crosstalk: 80 dB (1 kHz); connectors for high- and low-level inputs

Models also available

GAA-7500 Amplifier/Equalizer, $115

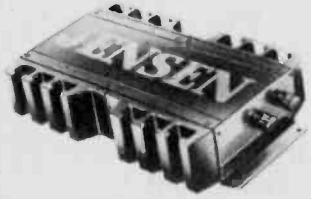
HI COMP
Audiovox Corp.
150 Marcus Blvd.
Hauppauge, N.Y. 11787

HCE-707

Price $120
Design Amp/equalizer
Dimensions 2H x 6½W x 6½D
Mounting Under dash
Power 20 watts (13 dBW) per channel
Response 50 Hz to 45 kHz, ±3 dB
Controls Equalizer (7 bands; 60 Hz, 150 Hz, 400 Hz, 1 kHz, 2.4 kHz, 6 kHz, 15 kHz); EQ bypass
Meters Bar-graph
Features Seven-slide equalizer booster with twin LED power level meters; 7 slide-bar response controls; built-in heavy-duty fader control; selectable hi-low level inputs; 60 watts max. output

JENSEN
Jensen Sound Laboratories
4136 N. United Parkway
Schiller Park, Ill. 60176

A-124 Biamplified Amplifier



Price $279.95
Dimensions 2⅜H x 7⅛W x 11 7/16D
Mounting Trunk
Power 50 watts (17 dBW) per channel continuous into 4 ohms from 20 Hz to 20 kHz with no more than 0.6% THD
Features Direct-coupled output capacitorless circuitry; switchable input impedance; automatic power switching; dual 40W and dual 10W amps; full electronic protection; DC-to-DC converter power supply; extra-large heat sinks; low-loss shielded cables; frequency response: 20 Hz to 50 kHz, ±1.5 dB; S/N: 80 dB (A-weighted); biamp crossover frequency: 1 kHz (12 dB/octave)

Models also available

A-60 Biamplified Amplifier, $199.95; EQA-3000 Amplifier/Equalizer, $179.95

JET SOUNDS
Car Tapes, Inc./Jet Sounds Labs
1000 E. Del Amo Blvd.
Carson, Calif. 90746

JS-120 Amplifier/Equalizer

Price $149.95
Dimensions 2 3/16H x 7 5/16W x 6⅛D
Mounting Under dash
Power 50 watts (17 dBW) per channel continuous into 8 ohms from 20 Hz to 30 kHz with no more than 1% THD
Response 20 Hz to 30 kHz, ±3 dB
S/N 65 dB
Controls Equalizer (10 bands: 30 Hz, 60 Hz, 150 Hz, 400 Hz, 1 kHz, 2.4 kHz, 4 kHz, 8 kHz, 15 kHz, 20 kHz); 4-way fader
Meters Bar-graph
Features 18-digit LED power indicator (9 per channel)

Models also available

JS-70 Amplifier/Equalizer, $9.95; JS-80 Amplifier, $89.95; JS-50 Amplifier/Equalizer, $59.95; JS-40 Amplifier/Equalizer, $49.95

KENWOOD
Kenwood Electronics, Inc.
1315 E. Watsoncenter Road
Carson, Calif. 90745

KAC-801 Amplifier

Price $219
Dimensions 2¾H x 11⅝W x 6 15/16D
Mounting Under dash
Power 50 watts (17 dBW) per channel continuous into 4 ohms from 20 Hz to 70 kHz with no more than 1% THD
Features S/N: 80 dB; 12V DC-to-DC converter; LED power indicator light; full circuit and speaker protection

Models also available

KGC-737 Equalizer/Amplifier, $219; KAC-727 Amplifier, $95

KRACO
Kraco Enterprises, Inc.
505 E. Euclid Ave.
Compton, Calif. 90224

KE-7

Price $169.95
Design Amp/equalizer
Dimensions 2½H x 7⅛W x 7⅞D
Mounting Under dash
Power 40 watts (16 dBW) continuous into 4 ohms from 20 Hz to 30 kHz with no more than 10% THD
Features Built-in equalizer with ±12 dB boost/cut at 7 bands between 60 Hz and 15 kHz; power meters; fader; heat sink; headphone jack; power on/off

Models also available

KE-5, $79.95; KE-3, $59.95; PB-131, $39.95; Ke-6, $89.95; 902 Amplifier, $59.95

LAKE
Lake Communications
5743 Howard St.
Niles, Ill. 60648

7100 Booster/Equalizer

Price $119.95
Mounting Under dash
Power 25 watts (14 dBW) per channel continuous into 4 ohms from 20 Hz to 30 kHz with no more than 1% THD; total power: 100 watts (20 dBW)
Features Built-in 7-band equalizer; 2 LED meters

Models also available

525 Booster/Equalizer, $99.95; 200 Booster, $49.95

LINEAR POWER
Linear Power, Inc.
11545 D Ave., East
Auburn, Calif. 95603

601 Amplifier

Price N/A
Dimensions 3H x 8½W x 6D
Power 30 watts (14.75 dBW) per channel continuous into 4 ohms from 20 Hz to 20 kHz with no more than 0.1% THD
IM 0.1% at max rated power
Response 20 Hz to 20 kHz, ±1 dB
S/N 90 dB
Features Delay turn-on; phono inputs; adjustable input sensitivity; simplified hookup

Models also available

901 Amplifier, N/A; 1501 Amplifier, N/A; Linear Power Equalizer, N/A; 40A Amplifier, N/A

MAGNUM
Orovox Sound
11545 Tuxford St.
Sun Valley, Calif. 91352

M-750 Amplifier

Price $339
Design Power amp; booster
Dimensions 2½H x 5½W x 8D, each piece; unit comprises separate power supply and amp
Mounting Under dash/in trunk
Power 75 watts (18.75 dBW) per channel continuous into 4 ohms from 20 Hz to 20 kHz with no more than 0.2% THD
Response 10 Hz to 50 kHz, +0, –1 dB
Features Dual inputs (high- and low-level); fuse-protected outputs; separate sensing lead for on/off control; includes cables for trunk mounting; specs certified by an independant testing laboratory; optional 5-year warranty available; amplifier section fan cooled

Models also available

M-40 Preamp/Equalizer, $99

MARANTZ
Marantz Co., Inc.
20525 Nordhoff St.
Chatsworth, Calif. 91311

SA-247 Graphic Equalizer/Amplifier

Price $170
Dimensions 2⅛H x 6¾W x 5¾D
Mounting Under dash
Power 15 watts (11.75 dBW) per channel continuous into 4 ohms from 20 Hz to 20 kHz with no more than 0.5% THD; max output 60 watts
Controls Equalizer (7 bands; detented controls); fader
Features Ambience enhancement switch

Models also available

SA-2040 Amplifier, $150; 8A-2020 Power Amplifier, $75

METRO SOUND
Metro Sound
10615 Vanowen St.
North Hollywood, Calif. 91605

MS-75 Amplifier

Price $139.95
Dimensions 4H x 6⅛W x 6⅛D
Mounting Under dash
Power 36 watts (15.5 dBW) per channel continuous into 4 ohms from 30 Hz to 22 kHz with no more than 0.3% THD
Features Locking speaker input connector; locking output connector; noise suppressor filter choke

Models also available

MS-55 Amplifier, $87.95

MGT
Magtone Electronics, Inc.
2741 Toledo St., Suite 204
Torrance, Calif. 90503

MGT-2200

Price $349.95
Design Power amp
Dimensions 3 1/5H x 13 7/10W x 8 3/10D
Mounting Trunk
Power 50 watts (17 dBW) or 100 watts (20 dBW) per channel continuous into 4 ohms from 20 Hz to 30 kHz with no more than 0.8% THD (switchable)
Response 20 Hz to 30 kHz, ±0.5 dB
S/N 80 dB
Features High/low impedance inputs; power inverter circuit; direct-coupled amplifier circuit

Models also available

MGT-4100, $239.95; MGT-2100, $179.95; MGT-4030, $69.95

MIDLAND
Midland International Corp.
1900 Johnson Drive
at State Line Road
Shawnee Mission, Kans. 66205

60-150 Amplifier/Equalizer

Price $69.95
Dimensions 2 7/16H x 6W x 6D
Mounting Under dash
Power 12 watts (10.75 dBW) per channel continuous into 4 ohms from 50 Hz to 20 kHz with no more than 1% THD
Controls Equalizer (5 bands); fader
Features "Power on" light; special slide mount (can mount from top or bottom without special adapters)

Models also available

60-100 Power Amp/Booster, $39.95

MITSUBISHI
Mitsubishi Audio Systems
Melco Sales, Inc.
3030 E. Victoria St.
Compton, Calif. 90221

CV-21

Price $139.95
Design Power amp
Dimensions 1 4/5H x 5½W x 6 1/5D
Mounting Under dash
Power 10 watts (10 dBW) per channel continuous into 4 ohms with no more than 1% THD

Models also available

CV-23, $159.95; CV-22, $89.95

MOBILE AUDIO DEVELOPMENT
Mobile Audio Development Corp.
P.O. Box 7338
Arleta, Calif. 91331

MA-270 Amplifier

Price $399.95
Dimensions 2½H x 11W x 7D
Mounting Under dash/trunk
Power 135 watts (21.25 dBW) per channel continuous into 4 ohms from 15 Hz to 50 kHz with no more than 0.3% THD
IM 0.5% (100 watts)
Response 15 Hz to 50 kHz, ±3 dB
S/N 70 dB
Outputs Common ground
Features Fused speaker outputs; inverted dual-power supply; remote on-off switching; floating common-ground input

Models also available

MA-100B Amplifier, $219.95; MA-1000 Amplifier/Equalizer, $199.95; MA-100 Amplifier, $169.95; MA-700 Amplifier/Equalizer, $169.95; MA-40 Amplifier/Equalizer, S79.95; MA-7P Preamplifier/Equallzer, $79.95

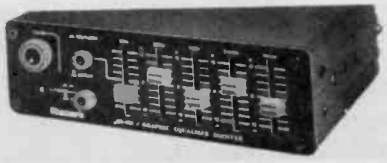
NORTH STAR
North Star Electronics, Inc.
845 Sandhill Ave.
Carson, Calif. 90746

NS-607F

Price $89.95
Design Amp/equallzer
Dimensions 1¾H x 6½W x 6¾D
Mounting Underdash
Power 16 watts (12 dBW) per channel continuous into 4 ohms from 20 Hz to 20 kHz with no more than 10% THD
Response 20 Hz to 20 kHz
Controls Equalizer (7 bands: 60 Hz, 150 Hz, 400 Hz, 1 kHz, 2.5 kHz, 6 kHz, 15 kHz); EQ bypass
Meters VU
Features Fader; LED indicator lamp

NUMARK
Numark Electronics Corp.
503 Raritan Center
Edison, N.J. 08817

EB-600 Equalizer/Amplifier



Price $129.95
Dimensions 2⅛H x 6⅞W x 6½D
Mounting Under dash
Power 30 watts (14.75 dBW) per channel continuous into 8 ohms
Controls Equalizer (5 bands); EQ bypass
Features Fader

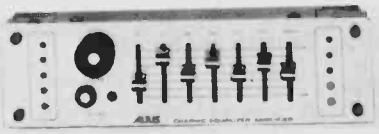
NUSOUND
Nusound Div.
Jin Yung (America), Inc.
5219 Cramer Ave.
N. Hollywood, Calif. 91601

JCP-060 Amplifier/Equalizer

Price $74.95
Dimensions 1 9/10H x 5⅞W x 4 1/5D (amplifier); 1 3/10H x 2½W x 5⅞D (remote control unit)
Mounting Under dash
Power 25 watts (14 dBW) per channel continuous into 4 ohms from 40 Hz to 15 kHz with no more than 1.5% THD at 1 kHz
Response 40 Hz to 15 kHz, ±3 dB
S/N 40 dB
Controls Equalizer (5 bands: 60 Hz, 200 Hz, 1 kHz, 3.5 kHz, 10 kHz)
Features Independent control module; hideaway amp

PACE/ALTUS
Pathcom, Inc.
24105 S. Frampton Ave.
Harbor City, Calif. 90710

PSG-3750 Amplifier/Equalizer



Price $119.95
Design Amp/equalizer
Dimensions 1 2/3H x 6½W x 7D
Mounting Under dash
Power 35 watts (15.5 dBW) per channel continuous into 4 ohms from 30 Hz to 20 kHz
Controls Equalizer (7 bands)
Meters LED peak
Features LED indicators

PANASONIC
Panasonic Car Audio
One Panasonic Way
Secaucus, N.J. 07094

CJ-5000 Amplifier

Price $229.95
Dimensions 2⅝H x 7⅝W x 9⅛D
Mounting Under dash
Power 50 watts (17 dBW) per channel continuous into 4 ohms from 15 Hz to 40 kHz with no more than 0.05% THD
Response 15 Hz to 50 kHz
S/N 80 dB
Features Dual inputs for general car radio or Panasonic preamps

Models also available

CJ-4000 Amplifier, $189.95; CJ-3600 Amplifier/Equalizer, $129.95; CJ-3000 Amplifier, $109.95; CJ-255Z Amplifier, $79.95

PIONEER
Pioneer Electronics of America
1925 E. Dominguez St.
Long Beach, Calif. 90810

AD-360 Booster

Price	$149.95
Dimensions	2½H x 9W x 8D
Power	50 watts (17 dBW) per channel continuous into 4 ohms from 20 Hz to 30 kHz with no more than 0.8% THD
Features	Built-In protection circuits; auto on/off power switch

Models also available

AD-50 Amplifier/Equalizer, $199.95; GM-120 Amplifier, $149.95; AD-30 Amplifier/Equalizer, $129.95; GM-40 Amplifier, $69.95

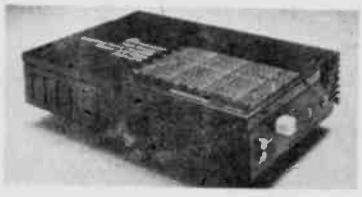
POWER DRIVE
Recoton Corp.
46-23 Crane St.
Long Island City, N.Y. 11101

SE-50 Equalizer/Amplifier

Price	$129.95
Design	Amp/equalizer
Dimensions	2H x 6W x 9D
Mounting	Under dash
Power	24 watts (13.75 dBW) per channel continuous into 4 ohms from 20 Hz to 30 kHz with no more than 1% THD
Response	10 Hz to 30 kHz, –3 dB at 1 kHz
Controls	Equalizer (5 bands: 50 Hz, 250 Hz, 1 kHz, 3.5 kHz, 10 kHz)
Features	Front/rear/fader

PYRAMID
Mobile Audio Development Corp.
P.O. Box 7338
Arleta, Calif. 91331

PMA-270 Amplifier



Price	$289.95
Design	Power amp
Dimensions	2½H x 11W x 7½D
Mounting	Under dash
Power	270 watts (24.25 dBW) per channel continuous into 4 ohms from 15 Hz to 50 kHz with no more than 0.3% THD
Response	20 Hz to 50 kHz, ±3 dB
S/N	70 dB
Outputs	Inverted transfer
Features	Floating or common-ground input; fused outputs; inverting power supply; high- or low-impedance input

Models also available

MA-1000 Amplifier, $219.95; MA-100B Amplifier, $216.95; MA-700 Amplifier, $179.95; MA-7P Preamplifier/Equalizer, $109.95; PMA-100 Amplifier, $149.95; MA-40 Amplifier, $99.95

RCA
RCA Special Products Div.
2000 Clements Bridge Road
Deptford, N.J. 08096

12R906 Booster Amplifer

Price	$44.75
Design	Booster
Dimensions	1¼H x 4W x 5½D
Mounting	Under dash
Power	9 watts (9.5 dBW) per channel continuous into 4 ohms at 1 kHz with no more than 0.1% THD
Response	20 Hz to 25 kHz
Controls	None
Meters	None
Features	Two channels; built-in protection circuit

REALISTIC
Radio Shack Corp.
1400 One Tandy Center
Ft. Worth, Texas 76102

12-1860 Amp

Price	$28
Power	12 watts (10.75 dBW)
Features	Includes hardware

ROYAL SOUND
Royal Sound Co. Inc.
200 Industrial Way W.
Eatontown, N.J. 07724

RA-6000 Amplifier

Price	$350
Design	Power amp
Dimensions	2 4/5H x 7 9/10W x 9 3/10D
Mounting	Under dash
Power	60 watts (17.75 dBW) per channel continuous into 4 to 8 ohms from 10 Hz to 50 kHz with no more than 0.2% THD
IM	0.2% (60 watts)
Response	10 Hz to 50 kHz, ±1 dB
S/N	95 dB
Features	Fused protection circuit; resettable speaker-protection circuit-breaker; automatic power control; gold-plated input terminals; heavy duty push-type positive-lock color-coded speaker output terminals

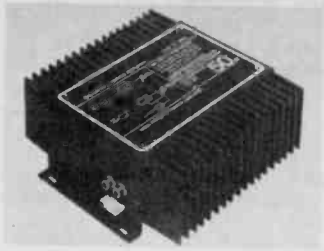
Models also available

RC-2000 Preamplifier/Equalizer, $350; EA-600 Amplifier, $120

SANYO
Sanyo Electric, Inc.
1200 W. Artesia Blvd.
Compton, Calif. 90220

PA-6050 Amplifier

Price	$149.95



Dimensions	3H x 7W x 7⅝D
Mounting	Trunk/under seat
Power	25 watts (14 dBW) per channel continuous into 4 ohms from 20 Hz to 20 kHz with no more than 0.05% THD
Features	RCA input jacks for line-level preamp output; high-level input jacks for speaker outputs

Models also available

PA-6120 Amplifier, $279.95; PA-6060 Amplifier, $219.95; PA-6100 Amplifier, $169.95; EQZ-6400 Biamplified Equalizer, $109.95; PB-6000 Booster, $89.95; EQZ-6200 Preamplifier/Equalizer, $79.95; PA-7000 Booster, $59.95; PB-5050 Booster, $49.95; PB-2000 Booster, $44.95

SONY
Sony Industries
9 W. 57th St.
New York, N.Y. 10016

XM-1 Amplifier

Price	$299.95
Design	Power amp
Dimensions	1¾H x 5⅝W x 10¼D
Mounting	In dash/under dash
Power	70 watts (18.5 dBW) per channel continuous into 4 ohms
IM	0.08% (70 watts)
Response	20 Hz to 30 kHz, ±3 dB
S/N	100 dB
Features	Aluminum integrated body; PWM system (pulse width modulation); low distortion; low power consumption; Class D digital amplifier; remote turn-on circuit

Models also available

XE-9 Equalizer, $114.95; GB-40 Booster, $99.95; XM-41 Amplifier, $89.95; XM-21 Amplifier, $59.95

SOUND BARRIER
Sound Barrier Corp.
1050 E. Dominguez, Unit P.
Carson, Calif. 90746

Bravo 303 Equalizer

Price	$134.95
Dimensions	1H x 6W x 6D
Mounting	Under dash
Power	15 watts (11.75 dBW) per channel continuous
Response	25 Hz to 30 kHz
Controls	Equalizer (7 bands: 60 Hz, 150 Hz, 400 Hz, 1 kHz, 2.4 kHz, 6 kHz, 15 kHz)
Features	High/low impedance switch; ultra-thin design

SPARKOMATIC
Sparkomatic
645 Madison Ave.
Pan Ocean Bldg.
New York, N.Y. 10022

GE-1000 Equalizer/Amplifier

Price $189.95
Dimensions 2½H x 7½W x 9¼D
Mounting Under dash
Power 100 watts (20 dBW) per channel continuous into 4 to 8 ohms from 20 Hz to 20 kHz with no more than 0.01% THD
Controls Built-in 7-band equalizer; fader
Meters LED peak
Features "Linear" switch for linear frequency response of the amp; protective relay circuit for speakers

Models also available
GE-500 Equalizer/Booster, $89.95; LC-100 Amplifier, $89.95; LC-101 Amplifier, $49.95; LC-50 Booster, $29.95

SPECO
SPECO Div. Components Specialties, Inc.
1172 Route 109
Lindenhurst, N.Y. 11757

SPB-40 Booster

Price $52
Design Booster
Dimensions 1⅝H x 4 5/16W x 5¾D
Mounting Under dash
Power 20 watts (13 dBW) per channel continuous into 4 to 8 ohms from 100 Hz to 10 kHz
Controls EQ bypass
Features Automatic "power off" switch; couples to any car stereo radio or tape player

Models also available
EPB-40 Equalizer/Booster, $124.95

SPECTRON
Spectron Electronics, Inc.
9627 Owensmouth Ave.
Chatsworth, Calif. 91311

602 Amplifier
Price $329
Design Power amp
Dimensions 3 1/5H x 7½W x 5 7/10D
Mounting Under dash/in trunk
Power 60 watts (17.75 dBW) per channel continuous into 4 ohms from 20 Hz to 20 kHz with no more than 0.05% THD
Response 10 Hz to 100 kHz, ±3 dB
S/N –85 dB
Features Over-voltage, temperature, and short-circuit protection; high-quality construction; isolated power supply to eliminate noise pickup; low power consumption (typically 3A); dual Slope VI limiter permits 602 to drive reactive loads and operate with low speaker impedances

Models also available
302 Preamplifier/Equalizer, $209

TANCREDI
Tancredi Div.
Kologel Co., Ltd.
2318 E. Del Amo Blvd
Compton, Calif. 90220

TA-100 Amplifier/Equalizer
Price $149.95
Dimensions 2H x 5⅛W x 7 5/16D
Mounting Under dash
Power 50 watts (17 dBW) per channel continuous into 4 ohms from 20 Hz to 20 kHz with no more than 1% THD
Controls Equalizer (7 bands)
Features LED power indicators; floating common ground

Models also available
TA-50 Power Amp, $199.95; TE-200 Booster/Equalizer, $159.95; TE-100 Booster/Equalizer, $129.95; TE-80 Amplifier/Equalizer, $99.95; TE-70 Amplifier/Equalizer, $89.95; TS-120 Amplifier, $49.95

TEASER WIREWORKS
Teaser Wireworks, Inc.
P.O. Box 402003
Dallas, Texas 75240

EQ-10 Preamp/Equalizer
Price $299
Design Preamp/equalizer
Dimensions 1H x 14W x 6D
Mounting Under dash
Response 20 Hz to 100 kHz, ±0.25 dB
S/N Greater than 100 dB re 0 dBm output
Controls Equalizer (10 bands); standard ISO centers; EQ bypass
Outputs 1 stereo pair, max output: 12V
Meters Bar-graph (vacuum fluorescent)
Features Balance control; volume control; full 2-year warranty; mil-spec parts

TEN
Fujitsu Ten Corp. of America
19281 Pacific Gateway Drive
Torrance, Calif. 90502

PA-160
Price $289.95
Design Power amp
Dimensions 2 13/16H x 9 13/16W x 7½D
Mounting Under dash/in trunk
Power 40 watts (16 dBW) per channel continuous into 4 ohms from 30 Hz to 20 kHz with no more than 0.3% THD
Response 20 Hz to 30 kHz, ±3 dB
S/N 70 dB

VISONIK HI FI
Visonik of America, Inc.
701 Heinz Ave.
Berkeley, Calif. 94710

PA-1 Preamplifier

Price $125
Dimensions 1½H x 6⅞W x 4½D
Mounting Under dash
Features Two inputs; bass, midrange, and treble controls; input sensitivity: 2.5V (variable 0.05 to 2.5); response: 20 Hz to 20 kHz, ±0.1 dB

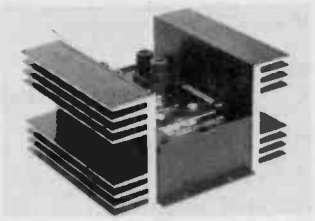
VISAM SERIES

Visam A-401 Amplifier
Price $128
Dimensions 2½H x 6W x 7D
Mounting Under dash/kick-panel/trunk
Power 40 watts (16 dBW) per channel, both channels operating, into 4 ohms from 20 Hz to 20 kHz with no more than 0.25% THD
S/N 85 dB
Features Can be used as a mono amplifier (80 watts into 2 ohms) when connected with an additional Y-adapter (supplied)

Models also available
Visam AS-2000 Autosub Mono Amplifier/Equalizer, $120

ZAPCO
Zeff Advanced Products Co.
5018 Paradise Road
Modesto, Calif. 95351

150LA Amplifier



Price $460
Power 75 watts (18.75 dBW) per channel continuous into 4 ohms from 16 Hz to 20 kHz with no more than 0.07% THD
IM 0.08% (75 watts)
Response 5 Hz to 75 kHz, ±1.5 dB
S/N 102 dB
Features Low-distortion circuitry

Models also available
300-LA Amplifier/Equalizer, $1,500; 150L Amplifier, $376; PEQ Preamplifier/Equalizer, $266

Separate Speakers & Speaker Systems

ADCOM
Adcom
9 Jules Lane
New Brunswick, N.J. 08901

ELF-1

Price	$229/pr.
Dimensions	5H x 8W x 6⅜D
Design	Enclosed
Drivers	4" long-throw woofer in aluminum die-cast basket; 1" soft-dome tweeter with aluminum form
Response	45 Hz to 20 kHz
Sensitivity	86 dB SPL at 1 meter at 1 watt
Min. power	5 watts (7 dBW)
Max. power	60 watts (17.75 dBW)
Impedance	4 ohms
Mounting	Surface
Features	Wedge-shaped; brackets included; mirror-imaged pairs; aluminum die-cast cabinet with black matte finish; black aluminum grille with rubber gasket

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

ADS 300C

Price	$125
Dimensions	8½H x 5¾W x 3D (1½" above surface; 1½" below surface)
Design	2-way
Response	50 Hz to 20 kHz, ±3 dB
Sensitivity	90 dB SPL at 1 meter at 1 watt
Min. power	10 watts (10 dBW)
Max. power	100 watts (20 dBW)
Impedance	4 ohms
Size(s)	5¼" woofer; 1" soft-dome tweeter
Mounting	Flush
Features	Super-slim design for door and rear deck mounting; 3-position tweeter level switch; tweeter protection fuse; removable high-strength metal grille; optional mounting kits for 6" x 9" hole and super-flush mounting

Models also available

ADS 300C, $155; ADS 200C, $125

AFCO
AFCO Electronics
471 Roland Way
P.O. Box 2648
Oakland, Calif. 94621

AF-2000

Price	$149.95/pr.
Dimensions	7 2/25H x 4 1/3W x 4 3/25D
Design	2-way
Response	50 Hz to 20 kHz
Min. power	30 watts (14.75 dBW)
Max. power	50 watts (17 dBW)
Impedance	4 ohms
Size(s)	4"
Magnet	8 oz.
Mounting	Flush/surface
Features	Detachable mounting brackets and wire included

AFS/KRIKET
AFS/Kriket
8050 Castleway Drive
Indianapolis, Ind. 46250

8976 Domax III

Price	$159.95/kit
Dimensions	6⅜H x 9W x 3⅜D
Design	3-way
Drivers	Dome tweeter; piezo supertweeter
Response	35 Hz to 40 kHz, ±5 dB re 104 dB SPL at 1 meter at 1 watt
Sensitivity	97 dB SPL at 1 meter at 1 watt
Min. power	2 watts (3 dBW)
Max. power	100 watts (20 dBW)
Impedance	4 ohms
Size(s)	6" x 9"
Magnet	20 oz.
Mounting	Flush
Features	Pole-mounted high-frequency assembly for minimum IM distortion; ferrofluid tweeter damping; lifetime guaranty

8974 DOMAX II

Price	$129.95/kit
Dimensions	6⅜H x 9W x 3⅜D
Design	2-way
Response	40 Hz to 22 kHz, ±5 dB re 98 dB SPL at 1 meter at 1 watt
Sensitivity	96 dB SPL at 1 meter at 1 watt
Min. power	2 watts (3 dBW)
Max. power	50 watts (17 dBW)
Impedance	4 ohms
Size(s)	6" x 9"
Magnet	20 oz.
Mounting	Flush
Features	1¼" aluminum high-temperature woofer voice coil; 1" phenolic dome tweeter; ferrofluid tweeter damping; lifetime guaranty

Models also available

8972, $99.95/kit; 8932, $69.95/kit; 8931, $55/kit; 8232, $74.95/klt; 8231, $54.95/kit; 8032, $79.95/kit; 7311, $17.95; 6069, $50; 2732, $32.95; 2521, $23.95; 2421, $23.95; 0006, $69.95/pr.; 0005, $139.95/kit; 0004, $69.95/kit; 0003, $54.95/kit; 0002, $59.95/klt; 0001, $44.95/kit

ALPINE
Alpine Electronics of America, Inc.
3102 Kashiwa St.
Torrance, Calif. 90505

6004

Price	$199.95/pr.
Dimensions	4½H x 7 3/16W x 1¼D (midrange assembly)
Design	3-way
Response	40 Hz to 16 kHz
Max. power	40 watts (16 dBW)
Impedance	4 ohms
Size(s)	6" x 9" woofer; soft-dome midrange; titanium-dome super tweeter
Magnet	20 oz.
Mounting	Flush
Features	Wire mesh grilles

Models also available

6302, $119.95/pr.

ALTEC LANSING
Altec Corp.
1515 S. Manchester Ave.
Anaheim, Calif. 92803

SK-1

Price	$99.95/pr.
Dimensions	5½H x 5½W x 2 5/16D
Design	Extended range
Response	100 Hz to 10 kHz, ±5 dB re 92 dB SPL at 1 meter at 1 watt
Sensitivity	92 dB SPL at 1 meter at 1 watt
Min. power	1 watt (0 dBW)
Max. power	35 watts (15.5 dBW) (rms-pink noise)
Impedance	4 ohms
Size(s)	5¼" midrange
Mounting	Flush
Features	Functions as heart of Altec Lansing AL-1 system; can also be used as a single speaker in installations with limited space

SW-1 Power Bass Subwoofer

Price	$219.95
Dimensions	6½H x 9⅜W x 4⅛D
Design	Subwoofer
Response	50 Hz to 150 kHz, ±4 dB
Max. power	40 watts (16 dBW)
Impedance	1K ohms
Size(s)	6" x 9"
Mounting	Flush
Features	Includes Power Bass control module; part of Altec Lansing AL-1 system

Models also available

6 x 9 4A Duplex, $159.95/pr.; TK-1, $69.95/pr.; AAS-692STX Glacier, $82.95; AAS-621CX Cumberland, $37.95/pr.

AUDIOVOX
Audiovox Corp.
150 Marcus Blvd.
Hauppauge, N.Y. 11787

Comp 100

Price	$126
Dimensions	4½H x 7W x 4¼D
Design	2-way
Response	50 Hz to 20 kHz re 92.5 dB SPL at 1 meter at 1 watt
Min. power	35 watts (15.5 dBW)
Max. power	50 watts (17 dBW)
Impedance	8 ohms
Size(s)	4" woofer; soft-dome tweeter
Magnet	10 oz. (woofer); 6 oz. (tweeter)
Mounting	Surface
Features	Heavy-duty cast-aluminum housing; 50-watt input rating; complete with swivel bracket

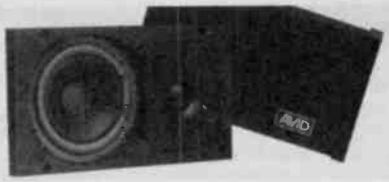
HCS-362

Price	$116
Design	3-way
Response	50 Hz to 18 kHz
Min. power	40 watts (16 dBW)
Max. power	70 watts (18.5 dBW)
Impedance	8 ohms
Size(s)	6" x 9"
Magnet	20 oz.
Mounting	Flush
Features	Independent woofer/tweeter/midrange; Sound/Flo®grilles

Models also available

HCS-342, $116; HCS-59, $100; Dome 20, $93; Tryvox 30, $84; COID-69-20A, $52; COID-57-20, $52; COSC-6, $46; COSC-4, $46; COSC-5A, $43; SC-5, $25

AVID
Avid Corp.
10 Tripps Lane
East Providence, R.I. 02914



Price	$175/pr.
Dimensions	1H x 9 3/16W x 5 7/16D
Design	2-way
Response	60 Hz to 20 kHz, ±5 dB re 93 dB SPL at 1 meter at 1 watt
Sensitivity	90 dB SPL at 1 meter at 1 watt
Min. power	5 watts (7 dBW)
Max. power	75 watts (18.75 dBW)
Impedance	4 ohms
Size(s)	4½" woofer; 1" soft-dome tweeter
Magnet	20 oz. (woofer); 10 oz. (tweeter)
Mounting	Flush/surface
Features	Avid Expert Drive® design; limited 5-year warranty; complete with adapter for sub-surface mount and wiring; magnetic fluids for improved power handling; fuse protected

Models also available

10, $225/pr.; 1, $60/pr.; RD-5, $60/pr.

AXIOM
Axiom Engineering Laboratories
6901 Owensmouth Ave., #6
Chatsworth, Calif. 91311

MS-1

Price	$299/pr.
Dimensions	4H x 12 ½W x 9D
Design	Enclosed
Drivers	2 (full range damped cone; vented dome)
Response	40 Hz to 20 kHz, ±3 dB re 92 dB SPL at 1 meter at 1 watt
Sensitivity	94 dB SPL at 1 meter at 1 watt
Min. power	5 watts (7 dBW)
Max. power	100 watts (20 dBW)
Impedance	8 ohms
Controls	None
Size(s)	8" woofer; 1" tweeter
Magnet	20 oz.
Mounting	Flush/rear-deck; min. cutout required: 6 ¾" round
Features	Metalized Mylar, 5% tolerance capacitors; forward-firing tweeter; 3/4" high-density particle-board baffle; 1 ½" high-power aluminum voice coil woofer; specially damped woofer cone

BIG ROCK
Olson Electronics
260 S. Forge St.
Akron, Ohio 44327

SP-389

Price	$29.99
Dimensions	9H x 6W x 4D
Design	2-way
Response	25 Hz to 30 kHz
Min. power	4 watts (6 dBW)
Max. power	40 watts (16 dBW)
Impedance	8 ohms
Size(s)	6" x 9" woofer; 3" tweeter
Magnet	30 oz.
Mounting	Flush

Models also available

SP-513, $19.99; SP-232, $20/pr.

BLAUPUNKT
Robert Bosch Corp.
2800 S. 25th Ave.
Broadview, Ill. 60153

AMP-369 "Big Mouth"

Price	$100
Design	Amp/equalizer
Dimensions	1¾H x 4W x 5D
Mounting	Under dash
Power	25 watts (14 dBW)
Response	20 Hz to 45 kHz, ±3 dB
Controls	Bass; treble; midrange; equalizer (3 bands: 100 Hz, 1 kHz, 10 kHz)
Features	Matched amplified speaker system; amplifier features: separate bass, treble & midrange controls; speakers are 6" x 9" coaxials with aluminum voice coils

Models also available

731 000, $76.90; 729 000, $76.90; 728 000, $108.30/pr.; 676 000, $71.40; 639 000, $71.40; 688 000, $134.25/pr.; 687 000, $103.60; 721 000, $41.40; 725 000, $73.50/pr.; 724 060, $34.30; 727 000, $34.25; 733 060, $61.40/pr.; 726 000, $25; 736060, $43.55/pr.

BOMAN
Boman Industries
9300 Hall Road
Downey, Calif. 90241

SK-4000GL

Price	$99.95/pr.
Design	4-way
Response	70 Hz to 15 kHz, ± 10 dB
Max. power	35 watts (15.5 dBW)
Impedance	4 ohms
Size(s)	6" woofer; 3" midrange; 1" tweeter horn; 1" dome tweeter
Magnet	20 oz.
Mounting	Flush
Features	Built-in audio spectrum diffuser; built-in high- and mid-frequency equalizer attenuation control

Models also available

SK-410TR-40GL, $79.95/pr.; SK-69TR-40GL, $79.95/pr.; SK-525TR-40GL, $74.95/pr.; SK-1020CX-20GL, $59.95/pr.; SK-410CX-20GL, $69.95/pr.; SK-69CX-20GL, $64.95/pr.; SK-525CX-20GL, $54.95/pr.; SK-690N, $34.95/pr.; SK-1010N, $32.95/pr.; SK-660N, $26.95/pr.; SK-450N, $22.95/pr.; SK-75N, $22.95/pr.; SK-650N, $21.95/pr.; SK-550N, $15.95/pr.

BOSE
Bose Corp.
100 The Mountain Road.
Framingham, Mass. 01701

1401 Car Stereo System

Price	$328.95
Dimensions	1½H x 10W x 4½D (equalizer)
Design	Full-range with active electronic equalizer
Min. power	0.25 watts (–6 dBW)
Max. power	25 watts (14 dBW)
Impedance	0.45 ohms
Size(s)	4½"
Magnet	9.1 oz.
Mounting	Flush
Features	Speaker and booster/equalizer system; equalizer mounted under dash; output of equalizer: 50 watts (17 dBW) per channel continuous into 0.45 ohms from 40 Hz to 17 kHz with no more than 0.09% THD

BRAUN
Adcom
9 Jules Lane
New Brunswick, N.J. 08901

Output C

Price	$299/pr. (with brackets)
Dimensions	6¾H x 4¼W x 4⅜D
Design	2-way
Response	50 Hz to 25 kHz
Sensitivity	85 dB SPL at 1 meter at 1 watt
Min. power	10 watts (10 dBW)
Max. power	35/50 watts (15.5/17 dBW)
Impedance	4 ohms
Size(s)	4" woofer; 1" dome tweeter
Magnet	18 oz. (woofer)
Mounting	Surface
Features	Original mini speaker from Braun; aluminum cabinet 5mm thick; crossover at 1.5 Hz, 12 dB/octave; employs long-throw woofer and computer-calculated crossover network; bracket allows maximum flexibility in mounting; padded rubber edging acts as cushion

BYERS
Stephens-Byers Corp.
2218 Old Middlefield Way
Mountain View, Calif. 94043

6020 Porta-Sport

Price	$320
Dimensions	13H x 33W x 7D
Design	Enclosed
Drivers	Two 7" woofers; two 1" textile dome tweeters
Response	40 Hz to 20 kHz, ±3 dB re 90 dB SPL at 1 meter at 1 watt
Sensitivity	90 dB SPL at 1 meter at 1 watt
Min. power	5 watts (7 dBW)
Max. power	80 watts (19 dBW)
Impedance	8 ohms
Controls	Tweeter
Mounting	Surface/rear-deck
Features	Single-unit transmission reflex housing for right and left channels; special design allows for in or out of vehicle use, sportcars, or hatchbacks; biamping option

Models also available

6000 Soundboard, $295; 6000A Soundboard, $250

CANTON
Adcom
9 Jules Lane
New Brunswick, N.J. 08901

AC-200 Amplified Speaker

Price	$380/pr.
Dimensions	4 2/5H x 7 3/5W x 5¾D
Design	Powered, biamplified two-way system
Response	48 Hz to 25 kHz
Size(s)	4 1/3" woofer; 9/10" dome tweeter
Mounting	Surface
Features	Designed to run off car stereo speaker output; can also be operated with low-level source such as a preamplifier; active crossover at 1.7 kHz; 20-watt amplifier for the woofer; 5-watt amp for the tweeter; woofer amp is a bridge-switching amp with direct coupling; S/N: 78 dB; THD: 0.03% at 20 watts, 40 Hz to 2 kHz; high-frequency amp is a single amp with S/N, 74 dB; THD: 0.5% at 5 watts, 1.5 kHz to 12.5 kHz; crossover at 12 dB/octave; input voltages: 3V to 60 ohms or 300 mV to 50 ohms for full modulation; ground-interference suppression: 45 dB; enclosure made of die-cast aluminum, finished in black

Models also available
HC-100, $250/pr.

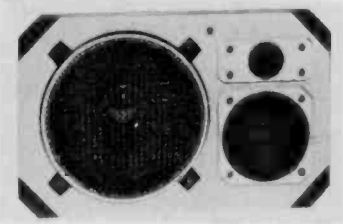
CAR-FI
Car-Fi International
152 W. Cypress Ave.
Burbank, Calif. 91502

CS-4
Price	$239.95
Dimensions	6H x 9W x 4D
Design	3-way
Response	40 Hz to 30 kHz, ±2 dB re 93 dB SPL at 1 meter at 1 watt
Min. power	4 watts (6 dBW)
Max. power	50 watts (17 dBW)
Impedance	4 ohms
Size(s)	6" x 9" woofer; soft-dome midrange; samarium cobalt tweeter
Magnet	30 oz.
Mounting	Flush/surface
Features	Biamp compatible

Models also available
CS-3, $149.95; CS-2, $129.95; CS-1, $89.95

CLARION
Clarion Corp. of America
5500 Rosecrans Ave.
Lawndale, Calif. 91260

SK-99B



Price	$130.95
Dimensions	6⅜H x 10W x 1⅞D
Design	3-way
Response	100 Hz to 20 kHz, ±3 dB
Min. power	12 watts (10.75 dBW)
Max. power	25 watts (14 dBW)
Impedance	8 ohms
Size(s)	5¼" woofer; 2½" midrange; 1" tweeter
Magnet	20 oz.
Mounting	Flush

Models also available
SK-103, $169.50/pr.; SK-102, $149.95/pr.; SK-106, $69.95; SK-105, $69.95; SK-107, $69.95/pr.; SK-89C, $65.75/pr.; SK-45C, $60.50/pr.; SK-44C, $54.95/pr.; SK-40C, $36.95/pr.; SK-95C, $36.95/pr.; SK-42C, $34.95/pr.

CLASSIC RESEARCH
Classic Research & Design
Div. of Classic Car Sounds
5070 E. 22nd St.
Tucson, Ariz. 85711

3F-320
Price	$349.95/pr.
Dimensions	13½H x 2¾W x 6D
Design	3-way
Response	150 Hz to 20 kHz
Sensitivity	90 dB SPL at 1 meter at 1 watt
Min. power	20 watts (13 dBW)
Max. power	110 watts (20.5 dBW)
Impedance	4 to 8 ohms
Size(s)	4½" woofer; 4½" midrange; ¾" dome tweeter
Magnet	20.5 oz.
Mounting	Surface
Features	Speaker enclosures use high quality SEAS drivers; custom color-coordinated to match interiors of better foreign and domestic vehicles, designed for use with high power, subwoofer type systems; also available as 2F-320 2-way, $299.95/pr.; contact company regarding custom or esoteric installations

Models also available
2R-320, $299.95

COBRA
Dynascan Corp.
6460 West Cortland
Chicago, Ill. 60635

SP-693-20
Price	$79.95
Design	3-way
Response	50 Hz to 18 kHz
Max. power	30 watts (14.75 dBW)
Impedance	6 ohms
Size(s)	9" x 6"
Magnet	20 oz.
Mounting	Flush/surface

Models also available
SP-692-20, $59.95; SP-553-20, $69.95; SP-552-20, $49.95; SP-403-20, $79.95; SP-402-20, $59.95

CRAIG
Craig Corp.
921 W. Artesia Blvd.
Compton, Calif.

V-451
Price	$179.95
Design	Separate
Drivers	Two 6" x 9" woofers with coaxially mounted tweeters; 2 mid-woofers; 2 separate phenolic ring tweeters
Response	60 Hz to 20 kHz, ±6 dB
Max. power	40 watts (16 dBW)
Impedance	4 ohms
Size(s)	6" x 9" woofer; 5¼" x 5¼" midrange; 3" x 3" tweeter
Magnet	20 oz.
Mounting	Flush; rear-deck; minimum cutout required: 6 x 8⅝, 4 15/16, 3
Features	Six-speaker system with co-axial woofer/tweeter and super tweeter with either surface or flush mounting

Models also available
V-480, $159.95; V-350, $74.95; V-362, $59.95; V-321 Powerplay, $54.95; V-304 Powerplay, $44.95; V-380, $44.95; V-360, $39.95; V-301, $34.95; V-103, $32.95; V-240, $29.95; V-341, $29.95; V-190, $29.95; V-102, $24.95; V-300, $22.95; V-180, $22.95; V-101, $18.95

DAHLQUIST
Dahlquist, Inc.
601 Old Willets Path
Hauppauge, N.Y. 11787

ALS-3
Price	$250/pr.
Dimensions	4½H x 7½W x 4D
Design	3-way
Response	45 Hz to 22 kHz
Min. power	5 watts (7 dBW)
Max. power	30 watts (14.75 dBW)
Impedance	4 ohms
Controls	Auto/home equalizer switch
Size(s)	4" woofer; 1½" midrange; 1" tweeter
Mounting	Surface
Features	Equalization for car or home use; cast-aluminum case with anti-diffraction baffle; 90° adjustable bracket included (removable); exceptional clarity and detail throughout range make it also suitable for quality home stereo systems

DIMENSION
Dimension by Custom Craft
2020 E. Orangethorpe Ave.
Anaheim, Calif. 92806

MK-200-2
Price	$139.95/pr.
Design	Separate
Response	40 Hz to 20 kHz
Min. power	4 watts (6 dBW)
Max. power	60 watts (17.75 dBW)
Impedance	4 ohms
Size(s)	6" x 9" woofer; 2" tweeter
Magnet	30 oz.
Mounting	Flush
Features	Cast-aluminum frame

Models also available
MK-100-2, $109.95/pr.; MK-200-W Subwoofer, $59.95; MK-100-W Subwoofer, $49.95

EPI
Epicure Products, Inc.
One Charles St.
Newburyport, Mass. 01950

LS-81
Price	$190/pr.
Dimensions	7⅞H x 5⅛W x 2½D
Design	2-way
Response	80 Hz to 20 kHz, ±3 dB re 86 dB SPL at 1 meter at 1 watt
Sensitivity	86 dB SPL at 1 meter at 1 watt
Min. power	12 watts (10.75 dBW)
Max. power	60 watts (17.75 dBW)
Impedance	4 ohms
Size(s)	14½" woofer; 1" tweeter
Magnet	13.25 oz. (woofer); 6 oz. (tweeter)
Mounting	Flush/surface
Features	Supplied with mounting base; when base is used only a 4¼" hole and 1½" of depth is needed; 12 dB/octave constant resistance crossover eliminates midrange coloration

Models also available
LS-70, $160/pr.; LS-35, $50/pr.

FULTON
Fulton Electronics
4204 Brunswick Ave. North
Minneapolis, Minn. 55422

Midget Monitor
Price	$149
Dimensions	10H x 7W x 6D
Design	Enclosed
Drivers	5" woofer; 2¼" tweeter
Response	75 Hz to 24 kHz, ±3 dB
Sensitivity	83 dB SPL at 1 meter at 1 watt
Min. power	7 watts (8.5 dBW)
Max. power	250 watts (24 dBW)
Impedance	8 ohms
Controls	None
Magnet	9 oz.
Mounting	Surface
Features	Walnut-veneer cabinet; foam grille

FULTRON
Arthur Fulmer
122 Gayoso
Memphis, Tenn. 38101

15-9260

Price	$129.95
Dimensions	4¾H x 7⅜W x 4½D
Design	2-way
Max. power	25 watts (14 dBW)
Impedance	4 or 8 ohms
Controls	Brilliance
Size(s)	6½" (round)
Mounting	Surface
Features	Die-cast aluminium housing with brilliance control

Models also available
15-9665, $79.95; 15-9696, $79.95; 15-9690, $69.95; 15-9590, $69.95; 15-9490, $59.95; 15-9670, $49.95; 15-9470, $46.95; 15-9660, $39.95; 15-9460, $36.95; 15-9440, $26.95; 15-9560, $26.85; 15-9430, $24.95; 15-9610, $24.95; 15-9240, $21.95; 15-9420, $15.95; 15-9220, $14.95

GC/AUDIOTEX
GC Electronics
400 South Wyman St.
Rockford, Ill. 61101

30-5121

Price	$99.95/pr.
Dimensions	7½H x 4⅜W x 4⅛D
Design	2-way
Response	55 Hz to 20 kHz
Max. power	25 watts (14 dBW)
Impedance	4 to 8 ohms
Size(s)	4" woofer; 2" tweeter
Mounting	Surface
Features	Home and auto mini speaker system; mounting bracket included; black die-cast aluminum cabinet; push terminals for easy connection

Models also available
30-2648, $97.85; 30-2647, $85.70; 30-2646, $56.85; 30-3074, $41.55; 30-3072, $41.15; 30-2644, $78.20; 30-3071, $33.20; 30-3070, $29.15; 30-2642, $53.75; 30-3054, $23.55; 30-3053, $19.75; 30-3047, $18.85; 30-2641, $46.90; 30-3056, $18.45; 30-2640, $43.75

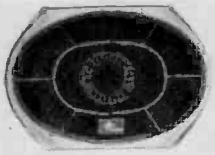
GRAFYX-STANDARD OF THE HIGHWAY®
Grafyx Audio Products, Inc.
310 Kirk Road
St. Charles, Ill. 60174

SH-601

Price	$89
Design	Separate
Drivers	6" long-throw rubber surround woofer; modified 1" hard-dome tweeter
Response	45 Hz to 20 kHz, ±3 dB re 88 dB SPL at 1 meter at 1 watt
Sensitivity	88 dB SPL at 1 meter at 1 watt
Min. power	10 watts (10 dBW)
Impedance	4 ohms
Controls	None
Size(s)	6" woofer; 1" tweeter
Magnet	12 oz. (woofer); 10 oz. (tweeter)
Mounting	Flush; door; rear-deck; minimum cutout required 5½" (woofer); 3" (tweeter)
Features	High-temperature woofer voice coil; ferrofluid tweeter

GRAN PRIX
Peerless Audio Manufacturing Corp.
40 Jytex Drive
Leominster, Mass. 01453

LeMans



Price	$124.95/pr.
Dimensions	3H x 6W x 9D
Design	Coaxial
Response	50 Hz to 20 kHz
Sensitivity	92 dB SPL at 1 meter at 1 watt
Min. power	3 watts (4.75 dBW)
Max. power	40 watts (16 dBW)
Impedance	4 ohms
Size(s)	6" x 9" (woofer); 1" soft-dome tweeter
Magnet	20 oz.
Mounting	Flush
Features	Biampable; 6 dB (acoustical) and 12 dB/octave crossover; hi-temp four-layer voice coil on phosphor-bronze former

Models also available
Monza, $119.95/pr.

GRUNDIG
GR Electronics
635 Madison Ave.
New York, N.Y. 10022

GLA-1845

Price	$68/pr.
Dimensions	5¼H x 5¼W x 1¾D
Design	2-way coaxial
Response	50 Hz to 20 kHz, –15 dB
Min. power	5 watts (7 dBW)
Max. power	45 watts (16.5 dBW)
Impedance	4 ohms
Size(s)	5¼" (round)
Magnet	10 oz.
Mounting	Flush
Features	Direct-radiating cone tweeter; built-in crossover

Models also available
GLA-1640, $52/pr.; GLA-1230, $41.50/pr.

HED
Cerwin-Vega, Inc.
12250 Montague St.
Arleta, Calif. 91331

CS-18

Price	$150/pr.
Dimensions	6½H x 9½W x 4½D
Design	2-way
Response	40 Hz to 20 kHz, ±4 dB re 98 dB SPL at 1 meter at 1 watt
Min. power	2 watts (3 dBW)
Max. power	75 watts (18.75 dBW)
Impedance	4 ohms
Size(s)	6" x 9"
Magnet	88 oz.
Mounting	Flush
Features	High power handling and efficiency

Models also available
CS-7, $104/pr.

HERALD
Herald Electronics
6611 N. Lincoln Ave.
Chicago, Ill. 60645

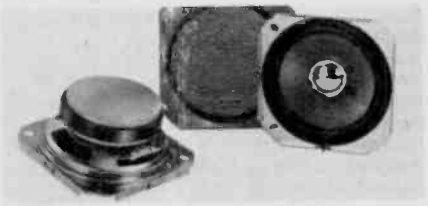
S-69

Price	$54.95
Dimensions	Coaxial
Drivers	30 Hz to 25 kHz
Sensitivity	80 watts (19 dBW)
Min. power	150 watts (21.75 dBW)
Max. power	4 ohms
Controls	6" x 9" woofer; 2¾" piezo tweeter
Size(s)	40 oz.
Magnet	Flush; surface; rear-deck
Mounting	Biamp connection

Models also available
S-23, $45; S-22, $29.95; S-994, $27.95

HI COMP
Audiovox Corp.
150 Marcus Blvd.
Hauppauge, N.Y. 11787

HCS-10



Price	$36
Dimensions	4" (round)
Design	2-way enclosed
Response	120 Hz to 16 kHz
Sensitivity	90 dB SPL at 1 meter at 1 watt
Min. power	10 watts (10 dBW)
Max. power	20 watts (13 dBW)
Impedance	8 ohms
Size(s)	4" x 4" woofer
Magnet	7 oz.
Mounting	Door
Features	Shallow depth for in-door or in-dash installation; deluxe Sound-Flo® grilles; molded rainguard shields

Models also available
HCS-241, $50

HITACHI
Hitachi Sales Corp. of America
401 W. Artesia Blvd.
Compton, Calif. 90220

HS-1M

Price	$199.95/pr.
Dimensions	7¼H x 4⅝W x 4¾D
Design	2-way
Response	50 Hz to 20 kHz, –15 dB re 85 dB SPL at 1 meter at 1 watt
Min. power	5 watts (7 dBW)
Max. power	50 watts (17 dBW)
Impedance	8 ohms
Size(s)	4" x 1"
Mounting	Surface
Features	Super-mini two-way speaker system; 85-dB output and 80-watt power capacity in a tiny cabinet; optional mounting brackets for car installation

INFINITY
Infinity Systems, Inc.
7930 Deering Ave.
Canoga Park, Calif. 91304

Infinitesimal

Price	$195
Dimensions	11H x 6¼W x 5¼D
Design	2-way
Response	65 Hz to 32 kHz, ±2 dB
Min. power	15 watts (11.75 dBW)
Max. power	100 watts (20 dBW)
Impedance	4 ohms
Size(s)	5" Infinity-Watkins dual-drive woofer with propylene cone; EMIT tweeter
Mounting	Flush/surface
Features	Self-contained unit

JANSZEN
Janszen Electrostatic by Soundmates
796 29th Ave., S.E.
Minneapolis, Minn. 55414

S-6

Price	$87.50
Design	Separate
Response	50 Hz to 8 kHz, ±6 dB re 91 dB SPL at 1 meter at 1 watt
Sensitivity	91 dB SPL at 1 meter at 1 watt
Min. power	1 watt (0 dBW)
Max. power	100 watts (20 dBW)
Impedance	4 ohms
Size(s)	6" x 9" woofer; 1" dome tweeter
Magnet	30 oz.
Mounting	Flush
Features	Power "Beam Dome" adjustable tweeter; tweeter case made from American black walnut; grille is made of wood and can be changed by customer

JBL
James B. Lansing Sound, Inc.
8500 Balboa Blvd.
Northridge, Calif. 91329

A-30

Price	$219.95/pr.
Design	2-way
Response	30 Hz to 15 kHz
Sensitivity	93 dB SPL at 1 meter at 1 watt
Max. power	40 watts (16 dBW)
Impedance	4 ohms
Size(s)	6" x 9"
Magnet	20 oz. (cast frame)
Features	Piezoelectric tweeter

Models also available
A-15, $179.95/pr.

JENSEN
Jensen Sound Laboratories
4136 North United Parkway
Schiller Park, Ill. 60176

Series II

J-1001 Series II

Price	$179.95
Dimensions	9 1/16H x 6 5/16W x 3⅛D (woofer); 4¼" (diameter) x 1 1/16D (tweeter); 4 17/32" (diameter) x 1½D (midrange)
Design	3-way (separate speakers)
Response	35 Hz to 20 kHz (total system)
Sensitivity	100 dB SPL at 1 meter at 1 watt
Max. power	50 watts (17 dBW)
Impedance	4 to 8 ohms
Controls	Left and right channel attenuators
Size(s)	6" x 9" woofer; 3½" midrange; 2" tweeter
Magnet	20 oz. (woofer); 3 oz. (midrange); 3 oz. (tweeter)
Mounting	Flush
Features	Separate control module to control midrange driver levels; 2-year limited warranty

Series I

J-1174 Series I Triax®

Price	$119.95
Dimensions	5 7/16H x 5 7/16W x 2⅜D (woofer); 5⅜H x 3W x 1⅛D (tweeter/midrange)
Design	3-way (separate tweeter and midrange unit)
Response	60 Hz to 20 kHz
Sensitivity	100 dB SPL at 1 meter at 1 watt
Max. power	50 watts (17 dBW)
Impedance	4 ohms
Size(s)	5¼" woofer; 2" tweeter; 2" midrange
Magnet	20 oz.
Mounting	Flush (woofer)/surface (tweeter/midrange)
Features	Separate tweeter/midrange module for optimum directionality and high frequency; 1-year limited warranty

Models also available
J-1130 Triax® II, $149.95; J-1124 Triax® II, $149.95; J-1033 Triax® II, $149.95; J-1037 Coax II, $109.95; J-1201 Coax II, $99.95; J-1041 Coax II, $89.95; J-1126 Coax II, $84.95; J-1044, $74.95; J-1065 Series I Triax®, $119.95; J-1101 Series I Triax®, $119.95; J-1120 Series I Coax, $89.95; J-1069 Series I Coax, $74.95; J-1105 Series I Coax, $74.95; J-1113 Series I Coax, $74.95; J-1188 Series I Coax, $74.95; J-1077 Series I Coax, $72.95; J-1186 Series I Coax, $69.95; J-1081 Series I Coax, $67.95; J-1093 Series I Coax, $64.95; J-1073 Series I Dual Cone, $52.95; J-1085 Series I Dual Cone, $49.95; J-1089 Series I Dual Cone, $44.95; J-1097 Series I Dual Cone, $42.95; J-1134 Series I Dual Cone Replacement, $34.95; J-1117 Series I Dual Cone Replacement, $29.95; J-1242, $149.95; J-1245, $34.95

JET SOUNDS
Car Tapes, Inc./Jet Sounds Labs
1000 E. Del Amo Blvd.
Carson, Calif. 90746

JSL-1511

Price	$99.95
Dimensions	2¾H x 6½W x 10¼D
Design	3-way (4 speakers)
Response	55 Hz to 18 kHz, ±5 dB re 90 dB SPL at 1 meter at 1 watt
Max. power	50 watts (17 dBW)
Impedance	8 ohms
Size(s)	5¼" (round)
Magnet	20 oz.
Mounting	Flush
Features	Air-suspension woofer with 1½" voice coil; top mounting

Models also available
JSL-980TX, $69.95; JSL-1043TX, $59.95; JSL-563TX, $49.95; JSL-950CX, $39.95; JSL-560CX, $35.95; JS-50-10, $25.95; JS-350S, $17.95

KENWOOD
Kenwood Electronics, Inc.
1315 E. Watsoncenter Road
Carson, Calif. 90745

KSC-701

Price	$229/pr.
Dimensions	7⅛H x 8 15/16W x 5D
Design	3-way acoustic suspension
Response	60 Hz to 21 kHz
Max. power	60 watts (17.75 dBW)
Impedance	4 ohms
Size(s)	4" woofer; 2½" midrange; horn tweeter
Mounting	Surface
Features	Cast-aluminum enclosure; heat-resistent woofer (with reverse roll edge)

Models also available
KSC-501, $149/pr.

KINETIC AUDIO
Kinetic Audio Intl., Ltd.
6624 W. Irving Park Road
Chicago, Ill. 60634

STAT® 400

Price	$399
Dimensions	17½H x 10½W x 9D
Design	2-way mini
Response	34 Hz to 22 kHz, ±3 dB re 93 dB SPL at 1 meter at 1 watt
Sensitivity	94 dB SPL at 1 meter at 1 watt
Min. power	10 watts (10 dBW)
Max. power	80 watts (19 dBW)
Impedance	4 ohms
Controls	Level
Size(s)	Two 5" Bextrene mid/woofers; 1¼" synthetic dome tweeter
Magnet	25 oz. (woofer)
Mounting	Surface
Features	Fuse protection; phase-corrected mid/woofers have ¾ PP excursion; rack-mountable with optional ears; walnut veneer mirror-matched; components also mirror-matched; "Linear Phase" design; heavy-duty wire-wound T-pads

KRACO
Kraco Enterprises
505 E. Euclid Ave.
Compton, Calif. 90224

VCS-2000

Price	$149.95
Dimensions	4 9/16H x 7⅜W x 4½D
Design	2-way
Response	120 Hz to 20 kHz, ±10 dB re 79 dB SPL at 1 meter at 1 watt
Max. power	50 watts (17 dBW)
Impedance	8 ohms
Size(s)	4" (round)

Magnet 10 oz.
Mounting Surface
Features Variable attenuator in an aluminum die-cast enclosure

Models also available

TRI-469, $89.95; TRI-410, $69.95; CX-410-20, $49.95

KUSTOM ACOUSTICS
Kustom Acoustics, Inc.
6624 W. Irving Park Road
Chicago, Ill. 60634

711/NFM (Near Field Monitor)

Price $179
Dimensions 15H x 7½W x 10D
Design 2-way tapered acoustical line/ seml-labyrinth
Response 39 Hz to 28 kHz, ±25 dB re 92 dB SPL at 1 meter at 1 watt
Sensitivity 93 dB SPL at 1 meter at 1 watt
Min. power 25 watts (14 dBW)
Max. power 75 watts (18.75 dBW)
Impedance 8 ohms
Controls L-pad
Size(s) 6" long-throw Bextrene woofer; 1" synthetic dome tweeter
Magnet 20 oz.
Features Rack-mountable;

Models also available

711, $179

LAKE
Lake Communications, Inc.
5743 Howard St.
Niles, Ill. 60648

L-95

Price $99.95
Dimensions 6" x 9"
Design Triaxial
Magnet 20 oz.
Features Bridgeless construction; wire-mesh grille

Models also available

L-96, $89.95; L-68, $79.95; L-67, $59.95; L-65, $59.95; L-120, $49.95

MAGNUM
Orovox Sound
11545 Tuxford St.
Sun Valley, Calif. 91352

PROFESSIONALS SERIES

M-124

Price $195.80/pr.
Design 3-way
Response 25 Hz to 22 kHz
Min. power 25 watts (14 dBW)
Max. power 85 watts (19.25 dBW)
Impedance 8 ohms
Size(s) 6" x 9" woofer; piezoelectric tweeter/midrange
Magnet 30 oz.
Mounting Flush/surface
Features 1½" aluminum voice coil; die-cast frame; dura-last grilles

XL Series

XL-620M

Price $133.50/pr.
Design 3-way
Response 25 Hz to 20 kHz
Min. power 5 watts (7 dBW)
Max. power 50 watts (17 dBW)
Impedance 4 to 8 ohms
Size(s) 6" x 9" woofer; piezoelectric tweeter/midrange
Magnet 20 oz.
Mounting Flush/surface
Features Separate grilles; available with 10-oz. magnet as XL-610M for $126.50/pr; 1" aluminum voice coils

200 SERIES

S-210

Price $75/pr.
Design 2-way midrange/tweeter
Response 500 Hz to 25 kHz
Max. power 15 watts (11.75 dBW) (midrange)
Impedance 8 ohms
Size(s) 3½" midrange
Magnet 10 oz. midrange
Mounting Flush/surface
Features Combined piezoelectric tweeter/ midrange; dura-cast grilles

Models also available

M-112, $179.80/pr.; M-75, $171.20/pr.; M-122, $163.50/pr.; M-120, $159.25/pr.; M-110, $153/ pr.; M-142, $143.60/pr.; M-101, $139/pr.; M-132, $135/pr.; M-140, $119.60/pr.; M-130, $115/pr.; M-153, $43.40; M-151, $30.30; 240, $65.90/pr.; M-350, $21.30; 230, $40.60/pr.; XL-520M, $121.20/pr.; XL-620T, $120.10/pr.; XL-520T, $107.80/pr.; XL-620C, $103.20/ pr.; XL-520C, $89.30/pr.; XL-620F, $80.70/pr.; XL-520F, $67.30/pr.; XLB-620C, $45.80; XLB-520C, $40.80; XLB-620F, $33.60; XLB-620W, $33.30; XLB-520W, $28.80; XLB-520F, $28.60; S-207, $53/pr.; S-202, $49.50/pr.; S-201, $49.50/ pr ; S-205, $39.80/pr.; S-220, $37/ pr.

MARANTZ
Marantz Co., Inc.
20525 Nordhoff St.
Chatsworth, Calif. 91311

SS-5000

Price $300/pr.
Dimensions 7 9/32H x 11 5/32W x 7 9/32D (less mounting bracket)
Design 2-way
Response 30 Hz to 20 kHz (DIN) re 81 dB SPL at 1 meter at 1 watt
Min. power 15 watts (11.75 dBW)
Max. power 250 watts (24 dBW)
Impedance 4 ohms
Size(s) 6½" x 1"
Magnet 13 oz.
Mounting Surface
Features "T"-shaped focused field pole piece; conjugate crossover network; zinc enclosure

Models also available

SS-569, $130; SS-5100, $250/pr.; SS-3469, $110; SS-3410, $80; SS-469, $110/pr.; SS-3357, $100/pr.; SS-825, $90/pr.; SS-3269, $80/ pr.; SS-725, $70/pr.; SS-269, $70/ pr.; SS-169, $60/pr.; SS-140, $40/ pr.

MATRECS
Matrecs Industries
805 Woodman Ave.
Rockford, Ill. 61101

Daneplex 40

Price $189.95
Dimensions 6H x 9W x 4¼D
Design Two-way
Response 35 Hz to 20 kHz, ±3 dB
Min. power 8 watts
Max. power 150 watts
Impedance 8 ohms
Mounting Flush

Models also available

Daneplex 30, $129.95; Daneplex 20, $99.95

MESA
Mesa Electronics Sales, Ltd.
2940 Malmo Drive
Arlington Heights, Ill. 60005

MB-6

Price $74.95 (kit)
Design Subwoofer
Response 37 Hz to 200 Hz
Min. power 30 watts (14.75 dBW) (nominal)
Impedance 4 to 8 ohms
Size(s) 6" x 9"
Magnet 40 oz.
Mounting Flush
Features Mobile bass booster; includes crossover network and 20' cables; 5-year limited warranty

Models also available

MB-5, $69.95 (kit); Mini-Mesa 60, $139; Mini-Mesa 50, $300/pr.; Mini-Mesa 30, $190/pr.; Mini-Mesa 25E, $159.95/pr.; Mini-Mesa 20-ZX, $110/pr.; Mini-Mesa 15, $129.95/pr.

MGT
Magtone Electronics, Inc.
2741 Toledo St., Suite 204
Torrance, Calif. 90503

MGT-4210

Price $169.95/pr.
Dimensions 5 1/10H x 10 1/5W x 6 1/5D
Design Enclosed
Response 50 Hz to 20 kHz
Min. power 10 watts (10 dBW)
Max. power 50 watts (17 dBW)
Impedance 4 ohms
Size(s) 4" woofer; 2¼" midrange; 1" tweeter
Magnet 10 oz.
Mounting Surface; rear-deck

Models also available

MGT-4210, $169.95/pr.; MGT-4020, $79.95/pr.; MGT-6513T, $79.95/pr.; MGT-6913C, $74.95/ pr.; MGT-6513C, $64.95/pr.; MGT-5206, $44.95/pr.; MGT-3600, $44.95/pr.

MITSUBISHI
Mitsubishi Car Audio
Melco Sales, Inc.
7045 N. Ridgeway
Lincolnwood, Ill. 60645

SX-30SA

Price	$149.95
Design	2-way
Response	80 Hz to 20 kHz, ±2 dB re 86 dB at 1 meter at 1 watt
Max. power	50 watts
Impedance	4 ohms
Size(s)	4" (round)
Magnet	65 oz.
Mounting	Surface
Features	Tweeter attenuator control; aluminum die-casting baffle-board enclosure

Models also available

SX-10BA, $129.95; SG-69QA, $119.95; SG-69TA, $99.95; SG-20CA, $99.95; SG-69CA, $79.95; SG-16CA, $69.95; SG-40CA, $69.95; SG-40WA, $59.95; SG-69WA, $49.95; SG-16EA, $49.95; SG-13WA, $49.95; SG-10WA, $39.95; SB-2SA, $39.95

MR. AUDIO
Jasco Products Co., Inc.
217 N.E. 46th
P.O. Box 466
Oklahoma City, Okla. 73101

5454

Price	$119.95
Design	Coaxial
Response	50 Hz to 20 kHz
Max. power	50 watts (17 dBW)
Impedance	8 ohms
Size(s)	4" woofer; 1"tweeter
Mounting	Surface
Features	Miniature hi-fi speaker with mounting brackets

Models also available

6924, $79.78; 6923, $65.87; 6922, $63.11; 6912, $51.20; 5222, $46.98

NUMARK
Numark Electronics Corp.
503 Raritan Center
Edison, N.J. 08817

NS-3296

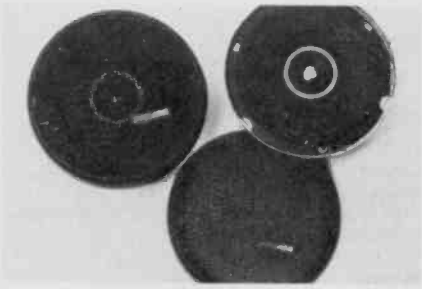
Price	$49.95
Dimensions	6H x 9W
Design	Triaxial
Response	30 Hz to 19 kHz
Min. power	15 watts (11.75 dBW)
Max. power	25 watts (14 dBW)
Impedance	8 ohms
Size(s)	6" x 9" woofer; 3" x 3" midrange; 2" x 2" tweeter
Magnet	20 oz.
Mounting	Rear-deck

Models also available

MS-100A, $129

PACE/ALTUS
Pathcom, Inc.
24105 S. Frampton Ave.
Harbor City, Calif. 90710

SK-1010T



Price	$49.95
Design	2-way
Response	80 Hz to 16 kHz
Min. power	10 watts (10 dBW)
Max. power	50 watts (17 dBW)
Impedance	8 ohms
Size(s)	1" (round)
Magnet	20 oz.
Mounting	Flush
Features	Snap-on wire-mesh grillle

Models also available

CS-936, $119.95; SK-1151T, $89.95

PANASONIC
Panasonic Auto Products
One Panasonic Way
Secaucus, N.J. 07094

RM-S610 Cockpit Speakers

Price	$209.95/pr.
Dimensions	5 7/16H x 9 13/16W x 7 7/16D
Design	2-way
Response	60 Hz to 20 kHz
Max. power	50 watts (17 dBW)
Impedance	4 ohms
Mounting	Surface
Features	Die-cast aluminum woofer; wide-range tweeter

SOUND PUMP SERIES

EAB-920 Sound Pump 100

Price	$159.95/pr.
Design	4-way
Response	20 Hz to 25 kHz
Min. power	50 watts (17 dBW) sustained
Max. power	100 watts (20 dBW)
Impedance	4 ohms
Size(s)	6" x 9" bass driver; 1" piezoelectric midrange; two ½" piezoelectric cone tweeters
Magnet	30 oz.
Mounting	Flush
Features	Seamless aluminum voice coil bobbin maintains exact magnet position and helps prevent coil breakdown

THIN SERIES

EAB-050

Price	$49.95/pr.
Dimensions	5H x 5W x 1D
Design	2-way
Response	50 Hz to 16 kHz
Max. power	10 watts (10 dBW)
Impedance	4 ohms
Size(s)	5" (round)
Magnet	4.7 oz. strontium
Mounting	Flush
Features	Waterproof cone; thin grille; 1" mounting depth

Models also available

EAB-905 Hi-Power Sound Pump II, $69.95/pr.; EAB-772 Sound Pump, $69.95; EAB-752A Sound Pump II, $79.95/pr.; EAB-774 Sound Pump, $59.95/pr.; EAB-930 Sound Pump, $89.95/pr.; EAB-911, $34.95/pr.; EAB-915, $34.95; EAB-914, $29.95/pr.; EAB-030, $24.95/pr.

PHILMORE
Philmore Manufacturing Co., Inc.
40 Inip Drive
Inwood, N.Y. 11696

TS-98

Price	$81/pr.
Dimensions	6H x 9W x 4½D
Design	4-way
Response	40 Hz to 20 kHz
Sensitivity	92 dB SPL at 1 meter at 1 watt
Min. power	30 watts
Max. power	60 watts (17.75 dBW)
Impedance	8 ohms
Size(s)	6"x 9" woofer; 3" midrange; two 2" tweeters
Magnet	20 oz.
Mounting	Flush
Features	1⅜" voice coil; soft padded snap-on grilles; 15' color-coded wire; sensitivity: 92 dB

Models also available

TS-48, $28.48; TS-97, $40.95/pr.; TS-525, $36.50/pr.; TS-99, $31/pr.; TS-69, $12.85; TS-500, $9.75

PIONEER
Pioneer Electronics of America
1925 E. Dominguez St.
Long Beach, Calif. 90810

TS-202

Price	$179.95
Design	2-way coaxial
Response	30 Hz to 20 kHz
Max. power	60 watts (17.75 dBW)
Impedance	4 ohms
Size(s)	8" woofer; 2⅝" tweeter
Magnet	20 oz.

Features Unobstructed bridgeless mounting of tweeter; fits 6" x 9" opening

Models also available

TS-1600, $169.95; TS-W203, $149.95; TS-695, $149.95; TS-697, $139.95; TS-168, $124.95; TS-696, $119.95; TS-X6, $109.95; TS-X9, $199.95/pr.; TS-585, $99.95; TS-694, $85.95; TS-167, $79.95; TS-693, $71.95; TS-165, $69.95; TS-164, $64.95; TS-692, $63.95; TS-162DX, $55.95; TS-T3, $49.95; TS-691, $49.95; TS-M2, $49.95; TS-121, $44.95; TS-35, $44.95; TS-120, $39.95; TS-87, $29.95; TS-5, $29.95

POLK
Polk Audio
1205 S. Carey St.
Baltimore, Md. 21230

Mini Monitor

Price	$125
Dimensions	13⅞ x 6W x 4¾D
Design	3-way
Response	60 Hz to 20.5 kHz, ±2 dB
Sensitivity	92 dB SPL at 1 meter at 1 watt
Min. power	5 watts (7 dBW)
Max. power	30 watts (14.75 dBW)
Impedance	6 ohms
Controls	Factory calibrated
Size(s)	4½" fluid-coupled, sub-bass passive radiator; 4½" bass-midrange; 1" soft-dome tweeter
Magnet	9 oz.
Features	Fused tweeter; plasticized drivers; optional brackets available

POLY-PLANAR®
Electronic Research Associates, Inc.
Poly-Planar® Div.
311 E. Park St.
Moonachie, N.J. 07074

B-51

Price	$28.95
Dimensions	5H x 9W x 1⅜D
Response	80 Hz to 12 kHz, ±3 dB re 100 dB SPL at 1 meter at 1 watt
Sensitivity	100 dB SPL at 1 meter at 1 watt
Max. power	10 watts (10 dBW)
Impedance	4 to 8 ohms
Magnet	3 oz.
Mounting	Surface
Features	Finished grille; thin profile; lightweight; high efficiency; weatherproof; shockproof

Models also available

A-3000SV, $41.95/pr.; A-500, $37.95; A-2000V, $35.50/pr.; P-5B, $15.50; RP-8, $14.25; RP-6, $13.50

POWER DRIVE
Recoton Corp.
46-23 Crane St.
Long Island City, N.Y. 11101

SM-200

Price	$149.95
Dimensions	7H x 4½W x 4½D
Design	2-way
Response	60 Hz to 21 kHz
Max. power	50 watts (17 dBW)
Impedance	8 ohms
Size(s)	4" woofer; 1" tweeter
Magnet	6.5 oz. (woofer); 5 oz. (tweeter)
Mounting	Surface
Features	Die-cast, brushed-aluminum case

Models also available

CS-3690, $119.95; CS-369, $79.95; CS-35, $69.95; CS-265, $64.95; CS-105, $39.95

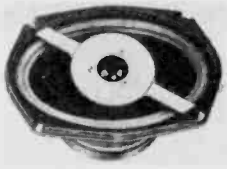
PSB
PSB Speakers, Inc.
P.O. Box 144
St. Jacobs, Ontario
Canada, N0B 2N0

PSB Alpha II

Price	$120
Dimensions	4H x 8W x 5D
Design	2-way
Response	80 Hz to 20 kHz, ±2 dB
Min. power	20 watts (13 dBW)
Max. power	60 watts (17.75 dBW)
Impedance	4 ohms
Size(s)	4" woofer; 1" tweeter
Mounting	Surface
Features	Mounting bracket and hardware included; speaker shaped to fit into rear deck of car

PYLE
Pyle Industries, Inc.
501 Center St.
Huntington, Ind. 46750

F69C290-FD



Price	$82.50
Dimensions	9 5/16H x 6 3/8W x 4¼D
Design	2-way
Response	50 Hz to 20 kHz
Sensitivity	100 dB SPL at 1 meter at 1 watt
Max. power	85 watts (19.25 dBW)
Impedance	4 to 8 ohms
Size(s)	6" x 9"
Magnet	30 oz.
Mounting	Flush
Features	Dome radiator tweeter mounted on nonresonant bracket; biamplified; 1½" high-temperature voice coil

F57C100-WF

Price	$25.60
Dimensions	7¼H x 5W x 2½D
Design	2-way
Response	60 Hz to 19 kHz
Sensitivity	98 dB SPL at 1 meter at 1 watt
Max. power	55 watts (17.5 dBW)
Impedance	4 to 8 ohms
Size(s)	5" x 7"
Magnet	10 oz.
Mounting	Flush
Features	Separate treble cone; 1" high-temperature voice coil

Models also available

F69C290-FD4, $83.25; F69C290-FD, $82.50; F69C290-FP, $68.25; F69C190-FP, $59.90; W10C300-F, $58.25; W8C300-F, $54.15; W69C290-F4, $51.60; W69C290-F, $50.85; F52C165-FP4, $50.40; F69C100-FP, $49.90; F52C165-FP, $49.60; W10C200-F, $45.85; F410C100-FP, $43.25; F52C100-FP, $42.50; W8C200-F4, $41.60; F410C160-FP, $40.90; W8C200-F, $40.85; W69C190-F4, $40.40; W69C190-F, $39.90; W410C160-F, $29.60; W52C165-F, $29.15; F69C100-WF, $26.60; F410C100-WF, $26.25; F6C100-WF, $25.60; M5C99-F, $24.90; F69C100-W, $24.15; F52C100-WF, $23.25; F5C100-WF, $23.25; WM5C100-F, $23.25; HT-35P, $23.25; H35A15-X, $21.65; M5C160-F, $28.25; F35C30-WF, $19.60; T17C55-X, $19.15; P-T3PA, $31.60/pr.; T3C24-X, $16.65

QUADRAFLEX
CBS Retail Stores
1301 65th St.
Emeryville, Calif. 94608

AS-87

Price	$99.95
Design	3-way triaxial design
Min. power	2 watts (3 dBW)
Max. power	30 watts (14.75 dBW)
Impedance	4 ohms
Size(s)	6" x 9"
Magnet	24 oz.
Mounting	Flush
Features	Grilles and mounting hardware included

Models also available

AS-72T, $69.95; AS-67, $44.95

RCA
RCA Distributor & Special Products Div.
2000 Clements Bridge Road
Deptford, N.J. 08096

12R415

Price	$64.50
Design	3-way
Response	65 Hz to 18 kHz
Max. power	30 watts (14.75 dBW)
Impedance	4 ohms
Size(s)	4" x 10" woofer; 2" midrange; 1½" tweeter
Magnet	20 oz.
Mounting	Flush
Features	Wire mesh grille

Models also available

12R413, $64.50; 12R411, $53.95; 12R414, $47.75; 12R412, $47.75; 12R410, $39.75; 12R406A, $35; 12R405A, $29; 12R408A, $23; 12R416, $21; 12R400A, $19.50; 12R401E, $17.50; 12R409, $14.30

REALISTIC
Radio Shack Corp.
1400 One Tandy Center
Ft. Worth, Texas 76102

40-1256

Price	$49.95
Design	2-way
Max. power	60 watts (17.75 dBW)
Impedance	8 ohms
Size(s)	6" x 9"
Magnet	20 oz.
Mounting	Flush

Models also available

40-1255, $39.95; 12-1854, $79.95/pr.; 12-1848, $29.95/pr.; 12-1855, $29.95/pr.

RECOTON
Recoton Corp.
46-23 Crane St.
Long Island City, N.Y. 11101

CF-300

Price	$159.95
Dimensions	7½H x 4½W x 5D
Design	3-way
Response	60 Hz to 20 kHz
Min. power	8 watts (9 dBW)
Max. power	60 watts (17.75 dBW)
Impedance	8 ohms
Controls	Brilliance attenuator
Size(s)	4" woofer; 2" x ½" midrange; 1" tweeter
Magnet	10 oz. (woofer)
Mounting	Surface
Features	All mounting hardware for car or home

Models also available

CF-1369, $109.95; CF-136, $104.95; CS-14, $24.99

ROYAL SOUND
Royal Sound Co., Inc.
200 Industrial Way West
Eatontown, N.J. 07724

RS-100D

Price	$300
Dimensions	11W x 6 1/5D
Design	Component speaker
Response	20 Hz to 15 kHz
Sensitivity	88 dB SPL at 1 meter at 1 watt
Min. power	6.3 watts (8 dBW)
Max. power	100 watts (20 dBW)
Impedance	8 ohms
Size(s)	7 3/5" round
Mounting	Flush
Features	Low distortion; aluminum plate; low coloration; alnico magnet

Models also available

RS-600, $150; RS-80D, $135; RS-6100, $250/pr.; RS-700, $120; RS-10B, $90; RS-900, $80; RS-6045N, $150/pr.; RS-530, $75; RS-35B, $70; RS-6030, $120/pr.; RS-800, $60; RS-25CA, $45

RSL
Rogersound Laboratories, Inc.
8381 Canoga Ave.
Canoga Park, Calif. 91304

AS-44

Price	$90/pr.
Design	Coaxial
Drivers	Woofer; tweeter
Response	50 Hz to 22 kHz re 86 dB SPL at 1 meter at 1 watt
Sensitivity	86 dB SPL at 1 meter at 1 watt
Min. power	2 watts (3 dBW)
Max. power	20 watts (13 dBW)
Impedance	6 ohms
Size(s)	6" x 9" woofer; 2" tweeter
Magnet	10 oz.
Mounting	Flush; minimum cutout required: 6" x 9"
Features	Includes all mounting hardware, grilles, and wire

SANYO
Sanyo Electric Co.
1200 West Artesia Blvd.
Compton, Calif. 90220

SP-90

Price	$219.95
Dimensions	5¾H x 9¾W x 7D
Design	2-way, with passive radiator; enclosed system
Response	80 Hz to 20 kHz
Max. power	120 watts (20.75 dBW)
Impedance	4 ohms
Size(s)	4" (round) woofer; 1" phenolic dome tweeter
Magnet	12 oz. (woofer); 5 oz. (tweeter)
Mounting	Enclosed system/surface
Features	Tweeter features ferrofluid damping for improved transient response and exceptional power-handling abillty

Models also available

SP-69A, $219.95; SP-778, $109.95; SP-412, $99.95; SP-410, $59.95; SP-772, $89.95; SP-760, $89.95; SP-766, $79.95; SP-738, $79.95; SP-734, $69.95; SP-758, $64.95; SP-40, $59.95; SP-732, $59.95; SP-721, $49.95; SP-737, $47.95; SP-711, $34.95; SP-759, $59.95/pr.; SP-709, $25.95; SP-733, $44.95/pr.; SP-780, $42.95/pr.; SP-706, $20.95; SP-700, $16.95

SEAS
Classic Research and Eng., Inc.
5070 E. 22nd St.
Tucson, Ariz. 85711

25F-WBX

Price	$59.95
Dimensions	10 1/5H x 10 1/5W x 13 2/5D
Design	Separate
Response	35 Hz to 3 kHz, ±6 dB
Sensitivity	94 dB SPL at 1 meter at 1 watt
Min. power	2 watts (3 dBW)
Max. power	100 watts (20 dBW)
Impedance	8 ohms
Size(s)	10" woofer, 1½" voice coil
Mounting	Flush; door

Models also available

21F-WBX, $49.95; 21F-WBM, $39.95; LFE-170, $34.95; 11F-GXA, $34.50; 11F-M, $29.95; H-107, $24.95; 10FM, $19.95; H-202, $19.95; SF-HF, $12.95

SONY
Sony Industries
9 W. 57th St.
New York, N.Y. 10016

XS-1

Price	$299.95
Dimensions	5¼H x 10½W x 7⅜D
Design	2-way closed box
Response	90 Hz to 40 kHz, ±3 dB
Sensitivity	88 dB SPL at 1 meter at 1 watt
Min. power	5 watts (7 dBW)
Max. power	100 watts (20 dBW)
Impedance	4 ohms
Controls	High-frequency level
Size(s)	5" woofer; aluminum ribbon tweeter
Mounting	Surface/rear deck
Features	Die-cast aluminum case; wire-mesh grille; adjustable mounting bracket included

Models also available

XS-11, $229.95; XS-M33, $199.95; XS-21, $199.95; XS-M31, $159.95; XS-66, $159.95; XS-601, $149.95; XS-63, $139.95; XS-43, $139.95; XS-602, $129.95; XS-62, $109.95; XS-202, $99.95; XS-201, $79.95; XS-613S, $65.95; XS-203, $49.95; XS-611S, $39.95

SOUND BARRIER
Sound Barrier Corp.
1050 E. Dominguez, Unit P
Carson, Calif. 90746

Phantom 3B

Price	$299.95
Dimensions	5H x 8⅞W x 7⅛D
Design	3-way
Response	50 Hz to 20 kHz, ±7.5 dB re 70 dB SPL at 1 meter at 1 watt
Min. power	3 watts (4.75 dBW)
Max. power	50 watts (17 dBW)
Impedance	4 to 8 ohms
Size(s)	4" (round)
Magnet	10 oz.
Mounting	Surface
Features	Built-in amplifier with 7-band graphic equalizer control box; die-cast aluminum frame

Models also available

Phantom 3, $234.95; 757, $163.95; 767, $158.95; DR-200, $137.95; 787, $129.95; 777R, $112.95; Falcon 20, $62.95; Bonanza 35, $52.95; DC-8R, $37.95

SPARKOMATIC
Sparkomatic Corp.
645 Madison Ave.
Pan Ocean Bldg.
New York, N.Y. 10022

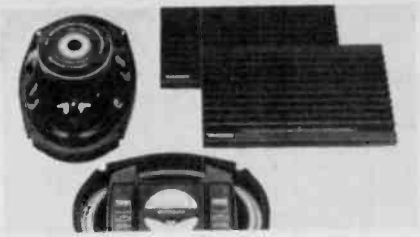
SK-6900

Price	$89.95
Dimensions	10⅛H x 6½W x 3D
Design	3-way
Response	40 Hz to 18 kHz, ±3 dB
Min. power	40 watts (16 dBW)
Max. power	80 watts (19 dBW)
Impedance	4 ohms
Size(s)	6" foam air-suspension woofer; 3" midrange; 1½" wide-dispersion dome horn-loaded tweeter
Magnet	20 oz. barium ferrite (woofer); 3 oz. ceramic (midrange)
Mounting	Deck

SPX® Series

SK-6950

Price	$99.95
Dimensions	9¼H x 6½W x 4D
Design	4-way



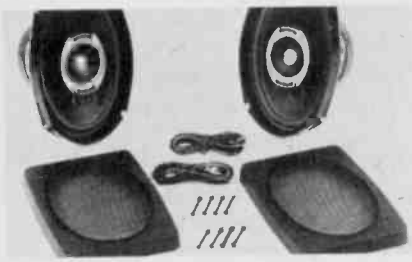
Response	50 Hz to 20 kHz
Max. power	100 watts (20 dBW)
Impedance	4 ohms
Size(s)	6" x 9" foam-edge air-suspension woofer
Magnet	20 oz. strontium cobalt woofer magnet
Mounting	Deck
Features	Special magnet design with hole in center allows air cooling and directs magnetic energy to where required; 1½" voice coil dissipates heat and allows for better power-handling capability at low frequencies; large damper for improved bass response; 2 tweeters for better power-handling capabilities at high frequencies; midrange specially designed for low resonance

Models also available

SK-525, $89.95; SK-6922T, $69.95; SK-522T, $59.95; SK-622T, $49.95; SK-6920C, $47.95; SK-4120C, $47.95; SK-600, $39.95; SK-650, $69.95

SPECO
SPECO Div. Components Specialties, Inc.
1172 Route 109
Blauvelt, N.Y. 11757

SK-6930CD Super Series



Price	$138
Design	Coaxial
Response	50 Hz to 20 kHz
Max. power	50 watts (17 dBW)
Impedance	4 and 8 ohms
Controls	None
Size(s)	6" x 9" woofer; 2½" tweeter
Magnet	30 oz.
Mounting	Flush
Features	Woofer uses a 1½" aluminum voice coil; kit includes 2 coaxial speakers; each system complete with 2 deluxe black mesh grilles, wire, and hardware

Models also available

DMS-3, $165/pr.; SK-6930TD Super Series System, $155/pr.; DMS-2, $125; SK-5A5S, $35.75; SI-200, $175/pr.; CS-201, $29.95

TANCREDI
Tancredi Div.
Kologel Co., Inc.
2318 E. Del Amo Blvd.
Compton, Calif. 90220

TS-730

Price	$89.95
Design	3-way
Response	40 Hz to 20 kHz, ±4 dB re 94 dB SPL at 1 meter at 1 watt
Max. power	60 watts (17.75 dBW)
Impedance	4 ohms
Size(s)	6" x 9"
Magnet	20 oz.
Mounting	Flush
Features	Specially designed dome midrange and dome tweeter; aluminum voice coil bobbin for better power-handling capacity; foam rolled edge

Models also available

TS-340, $79.95; TS-630, $75.95; TS-720, $65.95; TS-530, $65.95; TS-320, $59.95; TS-230, $55.95; TS-220, $45.95; TS-420, $35.95; TS-510, $29.95; TS-410, $25.95

TRIFLEX
Orovox Sound
11545 Tuxford Ave.
Sun Valley, Calif. 91352

TR-2001

Price	$63.80
Dimensions	7H x 9W x 6D
Design	3-way
Response	75 Hz to 22 kHz
Min. power	6 watts (7.75 dBW)
Max. power	35 watts (15.5 dBW)
Impedance	8 ohms
Size(s)	5¼" (round)
Magnet	20 oz.
Mounting	Surface

Models also available

TF-1000, $49.95

TRUSONIC
Trusonic
10530 Lawson River Ave.
Fountain Valley, Calif. 92708

K-6943

Price	$200
Dimensions	9¼H x 6 2/5W x 4 1/5D
Design	3-way
Response	25 Hz to 25 kHz, ±4 dB re 98 dB SPL at 1 meter at 1 watt
Min. power	3 watts (4.75 dBW)
Max. power	130 watts (21 dBW)
Impedance	4 ohms
Size(s)	6" x 9"
Magnet	40 oz.
Mounting	Flush
Features	Chromed cast frame; 1½" voice coil; biampable; waterproof construction; 5-year warranty; grilles and hardware included

Models also available

K-6923, $175; K-6942, $170; K-6042, $150; K-6922, $150; K-6022, $125; K-6941, $120; K-6021, $75

ULTRALINEAR
Ultralinear Loudspeakers
Div. Solar Audio Products, Inc.
3228 E. 50th St.
Los Angeles, Calif. 90058

M-14

Price	$149.95/pr.
Dimensions	7 7/16H x 4¾W x 4 5/8D
Design	2-way
Response	53 Hz to 18 kHz
Min. power	3 watts (4.75 dBW)
Max. power	50 watts (17 dBW)
Impedance	4 to 8 ohms
Size(s)	4" woofer; 2½" tweeter
Magnet	24 oz.
Mounting	Surface
Features	Simulated-walnut laminated finish; mobile mounting bracket included

VISONIK DAVID
Visonik of America, Inc.
701 Heinz Ave.
Berkeley, Calif. 94710

W-700

Price	$145 (with M-6 mounting kit)
Dimensions	7½H x 8¾W x 5D
Design	Subwoofer
Response	40 Hz to 160 kHz, –4 dB
Min. power	70 watts (18.5 dBW)
Impedance	4 ohms
Size(s)	7" (round)
Magnet	67 oz.
Mounting	Flush
Features	Optional enclosure

VISAM SERIES

Visam W-620G

Price	$54
Design	Woofer
Response	45 Hz to 3.5 kHz, ±4 dB
Min. power	10 watts (10 dBW)
Max. power	60 watts (17.75 dBW)
Impedance	4 ohms
Size(s)	6" (round)
Magnet	20 oz.
Mounting	Surface
Features	Furnished with a matching grille

Models also available

D-5000, $130 (B-5 bracket, $12.50); D-4000, $110 (B-5 bracket, $12.50); Visam TP-6953 Tri-Phase System, $200; Visam TP-653 Tri-Phase System, $200; Visam CP-693 Co-Phase System, $150; Visam CP-63 Co-Phase System, $150/pr.; Visam W-6920G/8, $59; Visam W-6920G, $54

ZAPCO
Zeff Advanced Products
5018 Paradise
Modesto, Calif. 95351

W-6915308

Price	$42
Dimensions	6 7/16H x 9 1/16W x 3 ⅞D
Design	Woofer
Response	3 kHz, ±5 dB re 100 dB SPL at 18" at 1 watt
Sensitivity	93.2 dB SPL at 1 meter at 1 watt
Max. power	50 watts (17 dBW)
Impedance	8 ohms
Size(s)	6" x 9"
Magnet	30 oz.
Mounting	Flush
Features	Thiele and Small parameters; box tuning info available for 35 Hz performance; designed for high efficiency, extended low end, in 2- or 3-way systems; 1½" voice coil with aluminum form for high-power handling

Models also available

W-6915304, $42

Home Video

What You Need to Know

A complete guide to understanding home video disc and tape systems

by Bennett Evans

Home video is beginning to look deceptively like home audio: We have tape recorders, disc players, and even the beginning of component systems.

With the equipment that is available today, the videophile can set up a system to record and play back tapes, play discs, and even distribute signals from each, independently, to TV sets in several rooms.

But as in audio, the wider the choices the more perplexing the problem of making a selection.

To most of you, the main question is whether to buy a disc system, a tape system, or both.

In audio, the disc is the primary medium, offering the highest recorded quality at the lowest cost, as well as a variety of recordings. Tape is a Johnny-come-lately; it is used for copying one's record collection to play in the car, to tape programs off the air, and to make live recordings. Because it is newer, and because prerecorded tapes cost more than records, the variety of prerecorded program material is comparatively limited.

In video, discs offer the greatest quality for the lowest cost; but tape is the primary medium, and will remain so for awhile, for here, the disc format is the newest. Recorded repertoire is available in far greater variety for tape, and tape is far more versatile: It doesn't restrict you to prerecorded programming, but lets you tape "live" off the air.

Because blank video tapes tend to be expensive, many people use their VCRs primarily for "time-shifting," or to record a program for playback at a more convenient hour. These recordings are usually replayed a few times and then erased to make way for another program.

I suspect that few video recordings are played as many times as are audio recordings, in any case. The medium is too rich for frequent replay.

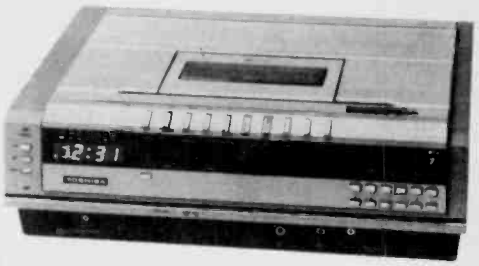
(I'm referring here to the medium itself, not after transmitting on it.) Since watching video requires more attention than listening to music, you're likely to tire of a given piece of video programming much sooner than you would of a Mozart overture (assuming you like Mozart overtures). Commercial TV recognizes this; you rarely see a TV show rerun more than once in prime time.

In other words, you'll probably play most of your video recordings far fewer times than you would your audio ones. And since video recordings are more expensive to produce and thus cost you more, each viewing will mean a greater financial outlay.

So if you're like most people, your video system will include a video cassette recorder (VCR) of some kind: mercifully, its recordings are erasable. But which VCR? At the moment, you have a choice of two, mutually incompatible tape systems—Beta and VHS—with a possible third, "LVR," system by the end of 1981. Technically, Beta and VHS are quite similar—in fact, many of the same patents are used by manufacturers on both sides, thanks to cross-licensing agreements. The main differences lie in the cassette size and the tape path.

Cassette size mainly affects maximum recording time. The Beta system, which was available commercially first, uses the smaller cassette, and its tape runs at a slightly higher speed. As a result, VHS has an edge in maximum recording time: Using the thinnest tapes and slowest speeds available for each format, VHS can pack 9 hours of program onto a tape, while Beta can manage only 5. But changers that hold four cassettes for recording or playback are now available for Beta decks. With a changer, the Beta format's maximum capacity goes up to 20 hours, with just three short (about 10-second) breaks.

Longer recording time means lower tape cost, too; at slower speeds, a given length of tape plays longer—and double-length cassettes are usually less expensive than two single-length ones. On the other hand, a 5-hour or 9-hour recording tape with 10 or 18 half-hour programs on it can be an inconvenience due to the long wait while you fast-forward to the programs near the tape's end. Extended tape length is most useful in taping a multipart series, or for programs you'll miss during an extended absence from home.



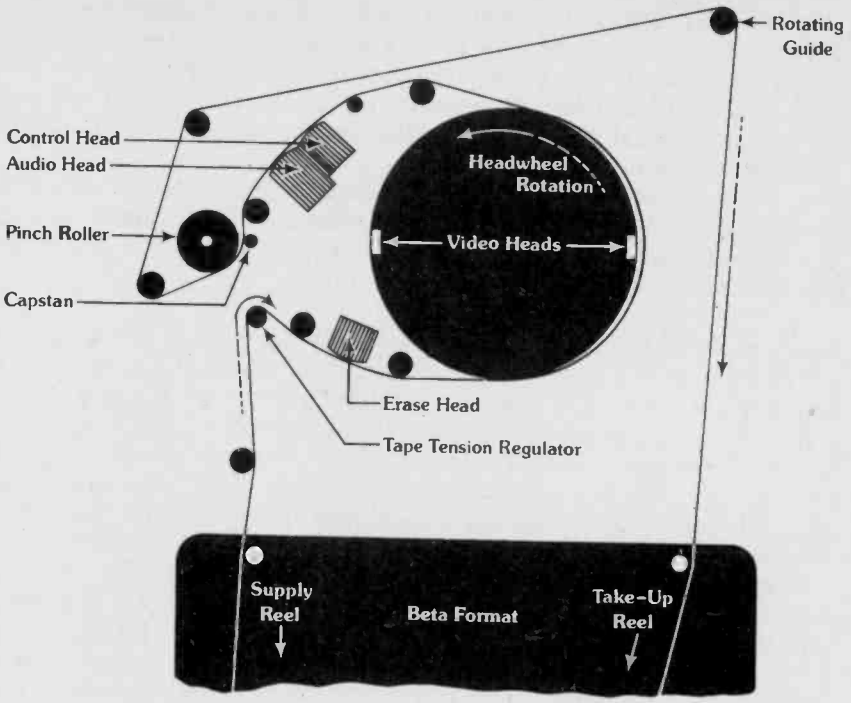
Both Beta and VHS VCRs look essentially the same on the outside, and, generally, they have the same features. The main difference is in recording time and tape path (see following pages). Shown are Panasonic's PV-1400 (above), a VHS machine, and Toshiba's V-8000 (below), a Beta deck.

In both the Beta and the VHS systems, the tape is pulled out of the cassette and wrapped around a rotating head drum for recording and playback. (The moving head drum provides a sufficiently high tape-to-head speed for good video recording without requiring that the tape itself move rapidly; with this system, video frequencies of several megahertz can be recorded on tape that moves at a speed slower than that of audio cassette tape.)

Once out of the cassette, though, each system's tape path differs. Beta decks have a single, swinging arm that wraps the tape in a more complex path. That takes longer, but allows the tape to be rewound and fast-forwarded without first being returned to its cassette. With Beta decks, you can go directly from play into rewind or fast-forward; with VHS decks the machine must go through the stop mode first. You wait for the tape to return before proceeding, with a similar wait before you resume play.

The Beta-format companies (Sanyo, Sears, Sony, Toshiba, and Zenith) claimed this head-path difference was the reason Beta-format decks could offer "fast-search," or "visible fast forward and rewind." Fast search, the equivalent of the "Cue" and "Review" functions on some audio decks, lets you see a rapid succession of images on the screen as you zip through a tape, allowing you to easily locate a program or scene even if you don't know its tape-counter location. This feature is now incorporated on many VHS decks too.

Beta format machines employ a single, swinging arm to wrap the tape around the head drum. While the tape path is somewhat complex, this system allows you to enter either fast-wind mode without the machine having to first stop.



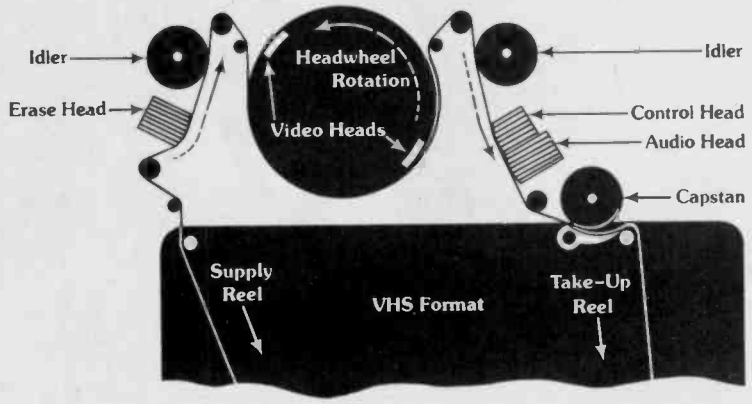
During 1981, a third tape format may become available—Toshiba's LVR, which has very little in common with the Beta and VHS systems. Instead of getting the necessary head-to-tape speed by moving the heads rapidly against a slowly-moving tape, Toshiba's LVR takes the more straightforward path of moving the tape rapidly over heads that remain stationary. Moving at 5.5 meters (18 feet) per second—about 115 times as fast as audio cassette—the tape would soon come to its end. . . if it had one. Instead, it's an endless loop: 25 seconds in duration. Like audio's 8-track system, the LVR switches tracks at the end of each loop—except that it switches 299 times (instead of just 4), for a total recording time of just over 2 hours.

LVR has both advantages and disadvantages when compared to the Beta and VHS systems. Like disc, it offers fast access to any part of the tape, since the head has only to move across the tape's width, rather than through its entire length, to get from one end to the other. Still-frame could be a problem, but repeating any single, 25-second track indefinitely would not. And its mechanism will be smaller, lighter, simpler, and cheaper than those of the VHS or Beta decks. Toshiba's target price is $500 for an LVR recorder, $300 for a play-only deck. Tapes would be far cheaper, too, because all 300 tracks could be recorded in a single pass for a total duplicating time of only 25 seconds for a 2-hour tape as opposed to the 2 hours required for head-drum systems.

The disadvantages are two: shorter maximum recording time (2 hours, as opposed to 5 or 9) and the availability of far fewer commercially recorded programs, at least in the beginning.

Toshiba originally planned to market a home LVR this year, but has chosen to go ahead with one for computer data storage (that fast, end-to-end access makes it a natural for the purpose) and other industrial uses, postponing the home version until 1981. (BASF's LVR system, which uses longer tape and fewer tracks, and which reverses at the tape's end, is apparently on hold for the indefinite future.)

Philips' Video 2000 system, now sold in Europe, may appear here before long. It's a head-drum system with servo track control for higher track



VHS VCRs use two arms to place the tape in a rather simple path around the head drum. When you engage one of the fast-wind modes, a pause occurs while the machine goes through the stop mode. While initially only Beta machines offered such functions as "fast-search" and "visible fast-forward," many new VHS decks have overcome this design limitation and now have them too.

density and better tape economy. Like today's audio cassettes, it's recorded on two sides; early versions required the user to flip the cassette over to play Side 2, but auto-reverse models undoubtedly will be offered.

Both LVR and Video 2000 have higher tape speeds than Beta or VHS, which probably means superior audio quality.

It's too soon to say what features LVR (and possibly Video 2000) decks will have. But already VHS and Beta decks offer a wide choice of speeds, tape searching aids, and facilities for taping off the air, for example.

Speeds. In the race for more recording time, both the Beta and the VHS camps have added slower speeds, and now, each offers three speeds. On the Beta side, most decks only record and play the two newer speeds (called X2 and X3 or Beta II and Beta III), though some can also play the original X1-speed tapes. Some VHS decks offer all three speeds for record and playback, while others include the original, fast, "SP" (standard-play) "2-hour" speed plus one other—either the "4-hour," "LP" speed of the "6-hour," "EP" one. (Total play time can be extended by 50% when the new, longer tapes are used.)

In addition to these normal operating speeds, you'll find special speeds available on many decks: still-frame, frame-by-frame advance, slow-motion, fast-motion, and high-speed scanning, for example. Scanning (fast visual search) is useful and convenient to almost everyone, the others fill rather specialized needs. If you want still-frame, check the deck's still-frame operation before buying—decks differ noticeably in the stability of the picture in this mode.

Indexing. Like audio tape decks, video decks have tape-index counters, usually with memory rewind facilities that stop fast-winding when the counter reaches zero. But more sophisticated aids are also available.

Fast-search, available currently only on the most expensive decks, is the newest and most sophisticated of these. Other aids, however, are available in the lower price ranges. Several decks automatically record a

Portable VCRs are becoming increasingly popular for home moviemaking. Many of the newest decks weigh less than 13 pounds. A wide variety of portable color cameras are also available, many with electronic viewfinders, which allow you to see the picture as it will eventually appear on your TV screen. Shown are Akai's ActiVideo system (right) and Toshiba's IK-1850 (above).

cue signal on the tape at the start of each recording; if you record six separate programs on a tape, the deck's fast-forward or rewind will automatically stop at the point corresponding to the start of each one; if you're recording "live," with a camera, rewind will stop at the beginning of each shot. Unfortunately, few spec sheets even mention this useful feature and you'll probably have to check each deck's operation for yourself in the store.

Sharp's APLD (Auto Program Locate Device), familiar from Sharp and Optonica audio decks, is available on its VC-6800 video deck, too. Like the audio version, it lets you place up to 99 cue signals on the tape at locations of your choice, then fast-wind to any one of them by keying in its number. You can also key in the tape-counter setting of the spot you want to watch and the deck will stop there, too.

Tuners, Timers and Programmers. Every home VCR (except some portables) has a built-in tuner and timer for unattended recording off the air. The tuner also lets you record one program while you're watching another—valuable, since TV networks tend either to run no worthwhile programs at all, or programs equally rare and worthwhile opposite one another. These tuners and timers can get quite elaborate.

Lower-priced decks usually employ the familiar, dual-dial type tuners, with knobs for VHF and UHF channels. For about $100 more, you can have convenient, pushbutton tuning, with 12 or 14 buttons that can be preset to the channels in your area. (Make sure you have enough buttons to cover all of those you want to watch; in parts of the New York City area, at least, you can receive more than 14 channels off the air.) You can also find a model or two that's tuned by entering the channel number on a calculator like keypad—more versatile, but less convenient.

Timers vary from those that record a single program in a 24-hour period, to "programmable" units covering periods of three days to two weeks, and recording anywhere from 3 to 7 programs in that period, changing channels as required.

Remote Controls. Most decks have remote pause controls, which enable you to stop recording during commercials (or at other times) from

where you are seated. JVC, Magnavox, RCA, Sanyo, and Sony have models with various speed options remotely controlled; high-speed playback (to lessen the pain of commercial breaks, for example) is the most common and probably most useful of these. Quasar has a model with remote channel change as well as forward and reverse cueing; MGA Mitsubishi offers an optional 15-function wireless remote.

Cameras. Only a few years ago, a $5,000 color camera was a breakthrough; now you can buy a color video camera for about $1,000. Today's cameras differ mainly in comfort (which you'll have to judge for yourself), lenses, viewfinders, and color-correction facilities.

Zoom lenses are more expensive than fixed ones. But they also widen your image-making possibilities. A zoom is a bagful of lenses in one—a "wide-angle" (rarely very wide, in video), a telephoto, and anything in between. You can adjust it to the precise angle of coverage you want. You can even zoom with it (a trick that seldom should be used—it is easily overdone).

If you use a zoom, you'll also need a more elaborate finder than the simple window sights that come with the cheapest cameras. "Electronic finders" are usually offered as options. These tiny TV screens show (in black and white) everything that will go on the tape. With an electronic finder, you can check focus, contrast, brightness, lens coverage angle, and your aim while shooting, and then watch an instant playback to make sure you got it right.

Some cameras use through-the-lens reflex finders. These are purely optical; but, like the reflex finders in still-movie cameras, they show focus and coverage for any zoom setting.

Daylight and indoor light are composed of different wavelengths and thus are different colors. Your eye adjusts automatically to the difference, but only when looking at the live scene. An outdoor picture with an indoor color balance, or vice versa, looks unnatural. So cameras provide for color balancing; some simply supply a light-correction filter; others, adjustments and color-correction meters. The more elaborate the color-correction facilities, the more accurate the result—but the higher the cost and the more complex the operation.

If you want to shoot home video movies, you'll need a portable VCR.

Portables. If you want to walk around and shoot video movies, you'll want one of these. Portables run on rechargeable batteries (usually about an hour per charge) and consist of only a deck—extras like tuners and timers are stripped off to save weight. A tuner/timer, combined with a battery charger and power supply, is normally available as an accessory. The charger is usually available without the tuner/timer, too, and a few portables offer optional programmer/charger combinations.

A three-part video recorder is more costly to make, so portables are considerably more expensive than non-portable units with the same tuner/timer facilities, and that's not even counting the camera.

No cameras are offered for video disc systems, since none of them currently can record. Yet the disc format still looks like a winner (but not necessarily *the* winner). Picture and sound quality (at least on the laser-scanned discs used by Magnavox and Pioneer—the only ones now in production) are generally superior to those of tape. This is especially important to owners of the new, big-screen projection sets.

Discs also offer dual-channel sound. Separation between channels on the current Philips/MCA laser disc is sufficent for bilingual applications, as well as stereo. The JVC/Matsushita "VHD" system will start out with stereo (and presumably bilingual) capabilities too. And while the initial versions of RCA's SelectaVision disc will be strictly mono, RCA has indicated that a two-channel version will follow.

So far, only Pioneer has issued a spec sheet detailing the sound quality of a production unit: It claims 40 Hz to 20 kHz response, 55 dBA S/N, and less than 0.3% THD—far better than videotape (which runs at a slower speed than does audio cassette tape) can offer.

Pioneer's VP-1000 illustrates some special conveniences of the laser-scanned disc system: There's a 3X fast-motion mode; slow-motion variable from normal down to 1 frame per second; still-framing with virtually no noise and jitter; the ability to step forward or backward one frame at a time; and a fast-scan mode that zips through the entire disc, forward or backward, in about 30 seconds, with the image visible on screen.

With "standard" videodiscs, which play for 30 minutes per side, the number of each frame (and each chapter, on discs encoded with chapter numbers) can be shown on screen when desired; with extended-play discs (60 minutes per side), elapsed time can be shown instead. (The extended discs, however, don't allow slow-motion or still framing.) A random access feature locates any frame within 20 seconds after its number has been punched in on the keyboard. Magnavox's original Magnavision player, which uses the same discs, has virtually all these features except the random-access keyboard.

The JVC-developed "VHD" (Video High Density) system espoused by JVC, Panasonic, Quasar, GE, and Thorn-EMI in England claims similar facilities (though British journalists also say an expensive, external "frame-store" device was under the table, "helping" the system's still-frame capability at a recent demonstration.

Before buying a videodisc system, remember that the three formats are incompatible.

RCA's SelectaVision disc system probably won't offer still frame. Unlike the others, it has physically incised grooves, whose walls might be injured by its stylus' looping back to the beginning of the repeated groove. But RCA has just announced that units will have forward and reverse visual search, plus rapid access to individual time segments (not frames), using a digital time indicator. And it will share with the others one advantage which is inherent in any disc format: fast cueing from one end of the recording to the other, since the scanning head (like a tonearm) has only to move a few inches from the outermost to innermost grooves. So far, only Zenith has committed itself to join RCA in producing hardware for this system, though the list of software licenses looks most impressive.

Another advantage of the disc format is lower replication costs; because the entire recorded surface is exposed at once, a disc can be stamped out like a high-precision cookie. In contrast, tapes must run, inch by inch, through a duplicator, and with current video duping technology, a 2-hour tape takes 2 hours to duplicate, making the process quite expensive.

The players are less expensive, too. At about $700, the Magnavox and Pioneer laser-disc models cost us about the same as the cheapest video cassette recorders, while offering elaborate scanning and slow, still, or fast-motion modes. SelectaVision and VHD are supposed to sell for about $500 (while is doubtful, considering the inflation rate), or lower than any VCR to date.

The advent of digital video discs implies that similarly produced audio discs can't be too far in the future. Today's "digital" records are actually analog phonograph discs made from digital masters. The full advantages of digital sound won't be realized until home players for digitally-encoded records are available. (Tape won't do for digital recordings. It's too expensive to produce, too time-consuming to scan through.) Since digital audio recording takes about the same bandwidth as video, the odds are that any digital home phonograph will have a video player as its base.

While the precise form of that disc is still hard to predict, Philips is betting on a "Compact Disc," which is only 4½ inches in diameter. It can't be

The future of video disc systems, such as Magnavox's Magnavision (above), is one of the questionmarks in home video. On one hand, these discs offer better quality pictures and sound at lower cost than do tape formats; on the other hand, they do not allow you to record your own programs. One bottleneck to the success of disc systems is that, as of next year, three separate, incompatible designs will be sold.

played on Philips video players, though it uses the same basic technology.

JVC's VHD system is accompanied by an AHD (Audio High Density) disc that uses basically the same player, with additional (or substitute) electronics. One glimpse of the future was quietly unveiled by GE early this summer: a mockup of a three-box VHD/AHD component system. One box was the VHD player itself; the second was a programmer for locating specific frames on the disc; the third was an AHD decoder for producing digital sound from AHD records on the VHD player. RCA has unveiled no plans as yet for digital sound based on its SelectaVision disc.

With so much to offer, disc systems would have an easy pathway into our homes, if it weren't for the other disc systems. So far, makers of totally incompatible disc systems—VHD, SelectaVision and the Philips/MCA laser disc—have announced that they'll be competing for the home video market by early 1981. (Several other systems are competing for various commercial markets too; but unless they swarm lemminglike into the home arena, we can ignore them.)

Forget the multiple-system, four-channel disc debacle of the mid-70s. This one's worse. Four-channel discs could be played in stereo on existing systems, and adapters could convert those stereo systems to play any or all of the 4-channel discs quadriphonically. But each of the videodisc systems will require a separate player of its own. Aside from record size and (in some instances) rotational speed, they have nothing in common.

The Philips/MCA laser system is the only one of the three on the market at this writing, and it's taken such hold upon the popular imagination that it's widely believed that all videodiscs and digital audio discs are scanned by lasers. In actuality, this is the only laser system among the three.

In this system the recorded information is in the form of microscopic pits on the surface of a silvered disc. The silvered layer is encapsulated in a layer of transparent plastic for protection. As a result the pits can't be scratched or clogged with dust. And only large scratches on the surface of the clear layer will cause any problem, since the optical system that scans the laser light reflected from the silvered surface is focused on that inner layer; blemishes on the outer layer are sufficiently out of focus to be virtually unseen by the scanning system.

While the optical system reads the information on the spiral track, it also reads its own position relative to that track. Feedback servos use this information to guide the laser inward to follow the track's spiral (or outwards, if you're playing in reverse). Since the scanner is not guided by physical grooves, there are no grooves to jump; a given track, therefore, can be repeated indefinitely without damaging the disc. On normal-play (30 minutes/side) discs, this permits still-framing, since each revolution of the disc represents one frame.

But a record's circumference is greater at its outer grooves than at its inner ones. A constant speed that's fast enough to spread enough information out along the inner groove for easy reading will waste space at the outer groove by spreading it much farther than necessary. So the Philips/MCA system's extended-play discs turn more slowly when playing the outer grooves than when playing the inner ones. Instead of a constant rotational speed, like a phonograph, it has a constant linear speed in track-inches-per-second like that of a tape deck. This method doubles the amount of material that can be recorded on a disc, but eliminates the still-frame feature.

JVC's VHD system also uses pits, in this instance recorded by laser but played back by a capacitance-sensing stylus that glides over the record surface. The stylus is guided not by grooves, but rather by rows of even smaller pits on each side of the signal track, which carry track-placement signals to control the position of the stylus. In effect, recorded signals tell the stylus-control system where groove walls would be if they existed. The stylus itself is several times wider than the track it's following, but the electrode that senses variations in capacitance forms only a narrow strip on the stylus' leading edge. The broad stylus surface reduces record wear by spreading the stylus' downward force over a wider area. The disc itself is 10.2 inches in diameter, and comes in a dust-protective sleeve.

That makes any of these systems very much a gamble.

RCA's SelectaVision also works by sensing capacitance variations as an electrode stylus passes over microscopic pits in the disc surface. But these pits are in a physically-bounded groove, which simplifies player construction, but also obviates still-framing for the reasons mentioned above. Unlike a record groove whose twists and turns carry the recorded information, RCA's groove is a smooth spiral that merely guides the stylus.

The 12-inch disc is contained in a plastic record caddy for protection. The caddy is inserted into the player, which then strips it off the disc and ejects it.

Should you buy a videodisc player at this point? It's too soon to say. I've tested the Magnavox Magnavision laser-disc player and found it very good. But aside from Pioneer's player for the same disc system, it's the only one now on the market, although others may be available by the time you read this.

It would be possible, I suppose, to make a system that will play all three types of video disc. But it wouldn't be easy or cheap. My guess is that a single, omnibus player would cost about the same as three separate ones, with space being the only saving. And don't expect any of the originators of these systems to encourage such a multimode player unit.

That makes any of these systems very much a gamble. Should VHS and Beta tape be superseded next week by a truly sensational new tape system, VHS and Beta owners wouldn't quite be out of luck. Blank tapes would still be made for some years and they could record programs off the air or from cable. Disc systems make sense only so long as disc producers continue to make program material for them: You can't make your own, as you can with tape. So for now, at least, VCRs seem to be the best way for most of you to get your feet wet in video. **HF**

Home Video Equipment

AKAI
Akai America, Ltd.
2139 East Del Amo Blvd.
Compton, Calif. 90224

VT-350
Price $2,195
Dimensions 5H x 10¼W x 11½D
Format Akai
Video res. 270 lines
Video S/N 41 dB
Audio resp. 100 Hz to 10 kHz, ±3 dB
Audio S/N 43 dB
Auto timer No
Edit/pause Yes; also edit
Monitor CRT Optional (Model VM-300 Viewfinder, CRT standard, $215)
Slow-motion Yes
Stop-motion Yes
Features Electronic editing; auto-repeat; still frame; modular camera; 14½-lb. battery-operated video cassette recorder, 3" attachable monitor (optional)

VT-300 series

Price $1,095 to $1,995 (depending on model)
Dimensions 5H x 10¼W x 11½D
Format Akai
Video res. 270 lines
Video S/N 41 dB
Audio resp. 100 Hz to 10 kHz, ±3 dB
Audio S/N 43 dB
Auto timer No
Edit/pause No
Monitor CRT Yes (incl. on $1,995 model; optional, $215 on other models)
Slow-motion No
Stop-motion Yes
Features Pause; still frame; 3" monitor (some models); camera adapter

VPS-7300 ActiVideo
Price $1,495
Dimensions 4 4/5H x 11½W x 12 1/10D
Format VHS
Video res. 280 lines (B/W)/240 lines (color)
Video S/N 45 dB
Audio resp. 70 Hz to 10 kHz, ±3 dB
Audio S/N 40 dB
Auto timer Yes
Edit/pause Yes
Monitor CRT No
Slow-motion Yes
Stop-motion Yes
Features Auto centering on freeze; noiseless 2X pb; variable speed pb (freeze to 4X); LED recorder status indicator array

BETAVISION
Sears Roebuck Co.
Sears Tower
Chicago, Ill. 60684

5356 (Portable)
Price $1,195
Format Beta II
Speed opt. 2 speed
Slow-motion Yes
Stop-motion Yes
Programming Yes
Features Separate deck and tuner

5305
Price $739.95
Dimensions 7 7/10H x 19 4/5W x 15 4/5 D
Format Beta
Video res. 250 lines (B/W)/240 lines (color)
Video S/N 43 dB (luminance); 35 dB (chrominance)
Audio resp. 50 Hz to 7 kHz, +3 dB, –4.5 dB
Audio S/N 40 dB
Auto timer Yes
Edit/pause Pause only
Monitor CRT No
Slow-motion No
Stop-motion No
Features One-button recorder; front-mounted controls and clock timer; works with any TV; remote pause control

CURTIS MATHES
Curtis Mathes Sales Co.
One Curtis Mathes Parkway
Athens, Tex. 75751

F-736
Price $1,399.95
Dimensions 7H x 19W x 15D
Format VHS
Speed opt. SP speed: 2 hrs; LP speed: 4 hrs; SLP speed: 6 hrs
Video res. 320 lines (B/W)/320 (color)
Video S/N 46 dB
Pix flutter 0.25 microseconds
Audio resp. 100 Hz to 8 kHz, (2-hr. mode)
Audio S/N 44 dB
Auto timer Yes
Edit/pause Yes
Monitor CRT No
Power supply AC; battery pack
Slow-motion No
Stop-motion Yes
Programming Yes; 8-event, 14-day; also same day each week
Features Two-times-normal-speed forward; visable cue and review at 10 times normal speed; solenoid recorder controls; all recorder functions are remote; 62 watts power consumption; weight: 34 lbs.; day-of-week indicator; warranty: labor is handled by dealer either at set charge or at no charge, 4 years on parts

F-735/739 (Portable)
Price $1,249.95
Dimensions 4½H x 11½W x 11D (each unit)
Format VHS
Speed opt. SP speed: 2 hrs.; LP speed: 4 hrs.; SLP speed: 6 hrs
Video res. 320 lines (B/W)/320 (color)
Video S/N 46 dB
Pix flutter 0.25 microseconds
Audio resp. 100 Hz to 8 kHz (2-hr. mode)
Audio S/N 44 dB
Auto timer Yes
Edit/pause Yes
Monitor CRT No
Power supply AC; battery pack
Slow-motion No
Stop-motion Yes
Programming Yes; 8-event, 14-day; also same day each week
Features Day-of-week indicator; remote pause, freeze frame, frame advance; solenoid recorder controls; weight: tuner, 10 lbs., deck 15 lbs. 8 oz. (including battery); warranty: labor is handled by dealer either at set charge or no charge, 4 years parts

F-738
Price $1,099.95
Dimensions 6H x 19W x 14D
Format VHS
Speed opt. SP speed: 2 hrs.; LP speed: 4 hrs.; SLP speed: 6 hrs
Video res. 290 lines (B/W)/280 (color)
Video S/N 40 dB
Pix flutter 0.25 microseconds
Audio resp. 100 Hz to 8 kHz (2-hr mode)
Audio S/N 42 dB
Auto timer Yes (turns set on and off over 24 hr. period)
Edit/pause Yes
Monitor CRT No
Power supply AC
Slow-motion No
Stop-motion No
Programming No
Features Visable cue and review at 10 times normal speed: electronic tuner; solenoid electronic recorder controls; remote control (pause, cue and review channel change); 46 watts power consumption; 28 lbs. weight; warranty: labor is handled by dealer either at set charge or no charge, 4 years parts

740

Price $799.95
Dimensions 7H x 19W x 16D
Format VHS
Speed opt. SP speed: 2 hrs.; LP speed: 4 hrs.; SLP speed: 6 hrs
Video res. 290 lines (B/W)/310 (color)
Video S/N 42 dB
Pix flutter 0.25 microseconds
Audio resp. 100 Hz to 8 kHz (2-hr. mode)
Audio S/N 42 dB
Auto timer Yes (turns set on over 24-hr. period)
Edit/pause No
Monitor CRT No
Power supply AC
Slow-motion No
Stop-motion No
Programming No
Features Warranty: labor handled by dealer either at set charge or no charge, 4 years parts; 34 watts power consumption; weight: 31 lbs.

JVC VIDSTAR
JVC America Co.
58-75 Queens Midtown Expressway
Maspeth, N.Y. 11378

HR-2200 (Portable)

Price $1,200 to $1,350 (see below)
Dimensions 4 1/16H x 11 5/16W x 10 9/16D
Format VHS
Speed opt. SP speed: 2 hrs.; SLP speed: 6 hrs
Video res. 525 lines (B/W)/525 (color)
Video S/N 45 dB
Audio resp. 70 Hz to 10 kHz
Audio S/N 40 dB
Auto timer Yes
Edit/pause Yes
Monitor CRT Yes
Power supply AC and external DC
Slow-motion Yes
Stop-motion Yes
Programming Yes; 10-days
Features Pricing: $1,350 for deck, tuner/timer AC power adapter and 2 power battery packs; $1,200 for deck, AC power adapter and 1 battery pack; weight: 11.4 lbs., including battery pack; 120 min. maximum recording time on battery pack

MAGNAVOX
Magnavox Consumer Electronics Co.
1700 Magnavox Way
Fort Wayne, Ind. 46804

8273 (Portable)

Price $1,775
Dimensions 5½H x 7½W x 14 ⅛D (record unit)
Format VHS
Video res. 270 lines (B/W)/230 lines (color)
Video S/N 40 dB
Audio resp. 100 Hz to 6 kHz
Auto timer Yes
Edit/pause Yes; also edit
Monitor CRT No
Slow-motion No
Stop-motion No
Programming Yes; 7-days
Features Electronic tuning; Varactor tuner

8271 (Portable)

Price $1,500 (sold only with master control center)
Dimensions 5½H x 12 ⅛W x 14¼D
Format VHS
Video res. 270 lines (B/W)/230 lines (color)
Video S/N 40 dB
Audio resp. 100 Hz to 6 kHz
Audio S/N 40 dB
Auto timer Yes
Edit/pause Yes; also edit
Monitor CRT No
Slow-motion No
Stop-motion No
Features Mechanical tuning

8227

Price $1,325
Dimensions 6⅞H x 19⅛W x 15⅜D
Format VHS
Video res. 270 lines (B/W)/230 lines (color)
Video S/N 40 dB (short play)
Audio resp. 100 Hz to 8 kHz (short play)
Audio S/N 42 dB
Auto timer Yes
Edit/pause Yes; also edit
Monitor CRT No
Slow-motion No
Stop-motion No
Programming Yes; programmable electronic clock timer (preset for 7 days to record 4 preselected programs); electronic program indexing; special circuitry prevents loss of preset programs in event of power failure

8372 (Portable)

Price $1,295
Dimensions 4½H x 11/3/8W x 9⅞D
Format VHS
Power supply AC
Slow-motion Yes
Stop-motion Yes
Programming Yes; 14 day
Features Weighs 13 lbs.; quartz clock on tuner; remote pause unit

8229

Price $1,195
Dimensions 6⅞H x 19⅛W x 15⅜D
Format VHS
Video res. 270 lines (B/W)/230 lines (color)
Video S/N 40 dB (short play)
Audio resp. 100 Hz to 8 kHz (short play)
Audio S/N 42 dB
Auto timer Yes
Edit/pause Yes
Monitor CRT No
Slow-motion Yes
Stop-motion Yes
Programming Yes; programmable electronic clock timer (preset for 7 days to record) 4 preselected programs
Features Variable speed; fast motion; remote control; frame-by-frame

8371 (Portable)

Price $1,195
Dimensions 4½H x 11⅜W x 9⅞D
Format VHS
Speed opt. SP speed: 2 hrs.; SLP speed: 6 hrs
Power supply AC
Slow-motion Yes
Stop-motion Yes
Programming Yes
Features Remote control

8222

Price $1,075
Dimensions 7¼H x 19 3/32W x 15D
Format VHS
Video res. 270 lines (B/W)/230 lines (color)
Video S/N 40 dB
Audio resp. 100 Hz to 8 kHz (short play)
Audio S/N 40 dB (short play)
Auto timer Yes
Edit/pause Yes
Monitor CRT No
Slow-motion No
Stop-motion No

8370

Price $1,075
Dimensions 4½H x 11⅜W x 9⅞D
Format VHS
Speed opt. SP speed: 2 hrs.; LP speed: 4 hrs.; SLP speed: 6 hrs
Auto timer Yes
Edit/pause Yes
Power supply AC
Slow-motion Yes
Stop-motion Yes

OMNIVISION VHS
Panasonic Co.
One Panasonic Way
Secaucus, N.J. 07024

PV-1600

Price $1,295 (open list)
Dimensions 6⅞H x 19⅛W x 15½D
Format VHS
Speed opt. SP speed: 2 hrs., SLP speed: 6 hrs

Video res. 230 lines
Video S/N 40 dB
Audio S/N 40 dB
Auto timer Yes
Edit/pause Yes
Monitor CRT No
Slow-motion No
Stop-motion No
Programming Yes; 7 days, 4-program

PV-1300

Price $1,095
Video S/N 43 dB
Pix flutter 0.0009%
Edit/pause Yes
Power supply AC; battery pack (built in)
Slow-motion No
Stop-motion No
Programming No
Features Electronic tuning; soft-touch controls; all DC motor drive; direct-drive head cylinder; direct-drive capstan; remote control (search, pause, channel change); 9-time search

PV-1200

Price $1,095 (open list)
Dimensions 6⅞H x 19⅛W x 15½D
Format VHS
Speed opt. SP speed: 2 hrs.; SLP speed: 6 hrs
Video res. 230 lines
Video S/N 40 dB
Audio S/N 40 dB
Auto timer Yes (programmable)
Edit/pause Yes
Monitor CRT No
Slow-motion No
Stop-motion No
Features Time-limit timer with TV tuner for off-the-air recording

PHILCO
GTE Consumer Electronics
700 Ellicott St.
Batavia, N.Y. 14020

V-1715

Price $1,500
Dimensions 4½H x 11½W x 9⅝D (record deck); 4⅜H x 11⅜W x 9⅝D (tuner)
Format VHS
Speed opt. SP: 2 hrs. with T-120 tape; LP: 4 hrs. with T-120 tape; SLP: 6 hrs. with T-120 tape
Video res. 270 lines (B/W)/230 (color)
Video S/N 40 dB
Audio resp. 100 Hz to 8 kHz, 10 dB down at SP
Audio S/N 42 dB (SP)
Audio flutter 0.2% (SP)
Auto timer Yes
Edit/pause Yes
Monitor CRT No
Power supply AC; battery pack
Slow-motion No
Stop-motion Yes
Programming Yes; can record 8 shows up to 14 days in advance
Features Portable deck weighs 14 lbs.; remote pause/freeze frame/frame advance

V-550

Price $1,395
Dimensions 5½H x 19W x 14D
Format VHS
Speed opt. SP: 2 hrs. with T-120 tape; LP: 4 hrs. with T-120 tape; SLP: 6 hrs. with T-120 tape
Video res. 270 lines (B/W)/230 (color)
Video S/N 40 dB
Audio resp. 100 Hz to 8 kHz, 10 dB down at SP
Audio S/N 42 dB (SP)
Audio flutter 0.2% (SP)
Auto timer Yes
Edit/pause Yes
Monitor CRT No
Power supply AC
Slow-motion No
Stop-motion No
Programming Yes; can record 8 programs up to 14 days in advance
Features Videoscan scans the tape at 9 times normal speed in forward and rewind; remote pause/channel change/scan

1330

Price $1,150
Dimensions 5½H x 19W x 14D
Format VHS
Speed opt. SP: 2 hrs. with T-120 tape; LP: 4 hrs. with T-120 tape; SLP: 6 hrs. with T-120 tape
Video res. 270 lines (B/W)/230 (color)
Video S/N 40 dB
Audio resp. 100 Hz to 8 kHz, 10 dB down at SP
Audio S/N 42 dB (SP)
Audio flutter 0.2% (SP)
Auto timer Yes
Edit/pause Yes
Monitor CRT No
Power supply AC
Slow-motion No
Stop-motion No
Programming Yes; 1 day, 1 program
Features Remote pause and channel change control; dubbing function

QUASAR
Quasar Electronics Co.
Division of Matsushita Electric Corp. of America
9401 West Grand Ave.
Franklin Park, Ill. 60131

VH-5160

Price N/A
Dimensions 6 5/16H x 19W x 14⅝D
Format VHS
Speed opt. SP speed: 2 hrs.; LP speed: 4 hrs.; SLP speed: 6 hrs
Programming Yes; 14 days, 8 programs
Features Save-transition stabilizer; 14-button electronic tuner; channel lock/memory system; time adjust (day/hour/min.; forward/reverse action); remote control (FF/REW/STOP; PLAY/REC; pause; frame advance; slow (variable); double speed play; cue/review; channel change

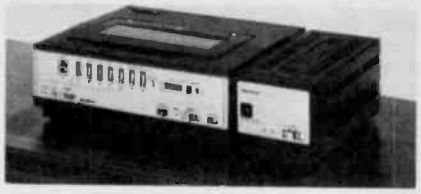
VH-5040

Price N/A
Dimensions 5⅜H x 19W x 14¼D
Format VHS
Speed opt. SP speed: 2 hrs., LP speed: 4 hrs.; SLP speed: 6 hrs
Programming Yes; 14 days; 8 programs
Features Save transition stabilizer; 14-button electronic tuner; channel lock/memory system; time adjust (day/hour/min.; forward/reverse action); remote control (pause, channel change, cue/review)

VH-5030

Price N/A
Dimensions 5⅜H x 19W x 14¼D
Format VHS
Speed opt. SP speed: 2 hrs.; LP speed: 4 hrs.; SLP speed: 6 hrs
Programming Yes; one day; one program
Features Scene-transition stabilizer; 14-button electronic timer channel lock/memory system; auto rewind; fast/slow in both fast-wind modes; remote control (pause, channel change)

VH-5300 (Portable)



Price $1,000
Dimensions 4⅜H x 11⅜W x 9⅝D
Format VHS
Speed opt. SP speed: 2 hrs.; LP speed: 4 hrs.; SLP speed: 6 hrs
Video res. 280 lines (B/W)/240 lines (color)
Video S/N 42 dB (B/W)
Audio resp. 100 Hz to 8 kHz, –10 dB (short play); 100 Hz to 6 kHz, –10 dB (long play); 100 Hz to 5 kHz, –10 dB (super long play)
Audio S/N 40 dB
Edit/pause Yes
Power supply AC (via adapter); built-in, rechargeable battery; 12VDC remote
Slow-motion Yes
Stop-motion Yes
Programming Yes; via optional power supply/tuner units
Features Frame-advance; scene-transition stabilizer; available with any of 3 power supply/tuner units: VA-507, $150; VA-512, $250; VA-520, $350

SANYO
Sanyo Electric, Inc.
1200 West Artesia Blvd.
Compton, Calif. 90220

VCR-5000 Betacord III

Price $1,095
Dimensions 6 3/10H x 17 3/5W x 14 3/5D
Format Beta
Video res. 250 lines (B/W)/240 lines (color)
Video S/N 43 dB (luminance); 35 dB (chrominance)

Audio resp. 50 Hz to 70 kHz, +3, –4.5 dB
Audio S/N 40 dB
Audio flutter 0.15%
Auto timer Yes
Edit/pause Yes; also edit
Monitor CRT Yes
Slow-motion Yes
Stop-motion Yes
Features Remote pause control; built-in all channel tuners; micro-touch controls; digitron clock/timer; audio dubbing capability; automatic shut-off sleep switch; easy connect to any TV set

VTC-9100A

Price $795
Dimensions 7¾H x 19½W x 14½D
Format Beta
Video res. 250 lines (B/W)/240 lines (color)
Video S/N 43 dB
Audio resp. 50 Hz to 7 kHz, ±3 dB
Audio S/N 40 dB
Auto timer Yes
Edit/pause Yes; also edit
Monitor CRT Optional
Slow-motion No
Stop-motion No
Features Instant stop/start with remote control for on-the-air editing; built-in all-channel tuner; built-in connector to any TV set; simple one-finger operation; video inputs and outputs; automatic shut-off with sleep switch; audio output jack for stereo play; instant replay capabilities; memory counter; LED clock/timer

SELECTAVISION
RCA
600 North Sherman Drive
Indianapolis, Ind. 46201

VDT-625

Price $1,395 (see below)
Dimensions 7H x 19W x 14½D
Format VHS
Speed opt. SP speed: 2 hrs.; LP speed: 4 hrs.; SLP speed: 6 hrs
Auto timer Yes
Edit/pause Yes; also edit
Monitor CRT No
Slow-motion Yes
Stop-motion Yes
Programming Yes; 7 days; 4 programs; brief power interruptions accepted without loss of timer memory information or loss of recording ability; electronic program indexing
Features Play speed is automatic; digital channel display with pushbutton channel selection; wired remote for still/pause, frame advance, fast or slow action, and channel change; price is open listed

VET-450

Price $1,150 (see below)
Dimensions 6H x 19W x 15D
Format VHS
Speed opt. SP speed: 2 hrs.; LP speed: 4 hrs.; SLP speed: 6 hrs
Auto timer Yes
Edit/pause Yes
Slow-motion No
Stop-motion No
Programming Yes; 14 days, 8 programs
Features Electronic tuning; remote control (channel change, picture search): price is open listed

VEP-150 (Portable)

Price $1,075
Dimensions 5H x 11W x 11D
Format VHS
Speed opt. SP speed: 2 hrs.; LP speed: 4 hrs.; SLP speed: 6 hrs
Auto timer No
Edit/pause Yes
Power supply Built-in rechargeable battery pack
Slow-motion No
Stop-motion No
Programming No
Features Tape counter with memory switch; shoulder strap; weight: 15 lbs. 2 oz., including battery

VET-250

Price $995
Dimensions 6H x 19W x 15D
Format VHS
Speed opt. SP speed: 2 hrs.; LP speed: 4 hrs.; SLP speed: 6 hrs
Auto timer Yes
Edit/pause Yes
Slow-motion No
Stop-motion No
Programming No
Features Electronic tuning; remote control (channel change; picture search)

VET-650

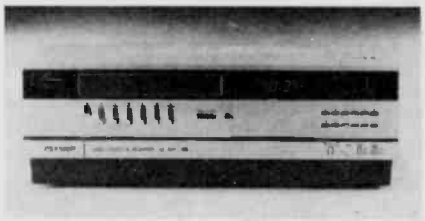
Price N/A
Dimensions 6H x 19W x 15D
Format VHS
Speed opt. SP speed: 2 hrs.; LP speed: 4 hrs; SLP speed: 6 hrs
Auto timer Yes
Edit/pause Yes
Slow-motion Yes (variable)
Stop-motion Yes
Programming Yes; 14 days, 8 programs
Features Electronic tuning; remote control (channel change, picture search)

SHARP
Sharp Electronics Corp.
10 Keystone Place
Paramus, N.J. 07652

VC-6800

Price $1,095
Dimensions 6⅝H x 19⅛W x 15⅞D
Format VHS
Speed opt. EP speed: 6 hrs. with T-120 tape; SP speed: 2 hrs. with T-120 tape
Video res. 240 lines (B/W)/230 (color)
Video S/N 45 dB
Pix flutter 0.3%
Audio resp. 70 Hz to 10 kHz, +2, –7 dB
Audio S/N 40 dB
Audio flutter 0.3%
Auto timer Yes
Edit/pause Yes
Monitor CRT No
Power supply AC
Slow-motion No
Stop-motion No
Programming Yes; can be programmed to record up to 7 separate programs on 7 different channels, 7 days in advance; daily key allows automatic recording of programs at the same time for 7 consecutive days; liquid-crystal display shows each command as it is entered; memory recall key allows stored instructions to be received quickly; backup batteries prevent loss of memory during power interruptions
Features Front-loading cassette tape system; APLD(Auto Program Locating Device); tape-remaining LED indicator; 4-digit electronic tape counter with memory; quartz digital LCD clock/timer; touchbutton electronic tuning with AFT

VC-7400



Price N/A
Dimensions 6½H x 17⅞W x 15 1/6D
Format VHS
Speed opt. EP speed: 6 hrs. with T-120 tape; SP speed: 2 hrs. with T-120 tape
Video res. 240 lines (B/W)/230 (color)
Video S/N 45 dB
Pix flutter 0.3
Audio resp. 70 Hz to 10 kHz, +2, –7 dB
Audio S/N 40 dB
Audio flutter 0.3%
Auto timer Yes
Edit/pause Yes
Monitor CRT No
Power supply AC
Slow-motion No
Stop-motion No
Programming Yes; can be programmed up to 24 hours in advance, for up to 6 hours of recording; auto stop shuts off recorder at a preset time
Features Automatic front-loading cassette tape system; soft-touch solenoid controls; tape-remaining LED indicator; 4-digit tape counter; one-touch recording system; touchbutton electronic tuning with AFT

SONY BETAMAX
Sony Corp. of America
9 West 57th St.
New York, N.Y. 10019

SL-3000 (Portable)

Price $1,299.95
Dimensions 5H x 11¾W x 11⅝D
Format Betamax
Video res. 250 lines (B/W)/240 lines (color)
Video S/N 45 dB
Audio resp. 50 Hz to 8 kHz, ±1 dB
Audio S/N 40 dB
Auto timer Yes
Edit/pause Yes
Monitor CRT No
Power supply AC; battery pack; 12 VDC remote; maximum battery recording time: 1 hr.
Slow-motion No
Stop-motion No
Programming Yes; via optional tuner/timer
Features Weights (20 lbs.); memory rewind; automatic shutoff; audio dubbing; off-air record option; battery-level indicator; auxiliary hookups for earphone and microphone jacks; dew warning light and built-in heater

SL-5400

Price $1,250
Dimensions 6½H x 19⅛W x 15D
Format Betamax
Video res. 250 lines (monochrome)/240 lines (color)
Video S/N 45 dB
Audio resp. 50 Hz to 10 kHz
Audio S/N 40 dB
Auto timer Yes
Edit/pause Yes
Monitor CRT No
Slow-motion No
Stop-motion Yes
Programming Yes; 3-day, multi-event
Features Betascan (fast-forward and fast-rewind at ten times normal speed with visible picture); built-in digital clock timer; preset timer shut-off; electronic pushbutton tuning; audio dubbing capability; remote control (pause, Betascan and fast-forward)

SYLVANIA
GTE Consumer Electronics
700 Ellicott St.
Batavia, N.Y. 14020

VC-4515

Price $1,500
Dimensions 4½H x 11½W x 9⅝D (record deck); 4⅜H x 11⅜W x 9⅝D (tuner)
Format VHS
Speed opt. SP: 2 hrs. with T-120 tape; LP: 4 hrs. with T-120 tape; SLP: 6 hrs. with T-120 tape
Video res. 270 lines (B/W)/230 (color)
Video S/N 40 dB
Audio resp. 100 Hz to 8 kHz, 10 dB down at SP
Audio S/N 42 dB (SP)
Audio flutter 0.2% (SP)
Auto timer Yes
Edit/pause Yes
Monitor CRT No
Power supply AC; battery pack
Slow-motion No
Stop-motion Yes (SLP)
Programming Yes; can be programmed to record 8 programs up to 14 days in advance
Features Portable deck weighs 14 lbs.; remote pause/freeze frame/frame advance

VC-3100

Price $1,395
Dimensions 5½H x 19W x 14D
Format VHS
Speed opt. SP: 2 hrs. with T-120 tape; LP: 4 hrs. with T-120 tape; SLP: 6 hrs. with T-120 tape
Video res. 270 lines (B/W)/230 (color)
Video S/N 40 dB
Audio resp. 100 Hz to 8 kHz, –10 dB
Audio S/N 42 dB (SP)
Audio flutter 0.2% (SP)
Auto timer Yes
Edit/pause Yes
Monitor CRT No
Power supply AC
Slow-motion No
Stop-motion No
Programming Yes; can record as many as 8 different shows during 14 days or can record same show on 14 different days; max 6 hours recording
Features Superscan scans at 9 times normal speed in both forward and rewind in 4-hr. and 6-hr. modes; remote pause/channel change/scan

VC-3000

Price $1,350
Dimensions 7H x 19W x 14¾D
Format VHS
Speed opt. SP: 2 hrs. with T-120 tape; LP: 4 hrs. with T-120 tape; SLP: 6 hrs. with T-120 tape
Video res. 270 lines (B/W)/230 (color)
Video S/N 40 dB
Audio resp. 100 Hz to 8 kHz, 10 dB down at SP
Audio S/N 42 dB (SP)
Audio flutter 0.2% (SP)
Auto timer Yes
Edit/pause Yes
Monitor CRT No
Power supply AC
Slow-motion No
Stop-motion No
Programming Yes; can be programmed to record 4 programs on 4 different channels up to 7 days in advance

VC-2800

Price $1,150
Dimensions 5⅜H x 18⅞W x 14D
Format VHS
Speed opt. SP: 2 hrs. with T-120 tape; LP: 4 hrs. with T-120 tape; SLP: 6 hrs. with T-120 tape
Video res. 270 lines (B/W)/230 (color)
Video S/N 40 dB
Audio resp. 100 Hz to 8 kHz, ±10 dB (SP)
Audio S/N 42 dB (SP)
Audio flutter 0.2% (SP)
Auto timer Yes
Edit/pause Yes
Monitor CRT No
Power supply AC
Slow-motion No
Stop-motion No
Programming Yes; 1 day, 1 program
Features Remote pause and channel-change control; audio-dubbing control

TOSHIBA
Toshiba America, Inc.
280 Park Ave.
New York, N.Y. 10017

V-5425

Price $1,345
Dimensions 7H x 18 7/10W x 15 1/5D
Format Betamax III
Video res. 250 lines (SP)/240 lines (LP)
Video S/N 45 dB (SP)/45 dB (LP)
Audio resp. 50 Hz to 8 kHz (SP)/50 Hz to 7 kHz (LP)
Audio S/N 40 dB
Auto timer Yes
Edit/pause Yes; also edit
Monitor CRT No
Power supply AC
Slow-motion No
Stop-motion Yes
Programming Yes; 3 programs in 7-day period; on/off and channel change
Features Visual-picture-search 3 programs in 7 days; visual-picture-search action on screen in fast-forward or rewind; Comput-R-Tune electronic tuning system; remote pause; dual speed

V-5535 (Portable)

Price $1,345
Dimensions 5 2/5H x 18 3/5W x 13½D
Format Betamax I & II (I in play back only)
Video res. 250 lines
Video S/N 45 dB
Audio resp. 80 Hz to 8 kHz, –6 dB
Audio S/N 40 dB
Auto timer Yes
Edit/pause Yes; also edit
Monitor CRT No
Power supply AC; battery pack
Slow-motion No
Stop-motion No
Programming No
Features Portable deck with tuner/timer; built-in rechargeable battery compartment; touch reference controls; remote pause

V-8000

Price $1,245
Dimensions 6 1/5H x 18 3/10W x 15 1/5D
Format Beta II
Video res. 250 (SP)/240 (LP) (color)
Video S/N 45 dB
Audio resp. 50 Hz to 8 kHz (SP)/50 Hz to 7 Hz (LP)
Audio S/N 40 dB
Auto timer Yes
Edit/pause Yes
Monitor CRT No
Power supply AC
Stop-motion Yes
Programming Yes; one program
Features Superscan visual picture search; 40 times faster than play speed and Beta scan; wired full-function remote control

ZENITH
Zenith Radio Corp.
1000 Milwaukee Ave.
Glenview, Ill. 60025

VR-9700J

Price $1,300
Dimensions 6½H x 19½W x 15¼D
Format Betamax
Video res. 280, ±30 lines (B/W)/240 +10, –30 lines (color)
Video S/N 45 dB
Audio resp. 50 Hz to 10 kHz
Audio S/N 40 dB
Audio flutter –4%
Auto timer Yes
Edit/pause Yes; also edit
Monitor CRT No
Slow-motion No
Stop-motion Yes
Programming Yes; 4 programs, 4 stations, 4 times over 14-day period

VR-9000W

Price $1,125
Dimensions 6½H x 19⅛W x 15D
Format Beta II and III
Video res. 280, ±30 lines (B/W)/240 +10, –30 (color)
Video S/N 45 dB
Audio resp. 50 Hz to 7 kHz
Audio S/N 40 dB
Auto timer Yes
Edit/pause Yes
Monitor CRT No
Slow-motion No
Stop-motion Yes
Features Remote control with speed search; PCM switch; electronic touch-command channel selection; audio dub; AFC

Video Tape

AMPEX
Ampex Corp.
401 Broadway
Redwood City, Calif. 94063

Ampex Beta
Length/price L-250, 30/60 min, $11.49; L-500, 60/120 min, $14.49
Format Beta
Coating(s) Ferric oxide
Features Brilliant color characteristics with consistent signal output and high signal stability; low chroma noise

Ampex VHS
Length/price T-60, 60/120 min, $14.99; T-120, 120/240 min, $20.99
Format VHS
Coating(s) Cobalt-modified ferric oxide
Features Low chroma noise and low dropout rate for a cleaner, clearer picture

BASF
BASF Systems, Inc.
Crosby Drive
Bedford, Mass. 01730

BASF Beta
Length/price L-500, 60 min, $16.95; L-750, 120 min, $20.95
Format Beta
Coating(s) Chromium dioxide
Features The highly coercive CrO_2 video tape which fits the exact bias of the Beta system; CrO_2 offers superior properties in signal-to-noise ratio, color brilliance, sharpness and operational dependabilty; magnetically stable for frequent recording

BASF VHS
Length/price T-60, 120 min, $17.95; T-120, 240 min, $24.95
Format VHS
Coating(s) Chromium dioxide
Features Made with CrO_2 for superior properties in signal-to-noise ratio, color brillance, sharpness and operational dependability; magnetically stable for frequent recording

FUJI
Fuji Photo Film USA, Inc.
350 Fifth Ave.
New York, N.Y. 10001

"Fine Grain" Beridox
Length/price L-125, 30 min, $11.95; L-250, 60 min, $13.25; L-370, 90 min, $14.90; L-500, 120 min, $17.50
Format Beta
Coating(s) Beridox
Features Packed in white non-shedding plastic box

"Fine Grain" Beridox
Length/price T-30, 30 min, $15.50; T-60, 60 min, $18.35; T-90, 90 min, $22.95; T-120, 120 min, $25.50
Format VHS
Coating(s) Beridox

IRISH
Irish Recording Tape
270-278 Newtown Road
Plainview, N.Y. 11803

551
Length/price L-250, 60 min, $15.95; L-500, 120 min, $19.95; L-750, 180 min, $24.95
Format Beta
Coating(s) Chrome
Features Sleeve-shrink wrapped

552
Length/price T-60, 120 min, $19.95; T-120, 240 min, $27.15
Format VHS
Coating(s) Chrome
Features Sleeve shrink-wrapped

JVC
JVC America Co.
58-75 Queens Midtown Expressway
Maspeth, N.Y. 11378

JVC
Length/price T-30, 30 min, $14.75; T-60, 60 min, $16.95; T-120, 120 min, $25.95
Format VHS
Coating(s) Ferric oxide

MAGNAVOX
Magnavox Consumer Electronics Co.
1700 Magnavox Way
Fort Wayne, Ind. 46804

Magnavox VHS
Length/price AH-9202, 180 min, $15.95; AH-9204, 360 min, $19.95
Format VHS
Coating(s) Ferric oxide

MAXELL
Maxell Corp. of America
60 Oxford Dr.
Moonachie, N.J. 07074

Maxell Beta
Length/price L-250, $16.95; L-500, $22.50
Format Beta
Coating(s) Epitaxial

Maxell High-Grade VHS
Length/price HGT-30, $18.95; HGT-60, $21.95; HGT-90, $25.95; HGT-120, $29.95
Format VHS
Coating(s) Epitaxial

Maxell VHS
Length/price T-60, $19.95; T-120, $28.50
Format VHS
Coating(s) Epitaxial

MEMOREX
Memorex Corp.
1600 Memorex Drive
Santa Clara, Calif. 95052

Memorex VHS
Length/price Memorex, 60 min, $19.99; Memorex, 120 min, $27.99
Format VHS
Coating(s) Ferric oxide

Memorex

Length/price L-500, $14.99; L-750, $19.99 (Beta); T-60, $16.99; T-90, $18.99; T-120, $24.99 (VHS)
Format Beta; VHS
Coating(s) Ferric oxide
Features All videocassettes include a protective video storage album; superior color reproduction

PHILCO
GTE Consumer Electronics
700 Ellicott St.
Batavia, N.Y. 14020

Philco
Length/price SC-2100, 60 min, $19.95; SC-2101, 120 min, $28.95
Format VHS
Coating(s) Ferric oxide

QUASAR
Quasar Electronics Co.
Div. of Matsushita Electronics Corp. of America
9401 West Grand Ave.
Franklin Park, Ill. 60131

Quasar
Length/price VCT-60, 60 min, $18.95; VCT-120, 120 min, $26.95
Format VHS
Coating(s) Ferric oxide

RCA
RCA Consumer Electronics
600 N. Sherman Drive
Indianapolis, Ind. 46201

RCA
Length/price VK-125, 60 min, $14.95; VK-250, 120 min, $19.95
Format VHS
Coating(s) Chrome

SANYO
Sanyo Electric Co.
1200 W. Artesia Blvd.
Compton, Calif. 90220

Sanyo Beta
Length/price L-250, 60 min, $14.95; L-500, 120 min, $19.95; L-750, 180 min, $23.50
Format Beta
Coating(s) Chrome

SCOTCH
3M
Magnetic Audio/Video Products Div.
3M Center
St. Paul, Minn. 55101

Scotch Beta
Length/price L-250, 30 min, $14.95; L-500, 60 min, $18.95; L-750, 4½ hours on Beta III recorders, $23.95
Format Beta
Coating(s) Treated gamma ferric oxide

Scotch VHS
Length/price T-30, 30/60 min, $18.45; T-60, 60/120 min, $21.75; T-120, 120/240 min, $27.95
Format VHS
Coating(s) Ferric oxide

SEARS
Sears Roebuck Co.
Sears Tower
Chicago, Ill. 60684

Sears Beta
Length/price 5325, 60 min, $10.95; 5350, 120 min, $15.95; 5375, 180 min, $22.95; 300 min., $125.95
Format Beta
Coating(s) Chromoxide

SONY BETAMAX
Sony Corp. of America
9 West 57th St.
New York, N.Y. 10019

Betamax

Length/price L-125, 45 min, $10.95; L-250, 90 min, $12.95; L-500, 180 min, $16.95; L-750, 270 min, $20.95; L-830, 300 min, $23.95
Format Beta
Coating(s) Chrome
Features Blister pack available; compatible with all Beta-format video tape recorders

SYLVANIA
GTE Consumer Electronics
700 Ellicott St.
Batavia, N.Y. 14020

Sylvania
Length/price SC-2100 (T-60), 60 min, $19.95; SC-2101 (T-120), 120 min, $28.95
Format VHS
Coating(s) Ferric oxide

TDK
TDK Electronics Corp.
755 Eastgate Blvd.
Garden City, N.Y. 11530

TDK

Length/price Super Avilyn L-250, $15.50; Super Avilyn L-500, $22
Format Beta
Coating(s) Cobalt-adsorbed gamma ferric oxide (Super Avilyn)
Features Jam-proof super precision mechanism; highest color S/N ratio produces crisp, well-defined images; full 1-year warranty

TDK
Length/price Super Avilyn T-30, 30 min, $19.50; Super Avilyn T-60, 60 min, $21.75; Super Avilyn T-90, 90 min, $25.75; VAT-120, 120 min, $30
Format VHS
Coating(s) Cobalt-adsorbed gamma ferric oxide (Super Avilyn)
Features Consistently high output and outstanding color brilliance; first non-deckmaker tape to be approved for all 4-hour machines; full 1-year warranty

TOSHIBA
Toshiba America, Inc.
82 Totowa Road
Wayne, N.J. 07470

Toshiba
Length/price L-830, $23.95; L-750, $20.95; L-500, $16.95; L-250, $12.45
Format Beta
Coating(s) Chrome

ZENITH
Zenith Radio Corp.
1000 Milwaukee Ave.
Glenview, Ill. 60025

Zenith
Length/price L-500, 180 min, $14.95; L-750, 270 min, $17.95; L-830, 300 min, $20.95
Format Beta
Coating(s) Chrome

Video Accessories

ADD 'N STAC
Royal Sound Co., Inc.
200 Industrial Way W.
Eatontown, N.J. 07724

Beta Add 'n Stac
Price $8
Description Plastic storage unit holds 6 Beta-format videocassettes in Phillps-type boxes; interlocking feature permits units to be snapped together in any configuration as the need for additional storage space arises; available in a variety of colors; predrilled holes in the back of every module facilitate hanging

VHS Add 'n Stac
Price $8
Description Plastic storage unit holds 6 VHS format videocassettes in Phlips-type boxes; interlocking feature permits units to be snapped together in any configuration as the need for additional storage space arises; available in a variety of colors; predrilled holes in the back of every module facilitate hanging

ALLSOP 3
Allsop Automatic, Inc.
4201 Meridian St.
Bellingham, Wash. 98225

60010 Video Cassette VHS Cleaner
Price $29.95
Description Patented VHS video cleaner cleans video and audio head, capstan, and pinch roller; non-abrasive

BIB VIDEOPHILE EDITION
Bib Hi-Fi Accessories, Inc.
1751 Jay Ell Drive
Richardson, Texas 75081

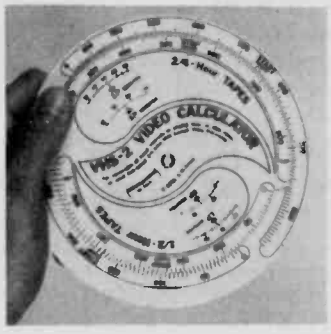
VE-8
Price $3.75
Description Antistatic TV screen cleaning fluid; prevents static build-up on TV screens; effectively removes smudges and finger prints

VE-5

Price $4.50
Description Videotape head-cleaning tools; designed after close consultation with video recorder manufacturers; safe, absorbent, residue free

CALCU-PRODUCTS
Calcu-Products
P.O. Box 3209
York, Pa. 17402

VHS-2 Video Calculator



Price $7.45 (plus 90¢ postage & handling)
Description A plastic disc calculator used for the conversion of count intervals to playing time or available recording time on VHS video recorders; indicates time in one-minute intervals; accompanying instruction booklet contains many hints on recording and logging video tapes

CURTIS MATHES
Curtis Mathes Sales Co.
One Curtis Mathes Parkway
Athens, Texas 75751

F-738 Camera
Price $899.95
Description Electronic viewfinder (side mount); 6-to-1 automatic power zoom lens; extendable boom mike; remote pause; shoulder rest

FIDELITONE
Fidelitone, Inc.
3001 Malmo Road
Arlington Heights, Ill. 60005

8504
Price $79.95
Description Solid hand-rubbed walnut videocassette holder; lacquer finished; routed thumb slotted opener; holds 24 Beta tapes

FUJI
Fuji Magnetic Tape Div.
Fuji Photo Film USA, Inc.
350 fifth Ave.
New York, N.Y. 10001

VCR Head-Cleaning Cassettes
Price Designed to remove binder residue, tape particles from video heads of ½" VCRs; 10-second pass of head-cleaning cassette; recommended maximum usage per cassette 3 full times or 90 cleanings
Description VCL-30, VHS, $25; BCL-20, Beta, $18.50

GUSDORF
Gusdorf Corp.
6900 Manchester Ave.
St. Louis, Mo. 63143

1920

Price $211.95
Description From the Status Pro collection of Gusdorf Electronics Furniture comes this handsome cabinet with slip-in compartment for 19" TV; a convenient storage area below includes retractable shelf for VCR or videodisc plus room for cassette filing; side panels are a full 1½" thick; walnut finish is protected by a Rendura surface for years of carefree maintenance; hooded double-wheel casters allow for easy mobility

LE-BO
LE-BO Products Co., Inc.
58-60 Grand Ave.
Maspeth, N.Y. 11378

VC-1016/18 Beta/VHS Tape Cabinet
Price $80
Description Three drawers; 30 tape-capacity; platform for VCR; walnut decor

MAGNAVOX
Magnavox/Consumer Electronics Co.
1700 Magnavox Way
Pt. Wayne, Ind. 46804

8241 Video Camera
Price $1,295
Description Lens, 6X, f/2 zoom lens (17mm to 102mm); electronic viewfinder (LED readouts for correct iris setting); AGC on/off switch; battery compartment; tripod mount; omnidirectional condenser mike; VCR start/stop switch; equipment includes 20' camera cable, daylight filter, power supply

8244 Color Video Camera
Price $975
Description Automatic power zoom and iris adjustment; thru-lens viewfinder; 5X lens; f/1.4 zoom lens (13mm to 65mm); macro feature for closeups; white balance control; backlight compensation control (BLC); condenser mike; optional boom mike; daylight filter; power supply; VCR stop/start switch; optional electronic viewfinder and chest brace; includes 3-meter camera cable, wrist strap, lens hood, and lens cap; 4.5 watts DC power consumption

MARSHALL
Marshall Electronics
Mogami Products Div.
P.O. Box 2027
Culver City, Calif. 90230

2626

Price $69.95
Description Mogami 33' color camera extension cable; operates with all consumer cameras by Panasonic, RCA, JVC, and Quasar

MICHELL ENGINEERING
Dick Wagner
5930 Penfield Ave.
Woodland Hills, Calif. 91367

Tape Tree
Price $184
Description 4' high lucite and chrome video rack holding 40 videocassettes (U-Matic, Beta, and VHS)

NORTRONICS
Nortronics Co., Inc.
Recorder Care Div.
8175 Lewis Road
Golden Valley, Minn. 55427

VCR-211 Video Tape Eraser
Price $47
Description Industry's finest bulk eraser to completely erase recorded video tapes to the level of virgin (new) tape; generates a powerful 60-Hz magnetic field to provide 1,040 gauss field intensity at ¼" spacing; burn-out proof design; operates on 110-129 VAC, 50-60 Hz

VCR-50
Price $24.40
Description Five vital products for the complete care of video cassette recorders including a static-free cleaning cloth, spray tape, head cleaner, 25 non-abrasive cellular foam swabs, lint-free cellular tissues, and Super Blast® compressed air supply; includes detailed, well-illustrated instructions

VCR-205 Head Demagnetizer
Price $21.20
Description A truly professional tool designed to remove all traces of residual magnetism from heads and other metal VCR parts and, therefore, to prevent partial erasure of recorded video cassette tapes

OMNIVISION
Panasonic Co.
One Panasonic Way
Secaucus, N.J. 07021

PK-800 TTL Camera
Price $1,249
Description Motorized zoom (6-to-1); viewfinder mounted on side of camera; 1.5" CRT; condenser mike built in; pause switch on handle; 2/3" saticon tube (lower lag, lower light level); comes

with f1.4 lens; 3-step color temperature switch: 3200° Kelvin, 5000° Kelvin, 5500° Kelvin; 12V with AC adapter; 4.8 lbs. with 10' cable; standby switch turns camera and portable deck off, draws 1 watt of power to keep saticon tube warm

PK-750 TTL Camera
Price $995
Description Motorized zoom (6-to-1); viewfinder mounted on side of camera; 1.5" CRT; condenser mike built in; pause switch on handle; single tube 2/3" vidicon; striped filter; horizontal resolution more than 240 lines; minimum light intensity 100 Lux (f1.8), 10 foot candles; 3-step color temperature switch: 3200° Kelvin, 5000° Kelvin, 5500° Kelvin; 12V with AC adapter; 4.8 lbs with 10' cable; standby switch turns camera and portable deck off and draws 1 watt of power to keep vidicon tube warm

PK-700 TTL Camera
Price $995
Description Motorized zoom 6-to-1 viewfinder mounted on top of camera; 1.5" CRT; condenser mike built in; pause switch on handle; single tube 2/3" vidicon; striped filter; horizontal resolution more than 240 lines; minimum light intensity 100 Lux (F1.8), 10 foot candles; 3-step color temperature switch: 3200° Kelvin, 5000° Kelvin, 5500° Kelvin; 12V with AC adapter; 4.8 lbs with 10' cable; standby switch turns camera and portable deck off and draws 1 watt of power to keep vidicon tube warm

PK-530 TTL Camera
Price $775
Description 3-to-1 zoom; condenser mike built in; pause switch on handle; single tube 2/3" vidicon; striped filter; horizontal resolution more than 240 lines; minimum light intensity 100 lux (F1.8), 10 foot candles; 3-step color temperature switch: 3200° Kelvin, 5000° Kelvin, 5500° Kelvin; 12V with AC adapter; 4.8 lbs. with 10' cable; standby switch turns camera and portable deck off and draws 1 watt of power to keep vidicon tube warm; optional 1.5" CRT electronic viewfinder available

QUASAR
Quasar Electronics Co.
Div. of Matsushita Electric Corp. of America
9401 West Grand Ave.
Franklin Park, Ill. 60131

VK-730 Camera
Price $1,000
Description 6-to-1 power zoom lens; boom mike; 7.2 watts power consumption; weighs less than 5 lbs.; electronic viewfinder, movable

VK-725 Camera
Price $1,000
Description 6-to-1 power zoom lens; boom mike; 7.2 watts power consumption; weighs less than 5 lbs.; electronic view finder, fixed

RACK FACTORY
The Rack Factory
205 E. La Chapelle
San Antonio, Texas 78204

LK-8500
Price $85
Description Lockable videocassette drawer holds 32 VHS or Beta videocassettes; made of oak and oak veneer; hand-rubbed oil finish; available in stained or clear finish

RCA
RCA
600 N. Sherman Drive
Indianapolis, Ind. 46201

TEP 1400 Tuning Timer Module
Price $350
Description Programmable for 7 days, 5 programs; non-volatile memory; built-in battery charger; 5H x 10W x 12D

PDP-500 Power Supply
Price $149
Description Operates a portable VCR and camera or can be a battery charger; status lights to indicate charging activity

RECOTON
Recoton Corp.
46-23 Crane St.
Long Island City, N.Y. 11101

TV-50
Price $9.95
Description Stereo sound simulator; simple in-line connection to your stereo and TV; enjoy TV viewing while listening in stereo

V-100 Video Tape Cabinet
Price $41.99
Description Holds 18 Betamax or VHS tapes

ROBINS
Robins Industries
75 Austin Blvd.
Commack, N.Y. 11725

24-001 Video Cassette Eraser
Price $58.50
Description Quickly eliminates signals from any video or audio tape; for VHS and Beta cassettes; heavy-duty unit is UL listed

SCOTCH
3M
Magnetic Audio/Video Products Div.
3M Center
St. Paul, Minn. 55144

Video Head Cleaners

SERVICE
Service Manufacturing Co., Inc.
River Street
Hastings-On-Hudson, N.Y. 10706

VC-28/30 Video Tape Cabinet
Price $82.95
Description Module holds 28 VHS or 30 Beta video cassettes

Price $27.95 (Beta-format); $28.95 (VHS)
Description Cleaning tape has recorded message; "When you can read this message, your heads are clean. Stop the player now!"

SOUND CONNECTORS®
Sound Connections International, Inc.
8415 Tangerine Place
Tampa, Fla. 33617

Interconnect Cables
Price $27.50
Description Silver-plated copper interconnect cables with gold-plated RCA pin plugs; for optimum performance in connecting VCR to VCR for tape duplication; available in 1 4/5; 3 4/5; and 6 4/5' lengths

SUPEREX
Superex Electronics Corp.
151 Ludlow St.
Yonkers, N.Y. 10705

VTRS-4 Video Tape Switcher
Price $59.95
Description 2¾H x 6¼W x 4¾D; switching center for video decks allows simultaneous dubbing of audio and video onto 3 decks; RCA-type input and output jacks; linear to 50 MHz

TAPE SAFE
Innovative Concepts
2284 Ringwood Ave.
San Jose, Calif. 95131

TS-VHS/TS-BETA
Price $2.50
Description Impact-resistance plastic storage cabinet that can also double as shipping box; has dual locking system; comes complete with labels for keeping track of everything recorded on tapes; available in both VHS and Beta

VIDEORASER®
Sonar Radio Corp.
3000 Stirling Road
Hollywood, Fla. 33021

VX-1602 Videoraser®
Price $69.50
Description 1,600-gauss videocassette eraser with thermal overload circuit; 220/240 volts; 50 Hz

VX-1601 Videoraser®
Price 58.75
Description 1,600-gauss video cassette eraser; UL listed; thermal overload circuit; 110 volts; 60 Hz

XASIS
Xasis Transducer Co., Inc.
9025 Eton Ave., Suite C
Canoga Park, Calif. 91304

XTE-201 Video Switch
Price $43
Description Allows video accessories (VCR, video disc, subscription TV, etc.) to be used on a second TV; dual inputs, dual outputs; 3 dual-function slide switches mix inputs and outputs

8

Troubleshooting Tips

How to diagnose and cure problems that arise with every stereo system

by Alexander N. Retsoff

A short while ago, I dug back into my record collection and listened to some discs made in the '50s. When I bought them, they were the sonic spectaculars of their time, and some of them still sounded very good. But none of them could match a current disc. Noise and distortion that I had hardly noticed in the old days now seemed unacceptably high. Why? Probably, because my present system is far superior to even a state-of-the-art one from the '50s, I now hear even the most minute distortion. And my standards of "acceptability" have risen; I now demand more of my source material than I once did.

As systems improve and our standards of excellence rise accordingly, we become more critical of any minor imperfections that affect our listening. Following are eight of the most common problems that may affect your system, how you can identify them, and what you can do to solve them.

Phono-System Hum. For most of us, the phonograph disc is our highest-quality program source, and it is here that problems are most apparent. Since the disc-reproduction system is a complex electromechanical device, it is subject to many ills, particularly the mechanical ones. One of the most common is hum.

A continuous low-level hum, heard only when playing records, usually is caused by *electrical* pickup. The majority of phono pickups work on the magnetic principle and are easily affected by electromagnetic hum fields. Current flowing in power lines generates a hum field; transformers and motors are surrounded by nettlesome 60-Hz fields. Magnetic cartridges are shielded against these fields, but they're not totally effective. Two

easy solutions are: moving the turntable farther away from the power-amp transformer and routing signal cables from cartridges to preamp away from power lines to minimize direct pickup.

Most turntables are fitted with a chassis-grounding wire. Usually, this should be connected to the amplifier's ground system via a terminal near the phono-input jacks, but sometimes you can reduce hum by leaving the wire disconnected. (Turn the system off and turn the volume control down, however, before making any changes; also, raise the volume level cautiously after the system is re-energized.)

In some cartridges, the shield is electrically connected to one of the signal grounds by a small tab that is fitted to one of the ground terminals. If the shield also makes electrical contact with a metal headshell, "ground loop" conditions that encourage hum pickup may occur. The two ground paths in such a system are: from shield to cartridge terminal and through the signal cable to the amp; and from shield through headshell to the tonearm and then through the turntable chassis and chassis-grounding wire to the amp. Try insulating the pickup from the headshell with a thin plastic wafer and use plastic mounting screws. Finally, make sure all electrical connections are secure. A faulty ground or signal connection will excite hum.

Sometimes "hum" may not be electrical in nature. An unsteady turntable support may also cause mechanical vibrations. If this motion couples through the turntable's suspension system, it can cause the record to vibrate; the cartridge is unable to distinguish between this source of motion and that imparted by the record groove. For example, if the turntable and a source of vibration such as an electric motor share a common platform, you may get a humlike sound whenever the motor is on.

Often, a mechanical vibration causes a sound that is like an electrical "hum."

Acoustic Feedback. When the sound field in the room couples back to the turntable it creates "acoustic feedback," which is akin to the type that causes a public-address system to "howl." While feedback to the turntable is seldom sufficient enough to bring about sustained oscillation (howling), it can intermodulate with the music, robbing it of clarity and permitting bass notes (especially) to hang on longer than they should.

If intermodulation gets worse when you turn up the volume and it occurs only in phono, feedback is probably the cause. Rest your finger lightly on the turntable frame. If you feel vibration when music is being played, suspect trouble. Your turntable should rest on a firm support that is either decoupled from floor- and wall-borne vibration or too solid and massive to respond.

To eliminate wall- and floor-borne feedback, you may have to move your turntable to a more secure location, even, perhaps, out of the listening room entirely. Placing compliant pads under the speaker may reduce the amount of vibration at the source. Additional isolation between turntable base and support surface also may help. These are "cut-and-try" solutions; frequently they work, sometimes they don't. The turntable dustcover may pick up the air-borne sound field. In many turntable designs, the dustcover rests directly on the base. If the cover picks up the air-borne sound field, vibrations will be transmitted directly to the base, by passing the suspension entirely. Solution? Move the turntable out of the listening room or remove the dustcover.

Distorted Disc Reproduction. Very often, a record that previously sounded fine is now fuzzy. This could be caused by a fuzz ball on the stylus, which often can be removed by merely blowing on the stylus. But don't touch the stylus with your finger. If it cannot be blown away, use a soft brush such as the camel's hair type that artists use, which frequently is packaged with the cartridge.

Turn down the volume while cleaning the stylus and always brush from the rear of the stylus towards the front, never from front to rear or from side to side. If the stylus has picked up a gummy residue—from a record treated with a poor quality lubricant—it may need to be cleaned with solvent, many of which are available for just this purpose. Whether selecting a lubricant or some type of record-cleaning or preservative kit, choose a reputable manufacturer; some solvents can damage a record or leave a residue. Some of the newer kits contain a permanent antistatic agent that helps prevent the disc from attracting dust.

Of course, distorted disc reproduction is not always due to dust and lint. If several discs played in succession sound bad and the stylus seems clean, it may mean that the stylus is worn or has been damaged accidentally. Have it inspected by a well-equipped store or, even better, keep a spare stylus on hand so you can change it yourself to see if this is the problem.

A worn stylus or one that is not properly adjusted may cause distortion on a record's inner grooves. One of those stylus-alignment gauges now on the market will ensure that the cartridge has been mounted for best tracking. Some of the new audiophile discs—especially the direct-to-disc

Hi-Fi Troubleshooting Guide

Problem	Likely Causes	Solutions
Phono System Hum	60-Hz hum field	Relocate turntable Reroute turntable cables
	Turntable grounding wire "ground loop"	Insulate pickup from headshell
	Mechanical vibration	Remove vibrating device
Acoustic Feedback	Floor- and wall-borne vibration	Move turntable to another room Use isolating pads/feet between speaker and mounting surface, and turntable and surface
	Vibration from dust cover	Remove dustcover
Distorted Disc Reproduction	Fuzz ball on stylus	Blow off or brush off lint ball (see text)
	Worn, damaged, or misaligned stylus	Use stylus-alignment gauge Insert spare stylus Have pro check stylus condition
Warp-Tracking Problem	Mismatched tonearm and cartridge	Determine resonance frequency with test record (see text) Try different arm/cartridge combination Add damping device

type—are cut at such high levels that your cartridge may simply not be able to track them. A better cartridge may be your only answer.

Warp-Tracking Problem. When choosing a cartridge, take its mass, stylus compliance, and the effective mass of your tonearm into account. If you try to mount a high-compliance cartridge in a high-mass arm, the system will resonate mechanically at too low a frequency, and will have difficulty tracking warped records. The optimum tonearm-resonance frequency is 10 Hz, give or take a couple of Hertz. While you seldom have sufficient data to predict the tonearm-resonance frequency, you can check it yourself with the Shure TTR-115 Audio Obstacle Course Era IV or Ortofon 0001 test record. No additional equipment is needed.

If your tonearm/cartridge system resonates at too low a frequency level (more typical than one that resonates at too high a frequency), you may be able to reduce the detrimental effect by adding a damping device either at the cartridge or near the arm pivot. Or, select a cartridge with lower compliance or an arm with lower mass.

It's best to take steps against this problem at the source; that is, either to damp the resonance or move the resonance frequency to a region in

Distorted Tape Copies	Excessive infrasonic energy	Effective infrasonic filter
	Dirty record head	Clean head regularly
	Magnetized head	Demagnetize heads regularly (see text)
	Worn or misaligned heads	Inspect heads regularly for wear pattern Have pro check azimuth alignment
	Improper choice of recording tape	Properly adjust deck's bias and equalization controls; check with deck's manufacturer for recommended tapes
Noisy, Distorted FM Stereo Reception	Low signal-strength	Antenna with high gain High-quality antenna lead-in wire
	Multipath	Reorient antenna for minimum multipath Consider a more "directional" antenna
Extraneous Signals on FM . . . in phonc mode	RFI Interference on FM	Signal trap between antenna and receiver
	Phono cables	Check grounds Try new set of cables Query manufacturer of amplifier (section) on recommendations
. . . regardless of program source	Speaker cables	Query manufacturer of amplifier (section) on recommendations
Poor-Sounding Speakers	Blown tweeter	Remove speaker grille, listen right at tweeter; have manufacturer replace, if necessary
	Damaged woofer voice-coil	Turn system off; push lightly on woofer cone—it should move freely; replace if necessary
	Improper speaker placement	Try different room locations (see text)

which it's less likely to be excited. Once the resonance is excited, two things occur: the cartridge generates substantial infrasonic energy *and* the warp frequency modulates the music. A sharp infrasonic filter (at least 12 dB/octave with a 15-Hz to 20-Hz cutoff point) will prevent infrasonic energy from driving your speaker into nonlinear operation—a paramount consideration with vented speaker enclosures—but the infrasonic filter cannot remove the modulation of the music and consequent muddy sound once it occurs.

Distorted Tape Copies. If you are dubbing a warped record on a wideband system and the copy sounds badly distorted, the problem may be large amounts of infrasonic energy overloading the recording amplifier or tape. An infrasonic filter in the phono preamp will prevent this. In general, the bandwidth of the signal fed to the tape deck should not exceed the recorder's own bandwidth capability. This is particularly true if a noise-reduction system is used, since any signal applied to the recorder that does not make it through the recording/reproducing process can cause noise-reduction-system mistracking and consequent frequency-response anomalies. In fact, this is one of the main reasons an MPX filter is built into almost every cassette deck. Residual 19-kHz FM-stereo pilot must be removed prior to the noise-reduction encoding.

Poor-sounding recordings can result from choosing an incompatible tape.

The most common tape-recording problem is dull, muddy sound, which can come about for a variety of reasons. Dirt on the tape heads prevents the tape from coming into close contact with the gap, which severely degrades high-frequency response. (However, a dirty playback head will not cause distortion.) Check the heads in your deck frequently; clean them (as well as the capstans, guides, and pinch rollers) with a cotton swab dipped in pure isopropyl alcohol or a recognized head cleaner. (Rubbing alcohol may have perfume and other additives that can leave a deposit on the heads; it therefore is *not* recommended.)

A head that has become magnetized will partially erase high-frequency information and lead to a (permanently) dull sound. Noise level also will be greater if the heads are magnetized. Regular demagnetization of the heads is widely recommended. I have nothing against this practice, provided that a quality demagnetizer is used and that it is used properly. However, withdrawing a demagnetizer too quickly or using one that is incapable of fully demagnetizing a head can actually *increase* the amount of magnetization. So be careful!

Worn heads or misaligned heads also lead to dull playback. Inspect your heads carefully. If a wear pattern is visible, consider replacement. Checking azimuth alignment requires a quality test tape, and unless you are prepared to invest in one, leave it to a professional.

Assuming your heads are in good shape, the most likely reason for poor tape sound lies in your choice of tape. Audiophiles feel, quite naturally, that the more they pay for a tape, the better it is. Vis-à-vis *potential,* this probably is true. But what is more important than a tape's potential is its *compatibility* with the settings of your deck. Unless bias requirements and sensitivity match the deck's parameters, the tape's full potential cannot be realized.

If your deck has user-adjustable bias and Dolby-calibration controls (and means to test the accuracy of the adjustment), by all means use them. If your deck does not offer these provisions, ask the manufacturer what specific tapes were used to adjust the deck at the factory. Chances are these will be your best choices.

Noisy Stereo Reception. The most common FM-reception problem is noisy or distorted stereo. By its nature, stereo reception requires at least 23 dB more signal strength from the antenna for the same quieting (noise

level) as mono reception. Thus, if some stations are notably quieter in mono than in stereo, there might not be anything wrong with your receiver at all. An antenna with higher gain may help to improve reception on those stations; a transmission line with less loss would also be a step in the right direction. Antenna "boosters" seldom help.

You may find stereo reception quiet but more distorted than mono. Again, the source of the problem may lie outside your tuner. Stereo is much more susceptible to multipath problems than is mono and, although a tuner with a better (lower) capture ratio and greater AM suppression would help to reduce this distortion, the most effective remedy is to minimize the percentage of multipath to start with. Try reorienting your antenna. Greatest signal strength (as indicated by the signal-strength meter) and minimum multipath may not occur with the same antenna orientation, and the latter usually is more important than the former. A more *directional* antenna will also help, provided it is oriented carefully.

Extraneous Signals. If you hear extraneous broadcasts—hams, CB, or aircraft/tower conversations—first determine if they are present, regardless of signal source, only on phono, or only when listening to FM. In the latter case, a trap tuned to reject out-of-band interference and wired between antenna and receiver should help to eliminate the chatter.

If the interference occurs only in the phono mode, it probably is being picked up by the phono signal cables. Make sure the grounds are secure and try to replace the cables. If this doesn't help, ask the amplifier manufacturer for his recommendations on eliminating this type of RFI. Interference, regardless of program source, may stem from pickup by the speaker cables. Again, the amplifier manufacturer is the best source for specific remedies.

Improper placement, as well as component failure, can make speakers sound dull.

Dull-Sounding Speakers. If your speaker suddenly sounds dull, you may have blown a tweeter (or a tweeter-protection fuse). Remove the grille and listen right at the tweeter. Tweeters are delicate drivers and the first to be damaged if your system misbehaves. Raspy bass may be caused by the woofer voice coil rubbing against the magnet. Turn off your system and lightly press the woofer cone in and out. It should move freely without binding. If a driver becomes defective, it's best to have the manufacturer (or his authorized service station) replace it.

Speaker placement, room dimensions, and acoustics play a large role in establishing the tonal balance of your system. As a rule of thumb, apparent bass response increases in proportion to the number of reflecting surfaces near the speaker. If your speaker is bass shy, placing it at the wall/floor intersection may help strengthen it. If it is bass heavy, moving it away from the wall and raising it above the floor may help smooth it.

Speakers placed away from the wall and raised above the floor tend to produce stereo imagery with greater depth. For best imaging, the speakers must be the same distance from your listening position and placed symmetrically to it. Tilting the speakers so that you sit closer to the axis of each usually strengthens the treble. Adding absorptive material to your listening room—overstuffed furniture, carpets, and drapes—tends to deaden the room and produce "drier" sound. Adding reflective surfaces livens the room.

In all cases, you must experiment. Whether it's adjusting a listening room to improve its acoustics or finding the source of hum, noise, distortion, or interference, the procedure is similar. Begin with the most likely source of the problem; then, by a process of elimination and reasoning trace it to its true source. Solving any or all of these problems yourself can be gratifying. **HF**

Equalizers

ADC
BSR (USA) Ltd.
Route 303
Blauvelt, N.Y. 10913

Sound Shaper 3 Equalizer
Price $500
Dimensions 6 5/16H x 19W x 12D
No. of bands 12 per channel
Range ±12 dB in each band
Input imped. 75 ohms
Out. imped. 10 ohms (1 kHz)
Max. output 10V
Features Paragraphic® equalizer allows control of 36 frequency ranges/channel

Sound Shaper 2 Mk. 2 Equalizer

Price $330
Dimensions 6¼H x 16⅜W x 6¾D
Weight 13 lbs. (net)
No. of bands 12 per channel
Range ±12 dB in each band
Input imped. 75K ohms
Out. imped. 10 ohms (1 kHz)
Max. output 9V
Features Includes line/record, monitor, EQ-bypass, meter switches, and input jack for sound level meter

Sound Shaper 1 Equalizer
Price $120
Dimensions 5¼H x 10W x 6¾D
Weight 7 lbs. (net)
No. of bands 5 per channel
Range ±12 dB in each band
Input imped. 75K ohms
Max. input 1V
Max. output 10V
Level cont. +12 dB, –12 dB
Features Includes tape-monitor switch and center detents for easy location of flat-response position

Models also available
Sound Shaper 110 Equalizer, $230

AUDIO CONTROL
Audio Control, Inc.
6520 212th St., S.W., B-1
Lynwood, Wash. 98036

C-101 Octave Equalizer
Price $549
Dimensions 3½H x 19W x 6½D
Weight 8 lbs. (net)
No. of bands 10 per channel
Range ±15 dB in each band
Input imped. 100K ohms
Max. input 7V
Out. imped. 150 ohms
Max. output 7V
Level cont. +0 dB; –0 dB
Features LED display real-time analyzer, pink-noise generator; lab-grade mike; switchable subsonic filter; mono-bass rumble reduction circuit; oak ends; rack-mount optional

C-50A Analyzer
Price $399
Dimensions 3½H x 9½W x 6½D
Weight 4 lbs. (net)
No. of bands 10
Range ±16 dB in each band
Input imped. 100K ohms
Max. input 7V
Out. imped. 150 ohms
Max. output 7V
Level cont. +0 dB; –0 dB
Features Includes pink-noise generator and measurement microphone; real-time analyzer

C-22 Equalizer
Price $249
Dimensions 3½H x 19W x 6½D
Weight 7 lbs. (net)
No. of bands 10 per channel
Range ±15 dB in each band
Input imped. 100K ohms
Max. input 7V
Out. imped. 150 ohms
Max. output 7V
Level cont. +0 dB; –0 dB
Features Stereo-paired sliders; switchable subsonic filter; EQ tape switch; mono-bass rumble-reduction circuit; oak ends; rack-mount optional

Richter Scale Bass Equalizer
Price $189
Dimensions 2½H x 14½W x 6½D
No. of bands 5 (½ octave)
Range ±12 dB in each band
Input imped. 100K ohms
Max. input 7V
Out. imped. 150 ohms
Max. output 7V
Level cont. +0 dB; –0 dB
Features Electronic crossover; 15 dB at 32 Hz boost switch; complete analyzer section includes swept pink noise, measurement mike, and lighted dB meter; (measurement range –20 to 3 dB) band centers at 31.5, 45, 63, 90, 125 Hz; subwoofer output; subsonic filter; mono-bass rumble reduction circuit

D-10 Octave Equalizer
Price $169
Dimensions 2½H x 14½W x 6½D
No. of bands 10
Range ±12 dB in each band
Input imped. 100K ohms
Max. input 7V
Out. imped. 150 ohms
Max. output 7V
Level cont. +0 dB; –0 dB
Features Compact styling; switchable subsonic filter; tape monitor; optional rack-mount kit

Models also available
D-11 Octave Equalizer/Analyzer, $229; 520B Equalizer, $119

AUDIO DEVELOPMENTS INTERNATIONAL
Audio Developments International
644 Emerson St.
Palo Alto, Calif. 94301

1500 Automatic Equalizer
Price $850
Dimensions 5H x 19W x 10D
Weight 12 lbs.
No. of bands 10 per channel
Range ±12 dB in each band
Input imped. 10K ohms
Max. input ±3 dB
Out. imped. 600 ohms
Max. output ±18 dB
Level cont. ±12 dB; –12 dB
Features Patented LED indicators; no external test equipment needed

1503 Equalizer
Price $730
Dimensions 3H x 19W x 10D
Weight 10 lbs.
No. of bands 31
Range ±12 dB in each band
Input imped. 10K ohms
Max. input +30 dBV
Out. imped. 600 ohms (balanced)
Max. output +27 dBV
Level cont. +12 dB; –12 dB
Features Low noise, distortion; full-range graphic 1/3 octave equalizer; 20 Hz to 20 kHz bands; optimum range indicator included; –115 dBV noise

Models also available
1501 Equalizer, $375

AUDIOLOGIC
Randix Industries Ltd.
991 Broadway
Albany, N.Y. 12204

MG-52E Equalizer
Price $89.95
Dimensions 1½H x 10W x 7¼D
Weight 4 lbs. (net)
No. of bands 6 per channel
Range ±12 dB in each band
Input imped. 100K ohms
Max. input 2.5V (controls centered)
Out. imped. 700 ohms
Max. output 2.5V

Models also available
MG-62E Equalizer, $89.95

CERWIN-VEGA
Cerwin-Vega, Inc.
12250 Montague St.
Arleta, Calif. 91331

GE-2 Equalizer
Price $600
Dimensions 5¼H x 19W x 7¼D
Weight 12 lbs. (net)
No. of bands 13
Range ±12 dB in each band
Input imped. 50K ohms (nominal)
Max. input 4V
Out. imped. 50 ohms (nominal output imp.; 2K ohms min. rated load imp.)
Max. output 8V
Level cont. +6 dB; −∞ dB
Features Half-octave control below 250 Hz, full octave control above 250 Hz

CROWN
Crown International, Inc.
1718 W. Mishawaka Road
Elkhart, Ind. 46514

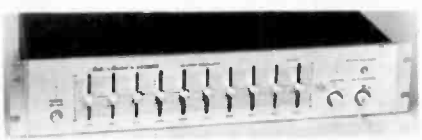
EQ/2 Distinction Series Equalizer
Price $1,195
Dimensions 7H x 19W x 14½D
Weight 16 lbs. (net)
No. of bands 11 per channel
Range ±15 dB in each band
Input imped. 75K ohms unbalanced; 20K ohms balanced (transformless)
Max. input 10V (WRMS)
Out. imped. 300 ohms (normal) 600 ohms (balanced)
Max. output 10V (WRMS)
Level cont. +10 dB (nominal unity gains with input attenuator)
Features Tunable center frequencies; hinge-point shelving tone controls; clip-level indicator; automatic turn-on muting; equalization and control cancel switches; test record and graph paper provided

dbx
dbx, Inc.
71 Chapel St.
Newton, Mass. 02195

20/20 Computerized Equalizer/ Analyzer
Price $1,295
No. of bands 10 (150 standard)
Features Microprocessor-controlled automatic equalizer; real-time analyzer, SPL meter, and pink-noise generator with 350 LED display, and 10 memories.

FISHER
Fisher Corp.
21314 Lassen St.
Chatsworth, Calif. 91311

EQ-2322 Equalizer



Price $249.95
Dimensions 3½H x 77 1/3W x 11¼D
Weight 9 lbs. 3 oz. (net)
No. of bands 10 per channel
Range ±12 dB in each band
Input imped. 50K ohms
Max. input 7V (flat)
Out. imped. 2K ohms
Max. output 7V at 1% THD

FURMAN SOUND
Furman Sound
616 Canal St., Suite 29
San Rafael, Calif. 94901

PQ-6A Parametric Equalizer
Price $550
Dimensions 3½H x 19W x 8D
Weight 7 lbs.(net)
No. of bands 3 per channel
Range +20 dB, −∞ dB in each band
Input imped. 100K ohms
Max. input 4.9V
Out. imped. 10 ohms
Max. output 8.3V
Level cont. +6 dB; −∞ dB
Features Tunable frequency and bandwidth (latter variable from approximately 0.1 to 4 octaves); bypass switches; tape-monitor switch; notches can go infinitely deep (i.e., total cancellation at selected frequency); S/N: 99 dB with EQ in and set flat; audiophile version

Models also available
PQ-3 Mono Parametric Equalizer/ Instrument Preamp, $315

GLI Integrated Sound Systems
29-50 Northern Blvd.
Long Island City, N.Y. 11101

EQ-1500 Equalizer
Price $250
Dimensions 3½H x 19W x 10D
Weight 7 lbs. (net)
No. of bands 10 per channel
Range ±12 dB in each band
Input imped. 100K ohms
Max. input 10V
Out. imped. 10 ohms
Max. output 10V
Level cont. +12 dB; −12 dB
Features High slew rate; BI-FET circuits; no turn-on or turn-off transients

JVC
JVC America, Inc.
58-75 Queens Midtown Expressway
Maspeth, N.Y. 11378

SEA-80

Price $600
Dimensions 6¼H x 17¾W x 12¼D
Weight 17 lbs. 10 oz. (net)
No. of bands 10 per channel
Range ±12 dB in each band
Input imped. 47K ohms
Out. imped. 600 ohms
Max. output 4V
Features Pink-noise generator; microphone input; fluorescent spectrum display

SEA-70
Price $360
Dimensions 6¼H x 16 9/16W x 12 7/16D
Weight 13 lbs. 3 oz. (net)
No. of bands 12 per channel
Range ±12, ±6 dB in each band
Input imped. 47K ohms
Out. imped. 100 ohms
Max. output 8V
Level cont. −6 dB (switchable)
Features 12-tone controls for each channel; 2-deck SEA recording and dubbing; reverse response switch

Models also available
SEA-20GL Equalizer, $190

KENWOOD
Kenwood Electronics, Inc.
75 Seaview Drive
Secaucus, N.J. 07094

GE-80
Price $165
Dimensions 2 29/32H x 17⅛W x 6 8/32D
Weight 5 lbs. 14 oz. (net)
No. of bands 5 per channel
Range ±10 dB in each band
Input imped. 47K ohms
Out. imped. 47K ohms
Max. output 5V
Level cont. −0 dB

KLARK-TEKNIK
Hammond Industries
155 Michael Drive
Syosset, N.Y. 11791

DN-22 Octave Equalizer
Price $830
Dimensions 5¼H x 19W x 8½D
Weight 16 lbs. (net)
No. of bands 11
Range ±12 dB in each band
Input imped. 10 ohms
Max. input 60V
Out. imped. 10 ohms
Max. output 22 dBm into 600 ohms
Level cont. +6 dB; infinite reduction
Features High- and low-pass filters; 0.01% THD

Models also available
DN-27 One-Third Octave Equalizer, $780

LUXMAN
Lux Audio of America, Ltd.
160 Dupont St.
Plainview, N.Y. 11791

G-120A Equalizer
Price $325
Dimensions 4¾H x 18 5/16W x 11 7/16D
Weight 10 lbs. 12 oz. (net)
No. of bands 10 per channel
Range ±12 dB in each band
Input imped. 65K ohms
Features Over-level indicator; tape loop; attenuator

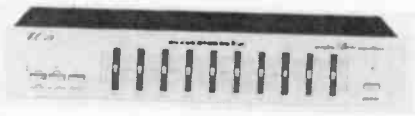
MCS® SERIES
J.C. Penney
1301 Ave. of the Americas
New York, N.Y. 10019

3030 Frequency Equalizer
Price $150
Dimensions 3 3/16H x 16 15/16W x 9 1/16D
Weight 13 lbs. 1 oz. (net)
No. of bands 5 per channel
Range ±12 dB in each band
Max. input 4V (1 kHz)

Max. output 1V
Level cont. ±1 dB

MARANTZ
Superscope, Inc.
20525 Nordhoff St.
Chatsworth, Calif. 91311

EQ-10 Graphic Tone Equalizer



Price $200
Dimensions 2⅞H x 16⅜W x 7½D
Weight 8 lbs. (net)
No. of bands 10 per channel
Range ±10 dB in each band
Input imped. 110K ohms
Out. imped. 3.5K ohms
Features The perfect finishing touch to any high-quality audio system; separate detented slide controls for each center frequency, permitting easily repeatable settings

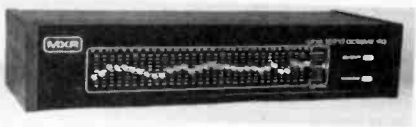
McINTOSH
McIntosh Laboratory, Inc.
2 Chambers St.
Binghamton, N.Y. 13903

MQ-104 Equalizer

Price N/A
Dimensions 3⅝H x 5½W x 9¼D
Weight 4¾ lbs. (net)
No. of bands 4 per channel
Range ±12 dB in each band
Input imped. 27K ohms
Max. input 8V
Out. imped. 600 ohms
Max. output 8V
Features Low-frequency compensation for matching McIntosh speakers to room placement; programmable filters via plug-in capacitors, one-third octave centers; variable Q section, from one-third octave to one octave

MXR
MXR Innovations, Inc.
247 N. Goodman St.
Rochester, N.Y. 14607

MOD 128 One-Third Octave Equalizer



Price $350
Dimensions 3½H x 19W x 6D
Weight 5 lbs. (net)
No. of bands 31
Range ±12 dB in each band
Input imped. 20K ohms
Max. input 8V
Out. imped. 100 ohms
Max. output 8V
Level cont. +12 dB; –12 dB
Features EQ bypass switch; one-third octave frequency centers; furnished with walnut side panels; rack-mounting ears optional

MOD 127 Equalizer

Price $325
Dimensions 3½H x 19W x 6D
Weight 5 lbs. (net)
No. of bands 15
Range ±12 dB in each band
Input imped. 20K ohms
Max. input 8V
Out. imped. 100 ohms
Max. output 8V
Level cont. +12 dB; –12 dB
Features EQ bypass switch; tape-monitor switch; alternate one-third octave frequency centers; furnished with walnut side panels; rack-mounting ears optional

Models also available

MOD 114 Graphic Equalizer, $219.95

NIKKO
Nikko Audio
320 Oser Ave.
Hauppauge, N.Y. 11787

EQ-I Equalizer

Price $200
Dimensions 3⅝H x 16½W x 13D
Weight 10 lbs. 12 oz. (net)
No. of bands 6 per channel
Range ±12 dB in each band
Input imped. 80K ohms
Max. input 5V volts
Out. imped. 2.2K ohms
Max. output 4V
Level cont. Tape monitor switch; gyrator circuitry; rack-mountable with optional kit
Features EQ defeat switch; S/N: 100 dB (A-weighted); THD: 0.05% (20 Hz to 20 kHz)

Models also available

EQ-I Equalizer, $300

NUMARK
Numark Electronics Corp.
503 Raritan Center
Edison, N.J. 08817

EQ-2300 Equalizer

Price $270
Dimensions 9½H x 12¾W x 3½D
Weight 6 lbs. 8 oz. (net)
No. of bands 10 per channel
Range ±12 dB in each band
Input imped. 50K ohms
Out. imped. 500 ohms
Max. output 10V
Level cont. +0 dB; –0 dB
Features Headphone-level control with impedance-matching switch; EQ defeat; 2 overload indicators; linear controls

Models also available

EQ-2000 Equalizer, $120

OLSON
Olson Electronics
260 S. Forge St.
Akron, Ohio 44327

RA-739 Equalizer

Price $129.98
Dimensions 3H x 15W x 8D
Weight 5 lbs.
No. of bands 10
Range ±12 dB in each band
Input imped. 8 ohms
Out. imped. 8 ohms
Level cont. +12 dB
Features Rack-mounting front panel

ONKYO
Onkyo U.S.A. Corp.
42-07 20th Ave.
Long Island City, N.Y. 11105

E-30 Equalizer

Price $549.95
Dimensions 3¼H x 17¾W x 14 9/16D
Weight 14 lbs. 5 oz. (net)
No. of bands 9
Range ±5/±10 dB in each band
Input imped. 100K ohms at 1.5V
Max. input 15V
Out. imped. 600 ohms
Max. output 15V
Level cont. +10 dB; –10 dB
Features Low-cut filter at 15 Hz and 30 Hz; 100 dB S/N (IHF A-weighted)

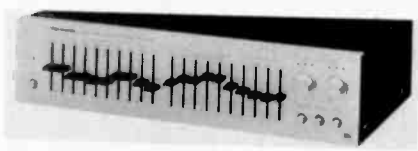
PIONEER
U.S. Pioneer Electronics Corp.
85 Oxford Drive
Moonachie, N.J. 07074

SG-9800 Equalizer

Price $395
Dimensions 5⅞H x 16½W x 14D
Weight 15 lbs. 8 oz. (net)
No. of bands 12 per channel
Range ±10 dB in each band
Input imped. 50 ohms
Out. imped. 600 ohms
Max. output 7.5V
Features Tape monitor provision

REALISTIC
Radio Shack Corp.
1400 One Tandy Center
Ft. Worth, Texas 76102

31-2000 Equalizer



Price $179.95
No. of bands 5 per channel
Range ±12 dB in each band
Input imped. 60K ohms
Out. imped. 10 ohms
Features Bypass button removes equalizer from circuit; frequency response: 5 Hz to 50 kHz, ±0.75 dB; hum and noise: –80 dB; left and right zero gain controls with 6-LED indicators

Models also available
Frequency Equalizer, $69.95

REFERENCE
CBS Retail Stores
1301 65th St.
Emeryville, Calif. 94608

210EQ
Price $199.95
Dimensions 7H x 15½W x 6¾D
Weight 8 lbs. 8 oz. (net)
No. of bands 12
Range ±12 dB in each band

ROTEL
Rotel of America, Inc.
1055 Saw Mill River Road
Ardsley, N.Y. 10502

RE-2000 Graphic Octave Equalizer
Price $370
Dimensions 5⅝H x 19W x 13 13/32D
Weight 16 lbs. (net)
No. of bands 10 per channel
Range ±12 dB in each band
Input imped. 56K ohms
Out. imped. 600 ohms
Max. output 7V
Features Inductorless active discrete resonant circuitry; rack-mount; two tape monitors; full dubbing facility; switches for record/play and complete bypass

RE-1010 Equalizer

Price $250
Dimensions 3 27/32H x 17W x 11 13/32D
Weight 9 lbs. 8 oz. (net)
No. of bands 10 per channel
Range ±12 dB in each band
Input imped. 50K ohms
Out. imped. 600 ohms
Max. output 7V
Level cont. +12 dB; –12 dB
Features Two tape monitors with dubbing, EQ record and bypass switches; inductorless active resonant circuitry

Models also available
RE-700 Graphic Octave Equalizer, $180; EA-600 Equalizer, $160

SAE
Scientific Audio Electronics, Inc.
701 E. Macy St.
Los Angeles, Calif. 90012

2800 Parametric Equalizer
Price $700
Dimensions 8¾H x 19W x 3½D
Weight 18 lbs.
No. of bands 4 per channel
Range ±16 dB in each band
Input imped. 50K ohms
Max. input 9V
Out. imped. 500 ohms
Max. output 9V
Level cont. +0 dB; –∞ dB
Features Parametric control for each band (adjustable bandwidth and center frequency); peak indicators; relay muting; tape EQ

Models also available
1800 Parametric Equalizer, $400; 180 Parametric Equalizer, $300

SANSUI
Sansui Electronics Corp.
1250 Valley Brook Ave.
Lyndhurst, N.J. 07071

SE-7B/SE-7S Graphic Equalizer

Price $300
Dimensions 6 5/16H x 19W x 11¾D
Weight 10 lbs. 6 oz. (net)
No. of bands 10 per channel
Range ±12 dB in each band
Input imped. 30K ohms
Out. imped. 47K ohms (rated load)
Max. output 5V
Level cont. +0 dB; –0 dB
Features Graphic equalizer with two-way tape copy switching and monitoring; output level control; detachable rack-mounting handles (SE-7B) in black, SE-7S in silver finish

Models also available
SE-5B, $230

SCOTT
H.H. Scott, Inc.
20 Commerce Way
Woburn, Mass. 01801

825Z Equalizer
Price $279.95
Dimensions 3½H x 17W
No. of bands 10 per channel
Range ±12 dB in each band
Input imped. 50K ohms
Out. imped. 300 ohms
Features 20 separate linear-action octave filters for optimum compensation of each band in audio spectrum; independent tape-monitor switch to replace an occupied tape facility on amp; 13 dual low-noise operational amplifiers; S/N ratio: 87 dB; separation: 80 dB at 1 kHz; control frequencies: 32, 64, 125, 250, 500 Hz, 1, 2, 4, 10, 15 kHz; THD (1V output): 0.01%

SHURE
Shure Bros., Inc.
222 Hartrey Ave.
Evanston, Ill. 60204

SR107 Equalizer
Price $300
Dimensions 1¾H x 19W x 8 9/16D
Weight 7 lbs. 12 oz. (net)
No. of bands 10
Range ±15 dB in each band
Input imped. 70K ohms
Max. input 6.2V
Out. imped. 115 ohms (line); 1 ohm (mike); 630 ohms (aux)
Max. output 6.2V
Level cont. ±15 dB
Features Rack-mount; additional 20 dB gain available

Models also available
M610 Equalizer, $195.60

SONTEC
Sontec Electronics
10120 Marble Court
Cockeysville, Md. 21030

HF-230 Equalizer
Price $990
Dimensions 1¾H x 19W x 6D
Weight 9 lbs. (net)
No. of bands 3
Range ±12 dB in each band
Input imped. 50K ohms
Max. input 14V (rms)
Out. imped. 100 ohms
Max. output 14V (rms)
Level cont. Factory set for unity gain
Features Slew rate of 200V per microsecond; 110 dB usable dynamic range; all forms of distortion under 0.002%; response flat DC to 200 kHz; high- and low-frequency shelving feature

SOUNDCRAFTSMEN
Soundcraftsmen
2200 S. Ritchey
Santa Ana, Calif. 92705

AE-2420R Analyzer-Equalizer
Price $499
Dimensions 5¼H x 19W x 11D
Weight 30 lbs. (net)
No. of bands 10 per channel
Range ±15 dB in each band
Input imped. 47K ohms
Max. input 10V
Out. imped. 180 ohms
Max. output 10V
Level cont. +6 dB; –12 dB
Features Complete line and tape equalizer plus differential-comparator analyzer; accurate to 0.1 dB with pink-noise generator, mike preamplifier, test record, and Computone charts

RP-2215R Equalizer

Price $370
Dimensions 5¼H x 19W x 11D
Weight 28 lbs. (net)
No. of bands 10 per channel
Range ±22 dB in each band
Input imped. 47K ohms
Max. input 10V
Out. imped. 180 ohms
Max. output 10V
Level cont. +6 dB; −12 dB
Features Tape and line EQ; overload LEDs; zero-gain LED monitoring; walnut-grain end panels; Environmental EQ Test Record and Computone Charts included; employs passive wire-wound precision coils to eliminate electronic noise or hiss; S/N: 114 dB; THD: 0.01%

RP 2201-R Equalizer

Price $299
Dimensions 5¼H x 19W x 11D
Weight 22 lbs. (net)
No. of bands 10 per channel
Range ±15 dB in each band
Input imped. 47K ohms
Max. input 10V
Out. imped. 180 ohms
Max. output 10V
Level cont. +6 dB; −12 dB
Features Tape and line EQ; zero gain controls; op-amp synthesized inductors are almost totally immune to pickup from magnetic fields and totally immune to current saturation; full tape monitor capabilities; THD: 0.01%; S/N: 105 dB; EQ test record; Computone charts

SE-450 Equalizer

Price $249
Dimensions 3 5/8H x 18W x 9D
Weight 10 lbs. (net)
No. of bands 10 per channel
Range ±15 dB in each band
Input imped. 47K ohms
Max. input 10V
Out. imped. 180 ohms
Max. output 10V
Level cont. +6 dB; −12 dB
Features Employs op-amp synthesized inductors which, although their function is electronically identical to wound coils, are almost totally immune to pickup from magnetic fields and totally immune to current saturation; full tape monitor capabilities; THD: 0.01%; S/N: 105 dB; EQ test record; Computone charts; available with black anodized front panel or brushed aluminum silver front panel

Models also available

TG-3044R Equalizer, $550; TG-2245-R Equalizer, $399

SPECTRO
Spectro Acoustics
4500 150th Ave., N.E.
Redmond, Wash. 98052

210R Equalizer

Price $300
Dimensions 6H x 19W x 7D
Weight 12 lbs. (net)
No. of bands 10
Range ±15 dB in each band
Input imped. 30K ohms (minimum); 50K ohms (nominal)
Max. input 10V (controls set flat)
Out. imped. 600 ohms
Max. output 10V
Level cont. +15 dB; −15 dB
Features Employs gyrators or synthesized inductors which, although their function is electronically identical to wound coils, are almost totally immune to pickup from magnetic fields and totally immune to current saturation; full tape monitor capabilities; wooden end panels optional; standard EIA rack-mount; upper level control; unity gain and tape equalization; power switch

2102R Equalizer

Price $220
Dimensions 3½H x 19W x 7⅜D
Weight 9 lbs. (net)
No. of bands 10
Range ±15 dB in each band
Input imped. 30K ohms (minimum); 50K (nominal)
Max. input 10V
Out. imped. 600 ohms
Max. output 10V
Level cont. +15 dB; −15 dB
Features Employs gyrators or synthesized inductors which, although their function is electronically identical to wound coils, are almost totally immune to pickup from magnetic fields and totally immune to current saturation; wooden end panels optional; standard 19" EIA rack-mount; tape monitor; EQ in and out rack-mount

Models also available

2102 Equalizer, $200

SUPEREX
Superex Electronics Corp.
151 Ludlow St.
Yonkers, N.Y. 10705

GEM-7 Equalizer

Price $449.95
Dimensions 5 3/10H x 19W x 17 2/5D
Weight 11 lbs. (net)
No. of bands 4 per channel
Range ±18 dB in each band
Input imped. 50K ohms
Out. imped. 100 ohms
Max. output 6V (rms)
Level cont. +18 dB; −18 dB
Features Variable frequency controls; variable bandwith controls; 0.126 to 2 octaves; parametric design

GEM-3 Equalizer

Price $239
Dimensions 4H x 19W x 7D
Weight 10 lbs. (net)
No. of bands 10
Range ±12 dB in each band
Input imped. 50K ohms
Out. imped. 600 ohms
Max. output 10V
Level cont. +14 dB; −14 dB
Features Tape monitor, volume, balance controls; rack-mount

Models also available

GEM-2, $119.95; GEM-1 Micro Equalizer, $89.95

TEASER WIREWORKS
Teaser Wireworks, Inc.
P.O. Box 402003
Dallas, Texas 75240

EQ-15 Equalizer

Price $399
Dimensions 3½H x 19W x 6D
Weight 6 lbs. (net)
No. of bands 15 per channel
Range ±12 dB in each band
Input imped. 100K ohms
Max. input 13V
Out. imped. 0.3 ohms
Max. output 13V
Level cont. +12 dB, −12 dB
Features One-half octave centers below 150 Hz; full 2-year warranty

TECHNICS BY PANASONIC
Panasonic Co.
One Panasonic Way
Secaucus, N.J. 07094

SH-9010 Equalizer

Price $540
Dimensions 3H x 19W x 14⅜D
Weight 13 lbs. (net)
No. of bands 5
Range ±12 dB in each band
Input imped. 47 ohms
Max. input 1V input
Out. imped. 300 ohms
Max. output 5V
Level cont. +0 dB, −0 dB
Features "Universal" (graphic/parametric) equalizer; each band is center-frequency adjustable ±1.6 octaves (with overlap from band to band) and also bandwidth ("Q") adjustable from 0.7 to 7 (complete range of center-frequency selection is from 20 Hz to 48 kHz); each stereo channel may be equalized independently; mounts on 19" rack

SH-8020 Equalizer

Price $370
Dimensions 6 1/3H x 16 15/16W x 9 19/32D
Weight 13 lbs. 3 oz. (net)
No. of bands 12 per channel
Range +12, −3 dB in each band
Input imped. 47K ohms
Max. input 6V
Max. output 6V
Features Variable range: ±12 or ±3 dB; source-rec-out switch; reverse EQ switch for low-noise recording; LED indicators for all modes

SH-8010 Equalizer

Price $190
Dimensions 3 13/16H x 16 15/16W x 9 1/16D
Weight 7 lbs. 2 oz. (net)
No. of bands 5
Range ±12 dB in each band
Input imped. 47 ohms
Level cont. Fixed zero gain
Features Tape-monitor switch; FQ bypass (source comparator) switch; band centers 1.6 octave apart

Headphones

AKG
AKG Acoustics, Inc.
77 Selleck St.
Stamford, Conn. 06902

K-340

Price	$189
Design	Dynamic/condenser
Response	16 Hz to 25 kHz, ±1 dB
Impedance	400 ohms
THD	0.05% at 104 dB SPL (1 kHz)
Max. level	200 mV re 117 dB SPL
Weight	14 oz. (net)
Features	Dynamic moving-coil low-frequency transducers; condenser high-frequency transducers; 5 passive diaphragms in each earcup; auto-adjust headband with Cardan® gimbal pivot

K-240

Price	$89
Design	Dynamic moving coil
Response	16 Hz to 20 kHz
Sensitivity	94 dB SPL with 0.31V input
Impedance	600 ohms
THD	1% at 112 dB SPL (1 kHz)
Max. level	200 mW re 125 dB SPL
Weight	10½ oz. (net) (with cable and plug)
Features	Six passive diaphragms in each earcup; auto-adjust headband with Cardan® gimbal pivot

K-141

Price	$69
Design	Dynamic moving coil
Response	20 Hz to 20 kHz
Sensitivity	94 dB SPL with 0.51V input
Impedance	600 ohms
THD	1% at 107 dB SPL (1 kHz)
Max. level	200 mW re 120 dB SPL
Weight	9¼ oz. (net) (with cable and plug)
Features	Auto-adjust headband with Cardan® gimbal pivot

Models also available

K-140S, $59; K-41, $39; K-40, $29

AUDIO TECHNICA
Audio Technica
1221 Commerce Drive
Stow, Ohio 44224

ATH-7

Price	$150
Type	Electret condenser
Design	Open-back
Response	20 Hz to 22 kHz, ±2 dB
Sensitivity	98 dB SPL
Impedance	4 to 16 ohms
THD	0.25% at 110 dB SPL (1 kHz)
Max. level	114 dB SPL
Weight	7.4 oz. (net)
Cord length	8¼'; straight
Features	Moderate noise rejection; fabric-covered earcups; external impedance adapter with speaker/headphone switch; LED program level indicators

ATH-6

Price	$100
Type	Electret condenser
Design	Open-back; electret condenser
Response	40 Hz to 22 kHz, ±3 dB
Sensitivity	98 dB SPL
Impedance	4 to 6 ohms
THD	0.35% at 110 dB SPL (1 kHz)
Max. level	110 dB SPL
Weight	7.4 oz. (net)
Cord length	8¼'; straight
Features	Moderate noise rejection; fabric-covered earcups; external impedance adapter with speaker/headphone switch

ATH-5

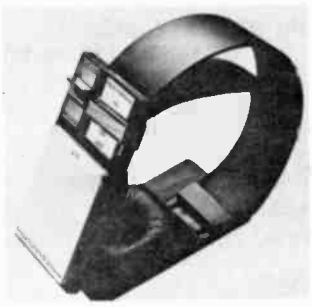
Price	$84.95
Type	Moving-coil dynamic
Design	Open-back
Response	20 Hz to 20 kHz
Sensitivity	96 dB SPL
Impedance	4 to 16 ohms
THD	0.4% at 110 dB SPL (1 kHz)
Weight	7.25 oz. (net)
Cord length	11½'; straight
Features	Moderate noise rejection; fabric-covered earcups; dome diaphragm drivers

Models also available

ATH-3, $64.95; ATH-2, $50; ATH-1, $30

BANG & OLUFSEN
Bang & Olufsen of America, Inc.
515 Busse Road
Elk Grove Village, Ill. 60007

U-70



Price	$95
Type	Orthodynamic
Design	Semi open-back
Response	16 Hz to 20 kHz
Sensitivity	94 dB SPL with 8 mW input
Impedance	140 ohms
THD	1% at 2W input
Max. level	2W
Weight	10.6 oz. (net)
Cord length	10'; straight
Features	"Ear control" allows vertical and horizontal adjustment of each earcup

BEYER
Beyer Dynamics, Inc.
5-05 Burns Ave.
Hicksville, N.Y. 11801

ET-1000

Price	$159.95 (ET-1000S includes power supply, $279)
Design	Circumaural seal
Response	10 Hz to 25 kHz
Sensitivity	100 dB SPL with 2V input
Impedance	4 to 8 ohms
THD	1% at 110 dB SPL (1 kHz)
Max. level	115 mV
Weight	13 oz. (net)
Cord length	8'
Features	Electrostatic when used with N-1000 power supply; sintered-bronze cover plates; broad-padded headband; soft earcushions

DT-441

Price	$74.95
Design	Open-back
Response	20 Hz to 20 kHz
Sensitivity	100 dB SPL with 1 mV input
Impedance	600 ohms
THD	1% at 116 dB SPL (1 kHz)
Max. level	42 mV
Weight	9 oz. (net)
Cord length	10'
Features	Finished in matte-black; air-filled foam cushions; well-padded headband; equipped with standard stereo phone plug

DT-440

Price	$64.95
Design	Open-back
Response	20 Hz to 20 kHz
Sensitivity	100 dB SPL with 1 mV input
Impedance	600 ohms
THD	1% at 116 dB SPL (1 kHz)
Max. level	42 mV
Weight	9 oz. (net)
Cord length	10'
Features	Finished in bright chrome-plate; air-filled foam cushions; well-padded headband; equipped with standard stereo phone plug

Models also available

DT-220, $59.95; DT-302, $29.95

CALIBRON
Horian Engineering, Inc.
Calibron Div.
600 Lake Emma Road
Lake Mary, Fla. 32746

HP-1
Price $35
Type Dynamic
Design Open-back; open-air
Response 20 Hz to 20 kHz, ±3 dB
Impedance 25 ohms
THD 5% (1 kHz)
Max. level 500 mV
Weight 9 oz. (net)
Cord length 12'; coiled
Features Mylar cone

CONCEPT
CBS Retail Stores
1301 65th St.
Emeryville, Calif. 94608

CE-H
Price $85
Design Orthodynamic constant energy
Response 20 Hz to 20 kHz, ±2 dB
Sensitivity 96 dB SPL with 1 mV input
Impedance 150 ohms
THD 0.25% at 95 dB SPL (1 kHz)
Max. level 3V (120 dB SPL)
Weight 10.5 oz. (net)
Features Extra-long leather cord

DUOTONE
Duotone Company, Inc.
6875 S.W. 81st St.
Miami, Fla. 33143

SH-90
Price $29.95
Response 20 Hz to 20 kHz
Impedance 4 to 16 ohms
Features Individual volume controls; mono/stereo switch; padded ear arid headbands; unbreakable molded plug

GC
GC Electronics
400 South Wyman St.
Rockford, Ill. 61101

90-108
Price $34.95
Design Open air
Response 20 Hz to 20 kHz
Sensitivity 98 dB SPL with 1 mW input
Impedance 4 to 16 ohms
THD 0.3% at 1 mW input
Weight 7.5 oz. (net)
Cord length 6'; straight
Features Lightweight, unlform vibration type drives result In high input endurance and low distortion; ¼" stereo phone plug

Models also available
90-106, $17.96; 90-104, $15.95

HERALD
Herald Electronics
6611 N. Lincoln Ave.
Chicago, Ill. 60645

PH-81
Price $29.95
Type Dynamic
Response 18 Hz to 23 kHz
Sensitivity 104 dB SPL (1 kHz)
Impedance 8 ohms
Weight 5 oz. (net)
Cord length 10'; coiled
Features Samarium cobalt magnet

PH-61
Price $15.95
Type Dynamic
Response 20 Hz to 18 kHz
Sensitivity 110 dB SPL (1 kHz)
Impedance 8 ohms
Weight 15 oz. (net)
Cord length 10'; coiled
Features Volume controls; adjustable padded headband

HERVIC
Hervic Electronics
18750 Oxnard St. #406
Tarzana, Calif. 91356

HP-1
Price $55
Type Dynamic
Response 18 Hz to 22 kHz
Sensitivity 100 dB SPL with 1 mW input
Impedance 104 ohms
Weight 6.7 oz. (net)
Cord length 3', coiled; 7½' straight
Features Low-mass diaphragm; fully-adjustable simulated leather headband; weightless cord: 4.2 oz.

INTERNATION
Sterling Hi-Fidelity, Inc.
22-20 40th Ave.
Long Island City, N.Y. 11101

HD-800
Price $60
Impedance 8 ohms
Features Includes built-in AM/FM stereo multiplex radio receiver and detatchable cable

250
Price $50
Design Round cup
Impedance 8 ohms
Weight 5 oz.
Features Ultrathin lightweight slamarlum cobalt magnet

Models also available
225, $36; 208, $36; 115, $31; 109, $27

JVC
JVC America
58-75 Queens Midtown Expressway
Maspeth, N.Y. 11378

HM-200E
Price $100
Response 20 Hz to 20 kHz
Sensitivity 94 dB SPL with 1 mW input
Impedance 8 ohms
Weight 24 oz. (net)
Features Adjustable headband; built-in binaural microphones

HP-1100
Price $80
Response 20 Hz to 20 kHz
Impedance 100 ohms
THD 0.2% at 500 Hz
Weight 7 oz. (net)

Models also available
HP-880, $65; HP-550, $40

KOSS
Koss Corp.
4129 North Port Washington Ave.
Milwaukee, Wis. 53212

ESP/10
Price $350
Type Electrostatic
Design Circumaural
Response 20 Hz to 22 kHz
Sensitivity 100 dB SPL V 1.9 (rms)
Impedance 180 ohms
THD 0.38% at 100 dB SPL (1 kHz)
Weight 14 oz. (net)
Cord length 10'; Y- coiled
Features Patented E/10 energizer with dual headset jacks; automatic overload indicators; pneumalite cushions

PRO/4 Triple A
Price $85
Type Dynamic
Design Circumaural
Response 10 Hz to 22 kHz
Sensitivity 100 dB SPL at 0.7V (rms)
Impedance 220 ohms
THD 0.5% at 100 dB SPL (1 kHz)
Weight 15.5 oz. (net)
Cord length 10'; coiled
Features Pneumalite earcushions

Technician/VFR®
Price $80
Type Dynamic
Design Circumaural
Response 10 Hz to 22 kHz
Sensitivity 100 dB SPL at 0.6V (rms)
Impedance 245 ohms
THD 0.3% at 100 dB SPL (1 kHz)
Weight 16.8 oz. (net)
Cord length 10'; Y-coiled
Features VFR controls (variable frequency response); pneumalite earcushions

HV/XLC


Price $79.95
Type High velocity
Design Circumaural
Response 15 Hz to 35 kHz
Sensitivity 1V (rms)
Impedance 90 ohms
Weight 7.8 oz. (net)
Cord length 10'; coiled
Features Variable density; volume/balance controls

HV/X
Price $69.95
Type High Velocity
Design Circumaural
Response 15 Hz to 35 kHz
Sensitivity 1V (rms)
Impedance 90 ohms
Weight 7.8 oz. (net)
Cord length 10'; coiled
Features Variable density

HV/1LC

Price $59.95
Type High-velocity
Design Supra-aural
Response 15 Hz to 30 kHz
Sensitivity 100 dB SPL at 1.1V (rms)
Impedance 132.5 ohms
THD 0.5% at 100 dB SPL (1 kHz)
Weight 10.8 oz. (net)
Cord length 10'; coiled
Features Volume-balance controls on each earcup

TECH/2

Price $59.95
Type Dynamic
Design Circumaural
Response 10 Hz to 22 kHz
Sensitivity 100 dB SPL at 0.7V (rms)
Impedance 245 ohms
THD 0.3% at 100 dB SPL (1 kHz)
Weight 15.9 oz. (net)
Cord length 10'; Y-coiled
Features Mike-boom mount on left earcup; pneumalite earcushions

K/6ALC

Price $39.95
Type Dynamic
Design Circumaural
Response 10 Hz to 16 kHz
Sensitivity 100 dB SPL at 0.14V (rms)
Impedance 94 ohms
THD 1% at 100 dB SPL (1 kHz)
Weight 14 oz. (net)
Cord length 10'; coiled
Features Volume-balance controls

K/6A

Price $29.95
Type Dynamic
Design Circumaural
Response 10 Hz to 16 kHz
Sensitivity 100 dB SPL at 0.15V (rms)
Impedance 100 ohms
THD 1% at 100 dB SPL (1 kHz)
Weight 14 oz. (net)
Cord length 10'; coiled

Models also available

HV/1A, $55; K/145, $54.95; KO/727B, $39.95; KC/180, $19.95

NEAL-FERROGRAPH
Neal-Ferrograph U.S.A., Inc.
652 Glenbrook Road
Stamford, Conn. 06906

Electrostatic

Price $224
Type Electrostatic
Design Circumaural
Response 20 Hz to 20 kHz, ±3 dB
Sensitivity 95 dB SPL with 100V input
Impedance 130 ohms (10 kHz); connects via adapter box to 4 to 16 ohm outputs
Max. level 100V re 95 dB SPL
Weight 13 oz. (including 3-meter cable) (net)
Features Permanently polarized capsule; padded, simulated-leather carrying case included; adapter for connecting headphones through speaker/headphone switching unit; foam-filled earcups

DYNA-X

Price $119
Design Circumaural
Impedance 120 ohms
Weight 13 oz. (including 3-meter cable) (net)
Features Padded, simulated-leather carrying case included; replaceable, foamed-filled earcups

NUMARK
Numark Electronics Corp.
503 Raritan Center
Edison, N.J. 08817

HV-3000

Price $54
Design Lightweight
Response 8 Hz to 28 kHz
Weight 6.5 oz. (net)
Features Samarium cobalt magnet; Neglex no-loss cable included

HV-2000R

Price $48
Design Lightweight
Response 8 Hz to 27 kHz
Weight 6 oz. (net)
Features Samarium cobalt magnet; ultrathin diaphragm; high efficiency

Models also available

HV-235R, $44; HV-215VA, $44; HV-115A, $32

OLSON
Olson Electronics
260 S. Forge St.
Akron, Ohio 44327

PH-500

Price $59.98
Design Ultrathin
Response 35 Hz to 18 kHz
Impedance 8 ohms
Weight 10 oz. (net)
Features Separate woofer and tweeter on each side

PHILMORE
Philmore Manufacturing, Inc.
40 Inip Drive
Inwood, N.Y. 11696

SP-90L

Price $22.50
Type Dynamic
Design Circumaural
Response 20 Hz to 22 kHz, ±3 dB
Sensitivity 110 dB SPL with 1 mW input
Impedance 8 ohms
Max. level 500 mW
Cord length 10; coiled
Features Left and right volume controls on each phone; mono/stereo switch

Models also available

SP-30, $31.95

PICKERING
Pickering & Co., Inc.
101 Sunnyside Blvd.
Plainview, N.Y. 11803

OA-7 Dynaphase

Price $70
Design Dynamic high-velocity elements
Response 20 Hz to 22 kHz, ±5 dB
Sensitivity 110 dB SPL with 200 mV input
Impedance 100 ohms
THD 0.5% at 110 dB SPL (1 kHz)
Max. level 500 mV
Weight 5.5 oz. (net)
Cord length 10'
Features Samarium cobalt drivers; open audio supra-aural textile-covered replaceable cushions; cushioned headband

OA-5A

Price $60
Design Dynamic high velocity elements
Response 20 Hz to 22 kHz, ±5 dB
Sensitivity 110 dB SPL with 200 mV input
Impedance 100 ohms
THD 0.25% at 110 dB SPL (1 kHz)
Max. level 500 mV
Weight 5 oz. (without cord) (net)
Features Special adapter for portables; supra-aural textile-covered replaceable cushions

OA-4

Price $49.95
Type Dynamic
Design Open-audio
Response 10 Hz to 20 kHz
Sensitivity 105 dB SPL with 1 mV input (1 kHz)
Impedance 40 ohms
THD Less than 0.5% at 100 dB SPL (1 kHz)
Max. level 0.15 watts
Weight 2 oz. (without cord) (net)
Cord length 7'; straight
Features Super lightweight; multi-density polyurethane foam cushions; sized for total portability; adapter plug for TV, radio, etc.

Models also available

OA-3A Dynaphase, $45; OA-202, $29.95

PIONEER
U.S. Pioneer Electronics Corp.
85 Oxford Drive
Moonachie, N.J. 07074

SE-700

Price $100
Design Open-back
Response 20 Hz to 20 kHz
Sensitivity 100 dB SPL with 5.6 mW input (1 kHz)
Impedance 80 ohms (min)
Max. level 11 mW
Weight 12 oz. (net)
Cord length 9¾'
Features High-polymer molecular film driver

Monitor 10

Price $80
Design Circumaural
Response 20 Hz to 20 kHz
Sensitivity 100 dB SPL with 1 mW input
Impedance 8 ohms
Max. level 700 mW
Weight 23 oz. (net)
Cord length 16½'

SE-505

Price $75
Design Circumaural
Response 20 Hz to 20 kHz
Sensitivity 108 dB SPL with 11 mW input
Impedance 8 ohms
Max. level 500 mW
Weight 24 oz. (net)
Cord length 16½'
Features Volume and tone controls for each channel

SE-4

Price $50
Design Open-back
Response 20 Hz to 20 kHz

Sensitivity	96 dB SPL with 1 mW input (1 kHz)
Impedance	250 ohms
Max. level	200 mW
Weight	9 oz. (with cord) (net)
Cord length	9½'
Features	Lightweight

Models also available
SE-405, $55; SE-305, $45; SE-205, $30; SE-2, $30

PML
Ercona Corp.
2492 Merrick Road
Bellmore, N.Y. 11710

D-42 Deluxe

Price	$49.50
Type	Dynamic
Response	30 Hz to 20 kHz, ±3 dB
Impedance	200 ohms
Max. level	5 mV
Weight	9.5 oz. (net)
Features	Washable rubber earpieces

RDF-224

Price	$32.95
Type	Dynamic
Response	20 Hz to 18 kHz
Impedance	8 ohms
Max. level	100 mW
Weight	12 oz. (net)
Cord length	8'; coiled
Features	Foam-filled vinyl earcushions; stereo/mono switch

POWER DRIVE
Recoton Corp.
46-23 Crane St.
Long Island City, N.Y. 11101

ST-55

Price	$44.99
Response	18 Hz to 21 kHz
Sensitivity	103 dB SPL
Impedance	50 ohms
Weight	5 oz. (less cord) (net)
Cord length	10'; coiled
Features	Ultrathin diaphragm

ST-33

Price	$35.99
Response	20 Hz to 20 kHz
Sensitivity	103 dB SPL (1 kHz)
Impedance	50 ohms
Weight	5 oz. (net)
Cord length	10'
Features	Superthin diaphragm

Models also available
ST-22, $30.99; ST-16, $20.99

QUADRAFLEX
CBS Retail Stores
1301 65th St.
Emeryville, Calif. 94608

Q-45

Price	$54.95
Type	Dynamic
Response	20 Hz to 20 kHz, ±2 dB
Sensitivity	95 dB SPL with 1 mV input
Impedance	80 ohms
THD	1% at 95 dB SPL
Max. level	1.8V
Weight	10 oz. (net)
Features	Mylar diaphragms

Models also available
Q-25, $29.95; Q-12, $17.95

REALISTIC
Radio Shack Corp.
1400 One Tandy Center
Ft. Worth, Texas 76102

PRO-IIA

Price	$50
Type	Professional
Response	10 Hz to 22 kHz
Impedance	8 ohms
Weight	19 oz. (net)
Cord length	10'; coiled
Features	Adjustable padded headband with air-filled cushions; 12" Mylar diaphragm; 1" voice coils

LV-10

Price	$42
Type	High velocity
Design	Vented-back
Response	20 Hz to 20 kHz
Impedance	4 to 16 ohms
THD	0.5%
Weight	10 oz. (net)
Cord length	10'; coiled
Features	Soft sponge earpieces; less than 0.5% distortion; lightweight

PRO-30

Price	$40
Design	Uniform phase
Cord length	Coiled
Features	Rare-earth magnets; low-profile design, lightweight; low-mass planar drivers

Models also available
Nova®-PRO, $36.95; PRO-20, $29.95; Nova-40, $25; Nova-16, $20; NOVA-10, $16

ROBINS
Robins Industries
75 Austin Blvd.
Commack, N.Y. 11725

47-925

Price	$31.50
Response	20 Hz to 20 kHz
Impedance	8 ohms
Cord length	9' coiled
Features	Features 3" speakers; left-and-right slide volume and tone controls; deluxe padded adjustable headband and earcups

Models also available
47-921, $23.50; 47-901, $15.50

SAE TWO
Scientific Audio Electronics, Inc.
701 E. Macy St.
Los Angeles, Calif. 90012

7000

Price	$65
Design	Partial environment isolation (semi-iso)
Response	20 Hz to 15 kHz, ±3 dB
Impedance	200 ohms

SANSUI
Sansui Electronics Corp.
1250 Valley Brook Ave.
Lyndhurst, N.J. 07071

SS-40

Price	$42
Type	Dynamic
Design	Circumaural seal
Response	20 Hz to 20 kHz
Sensitivity	108 dB SPL
Impedance	25 ohms
Max. level	500 mW
Weight	13.1 oz. (net)
Cord length	6½'; straight
Features	Super-lightweight polyester film diaphragm; light, comfortable earpads/band

Models also available
SS-30, $30

SENNHEISER
Sennheiser Electronics Corp.
10 West 37th St.
New York, N.Y. 10018

Unipolar 2000

Price	$384
Design	Electret condenser, electrostatic
Response	16 Hz to 22 kHz
Sensitivity	103 dB SPL with 5V input
Impedance	8 ohms
THD	0.1% at 110 dB SPL (1 kHz)
Max. level	11.2V at 110 dB SPL
Weight	11 oz. (net)
Features	Electrostatic phones with no need for 110V AC line connection; polarizing voltage permanently frozen into electret diaphragms

HD-224

Price	$144
Type	Dynamic
Design	Circumaural
Response	16 Hz to 20 kHz
Sensitivity	94 dB SPL with 1 mW input
Impedance	200 ohms
THD	0.9% at 95 dB SPL (1 kHz)
Max. level	500 mW
Weight	8 oz. (net)
Cord length	10'
Features	Designed for good isolation

HD-430

Price	$126
Type	Dynamic
Design	Open-air
Response	16 Hz to 20 kHz
Sensitivity	94 dB SPL with 1 mW input
Impedance	600 ohms per channel
THD	0.5% at 95 dB SPL (1 kHz)
Max. level	100 mW
Weight	7 oz. (net)
Cord length	10'
Features	New cobalt samarium magnet system with high energy and low weight; new whirl-shaped diaphragm for excellent transient response

HD-424

Price $115
Type Dynamic
Design Open-air
Response 15 Hz to 20 kHz
Sensitivity 102 dB SPL with 1 mW input
Impedance 2K ohms per channel
THD 1% at 126 dB SPL (1 kHz)
Max. level 100 mW
Weight 7 oz. (net)
Cord length 10'
Features Deluxe version of HD-414 with softer and larger earcushions and headband cushion

Models also available

HD-420, $89; HD-414, $79; HD-400, $46

SIGNET
Signet Co.
4701 Hudson Drive
Stow, Ohio 44224

TK-33

Price $250
Design Electret condenser
Response 10 Hz to 22.5 kHz, ± 2 dB
Sensitivity 100 dB SPL at 1V
Impedance 4 to 16 ohms
THD 0.1% at 110 dB SPL (1 kHz)
Max. level 20 mV re 117 dB SPL
Weight 10 oz. (with cord); 7 oz. (without cord) (net)
Cord length 8.2'; straight
Features TK-33 adapter contains a passive-impedance matching transformer; speaker-operation selector switch; high or low sensitivity switch; 2 arrays of light-emitting diodes display relative voltage to each channel; adapter will accommodate 2 stereo headsets if desired

Models also available

TK-22, $80

SONIC INTERNATIONAL
Sonic International Corp.
2515 N.E. Riverside Way
Portland, Ore. 97211

Pro-90

Price $69.95
Type Dynamic
Design Circumaural
Response 20 Hz to 22 kHz
Sensitivity 105 dB SPL with 1 mV input
Impedance 4 to 32 ohms
Weight 9.7 oz. (net)
Cord length 10" coiled
Features Individual woofer and tweeter in each earcup

Pro-80

Price $59.95
Type Dynamic
Design Open-back
Response 15 Hz to 25 kHz
Sensitivity 115 dB SPL with 1 mV input
Impedance 4 to 32 ohms
Cord length 10' straight
Features Samarium cobalt magnets

Pro-70

Price $49.95
Type Dynamic
Design Open-back
Response 15 Hz to 25 kHz
Sensitivity 115 dB SPL with 1 mV input
Impedance 4 to 32 ohms
Cord length 10' coiled
Features Samarium cobalt magnets

Models also available

Pro-60, $44.95; Pro-10, $39.95; Pro-52, $34.95; Pro-5, $32.95; Sonic 101, $29.95; Sonic 40, $24.95; Sonic 30, $21.95

SONY
Sony Industries
9 West 57th St.
New York, N.Y. 10019

ECR-500

Price $120
Type Uni-electret electrostatic
Design Open-back
Response 20 Hz to 20 kHz
Sensitivity 91 dB SPL with 1V input
Impedance 30 ohms
THD 0.03% at 4V input
Max. level 114 dB SPL
Weight 12 oz. (net)
Cord length 8 1/5'; straight
Features Supplied with adapter for connection to amplifier loudspeaker terminals

DR-Z7

Price $100
Type Dynamic
Design Open-air
Response 20 Hz to 25 kHz
Sensitivity 104 dB/mW SPL
Impedance 110 ohms at 1 kHz
THD 0.03% at 90 dB SPL at 1 kHz
Max. level 30 mV
Weight 14.8 oz. (net)
Cord length 6 3/5'; straight
Features Acoustic dimple diaphragm with palladium coating; Litz wire cable; metal and leather construction

DR-Z6

Price $85
Type Dynamic
Design Open-air
Response 20 Hz to 25 kHz
Sensitivity 104 dB/mW SPL
Impedance 110 ohms (1 kHz)
THD 0.03% at 90 dB SPL (1 kHz)
Max. level 30 mV
Weight 14.1 oz. (net)
Cord length 6 3/5'; straight
Features Metal and vinyl construction; acoustic dimple diaphragm with palladium coating

Models also available

MDR-7, $79.95; DR-Z5, $70; DR-M5, $65; MD5-5a, $64.95; MDR-3 Sony Phone®, $49.95; DR-S5, $50; DR-S4, $40; MDR-2, $39.95; DR-S3, $30; DR-2, $22

STANTON
Stanton Magnetics, Inc.
200 Terminal Drive
Plainview, N.Y. 11803

XXI Stereo/Wafers®

Price $70
Design Open-audio
Response 20 Hz to 22 kHz
Sensitivity 110 dB SPL with 200 mV input
Impedance 100 ohms, ±10% (1 kHz)
THD 0.5% at 110 dB SPL
Max. level 0.1 watts rms/channel
Weight 5.5 oz. (without cord) (net)
Cord length 10'
Features Soft foam-cushioned headband; specially designed earpiece pivots; samarium cobalt drivers

XII Micro Wafer

Price $49.95
Type Dynamic high velocity
Design Open-audio
Response 10 Hz to 20 kHz
Sensitivity 105 dB SPL per mV (1 kHz)
Impedance 40 ohms (1 kHz)
THD Less than 0.5% at 100 dB SPL (1 kHz)
Weight 2 oz. (without cord) (net)
Cord length 7'; straight

Models also available

Dynaphase 55, $60; Dynaphase 35, $45; Dyna 25, $29.95

STAX
Stax Koygo, Inc.
940 E. Dominguez St.
Carson, Calif. 90746

SR Sigma Earspeaker System

Price $460
Type Electrostatic
Response 8 Hz to 35 kHz, ±1.5 dB
Sensitivity 102 dB SPL
Impedance 130K ohms
THD 0.02% at 1W (1 kHz)
Weight 16 oz. (net)
Cord length 8'; straight
Features Bias power source

SR-Lambda

Price	$300
Type	Electrostatic
Response	8 Hz to 35 kHz, ±1.5 dB
Sensitivity	102 dB SPL
Impedance	130K ohms
Weight	14 oz. (net)
Cord length	8'; straight
Features	Bias power source

SR-X/Mk.3

Price	$300
Type	Electrostatic
Response	20 Hz to 25 kHz, ±1.5 dB
Sensitivity	95 dB SPL
Impedance	35 ohms (adapter box)
THD	0.02%
Weight	14 oz. (net)
Cord length	8'; straight
Features	Diaphragm is 2 microns thick

Models also available

SR-50, $210; SR-5 Earspeaker System, $175; SR-44 Earspeaker System, $120

SUPEREX
Superex Electronics Corp.
151 Ludlow St.
Yonkers, N.Y. 10705

Studio Master/SM-700

Price	$69.95
Design	On-the-ear Isolated
Response	10 Hz to 20 kHz, ±3 dB
Sensitivity	110 dB SPL with 0.6V input
Impedance	35 ohms
THD	0.25% at 110 dB SPL (400 Hz)
Weight	10 oz. (net)
Features	Vented-magnet design for increased transient response; self-supporting voice-coil assembly

PRO-B-VI Monitor

Price	$60
Design	Around-ear Isolation
Response	15 Hz to 22 kHz, ±5 dB
Impedance	4 to 16 ohms
THD	0.9% at 110 dB SPL (400 Hz)
Weight	15 oz. (net)
Features	Two-way woofer/tweeter LC crossover design; twin acoustic woofer chambers

TRL-99

Price	$54.95
Design	On-ear fabric-faced open design
Response	15 Hz to 20 kHz, ±4 dB
Sensitivity	110 dB SPL with 0.6V input
Impedance	35 ohms
THD	0.4% at 110 dB SPL (400 Hz)
Weight	10 oz. (net)
Features	Micro-thin Mylar diaphragm drivers

Models also available

TRL-88, $49.95; TRL-3, $44.95

TECHNICS
Panasonic Co.
One Panasonic Way
Secaucus, N.J. 07094

EAH-830

Price	$80
Design	Dynamic
Response	15 Hz to 35 kHz
Sensitivity	100 dB SPL with 0.5V input (1 kHz)
THD	0.3% at 100 dB SPL (1 kHz)
Max. level	3V re 131 dB SPL
Weight	16 oz. (less cord) (net)
Features	Linear-drive design; double-cavity acoustic circuit; high power-handling capacity

EAH-T805

Price	$30
Type	Dynamic
Design	Circumaural
Response	20 Hz to 20 kHz
Sensitivity	100 dB SPL
Impedance	125 ohms

Models also available

EAH-820, $60; EAH-810, $40

TOSHIBA
Toshiba America, Inc.
82 Totowa Road
Wayne, N.J. 07470

HR-811

Price	$75
Type	Electret condenser
Design	Open-air
Response	20 Hz to 30 kHz
Sensitivity	101 dB SPL with 3V input
Impedance	8 ohms
THD	0.5% at 101 dB SPL (400 Hz)
Max. level	115 dB SPL
Weight	8.5 oz. (net)
Cord length	8'; straight
Features	"Complementary Back" electret full-face drive system with ultrathin 2.5 micron diaphragm

HR-X1

Price	$65
Type	Electret condenser
Design	Open-air
Response	20 Hz to 20 kHz
Sensitivity	101 dB SPL with 3V input
Impedance	8 ohms
THD	0.5% at 101 dB SPL (400 Hz)
Max. level	115 dB SPL
Weight	5.8 oz. (net)
Cord length	8'; straight
Features	"Complementary back" (exclusive)

Models also available

HR-F1, $49.95; HR-10M, $30

YAMAHA
Yamaha International Corp.
6600 Orangethorpe
Buena Park, Calif. 90620

YH-1000

Price	$220
Type	Orthodynamic
Design	Supra-aural
Response	20 Hz to 20 kHz
Impedance	100 ohms
THD	0.1% at 90 dB SPL
Max. level	103 dB mV
Weight	19 oz. (net)
Features	2" rare earth cobalt magnet; 2" polyester diaphragm; lockable high-adjustment sliders

YH-100

Price	$95
Type	Orthodynamic
Design	Supra-aural
Response	20 Hz to 20 kHz
Impedance	150 ohms
THD	0.3% at 90 dB SPL
Max. level	39 mV re 90 dB SPL
Weight	12 oz. (net)
Cord length	8'; straight
Features	Double headband

YH-1

Price	$65
Type	Orthodynamic
Design	Supra-aural
Response	20 Hz to 20 kHz
Impedance	150 ohms
THD	0.3% at 90 dB SPL
Max. level	94 mW
Weight	9 oz. (without cord) (net)

Models also available

YH-2, $50; YH-3, $35

ZENITH
Zenith Radio Corp.
1000 Milwaukee Ave.
Glenview, Ill. 60025

839-56

Price	$65.95
Type	Dynamic
Design	Open type
Response	10 Hz to 25 kHz
Sensitivity	100, ±3 dB SPL with 1 mV input
Impedance	8 ohms
Max. level	300 mV
Weight	13 oz. (net)
Features	Streamline design rotary tone; volume control on each earpiece

839-52

Price	$58.95
Type	Dynamic
Response	20 Hz to 20 kHz
Sensitivity	90, ±3 dB SPL with 1 mV input
Impedance	8 ohms
Max. level	700 mV
Weight	16 oz. (net)
Cord length	10'; coiled
Features	Separate slide-type tone and volume control on each earpiece; 10' coiled cord

839-54

Price	$54.50
Type	Dynamic
Design	Open type
Response	20 Hz to 16 kHz
Sensitivity	100, ±3 dB SPL with 1 mV input
Impedance	8 ohms
Max. level	300 mV
Weight	13 oz. (net)
Cord length	9'; coiled
Features	Volume control on each earpiece; 9' coiled cord

Models also available

839-32, $49.75; 839-50, $32.95; 839-55, $26.50; 839-49, $23.75

Microphones

AKG
AKG Acoustics, Inc.
77 Selleck St.
Stamford, Conn. 06902

C-424
Price $2,200
Polar pat. Cardioid Four
Transducer Condenser; two dual diaphragms
Response 20 Hz to 20 kHz
Output –43.5 dBm re 94 dB SPL
Impedance 200 ohms
Features Large-diaphragm quadriphonic mike with FET preamplifier; 3-position preattenuator

C-422
Price $2,100
Polar pat. Nine variable patterns
Transducer Double-diaphragm condenser
Response 20 Hz to 20 kHz
Output –45 dBm re 94 dB SPL
Impedance 200 ohms
Features Large-diaphragm stereo mike with FET preamplifier; remote pattern selector; aiming LEDs; 3-position preattenuator

D-12E
Price $225
Polar pat. Cardioid
Transducer Large-diaphragm dynamic
Response 40 Hz to 17 kHz
Output –53 dBm re 94 dB SPL
Impedance 200 ohms
Features Bass/kick-drum mike; includes integral stand adapter and case

D-222EB
Price $215
Polar pat. Cardioid
Transducer Two-way dynamic
Response 20 Hz to 18 kHz
Output –55.5 dBm re 94 dB SPL
Impedance 200 ohms
Features Dual-transducer design; bass rolloff; complete with stand adapter and case

D-320B
Price $145
Polar pat. Hypercardioid
Transducer Dynamic
Response 80 Hz to 18 kHz
Output 128 dB SPL
Impedance 200 ohms
Features Plug-in transducer system; 3-position bass rolloff switch; rugged die-cast housing; shock-mounted transducer; dual windscreen/pop filter

D-110
Price $135
Polar pat. Omnidirectional
Transducer Dynamic
Response 70 Hz to 15 kHz
Output –59 dBm re 94 dB SPL
Impedance 200 ohms
Features Lightweight lavalier

D-170E
Price $125
Polar pat. Supercardioid
Transducer Dynamic
Response 50 Hz to 15 kHz
Output –53.5 dBm re 94 dB SPL
Impedance 200 ohms
Features Ball-head wire-mesh windscreen; antifeedback mike; includes stand adapter and case

D-310
Price $110
Polar pat. Cardioid
Transducer Dynamic
Response 80 Hz to 18 kHz
Output 128 dB SPL
Impedance 200 ohms
Features Rugged die-cast housing; shock-mounted transducer; dual windscreen/pop filter

D-125
Price $80
Polar pat. Cardioid
Transducer Dynamic
Response 100 Hz to 18 kHz
Output –53.5 dBM re 94 dB SPL
Impedance 200 ohms
Features Rugged die-cast housing; shock-mounted transducer; dual windscreen/pop filter

D-120E
Price $75
Polar pat. Cardioid
Transducer Dynamic
Response 80 Hz to 17 kHz
Output –54 dBm re 94 dB SPL
Impedance 200 ohms
Features Ball-head type; includes stand adapter and case; available as D-120ES with on/off switch at $80

Models also available
C-34, $1,450; C-33, $850; C-414EB, $695; D-224E, $400; C-535EB, $340; C-451E Combo Design, $323; D-900E, $264; D-190SPL, $205; D-330 BT, $185; D-140E, $185; D-120SPL, $175; D-2000E, $165; C-505E, $155; C-502E, $150; D-200E1, $135; D-310S, $130; D-1000E, $110; D-160E1, $96; D-190E, $95; D-58E, $90; D-109, $88

AUDIO TECHNICA
Audio Technica Co.
1221 Commerce Drive
Stow, Ohio 44224

AT-813R
Price $125
Polar pat. Cardioid
Transducer Electret Condenser
Response 20 Hz to 20 kHz
Output –55 dBm re 94 dB SPL
Impedance 250 ohms
Features Powered from eternal DC power source only (9-52V); 16½' cable with professional XLR-type connectors at each end; no on/off switch

AT-811
Price $90
Polar pat. Cardioid
Transducer Electret condenser
Response 50 Hz to 20 kHz
Output –56 dBm re 94 dB SPL
Impedance 600 ohms
Features Recessed on/off switch; 16½' cable with ¼" phone plug or XLR

AT-803S
Price $90
Polar pat. Omnidirectional
Transducer Subminiature electret condenser
Response 50 Hz to 15 kHz
Output –57 dBm re 94 dB SPL
Impedance 600 ohms
Features Battery and recessed on/off switch on belt clip; 20' small diameter cable with ¼" phone plug or XLR

Models also available
AT-814, $120; AT-813, $105; AT-812, $95; AT-802, $80; AT-801, $75; AT-816/2 Recording Microphone Pair, $60/pr.; AT-805S, $50

BEYER
Beyer Dynamics, Inc.
5-05 Burns Ave.
Hicksville, N.Y. 11801

M-130
Price $389
Polar pat. Figure-8 bidirectional
Transducer Ribbon
Response 40 Hz to 18 kHz
Output –59 dBm re 1 mW/PA
Impedance 200 ohms
Features Small size; supplied with standard three-pin Switchcraft connector

M500
Price $199
Polar pat. Hypercardioid
Transducer Ribbon
Response 40 Hz to 18 kHz
Output –60 dBm re 1 mW/Pa
Impedance 200 ohms
Features XLB mike connector; 16½' cable; matte black finish

Models also available
M-111, $169; M-818, $149.95/pr.; M-400N, $119

CERWIN-VEGA
Cerwin-Vega, Inc.
12250 Montague St.
Arleta, Calif. 91331

UE-1
Price $125
Polar pat. Cardioid
Transducer Electret
Response 80 Hz to 20 kHz
Output –70 dBm re 94 dB SPL
Impedance 600/10K ohms
Features Impedance switch; tone switch

UD-1
Price $100
Polar pat. Cardioid
Transducer Dynamic
Response 70 Hz to 15 kHz
Output –73 dBm re 94 dB SPL
Impedance 200 ohms
Features Built-in pop filter

CROWN
Crown International
1718 W. Mishawaka Road
Elkhart, Ind. 46514

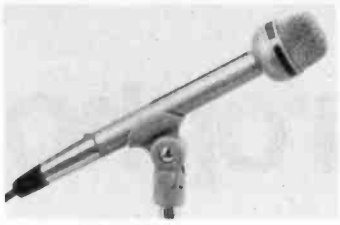
PZM-6LP
Price $349
Polar pat. Hemispherical
Transducer Electret
Response 50 Hz to 15 kHz
Output –76 dB re 94 dB SPL (open circuit); re 1V per microbar
Impedance 150 ohms
Features Transformer or active power supply; available in gold or black

PZM-30GP
Price $349
Polar pat. Hemispherical
Transducer Electret
Response 50 Hz to 15 kHz
Output –76 dB re 94 dB SPL (open circuit); re 1V per microbar
Impedance 150 ohms
Features Transformer or active power; supply available in gold or black

ELECTRO-VOICE
Electro-Voice, Inc.
600 Cecil St.
Buchanan, Mich. 49107

CH-15S
Price $493
Polar pat. Hypercardioid
Transducer Condenser Single-D
Response 55 Hz to 13.5 kHz
Output –40 dBm re 94 dB SPL
Impedance 150 ohms
Features Supplied with shock-mount and windscreen; phantom A-B powerable; steel and aluminum case; 2-year unconditional warranty

RE-20
Price $404.50
Polar pat. Cardioid
Transducer Dynamic Variable-D®
Response 40 Hz to 18 kHz
Output 57 dBm re 94 dB SPL
Impedance 50/150/250 ohms (switchable)
Features Wide-range response; Variable-D® design eliminates proximity effect; built-in blast filter; 2-year unconditional warranty

RE-18


Price $247.50
Polar pat. Super cardioid
Transducer Dynamic Variable-D®
Response 80 Hz to 15 kHz
Output 57 dB re 94 dB SPL
Impedance 150 ohms
Features Shock-mounted; Variable-D® design eliminates proximity effect; built-in blast filter; 2-year unconditional warranty

RE-10
Price $140.25
Polar pat. Super cardioid
Transducer Dynamic Variable-D®
Response 90 Hz to 13 kHz
Output 56 dBm re 94 dB SPL
Impedance 150 ohms
Features Variable-D® design eliminates proximity effect; no off-axis coloration; bass rolloff switch; 2-year unconditional warranty; RE-11 similar with built-in blast filter ($141)

CO-90
Price $125.40
Polar pat. Omnidirectional
Transducer Condenser
Response 40 Hz to 15 kHz
Output 57 dBm re 94 dB SPL
Impedance 150 ohms
Features Miniature lavalier; wide-range response; tie clip; belt clip; windscreen; storage pouch; 2-year unconditional warranty

671A
Price $98.40
Polar pat. Cardioid
Transducer Dynamic Single-D
Response 60 Hz to 14 kHz
Output 57 dBm re 94 dB SPL
Impedance 150 ohms/Hi-Z (switchable)
Features On/off switch, lockable in on position; built-in blast filter

Models also available
CO-15P, $257; CS-15P, $239; RE-55, $235; DO-56, $110; RE-15, $222; DS-35, $125; 1776, $122.10; DO-54, $125.40; RE-85, $117.50; 660, $93.90; 647AL, $85.80; 635A, $79; 631B, $73.80

GC/AUDIOTEX
GC Electronics
400 South Wyman St.
Rockford, Ill. 61101

30-2316
Price $57.10
Polar pat. Cardioid
Transducer Electret condenser
Response 50 Hz to 13 kHz
Output –69 dBm
Impedance 600 ohms
Features 20' cable; 9 oz.; table stand; slip-out stand clamp; black vinyl storage case

30-2314
Price $41.60
Polar pat. Cardioid
Transducer Dynamic
Response 50 Hz to 17 kHz
Output –77/–58 dBm (switchable)
Impedance 500/30K ohms (switchable)
Features 20' cable; 8.5 oz.; slip-out stand clamp; lavalier holder; built-in volume control

Models also available
30-2312, $36.75; 30-2310, $33.50; 30-2318, $25.05

HERALD
Herald Electronics
6611 N. Lincoln Ave.
Chicago, Ill. 60645

EC-100
Price $69.95
Polar pat. Cardioid
Transducer Electret condenser
Response 30 Hz to 16 kHz
Output –66 dBm
Impedance 600 ohms
Features 18' cable; XL connectors; teledyne brand

EC-101
Price $69.95
Polar pat. Omnidirectional
Transducer Electret condenser
Response 30 Hz to 16 kHz
Output –40 dBm
Impedance 600 ohms
Features Ultra-mini lavalier with on/off switch; 15' cable

MC-057
Price $59.95
Polar pat. Uni-cardioid
Transducer Dynamic
Response 70 Hz to 16 kHz
Output –55 dBm
Impedance 600 ohms
Features Teledyne brand; 18' cable; XL connectors

Models also available
MK-160, $59.95; EC-102, $59.95; EO-200, $55; M-80, $39.95; EO-300, $39.95; MIC-080, $36

JVC
U.S. JVC Corp.
58-75 Queens Midtown Expressway
Maspeth, N.Y. 11378

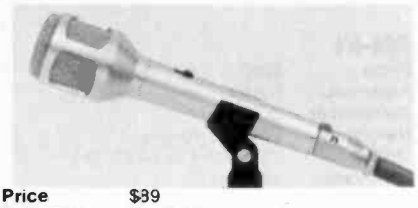
M-510
Price $190
Polar pat. Super-directional; unidirectional
Transducer Electret
Response 40 Hz to 20 kHz
Output –68 dBm; –71 dBm
Impedance 600 ohms
Features Unidirectional capsule

HM-200E
Price $100
Polar pat. Binaural
Transducer Electret
Response 40 Hz to 18 kHz
Impedance 600 ohms

Models also available
M-201, $60

MARLBORO
Marlboro Sound Works
Div. of M.I.C.A.
170 Eileen Way
Syosset, N.Y. 11791

M-900



Price $89
Polar pat. Cardioid
Transducer Magnetic
Response 50 Hz to 17 kHz
Output –74 dBm (low); –58 dBm (high)
Impedance 200 ohms (low); 20K ohms (high)
Features Impedance selectable inside mike with simple connector; 16' heavy-duty cable; XLR connector

M-500

Price $87
Polar pat. Cardioid
Transducer Magnetic
Response 50 Hz to 16 kHz
Output –76 dBm (low); –56 dBm (high)
Impedance 200 ohms (low); 20K ohms (high)
Features Impedance selectable inside mike with simple connector; 16' heavy duty cable; XLR connector

Models also available

M-400, $49; M-300, $42; M-200, $31; M-50, $21; M-30, $14

MR. AUDIO
Jasco Products Co., Inc.
217 N.E. 46th
P.O. Box 466
Oklahoma City, Okla. 73101

1151

Price $10.98
Features Deluxe cassette microphone with holder and ¼" adapter

1150

Price $6.33
Response 100 Hz to 8 kHz
Output –77 dB
Impedance 200 ohms
Features Cassette microphone with molder

NAKAMICHI
Nakamichi U.S.A. Corp.
1101 Colorado Ave.
Santa Monica, Calif. 90401

DM-1000

Price $280
Polar pat. Cardioid
Transducer Moving-coil dynamic
Response 30 Hz to 18 kHz, ±2.5 dB
Output –54 dBm re 94 dB SPL (10 microbars)
Impedance 250 ohms
Features Triple-layer windscreen, double-construction casing reduces mechanical noise pickup for hand-held use; hun-cancelling coils

CM-300

Price $165
Polar pat. Cardioid; omnidirectional
Transducer Electret condenser
Response 30 Hz to 18 kHz, ±3.5 dB
Output –54 dBm re 94 dB SPL (10 microbars)
Impedance 200 ohms
Features Includes cardioid and omni capsules; optional super-cardioid "shotgun" capsule CP-3, $40; super-omnidirectional "pinpoint" capsule CP-4, $60

Models also available

DM-500, $100; CM-100, $100

NEUMANN
Gotham Audio Corp.
741 Washington St.
New York, N.Y. 10014

KM-84

Price $386
Polar pat. Cardioid
Transducer Condenser
Response 20 Hz to 20 kHz
Output –38 dBM re 10 dyne/cm²
Impedance 200 ohms
Features Flat off-axis response; phantom-powered

NUMARK
Numark Electronics Corp.
503 Raritan Center
Edison, N.J. 08817

UD-985

Price $110
Polar pat. Unidirectional
Transducer Dynamic
Response 50 Hz to 16 kHz
Impedance 600 ohms
Features Balanced line cable; XLR connectors to phone plug; –73 dB sensitivity at 1 kHz

UC-945

Price $79.95
Polar pat. Unidirectional
Transducer Electret condenser
Response 30 Hz to 18 kHz
Impedance 600 ohms
Features Unbalanced line cable; XLR connectors to phone plug; –68 dB sensitivity at 1 kHz

UC-935

Price $59.95
Polar pat. Unidirectional
Transducer Electret condenser
Response 30 Hz to 16 kHz
Impedance 600 ohms

Models also available

UD-975, $99; UC-965, $85; TC-995, $39.95

OLSON
Olson Electronics
260 S. Forge St.
Akron, Ohio 44327

MK-105

Price $29.98
Polar pat. Omnidirectional
Transducer Electret
Response 20 Hz to 12 kHz
Output –70 dBm
Impedance 600 ohms
Features Ultra-miniature lavalier; FET preamp; 16' cable with ¼" phone plug

PHILMORE
Philmore Manufacturing Co., Inc.
40 Inip Drive
Inwood, N.Y. 11696

DMS-80

Price $49.90
Response 49 Hz to 20 kHz
Impedance 600 ohms

DMS-90

Price $36.50
Response 80 Hz to 13 kHz
Impedance 600 ohms
Features Two to a blister package

PIONEER
U.S. Pioneer Electronics Corp.
85 Oxford Drive
Moonachie, N.J. 07074

DM-61

Price $130
Polar pat. Unidirectional
Transducer Dynamic
Response 80 Hz to 12 kHz
Impedance 600 ohms

Models also available

DM-51, $100; DM-21, $30

PML
Ercona Corp.
2492 Merrick Road
Bellmore, N.Y. 11710

ST-8

Price $1,645
Polar pat. Variable from omni, through cardioid, to figure-8
Transducer Condenser
Response 30 Hz to 20 kHz
Impedance 200 ohms
Features Stereo

DC-63

Price $815
Polar pat. Variable: 44 distinct directional patterns
Transducer Condenser
Response 30 Hz to 20 kHz
Impedance 200 ohms balanced
Features Symsi-(phantom) powered with easy operating switches

Models also available

DC-73, $330; DC-21, $252.95; DC-20, $239.95

REALISTIC
Radio Shack Corp.
1400 One Tandy Center
Ft. Worth, Texas 76102

Stereo One-Point Electret Condenser

Price $60
Polar pat. One-point stereo
Transducer Two back electret elements
Response 30 Hz to 18 kHz, ±3 dB
Features Selectable low-frequency contour; 16.5' cable with dual ¼" plugs; stand adapter included

Professional Electret Condenser

Price $50
Polar pat. Cardioid
Transducer Back electret design
Response 20 Hz to 20 kHz, ±3 dB
Impedance 600 ohms
Features Lo-Z impedance balanced option; XLR-type connector; 16.5' heavy-duty cable; includes foam windscreen and stand adapter; switchable low-frequency contour

Models also available

Highball Dynamic, $48; Dual Pattern Stereo Electret Condenser, $40; 33-1045, $29.95; 33-992, $29.95; Featherweight Condenser, $18

RECOTON
Recoton Corp.
46-23 Crane St.
Long Island City, N.Y. 11101

MM-660

Price $49.99
Polar pat. Cardioid
Transducer Electret stereo
Response 50 Hz to 16 kHz
Impedance 600 ohms
Features Two internal electret picks to eliminate the need for two mikes & stands when recording

REVOX
Studer ReVox America, Inc.
1425 Elm Hill Pike
Nashville, Tenn. 37210

M-3500

Price $160
Polar pat. Hypercardioid
Response 40 Hz to 18 kHz
Impedance 600 ohms
Features Black matte finish; XLR mike connector; 16' cable

ROBINS
Robins Industries
75 Austin Blvd.
Commack, N.Y. 11725

48-020

Price $38
Polar pat. Unidirectional
Transducer Cardioid
Response 100 Hz to 12 kHz
Impedance 600 or 20K ohms
Features High/low impedance switch; stand adapter; 20' cord

48-019

Price $29.50
Polar pat. Omnidirectional
Transducer Dynamic
Response 100 Hz to 12 kHz
Impedance 600 or 50K ohms
Features High/low impedance switch; stand adapter; 6' cord to ¼" plug

Models also available

48-023, $24; 48-038, $18.50; 48-021, $6.80

SANSUI
Sansui Electronics Corp.
1250 Valley Brook Ave.
Lyndhurst, N.J. 07071

DM-11

Price $110
Polar pat. Cardioid
Transducer Dynamic
Response 100 Hz to 15 kHz
Output –76 dBm
Impedance 600 ohms
Features Windscreen; balanced output with 18' cord

Models also available

EM-1, $80

SENNHEISER
Sennheiser Electronics Corp.
10 West 37th St.
New York, N.Y. 10018

MD-441

Price $455
Polar pat. Super cardioid
Transducer Dynamic
Response 30 Hz to 20 kHz
Impedance 200 ohms
Features Brilliance switch for nominal 5 dB boost at 5 kHz

MD-211

Price $356
Polar pat. Omnidirectional
Transducer Dynamic
Response 40 Hz to 20 kHz
Impedance 200 ohms

MD-431

Price $352
Polar pat. Super cardioid
Transducer Dynamic
Response 40 Hz to 16 kHz
Impedance 200 ohms
Features Vocal mike; on/off switch with lock; built-in bass/proximity cutoff and pop filters; very high front-to-back-ratio

Models also available

MD-421, $327; MD-416, $300; ME-80, $172; ME-40, $123; ME-20, $87; MD-402U, $79.50

SHURE
Shure Brothers, Inc.
222 Hartrey Ave.
Evanston, Ill. 60204

SM-81

Price $250
Polar pat. Cardioid
Transducer Condenser
Response 20 Hz to 20 kHz
Output –39.5 dBm re 94 dB SPL
Impedance 150 ohms
Features Simplex-(phantom) powered over 12-48V; 10-dB attenuator; low-frequency response switch; studio recording mike; requires external power supply

SM-53

Price $246
Polar pat. Cardioid
Transducer Dynamic
Response 70 Hz to 16 kHz
Output –60 dBm re 94 dB SPL
Impedance 150 ohms
Features Low-end rolloff switch; highly effective shock-mount; hum rejection system; minimal proximity effect

SM-76

Price $193.20
Polar pat. Omnidirectional
Transducer Dynamic
Response 45 Hz to 20 kHz
Output –61 dBm re 94 dB SPL
Impedance 38 and 150 ohms
Features Extremely flat response; probe-style recording mike

SM-59

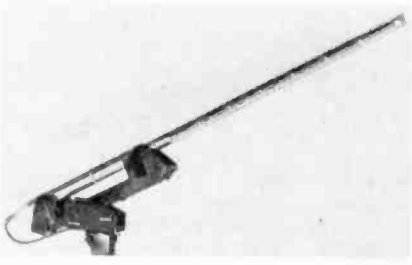
Price $158.40
Polar pat. Cardioid
Transducer Dynamic
Response 50 Hz to 15 kHz
Output –61 dBm re 94 dB SPL
Impedance 150 ohms
Features Mechano-pneumatic shock-mount; wide-range smooth-frequency response; professional broadcast and recording mike

Models also available

SM-58, $151.80; SM-78 Series, From $150; SM-57, $118.80; SM-77 Series, From $117; SM61, $106.20; 516EQ, $100.80; SM-63, $100; SM-17, $76.80; SM18, From $63

SONY
Sony Industries
9 West 57th St.
New York, N.Y. 10016

C-76



Price $795
Polar pat. Super cardioid
Transducer Condenser
Response 40 Hz to 16 kHz
Output –38 dB (or 12.6 mV) re 94 dB SPL
Impedance 250 ohms
Features Gun type; windscreen; low-cut switch; AC/DC operation; LED low-power indicator (for DC battery operation)

C-48
Price $795
Polar pat. Cardioid; bidirectional; omnidirectional
Transducer Dual diaphragm condenser
Response 30 Hz to 16 kHz
Output –40 dBm re 94 dB SPL
Impedance 150 ohms
Features Low noise, high gain preamp; 10 dB pad; bass rolloff switch; LED indication of directivity selection; phantom or battery powered operation

ECM-56F
Price $265
Polar pat. Cardioid
Transducer Back electret condenser
Response 20 Hz to 16 kHz
Output –54 dBm re 94 dB SPL
Impedance 250 ohms
Features Uses phantom power (48V DC) or batteries (9V); studio quality vocal and instrumental mike; stand or boom mounting; 8 dB pad and bass rolloff switch; XLR connector; balanced output

F-660
Price $250
Polar pat. Unidirectional
Transducer Dynamic
Response 100 Hz to 10 kHz
Output –58 dB (or 1.2 mV) re 94 dB SPL
Impedance 250 ohms
Features Safety-locked cord; vibration-free structure; double windscreens; mike holder

ECM-30
Price $115
Polar pat. Omnidirectional
Transducer Electret condenser
Response 50 Hz to 14 kHz
Output –55 dB (or 2 mV) re 94 dB SPL
Impedance 250 ohms
Features Ultra-miniature design is inconspicuous in use; up to 3,100 hours continuous use on one battery; balanced output; carrying case; windscreen; tie clip

ECM-41
Price $100
Polar pat. Cardioid
Transducer Electret condenser
Response 50 Hz to 13 kHz
Output –54 dB (or 2 mV) re 94 dB SPL
Impedance 250 ohms
Features Adjustable telescoping wand; balanced line; windscreen; mike holder; nonreflecting finish

ECM-260F
Price $65
Polar pat. Cardioid
Transducer Back electret condenser
Response 50 Hz to 14 kHz
Output –54 dBm re 94 dB SPL
Impedance 200 ohms
Features Hand-held multipurpose mike; 1.5V AA battery operation; ¼" phone connector; supplied with holder and windscreen

ECM-99A
Price $65
Polar pat. Two cardioid elements (single-point stereo)
Transducer Electret condenser
Response 50 Hz to 12 kHz
Output –57 dB (or 1.4 mV) re 94 dB SPL
Impedance 250 ohms
Features Stereo recording with a single mike; wide-frequency response; up to 2,000 hours battery life; windscreen; mike holder; carrying case; plug adapter

ECM-210M
Price $35
Polar pat. Cardioid
Transducer Electret condenser
Response 50 Hz to 12 kHz
Output –56 dB (or 1.6 mV) re 94 SPL
Impedance 200 ohms
Features Mini-plug to fit most portable tape recorders; up to 10,000 hours of continuous operation on AA power supply; mike desk stand

F-99M
Price $35
Polar pat. Two cardioid elements (single-point stereo)
Transducer Dynamic
Response 80 Hz to 12 kHz
Output –61 dB (or 0.9 mV) re 94 dB SPL
Impedance 200 ohms
Features Stereo recording with a single mike; mini-plug connector; mike stand; 5' cable

Models also available
C-74, $675; C-38B, $545; C-37P, $495; ECM-53FP, $295; ECM-65F, $235; ECM-64P, $235; ECM-50PS, $225; ECM-33F, $195; F-115, $160; ECM-990F, $150; ECM-23F, $115; F-520, $100; F-420, $75; ECM-170A, $75; ECM-150, $65; ECM-31M, $55; ECM-220FA, $50; F-400 A, $50; ECM-16, $40; F-320 A, $38; ECM-210S, $38; F-500S, $25; F-500, $23

SUPERSCOPE BY MARANTZ
Superscope, Inc.
20525 Nordhoff St.
Chatsworth, Calif. 91311

EC-9P
Price $110
Polar pat. Cardioid
Transducer Electret condenser
Response 30 Hz to 17 kHz
Output –62 dBm re 94 dB SPL
Impedance 250 ohms
Features Professional mike; standard cannon output; low-cut filter; 10 dB pad; optional power operation

EC-15P
Price $100
Polar pat. Omnidirectional
Transducer Electret condenser
Response 70 Hz to 16 kHz
Output –58 dBm re 94 dB SPL
Impedance 250 ohms
Features Professional tie-clasp mike; IC-FET electronics; standard cannon output; optional power operation

EC-33S
Price $66
Polar pat. Uni- and bidirectional
Transducer Electret condenser
Response 50 Hz to 15 kHz
Output –52 dBm re 94 dB SPL
Impedance 1K ohms
Features Patented pull-apart design allows use as a one-point stereo mike or 2 separate monaural mikes; remote stop/start switch

Models also available
EC-7, $64; EC-12B, $54; EC-5, $42; EC-3S, $32; EC-3, $28; EC-1, $18

TEAC
Teac Corp.
7733 Telegraph Road
Montebello, Calif. 90640

ME-120
Price $120
Polar pat. Cardioid; omnidirectional
Transducer Electret condenser
Impedance 200 ohms
Features Switchable 6-dB-per-octave filter; switchable 10-dB attenuation pad

MM-100
Price $100
Polar pat. Cardioid; dynamic
Impedance 200 ohms
Features XLR connectors

Models also available
ME-80, $90; ME-50, $50; ME-20, $40

TECHNICS
Panasonic Co.
One Panasonic Way
Secaucus, N.J. 07094

RP-3540E
Price $70
Polar pat. Cardioid
Transducer Electret condenser
Response 40 Hz to 14 kHz
Impedance 600 ohms
Features Stand; mike holder; ⅜" adapter; windscreen; good in vocal applications

RP-3500E


Price $60
Polar pat. Cardioid
Transducer Electret condenser
Response 50 Hz to 12 kHz
Impedance 600 ohms
Features Stand; mike holder; ⅜" adapter; windscreen; good in close-up miking

Models also available
RP-3210E, $60; RP-3330, $30

TOSHIBA
Toshiba America, Inc.
82 Totowa Road
Wayne, N.J. 07470

EM-420
Price $69.95
Polar pat. Unidirectional
Transducer Electret
Response 50 Hz to 20 kHz
Impedance 600 ohms
Features Back electret

EM-220
Price $39.95
Polar pat. Unidirectional
Transducer Electret
Response 50 Hz to 18 kHz
Impedance 1K ohm
Features Back electret

Signal Processors

(including Noise-Reduction units)

ACE AUDIO
Ace Audio Co.
532 Fifth St.
East Northport, N.Y. 11731

5000 Electronic Crossover

Price $87.50 (kit)/$141.25 (wired)
Description Designed for operation with any speaker system and a subwoofer; crossover at 100 Hz/18 dB/octave (other frequencies available at additional charge of $16); subwoofer-level control; built-in bridging amplifier; distortion less than 0.002%; noise, –90 dB; defeat switch; crossover frequencies determined by accurate precision components

4100 Infra-Ultrasonic Filter

Price $72.50 (kit)/$98.50 (wired)/220V models, $6.50 extra
Description Combined infrasonic/ultrasonic filter: 20 Hz, 18 dB/octave, 20 kHz, 12 dB/octave; eliminates undesirable frequencies and power loss both above and below the audio passband; typical distortion: 0.002%; also available with 30- or 40-Hz cutoff (add $6.50)
Features Unit is sold with 30-day money-back guaranty (wired units only)

Models also available

6000 Electronic Crossover, $103.50 (kit)/$142 (wired)/$33.50 plug-in modules)/220-volt modules)/220-volt extra

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

ADS-10 Acoustic Dimension Synthesizer

Price $1,150
Description Built-in amplification; matching speakers optimized for ambience reproduction
Response 30 Hz to 13 kHz, +1, -3 dB
THD 0.03% (front); 0.3% (rear) (1 kHz)
Noise 83 dB re 3V
Delay 10 ms to 100 ms (variable)
Decay 0 to 1.6 sec (variable)
Inputs 2 main; 2 tape; 2 power amp
Outputs 2 front; 2 rear #1; 2 rear #2; 2 tape; 2 speaker
Features 24.5K-bit digital memory; proprietary source ambience discriminator circuitry; selectable delayed bandwidth (5, 8, or 13 kHz); headphone circuit mixes direct and delayed signals for use as tape recording reverb unit

Models also available

ADS 10-01 Acoustic Dimension Synthesizer, $700

ADVENT
Advent Corp.
195 Albany St.
Cambridge, Mass. 02139

Model 500 SoundSpace Control

Price $799
Description Acoustic simulator
Response 20 Hz to 6 kHz; 6 kHz to 20 kHz (direct)
THD 0.1% (rear channels for 1.5V input at 1 kHz; front channels, unity gain)
Delay 1 to 100 ms (continuously variable)
Decay Continuously variable
Features 32,000-bit RA memory

AUDIO PULSE
Audio Pulse Electronics, Inc.
4501 N. Arden Drive
El Monte, Calif. 91731

Model 1000 Time-Delay System

Price $1,000
Description Ambience simulator, with dynamic range expander, using multiple recycling of signal and cross-coupling through a digital delay line
Response Direct (front): 20 Hz to 20 kHz, ± 0.5 dB; delayed (rear): 20 Hz to 7 kHz, ±3 dB
THD Direct (front): 0.09 max THD (IHF); delayed (rear): 0.5% max THD (IHF)
Noise Direct (front): 80 dB (IHF); delayed (rear): 75 dB (IHF)
Expansion 1.0 to 1.5 ratio (continuously variable)
Delay Initial delay: 7, 12, 19, 33, 42, 53 ms (minimum); continuously variable to 12, 21, 33, 58, 75, 95 ms
Decay 0.0 to 1.2 sec (variable)
Attack 2 ms
Release 200 ms
Inputs Sensitivity: 50 mV to 60V (variable)
Outputs 0 to 1.5V (variable)
Features Digital display of delay and decay times; LED input level indicators; LED expander-level indicators; front-channel delay for stage depth; headphone amplifier with ambient mix, remote defeat jack; additional outputs for 6/8 channel operation; compatible with any preamp; tape monitor or speaker outputs; automatic defeat of between-song dialogue on radio broadcasts; tape monitor facilities; individual input/output level controls; balance control; optional rack-mounting brackets

Models also available

Model Two Digital Time-Delay, $680; IRS-1, $195

AUDIONICS OF OREGON
Audionics, Inc.
10950 S.W. 5th, #160
Beaverton, Ore. 97005

Space and Image Composer

Price $1,095
Description High-performance SQ decoder, and ambient recovery system
Response 20 Hz to 20 kHz, +0.5 dB
THD 0.15% (20 Hz to 20 kHz)
IM 0.15%

Noise –80 dB re 250 mV
Compression None
Expansion None
Attack 3 ms
Release 3 ms
Inputs Stereo; 4-channel discrete
Outputs Tape; 4-channel discrete; 4-channel decoder
Features Tate directional circuit for decoding circuit; up to 45 dB front-to-back separation

BOSE
Bose Corp.
100 The Mountain Road
Framingham, Mass. 01701

Bose Spatial Expander

Price $449
Description Time-Delay processor
Response 35 Hz to 35 kHz
THD 0.5%
IM 0.5%
Compression Full bandwidth square root
C/E ratio Compander (1/2—2/1)
Delay 11 ms to 42 ms (variable)
Inputs 2 preamp (47K ohms impedance)
Outputs 2 preamp (25K ohms impedance)
Features Designed to work with the Bose Spatial Control receiver; reproduces more ambience and spaciousness of a live performance

BOZAK
Bozak, Inc.
587 Connecticut Ave.
South Norwalk, Conn. 06854

902S Time-Delay System

Price $975
Description Analog control unit with integrated 35 watt-per-channel amplifier plus 2 DS-1800 indirect radiating loudspeakers
Response 30 Hz to 7.7 kHz, +0, –3 dB (control unit)
THD 0.1%, 1 kHz to 20 kHz
IM 0.01% at 1 kHz
Noise 86 dB re 0 dBm (unweighted)
Compression 2:1 (internal)
Expansion 1:2 (internal)
C/E ratio 1:2; 2:1
Delay 30 to 130 ms (continuously variable)
Decay Up to 3 sec (continuously variable)
Features Ambience simulator circuitry; phase-coherent outputs; unique LED dual-range meter monitors delay output; external jumpers for delay signals to amp inputs; short-circuit protection; also available without speakers, $795

901 Time-Delay Unit

Price $625
Description Analog control unit (same as 902 control unit, but has no amplifier or speakers)

CERWIN-VEGA
Cerwin-Vega, Inc.
12250 Montague Ave.
Arleta, Calif. 91331

CX-2 Passive Electronic Crossover

Price A passive electronic crossover yielding unmeasurable noise and distortion; available in precise fixed frequency designs of 100 Hz, 150 Hz, 200 Hz, and 250 Hz
Description $100

CONCERT MACHINE
Sound Concepts, Inc.
P.O. Box 135
Brookline, Mass. 02146

AD-1060

Price $300
Description Ambience-restoration system; time delay with built-in amplifiers generates 2 ambience channels, designed especially for car stereo systems
Response 10 Hz to 6 kHz, ±3 dB
THD 1%
Noise 60 dB re DIN A below max output
Delay 10 to 70 ms (variable)
Inputs Stereo line (Hi-Z1V); stereo and mono speaker lever
Outputs 2
Features Achieves spatial effect with no reverberation; single-shaft remote control available as Model 1060RC ($40)

MITCHELL A. COTTER
Mitchell A. Cotter Company, Inc.
35 Beechwood Ave.
Mt. Vernon, N.Y. 10553

NFB-2 Noise Filter/Buffer

Price $500
Description Subsonic ultrasonic time-domain corrected filter
Features Subsonic/ultrasonic time-domain corrected filter to limit bandwidth of the signal to the amplifier to the audio spectrum

CROWN
Crown International
1718 W. Mishawak Road
Elkhart, Ind. 46514

VFX-2A Crossover

Price $429
Description Continuously variable
Features Max input, 10V; max output, 10V; continuously variable, active, solid-state filters that can be used to perform either crossover or bypass functions; two filters per channel, each continuously variable from 20 Hz to 20 kHz; filter rolloff fixed at 18 dB per octave, which eliminates any noticeable dip in the frequency spectrum at crossover points when properly adjusted; sharp rolloff also quickly attenuates unwanted frequencies above and below crossover

dbx
dbx, Inc.
71 Chapel St.
Newton, Mass. 02195

2BX Expander

Price $499
Description Two-band linear expander
Response 20 Hz to 20 kHz, ±0.5 dB
THD 0.1% at 1.0 expansion (20 Hz to 20 kHz)
IM 0.15%
Noise –85 dBV re 1V
Expansion 1:1 to 1:1.5 (up to 50%)
Attack Program dependent
Release Program dependent
Inputs Signal; tape monitor
Outputs Signal; recording
Features Twenty gain-change LEDs (10 per band)

128 dbx II System

Price $499
Description Wideband linear compressor/expander or peak unlimiter/limiter plus dbx II noise-reduction system
Response 30 Hz to 20 kHz, ±0.5 dB
THD 0.5% (30 Hz to 20 kHz)
IM 0.15%
Noise –85 dBV re 1V
Compression Continuously variable to infinity
Expansion Continuously variable to 2.0 (up to 100%)
Inputs Signal; tape monitor
Outputs Signal; recording
Features Level-match control; dbx disc decode switch

110

Price $249
Description Subharmonic synthesizer
Response 20 Hz to 20 kHz, ±1 dB
THD 0.1% (30 Hz to 20 kHz) (main signal channel)
IM 0.15% (main signal channel) (SMPTE)
Inputs Main stereo
Outputs Main stereo (optional low frequency only)
Features Level control; low-frequency boost; bypass switch

21 Tape/Disc Decoder

Price $109
Description dbx type II noise-reduction decoder for playback of dbx-encoded discs or tapes
Response 15 Hz to 30 kHz, ±0.5 dB (NR out)
THD 0.2% (1 kHz)
Noise –74 dBV re 1V
Expansion 1:2 (fixed)
Inputs Main signal; tape monitor
Outputs Main signal; record

Models also available

3BX Expander, $759; 1BX Expander, $279; 224 dbx II System, $299; 118 Compressor/Expander, $239

DRACO
Draco Labs, Inc.
1005 Washington St.
Grafton, Wisc. 53024

Digital Expander

Price $595
Description 3-band expander
Response 20 Hz to 20 kHz, ±0.5 dB
THD 0.05% (20 Hz to 20 kHz)
IM 0.005%
Noise –100 dB re 1V
Expansion Yes
C/E ratio 1:1 to 1:1.6 dB
Attack Variable/band ms
Release Variable/band ms
Inputs Main; tape
Outputs Main; record
Features Digital gain sections; pre-post process selection; bypass; 3-section LED display

DYNACO
Dynaco, Inc.
110 Shawmut Road
Canton, Mass. 02021

SIE-1

Price $200
Description Sterec-Image enhancer
Response 20 Hz to 20 kHz, ±0.5 dB
THD 1%
Features Broadens and deepens stereo image; aids localization of instruments

FURMAN SOUND
Furman Sound, Inc.
616 Canal St.
San Rafael, Calif. 94901

TX-3A Tunable Crossover

Price $245
Description Stereo 2-way/mono 3-way crossover
Response 20 Hz to 20 kHz, ±1 dB
THD 0.01% at 1 kHz (+20 dBm output)
Noise 101 dB below max output (8.7V rms)
Inputs 10 ohms unbalanced; optionally 10K ohms balanced with cannon-style connectors
Outputs 50 ohms unbalanced; max level 8.7V rms
Features Rack-mount, black anodized panel; may be used as a crossover in bi- or tri-amp systems or as a bandpass filter; both crossover points are completely adjustable to any frequency from 20 Hz to 20 kHz; level controls for all inputs and outputs; max available gain: 6 dB; Butterworth response: 12 dB/octave rolloffs

Models also available

TX-4A Tunable Crossover, $415; RV-1 Reverberation System, $290

GARRARD
Garrard U.S.A., Inc.
85 Sherwood Ave.
Farmingdale, N.Y. 11735

MRM 101 Music Recovery Module

Price $219.95
Description Electronically identifies and suppresses pops, clicks, and scratch sounds from records prior to connection to amplifier

KLARK-TEKNIK
Hammond Industries
155 Michael Drive
Syosset, N.Y. 11791

DN-70 Digital Time Processor

Price $4,900
Description Single-channel delay line
Response 30 Hz to 15 kHz, ±1 dB (at all delays)
THD 0.1% (1 kHz)

Delay 653 ms (max) on all three delay outputs
Outputs 4 (A, B, C, and A-mixed output of all three)
Features Front-panel regeneration and direct/delayed mix controls; digital readout of time delay on channels A, B, and C; also available with 323 ms ($4,750) or 163 ms ($4,600) delay; full control of digital processing available with remote socket for pitch shifting, flanging and "freeze" functions; input-level indicators for full use of dynamic range; dynamic range: 90 dB

Models also available

DN-36 Analogue Time Processor, $1,600; DN-34 Analogue Time Processor, $1,600

KLH
KLH Research and Development Corp.
145 University Ave.
Westwood, Mass. 02090

DNF 1201A Dynamic Noise Filter

Price $379
Description Single-pass noise-reduction system using dynamically controlled variable-cutoff low-pass filter
Response 10 Hz to 20 kHz, ±0.5 dB
THD 0.2% (20 Hz to 10 kHz)
IM 0.05%
Noise 80 dBV max
Inputs Line level; tape monitor
Outputs Line level; tape record
Features Ref. level: 0.24V to 0.77V (variable); suppression: 5 to 14 dB tape-hiss reduction (depending on program) up to 38 dB at 10 kHz; variable sensitivity controls

Models also available

TNE-7000A Noise Suppressor, $329

KOSS
Koss Corp.
4129 N. Port Washington Road
Milwaukee, Wis. 43212

K/4DS

Price $459
Description Digital delay system
Delay 13 to 70 ms (4 steps: dub to auditorium)
Features Ambience amplifier and loudspeakers; crossfeed circuit; optional rack-mount handles; isolate stereophone function with twin jacks

LOGICAL SYSTEMS
Logical Systems
3314 H St.
Vancouver, Wash. 98663

8801 Dynamic Noise Filter

Price $289
Description Dynamic noise reduction that eliminates hiss and rumble from records, tapes, and radio from existing program material; can be used to record
Response 20 Hz to 20 kHz, ±0.5 dB
THD 0.1% (20 Hz to 20 kHz)
IM 0.01% (60 Hz/7 kHz mixed 4:1); typically 0.005%
Noise 75 dB re 2V
Attack Program dependent (very fast)
Release Program dependent (very fast)
Inputs 47 ohm single-ended stereo RCA phono
Outputs 600 ohm or greater; 10V max into 10K ohms
Features Removes hiss and rumble from all sources without encoding or decoding; mono bass feature has dynamic bass tracking; tri-color LED display; continuously variable threshold control; up to 30-dB rumble reduction; up to 15 dB hiss reduction; rack-mountable

Models also available

8800 Dynamic Noise Filter, $199

M & K SOUND
Miller & Kreisel Sound Corp.
10391 Jefferson Blvd.
Culver City, Calif. 90230

LP-1 Electronic Crossover

Price 8½", no bypass switch, $165; 8½", with bypass switch, $180; 19", rack-mount, no bypass switch, $170; 19", rack-mount, with bypass switch, $185
Description Completely passive electronic crossover for biamplification; separate bass and treble level controls; bypass switch available; available in 75 or 100 Hz; low-pass, 12 dB/octave; high-pass, 12 dB/octave

MXR
MXR Innovations, Inc.
247 N. Goodman St.
Rochester, N.Y. 14607

MOD 132 Dynamic Expander

Price $300
Description Linear dynamic expander with adjustable expansion ratio and front-panel control of release time
Response 20 Hz to 20 kHz, +0, –1 dB
THD 0.05% (20 Hz to 20 kHz) (1:1 expansion)
IM 0.1% (60 Hz/7 kHz, 4:1) (1:1 expansion)
Noise –94 dBV re 1V rms (full expansion)
Expansion Variable from 1:1 to 1.6:1
Attack 5 ms (program dependent)
Release 50 to 500 ms (user variable)
Features LED display; level control; bypass switch; tape-monitor switch; pre/post switch; furnished with walnut side panels; rack-mounting ears available as an option

Models also available

MOD 119 Compander, $149.95

NAKAMICHI
Nakamichi U.S.A. Corp.
1101 Colorado Ave.
Santa Monica, Calif. 90401

Hi-Com II

Price $480
Description Two-band noise-reduction system with Telefunken High Com compander IC
Response 20 Hz to 20 kHz, ±1 dB
THD 0.1% at 400 Hz
Noise 20 to 25 dB improvement
Compression 1:2 (encoding); 2:1 (decoding)
Features 20 dB noise reduction plus 3 to 7 dB headroom improvement; defeatable infrasonic and multiplex filters; recommended for high-quality cassette decks

NIKKO
Nikko Audio
320 Oser Ave.
Hauppauge, N.Y. 11787

ATD-1 Time-Delay System

Price $400
Description Time Delay Synthesizer
Response 20 Hz to 5 kHz, ±3 dB (delayed out)
THD 0.02% (20 Hz to 20 kHz) (main out); 0.6% at 500 Hz (delayed out)
Noise 80 dB (main out); 60 dB (delayed out)
Delay 13 to 135 ms (3-push switch)
Decay 100 ms to 2 sec (variable)
Inputs Main; tape 1
Outputs Main; delayed; tape 1
Features Input level adjust with LED indicators; mix-record switch; tape-monitor switch

PACKBURN
Packburn Electronics
P.O. Box 335
Dewitt, N.Y. 13214

303 Audio Noise Supressor

Price $1,950
Description Three separate processors to reduce both transient noises and hiss from a wide variety of recorded sound media, especially 78 rpm records
Response ±½ dB, 10 Hz to beginning of cutoff frequency, which varies from 3 kHz to 15 kHz in accordance with dynamics of program material; alternatively, a fixed cutoff frequency may be selected; meter in front panel reads cutoff frequency
IM 0.05%
Noise 75 dB re 3V (+12 VU)
Inputs 600 ohms balanced line (transformerless) and single-ended Hi Z
Outputs 600 ohms balanced line (transformerless) and single-ended Lo Z
Features Will process vertical-cut records as well as lateral-cut records and stereo records; tape, film, cylinders, etc.; provides facilities for reproducing from either groove wall with minimum of vertical modulation noise; 5¼H x 19W x 10D; rack-mountable

Models also available

101 Transient Noise Suppressor, $1,500

PHASE LINEAR
Phase Linear Corp.
20121 48th Ave. W.
Lynnwood, Wash. 98036

6000 Series Two Audio Time-Delay System

Price $650
Response 40 Hz to 6 kHz, ±3 dB
THD 0.5% (40 Hz to 6 Hz)
Noise –88 dB re 2V
Compression 2:1
Expansion 1:2
C/E ratio 1
Delay 15 to 60 ms (variable)
Decay 200 ms to 4 sec (variable)
Inputs Main
Outputs Front; rear
Features Frequency-compensation filters; 5 discrete delay paths

Models also available
1000 Series Two, $400

PSB
PSB Speakers, Inc.
P.O. Box 144
St. Jacobs, Ontario
Canada N0B 2N0

PSB InfraSonic Barrier
Price $109
Description Sophisticated low filter that sharply rolls off frequencies under 20 Hz; virtually eliminates problems caused by warped records, turntable rumble, and tonearm/cartridge resonances
Response 20 Hz to 100 kHz, ±0.25 dB
THD 0.008%

RG DYNAMICS
RG Dynamics, Inc.
4448 West Howard St.
Skokie, Ill. 60076

RG X-15 Stereo Dynamic Signal Processor

Price $255
Response 20 Hz to 20 kHz, ±1 dB
THD 0.12% (1 kHz at 1V output) (maximum process setting)
IM 0.12% at 1V output
Noise –90 dB, 1V output
Expansion Variable from 0 to +9 dB, upward, –6 dB downward
Attack 0.6 ms
Release 80 ms
Inputs Main; tape
Outputs Main; tape
Features Our new dynamic processor offers the same high standard of performance set by RG at a very affordable price; automatic operation requires no signal input-level adjustment; factory preset attack circuitry; independent left and right channel processing provides the accurate imaging RG is famous for; excellent distortion figures; complete tape functions include calibrated front-panel settings carefully adjusted for optimum processing while recording

Models also available
RG Pro-20W1 Stereo Dynamic Processor, $419 (also available as model RG Pro-20B1 with standard 19" black rack panel, $399, and Model RG Pro-20BW1 with 17" black panel and solid walnut end blocks, $419); RG Pro-16W1 Stereo Dynamic Processor, $335 (also available as Model RG Pro-16B1 with standard 19" black rack panel, $315, and Model RG Pro-16BW1 with 17" black panel and solid walnut end blocks, $335)

RUSSOUND
Russound/FMP, Inc.
Box 2369
Woburn, Mass. 01888

IH-1
Price $449.95
Description Stereo image enhancer/field synthesizer
Features Expands or contracts width of sound field to suit preference of listener; processes portions of frequency spectrum to create a live, moving sound field

SAE
Scientific Audio Electronics, Inc.
P.O. Box 60271 Terminal Annex
Los Angeles, Calif. 90060

4100 Ambience System
Price $600
Description Time-delay ambience system
Response 20 Hz to 5 kHz, ±1 dB
THD 0.5% (20 Hz to 5 kHz)
IM 0.5%
Noise 60 dB re 2.5V
Delay 15 to 70 ms (3 variable steps)
Decay 0 to 100% (variable)
Inputs Preamp out; rear channel out (4-channel)
Outputs Front-to-amp; rear-to-amp
Features Three independent delay level controls (for three delays); overload indicators

Models also available
5000A Impulse Noise Reducer, $275

SANYO
Sanyo Electric, Inc.
Consumer Electronics Div.
1200 W. Artesia Blvd.
Compton, Calif. 90220

Plus N-55 "Super D" Noise-Reduction System
Price $409.95
Description Optimizes level sensing for superior audio performance; fluorescent peak-reading signal level meters; source/tape switch/MPX filter; companding noise-reduction system; rackmount capability: 11¾H x 17⅜W x 11¾D with 2:1 expansion/compression ratio; 40 dB tape noise reduction; 0.08% THD; load B dynamic range

SOUND CONCEPTS
Sound Concepts, Inc.
P.O. Box 135
Brookline, Mass. 02146

SD550
Price SD-550
Description Ambience restoration system
Response 10 Hz to 8 kHz, ±1 dB
THD 0.5% (100 Hz to 3 kHz)
IM 0.5%
Noise –90 dB re 1V
Delay 5 ms to 100 ms (variable)
Inputs 4: stereo pair plus quad
Outputs 4: stereo front channel plus 2 ambience channels
Features Recreates 2 channels of ambience sound from stereo or quad sources; controls adjust for speakers and room conditions

IR-2100
Price $229

SOURCE ENGINEERING
Source Engineering
Box 506
Wilmington, Mass. 01887

SNS Suppressor
Price $319
Description "One-way" (program source) noise suppressor
Response 20 Hz to 25 kHz, ±1.5 dB
THD 0.1% (20 Hz to 20 kHz)
IM 0.1%
Noise –80 dB re 10 dBV (316 mV)
Attack 5 ms
Release 5 ms
Inputs 1 input per channel
Outputs 2 parallel outputs per channel
Features Four-band (3 active), one-way noise reduction (14 to 20 dB improvement in S/N); includes steep (50 dB/octave) treble filtering options at 3 and 7 kHz; independent suppression controls for left and right channels

Models also available
VRE Expander, $219

STRELIOFF
Strelioff Systems Designs
5305 Tendilla Ave.
Woodland Hills, Calif. 91364

EX-1 Electronic Crossover
Price $1,000
Description Four-way stereo capabilities with standard crossover points at 125 Hz, 800 Hz, and 5 kHz; independent level controls for each bandpass; modular design employs only discrete devices on plug-in circuit boards; 3½H x 19W rackmount chassis for professional and recording studio installations; requires Model RS-1 regulated power supply

PX-1 Passive Crossover
Price $1,000
Description Passive crossover
Features 5¼H x 19W x 12D rackmount chassis; 4-way stereo design employs only the highest quality components; standard crossover points are 125 Hz, 800 Hz, and 5 kHz with a one-half octave higher option switch for each range; high or low attenuation switches are also provided for each range (5 dB nominal); all switch functions are discrete for each channel providing easy reference; specifications refer to 8-ohm speaker loads (impedance options are available); provides fusing at the inputs and for each output range

SYMMETRY
Symmetry Audiophile Systems
101 Townsend St.
San Francisco, Calif. 94107

ACS-1 Electronic Crossover
Price $750
Description An active crossover for stereo or mono use
THD 0.01% (20 Hz to 20 kHz)
IM 0.01%
Noise 100 dB/min reference below 3V at unity gain
Inputs 100K ohms
Outputs Low pass; hi pass
Features Low pass (transitional Butterworth) Thompson filter characteristics; 12 dB per octave slope/crossover point continuously variable from 45 Hz to 4.5 kHz

TEASER WIREWORKS
Teaser Wireworks, Inc.
P.O. Box 402003
Dallas, Texas 75240

400 Electronic Crossover
Price $349
Description Fixed-frequency 2-way stereo crossover
THD 0.001%
Features Available in variable-frequency version (400A, $399); S/N ratio: 100 dB

Models also available
600 Electronic Crossover, $399

System Accessories

(including Tape & Phono Care products)

ACE AUDIO
Ace Audio Co.
532 Fifth St.
East Northport, N.Y. 11731

3900 Ground Iliminator
Price $14.25 (kit); $18.50 (wired)
Description Eliminates hum resulting from component interconnections or ground loops; uses passive circuitry

APRES
Aprés Audio, Ltd.
7 Revere Court
Suffern, N.Y. 10901

L'Original
Price $689
Description A fully constructed custom audio cabinet; finished in oak with sculptured radial corners, the cabinet is mounted on casters concealed by a chrome apron; smoked acrylic door is framed for safety and strength with solid oak; the cabinet is rendered child-proof via a cylinder lock and key; rear panels detach for easy access & heat dissipation; two adjustable shelves will hold over 100 lbs. each; a fully extended tape drawer stores over 100 cassette tapes and doubles as a permanent shelf; record storage is ample; available in a choice of finishes; 53H (with casters) x 23⅜W x 19⅞D

Elegant
Price $579
Description Contemporary audio cabinet of the finest oak, oak veneer and acrylic; streamlined effect is repeated throughout the design by utilizing sculptured radial corners and crescent-shaped acrylic panels; drop-latch door of smoked acrylic allows for visual display of electronics; overall dimensions: 33¼H x 46W x 18⅛D; internal dimension: 7½H x 42⅜W x 17⅞D

Le Starr
Price $569
Description A fully constructed audio cabinet styled in high-grade acrylic, hand-rubbed and polished; "S"-shaped design accented with chrome supports; 4 shelves to accommodate 6 components and records; overall dimensions: 28¼H x 46½W x 15½D

AUDIO INNOVATIONS
Audio Innovations, Inc.
1431B Air Rail Ave.
Virginia Beach, Va. 23455

LED-2C
Price $199.95
Description Dynamic power display

DPS-1
Price $189.95
Description Digital power switch

BANG & OLUFSEN
Bang & Olufsen
515 Busse Road
Elk Grove Village, Ill. 60007

MC-40 Music Cabinet
Price $595
Description Genuine rosewood, teak, or oak finish veneer; low profile cabinets for complete Beosystem; compartment for receiver, turntable, cassette deck, headphones and records; measures 24¾" x 54" x 16"

B.I.C.
B.I.C./Avnet
South Service Road
Westbury, N.Y. 11590

FM-10 Beam Box
Price $89.95
Description Indoor electronically directable FM antenna

FM-8 Beam Box
Price $49.95
Description Indoor electronically directable FM antenna

FM-6 Beam Box
Price $29.95
Description Indoor electronically directable FM antenna

BUSH
Bush Industries, Inc.
312 Fair Oak St.
Little Valley, N.Y. 14755

6790 Component Cabinet
Price $269.95
Description Split tempered safety glass; adjustable ebony shelves; record dividers; walnut top rails and end frames; 29H x 51⅛W x 17D

DB SYSTEMS
DB Systems
P.O. Box 347
Jaffrey, N.H. 03452

DBP-12 Audio Cable
Price $59.95
Description Low-capacitance (400 pF) stereo cable for connection between preamp and power amp; rugged gold-plated connectors

dbx
dbx
71 Chapel St.
Waltham, Mass. 02195

3BX-R Remote Control
Price $169
Description Increases flexibility of the 3BX by providing remote control of transition level, release time, and expansion ratio, plus master volume and fade controls

ETR
ETR, Inc.
P.O. Box 9056
Fresno, Calif. 93792

HEC-100
Price $249
Description Low-boy equipment console; user assembled

SRR-1
Price $29.95 (ash); $39.95 (imported koa)
Description Stackable record storage module; user assembled; constructed of solid hardwoods

FINCO
The Finney Company
34 W. Interstate St.
Bedford, Ohio 44146

T-82 Teletuner
Price $99
Description Converts all UHF/VHF television audio (sound) for input and playback through your hi-fi system using a single-shaft UHF/VHF tuner with fine-frequency adjustment and a signal-level meter to eliminate tuning guesswork with LED on/off indicator light

FULTON
Fulton Electronics
4204 Brunswick Ave. North
Minneapolis, Minn. 55422

High-Performance Audio Connector
Price $49.95 (large); $29.95 (small)
Description For amplifiers and speakers; a high-mass, solid-copper connector that transfers maximum power without being frequency-selective; eliminates the connector as a source of audio distortation and replaces the banana plug forever; of interest to manufacturers, retailers, and audiophiles alike

GUSDORF
Gusdorf Corp.
6900 Manchester Ave.
St. Louis, Mo. 63143

1930
Price $340
Description A home entertainment center from Gusdorf's new Status Pro Collection has room for everything in audio and video; no exterior fasteners and 1½" thick sides; entire height of the unit is covered with bronze-toned tempered safety-glass

doors; four infinitely adjustable shelves for audio components and record storage; slip-in section for television has back panels to conceal the wall and create a custom look; double-doored cabinet space reveals VCR slide-out shelf; separations in back allow heat emission; available in rich walnut-tone finish with Rendura coating

1990
Price $339.95
Description A 6½" high electronics furniture tower designed to house both audio and video equipment; 2 bronze-toned tempered safety-glass doors with magnetic catches covering 5 infinitely adjustable shelves deep enough for a turntable; below is an open area for slip-in television; 2-doored cabinet conceals a removable VCR slide-out shelf; record dividers may be inserted and an optional rack-mounting kit is available; no fasteneres can be seen from the exterior; rich walnut tone finish with Rendura coating

HEATHKIT
Heath Co.
Benton Harbor, Mich. 49022

AD-1701 Graphic Output Indicator
Price $159.95

KINETIC AUDIO
Kinetic Audio International, Ltd.
6624 W. Irving Park Road
Chicago, Ill. 60634

Equipment Cabinets
Price $99-399
Description Furniture styled equipment cabinets with shelves or rack rails and walnut veneer sides; Optional casters and plexiglass door; EC-20: 20H x 21W x 15D; EC-40: 40H x 21W x 15D; EC-48 and EC-48X: 48H x 21W x 18D

Amp Load Stabilizer Networks
Price $12.50 (dual red and black banana plugs); $10
Description Load stabilizing electronic network and anti-oscillation filter

LOGICAL SYSTEMS
Logical Systems
3314 "H" St.
Vancouver, Wash. 98663

1081 Real-Time Audio Analyzer
Price $179 (kit); $299 (assembled)
Description Standard ISO frequencies match most 10-band equalizers; allows you to view left channel, right channel, both channels summed, or balanced line; built-in diagnostic sweep signal; mike jack; phono jacks and barrier block inputs allow 1081 to be easily hooked up to receivers, preamps, mixing boards, tape machines, or audio jack of video tape machine

MITCHELL A. COTTER
Mitchell A. Cotter Company, Inc.
35 Beechwood Ave.
Mt. Vernon, N.Y. 10553

Triaxial Interconnect Cable
Price Varies with lenght
Description Triaxial cable for the interconnection of components; suppresses RF and all other real-world noises which could be induced upon standard interconnect cables

MR. AUDIO
Jasco Products Co., Inc.
217 N.E. 46th
P.O. Box 466
Oklahoma City, Okla. 73101

Batt-A-Dapt®
Price $4.99 to $7.49
Description 6/9V AC, 3/12V AC, 3/12V DC adapters

1466
Price $5.02
Description Headphone extension cord; 25' coiled

PHASE LINEAR
Phase Linear Corp.
20121 48th Ave. W.
Lynnwood, Wash. 98036

1200 Series Two Real-Time Analyzer
Price $800
Description Precision room-analyzing instrument consisting of 12-band display and filter bank satisfying ANSI standards, accurate pink-noise generator, and calibrated mike

PHILIPS
Philips HiFi Labs
Interstate 40 & Straw Plains Pike
P.O. Box 6960
Knoxville, Tenn. 37914

AH-080 Programmable Timer
Price $209.95

Description Master controller for high-fidelity systems; permits programmable 5-way system switching; direct on/off switching, automatic switching at preset times up to 7 days in advance, repeat automatic switching at the same preset times every day, automatic switching after selected time intervals, automatic one-hour switching at any chosen time; fitted with a programmable alarm and quartz-controlled digital clock

REALISTIC
Radio Shack
1400 One Tandy Center
Ft. Worth, Tex. 76102

Audio Power Meter
Price $49.95
Description 20- to 200-watt scale

ROBAC
Alpha Group, Inc.
7321 Victoria Park Ave., Unit 2
Markham, Ontario L3R 2Z8

Robac 11 Acoustic Panels
Price $8.99 Per Sq. Foot
Description The Robac Acoustic Panel decreases the reverb (ringing echo) in any given room. Each Panel is one foot sq. and weighs 1 lb., available in 6 colors

ROTEL
Rotel of America, Inc.
1055 Saw Mill River Road
Ardsley, N.Y. 10502

RY-1010 Spectrum Analyzer
Price $475
Description Peak level, 10-band spectrum analyzer with built-in pink-noise generator; complete with electret condenser mike; range selector for 12 dB, 24 dB, or 36 dB peak-level display; 3-position line mode switch for individual or dual channel measurements; level calibration control

RUSSOUND
Russound/FMP, Inc.
P.O. Box 2369
Woburn, Mass. 01888

SP-1 Patchbay
Price $179.95
Description For two-channel stereo systems only; switching capability for up to 4 stereo tape recorders and 5 stereo accessories for any combination of recording, playback, monitoring, dubbing, in conjunction with signal processing components; compatible with any combination of separate components including recorders, preamps, amps, noise reduction units, equalizers, receivers, etc.; professional-type label strip permits easy labeling and identification of functions; set of 12 patch cords furnished, additional cords available; walnut-finish vinyl over wood case, semi-gloss black front panel: 5H x 7¾W x 1⅞D; also available in rack-mount

QT-1 Four Channel Patching and Control Center
Price $289.95
Description Expands tape-monitor loop of audio system to accept 4 or 2 channel noise-reduction systems, graphic equalizers, matrix decoders and up to 4 stereo or quad tape recorders, all of which may be connected and left permanently in place, all switching functions being handled by front panel switch or patch cords; solves the problems of interfacing multiple accessories by providing professional flexibility in patching components together for such functions as recording, mixing, dubbing and duplication, sound-on-sound, sound-with-sound, compression/expansion, equalization etc.; set of 16 patch cords furnished, additional cords available; no AC or active circuits to cause hum or distortion; only resistive components to prevent overloading: 4 3/16H x 13⅞W x 5D; also available in rack-mount

SAE TWO
Scientific Audio Electronics, Inc.
701 E. Macy St.
Los Angeles, Calif. 90012

Remote-1
Price $50
Description Remote control for transport functions of C-4 and C-3D; provided with 20' cable

SANYO PLUS
Sanyo Electric, Inc.
Consumer Electronics Div.
1200 W. Artesia Blvd.
Compton, Calif. 90220

Plus E-55 Computerized Programmable Timer
Price $299.95
Description Microprocessor; companion to rack-mount series; four switched AC outlets; large fluorescent display for clock time and program display; 9 programmable intervals in a 24-hour period

SCOTT
H.H. Scott, Inc.
20 Commerce Way
Woburn, Mass. 01801

830Z Audio Analyzer
Price $599.95
Description Ten-octave; built-in multi-frequency signal generator; visually confirms frequency response or SPL; useful in verifying system performance, optimizing loudspeaker placement and tape recorder bias and equalization; includes external microphone and test record

SONY
Sony Corporation of America
9 W. 57th St.
New York, N.Y. 10019

UR-222
Price $50
Description Rosewood case for Sony components; fits receivers V-25, V-35, V-45, V-55, and tape decks TCK-81, 71, 65, 61, TC-75, 55, 55 MK.II, 45, and 35

SOURCE ENGINEERING
Source Engineering
Box 506
Wilmington, Mass. 01887

ASC Accessory Switching Control
Price $129
Description For connection in a tape-monitor loop; enables up to four tape recorders or other accessories to be used in any sequence or bypassed altogether; permits dubbing between tape decks independent of main signal path; provides access to both input and output of any accessory from front panel without disturbing cabling; uses no power, but has 5 convenience outlets and 10A power cord on rear panel; uniform in styling with other source products

SPICA
Spica
1570 Paeheco St., Suite E-16
Santa Fe, N.M. 87501

IC-36
Price $22/pr.
Description Low inductance audio cables; 36" length with RCA plugs attached; for use with sources with less than 2.5K ohms output impencence

STEREMOTE
Steremote
1845 Utica Ave.
Brooklyn, N.Y. 11284

Stereo System Control Center
Price $549.95
Description Basic 40 watt-per-channel capacity with 1 portable control; optional add-on available: mode selector, $199.95; room control, $249.95; tape control, $199.95; memory tuner, $199.95; simultizer, $199.95; portable control, $129.95; AC control with 1-hr. sleep control, $19.95

SUPEREX
Superex Electronics Corp.
151 Ludlow St.
Yonkers, N.Y. 10705

PLM-1 LED Power Level Module
Price $99.95
Description Connects to speaker outputs of receiver or amplifier for instantaneous power output display; 12 LEDs per channel; wattage calibrated from 0.12 watts (-9.25 dBW) to 256 watts (24 dBW)

SUPEX
Sumiko, Inc.
P.O. Box 5046
Berkeley, Calif. 94705

LRO/15 Cable
Price $40
Description A high-performance interconnect cable for all component connections; inner conductors are 242 strands of polyurethane insulated copper Litz wire; greatly increased surface area defeats high-frequency rolloff caused by the phenomenon of skin effect; DC resistance: 0.015 ohms; capacitance: 140 pF/m; length: 1m; gold-plated RCA connectors

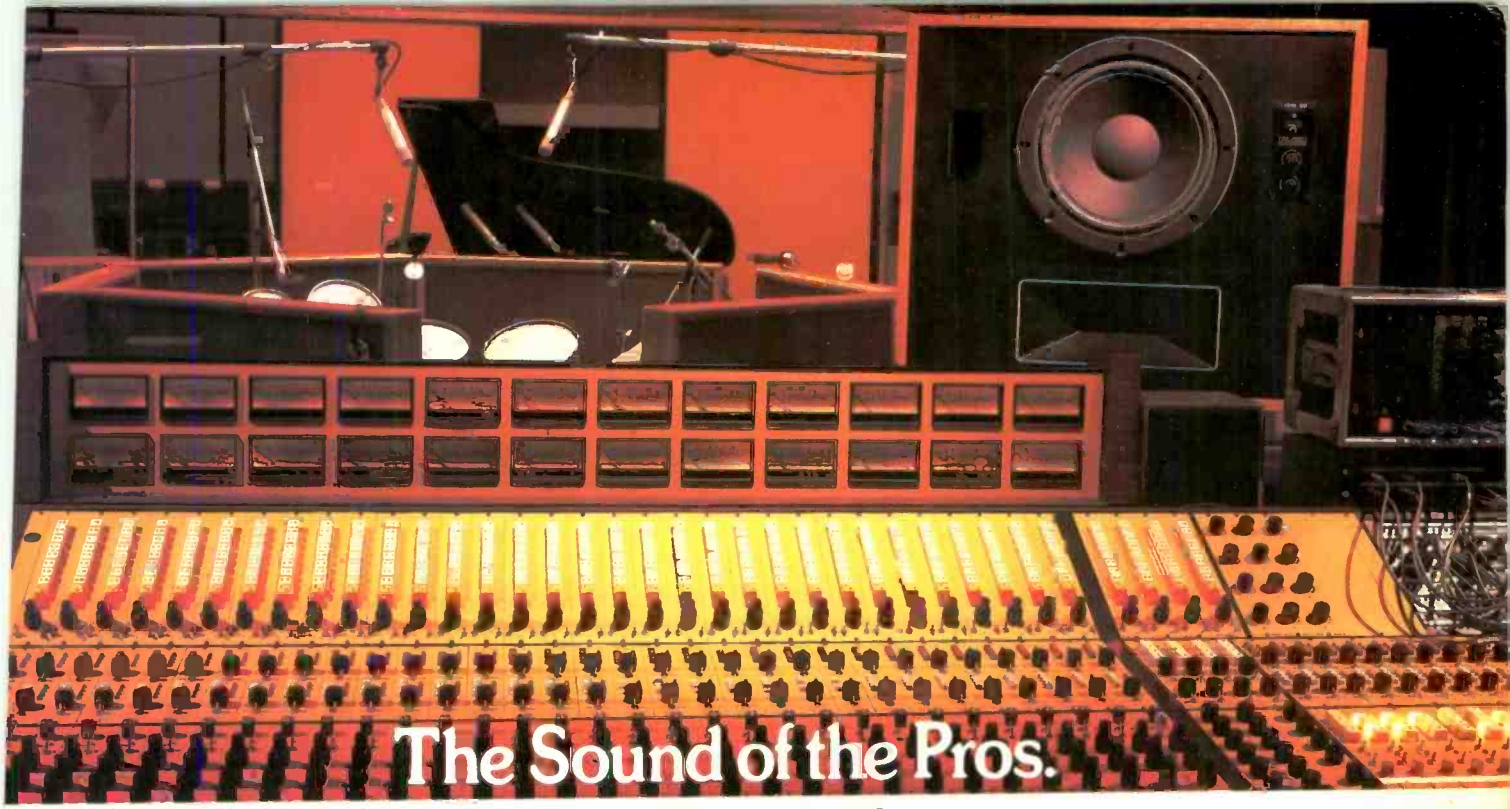
WINEGARD
Winegard Co.
3000 Kirkwood St.
Burlington, Iowa 52601

FM-4400 Indoor FM Antenna
Price $69.95
Description FM indoor antenna with built-in amplifier; 110V; gain: 15 dB; housing is walnut brown with gold tone reflector bar that manually rotates for directivity

FM-3400 FM Signal Booster
Price $39.95
Description Solid-state 300-ohm FM booster increases FM signals by 15 dB for improved FM and FM stereo reception; russed steel housing

FM-2400 Indoor FM Antenna
Price $39.95
Description FM indoor antenna; non-amplified; black with silver tone reflector bar that rotates for directivity

Advertising Index



Ocean Way Recording, Hollywood, CA

For the Pro at Home.

We've been perfecting professional sound reproduction for almost half a century. From the famous Voice-of-the-Theater™ to our studio monitors and large floor-standing models, Altec Lansing is continuing a tradition of creating significant advancements in speaker technology. And now we've taken the most recent professional sound innovations and put them into our new speakers for the house, our models 4, 6 and 8. As a result, you can hear what has made Altec Lansing a long time favorite in studios, theaters and on sound stages from coast to coast: Crisp, clear sound realism.

Professional features made for the home.

Here are some of the acoustic innovations featured by our new speakers: The Altec Tangerine,® a revolutionary radial phase plug that brings out all the high frequencies blocked by standard circumferential phase plugs. It works with our new LZT (Lead Zirconate Titanate) ultra high-frequency compression driver that replaces magnets and voice coils with a state-of-the-art semiconductor for super clean sound.

Another important professional feature is our Mantaray® constant directivity horn that expands your listening "sweet spot" well off to the sides of the speakers.

We've also developed a different approach to a cross-over network design that minimizes distortion and improves high-frequency response. In addition, each of our new models is equipped with an Automatic Power Control to protect the speaker from power overloads without shutting off the sound.

There's also a new look to our new home speaker line. We use rare Endriana wood from the South Pacific for our speaker cabinetry which highlights an unusually rich woodgrain and exhibits extraordinary acoustic properties.

Of course, there's a lot more to our speaker designs than these new enhancements. The sum total of many years spent in speaker research and development is incorporated in our home models.

Sound experience in a Free brochure.

If you'd like to learn more about all the professional features we've built into our new line, write for our free brochure "A New Generation of Speaker Systems for the Home." Better yet, visit your nearest Altec Lansing listening room and find out how we adapted our professional sound quality to the environment of your home. For the name of your local dealer, call toll-free (800) 528-6050, Ext. 730; in Arizona (800) 352-0458. Or write: Altec Lansing International, 1515 S. Manchester Ave., Anaheim, CA 92803.

ALTEC LANSING

CIRCLE 2 ON READER-SERVICE CARD

A NEW STANDARD OF RECORD CARE

NEW D4 FLUID
Inherently more active against record contamination. Inherently safe for record vinyl. Preferentially absorptive formula carries all contamination off the record.

NEW D4 FABRIC
Unique directional fibers preferentially remove fluid and contamination. D4 fabric results in clearly better cleaning, better drying and ultimately residue-free surfaces.

UNMATCHED VALUE
The Discwasher D4 System is enhanced by the durability and aesthetics of the hand-finished walnut handle. Included in the D4 System are the DC-1 Pad Cleaner and new instructions.

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Discwasher, Inc., 1407 N. Providence Rd., Columbia, MO 65201

CIRCLE 6 ON READER-SERVICE CARD