

Audio

THE AUTHORITATIVE MAGAZINE ABOUT HIGH FIDELITY • OCTOBER 1976 • \$1.25

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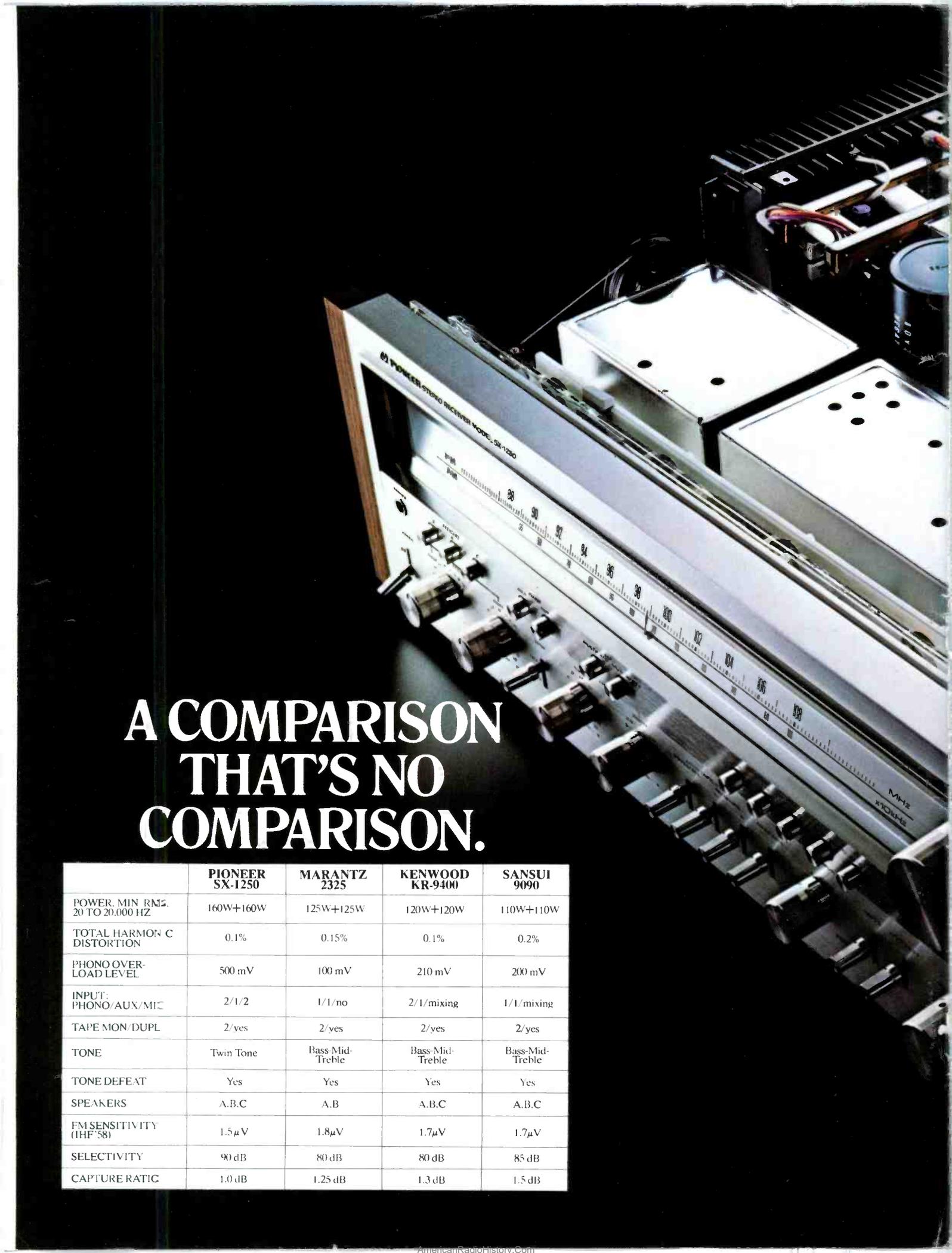
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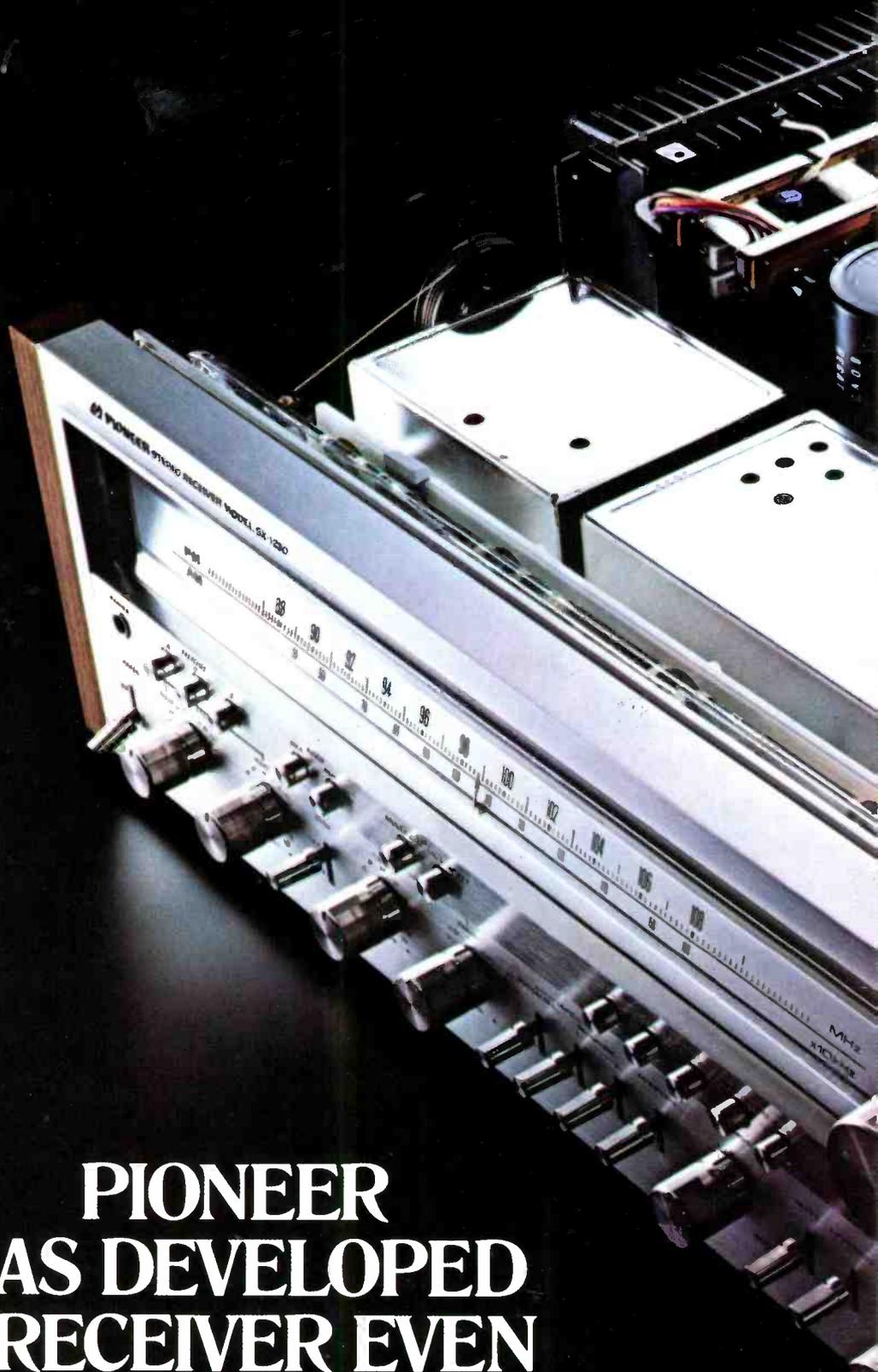
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Service



A COMPARISON THAT'S NO COMPARISON.

	PIONEER SX-1250	MARANTZ 2325	KENWOOD KR-9400	SANSUI 9090
POWER, MIN RMS, 20 TO 20,000 HZ	160W+160W	125W+125W	120W+120W	110W+110W
TOTAL HARMONIC DISTORTION	0.1%	0.15%	0.1%	0.2%
PHONO OVER- LOAD LEVEL	500 mV	100 mV	210 mV	200 mV
INPUT: PHONO/AUX/MIC	2/1/2	1/1/no	2/1/mixing	1/1/mixing
TAPE MON/ DUPL	2/yes	2/yes	2/yes	2/yes
TONE	Twin Tone	Bass-Mid- Treble	Bass-Mid- Treble	Bass-Mid- Treble
TONE DEFEAT	Yes	Yes	Yes	Yes
SPEAKERS	A.B.C	A.B	A.B.C	A.B.C
FM SENSITIVITY (IHF '58)	1.5 μ V	1.8 μ V	1.7 μ V	1.7 μ V
SELECTIVITY	90 dB	80 dB	80 dB	85 dB
CAPTURE RATIO	1.0 dB	1.25 dB	1.3 dB	1.5 dB



**PIONEER
HAS DEVELOPED
A RECEIVER EVEN
MARANTZ, KENWOOD AND
SANSUI WILL HAVE TO
ADMIT IS THE BEST.**

One look at the new Pioneer SX-1250, and even the most partisan engineers at Marantz, Kenwood, Sansui or any other receiver company will have to face the facts.

There isn't another stereo receiver in the world today that comes close to it. And there isn't likely to be one for some time to come.

In effect, these makers of high-performance receivers have already conceded the superiority of the SX-1250. Just by publishing the specifications of their own top models.

As the chart shows, when our best is compared with their best there's no comparison.

160 WATTS PER CHANNEL: AT LEAST 28% MORE POWERFUL THAN THE REST.

In accordance with Federal Trade Commission regulations, the power output of the SX-1250 is rated at 160 watts per channel minimum RMS at 8 ohms from 20 to 20,000 Hz, with no more than 0.1% total harmonic distortion.

That's 35 to 50 watts better than the cream of the competition. Which isn't just something to impress your friends with. Unlike the usual 5-watt and 10-watt "improvements," a difference of 35 watts or more is clearly audible.

And, for critical listening, no amount of power is too much. You need all you can buy.

To maintain this huge power output, the SX-1250 has a power supply section unlike any other receiver's.

A large toroidal-core transformer with split windings and four giant 22,000-microfarad electrolytic capacitors supply the left and right channels independently. That means each channel can deliver maximum undistorted power at the bass frequencies. Without robbing the other channel.

When you switch on the SX-1250, this power supply can generate an inrush current of as much as 200 amperes. Unlike other high-power receivers, the SX-1250 is equipped with a power relay controlled by a sophisticated protection circuit, so that its transistors and your speakers are fully guarded from this onslaught.

PREAMP SECTION CAN'T BE OVERLOADED.

Perhaps the most remarkable feature of the preamplifier circuit in the SX-1250 is the unheard-of phono overload level of half a volt (500 mV).

That means there's no magnetic cartridge in the world that can drive the preamp to the point where it sounds strained or hard. And that's the downfall of more than a few expensive units.

The equalization for the RIAA recording curve is accurate within ± 0.2 dB, a figure unsurpassed by the costliest separate preamplifiers.

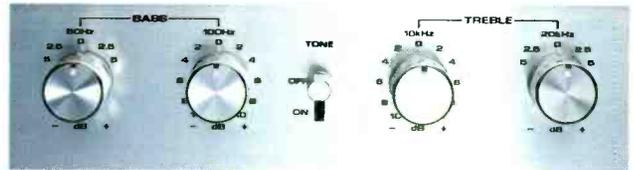
THE CLEANEST FM RECEPTION THERE IS.

Turn the tuning knob of the SX-1250, and you'll know at once that the AM/FM tuner section is special. The tuning mechanism feels astonishingly smooth, precise and solid.

The FM front end has extremely high sensitivity, but that alone would be no great achievement. Sensitivity means very little unless it's accompanied by highly effective rejection of spurious signals.

The SX-1250 is capable of receiving weak FM stations cleanly because its front end meets both requirements without the slightest compromise. Thanks, among other things, to three dual-gate MOSFET's and a five-gang variable capacitor.

On FM stereo, the multiplex design usually has the greatest effect on sound quality. The SX-1250 achieves



Twin tone-control system with step-type settings, permitting 3025 possible combinations.

its tremendous channel separation (50 dB at 1000 Hz) and extremely low distortion with the latest phase-locked-loop circuitry. Not the standard IC chip.

Overall FM distortion, mono or stereo, doesn't exceed 0.3% at any frequency below 6000 Hz. Other receiver makers don't even like to talk about that.

AND TWO MORE RECEIVERS NOT FAR BEHIND.

Just because the Pioneer SX-1250 is in a class by itself, it would be normal to assume that in the class just below it the pecking order remains the same.

Not so.

Simultaneously with the SX-1250, we're introducing the SX-1050 and the SX-950. They're rated at 120 and 85 watts, respectively, per channel (under the same conditions as the SX-1250) and their design is very similar.

In the case of the SX-1050, you have to take off the cover to distinguish it from its bigger brother.

So you have to come to Pioneer not only for the world's best.

You also have to come to us for the next best.

U.S. Pioneer Electronics Corp., 75 Oxford Drive, Moonachie, New Jersey 07074



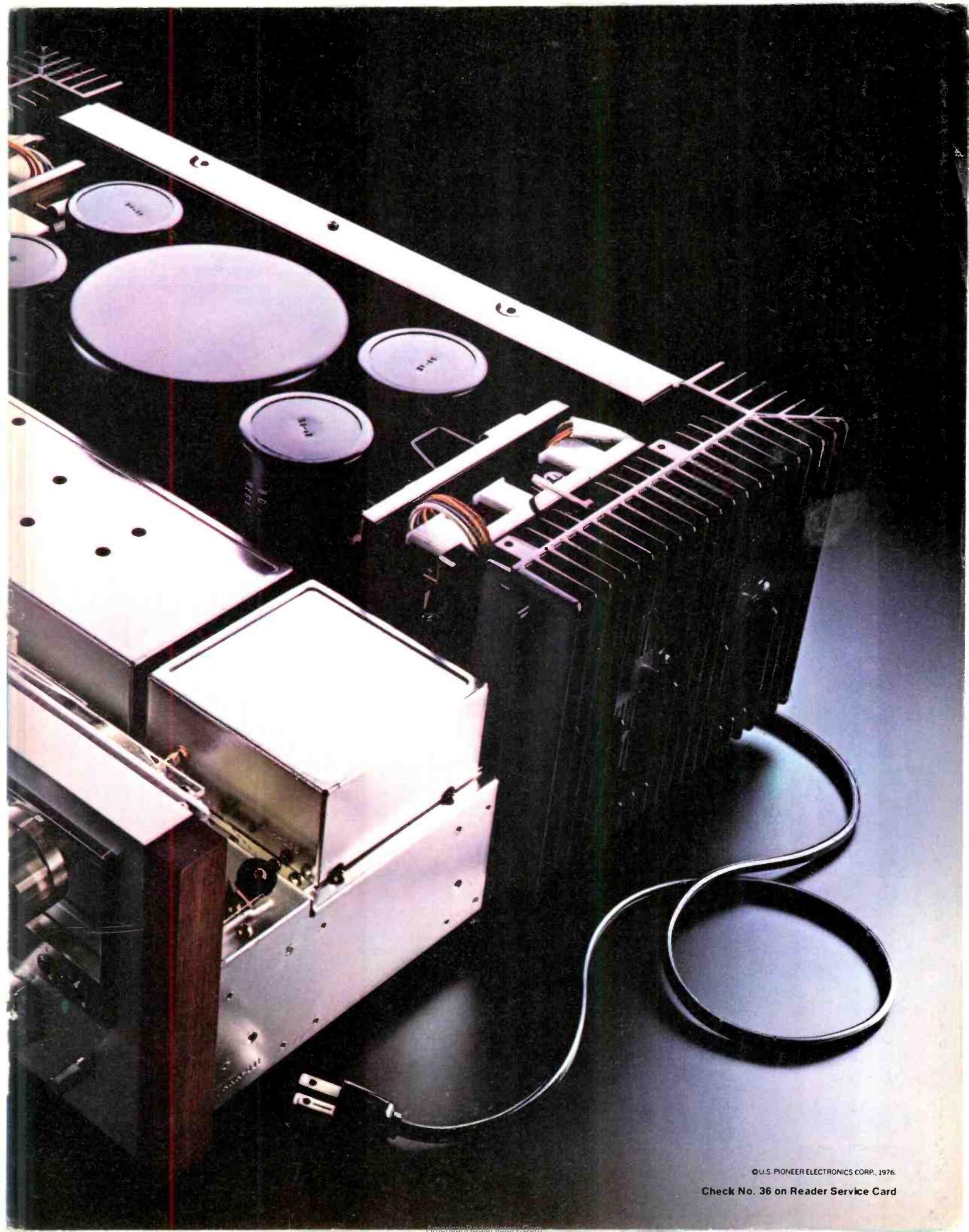
Click-stop volume control calibrated in decibels, with left/right tracking within 0.5 dB.



PIONEER®

Anyone can hear the difference.

For informational purposes only, the SX-1250 is priced under \$900. The actual resale price will be set by the individual Pioneer dealer at his option.



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Stax has 3 'Class A' Amplifiers.

DA-300 150W/channel reference

Any Stax amp is a composite of Class A design, complex program definition, unusually "available" power from DC up, and TAP. (Total Audio Protection circuitry is the most elegant fail-safe protection you can give your sound system.)

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COLUMBIA, MO 65201
A DIVISION OF DISCWASHER GROUP

DA-80 50W/channel stereo

DA-80M 80W mono



Audio

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About the cover: The Mills Violano-Virtuoso was designated by the U.S. Patent Office as "one of the eight greatest inventions of the decade" in 1909. Built by the Mills Novelty Co., Chicago, about 1921, this one has been restored by Albert H. Hreha of the Carousel Mechanical Museum in Morton, Pa.



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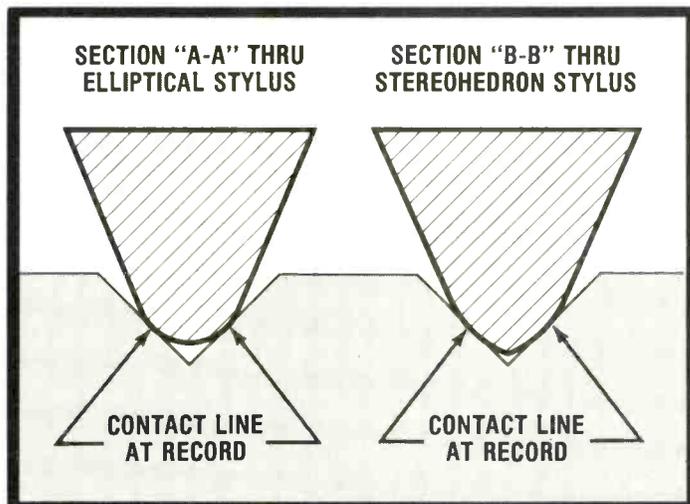


THE SOURCE OF PERFECTION **IN STEREO SOUND...** **PICKERING'S ALL NEW** **XSV/3000**



It features a totally unique construction (developed by Pickering through our pioneering efforts in discrete, 4-channel) plus a totally new stylus tip shape, the Stereohedron™, which has superior tracing ability and assures longer stylus and record life!

This new cartridge makes possible a wider, more open, finer sound — because it maximizes stereo tracing capabilities with the slightest, lightest touch a record ever had. It increases record life because force is spread over a greater contact area. And that means the least record wear achievable in these times (with a stereo cartridge).



Conventional elliptical styli have a relatively limited bearing radius at the contact area with the groove. The Stereohedron combines the elliptical and Quadrahedron concepts to create a stylus having a larger bearing contact radius at the area in order to reduce stylus wear and prolong record life.

For further information write to:

Pickering & Co., Inc. Dept. A

101 Sunnyside Blvd., Plainview, New York 11803



"for those who can [hear] the difference"

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Way To Show
You What
You'll Get
Out Of An
Empire
Phono
Cartridge
Is To
Show You
What Goes
Into One.



At Empire we make a complete line of phono cartridges. Each one has slightly different performance characteristics which allow you to choose the cartridge most compatible to your turntable.

There are, however, certain advantages, provided by Empire's unique design, that apply to all our cartridges.

4 One is less wear on your records. Unlike other magnetic cartridges, Empire's moving iron design allows the diamond stylus to float free of its magnets and coils, imposing much less weight on your record's surface and insuring longer record life.

Another advantage is the better channel separation you get with Empire cartridges. We use a small, hollow iron armature which allows for a tighter fit in its positioning among the poles. So, even the most minute movement is accurately reproduced to give you the space and depth of the original recording.

Finally, Empire uses 4 coils, 4 poles, and 3 magnets (more than any other cartridge) for better balance and hum rejection.

The end result is great listening. Audition one for yourself or write for our free brochure, "How To Get The Most Out Of Your Records". After you compare our performance specifications we think you'll agree that, for the money, you can't do better than Empire.

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Garden City, New York 11530

EMPIRE
Already your system
sounds better.

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Audioclinic

Joseph Giovanelli

Cartridge Aging

Q. My cartridge is almost two years old; the stylus is now ready to be replaced. Under these circumstances, I am wondering if it is best to replace the whole cartridge rather than just replacing the stylus.

Do cartridges which are two or more years old lose enough sonic quality to warrant replacement?
—Mark Pearl, Lancaster, Pa.

A. There is no reason to think that a cartridge should lose any sonic quality because of age; it should operate perfectly for years. Styli will wear out, bend from being dropped, and otherwise be defective from a number of causes, but the basic cartridge will keep right on going.

Sometimes a coil in the cartridge will open up, with the result that one channel will become completely inoperative. Barring such a failure, however, cartridge performance should remain substantially unchanged over the years.

Power Line Leakage to Chassis

Q. When touching the metal knobs or metal front panel of my receiver, a "buzz" or slight current can be felt by my fingertips. This can be felt even when the power is turned off. What gives?—Willis C. Lewis, Sacramento, Ca.

A. There is often a bit of leakage between the power line and the chassis of a receiver, tape machine, etc. There is also something less than an infinite Ohmic resistance between you and earth ground. Thus, when you touch a chassis which possesses some leakage potential, this current passes through you to ground. You feel this slight "buzz" or vibration as the fingertips slide over the metal parts of a piece of equipment.

Sometimes this leakage is deliberately introduced in the form of a line bypass capacitor. (The purpose of this capacitor is to minimize transients or radio frequency energy present on the power line from adversely affecting the performance of the equipment, and also to reduce hum possibilities.)

This "feelable" leakage is generally not a problem. The condition can often be completely eliminated by in-

terchanging the two prongs of the wall plug, i.e. reversing the polarity of the plug.

When a receiver or other piece of electrical equipment is grounded as instructed by its maker, the sensation of current leakage will disappear, regardless of the polarity in which the plug is inserted into the wall outlets.

If the leakage is still apparent after grounding, then the ground being used is not a good one or perhaps the interconnecting cable between chassis and ground is defective.

There can be rare instances where a direct short exists between the power line and the chassis, which can be quite dangerous. The sensation you have described will probably be no greater under these conditions than it would be with just a slight leak present. With a direct short between power line and chassis, a dangerous shock hazard exists if you were to simultaneously come into contact with the metal parts of the equipment and a good ground, such as a kitchen sink, radiator or a host of other items around the home. This is now much less likely with more and more devices equipped with grounded outlet line cords. In the case of the tiny, random leakages often found, coming into contact with a ground and the chassis of the equipment won't cause problems.

While power line leakage is not generally a problem, its presence may indicate a more serious condition. Test for serious leakage conditions with an Ohmmeter. Check between each prong of the wall plug of the suspect equipment and the equipment chassis. Have the power switch turned on. The resistance between chassis and the wall plug terminals should high, probably better than one meg.

These direct shorts between chassis and power line can be the result of a shorted line bypass capacitor or a short between the primary winding of the power transformer and its core. Of course, it can also result from careless production.

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

AUDIO • OCTOBER, 1976

Power Plus.

The Scott R336 Receiver.



Power is important. But power alone is not enough. That's why the popular Scott R336 gives you all the power you need. Plus the performance features you expect.

The Scott R336 provides 42 watts minimum continuous RMS power output per channel. More than enough for most listeners. And both channels are driven into 8 ohms from 20 Hz to 20 kHz with no more than 0.3% total harmonic distortion.

Power? Sure. But check these important performance features many other receivers in this medium price range have sacrificed.

IM distortion (lower than 0.15%). Far below the average. Provides cleaner sound and eliminates listening fatigue.

Signal strength and center channel tuning meters. Provide simultaneous visual indication of correct tuning and optimum signal strength.

Phase locked loop multiplex section. Maintains superior stereo separation. Remains in alignment for the life of the receiver.

FET RF stage. Assures higher sensitivity and overload immunity.

Log-linear taper volume control with detents. Spreads out volume levels. Provides finer control at low-to-moderate levels.

Clutched bass and treble controls with detents. Allow altering the frequency response of one channel without affecting the other. Systems can be "custom balanced" to compensate for room acoustics, decor or speaker placement.

Separate high-frequency noise filter. Permits cleaning up of noisy tapes, discs or broadcasts.

Three position FM de-emphasis switch. Permits proper reception of domestic, Dolbyized or European broadcasts.

Two completely independent tape monitors. Allow two tape recorders to be used simultaneously for direct tape-to-tape copying without passing through the receiver's electronics.

FM Muting. Silences interstation hiss while the tuner scans the frequency spectrum.

Pretuned LC notch filters in the multiplex. Reduce interference to a minimum.

Signal strength meter circuit. Employs two point sampling for wider dynamic range.

Over 120 db IF gain. Assures better limiting and better AM rejection.

Instantaneous electronic protection circuit in the output stage. Employs voltage/current sensing to prevent output transistor failure and speaker damage.

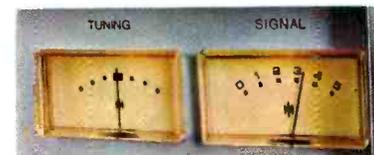
AM section designed around a tuned RF amplifier using J-FET. Improves signal-to-noise ratio.

And the Scott R336 is backed by a three-year, parts and labor limited warranty. Another very important plus.

For specifications on our complete line of audio components, write or call H.H. Scott, Inc. Corporate Headquarters: 20 Commerce Way, Woburn, MA 01801, (617) 933-8800. In Canada: Paco Electronics, Ltd., 45 Stinson Street, Montreal, H4N2E1, Canada. In Europe: Syma International S.A., 419 avenue Louise, Brussels, Belgium.



Clutched bass and treble controls with detents.



Signal strength and center channel tuning meters.

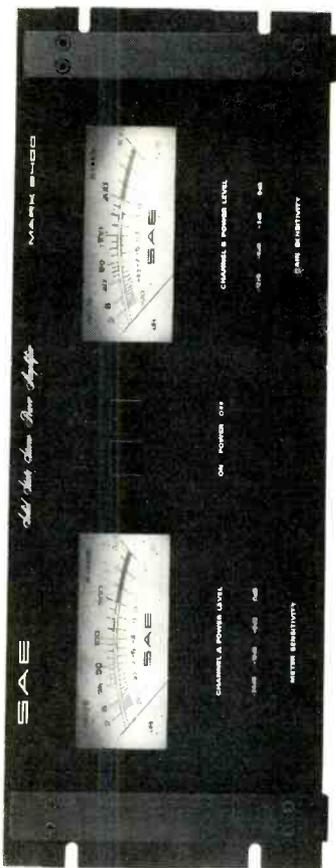


Two completely independent tape monitors.

SCOTT
The Name to listen to.

Receivers / Tuners / Amplifiers / Turntables / Speakers
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The \$750 alternative.



SAE 2400 Professional Dual-Channel Power Amplifier

6

- 200 Watts RMS, per channel, both channels driven into 4 or 8 Ohms from 20Hz to 20KHz at no more than 0.05% Total Harmonic Distortion.
 - 0.05% IM into 4 or 8 Ohms
 - (signal to noise) greater than 100dB
 - plug-in board modules
 - forced air cooling
 - only 11" deep
 - weighs less than 42 lbs.
 - superb construction using only the finest materials and component parts
 - available in black rack mount (as shown) or our traditional satin gold and black
- You'd have to look a long time to find a power amplifier that delivers this much value.



Scientific Audio Electronics, Inc.
P.O. Box 60271, Terminal Annex
Los Angeles, California 90060
Please send me the reasons (including available literature) why the SAE 2400 Professional Amplifier is the "\$750 Alternative."

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Unity Gain From Sound Modifiers

Q. I plan to modify the sound of my acoustical guitar by running the output of an audio pickup through such devices as synthesizers, octave dividers, echo, attack delay, etc. I want such devices to have unity gain so that the volume will remain constant. Is there a device that will monitor/compare the input and output voltages in this system and make them equal?—Howard R. Peters, Rockford, Ill.

A. To achieve "unity gain" all that is required is to adjust each sound modifier in turn, as follows:

1. Feed a test oscillator into the input of the device.
2. Keep the signal level low enough to prevent overload.
3. Measure the output of the audio oscillator.
4. Adjust the volume control on the sound modifier so that its output voltage equals the voltage from the generator.
5. Make certain that such frequency-sensitive items, as wah-wahs, are disabled during this adjustment.

Although the system is now set up to have unity gain, there may be times when the sound produced by the system appears to be louder than when no modifiers are involved. This has to do with the tonal and coloration characteristics of such things as "fuzz" boxes, ring modulators, wah-wahs, etc. These devices may cause frequencies in the so-called "presence" range to be louder, and make it appear that the overall volume is higher than when the devices are not in use.

A master gain control just ahead or after the sound modifiers should be the *only* volume control used to adjust the amount of sound heard from your loudspeakers.

In order to obtain the most efficiency, do not use high fidelity loudspeakers; use musical instrument speakers. These are more efficient and produce the highly colored sound favored by many performers. Such speakers will not sound good in high-fidelity applications. When uncolored sound reproduction is required, switch to a conventional, high-fidelity unit.

Lubricating a Turntable

Q. What is the best method for lubricating a turntable?—Richard Roland, Orchard Lake, Mi.

A. Before lubricating a turntable, check the maker's instructions. It is *important* to use the correct lubricants. I have run across instances

where the use of an improper lubricant did physical damage to the turntable.

In general, the well should be oiled with a few drops of a light oil, no heavier than 10-weight, non-detergent oil.

Many turntables employ an intermediate idler to transfer motion from the motor to the turntable. A drop of light oil should be applied to the bearing. Make sure that no oil is deposited onto the idler's drive surface.

Record changers often require grease on sliding parts. The old grease should be removed with an appropriate solvent before new grease is applied.

It is often difficult to lubricate the motor shaft without completely dismantling the motor and soaking its bearings in the proper lubricant. Some of the soft, porous bearings are designed to hold a certain amount of lubricant. The manufacturer may say these bearings are "life-time" lubricated but may not be literally true. I do this sort of "soaking business" with a light-weight oil for this purpose.

Sometimes the pivots of the tonearm become oxidized, with an audible crackling as the arm moves across a record. A little "spritz" of WD-40 in each pivot does a good job because it both lubricates and cleans them. The arm then becomes a better ground and shields the system against hum.

Checking Capacitance of Phono Cables

Q. I have several sets of phono cables of unknown capacitance. Because CD-4 reproduction requires cables rated at approximately 100 pF, I need to determine the specific capacitance of these cables. I have access to a Heathkit IT-28 direct-reading capacitor checker, but I am not familiar with the correct procedure by which to test the cables. Please advise me.—Robert L. Gable, Jr., APO San Francisco, CA.

A. The capacitance of a shielded cable is measured between the center conductor and the shield. Therefore, in order for your capacitance checker to be used properly, one of its terminals is connected to the center terminal of the connector of the phono cable to be checked. The other terminal of the capacitor checker is connected to the outer portion, or skirt, of the same connector. If one of the terminals of the capacitance checker is at ground potential, this terminal is the one to be connected to the outer

INNER BEAUTY

Brilliant new engineering for a bright new sound:
KENWOOD RECEIVERS FOR '76



KENWOOD introduces an all-new receiver line for '76—six high performance new models, created in the KENWOOD tradition of engineering excellence. The beauty of 'original-performance' reproduction starts deep inside each new model. Big new power ratings enhance performance right down the line, but power alone is not the whole story. KENWOOD engineers have carefully concentrated on total performance, with a host of technical refinements: Direct-coupled output stages with pure complementary symmetry for better bass response and crisp transient response. New distortion-cutting circuitry in the all-important preamp for increased signal-to-noise ratio. Advanced new tuner design for greater sensitivity, better capture ratio, and full stereo separation throughout the frequency range. Plus KENWOOD's new uncluttered internal layout that minimizes wiring to maintain optimum signal-to-noise performance. Six new receivers—with an inner beauty all their own—are waiting for you at your nearest KENWOOD Dealer.



KENWOOD

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Is it live, or is it Memorex?

The amplified voice of Ella Fitzgerald can shatter a glass. And anything Ella can do, Memorex cassette tape with MRX, Oxide can do.

If you record your own music, Memorex can make all the difference in the world.

MEMOREX Recording Tape.
Is it live, or is it Memorex?



shell of the connector—the shield of the cable.

This will allow you to determine the amount of capacitance within the various interconnecting cables you have. You must, however, add the capacitance within the tonearm. To do this, remove the cartridge from the headshell and connect the terminals of the capacitor checker to the slide lugs. Try to keep the ground terminal of the checker connected to the ground terminals of the tonearm leads.

To determine the total effective capacitance of your phonograph system with any one of the cables you are about to test, you add the capacitance of that cable to that possessed by the tonearm.

Cartridge Output Versus Cost

Q. I just purchased the Empire 999 TE/X cartridge. When I installed it I found that I had to turn the volume control up higher to obtain the same output from my system that I had with a much cheaper magnetic cartridge. Why is this?—McDonald A. Layne, Jr., Bronx, N. Y.

A. The less expensive cartridges are designed for use with less expensive equipment which do not always have the sensitivity necessary for use with low output cartridges.

Manufacturing a cartridge which has a lot of output, however, involves moving quite a bit of mass. This, in turn, means more record wear and a degradation at high frequencies and transient response. The better cartridges, such as yours, are made with as small a mass as possible, thus making them more difficult to construct, and their output falls off. Therefore, a better amplifier is needed, one having a good noise figure in order to use one of these better cartridges.

The output from one of these cartridges would be even less if the tolerances in their manufacture were as loose as those in the less expensive models. This factor also adds to the overall cost of the more expensive cartridges.

The value of the parts used to make a magnetic cartridge is not high. The cost is really a matter of the labor involved in working with the small parts so that they will operate correctly over long periods of time. This means that, in addition to the actual process of manufacturing the cartridge, more inspections and testing must be performed to make certain that the unit you buy will perform as the maker intended. 

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AUDIO • OCTOBER, 1976

Dolby Noise Reduction

The First Successful Decade 1966-1976

Dolby noise reduction has staying power.

It has been around for ten years.*

If you have read our technical papers and otherwise followed our progress, you are probably familiar with the reasons for this success. Here are ten quick reminders.

1 The Dolby system works like a constant-gain amplifier in two critical dynamic regions—low levels and high levels. Error-free signal handling is thus ensured at the dynamic range extremes. Compression and expansion occur only at easy to handle mid-levels, between -20 dB and -40 dB.

2 The system employs a simple adding and subtracting scheme which automatically results in mathematically exact complementary compression and expansion. There are no approximations, so the signal must come out the same as it went in (just check the Dolby Level now and then).

3 Compressor overshoots with high-level transient signals are suppressed without audible distortion, because of the basic system layout (dual signal paths). Since there are no overshoots to be clipped by the recorder, there is no impairment of even the most extreme transient signals.

4 The freedom from overshoot is a result of system philosophy, not an ultra-short attack time. Relatively gradual gain changes are used, yielding a compressor output which is remarkably free from modulation distortion. There is no need to depend upon cancellation of modulation products by the expander (thereby relaxing recorder performance requirements).

5 The reproduced dynamics of low-level signals are essentially immune to rumble in the input signal and head bumps and other frequency response errors in the recorder—the system has a solid low-level 'gain floor' below -40 dB.

6 The system gives a pre-determined amount of noise reduction which is realistically useful.

7 The noise that remains has a subjectively constant level. Noise modulation effects are almost non-existent.

8 The principles and parameters used in the Dolby system result in a high margin of safety. The system works well with all types of audio signals—speech, music, effects—and with practically all types of noises. High noise levels (from multi-generation copies, for example) do not impair performance.

9 The system functions reliably on a day in, day out basis, with real workaday recorders and other equipment.

10 All of the above have been proved in ten years of dependable service to the industry—25,000 professional channels in use by well over a thousand studios in more than 50 countries around the world.

**The first five A301 units were delivered to the Decca Record Company, London, on April 14, 1966.*

Dolby noise reduction now looks forward to

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London SW9
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Telex 919109
Cable Dolbylabs London

Behind the scenes

Come summertime, and your peripatetic reporter usually visits some audio manufacturers in some salubrious foreign clime. This year it was off to the Revox/Studer plants in Switzerland and Germany (I'll report on this visit in due course) and to Decca Records in London.

As I'm sure you are aware, in the United States Decca records are sold under the "London" label. Last February, London Records invited members of the audio press corps to a New York hotel suite to audition what they had billed as their new line of "super high quality Dolby B pre-recorded cassettes." They had titillated us in their invitation by stating that there would be an A/B comparison test between 15 ips copymasters and the cassettes, and that we could expect to find them "indistinguishable." Well!!

Presiding at the demonstration was Gerd Nathan, the genial physicist in charge of the cassette project, and none other than Arthur Haddy, Decca's legendary chief engineer, the man responsible for *ffrr* recordings. The room was set up with professional monitor loudspeakers, and if I remember correctly, the 15 ips tape deck was a Philips machine. The cassette units were British, made by the Neal Company, and they use the Wollensak transport with their own electronics, à la Advent. Various amplifying equipment, an oscilloscope, some other instrumentation, and an A/B switch completed the set up.

Pop and classical cassettes were demonstrated and compared with 15 ips copymasters of the same program material. Levels were precisely matched, and we were permitted to do our own A/B switching. Sure enough, these London/Decca pre-recorded cassettes really were something special, because it was indeed difficult to distinguish between them and the 15 ips tape. Believe me—there were plenty of wrong guesses as to which was which! We were assured that the cassettes were standard productions, and not something specially made for this demonstration.

A word about the sound quality is in order. The cassettes unquestionably were wide in frequency response and dynamic range. What impressed me the most were the good motion, relative freedom from dropouts, and most especially the absence of modulation noise. For the first time, it was consistently possible to hear exposed flutes, oboes and clarinets, and sustained piano chords without the blurring and the "bubbling" unsteady quaver which modulation noise inflicts on these instruments. In my opinion, it has been modulation noise above all other technical shortcomings of the cassette that has kept them out of contention as a high fidelity medium.

I should note that while the good points of the cassette were audibly obvious, I wasn't too happy with the reproduction in the demo room. This was mainly because of the loudspeakers. Typical of the co-called "professional monitor" breed, they rolled off rapidly below 60 Hz, had a peaked mid-range, exaggerated top end, and an overall harshness that was not only unpleasant but highly inaccurate. Room acoustics didn't help either, contributing a boomy resonance around 80-100 Hz. Program material ranged from pop items like Mantovani and Ronnie Aldrich and quasi-rock stuff, to classical music performed by the Chicago, London and Los Angeles symphony orchestras, which we know so well from the excellent London/Decca Records.

I asked Gerd Nathan what sort of duplication process Decca used to achieve such high quality results, envisioning all sorts of exotic guidance systems, with motion servos to prevent tape skew, saturation threshold detectors, etc. To my surprise, he told me that their system was fairly straightforward, with some significant modifications to standard Gauss duplication equipment, but that extremely rigid quality control was the main factor in their operation. I guess I exhibited some skepticism, and remarked that some time I would like to

see the Decca cassette duplication facility in England. Some months passed, and I received the first samples of the new London/Decca cassettes. When I played these cassettes over my "state-of-the-art" system, I was truly astonished with the high quality of the sound. After years of conditioning to all of the sonic ailments that afflict the sound of cassettes, to hear a nice clean sound, with wide frequency response and dynamic range, and nary a trace of modulation noise was a most pleasant surprise. I expressed my high opinion of these cassettes to the people here at London Records in New York, and suggested that if they heard them over my sound system, they would really be impressed with the quality of their product. Some weeks later, I had as my guests Mr. H. Toller-Bond, President of London Records, his marketing manager Mr. Bernie Fass, and old friend Lee Kubly of Harman International, and we spent a most pleasant afternoon playing a wide variety of the new London cassettes. Everyone was duly impressed, and at the conclusion of our "musicale," Mr. Toller-Bond very kindly suggested that I might like to visit the Decca cassette plant in England. The wheels were set in motion, arrangements made, and thus somewhat circuitously I have explained how I wound up in London on the 16th of July.

Before going into details of the Decca cassette operation it might be worthwhile to take a brief retrospective look at the cassette medium. As you know, Philips introduced the compact cassette in 1965, and I don't think they envisioned it as anything more than a convenient mini-recorder... good for dictation and that sort of thing. Inevitably, of course, someone recorded music on the system, and ghastly though it may have been in quality, the sheer fascination of it encouraged experimentation. In due time improvements were made in tape oxides, cassette shell moulding, better slip liners, and, of course, in the cassette player drive mechanisms. The

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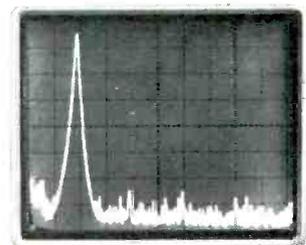
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A by-product of dry lubricants developed for aerospace applications, Sound Guard preservative is so smooth it reduces friction, yet so thin (less than 0.000003") it leaves even the most fragile groove modulations unaffected.

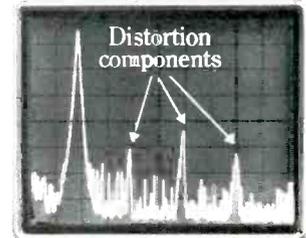
Len Feldman in Radio Electronics reports "At last! The long awaited record-care product has arrived.

It preserves frequency response

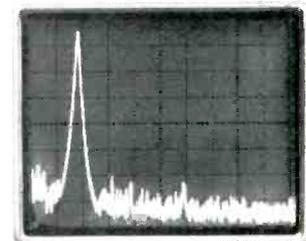
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first pre-recorded cassettes appeared, and they were pretty horrible. More time went by, and more improvements in the system, yet pre-recorded cassettes suffered from high tape hiss, modulation noise, frequent dropouts, and the lack of headroom caused tape saturation and high distortion. A few years down the line and we got tape oxides with higher packing density. Dolby B noise reduction arrived and alleviated the curse of tape hiss. Chromium dioxide was introduced with improved high frequency response. Ampex began to duplicate Dolby B cassettes, a big step forward, but many problems remained.

The advent of high-output, low noise cassette tapes, plus recorders with good motion and electronics with relatively low distortion, and improved permalloy and ferrite heads, provided the audio consumer with a recording medium that was impressively close to high fidelity quality. This led to the widespread practice of dubbing records to cassettes. . .and since the copies were made on a real-time basis at one-to-one, their quality was excellent. Thus, to most consumers, it was very frustrating to be able to make high quality recordings in their homes, but not be able to get similar quality in a pre-recorded cassette. Alas, they still suffered from all the woes and technical inadequacies previously enumerated.

Advent set new standards of high quality in pre-recorded tapes with the use of Chromium dioxide tape and low ratio duping speeds. On the other hand, Ampex gave up the ghost and got out of the duplicating business. Philipps and Deutsche Grammophon finally decided to encode their cassettes with Dolby B noise reduction with generally good results.

In spite of these improvements in the quality of pre-recorded cassettes, most audiophiles felt that the lowly cassette couldn't challenge the high fidelity of phono discs or open-reel tapes. Undismayed by these attitudes, research and development work on cassette technology continued apace in the labs of many companies. Since the demise of Ampex Stereo Tapes, those record companies who wanted to have their productions available on pre-recorded cassettes would either have to sub-contract for their duplication, or do it themselves. London/Decca Records, always a quality oriented company, decided that if they chose to make their own pre-recorded cassettes, an intensive investigation into all of the parameters involved in cassette duplication would

have to be undertaken, with a view towards correcting the existing technical flaws in this medium, and thus enable the production of high fidelity cassettes. Quite a tall order!

Well, back to London. And what a terribly unseasonable London. . . temperatures in the high eighties and humidity to match. . .and almost without exception. . .no air-conditioning! After we were ensconced at the Savoy, it was off to dinner with Arthur Haddy and his charming wife Lydia. Mr. Haddy is both chief engineer and Director of Decca Records and an altogether remarkable man. He was involved with the radar project that was of such great help in the Battle of Britain, and it was out of this experience that he evolved the idea of *ffrr* (full frequency range recording) and Decca records with this process (still 78 rpm of course) began to be marketed in 1947.

Mr. Haddy has always been venturesome in his pursuit of high quality sound. In 1957, I met him for the first time in New York, at the London Records offices where he was demonstrating a stereo record utilizing "hill and dale" recording for vertical modulation. The quality was excellent, better by far, in fact, than the Westrex "45/45" system that came along a few months later. But his system was not compatible, and so Decca quickly switched to the Westrex system. However, his stereo experiments had put him in a fortunate position as far as the Westrex discs were concerned, for he had been recording stereo on tape for some time, and had a large backlog of productions ready to transfer to stereo disc. Mr. Haddy has many other accomplishments, too numerous to mention. For his contributions to recording the Audio Engineering Society has made him a Fellow, and given him the Emile Berliner Award (now the silver medal). In his own country, he was on this years' "Honors List" of the Queen, and was awarded the Order of the British Empire (OBE). Along with Gerd Nathan, he has tackled the problems inherent in the process of cassette duplication with his customary zeal.

After a preliminary visit with Arthur Haddy at the Decca studios in London, Gerd Nathan drove us to the quaint little village of Bridgenorth, near the Welsh border, and some 140 miles north of London. By odd coincidence, Bridgenorth is only a few miles from Kidderminster where I was stationed during the War. In Bridgenorth, in what was an ancient hospital, where generations of British warriors

Introducing the Avid 101.

A rational solution to the problems of 2-way speaker design.

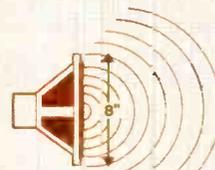
Designing a reasonably priced 2-way speaker system has always had its problems. One of the most perplexing of which has been engineering a speaker system with both well-dispersed midrange *and* really extended bass.

The bass vs. midrange dilemma.

In one respect, a 6 or 8 inch woofer is preferable for a 2-way speaker system because its small diameter



Conventional 10" woofer is directional in midrange.



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affords better dispersion in the critical midrange area up to the

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But, a small diameter woofer just isn't capable of handling the power required for really extended bass (say to 30 Hz) in traditional designs without the use of costly electronic equalizers.

A real dilemma. The best solution to which we feel lies in a unique new 2-way speaker system—the Avid Model 101.

A rational solution.

The Avid 101 overcomes the traditional bass versus midrange

dilemma through an unusual combination of a large vented enclosure and a specially engineered 8 inch woofer.

Unlike conventional vented designs, the Avid 101's vented enclosure is used to *extend the bass response* of the system, rather than to increase the efficiency. This unique design (essentially a 4th order Chebychev filter alignment) achieves really extended bass—*down 3 dB at 30 Hz*—while the use of an 8 inch woofer insures a smooth, well dispersed midrange up to its 2500 Hz crossover point.

Of course, no ordinary 8" woofer could do the job. It took us over a year to perfect the woofer design and it's quite unique. For example, it utilizes an unusually large magnetic structure and a specially developed rubber-edged

cone of almost twice the weight and stiffness typically used.

But you have to actually listen to the Model 101 to really appreciate just how well it solves the traditional problems of the 2-way speaker.

A high end to match.

Things just wouldn't be complete if we didn't give the 101 a high-end performance that was every bit as good.

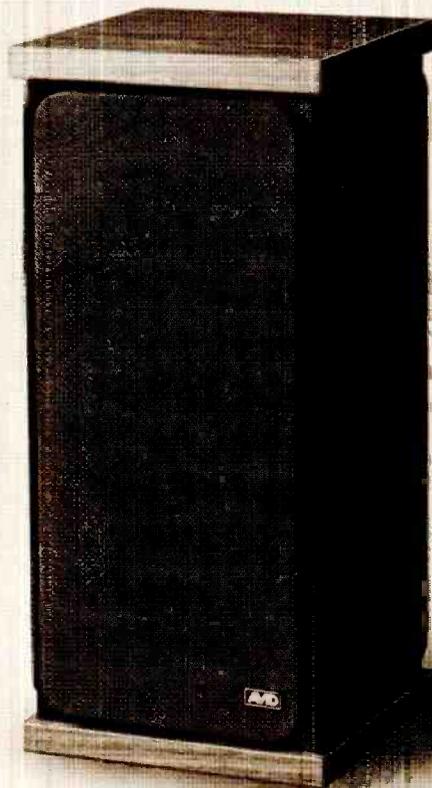
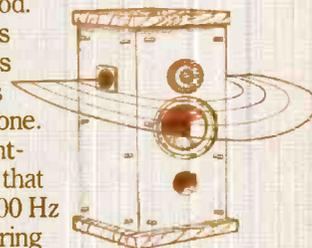
Which is why the 101 has three tweeters instead of just one. A primary, front-facing tweeter that comes in at 2500 Hz and two side-firing units that kick in around 3500 Hz.

The result is full 180° dispersion in the high end all the way up to 15 kHz for a sense of imagery and openness which, until now, was unavailable in all but the highest priced speakers.

The right choice for most listeners.

We believe that the Avid Model 101 truly represents an advancement in two-way loudspeaker design and is the completely right choice for the vast majority of serious listeners.

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came to heal their wounds, Decca cassettes are now manufactured. (Some of the locals aver that when there is a gibbous moon low in the sky, you can still hear the screams of the wounded.) Methinks some bloke forgot to turn off an oscillator that was set to 3 kHz! What once were long wards in the hospital are now admirably suited for the set up of the lines of master playback and the duplicating slaves. The wards are equally advantageous in the production flow of cassette loading, labeling, packaging, etc.

Production chief Peter Banks gave us the guided tour of all the manufacturing facilities, and then along with Gerd Nathan, we sat down to discuss the details of the Decca processing. There are two Gauss Electro Physics (now Cetec) master playback machines, using one inch running masters, and equipped with the tape storage bins, and currently 20 Gauss duplicating slaves, all save one equipped with ferrite heads. More slave units are on order. On receipt of a slave unit, the heads are demounted carefully checked for physical specs, remounted on a special adjustable plate, and then undergo ultra-precise alignment of azimuth, zenith, etc. The normal tape guidance path on the slaves is changed to a proprietary configuration that avoids sharp bends and results in an exceptionally tight tape wrap on the heads. A master bias oscillator is set at 10 megahertz and is routed to the heads of each slave. Each slave is specially equipped with a meter and position switch to ensure that each head is receiving the proper bias. The running master operates at 240 ips, and the slaves at 60 ips, with a resultant duplicating ratio of 32 to 1. Depending on the type of program material and its dynamic range, either BASF duplicating tape is used or a high energy Memorex oxide which affords about 8 dB more headroom. In another factory, Decca operates its own molding plant where the cassette shells are manufactured. According to Gerd Nathan, this is one of the most critical factors in a high quality cassette. He states there are over 400 separate dimensions that must precisely meet specs. Decca research has concluded that roller guides in the shell, no matter how good the pins or bearings, ultimately contribute to poor wow and flutter. In the Decca shell solid posts of slippery Delrin are used. The Decca shells are welded, rather than screwed together, and they claim that uneven torque in the screw operation causes deformation of the shell. The slip liner of the shell is another

proprietary item and is graphite-coated for lubrication. Another special Decca machine attaches the tape to the hub with tiny rods of aluminum, which are press fitted along with the tape into a slot in the hub.

Decca claims this cassette shell is so good that minimal azimuth shift occurs from tape pack displacement when the cassette is turned over to play the second program. Quite a claim, so to check it, when I came home I set up the new Tandberg TD330 cassette recorder that features adjustable azimuth on record. A built-in 10 kHz oscillator provides a signal, and by adjusting a small knob on the record head to achieve maximum reading on the right hand meter, you've set the azimuth. Now when you have done this and then simply turned the cassette over to the other channels and applied the 10 kHz signal, if the tape pack hasn't shifted, you should get a reading very close to the original adjustment. I bulk-erased a Decca cassette and ran it through this test better than 20 times... shaking the cassette, up, down and around, and, of course, the normal side turnover. The meter reading was consistently from 1½ to 2 dB lower from side to side. According to some experts I consulted at Philips, this is very good indeed. Just for the hell of it, I ran through about 8 different brand name cassettes in the same test. One was close to the Decca cassette, several more stayed within 4-5 dB, but a number of cassettes were off by as much as 10-18 dB!

Back in the listening room at Bridgenorth, engineer John Baxter had a neat set-up where one could switch between the running master, the production cassette and the stereo disc of the same program. Now the running master and the stereo disc are made from the cutting master. They are second generation from the original master. The cassette is made from the running master, and it is third generation. Without Dolby, things would get to be intolerably noisy. With Dolby, the cassette is just lightly noisier than the running master. In making the running master, the cutting master is decoded through the Dolby A units, and then encoded to Dolby B, through the Dolby 320 unit.

Next month we will report on the results of switching between these formats, which might surprise some people, and go on to some tests concerning signal-to-noise ratio, dynamic range, equalization and distortion, then on to the Decca studios for a look see. A

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Annual Equipment Directory

Since *Audio* published its first Equipment Directory in 1958, the listings have grown to more than 2,100 items in 13 different categories. Even so, we didn't list every product worthy of the adjective "high fidelity," as some makers do not wish to supply specifications, while others did not reply in time.

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

Naturally it is impossible to list all the particular features for any piece of equipment, and we suggest that the reader write directly to the manufacturer for more complete information. An addenda to this directory will be published in December.

Manufacturer Directory

16

Analog & Digital Systems
64 Industrial Way
Wilmington, MA 01887

AKG-Philips
91 McKee Dr.
Mahwah, NJ 07430

Accuphase
(See TEAC Corp.)

Ace Audio
25 Aberdeen Dr.
Huntington, NY 11743

Acoustical Engineering
P.O. Box 221
Sunnyvale, CA 94088

Acoustical Manufacturing
Huntingdon, England

Acoustic Fiber Sound System
2831 N. Webster
Indianapolis, IN 42619

Acoustic Research
10 American Dr.
Norwood, MA 02062

Acousti-phase
P.O. Box 207
Proctorsville, VT 05153

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

Advent
195 Albany St.
Cambridge, MA 02139

Aiwa-Meriton
35 Oxford Dr.
Moonachie, NJ 07074

Akai America
2139 E. Del Amo Blvd.
Compton, CA 90220

Allison Acoustics
7 Tech Circle
Natick, MA 01760

Altec
1515 S. Manchester St.
Anaheim, CA 92803

American Audioport
317 Professional Bldg.
909 University
Columbia, MO 65201

Analog Engineering Associates
520 Park Ave. S.
Winter Park, FL 32789

Armstrong Audio
(See Roth/Sindell)

Astatic Corp.
P.O. Box 120
Conneaut, OH 44030

Audioanalyst
P.O. Box 262
Brookfield, CT 06804

Audio Arts
(See Fulton Musical Industries)

Audio Dimensions
4 Riverstone Dr.
Weston, Ont. M9P-2R6
Canada

Audio Dynamics
230 Pickett District Rd.
New Milford, CT 06776

Audio Engineering
(See Roth/Sindell)

Audio General
1631 Easton Rd.
Willow Grove, PA 19090

Audio Int'l.
3 Cole Place
Danbury, CT 06810

Audio Laboratories
2800 Cathedral Dr.
Tallahassee, FL 32304

Audionics
10950 SW Fifth Ave.
Beaverton, OR 97005

Audio Phase
525 N. Central St.
Kent, WA 98031

Audiophile Systems
5750 Rymark Court
Indianapolis, IN 46250

Audioson-Kirksaeter
60 E. 42nd St.
New York, NY 10016

Audio Research
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Minneapolis, MN 55406

Audio-Tech Electronics
3863 Steilacoom Blvd. S.W.
Tacoma, WA 98499

Audio-technica
33 Shiawasse Ave.
Fairlawn, OH 44313

Audire Labs
(See Roth/Sindell)

Auratone
P.O. Box 580
Del Mar, CA 92014

Avid
10 Tripps Lane
E. Providence, RI 02914

BGW Systems
P.O. Box 3742
Beverly Hills, CA 90212

BML Electronics
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Wheeling, IL 60090

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Blauvelt, NY 10913

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515 Busse Rd.
Elk Grove Village, IL 60007

Bertagni
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Costa Mesa, CA 92626

Harold Beveridge
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Santa Barbara, CA 93103

Beyer
(See Revox)

Bigston
9829 W. Berwyn Ave.
Rosemont, IL 60018

Bose
100 The Mountain Rd.
Framingham, MA 01701

Bozak
P.O. Box 1166
Danbury, CT 06821

BoleC
Westbury, NY 11590

Bryston
17 Canso Rd., Unit 1
Rexdale, Ont. M9W-4M1
Canada

CBS Retail Stores
1313 53rd St.
Emeryville, CA 94608

CM Laboratories
3 Cole Place
Danbury, CT 06810

Cerwin-Vega
6945 Tujunga Ave.
N. Hollywood, CA 91605

Community Electronics
P.O. Box 1705
7 Widewater Dr.
Lafayette, IN 47902

Concept
(See CBS Retail Stores)

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

Creative Environments
85 Hoffman Lane S.
Happauge, NY 11787

Crisman Speaker Co.
824 Pearl
Boulder, CO 80302

Crown
1718 W. Mishawaka Rd.
Elkhart, IN 46514

DB Systems
P.O. Box 187
Jaffrey Center, NH 03454

DWD Audio Systems,
3206 N. Marks
Fresno, CA 93705

Dahlquist,
27 Hanse Ave.
Freeport, NY 11520

Dayton-Wright
350 Weber St. North
Waterloo, Ont.
Canada

Delta-Graph
(See Spectro-Acoustics)

Design Acoustics
2909 Oregon Court
Torrance, CA 90503

Dokorder, Inc.
5430 Rosecrans
Lawndale, CA 90260

Dual
(See United Audio Products)

Dunlap-Clarke
230 Calvery St.
Waltham, MA 02100

Duntech Labs
P.O. Box 9266
Corpus Christi, TX 78408

Dynaco
P.O. Box 88
Blackwood, N.J. 08012

EMT
(See Gotham)

EPI
(See Epicure Products)

EPS
(See CBS Retail Stores)

ESS
9613 Oates Dr.
Sacramento, CA 95827

Eastman Sound
Harmony Rd.
Mickelton, NJ 08056

Electro Music
56 W. Del Mar Blvd.
Pasadena, CA 91105

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

Electro-Voice
600 Cecil St.
Buchanan, MI 49107

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

Empire
1055 Stewart Ave.
Garden City, NY 11530

Epicure
1 Charles St.
Newburyport, MA 01950

Epitome
725 Bergen St.
Brooklyn, NY 11238

Ercona
2492 Merrick Rd.
Bellmore, NY 11710

Fergus-Fons
(See Audio Dimensions)

Fidelity Research
P.O. Box 5242
Ventura, CA 93003

Fisher
21314 Lassen St.
Chatsworth, CA 91311

Frazier
1930 Valley View Lane
Dallas, TX 75234

Fulton Musical Industries
4428 Zane Ave., North
Minneapolis, MN 55422

GTE/Sylvania
700 Ellicott St.
Batavia, NY 14020

Gate Electronics
348 E. 84th St.
New York, NY 10028

Garrard
(See Plessey)

Geranium Laboratories
45 York St.
Brooklyn, NY 11201

Gollehon
209 Front NW
Grand Rapids, MI 49501

Gotham Audio
741 Washington St.
New York, NY 10014

(Continued on next page)

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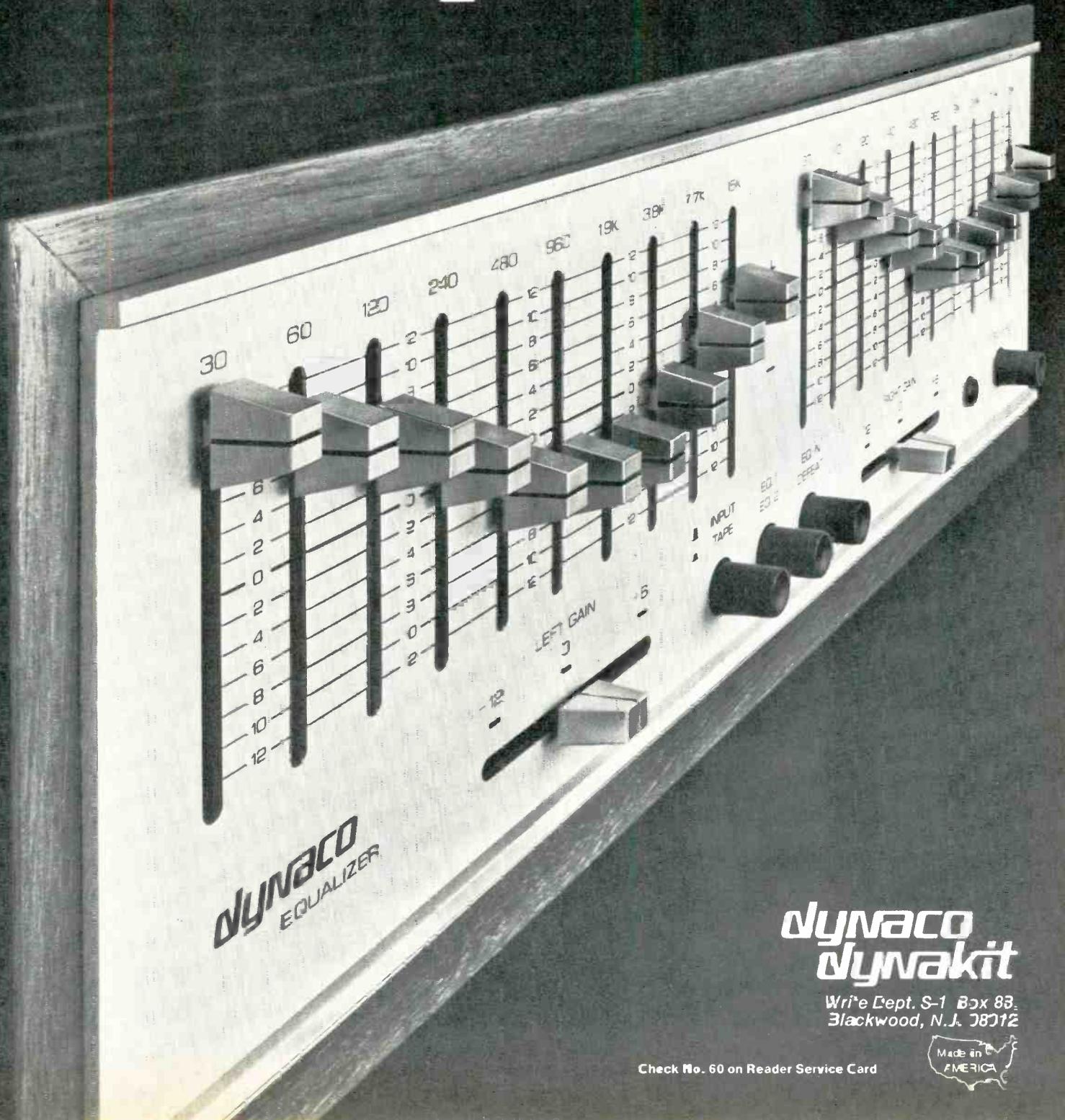
It's easier to use, more tolerant, (forget overload, switch pop, and unity gain problems) and has greater versatility. Two separate line in/out pairs, plus tape monitor or one. No inductor saturation, with a hybrid

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18

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Canada.

* a British Army expression meaning taking a risk

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Manufacturer Directory

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(See Sumiko)

Graphx
1550 #F Fullerton Ave.
Addison, IL 60101

Great American Sound (GAS)
20940 Lassen St.
Chatsworth, CA 91311

Group 128
50 Sun St.
Waltham, MA 02154

Harman/Kardon
55 Ames Court
Plainview, NY 11803

Hartley
620 Island Rd.
Ramsey, N.J. 07446

Haynes Microelectronics
625 Post St.
Box 413
San Francisco, CA 94109

Hear-Muffs
4504 Bryan Place
Downers Grove, IL 60515

Heath
Benton Harbor, MI 49022

Hegeman Labs,
555 Prospect St.
E. Orange, NJ 07017

Hitachi
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Compton, CA 90220

IMF International
720 Marin Ave.
Montreal, P.Q. H4C-2H2
Canada

Infinity
7930 Deering Ave.
Canoga Park, CA 91304

Innotech
42 Tiffany Place
Brooklyn, NY 11231

International Sound
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Modesto, CA 95351

JBL
3249 Casitas Ave.
Los Angeles, CA 90039

JVC
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Maspeth, NY 11378

Janis Audio
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Bronx, NY 10461

Janszen
7516 42nd Ave., North
Minneapolis, MN 55427

Jennings Research
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Los Angeles, CA 90001

Jensen
4310 Trans World Rd.
Schiller Park, IL 60176

KLH
30 Cross St.
Cambridge, MA 02139

Kelso Imports
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New York, NY 10010

Kenwood
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Woodside, NY 11377

King Research
P.O. Box 125
Greenville, OH 45331

Klein & Hummel
(See Gotham Audio)

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Hope, AR 71801

Koss
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Milwaukee, WI 53212

Kustom Acoustics
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Chicago, IL 60634

LTC Corp.
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Santa Ana, CA 92705

Lafayette Radio Electronics
111 Jericho Tpk.
Syosset, NY 11791

Lamb Laboratories
155 Michael Dr.
Syosset, NY 11791

H.J. Leak
(See Ercona)

Lecson
(See Roth/Sindell)

Lenco
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Inglewood, CA 90301

**Mark Levinson
Audio Systems**
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Hamden, CT 06514

Linn-Sondek
(See Audiophile Systems)

Little Speaker
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Newburyport, MA 01950

Loudspeaker Design
2710 Garfield Ave.
Silver Spring, MD 20910

Lux
200 Aerial Way
Syosset, NY 11791

Magitran
311 E. Park Ave.
Moonachie, NJ 07074

Magnepan, Inc.
1124 First St.
White Bear Lake, MN 55110

Marantz
20525 Nordhoff St.
Chatsworth, CA 93112

Marjen
P.O. Box 251
South Kent, CT 06785

McIntosh
2 Chambers St.
Binghamton, NY 13903

McKay-Dymek
675 N. Park Ave.
Pomona, CA 91766

Meriton-Aiwa
35 Oxford Dr.
Moonachie, NJ 07074

Micro/Acoustics
8 Westchester Plaza
Elmsford, NY 10523

Micro Seiki
(See TEAC Corp.)

Microtower
(See Epicure)

Mitsubishi
Melco Sales
3030 E. Victoria St.
Compton, CA 90221

Keith Monks
(See Audiophile Systems)

Mordaunt-Short
(See Lamb Laboratories)

Music Systems
34 N. Gore Ave.
St. Louis, MO 63119

Nagra
19 W. 44th St.
New York, NY 10036

Nakamichi Research
220 Westbury Ave.
Carle Place, NY 11514

Neumann
(See Gotham Audio)

Nikko
16270 Raymer St.
Van Nuys, CA 91406

North American Philips
100 E. 42nd St.
New York, NY 10018

Ohm Acoustics
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Brooklyn, NY 11205

Onkyo
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Long Island City, NY 11101

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Ortofon
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New York, NY 10016

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PSB Speakers
P.O. Box 144
St. Jacobs, Ont. NOB 2N0
Canada

Panasonic (Technics)
1 Panasonic Way
Secaucus, NJ 07094

Paoli Hi-Fi
P.O. Box 876
Paoli, PA 19301

Pearl
(See Ercona)

Phase Linear
20121 48th Ave. West
Lynwood, WA 98036

Philips High Fidelity Labs
P.O. Box 2208
Fort Wayne, IN 46801

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Plainview, NY 11803

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(Continued on next page)

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An insidious form of distortion you may not even be aware of, is causing "listening fatigue" as you play your records. After about 15 minutes of a complex, musically demanding record, it shows up. You feel vaguely anxious, irritable, and ready to turn off the music. That's "listening fatigue"—virtually eliminated at last with the new Sonus phono cartridges.

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**Power Research
Products**
1401 Clipper Heights Ave.
Baltimore, MD 21211

Presage
500-41A Peconic St.
Ronkonkoma, NY 11779

Pro Musica
(See Fulton Musical
Industries)

Pulse Dynamics
Box 355
Fulton & Deposit Sts.
Colchester, IL 62326

Quadriflex
(See CBS Retail Stores)

RCA
Special Products Div.
Cherry Hill Offices
Camden, NJ 08101

RTR Industries
8116 Deering Ave.
Canoga Park, CA 91304

Rabco
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Plainview, NY 11803

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Notions**
(See Roth/Sindell)

Radford Audio Ltd.
(See Roth/Sindell)

Radio Shack
2617 W. 7th St.
Ft. Worth, TX 76107

Reference Audio
5990 St-Hubert
Montreal, P.Q. H2S 2L7
Canada

Rectilinear
107 Bruckner Blvd.
Bronx, NY 10454

Revox Corp.
155 Michael Dr.
Syosset, NY 11791

Rocelco
160 Ronald Dr.
Montreal, P.Q. H4X-1M8
Canada

Rogersound Labs
6319 Van Nuys Blvd.
Van Nuys, CA 91401

Rotel
2642 Central Park Ave.
Yonkers, NY 10710

Roth/Sindell
540 Kelton Ave.
Los Angeles, CA 90024

Russound/FMP
P.O. Box 204
Stratham, NH 03885

SAE
P.O. Box 60271
Terminal Annex
Los Angeles, CA 90060

STR
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N. Highland, CA 95680

Sankyo Seiki
149 5th Ave.
New York, NY 10010

Sansui
55-11 Queens Blvd.
Woodside, NY 11377

Saras
4150 Glencoe Ave.
Venice, CA 90291

Satin
(See Superex)

Schlumberger
(See Reference Audio)

Schober
43 W. 61st St.
New York, NY 10023

H.H. Scott
20 Commerce Way
Woburn, MA 01801

Sennheiser
10 W. 37th St.
New York, NY 10018

Sequerra
143-11 Archer Ave.
Woodside, NY 11435

Sharp
10 Keystone Place
Paramus, NJ 07652

Sherwood
4300 N. California
Chicago, IL 60645

Shure Bros.
222 Hartrey Ave.
Evanston, IL 60204

Sidereal Akustic
225 S. Poplar St.
Brea, CA 92621

Singer
Suite 2365
One World Trade Center
New York, NY 10048

Sonab
1185 Chess Drive
Foster City, CA 94404

Sonex
(See Sumiko)

Sonic Research
27 Sugar Hollow Rd.
Danbury, CT 06810

Sonic Systems
6165 N. Rosemead Blvd.
Temple City, CA 91780

Sony Corp.
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New York, NY 10019

Soundcraftsmen
1721 Newport Circle
Santa Ana, CA 92705

Speakerlab
5500 35th St. SE
Seattle, WA 98105

Spectro-Acoustics
1308 E. Spokane St.
Pasco, WA 99302

Stanton Magnetics
Terminal Drive
Plainview, NY 11803

Stark Designs
12111 Branford St.
Sun Valley, CA 91352

Stax
(See American Audioport)

J.E. Sugden
Carr St.
West Yorkshire
England BD19 5 LA

Sumiko
P.O. Box 5046
Berkeley, CA 94705

Superscope
20525 Nordhoff St.
Chatsworth, CA 91311

Superex
151 Ludlow St.
Yonkers, NY 10705

Supex
(See Sumiko)

Synergistics
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Canoga Park, CA 91304

Tandberg
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Pelham, NY 10803

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Bohemia, NY 11716

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7733 Telegraph Rd.
Montebello, CA 90640

Telefunken
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Thorens
(See Elpa Marketing)

Threshold
1832 Tribute Rd., Suite E
Sacramento, CA 95815

Toshiba
280 Park Ave.
New York, NY 10017

TransAudio
(See CBS Retail Stores)

Trans-Bass Systems
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Santa Ana, CA 92704

Transcriptor
(See R. Allen Waech Assoc.)

Turner Div.
Conrac Corp.
716 Oakland Rd. N.E.
Cedar Rapids, IA 52402

Uher
621 S. Hindry Ave.
Inglewood, CA 90301

Ultralinear Loudspeakers
Div. Solar Audio Products
3228 E. 50th St.
Los Angeles, CA 90058

United Audio Products
120 S. Columbus Ave.
Mt. Vernon, NY 10553

United Sound
RD #1, Box 92A
Englishtown, NJ 07726

Videoton
(See Kelso)

Utah Electronics
1124 E. Franklin St.
Huntington, IN 46750

**R. Allen Waech
Associates**
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Milwaukee, WI 53213

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(See Roth/Sindell)

Yamaha
6600 Orangethorpe Ave.
Buena Park, CA 90620

Dual owners generally are more experienced than typical component owners. More than half have owned another brand. Usually they have spent more for records than all their audio equipment combined. Thus, they need no reminder that the turntable is the only component that handles the record. Or that to compromise with quality here can risk damage to their record collection.

What Dual owners know about their turntables that you should know about yours.

(And there is no way to repair a damaged record.)

Dual owners also know that the true measure of a turntable's quality and long-term reliability is not merely in its features but is inherent in the materials used, the care in their assembly and the quality control employed in testing.

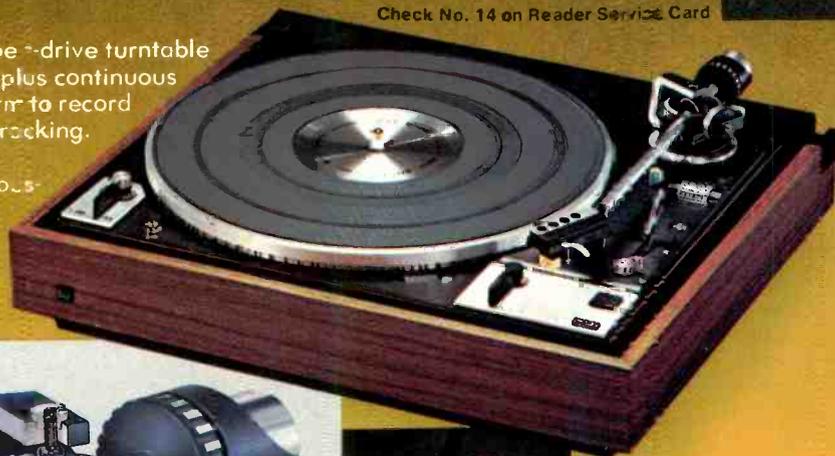
The mechanical feel of controls and switches, smoothness of tonearm movement and overall evidence of solidity are excellent clues to a turntable's general performance. Other clues are internal and not so easily appreciated. If you own a Dual, you know precisely what we mean. If you don't, the examples of Dual refinements described below may be of interest and enlightenment. They indicate why you will appreciate some things about Dual right away, and why others may take years.

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

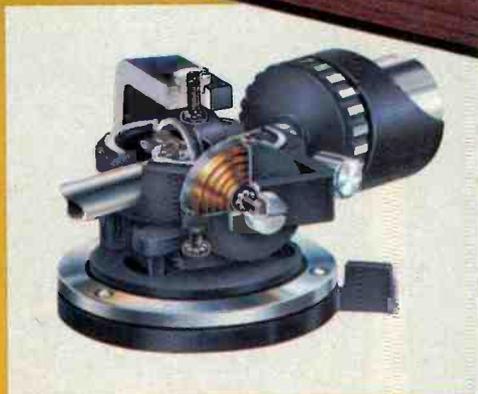
Exclusive U.S. Distribution Agency for Dual
Check No. 14 on Reader Service Card

Dual

Dual 1249. Single-play/multi-play, belt-drive turntable with fully automatic start and stop, plus continuous play. Mode Selector parallels tonearm to record in single-play for accurate vertical tracking. Other features: 6% pitch control; illuminated strobe; cue-control viscously damped in both directions; anti-skating calibrated for conical, elliptical and CD-4 style. Less than \$280.



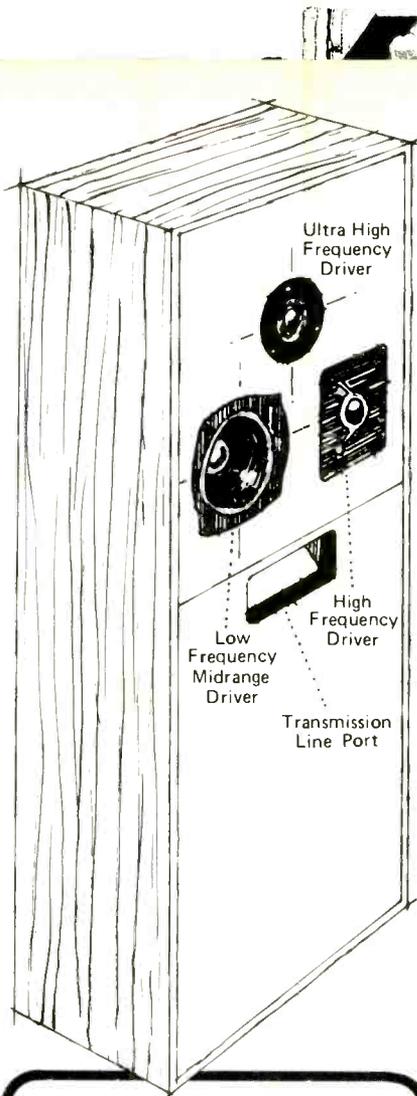
True, four-point gimbal centers and pivots the tonearm mass at intersection of horizontal and vertical axes. Tonearm is dynamically balanced in all planes. The four needle-point pivots are first hardened, then honed, a process which produces microscopically smooth surfaces. The precision ball-bearing races are only 0.157 inch diameter.



Unique "Vario-pulley" used in Dual's three belt-drive models is precision-machined for perfect concentricity and balance. Speeds are adjusted by expansion and contraction of pulley circumference; belt is never twisted or distorted.



Dual single-play, multi-play models: 1225, less than \$140; 1226, less than \$170; 1228, less than \$200; 1249, less than \$280.
Dual single-play models: 502, less than \$160; 510, less than \$200; CS704, less than \$300; CS721, less than \$400.



Innotech: Radical design, exceptional performance

Unlike conventional models, our Transmission Line and Bass Reflex speakers permit accurate reproduction of the "transient" information in all music. This, combined with wide & linear frequency response, plus low distortion, gives Innotech speakers an uncanny accuracy in reproducing music and other sonic inputs; all pitch and tone nuances are accurately portrayed.

A dynamic piston-type cone woofer/midrange driver is uniquely combined with dome-type tweeters in a phase-coherent array. The woofer has a 5 inch plastic cone capable of long movement without breakup. The motor size of this woofer is extremely large for a cone of such low mass and size. Thus, the woofer reproduces all frequencies in its range with accurate transient definition.

The dome tweeters and super-tweeters also combine low diaphragm mass with large motor size to yield accurate frequency and transient information. Drivers are front-mounted and positioned as closely as possible. By utilizing a unique crossover design with these clustered drivers, Innotech speakers generate an integrated, phase-coherent, sonic wave front with a wide dispersion pattern.

Innotech speakers are an advancement from the current state-of-the-art, a step closer to being "at the performance." Write for details.

innotech™

42 Tiffany Place, Brooklyn, New York 11231

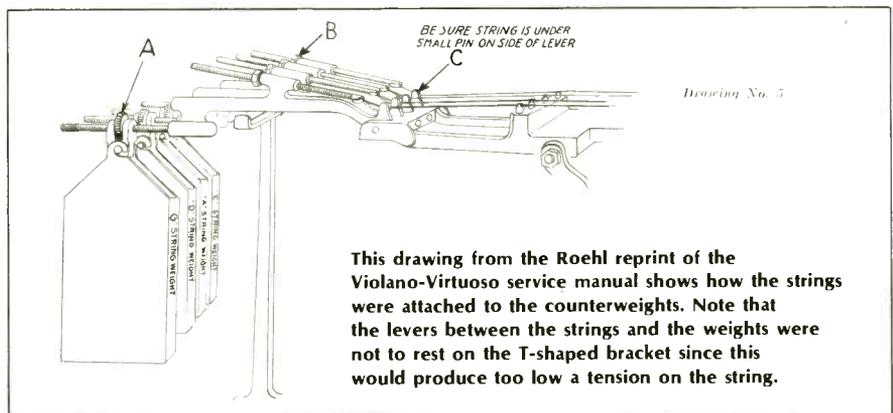
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elty Co. of Chicago, was born in Sweden in 1877 and moved to Chicago when he was 10. He joined Mills in 1904 and brought with him the patent for a self-playing violin. By the time he was 70, Sandell had secured over 300 patents, mostly relating to violin-playing machinery, though one (according to the Nov. 1, 1947, edition of *Billboard* is for a high-efficiency, reversible, shaded pole motor. He died in Chicago during January of 1948.

The Concert Grand Model cost some \$2,000 when new, weighed 1100 lbs., and stood 5 ft., 4 in. high, 3 ft., 7 in. wide, and 2 ft., 7 in. deep. The in-

waltz, two fox-trot pattern. They were cut much as player piano rolls were cut, at special consoles, one for each instrument, and the man cutting the violin part had to be quite accomplished on that instrument. One photo in Roehl's book shows the two "musicians" at the keyboard consoles, and the man at the violin console is believed to be Sandell.

The machine on the cover and shown here belongs to Albert H. Hreha and is part of his fine collection at the Carousel Mechanical Music Museum, which is located at the Village Mall on State Route 420, in Mor-



This drawing from the Roehl reprint of the *Violano-Virtuoso* service manual shows how the strings were attached to the counterweights. Note that the levers between the strings and the weights were not to rest on the T-shaped bracket since this would produce too low a tension on the string.

strument was available in four finishes, red or brown mahogany, and dull or polished oak. Most of the popular tunes of the day were cut onto the music rolls, and new up-dated catalogs were issued each month. There are, in addition, a fair number of rolls containing classical excerpts, operatic airs, and foreign songs. Roehl tells us that these last were extremely popular, and gives us the following anecdote about the Boston Candy Kitchen in Binghamton, N.Y.:

"The same gentlemen who told of the Boston Kitchen said that one of the best investments they ever made was to put in wall boxes at the booths. When the machine was new, it was so popular that people would put money in the boxes without regard to what money others had already dropped in. In fact, he told of one special roll of Irish tunes that came out close to St. Patrick's day in a particular year, a roll that had eight tunes on it in place of the usual five. The local folks of the Auld Sod liked it so well that they kept the machine hot all day long, and at closing time at night the proprietors had to shut the machine off and empty the wall boxes of their money or the machine might *still* be playing!"

The music rolls cost \$5.00 each and were usually in a two fox-trot, one

ton, Penna., across from the Morton train station. A dealer in antiques, specializing in Tiffany lamps, though they are his second love, Al found the Violano in an old hotel in Seal Harbor, Maine, in 1963. The hotel had been boarded up for 35 years, and Al was able to buy the machine from the estate of the folks who had owned the hotel. While machines were made to about 1930, this Concert Grand is thought to have been built in 1921. It took Hreha a year of work to restore and repair the Violano; all new wiring was required and the violin and much of its associated mechanism had to be taken out of the cabinet for overhaul. Hreha is just completing the restoration of a second machine which will be available to an interested collector.

There are 13 similar machines in various parts of Pennsylvania and several hundred elsewhere. Most of the owners of these machines belong to the Music Box Society Int'l., and Hreha will be happy to pass along details about the society, which has 1800 members including private individuals and museums. The Carousel Mechanical Music Museum is open Fridays from 6:00 to 10:00 p.m.; Saturdays and Sundays from noon to 6:00 p.m., and other days by appointment; the phone number is 215/544-1717.

The new Sansui



The Sansui 9090

Powerhouse.

Power, features and performance. That's what the new Sansui 9090 and 8080 stereo receivers are all about.

Listen to what the new Sansui 9090 at under \$750.00* has to offer: • A whopping 110 watts minimum RMS power per channel with both channels driven into 8 ohms over the 20 to 20,000 Hz range with no more than 0.2% total harmonic distortion. • Twin power meters to monitor the output for each channel • Advanced PLL IC Multiplex Demodulator for improved channel separation, eliminating distortion and reducing detuning noise • Twin signal meters for easy, accurate tuning • 7-position tape play switch for total creative versatility in dubbing and monitoring • and many other exciting features. Cabinet finished in walnut veneer.

All in all the Sansui 9090 represents what is probably the most advanced receiver available today. Watt for watt, feature for feature, dollar for dollar, an almost unbelievable value.

Also available is the Sansui 8080 at under \$650.00* with 80 watts of continuous RMS power under the same conditions with almost all the same features. Cabinet in simulated walnut grain.

Try, and then buy, one of the new Sansui receivers at your favorite Sansui franchised dealer today. You will be glad you did. For years to come.

*The value shown is for informational purposes only. The actual resale price will be set by the individual Sansui dealer at his option.



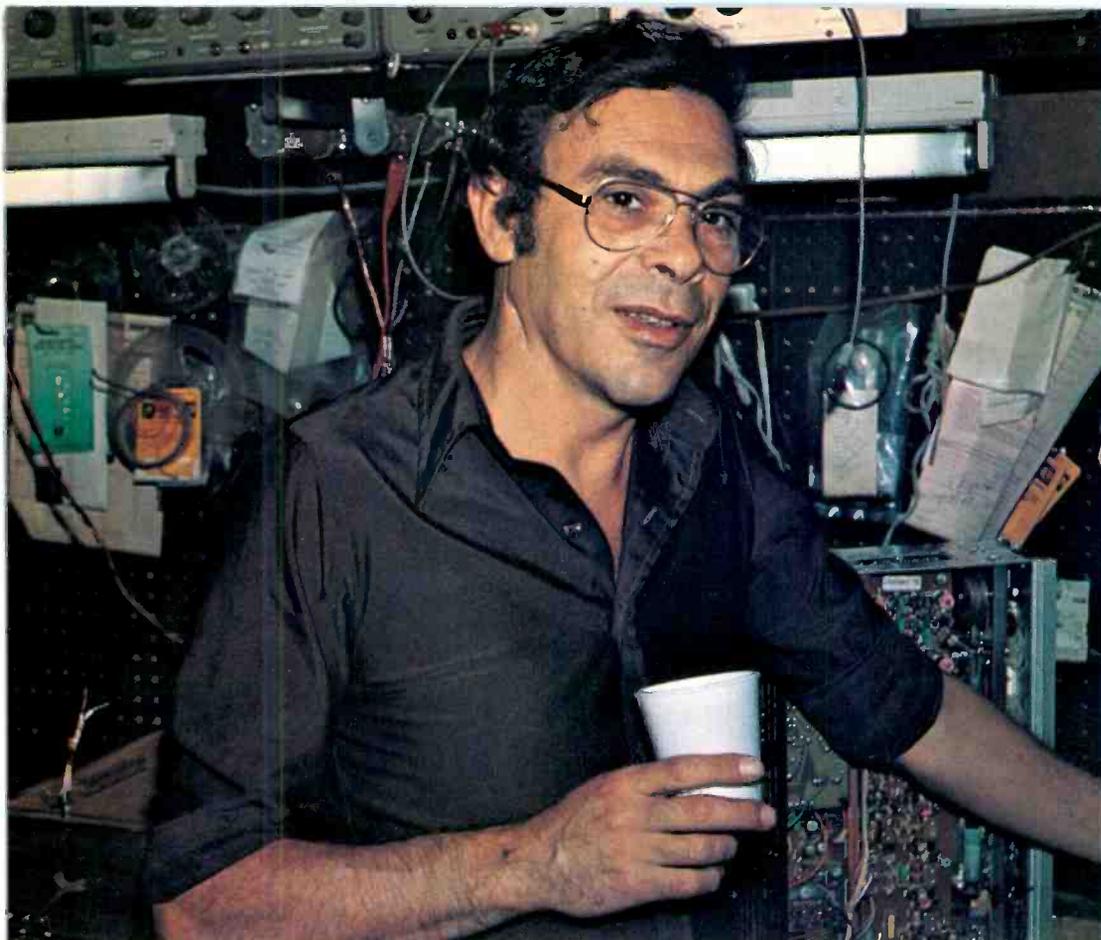
Sansui 9090

Sansui 8080

SANSUI ELECTRONICS CORP.
 Woodside, NY 11377 • Gardena, California 90247
 SANSUI ELECTRIC CO., LTD., Tokyo, Japan
 SANSUI AUDIO EUROPE S.A., Antwerp, Belgium
 In Canada: Electronic Distributors



Check No. 43 on Reader Service Card



A Dealer's View of Discounts and Service

**Martin Clifford
& Margaret Eisen**

28 *Let's be honest about it—discounters of stereo equipment are getting the lion's share of the retail dollar. You can buy name-brand components at cut-rate prices in almost any neighborhood drug store these days.*

If you're smart about good equipment and IF you know how to shop, you can buy cheap and do just about fine. But what happens if you're not shrewd enough to get past those two big "IFs"? And what are you going to do about service three, four or five years down the line?

We know a hard-nosed and almost brutal realist of a hi-fi dealer, Ralph Sommer, President of Barnett Bros., a 50-year-old family business in downtown Philadelphia. Because we know Ralph has a passion for honesty and rarely pulls a punch, we thought we'd ask him some "embarrassing" questions about the true values available at discounters and how much good service should really cost.

Sommer agreed to a "no holds barred" question and answer session, and what we got back was a highly controversial article. Here's how it went:

A: Audio: What brands do you handle?

Sommer: Among others, Bose, Revox, Yamaha, McIntosh, ADS-Braun, Stax, Tandberg, B&O, Klipsch, Ortofon, SAE, Soundcraftsmen, Thorens, Elpa, Lux, Sennheiser, Beyer, and dbx.

A: What are your prices for this equipment?

S. Standard, easily higher than the discount houses, and probably higher than my competitors.

A. Do you charge the list price?

S. List price is in some ways fictional. I make what I consider a fair evaluation of the value of a product and charge accordingly. The price I set can, quite conceivably, be less than what the manufacturer sets as his "suggested list price."

A. What is your profit margin on equipment?

S. My margin on legitimate name-brand items—not the so-called house brands—is between 30 and 35 per cent, and I defy any dealer to operate a business for over 50 years, as we have, on a smaller margin. It is unrealistic for a consumer to expect the dealer to operate on smaller margins and stay in business, and if the dealer is out of business, where is the customer going to go when he needs his component fixed?

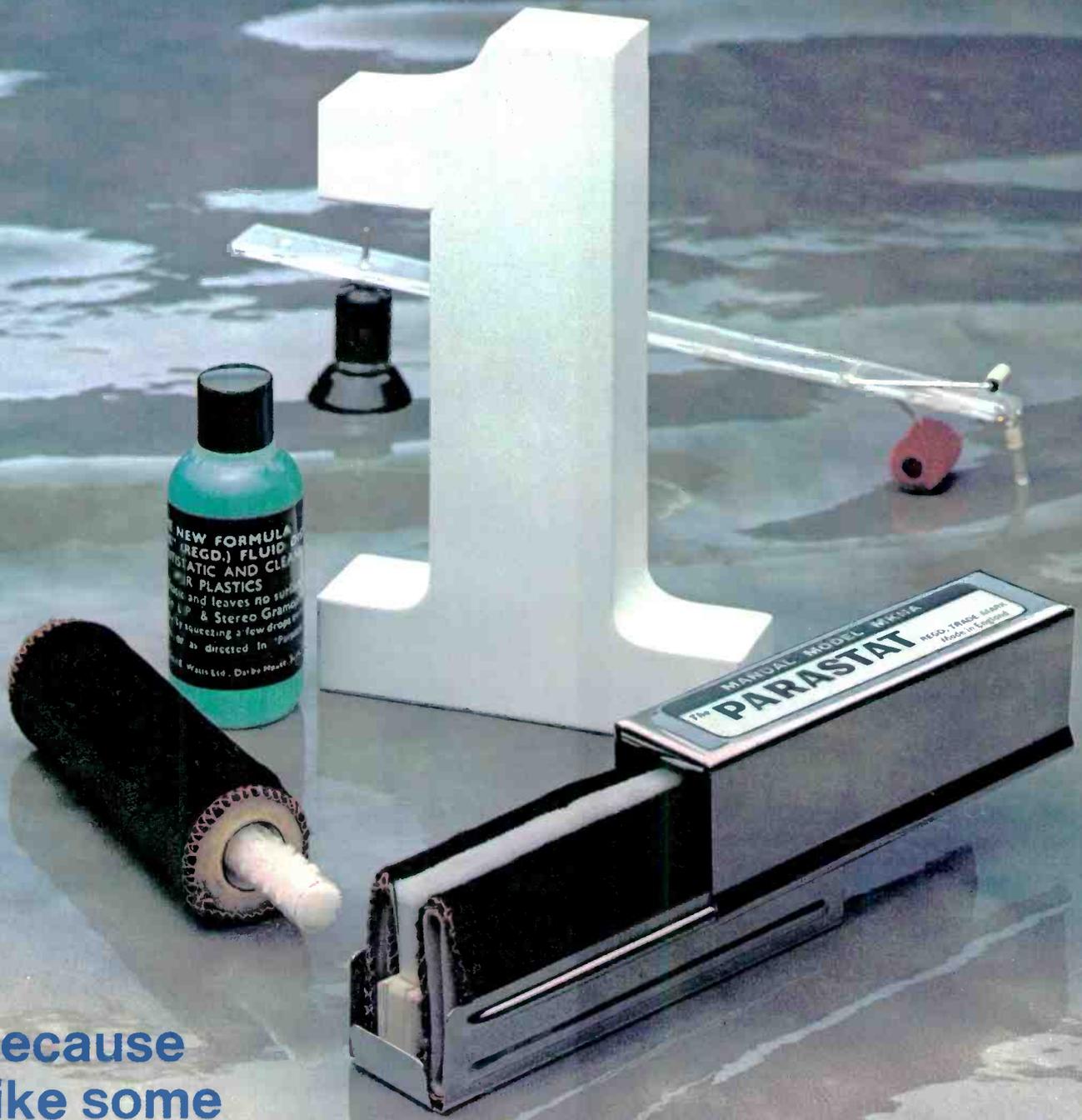
A. What do you say when a customer tells you that he can get a piece of gear cheaper elsewhere?

S. I tell him to buy there, if he wants to, and if he isn't aware of who the cheapest discounter is, I'll give him the names and addresses of the closest ones. But it isn't the initial purchase price that counts, but the total cost over a period of years, just as with cars. For example, if two cars have identical purchase prices but one gets 10 more miles per gallon, then the other one is going to cost you several thousand dollars more over the life of the car. It's the same way with hi-fi equipment; service charges can add so much dollar-wise, that what was originally a relatively reasonable purchase, now has become an extremely high cost item. And this is particularly true if no service at all is offered with the original purchase.

What you're saying, then, is that the purchase of a hi-fi system is the same as with any other item, such as a suit, shoes, or refrigerator.

S. That's a common misconception. Next to a house and a car, an audio system can easily be the third largest purchase in an individual's life. Furthermore, a good system is much more complicated and sophisticated than even a refrigerator. There are many good cleaners and tailors for the

Still Number



...because unlike some record "care" products **Watts really works!**

Watts Disc Preener. World's most popular record cleaning tool. Simply add a few drops of Watts "Anti-Static" solution to its moistened core and *without* transferring any liquids to the record's surface, Preener cleans and preserves the grooves of your new records. Watts Preener leaves no residue to clog the stylus, which can degrade the sound quality of your favorite record.



Watts Parastat. 2 Cleaners in One. Parastat's special brush penetrates record grooves to loosen and remove dust and dirt. Ideal for records which have been mistreated with anti-static sprays. Parastat also provides cleaning action for the maintenance of new records. With a *drop or two* (we're not in the fluid business) of Watts "Anti-Static" solution, to the Parastat's lower pad, the proper degree of humidity is applied to relax dust-attracting static.

Watts Dust Bug. Elegantly simple in design and function, the famous Dust Bug keeps a new record clean by removing dirt and dust which may settle on the record while in use. When the red plush pad of the Bug is slightly dampened with Watts "Anti-Static" solution, which is supplied, Dust Bug provides just the proper degree of humidity to prevent the generation of static electricity. While imitated, the ultra-lightweight Watts Dust Bug has never been *equalled* in performance and effectiveness.

Record Care Products are distributed by:
ELPA MARKETING INDUSTRIES, INC. EAST: New Hyde Park, New York 11040 WEST: 7301 E. Evans Rd., Scottsdale, Arizona 85260

Clearly

Nakamichi proudly introduces its first all-electronic components, backed by world-famous Nakamichi engineering and manufacture. The 610 Control Preamplifier and the 620 Power Amplifier offer no-compromise performance and flexibility that's clearly Nakamichi. Grouped with the exciting new 600 Cassette Console, they comprise the Recording Director Series — elegantly styled with identical profiles, each is a study in human engineering.

The 610 Control Preamplifier is three devices in one. As a stereo preamplifier its performance and color-free sound invite comparison with the finest units available. It also functions as an advanced test center, with built-in test tones, pink noise generator and precision meters — just to name a few. As a studio-quality mixer, any 5 of 19 different inputs can be selected in many combinations. The creative audiophile will find no end to the 610's capabilities.

Phono S/N Ratio (IHF-A): Better than 80 dB (0 dB=1 mV); THD: Less than 0.005%
Meters: -40 dB to +10 dB range, peak reading; Frequency Response: 5 Hz-150 kHz ± 0.75 dB

610

suit, many good cobblers for the shoes, and many good refrigeration repairmen, but where are the expert audio technicians? And what has happened to the numerous schools that used to teach all this, as well as the basics of electronics?

A. But can't radio and TV repairmen also do audio repairs?

S. That's another mistaken idea. TV repair today is fairly systematic, and most TV makers follow the same pattern, although I'll grant there are some exceptions. A television set is one component; whereas the average

high fidelity system consists of a number of components, a tuner, a stereo amp, a transcription grade turntable, headphones, speakers, etc., to say nothing of the various other components such as equalizers, cassette decks, and so on. Not only that, but high fidelity manufacturing is so highly competitive, that the circuitry for these systems has become increasingly complex. These components are not something for either the average TV repairman or amateur "tinkerer" to fix. In addition, manufacturers are constantly introducing new circuit

concepts, and consequently the hi-fi service technician must study constantly just to keep apace with the field.

A. What is the biggest advantage of having equipment repaired by the person who sold it to you?

S. He will be interested in getting the equipment working permanently and properly, not just fixing the immediate problem. It's like being out of town and going to a strange doctor when you hurt your ankle. The doctor would probably just concern himself with the injured ankle, and not with your general health.

Also, in being familiar with the equipment we sell, we are able to anticipate many problems before they actually occur, and repair them before they result in major damage to the component. This is the philosophy behind our annual equipment check-up.

A. Is this part of your service policy?

S. We have a five-year service policy on all equipment that we sell, and we will repair all defective electronic parts at just \$1.00 charge. This is provided that the customer brings his equipment in annually for an equipment checkup. This used to be free

"When a customer says he can get a piece of gear cheaper elsewhere, I tell him to buy there if he really wants to."



Nakamichi!

The 620 Power Amplifier boasts harmonic and IM distortions so low they cannot be reliably measured with the best test instruments. It is unconditionally stable under any load, including a direct short circuit. The power supply packs more punch than units several times its size. A unique biasing circuit cuts idling current by 1/20 and keeps the bold heat sink fins cool to the touch. Peak indicator lamps glow green or red for each channel at pre-settable power output levels.

For complete information, write Nakamichi Research (U.S.A.), Inc., 220 Westbury Ave., Carle Place, N.Y. 11514 or see your Nakamichi dealer soon and ask for a demonstration of the 610 and 620 together with the incredible 600 Cassette Console (now also available in matte black finish).

620 Power Output: 100 watts per channel min. RMS, 8 ohms, 5 Hz-20 kHz, with no more than 0.01% THD
IM Distortion: Less than 0.002% at 100W/8 ohms (60 Hz: 7 kHz, 4:1); S/N Ratio: Better than 120 dB (IHF-A)

Check No. 28 on Reader Service Card

but now we have to charge something or the maker's warrantee would not be valid because of a recent FTC ruling.

A. Why bring it in once a year?

S. There is a gradual deterioration in the component parts, even solid state. A coil may become slightly misaligned, a resistor may change value so it's out of tolerance, or a filter capacitor may become leaky. This deterioration is so gradual that the owner isn't sure what's happening; and if he brings it back when it finally stops working completely, then it cost too

much to repair. This is known as preventive maintenance.

This is the same as you going to a doctor once a year for a check-up; even though you think there's nothing wrong, you want to make sure.

A. Do you give estimates on repair?

S. No, we don't give estimates for these five reasons: it takes time, locating the trouble is the greatest part of any repair job, we are definite in our diagnosis, knowledge is costly, and the components must be made to operate to complete the diagnosis.

A. How can a customer know what

the repair bill will come to?

S. He must tell us how much he is willing to spend. One of the big problems in high fidelity repairs is locating the defect. Sometimes the defect can be subtle and take a competent repair technician several hours to run down. When you're paying for repairs, you're paying for technical knowledge and ability.

It must be understood that if we see, during the course of the repair, that it will cost more than the customer is willing to spend, then we stop and contact him. If he wants to authorize the higher bill, fine; if not, we put his equipment back together as it was brought in, and charge him \$5.00 for handling, which doesn't begin to cover our costs.

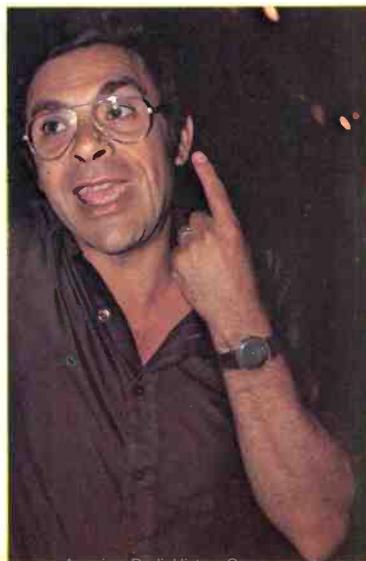
A. Should the customer get an itemized repair bill?

S. Yes. A dealer shouldn't be afraid to itemize a repair that takes hours of a competent technician's time and then replacement of a part that may cost just pennies.

A. Has there been a deterioration in the manufacturer's quality control?

S. There are two factors to be considered here, the human and the electronic. With the human factor, we are

"A dealer shouldn't be afraid to itemize a bill that takes hours of a competent technician's time."



at the mercy of people who may not be mentally alert on a given day. With the electronic factor, we must consider whether it is being subcontracted or not. In short, how much control does the "manufacturer" have over the product on the line? To give a simple example, the manufacturer may be using a contaminated solder bath, producing problems in equipment that may not show up for six months or more. By that time the equipment is in the customer's hands.

A. Do you think manufacturers deliver very much out-of-spec equipment to dealers?



"Lemons occur in every industry, but the 'let the buyer beware' should not apply to the quality dealer."

S. Once in a while, but rarely with the top-quality lines.

A. Do you ever run into equipment that requires no servicing?

S. Yes, often.

A. Do you ever get very old equipment for repair?

S. Yes, we've had equipment as old as 25 years come in. Some people become attached to their hi-fi system and even if the cost of repair is more than the value of their gear, they prefer it to buying new components.

A. What happens when a maker produces an outright lemon?

S. I believe it is the function of the dealer to help cushion such problems, and this is why some manufacturers are so selective about granting dealerships. But if the manufacturer is "quality conscious," he will not be afraid to admit his responsibility.

A. How do you handle lemons?

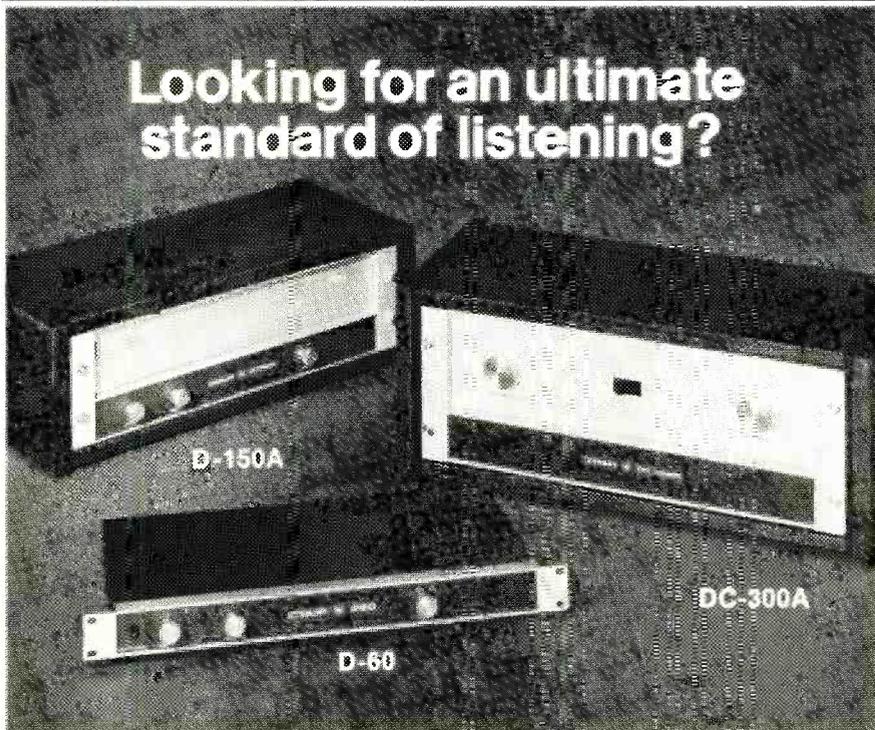
S. By the time the customer comes to us with his complaint, we are generally aware of the problem. And we can, if necessary, offer the customer some stand-by equipment to use until we get his original equipment repaired. And if the manufacturer is a responsible one, as most are, he will back his good name with a new piece of equipment when the case is extreme.

Let's face it, lemons occur in every industry, but the saying "Let the buyer beware" should not apply to the quality dealer. Our policy on this is that for five years from purchase we will replace free any component part where the defect is due to faulty workmanship. If the situation warrants, we will try to get an entire new unit with the cooperation of the manufacturer.

I'm sold on delivering top-grade service. I've seen the industry change in a lot of ways over the past 25 years, but human nature hasn't changed one iota. Every customer who walks into my store expects me to stand unconditionally behind the products I sell, and he has the right to expect that. 

AUDIO • OCTOBER, 1976

32



Many hi-fi enthusiasts bought a Crown DC-300A power amplifier because they were impressed by its performance specs, and by the quality of its "listening" performance. It was, for them, the "ultimate" amplifier.

Why not do what they did? Compare the specs for the Crown DC-300A with those of any other amplifier. Compare the clean,

pure DC-300A sound that comes from low-distortion circuitry and plenty of headroom. And especially compare the DC-300A with its smaller relatives, the Crown D-150A and D-60. Same clean, pure sound, less power, but maybe just what you need.

Use your own judgment. You could find your ultimate listening standard in Crown.

DC-300A Stereo Amp
155 watts per channel min.
RMS into 8 ohms
(1-20,000 Hz), no more
than .05% total
harmonic distortion.

D-150A Stereo Amp
80 watts per channel min.
RMS into 8 ohms
(1-20,000 Hz), no more
than .05% total
harmonic distortion.

D-60 Stereo Amp
32 watts per channel min.
RMS into 8 ohms
(20-20,000 Hz), no more
than .05% total
harmonic distortion.

Fast playback coupon

When listening becomes an art,

Send directly to Crown for fast info on amps.

Name _____

Address _____

City _____

State _____ Zip _____



CROWN

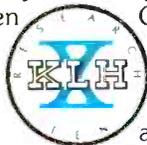
Box 1000, Elkhart IN 46514

Check No. 10 on Reader Service Card



KLH Research Ten Column Bookshelf Loudspeakers: For people who care more about music than money.

You are looking at three pairs of truly unusual loudspeakers. From left to right, they are the CB-10, CB-8, and the CB-6. What makes them so unusual is that each pair is capable of reproducing an amount and quality of sound that has heretofore been impossible to achieve from such modest sized devices. They are efficient and can be driven effectively by any reasonable power source (the CB-6 and CB-8 need as little as 8 watts per channel; the CB-10 will do quite nicely with as little as 10 watts per side). Yet all three pairs have the ability to handle as much as 100 watts RMS per channel! Their performance is perhaps best characterized as uncommonly open and airy,



with notably good bass response. Indeed, the CB-8 and CB-10 use our famous Megaflux Woofer™; the CB-6 has a "special six"—a new woofer that is easily among the best used in today's smaller loudspeakers. The CB-6, the smallest of the series, delivers about a third of an octave less bottom than the CB-8; the CB-8 about a third of an octave less than the CB-10. But all three models share exceptional smoothness and perfect musical balance. They also share something else. They are incredibly *inexpensive*.

Which can be a problem. Unfortunately there's a sizeable number of people who believe that if a speaker

doesn't cost a lot of money, it can't deliver a lot of sound. But if you trust your ears more than your checkbook, we suggest you listen to our CB loudspeakers soon. We think you'll love them *and* their sensible prices a lot.

For more technical information, visit your KLH Research Ten dealer. Or write to KLH Research & Development Corp., 30 Cross St., Cambridge, Mass. 02139. (Distributed in Canada by The Pringle Group, Ontario, Canada.)



KLH Research Ten Division
KLH Research & Development Corp.
30 Cross St., Cambridge, Mass. 02139

New. Diverse. Consistent.

The instruments in this advertisement are new and diverse. They are also selective, deliberately. This is consistent with our attitude — to make components only where we feel we have something to contribute. Then, to give them the finest expression of which we are capable.

Our 330c stereo receiver is the most recent in a series that opened the world of true high fidelity to the music lover with a modest budget. Its predecessor, the 330B, earned extraordinary reviews and recommendations from the leading magazines and the most respected consumer organizations. Nevertheless, when improvement was practical, we replaced it.



The 330c has increased power, tighter phase linearity and wider bandwidth than its immediate predecessor. Yet it is offered at virtually the same price as the original 330, introduced seven years ago.

In its review of the HK1000 stereo cassette deck, *High Fidelity* said, "The HK1000 is the best so far . . . A superb achievement."

We've gone beyond it.

With the HK2000.

Performance specifications of the HK2000 are impressive. For example, wow and flutter: 0.07% (NAB) WRMS. The HK2000 is so sensitive to low frequencies that a subsonic filter has been incorporated which can be used to remove unwanted signals from warped records. But just as in all

Harman Kardon amplifiers and receivers, wide band design in the HK2000 produces sound quality that transcends its impressive specifications.

When we introduced our straight line tracking turntable, the ST-7, it was recognized at once as the definitive way of playing records. Precisely as the master was recorded. Without tracking error. Without skating.

The ST-7 was designed for the music lover who had to have the very best—and could afford it.

The ST-6 now joins the ST-7. Straight line tracking with the demonstrable benefits it offers, is now available to a wider audience—without compromising performance.

The two turntables are virtually identical in appearance and operating capability. They use the same tonearm and straight line tracking mechanism. They are both belt driven and use the same platter and support bearing. Yet the ST-6 is available for little more than the cost of a deluxe record player of conventional design.

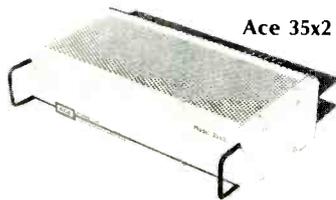
We'd like to tell you more about our new instruments and, equally important, about the point of view they represent. Write to us directly—without impersonal reply cards or coupons. We'll respond in kind with full information.

Harman Kardon, 55 Ames Court, Plainview, New York 11803.



harman/kardon

Amplifiers



Ace 35x2



Bose 1801



Accuphase E-202



Audio Research D-150

Letter Key: (T) with model indicates tube type; (B) with model indicates basic amp; (O) with model indicates 4-channel; (K) with price indicates kit price; (W) with price indicates wired price.

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MANUFACTURER	MODEL	Watts FT/Ch (clean) into 8 ohms	Freq. respon. at rated power, 20Hz-20kHz	Highest THD from 0.25W to rated power, %	Highest IM from 0.25W to rated power, %	S/N phono, re 10 mV input, dB	Phono sensitivity, in mV, Phono 1, phono 2	Phono overload, in mV, Phono 1, phono 2	Mike input sens., mV	High level input, V	Headphone output level, V	Headphone load Z, ? ohms	Speaker output Z, ? ohms	Damping factor, 1 kHz	Dimensions, in inches	Weight, lbs. (net)	Price, \$	
ACE AUDIO	35x2 (B)	35	20-20k	0.1	0.1						4.8	100	14x3 1/2 x 14	13	204.25W			
	35x2 Bi-Amp	35	20-20k	0.1	0.1				1		4.8	100	14x3 1/2 x 14	13	149.50K		259.50	Built-in x-over
ACCUPHASE	P-300(B)	150	20-20	0.10	0.1						4-16	8			17 1/2 x 6 x 14	55	800.00	
	E-202	100	20-20	0.15	0.1		2.5-5/2.5		0.16		4-32	8			18 x 6 x 14	43	750.00	
	P-20(B)	70	20-20	0.10	0.1						4-16	8			19 x 6 x 14	52	750.00	
ANALOG ENGINEERING ASSOC.	555 (B)	55	2-30	0.1	0.1				1.6		8	400	19x11x6	24	589.00			
ARMSTRONG	521	40	20-25 ±1	0.08	0.08	65	3.0	150		0.25	2.0		4-16	50	12x3x11	10.5	325.00	
AUDIONICS	PZ-3	100	20-20	0.03	0.05				1.0		4/8	50	19x5 1/2 x 16	29	429.00			
	PZ-3 HP	100	20-20	0.03	0.05				1.0		4/8	50	19x5 1/2 x 16	32	529.00			VU peak reading
AUDIO RESEARCH	D-150 (T) (B)	150		1.0	0.5	80			2.2		4-16	14	19x10 1/2 x 16 1/2	115	2685.00			Power, bias, or a.c. metering.
	D-76A (T) (B)	75		1.0	0.5	80			1.5		4-16	14	19x7x12 1/2	52	1195.00			
	D-51 (T) (B)	50		1.0	0.5	80			1.5		4-16	14	19x7x12 1/2	52	695.00			
AUDIRE	MODEL 1 (B)	100	20-20	0.05	0.05	100			1.0		4-16	150	16x13x6	32	380.00			
BGW SYSTEMS	250B	90	20-20k	0.1	0.1				1.5				2	500	19x11 1/2 x 5 1/2	30	529.00	
	500D	200	20-20k	0.1	0.1				2.0				2	500	19x12x7	49	879.00	
	750A	340	20-15k	0.25	0.25				2.0				2	500+	19x12x7	49	1029.00	
	100	30	20-20k	0.1	0.1				0.75				4	250	19x11x1 1/2	18	319.00	
	1000	500	20-20k	0.2	0.2				2.0				2	1000	19x17x7	70	1499.00	
	2X1500	3000	5-5k	0.2	0.2				2.0				2	2000	19x17x14	140	3198.00	
BOSE	Basic 1801	250	20-20	0.5	0.5	100			1.5				40	18x18 1/2 x 7	84	986.00		
BOZAK	929 (B)	150	20-20	0.2	0.2				1.0		8	100	19x12x7	44	849.00			
	939 (B)	65	20-20	0.2	0.2				0.6		8	100	17 1/2 x 10 1/2 x 5 1/2	25	479.50			
	949	65	20-20	0.2	0.2	68	2.5/2.5	120/120	0.25		8	100	17 1/2 x 11 1/2 x 5 1/2					
BRYSTON	3B	100	5-100	0.05	.025	100			1		8/4	400	19x5 1/2 x 10	35				
	4B	200	5-100	0.05	.025	100			1.3		8/4	400	19x5 1/2 x 13 1/2	50				
CERWIN-VEGA	A-1800	225	10-60	0.08									200	19x7 x 11 1/2	35	600.00		
	A-1800M	225	10-60	0.08									200	19x7 x 11 1/2	35	600.00		
	A-2200I	200	10-60	0.15									200	19x7 x 11 1/2	35	900.00		
	A-3000I	365	10-60	0.08									200	19x7 x 11 1/2	52	1200.00		
C/M LABS	CM912A	150		0.1	0.1						4	50	19x5 1/2 x 17	49	799.00			
	CM914	100		0.1	0.1						4	50	19x5 1/2 x 12	28	399.00			
CROWN	D-60 (B)	32	20-20	0.05	0.01	106			0.775						17x8 1/2 x 1 1/2	10	299.00	
	D-150A (B)	80	1-20	0.05	0.01	110			1.19	15.0	4	4-16	200	17x8 1/2 x 5 1/2	25	489.00		
	DC300A (B)	155	1-20	0.05	0.01	110			1.75			4-16	200	17x9x7	48	849.00		
	M60D (B)	600	1-20	0.05	0.01	120			3.5			4-16	400	19x16 1/2 x 8 1/2	92	1795.00		

Skeptics Agree!

Excerpt from
ELECTRONICS ENGINEERING TIMES
January 27, 1975 "Keep Your Records Clean"

"Up to now, I've had to wash records as dirty as these in a sink, with the attendant risks of mishandling. The Discwasher got rid of all the dirt and fingerprints in one easy operation, far more effective than any other record-cleaning tool I have come across. For simply dusting records, it is also very effective and does not leave that line of dust across the disc when you pick it up from the surface. At \$15.00 it's not cheap, but if you care for your records, it's worth it."

Excerpt from
AUDIO
May, 1976

"For the daily care of records, to wit, the ounce of prevention that can assure your records of reasonable longevity and noise-free plays, the Discwasher with D-II solution and the Zerostat should do the best job of keeping your records clean with a minimum of noise problem."

Excerpt from
STEREO
Winter, 1975

"We were frankly at a loss as to how to test the 'performance' of the Discwasher System... Each time we examined the residue that adhered to the surface of the Discwasher brush, and each time we were amazed at the amount of debris that this combination of brush and fluid was able to remove. It was frightening to realize that our stylus had been grinding away at these minute particles and globules for so long—but that seems to be the irrefutable case."

Excerpt from
DANISH HIGH FIDELITY MAGAZINE
December, 1974—"Testing"

"Discwasher D-II has been tried out on many different records in many different conditions..."

"All the other record cleaning devices used did not give results. Discwasher D-II not only cleaned the records but brought them back to their original state of high quality."

"On the grounds of the fantastic results, which can come about by using the Discwasher D-II, many will ask the question, 'IS IT WORTH 128 KRONER?'... But it does exactly what it says it does and this is where all of the others fail."

"It pays for itself, and is highly recommended."

Excerpt from
STEREO SOUND
Summer, 1975 (Japan) Page 303

K. Yamanaka, "This is the record cleaner. It is really effective. We can now listen to our old records with new discoveries."



 **DISCWASHER**
COLUMBIA, MO 65201

Amplifiers



Crown CD-300A



Dunlap Clarke
Dreadnaught 1000



GAS Son of Ampzilla

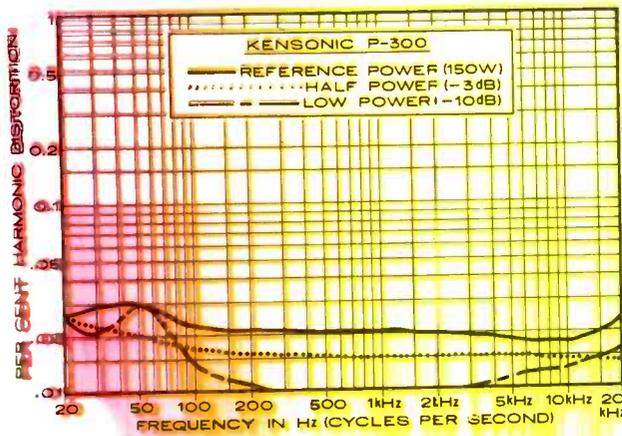


Dynaco Mark VI

Letter Key:
(T) with model indicates tube type;
(B) with model indicates basic amp;
(Q) with model indicates 4 channel;
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(W) with price indicates wired price.

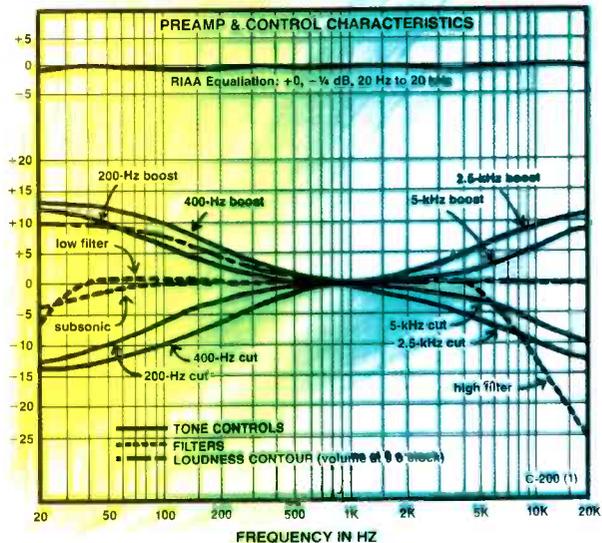
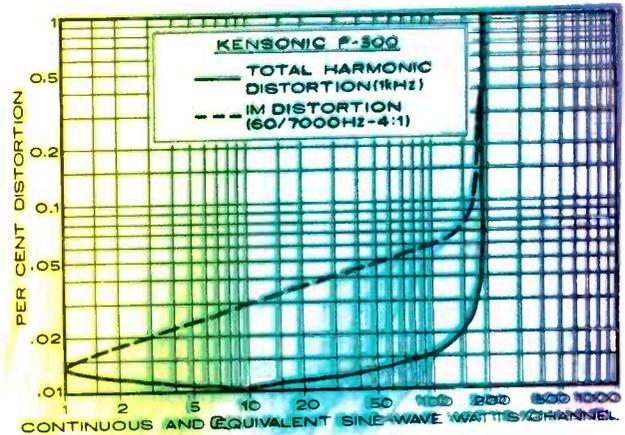
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MANUFACTURER	MODEL	Power	Freq. resp. into 8 ohms	Highest THD from 1Hz-7kHz	Highest IM from 0.25W to rated power, %	S/N Phono r.e. 10 mV input, dB	Phono sensitivity, in mV, Phono 1, phono 2	Phono overload, in mV, Phono 1, phono 2	Mike input sens., mV	High level input, V	Headphone output level, V	Headphone load Z, ohms	Speaker output Z, ohms	Damping factor, 1 kHz	Dimensions, in inches	Weight, lbs. (net)	Price, \$
DAYTON WRIGHT	XEC 1000 (B)	500	10-70	.002	.002	-	-	-	-	-	-	2-16	250	19x17x16 1/2	147	3400.00	
DUNLAP CLARKE	Dreadnaught 250 (B)	125	20-20 ±0.5	0.25	0.1	100	-	-	1.0	-	-	2	50	19x7x10	35	675.00	
	Dreadnaught 500 (B)	150	20-20 ±0.5	0.25	0.1	100	-	-	1.2	-	-	2	50	19x7x12	45	875.00	
	Dreadnaught 1000 (B)	250	20-20 ±0.5	0.25	0.1	100	-	-	1.75	-	-	2	50	19x17x15	70	1500.00	
DYNACO	ST400 (B)	200	8-50k -0, +1	0.25	0.1	-	-	-	-	-	-	4-16	80	17x14x7	52	499.00K 725.00W	
	ST410 (B)	200	8-50k +0, +1	0.25	0.1	-	-	-	-	-	-	4-16	80	17x14 1/2 x 6 1/2	45	399.00K 599.00W	
	ST150 (B)	75	10-40k +0, +1	0.25	0.25	-	-	-	-	-	-	4-16	80	14 1/2 x 13 1/2 x 6 1/2	29	269.00K 399.00W	
	ST300 (B)	150	10-40k +0, +1	0.25	0.25	-	-	-	-	-	-	8-16	80	18 1/2 x 14 1/2 x 7 1/2	52	489.00K 699.00W	
	QSA-300 (Q)	75	10-40k +0, +1	0.25	0.25	-	-	-	-	-	-	4-16	80	18 1/2 x 14 1/2 x 7	52	489.00K 799.00W	
	ST120 (B)	60	5-100k ±0.5	0.5	0.5	-	-	-	-	-	-	4-16	40	13x10 1/2 x 4	20	209.00K 289.00W	
	ST80 (B)	30	10-50k ±0.5	0.5	0.5	-	-	-	-	-	-	4-16	40	14x8x4	13	149.00K 199.00K	
	SCA-80Q	30	15-50k ±5dB	0.5	0.5	60	3.0	80	-	0.13	-	8	4-16	40	13 1/2 x 12 x 4	16	224.00K 199.00K
	MK VI (B) (T)	100	10-40k +0, -1dB	1.0	1.0	-	-	-	-	-	-	-	4, 8,	14	19x10 1/2 x 8 1/2	55	425.00K 649.00K
	ST-70 (B) (T)	20	10-40k +0, -1dB	1.0	1.0	-	-	-	-	-	-	-	4, 8,	15	13x9 1/2 x 6 1/2	32	169.00K
	Mark III (B) (T)	50	(Mono) 10-40k ±5dB	1.0	1.0	-	-	-	-	-	-	-	4, 8,	15	9x9x7	28	169.00K 335.00W
EPICURE	I	125	10-100 ±0.5	0.2	0.2	100	-	-	-	-	-	-	-	7 1/2 x 18 1/2 x 12 1/2	58	649.00	Rack Mount avail.
ESS	500A	250	20-20	0.25	0.25	-	-	-	0.75	-	-	8	-	19x13x7 1/4	49	998.00	
	1004A	500	20-20	0.25	0.25	-	-	-	0.75	-	-	4	-	19x15 1/2 x 7 1/4	53	1097.00	
FISHER	CA2100 (B)	12	40-12	0.8	0.8	65	180	-	0.15	-	-	30	-	4 1/2 x 14 x 11 1/4	11 1/2	149.95	
	CA2300	35	20-20	0.15	0.2	65	650	-	0.18	-	-	40	-	5 1/2 x 16 1/2 x 13 1/2	22 1/2	279.95	
	CA2400	60	20-20	0.15	0.1	65	650	-	0.125	-	-	35	-	5 1/2 x 16 1/2 x 14	24 1/2	399.95	
GREAT AMERICAN SOUND	Ampzilla II	200	20-20	0.05	0.05	-	-	-	1.6	40	-	4-16	150	17 1/2 x 9 x 7	52	899.00	meters & overload LED, rack mount avail.
	Son of Ampzilla	80	20-20	0.08	0.08	-	-	-	1.0	-	-	2-16	100	17x9x5	25	399.00	Rack mount avail.
HARMAN-KARDON	Citation 16 (B)	150	20-20	0.05	0.05	-	-	-	-	-	-	4-16	300	9 1/2 x 19 x 14	55	795.00	
	A401	20	20-20	0.5	0.12	-	-	-	-	-	-	8-16	30	13x10 1/2 x 5 1/2	13 1/2	185.00	
	Citation (B)	60	20-20	0.2	0.15	-	-	-	-	-	-	8-16	40	5 1/2 x 12 1/2 x 12 1/2	30	340.00	
HEATH	AA-1640 (B)	200	20-20	0.1	0.1	-	-	-	1.5	-	-	8	-	19x18x7 1/4	58	439.95K	
	AA-1505 (B)	35	20-20	0.1	0.1	-	-	-	1.5	-	-	8	60	8x14 1/2 x 5 1/2	21	129.95K	
	AA-1506	60	20-20	0.1	0.1	-	-	-	1.5	-	-	8	60	8x14 1/2 x 5 1/2	21	179.95K	
	AA-1214	15	20-20	0.5	0.5	-65	2	75	-	0.19	-	8	30	12 1/2 x 12 x 4	9 1/2	114.95K	
	AA-18	3.25	40-20	1.5	4.0	-65	-	-	-	-	-	8	10	7 1/2 x 5 1/2 x 2 1/2	2 1/2	24.95K	



HARMONIC DISTORTION. "An input signal of 0.2 volt drove the amplifier to a reference 10-watt output at maximum gain. We could not measure the output noise, which was less than our minimum meter reading of 100 microvolts (roughly -100dB referenced to 10 watts)."

TOTAL HARMONIC/IM DISTORTION. "With regard to the sound quality of the two components, since they add neither noise nor distortion, there is little to be said."*



PREAMP & CONTROL CHARACTERISTICS. "The tone controls and filters are more effective than most."*

"If you are looking for the proverbial 'straight wire with gain,' this combination meets all the requirements."

Hirsch-Houck Laboratories wrote that headline over a year ago. Since then, quite a number of independent laboratories have attested to the uncompromising quality of Accuphase.

We've assembled them for you in a free 36-page booklet. It's the second most informative way you can learn about these superb stereo components.

The best way is to audition them yourself. Then you'll understand why the critical acclaim has been as impressive as the product itself.

Accuphase

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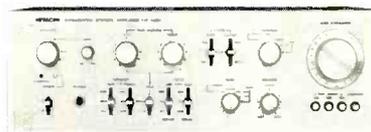
Amplifiers



Kenwood 700-M

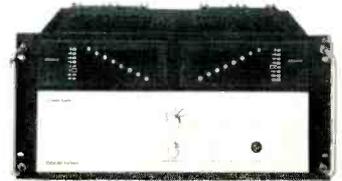


ESS 500A



Hitachi HA-1100

Harman/Kardon Citation 16



Letter Key:
 (T) with model indicates tube type;
 (B) with model indicates basic amp;
 (D) with model indicates 4-channel.
 (K) with price indicates kit price.
 (W) with price indicates wired price.

40

MANUFACTURER	MODEL	2 warts. FTC/Chan. into 8 ohms		Freq. respon. at rated power, 2 Hz.-20 kHz		Highest THD from 0.25W to rated power, %		Highest IM from 0.25W to rated power, %		S/N phono, re 10 mV input, dB		Phono sensitivity, in mV., Phono 1, phono 2		Phono overload, in mV., Phono 1, phono 2		Mike input sens., mV		High level input, V		Headphone output level, V		Headphone load Z, ? ohms		Speaker output Z, ? ohms		Damping factor, 1 kHz		Dimensions, in inches		Weight, lbs. (net)		Price, \$					
		Watts	Chan.	Hz.	20 kHz	0.1	0.1	2/1.6-6	6	280	Phono 1	Phono 2	Phono 1	Phono 2	Phono 1	Phono 2	Phono 1	Phono 2	Phono 1	Phono 2	Phono 1	Phono 2	Phono 1	Phono 2	Phono 1	Phono 2	Phono 1	Phono 2	Phono 1	Phono 2	Phono 1	Phono 2					
HITACHI	HA-610	60	20-20	0.1	0.1			2/1.6-6	6	280																											
	HA-1100	100	20-20	0.1	0.1			1.2/1.6-6	430/330-1300																												
INFINITY SYSTEMS	DSP	250	20-20	0.2	0.2																																
JENNINGS	The Amp (B)	210	20-20	.01	.01																																
JVC	JA-S71	80	20-20	0.1	0.1	65	2.5	210																													
	JA-S31	40	20-20	0.2	0.2	65	2.5	180																													
KENWOOD	600	130	D.C.-70	0.08	0.08	76	2.5	220																													
	500	100	D.C.-70	0.08	0.08	76	2.5	220																													
	KA-8300	80	5-40	0.1	0.1	72	2.5	260																													
	KA-7300	85	5-60	0.1	0.1	76	2.5	200																													
	KA-5500	55	5-40	0.1	0.1	76	2.5	200																													
	KA-3500	40	10-40	0.2	0.2	76	2.5	200																													
700M (B)	170	20-20	0.1	0.1	100																																
LAFAYETTE	LA-84 (D)	20	20-20	0.5	1.0	60	6/4	12/84																													
	LA-1050	22	20-20	0.5	1.0	65	2.5/6	42/85																													
	LA-475	10	40-20	0.8	1.0	65	130/3.5	50/2V																													
LEAK	2100	30		0.1	0.1	65	2.2/6																														
	2200	45		0.1	0.1	65	2.5/6.5																														
LECSO	AP-3 (B)	100	10-32	0.05	0.05	90																															
	AP-1 (B)	35	10-32	0.05	0.05	90																															
LUX	M4000 (B)	180	20-20	0.05	0.05																																
	L100	110	20-20	0.08	0.08	75	3.0	450																													
	M2000 (B)	120	20-20	0.05	0.05																																
	L85V	80	20-20	0.08	0.08	74	2.5	300																													
	MB3045 (T) (B)	50	20-20	0.3	0.3																																
	L80V	50	20-20	0.08	0.08	75	2.5	200																													
M6000 (B)	300	20-20	0.05	0.05																																	
MARANTZ	510M (B)	256	20-20	0.1	0.1																																
	250M (B)	126	20-20	0.1	0.1																																
	140 (B)	75	20-20	0.1	0.1																																
	1250	125	20-20	0.1	0.1	80	1.6/1.6	300																													
(Continued)	1150D	75	20-20	0.1	0.1	80	1.8	300																													

Some thoughts on whether to simply upgrade your receiver or step up to separates.

As receivers become more powerful and versatile—approaching the performance of separate components—the original virtues of the one-chassis format diminish. Space-saving and convenience no longer exist when the chassis is too large for any normal shelf. All-in-one construction can now be considered an inherent *dis*advantage. No single element—tuner, preamplifier or amplifier—can be individually upgraded. And if any of these elements needs servicing, the entire receiver must be packed, shipped and done without.

These conditions are likely to worsen as the power race among receivers continues. With existing technology, higher power means physically larger (and heavier) power supplies and more massive heat sinks, leading to even more unmanageable proportions.

Control flexibility functions and facilities are other considerations. If you want filters with selectable cut-off points, turnover frequencies for each tone control, and if special refinements, such as a linear equalizer for phono, are preferred over basic controls, you're probably ready to consider separates. Which brings us to LUX.

Although our published specifications of LUX amplifiers and tuners are typically state of the art, independent test reports have found them very conservative. For example, Hirsch-Houck labs, after testing the L-100 integrated amplifier, reported the following in *Stereo Review*: "The harmonic distortion (THD) at 1,000 Hz and 10 watts output was 0.0087%, and it remained at that figure up to the rated 110 watts." (Note that at 110 watts,

the rated distortion from 20 to 20,000 Hz is 0.08%.)

Audio magazine had a similar experience with the T-310 tuner: "...most of our results were far superior to those claimed...distortion in mono and stereo was the lowest we have ever read for any tuner at any price...LUX's conservatism extends to some of the 'lesser' FM specs as well. We measured a capture ratio of 1.2 dB (1.5 claimed) and alternate channel selectivity turned out to be 76 dB (70 dB claimed.)..."

However, we regard measured specifications as no more than a partial indication of a component's ultimate performance. LUX's audiophile/engineers consider accuracy of music reproduction the most important goal in new product development and modify circuit parameters in pursuit of sonic excellence long after measurable goals have been reached.

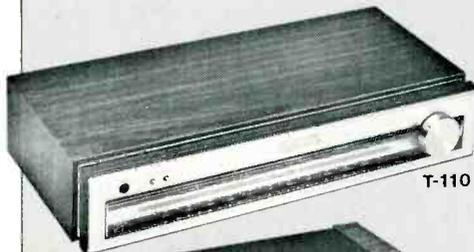
Thus, we consider one of our finest tributes to date to be *Radio-Electronics'* overall evaluation of the L-100: "We heard a clarity and effortless power capability that is hard to describe in words but definitely is audible...LUX seems to have found some of the answers...about what makes one amplifier sound better than another."

Whether you simply trade in your present receiver for a better one, or move up to separates, it's likely to be expensive. We suggest therefore that you carefully examine *all* the relevant factors—size, weight, flexibility, specifications, performance, and expected reliability—in addition to the initial cost. The more care you take, the more likely it will work out to your ultimate advantage. And, we suspect, to ours also.

LUX Audio of America, Ltd.

200 Aerial Way, Syosset, New York 11791 • In Canada: White Electronics Development Corp., Ontario

At the moment, this is as close as you can get to a LUX "receiver."



T-110

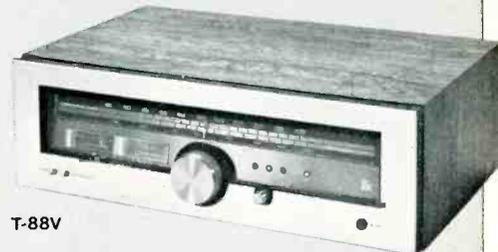
T-110 Stereo FM Tuner LUX's finest FM tuner. MOS-FET front-end, five-section tuning capacitor. Phase-locked-loop IC for FM multiplex. Special features include: antenna attenuator circuit; time-delay circuit protection; 75/25 microsecond de-emphasis for use with external Dolby* unit. \$525.00

L-100 Integrated Stereo Amplifier LUX's most powerful: 110 watts minimum continuous power per channel into 8 ohms, 20-20,000 Hz, with no more than 0.08% total harmonic distortion throughout. Features include: exclusive linear equalizer for custom-tailored phono response; variable phono input sensitivity and impedance; three turnover frequencies each for bass and treble, 20-dB-range volume attenuator for each step of master volume control. \$995.00

T-88V AM/Stereo FM Tuner LUX's least expensive tuner, yet includes FET front-end and linear-phase ceramic filters in IF section. \$345.00

L-80V Integrated Stereo Amplifier 50 watts per channel minimum continuous power into 8 ohms, 20-20,000 Hz, total harmonic distortion no more than 0.08%. Features include: two turnover frequencies each for bass and treble controls; two cutoff frequencies each for high and low filters; two-deck dubbing. \$475.00

*Dolby is a trademark of Dolby Laboratories, Inc.



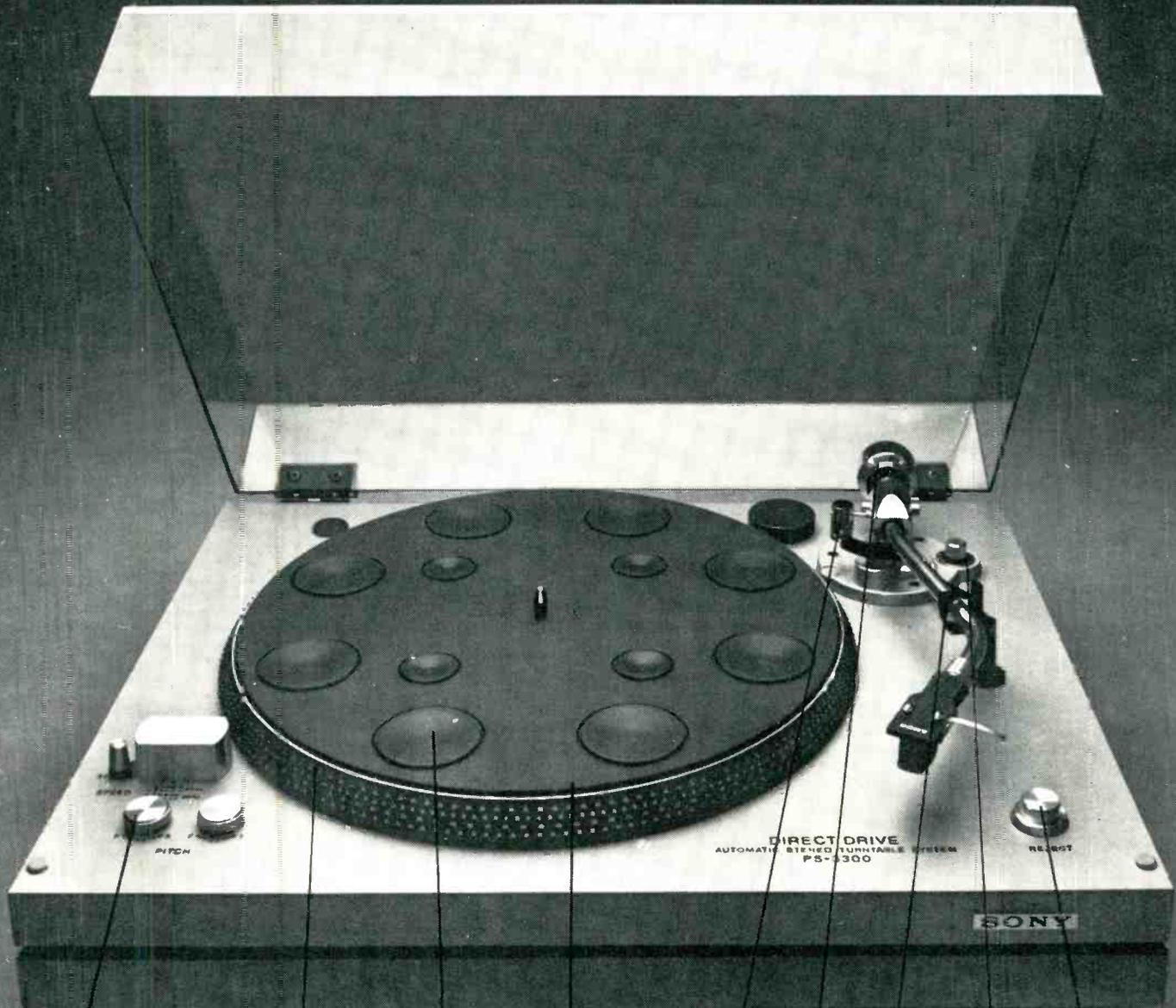
T-88V



L-80V



L-100



Bell shaped rubber suspension

Electrically controlled speed selector and pitch controls.

Built-in stroboscope.

Rubber record mat with air-damped record cushions.

Precision machine finished aluminum platter with speed monitor magnetic coating.

Tracking-force ring.

Lateral Balancer.

Viscous-damped cueing lever.

Reject button.

Calibrated Anti-skating compensation.

Cartridge not included

Pioneer's publicized \$200 direct drive manual turntable has just been shot down by our semi-automatic.

43

Sorry, Pioneer. But all's fair in love and product war.

In that spirit, Sony unveils the PS-3300. A \$200 direct drive turntable that's *semi-automatic*.

So the contest between our PS-3300 and their vaunted PL-510 is really no contest. Because in the crassest terms, we give you more: an automatic arm return and a reject button.

And that's a substantial difference, for no difference in price.

What's more, we didn't shave anything to make it possible.

The PS-3300 has a finely crafted direct drive system with a brushless and slotless DC servo-controlled motor.

The PS-3300 innovates with a speed monitoring system that state troopers would love to get their hands on: an electronic process using an 8-pole magnetic pick-up head and a pulse coated platter rim.

Plus there's independent fine speed adjustments, a tonearm that's so sensitive it's almost neurotic, and so on.

And to see the attention to detail that Sony stands for, note what the PS-3300 stands on. Bell-shaped rubber feet that are specially constructed to prevent both acoustic and mechanical feedback. (When it comes to feedback, we put our feet down.)

They absorb vibrations—whether from footsteps bouncing on the floor or sound waves bouncing off the wall. Otherwise, these vibrations would be transferred to the stylus, amplified, and be transferred back to the stylus—creating a vicious cycle.

If you're wondering how we managed to do this—how our semi-automatic shot down their high-flying manual—our response is a brief one.

While Pioneer relied on its reputation, Sony relied on its engineers.

SONY

Amplifiers



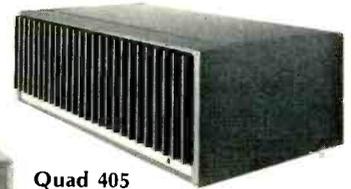
Phase Linear 700B



Lux M-4000



Marantz 510-M



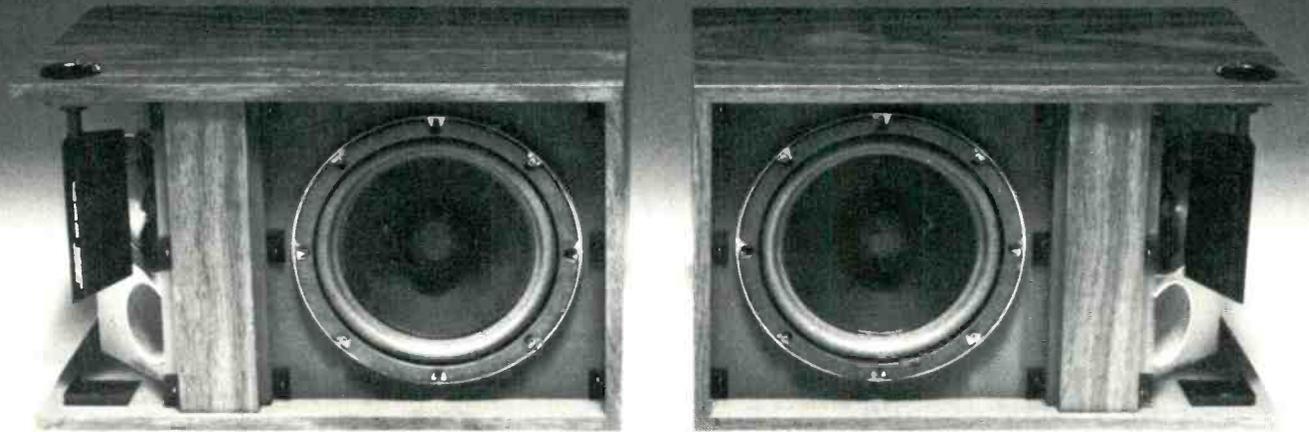
Quad 405

Letter Key: (Q) with model indicates 4-channel, (T) with model indicates tube type, (B) with model indicates basic amp; (K) with price indicates kit price; (W) with price indicates wired price.

44

MANUFACTURER	MODEL	2 watts FTC/chan. into 8 ohms	Freq. respon. at rated power, 7Hz-7kHz	Highest THD from 0.25W to rated power, %	Highest IM from 0.25W to rated power, %	S/N phono, re 10 mV input, dB	Phono sensitivity, in mV, Phono 1, phono 2	Phono overload, in mV, Phono 1, phono 2	Mike input sens., mV	High level input, V	Headphone output level, V	Headphone load Z, 2 ohms	Speaker output Z, 2 ohms	Damping factor, 1 kHz	Dimensions, in inches	Weight, lbs. (net)	Price, \$
MARANTZ (Continued)	1150	75	20-20	0.1	0.1	80	1.8	300	1.8	180	8	8	45	15 1/2 x 5 1/2 x 12 1/2	33	399.95	
	1070	35	20-20	0.3	0.3		1.8		1.8	180	8	8	45	14 1/2 x 4 3/4 x 11	19	299.95	
	1040	20	20-20	0.3	0.3					150	8	8	45	14 1/2 x 4 3/4 x 11	16.5	199.95	
	240 (B)	126	20-20	0.1	0.1					1.5		8	100	15 1/2 x 5 1/2 x 10 1/2	28	399.95	
	4140 (Q)	70x2 25x4	20-20	0.3	0.3		1.9			1.8	8	8	40	15 1/2 x 5 1/2 x 12 1/2		549.95	
	4070 (Q)	35x2 15x4	20-20	0.5	0.5		1.9			1.5	8	8	40	14 1/2 x 4 3/4 x 11		299.95	
MCINTOSH	MC50														24	279.00	Complete specs. avail. from mfg.
	MC250														40	429.00	
	MC2100														63	599.00	
	MC2105														77	799.00	
	MC2120														70	799.00	
	MC2125														77	999.00	
	MC2200														87	949.00	
	MC2205														96	1199.00	
	MC2300														143	1499.00	
	MC2505														53	549.00	
MITSUBISHI	DA-A15 (B)	150	20-20	0.1	0.1							4-16	100	16 1/2 x 11 1/4 x 6 1/2	40	590.00	
	DA-A10 (B)	100	30-30	0.1	0.1							4-16	100	16 1/2 x 11 1/4 x 6 1/2	36 1/2	390.00	
NAIM AUDIO	NAP160 (B)	60	5-40	0.02	0.02									17 x 12 x 5	18	799.00	
	NAP120 (B)	40	5-40	0.02	0.02									17 x 12 x 5	18	399.00	
	NAP250 (B)	70	5-40	0.02	0.02									17 x 12 x 5	25	1399.00	
NAKAMICHI	620 (B)	100	5-20	0.01	0.005				1			4-16	100	15 1/2 x 9 1/2 x 6 1/2	27.6	600.00	Peak Power Indicator
ONKYO	A-7022	54	20-20	0.5	0.05	75	1.2/2.4/4.8	300	0.1		4-16	80	16 1/2 x 14 1/2 x 5 1/2	29	360.00		
	A-7055	23	20-20	0.5	0.05	75	1.2/2.4/4.8	230	0.1		4-16	80	16 1/2 x 14 1/2 x 5 1/2	25	240.00		
OPTONICA	SM-1212	17	20-20	0.8	0.1	70	2.5	420/420	0.15	0.8	4-16	4-16	30	16 1/2 x 5 1/2 x 10 1/2	16 1/2	139.95	
	SM-1414	30	20-20	0.3	0.1	75	2.5/5	700/700	0.15	0.8	4-16	4-16	40	16 1/2 x 5 1/2 x 10 1/2	17 1/2	219.95	
	SM-4545	55	20-20	0.1	0.1	70	2.5/5	1260/1260	0.15	0.8	4-16	4-16	60	17 1/2 x 5 1/2 x 15	35 1/2	399.95	
PEACETIME	SJ-80 (B)	35	15-50	0.40	0.15	65	100	100/120	0.5	2.6	8	4-16	60	16 1/2 x 3 1/2 x 10 1/2	11	269.95	
PHASE LINEAR	700B	345	20-20	0.25	0.25								1000	19 x 11 x 7	45	799.00	
	400	201	20-20	0.25	0.25								1000	19 x 10 x 7	35	499.00	
	200	105	20-20	0.25	0.25								100	19 x 8 1/2 x 5 1/2	16	389.00	
PIONEER	Spec 2 (B)	250	20-20	0.1	0.1						4/8	50*	19 x 17 x 17 1/2	54	900.00	*20-20 kHz.	
	SA-9900	110	20-20	0.1	0.1	70	2.5/10	500/1V	6-24	1.0	4/8	30	16 1/2 x 6 1/2 x 16	44	750.00		
	SA-9500	80	20-20	0.1	0.1	70	2.5/10	250/500	6-24	0.5	4/8	30	16 1/2 x 6 1/2 x 16	38	500.00		
	SA-8500	60	20-20	0.1	0.1	70	2.5/5	200/400	7.5/15	0.4	4/8	30	16 1/2 x 6 x 16	28 1/2	400.00		
	SA-7500	40	20-20	0.3	0.3	70	2.5/2.5	200/200	7.5/7.5	0.2	4/8	25	16 1/2 x 6 x 13 1/2	26 1/2	300.00		
	SA-6500	25	20-20	0.1	0.1	70	2.5/	200	8	0.2	4/8	30	15 x 5 1/2 x 12	16 1/2	175.00		
PLANAR	Presage SA2100	65	20-20	0.5	0.5	74	2.0/2.0	79/79	0.1	1.0	16	8	50	19 1/2 x 6 1/2 x 15		399.00	

Odd Couple.



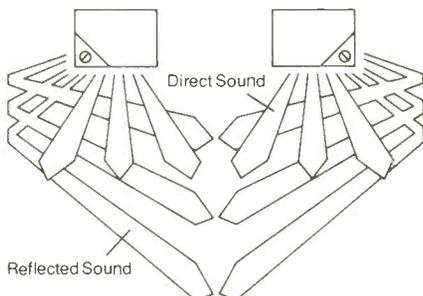
45

This is a pair of Bose Model 301 Direct/Reflecting® bookshelf speakers with their grilles removed.

What's odd about them might not be immediately obvious, but it's very significant. Unlike most pairs of speakers, they're not identical. Instead, the left-hand speaker is a mirror image of the right-hand speaker.

Bose goes to the extra trouble and expense of making the two speakers of the pair you buy different to provide the proper proportion of reflected and direct sound at high frequencies, a feature unique among bookshelf speakers.

To accomplish this, each speaker is of an "asymmetrical"



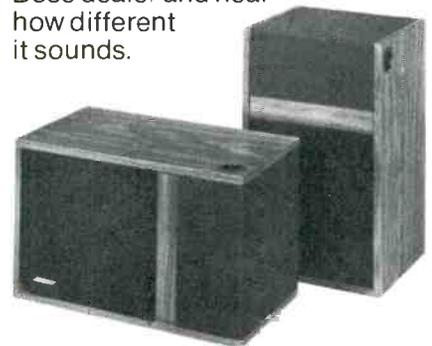
design. As a result, a pair of Model 301s has woofers pointing straight ahead and tweeters angled outward. A large proportion of the high frequency energy is reflected off the side walls and then into the center of the listening room, rather than being aimed directly at the listener. As in a live performance, the listener is surrounded with a balance of reflected and direct sound. This is the same principle used in the Bose 501 and in the legendary Bose 901® Direct/Reflecting speaker system. The result is extraordinarily open, natural, and spacious sound.

In addition, the Model 301 Dual Frequency Crossover™ network causes the woofer and tweeter to operate simultaneously for more than an octave, providing exceptionally smooth midrange response and an open spatial quality.

With the unique Direct Energy Control, the Model 301 provides excellent performance in a wide variety of rooms, including small apartments and dormitory rooms. And it is truly small enough to fit in a bookshelf.

These features make the Model 301 an unusual speaker with unusually fine performance. Its suggested retail price—less than \$100 per speaker—makes it an extraordinary value.

You already know the Model 301 looks different from other bookshelf speakers. Now visit a Bose dealer and hear how different it sounds.



BOSE®

**The Mountain
Framingham, Mass. 01701**

Patents issued and pending.

For a full-color brochure on the Model 301, write: Bose, Dept. AU10The Mountain, Framingham, Mass. 01701.

Amplifiers



Spectro Acoustics 202



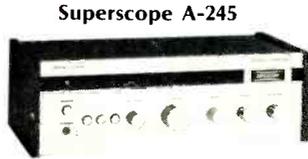
Sansui BA-5000

Letter Key: (D) with model indicates 4-channel, (T) with model indicates tube type; (K) with price indicates kit price; (B) with model indicates basic amp; (W) with price indicates wired price.

MANUFACTURER	MODEL	? watts-FTC/chan. into 8 ohms	Freq. respon. at rated power, 7Hz-7kHz	Highest THD from 0.25W to rated power, %	Highest IM from 0.25W to rated power, %	S/N phono, re 10 mV input, dB	Phono sensitivity, in mV., Phono 1, phono 2	Phono overload, in mV., Phono 1, phono 2	Mike input sens., mV	High level input, V	Headphone output level, V	Headphone load Z, ? ohms	Speaker output Z, ? ohms	Damping factor, 1 kHz	Dimensions, in inches	Weight, lbs. (net)	Price, \$	
PULSE DYNAMICS	251A	100	20-15	0.5					0.8		4/12			30	250.00			
	250A	100	20-15	0.5					0.8		4/12			25	220.00			
	187	16	30-60	0.5					0.15		4/16			3 1/2	65.00			
	186	16	30-60	3					0.35		4/16			3 1/2	75.00			
	187B	16	40-60	0.5					0.20		4/16			3 1/2	78.00			
	182	4	30-60	0.5					0.15		4/16			1 1/4	58.00			
QUAD	303	45	20-20	0.03	0.03						4/16	25		4 1/4 x 12 3/4 x 6 1/4	13 1/2 x 7 1/2 x 4 1/2	18	285.00	
	405	100	20-18	0.01	0.01						4/16	200		13 1/2 x 7 1/2 x 4 1/2	20	410.00		
RABID AUDIOPHILE	BAZOOM 2000	1900 H.P.*	D.C. - light	0.0	0.00	2	10W	11W	-	-	-	?	Wet	1 Kubit ³	1832.1	2000.00	*at idle. Water cooled.	
RADFORD	RD-250	50	20-32	0.02	0.02	83	2	280	-	0.2	2	4-8	100	17x5x11	21	575.00		
	ZD100 (B)	100	10-100	0.005	0.005	100			1			4-8	100	20x5x11	35	750.00		
RADIO SHACK	Realistic SA-10													7 1/2 x 5 1/2 x 3 1/2		29.95		
	Realistic SA-101													9 1/4 x 7 x 3 1/4		59.95		
	Realistic SA-1000A	25	20-20	0.5	0.2	60	2.5	150				8		15 1/2 x 11 1/2 x 4 1/2		159.95		
	Realistic SA-2000	55	20-20	0.3	0.3	60	3/3	160/160				8		16 x 12 x 4 1/2		259.95		
REVOX	A78	40	20-20		0.3	65	3/230		3.0					16 1/2 x 9 1/2 x 6 1/4				
ROTEL	RA-1412	110	3-100	0.1	0.03	75	2.4, 8/2.4, 8/2.4, 8/2.4, 8/2.4, 8/2.4	300/300	3.0	0.15		4-16	8	80	21 1/2 x 17 1/4 x 7 1/4	49 1/2	780.00	
	RA-1312	80	5-100	0.3	0.08	75	2.4, 8/2.4, 8/2.4, 8/2.4, 8/2.4	250/250	3.0	0.15		4-16	8	70	19 1/2 x 16 1/2 x 7 1/4	38 1/2	570.00	
	RA-812	45	4-100	0.3	0.08	70	2.4, 8/2.4, 8/2.4, 8/2.4	180/180	3.0	0.15		4-16	8	50	17 1/2 x 13 1/2 x 7 1/4	22	370.00	
	RA-712	40	5-95	0.5	0.07	70	2/2	130	-	0.15		4-16	8	40	17 1/2 x 12 1/2 x 7 1/4	19	240.00	
SAE	2600	400	20-20k ±0.25	0.05	0.05				2.12		4/8	100		19x7x14 1/2	60	1750.00		
	2500	300	20-20k ±0.25	0.05	0.05				1.84		4/8	100		19x7x14 1/2	58	1250.00		
	2400	200	20-20k ±0.25	0.05	0.05				1.50		4/8	100		19x7x11 1/2	42	750.00		
	2200	100	20-20k ±0.25	0.05	0.05				1.00		4/8	100		19x5 1/2 x 8 1/2	23	450.00		
	2000	50	20-20k ±0.25	0.10	0.05				1.00		4/8	100		19x3 1/2 x 8	18	250.00		
	3400	200	20-20k ±0.25	0.10	0.05	74	2.5/2.5	100/100		0.25		4/8	100		19x7x13	50	950.00	
SANSUI	BA5000 (B)	300	20-20	0.1	0.1				0.7			2-8	10	19x18 1/2 x 8 1/4	108.0	1300.00	*S/N at 3mV input	
	BA3000 (B)	170	20-20	0.05	0.05				0.7			4-8	100	18 1/2 x 16 1/2 x 7 1/4	49.8	900.00		
	AU20000	170	20-20	0.05	0.05	70*	1.5/3/6	800	0.13			4-8	80	18 1/2 x 16 1/2 x 7 1/4	52.0	1000.00		
	AU11000	110	20-20	0.08	0.08	65	2/4/8	300	0.13			4-8	80	18 1/2 x 15 x 6 1/4	41.9	750.00		
	AU-9900	80	20-20	0.08	0.08	65	2/4/8	300	0.13			4-8	80	18 1/2 x 15 x 6 1/4	39.5	600.00		
	AU-7900	75	20-20	0.1	0.1	75	2.5	250	0.13			4-8	80	17x13 1/2 x 5 1/2	31.3	400.00		
	AU-5900	45	20-20	0.1	0.1	75	2.5	250	0.13			4-8	80	17x12 1/2 x 5 1/2	25.4	260.00		
	AU-4900	35	40-20	0.15	0.2	75	2.5	230	0.13			8	50	16x9 1/2 x 5	14.8	200.00		
	AU-3900	22	40-20	0.15	0.2	75	2.5	200	0.13			8	50	16x9 1/2 x 5	13.2	160.00		



Sony TA-3650



Superscope A-245



Technics SU-9600P



Yamaha B-2

Letter Key: (T) with model indicates tube type; (Q) with model indicates 4-channel; (B) with model indicates basic amp; (K) with price indicates kit price; (W) with price indicates wired price.

MANUFACTURER	MODEL	Watts-FTC (chain into 8 ohms)	Freq. response at rated power, 2 Hz - 20 kHz		Highest THD 1 from 0.25W to rated power, %	Highest IM from 0.25W to rated power, %	S/N phono, re 10 mV input, dB	Phono sensitivity, in mV, Phono 1, phono 2	Phono overload, in mV, Phono 1, phono 2	Mike input sens., mV	High level input, V	Headphone output level, V	Headphone load Z, 2 ohms	Speaker output Z, 2 ohms	Damping factor, 1 kHz	Dimensions, in inches	Weight, lbs. (net)	Price, \$	
			±0.5	±0.5	85	85		0.15-1.0*	0.15-1.0*	4/16	28	5 1/2 x 11 x 8	17%	240.00K	*2-chan. adj.				
SCHOBBER	TR-3D (B)	70	5-40k ±0.5	0.1	0.07	85			0.15-1.0*			4/16	28	5 1/2 x 11 x 8	17%	240.00K		*2-chan. adj.	
	TR-3M (B)	70	5-40k ±0.5	0.1	0.07	85			0.15-1.0*			4/16	28	5 1/2 x 11 x 8	16%	176.00K		*1-chan. adj.	
SCOTT	A406	15	20-20	0.5	0.3	70	2.5	100	6.0	0.15		8-600	8	35	13 1/2 x 11 1/2 x 5	15	149.95		
	A416	20	40-20	0.5	0.3	70	2.5	100	6.0	0.15		8-600	8	35	13 1/2 x 11 1/2 x 5	16	199.95		
	A426	30	20-20	0.5	0.2	75	2.5	100	6.0	0.15		8-600	8	35	15 1/2 x 13 x 5 1/2	20	249.95		
	A436	42	20-20	0.3	0.15	75	2.5	100	6.0	0.15		8-600	8	35	15 1/2 x 13 x 5 1/2	23	299.95		
	A236	15	20-20	0.5	0.5	60	2.5	55		0.15		8-600	8	35	15 1/2 x 10 x 5 1/2	12	159.95		
SHERWOOD	HP-2000	120	20-20	0.08	0.08	83	2.2	160	2.3	0.11		4	8	60			700.00		
	HP-1000	60	20-20	0.08	0.08	78	2.2	160		0.11		4	8	60			500.00		
SONY CORP.	TA-8650	80	20-20	0.1	0.1	82	2.5/0.1	175/7	0.2	0.15	0.3	8	8	100	17 1/2 x 16 1/2 x 5 1/2	44%	1300.00	V-FET	
	TA-5650	50	20-20	0.1	0.1	82	2.5/2.5	300/300	-	0.15	0.3	8	8	50	18 1/2 x 12 1/2 x 6 1/2	30	500.00	V-FET	
	TA-4650	30	20-20	0.1	0.1	82	2.5/2.5	300/300	-	0.15	0.3	8	8	45	17 x 12 1/2 x 6 1/2	25%	400.00	V-FET	
	TA-3650	55	20-20	0.1	0.1	82	2.5/2.5	210/210	-	0.15	0.3	8	8	35	18 1/2 x 13 x 6 1/2	27	300.00		
	TA-2650	45	20-20	0.2	0.2	82	2.5	200	-	0.15	0.3	8	8	25	15 1/2 x 10 1/2 x 5 1/2	19	220.00		
	TA-8550 (B)	100	20-20	0.1	0.1	-	-	-	-	-	-	-	8	200	17 1/2 x 16 1/2 x 6 1/2	42	1000.00	V-FET	
	TA-5550 (B)	50	20-20	0.1	0.1	-	-	-	-	-	-	-	8	100	18 1/2 x 12 1/2 x 6 1/2	27%	450.00	V-FET	
	TA-3200F (B)	100	20-20	0.1	0.1	-	-	-	-	-	-	-	8	170	15 1/2 x 12 1/2 x 6	30%	400.00		
SPECTRO ACOUSTICS	202 (B)	100	20-20	0.25	0.25	-	-	-	-	1.0	-	-	8	150	15 x 10 x 6	25	375.00		
	202C (B)	100	20-20	0.25	0.25	-	-	-	-	1.0	-	-	8	150	19 x 10 x 7	25	375.00		
STAX	DA-300(B)	150	OC-500k	0.03	0.04	97				1.7			2	700	17 x 9 1/2 x 13 1/2	90	3600.00	Class A	
	DA-80(B)	45	OC-500k	0.03	0.04	100				1.7			2	600	17 1/2 x 16 1/2 x 6 1/2	43	1700.00		
SUGOEN	A48	40	20-20	0.1	0.1	82	2.5/2.5	110/110	-	0.1	10.0	8-2000	4-16	40	16 x 11 x 5	23%	525.00		
	P51 (B)	50	20-20	0.1	0.1	-	-	-	-	0.5	-	-	4-16	40	11 1/2 x 9 1/2 x 5	20	350.00		
SUPERSCOPE	A-235	3	30-15 ±3	1.0			3	100		0.15		8	8		15 x 5 x 7	6%	89.95		
	A-245	8	20-30 ±3	1.0			2.5	100		0.15		8	8		15 x 5 x 7	8	119.95		
TECHNICS BY PANASONIC	SU-7600	41	20-20	0.2	0.2	72	2	120		0.15		4-16	4-16	40	7 1/2 x 13 x 5 1/2	19	199.95		
	SU-8600	73	20-20	0.08	0.08	73	2/2	200/200		0.15		4-16	4-16	50	19 1/2 x 13 1/2 x 7 1/2	32	349.95		
	SE-9600P (B)	110	20-20	0.08	0.08					1.0		8-16	4-16	100	19 x 16 1/2 x 7 1/2	54	799.95		
THRESHOLD CORP.	800A														19 x 8 1/2 x 16	85	2165.00	Write manufacturer for complete specs.	
YAMAHA INTERNATIONAL CORPORATION	B-1 (B)	150	20-20	0.1	0.1							4-16	100	18 x 6 x 15 1/2	87	1600.00			
	B-2 (B)	100	10-100	0.08	0.03							4-16	70	17 1/2 x 6 x 14 1/2	57.2	850.00			
	CA-100	70	20-20	0.1	0.1	80	3/3	310/310	2.5		25.3	270	4-16	70	17 1/2 x 5 1/2 x 12 1/2	34.2	600.00		
	CA-800	45	20-20	0.1	0.1	80	3/3	310/310	2.5		21	270	4-16	70	17 1/2 x 5 1/2 x 12 1/2	29.7	470.00		
	CA-600	30	20-20	0.1	0.1	80	3/3	310/310	2.5		17.9	270	4-16	70	17 1/2 x 5 1/2 x 12 1/2	24.2	330.00		
CA-400	20	20-20	0.1		75	3/3	135/135	3.0		14.7	270	4-16	50	17 1/2 x 5 1/2 x 12	17.6	270.00			

Pre-Amplifiers



AGI 510



Duntech CC-10



Dynaco PAT-5



DB Systems DB-1

48

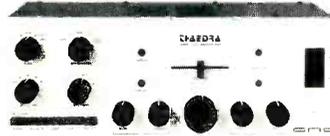
MANUFACTURER	MODEL	Frequency response 20Hz - 20kHz: ±3 dB		Rated output, V	THD at rated output, %	IM at rated output, %	S/N ratio, phono, dB re 10 mV input	Phono sens., mV, phono 1/phono 2	Phono over/oad, mV, phono 1/phono 2	Mike input sens., mV	High level sens., V	Tape input impedance, ohms	Tape mon. output level, V	Dimensions, in.	Weight, lbs	Price, \$	NOTES
		20-20 ±0.2	10														
ACCUPHASE	C-200	20-20 ±0.2	10	0.05	0.05	-	2.6/2.6	-	2.0	0.4	200	0.2	17½x6 x14	31	650.00		
ACE AUDIO	BSP	20-20 ±0.1	10	0.05	0.05	70	2.2	250	-	0.1	1000	0.1	11x8x3	3	142.00(W) 89.75(K)	W/o tone controls. Low-gain; w/o tone controls	
	ZDP	0-67 +0-3	2	0	0	76	10	110	-	1.0	1000	0.1	11x8x3	3	112.75(W) 89.75(K)		
ANALOG ENGINEERING ASSOCIATES	520	10-40 ±0.5	2	.005	.005	80	1.8/1.8	120/120	-	15	600	2	15x4.75x11	11	589.00	Moving coil cartridge pre-amp	
	510	10-60 ±0.5	20	.001	.001	120	.02	20	-	-	-	-	5.5x7.5x2.75	2	115.00		
AUDIO ARTS	Bravura	3-130 ±1	9	.001	.002	69	2.5	163	-	0.5	-	-	13½x3x8½	10	495.00		
AUDIO GENERAL	511	20-20 ±0.1	5	0.005	0.005	80	2.3	70	-	0.23	560	0.23	14x5¼x10	13	400.00	No tone controls	
AUDIO RESEARCH	SP-3A-1 (T)	10-30 ±1	5	0.005	0.008	70	-	-	-	-	100k	600	15¼x12½x5½	14	795.00	Switched a.b. delay	
AUDIARE	DIFFET 1	5-100 ±1	3	0.005	0.001	90	1.2	175	-	0.1	600	15	15x4x7	8	425.00	Optional Head Amp \$75.00	
BGW	202	20-20k ±.2	8	0.01	0.01	82	1.0	7100	-	0.1	1000	10	19x5¼x10¼	18	599.00	Head amp for moving coil carts.	
	201	20-20 ±2	8	0.01	0.01	82	1.0	7100	-	0.1	1000	10	19x5¼x10¼	18	499.00		
	50	20-20k ±2	100	0.05	0.05	-	0.1	4	-	-	-	-	5½x2½x9	7	149.00		
BEVERIDGE	"A"	20-20k ±0.25	4	0.01	0.01	85	3/3	150/150	-	0.5	600	0.5	16x4x12	15	800.00		
BOSE	04401	20-20k ±0.2	2	0.2	0.2	86	2.0/2.0	70/70	-	0.2	600	-	18x6x13	12	599.00	Opt. SQ, CD-4 plug-ins.	
BOZAK	909	20-20 ±0.25	10	0.1	0.1	80	2/2	120/120	-	0.2	100k	0.2	17½x5¼x6½	12	450.00		
	919	20-20 ±0.25	10	0.1	0.1	74	2/2	120/120	0.3	0.075	100k	0.2	17½x7x10¼	21	797.00		
C/M LABS	CM300	24-80 ±0.5	2	0.05	0.02	80	1.6	130	-	0.2	600	0.2	19x5¼x17	15	449.00		
CROWN	IC-150A	10-20 ±.1	12	0.05	0.01	85	0.8-8	33-330	-	0.25	600	-	17x8½x5¼	10	399.00		
DB SYSTEMS	DB-1	10-20 ±0.25	3	.0008	0.001	89	2.0	160	-	0.12	1000	0.12	8½x3¼x7	2.6	350.00	power supply \$75.00 *max. gain 30 dB, head amp.	
	DB-4	10-100 ±0.1	1	.0005	0.001	102	*	73	-	-	-	-	6½x4¼x2¼	1.1	150.00		



Audio Research SP-3A-1



Bozak 919



GAS Thaedra



BGW 202

MANUFACTURER	MODEL	Frequency response Hz - 20kHz, ±3 dB		Rated output, V	THD at rated output, %	IM at rated output, %	S/N ratio, phono, dB re 10 mV input	Phono sens., mV, phono 1/phono 2	Phono overload, mV, phono 1/phono 2	Mike input sens., mV	High-level sens., V	Tape mon. impedance, ohms	Tape mon. output level, V	Dimensions, in.	Weight, lbs.	Price, \$	NOTES
		7-250	10-250														
DAYTON WRIGHT	SPS Mk 3	7-250 ±1	10-250 ±1	1.5	.001	.0015	75	1.5	115	—	0.6	10k	1.5	6x6½x11	8	465.00	No tone controls
	SPL Mk 2b	10-250 ±1	—	1.5	.001	.0015	80	30µV/ 1.5mV	2.6/ 130	—	0.6	10k	1.5	13x6½x11	21	1148.00	No tone controls; Pre- preamp.; earphone power amp.
	DW 535	9-500 ±1.5	—	1.5	.005	.005	70db*	30µV	70	—	—	—	—	10x2x7	5	393.00	*Below 200mV pre-preamp.
DUNLAP CLARKE	10	5-200 ±3	—	4	0.05	0.05	90	1	180	—	—	—	—	19x3½x12	12	675.00	
DUNTECH	CC-10	3-800 ±1	—	10	0.1	0.1	90	1/1	500/500	—	0.1	600	10	17x3½x10	24	649.00	All FET, M/C phono pre-amp; 300 V/mS slew rate.
DYNACO	PAT-5	10-50 ±1	10-100 ±5	2.0	0.05	0.05	70	2.7	115	—	0.2	15k	—	13½x4½x12	13	239.00(K) 399.00(W)	
	PAT-4	10-100 ±5	—	2.0	0.05	0.05	70	4.0	80	—	0.2	600	—	13½x4½x9	10	139.00(K) 229.00(W)	
	PAS-3X (T)	10-40 ±5	—	2.0	0.05	0.05	70	2.0	250	—	0.2	47k	—	13½x4½x9	11	159.00(K)	
EPICURE	4	20-20 ±0.25	—	—	0.005	0.005	85	1.5	150	—	0.1	—	—	5x15½x8	19	450.00	
FISHER	CA4500	30-15 ±0.1	—	—	0.02	0.1	70	—	500	—	0.2	—	—	7½x18½x15½	31½	—	
GLI	3880	20-20 ±0.5	—	2	0.05	0.05	85	2.0/2.0	160/160	2.0	0.15	600	0.2	19x8½x4	8	425.00	
	1000	20-20 ±0.5	—	2	0.01	0.01	90	—	—	—	0.2	600	0.2	19x3½x4	3½	225.00	Module for above.
GREAT AMERICAN SOUND	Thaedra	20-20 ±0.1	—	2	0.01	0.01	*86	0.07/2	3.5/100	—	0.2	600	10	17x6x12½	33	899.00	*Phono 1, moving coil, 75 nV ref. noise
	Thoebe	20-20 ±0.1	—	2	0.01	0.01	86/ 86	2/2	100/100	—	0.2	600	10	17x5½x8	28	499.00	servo-loop amplifiers
	Goliath	20-20 ±0.1	—	2	0.01	0.01	*	0.07	200	—	—	—	—	2½x5½x8	5	149.00	*Moving coil head amp only. 75 nV ref. noise.
HARMAN/KARODN	Citation 11	5-125 ±0.5	—	—	0.05	0.05	—	1.5	115	—	—	—	—	16x4½x12	20	395.00	
HEATH	AP-1615	30-15 ±0.5	—	1.5	0.1	0.05	65*	2	100	—	180	—	180mV	17½x4½x8½	9	129.95(K)	*Re: 2mV.
	AN-2016 (Q)	10-30 ±0.5	—	1.5	0.05	0.05	75	2/6	60	—	170	—	180mV	19x6½x14½	28	599.95(K)	Incorporates AM/FM digital tuner.
INFINITY SYSTEMS	FET	20-100 ±1	—	—	0.1	0.1	82	2.5/1	70	—	0.25	50k	1.0	18½x4½x15	26	1000.00	
JVC	JP-S7	15-100 ±0-5	—	1	0.2	—	75	2/2/2	350/350/ 350	—	200	50k	200	22½x10½x6½	19	700.00	10 freq. equal.
KENWOOD	700C	20-20k	—	1.5	0.04	0.04	76	2.5	400	2.5	0.15	100k	150	17½x5½x12	21	649.95	
LECDN	AC-1	10-40 ±3	—	1.2	0.05	0.05	70	1.5	500	—	0.12	600	0.1	14x10x2	7	575.00	
MARK LEVINSON AUDIO SYSTEMS	LNP-2	10-100 ±0.2	12-100 ±1	6	.005	—	82	4.7	200/200	—	0.2	600	8.0	19x4x8	9	—	
	JC-2	12-100 ±1	—	3	.02	.02	88	6.3(A) 0.3(D)	150	—	0.27	600	6.5	19x2x6	6	—	

WE STOLE THE IDEA FROM NASA.



You can dock our pre-amplifier (model DA-P10) to our 100 w/ch power amplifier (model DA-A10) or to our 150 w/ch power amplifier (model DA-A15). Does NASA give you a choice?

As soon as Apollo docked with Soyuz in outer space, our engineers got itchy.

Why not design a pre-amp that docks with an amplifier? Or a power meter that docks with an amp?



Power Level Meter (Model DA-M10)

AM/FM Stereo Tuner (Model DA-F10)

No sooner dreamed than designed.

Now Mitsubishi introduces a whole new series of compo-



Integrated Logic Control Turntable (Model DP-EC1)

nents that dock—pre-amp, power amplifier and power level meter.

Plus an electronically-controlled turntable with integrated logic design, universal head shell, and an arm that knows exactly the size of the record you're playing.

As for purity of sound, Mitsubishi handled that with dual-monaural construction. Our one amp is actually two separate amplifiers built on one chassis. Our docking pre-amp is built the same way.

That's how we give you a great signal-to-noise ratio. And separation that really separates.

And everything's designed with a sturdy military look.

There's only one problem with stealing this neat idea from NASA.

Soon everybody else will be trying to steal it from us.

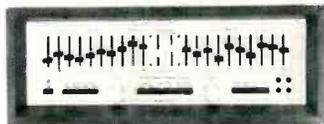
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Pre-Amplifiers

Sansui CA-3000



Soundcraftsmen PE2217

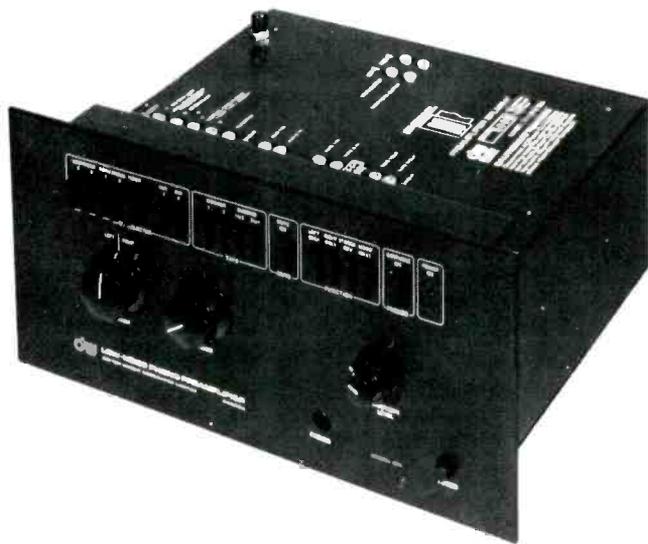


JVC JP-57

MANUFACTURER	MODEL	Frequency response 20Hz - 20kHz, ±1 dB	Rated output, V	THD at rated output, %	IM at rated output, %	S/N ratio, phono, dB re 10 mV input	Phono sens., mV, phono 1/phono 2	Phono overload, mV, phono 1/phono 2	Mike input sens., mV	High level sens., V	Tape mon. impedance, ohms	Tape mon. output level, V	Dimensions, in.	Weight, lbs.	Price, \$	NOTES
LUX	C-1000	2-80, +0-1	1.0	0.007	0.007	77	2.5/2.5	450	-	0.15		0.15	19½x9¾x7	22	895.00	
	CL35 IV (T)	15-40, +0-1	2.0	0.06	0.06	76	1.4	450	-	0.14		0.14	19x11x7½	26.4	495.00	
	CL350	10-50, +0-1	1.0	0.02	0.02	75	2.0	300	-	0.11		0.11	18½x9¾x7¼	19	495.00	
MARANTZ	3800	20-20 ±.25	3.0	.02	.012	82	1/1	100/100	1	1	11k	3.0	15½x5¾x9¾	16	599.95	with Dolby system
	3600	20-20 ±.25	3.0	.02	.012	82	1	100	1	1	11k	3.0	15½x5¾x9¾	15	499.95	
	3200	20-20 ±.5	3.0	.05	.05	80	1.8	200	1.8	1.8	600	3.0	14½x4¾x9	12	249.95	
MCINTOSH	C26													33	449.00	Preamp/Amp Combination
	C28													37	649.00	
	MA6100													46	699.00	
MITSUBISHI	DA-P10	10-70 ±0.5	1	0.02		86	2.2/2.2	270/270			680	0.15	16½x6¾x8	13	290.00	
NAIM AUDIO	NAC12N	20-20 ±.5	1	0.02	0.02	-65	2	200					5½x5x12		399.00	opt. moving coil phono boards
NAKAMICHI	610	10-50 ±0.3	5	0.005	0.005	100	1/1	250/250	0.2	0.075	75k	316	15½x9¾x6¾	15.5	550.00	Test Tone Oscillator 50dB Peak-read meter 610B (Black): \$570.00
PHASE LINEAR	4000	20-20 ±0.5	8	0.25	0.25	72		85/85					19x7x10	18		
	2000	20-20 ±0.5	2	0.1	0.1	74		85					19x5½x6	15		
PIONEER	Spec 1	10-70 +0-0.5	2/7	0.3/0.5		70	2.5/10	500/1V	2.5	1.0	2200	0.15	19x7¼x14½	24½	500.00	
QUAO	33	30-20 ±0.5	0.5	0.02	0.02	80	1/3	40/120		0.1	800	0.1	10¼x3¾x6¾	6½	265.00	
RADFORD	ZD 22	20-32 ±1	2	0.005	0.005	83	2	280	-	0.1	27k	0.4	17x5x10	12	475.00	
RUSSOUND/FMP	IMP-1	20-20 ±0.2	1.3	0.2	0.2	70			1.0				2x6x2	1	59.95	Two channel mixer included
	GIMP	20-20 ±0.2	0.8	0.2	0.2	70			1.0				2x6x2	1	69.95	
SAE	2100	5-100k ±1.0	2.5	0.01	0.01	82	2.5-5.0/2.5-5.0	220/220		0.25	600	0.25	19x7x7	28	900.00	
	2100LD	5-100k ±1.0	2.5	0.01	0.01	82	2.5-5.0/2.5-5.0	220/220		0.25	600	0.25	19x7x7	28	650.00	
	2900	5-100k ±1.0	2.5	0.02	0.02	78	2.5-5.0/2.5-5.0	220/220		0.25	600	0.25	19x5¼x3¾	22	400.00	
	3000	5-100k ±1.0	2.5	0.03	0.03	74	2.5/2.5	100/100		0.25	600	0.25	19x3¾x3¾	15	200.00	
SANSUI	CA-3000	10-100	1.3	0.03	0.03	70	1.5/3/6	1000		0.13		0.13	18½x7¾x14½	29.3	700.00	
SONY	TA-8450	10-100 +0-1	1	0.03	0.05	86	1.5/0.16	140/13	0.16	0.15	1000	0.15	17½x13¾x6¾	26	1300.00	w/peak mtk.
	TA-5450	10-100 +0-1	1	0.03	0.05	86	1.5/1.5	140/140	-	0.15	1000	0.15	18½x12¾x6¾	29½	450.00	

MANUFACTURER	MODEL	Frequency response Hz - 2kHz ±1 dB	Rated output, V	THD at rated output, %	IM at rated output, %	S/N ratio, phono, dB re 10 mV input	Phono sens. mV, phono 1/phono 2	Phono overload, mV, phono 1/phono 2	Mike input sens., mV	High level sens., V	Tape mon. impedance, ohms	Tape mon. output level, V	Dimensions, in.	Weight, lbs.	Price, \$	NOTES
SOUNCRAFTSMEN	PE2217	5-100 ±25	7	0.01	0.01	84	1.0/1.0	105/105	-	0.1	600	0.1-2	20x7¼x11	28	529.50	Two 10-band equalizers; two LED balancing circuits; 4 phono preamps.
SPECTRO ACOUSTICS	217	5-100 ±1	2	0.05	0.01	75	5/15	100/300	-	0.2	600	10	17x3½x6	10	250.00	
	101B	5-100 ±1	2	0.05	0.01	75	10	100	-	0.2	600	10	15x6x6	10	335.00	
	217R	5-100 ±1	2	0.05	0.01	75	5/15	100/300	-	0.2	600	10	19x3½x6	10	250.00	
STANTON	210B	30-20 ±1	8	0.1	0.15	66		150				8½x3x7	5½	240.00		
STAX	SRA-12S	30-15 ±0.5	7	0.02	0.08	68	1	100		0.1		7	7x4½x12	9½	500.00	
SUGDEN	C51	30-20 ±½	1.0	0.1	0.1	82	2.5/2.5	60/60	-	0.15	600	0.75	11x3½x6	6¼	250.00	
	Q51 (Q)	30-30 ±½	1.0	0.2	0.1	-	-	-	-	-	-	-	11x3½x6	6¼	300.00	
TECHNICS BY PANASONIC	SU-9600P	2-100 +0-3	1-11	0.02	0.02	73/69-76	2/1-3	900/450-1350		0.1	600	0.1	19x7¼x17	54	629.95	
YAMAHA	C-1	10-50 ±0.2	.775	0.02	0.02		2/8	800	2.0	0.2	1000	.15	18½x6¼x15¼	28.3	1800.00	
	C-2	5-100 +0-1.5	.715	0.003		85	2/2						17¼x3x12½	17.3	650.00	

The SPL Mk 2



Continued.... the Basic Black Series.... through properly defining the functions required of each discreet block in the system, and careful determination of controls and interfaces; both exceptional performance and high reliability far in advance of other so-called systems can be attained - and maintained.

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Continued....

A Basic Preamplifier - PLUS

THE DAYTON WRIGHT SPL MK2 PROFESSIONAL LOW NOISE PREAMPLIFIER

A Very Low Noise Preamplifier for the person who wants the logical simplicity of a tone control free unit, while obtaining performance that transcends the capabilities of discreet transistor or integrated circuit designs. This hybrid unit has been developed over a period of several years and refined to the point where any part of its low distortion performance cannot be equaled in any unit with truly musical qualities. The design goal has been extreme detail and definition combined with total absence of (traditional) "transistor" sound. The results cannot be approached by tube or traditional transistor designs presently on the market. By careful value analysis and cost control, excellent quality has been built into the design. We have also avoided excesses in mechanical design, which do not contribute to the reliability or the performance of the preamplifier.

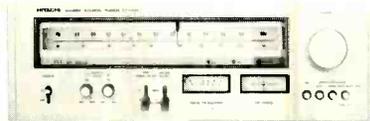
It comes fitted with the same superb pre-preamplifier for moving coil cartridges as used in our DW 535 Pre-preamplifier system, with provisions for the selection of two moving coil cartridges as well as 2 magnetic cartridges.

There are facilities for handling two tape recorders with cross-dubbing.

Unusual in any preamplifier is the inclusion of an excellent modest-power-rating stereo power amplifier for driving ear-phones... or for driving small monitor speakers in locations where the preamplifier is used away from the main speaker system.

At the very low levels of I.M., T.I.M., and Harmonic distortion achieved specifications cease to have any qualitative meaning. We respectfully suggest, therefore, that you arrange to audition this unit in comparison with any other preamplifier you might presently regard as the very best.

Tuners



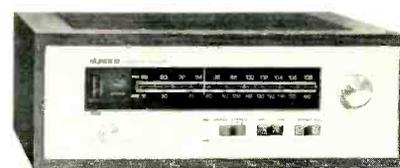
Hitachi FT-920



Kenwood 700-T



Accuphase T-101



Dynaco AF-6

Letter Key:
 (T) with model indicates tube type; (K) with price indicates ket price;
 (Q) with model indicates 4-channel; (W) with price indicates wired price.

MANUFACTURER	Model	Performance										Dimensions			Price, \$	NOTES		
		IHF sensitivity, μ V, mono/stereo	Capture ratio, dB	Att. chan. selectivity, dB	AM suppress., IHF, dB	Signal for 50 dB quieting (μ V), mono/stereo	Stereo sep., 1 kHz, dB	Stereo sep., 10 kHz, dB	THD, mono, 100% mod., 1 kHz	THD, stereo, 100% mod., 1 kHz	Tuning indicator type	SN ratio, max. at 200 μ V, mono/stereo, dB	Max. output level, V	De-emphasis (μ S)			Weight, lbs.	
ACCUPHASE	T-100	2.0/20	1.5	70	60	4.5/45	45	30	—	—	3mtrs	75/70	—	—	17"x6" x14"	31	700.00	
	T-101(F)	2.0/20	2.0	55	55	4.5/45	45	30	—	—	3mtrs	75/70	—	—	18"x6" x14"	24 1/2	450.00	
ARMSTRONG	624(F)	1.0/-	1.75	56	50		40		0.2	0.2	2mtrs	65/-	0.77	75	12"x3" x11"	7.75	225.00	Model 623 similar, S325.
DYNACO	FM-5(F)	1.75	1.5	65	58	5	40	30	0.5	0.9	mtr., lgt.	65	—	75	13"x4" x9"	11	199.00(K)	
	AF-6	1.75	1.5	65	58	5	40	30	0.5	0.9	mtr., lgt.	65	—	75	13"x4" x12"	13	319.00(W)	269.00(K)
FISHER	FM2100	2.0/11.2	1.8	65			40		0.3	0.4		70/65			4"x14" x11"	9 1/2	149.95	
	FM2300	1.9/10.8	1.0	70			46		0.3	0.4		70/65			5"x16" x13"	16	249.95	
	FM2400	1.8/10.3	1.0	70			50		0.1	0.2		73/65			5"x6" x14"	16	299.95	
HARMAN/KARDON	Citation 15		2.0									70	2		16"x5" x13"	30	395.00	
HEATH	AJ-1510(F)	1.8	1.5	95	65	—	40	25	0.3	0.35	1mtr	65/-	1.2	75	16"x6" x14"	15 1/2	499.95(K)	
	AJ-1214	2.0	2	40	50	—	35	—	0.5	0.75		60/-	1	75	13"x3" x11"	7 1/2	114.95(K)	
	AN-2016 (Q)	1.7	1.3	100	68	3.5/35	40	20	0.3	0.35	2mtrs	68/60	—	75/25	19"x5" x14 1/2"	28	599.95(K)	incl. built-in preamp.
HITACHI	FT-520	1.7/14	1.0	80	55	3.5/39	45		0.15	0.25	2mtrs	74/68			17"x5" x15"	16.5	239.95	
	FT-920	1.6/14	1.0	80	55	3.1/34	45		0.15	0.25	2mtrs	74/68			17"x5" x15"	17.2	299.95	
JVC AMERICA, INC.	JT-V71	1.8	1.0	75	50	3.8/38	50	40	0.1	0.1	2mtrs	75/68	1.3	75	16"x14" x6 1/2"	15 1/2	269.95	
	JT-V31	1.9	1.2	60	50	4.0/40	45	35	0.2	0.35	2mtrs	72/50	.75	75	15"x14" x6"	11	169.95	
KENWOOD	600T	1.6/9.3	0.8	110	65	2.8/30	50	45	0.05	0.07	2mtrs	82/76	1.5	75/25	17"x6" x15"	25	649.95	
	KT-8300	1.6/9.3	1.0	110	60	2.8/30	50	45	0.08	0.1	2mtrs	78/75	1.5	75	17"x6" x15"	18 1/2	379.95	
	KT-7300	1.8/10.3	1.0	80	60	3.8/45	45	35	0.1	0.2	2mtrs	73/68	1.2	75	17"x6" x15"	17 1/2	259.95	
	KT-5300	1.9/10.8	1.0	60	50	5/	30	30	0.2	0.3	1mtr	70/	0.7	75	15"x5" x11"	11 1/2	129.95	
LAFAYETTE	LT-010	1.5/-	1.5	70	60	2/20	40	25	0.2	0.3	2mtrs	65/63	1.1	25/75	15"x3" x9"	11 1/2	269.95	
	LT-825	2.2/	2.5	40	50	3/30	35	15	0.25	0.6	mtr	65/60	1	75	12"x4" x9"	10	149.95	
LEAK	2300		1.5	60	50		35	30	0.5	0.5					5"x16" x12"	13	495.00	
LECSOIN	FM1(F)	1.5/	1.2	70	75		40		0.1	0.2	2 LED	70/-	1	75	14"x2" x10"	10	575.00	Opt. Digital Readout
LUX	T110(F)	1.6/	1.3	70	53	2.2/34	48	38	0.08	0.08	2mtrs	78/72	1.5	75/25	19"x9" x4"	17	525.00	
	T-310	1.7/	1.5	75	53	2.2/34	42	30	0.10	0.12	2mtrs	75/70	1.7	75/25	19"x12" x6"	22	595.00	
	T-88V	2.0/	1.8	60	50	2.8/43	43	30	0.20	0.30	2mtrs	72/68	1.8	75	17"x12" x6 1/2"	15.4	345.00	

Dolby FM

What It's All About

Dolby FM is multi-faceted.

It's about FM transmitting.

It's about FM receiving.

But more than that, it is about signal integrity.

About the possibility of total recoverability, by the listener at home, of the frequency response and dynamic range of the source material used at the station.

Right now, listeners who really enjoy wide dynamic range high-fidelity sound are often pretty discouraged by what they hear on FM. For instance, the sounds that are supposed to be quiet are almost indistinguishable from those that are supposed to be loud. Of course, these signal leveling practices arise because of station "ratings" and the belief that a signal which always sounds loud or brilliant keeps ratings high. The Top Forty stations probably always will broadcast in this way—and perhaps they should, if that's the sound their particular listening audience really prefers.

One station would be enough

We think it's time for some improvements for more discriminating radio listeners. Such individuals would be served well if, in each geographic territory, they could have just one quality conscious and embellishment-free station in each of the format categories that people really listen to, such as classical, folk, jazz, and progressive rock. The food business learned long ago that every town needs at least one gourmet restaurant.

We know that in the long run we are talking about only a fraction of all stations. But that would be enough. It would take care of the quality oriented radio listeners we are interested in. And those listeners are the ones who are most likely to buy receivers with built-in Dolby FM decoding.*

How you can help improve FM

You can help improve FM. First listen critically to the best FM stations in your area. If the contrast between loud and soft sounds is markedly less than you hear when playing your own records, and this bothers you, then write to these stations and offer your views. We'd appreciate it if you would point out that extra signal treatment is theoretically unnecessary when Dolby encoding is used (see explanation at right). You might even declare that you are as dismayed by the use of traditional limiting, compression, and equalization on these stations as you would be if the waiter in a fine restaurant poured ketchup and mustard all over your food before serving it to you.

If you know that your station is already Dolby encoding, and you still hear disturbing manipulations of the signal, then we are especially concerned that you should write. We know well that some of the 140 Dolby FM stations carry on using various types of conventional signal treatment in spite of the fact that our encoder unit removes the basic problem of high frequency overmodulation. But it's hard to change the habits of an industry overnight. It would help if you could assure these well meaning—but fearful of "ratings"—stations of your continued support if they would simply broadcast accurately the dynamic range and frequency response of the source material.

If we all care, we can have better FM broadcasting. At least from the stations we listen to. And that would be enough.

That's what Dolby FM is all about.

The reason for Dolby FM

Why Dolby FM encoding and decoding anyway? Why not just a high fidelity, wide dynamic range FM signal by itself? Because this is a technical and practical impossibility. If the FM station broadcasts at a reasonably high signal level, then the high frequencies have to be limited (due to historical reasons relating to the standard 75 microsecond boost employed at the transmitter). The station can reduce its level and use no signal treatment, but this wastes transmitting capability and reduces geographical coverage. Therefore, practically all stations employ high frequency limiting.

The inevitability of signal degradation apparently affects the thinking of many station personnel. Since it is already necessary to limit the signal somewhat, perhaps it seems defensible to experiment further with signal processing. This results not only in an effort to compensate for the sparkle lost in high frequency limiting, but also in an attempt to make the signal seem even more energetic and brilliant than the original. There seems to be a general belief among many broadcasters that listeners really prefer this kind of altered sound.

In comparison with many of these signal modification practices, Dolby FM encoding is rather unexciting. Basically, it amounts to a gentle form of high frequency limiting, but the difference is that it is done in a way which permits the listener at home to "un-limit" or to recover the signal. About half of the Dolby B-Type compression and expansion capability is used, together with a 25 microsecond boost, to solve the station's high frequency overmodulation problem (which gives a distortion-free channel between the transmitter and receiver); the other half is used to improve the signal to noise ratio.

** July 1976. Thirty-three different models are available from Dolby licensees. These products are tuners, receivers, and music centers with designed-in Dolby decode circuits, requiring no extra wiring, adaptors, or calibration procedures. Write for the latest list. Technical information on Dolby FM is also available.*



Dolby Laboratories Inc

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Telex 34409
Cable Dolbylabs

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Telephone 01-720 1111
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Tuners



Sansui TU-9900

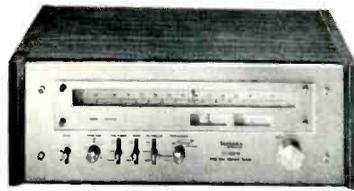


Rotel RT-1024

Letter Key:
 (T) with model indicates tube type; (K) with price indicates ket price;
 (Q) with model indicates 4-channel; (W) with price indicates wired price.

MANUFACTURER	Model	IHF sensitivity, μ V, mono/stereo	Capture ratio, dB	Att. chan. selectivity, dB	AM suppress., IHF, dB	Signal for 50 dB quieting (μ V), mono/stereo	Stereo sep., 1 kHz, dB	Stereo sep., 10 kHz, dB	THD, mono, 100% mod, 1 kHz	THD, stereo, 100% mod, 1 kHz	Tuning indicator (type, how many)	S/N ratio, max., at 200 μ V, mono/stereo, dB	Max. output level, V	De-emphasis (μ S)	Dimensions, in.	Weight, lbs.	Price, \$	NOTES
MARANTZ	150	1.8/-	1.0	85	65	2.3/30	45	30	.15	.3	scope	75/66	1.7	75/25	15"x5"x12	26	599.95	
	125	1.9/-	1.1	80	63	2.5/35	42	29	.2	.3	2mtrs	75/65	1.7	75/25	15"x5"x12	17	339.95	
	112	2.2/-	1.5	65	60	3/44	40	28	.3	.5	1mtr	72/64	1.5	75/25	14"x4"x11	14	219.95	
	104	2.5/-	2.5	48	45	4/50	40	25	.4	.7	1mtr	68/58	.5	75/25	14"x4"x11	12	169.95	
MCINTOSH	MR74															37	699.00	For complete specs, write mfg. Tuner w/Preamp
	MR77															39	699.00	
	MR78															39	899.00	
	MX113															38	799.00	
MCKAY-OYMEK	AM-5*										1mtr						295.00	*AM Tuner
	AM-7*										1mtr						320.00	*AM Tuner
MITSUBISHI	DA-F10	2.5/7.8	0.8/1.5	45/75	60/55	5.5/55	45/35	35/25	0.15/0.5	0.15/0.2	2mtrs	75/70	1.2	75	16"x6"x10%	15%	260.00	Wide/Narrow selectivity.
ONKYO	T-4055	1.7	1.2	80	55		40	35	0.2	0.5	2mtrs	70/	2	75	16"x5"x14	20	220.00	
OPTONICA	ST1212	2.5/7.9	2.0	55	45	7.1/63	36	24	0.6	0.9	1mtr	67/55	0.6	75	14"x5"x10%	11%	129.95	
	ST1414	2.2/5.6	2.0	56	45	6.3/56	40	29	0.6	0.9	2mtrs	67/60	0.8	75	16"x5"x10%	12	189.95	
	ST3535	2.5/5.5	1.5	65	43	6.2/50	34	25	0.4	0.8	2mtrs	65/60	1.0	75	17"x5"x15	22	269.95	
PEACETIME	FM-8(F)	1.8	1.3	80	50	/20	40	30	0.2	0.4	1 mtr.	/66			16"x3"x10%		299.00	
	12ED(F)	1.5	1.2	95	62		40	30	0.2	0.2	1 mtr.	/65		75	17"x5"x13		1000.00	
PHASE LINEAR	5000	2.2/15	1.5	80	75	3/30	45	30	0.25	0.25	2mtrs	70/65	2	75/25				
PIONEER	TX-9500	1.5/	1.0	85	55	2.5/35	40	35	0.15	0.2	2mtrs	80/75	2	25/75	16"x6"x14%	20	400.00	
	TX-7500	1.9/	1.0	80	55	4/50	40	35	0.2	0.3	2mtrs	73/68	1.5	25/75	16"x6"x14%	18	250.00	
	TX-6500	1.9/	1.0	60	50	5.5/87	40	30	0.15	0.3	1mtr	75/68	0.65	25/75	15"x5"x12%	12%	175.00	
QUAD	FM3 (F)	1.0/5	3	46	55	5.0/30	40	25	0.3	0.5		70/70	0.1	75	10"x3"x6%	6	285.00	
RADIO SHACK	Realistic TM-101	10	5	25			30		1.5	2.0		50					59.95	
	Realistic TM-1000	2.0	2	65			35		0.5	0.8	1mtr	65			9"x7"x3%		159.95	
REVOX	A76	1.0/10.0	1.0										1	75				
ROTEL	RT-1024	1.6/3	1.0	80	60	2.1/35	47	35	0.1	0.2	2	80/75	1.5	75	19"x7"x14%	24.2	570.00	
	RT-824	1.6/3	1.0	80	55	3/44	40	30	0.15	0.3	2	75/70	1.5	75	17"x5"x13%	19.8	320.00	
	RT-724	1.9/4	2.0	75	55	4/50	40	30	0.15	0.3	2	75/70	1.5	75	17"x5"x12%	18	200.00	
	RT-324	1.9/4	20	60	50	4/50	40	30	0.15	0.3	1	75/70	0.7	75	16"x4"x9%	8.8	170.00	
SAE	8	1.6/15.0	1.5	120	100	3.0/30	45	35	0.15	0.20	2mtrs	70/67	1.2	75/25	19"x5"x10	24	650.00	
	3200	1.7/18.0	1.5	110	95	3.5/35	42	32	0.20	0.25	LED	70/67	1.2	75	19"x3"x6	18	300.00	

Toshiba ST-910



Technics ST-8600

Sequerra Model 1



Letter Key:
 (T) with model indicates tube type; (K) with price indicates ket price;
 (Q) with model indicates 4-channel; (W) with price indicates wired price.

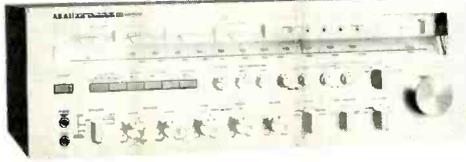
MANUFACTURER	Model	IHF sensitivity, μ V, mono/stereo		Capture ratio, dB		Alt. chan. selectivity, dB		AM suppress., IHF, dB		Signal to 50 dB quieting (Q.V.), mono/stereo		Stereo sep., 1 kHz, dB		Stereo sep., 10 kHz, dB		THD, mono, 100% mod. 1 kHz		THD, stereo, 100% mod. 1 kHz		Tuning indicator (d) type, how many		S/N ratio max. at 200 μ V, mono/stereo, dB		Max. output level, V		De-emphasis (dB)		Dimensions, in.		Weight, lbs.		Price, \$		NOTES		
		mono	stereo	mono	stereo	mono	stereo	mono	stereo	mono	stereo	mono	stereo	mono	stereo	mono	stereo	mono	stereo	mono	stereo	mono	stereo	mono	stereo	mono	stereo	mono	stereo	mono	stereo					
SANSUI	TU-9900	1.5	1.0	90	58	3	50	40	0.06	0.08	2mtrs	80/76			75/50/25	18 $\frac{1}{2}$ x6 $\frac{1}{2}$ x12 $\frac{1}{2}$	21.2	450.00																		
	TU-7900	1.7	1.5	85	55	3/32	40	30	0.25	0.35	2mtrs	75/65			75/50/25	17x5 $\frac{1}{2}$ x9 $\frac{1}{2}$	14.6	300.00																		
	TU-5900	1.8	2.0	60	55	3.5/45	40	30	0.25	0.35	2mtrs	70/60			75/50/25	17x5 $\frac{1}{2}$ x9 $\frac{1}{2}$	14.1	230.00																		
	TU-3900	2.0	2.0	60			40		0.3	0.4	2mtrs	70/			75/50/25	16x5x9 $\frac{1}{2}$	11.0	160.00																		
SCOTT	T516	2.2/18	1.5	52	50	3.5/70	40	34	0.3	0.5	1mtr	68/65	0.4		25/50/75	14 $\frac{1}{2}$ x5x12	16 $\frac{1}{2}$	149.95																		
	T526	1.9/18	1.5	52	40	3.5/70	40	34	0.3	0.5	2mtrs	68/65	0.4		25/50/75	15 $\frac{1}{2}$ x5 $\frac{1}{2}$ x12 $\frac{1}{2}$	17	249.95																		
	T-33	1.8/18	1.2	75	75	3.2/55	35	34	0.3	0.5	2mtrs	68/65	2.0		75/50/75	17 $\frac{1}{2}$ x5 $\frac{1}{2}$ x11 $\frac{1}{2}$	18 $\frac{1}{2}$	999.95																		
	431	1.8/18	2.5	70	100	3.2/55	35	34	0.3	0.5	2mtrs	68/65	2.0		75/50/75	17 $\frac{1}{2}$ x6x15 $\frac{1}{2}$	17	219.90																		
SEQUERRA	Model I	8.75/15.5*	0.75	100	54	14.8/35.8*	52	38	0.3	0.4	scope	74/70	1.2		75/50/25	19x7x14 $\frac{1}{4}$	46	2995.00																*dBf. 1.5/3.3		
	Model II	6.75/15.5*	0.75	100	54	14.8/35.8*	52	38	0.3	0.4		74/70	1.2		75/50/25	17x3 $\frac{1}{2}$ x14		1600.00																*dBf. 1.5/3.3		
SHERWOOD	Micro/CPU 100	1.7	0.5	85		2.2/25	50	40	0.07	0.15	2mtrs	75/70			75/50/25			2000.00																		
	HP-5500	1.7	1.0	85	100	2.4/25	50	30	0.1	0.2	2mtrs	70/65			75/25			400.00																		
	HP-5000	1.7	1.0	85	95	2.4/25	45	30	0.1	0.2	2mtrs	70/65			75/25			300.00																		
SONY	TA-5950SD	1.5/-	1.0	85	56	2.8/35	50	40	0.1	0.2	2mtrs	76/70	2		25/75	17 $\frac{1}{2}$ x6 $\frac{1}{2}$ x13	20 $\frac{1}{2}$	450.00																w/Dolby		
	TA-4950	1.9/-	1.0	80	53	4.0/50	40	35	0.15	0.3	2mtrs	75/70	2		75	17x6 $\frac{1}{2}$ x13	17	350.00																		
	TA-3950SD	1.7/-	1.0	80	56	3.0/40	40	35	0.15	0.25	2mtrs	75/70	1.5		25/75	18 $\frac{1}{2}$ x6 $\frac{1}{2}$ x13	17 $\frac{1}{2}$	300.00																w/Dolby		
	TA-2950SD	2.0/-	1.0	50	54	4.0/50	40	35	0.2	0.3	2mtrs	73/68	0.75		25/75	15 $\frac{1}{2}$ x5 $\frac{1}{2}$ x12 $\frac{1}{2}$	13 $\frac{1}{2}$	220.00																	w/Dolby	
SUPEREX	5000	1.5/20.0	1.5	100	90		45	35	0.1	0.3	2mtrs	72/70			75/25	17 $\frac{1}{2}$ x2 $\frac{1}{2}$ x12 $\frac{1}{2}$	3	1500.00																Dolby		
SUPERSCOPE	T-210	5	6	25	35	10/55	30	15	1.0	1.5	mtr	60			75	15x4 $\frac{1}{2}$ x7 $\frac{1}{2}$	5 $\frac{1}{2}$																			
TECHNICS BY PANASONIC	ST-7600	1.9/10.8*	1.0	75/90	55	13.6/34.3**	35	0.2	0.4	2mtrs	75	0-0.7	75	17 $\frac{1}{2}$ x5 $\frac{1}{2}$ x14	12	179.95																	*10.8 dBf. **13.6/34.3 dBf			
	ST-8600	1.9/10.8*	1.0	85	55	13.6/34.3**	35	0.15	0.25	2mtrs	80/72	0.08-1.55	75	19 $\frac{1}{2}$ x7 $\frac{1}{2}$ x14	22	349.95																	*10.8 dBf. **13.6/34.3 dBf			
TOSHIBA	ST-910(F)	1.8	1.0		65		40	0.2*	0.15*		175				17 $\frac{1}{2}$ x5 $\frac{1}{2}$ x13 $\frac{1}{2}$	17 $\frac{1}{2}$	1800.00																*at 400 Hz			
YAMAHA	CT-7000	2.0/-	1.0	80	60		50	35	.06/-	0.06	2mtrs				17 $\frac{1}{2}$ x5 $\frac{1}{2}$ x12 $\frac{1}{2}$	28 $\frac{1}{2}$	1200.00																CT-7000BL Same except in black.			
	CT-800	1.7/-	1.0	80	55		45	35	.15/-	0.3	2mtrs				17 $\frac{1}{2}$ x5 $\frac{1}{2}$ x12 $\frac{1}{2}$	16 $\frac{1}{2}$	370.00																			
	CT-600	2.0/-	1.5	75	55		40	28	.3/-	0.5	2mtrs				17 $\frac{1}{2}$ x5 $\frac{1}{2}$ x12 $\frac{1}{2}$	16 $\frac{1}{2}$	270.00																			
	CT-400	2.0/-	1.5	75	55		40	28	.3/-	0.5	2mtrs				17 $\frac{1}{2}$ x5 $\frac{1}{2}$ x12 $\frac{1}{2}$	11	210.00																			

Receivers

Advent 300

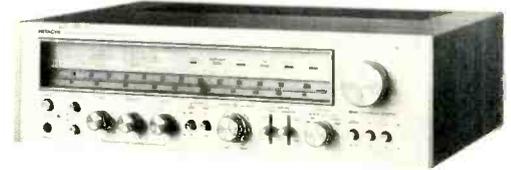
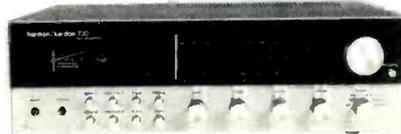


Craig 5503



Akai AS-108DB

Harman/Kardon 730



Hitachi SR-903

Letter Key: (T) with model indicates tube-type; (K) with model indicates kit; (Q) with model indicates 4-channel; (W) with model indicates wired; (F) with model indicates FM only;

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MANUFACTURER	Model	Ave. power/chan. into 8 ohms, mW at per FTC rule		Max THD 0.25 W, rated power, %		Max IM 0.25 W, rated power, %		Freq. range for FTC-rated power, Hz-KHz		S/N, phono re 10 mV input, dB		Phono overload, mV		IHF sens. tuner, mono/stereo microvolts		Capture ratio, dB		Signal for 50 dB quieting, -I-V, mono/stereo		% THD, 100% modulation of 1 kHz, mono/stereo		De-emphasis, μ S		All. chan. selectivity, dB		Tuning aids, no. & type		Dimensions, in.		Weight, lbs.		Price, \$		NOTES
		30	0.2																															
AIWA-MERITON	AX-7500	30	0.2			20-20			200													2 mtrs								360.00				
ADVENT	300	15	0.5	0.3	40-20	85	2	100	2.5/20	1.4	5/50	0.2/0.5	75	65	2 LEO	68/65	15 $\frac{1}{2}$ x3x9	12	259.95												Available for 12V d.c. operation.			
AKAI	AS-1080DB(Q)	80	0.2		20-20	80	*3		1.9	1.0		0.2/0.4	75	70	1 mtr	/70	20.5x7.2x16.1	42	895.00											40 watts/chan. in quadra. *Note: 1.5 (CD 4)				
	AS-1070(Q)	50	0.3		20-20	80	*3		1.9	1.0		0.2/0.4	75	70	1 mtr	/70	20.5x7.2x16.1	39	695.00											25 watts/chan. in quadra. *Note: 1.5 (CD 4)				
	AA-1050	50	0.15		20-20	80	3		1.8	1.0		0.15/0.3	75	100	2 mtrs	/75	18.9x6.1x15.4	29	450.00															
	AA-1030	30	0.3		20-20	80	3		1.9	1.5		0.2/0.4	75	70	2 mtrs	/70	17.3x5.5x13.8	28	350.00															
	AA-1010DB	14	0.8		40-20	80	3		2.0	1.5		0.3/0.6	75	70	1 mtr	/60	17.3x5.5x12.8	18	300.00															
	AA-1010	14	0.8		40-20	80	3		2.0	1.5		0.2/0.4	75	70	1 mtr	/65	17.3x4.9x10.4	15	200.00															
ARMSTRONG	625(F)	40	0.08	0.08	20-25	65	3	150	1/-	1.75		0.2/0.2	75	56	2 mtrs	65/-	20x3x11	15	450.00											Model 626 similar, \$540.				
BANG & OLUFSEN	Beomaster 4000	40	0.4	0.3	40-20	58	3	Adj.	2	3			50	55	1 mtr	70	23x4x11	22	595.00															
	Beomaster 1900	30	0.2	0.15	20-20	60	3	220		3			50	55	1 mtr	65	24 $\frac{1}{2}$ x2 $\frac{1}{2}$ x10	16 $\frac{1}{2}$	495.00															
CONCEPT	5.5	55	0.3	0.1	20-20	75	1.9	120	1.6/3.6	1.0	3.5	0.1/0.15	75	85	2 mtrs	72/70	19x6x13 $\frac{1}{2}$	35	495.00															
	3.5	35	0.3	0.1	20-20	75	1.9	100	1.7/3.8	1.5	3.5	0.2/0.25	75	78	2 mtrs	70/68	18 $\frac{1}{2}$ x6x15	27.3	395.00															
	2.0	20	0.3	0.1	20-20	75	2.1	100	1.8/4	1.7	4.0	0.2/0.3	75	75	meter	68/66	18x6x14	23	295.00															
CRAIG	5503	50	0.1	0.1	20-20	82	2.5	150	1.8/	1.3	3.4/	0.1/0.3	25/75	80	2 mtrs	70/	22 $\frac{1}{2}$ x6 $\frac{1}{2}$ x14 $\frac{1}{2}$	31	449.95															
	5502	25	0.9	0.9	20-20	82	2.5	150	2.0/	2.4	6/	0.5/1.0	25/75	55	2 mtrs	65/	19 $\frac{1}{2}$ x5 $\frac{1}{2}$ x13	19	199.95															
	5501	17	0.9	0.9	50-20	82	2.5	150	2.5/	2.4	6/	0.5/1.0	25/75	55	1 mtr	60/	19 $\frac{1}{2}$ x5 $\frac{1}{2}$ x13	16 $\frac{1}{2}$	239.95															
FISHER	RS1015	15	0.8		20-20			100		1.2		0.3/0.4		65			6x19x13	21 $\frac{1}{2}$	229.95															
	RS1020	20	0.5		20-20			100		1.2		0.3/0.4		65			6x19x13	23	279.95															
	RS1030	30	0.5		20-20			100		1.2		0.3/0.4		65			6x19x13	24 $\frac{1}{2}$	329.95															
GTE/ SYLVANIA	GTE/2300	20	0.5	0.8	20-20	70				1.5	3	0.3/0.3		55			18 $\frac{1}{2}$ x6 $\frac{1}{2}$ x13 $\frac{1}{2}$		269.95															
	GTE/2400	55	0.1	0.1	20-20	80				1.5	3	0.3/0.3		67			18 $\frac{1}{2}$ x6 $\frac{1}{2}$ x15 $\frac{1}{2}$		399.95															
	GTE/2600	80	0.1	0.1	20-20	80				1.5	3	0.3/0.3		67			18 $\frac{1}{2}$ x6 $\frac{1}{2}$ x15 $\frac{1}{2}$		529.95															
HARMAN/ KARDON	730	40	0.1	0.12	4-130	2.5	95	1.9	2				75	80	1 mtr	65	17x14 $\frac{1}{4}$ x5 $\frac{1}{2}$	29	419.95															
	430	25	0.3	0.12	4-130	2.7	85	1.9	1.7				75	60	1 mtr	65	17x14 $\frac{1}{4}$ x5 $\frac{1}{2}$	24	319.95															
	330C	20	0.5	0.3	10-80	2.8	80		1.8				75	60	1 mtr	75	15 $\frac{1}{2}$ x13x4 $\frac{1}{2}$	21	219.95															
HEATH	AR-1214	15	0.5	0.5	20-20	60	2	75	2			0.5/0.75	75	60			17x4x13	13	199.95(K)															
	AR-1500A	60	0.25	0.1	20-20	63	1.8		1.5			0.5/	75	90	2 mtrs	60	18 $\frac{1}{2}$ x5 $\frac{1}{2}$ x14	53	399.95(K)															
	AR-2020(Q)	15	0.5	0.5	20-20	60	2		2			0.5/0.75	75	40			20x5x14	24	269.95(K)															

JVC builds in what other receivers leave out. A graphic equalizer.



The only way you can equal the realistic sound capability of JVC's modestly priced S300 stereo receiver, is by adding an expensive, but highly versatile graphic equalizer, to another receiver.

For the price of a conventional receiver in its price range, the S300 has built-in JVC's exclusive graphic equalizer system. With five zone controls to cover the entire musical range. While most high priced receivers offer bass and treble controls, and some include a third for midrange, none approach the precision and flexibility of the SEA graphic equalizer system developed and patented by JVC.

371,293 ways to hear better sound.

By adjusting the five detent tone controls covering the frequency range at 40Hz, 250Hz, 1,000Hz, 5,000Hz and 15,000Hz, you can create 371,293 different sounds. A feat never before achieved (with a stereo receiver) outside a professional recording studio. But, then, the S300 is a JVC professional.

Get better performance from your components and listening room.

Why do you need such tremendous variations in tone? Quite simply, they help you to overcome the shortcomings of the acoustics in your listening room; they also can help you to compensate for the deficiencies in old or poor recordings.

Finally, they can do wonders for the frequency response of your speakers, and where you place them.

SEA is really quite easy to use. For example, the 40Hz switch reduces record hum or rumble, and it can add greater clarity to the ultra low bass of an organ.

The problem of booming speakers is simply handled with the 250Hz switch. And in the important midranges, the 1,000Hz control adds new dimension to the vocals of your favorite rock performers, while the 5,000Hz switch brings out the best in Jascha Heifetz. You can even reduce tape hiss and diminish the harsh sound of a phono cartridge at high frequencies, with the 15,000Hz control. Then, to double check any adjustment, SEA works with a tone cancellation switch which permits you to instantly compare your setting with a perfectly flat response.

SEA adjusts the sound of your system to the size of your room.

You see, small rooms tend to emphasize high frequencies, while large ones accentuate the lows. But the ingenious SEA allows you to compensate for room size

and furnishings—so your system can perform the way it was meant to, wherever you are.

While most manufacturers reserve unique features for their top of the line model, JVC has included SEA in three of its receivers. The S300, the S400, and, of course, the top professional—the S600.

When you hear these receivers at your JVC dealer (call toll-free 800-221-7502 for his name), think of them as two components in one. In fact, it's like having all the benefits of a graphic equalizer . . . without buying one.

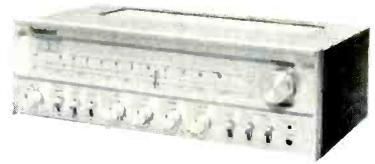
JVC

JVC America, Inc.
58-75 Queens Midtown Expressway,
Maspeth, N.Y. 11378 (212) 476-8300

Receivers



JVC JR-S600



Quadriflex 676

Marantz 2325



Kenwood KR-7600



Letter Key: (T) with model indicates tube-type; (K) with model indicates kit; (Q) with model indicates 4-channel; (W) with model indicates wired; (F) with model indicates FM only;

MANUFACTURER	Model	Ave. power (Chin. into 8 ohms, W), at pair FCC rule		Max THD 0.25 W, rated power, %		Max IM 0.25 W, rated power, %		Freq. range for FCC-rated power, Hz-kHz		S/N, phono, re 10 mV input, dB		Phono sens., mV		Phono overload, mV		IHF sens. tuner, mono/stereo microvolts		Capture ratio, dB		Signal for 50 dB quieting, μ V, mono/stereo		% THD, 100% modulation of 1 kHz, mono/stereo		De-emphasis, μ S		Att. char. selectivity, dB		Tuning aids, no. & type		dB, best S/N, mono/stereo		Dimensions, in.		Weight, lbs.		Price, \$		NOTES
		15	0.8	0.8	20-30	70	2.5	250	1.7	1.0	3.5/38	0.1/0.25	25/75	80	2 mtrs	72/65	22x6x17	41	749.95																			
HITACHI	SR-302R	15	0.8	0.8	20-30	70	2.5	250	1.7	1.0	3.5/38	0.1/0.25	25/75	80	2 mtrs	72/65	22x6x17	41	749.95																			
	SR-502R	20	0.8	0.8	20-30	70	2.5	200	1.7	1.0	3.5/38	0.1/0.25	25/75	80	2 mtrs	72/65	22x6x17	37 1/2	499.95																			
	SR-703	40	0.5	0.5	10-30	70	2.5	200	1.9	1.2	3.5/40	0.2/0.4	75	60	2 mtrs	70/60	19x6x13	23	399.95																			
	SR-803	50	0.4	0.4	10-40	70	2.5	180	1.9	1.2	3.5/40	0.2/0.4	75	60	2 mtrs	70/60	19x6x13	21.2	299.95																			
	SR-903	75	0.2	0.2	10-40	70	2.5	80	2.2	2.5	3.8/45	0.4/0.6	75	50	2 mtrs	65/53	19x6x13	16.5	199.95																			
JVC	JR-S600	110	0.1	0.1	20-20	70	2.5	250	1.7	1.0	3.5/38	0.1/0.25	25/75	80	2 mtrs	72/65	22x6x17	41	749.95																			
JR-S400	70	0.1	0.3	20-20	70	2.5	200	1.7	1.0	3.5/38	0.1/0.25	25/75	80	2 mtrs	72/65	22x6x17	37 1/2	499.95																				
JR-S300	50	0.3	0.3	20-20	70	2.5	200	1.9	1.2	3.5/40	0.2/0.4	75	60	2 mtrs	70/60	19x6x13	23	399.95																				
JR-S200	35	0.5	0.5	20-20	70	2.5	180	1.9	1.2	3.5/40	0.2/0.4	75	60	2 mtrs	70/60	19x6x13	21.2	299.95																				
JR-S100	20	0.5	0.5	40-20	70	2.5	80	2.2	2.5	3.8/45	0.4/0.6	75	50	2 mtrs	65/53	19x6x13	16.5	199.95																				
4VR-S456X(Q)	43	0.5	0.8	20-20	65	1.9/3		1.8	2		0.5/0.6	75	65	2 mtrs		20x7x17	44	649.95																				
KENWOOD	KR-9600	160	0.08	0.08	5-35	75	2.5	500	1.6	1.3	2.5/35	0.1/0.2	25/75	83	2 mtrs	78/72	23x6x16	53	529.95																			
	KR-7600	80	0.3	0.3	7-50	75	2.5	180	1.7	1.5	3/37	0.15/0.25	25/75	80	2 mtrs	75/70	20x6x4	36	449.95																			
	KR-6600	60	0.3	0.3	7-50	75	2.5	180	1.7	1.5	3/37	0.15/0.25	25/75	80	2 mtrs	75/70	20x6x4	36	449.95																			
	KR-5600	40	0.5	0.5	7-35	70	2.5	170	1.8	1.5	3/37	0.15/0.25	25/75	80	2 mtrs	75/70	19x6x13	25	359.95																			
	KR-4600	30	0.5	0.5	7-35	70	2.5	170	1.8	1.5	3/37	0.15/0.25	25/75	80	2 mtrs	75/70	19x6x13	23	299.95																			
	KR-3600	22	0.8	0.8	7-35	70	2.5	150	2.3	2	4/47	0.2/0.4	75	60	1 mtr	73/68	19x6x13	19	249.95																			
	KR-2600	15	0.8	0.8	10-45	70	2.5	140	2.5	2.5	4.5/50	0.3/0.5	75	50	1 mtr	70/64	17x6x12	14	189.95																			
LAFAYETTE	LR-9090	90	0.1		20-20	60/65	2.5/5	180/360	1.8/6	1.25	3.5/40	0.2/0.4	25/75	80	2 mtrs	72/67	21x6x16		599.95																			
	LR-5555	55	0.5		20-20	60/65	2.5/5	150/300	1.8/6	1.25	3.9/40	0.2/0.4	75	80	2 mtrs	72/67	19x6x14		399.95																			
	LR-3030	30	0.5		20-20	60	3.5	180/360	2.0/8	1.5	4.5/50	0.25/0.4	75	70	2 mtrs	70/65	19x6x14		299.95																			
	LR-2020	20	0.6		20-20	60	4	180	2.0/8	1.5	4.5/50	0.25/0.4	75	70	1 mtr	70/65	16x5x11		249.95																			
	LR-1515	15	0.7		20-20	65	4	180	2.2/10	2	5/51	0.5/0.8	75	60	1 mtr	70/63	16x5x11		199.95																			
LEAK	2000	30	0.1	0.1	65	2.2		1.6	1.5		0.5/0.5	50	50		65	5x19x11	21	750.00																				
MARANTZ	2325	125	0.1	0.1	20-20	80	1.8	100	2.3	1.25	3.5/50	.15/3	25/75	80	2 mtrs	70/60	19x6x15	49.5	799.95																			
	2275	75	.2	.2	20-20	78	1.8	100	2.3	1.5	3.5/50	.25/3.5	25/75	80	2 mtrs	70/60	17x6x14	38	649.95																			
	2250B	50	.25	.25	20-20	78	1.8	100	2.3	1.5	4/50	.3/3.5	25/75	65	2 mtrs	70/60	17x6x14	34	549.95																			
	2240B	40	.25	.25	20-20	78	1.8	100	2.3	1.5	4/50	.3/4	25/75	65	2 mtrs	70/60	17x6x14	31	499.95																			
	2235B	35	.25	.25	20-20	77	1.8	100	2.3	1.5	4/50	.3/4	25/75	65	2 mtrs	70/60	17x6x14	26.5	449.95																			
	2225	25	.5	.5	20-20	77	1.8	100	2.5	2.5	4/50	.3/5	25/75	50	2 mtrs	70/60	17x6x14	26	369.95																			
	2220B	20	.5	.5	20-20	77	1.8	100	2.5	2.5	4/50	.3/5	25/75	50	1 mtr	70/60	17x6x14	26	339.95																			
	2215B	15	.8	.8	40-20	76	2.2	100	2.5	3	4/50	.4/7	75	50	1 mtr	68/55	17x6x11	20	249.95																			
	MCKAY-DYMEK	DR-22													1 mtr		17x6x13		750.00																			
DR-22S														1 mtr		17x6x13		750.00																				
AM 8														1 mtr		17x3x10		320.00																				
NIKKO	2025	10	1.0		40-20					3		0.5	35			18x5x14	16	199.95																				
	3035	17	0.8		20-20					1.5		0.5	35			19x6x14	24	249.95																				
	5055	25	0.8		20-20					1.5		0.5	35			19x6x14	25	299.95																				
	6065	33	0.5		20-20					1.5		0.5	35			19x6x14	26	349.95																				
	7075	43	0.5		20-20					1.3		0.4	35			19x6x14	28	399.95																				
	8085	53	0.3		20-20					1.3		0.4	35			19x6x14	30	449.95																				
	9095	68	0.3		20-20					1.6		0.4	30			18x6x15	36	519.95																				
ONKYO	TX-4500	55	0.1	0.3	20-20	65	2.5	200	1.8/5	1.5	4/40	0.2/0.4	25/75	70	2 mtrs	70/65	21x6x17	36.5	450.00																			
	TX-2500	27	0.5	0.5	40-20	65	2.5	150	2/5	2	4/40	0.2/0.4	25/75	60	2 mtrs	65/60	19x6x17	26.4	300.00																			
	TX-220	12	1		50-20	60	2.5		3/1.8	2		0.4/0.8	75	60	1 mtr	65/70	16x6x13	22.5	220.00																			
	TS-500(Q)	20	1	0.4	20-20	65	2.5			2		0.4/0.8	75	60	1 mtr	70/70	21x5x16	38	750.00																			



Power separates the new Powerhouse receivers from the competition.

Lafayette's new Powerhouse receivers have more than just brute power. Check our spec chart. You'll find clean power for clear, distortion-free listening. That's the kind of power the Powerhouse line delivers.

Powerhouse receivers are designed to be the center of your music system. And they've got the performance and features that make them the heart of your music system.

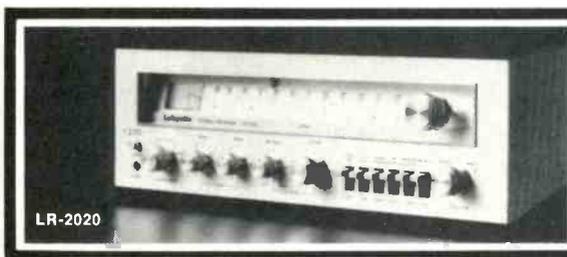
Every Powerhouse receiver, including the LR-1515, the LR-2020 and the LR-3030 shown, has the selective phase-lock-loop circuitry for drift-free FM and positive detent controls for complete control. You'll also find superb features like derived 4-channel sound, dual tuning meters, tape monitor, FM mute and other performance and convenience controls on our other Powerhouse models.

Behind every Powerhouse receiver you'll find Lafayette warranties, and qualified experts to help you. Stop in at one of the Lafayette stores or dealers coast to coast.

The differences between Powerhouse receivers are in this chart. The difference between Powerhouse and other receivers is simple—Performance makes the difference.

Specifications	LR-3030	LR-2020	LR-1515
Power Min. RMS 20-20,000 Hz	30+30	20+20	15+15*
Total Harmonic Distortion(Less Than)	0.5%	0.6%	0.7%
Input Sensitivity Phono/Aux/Mike mV	3.5/150	4.0/150	4.0/150
Tone	Bass/Mid/Treble	Bass/Treble	Bass/Treble
Speakers	A, B, 4/ch	A, B, 4/ch	A, B, 4/ch
FM Sensitivity (Stereo)	23.0 dBf (2.0 μ V)**	23.0 dBf (2.0 μ V)**	25.0 dBf (2.2 μ V)**
Selectivity	70 dB	70 dB	60 dB
Capture Ratio	1.5 dB	1.5 dB	2.0 dB
Price	\$299.95	\$249.95	\$199.95

*@ 40-20,000 Hz
**IHF ('58) Sensitivity (Mono)



Lafayette

There is no competition.

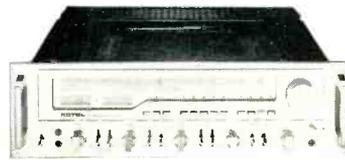
For more information and a free catalog please write: Lafayette Radio Electronics, Box 121, 111 Jericho Tpke., Syosset, N.Y. 11791
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Check No. 22 on Reader Service Card

Receivers



Sony SRT-6800SD



Rotel RX-1603



Scott R-306



Sansui 9090

Letter Key: (T) with model indicates tube-type; (K) with model indicates kit;
(O) with model indicates 4-channel; (W) with model indicates wired;
(F) with model indicates FM only;

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MANUFACTURER	Model	Ave power/chan into 8 ohms, W, as per FTC rule		Max THD 0.25 W-rated power, %		Max IM 0.25 W-rated power, %		Freq. range for FTC-rated power, Hz-kHz		S/N, phono, re 10 mV input, dB		Phono sens., mV		Phono overload, mV		IHF sens. tuner, mono/stereo microvolts		Capture ratio, dB		Signal for 50 dB weighting, μ V, mono/stereo		% THD, 100% modulation of 1 Hz, mono/stereo		De-emphasis, μ S		Att. chan. selectivity, dB		Tuning aids, no. & type		dB, best S/N, mono/stereo		Dimensions, in.		Weight, lbs.		Price, \$		NOTES											
		Power	THD	Power	THD	Hz	kHz	dB	dB	dB	dB	dB	dB	dB	dB	dB	dB	dB	dB	dB	dB	dB	dB	dB	dB	dB	dB	dB	dB	dB	dB	dB	dB	dB	dB	dB	dB												
PIONEER	SX-1250	160	0.1	0.1	20-20	75	2.5	500	1.5/2.9	1	2.1/35	0.1/0.2	25/75	83	2 mtrs	80/74	22x7x18	64	900.00																														
	SX-1050	120	0.1	0.1	20-20	75	2.5	300	1.8/3.4	1	2.9/35	0.1/0.25	25/75	80	2 mtrs	78/73	20x6x18	51	700.00																														
	SX-950	85	0.1	0.1	20-20	75	2.5	200	1.8/7.1	1	4/44	0.15/0.3	25/75	80	2 mtrs	72/67	20x6x16	42	600.00																														
	SX-850	65	0.1	0.1	20-20	70	2.5	200	1.8/7.1	1	4/44	0.15/0.3	25/75	80	2 mtrs	72/67	20x6x16	42	500.00																														
	SX-750	50	0.1	0.1	20-20	70	2.5	200	1.9/4.9	1	4/50	0.15/0.3	25/75	80	2 mtrs	72/67	19x6x14	30	400.00																														
	SX-650	35	0.3	0.3	20-20	70	2.5	200	1.9/4.9	1	3.1/44	0.15/0.3	25/50/75	60	2 mtrs	70/65	19x6x14	29	300.00																														
	SX-550	20	0.3	0.3	20-20	70	2.5	200	2/5.5	1	4.5/50	0.15/0.3	25/75	60	1 mtr	70/65	18x5x12	20	250.00																														
	SX-450	15	0.5	0.5	20-20	70	2.5	150	2/5.5	1	4.5/50	0.15/0.3	25/75	60	1 mtr	70/65	18x5x12	19	200.00																														
	QX-949A(O)	40	0.3	0.3	20-20	70	2.5	100	1.8/	1		0.2/0.4	25/75	80	2 mtrs	70/	21x6x17	49	750.00																														
	PLANAR	SR2100	65	0.5	0.5	20-20	70	2	79	2/2	1	10/10	0.25/0.3	25/75	50	1 mtr	70	19x6x15	39	529.00																													
SR2040		25	0.5	0.5	20-20	72	2.5	70	2/2	1	10/10	0.3/0.4	25/75	50	1 mtr	70	17x6x15	28	269.00																														
QUADRAFLEX	979	48	0.5	0.1	20-20	72	1.5	100	1.6	1.3	2.4	0.14/0.2	75	80	2 mtrs	70/68	20x5x14	30	399.95																														
	878	35	0.5	0.1	20-20	72	1.8	100	1.7	1.5	2.4	0.16/0.33	75	75	2 mtrs	70/68	19x5x14	24	329.95																														
	777	25	0.5	0.2	30-20	70	2	90	1.8	1.6	2.5	0.2/0.38	75	65	2 mtrs	68/66	18x5x12	20	279.95																														
	676	17.5	0.5	0.2	35-20	70	2	90	1.9	2	2.6	0.22/0.4	75	60	mtr	66/64	16x5x12	17	229.95																														
	575	12.5	0.5	0.2	35-20	70	2	75	2.4	2.5	4	0.4/0.6	75	50	mtr	64/62	16x5x12	16	199.95																														
RADIO SHACK	Realistic STA-16	3.5	0.9	0.4	30-20	60	2.2				3.5	0.5/0.8	30	mtr	/60	16x10x4		119.95																															
	Realistic STA-21	7	0.9	0.3	20-20	60	2.5				3	0.5/0.6	45	mtr	/60	16x11x5		159.95																															
	Realistic STA-52	12	0.9	0.5	20-20	60	2.5				2	0.5/0.6	70	mtr	/60	17x11x5		199.95																															
	Realistic STA-64	16	0.8	.15	20-20	65	2.5				2	0.5/0.6	70	mtr	/65	18x14x5		239.95																															
	Realistic STA-77A	18	0.8	.15	20-20	60	2.2				2	0.5/0.5	55	mtr	/65	18x14x5		259.95																															
	Realistic STA-84	25	0.7	.1	20-20	60	3					2	0.4/0.7	60	mtr	/65	19x15x5		299.95																														
	Realistic STA-90	45	0.5	.1	20-20	60	3					2	0.5/0.7	70	2 mtrs	/65	19x14x6		359.95																														
	Realistic STA-235	55	0.3	.1	20-20	65	2.5					2	0.2/0.5	75	mtr	/70	19x13x5		399.95																														
	Realistic STA-2000	75	0.25	0.1	20-20	70	2.2					1.5	0.3/0.7	75	mtr	/70	19x16x6		499.95																														
	ROTEL	RX1603	180	0.1	0.05	5-100	75	2	250	1.6/3	1	2.1/35	0.1/0.2	50/75	80	2 mtrs	80/75	24x7x19	72	1000.00																													
RX802		50	0.5	0.09	10-100	70	2	150	1.6/3	1	3/44	0.15/0.3	50/75	80	2 mtrs	75/70	24x5x14	30	500.00																														
RX7707		35	0.5	0.1	10-65	70	2	130	2.0/3.6	1.5	3.6/50	0.15/0.3	50/75	50	1 mtr	75/70	22x4x13	19	500.00																														
RX-502		35	0.5	0.1	10-75	70	2.5	130	1.8/3.8	1.5	3.5/44	0.15/0.3	50/75	70	2 mtrs	75/70	22x5x13	23	370.00																														
RX402		25	0.5	0.1	15-75	70	2.4	100	1.9/4	2	4/50	0.15/0.3	50/75	60	1 mtr	75/70	19x4x12	15	300.00																														
RX-202MKII		20	1.0	0.2	20-70	70	2.2	80	2.5/5	3	4/50	0.2/0.5	50/75	50	1 mtr	70/60	19x4x10	13	230.00																														
RX-152MKII		15	1.0	0.2	20-60	65	2.8	80	3/6	5	4/50	0.2/0.5	50/75	50	1 mtr	70/65	19x4x10	11	200.00																														
RX-102MKII		10	1.0	0.2	20-60	65	2.8	80	3/6	5	5/50	0.2/0.5	50/75	50	1 mtr	70/65	19x4x10	10	170.00																														
SANSUI	9090	110	0.2	0.2	20-20	70	2.5	200	1.7	1.5	3	0.2/0.3	25/75	85	2 mtrs	70	21x7x16	51	750.00																														
	8080	80	0.2	0.2	20-20	70	2.5	200	1.7	1.5	3	0.2/0.3	25/75	85	2 mtrs	70	21x7x16																																

"I TESTED OUR NEW FM CAR RADIO IN THE HEART OF THE JUNGLE."

by Steve Tillack

When I said "Take me down to Wall Street," the cabbie thought I was nuts.

Then when I pulled out an FM car stereo and started testing it, he knew I was bananas. *Until* he heard the terrific music I got.



It all started two years ago. Pioneer wondered what would happen if you designed a car stereo to high fidelity specs. Nobody ever did that before. So Pioneer engineered the Supertuners. Four of them. With built-in cassette or 8-track. Muting. Local/distance switch. And a 1.8 dB capture ratio that pulls in FM stations like you never heard before.

Even on Wall Street.

Everybody knows those tall buildings are murder on FM reception. Signals bounce around like ping-pong balls.

But not our Supertuner. While the other FM radios were full of interference and stations piled on top of each other, Supertuner came in loud and clear.

The specifications say it's the best line of car radios ever built.

The cab driver says he's buying one. He gets enough static from his customers.

**THE PIONEER
SUPER TUNERS**



Pioneer Electronics of America 1925 East Dominguez Street, Long Beach, California 90810

Check No. 35 on Reader Service Card

Receivers

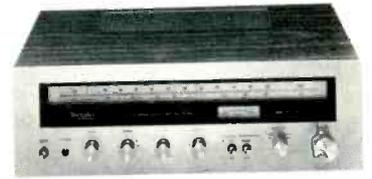


Tandberg TR-2075



Toshiba SA-514

Soundcraftsmen
SC-3000B



Technics SA-5060

Letter Key: (T) with model indicates tube-type; (K) with model indicates kit;
(Q) with model indicates 4-channel; (W) with model indicates wired;
(F) with model indicates FM only;

MANUFACTURER	Model	Ave. Power/chan. into 8 ohms; W, as per FTC rule.		Max THD @ 25 W, %	Max IM @ 25 W, %	Freq. range for FTC-rated power, Hz-KHz	S/N, phono, re 10 mV input, dB	Phono sens., mV	Phono overload, mV	IHF sens. tuner, mono/stereo microvolts	Capture ratio, dB	Signal for 50 dB quieting, μ V, mono/stereo	% THD, 100% modulation of 1 kHz, mono/stereo	Deemphasis, μ S	Att. char. selectivity, dB	Tuning aids, no. & type	dB, best S/N, mono/stereo	Dimensions, in.	Weight, lbs.	Price, \$	NOTES
		100	0.1																		
SHERWOOD	S9910	100	0.1	0.1	20-20	2	160	1.7	1	2.4/25	0.1/0.2	25/75	80	2 mtrs	70/65	21"x6"x15"	41	700.00			
	S7910	60	0.1	0.1	20-20	2	160	1.7	1	2.7/30	0.15/0.3	25/75	75	1 ind	70/65	21"x6"x15"	34	500.00			
	S8910(F)	60	0.1	0.1	20-20	2	160	1.7	1	2.7/30	0.15/0.3	25/75	75	2 mtrs	70/65	21"x6"x15"	34	475.00			
	S7310A	40	0.3	0.3	20-20	2	90	1.8	1.2	2.7	0.5/0.25	75	65	1 ind	70	17"x5"x13"	35	400.00			
	S7210A	30	0.5	0.5	20-20	2	110	1.9	1.4	2.8	0.3/0.6	75	65	1 mtr	70	17"x5"x13"	28	300.00			
	S71108	20	0.7	0.7	20-20	2	90	2.0	1.5	2.9	0.4/0.6	75	60	1 mtr	70	17"x5"x13"	27	250.00			
	S7010A	12	0.8	0.8	40-20	2	80	2.5	4	3.3	0.3/0.6	75	50	1 mtr	65	17"x5"x13"	27	200.00			
SONAB	R3000	30	0.25	0.1	30-25 +1				3.0	1				1 mtr		17x4x14	9	465.00			
SONY	STR-6800SD	80	0.15	0.15	20-20	84	2.5	100	1.7/-	1	3.5/45	0.2/0.3	25/75	80	2 mtrs	73/68	19"x6"x16"	36	600.00	w/Dolby FM	
	STR-5800SD	55	0.2	0.2	20-20	84	2.5	100	1.7/-	1	3.5/45	0.2/0.3	25/75	80	2 mtrs	73/68	19"x6"x16"	34	500.00	w/Dolby FM	
	STR-4800SD	35	0.2	0.2	20-20	82	2.5	70	1.9/-	1.5	4.0/45	0.2/0.4	25/75	80	2 mtrs	73/68	19"x6"x16"	30	400.00	w/Dolby FM	
	STR-3800	25	0.5	0.5	20-20	80	2.5	100	2.0/-	1.5	4.0/45	0.2/0.4	75	60	2 mtrs	70/68	19"x5"x13"	23	280.00		
	STR-2800	20	0.5	0.5	20-20	80	2.5	100	2.0/-	1.5	4.0/45	0.2/0.4	75	50	2 mtrs	70/68	19"x5"x13"	21	240.00		
	STR-1800	12	0.8	0.8	40-20	75	3.0	100	3.5/-	4.0		0.8/1.0	75	50	1 mtr	65/-	19x6x11"	16	180.00		
SOUND-CRAFTSMEN	SC30008(Q)	25	0.5	0.1	20-20	65	2.4	85	1.9/-	2	4.0/-	0.3/0.5	75	60	1 mtr	67/-	18"x4"x13"	15	329.50	Split power supply, matrix 4-ch switch	
	SC20008(Q)	20	0.8	0.2	40-20	65	2.4/140	90	2.5/-	3	5/-	0.3/0.5	75	40	1 mtr	65/-	18"x4"x10"	13.2	259.50	matrix 4ch-switch	
SUPERSCOPE	R-1270	35	1		40-20	3		1.9					75	40	1 mtr	65	17x5x11"	22	299.95		
	R-1240	20	1		40-20	3		2.2					75	1 mtr	60	17x5x11"	18	239.95			
	R-1220	10	1		40-20	3		2.5					75	1 mtr	60	17x5x11"	15	179.95			
TANDBERG	TR104(F)	40	0.2	0.2	20-20	76	2.8	100	2	0.9	3.5	0.2/0.3	75	80	2 mtrs	68/66	17"x12"x5"	20	599.00		
	TR1055	55	0.2	0.2	20-20	76	2.8	100	2	0.9	3.5	0.2/0.3	75	80	2 mtrs	68/66	17"x12"x5"	22.5	699.00		
	TR2055(F)	55	0.15	0.15	20-20	78	2.2-10	250	1.8	0.9	3/40	0.2/0.3	25/75	80	2 mtrs	78/75	20"x14x6"	28	749.00		
	TR2075	75	0.15	0.15	20-20	78	2.2-10	250	1.8	0.9	3/40	0.2/0.3	25/75	80	2 mtrs	78/75	20"x14x6"	27.2	1099.00		
TECHNICS BY PANASONIC	SA-5760	165	0.08	0.1	20-20	78	0.5/2.5	250	1.8/	1		0.1/0.15	75	80	2 mtrs	85/75	21"x7x19"	51	799.95		
	SA5560	85	0.1	0.1	20-20	78	2.5	150	1.8/	1.5		0.15/0.25	75	70	2 mtrs	75/72	19"x6x16"	35	499.95		
	SA-5460	65	0.1	0.1	20-20	78	2.5	150	1.8/	1.5		0.15/0.25	75	70	2 mtrs	75/72	19"x6x16"	31	399.95		
	SA5160	38	0.5	0.7	30-20	75	2.5	130	1.9/	1.5		0.15/0.4	75	70	1 mtr	73	16"x5"x14"	16	229.95		
	SA-8500X(Q)	26	0.5	0.7	20-20	70	2		1.9	1.5		0.3/0.4	75	65	1 mtr	65	21"x6"x15"	37	739.95	(Quadraphonic)	
	SA-8100X(Q)	16	0.5	0.7	20-20	70	2		1.9	1.5		0.3/0.4	75	65	1 mtr	65	19"x6"x15"	33	649.95	(Quadraphonic)	
TOSHIBA	SA-2200	7	0.8		40-20	70	3	70	3	3.5		0.6/0.8	75	60	1 mtr	65/60	17"x5"x10"	14	179.95		
	SA-320	15	0.4		20-20	70	2.5	130	1.9	1.0		0.2/0.4	75	60	2 mtrs	70/65	19"x6"x17"	25	199.95		
	SA-420	25	0.4		20-20	70	2.5	130	1.9	1.0		0.2/0.4	75	60	2 mtrs	70/65	19"x6"x17"	25	249.95		
	SA-520	40	0.4		20-20	70	2.5	150	1.8	1.0		0.2/0.4	25/50/75	65	2 mtrs	70/65	21"x6"x17"	37	349.95		
	SA-620	50	0.3		20-20	70	2.5	150	1.8	1.0		0.2x0.4	25/50/75	65	2 mtrs	70/65	20"x6"x17"	40	449.95		
	SA-514(Q)	40*	0.4		20-20	65	2.5		2	2		0.3/0.5	75		2 mtrs		20x5x14	26	599.95	*15W/ch. in quadra	
TRANSAUDIO	6600	9.0	0.8	0.4	40-20	65	1.5	90	2.2	2	3.8	0.6/0.8	75	62	2 mtrs	64/60	17"x5"x11"	14	199.95		
	6200	6.5	0.8	0.4	40-20	65	1.5	90	2.4	2	4.0	0.6/0.8	75	50	1 mtr	64/60	17"x5"x11"	12	159.95		
	5502	4	0.8	0.5	40-20	60	2.0	70	4.0	4	6.0	0.8	75	45	1 mtr	62/58	16"x4x9"	8	149.95		
YAMAHA	CR-1000(F)	70	0.1	0.1	20-20	3		1.7/40	1	3/40			75/-	80	2 mtrs	75/72	20"x6"x13"	41.8	850.00		
	CR-800	45	0.1	0.1	20-20	3		1.7/40	1	3/40			75/-	80	2 mtrs	75/72	18"x6"x11"	30.8	580.00		
	CR-600	30	0.1	0.1	20-20	3		2.0/50	1.5	3/40			75/-	75	2 mtrs	70/66	18"x6"x11"	27.5	460.00		
	CR-450	32	0.1	0.1	20-20	3			1.5				75/-	75	2 mtrs	68/66	18"x6"x13"	20.5	390.00		
	CR-400	16	0.5	0.1	20-20	3		2.5/50	2.0	3.5/50			75/-	75	2 mtrs	68/66	17"x6"x11"	20.9	330.00		

8 sound reasons to buy our new receiver. Plus its sound.



Sony's new, more powerful STR-6800SD receiver should get a warm reception. Because it not only looks different from other receivers, it is different.

It has some features found in more expensive separate components—and other features found nowhere else at all.

1. The most-used controls all in one place. The level control, muting switch, tuning knob and input and tape selectors are all in the upper right-hand corner.

2. A dial pointer that doubles in length when it's close to a station. Together with the signal strength meter and the center channel meter, this Sony exclusive helps you tune more accurately.

3. A stepped level control to keep both channels equal. It guarantees unprecedented accuracy—to within 1/2 db over the whole volume range.

4. MOS FET front end electronics unitized tuning. Because it's unitized, the receiver tunes the same whether it's cold or warmed up.

And MOS FET gives it a very wide dynamic range

5. Dolby noise reduction system. So you can benefit from Dolby broadcasting. Instead of being an extra, it's built in—operated from the front panel.

6. Phase locked loop. It gives you better stereo separation and less distortion.

7. LEC (low emitter concentration) transistor. This Sony exclusive in the preamp phono stage yields tight RIAA equalization, low noise, low distortion and a wide dynamic range.

8. Sony's most powerful receiver. It delivers 80 watts minimum RMS continuous power per channel at 8 ohms from 20 Hz to 20,000 Hz with no more than 0.15% total harmonic distortion. It has a direct-coupled power amplifier with true complementary symmetry output stages.

And more. To these specifications (remember, we state

them conservatively), add Sony's proven reliability. And you get a receiver that produces a sound that'll make you understand why you have ears.

That's the STR-6800SD at \$600. Or, for less power and a few less features—but no loss of fidelity—the STR-5800SD at \$500 and the STR-4800SD at \$400 (all suggested retail prices).

A sound investment.



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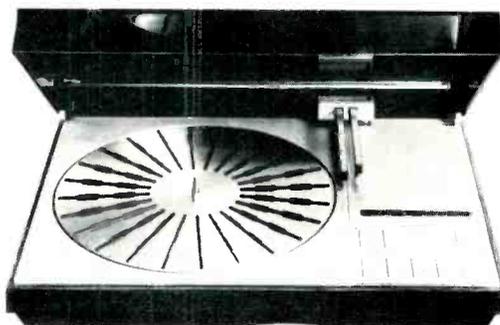
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Single-Play Turntables

Fons CQ-30



B&O 4002



AR-XB



ADC Accutrac 4000



SPEEDS
 A - 33, 45, 78 D - 16, 33, 45, 78
 B - 33, 45 E - 16, 33, 45
 C - 33 only F - Cont. variable

66

MANUFACTURER	MODEL	Speeds (see letter code)		Wow & flutter at 33 1/3 % (W RMS)	? dB noise, DIN	Motor type	Speed adjustment, %	Drive system	Speed accuracy, ±%	Dimensions, in inches	Built-in strobe light?	Model (for separate arm)	Overall length, in.	Pivot style (dia., in.)	Vertical bearing type	Lateral bearing type	Max. tracking error, deg/in.	Anti-skate adjustment?	Arm resonance, Hz.	S-V plus force range gms.	Solid w. base and cover?	Damped cueing?	Price \$	NOTES
		B	0.03																					
ADC	Accutrac 4000	B	0.03	-70	dir. drive	2%	direct		18 1/2 x 17 1/2 x 6	yes	no	10	9 1/2	pivot	sleeve		yes	8-10	0-4	yes	yes	499.95	Computer tract selection; wireless remote cont.; inc. ADC cart., remote recvr., transmitter	
ACOUSTIC RESEARCH	AR-XA	B	0.03	-65	sync	—	belt	0.3	12 1/2 x 16 x 5 1/2	no	—	11	9	conical	ball	0.32	no	—	*	yes	no	129.00	*c/w M91ED Shure cartridge	
	AR-XA-91	B	0.03	-65	sync	—	belt	0.3	12 1/2 x 16 x 5 1/2	no	—	11	9	conical	ball	0.32	no	7	*	yes	no	183.95	*as above	
	AR-XB	B	0.03	-65	sync	—	belt	0.3	12 1/2 x 16 x 5 1/2	no	—	11	9	conical	ball	0.32	no	—	*	yes	yes	145.00	*as above	
	AR-XB-91	B	0.03	-65	sync	—	belt	0.3	12 1/2 x 16 x 5 1/2	no	—	11	9	conical	ball	0.32	no	7	*	yes	yes	199.95	*as above	
AUDIO-TECHNICA											AT 1009	13	9 1/2	knife	knife	1.3	yes	8	0-2.5		yes	160.00		
											AT 1005	12 1/2	9 1/2	knife	knife		yes	8	0-3	opt.	yes	80.00		
AUDIONICS/ERA	MK6	B	0.05	-50	hys sync		belt	0.5	16 1/2 x 12 x 5 1/2	no												170.00	48-pole motor	
	MK7	B	0.05	-55	hys sync		belt	0.5	17 x 13 x 5 1/2	no														
	MK15	B	0.05	-55	sync dir		passt direct belt	0.1	17 x 13 x 5 1/2	yes														
	3035	B	0.05	-50	dir hys sync		direct belt	0.1	18 x 14 x 5 1/2	no					gimbal	gimbal	1.25	yes						
BSR	208PX	B	0.09	-58	hys sync		belt	1.0	16 1/2 x 14 x 7 1/2	no		11	7.5	pivot	ball	0.75	yes	7	0-4	yes	yes	99.95		
BANG & OLUFSEN	4002	B	0.025	65	d.c. mtr. asgn.	3	belt	0.02	19 1/2 x 3 1/2 x 14 1/2			6 1/2	6 1/2	pivot	ball	0.001		35	0-3	yes	yes	740.00		
	1900	B	0.035	62		3	belt	0.1	17 1/2 x 3 1/2 x 13			11	9	pivot	ball	0.126		35	0-3	yes	yes	325.00		
CRAIG	5102	B	0.05	-40	4-pole sync	2	belt	0.2	19 1/2 x 14 x 7 1/2	no		11	6 1/2			+6 -1	yes	8	0-4	yes	yes	189.95		
DUAL	721	B	0.03	70	d.c. servo	10	direct		16 1/2 x 14 x 5 1/2	yes		11 1/2	8 1/2	ball	ball	0.4	yes	6.5	0-3	yes	yes	400.00		
	704	B	0.03	70	d.c. servo	10	direct		16 1/2 x 14 x 5 1/2	yes		11 1/2	8 1/2	ball	ball	0.4	yes	6.5	0-3	yes	yes	310.00		
	510	B	0.06	63	sync	6	belt		14 1/2 x 12 x 4 1/2	yes		11 1/2	8 1/2	ball	ball	0.4	yes	6	0-3	no	yes	200.00		
	502	B	0.06	63	sync		belt		14 1/2 x 12 x 4 1/2	no		11 1/2	8 1/2	ball	ball	0.4	yes	6	0-3	no	yes	160.00		
EMT	928stm	A	0.1	-65		2	belt		18 x 10 x 3 1/2	yes	929	12	9	pivot	ball	0.83	yes	7	0.5-5	cov opt.	yes	1512.00		
	930stu	A	0.075	-62	hys sync	4	idler	0.15	19 1/2 x 15 1/2 x 7	yes	929	12	9	pivot	ball	0.83	yes	7	0.5-5	no	no	2560.00		
EMPIRE	698	B	0.04	-68*	hys sync	1 1/2	belt	0.25	17 1/2 x 15 1/2 x 8 1/2	no		11	9	ball	ball	1.5	yes	8	0-4	no	yes	400.00	ARLL method	
FERGUS-FONS	Fons CQ-30	F	±0.03	-62	d.c. servo	29-100	belt	X	17 1/2 x 13 1/2 x 6	no	none									yes		300.00	Less arm.	

**The turntable
nobody had heard of
two years ago is
now Number One.
The most popular
turntable in America.
It's called a
"bee eye cee."
It's built five ways.
And it's imported.
From Michigan.**



Five ways means five models. And all five are belt drive turntables, with low speed (300 rpm) motor, program system, superior tone arm, and excellent performance characteristics. For more information pick up our "5 Turntables" folder at high-fidelity dealers or write to British Industries Co., Westbury, N.Y. 11590.

Model 920 about \$79—940 about \$109—960 about \$159—980 about \$199—1000 about \$279. Model 980 shown ©1976 British Industries Co. A Division of Avnet Inc.

5 Turntables B I C

Check No. 9 on Reader Service Card

Single-Play Turntables

Garrard
125SB



Hitachi PS-48

Kenwood KD-1033



SPEEDS

- A 33, 45, 78
- B 33, 45
- C 33 only
- D 16, 33, 45, 78
- E 16, 33, 45
- F - Cont. variable

MANUFACTURER	MODEL	Speeds (see letter code)		Wow & flutter at 33 1/3 % (W RMS)	? dB rumble	Motor type	Speed adjustment, ±%	Drive system	Speed accuracy, ±%	Dimensions in inches	Built-in strobe light?	Model (for separate arm)	Overall length, in.	Pivot-stylus dist., in.	Vertical bearing type	Lateral bearing type	Max. tracking error, deg/in.	Anti-skate adjustment?	Arm resonance Hz.	Stylus force range gms.	Solid w/ base and cover?	Damped cueing?	Price \$	NOTES	
		B	A																						
FISHER	MT6010	B	0.1	53	4	pole sync		belt	0.5	6x18 x14 1/2			8%				+2		15	yes	yes	119.95			
	MT6120	B	0.08	55	4	pole sync		belt	0.4	6 1/2 x18 x14 1/2			8%				+3 -1	yes	10	5.3	yes	yes	149.95		
	MT6130	B	0.03	60		4	pole sync d.c. servo		direct		6x18 1/2 x15 1/4			9%				±1	yes	10	5.3	yes	yes	199.95	
GALE	GT2101	F	0.01	75	*	**	direct																1875.00	*d.c. brushless motor **Speed accuracy @ 33 1/3 rpm, 10 ppm	
GARRARD	DD-75	B	0.04	-70*	d.c. servo	3	direct	0.2	17 1/2 x14 1/2 x6 1/2	yes		10%	8%	jewel	ball	.5	yes	8	0.3	yes	yes	229.95	*DIN B		
	125SB	B	0.08	-62*	sync		belt	+1.5 -1.0	16 1/2 x15 x8 1/2	no		9%	7%	needle	ball	1.0	yes	7.5	0.4	yes	yes	109.95	*DIN B		
GRACE											G-707	11%	9%			1.5	yes	8	0.3	yes	yes	130.00			
											G-840	12%	9%			1.5	yes	7	0.3	yes	yes	120.00			
											G-860	14%	11%			1.1	yes	5	0.3	yes	yes	150.00			
											G-940	14%	9%		uni pivot	uni pivot	1.5	no	—	0.3	—	yes	yes	150.00	16 in. oil-damped unipivot
											G-704	11%	9%		uni pivot	uni pivot	1.4	no	—	0.3	—	yes	yes	225.00	oil-damped unipivot
HARMAN/KARDON	ST-7	B	0.04	-68	d.c.*	0.3	belt	0.3	16 1/2 x16 1/2 x6 1/2	yes		5%		Rola-mite	Rola-mite	0			0.5	yes	yes	430.00	*Brushless		
	ST-6	B	0.04	-57	a.c. sync		belt	0.3	16 1/2 x16 1/2 x6 1/2	no		5%		Rola-mite	Rola-mite	0			0.5	yes	yes	325.00			
HITACHI	PS-10	B	0.1		hys sync		belt		18 1/2 x7 1/2 x14 1/2	no		12%	9%				yes		0.4	yes	yes	129.95			
	PS-15	B	0.07		hys sync		belt		18 1/2 x16 1/2 x14 1/2	no		12%	9%				yes		0.3	yes	yes	169.95			
	PS-38	B	0.04		d.c. servo	3	direct		18 1/2 x6 1/2 x14 1/2	yes		12%	9%				yes		0.3	yes	yes	199.95			
	PS-48	B	0.025		d.c. servo	±2.5	direct		18 1/2 x6 1/2 x14 1/2	yes		12%	8%			+2 -1.40	yes		0.3	yes	yes	239.95			
JVC	TT-101	B	.02	75	d.c. servo	±6Hz	direct	.002	8x20% x16%	dig.		350 mm	245 mm	gim-bal	gim-bal	+1.48 -1.31	yes		0.3	yes	yes	1200.00	Quartz locked.		
	TT-81	B	.025	73	d.c. servo	±6Hz	direct	.002	8x20% x16%	yes		350 mm	245 mm	gim-bal	gim-bal	+1.48 -1.31	yes		0.3	yes	yes	800.00	Quartz locked.		
	JL-F45	B	.03	67	d.c. servo		direct		18 1/2 x5 1/2 x14 1/2	yes				220 mm	gim-bal	gim-bal	+3.35 -0.43	yes		0.3	yes	yes	249.95		
	JL-F35	B	.06	63	4-pole sync		belt		17 1/2 x5 1/2 x13 1/2	no				220 mm	gim-bal	gim-bal	+3.35 -0.43	yes		0.3	yes	yes	159.95		
	JL-A15	B	.06	63	4-pole sync		belt		17 1/2 x5 1/2 x13 1/2	no				220 mm	gim-bal	gim-bal	+3.35 -0.43	yes		0.3	yes	yes	129.95		
KENWOOD	KD-550	B	0.03	-70	d.c. servo	8	direct	0.01	19 1/2 x6 1/2 x15 1/2	yes		12%	9%	ball	ball	1.5	yes	7	0.4	yes	yes	249.95			
	KD-500	B	0.03	-70	d.c. servo	8	direct	0.01	19 1/2 x6 1/2 x15 1/2	yes													199.95		
	KD-3055	B	0.06	-65	sync		belt	0.5	19x5 1/2 x14 1/2			11%	8%	ball	ball	1.5	yes	7	0.4	yes	yes	179.95			
	KD-2055	B	0.06	-65	sync		belt	0.5	19x5 1/2 x14 1/2			11%	8%	ball	ball	1.5	yes	7	0.4	yes	yes	139.95			
	KD-1033	B	0.06	-64	sync		belt	0.5	18x5 1/2 x13 1/2			11%	8%	ball	ball	1.5	yes	7	0.3	yes	yes	89.95			
LAFAYETTE	T-6000	B	0.03	-65	a.c. servo	4	direct		19 1/2 x16 1/2 x7	yes		12%	9%	needle	needle		yes		1.3	yes	yes	229.95			
	T-4000	B	0.08	-45	d.c. servo	2.5	belt		18 1/2 x14 1/2 x6 1/2	yes		11%	8%	needle	needle		yes		1.5	yes	yes	179.95			
	T-2000	B	0.1	-40	hys sync	1.3	belt		17 1/2 x13 1/2 x6			11%	8%	needle	needle		yes		1.5	yes	yes	129.95			

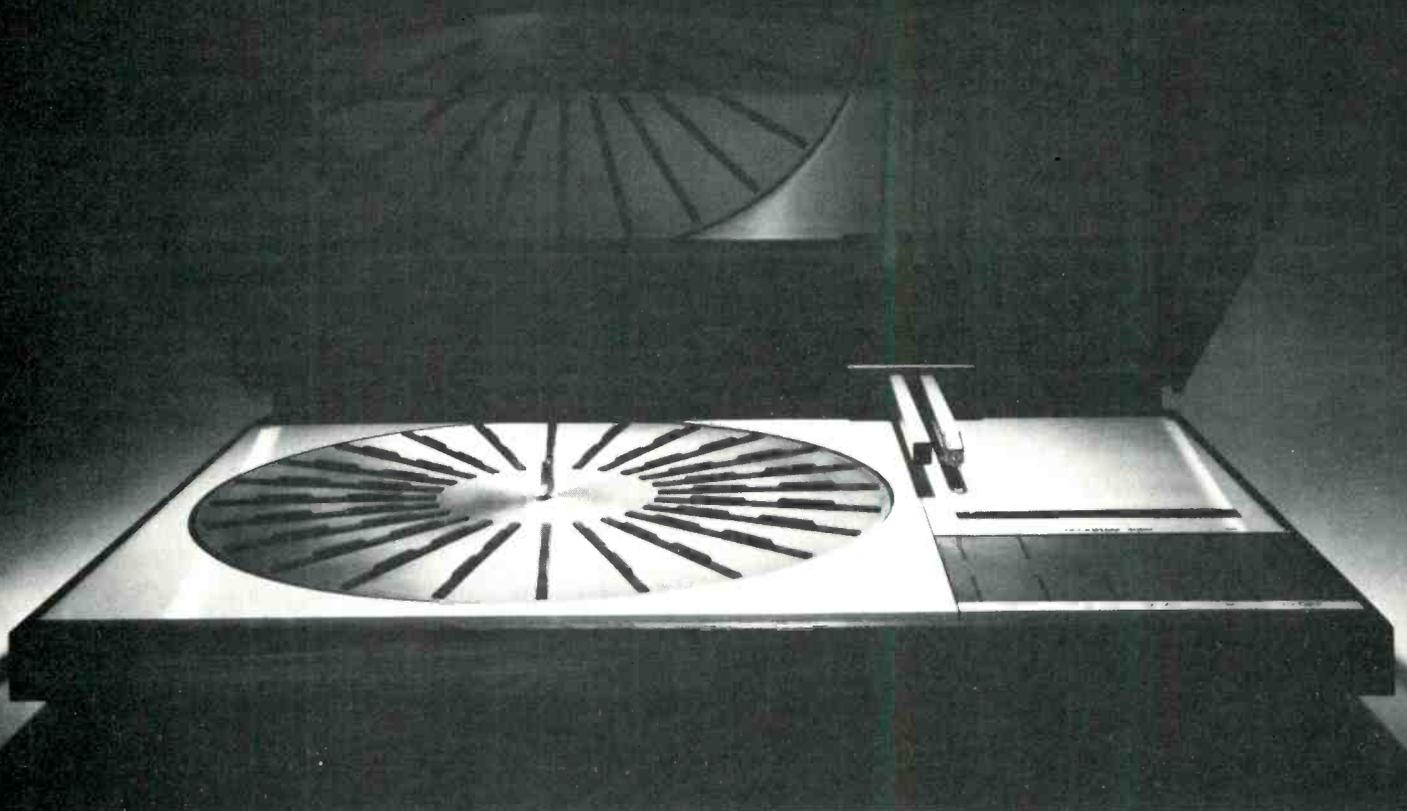
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speed, cue the stylus, and turn off the unit when the selection is finished. Furnished with Bang & Olufsen's finest cartridge, in itself an acknowledged masterpiece of audio engineering.

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Single-Play Turntables



Audio-technica AT1009



Harman/Kardon ST-7



Lenco L-90

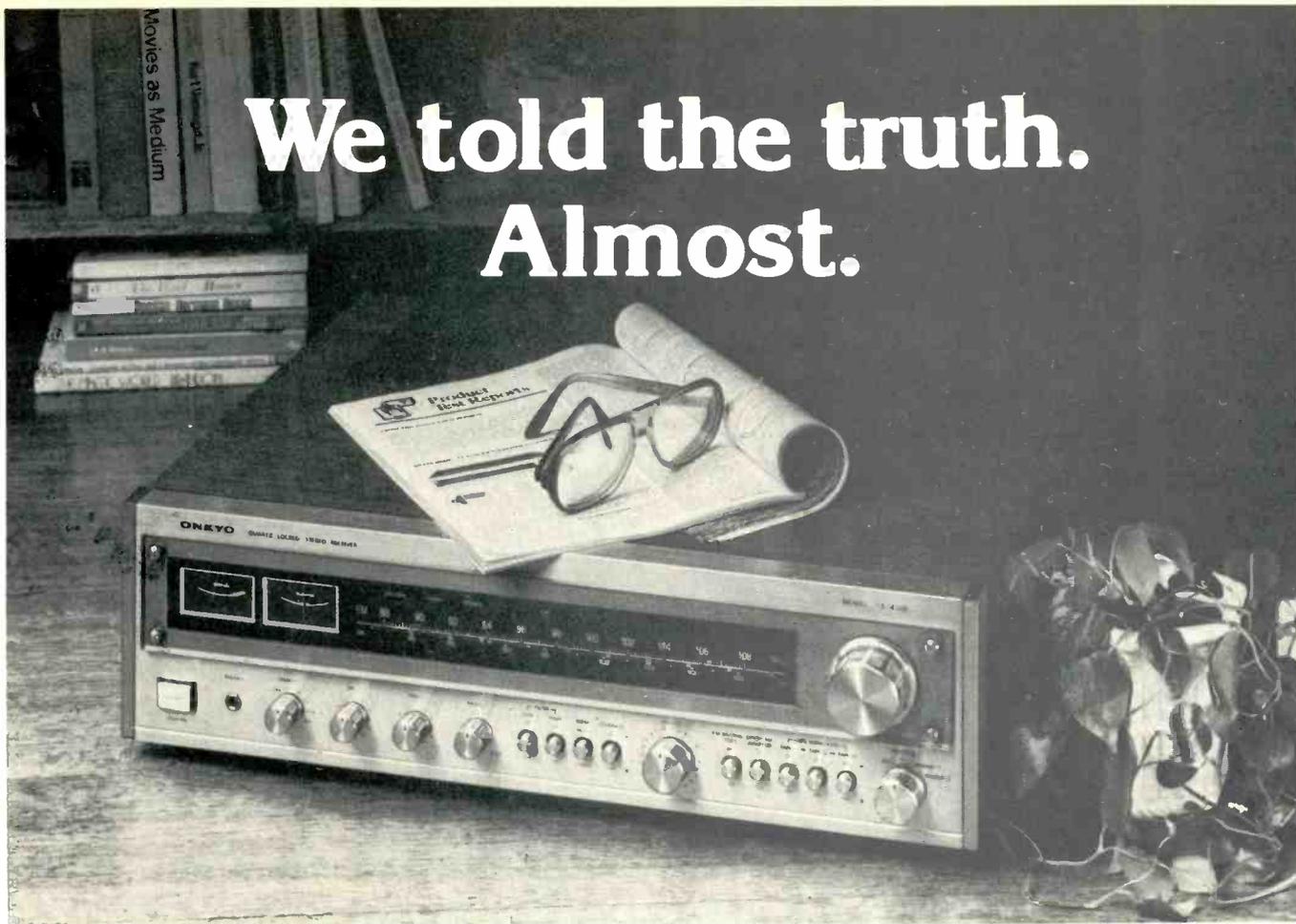
SPEEDS

A - 33, 45, 78 D - 16, 33, 45, 78
 B - 33, 45 E - 16, 33, 45
 C - 33 only F - Cont. variable

70

MANUFACTURER	MODEL	Speeds (see letter code)		Wow & flutter at 33 1/3, % (W RMS)	? dB rumble	Motor type	Speed adjustment, ±%	Drive system	Speed accuracy, ±%	Dimensions, in inches	Built-in strobe light?	Motor (for separate arm)	Overall length, in.	Pivot-stylus dist., in.	Vertical bearing type	Lateral bearing type	Max. tracking error, deg/in.	Anti-skate adjustment?	Arm resonance Hz.	Stylus force range mms.	Sold w. base and cover?	Damped cover?	Price \$	NOTES
		B	0.08																					
LENCO	L-90	B	0.08	-63	hys sync	+7		belt	18 1/4 x 14 x 5 1/2	yes								yes	0.5	yes	yes	299.95		
	L-84	B	0.08	-60	hys sync	-3		belt	16 1/4 x 12 1/4 x 6	no								yes	0.5	yes	yes	195.50		
	L-82	B	0.08	-60	hys sync			belt	16 1/4 x 12 1/4 x 6	no								yes	0.5	yes	yes	160.50		
	L-80	B	0.08	-60	hys sync			belt	16 1/4 x 12 1/4 x 6	no								yes	0.5	yes	yes	139.50		
	L-75/S	B	0.08	-60	hys sync			rim	16 1/4 x 12 1/4 x 6	no								yes	5	yes	yes	165.50		
LINN SONDEK	LP12	C	0.04	-60*	sync			belt	17 1/2 x 14 x 5 1/2	no										yes			359.00	*Rumble unweighted, ref. 10 CM/SEC, 1000 Hz signal
LUX	P-121	B	0.03	70	d.c. servo	4	direct	adj.	18 1/2 x 14 x 5 1/2	yes	*	-	-	-	-	-	-	-	yes	-	-	-	495.00	*Supplied w/teararm mounting plates.
MARANTZ	6300	B	.04	-60	d.c. servo	3	direct		17 1/2 x 14 x 7	yes		9.09				2.5	yes		0.4	yes	yes	269.95		
	6320	B	.04	-60	d.c. servo	3	direct		17 1/2 x 14 x 7	yes										yes			219.95	without arm.
	6200	B	.06	-60	a.c. servo	3	belt		17 1/2 x 13 1/2	yes		8%					yes		0.4	yes	yes	199.95		
	6100	B	.08	-60	a.c. sync		belt		17 1/2 x 13 1/2	no		8%					yes		0.4	yes	yes	129.95		
MITSUBISHI	DP-EC1	B	0.025	65	d.c.	3	direct	0.25	18 1/2 x 14 1/2 x 6	yes		12%	9		2.9	yes		0.3	yes	yes		590.00		
MICRO SEIKI	MB-10	B	0.06	-	sync	-		belt	18 x 14 x 5 1/2	no		8%	-	-	-	1.5	yes	-	0.3	yes	yes	100.00		
	MB-15	B	0.06	-	sync	-		belt	18 x 14 x 5 1/2	no		8%	-	-	-	1.5	yes	-	0.3	yes	yes	150.00		
	DD-20	B	0.03	-	d.c. servo	6	direct		18 x 15 x 6	yes		8%	-	-	-	1.5	yes	-	0.3	yes	yes	200.00		
	DD-30	B	0.03	-	d.c. servo	6	direct		18 x 15 x 6	yes		8%	-	-	-	1.5	yes	-	0.3	yes	yes	300.00		
	DD-40	B	0.028	-	d.c. servo	6	direct		19 x 15 x 6	yes		9%	-	-	-	1.5	yes	-	0.3	yes	yes	400.00		
	DDX-1000	B	0.025	-	d.c. servo	6	direct		17 1/2 x 17 1/2 x 5	yes		MA-505	12%	-	-	-	1.5	yes	-	0.3	no	-	600.00	
MONKS												MSBA MK III	11	9	uni-pivot	uni-pivot	*		0.3	yes			149.95	*Magnetic Antiskate; Mercury contacts; damped unipivot
MUSIC SYSTEMS	GH228												11%	9	uni-pivot		yes		0.3				150.00	
OPTONICA	RP1414	B	0.12	58	hys sync			belt	17 1/2 x 14 x 6 1/2	yes		8%		ball	pivot		yes	8	0.4	yes	yes	139.95		
	RP3636	B	0.05	68	sync servo	+4	direct	+1.5 -1.0	17 1/2 x 14 x 6 1/2	yes		9%		ball	pivot	1.8	yes	7.5	0.4	yes	yes	299.95		
PHILIPS LABS	GA427	B	0.2	-55	24-pole sync	no		belt	15 1/2 x 13 x 5	no						0.09	yes	9	0.4	yes	yes	99.95		
	GA212	B	0.09	-62	d.c. servo	3		belt	15 1/2 x 13 x 6 1/2	no						0.06	yes	6	0.3	yes	yes	169.95		
	GA222	B	0.08	-65	d.c. servo	6		belt	15 x 13 x 5 1/2	no		11%	9%			0.05	yes	6	0.3	yes	yes	229.95		

We told the truth. Almost.



We erred on the side of modesty when we published the specifications and performance data of our Quartz Locked AM/FM Stereo Receiver.

Then Hirsch-Houck, a famous independent audio testing lab*, put our TX-4500 through the mill on their own. You know who they are . . . possibly the best known in the business. They said and we quote:

" . . . virtually impossible to incorrectly tune in an FM station."

" . . . sound quality in FM reception with the TX-4500 will be determined only by the quality of the broadcast program."

" . . . when playing records the sound had a definition and clarity that were unmistakable."

In fact, they compared the TX-4500 favorably with component tuners and amplifiers, and we didn't lose. While we claimed the TX-4500 would deliver 55 watts per channel, minimum RMS at 8 ohms, both channels driven, from 20 Hz to 20 kHz with no more than 0.1% Total Harmonic Distortion, they found Total Harmonic Distortion less than 0.02% at middle frequencies; 0.09% at 20 Hz, and 0.04% at 20 kHz.

We said IM distortion was 0.1% at 1 watt. They found it between 0.01% and 0.02% at most power levels from 1 to 40 watts.

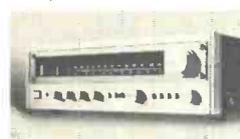
You should also know about our FET/4-gang variable capacitor front end. Our circuitry with 70

transistors, 8 IC's and 59 diodes, plus the FET. About provision for three sets of speakers and three tape recorder circuits, each controlled by its own pushbutton.

You might also be interested in detented tone controls and center detent balance control. Phase Locked Loop Multiplex.

But mostly, you have to see what Quartz Locked tuning does, verified by the lab that the system invariably resulted in the lowest possible distortion and noise and best stereo separation the receiver is capable of.

There's no way we can tell you everything about our "Studio on a Shelf". There's too much, and we're too modest. But, you can find out at your Onkyo dealer. He may even have a copy of the lab report. If not, write us for a copy.



While you're at it, look into the TX-2500 also. It costs a little less than the TX-4500 and performs almost as well. Instead of Quartz Locked tuning, the TX-2500 features Servo Locked tuning. In our own modest way we have to say it's pretty good.

So, if you can't go for the top of our line, you can come pretty close. And the best place to start is with an Onkyo dealer.

*Popular Electronics, August, 1976.

ONKYO®

ONKYO U.S.A. CORPORATION Eastern Office: 42-07 20th Ave., Long Island City, N.Y. 11105, 212-729-2323
Midwest Office: 935 Sivert Drive, Wood Dale, Ill. 60191, 312-595-2970 Canada: Sole Distributor, TriTel Associates Ltd., Willowdale, Ontario, Canada M2H 2S5

Check No. 30 on Reader Service Card

Single-Play Turntables



Grace 707

Sony PS-4750



SPEEDS

- A - 33, 45, 78
- B - 33, 45
- C - 33 only
- D - 16, 33, 45, 78
- E - 16, 33, 45
- F - Cont. variable

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MANUFACTURER	MODEL	SPEEDS (See latter column)		Wow & flutter at 43 1/3, % (W RMS)	? dB rumble, DIN	Motor type	Speed adjustment, %	Drive system	Speed accuracy, %	Dimensions, in inches	Built-in strobe light?	Model (for separate arm)	Overall length, in.	Pivot style for dist., in.	Vertical bearing type	Lateral bearing type	Max. tracking error, deg/in.	Anti-skate adjustment?	Arm resonance, Hz.	Stylus force range gms.	Sold w. base and cover?	Damped casing?	Price \$	NOTES
		B	F																					
PIONEER	PL-71	B	0.05	60	d.c. servo	2	direct		19x7 1/4 x 16 1/4	yes			8%	ball	ball	yes		0.5	yes	yes		300.00		
	PL-530	B	0.03	70	d.c. servo	2	direct		19x6 1/4 x 15 1/4	yes			8%	ball	ball	yes		2.5	yes	yes		250.00		
	PL-510	B	0.03	60	d.c. servo	2	direct		17 1/4 x 6 1/4 x 14 1/4	yes			8%	ball	ball	yes		0.35	yes	yes		200.00		
	PL-117D	B	0.07	50	4-pole sync		belt		17 1/4 x 6 1/4 x 14 1/4	no			8%	ball	ball	yes		0.35	yes	yes		175.00		
	PL-115D	B	0.07	50	4-pole sync		belt		17 1/4 x 6 1/4 x 14 1/4	no			8%	ball	ball	yes		0.35	yes	yes		125.00		
	PL-112D	B	0.07	50	4-pole sync		belt		17 1/4 x 6 1/4 x 14 1/4	no			8%	ball	ball	yes		0.35	yes	yes		100.00		
POLK AUDIO	Formula Four										PLS 4/D	11 1/2	9%	uni-pivot	uni-pivot	yes					yes		139.50	
PRO MUSICA	Pro Musica	B	0.08	-50	hys sync	-	belt	0.1	16 1/2 x 5 1/4 x 12 1/4	no		12	-				yes		0.25	yes	yes		495.00	
QUADRAFLEX	QL14	B	0.1	-50	sync	-	belt	1.0	17 1/2 x 13 1/4 x 6 1/4	no		10 1/2	8%	needle	ball	1.2	yes	7	0.4	yes	yes		129.95	
RADIO SHACK	Realistic LAB-300	B	0.10	-60	4-pole sync		belt		17 1/2 x 14 1/4 x 7 1/4	no							yes		0.4	yes	yes		159.95	*Automatic arm return and shutoff
	Realistic LAB-100	B	0.09	-58	sync		belt		16 1/2 x 14 1/4 x 7 1/4	no							yes		1.5	yes	yes		99.95	
ROTEL	RP-3000	B	0.06	60	a.c. sync	5	direct	0.1	18 1/2 x 14 1/4 x 7 1/4	yes		11 1/2	9	knife	knife		yes		0.5	yes	yes		220.00	
	RP-2500	B	0.05	58	d.c. servo	5	belt	0.1	17 1/2 x 13 1/4 x 5 1/4	yes		11 1/2	9	knife	knife		yes		1.5	yes	yes		180.00	
	RP-1100	B	0.2	45	hyst sync	-	belt	-	18 1/2 x 14 1/4 x 8	no		11 1/2	9	knife	knife		yes		1.5	yes	yes		130.00	
SANSUI	SR-929	B	0.028	-74	d.c.	3.5	direct	0.002	19 1/2 x 15 1/4 x 7	yes			9%	knife	uni.		yes		0.3	yes	yes		430.00	Quartz Servo
	FR-5080S	B	0.03	-70	d.c.	3.5	direct		18 1/2 x 15 1/4 x 6 1/4	yes			8%	pivot	ball		yes		0.3	yes	yes		260.00	Full Auto
	SR-525	B	0.03	-72	d.c.	3.5	direct		18 1/2 x 15 1/4 x 6	yes			8%	knife	ball		yes		0.3	yes	yes		230.00	
	FR-3080	B	0.07	-60	hys sync		belt		17 1/2 x 14 1/4 x 6 1/4				8%	pivot	ball		yes		0.4	yes	yes		200.00	Full Auto
	SR-323	B	0.06	-60	hys sync		belt		18 1/2 x 14 1/4 x 6				8%	knife	ball		yes		0.3	yes	yes		140.00	
	FR-1080	B	0.08	-58	hys sync		belt		17 1/2 x 14 1/4 x 6				8%	pivot	ball		yes		0.4	yes	yes		160.00	Auto Return
SR-222	B	0.06	-60	hys sync		belt		18 1/2 x 14 1/4 x 6				8%	pivot	ball		yes		0.3	yes	yes		115.00		
SCHLUMBERGER	A1B	B	0.1	-60	24-pole sync	3	belt		17 1/2 x 16 1/4 x 6 1/4	yes		8	6%	ball	ball				0.25	yes	yes		1800.00	
SHURE											SME 3009 IMP.		9	knife	ball				0.15				162.00	
											SME 3009/25 IMP.		9	knife	ball				0.15				174.00	
SINTRONIC (SINGER)	Studio Pro	B	0.2	-38	ind sync	2	belt	0.1	15 1/2 x 15 1/4 x 7 1/4	no	303	12%	8%				yes		1	no cov	yes		340.00	
SONAB	#7S	B	0.08	-60	hys sync		belt	±1.0	17 x 14 x 6	no		9					yes			yes	yes		240.00	

The Sensuous Speaker.

Yamaha's new two-way beryllium dome NS-500.

A very responsive speaker with a rich, luscious sound. A deeply involving sound. Highly defined, finely detailed.

The NS-500 is created from the same advanced beryllium technology that's made Yamaha's revolutionary NS-1000 Series speakers, in the eyes and ears of many audio experts, the highest standard of sound accuracy. (Specific benefits of Yamaha's beryllium technology have been documented in a paper presented to the 52nd Convention of the Audio Engineering Society.)

With the NS-500, you get all of beryllium's advantages (transparency, detail, and lack of distortion that go beyond the best electrostatic speakers), but at a price roughly half that of the NS-1000. Only \$500 the pair, suggested retail price.

The joy of beryllium.

The ideal dome material for a high frequency driver must respond instantly to changes in amplitude and frequency of the input signal. So the ideal dome material must be virtually weightless as well as extremely rigid.

Beryllium is the lightest and most rigid metal known. Its density is less than two-thirds that of commonly used aluminum, and its rigidity is almost four times as great—thus preventing dome deformation and consequent distortion. What's more, beryllium's sound propagation velocity is twice that of aluminum.

The beryllium dome found on the NS-500's high frequency driver is the world's lightest—about half the weight of one petal of a small sweetheart rose. Which is one of the reasons for this speaker's exceptional sensitivity and response. And for its sensuous sound.

A closer look.

To be able to offer the sophistication of beryllium at a more affordable price, without sacrificing quality of performance, Yamaha designed the NS-500 as a two-way bass reflex system.

This gives the NS-500 a trace more emotion at the low end than the resolutely objective NS-1000. But it also gives the NS-500 more efficiency (91dB SPL at one meter with one watt RMS input). Which means you don't have to invest in the highest powered amplifiers or receivers in order to drive the NS-500 to its full rated output.

For an optimum match with the beryllium tweeter, Yamaha developed a very light, very rigid "shell" woofer. And a special hermetically-sealed air core LC crossover with a carefully selected 1.8kHz crossover point.

As a result of these design parameters, the NS-500 boasts an insignificant 0.03% THD below 50 dB SPL, from 40 Hz to 20 kHz, making it the perfect complement

to Yamaha's state-of-the-art low distortion electronics.

Underneath the sleek monolithic styling of its solidly crafted enclosures, the NS-500 is full of many exclusive Yamaha features and distinctive Yamaha touches of craftsmanship.

But to fully appreciate the beauty of the NS-500, you really should visit your Yamaha Audio Specialty Dealer.

Which brings us to something else.

Something more than just another speaker pamphlet.

Yamaha's *Reference Handbook of Speaker Systems* is a very thorough guide encompassing all aspects of speaker design, performance, and evaluation. Starting with a detailed explanation of speaker design principles, the discussion then turns to a solid base of objective criteria, written in easily understood language, to help you properly evaluate any speaker in any listening environment. Already a much sought-after reference work among audio professionals, Yamaha's *Reference Handbook of Speaker Systems* is available at your Yamaha Audio Specialty Dealer.

At \$5.00 a copy, it's well worth the cost. However if you clip out the coupon in the bottom corner of this page, take it to your Yamaha Audio Specialty Dealer and hear a demonstration of the exciting NS-500 or any other Yamaha speaker, the book is yours for half the price.

And if you're not familiar with the name of your local Yamaha Audio Specialty Dealer, cross us a line. In turn, we'll also send you a free preprint of the Audio Engineering Society paper on Yamaha beryllium technology mentioned above.

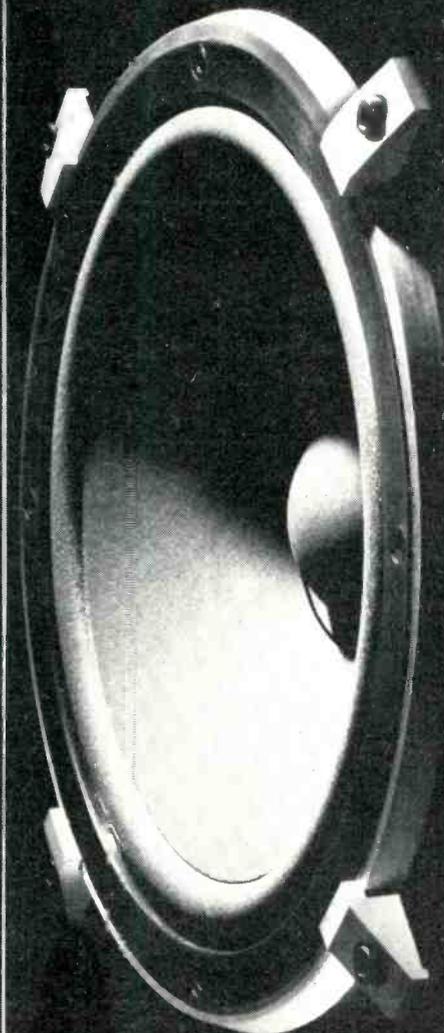


This coupon is worth \$2.50 off the \$5.00 suggested retail price of Yamaha's *Reference Handbook of Speaker Systems*, when presented to any participating Yamaha audio dealer, with a demonstration of any Yamaha speaker system. Offer expires March 1, 1977.



P.O. Box 6600, Buena Park, CA 90622

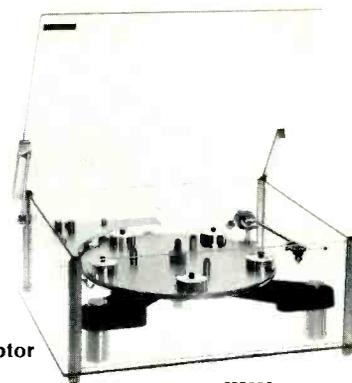
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Single-Play Turntables



Thorens TD-126C



Transcriptor



Technics SP-10 Mk II

SPEEDS

- A - 33, 45, 78
- B - 33, 45
- C - 33 only
- D - 16, 33, 45, 78
- E - 16, 33, 45
- F - Cont. variable

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MANUFACTURER	MODEL	Speeds (see letter code)	Wow & flutter at 33 1/3 % (W/RMS)	± dB rumble, DIN	Motor type	Speed adjustment, ±%	Drive system	Speed accuracy, ±%	Dimensions, in inches	Built-in strobe light?	Model (for separate arm)	Overall length, in.	Pivot style dia., in.	Vertical bearing type	Lateral bearing type	Max. tracking error, deg/in.	Anti-skate adjustment?	Anti-resonance, Hz.	Stylus force range, gms.	Solid w. base and cover?	Damped cueing?	Price \$	NOTES
SONY	PS-8750	B	0.025	70*	a.c. servo	4	direct	0.003	7 1/4 x 18 x 15 1/4	yes		12%	9%	needle	ball		yes	7-10	0-2.5	yes	yes	900.00	*455398; Quartz-lock, semi-auto
	PS-4750	B	0.03	70*	d.c. servo	4	direct		7 x 18 1/2 x 16 1/2	yes		12%	9%	ball	ball		yes	7-10	0-3	yes	yes	300.00	*As above
	PS-4300	B	0.03	70*	d.c. servo	4	direct		6 x 17 1/2 x 14 1/2	yes		11%	8%	pivot	ball		yes	7-10	0-3	yes	yes	270.00	Fully auto
	PS-3750	B	0.03	70*	d.c. servo	4	direct		6 x 17 1/2 x 14 1/2	yes		11%	8%	pivot	ball		yes	7-10	0-3	yes	yes	230.00	*As above
	PS-3300	B	0.04	65*	d.c. servo	4	direct		6 x 18 x 14	yes		11%	8%	pivot	ball		yes	7-10	0-3	yes	yes	190.00	*As above; semi-auto
	PS-2350	B	0.08	63*	d.c. servo	4	belt		6 1/2 x 17 1/2 x 15	no		11%	8%	pivot	ball		yes	7-10	0-3	yes	yes	160.00	*As above; semi-auto
	PS-1100	B	0.2		4-pole ind		idler		6 1/2 x 17 1/2 x 14	no		11%	8%	pivot	ball		fixed	7-10	2.5 fixed	yes	yes	100.00	Semi-auto w/cartridge
STANTON	8004II	B	0.07	45	sync	no	belt	0.3	13 x 14 x 7	no	no	11	8.6	uni-poise	uni-poise	1.7	yes	12	0.4	yes	yes	199.95	
	8004IIA	B	0.07	45	sync	no	belt	0.3	13 x 14 x 7	no	no	11	8.6	uni-poise	uni-poise	1.7	yes	12	0.4	yes	yes	179.95	
	8004IIB	B	0.07	45	sync	no	belt	0.3	13 x 14 x 7	no	no	11	8.6	uni-poise	uni-poise	1.7	yes	12	0.4	yes	yes	172.50	
	8004IV	B	0.07	45	sync	no	belt	0.3	13 x 14 x 7	no	no	11	8.6	uni-poise	uni-poise	1.7	yes	12	0.4	yes	yes	224.95	
STAX											UA-7M	13	9	uni	uni	0.6	yes	11	0-3		yes	183.00	
TECHNICS BY PANASONIC	SP-10 MKII	A	0.025		d.c. servo		direct	.002	14 1/2 x 14 1/2 x 4	yes									no			699.95	
	SL-1400	B	0.03		d.c. servo		direct		5 1/2 x 17 1/2 x 14 1/2	yes	9	9			1.0			0.3	yes	yes	249.95		
	SL-1500	B	0.03		d.c. servo		direct		17 1/2 x 14 1/2 x 5 1/2	yes		9			1.0			0.3	yes	yes	199.95		
	SL-20	B	0.05		d.c. servo		belt		5 1/2 x 16 1/2 x 13 1/2	no			8%					0.4	yes	yes	99.95		
	SL-23	B	0.05		d.c. servo		belt		5 1/2 x 17 1/2 x 13 1/2	yes			8%					0.4	yes	yes	139.95		
	SL-1300	B	0.03	-70	d.c. servo	5	direct		17 1/2 x 14 1/2 x 5 1/2	yes			9%	gimbal	4-pt.	0.25	yes	7-10	0-3	yes	yes	199.95	
THORENS (ELPA)	TD-126C	A	0.04	-70	sync		belt	0.3	19 1/2 x 15 1/2 x 6 1/2	yes		12	9.06	ball	ball	0.18	yes	8	0.4	yes	yes	560.00	
	TD-145C	B	0.06	-55	sync	2	belt	0.5	17 x 13 1/2 x 7 1/2			12	9.06	ball	ball	0.2	yes	8	0.4	yes	yes	299.95	
	TD-160C	B	0.06	-55	sync	2	belt	0.5	17 x 13 1/2 x 7 1/2			12	9.06	ball	ball	0.2	yes	8	0.4	yes	yes	249.95	
	TD-165C	B	0.06	-55	sync	2	belt	0.5	17 x 12 1/2 x 7 1/2			12	9	ball	ball	0.2	yes	10	0-4	yes	yes	169.95	
TOSHIBA	SR-305	B	0.1	48	a.c. sync		belt		17 1/2 x 13 1/2 x 7	no			8%		ball		yes			yes	yes	129.95	
	SR-255	B	0.05	60	d.c. servo	2	direct		18 x 6 1/2 x 14	yes			8%		ball	2.0	yes			yes	yes	199.95	
	SR-355	B	0.04	60	d.c. servo	2	direct		18 1/2 x 14 1/2 x 7 1/2	yes			8%		ball	2.0	yes			yes	yes	229.95	
TRANSCRIPTOR	Skeleton Univ.	B	0.06		hys sync		belt	+1	18 x 15 1/2 x 7	no	9	1%	pivot	pivot	2.5	yes	180	0-5	yes	no	395.00		
	Round	B	0.06		hys sync		belt	+1	14-diam. 4	no	6%	4%	pivot	pivot		no		0-5	yes	yes	200.00		
TRANSAUDIO	1600	B	0.1	45	sync		belt	1.0	17 1/2 x 14 1/2 x 5 1/2	no		11%	8%	needle	ball	1.3	yes	8	0-3	yes	yes	99.95	
WIN											TA-10	11%	9	needle	ball	2	no	12	.5-3	yes		149.95	

The Miida Stereo System

It delivers everything we promise.

We're sure! Because every promise we make is backed by test-proven facts.

Start with the Miida 3140 AM/FM Stereo Receiver. You get 43 watts per channel minimum RMS, both channels driven at 8 ohms, from 20Hz to 20kHz with no more than 0.4% total harmonic distortion.

Tie it into the Miida T3115 Direct Drive Turntable. It gives you such consistent rotation that wow, flutter and rumble are virtually eliminated.

To complete this remarkable system, connect a pair of Miida SP3150 4-way Speakers for a dynamically balanced stereo system that delivers sound with stunning brilliance and clarity.

Ask your dealer to show you a Miida Stereo System. It delivers everything we promise... and that's a fact.

For more information write to: Miida Electronics Inc., a subsidiary of Marubeni Corp., 205 Chubb Avenue, Lyndhurst, New Jersey 07071, (201) 933-9300.

Miida 3140—AM/FM STEREO RECEIVER Phase locked loop multiplex; IHF sensitivity: 2.0; Capture ratio: 1.5 dB; IF rejection: 70 dB

Miida T3115—DIRECT DRIVE TURNTABLE Stroboscope allows you to adjust speed with pinpoint accuracy; 2-speed adjustments; 13½" turntable; 6-pole electronic motor; S-shaped tone arm with anti-skate

Miida SP3150—4-WAY SPEAKER SYSTEM Overall frequency response: 25 Hz to 22 kHz \pm 5 dB; Impedance: 8 ohms; Built-in crossover: 750Hz-1800Hz, 7.5kHz, 12kHz; Power handling capability 55 watts maximum music power



Miida ...the stereo specialist.

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Multi-Play Turntables

Fisher 220XA



Garrard GT-55



BSR 200BA

Dual 1249



BoleC 920



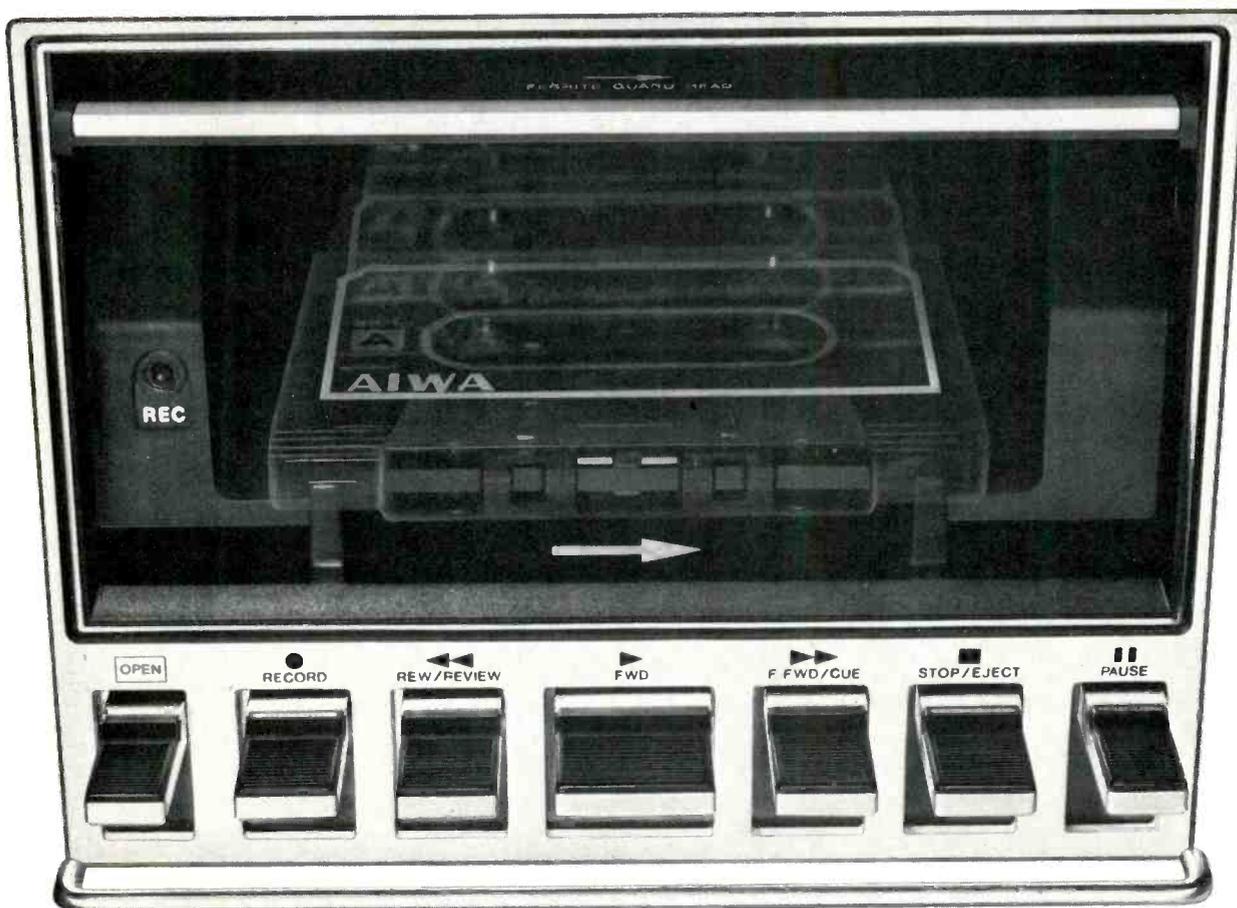
SPEEDS

A - 33, 45, 78 D - 16, 33, 45, 78
 B - 33, 45 E - 16, 33, 45
 C - 33 only F - Cont. variable

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MANUFACTURER	MODEL	Speeds - sea code		Wow & Flutter, % 33 1/3, W rms	dB rumble, DIN	Max. track error, idg./in.	Pivot-stylus distance, in.	Stylus force adj., method	Track force range, gmt.	Damped cueing?	Built-in strobe?	Arm resonance, Hz	Max. number records	Change time, 33 1/3, sec.	Clearance above board, in.	Base dimensions, inches	Overall height, inches	Price for base and cover if sold separate	Net weight, lbs.	Price, \$	NOTES
		8	12																		
B-I-C	920	8	0.12	-60	0.8	7%	Bal.	0-4	Yes	No	10	6	13	3%	13 1/2 x 15 1/4	5 1/2	22.90	8	79.95		
	940	8	0.05	-65	0.35	8%	Bal.	0-4	Yes	No	9	6	13	5	14 1/4 x 17 1/4	6 1/2	26.90	11	109.95		
	960	8	0.05	-65	0.35	8%	Bal.	0-4	Yes	No	9	6	13	5	14 1/4 x 17 1/4	6 1/2	26.90	12	159.95		
	980	B	0.05	-65	0.35	8%	Bal.	0-4	Yes	Yes	9	6	13	5	14 1/4 x 17 1/4	6 1/2	26.90	13	199.95		
	1000	B	0.04	-69	0.35	8%	Bal.	0-4	Yes	Yes	9	6	15	5	14 1/4 x 17 1/4	6 1/2	26.90	16	279.95		
BSR	200BAX	B	0.06	-60	0.75	7.5	.	0-4	Yes	No	9	6	12	5	16 1/4 x 14 1/2	8	21 1/2	139.95		* Bal. & Spr.	
	100BAX	8	0.09	-58	0.75	7.5	.	0-6	Yes	No	11	6	12	5	16 1/4 x 14 1/2	8	19	109.95			
	2630W	B	0.18	-54	1.0	7.5	.	0-6	Yes	No	11	6	8	4	16 1/4 x 14 1/2	8	19	99.95			
	2320W	A	0.26	-50	1.0	7.5	Spr.	2-6	Yes	No	8	6	8	4	16 1/4 x 14 1/2	8	16	79.95			
	2260BX	A	0.3	-50	1.0	7.5	Spr.	0-6	No	No	6	6	8	4	16 1/2 x 14	7 1/2	13	64.95			
DUAL	1249	8	0.06	63	0.4	8%	.	0-3	Yes	No	6	6	13	5	14 x 12	6 1/4	33.00	15	280.00	* Bal. & Spr.	
	1228	B	0.09	59	0.46	8%	.	0-5	Yes	No	5.5	6	13	4%	13 x 11	6	32.00	9 1/2	200.00		
	1226	B	0.12	57	0.46	8%	.	0-5	Yes	No	9	6	13	4%	13 x 11	6	32.00	9 1/2	170.00		
	1225	B	0.15	56	0.46	8%	.	0-5	Yes	No	8	6	13	4%	13 x 11	6	32.00	8 1/2	140.00		
FISHER	220XA	A	0.2	-55				1.5-5				6			16 x 15	7 1/2	13	99.95			
GARRARD	GT-55	B	.05	-66*	0	7%	Bal.	.5-3	Yes	Yes	8	6	15	4%	16 1/4 x 15	7 1/4	25.90	16	249.95	* DIN B	
	990B	B	.06	-64*	1.0	8%	Bal.	.7-4	Yes	No	8	6	12	4%	16 1/4 x 15	8	25.90	18	169.95	* DIN B	
	775M	A	.08	-57*	1.5	7 1/2%	Bal.	0-5	Yes	No	8	6	10	4%	16 1/2 x 15	8 1/2	19.95	14	119.95	* DIN B	
	440M	A	.10	-55*	.7	7 1/2%	Spg.	2-6	Yes	No	12	6	10	4%	16 1/2 x 15	8 1/2	19.95	14	79.95	* DIN B	
PHILIPS LABS	GA406	B	0.1	-60	0.4		Bal.	0.9	Yes	Yes	9	6			16 1/2 x 14	14			149.95		
RADIO SHACK	Realistic Modulaire	A							no	no	6				13 x 9 1/2	7	incl		39.95		
	Realistic 48A	A							no	no	6				15 x 13 1/2	6 1/2	incl		44.95		
	Realistic LAB-14	A							yes	no	6				15 1/4 x 13 1/2	7	incl		59.95		
	Realistic LAB-54	A							yes	no	6				15 x 13 1/2	7	incl		79.95		
	Realistic LAB-50	B							yes	no	6				17 x 14 1/4	7	incl		99.95		
	Realistic/Miracord 42	B	.5	-60					yes	yes	10				17 1/2 x 14	8 1/4	incl		149.95		
Realistic/Miracord 46	A	1	-50					yes	yes	10				16 1/2 x 14	8	incl		199.95			
TECHNICS BY PANASONIC	SL-1350	B	0.04			9%	Bal.	0-3	Yes	Yes	6				17 1/4 x 14 1/2	8		21	349.95		

The New AIWA AD-6500:



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NOW YOU CAN GET LOADED AUTOMATICALLY.

Up to now loading a cassette into a front loading cassette deck was a little like putting a square block into a round hole. But now there's the AIWA AD-6500. The world's first cassette deck with automatic cassette loading. So you can play any cassette quickly, easily and precisely.

But there's a lot more to the AD-6500 than how you get a cassette into it. There's also the music that comes out of it. Like a frequency response of 30Hz to 17kHz with FeCr tape. Musically speaking that means hearing all the music—not just part of it.

And because we used Dolby* we also improved the S/N ratio to 62 dB. So you can listen

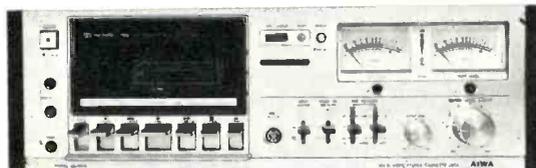
to the music instead of tape hiss.

You won't have to listen to speed variations either. Because the AD-6500 has a frequency controlled servo-motor as well as inaudible wow and flutter (0.07%).

And with the AD-6500 you can see as well as hear what you're listening to. With 2 VU meters complete with 2-step peak level indicator lights. There's also memory rewind and quick review/cue system for easy, efficient use. Three-step tape selector for the 3 different kinds of tape. Fully automatic stop.

A Ferrite Guard Head (FGH) and more.

So get the AIWA AD-6500. Because the only thing easier than loading it is listening to it.



*Dolby is a Trademark of Dolby Laboratories, Inc.

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Check No. 3 on Reader Service Card

Phono Cartridges



Micro Acoustics
2002



Pickering
XSV 3000



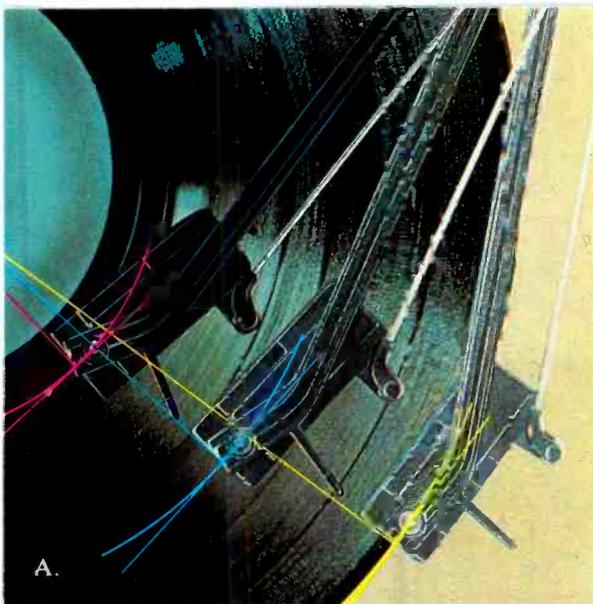
Shure M-24H

MANUFACTURER	MODEL	Frequency response, Hz to kHz, dB		Channel separ., 1kHz, dB	Channel separ., 10kHz, dB	mV output, 1 kHz, 5cm/s	Recommended tracking force range, gms	Recommended load resistance, ohms	Recommended loading capacitance (pF)	Stylus type - use code ?)	Stylus radius (radius) mils	Is stylus user or factory replaced?	Weight, gms	Price, \$	Replacement stylus price, \$	NOTES STYLUS TYPE C - Conical S - Spherical E - Elliptical Q - For CO-4 use (Shibata, etc.)
ADC	SXLM MK II	15-50 +2.5	28	0.6	1/2	100k		Q	0.2x 2.0	user	5.7	145.00	39.95			
	XLMI	15-20 +1.5	28	0.9	1/2	47k		E	0.7x 0.3	user	5.7	100.00	29.95			
	VLMII	15-20 +1.5	24	0.9	1.2	47k		E	0.7x 0.3	user	5.7	75.00	24.95			
	OLM 36II	15-20 +3	26	5.5	1/2	47k		E	0.7x 0.3	user	5.8	54.95	24.95			
	OLM32II	15-20 +3	24	5.5	1.2	47k		E	0.7x 0.3	user	5.8	44.95	19.95			
	OLM30II	15-20 +3	24	5.5	1.2	47k		S	0.7	user	5.8	34.95	15.95			
	P32	15-20 +3	24	5.5	1-2	47k		E	0.7x 0.3	user	5.8	29.95	16.95			
	P30	15-20 +3	22	5.5	1-2	47k		S	0.7	user	5.8	19.95	13.95			
AKG	P8ES	10-28	30	25	3.75	47k	470	E	0.2x 0.7	user	5.86	135.00	78.00		Transversal suspension; use with tonearms under 15 mg friction. TS system; res. curve.	
	P8E	10-23	30	20	4	47k	470	E	0.2x 0.7	user	5.86	100.00	55.00		TS system.	
	P7E	10-21.5	25	18	4.5	47k	470	E	0.3x 0.7	user	5.86	70.00	30.00		TS system.	
	P6E	20-20	25	15	6.25	47k	470	E	0.4x 0.6	user	5.86	50.00	20.00		TS system.	
	P6R	20-20	25	15	6.25	47k	470	S	0.7	user	5.86	40.00	15.00		TS system.	
ASTATIC	181d	60-12 +6	25	150	2-3	143k	100	S	0.7 3.0	user	1.7	14.95	6.45		ceramic	
	157d	90-14 +6	24	165	3-4.5	143k	100	S	0.7 3.0	user	3.4	14.95	6.45		ceramic	
	155d	70-11 +6	23	625	3.5-5	1 meg	100	S	0.7 3.0	user	3.4	11.95	6.45		ceramic	
	139d	90-13 +6	24	390	4.5-6	500k	100	S	0.7 3.0	user	3.4	13.75	6.45		ceramic	
AUDIO TECHNICA	AT 20SLa	5-50	30	25	2.7	47-100k		Q	*	user	8%	175.00	85.00		*Shibata Limited edition.	
	AT 15Sa	5-45	30	23	2.7	47k-100k		Q	*	user	8%	125.00	63.00		*As above.	
	AT 14Sa	5-45	27	20	2.7	47k-100k		Q	*	user	5%	85.00	42.00		*As above.	
	AT 13Ea	10-30	25	20	4.2	47k		E	0.2x 0.7	user	5%	65.00	35.00			
	AT 12Sa	15-45	26	20	2.7	47k-100k		Q	*	user	5%	75.00	38.00		*As above.	
	AT 12E	15-26	23	17	4.2	47k		E	0.4x 0.7	user	5%	55.00	30.00			
	AT 11E	15-25	21	16	4.8	47k		E	0.4x 0.7	user	5%	45.00	25.00			
	AT 11	15-22	21	16	4.8	47k		S	0.7	user	5%	35.00	18.00			
AT 10	20-20	20	15	4.8	47k		S	0.7	user	4.8	25.00	13.00				
BANG & OLUFSEN	MMC-6000	20-15 +1.5	25	20	0.6	100k-47k	100	Q		fact.	4	125.00			*Class A-CD 4 15-45	
	MMC-5000	20-15 +1.5	25	20	0.6	100k-47k	200	Q		fact.	4	100.00			*Same as above.	
	MMC-4000	20-25 +1.5	25	20	0.6	47k	100	E		fact.	4	75.00				
	MMC-3000	20-25 +1.5	25	20	0.6	47k	100	S		fact.	4	50.00				
DECCA / ROCELCO	London MKVI Gold	20-20		5	1-1 1/2	50k		E	0.3x 0.6	fact.	4	149.50	80.00			
	London MKVI Plum	20-20		7.5	2	50k		S	0.6/ 0.7	fact.	4	129.50	70.00			
EMT	XSD-15	20-15 +2	25	0.75	2-3	200		S	0.6	fact.	21	300.00	90.00			
EMPIRE	2000Z	20-20 +1	30	30	4.2	47k	300	E	0.2x 0.7	user	7	100.00	50.00			
	4000D/III	10-50 +3	28	23	4.2	100k	100	Q	0.2	user	7	150.00	75.00			
	4000D/II	15-50 +3	26	21	4.2	100k	100	Q	0.2	user	7	125.00	63.00			
	4000D/I	15-45 +3	24	20	4.2	100k	100	Q	0.2	user	7	85.00	43.00			
	2000E/III	20-20 +2	28	28	9.85	47k	400-500	E	0.2x 0.7	user	7	70.00	35.00			
	2000E/II	20-20 +3	25	25	9.85	47k	400-500	E	0.2x 0.7	user	7	55.00	28.00			
	2000E/I	20-20 +3	23	23	9.85	47k	400-500	E	0.2x 0.7	user	7	45.00	23.00			
	2000E	20-20 +3	23	23	9.85	47k	400-500	E	0.3x 0.7	user	7	40.00	20.00			
	2000	20-20 +3	21	21	9.85	47k	400-500	C	0.7	user	7	30.00	15.00			

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MANUFACTURER	MODEL	Frequency response, Hz to kHz ±dB		Channel separ., 1kHz, dB	Channel separ., 10kHz, dB	mV output, 1 kHz, 5cm/S	Recommended tracking force range, gmms.	Recommended load resistance, ohms	Recommended loading capacitance (pF)	Stylus type — use code	Stylus radius (radii) mils	If stylus user or factory replaced?	Weight, gmms.	Price, \$	Replacement stylus price, \$	NOTES STYLUS TYPE C — Conical S — Spherical E — Elliptical Q — For CD-4 use (Shibata, etc.)
		20-20 ±2	27	23	0.1	1.5-2.0			E	0.2x 0.08	fact.	10	130.00	65.00		
FIDELITY RESEARCH	FR-1/Mk2	20-20 ±2	27	23	0.1	1.5-2.0				E	0.2x 0.08	fact.	10	130.00	65.00	Transformers: FRT-4 \$250.00 FRT-3 \$150.00
	FR-1/Mk3	20-25 ±2	31	25	0.16	1.5-2.0				E	0.2x 0.08	fact.	10	210.00	105.00	
GRACE	F-9F	10-60 ±2	30	27	3.5	½-2	*	80	Q		user	6	150.00	70.00	*30k-100k, CD-4	
	F-9E	10-45 ±2	30	25	3.5	½-2	*	80	E	0.2x 0.8	user	6	135.00	62.00	*30k-100k, CD-4	
	F-9L	10-40 ±2	30	25	5.5	½-2	47k	100	E	0.2x 0.8	user	6	120.00	57.00		
	F-9U	10-50 ±2	30	27	3.5	½-2	*	80	Q		user	6	100.00	47.00	*30-100k, CD-4	
	F-9D	10-35 ±2	30	23	3.5	½-2	47k	100	C	0.65	user	6	95.00	43.00		
	F-8C	15-25	30	25	5.0	½-2	47k	100	E	0.2x 0.8	user	5.9	95.00	43.00		
	F-8L	20-20	30	23	5.0	½-2	47k	100	E	0.2x 0.8	user	6.5	80.00	37.00		
JVC	4MD-20X	10-50	30	20	2.0	1.5-2.0	47-100	100	Q		user	6.7	69.95	40.00	*at 30kHz	
MICRO ACOUSTICS	QDC-1e	20-20 ±2	30	20	3.5	¾-1½	47k			E	0.2x 0.9	user	7	95.00	40.00	
	2002-e	20-20 ±1½	30	20	3.5	0.7-1.4				E	0.2x 0.9	user	4	115.00	42.50	
NAKAMICHI	MC-1000	10-65	27	25	0.2	1.8	200			Q*	0.3x 0.8	fact.	8.2	250.00	150.00	Moving coil, *Shibata for stereo use; needs MCB-100 booster (\$100).
ORTOFON	SL20Q	20-70	25	25	3.6	1.5-2	47k*	—	Q	0.2	fact.	7	140.00	75.00	*use 100k load for CD-4.	
	MC20	20-60	25	25	3.6	1.5-2	47k*	—	fact.	0.3	fact.	7	130.00	70.00		
	SL20E	20-50	25	25	3.6	1.5-2	47k	—	E	0.3x 0.7	fact.	7	120.00	65.00		
	SL15E MKII	20-20	25	20	5.5	1.5-2	47k	—	E	.3x .7	fact.	5	100.00	55.00		
	M15Esuper	20-20	25	20	4.0	0.75-1.5	47k	400	E	.3x .7	user	5	90.00	50.00		
	M15 super	20-20	25	20	4.0	0.75-1.5	47k	400	S	.6	user	5	80.00	45.00		
	VMS 20E	20-20	25	20	5.0	0.75-1.5	47k	400	E	.3x .7	user	5	65.00	35.00		
	F15E	20-20	25	20	5.0	1-2	47k	400	E	.3x .7	user	5	50.00	27.50		
	FF15E	20-20	25	20	5.0	2-3	47k	400	E	.3x .7	user	5	50.00	25.00		
F15	20-20	25	20	5.0	1-2	47k	400	S	.6	user	5	40.00	22.50			
PICKERING	V-15 Micro	20-20	30		5.0	1½ ±½	47k	275	E	0.4x 0.7	user	6.5	49.95	26.25		
	IV AME	20-20	30		5.5	2 ±1	47k	275	S	0.7	user	6.5	34.95	19.22		
	V-15 Micro	20-20	30		6.0	3 ±1	47k	275	E	0.4x 0.7	user	6.5	39.95	23.95		
	IV AM	20-18	28		7.3	4 ±1	47k	275	E	0.5x 0.7	user	6.5	29.95	16.47		
	V-15 Micro	20-17	26		7.3	3 ±1	47k	275	S	0.7	user	6.5	29.95	16.47		
	IV ACE	20-18	28		7.3	3 ±1	47k	275	S	0.7	user	6.5	24.95	13.72		
	V-15 Micro	20-17	26		7.3	5 ±2	47k	275	S	0.7	user	6.5	24.95	13.72		
	IV AT	20-17	26		7.3	5 ±2	47k	275	S	0.7	user	6.5	24.95	13.72		
	V-15 Micro	20-17	26		7.3	5 ±2	47k	275	S	0.7	user	6.5	24.95	13.72		
	IV AC	20-17	26		7.3	5 ±2	47k	275	S	0.7	user	6.5	24.95	13.72		
	IV-15/1200E	10-30	35		4.0	¾ ±½	47k	275	E	0.2x 0.7	user	5.5	79.95	35.00		
	XV-15/750E	10-25	35		4.0	¾ ±½	47k	275	E	0.3x 0.7	user	5.5	65.00	31.50		
	XV-15/625E	10-25	35		4.0	1 ±½	47k	275	E	0.3x 0.7	user	5.5	59.95	30.00		
	XV-15/400E	10-25	35		5.0	1½ ±½	47k	275	E	0.4x 0.7	user	5.5	54.95	28.50		
	XV-15/35Q	10-25	35		5.5	2 ±1	47k	275	S	0.7	user	5.5	49.95	26.25		
	XV-15/150	10-20	35		7.3	3 ±1	47k	275	S	0.7	user	5.5	39.95	23.95		
XV-15/200E	10-25	35		7.3	3 ±1	47k	275	E	0.4x 0.7	user	5.5	34.95	23.95			
XV-15/140E	10-20	35		7.3	4 ±1	47k	275	E	0.5x 0.7	user	5.5	34.95	19.22			
XV-15/100	10-20	35		7.3	5 ±2	47k	275	S	0.7	user	5.5	29.95	16.47			
XUV/4500-Q	10-50	35		4.0	1½ ±½	100k	100	Q		user	5.5	139.95	56.00			
XSV/3000	10-30	35		4.8	1½ ±½	47k	275	S		user	5.5	99.95	39.95			
UV-15/2400-Q	10-50	35		3.3	2 ±½	100k	100	Q		user	5.5	124.95	50.00			
UV-15/2000-Q	20-45	30		3.3	2 ±½	100k	100	Q		user	5.5	69.90	35.00			
RADIO SHACK	Realistic/Shure R7CED		25			3.5				C	0.6	user		15.95		
	Realistic/Shure R25EC	30-20	25			2.4				E	0.4x 0.7	user		17.95	11.95	

(Radio Shack continued on next page)



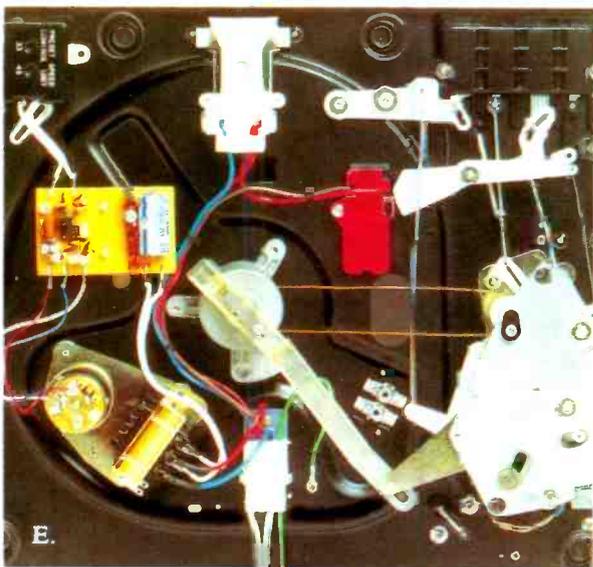
A. The computer-designed True Tangent Tonearm keeps the stylus at a constant 90° tangent to the record groove, by means of an articulated head. The angle between the head (holding cartridge and stylus) and the shaft of the tonearm changes with each groove. Thus, while the tonearm swings in an arc over the record, the stylus is kept at a constant, true tangent. Tracking error is eliminated, with its consequent problems of record wear and harmonic distortion.



B. Made of modern, low-mass magnesium, the GT55's tonearm weighs an astonishing 14 grams. It rides on jewel vertical pivots and horizontal ballbearings. Inertial drag and friction are reduced to absolute minimum levels.



C. Anti-skating protection on the GT55 is provided by a unique, patented system. Completely non-mechanical, it operates magnetically, and varies in proportion to the actual skating force across the surface of the disc. It is calibrated for elliptical and CD4 styli.



D. Cueing rate is variable, and the cueing operation is damped in both directions by the main cam of the turntable.

E. The GT55 is the only belt drive multiple play turntable with a DC servo motor. Both the motor and the belt-driven automatic mechanism are completely new. The speed of the motor is continuously governed and regulated by an electronic servo system. The automatic mechanism is smooth and silent in both single and multiple play. It is also completely disengaged from the tonearm when the record is playing.



F. Speed control is variable $\pm 3\%$, and is electronically governed by the servo which controls the motor. Read-out is monitored by an illuminated stroboscope.

G. The platter is four pounds, die cast and dynamically balanced for smooth, precise rotation. It is driven by a flexible belt, which insulates it from any possible motor vibration.



H. The precision controls are conveniently grouped, and include selectors for single or multiple play, as well as a repeat-play option for use in either mode.



Garrard
Turntable specialist for 50 years.

Check No. 37 on Reader Service Card

Only three turntables in
the world offer

True Tangent Tracking.

Bang & Olufsen, Rabco,
and the new Garrard GT55.

They play your records
precisely the way the
original masters were cut,
with the stylus held at a
90° tangent to the groove.
They eliminate harmonic
distortion caused
by tracking error.

One of the three is
also fully automatic in
both single and multiple
play. Its tonearm is low-
mass magnesium, balanced
on jewel pivots.

Yet it sells for the lowest
price of all three —
as much as \$400 lower!

The new GT55.

By Garrard.

The GT55

Generation Two Turntable with True Tangent Tracking.

Since the first flat disc record was made, just about 90 years ago, audio engineers have been searching for a way to eliminate tracking error.

The master record is cut with a stylus that maintains a constant 90° tangent to the groove it is inscribing. Problem: play it back the same way. Anything else produces tracking error (maybe a little, maybe a fair amount), and that means distortion.

In 90 years of search, turntable manufacturers have proposed an array of solutions. Some have been inventive, even ingenious; others have verged on the ridiculous. None until quite recently have been successful.

Now there are three, all as different from any other turntable as the flat disc is from Edison's cylinder. Two of them solve the problem by a radical departure from traditional design: they move the entire tonearm across the record—pivot, counterweight and all.

Ingenious. Complex. And expensive.

Garrard found another way. Our half-century of turntable engineering culminated in a solution that retains the pivoted tonearm yet keeps the stylus in an absolutely true 90° tangent to the groove at every point from the record's outer rim right to the label.

Further, we did this with a computer-designed tonearm made of the ultimate in lightweight, rigid metals: magnesium. It has the lowest mass (14 grams)—and the lowest inertial drag—of any multiple-play turntable.

And it *is* automatic. Fully automatic. Silky-smooth, silently automatic, and therefore gentler and safer than the steadiest hand, whether you use it as a single play or a multiple play turntable.

Garrard's solution—the GT55—delivers other advantages, as well. Some small, some quite large, depending on what's important to you.

And one overriding advantage. The others sell for prices up to \$700. The GT55 is under \$250. Which makes True Tracking not a costly privilege but an available benefit. To everybody.



For your free copy of the new Garrard Guide, please write:
Garrard, Division of Plessey Consumer Products,
Dept. C, 100 Commercial Street, Plainview, N.Y. 11803

Phono Cartridges



Sonic Research



Audio-technica
AT20SLa

MANUFACTURER	MODEL	Frequency response, Hz to kHz, -dB		Channel separ., 1kHz, dB	Channel separ., 10kHz, dB	mV output, 1 kHz, 5cm/S	Recommended tracking force range, gms.	Recommended load resistance, ohms	Recommended loading capacitance, pF	Stylus type - use code	Stylus radius (radius) mils	Is stylus user or factory replacer?	Weight, gms.	Price, \$	Replacement stylus price, \$	NOTES STYLUS TYPE C - Conical S - Spherical E - Elliptical Q - For CD-4 use (Shibata, etc.)
		20	25													
RADIO SHACK Continued	Realistic/ Shure R47EB	30-20	20						E	0.4x 0.7	user		19.95	13.95		
	Realistic/ Shure R27E	30-20	25			3/4-3			E	0.4x 0.7	user		24.95	17.95		
	Realistic/ Shure R700E	20-20	25			¾-1½			E	0.2x 0.7	user		34.95	23.95		
	Realistic/ Shure R1000E	20-20±3	25			¾-1½			E	0.2x 0.7	user		44.95	25.95		
SATIN	M-117E	10-40 ±2	25	20	3.5	0.5-1.5	47k	350	E	0.2x 0.8	user	9	170.00	90.00		Hi-output moving coil.
	M-117X	10-50 ±2	25	20	3.0	0.5-2.0	47k	350	Q	0.1x 2.5	user	9	190.00	120.00		as above
SHURE	V-15 type III	10-25	28		3.5	¾-1¼	47k		E	0.2x 0.7	user	6	85.00	31.00		
	M24H	20-50	22		3.0	1-1½					user	5.8	74.95	31.00		*Hyperbolic 2/4 chan.
	M95ED	20-20	25		4.7	¾-1¼	47k		E	0.2x 0.7	user	6	64.95	28.10		
	M95EJ	20-20	20		4.7	1½-3	47k		E	0.4x 0.7	user	6	49.95	23.40		
	M91ED	20-20	25		5.0	¾-1¼	47k		E	0.2x 0.7	user	5.5	59.95	27.05		Built in snap-down stylus guard.
	M75ED	20-20	25		5.0	1½-3	47k		E	0.4x 0.7	user	6	59.95	27.05		
	M93E	20-20	25		6.2	1½-3	47k		E	0.4x 0.7	user	6	44.95	20.30		
	M70EJ	20-20	20		6.2	1½-3	47k		E	0.4x 0.7	user	5.8	39.50	15.25		
	M70B	20-20	20		6.2	1½-3	47k		S	0.006	user	5.8	32.50	11.80		
	M55E	20-20	25		6.6	¾-2	47k		E	0.2x 0.7	user	7	34.95	15.55		
SONIC RESEARCH	Blue Label	5-20 ±1.5	30	30	4.0	¾-1¼	47k	250	Q	3x 0.3	user	5½	125.00	62.00		
	Red Label	5-20 ±1.5	30	30	4.0	¾-1¼	47k	400	E	0.7x 0.3	user	5½	104.00	41.00		
	Green Label	5-20 ±2	30	30	4.0	¾-1¼	47k	400	S	0.6	user	5½	88.00	24.00		
	Silver Label P	5-20 ±2	30	30	5.0	¾-1¼	47k	250	Q	3x 0.3	user	5½	70.00	36.00		
	Silver Label E	5-20 ±2	30	30	5.0	¾-1¼	47k	400	E	0.7x 0.3	user	5½	60.00	27.00		
	STANTON	600EE	20-20 ±2.5	35		5.0	1-2	47k	275	E	0.3x 0.7	user	5	55.00	27.75	
600E		20-20 ±2	35		5.0	1½-3	47k	275	E	0.4x 0.7	user	5	50.00	25.00		
600A		20-20 ±2	35		5.0	2-4	47k	275	S	0.7	user	5	45.00	20.25		
500EE		10-20 ±2	35		5.0	1-2	47k	275	E	0.3x 0.7	user	5	40.00	25.00		
500E		10-20 ±3	35		5.0	2-5	47k	275	E	0.4x 0.7	user	5	35.00	20.00		
500A		20-10 ±1 10-20 ±2	35		5.0	2-5	47k	275	S	0.7	user	5	30.00	12.00		
500AA		20-10 ±1 10-20 ±2	35		5.0	1-2½	47k	275	S	0.5	user	5	35.00	18.00		
500AL		20-17 ±2.5	28		5.0	3-7	47k	275	S	0.7	user	5	30.00	12.00		
780/4DQ		10-50	35		3.0	2 ±½	100k	100	Q		user	5.5	125.00	45.00		
780/Q		10-45	30		3.0	2 ±½	100k	100	Q		user	5.5	75.00	33.00		
681EEE		10-12 ±½	35		3.5	¾-1¼	47k	275	E	0.2x 0.7	user	5.5	82.00	41.00		
681EE		10-10 ±½	35		4.1	¾-1¼	47k	275	E	0.2x 0.7	user	5.5	72.00	36.00		
681A		10-10 ±½	35		5.5	1½-3	47k	275	S	0.7	user	5.5	66.00	30.00		
681SE		10-10 ±½	35		5.5	2-4	47k	275	E	0.4x 0.7	user	5.5	66.00	30.00		
680EL	20-18 ±2	30		5.5	2-5	47k	275	E	0.4x 0.7	user	5.5	90.00*	30.00		*W. spare stylus.	
680EE	20-20	35		4.1	¾-1¼	47k	275	E	0.3x 0.7	user	5.5	59.95	31.25			
SUPEK	SD-900E	5-40 ±1.5	27	25	0.2	1-1½			E	0.3x 0.8	fact.	10	125.00	67.50		Moving-coil, requires transformer.
	SD-900E Super	10-50 ±1.5	30	27	0.2	1.2-1.7			E	0.3x 0.8	fact.	8	150.00	75.00		As above
	SD-901/E Super	10-35 ±1.5	30	27	2.0	1.2-1.7	47k	80	E	0.3x 0.8	fact.	9	155.00	77.50		High output moving coil.
WIN	SDT-10	10-50	30	20	0.5-1.5	400	*	E	0.2x 0.7	user	1.5	225.00	45.00		*Less than 500.	

SOME OF THE HEAVIEST EQUIPMENT IN THE BUSINESS.

The next time you're looking at tape decks, pick up any piece of Akai equipment. They're heavy.

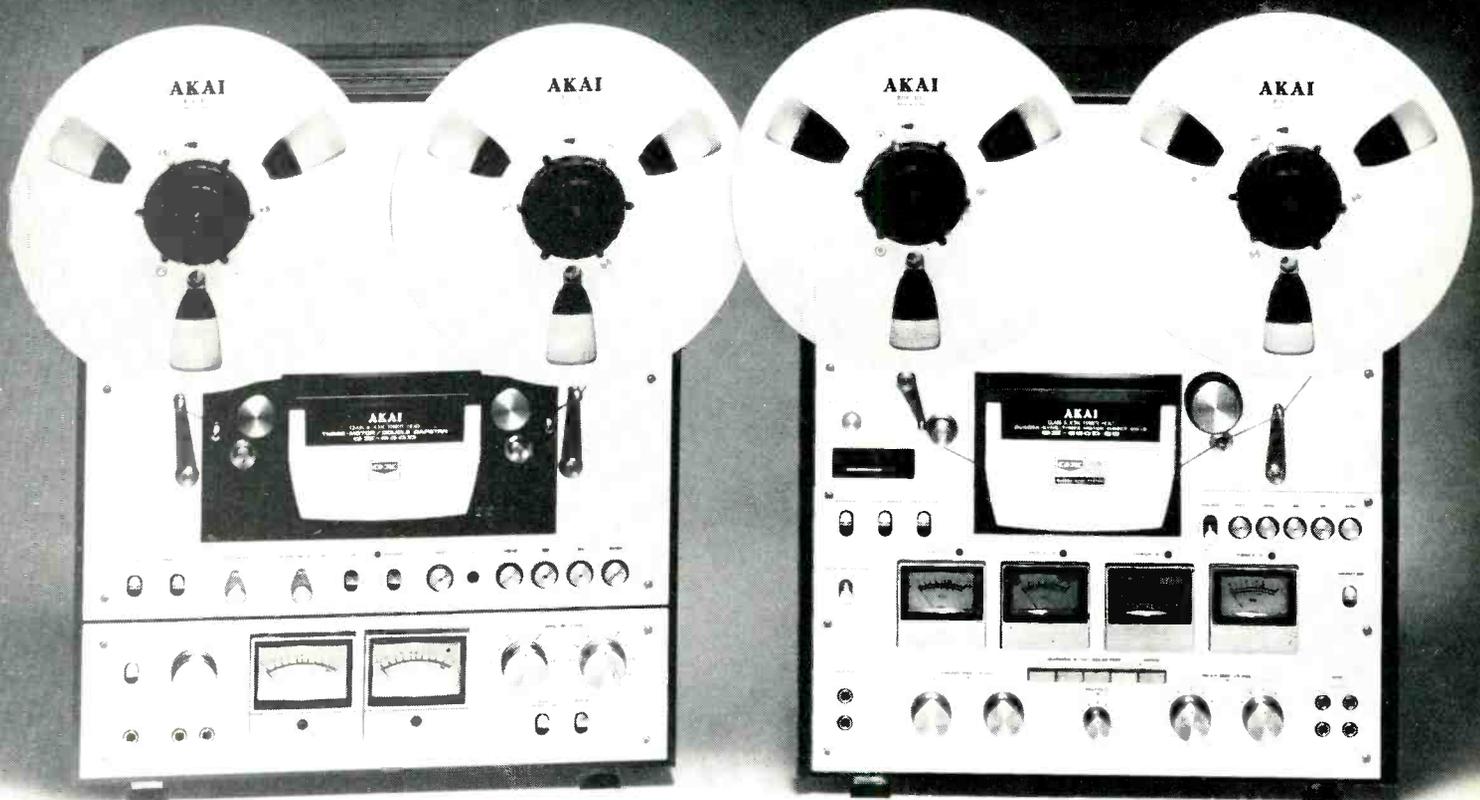
The motor, the drive system, the flywheel. Akai makes them big. As big and as strong as we possibly can. So they'll perform for you.

The Akai GX-630DSS is a good example. Pound for pound and dollar for dollar, it's one of our heaviest. It's driven by a big, heavy-duty AC servo capstan motor plus 2 eddy current motors for fast forward and rewind. It features Akai's Quadra-Sync® for

multiple track synchronization when recording. It offers complete versatility for mixing. And pitch control. It's got just about everything. For the guy who wants to do just about everything.

Our GX-650D stereo tape deck has just about everything, too. Closed loop dual capstan drive. One AC servo capstan motor plus 2 eddy current motors. Sound on sound. 3 speeds. It's got it.

That's the kind of equipment you can expect from Akai. Strong because we're heavy. Heavy because we're strong. Akai. Pick one up.



AKAI™ COMIN' ON STRONG!

Akai reel-to-reel tape decks from \$299.95 to \$1,495.00 suggested retail value. Akai America Ltd. 2139 East Del Amo Blvd. Compton, California 90220.

Loudspeakers

MANUFACTURER	MODEL	Enclosure type	Woofer dia., inches	Midrange dia., inches	Midrange type	Tweeter dia., inches	Tweeter type	Level control (M=midrange, T=tweeter)	Anisotropic freq. response Hz to kHz ±dB	dB SPL, 1 watt, 100Hz-10k Hz	Recommended min. amp. power	Crossover frequencies, Hz	Impedance, ohms, Nominal/minimum	Dimensions, inches	Finish	Grille Material? Color?	Weight, lbs.	Price, \$	NOTES
AOC	303AX2	Ac. sus.	10		1½	cone	M,T		37-20 ±3	25	1.2k	8/6	12½x10½ x23	Vin. Wal.	Cloth, brn.	37	129.00		
	XT-9	Ac. sus.	10		1¼	cone	M,T		45-20 ±3	25	1.5k	8/6	13x11¼ x23	Vin. Wal.	Foam, blk.	35	89.00		
	450AX	Ac. sus.	12		2½	cone	M,T		25-30 ±3	30	1.5k	8/6	14x12½ x25	Oil. Wal.	Cloth, brn.	50			
ADS	910	Ac. sus.	(2) 10	2	dome	1	dome		28-20 ±3	93	20	450 4000	4/4	19x15 x33½	wal.	cloth blk	85	560.00	can be bi- or tri-amped optional stands
	810	Ac. sus.	(2) 8	2	dome	1	dome		35-20 ±3	93	15	550 4000	4/4	14x11¼ x25½	wal.	cloth blk	46.5	349.00	
	710	Ac. sus.	(2) 7	2	dome	1	dome		40-20 ±3	92	15	550 4000	4/4	12¼x10½ x21¼	wal.	cloth blk	35	249.00	
	200	Ac. sus.	4			1	dome		90-20 ±3	89	15	2500	4/4	4¼x4¼ x6¾	brush alum	alum	4.5	100.00	
	2002	Ac. sus.	4			1	dome		85-20 ±3	89		2500	50K	4¼x5 x6¾	brush alum	alum	5	398.00	3 built-in amps
	700	Ac. sus.	(2) 7			1	dome		45-20 ±3	91	15	1500	4/4	12¼x10½ x21¼	wal.	cloth blk	32.5	179.00	
	500	Ac. sus.	8			1	dome		45-20 ±3	91	15	1500	4/4	11½x9¾ x20	wal.	cloth blk	25	139.00	
400	Ac. sus.	7			1	dome		48-20 ±3	90	10	1500	4/4	10x8½ x17¾	wal.	cloth blk	18.5	99.50		
ACOUSTIC FIBER SOUND SYSTEMS	KK5030	Ac. sus.		4					75-20	6		8	7x5¼x5	*	clth blk	1%	29.95 pr.	*Nauga-hyde	
	KK5040	Ac. sus.		5					70-20	8		8	8x6¼ x6	*	clth blk	2%	36.95 pr.	*see above	
	KK5050	Ac. sus.		5					65-20	10		8	9x7¼ x7	*	clth blk	3%	41.95 pr.	*see above	
ACOUSTIC RESEARCH	AR-LST	Ac. sus.	12	(4) 1½	dome	(4) ¾	dome		*	86	*	575, 5k	8/4	27x20 x9%	wal.	cloth beige	90	600.00	*Complete data on request
	AR-3A	Ac. sus.	12	1½	dome	¾	dome	M,T	*	86	*	575, 5k	4/3	25x14 x11¼	wal.	cloth beige	53	295.00	*as above
	AR-5	Ac. sus.	10	1½	dome	¾	dome	M,T	*	86	*	650, 5k	8/4	13½x24 x11¼	wal.	cloth beige	39	215.00	*as above
	AR-2AX	Ac. sus.	10	3½	cone	¾	dome	M,T	*	86	*	1.4, 5k	8/4	13½x24 x11¼	wal.	cloth beige	36½	165.00	*as above
	AR-6	Ac. sus.	8			1¼	dome/ cone	T	*	86	*	1.8k	8/4	12x19½ x7	wal.	cloth beige	20	99.00	*as above
	AR-7	Ac. sus.	8			1¼	dome/ cone		*	86	*	2k	8/4	9¾x15¼ x6¾	wal.	cloth beige	11	75.00	*as above
ACOUSTICAL ENGINEERING	MACH IV	Horn	15	8	Horn	1½	Horn	T	32-18 ±5	98.0	40	400, 2.5k	8	30x26 x42	oil. wal.	clth, brn.	160	1495.00	
	SARATOGA	Horn	12	8	Horn	1½	Horn	T	36-18 ±5	96.5	40	500 3k	8	28x22 x30	oil. wal.	clth, brn.	150	895.00	
	Model 5	Horn	12	8	Horn	1½	Horn	T	36-18 ±5	96.5	40	500 3k	8	20½x29 x30	Fit blk	none	120	595.00	Wal. finish \$695.00
	MiniCorner	Horn	8	4	Horn	1	Horn	T	42-16 ±5	88.5	20	800 5k	8	12x12 x24	oil wal	clth, brn.	65	295.00	
ACOUSTI-PHASE	Phase Master	Bass Reflex	12	(2) 5	dome		horn	M,T	30-20 ±4		15	500 55	4/8	25x15 x14	butch. block	brown	60	359.00	
	Phase III±	Bass Reflex	12	5	cone	1	dome		32-20 ±3		10	700, 4500	4/8	25x15 x14	wal.	brown	47	279.95	
	Phase II	Bass Reflex	10	5	cone	1	dome		38-20 ±3		10	1200, 4500	4/8	24½x14¼ x12½	wal.	brown	42	199.95	
	Phase Monitor	Bass Reflex	12			1	dome		38-20 ±3		10	200, 2000	4/8	25x15 x14	wal.	brown	47	159.00	
	Phase I	Bass Reflex	8			1	dome		40-20 ±4		6	1600	4/8	21½x12½ x11	wal.	brown	29	119.95	
	Microphase	Bass Reflex	6½			1	dome		48-20 ±4.5		5	1600	4/8	17½x10½ x8	wal.	brown	19	79.95	
ACOUSTIQUE 3A	Andante Master Control	A.P.F. elect.	10	6	dome	1x2			25-40 ±3	93	10	300, 5k	8	12x8 x18	wal	clth blk	50	792.00	acoustic pressure feedback 125 w built-in amp.
	Andante 'ultra linear'	A.P.F.	11	2	dome	0.8	dome		30-30 ±3	93	5	300, 4k	8	12x8 x18	wal or blk suede	clth blk	50	459.00	120w built-in amp. phased array
	Adagio	infinite acoustic loading	11	2	dome	0.8	dome	M	30-30 ±3	92	10	400, 4k	8/8	13x12 x31	wal	clth blk	67	389.00	
	Apogee	reflex bass reflex	10	—	—	0.8	dome	—	50-30 ±3	94	10	3.5k	8/8	12x10 x25	wal	clth blk	32	189.00	phased array 125 w rms power handling
	Arioso Monitor	bass reflex	15	6	cone	1	horn	B, M, T	50-18 ±3	94	20	300, 5k	8/8	18x15 x27	wal	clth blk	90	499.00	

some straight talk about loudspeaker accuracy from the people who invented it

Of over 100 speaker brands advertised on the market, all claiming supremacy for their product based on the kind of sound they produce, one leading company stands apart. It is Acoustic Research. We design, build and test our products to accurately reproduce all the sound information contained on your records, tapes and radio broadcasts, but no more. What you want from a loudspeaker is a precise recreation of what the recording engineer placed on your disc or tape, be it good, bad or mediocre. Only AR loudspeakers can guarantee you this kind of accuracy.

The most important contributors to AR loudspeaker accuracy are an original design with inherently flat frequency response (the ability to reproduce faithfully the complete range of musical sounds, including harmonics, without emphasizing or subduing any of them) and a rigorous testing program to insure that this ideal specification is fully realized in every product shipped. The flatness of AR response curves is an accepted fact. Perhaps not so well known is our insistence that every individual AR driver, and every completed system, perform to within ± 1 dB of this response curve before it may be shipped to your dealer.

We'd like you to know much more about accuracy in sound reproduction and have prepared a 36-page brochure on loudspeaker design and selection which will help you to make the most informed choice among the many options offered in the marketplace. For \$1.00 we'll send you a copy by first class mail. Or you may obtain your copy free by visiting your AR dealer. While you're there ask for an A-B demonstration of AR speakers using music with which you're familiar, against any other speakers in his showroom. We think you'll find our accurate sound the one you want to live with. For a list of AR dealers serving your area, circle reader service number or contact:

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Tim Holl, Director of Engineering at Acoustic Research

AR-11 three-way loudspeaker system \$325.

AR accuracy is available in speakers selling from under \$100 to \$425.

Loudspeakers

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MANUFACTURER	MODEL	Enclosure type	Woofer dia., inches		Midrange type	Tweeter dia., inches		Tweeter type	Level controls (M=midrange, T=Tweeter)	Anechoic freq. response Hz to kHz ±dB	dB SPL 1 watt input, 1 mtr. on axis, 100Hz-10k Hz	Recommended min. amp. power	Crossover frequencies, Hz	Impedance ohms; Nominal/minimum	Dimensions, inches	Finish	Grille Material? Color?	Weight, lbs.	Price, \$	NOTES	
			15	6		1x2	equi-phase flat														25-40 ±3
ACOUSTIQUE 3A Continued	Andante Studio	A.P.F. elect.	15	6	dome	1x2	equi-phase flat			25-40 ±3	94	10	250, 5k	8	16x10 x30	wal	clth blk	100	1000.00	150w built-in amp.	
	Allegretto	bass reflex	10	4x8	horn	1	horn	M		50-18 ±3	93	10	2k, 10k	8/8	12x10 x25	wal	clth blk	34	269.00		
ADVANCED DEVELOPMENT DIVISION, AR	AR-10π	Ac. sus.	12	1½	dome	¾	dome	W MT	*	86	25	525, 5000	8	12x14 x10½	oil wal	foam grey		55	425.00	*Complete curves available on request *as above	
	AR-11	Ac. sus.	12	1½	dome	¾	dome	MT	*	86	25	525, 5000	4	25x14 x10½	oil wal	foam grey		49%	325.00	*as above	
	AR-12	Ac. sus.	10	2	cone	¾	dome	MT	*	86	25	700, 4000	8	25x14 x10½	oil wal	foam grey		37½	225.00	*as above	
	AR-14	Ac. sus.	10	—	—	1	dome	T	*	86	15	1300	8	25x14 x10½	oil wal	foam grey		35	160.00	*as above	
	AR-16	Ac. sus.	8	—	—	1	dome	T	*	85	15	1300	8	20x10 x8½	oil wal	foam grey		21	115.00	*as above	
	AR-16	Ac. sus.	8	—	—	1	dome	T	*	85	15	1300	8	20x10 x8½	oil wal	foam grey		21	99.95	*as above	
ADVENT	Advent	Ac. sus.	—	—	—	1	dome	T		87	15	1000	8/5.6	14¼x25½ x11½	wal	clth beige		44	145.00	Wal. vin., \$126.00	
	Small Advent	Ac. sus.	—	—	—	1	dome	—		87	15	1400	4/	11½x20 x9½	wal	clth beige		26	92.00		
	Advent/2	Ac. sus.	—	—	—	1½ (2)	cone	—		87	10	1500	8/	11½x19 x7½	wal vin	clth beige		26	79.00	Also in white metal grille, 96.00	
	Advent/3 Model 400	Ac. sus.	—	—	—	¾	cone	—		8	8	8/	8/	15¼x9½ x6¾	wal vin white	clth beige metal		10.6	52.00		
AKAI	S-123	bass reflex	12	4½	cone	1½	—	M, T		35-20 ±5	50	1.5k	8	14¼x10½ x26½	wood vin.	foam		40	190.00		
	S-122	bass reflex	12	—	cone	1½	—	T		40-20 ±5	40	4k, 2k	8	14¼x10½ x26½	wood vin.	foam		34	130.00		
	S-102	bass reflex	10	—	cone	1½	—	T		45-20 ±5	35	2k	8	13¼x9½ x24	wood vin.	foam		27	90.00		
	S-82	Ac. sus.	8	—	cone	3	—	—		60-17 ±5	15	4k	8	11x6¼ x19	wood vin.	clth		9	75.00 pr.		
ALLISON ACOUSTICS	One	Ac. sus.*	2x10	2x3½	**	2x1	**	***		86	30	350-3750	8/7	19x40 x10½	wal	plastic blk		67	360.00	*stabilized radiation design. **convex cone ***single 3-pos. switch	
	Two	Ac. sus.*	2x8	2x3½	**	2x1	**	***		86	30	350-3750	8/7	16x36 x9½	wal	plastic blk		57	295.00		
	Three	Ac. sus.*	10	3½	**	1	**	***		86	30	350-3750	4/3½	15¼x40 x10	wal	plastic blk		45	260.00		
	Four	Ac. sus.*	8	—	—	2x1	**	T		86	30	2k	8/6½	19½x11 x10	wal	plastic blk		24	175.00		
ALTEC	Nine	vented	12	6½	cone	5	cone			40-20	93	60	800-7kHz	8	26½x17½ x15	oil oak	foam blk		56	289.00	
	Seven	vented	12	6½	cone	4 (2)	cone			45-20	90	50	850-8kHz	8	25x16 x14½	oil wal	knit blk		43%	219.00	
	Five	vented	12	—	—	4	cone			45-20	91.5	45	1500	8	25x16 x14½ x12	oil wal	knit blk		32	169.00	
	Three	vented	10	—	—	4	cone			50-20	90.5	35	1500	8	24x12½ x11½	oil oak	knit blk		26%	119.00	
	One	sealed	8	—	—	4	cone			50-20	84	30	3000	8	21x11½ x10½	oil oak	knit blk		23	89.00	
	19	vent	15	—	—	—	sec. horn			30-20	99	65	1200	8	30x39 x21	oil wal	knit blk		143	659.00	
	17	vent	15	—	—	—	sec. horn rad. horn			20-20	100	65	1500	8	40x26 x18	oil wal	knit blk		138	585.00	
	15	vent	12	—	—	—	sec. horn rad. horn			30-20	90	60	1700	8	22x27 x15½	oil wal	knit blk		76	429.00	
	Stonehenge II	vent	12	5½	cone	5	cone			35-20	86	50	500-5k	8	37½x16 x14½	oil oak	knit blk		61	359.00	
	Santana II	vent	12	—	—	5	cone			40-20	89	45	2500	8	19x25½ x16	oil wal	knit blk		57	259.00	
	A7-8	reflex	15	—	—	—	sec. horn			45-20	101	50	800	8	52¼x30 x24	grey	knit blk		135	557.00	
	A7-500-8	reflex	15	—	—	—	sec. horn			45-20	101	50	500	8	52¼x30 x24	grey	knit blk		163	589.00	
	STRDNG	620	Ac. sus.	8	2	dome	1	dome			25-25 ±3	85	20	400, 4500	8	10x12 x24	oil rose, wal	foam		30	275.00



Bring home a legend.

When you go out to buy a stereo system, you'll be matching sophisticated, expensive components from a vast array of choices.

More important (because good music means a lot to you), you'll be selecting an important part of your personal environment.

So you don't want to be let down, not even a little bit. That's why the speakers you bring home should be Bose 901s.[®]

You'll be impressed with your new 901s as soon as you unpack them. They're much more compact than their performance, reputation, or price would lead you to believe, and they're beautifully crafted from fine materials.

By the time you have the system set up, you'll somehow be expecting something new and better in the music, something you've never been able to hear before.

You won't be disappointed.

You will hear an extraordinarily open, spacious sound that very effectively reproduces the feeling of a live, concert-hall performance, a sound that has been acclaimed by reviewers all over the world.

That unique sound is the result

of several interrelated technical developments.

First, the 901s are Direct/Reflecting[®] speakers. Sound reflects off the walls of the room, surrounding you with the correct proportions of reflected and direct sound, all frequencies in balance, almost everywhere in the room. In contrast, conventional direct-radiating speakers tend to beam high frequencies, limiting optimum listening area, and producing a sometimes harsh sound.

Second, the 901 has no conventional woofers or tweeters, just nine identical, 4½-inch, full-range drivers, acoustically coupled inside that very compact 901 cabinet. Coupling tends to cancel out, across all nine drivers, the small imperfections found in any speaker (ours included). The result is a smooth, life-like sound that's virtually free of distortion.

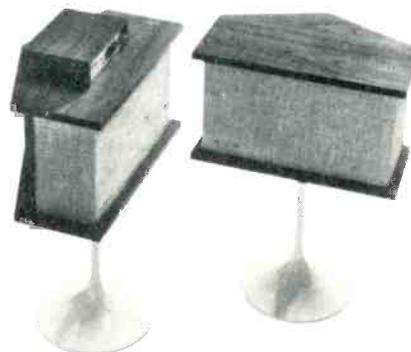
Third is the Active Equalizer, a compact electronic unit that automatically boosts power at frequencies that need a boost. This produces consistent sound output up and down the frequency range, with full, clear highs and solid, powerful lows.

The first time you listen to

your new 901s, you'll know you've brought home the right speakers. Years later you'll have the continued satisfaction of owning and using a product of uncompromising quality.

We invite you to go to a Bose dealer, listen, and compare the 901 to any other speaker, regardless of size or price. Then you'll begin to know why the Bose 901 has become something more than a loudspeaker system for thousands of music lovers all over the world.

For a full-color brochure on the 901 loudspeaker system, write: Bose, Dept. AU10, The Mountain, Framingham, Mass. 01701. Patents issued and pending.



BOSE[®]

The Mountain
Framingham, Mass. 01701

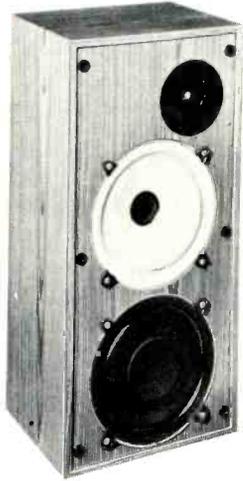
Loudspeakers

90

MANUFACTURER	MODEL	Enclosure type	Monitor dia., inches	Midrange dia., inches	Midrange type	Tweeter dia., inches	Tweeter type	Level controls (M=midrange, T=tweeter)	Anechoic freq. response Hz to kHz ±dB	dB SPL, 1 watt input, 1 mtr. on axis, 100Hz-10k Hz	Recommended min. amp. power	Crossover frequencies, Hz	Impedance, ohms, Nominal/minimum	Dimensions, inches	Finish	Grille Material? Color?	Weight, lbs.	Price, \$	NOTES
AUDIOANALYST	A66	tuned col. Ac. sus.	(2) 4 1/2		2	cone			55-18 ±3	95	5	2k	6/5	10x9 x20	wal	blk	21	89.00	
	A76X	Ac. sus.	10		2	cone	T		44-18 ±3	90.5	10	1.8k	8/6	12 1/4 x 10 1/2 x 21	wal	wh	32	119.00	
	A100C	Ac. sus.	10	cone	1 1/2	cone	M, T		44-20 ±3	90.5	10	1.8, 8.5k	8/6.5	12 1/4 x 10 1/2 x 21	wal	wh	37	138.00	
	A100X	Ac. sus.	10	cone	1 1/2	cone	M, T		40-20 ±3	92	10	1.5, 7.5k	8/6.5	13 1/2 x 12 x 24 1/2	wal	wh	37	159.00	
	A200X	Ac. sus.	12	5	cone	(1) 2 (2) 1 1/2	cone	M T	38-20 ±3	93.5	10	800, 2k, 7.5k	8/7.5	15 x 12 1/2 x 27	wal	wh clth blk	53	279.00	
	Anthem Array	stag. tun.	(2) 10	4 1/2	cone	1	dome	M, T ST.	30-20 ±3	87	20	120, 450, 38, 12k	8/4	15 x 15 x 44		clth blk	80	499.00	
AUDIO ENGINEERING	Model 1	Ac. sus.	10		2	dome	T		40-18 ±3	88	15	1500	4	15x9 x25	oil wal	foam or clth	42	156.00	
AUDIO LABS	82	Ac. sus.	8		2	cone			35-20 ±5	94	8	2k	8	12x19 1/2 x8	wal	clth blk	23	79.00	
	81	Ac. sus.	8		1	dome			25-20 ±4	92	8	1.6k	8	12x22 x9	wal	clth blk	26	99.00	
	101-0	Ac. sus.	10		1	dome			22-20 ±4	91	12	2k	8	14 1/2 x 25 1/2 x 11 1/2	wal	clth blk	46	139.00	
	121	Ac. sus.	12		1	dome			22-20 ±3	92	12	1.6k	8	14 1/2 x 25 1/2 x 12	wal	clth blk	48	169.00	
	1251	Ac. sus.	12	5	cone	1	dome		20-20 ±4	94	12	500, 5k	8	14 1/2 x 26 1/2 x 11 1/2	wal	clth blk	49	249.00	
	Range Expander	*				1	dome		12-22 ±3	88	12	12k	8	*	*	*	3	25.00	*converts Advent to 3-way
	881	Ac. sus.	(2) 8		1	dome			20-22 ±4	92	12	1.6k	4	12x29 x10	wal	clth blk	46	219.00	
	O-821	Ac. sus.	(2) 8	2	dome	1	dome	M, T	20-22 ±4	93	12	300, 4.5k	4	12x42 x10	wal	clth blk	48	299.00	
AUDIO NICS	TL30-C	Trans. line Ac. sus.	8		2	cone			30-20 ±2.5	82	20	3k	8/5	39x12 x12	rose	knit blk	65	239.00	parametric crossover
	M-32B	Ac. sus.	8		2	cone			45-20 ±2.5	82	20	3k	8/5	21x14x9	rose	knit blk	28	155.00	parametric crossover
	M-33	Ac. sus.	9x13	5	cone	1	dome		38-20 ±3	85	20	250-3k	8	31x16 x14	rose	knit blk	60	379.00	
	TL-M51	Trans. line	8		2	cone			35-20 ±2.5	85	20	3k	8/5	46x12 1/2 x12 1/2	rose	knit blk	75	329.00	parametric crossover
	TL-M100	Trans. line	5	cone	1	dome			30-20 ±2.5	82	20	450-3k	8/5	46x12 1/2 x12 1/2	rose	knit blk	85	549.00	parametric crossover
	TL-M200	Trans. line	9x13	5	cone	1	dome		30-20 ±2.5	80	50	100-50-3k	8/5	51x16 x22	rose	knit blk	160	1050.00	parametric, sub&mid woofer bi-amp
AUDIO PHASE	FW154	bass reflex	15	4x10	horn	3	cone	MT	20-25		5	800 2.5k 6.5k	8	28x18 x16	oil wal	knit blk	45	299.50	
	FW124	bass reflex	12	4x10	horn	3	cone	MT	20-25		5	800 2.5k 6.5k	8	23 1/2 x 15 1/2 x 12	oil wal	knit blk	37	249.50	
	SW123	bass reflex	12	4x10	horn	3	cone	MT	30-19		1	800 1.5k	8	23 1/2 x 15 1/2 x 12	oil wal	foam blk	37	169.50	
	LV123	bass reflex	12	5	cone	3	cone	-	35-19		1	800 1.5k	8	23 1/2 x 15 1/2 x 12	wal	foam blk	35	119.50	
	LV82	bass reflex	8	-	-	3	cone	-	40-18		1	1.5k	8	23x13 x10	wal	foam blk	27	69.50	
AUDIOSON/ KIRKSAETER	Monitor 100	Ac. sus.	(2) 10	(2) 1 1/2	dome	(2) 1	dome		18-22		100	1.2k 5.5k	8	15 1/2 x 29 1/2 x 12	wal	steel-clth brn	66	450.00	
	Monitor 70	Ac. sus.	12	1 1/2	dome	1	dome		20-22		70	1.2k, 5.5k	4	22 1/2 x 13 x 11	wal	steel-clth brn	40	300.00	
	Monitor 50	Ac. sus.	10	1 1/2	dome	1	dome		22-22		50	1.2k, 5.5k	4	18x9 1/2 x 11 1/2	wal	steel-clth brn	22	210.00	
	Monitor 40	Ac. sus.	8	1 1/2	dome	1	dome		28-22		40	1.2k, 5.5k	4	18x9 1/2 x 8	wal	steel-clth brn	18	165.00	
	Monitor 35	Ac. sus.	8			1	dome		30-20		35	3.5k	4	18x9 1/2 x 8	wal	steel-clth brn	14	130.00	
AUDIO RESEARCH	Tympani 1C	tympanic sus.	(2) 72		(1) 72				40-18 ±3		50	1.3k	8	3-sec. 72x16 x1		clth wh or blk	160	1325.00 pr.	Folding floor screen.
	Tympani III A	tympanic sus.	(4) 72	(1) 72	(1) 72				35-18 ±3		75	150-1.5k	8	14-sec. screen		clth wh or blk	200	1895.00 system	same as above bi-amp or tri-amp

Celestion and Decca

A century of leadership bridging audio's two widest gaps.



Celestion UL8

Widest gap number 1: Between the signal at your amplifier's output and the sound you hear. The loudspeaker must fill this gap via mechanical translation. The vibrating element of every speaker possesses mass and inertia—and will therefore by definition be an imperfect reproducer. This is why loudspeaker distortion, frequency and transient response specifications are much poorer than those of good amplifiers.

Celestion's 52 years of building nothing but speakers has evolved an integrate design approach which bridges this gap to an extent few other companies can match. First, Celestion system engineers design a complete speaker system, juggling all variables including driver design. Next, to fill system engineering's requirements. In most speaker companies, designers must compromise insofar as they must make do with commercially available drive units. By designing and building their own drivers to precisely meet the demands of any particular application, Celestion engineers dramatically reduce compromise other designers must accept. The result is maximum possible performance for given size and price ranges.

From Celestion's UL6 winning the 5th Japan Stereo Components Grand Prix contest, to the Celestion "Power-Range" models used by the Beatles, to the Ditton 66 studio monitors of the Olympic Radio and Television Organization, Montreal /76, people who know how to best bridge the speaker gap—insist on Celestion.



Decca MKV1 Gold Elliptical Cartridge

Widest gap number 2: Between vinyl record grooves and the signal at your phono preamp's input. Like the vibrating element of every speaker, the phono cartridge, stylus and tonearm possess mass, inertia and friction—and can thus approach but not attain correct translation of what is really recorded on the disk.

From Decca, the world's most experienced producer of high quality phonograph records, comes the world's highest fidelity means of playing them: the Decca System. Consisting of:

- 1) Decca London MKV1 Gold Elliptical or Plum Spherical Cartridges employing Decca's legendary "Positive Scanning" system. Featuring lower stylus mass, higher compliance, lower tracking force than the Decca MKV series. Decca MKV1 models offer the best transient response of all cartridges—regardless of price.
- 2) New Decca International Arm. Magnetic antiskating and damped unipivot jewelled bearing of original international Arm, plus several modifications and improvements. As close as you can get to zero friction and zero groove pressure unbalance.
- 3) Decca Record Brush and Record cleaner, "dry clean" devices utilizing Decca's unique conductive micro-fiber to clean records and drain static without the destructive properties liquid cleaners exhibit on cartridges and records. Designed especially for Decca's state-of-the-art MKV1 cartridges.

Bridge the phono gap and hear what is *really* on your records—insist on Decca.



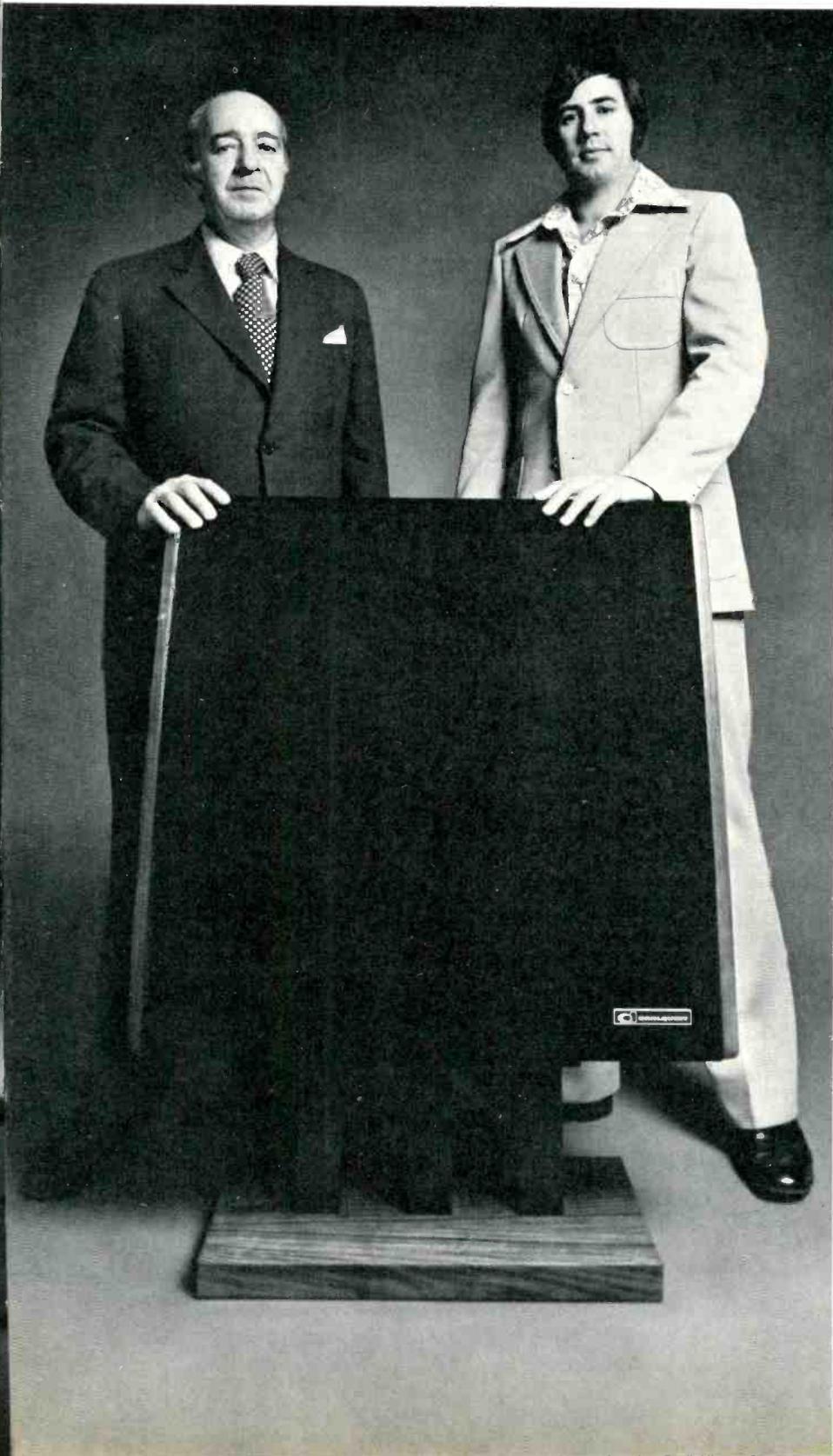
Sole North American Distributors.
ROCELCO INC., 160 Ronald Dr., Montreal, Canada H4X 1M8 Phone (514) 489-6842

Loudspeakers

MANUFACTURER	MODEL	Enclosure type	Woofer dia., inches	Midrange dia., inches	Midrange type	Tweeter dia., inches	Tweeter type	Level control (M=midrange, T=tweeter)	Anisochron freq. response Hz to kHz ±dB	dB SPL 1 watt/100Hz-10kHz	Recommended min. amp. power	Crossover frequencies, Hz	Impedance, ohms; Nominal/minimum	Dimensions, inches	Finish	Grille Material? Color?	Weight, lbs.	Price, \$	NOTES
AUDIO-TECH	HR-1	ported	12				horn		32-19 ±4	20	800	8/5	24x17x33	oil wal	foam grey	110	250.00		
	HR-2	ported	10				horn		40-19 ±4	20	1000	8/5	17x13	oil wal	foam grey	52	170.00		
	AT-1	ported	10			2	horn		40-20 ±4	20	2500	8	17x13	oil wal	foam grey	37	65.00	Kit	
	AT-2	Ac. sus.	12	5	cone	1	dome	M, T	35-18 ±4	20	18-5k	8	17x13	oil wal	foam grey	45	115.00	Kit	
	AT-3	Ac. sus.	12	12x4	horn	4	horn	M, T	35-20 ±4	20	700-5k	8	17x13	oil wal	foam grey	47	170.00	Kit	
AT-4	ported	15	12x4	horn		horn	M, T	25-18 ±4	20	70-5k	8	24x17x35	oil wal	foam grey	105	260.00	Kit		
AURATONE	5C	Ac. sus.	4½						50-15	90	3		8	6½x6½	oil wal	foam blk	4	49.95 pr.	
	5S	Ac. sus.	4½						50-15	90	3		8	6½x10½	oil wal	foam blk	5	54.95 pr.	
	5W	Ac. sus.	4½						50-15	90	3		8	7½x7½	oil wal	foam blk	5	69.95 pr.	
	5X	Ac. sus.	4½						50-15	90	3		8	7½x7½	oil wal	foam blk	4	49.95 pr.	
AVID	103	Ac. sus.	10	3½	cone	1	dome	M, T	44-18 ±3	83	20	500-3.5k	8/6	15x9½	oil wal	clth brn	38	179.00	
	102	Ac. sus.	10			1	dome	T	44-18 ±3	85	15	2.2k	8/6	15x9½	oil wal	clth brn	36	139.00	
	101	vented	8			(1)1½	cone		30-18 ±3	85	15	2.5k	8/7	13x13	oil wal	clth brn	40	149.00	
	100	Ac. sus.	8			(2)1½	cone		48-18 ±3	85	15	2.5k	8/7	12½x8½	oil wal	clth brn	22	95.00	
	105	Ac. sus.	12	3		(2)1½	dome	T	30-18 ±2.5	85	25	500-48.9k	8/6	20½x15	oil wal	clth brn	75	319.00	
	60	vented	9x6		cone	2½	cone	M	60-17 ±5	90	5	1600-8k	8	8½x8½	oil wal	clth brn	32	130.00 pr.	
B-I-C VENTURI	Formula 1		8	1½	horn				35-18	91	10	1.5k	8/6½	11x10x16½	oil wal	foam *	23	74.95	*Blk., blu, brn, or orange *as above
	Formula 2		8	1½	horn	3	dome		30-23	92.5	10	1.58-15k	6/5	12x11½	oil wal	foam *	30	119.50	*as above
	Formula 4		10	1½	horn	3	dome		25-23	93.5	10	1.58-15k	6/5	13½x13	oil wal	foam *	45	159.00	*as above
	Formula 6		12	5, (2)1½	cone, horn	(2)1½	piezo	T	20-28	96	10	750, 1.58-15k	6/4½	15½x14½	oil wal	foam *	64	295.00	*as above
	Formula 5 Monitor Formula 7 Monitor		10 12	1½ 8	horn cone	1½ 1½	piezo T	T	30-30 20-30	96 99	10	1.58-10k 750, 1.58-10k	6/5 6/4½	14½x12½ 16x13½	oil wal	clth brn clth brn	49 81	219.95 445.00	
B & W	DM5	ac. sus.	5			.8	dome		100-18 ±5	85	15	4-5k	8/3	8x18x18	oil wal	foam blk	17	149.00	Fused
	DM4	vented	7	1.5	dome	1.5	dome		20-80 ±5	90	10	2.5-14.0	8/3	10x10x21	oil wal	clth brn or blk	24.5	230.00	
	OM2A	trans. line	7	1.5	dome	1.5	dome	T	60-20 ±4	85	25	3-14	8/3.5	14x13½x25½	oil wal	clth brn or blk	49	350.00	
BML	Tracer SK	Trans. line	8	6	ABR	3½	horn	none	50-20 ±5	92	5	1000, 5000	6/4	11½x7	oil wal	clth brn	25	99.95	
	Tracer IA	Trans. line	8	8	ABR	3½	horn	none	43-23 ±5	94	6	1k, 5k	6/4	12x10	oil wal	clth brn	30	149.95	
	Tracer II	Trans. line	8	8	ABR	2x3½	horn	none	38-23 ±5	94	12	1k, 5k	6/4	14½x9	oil wal	clth brn/blk	35	199.95	
	Tracer III	Trans. line	2x8	4½	cone	3½	horn	none	32-23 ±3	90	20	450, 4000	6/4	14x12x22	oil wal	clth brn/blk	52	339.95	Trolley stands optional
	"Tower of Power"	Trans. line	2x8	2x8	ABR	4x3½	horn	none	28-23 ±5	90	100	1k-5k	12/8	14½x10x54	oil wal	clth brn/blk	80	459.95	Price incl. Mtg. cradle/rack
BANG & OLUFSEN	Beovox M70	Ac. sus.	10	2½	cone	1	dome		27-20 ±4-8	70	500-4.5k	4/8	13½x25½	oil wal	clth blk	55	700.00		
	Beovox S60	Ac. sus.	10	2	cone	1	dome		36-20 ±6	60	700-4k	4/8	12½x23½	oil wal	clth blk	24	440.00		
	Beovox P45	Ac. sus.	(2)5			1	dome		40-20 ±6	45	2k	4/8	13½x25	oil wal	clth blk	17	310.00		
	Beovox S45	Ac. sus.	5			1	dome		38-20 ±6	45	2k	4/8	10½x19	oil wal	clth blk	15	280.00		
	Beovox P30	Ac. sus.	6½			1	dome		49-20 ±6	30	3k	4/8	11x21½	oil wal	clth blk	11	230.00		
	Beovox S30	Ac. sus.	6½			1	dome		49-20 ±6	30	3k	4/8	8½x16x5	oil wal	clth blk	8	200.00		
BECKER	102	Ac. sus.	6½			3	dome			10		8/3	9x6½	oil wal	clth blk/brn	10	50.00 pr.		
	104	Ac. sus.	8			3	dome			15		8/3	11½x8½	oil wal	clth blk/brn	14	85.00 pr.		
	105	Ac. sus.	10	5	cone	3	dome			35		8/3	13x8½	oil wal	clth blk/brn	24	110.00 pr.		
	106	Ac. sus.	12	5	cone	4	dome			35		8/3	15x10½	oil wal	clth blk/brn	31	140.00 pr.	*cloth-foam	
	107	Ac. sus.	12	5	cone	4	dome			60		8/3	15½x11½	oil wal	clth blk/brn	33	200.00 pr.	*as above	

(Continued)

Who's behind the remarkable DQ-10 speaker?



Some of the most remarkable men in audio—Jon G. Dahlquist and Saul B. Marantz, the founders of this company.

There's hardly an audiophile anywhere who doesn't know about Saul Marantz, one of the pioneers in the growth of this industry and a leading proponent of high quality performance.

Then there's our brilliant engineering head, Jon Dahlquist. His contribution in the Lunar Excursion Module project involved vibration and stress analysis. This eventually led him to more earthly projects such as loudspeaker wave-form behavior. His research was applied to the unique acoustical concepts that are incorporated in the DQ-10, Phased Array™ speaker system. 93

For the first time a single speaker system accurately controls time delay, phase shift, and diffraction effects. This advanced speaker design has caused quite a stir in the audio industry. Critical listeners and knowledgeable reviewers throughout the world have praised the DQ-10 for its superb definition, its 3 dimensional spaciousness, the ultra smooth coherency over the entire range, and its correct stereo imaging.

It doesn't take long to discover these qualities for yourself. Just take your most challenging record down to your nearest Dahlquist dealer and put yourself in front of a speaker that some remarkable men are behind.

DAHLQUIST

The boxless speaker

27 Hanse Ave. Freeport N.Y. 11520

Check No. 11 on Reader Service Card

Loudspeakers

MANUFACTURER	MODEL	Enclosure type	Woofer dia., inches	Midrange dia., inches	Midrange type	Tweeter dia., inches	Tweeter type	Level controls	Annechoic freq. response Hz to kHz	dB SPL, 1 watt input, 1 mtr. on axis, 100Hz-10k Hz	Recommended min. amp. power	Crossover frequencies, Hz	Impedance, ohms; Nominal/minimum	Dimensions, inches	Finish	Grille Material? Color?	Weight, lbs.	Price, \$	NOTES
BECKER (Continued)	111	Ac. sus.	12	6	cone	4	dome			60		8/3	15x11 x24½ 9½x9½ x34	vin wal wal	* brn/blk clth	40	240.00 pr.	*as above	
	211	vented	(2) 6			4	dome			50		8/3				30	220.00 pr.		
BERTAGNI	D110	geostatic	*	*	dyn	*	piezo	M, T	30-20	92	25	1.2, 10k	4	3¼x22 x48¼ 20x3¼	oak alum	foam blk	47	N/A	*Asymmetrical Diaphragm *as above
	D120	geostatic	*	*	dyn	*	piezo	M, T	35-20	92	25	1.2, 10k	4	20x3¼ x52½ 22x3¼	oak alum	foam blk	50	549.00	*as above
	O75	geostatic	*	*	dyn	*	piezo	M, T	30-20	91	25	1.2, 10k	8/4	20x3¼ x34	oak & alum	foam blk	30	349.00	*as above
	O60	geostatic	*	*	dyn	*	piezo	M, T	38-20	91	15	800, 10k	8/4	20x3¼ x28	alum wal	foam blk	26	259.00	*as above
	U60	geostatic	*	*	dyn	*	dyn	M, T	38-18	89	15	800	8/4	17½x3¼ x25½ 14x4¼	vin alum	foam blk	20	199.00	*as above
	U50	geostatic	*	*	dyn	*	piezo		45-20	86	15	3k	8/4	x21½	alum	foam blk	15	129.00	*as above
BEVERIDGE	Two	horn es					no		40-15 ±2	*	none		24x15 x78	oil wal	foam blk	95	4000.00 pr.*	*w/amplifiers.	
BOSE	901	Ac. sus*		(9) 4½						20		8	20½x13 x12½ 14½x14½ x24	wal	clth tan clth brn	33	598.00 pr.	Inc. equalizer; *Direct reflecting design.	
	501	Ac. sus*	10		(2) 3½					15	1.5k	4		vin wal	foam blk/mar	42	168.00		
	301	ported	8		3					10	1.2 & 3k	8	14½x9½ x10½	vin wal	foam blk/mar	18	96.00		
BOZAK	B310B	inf. baf.	(4) 12 6	(2) 6	cone	(8) 1½	cone		28-20	60	400, 2.5k	8	36x19 x52	wal	clth brn,wh	225	1150.00		
	B410	inf. baf.	(4) 12 6	(2) 6	cone	(8) 1	1½ cone		28-20	60	400, 2.5k	8	36x19 x52	wal	clth brn,wh	225	1250.00		
	B4000	inf. baf.	(2) 12 6	6	cone	(8) 1½	cone		35-20	50	400, 2.5k	8	26x16 x44	wal	clth brn,wh	165	669.50		
	B4005	inf. baf.	(2) 12 6	6	cone	(8) 1½	cone		35-20	50	400, 2.5k	8	36x20 x28	wal	clth brn,wh	150	795.00	Lo-Boy	
	B-407A	inf. baf.	(4) 8	6	cone	(8) 1½	cone	T	30-20	75	2.5k	8	18x16 x41	wal	clth brn	100	529.50		
	B-501	inf. baf.	8 12	6	cone	(3) 1½	cone	T	40-20	20	800, 2.5k	8	27x16 x30	wal	foam brn	90	379.50		
	B401	inf. baf.	12	6	cone	(2) 1½	cone	T	40-20	15	800, 2.5k	8	18x13 x25	wal	foam brn	65	279.50		
	B-301FD	ducted port	12	4	cone	1½	cone	T	40-20	15	1.2 & 3.6k	8	14x11 x23	wal	foam brn	40	169.50	B-301B— Bookshelf \$197.50	
	B-201	ported	8			1½	cone		45-20	12	2.5k	8	20x10 x12	wal	clth brn	30	104.50		
	B-1000	inf. baf.	8			1½	cone		50-20	12	2.5k	8	18x12 x21	beige or wh	brn mesh gold	25	127.50	Outdoor weather- proof	
C/M LABS	CM15A	Ac. sus.*	15	6	cone	2	cone	M,T, W	20-25 ±2.5	96	75	450, 5k, 12k	4/4	17x17 x34	oil wal	foam brn	97	499.00	*With servo feedback.
	CM10	Ac. sus.*	10	4	cone	1½	cone		30-18 ±3	85	50	500, 5k	6/6		oil wal	foam brn	35	179.00	*With servo feedback.
CELESTION	Ditton 15	ABR*	8			1½	pres.		30-15	90	10	2.5k	4/8	9½x9x21	wal	clth blk	16.7	149.50	*aux. bass radiator
	Ditton 33	ac sus	10	5	cone	1	dome		40-25	86	10	500, 2.5k	4/8	14x10½ x24	wal	clth blk	34	229.50	
	Ditton 44	ac sus	12	6	cone	¾	dome		30-40	90	10	500, 5k	4/8	14½x10 x30	wal	clth blk	45	269.50	
	Ditton 25	ABR*	12	2x 1½	pres.	¾	dome		20-40	90	10	2k, 9k	4/8	14x11 x32	wal	clth blk	45	329.50	*as above
	Ditton 66	ABR*	12	2¼	dome	¾	dome		16-40	86	10	500, 5k	4/8	15x11¼ x40	wal	clth blk	68	479.50	*as above
	UL 6	ABR*	6			1	dome		35-28	80	10	2.5k	4/8	16x8½ x11½	wal	clth blk	20	169.50	*as above
	UL 8	ABR*	8			1	dome		30-28	82	15	2k	4/8	11x9¼ x23	wal	clth blk	25	219.50	*as above
	UL 10	ac sus	10	2	dome	¾	dome		20-40	80	40	700- 5k	4/8	12½x15 x26½	wal	clth blk	50	349.50	
CERWIN-VEGA	V-10		10	—		1	dome			117		2500	8	10x14 x25	wal	blk		109.50	
	V-12		12	—		1	dome			113		2500	8	12x14½ x25	wal	blk		149.00	
	V-15		15	—		1	dhorm dome					8		wal	blk var colors				
	R-10 (Continued)		10	—		1	dome		38-20 ±4	92		1200	4-8		wal			149.00	

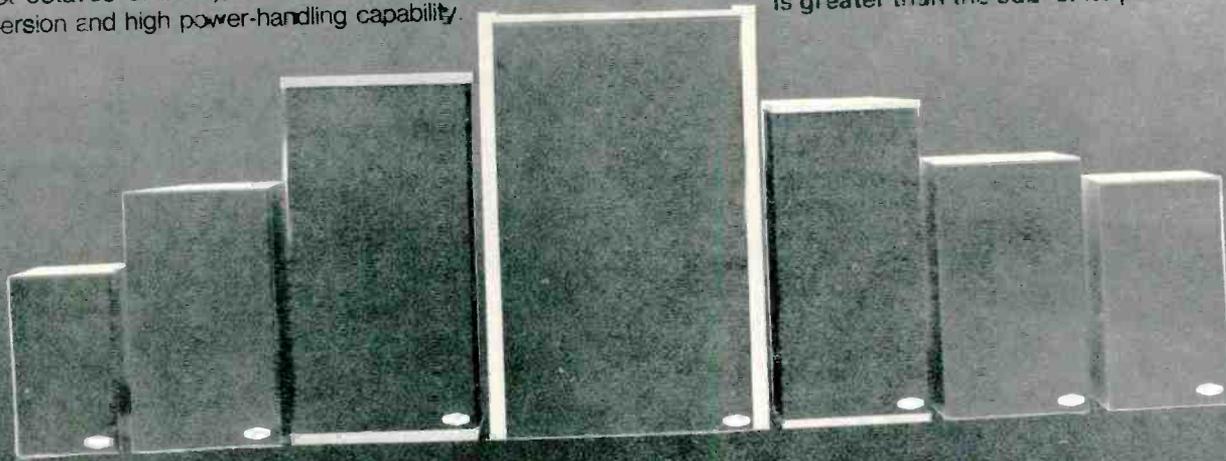
The ultimate product of the transistorized receiver revolution



is not a receiver!

The transistor revolution is producing an increasing variety of high quality receivers and amplifiers to choose from, many with more watts per channel than ever before. However, it's the low-to-medium powered units that offer the real breakthrough, since most of them now actually measure less than .3% distortion up to their rated power output, producing sonic quality formerly found only in high-powered models. This created the need for an efficient speaker that would utilize the advantages of these new receivers; but not until the creation of Synergistics has such a high degree of sonic accuracy been possible in a system driven by a low-to-medium powered receiver. In spite of their low-power requirements, these speakers have all the plus features of their high-power-dependent competitors: wide frequency response (including the lowest octaves of bass), excellent transient response, wide dispersion and high power-handling capability.

Most listeners agree that speakers account for the greatest audible difference in the way a system sounds, but because most high-accuracy speakers require a lot of power, they spend up to twice as much on a receiver as they spend on speakers. With Synergistics, your power requirements are cut in half; you can substitute higher quality speakers for higher powered electronics at no sacrifice in low-distortion acoustic output. In test markets for any given system price range, well over 75% of listeners interviewed preferred systems with low-to-medium powered receivers and Synergistics speakers when compared to top-selling, low-efficiency speakers with high powered receivers. Without any explanation from us they heard with their own ears why we chose Synergistics as the name for our speakers. **SYNERGISTICS: Cooperative action in a system where the total effect is greater than the sum of its parts.**



For More Information Write To: Synergistics, P.O. Box 1245, Canoga Park, California 91304.
Check No. 51 on Reader Service Card

Loudspeakers

MANUFACTURER	MODEL	Enclosure type	Woofer dia., inches	Midrange dia., inches	Midrange type	Tweeter dia., inches	Tweeter type	Level controls (M=midrange, T=tweeter)	Anechoic freq. response Hz to kHz	dB SPL 1 watt input, 1 mtr. on axis, 100Hz-10k-Hz	Recommended min. amp. power	Crossover frequencies, Hz	Impedance, ohms, Nominal/minimum	Dimensions, inches	Finish	Grille Material? Color?	Weight, lbs.	Price, \$	NOTES
EASTMAN SOUND CO. Continued	Gamma 308S	Ac. sus.	8	5	cone	1 1/2	ring	M,T	50-18k ±6*	91	25	1k, 4k, 1k	8	12 1/2 x 7 x 2 1/2	wal.	brn.	25.5	109.00	*see above
	Gamma 210S	Ac. sus.	10			1 1/2	ring	T	40-18k ±4*	88	30	1k	8	12 1/2 x 10 x 2 1/2	wal.	brn.	35	129.00	*see above
	Gamma 310S	Ac. sus.	10	5	conv.	1	horn	M,T	40-18k ±5*	92	30	750-3k	8	12 1/2 x 10 x 2 1/2	wal.	brn.	35	159.00	*see above
	Gamma 412S	Ac. sus.	12	5	conv.	2	horn	M,T	35-20k ±5*	90	40	500-3k	8	15 x 12 1/2 x 2 1/2	wal.	brn.	51	249.00	*see above
	Gamma 1200M	Ac. sus.	12	5	conv.	1 1/2	dome	M,T	32-20k ±4*	92	40	350-4k	8	15 x 12 1/2 x 2 1/2	wal.	brn.	58	319.00	*see above
	Gamma 1500S	Ac. sus.	15	5	conv.		horn	M,T	30-20k ±4*	90	40	350-4k	8	18 x 14 x 2 1/2	wal.	brn.	63	369.00	*see above
ELECTRO-VOICE	Sentry III	Part.	15	8 1/2 x 32	horn	4 x 6	horn	M,T	40-18 ±3	98	50	600, 350, 55k	8	34 1/2 x 20 1/2 x 2 1/2	wal.	cloth blk.	156	726.00	
	Interface A	Part.	12	8	cone	(2) 2	cone	T	32-20 ±3	89	25	1.5k	8	14 x 7 x 2 1/2	wal.	cloth blk.	35	450.00	
	Interface B	Part.	10	8	cone	2	cone	T	36-18 ±3	92	25	1.5k	8	14 x 23 x 2 1/2	wal.	cloth blk.	27	325.00	
	EVS-16B	Ac. sus.	12	8	cone	2	cone	T	30-20 ±5	91	25	700, 3k	8	14 x 25 x 1 1/2	wal.	cloth brn.	45	167.95	
	EVS-15B	Ac. sus.	10	5	cone	2	cone	T	40-20 ±5	90	25	700, 3k	8	13 1/2 x 24 x 1 1/2	wal.	cloth brn.	39	146.95	
	EVS-14B	Ac. sus.	10	5	cone	2	cone	T	40-18 ±5	89	25	1.5k	8	13 1/2 x 24 x 1 1/2	wal.	cloth brn.	28	125.95	
	EVS-13B	Ac. sus.	8		cone	2 1/2	cone	T	50-18 ±5	88	20	1.5k	8	10 x 19 x 8 1/2	wal.	cloth brn.	19	83.95	
	Musicastrer IA	Part.				2 1/2	cone	T	80-10 ±5	94	20	4k	8	21 1/2 x 21 1/2 x 8 1/2	*		29	120.00	*Outdoor system. Musicastrer IIA has super tweeter, 16k resp. \$150.00
	EMPIRE	9000GT	Inf. Baf.	15	2 1/2	dome	1	dome	T	15-25	95	5	450-5k	8/5	18 x 30 x 17	oil wal.		50	329.95
6000MIII		bass ref.	12	1	cone	1/4	dome	T	30-20	90	10	450-5k	8/5	18 x 24 1/2 x 18	oil wal.		35	149.95	marble top
EPICURE	10	Ac. sus.	(2) 8			1			45-20 ±3		12	1.8k	8	9 x 11 x 2 1/2	Vin. oil wal.	cloth brn.	25	109.00	
	10W	Ac. sus.	(2) 8			1			45-20 ±3		12	1.8k	8	9 x 11 x 2 1/2	oil wal.	cloth brn.	25	125.00	
	11	port	8			1			38-20 ±3		25	1.8k	8	20 x 12 x 10	oil wal.	cloth brn.	30	149.00	
	20	Ac. sus.	(2) 8			(2) 1			40-20 ±3		25	1.8k	4	27 1/2 x 11 x 18 1/2	oil wal.	cloth brn.	50	229.00	
	5	Ac. sus.	8			1			50-20 ±3		20	1.8k	4	15 x 11 x 8 1/2	Vin. oil wal.	cloth brn.	18	70.00	
	400+	Ac. sus.	(4) 6			(4) 1			27-19 ±3		25	1.8k	4	14 x 14 x 3 1/2	oil wal.	cloth blk.	90	399.00	"Mini-tower"
EPITOME	EpitomE	Ac. line	10	2	dome	1	dome	T	20-20 ±3	92	20	400, 5000	8	36 x 14 x 15	oil wal.	foam blk.	80	525.00	matched mirror-image pairs
	EpitomE Mini	Ac. line	8	2	dome	1	dome	T	32-20 ±3	90	20	400, 5000	8	20 x 12 x 12	oil wal.	foam blk.	40	225.00	
FISHER	XP57A		8			2			38-18		5	1.5k	8	21 x 12 x 9	wal.		19 1/2	89.95	
	XP62A		10			3			35-20		5	1.5k	8	22 1/2 x 12 x 10	wal.		24 1/2	119.95	
	XP68A		10	5	cone	3			35-20		5	1 & 5k	8	22 1/2 x 12 x 10	wal.		28	149.95	
	XP75A		12	5	cone	3			35-20		8	1 & 5k	8	25 1/2 x 15 x 12	wal.		41	179.95	
	XP85A		12	(2) 5	cone	3	dome		32-20		8	1 & 5k	8	25 1/2 x 15 x 12	wal.		42	199.95	
	XP95A		15	(2) 5	cone	3	dome	M,T	28-20		8	1 & 5k	8	28 x 17 1/2 x 13	wal.		44	249.95	
	ST640	Pass. Rad.	(2) 10	5	cone	4	cone	M,T	42-20	90	8	400, 7k	8	28 1/2 x 16 1/2 x 12	wal.		37	199.95	
	ST660	Pass. Rad.	(2) 10	5	cone	4	dome	M,T	39-22	90.4	8	400, 7k	8	29 1/2 x 18 1/2 x 13	wal.		45	249.95	
FRAZIER	Super Midget	Tuned Slot	4							89	1		8	15 1/2 x 6 1/2 x 4 1/2	oil wal.	cloth brn.	14	60.00	
	Super Monte Carlo	Tuned Slot	8			3	PZ			95	1	4k	8	19 x 10 x 12	oil wal.	cloth brn.	31	125.00	
	Mark IV-A	Tuned Slot	10			3 x 7	horn	T		93	1	2k	8	24 x 14 x 12	oil wal.	foam	44	180.00	
	Concerto	Tuned Slot	10	3 x 7	horn	3	PZ	T		93	1	2 & 4k	8	16 x 16 x 2 1/2	oil wal.	foam	56	265.00	
	Mark V-A	Tuned Slot	12	(3) 4	cone	3	PZ	M,T		96	1	500, 4k	8	25 1/2 x 14 x 12	oil wal.	foam	55	300.00	
	Seven A	Tuned Slot	12	(2) 4	cone	(2) 3	PZ	M,T		99	1	400, 4k	8	29 x 19 x 16	oil wal.	foam	98	400.00	
	Mark VI-A	Tuned Slot	12	8	cone	3 x 7	horn	M,T		97	1	600, 3 & 7k	8	29 1/2 x 25 x 6	oil wal.	cloth brn.	103	525.00	
	Eleven	Tuned Slot	12	(4) 4	cone	(2) 3	PZ	M,T		103	1	400, 4k	4	55 x 30 x 18	oil wal.	gld. foam	250	1200.00	

MANUFACTURER	MODEL	Enclosure type	Woofer dia., inches	Midrange dia., inches	Midrange type	Tweeter dia., inches	Tweeter type	Level controls (M=midrange, T=tweeter)	Antischoic freq. response Hz to kHz ±dB	dB SPL 1 watt input, 1 mtr. on axis, 100Hz-10k Hz	Recommended min. amp. power	Crossover frequencies, Hz	Impedance, ohms; Nominal/minimum	Dimensions, inches	Finish	Grille Material? Color?	Weight, lbs.	Price, \$	NOTES
FULTON	J Modular	Special	10 & 12	8 & 2	cone	2x4	elect.	W, M, T	22-42 ±1.5	82	75	68, 375, 1.8, 7.0k	8/5	25x22 x59%	wal. teak rosew.	cloth blk.	250	973.00	
	E Modular	Ac. sus.	12	8	cone	2 1/2	cone	M	32-22 +2	85	40	82, 2.2k	8/6	17 1/2 x 14 x 48%	wal.	cloth blk.	118	394.00	
	B Modular	Ac. sus.	10	8	cone	2 1/2	cone		40-22 ±2 1/2	85	25	475, 2.2k	8/6	17 1/2 x 10 x 37%	wal.	cloth blk.	70	318.00	
	100	Ac. sus.	10		cone	2 1/2	cone	T	40-22 ±2 1/2	87	25	1.2k	8/5	14x9% x22	wal.	cloth blk.	30	159.00	
	80	Ac. sus.	8		cone	2 1/2	cone		50-22 ±2 1/2	90	12	2.2k	8/6	9 1/2 x 8 1/2 x 17%	wal.	cloth blk.	20	119.00	
	60	Ac. sus.	8		cone	3	cone		55-28 ±2 1/2	88	15	5.8k	8/6	11 1/2 x 10 x 17%	vin.	cloth blk.	28	89.00	
	Q	Ac. sus.	10 & 10	10	cone	2 1/2	cone	M, T	40-22 ±3	132	300 built in	1, 2.5, 5k	4	16x24 x66	nyl.	cloth blk.	165	2895.00	
GLI	Disco I	Bass ref.	(2) 15	9	horn	3	horn		30-24 ±3	103	25	975, 7k	8/6	37 1/2 x 21 1/2 x 22%	laq.	blk.	100	1075.00 pair	Sep. mid-hi array.
	Disco II	Bass ref.	(2) 15	8	cone	4	horn		30-24 ±3	99	50	300, 7k	8/6	37 1/2 x 21 1/2 x 22%	laq.	blk.	140	1275.00 pair	
	Disco III	Exp. horn	(2) 15	12	rad. horn	3	horn		55-24 ±3	100	50	875, 7k	8/6	49 1/2 x 36 x 28%	laq.	blk.	150	1675.00 pair	
	Disco IV	Hyp. horn	(2) 15	4 1/2	rad. horn	3	horn		30-24 ±3	106	50	100, 300, 7k	8/6	49 1/2 x 36 x 28%	laq.	blk.	200	1975.00 pair	
GALE ELECTRONICS	401A	Ac. sus.	(2) 8	4	cone	3/4	dome	M, T	35-25 +		25	475, 5000	4/8	13x23% x10%	chrome oil wal.	PVC blk. brn.	54	450.00	same except for finish.
	401C																46	425.00	
GOLLEHON	8220	Horn	15	3	horn	1	horn	M, T	30-20 ±5	101	30	500, 2k	8	57x28 x25	fiber glass	none	230	740.00	
	8202	Horn	12			1	horn	H	50-20 ±5	97	25	2k	8	30x24 x18	fiber glass	foam	90	400.00	
GRAFYX	SP-10	Bass ref.	10			1	dome		30-20 ±5		75	2k	8	15 1/2 x 13 x 27	lam. wal.	cloth brn.	48	139.00	
	SP-8	Bass ref.	8			1	dome		35-20 ±5		75	2k	8	14x10 x25	wal.	cloth brn.	40	109.00	
	SP-7	Ac. sus.	8			1	dome		40-20 ±5		50	2k	8	12x8 x20	lam. wal.	cloth brn.	17	89.00	
	SP-6	Ac. sus.	6			2	cone		45-20 ±5		35	2k	8	10x7 1/2 x16	wal. lam.	cloth brn.	15	59.00	
HARTLEY	Zodiac I	Inf. baf.	10			1	dome		40-25 ±4		10	2k	8	21 1/2 x 14 1/2 x 8%	oil wal.	foam blk.	32 1/2	100.00	
	Zodiac '76	Inf. baf.	10			1	dome		35-25 ±4		10	2k	8	15x12 x30	oil wal.	foam blk.	50	140.00	
	Zodiac 300	Inf. baf.	(2) 10			1	dome		30-25 ±4		10	2k	8/4	23 1/2 x 11 1/2 x 25%	oil wal.	cloth blk.	65	225.00	
	Holton Jr.	Inf. baf.	10			1	dome		25-25 ±3		15	2k, 5k	8/5	15x12 x30	oil wal.	cloth blk.	55	290.00	
	Holton A	Inf. baf.	10			1	dome		20-25 ±3		15	2k, 5k	8/5	24x14 x30	oil wal.	cloth blk.	85	340.00	
	Concert master Jr.	Inf. baf.	10			1	dome		20-25 ±3		15	2k, 5k	8/5	24x14 x30	oil wal.	cloth blk.	85	355.00	
	Concert master III	semi-inf. baf.	18	10	cone	7	cone dome		16-25 ±3		25	200, 3 & 7k	8/5	29x16 x34	oil wal.	gold cloth blk.	125	900.00	
	Concert master IV	semi-inf. baf.	18	10	cone	7	cone dome		16-25 ±3		25	200, 3 & 7k	8/5	29x16 x34	oil wal.	cloth gold	125	925.00	
	Concert master V	semi-inf. baf.	24	10	cone	7	cone dome		16-25 ±3		25	200, 3 & 7k	8/5	29x18 x40%	oil wal.	cloth blk.	150	965.00	
	Concert master VI	semi-inf. baf.	24	10	cone	7	cone dome		16-25 ±3		25	200, 3 & 7k	8/5	29x18 x40%	oil wal.	cloth gold	150	980.00	
HAYNES	J-1	Ac. sus.	2X 8 1/2			1 1/2	soft dome		50-15 ±3	89	25	1.5k	8/6	14 1/2 x 12 1/2 x 30	oil wal.	foam opt.	45	199.50	
	J-2	Ac. sus.	2X 10			1 1/2	soft dome		35-15 ±3	91	60	1.5k	8/6	23 1/2 x 12 x 25%	oil wal.	foam opt.	65	249.50	
HEATH	AS-101	Vented	15		cone		horn		35-22		5	800	8	27 1/2 x 20 x 29%	pecan	cloth gold & blk.	101	339.95(k)	
	AS-48	Vented	14		cone		cone		40-20			2000	8	23 1/2 x 14 1/2 x 12	oak	cloth	42	239.95(k)	
	AS-1373	Ac. sus.	10	4 1/2	cone	1	dome	M, T	30-22 ±3		10	500, 3000	8/6	26x14% x12	wal.	foam	47	149.95(k)	
	AS-1344	Ac. sus.	6 1/2		cone	1	dome		35-22 ±3		10	4000	4	40x11 x11	lt. wal.	foam	45	129.95(k)	
	AS-1352	Ac. sus.	10		cone		dome		45-18 ±3		10	2800	8	24x13% x11	wal.	foam	40	99.95(k)	
	AS-1332	Ac. sus.	8		cone		dome		50-18 ±3			3400	8	19x10 1/2 x8	wal.	cloth	18	59.95(k)	
	AS-106	Ac. sus.		4 1/2	full range				100-10 ±5			4 to 20			wal.	cloth	6	26.95(k)	

Loudspeakers

MANUFACTURER	MODEL	Enclosure type	Woofer dia., inches	Midrange dia., inches	Midrange type	Tweeter dia., inches	Tweeter type	Level/controls (M=midrange, T=tweeter)	Amplifier freq. response Hz to kHz ±dB	dB SPL 1 watt input, 1 mtr. on axis, 100Hz-10k Hz	Recommended min. amp. power	Crossover frequencies, Hz	Impedance, ohms; Nominal/minimum	Dimensions, inches	Finish	Grille Material? Color?	Weight, lbs.	Price, \$	NOTES
HEGEMAN	H-1A	Inf. baf.	8		2	cone	T	30-20 ±2.5		25	5k	8	26x11 x8 3/4	vin. wal.	foam blk.	25	159.00		
	H-2	Inf. baf.	10		2	cone	T	25-25 ±2.5		30	3.5k	8	34x14 x12	vin. wal.	foam blk.	42	378.00		
	HSW	Inf. baf.	12					8-200			50-100	8	38 1/4 x 16 x 14 1/2	vin. wal.		75	600.00	Subwoofer	
	HB-80	Cl. box baf.	8		2	cone		70-40 ±2.5		20	4.5k	8	17 1/4 x 11 1/2 x 8	vin. wal.	blk. brn.	18	84.00		
	HB-100	Cl. box baf.	10		2	cone		50-40 ±2.5		25	3k	8	23x13 x10 1/2	vin. wal.	blk. brn.	28	114.00		
	HB-120	Cl. box baf.	12		2	cone		40-40 ±2.5		20	2.5k	8	25x14 1/4 x11 1/2	vin. wal.	blk. brn.	35	150.00		
	HB-69	Cl. box baf.	6x9		2	cone		80-20 ±2.5		8	4.5k	8	14x9 x6 1/2	vin. wal.	blk. brn.	22	69.00		
HITACHI	HS-335	Ac. sus.	10	5	cone	1	dome	45-18 ±4	91		700, 3k	8	12 1/2 x 21 1/4 x 12 1/2	wood vin. wal.	cloth brn.	28.6	169.95		
	HS-480	Ac. sus.	12	5	cone	1	horn	45-20 ±4	92		620, 4.9k	8	14 1/2 x 26 1/4 x 14 1/2	wood vin. wal.	cloth brn.	36.3	199.95		
IMF INTERNATIONAL	Monitor Mk IV	Trans. line	11 1/8	6	cone	1 1/2	S.T. dome	M,T	30-20 ±5	83	50	350, 3 & 13k	8/4	46x19 x16 1/2	wal.	cloth blk.	102	2390.00 pair	
	TLS 80	Trans. line	11 1/8	6	cone	1 1/2	S.T. dome	*	40-20 ±5	82	40	375, 3.5 & 13k	8/4	38 1/2 x 16 x 18	wal.	cloth blk.	84	1590.00 pair	*Perspective control
	TLS 50II	Trans. line	8	4	cone	1 1/2	dome	*	50-20 ±5	82	30	375, 3 & 15k	8/3	36x14 x15	wal.	cloth blk.	60	1050.00 pair	*as above
	ALS 40II	Trans. line	2x8	4	cone	1	dome	*	60-20 ±5	83	25	150, 375, 3k	8/4	13 1/2 x 13 1/2 x 26 1/2	wal.	cloth blk.	41	900.00 pair	*as above
	Super-Compact Compact II	Reflex	8	4	cone	1	dome	M,T	80-20 ±5	85	20	375, 3k	8/4	18x11 x11 1/2	wal.	cloth blk.	20	450.00 pair	
		Reflex	6 1/2	4	cone	1/2	dome	M,T	100-20 ±5	84	15	4k	8/4	15x9 x9 1/2	wal.	cloth blk.	13	300.00 pair	
INFINITY SYSTEMS	PDS I	Bass reflex.	10		2 1/2	cone	T	43-19 ±3.5		15	1600	8/8	13x11 1/4 x 25	oil wal.	cloth blk.	31	106.00		
	1001A	Trans. line	12		(2)	cone	T	33-21 ±4.5		20	1300	8/6	14 1/2 x 12 x 25	oil wal.	cloth blk.	37	149.00		
	3000	Bass reflex	12	4 1/2	cone	2 1/2	cone	M,T	35-20 ±4 1/2		10	500, 5k	8	14 1/2 x 12 x 25	oil wal.	cloth blk.	37	210.00	
	Monitor Jr.	Trans. line	12	1 1/2	dome	1	dome	M,T	32-22 ±3 1/2		25	600, 5k	8/8	14 1/2 x 12 x 25	oil wal.	cloth blk.	40	225.00	
	Column II	Ac. sus.	(2)	4	cone		(2) PZ dome	M,T	35-25 ±3.5		20	500, 8k	4/4	14x12 1/2 x 40	oil wal.	cloth blk.	78	329.00	
	2000 II	Trans. line	10	4	cone	1	PZ dome	M,T	28-28 ±4		20	500, 5k, 10k	8/8	20x14 x 27 1/2	oil wal.	cloth blk.	74	329.00	
	Monitor IIA	Trans. line	12	1-7/8	dome	1	dome	M,T	22-28 ±4		45	450, 5k, 10k	8/8	15x13 1/4 x 4 1/2	oil wal.	cloth blk.	94	449.00	
	QLS-I	Ac. sus.	12	(6) 1 1/2	dome		(8) line source	MBC, M,T	20-32 ±2		100	200, 600, 4k	8/4	18x15 x 66	oil wal.	cloth blk.	150	1100.00	
	Servo-Statik IA			18		E.S.	(7)	E.S.	20-32 ±2						Rose-wood	foam blk.	290	4500.00 pair	*2-Electro-static speakers 35x60x8; and 1-woofer box 19x22x22
INNTECH	D-22	Trans. line	5	1	dome	1	dome	T	28-25 ±3	85	40	1200, 9000	8/6	12.5x7.25 x35.0	oil wal.	cloth blk.	41.0	475.00*	*Includes one Sub-sonic filter [SF-2] for each pair of speakers.
	D-11	Bass reflex.	5	1	dome	1	dome	T	38-25 ±3	88	25	1200, 9000	8/6	17.5x16.5 x27.5	oil wal.	cloth blk.	31.0	350.00*	*as above.
	D-10	Bass reflex.	5			1	dome	T	38-20 ±5	88	25	2500	8/4	17.5x16.5 x27.5	oil wal.	cloth blk.	30.0	275.00*	*as above.
	D-12	Infinite baffle.	8						25-100 ±2		50	100	8/6	20.0x10.0 x40.0	oil wal.	cloth blk.	75.0	300.00	Sub-woofer.
INTERNATIONAL SOUND	SL VI	Vent. phase invert.	10/12	8	cone	1x3	Pz	M,T	25-20 ±3	80	75		8/6	16x16x x46	rose	blk.	80	600.00	
	SL V	Vent. phase invert.	10/10	8	cone	1x3	Pz	M,T	30-20 ±3	80	50		8/6	14x14 x49	rose	blk.	60	400.00	
	SL IV	Vent. phase invert.	12	8	cone	1x3	Pz	M,T	35-20 ±3	80	25		8/6	16x16 x29	rose	blk.	50	300.00	
	SL III	Vent. phase invert.	10	4 1/2	cone	1	Pz	M,T	40-20 ±3	80	25		8/6	14x14 x24	rose	blk.	35	200.00	
	SL II	Vent. phase invert.	8			1	Pz	M,T	50-20 ±3	80	15		8/6	11 1/2 x 12 x 24	rose	blk.	25	125.00	

MANUFACTURER	MODEL	Enclosure type	Woofer dia., inches	Midrange dia., inches	Midrange type	Tweeter dia., inches	Tweeter type	Level controls (M=midrange, T=tweeter)	Anisoch. freq. response Hz to kHz ±dB	dB SPL, 1-watt input, 1 mtr. on axis, 100Hz-10kHz	Recommended mini. amp. power	Crossover frequencies, Hz	Impedance, ohms, Nominal/minimum	Dimensions, inches	Finish	Grille Material? Color?	Weight, lbs.	Price, \$	NOTES
JANIS	W-1		15						30-100 ±1	87	60		8	22x22 x17½ 22x22 x17½	oil wal. oil wal.		90	650.00	subwoofer system as above
	W-2		12						33-100 ±2	87	60		8				82	450.00	
JANSZEN	ZVS-2	Ac. sus.	10		5x5	(2)ES	W,T		45-20 ±3		10	1.5k	8/4	13x13 x34	blk.	cloth brn/blk		290.00	
	ZVS-4	ported	10		5x5	(4)ES	W,T		38-20 ±3		10	1.5k	8/4	14½x14½ x46	blk.	cloth brn/blk		450.00	
	Z-824a	Ac. sus.	(2)		5x5	(8)ES	T		26-20 ±3		20	800	8/4	29x19½ x31½	oil, pecan	cloth brn.		790.00	
	ZL-412HPB	Ac. sus.	12		5x5	(4)ES	T		30-20 ±3		20	800	8/4	14½x11½ x27½	oil wal.	cloth brn/blu		350.00	
	ZL-410	Ac. sus.	10		5x5	(4)ES	T		35-20 ±3		20	1.8k	8/4	13½x11 x24	oil wal.	cloth brn/blu		250.00	
	ZL-210AH	Ac. sus.	10		5x5	(2)ES	T		35-20 ±3		20	1.8k	8/4	13½x11 x24	oil wal.	cloth brn/blu		200.00	
JBL	L-26	Ducted port	10	cone	1.4	cone	T		90	10	2k	8		12½x13½ x24	oak	cloth,bl or,brn.	42	168.00	
	L36	Ducted port	10	5 cone	1.4	cone	M,T		90	10	1.5k, 6k	8		13½x13½ x24	oak	cloth,bl or,brn.	45	225.00	
	L100	Ducted port	12	5 cone	1.4	cone	M,T		92	10	1.5k, 6k	8		14½x13½ x23	oiled wal.	foam, var.	55	333.00	
	L166	Ducted port	12	5 cone	1	dome	M,T		90	10	1k, 6k	8		14½x13 x23	oiled wal.	A.P.P. black	55	399.00	
	L65	Ducted port	12	5 cone	1.4	comp. driver	M,T		92	10	1k, 6.5k	8		17½x13½ x24½	oiled wal.	cloth,rd, bl,brn.	67	462.00	
	L120	Ducted port	10	5 cone	1.4	comp. driver	M,T		87	15	1k, 8k	8		12x12 x44	oil wal. sat wht	cloth,* var.	71	684.00	*6 optional grille colors
	L200B	Ducted port	15	5 cone	4	comp. driver	T		131	10	800	8		24x21½ x32½	oiled wal.	foam, var.	131	753.00	
	L308	Ducted port	15	4 comp. driver	3½	comp. driver slot rad	M,T		94	10	800, 8.5k	8		23x22½ x31½	oiled wal.	cloth, var.	145	960.00	
JENNINGS	Contrara R	ac. sus.	8		1	dome			15	1750	6			14x9x14	oil wal	clth blk	27	125.00	
	Contrara S	ac. sus.	8		1	dome			15	1750	6			19x9x11	oil wal	clth blk	28	125.00	
	Contrara P	ac. sus.	8		1	dome			10	500	6			10x10 x33	oil wal	clth brn,blk	39	225.00	
	Contrara Eian Vector One	ac. sus.	8	1½ dome	1	dome	M,T		25	1750 500	6			12½x12½ x40	oil wal	clth blk	65	360.00	
	Contrara Vector Two	ac. sus.	8	1 dome	1	dome	T		15	1750	6			14x10½ x23	oil wal	clth/brn or caml.	32.5	165.00	
	Contrara Vector Two	ac. sus.	10	4½ cone	1	dome	M,T		15	300 3k	6			14½x12 x25	oil wal	clth gray	40	250.00	
JENSEN	21	ac. sus.	8	—	2	cone	T		35-20	91	10	4000	8/5	11x8½ x18½	wal. vin.	*	18	75.00	*choice of two tone beige & dk brn. *as above
	22	ac. sus.	10	—	2	cone	T		32-20	92	10	4000	8/5	12½x10½ x22½	wal. vin.	*	28	99.00	
	23	ac. sus.	10	—	1½	dome	T		27-25	93	10	1000	8/5	13x12 x24	wal vin	+	40	129.00	*as above
	24	ac. sus.	12	3 cone	1½	dome	M,T		25-25	95	10	1000	8/5	15x13 x26	wal vin	+	50	185.00	*as above
	25	ac. sus.	15	(2) 3 cone	1½	dome	M,T		20-25	96	10	800 5000	8/5	18½x15½ x30½	wal vener	*	70	249.00	*as above
	Serenata	bass reflex	15	8 cone	5 (2) 1	cone dome	M,T		20-30	98	10	300 1500 4000	8/5	23x17 x31	wal vener	char	100	479.00	
KLH	354	ac. sus.	12	4½ cone	2½	cone	M,T		25-22		25		8	25x14 x12½	wal	clth blk	50	249.95	
	364	ac. sus.	12	5 cone	2½	cone	M,T		30-22		12		8	24x13 x12½	wal	clth blk	42	199.95	
	374	ac. sus.	10	4 cone	2½	cone			45-22		10		8	24x13 x9½	wal	clth blk	38	179.95	
	353	ac. sus.	12	4½ cone	2½	cone	M,T		25-22		25		8	26x14 x12½	wal vin	clth blk	49	219.95	
	317	ac. sus.	10	—	—	2½	cone	T	45-18		10		8	23x12 x9½	wal vin	clth blk	29	119.95	
	331	ported	8	—	—	2½	cone		50-18		8		8	21x12 x8½	wal vin	clth blk	41	159.00	
	SCX-3A	controlled acoustic complan.	12	44 mm	dome	1	dome	M,T	26-33		40		8	38x15 x13½	oil wal	clth brn	90	450.00	
	SCX-A	controlled acoustic complan.	12	4½ cone	1	dome	M,T		30-30		30		8	34x14 x12	oil wal	clth brn	75	298.00	
	CL4	controlled acoustic complan.	10	4½ cone	1	dome	M,T		30-22 ±3		25		8	26½x14½ x13	oil wal	clth brn	59	198.00	
	CL3	controlled acoustic complan.	10	—	—	2½	cone	T	35-20 ±3½		20		8	26x14 x11½	oil wal	clth brn	53	140.00	
CB10	controlled acoustic complan.	10	—	—	2½	cone	T	40-18 ±4		10		8	19½x14½ x7½	oak vener	clth brn	35	110.00		

(Continued)

Loudspeakers

MANUFACTURER	MODEL	Enclosure type	Woofer dia., inches		Midrange dia., inches		Tweeter dia., inches		Level control (M=midrange; T=tweeter)	Acoustic freq. response Hz to kHz ±dB	dB SPL 1 watt input, 1 mtr. on axis, 100Hz-10k Hz	Recommended min amp. power	Crossover frequencies, Hz	Impedance, ohms, Nominal/minimum	Dimensions, inches	Finish	Grille Material? Color?	Weight, lbs.	Price, \$	NOTES
			Woofer dia., inches	Midrange dia., inches	Midrange type	Tweeter type														
KLH (Continued)	CB8	controlled acoustic complian.	8	—	—	2½	cone	T	47-18 ±4	8	8	8	19½x11 x7¼	oak veneer	clth brn	27	89.00			
	CB6	controlled acoustic complian.	6	—	—	2½	cone	—	55-18	6	8	8	15½x10½ x6½	oak vin	foam brn	20	60.00			
KENWOOD	Model 7	ac sus	14	4	dome	1½	dome	M,T	20-35	94	100	400	18½x37 x15	oil wal	clth brn	121	1,350.00			
	LS-406	port	10	—	1	—	T	48-20	90	50	8	4k, 8k, 2k	oil wal	clth brn	38	149.95				
	LS-405	port	10	—	1	—	—	58-20	90	40	8	2k	oil wal	clth brn	31	119.95				
	LS-403	port	8	—	1½	—	—	65-20	88	25	8	2k	oil wal	clth brn	20	84.95				
KING RESEARCH	Frankmann	ac sus	(8) 12 8	(8) 8	cone	(8)	horn	—	20-18 ±4	98	10	200, 3k	8	wal, oak brch	clth brn	250	1495.00			
	Mini-Frank	ac sus	(4) 12 8	(2) 8	cone	(2)	horn	—	35-18 ±4	91	10	200, 3k	8	wal, oak brch	clth brn	85	800.00			
KLEIN & HUMMEL (GOTHAM)	OY	ac sus	10	4	cone	—	horn	W,T	40-16 ±2	—	—	500, 8k	—	12x9x19	wal	silver	44	775.00		
KLIPSCH	Klipschorn	horn	15	2	horn	1	horn	—	35-17 ±5	104	1	400, 6k	8/4	31½x28 x52	oil wal	b/k stnd	180-240	675.00-1441.00	price varies with finish	
	Belle Klipsch	horn	15	2	horn	1	horn	—	45-17 ±5	104	1	400, 6k	8/4	30½x18½ x35½	oil wal	b/k stnd	125	840.00-1200.00	price varies with finish	
	La Scala	horn	15	2	horn	1	horn	—	45-17 ±5	104	1	400, 6k	8/4	23½x24½ x35½	oil wal	b/k stnd	110	525.00		
	Cornwall	port	15	2	horn	1	horn	—	38-17 ±5	98.5	10	600, 6k	8/4	25½x15½ x12	oil wal	b/k	108	394.00-650.00	price varies with finish	
	Heresy	dir rad	12	2	horn	1	horn	—	50-17 ±5	96	10	700, 6k	8/4	15½x13½ x21½	oil wal	b/k	55	248.00-381.00	price varies with finish	
KOSS	Model One	dipole	es	—	es	—	es	B,M,T	32-19 ±3	—	75	250, 1.6k, 6.2k	4	oil wal.	clth brn.	150	1050.00			
	Model Two	dipole	es	—	es	1	dome	T	38-20 ±2	—	75	250, 2.3k	4	oil wal	clth brn	—	650.00			
KUSTOM ACOUSTICS	FSM II	Ac. line	12	—	—	1	dome	T	—	—	15	1.8k	8	30x16 x13	wal	b/k	—	299.00		
	FSM III	Ac. line	12	5	cone	1	dome	M,T	—	—	15	750, 3.5k	8	30x16 x13	wal	b/k	—	369.00		
	SJM II	Ac. line	12	—	—	1	dome	T	—	—	25	1.8k	8	27x17 x11	wal	b/k	—	329.00		
	SJM III	Ac. line	12	5	cone	1	dome	M,T	—	—	25	750, 3.5k	8	27x17 x11	wal	b/k	—	399.00		
	ST II	Ac. line	12	—	—	1	dome	T	—	—	35	1.8k	8	35½x15½ x12	wal	b/k	—	379.00		
	ST III	Ac. line	12	5	cone	1	dome	M,T	—	—	35	750, 3.5k	8	35½x15½ x12	wal	b/k	—	449.00		
	SMT	Ac. line	12	5	cone	1	dome	M,T	—	—	20	750, 3.5k	8	36x16 x13	wal	b/k	—	559.00		
	STL	trans. line	12	5	cone	1	dome	M,T	—	—	15	750, 3.5k	8	44x15½ x14	wal	b/k	—	749.00		
LTC	50	ac sus	10	—	—	(2) 1	dome	T	36-18 ±4	84	25	2500	8/6	14½x12 x26½	oil wal	clth b/k	48	229.95		
	100	ac sus	10	—	—	(4) 1	dome	T	36-24 ±3	84	25	2500	8/6	13½x11½ x36	oil wal	clth b/k	56	339.95		
	TX 5	ac sus	10	—	—	(4) 1	dome	T	36-24 ±3	84	25	2500	8/6	28x30 x24	oil wal plastic lam.	b/k	60	349.95		
	TX-10	ac sus	10	—	—	(8) 1	dome	T	36-24 ±3	84	25	2500	4/3	28x44½ x24	oil wal plastic lam.	plastic lam.	120	680.00		
LAFAYETTE	Criterion 2005+	port	10	—	—	—	heil	T	30-24 ±5	92	15	1.5k	8/6	12½x13½ x40	wal	clth b/k	58	199.95		
	Criterion 2002+	port	12	(2) 2x6	horn	1½	ring	M,T	20-20 ±5	—	10	2k, 4k	8	26x14 x16	vin wal	clth brn	45	149.95		
	Criterion 2001+	port	10	6	horn	1½	ring	M,T	30-18 ±5	—	10	2k, 4k	8	25x13½ x13	vin wal	clth brn	35	99.95		
	Criterion 310	ac sus	10	5	cone	3	cone	M,T	30-22 ±5	—	10	1k, 5k	8	22¼x10 x22¼	vin wal	clth brn	25	79.95		
LEAK	2020	ac sus	7	—	—	2	cone	—	45-20 ±3	—	—	3.5k	8/4	15½x9½ x9½	oil wal	clth	15	135.00		
	2030	reflex	8	4	cone	1	dome	—	40-20 ±2	—	—	700, 3.5k	8/4	19½x11 x10½	oil wal	clth	24½	195.00		
	2060	ac sus	12	4	cone	1	dome	—	35-20 ±2	—	—	600, 3.5k	8/4	25½x15 x13	oil wal	clth	51	325.00		
	2075	trans absorb	15	7 4	and cone	1	dome	—	30-20 ±2	—	—	450, 2k, 5k	8/4	49x19½ x14½	oil wal	clth	112	875.00		
LITTLE SPEAKER CO. (Continued)	A	bass rad	8	—	—	2	dome	T	30-18 ±5	—	15	900	8/5	26x16 x12	oil wal	foam brn	44	180.00		
	1	bass rad	10	—	—	2	dome	—	50-13 ±5	—	10	900	8/5	17x35 x11	oil wal	clth b/k	48	200.00		

MANUFACTURER	MODEL	Enclosure type	Woofer dia., inches		Midrange dia., inches	Midrange type	Tweeter dia., inches		Tweeter type	Level controls (M=midrange; T=tweeter)	Anechoic freq. response Hz to kHz ±dB	dB SPL 1 watt input, 1 mtr. on axis, 100Hz-10k Hz	Recommended min. amp. power	Crossover frequencies, Hz	Impedance, ohms; Nominal/minimum	Dimensions, inches	Finish	Grille Material? Color?	Weight, lbs.	Price, \$	NOTES
			Woofer dia., inches	Midrange dia., inches			Tweeter dia., inches	Tweeter type													
LITTLE SPEAKER CO. (Continued)	T	ported	8			2	dome	T		40-16 ±5		13	900	8/5	24x17x10	vin wal	foam brn	35	120.00		
	4A	ported		4 1/2	cone					60-10 ±5		8		8/7	12x8x5 1/2	vin wal	foam brn	8	40.00		
	O	bass rad	8			2	cone			50-12 ±5		12		8/4	24x14x8	vin wal	foam brn	20	80.00		
LOUDSPEAKER DESIGN	Ezekiel FRL		12	6	cone	2 1/2		T				35	600, 4k	7	15 1/2x44x10 1/2	oil wal	clth brn/blk	55	299.00		
	Ezekiel WRL		10			2 1/2		T				15	1.75k	6	14 1/2x25x12 1/2	vin wal	clth brn/blk	35	119.00		
MAGITRAN	OS 60	sound panel	(2) 9x12	(2) 8			dome			40-20 ±5	90			8	23x29 1/2x2	wal	clth	13	99.95		
MAGNEPAN	MG-II	bi-polar	9 1/2x57			1 1/2x57	vert strip			50-16 ±4	81	45	2.4k	6/5.8	22x71x2	oak	wt or blk	40	312.50		
MARANTZ	HO 88	ac sus	12	4 1/2	cone	1 1/2	dome	M, T, ST		25-25 ±3	90	25	500, 3k, 8k	8	15x12x4 1/2	oil wal	foam brn	67	399.95		
	HO 77	ac sus	12	4 1/2	cone	1 1/2	dome	M, T, ST		30-23 ±3	90	25	500, 3k, 8k	8	14 1/2x12x2 1/2	oil wal	foam brn	47	259.95		
	HO 66	ac sus	10	4 1/2	cone	1 1/2	dome	M, T		35-20 ±3	88	20	1k, 4k	8	14 1/2x11x2 1/2	oil wal	foam brn	37	179.95		
	HD 55	ac sus	8	4 1/2	cone	1 1/2	dome	M, T		40-20 ±3	88	10	1.2k, 4k	8	12x9x2 1/2	oil wal	foam brn	27	129.95		
	HO 44	ac sus	8	3	cone	3	cone			45-18 ±3	87	10	2k, 8k	8	11 1/2x8 1/2x19	vin wal	foam brn	20	89.95		
	Imperial 7	port	12	3 1/2	cone	1 1/2	cone	M, T		40-18 ±5	96	10		8	14 1/2x11 1/2x2 1/2	oil wal	foam brn	45	199.95		
	Imperial 6G	port	10		cone	1 1/2	cone	T		40-18 ±5	93	10		8	14 1/2x11 1/2x2 1/2	oil wal	foam brn	40	139.95		
	Imperial 5G	port	8			1 1/2	cone			40-16 ±5	92	10		8	12x9x2 1/2	oil wal	foam brn	23 1/2	99.95		
	Imperial 4G	port	8			1 1/2	cone			45-16 ±5	92	10		8	11 1/2x8 1/2x19	oil wal	foam brn	20	59.95		
MARJEN	I	ac sus	8	-	-	2	cone	T		44-20 ±3	89	10	2k	8/6	22x10 1/2x10 1/2	pine	clth, blk & natrl	34	139.00		
	II	ac sus	8	-	-	2	cone	T		44-20 ±3	88	10	2k	8/6	19x11x10 1/2	pine	blk or natrl	34	169.00		
	III	ac sus	8	-	-	2	cone	T		42-20 ±3	90	20	2k	4/3	12x12x36	pine	blk or natrl	53	249.00		
MCINTOSH	ML 1 C															wal		76	399.00		
	ML 2 C															wal		181	799.00		
	ML 4 C															wal		257	1199.00		
	ML 10 C															wal		58	319.00		
	ML 2 M															pecan		181	799.00		
MICRO-ACOUSTICS	FRM-1a	ac sus	10	2		(5) 1 1/2				32-18 ±4		18	1.7k	8	25 1/2x15 1/2x12 1/2	wal		40	199.00		
	FRM-2a	ac sus	10			(3) 1 1/2				40-16 ±4	2	10	1780	8	25 1/2x15 1/2x12 1/2	wal	foam brn	34	155.00		
	FRM-3	port	8			(1) 1 1/2				45-15 ±4	2	7	2.5k	8	23x13x9 1/2	wal	foam brn	26	119.00		
	M-S1					(4) 1 1/2				3.5-18k		15		16	4 1/2x5 1/2x3 1/2	wal	wht	2 1/2	117.00 pair	High freq. add-on	
MICROTOWER (EPI)	MT-I	*	(2) 4 1/2									5	200	8	32x8 1/2x8 1/2	sim wal	clth blk	21	99.95	*organ pipe principle	
	MT-II	*	(2) 4 1/2			(2) 1						15	3k	8	34x8 1/2x8 1/2	sim wal	clth blk	28	179.95	*as above	
	MT-III	*	(4) 4 1/2			(2) 1						25	3k	8	36x11 1/2x11 1/2	sim wal	clth blk	55	269.95	*as above	
	MTB-II	*	(2) 4 1/2			1						20	1.8k	8	22x9 1/2x13	sim wal	clth blk	23	149.95	*as above	
MITSUBISHI	DS-303	ac sus	12	2 1/2	dome	1/2	dome	M, T		30-35	90	40	600, 5k, 10k	6	14 1/2x13x2 1/2	oil wal	clth grey	75	580.00		
	DS-50CS	reflex	12	5	cone	1	dome	M, T		25-20	92	30	600, 5k, 10k	6	16 1/2x15 1/2x3 1/2	rose	clth brn	75	440.00		
	DS-36BR		12	5	cone	1	dome	M, T		30-20	93	30	600, 5k, 800, 5k	8/6	15 1/2x11 1/2x2 1/2	oil wal	clth blk	51	300.00		
	DS-288		10	4	cone	1 1/2	dome	M, T		40-20	91	20	800, 5k, 2k, 10k	8/5.5	13x10 1/2x2 1/2	oil wal	clth blk	33	200.00		
	DS-251 Mk II	ac sus	10			2 1/2	cone	T		40-25	91	20		8/6	12 1/2x9 1/2x20	oil wal	clth grey	26 1/2	170.00		
MORAUNT-SHORT	Carnival Series 2	inf baf	8									10		8	9 1/2x5 1/2	wal	clth brn	11 1/2	290.00 pair		
	Festival Series 2	inf baf	8									10		8	11x7 1/2x18	wal	clth brn	14	350.00 pair		
	Pageant Series 2	reflex	8					M, T				15		8	13x9x21	wal	clth brn	21	500.00 pair		

Loudspeakers

MANUFACTURER	MODEL	Enclosure type	Woofer dia., inches	Midrange dia., inches	Midrange type	Tweeter dia., inches	Tweeter type	Level controls (M=midrange, T=tweeter)	Anechoic freq. response Hz to kHz ±db	dB SPL, 1 watt, 1 mtr. on axis, 100Hz-10kHz	Recommended min. amp. power	Crossover frequencies, Hz	Impedance ohms, Nominal/minimum	Dimensions, inches	Finish	Grille Material? Color?	Weight, lbs.	Price, \$	NOTES
NAKAMICHI	Reference Monitor	reflex	12		2	cone	none		40-16 ±4	96	20	1.5k	8	25½x17¼x34¼	mahog	fiber gray	110	2400.00 pair	
	Reference Monitor (Small)	reflex	8		1.5	cone	none		60-16 ±5	94	20	2k	16	21x12¼x27½	mahog	fiber gray	44	1600.00 pair	
	Reference Monitor Slimline	reflex	8		1.5	cone	none		50-16 ±5	94	20	2k	16	16¼x12¼x36%	wal	clth brn	70	800.00 pair	
OHM ACOUSTICS	F	inf baf	12						35-19 ±4	84	56		4/3.7	44x7¼x17¼	oil wal	clth brn	80		
	G	vented	10						32-19 ±4	86	44		8/6.5	12½x11½x35	oil wal	clth blk	60		
	H	vented	8	2	cone	1	dome	T	32-20 ±4	87	32	5.17k	8/6.5	15x10¼x25	oil wal	clth blk	53		
	C ₂	vented	10	2	cone	1	dome	T	38-20 ±4	93	12	17k	7/5.7	14x9¼x25	oil wal	clth blk	43		
	O ₂	vented	10			2	cone	T	38-18 ±4	93	12	17k	7/5.7	14x9¼x25	oil wal	clth brn	42		
	E	ac sus	8			2	cone	T	70-18 ±4	96	9	17k	8/6	11½x7¼x21½	oil wal	clth blk	16		
ONKYO	M-8	bass reflex	8		2	cone	T		35-20			6k	8	11¼x9¼x21¼	vin wal	clth brn	16	90.00	
	M-12	bass reflex	10		3	cone	T		33-20			2.5k	8	13¼x11¼x23¼	oil wal	clth brn	34	130.00	
	M-20	acoustic susp.	12	2	dome	1	dome	M,T	35-20			700, 7k	8	13¼x11¼x23¼	oil wal	clth beige	40	200.00	
	M-25A	acoustic susp.	14	2	dome	1	dome	M,T	30-20			700, 7k	8	14¼x11¼x25¼	oil wal	clth brn	54½	250.00	
	M-30	acoustic susp.	12	3½x10½	horn	2¼	horn	M,T	20-20			700, 7k	8	16¼x15¼x28¼	oil wal	clth beige	51	300.00	
	Radian III	bass reflex	6½		3	cone	T		60-20			1.5k	8	9¼x11¼x33¼	oil wal	clth beige	29	120.00	
PSB SPEAKERS	Avanti	duc port	7		1	dome			45-20		8	1.5k	8	14¼x8¼x8	vin wal			160.00 pair	
	Avanti	duc port	8		1	dome			38-20		8	1.5k	8	19½x11x10	vin wal			220.00 pair	
	TMW 3	ac sus	12	4	1	dome			32-21		12	450, 84k	8	26¼x15¼x12	oil wal			400.00 pair	
	BETA II	duc port	8		1	dome			25-20		40	1.5k	4	23x12x10¼	oil wal			750.00 pair	
PEACETIME	Magnum 357	ac sus	15		horn	3½	Pz	M,T	18-45 ±12		30	600, 4k	8/6	65¼x24x30	laq blk	fbrglis silver	375	1295.00	
	30/06 Monitor	ac sus	15		horn	3½	Pz	M,T	18-45 ±12		30	600, 4k	8/6	15¼x28x13¼	laq blk	fbrglis silver	80	499.00	
	PT265	ac sus	10		3½	dome	M,T		35-20		12	300	8/6	14¼x11x24	wal	clth blk	42	160.00	
	L401	ac sus	10	5	horn	1½	dome	M,T	30-45		15	500, 4k	8/6	11¼x11x24	wal	clth blk	48	230.00	
	L801	dyn dmpg	10	5	horn	1½	dome	M,T	26-45		5	500, 4k	8/6	28x13x15¼	wal	clth blk	70	460.00	
	1101	dyn dmpg	12	5	horn	1½	dome	M,T	20-45		20	750, 4k	8/6	18x18¼x32	wal	clth blk	95	650.00	
	L901	dyn dmpg	12	5	horn	1½	dome	M,T	20-45		20	750, 4k	8/6	36x18¼x32	wal	clth blk	180	1450.00	
PHASE LINEAR	Andromeda II	port	(2) 12	(4) 4	cone	(5) 1	cone	L,M,T	20-20 ±2		50		6	Bass-24x24x24 Mid-60x24x60	oil wal	clth beige	223	1100.00	
PIONEER	HPM-200	ac sus	(2) 10	2½	dome		HPM	M,T	25-25	89		100, 700, 285k	6/5.5	29x19x32	wal	clth brn		500.00	
	HPM-100	bass reflex	12	4	cone	1¼	cone ST	M,T	30-25	92.5		1.2k, 4k, 12k	8	15¼x15¼x26¼	wal	clth blk	59	300.00	
	HPM-60	bass reflex	10	4	cone	1¼	cone ST		35-25	92.5		1.2k, 4k, 12k	8	13¼x12¼x24	wal	clth blk	38%	225.00	
	HPM-40	bass reflex	10				cone ST		35-25	91		4k, 10k	8	12¼x12¼x22¼	wal	clth brn	28%	150.00	
	CX-63DX	inf baf	15	(2) 5	cone	1	horn ST	M,T	20-22			770, 3.3k, 12k	8	19x13x28¼	wal	lattice brn	63	300.00	
	CS-99A	inf baf	15	(2) 5	cone	1	horn ST		25-22	97		800, 2k, 5k & 10k	8	16¼x11¼x24¼	wal	lattice brn	51%	250.00	
	CS-700G	inf baf	12¼	4¼	cone	1	horn		35-20			500, 4.5k	8	15x12¼x26	wal	clth brn	37	200.00	
	CS-500G	inf baf	10	5	cone	3	cone		35-20	94		700, 8k	8	12¼x12¼x22¼	wal	lattice brn	32%	150.00	
	CS-66G	inf baf	10	6¼	cone	3	cone		35-20	92		187k	8	12¼x11¼x21¼	wal	clth brn	19	125.00	
	Project 100A	bass reflex	10	1¼	dome	2	cone		40-20			700, 6k	8	13x10¼x23	vin wal	foam brn	30	125.00	
Project 60A	bass reflex	8			1¼	cone		50-20	10		3k	8	10¼x9¼x18¼	vin wal	foam brn	13	80.00		

MANUFACTURER	MODEL	Enclosure type	Woofer dia., inches			Midrange type			Tweeter dia., inches		Tweeter type		Level controls (M=midrange, T=tweeter)		Anechoic freq. response Hz to kHz ±dB		dB SPL, 1 watt input, 1 mtr. on axis		Recommended min. amp. power		Crossover frequencies, Hz		Impedance, ohms; Nominal/minimum		Dimensions, inches		Finish		Grille Material? Color?		Weight, lbs.		Price, \$		NOTES	
			Woofer dia., inches	Woofer dia., inches	Woofer dia., inches	Midrange type	Midrange type	Midrange type	Tweeter type	Tweeter type	Tweeter type	Tweeter type	M	T	20-20	92	10	60-3k	6	28x16	x11 1/2	vin wal	clth blk	50	199.95											
POLK	Monitor 10	vent	10	(2)	cone	1	dome						32-20.5	92	10	60-3k	6	28x16	x11 1/2	vin wal	clth blk	50	199.95													
	Monitor 7	vent	8	6 1/2	cone	1	dome						40-20.5	89	10	60-3k	8	24x14	x9 1/2	vin wal	clth blk	36	129.00													
	Mini-Monitor	vent	4 1/2	4 1/2	cone	1	dome						65-20	91	4	100-3k	8	14x6 1/4x5	x9 1/2	vin wal	foam blk	9 1/2	79.95													
POWER RESEARCH PRODUCTS	System III C	inf baf	12	(4) 6, (8) 3	cone	(4) 1 1/2	Pz	T					26-22	90	40	85, 400, 8k	8/6	15x15x15	x45	oil wal	clth blk	95	840.00													
	System IV	inf baf	10	6, 3	cone	1 1/2	Pz	T					35-22	86	30	100, 600, 8k	8/7	12x15	x41	oil wal	foam gray	64	*690.00 pair •650.00 pair										*sing. bass unit •tbl. bass unit			
PRESAGE	5	pass rad	8	4 1/2	cone	3 1/2	dome	M, T					30-20		25	*470, 3.5k	8	15x26	x12 1/2	oak wal	clth brn	43	329.00													
	9	port	10			1 1/2	ring	T					35-19		20	1.9k	8	25x14	x11	oak& wal	clth brn/blk	43	180.00													
	15	port	8			2	ring	T					60-19		10	1.3k	8	21 1/2x11 1/2	x8 1/2	oak& wal	clth brn/blk	23	109.00													
PULSE DYNAMICS	M-258	PA column	(2) 12	(6) 5x7	cone	1 1/2								100	50			12	14 1/2x14 1/2	x59	vin	clth	85	250.00												
QUAD	ESL	doublet											45-18	90	15			15	34 1/2x10 1/2	x31	alum blk		40	465.00												
QUADRAFLEX	ST21	ac sus	15	8	cone	1	dome	M, T					28-22.5		10	250, 3k	8	18 1/2x12 1/2	x40	oil wal	foam var	74	289.95													
	ST19	ac sus	12	6 1/2	cone	1	dome	M, T					32-22.5		10	500, 3k	8	15 1/2x12 1/2	x26 1/2	oil wal	foam var	46	219.95													
	ST17	ac sus	10	6 1/2	cone	2 1/2	cone	M, T					38-20		10	600, 3k	8	14 1/2x11 1/2	x24 1/2	oil wal	foam var	40	159.95													
	ST15	ac sus	10	-	-	2 1/2	cone						45-20		10	1500	8	13 1/2x11	x23 1/2	oil wal	foam var	30	109.95													
RTR	EXP-12	ac sus	12	-	-	3 1/2	cone	T					32-20	94	20	2000	8	14 1/2x11 1/2	x25 1/2	wal	clth blk	44	149.95													
	240-D	ac sus	10 & 8	-	-	3 1/2	cone	T					28-20	90	20	1200	4	14 1/2x12 1/2	x42	wal	clth blk	73	249.95													
	280-Dr	ac sus	(4) 10	-	-	2 1/2	cone	T					22-25	90	25	2500	8	16 1/2x16 1/2	x39	wal	clth blk	95	389.95													
	HPR-12 Mag	ac sus	10	5	cone	2 1/2	cone	M, T					30-25	96	15	1500	8	14 1/2x13	x36	wal	clth brn	72	289.95													
	ESR-6	di-pole	-	-	-	3.1x 5 1/2	ES	T, B					1500	90	15	7500	8	16 1/2x16 1/2	x19 1/2	wal	clth blk	23	199.95											ES add-on		
														30,000																						
RADIO SHACK/ REALISTIC	Minimus-5		6 1/2			1 1/2	horn						100-20								plastic blk		29.95													
	MC-500	ac sus	5			2	cone						40-20								oil wal	clth brn		39.95												
	Minimus-10	ac sus	8			3	cone						40-20								oil wal	clth brn		49.95												
	MC-1000	ac sus	8			2	cone						30-20								oil wal	clth brn		59.95												
	MC-1500	ac sus	8			3	cone						40-20								oil wal	foam		79.50												
	Nova-6	ac sus	8			3	cone	T					30-20								oil wal	lattice		79.50												
	Optimus-1B	ac sus	10			(2) 3		T					20-20								oil wal	clth brn		89.95												
	Optimus-5B	ac sus	12			cone		M, T					20-20								oil wal	clth brn		114.50												
	Nova-7B	ac sus	10	3	cone	3	cone	T					20-20								oil wal	lattice		119.50												
	Nova-8B	ac sus	12			(3) 3	cone	M, T					20-20								oil wal	lattice		139.95												
	Optimus T-100	ac sus	(2) 8			3	cone	T					55-18								3500	oil wal	clth brn		139.95											
Mach One	ac sus	15		horn		horn	M, T					8-25								800, 8k	oil wal	clth brn		199.50												
RECTILINEAR	7	port	12 & 7	(2) 1 1/2	dome	(2) 1	dome						32-20	95	30	200, 1.8k	8	35x18	x12	wal	clth blk	80	449.00													
	5	ac sus	12 & 7	1 1/2	dome	1	dome						32-20	91	30	200, 1.8k	6	25x15	x14 1/2	wal	clth blk	72	349.00													
	4 1/2	ac sus	10	2	dome	1	dome						35-20	90	25	800, 6k	6	25x13	x14	wal	clth blk	55	299.00													
	4	ac sus	10	1 1/2	dome	1	dome						35-19	92	20	2k, 6k	6	23 1/2x13	x12	wal	clth blk	48	219.00													
	2	ac sus	10			(2) 1 1/2	cone						35-18	94	20	2.5k	8	23 1/2x13	x12	vin wal	clth blk	47	169.00													
	III B	port	12	5	cone	(2) 2 1/2	cone						35-18	93	20	400 5k 11k	8	35x18	x12	oil wal	clth blk	75	299.00													
ROGERSOUND	Alpha III	bass ref. bass ref.	10	5 1/2	cone	1	dome	M, T					28-20		15	800-5k	8	51x12	x12	wal	clth blk	70	379.95													
	Max	bass ref.	12	5 1/2	cone	1	dome	M, T					30-20		12	800, 4k	8	32x18	x12	wal	clth blk	60	299.95													

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MANUFACTURER	MODEL	Enclosure type	Woofer dia., inches	Midrange dia., inches	Midrange type	Tweeter dia., inches	Tweeter type	Level controls (M=midrange, T=tweeter)	Asynchronous freq. response Hz to kHz ±dB	dB SPL, 1-watt input, 1 mtr. on axis, 100Hz-10kHz	Recommended min. amp. power	Crossover frequencies, Hz	Impedance ohms, Nominal/minimum	Dimensions, inches	Finish	Grille Material? Color?	Weight, lbs.	Price, \$	NOTES	
ROGERSOUND (Continued)	Studio Mon. 3300	bass ref.	12	5%	cone	2%	dome	M,T	40-20 ±3	6	800, 5k	8	25x14% x12	oak	clth	45	209.95	*249.95 wal.		
	Ranger	bass ref.	10	5%	cone	2%	dome	M,T	50-20 ±3	6	800, 5k	8	25x14% x12	oak	clth	39	149.95	*199.95 wal.		
	Alpha I	bass ref.	8		cone	2%	cone	T	45-20 ±3	8	1800	8	46% x11% x11%	wal	clth	60	129.95	/oak		
	Monaco	bass ref.	8		cone	2%	dome	T	60-13 ±3	5	1600	8	22x12% x10%	wal	clth	29	109.95			
	Mixdown Monitor	ac sus	6x9		cone	2	cone		65-20	1	3k	8/4	11x10 x7%	wal	clth	25 pr.	99.95	pair		
STR	Beta	vent	8			3	MST*		55-22 ±5	96	3	4k	8/4	16x9% x10	vin wal	foam	18	149.00	*Pz	
	Gamma	ac sus	10	5	cone	3	MST*		37-21 ±3	95	10	2k, 10k	8/4	24x14% x12%	vin wal	foam	43	149.00	*as above	
	Delta	ac sus	10	5	cone	3	MST*	T	37-31	99	10	1.5k, 5k	8/4	23% x11% x14	vin wal	blk	65	200.00	*as above	
	P-10	vent	12	5	cone	3	MST*	T	40-20 ±3	98	5	1.5k, 5k	8/4	26x14 x16	wal	blk	65	249.00	*as above	
	P-12	inf traf	12	5	cone	(2)3	MST*	M,T	30-21 ±4	92	20	300, 5k	8/4	31% x16 x15%	wal	blk	80	349.00	*as above	
	Sigma	vent	12	5	cone	3	MST*	M,T	40-21 ±3	99	15	900, 5k	8/4	31% x16 x15%	wal	blk	85	399.00	*as above	
	Omega	inf traf	(2)12	8	cone	3/3	dome MST*	M,T	23-19 ±3	93	20	150, 3k	8/4	31% x15% x31%	wal	blk	150	649.00	*as above	
SANSUI	SP-7500X	bass ref.	16	8	cone	*	horn	T	25-22	98			17% x11 x26	wal	wood	48	290.00	*6x2, w/super tweeters		
	SP-5500X	bass ref.	15	5	cone	*	horn	T	25-20	98			17% x11 x26	wal	wood	44	250.00	*6x2, w/super tweeters		
	SP-2500X	bass ref.	12	5	cone	2	horn	T	30-20	96			15x11 x25	wal	wood	40 1/2	200.00			
	LM-330	bass ref.	10		cone	2 1/2	cone	T	31-20	92			12% x12 x28	wal	clth	41 1/2	200.00			
	LM-220	bass ref.	8		cone	2 1/2	cone	T	32-20	91			11x10 x24%	wal	brn	26 1/2	170.00			
	LM-110	bass ref.	6 1/2		cone	2 1/2	cone	T	38-20	90			10x8x21	wal	clth	18	250.00	pair		
	AA-4900	bass ref.	10	5	cone	2 1/2	cone	T,M	30-20	94			13x11% x26%	wal	clth	30	190.00			
	AA-3900	bass ref.	8		cone	2 1/2	cone	T	35-20	93			12x11% x23%	wal	brn	21	150.00			
	AA-2900	bass ref.	6 1/2		cone	2 1/2	cone	T	42-20	92			10x8% x20	wal	clth	14	220.00	pair		
	SP-20000	pass rad.	10	4 1/2	horn	1 1/2	horn	M,T	25-40	93			14% x12% x31	rose	brn silver net	66	1180.00	pair		
SARAS	30	ac sus	12	5	cone	1	*		30-18 ±3	25			25x15% x12%	oil wal	clth	57	280.00	*reverse dome		
	20	ac sus	12			1	*		30-18 ±3	25			25x15% x12%	oil wal	clth	55	220.00	*as above		
	10	ac sus	10			1	*		30-18 ±4	25			24x13% x12	oil wal	clth	46	165.00	*as above		
SCHOBER	LSS-12	reflex	12	8	cone	1	horn	T	30-18*	96	10	250-3500	4	19% x14 x28%	wal	foam	55	250.00	*w/opt. tweeter	
SCOTT	S176	bass reflex	8			1 1/2	cone		60-18 ±4	5			3500	6/8	18x10% x8%	vin wal	knit	17	79.95	
	S177	ac sus	8	5	cone	1 1/2	cone		45-18 ±4	7			1200-3500	6/8	19x11x9%	vin wal	knit	21	109.95	
	S186	ac sus	10	4 1/2	cone	1	dome	M,T	40-20 ±4	10			800-4000	6/8	23x12% x10%	vin wal	knit	26	139.95	
	S196	ac sus	12	4 1/2	cone	1	dome	M,T	40-20 ±4	15			800-4000	6/8	24% x14 x11	vin wal	knit	40	179.95	
	Pro 70	ac sus	12	4 1/2	cone	(2)1	dome	M,T	35-20 ±4	15			800-4000	6/8	27x16% x12%	vin wal	brn mesh	50	299.95	
	Pro 100	ac sus	15	(2)4 1/2	cone	(2)1	dome	M,T	35-20 ±4	20			700-3500	4	29% x19 x14%	vin wal	brn mesh	65	399.95	
SIDEREAL AKUSTIC	Model One	resis reflex	(2)10	1 1/2	dome	3	Pz	none		88	40	600, 10k	4/3	31% x25% x13	oak	clth	100	499.00		
SONAB	0011	bass ref.	8			1 1/2	cone		52-15	8			8	10x10 x10	wal		13	150.00	Sold only in pairs	
	0A12	bass ref.	8			1 1/2	cone		42-15	8			8	8x18x13	wal wal			198.00	As above	
	0A14	bass ref.	8			1 1/2	cone		29-15	8			8	9x22x17	wal wal			288.00	As above	
	0A116	bass ref.	8	8		1 1/2	cone	M,T	28-15	5			500, 1.8k	8	10% x26% x18	wal wal			489.00	As above
	0A2212	bass ref.	8	8		1 1/2	cone	M,T	30-15	5			8	12x29% x21	wal			780.00	As above	
SONEX	TWO	*	(2)6 1/2	2 1/2	cone	1	dome		32-22 ±3	87	50	1.5k 12k	8/7	16x12% x35%	wal	clth	60		*time align.	
SONIC SYSTEMS	Model One	slotted port	15		(4)1	dome	T		40-15 ±2	99	100	1k	8	43% x28% x22%	wal			1300.00		

MANUFACTURER	MODEL	Enclosure type	Woofer dia., inches	Midrange dia., inches	Midrange type	Tweeter dia., inches	Tweeter type	Level controls (M=midrange, T=Tweeter)	Acoustic treat.	dB SPL 1 watt input, 1 mtr. on axis, 100Hz-10kHz	Recommended min. amp. power	Crossover frequencies, Hz	Impedance, ohms, Nominal/Minimum	Dimensions, inches	Finish	Grille Material? Color?	Weight, lbs.	Price, \$	NOTES
SONY	SSU-2000	ac sus	10	-	2 1/2	cone	T	35-20	90	20-100	2.5k	8/6	13x14x14	oil wal	clth	38	150.00		
	SSU-1250	pass rad	8	-	2 1/2	cone	-	45-20	91	10-60	4k	8/8	x25x13x11	oil wal	clth	24	100.00		
	SSU-1050	ac sus	8	-	3	cone	-	50-20	88	10-50	1k	8/6	x25x11x9	oil wal	clth	18	130.00		
SOUNDCRAFTSMEN	SC-12ES	ac sus	12	5	cone	*	ES	M,T	30-20	20	500-960, 1000	8	18x14x28	oil wal	clth blk	76	399.50	*144 sq. in. **variable x over	
	Lancier SC-7A	ac sus	12	5	cone	1	dome	M,T	20-20	10	500, 4500	8	15x11x25	oil wal	clth blk	59	269.50		
	Lancier SC-9T	ac sus	10	5	cone	(2)1	dome	M,T	20-20	10	500, 4500	8	12x12x12	oil wal	clth blk	63	229.50		
	Lancier SC-4	ac sus	12	5	cone	2 1/2	cone	M,T	20-20	10	750, 6000	8	15x12x12	oil wal	foam blk	53	169.50		
	Lancier SC-10A	ac sus	10	-	2 1/2	cone	T	20-20	10	2500	10	8	12 1/2x10	oil wal	foam blk	33	119.50		
	Lancier 9535-2	reflex	12	-	2 1/2	cone	-	30-20	5	3000	8	8	14x11x11	oil wal	brn/wht	33	99.50		
	Lancier 9534X	reflex	8	-	3	cone	-	40-18	5	3000	8	8	11x11x11	oil wal	clth brn/wht	27	69.50		
SPEAKERLAB	ONE	ac sus	8	-	1/2	dome	T	-	5	2.5k	4/4	18x11x11	oil wal	clth brn	30	89.00	Kit, \$59		
	TWO	ac sus	10	-	1 1/2	dome	T	-	7	1000	4/4	x9x23x15	oil wal	clth brn	49	139.00	Kit, \$89		
	THREE	ac sus	12	5	cone	3/4	dome	M,T	-	15	700, 6.5k	8/8	28x16x12	oil wal	clth brn	65	219.00	Kit, \$148	
	FOUR	ac sus	12	5	cone	4 1/2x1	horn	M,T	-	15	700, 6.5k	8/8	28x16x11	oil wal	clth brn	65	249.00	Kit, \$179	
	SEVEN	ac sus	10, 12	14x3 1/2	horn	1 1/2x4 1/2	horn	M,T	-	15	700, 5k	4/4	29x18x15	oil wal	clth brn	85	389.00	Kit, \$272	
	K	horn	15	17x6	horn	4 1/2x1 1/2	horn	M,T	-	10	350, 5k	4/4	50x32x28	oil wal	clth brn	170	595.00	Kit, \$389	
STARK DESIGNS	ST-2	ac sus	(2) 10	(2) 1 1/2	domes	(2) 1	domes	M,T	32-24	50	900, 4k	4	14x14x48	oil wal	clth brn/bk	112	600.00	4-pos. push-button level controls	
	ST-1	ac sus	(2) 8	(2) 1 1/2	domes	(2) 1	domes	M,T	40-24	40	900, 4k	4	11x11x42	oil wal	clth brn/bk	79	495.00	As above	
	SR-2	ac sus	12	2	dome	1	dome	M,T	32-20	40	450, 4.5k	8	15x13x24	oil wal	clth brn/bk	57	345.00	As above	
	SR-1	ac sus	10	2	dome	1	dome	M,T	40-20	30	450, 4.5k	8	15x11x24	oil wal	clth brn/bk	51	300.00	As above	
	SE-2	ac sus	10	-	-	1	dome	T	40-20	20	2k	8	13x11x24	oil wal	clth brn/bk	42	195.00	As above	
	SE-1	ac sus	8	-	-	1	dome	T	50-20	20	2k	8	10x11x21	oil wal	clth brn/bk	35	150.00	As above	
SUPERSCOPE	S-312A	air sus	12	4 1/2	3			30-20	50	2.6k	8	8	26x15x10	wal	foam brn	30	119.95		
	S-310A		10	4 1/2	3			+3 50-18	35	2.6k	8	8	24x13x10	wal	foam brn	19	79.95		
	S-308A		8		3			+3 60-18	30	5k	8	8	23x12x8	wal	foam brn	16	99.95		
	S-208A		8		3			+3 60-16	30		8	8	21x12x7	wal	foam brn	13	79.95	pair	
SYNERGISTICS	S-22	ac sus	(2) 8		2 1/2		T	33-20	6	2k	8	8	23x12x9			29	125.00		
	S-32	ac sus	(2) 10		2 1/2		T	28-20	10	2.5k	8	8	25x14x11			38	150.00		
	S-42	ac sus	(3) 10	4 1/2	2 1/2		T	28-20	10	750-5k	8	8	25x14x11			40	225.00		
	S-51	ac sus	(3) 12	4 1/2	2 1/2		M,T	30-20	8	700-5k	8	8	25x14x11			41	300.00		
	S-52	ac sus	(5) 8				T	28-20	6	2k	6	6	30x13x13			47	300.00		
	S-62	ac sus	12	4 1/2	(3) 2 1/2		M,T	26-24	8	750, 4k	8	8	33x16x12			64	375.00		
	S-72	ac sus	(2) 10	(2) 4 1/2	(3) 2 1/2		M,T	26-24	6	750-4k, 10k	8	8	40x30x12			90	495.00		
TANNODY	Arden	duct port	15	-	2	comp horn	2T	30-20	91	10	1k	8	39x26x14	oil wal	clth brn	124	555.00	W/remov. base	
	Berkeley	duct port	15	-	2	comp horn	2T	+4 25-20	91	10	1k	8	33x21x12	oil wal	clth brn	90	480.00	As above	
	Cheviot	duct port	12	-	2	comp horn	2T	+4 40-20	89	10	1k	8	33x17x10	oil wal	clth brn	66	345.00	As above	
	Devon	duct port	12	-	2	comp horn	2T	+4 45-20	89	10	1k	8	23x15x10	oil wal	clth brn	46	315.00		
	Eaton	duct port	10	-	2	comp horn	2T	+4 50-20	87.5	10	1k	8	20x13x9	oil wal	clth brn	40	285.00		
TOSHIBA	SS-215W	Closed Box	8		2 1/2	cone		35-20			3k	8	12x27x13	metal	clth blk	20	90.00		
	SS-220W	*	8		2	cone		35-20			4k	8	12x23x11	wal	clth blk	25	120.00	*pressure bal.	

Loudspeakers

MANUFACTURER	MODEL	Enclosure type	Woofer dia., inches	Midrange dia., inches	Midrange type	Tweeter dia., inches	Tweeter type	Level controls (M=midrange, T=tweeter)	Anchore freq. response Hz to kHz ±dB	dB SPL 1 watt output 1 mtr. on axis, 100Hz-10kHz	Recommended min. amp. power	Crossover frequencies, Hz	Impedance, ohms; Nominal/minimum	Dimensions, inches	Finish	Grille Material? Colour?	Weight, lbs	Price, \$	NOTES
TOSHIBA (Continued)	SS-3500W	*	8	4	cone	1 1/4			35-20		1.5, 7k	8	12 1/2 x 22 x 10	wal	clth	27 1/2	160.00	*as above	
	SS-4700S	*	10	4	cone	1 1/4		T	35-20		800, 6k	8	12 1/2 x 21 1/4 x 12	wal	clth	35%	200.00	*as above	
	SS-810N	*	12	2		1 1/4		M, T	20-30			8	16 1/4 x 30 3/4 x 17	rose	silv	79%	800.00	*as above	
TRANSAUDIO	1012A	ac sus	12	5	cone	2 1/2	cone	-	38-18 ±4	5	600, 2k	8	16 1/2 x 10 1/2 x 27	vin wal	foam blk	34	109.95		
	1011A	ac sus	12	-	-	2 1/2	cone	-	40-18 ±4	5	1800	8	15 1/2 x 10 1/2 x 26	vin wal	foam blk	28	89.95		
	1010A	ac sus	10	-	-	3	cone	-	45-17 ±4	5	1800	8	13 1/4 x 9 3/4 x 24	vin wal	foam blk	25 1/2	64.95		
TRANS-BASS SYSTEMS	TransMini	port	6 1/2			3	phen cone dome		80-18 ±5	88	8	8/8	7x7x31	oil wal	clth brn	18	69.95		
	82	port	8			1 1/2	dome	T	50-18 ±5	86	15	8/6	9x9x36	oil wal	clth brn	30	119.95		
	TZ-102	trans. line	10		(2)	3	Pz	T	35-22 ±5	90	20	8/8	13x15 x48	wal wht	clth brn	80	269.95		
	T-100	trans. line	10		3				25-100 ±5	50	100	8/8	13x15 x48	wal wht	clth brn	100	229.95	sub-woofer only	
ULTRALINEAR	25	bass ref.	8			3	cone		50-17	2	4.5k	8/4	11 1/4 x 9 1/4	wal	foam brn/bk	17	69.95		
	450	ac sus	10			1	dome	T	27-22	10	1.75k	8/4	12x12 43%	oak print	foam blk/brn	60	199.95	450W-279.95	
	425	ac sus	10	3 1/2	cone	3 1/2	cone		32-20	8	1.8 & 4k	8/4	11 1/4 x 9 1/4 x 38%	wal print	foam blk/brn	46	149.95		
	250	ac sus	15	6	cone	3	cone ring	M	25-20	15	800-2.6 & 6k	8/4	23 1/2 x 12 x 25	wal print	foam blk/brn	60	209.95		
	225	ac sus	12	6	cone	1	dome	M	28-22	10	900-5k	8/4	14 1/2 x 12 x 24%	wal print	foam blk/brn	45	189.95	225W-239.95	
	200B	ac sus	12	5	cone	2	ring	M	28-20	10	1.5 & 4k	8/4	14 1/2 x 12 24%	wal print	foam blk/brn	42	159.95	200BW-199.95	
	100B	bass ref.	12	4 1/2	cone	2	ring		32-18	5	1.5 & 4k	8/4	14 1/2 x 12 x 24%	wal print	clth blk/brn	37	119.95		
	55	bass ref.	10			3	cone		40-17	3	2.5k	8/4	11 1/4 x 9 1/4 x 23%	wal print	foam blk/brn	22	79.95		
UNITED SOUND	Reflector II	reflecting		(9) 4 1/2					35-22 ±5	30		8	20 1/2 x 13 x 12%	oil wal	foam blk	33	248.95 pair		
UTAH ELECTRONICS	HS10-C	vented	15	4x10	horn	1 1/4	phen ring	M, T			800/3.5k	8	20 1/2 x 14 x 27	oil wal	foam	70	299.95	Grille in brn. or blk.	
	HS4-C	vented	12	4x10	horn	1 1/4	phen ring	M, T			800/3.5k	8	15x14 x25%	oil wal	foam	49	229.95	Grille in brn. or blk.	
	HS2-C	vented	12		horn	5	cone	T			2k/5k	8	15x14 x25%	oil wal	clth brn	46	159.95		
	DX120A	vented	12		horn	3	cone	M, T			2k/5k	8	15 1/2 x 11 1/2 x 25%	vin wal	formed brn	40	169.95	Removable grille	
	DX100A	vented	10	5	cone	3	cone	T			1.5k/4k	8	14x10 x24%	vin wal	formed brn	35	129.95	Removable grille	
	AS-90	ac sus	12	8	cone	3 1/2	cone	T			1k, 3.5k	8	14x10 x23	vin	cloth brn	33	119.95		
	AS-50	ac sus	10	6	cone	3 1/2	cone				1k/3.5k	8	12 1/2 x 9 x 22	vin	clth brn	27	89.95		
	AS-30	ac sus	8			3 1/2	cone				3500	8	10 1/2 x 8 x 17%	vin	clth brn	14	59.95		
	PV300	sealed	8			3	cone				3500	8	11x6% x17%	vin	clth brn	22	99.95		
	PV200	sealed	8			3	cone				3500	8	11x6% x17%	vin	clth brn	20	89.95		
PV110	sealed	6									8	11x6% x17%	vin	clth brn	19 pr.	74.95 pair			
VICTOR	D258A	ac sus	10	5 1/2	cone	1	dome	M, T	30-20 ±2	5	600-287k	6/8	15 1/2 x 10 1/2 x 27%	oil wal	clth blk/brn	45	200.00		
	D402A	ac sus	(2) 8	(2) 4	cone	(2) 1	dome		35-20 ±3	3	3.5k	6/8	15 1/2 x 11 x 27%	oil wal	clth blk/brn	45	189.00		
	DP202A	ac sus	8			1	cone		45-20 ±3.5	2	3.5k	6/8	10x8% x15%	oil wal	clth blk/brn	15	65.00		
	KB14	ac sus	8			2 1/2	cone		45-18 ±4.5	1	3.5k	8	12 1/4 x 8 x 21%	vin wal	clth blk/brn	17.8	55.00		
YAMAHA	NS-1000	ac sus	12	3 1/2	dome	1 1/4	dome	M, T		90	500, 6k	8	28x15 1/2 x14%	ebony	foam	85%	1350.00 pair		
	NS-1000M	ac sus	12	3 1/2	dome	1 1/4	dome	M, T		90	500, 6k	8	26 1/4 x 14 x 12%	blk		68%	960.00 pair		
	NS-690	ac sus	12		dome	1 1/4	dome	M, T		90	800, 6k	8	24 1/2 x 11 1/2 x 11%		foam blk	48	560.00 pair		
	NS-670	ac sus	10		dome	1 1/4	dome	M, T		88	800, 6k	8	22 1/2 x 12 1/2 x 10%		foam blk	42	460.00 pair		
	NS-500	ac sus	10			1 1/2	dome	M, T			1.8k	8	24 1/2 x 13 1/2 x 13%		blk removeable	42.5	500.00 pair		
	NS-3	ac sus	10			1	dome	M, T			600, 1.2k	8	24x13% x10%	wal	foam blk	45	460.00 pair		
	NS-2	ac sus	10			1	dome				1.2k	8	24 1/4 x 11 1/4 x 11%	wal	foam blk	29	200.00 pair		

TDK SA. WE DEFY ANYONE TO MATCH OUR VITAL STATISTICS.

Manufacturer	Brand	MAGAZINE A		MAGAZINE B	
		S/N Ratio Weighted in dB	Output @ 3% THD	S/N in dB (re: 3% THD)	THD at 0 dB (%)
TDK	SA	66.5	+4.2	66.0	0.9
AMPEX	20:20+	56.4	+1.9	—	—
FUJI	FX	60.0	+2.3	—	—
MAXELL	UD	—	—	58.5	1.1
MAXELL	UDXL	62.5	+2.7	—	—
NAKAMICHI	EX	60.0	+2.3	55.0	1.1
SCOTCH	CHROME	—	—	64.0	1.3
SCOTCH	CLASSIC	62.5	+2.0	—	—
SONY	FERRICHROME	64.0	+2.1	64.0	1.8

Decks used for tests: Magazine A-Pioneer CT-F9191 (cross-checked on DUAL 901, TEAC 450); Magazine B-NAKAMICHI 1000.

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Two leading hi-fi magazines working independently tested a wide variety of cassettes. In both tests, TDK SA clearly outperformed the other premium priced cassettes.

The statistics speak for themselves. TDK SA provides a greater S/N ratio (66.5 dB weighted and 66.0 dB @ 3% THD), greater output sensitivity (+4.2 dB @ 3% THD), and less distortion (THD 0.9%) than these tapes.

When you convert these statistics into sound, TDK SA allows you to play back more of the original signal with less distortion and noise.

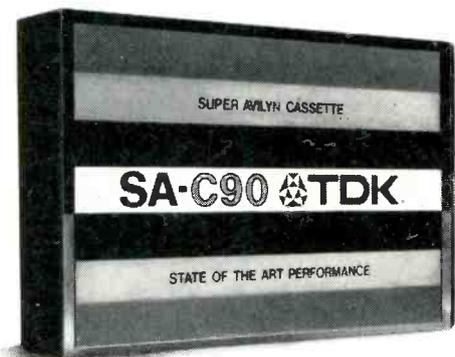
Put these facts and figures together and TDK SA adds up to the State of the Art because it provides greater dynamic range. This means cleaner, clearer, crisper recordings, plain and simple. Sound for sound, there isn't a cassette that can match its vital statistics.

Statistics may be the gospel of the audiophile, but the ultimate judge is your own ear. Record a piece of music with the tape you're using now. Then record that same music at the same levels using TDK SA. You'll hear why TDK SA defies anyone to match its sound.

Or its vital statistics.

TDK Electronics Corp., 755 Eastgate Boulevard, Garden City, New York 11530. Also available in Canada.

Check No. 52 on Reader Service Card



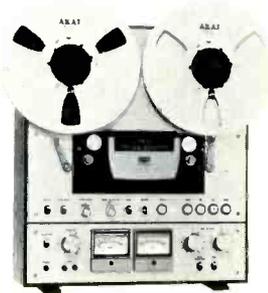
Wait till you hear what you've been missing.

Open-Reel Tape Decks

SPEEDS BY LETTER CODE:

	A	B	C	D	E	F	G	H	J
15	x	x	x	x	x	x	x	x	x
7 1/2	x	x	x	x	x	x	x	x	x
3 3/4	x	x	x	x	x	x	x	x	x
1 7/8	x	x	x	x	x	x	x	x	x
1 5/16	x								

Akai
GX-650D



Sony
TC-880-2



Tandberg 10XD



MANUFACTURER	MODEL	Speeds (per letter code)		Max. reel size, in.	No. of heads	No. of tracks	No. of channels	No. of motors	Drive motor type	Drive to capstan	Freq. resp., Hz-KHz ±dB, with standard test tape at highest machine speed	Wow & flutter, DIN 45-507, %	S/N w/stand. test tape	Output level at 0 VU, mV	Mtc. mixing?	Mtc. input Z, ohms	Record level indicators, type & qty.	Dimensions, in.	Weight, lbs.	Price, \$	NOTES (D) after price indicates Dolby included.
		B	C																		
AKAI	GX-270DSS	B	7	4	4	4/2	3	ac servo	direct	30-21 ±3	0.07	54	775	yes	600	4mtrs.	17.3x18.3x7.5	40	875.00		
	GX-630DSS	B	10%	4	4	4/2	3	ac servo	direct	30-21 ±3	0.06	54	775	yes	10k	4mtrs.	17.4x20.7x9.4	45	995.00		
	1730DSS	B	7	4	4	4/2	1	hys. sync.	belt	30-22 ±3	0.15	48	1230	no	30k	4mtrs.	16.5x18x9.5	33	479.95		
	GX-230D	B	7	3	4	2	3	ac servo	direct	30-23 ±3	0.07	60	775	yes	5k	2mtrs.	17.4x15.9x8.3	34	500.00		
	GX-265D	B	7	4	4	2	3	ac servo	direct	30-25 ±3	0.06	56	775	yes	5k	2mtrs.	17.3x15.9x8.2	37	675.00		
	GX-270D	B	7	3	4	2	3	ac servo	direct	30-23 ±3	0.07	60	775	yes	5k	2mtrs.	17.4x15.9x8.3	35	600.00		
	GX-630D	B	10%	3	4	2	3	ac servo	direct	30-25 ±3	0.06	57	775	yes	10k	2mtrs.	17.4x18.3x9.4	41.8	695.00		
	GX-630DB	B	10%	3	4	2	3	ac servo	direct	30-25 ±3	0.06	57	775	yes	10k	2mtrs.	17.4x18.3x9.4	43	775.00D		
	GX-650D	E	10%	3	4	2	3	ac servo	direct	30-30 ±3	0.04	58	775	yes	600	2mtrs.	17.4x20.6x10	58	995.00		
	1722W	B	7	2	4	2	1	induc.	induc.	30-21 ±3	0.14	50	1230	no	100k	2mtrs.	14x14.1x9.8	29	350.00		
	4000DB	B	7	3	4	2	1	induc.	belt	30-23 ±3	0.15	55	775	yes	5k	2mtrs.	16x12.8x7.7	27	380.00D		
4000DS MkII	B	7	3	4	2	4	induc.	belt	30-23 ±3	0.12	56	775	yes	30k	2mtrs.	16.2x12.6x7.8	25	300.00			
CROWN	SX-724	B	10%	3	4	2	3	hys	belt	20-25 ±2	0.09	60	2.45v	yes	350k	2mtrs.	19x9x15%	45	1195.00		
	SX-824	B, F	10%	3	4	2	3	hys	belt	20-25 ±2	0.09	60	2.45v	yes	350k	2mtrs.	19x9x15%	48	1595.00		
	CX-824	B, F	10%	3	4	2	3	hys	belt	40-30 ±2	0.06	60	2v	yes	350k	2mtrs.	19x9x17%	52	1995.00		
	SX-822	B, F	10%	3	2	2	3	hys	belt	30-30 ±2	0.06	60	2.45v	yes	350k	2mtrs.	19x9x17%	52	1595.00		
	SX-744	B	10%	3	4	4	3	hys	belt	20-25 ±2	0.09	60	2.45v	yes	350k	4mtrs.	19x9x21	51	1995.00		
	CX-844	E	10%	3	4	4	3	hys	belt	40-30 ±2	0.06	60	2v	yes	350k	4mtrs.	19x9x24%	64	2995.00		
DOKORDER	1140	F	10%	3	4	4	3	hys. sync		30-23 ±3	0.04	60		no	600	4mtrs.	17x20x16%	66	1299.95		
	8120	B	10%	3	4	2	3	hys. sync		30-22 ±3	0.06	60		yes	10k	2mtrs.	17x17% x6%	48%	649.95		
	8140	B	7	3	4	4	3	hys. sync		30-23 ±3	0.07	58		yes	10k	2mtrs.	17x17% x6%	42	749.95		
	8100	B	7	3	4	2	3	dc servo		30-22 ±3	0.08	58		yes	10k	2mtrs.	17x17% x6%	35	549.95		
	7700	B	7	3	4	2	3	dc servo		40-22 ±3	0.08	58		no	10k	2mtrs.	17x17% x6%	35	399.95		
NAGRA	IV SL	E	7	4	3	3	1	dc servo	direct	30-20 ±1	0.05 p-p	71 dBA	1000	yes	swth-able	2 needle peak mtr	13x9% x4%	13	4214.70	W. 10 1/2-in. adapter; cue channel.	
	IV SD	E	7	3	2	2	1	dc servo	direct	30-20 ±1	0.05 p-p	71 dBA	1000	yes	swth-able	2 needle peak mtr	13x9% x4%	13	3735.90	W. 10 1/2-in. adapter.	
	SNN	H	2%	3	1	1	1	dc servo	direct	40-15 ±2	0.05 rms	63 dBA	600	auto	200	compress mtr	5% x4x1	1%	1916.10	Uses 0.15-in. tape on special reel.	
DTARI	MX-5050	E	10%	4	2	2	3	hys dc	idler	30-18 ±2	0.06	68		yes	50k	2mtrs.	17x21% x21%	50	1450.00		
	MX-5050-QX	E	10%	4	4	4	3	dc servo	idler	30-18 ±2	0.06	65		yes	50k	4mtrs.	17x25% x21%	75	2195.00		
	MX-5050-8	F	10%	4	8	8	3	dc servo	idler	30-18 ±2	0.08	58		yes	50k	8mtrs.	21% x17% x9%	86	3995.00		
PIONEER	RT-2044	F	10%	3	4	4	3	4/8 pole	belt	30-28 ±3	0.04	55	450-930	yes	27k	4dB	18% x27% x10%	74	1600.00		
	RT-2022	F	10%	3	2	2	3	4/8 pole	belt	30-28 ±3	0.04	57	450-930	yes	27k	2dB	18% x21% x10%	62%	1250.00		
	RT-1050	F	10%	3	2	2	3	4/8 pole	belt	30-22 ±3	0.04	57	316	yes	20k	2dB	18% x17% x9%	49%	700.00		
	RT-1020L	B	10%	3	4	2/4	3	4/8 pole	belt	40-20 ±3	0.08	55	316	yes	20k	2dB	17% x17% x9%	57%	650.00		
	RT-1011	B	10%	3	4	2	3	4/8 pole	belt	40-20 ±3	0.08	55	316	yes	20k	2dB	17x17x9	41	600.00		

Our Contribution to the Realization of High Quality Music Reproduction in the Home over the Past 25 Years.

Our company was founded at the time of rapid developments in the field of magnetic tape recording.

During this period there were few machines available, but they revolutionized professional sound recording.

This advancing technology soon introduced a new era to the amateur recordist, because it was now possible to record sound on a reusable storage medium, which could even be cut and spliced together again.



1.

It is with considerable pride that we note our participation in these developments right from the very beginning.



2.

As long ago as 1954, our recorders were already equipped with the professional

three motor drive system.

What is it that makes REVOX recorders so successful?

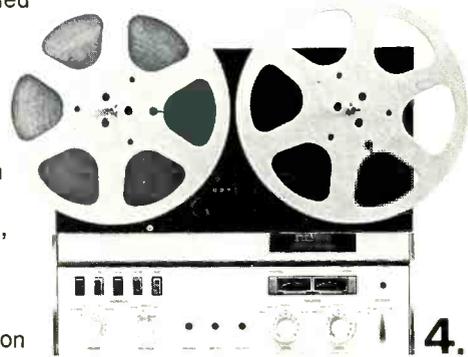
The answer to this question must take into account the changes which have occurred in the consumer since the early days of recording.

Today's audiophiles have an increasing awareness of true quality, and only a first-class product has a chance of being accepted by the serious recording enthusiast.



3.

The fact that REVOX tape recorders are in constant demand in such an increasingly quality-minded market is indicative of their high standard of construction and performance, but it also reflects the increasing sophistication of the serious audiophile, whose requirements can only be met by a small number of select products.



4.

5.



Our involvement in the design and production of professional equipment has led us to think in terms only of professional standards, even for our consumer products.

This approach produces far-reaching effects; the performance of

REVOX recorders with regard to durability, mechanical

and electrical stability, and closely-held specification tolerances, will stand comparison with professional equipment, and this is our main contribution to the realization of true high fidelity sound reproduction in the home.

6.



Does your equipment meet the high standards you require?

Visit your nearest REVOX dealer or write to:

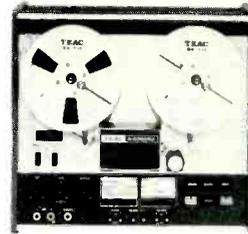
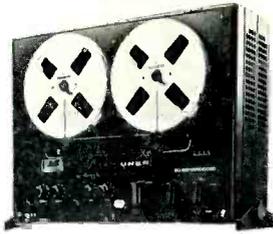
REVOX 155 MICHAEL DRIVE
SYOSSET, N.Y. 11791

1. DYNAVOX (1950) 2. REVOX A36 (1954)
3. REVOX D36 (1960) 4. REVOX A77 MK I (1967)
5. REVOX A700 (1973) 6. REVOX A77 MK IV (1975)

Check No. 41 on Reader Service Card

Open-Reel Tape Decks

**Uher
SG-520**



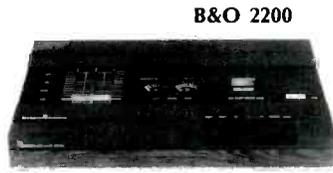
TEAC A-2300SX

SPEEDS BY LETTER CODE:

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

MANUFACTURER	MODEL	Speeds (see letter code)		Max. reel size, in.	No. of heads	No. of tracks	No. of channels	No. of motors	Drive motor type	Drive to capstan	Freq. resp., Hz-KHz, ±dB w/standart test tape at highest machine speed	Wow & flutter, DIN 45-507, %	S/N w/stand. test tape	Output level at 0 VU, mV	Mic. mixing?	Mic. input Z, ohms	Record level indicators, type & qty.	Dimensions, in.	Weight, lbs.	Price, \$	NOTES (D) after price indicates Dolby included.
REVOX	A77-1104	B	10%	3	4	2	3	asyn		30-20 +2 -3	0.08	66	2500	yes	50-600	2mtrs.	16½x14 x7%	33	899.00	Avail. 2 or 4-track, same price	
	A77-1137	B	10%	3	2	2	3	asyn		30-20 +2 -3	0.08	70	2500	yes	50-600	2mtrs.	16½x14 x7%	33	1112.00D	As above	
	A700	E	10%	3	2/4	2	3	asyn		30-22 +2 -3	0.06	65	1550	yes	50-600	2mtrs.	19x18½ x7	53	1800.00	As above	
SONY/ SUPERSCOPE	TC-880-2	F	10%	4	2/4	2	3	induc.		20-30 ±2	.02	59	-	yes	low	2mtrs.	18½x20½ x10%	80	2495.00		
	TC-788-4	F	10%	3	4	4	3			30-22 ±3	.04	53	-	yes	low	4mtrs.	17½x22 x8%	58½	1399.95		
	TC-758	B	10%	4	4	2	3	induc.		30-20 ±3	.05	53	-	yes	low	2mtrs.	17½x17½ 8%	54	999.95		
	TC-756-2	F	10%	3	2	2	3	induc.		30-22 ±3	.04	56	-	yes	low	2mtrs.	17½x17½ x8%	56	899.95		
	TC-645	B	7	3	4	2	3	eddy curr.		30-20 ±3	.07	53	-	yes	low	2mtrs.	15x14 x9	40%	499.95		
	TC-270	A	7	2	4	2	1	induc.		30-18	.12	50	-	no	low	2mtrs.	20½x10½ x15%	34½	449.95		
	TC-388-4	B	7	3	4	4	1	induc.		20-25	.09	52	-	yes	low	4mtrs.	16½x19½ x9	34%	679.95		
	TC-377	B	7	3	4	2	1	induc.	-	30-20 ±3	.09	52	-	yes	low	2mtrs.	16½x8½ x15%	22	399.95		
	TC-277-4	A	7	2	4	4	1	induc.	-	50-16 ±3	.12	52	-	no	low	4mtrs.	15½x7½ x15%	23	469.95		
	TC-105A	A	7	2	4	1	1	induc.	-	40-18	.12	46	-	no	low	1mtr.	14½x13½ x7%	20%	299.95		
	TC-106AV	A	7	2	2	1	1	4-pole induc.	-	40-18	.15	47	-	no	low	1mtr.	16½x7 x12	17%	279.95		
TC-377	A	7	3	4	2	1	induc.	-	30-20 ±3	.09	52	-	yes	low	2mtrs.	16½x8½ x15½	22	399.95			
TANDBERG	10XD	E	10%	4	4	2	3	hall effect ind	belt	30-25 ±2	0.04	72	1500	yes	50-600	pk. rdg. 2mtrs.	17½x17½ x7%	36	1399.00D		
	3500X	A	7	4	4	2	1	idler	idler	30-22 ±2	0.07	64	150	no	50-500	pk. rdg. 2mtrs.	15½x16½ x7%	20	599.00		
	3400X	A	7	4	4	2	1	ind	belt	30-26 ±2	0.07	64	775	no	50-600	pk. rdg. 2mtrs.	15½x16½ x7%	23½	699.00		
TEAC	A-2300SX	B	7	3	4	2	3	hys sync	belt	40-24 ±3	0.08	58	300	yes	10k	2mtrs.	17½x15½ x8%	40	600.00	remote capability	
	A-2300SD	B	7	3	4	2	3	hys sync	belt	40-24 ±3	0.08	58	300	yes	10k	2mtrs.	17½x15½ x8%	40	750.00D	remote capability	
	A-2340SX	B	7	3	4	4	3	hys sync	belt	40-18 ±3	0.08	55	300	yes	10k	4mtrs.	17½x19 x9	49	850.00	"simul-sync," remote capability	
	2340R	B	7	3	4	4	3	hys sync	belt	40-18 ±3	0.08	55	300	yes	10k	4mtrs.	17½x19 x9	47	900.00	2 dir. stereo play	
	A-3300SX	B	10%	3	4	2	3	hys sync	belt	40-24 ±3	0.06	58	300	yes	10k	2mtrs.	17½x17½ x8%	44	700.00	remote capability	
	A-6300	B	10%	4	4	2	3	hys sync	belt	40-24 ±3	0.06	58	300	yes	10k	2mtrs.	17½x20½ x8%	49	1100.00	2 dir. play, remote capability	
	A-7300	B	10%	3	4	2	3	dc servo	direct	40-24 ±3	0.05	58	775	yes	10k	2mtrs.	17½x22 x10	62	1400.00	4 balanced mic inputs, pitch control.	
	A-73002T	F	10%	3	2	2	3	dc servo	direct	30-26 ±3	0.04	60	775	yes	10k	2mtrs.	17½x22 x10	62	1450.00	4 balanced mic inputs, pitch control, min/sec indicator	
	A-3300SX 2T	F	10%	3	2	2	3	hys sync	belt	30-26 ±3	0.04	60	300	yes	10k	2mtrs.	17½x17½ x8%	44	750.00	remote capability, cue control	
	A-3340S	F	10%	3	4	4	3	hys sync	belt	35-22 ±3	0.04	58	775	yes	10k	4mtrs.	18x20½ x9	50	1200.00	simul-sync, cue control, remote capability	
	4070G	B	7	4	4	2	3	hys sync	belt	30-20 ±3	0.06	58	300	yes	10k	2mtrs.	18x18 x9½	51	750.00	2 dir. record/play	
	A-4300SX	B	7	4	4	2	3	hys sync	belt	40-24 ±3	0.06	58	300	yes	10k	2mtrs.	17½x19½ x8%	51	700.00	2 dir. play, remote capability	
	5500	B	7	4	4	2	3	dc servo	direct	40-24 ±3	0.08	58	300	yes	10k	2mtrs.	17½x22 x18%	36	900.00D	2 dir. play, remote capability	
A-6100	F	10%	4	2	2	3	hys sync	belt	30-26 ±3	0.04	60	775/300	yes	10k	2mtrs.	17½x20½ x8%	49	1050.00	separate ¼ track play head, remote capability		
TELEFUNKEN	M 12	B, F	10%	3	2	2	3	hys sync	belt	20-15 ±1	0.05	65	775	yes	200	2mtrs.*	19x17½ x8%	55	4435.00	*True VU meters.	
TOSHIBA	PT-262D	A	7	3	4	4	1			20-25	0.09	56			10k	2mtrs.	15½x7½ x14	26½	309.95		
	PT-884	A	7	3	4	4	1			50-20	0.09	56			10k	4mtrs.	15x8½ x16%	33	499.95		
UHER	5G-630	A	10%		4	2	4			20-20 ±3	0.02	65	750	yes		1mtr.	28½x6 x24	27%	1150.00		
	5G-510	B	7		4	2				40-24	0.08	58		no		1mtr.	18x7½ x14	22	399.95		
	5G-520	A	7		4	2				30-20	0.02	65		yes			18x7½ x14	27	600.00		
	5G-560	C	7		4	2					0.02	68		yes			12½x13½ x7%	30	950.95		

Cassette & Cartridge Tape Decks

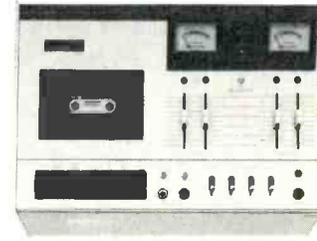


B&O 2200



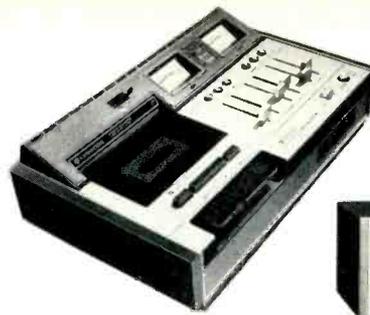
Akai GXC-570D

Harman/Kardon 2000

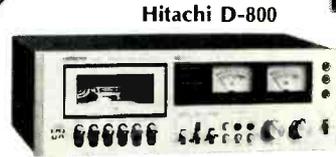


MANUFACTURER	MODEL	"X" if cassette; no tracks if cartridge		Freq. Response, Hz-kHz:± dB (standard tape)	Freq. response, Hz-kHz:± dB (C/D, tape)	% wow & flutter, W rms	S/N, dB, without Dolby	S/N, dB, with Dolby	C/D, bias & EQ?	L/N tape bias & EQ?	Mike mixing? If yes, no. inputs	Locking pause control?	Dues unit record?	Memory rewind?	V/U meters? (number?)	Peak level indicator (d)?	Dimensions, inches	Net weight, lbs.	Price, \$	NOTES
		Number of channels	Number of tracks																	
AKAI	GXC-760D	X	2	30-15 ±3	30-16 ±3	0.06	51	61	yes	yes	2	yes	yes	yes	2	yes	17.3x12.0 x5.6	25	595.00	
	GXC-740D	X	2	30-15 ±3	30-16 ±3	0.07	50	60	yes	yes	2	yes	yes	yes	2	yes	17.3x12.0 x5.6	20	495.00	
	GXC-710	X	2	30-14 ±3	30-16 ±3	0.08	50	50	yes	yes	2	yes	yes	yes	2	yes	17.3x12 x5.6	19	395.00	
	GXC-570D	X	2	30-15 ±3	30-16 ±3	0.06	52	62	yes	yes	2	yes	yes	yes	2	yes	17.3x8.9 x10.0	30	800.00	
	GXC-325D	X	2	30-15 ±3	30-16 ±3	0.055	51	61	yes	yes	2	yes	yes	yes	2	yes	17.4x11.9 x5.6	19	475.00	
	GXC-310D	X	2	30-14 ±3	30-16 ±3	0.07	50	60	yes	yes	2	yes	yes	yes	2	yes	17.3x11.8 x5.6	19	375.00	
	GXC-75D	X	2	30-14 ±3	30-16 ±3	0.1	50	58	yes	yes	2	yes	yes	yes	2	no	18.1x11.9 x5.8	17	450.00	
	GXC-39D	X	2	30-14 ±3	30-16 ±3	0.08	47	57	yes	yes	2	yes	yes	yes	2	yes	17.3x9 x4.6	13	275.00	
	CS-34D	X	2	40-13 ±3	40-15 ±3	0.13	52	62	yes	yes	2	yes	yes	no	2	no	14.9x8.9 x4.3	11	200.00	
	CR-80DSS	8	4/2	30-16 ±3		0.25	47		no	no	4	no	yes	no	4	no	19.4x11.2 x5.5	24	350.00	
	CR-83D	8	2	60-14 ±3		0.15	48		no	no	2	yes	yes	no	2	no	16.5x9.6 x4.3	12	220.00	
ADVENT	201	X	2	20-14 ±2	20-15 ±2	0.15	54	60	yes	yes	-	yes	yes	no	1	yes	13½x9¼ x4½	18	339.95	Auto shutoff.
AIWA-MERITON	AF-3200	X	2						yes	yes		yes	yes	2	2	yes			380.00	
	AD-6500	X	2						yes	yes		yes	yes	2	2	yes			370.00	
	AD-1600	X	2						yes	yes		yes	yes	2	2	yes			360.00	
	AD-1800	X	2						yes	yes		yes	yes	2	2	yes			450.00	
	AD-6300	X	2						yes	yes		yes	yes	2	2	yes			250.00	
	AD-1250	X	2						yes	yes		yes	yes	2	2	yes			230.00	
BSR	TDSU0-2	8	2	50-15 ±4		0.3	40		no	no	no	no	no	no	no	no	10¼x8¼ x4	5½	39.95	
BANG & OLUFSEN	8eocord 2200	X	2	30-14.5 ±1.5	30-14.5 ±1.5	±0.2	52	61	yes	yes	1	yes	yes	yes	2	yes	19x3x9	12	485.00	
BIGSTON	BSD300	X	2	30-13 ±3	30-15 ±3	0.08	48	56	yes	yes	2	yes	yes	no	2	no	14½x10¼ x5½	11¼	169.95	One Button record, cue & review, automatic rewind separate bias & EQ (STO, Cr O ₂ , Fe Cr) Dolby FM B-C switch.
	BSD230	X	2	30-13 ±3dB	30-16 ±3dB	0.15	50	58	yes	yes	2	yes	yes	yes	2	no	13½x9½ x4¼	8¾	209.95	
CRAIG	5201	X	2	35-14 ±3	30-16 ±2	0.1	50	60	yes	yes	2	yes	yes	yes	2	yes	17x11¼ x6¼	12¾	299.95	
	H260	8	2	30-10 ±2		0.25	50		no	no	2	yes	yes	no	2	yes	13½x8¼ x4¼	7¾	144.95	
	2712	X	2	40-12	40-15	0.25	40	50	yes	no	2	yes	yes	no	2	yes	11½x9x3	5¼	167.95	
DUAL	Auto Reverse C919	X	2	20-16.5 ±3	20-17 ±3	0.07	51		yes	no	no	yes	yes	no	2	yes	16½x11¼ x4½	15¼	500.00	
		X	2	20-14 ±1.5	20-15.5 ±1.5	0.07	60		yes	yes	2	yes	yes	yes	2	no	17x10¼ x5	14¼	450.00	
FISHER	CR5110	X	2		50-12	0.01	50		yes		2	yes	yes	yes	2		6½x17¼ x15		199.95	
	CR5115	X	2	40-12	40-15	0.07	58		yes		2	yes	yes	yes	2		6¾x17¼ x16		249.95	
	CR5120	X	2	30-12	30-16	0.07	58		yes		2	yes	yes	yes	2		6x18½ x15¼			
HARMAN/KAROON	HK2000	X	2	20-16 ±3	20-16 ±3	0.07		-62	yes		2	yes	yes	yes	2	yes	15x10¼ x5½	16	399.95	
HEATH	AD-1530	X	2	40-12 ±3	40-14 ±3	0.25	-48	-58	yes	yes	no	yes	yes	no	2	no	14x9½ x5½	14	279.95	Built-in signal generators; kit.

Cassette & Cartridge Tape Decks



Kenwood
KX-920



Hitachi D-800



JVC CD-S200

MANUFACTURER	MODEL	"X" if cassette; no. tracks if cartridge	Number of channels	Freq. Response, Hz-KHz ±? dB (Standard label)	Freq. response, Hz-KHz ±? dB	% wow & flutter, W rms	S/N, dB, without Dolby	S/N, dB, with Dolby	CR2, bias & EQ?	LN tape bias & EQ?	Mike mixing? If yes, no. inputs.	Locking pause control?	Does unit record?	Memory rewind?	VU meters? (number?)	Peak level indicator(s)?	Dimensions, inches	Net weight, lbs.	Price, \$	NOTES
HITACHI	D-2330	X		40-12	40-14	0.18	50	58	yes	yes			yes		2		13½x3½ x8%	6.2	149.95	
	D-410	X		30-13	30-16	0.08	52	60	yes	yes			yes		2		16½x5½ x10	10.4	199.95	
	D-3500	X		20-15	20-20	0.05	55	63	yes	yes			yes	yes	2	yes	17½x5½ x12	15.5	449.95	
	D-800	X		20-15	20-20	0.05	55	63	yes	yes			yes		2	yes	17½x5½ x12	14.3	479.95	
JVC	CD-1970	X	2	40-15 ±3	30-16 ±3	.09	52	62*	yes	yes	no	yes	yes	yes	2	yes M	16½x11½ x6%	18.7	399.95	sen-alloy head; *ANRS noise reduction.
	CD-S200	X	2	40-15 ±3	30-16 ±3	.09	52	62*	yes	yes	no	yes	yes	no	2	yes 5	19½x13½ x6%	19.8	299.95	sen-alloy head; *ANRS.
	CD-1920	X	2	40-15 ±3	30-16 ±3	.09	52	62*	yes	yes	no	yes	yes	no	2	yes 5	15½x12½ x6	15.8	249.95	*ANRS.
	CD-1669-2	X	2	30-13 ±3	30-16 ±3	.07	53	63*	yes	yes	no	yes	yes	yes	2	LED no	16½x12½ x5%	19.8	499.95	sen-alloy head; *ANRS.
	CD-1770	X	2	40-15 ±3	30-16 ±3	.05	52	62*	yes	yes	no	yes	yes	yes	2	yes 5	16½x11 x3%	12.1	299.95	sen-alloy head; *ANRS.
	CD-1740	X	2	40-12 ±3	40-14 ±3	.13	50	60*	yes	yes	no	yes	yes	no	2	LED no	17x9x4	8.8	199.95	*ANRS.
	CD-1636	X	2	45-15 ±3	45-16 ±3	.08	54	64*	yes	yes	no	yes	yes	no	2	no	14½x9% x4	10.1	349.95	portable ac., BAT., DC 8-16V; sen-alloy head; *ANRS
KENWOOD	KX-920	X	2	40-13 ±3	40-14 ±3	0.08	54	62	yes	yes	2	yes	yes	yes	2	yes	16x10 x5	12	299.95	
	KX-720	X	2	40-13 ±3	40-14 ±3	0.08	54	62	yes	yes	—	yes	yes	yes	2	yes	16x10 x5	12	259.95	
	KX-620	X	2	40-11 ±3	40-12 ±3	0.09	53	61	yes	yes	—	yes	yes	—	2	—	17x12 x5%	15	219.95	
LAFAYETTE	RK-D200	X	2	30-11	30-13	0.25	50	60	yes	yes	no	yes	yes	yes	2	yes	17½x12 x7		199.95	Auto-stop all modes direct FM dolby broadcast copy
	RK-D100	X	2	50-11	50-13	0.25	45	55	yes	no	no	yes	yes	no	2	no	14x9% x3%	8%	159.95	Auto-stop play & record modes
	RK-725	X	2	50-11	50-13	0.25	45	—	yes	no	no	yes	yes	no	2	no	13x9x3% x4	6	109.95	Headphone amplifier
	RK-899	8	2	50-10	—	0.3	40	—	—	—	no	yes	yes	—	2	no	16½x8% x4	10%	139.95	Selectable auto stop & eject stereo headphone jacks
LENCO	PAC-10	X	2						no	no	no	no	no	no	no	no	19½x10 x8%	18%	579.95	Changes 10 cassettes
	C-2003	X	2	30-18		0.10	50	60	yes	yes	yes		yes	yes	2	no			695.50	3 heads.
MARANTZ	5420	X	2	45-14 ±3	30-16 ±3	.07	52	60	yes	yes	4	yes	yes	yes	2	yes	17½x12% x6%	20.6	429.95	4 input mixer with pan pots
	5220	X	2	45-13 ±3	35-14 ±3	.08	50	58	yes	yes	2	yes	yes	yes	2	yes	16½x11½ x5%	21	369.95	Front load
	5120	X	2	45-13 ±3	35-14 ±3	.09	50	58	yes	yes	2	yes	yes	no	2	yes	16½x11 x5%	15.5	329.95	
	5020	X	2	45-13 ±3dB	35-14 ±3dB	.09	50	58	yes	yes	2	yes	yes	no	2	yes	16½x12% x5%	21	269.95	Front load
	5400	X	2	45-14 ±3	30-16 ±3	.07	52		yes	yes	4	yes	yes	yes	2	yes	17½x12% x6%	20.6	349.95	without dolby
	5200	X	2	45-13 ±3	35-14 ±3	.08	50		yes	yes	2	yes	yes	yes	2	yes	16½x12% x5%	21	299.95	without dolby
NAKAMICHI	1000	X	2	35-20 ±3 (EX)	35-20 ±3 (SX)	0.1*	52	60	yes	yes	3	yes	yes	yes	2	no	20½x8% x11%	39	1300.00	*DIN WTD Peak, 3-Head, Dolby+DNL, Double Caps.
	700	X	2	35-20 ±3 (EX)	35-20 ±3 (SX)	0.1*	52	60	yes	yes	3	yes	yes	yes	2	no	20½x5 x10%	28	850.00	*DIN WTD Peak, 3-Head, Dolby, Double capstan
	600	X	2	40-18 ±3 (EX)	40-18 ±3 (SX)	0.12*	52	60	yes	yes	no	yes	yes	yes	2	no	15½x9% x6%	14.3	500.00	*DIN WTD Peak, 2-Head, Dolby, IM Suppressor
	550	X	2	40-17 ±3 (EX)	40-17 ±3 (SX)	0.13*	52	60	yes	yes	3	yes	yes	no	2	no	12½x13% x3%	11.7	500.00	*DIN WTD Peak, 2-Head 3-way power supply, Dolby
	500	X	2	40-17 ±3 (EX)	40-17 ±3 (SX)	0.13*	50	58	yes	yes	3	yes	yes	yes	2	no	15x10 x4%	15.5	400.00	*DIN WTD Peak, 2-Head, Dolby 3 Tape Selector SW.
	350	X	2	40-15 ±3 (EX)	40-15 ±3 (SX)	0.13*	50	58	yes	yes	3	yes	yes	no	2	no	7½x9% x3%	7	350.00	*DIN WTD Peak, 2-Head, 3-way power supply, Dolby
NEAL	103	X	2	35-12 ±3	35-15 ±3	0.09	55	64	yes	yes	6	yes	yes	no	2		13½x9% x5%	14	598.50	Adjustable bias; solid state switching.

More great things from Uher.

Some facts everyone should know about tape recorders.

Mercedes Benz. Leica. Uher. Familiar names that represent precision and quality in cars, cameras and tape recorders. German products without peer. Those interested in making fine tape recordings usually look to Uher, a pioneer in magnetic recording for 25 years. Our newest products are no exception to this spirit of excellence. In fact, some of our ideas are extraordinary and truly useful to the tape recordist. The first home tape deck without a pinch roller is Uher's SG-630 logic with an exclusive Omega™ looping system, originally developed for video techniques and perfected for open-reel recording.



As a new generation deck, the SG-630 operates quickly and accurately, switching directly from fast forward to rewind to play without tape spill. Without a pinch roller, the SG-630 has far fewer parts to wear out and there's far less damage to tape edges. Tape tension is kept constant with "motionless sensors," and a four-motor drive system with computer controlled tape transport combine to provide ease of operation and the finest specifications. Another solution to old tape recording problems is the

addition of a stroboscope disc which offers a means of verifying actual tape speed. It's Uher's idea of designing many features of professional 10½ inch reel machines into the consummate deck for the home recordist.

This is what tape recording is coming to.

Uher has another sensible idea, this time for those who need an audiophile quality portable stereo cassette machine. The CR-210. It's a deck at home, in the car with a Uher power-mounting bracket or a portable machine anywhere else.



The CR-210 is the smallest precision cassette recorder in the world. Even at that, it has automatic reverse, automatic switching for chrome tapes, a built in condenser mike and disconnectable ALC switch. The kind of things seldom found even in bulky decks.

This gem operates on a variable power supply and if you're into filmmaking, the CR-210 can be used for synchronized sound recording.

It has everything, even a built-in speaker and handy carrying case.

For those interested in specs, the Uher CR-210 raises the technological standards for cassette recorders with wow and flutter characteristics found only in some larger machines. By now you've discovered that not all stereo recorders are created equal.

Check No. 54 on Reader Service Card

For those who have dreamt about owning a Uher recorder, we introduce the Uher CG-320, unlike any other stereo cassette machine, even a Uher.



We built the CG-320 to be an exceptionally reliable two-motor machine with the performance and features to match or surpass the world's finest cassette decks. Obviously, low distortion and top specifications are the hallmark of this quality Uher product.

We also include features like a clutchless tape drive system and self-contained stereo power stage making the CG-320 playable off a 12-volt car system or in the home with its built-in speakers. For noise reduction, the Dynamic Noise Limiter excels and on-off automatic level controls, memory rewind and automatic EQ switching for chrome tape places the user in complete command.

All in all, the CG-320 offers high technical precision, versatility and design to suit demanding tastes.

We invite you to visit a Uher tape expert who will guide you to the recorder best suited to your needs.

UHER

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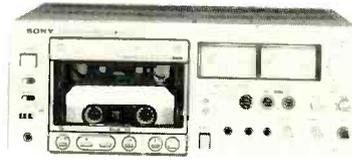
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Cassette & Cartridge Tape Decks



Nakamichi 1000

Sony/Superscope
EL-7 Elcaset



Yamaha TC-800D

MANUFACTURER	MODEL	"X" / I cassette: no tracks / I cartridge		Number of channels	Freq. Response, Hz-Hz: ± dB (standard tape)	Freq. response, Hz-Hz: ± dB	% wow & flutter, W rms	S/N, dB, without Dolby	S/N, dB, with Dolby	C/D, bias & EQ?	L/N tape bias & EQ?	Mike mixing? If yes, no. inputs	Locking/pause control?	Does unit record?	Memory rewind?	VU meters? (number?)	Peak level indicator (dB)?	Dimensions, inches	Net weight, lbs.	Price, \$	NOTES
OPTONICA	RT-2050	X	2	30-13 ±2	30-15 ±3	0.62	52	58	yes	yes		yes	yes	yes	2		18 1/2 x 14 x 5 1/2	22 1/2	299.95		
	RT-3535	X	2	30-15 ±2	30-16 ±3	0.58	52	58	yes	yes		yes	yes	yes	2		18 1/2 x 14 x 5 1/2	22 1/2	429.95		
PIONEER	CT-F9191	X	2	35-13 ±3	30-14 ±3	0.07	52	62	yes	yes	2	yes	yes	yes	2	yes	18 x 12 1/2 x 8	29	450.00		
	CT-F8282	X	2	30-13 ±3	30-15 ±3	0.07	53	63	yes	yes	2	yes	yes	yes	2	yes	17 1/2 x 13 1/2 x 7 1/2	28 1/2	400.00		
	CT-F2272	X	2	40-13 ±3	40-15 ±3	0.02	52	62	yes	yes	2	yes	yes	yes	2	no	15 1/2 x 13 1/2 x 7	21	320.00		
	CT-F2121	X	2	40-11 ±3	40-12 ±3	0.12	48	58	yes	yes	2	yes	yes	no	2	no	13 1/2 x 11 1/4 x 5 1/2	10 1/2	200.00		
	CT-5151	X	2	63-10 ±3	63-13 ±3	0.12	48	58	yes	yes	2	yes	yes	yes	2	yes	15 1/2 x 9 3/4 x 3 1/2	10 1/2	270.00		
	CT-4141A	X	2	63-10 ±3	63-12 ±3	0.13	48	58	yes	yes	2	yes	yes	no	2	no	15 1/2 x 9 3/4 x 3 1/2	10 1/2	250.00		
QUADRA-FLEX	288		8	40-12 ±2.5	-	0.17	50	-	-	-	-	yes	yes	-	2	yes	16 1/2 x 11 1/2 x 5 1/2	13 1/2	199.95	Peak LED	
RADIO SHACK/ REALISTIC	SCT-12	X	2	40-10		0.25						no	yes	yes	no	no	3 x 5 1/2 x 8 3/8		79.95	ALC	
	SCT-10	X	2	40-10		0.17						no	yes	yes	no	2	no	4 x 15		99.95	
	SCT-14	X	2	63-12.5		0.14		54	yes	yes	2	yes	yes	yes	2	no	8 x 8		149.95	Dolby	
	SCT-9	X	2		30-15 ±2	0.14		54	yes	yes	2	yes	yes	yes	2	no	3 1/2 x 11 1/2		199.95	Dolby	
	SCT-11	X	2		30-15 ±3	.2		58	yes	yes	2	yes	yes	no	2	no	4 1/2 x 14 1/2		229.95	Dolby	
	TR-882	B	2	50-10		0.2			no	no	no	yes	yes	no	2	no	5 1/2 x 15 1/2		99.95		
	TR-801	B	2	50-12		0.2			no	no	no	yes	yes	no	2	no	4 x 13 1/2		149.95		
ROTEL	RD-20	X	2	30-15 -3	22-16 -3	0.07	53	60	yes	yes	2	yes	yes	yes	2	yes	18 1/2 x 9 3/4	13	370.00		
	RD-12F	X	2	30-14 -3	30-16 -3	0.09	53	60	yes	yes	2	yes	yes	yes	2	yes	x 3 20 x 10 x 4 1/2	17 1/2	340.00		
SANKYO SEIKI	STD-1410	X	2		40-14	0.02		55			2	yes	yes	no	2	no	15 x 10	8.4	199.95		
	STD-1510	X	2		30-14	0.12		55			2	yes	yes	no	2	no	x 3 1/4 15 x 10 x 3 1/4	8.4	239.95		
SANSUI	SC-3003	X	2	35-11 ±3	35-13 ±3	0.09	50	60	yes	yes		yes	yes	yes	2	yes	17 1/2 x 11 1/2	17 1/2	370.00	Front load, memory.	
	SC-3000	X	2	35-11 ±3	35-13 ±3	0.09	50	60	yes	yes		yes	yes	yes	2	yes	x 6 1/4 17 1/2 x 11 1/2	17 1/2	360.00	Front load, memory.	
	SC-3000W	X	2	35-11 ±3	35-13 ±3	0.09	50	60	yes	yes		yes	yes	yes	2	yes	x 6 1/4 18 1/2 x 11 1/2	17 1/2	380.00	Front load, memory, wood case	
	SC-2002	X	2	35-11 ±3	35-12 ±3	0.1	50	60	yes	yes		yes	yes		2		x 7 1/2 17 1/2 x 11 1/2	17 1/2	300.00	Front load, memory.	
	SC-2000W	X	2	35-11 ±3	35-12 ±3	0.1	50	60	yes	yes		yes	yes		2		x 6 1/4 17 1/2 x 11 1/2	17 1/2	310.00	Front load, memory.	
	SC-2000	X	2	35-11 ±3	35-12 ±3	0.1	50	60	yes	yes		yes	yes		2		x 6 1/4 18 1/2 x 11 1/2	17 1/2	290.00	Front load, memory with wood case.	
SONAB	C-500	X	2	30-15	30-16 ±3	0.13	51	60	yes	yes	yes	yes	yes	yes	yes	yes	15 x 10 x 4	10	399.00		
SONY	TC-177SD	X	2	30-13 ±3	30-17 ±3	0.07			yes		2	yes	yes	yes	2	yes	17 1/2 x 6 1/4	22	749.95	w/Dolby	
	TC-118SD	X	2	40-10 ±3	40-13 ±3	0.15	50					no	yes	yes	no	2	no	x 12 1/2 14 1/2 x 4 1/4	7	199.95	w/Dolby
	TC-209SD	X	2	20-15 ±3	30-17 ±3	0.07			yes		2	yes	yes	yes	2	yes	x 5 1/2 17 1/2 x 6 3/4	26 1/2	499.95	w/Dolby & FeCr Eq.	
	TC-206SD	X	2	20-14 ±3	30-15 ±3	0.08			yes		2	yes	yes	yes	2	yes	x 12 1/2 17 x 6 1/2	16 1/2	349.95	As above.	
	TC-136SD	X	2	30-12 ±3	40-15 ±3	0.1					2	yes	yes	yes	2	no	x 12 1/2 15 1/4 x 5	9 1/2	299.95	As above.	
	TC-117	X	2	40-10	40-13	0.2						no	yes	yes	no	2	no	x 9 1/2 14 1/2 x 4 1/4	7	149.95	FeCr Eq.
Continued	TC-138SD	X	2	30-13	50-14 ±3	0.1					no	yes	yes	no	2	no	15 1/2 x 4 1/4	8 1/2	229.95	w/Dolby & FeCr Eq.	



Uher CG-320



TEAC A-650



Technics RS-677US



Tandberg TCD-330

MANUFACTURER	MODEL	X	Tracks	Freq. response, Hz	Freq. response, Hz	% wow & flutter, W rms	S/N, dB	S/N, dB	Cr/D, bias & EQ?	LN tape bias & EQ?	Mixe mixing? I	Looking pause control?	Dots unit recorder?	Memory rewind?	VU meters?	Peak level indicator (dB)?	Dimensions, inches	Net weight, lbs.	Price, \$	NOTES
SONY (Continued)	TC-186	X	2	20-15	30-15	0.07				2	yes	yes	yes	2	yes	16x5 1/2 x 11 1/2	15%	399.95	As above.	
	TC-186-SO	X	2	50-12 ±3	40-15 ±3	0.09		yes		no	yes	yes	no	no	no	6x16 1/2 x 11 1/2	16	299.95		
	TC-208		2	50-10		0.25	50	no		no	no	no	no	no	no	8x4 1/2 x 9 1/2	7%	89.95		
	TC-258		4	40-12		0.25	50	no		no	no	no	no	no	no	8x4 1/2 x 9 1/2	8%	119.95		
	EL-5	*	2	25-18 ±3	25-20 ±3	0.06		yes		2	yes	yes	yes	2	no	17x16 1/2 x 12 1/2		629.95	*Elcaset 3 1/2 ips	
EL-7	*	2	25-20 ±3	25-22 ±3	0.04		yes		2	yes	yes	yes	2	no	17x16 1/2 x 12 1/2	27%	899.95	*As above.		
SUPERSCOPE	CO-302A	X		30-15	30-18	0.12	48	yes	no	2		yes	no	2	yes	13x9x3	6	189.95		
	CO-301A	X		40-14	40-14	0.2	48	no	no	2		yes	no	2	yes	13x9x3	6	139.95		
	TD-48			30-10		0.2	48	no	no	no	no	no	no	no	no	7x10x5	6%	99.95		
	TD-28			30-10		0.2	48	no	no	no	no	no	no	no	no	7x10x5	6%	74.95		
TEAC	A-100	X	2	30-11	30-14	0.10	50	60	yes	yes	no	yes	yes	no	2	no	16x12 x6	18	200.00	
	A-150	X	2	30-12	30-15	0.09	50	60	yes	yes	4	yes	yes	yes	2	yes	16x12 x6	18	250.00	
	A-400	X	2	30-13	30-16	0.08	55	65	yes	yes	no	yes	yes	no	2	yes	17x11 1/2 x6	14	300.00	
	A-420	X	2	30-13	30-16	0.07	55	65	yes	yes	4	yes	yes	no	2	yes	17x11 1/2 x6	14	350.00	
	A-650	X	2	30-13	30-16	0.06	57	67	yes	yes	4	yes	yes	yes	2	yes	17x13 x7	29	550.00	
TEAC ESOTERIC SERIES	860	X	2	31-16 ±3	31-18 ±3	0.04	60	70	yes	yes	4	yes	yes	yes	2	yes	17x9 1/2 x14 1/2	40	1600.00	
	PC-10	X	2	30-13	30-16	0.07	58	68	yes	yes	no	yes	yes	no	2	yes	3x10 x11 1/2	11	500.00	
TANBERG	TCD-310	X	2	40-13.5 ±2	40-14.5 ±2	0.15	53	63	yes	yes	4	yes	yes	no	2		17x9x4	14.5	499.00	
	TCD-330	X	2	35-18 ±3	35-18 ±3	.12	55	65	yes	yes	4	yes	yes	yes	2		18x9x4	13	999.00	
TECHNICS BY PANASONIC	RS-677US	X	2	30-15	30-17	0.07	52	65	yes	yes	2	yes	yes	yes	2		5x17 1/2 x13	26%	499.95	
	RS-858US		4	30-12		0.15	+45			4	yes	yes		4		4x21 1/2 x20	20%			
	RS-671 AUS	X	2	30-15	30-17	0.075	52	65	yes	yes	2	yes	yes	yes	2		5x17 1/2 x13	22	399.95	
	RS-640US	X	2	30-14	30-16	0.08	51	64	yes	yes	2	yes	yes	yes	2		5x17 1/2 x12	12%	349.95	
	RS-630US	X	2	30-14	30-16	0.09	50	63	yes	yes	2	yes	yes	no	2		5x17 1/2 x12	17%	249.95	
	RS-625US	X	2	30-14	30-16	0.09	50	63	yes	yes	2	yes	yes	yes	2		5x15x11	13%	299.95	
RS-263AUS	X	2	30-13	30-14	0.15	49	57	yes	yes	2	yes	yes	yes	2		4x13x9	10%	199.95		
TOSHIBA	PC-3060	X	2	40-12	40-15	0.09	57	67	yes		no	yes	yes	no	2	no	15x12 x5 1/2	10%	199.95	
	PC-4030	X	2	40-12	40-15	0.09	57	67	yes		no	yes	yes	no	2	no	15x11 1/2 x5 1/2	10	229.95	
	PC-5060	X	2	40-12	40-15	0.08	58	68	yes		no	yes	yes	no	2	no	17x13 x5 1/2	15%	319.95	
	PC-6030	X	2	20-15	20-17.5	0.07	60	70	yes		yes	yes	yes	yes	2		16x8x10	22	749.95	
TRANSAUDIO	4500	X	2	40-12 ±2	40-14 ±2	0.15	49	54	yes	yes	-	yes	yes	-	2	yes	16x10x3	9%	199.95	Separate output level controls
	3800	X	2	40-10 ±2	40-10 ±2	0.2	48	-	-	yes	-	yes	yes	-	2	-	13x9x5	8%	149.95	Auto repeat, auto stop.
	3500	X	2	40-12 ±3	40-14 ±2	0.18	48	53	yes	yes	-	yes	yes	-	2		13x9x2	6%	149.95	Full auto stop
UHER	CR-210	X	2	25-15		0.12	56	60	yes	yes	no	yes	yes	yes	no	no	7x7	4%	595.00	
	CG-320	X	2	30-16		0.1			yes	yes	yes	yes	yes	no	no	16x4 1/2 x11	13%	585.00		
	CG-362	X	2	20-18	20-18	0.15	61	68	yes	yes	yes	yes	yes	yes	no	15x4 1/2 x11 1/2	15%	1066.95		
YAMAHA	TC-800GL	X	2	30-13	30-15	0.06	50	58	yes	yes	yes	yes	yes	yes	2	yes	12x12 1/2 x3	11.4	390.00	
	TC-800D	X	2	30-13	30-16	0.06	50	58	yes		yes	yes	yes	yes	2	yes	12x12 1/2 x3	10.6	310.00	
	TC-511S	X	2	30-13	30-15	0.07	50	58	yes		yes	yes	yes	yes	2	yes	17x13 x6 1/2	17.6	260.00	

Headphones

AKG K-240



Audio-technica AT-705



Yamaha HP-2



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MANUFACTURER	MODEL	Type (dynamic, electrostatic, etc.)	Freq. response, Hz-Hz, ±7 dB	Impedance, ohms	Sensitivity, dB SPL for 1 mV input	Maximum input, mV	% THD at 95 dB SPL	Cord length, ft.	Weight, oz.	Price, \$	NOTES	
AKG	K-240	dyn.	20-20	600	96.5	12v	1	9.8	6.2	64.50	Circum-aural earcups. Supra-aural earcups.	
	K-140	dyn.	16-20	600	97.5	11v	1	9.8	10%	39.50		
AKAI	ASE-22	dyn.	20-20	8	110	500	1.0	6	16	31.95		
ASTATIC	AH-10	dyn.	30-18	8	105	500		6	10			
	AH-20	dyn.	20-20	8	105	500		10	12			
AUDIO-TECHNICA	AT-706	elect.	20-22 ±2	4-16	98		0.1	6	9	129.95		
	AT-705	elect.	40-22 ±3	4-16	98		0.2	6	9	89.95		
	AT-703	dyn.	20-20	4-16	94				10%	69.95		
	AT-702	dyn.	25-20	4-16	97				10%	48.95		
	AT-701	dyn.	30-20	4-16	97				10%	39.95		
AVID	88S	dyn.	30-15	300	105	7.5	1.0	15	8	14.95		
	PRO 730	dyn.	20-18	300	105	7.5	1.0	15	10	26.95		
BEYER	DT48	dyn.	16-20		112				14	140.00		
	DT100	dyn.	30-20		110				7	70.00		
	DT480	dyn.	20-20		115	600			16%	75.00		
	DT109	dyn.	30-20	400	110	350			14%	95.00		
	DT202	dyn.	20-20	400	104	350			28	75.00		
	DT440	dyn.	20-20	600	102				18%	55.00		
	DT302	dyn.	20-20	200				22	2%	22.50		
ESS	Mark I	heil	20-50	32	35	14k	0.3	14	14	98.00		
		AMT	±3									
ELECTRO MUSIC	W-2	dyn.	30-15 ±5	4-16	55	850		6.57	8%	14.95		
	W-4	dyn.	20-20 ±5	4-16	53	850		13	12.7	44.95		
HEAR-MUFFS (SINGER)	HM-4000	dyn.	30-18 ±4	600	95	1000	10.5	10	27	37.95		
INFINITY SYSTEMS	ES-1	ES	20-25 ±2	8	*	**	0.1	8%	9	275.00	*98 SPL @ 2V, 1 kHz **50W @ 100 Hz	
JVC	5944	dyn.	20-20	8			0.5	6%	17	49.95	4CH/2CH; Phase rev. switch.	
JENSEN	210	dyn.	20-18	4-600	600	50	.9	14	9	29.95		
	220	dyn.	18-20	4-600	140	50	.9	14	18	49.95		
	230	dyn.	15-22	4-600	800	50	.8	14	19	59.95		
KOSS	Phase/2+2		20-20		310			0.4	12.5	17.3	145.00	4-chan:
	HV/1LC	dyn.	15-30	132.5			0.5	10	10.75	54.95		
	Phase/2	dyn.	10-22	299			1	10	22	75.00		
	K6LC	dyn.	10-16	94			1	10	17.9	29.95		
	Easy	dyn.	20-20	161			0.5	10	10	44.95		
	Listener											
	K/6	dyn.	10-16	100			1	10	15.7	19.95		
	K/7	dyn.	20-16	100			1	8	10.3	15.95		
	PRO/4AA	dyn.	10-22	230			0.4	10	20.5	65.00		
	ESP-9B	elect.	10-19 ±5	45			0.13	10	19	175.00		
	HV/1	dyn.	20-20	168			0.5	10	10	39.95		
	Technician	dyn.	10-22	245			0.3	10	16.75	75.00		
	VFR											
	K/145	dyn.	20-20	90			0.5	10	16	45.00		
	K/1B5	dyn.	10-18	100			1	10	15	35.00		
	K/125	dyn.	10-16	100			1	8	13.5	25.00		
	HV/1A	dyn.	15-30	157			0.5	10	10	49.95		
K/2+2	dyn.	10-20				0.5	10	24.2	90.00	4-channel.		
K0/727B	K/6LCO	dyn.	10-18	94			1	10	16.5	34.95		
		dyn.	20-17	100			0.5	10	21.6	49.95	4-channel.	



Stanton XXI



Superex PEP-81



Koss Technician/VFR



Marantz SE-15

MANUFACTURER	MODEL	Type (dynamic, electronic, etc.)	Freq. response, Hz-KHz, \pm dB	Impedance, ohms	Sensitivity, dB SPL for 1 mV input	Maximum input, mV	% THD at 95 dB SPL	Cord length, ft.	Weight, oz.	Price, \$	NOTES
LAFAYETTE	RP-50	dyn.	20-20	4-16	94			9%	10	59.95	Open air design 4-channel discrete plus 4 dimensional circuit Open air design.
	F-4400	dyn.	20-20	8	88			9%	26	44.95	
	F-750	dyn.	18-22	4-100		100		6%	5	49.95	
	F-700	dyn.	18-22	4-150				6%	4%	34.95	
MARANTZ	SE1S	elect.	20-20 +5	30			0.5	8	14	129.95	
	S05	dyn.	30-15	8	97		1.0	8	16	39.95	
NAKAMICHI	HP-100	dyn.	20-20 +3	8	*	500		8	14.3	50.00	*90dB/mW at 1 KHz (Re: 0dB=0.0002 μ Bar)
PEARL (ERCONA)	D42 Deluxe	dyn.	30-20	200	0.3			8	9%	34.95	
	RD224	dyn.	20-18	8	1.0			8	12	24.95	
PICKERING	DA-7	dyn.	20-22 +4	100	50	300	*	10	5%	70.00	*Distortion less than 0.5 at 110 dB SPL
	PH-4955	dyn.	40-11 +3	8	100	500	*	10	28	65.00	*Distortion less than 1.0 at 115 dB SPL
	OA-3	dyn.	20-20 +4	8	100	1200	*	10	7%	39.95	*Distortion less than 0.5 at 100 dB SPL
PIONEER	SE-700	HPM film	20-20	4-16	100	3v		10	13	80.00	
	SE-500	HPM film	20-20	4-16	100	3v		10	11	50.00	
	Monitor 10	dyn.	20-20	8	100	700		16%	23	70.00	
	SE-505	dyn.	20-20	8	108	500		16%	24	60.00	
	SE-405	dyn.	20-20	8	113	500		16%	17	45.00	
	SE-305	dyn.	20-20	8	108	500		16%	15	35.00	
SE-205	dyn.	20-20	4-16		500		8%	16	25.00		
QUADRAFLEX	Q-35	dyn.	20-20 +3.5	122	93	1500	3	10	13	44.95	
	Q-25	dyn.	20-18.5 +3.5	34.5	96	1250	3	10	10	29.95	
	Q-12	dyn.	50-14 +4	50	90	850	4	10	8	17.95	
RCA	10R201		10-20	8	110	300		10	12	29.95	
	10R199		20-14	8	110	200		5	10	12.95	
RADIO SHACK/ REALISTIC	Pro-1	dyn.	10-24	4-16				10		49.95	volume controls
	Nova-Pro	dyn.	20-20	4-16				10		34.95	
	LV-10	dyn.	20-20	4-16				10	10	39.95	
	Custom-Pro	dyn.	20-20	4-16				10		24.95	
	Nova-15	dyn.	20-20	4-16				10	7	21.95	volume controls
Nova-30	dyn.	30-18	4-16				10		19.95		
SANSUI	QH-44	dyn.	20-20	4-25	98	100		8.2	15%	70.00	4/2 Channel with Back Level & 4/2 Selector
	SH-15	dyn.	20-20	4-32	97	65		9.8	9%	60.00	
	SH-5	dyn.	20-20	4-32	97	65		6.6	8%	30.00	2-Way 4-Speaker with Volume and Tone Controls
	SS-100	dyn.	20-20	4-35	94	250		6.5	13%	90.00	
	SS-50	dyn.	20-20	8	106	500		16.3	28%	64.00	
	SS-35	dyn.	20-20	4-32	108	300		6.5	12%	56.00	
	SS-20	dyn.	20-20	8	112	500		13	26%	50.00	2-Way 4-Speaker with Volume and Tone Controls
	SS-10	dyn.	20-20	8	110	500		16.3	22	40.00	
	SS-10	dyn.	20-20	8	110	500		6	12.6	20.00	
	SS-2	dyn.	20-18	8	110	500					
SENNHEISER	HD44	dyn.	40-15	640	94	8000	1.5	10	1.2	29.75	Open Air Headphones
	HD414	dyn.	20-20	2000	102	18,000	1	10	4.8	49.75	
	HD424	dyn.	16-20	2000	102	18,000	1	10	6.7	79.75	
	HD4004	dyn.	100-6	17	82	5000	1.5	25	.6	18.75	"Open-Air" Headphones
	HD400	dyn.	20-18	600	88	8000	1	10	3	29.95	
HD224	dyn.	16-20	200	94	6000	.8	10	9	99.80		
SONAB	H20	dyn.	20-14 +2	400			0.3		16	59.50	
	H10	dyn.	20-14 +2	400			1.0		16	49.50	
SONY	ECR-500	elect.	20-20	30*	91**	12v	0.03	7.5	12	150.00	*For 8-ohm speaker output; **for 1 V input.

Headphones

MANUFACTURER	MODEL	Type (dynamic, electrostatic, etc.)	Freq. response, Hz-KHz, ± 7 dB	Impedance, ohms	Sensitivity, dB SPL, for 1 mv input	Maximum input, mV	% THD at 95 dB SPL	Cord length, ft.	Weight, oz.	Price, \$	NOTES
STANTON	Stereo Wafer XXI	dyn	20-22 ± 4	100	50	300	*	10	6	70.00	* Less than 0.5% at 110 dB SPL
	Dynaphase 65C	dyn	20-20 ± 5	8	60	1250	*	10	19	69.95	* Less than 0.5% at 100 dB SPL
	Dynaphase 60	dyn	40-11 ± 3	8	60	500	*	10	28	64.95	* Less than 1.0% at 115 dB SPL
	Dynaphase 40	dyn	60-10 ± 3	8	60	500	*	10	21	44.99	* Less than 1.0% at 115 dB SPL
	Dynaphase 28	dyn	30-19 ± 4	8	60	300	*	10	11	27.95	* Less than 1.0% at 100 dB SPL
STAX	SR-44	elec	25-20 ± 1.5	6-11		50W	0.5	8	8	85.00	
	SRX-SRD7	es	20-25 ± 1.5	6-11		100W	0.1	8	14	230.00	
	SRS/SRD6	es	30-25 ± 2	6-11		50W	0.4	8	14	130.00	
SUPERSCOPE	HP-10	dyn	30-15	8	100			6	8	19.95	
	DR-7A	dyn	25-18	8		500		10		14.95	
SUPEREX	PEP-81	elec	10-22 ± 5	4-16	95	10V	0.20	15	8 1/2	150.00	complete with console energizer
	PEP-79E	elec	10-22 ± 7	4-16	95	10V	0.25	15	8 1/2	90.00	complete with console energizer
	PRO VII	dyn	15-23	80	95	6V	0.50	15	18	65.00	
	CL-1	dyn	10-20	35	95	6V	0.30	15	10.6	55.00	
	TL-3	dyn	25-20	70	95	5V	0.60	15	10.5	40.00	
	TL-77	dyn	45-20	80	95	5V	0.60	7	11	30.00	
TECHNICS BY PANASONIC	EAH-80A	elec	20-20		101	5000		6	12 1/2	79.95	
TOSHIBA	HR-710	elec	20-20		104			11 1/2	6	44.95	
	HR-810	elec	20-30		115			11 1/2	8 1/2	74.95	
	HR-910	elec	20-35		115			11	8 1/2	129.95	
YAMAHA	HP-1	dyn	20-20	150	44	1000		8	8.8	65.00	
	HP-2	dyn	20-20	150	41	1000		8	6.7	45.00	

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Microphones

MANUFACTURER	MODEL	Directional pattern	Operating principle	Case material	External finish	Impedance, ohms	Freq. resp., Hz-KHz, ± 7 dB	EIA sensitivity, dBm	Mic connection	Cable length, ft.	Cable plug type	Dimensions, in.	Weight, oz.	Mounting method	Price, \$	NOTES
AKG	D-120E	cardioid	dyn.	alum.	anodized	200	50-17 ± 3	-146.5	XLR		6 1/2 x 2 1/4	6.2	5/8x27	50.00	Built-in pop filter.	
	D-140E	cardioid	dyn.	brass	nickel	200	30-15 ± 3	-145	XLR		6 x 1 1/4	6.2	5/8x27	150.00	Roll-off filter; built-in pop filter. Includes windscreen.	
	D-160E	omni	dyn.	zinc alloy	nickel	200	40-18 ± 3	-147	XLR		7 1/2 x 1 1/2	7.5	5/8x27	69.00	Built-in pop filter.	
	D-170E	cardioid	dyn.	zinc alloy	nickel	200	50-15 ± 3	-146	XLR		6 1/2 x 2 1/4	12	5/8x27	95.00	Built-in pop filter.	
	D-190E	cardioid	dyn.	brass	nickel	200	40-15 ± 3	-119.5	XLR		6 1/2 x 1 1/2	6	5/8x27	65.00	Built-in pop filter.	
	D-190ES	cardioid	dyn.	brass	nickel	200	40-15 ± 3	-119.5	XLR		6 1/2 x 1 1/2	6	5/8x27	70.00	With on/off switch.	
	D-200E	cardioid	dyn.	brass	matte	200	30-15 ± 3	-147	XLR		7 1/2 x 1 1/2	8	5/8x27	85.00	Two-way design.	
	D-1000E	cardioid	dyn.	brass	nickel	200	40-16 ± 3	-119.5	XLR		6 1/2 x 1 1/2	9.5	5/8x27	75.00	BMS switch for eq.	
ADVENT	MOC-1	cardioid	dyn.	metal	black	500	50-16	-	atch.	20	phone 5 1/2 x 1 1/4	10		99.95 pr.	Matched pair with case, desk stands.	
AKAI	ACM-100	uni.	dyn.		nickel	2k	30-17	-68		10	phono plug 3/8x6	150 gr.		39.95		
ASTATIC	810	cardioid	dyn.	zinc	satin chrome	150/40k	40-15	-147	swt.	18	not furn. 5 1/2 x 1 1/4	8	5/8x27	85.00		
	820	omni	dyn.	steel	chrome	150/45k	40-18	=154	swt.	18	not furn. 9 x 3/4	6	5/8x27	79.50		
	840	omni	dyn.	alum.	chrome	150	50-16	-153	swt.	30	not furn. 2 1/2 x 1 1/2	1 1/4	lav.	85.00		
Continued	850	cardioid	dyn.	zinc	chrome	150/40k	50-15	-147	swt.	18	not furn. 6 1/4 x 2	9 1/2	lav.	95.00		

Microphones

MANUFACTURER	MODEL	Directional pattern		Operating principle		Case material	External finish	Impedance, ohms	Freq. resp., Hz, kHz, ±? dB	E/A sensitivity, dB/m	Mic connection	Cable length, ft.	Cable plug type	Dimensions, in.	Weight, oz.	Mounting method	Price, \$	NOTES
ASTATIC (Continued)	857L	cardioid	dyn.	zinc	nickel	150	15-50	-150	swt.	8	not furn.	6½x2	9½	lav.	66.00			
	77	cardioid	dyn.	zinc	chrome	38/150/40k	30-15	-144	swt.	18	not furn.	4½x2½	40	lav.	90.00			
BEYER	M550S	omni	dyn.	alum.	black	500	50-10			15	mono jack						42.50	
	M810	cardioid	dyn.	alum.	chrome-black	500	50-10		tuchel	16½							70.00	
	M64	cardioid	pres. grad.	zinc	black	1k	100-10	-146	tuchel	16½			3				52.50	
	XIN (c)	cardioid	pres. grad. ribbon	plas.	black	1k	30-18	-146		16½		8x1	11½				85.00	
	M160	hyper cardioid	ribbon	brass	black	200	40-18	-152	swcft. A3F	16½		4½x1	6½				230.00	
	M260N	hyper cardioid	ribbon	steel	chrome	200	50-18	-153	swcft. A3F	16½		4½x2	8½				127.50	
	M500	hyper cardioid	ribbon	steel	black	200	40-18	-153	swcft. M3M	16½		7½x2½	8½				147.50	
	M201	hyper cardioid	dyn.	brass	black	200	40-18	-149	swcft. A3F	15½		6½x9½	8				165.00	
	M101	omni.	dyn.	brass	black	200	40-20	-150	swcft. M3M	16½		4½x1	5½				127.50	
	M111N	omni.	dyn.	zinc	black	200	60-15	-155	swcft. M3M	16½	not furn.	3½x1	2½				130.00	
	M88N	hyper cardioid	dyn.	brass	black	200	30-20	-144	swcft. A3F	16½	not furn.	7½x2	10½				222.50	
	M69N	cardioid	dyn.	steel	chrome	200	50-16	-144	swcft. A3F	15½	not furn.	7½x2	9				102.50	
	M67N	uni.	dyn.	zinc	chrome	200	40-18	-148	swcft. A3F	16½	not furn.	8½x1½	11½				140.00	
M411N	uni.	dyn.	zinc	black	200	200-12	-149	tuch		not furn.	5½x1½	5½				82.50		
M412N	uni.	dyn.	rbr.	black	200	200-12	-149	tuch		not furn.	5½x1½	5½				90.00		
ELECTRO-VOICE	CS-15	cardioid	elect.	steel	beige	10	40-18 ±3	-137	swt. A3	15		7x1		clamp	225.00			
	CO-85	omni	elect.	steel	beige	10	70-16 ±3	-152	swt. A3	15			3	tie-tack	156.00			
	DS-35	cardioid	dyn.	alum.	beige	10	60-17 ±3	-148	swt. A3	15		7½x2	9	clamp	99.00			
	RE-20	cardioid	dyn.	steel	beige	10	45-18 ±3	-150	A3M	15		8½x2	26		315.00			
	RE-15	super cardioid	dyn.	steel	beige	10	80-15 ±3	-150	A3M	15		6½x1½	6		180.00			
	RE-55	omni	dyn.	steel	beige	10	40-20 ±3	-149	A3M	15		10½x1½	8½		195.00			
	DO-54	omni	dyn.	steel	beige	10	50-15 ±3	-149	A3M	15		5½x1½	6½		82.50			
	635A	omni	dyn.	steel	beige	10	80-13 ±3	-149	A3M	15		6x1½	6		63.00			
	6498	omni	dyn.	alum.	beige	10	70-10 ±2	-155		30		2½x4	1	lav.	90.00			
	660	super cardioid	dyn.	zinc	chrome	hi/lo	90-13 ±3	-150	A3M	15		6½x1½	10½		75.00			
	644	cardioid	dyn.	zinc	grey	hi/lo	40-12 ±3	-148	MC4F	15		16x2½	41	5/8x27	120.00			
	671	cardioid	dyn.	zinc	chrome	hi/lo	60-14 ±3	-155	A3M	15		6½x2	8		72.00			
	670	cardioid	dyn.	alum.	brass	hi/lo	60-14 ±3	-151	A3M	15		7½x1½	6		78.00			
	627C	cardioid	dyn.	zinc	chrome	hi/lo	60-13 ±3	-152	A3M	15		6½x1½	7½		54.00			
	636	omni	dyn.	steel	chrome	hi/lo	60-13 ±3	-154	MC4M	15	not furn.	10½x1½	15	5/8x27	75.00			
	631A	omni	dyn.	zinc	chrome	hi/lo	80-13 ±3	-149	A3M	15		6x1½	6		57.00			
647A	omni	dyn.	steel	beige	hi/lo	70-10 ±6	-155		18	not furn.	3½x½	2	lav.	69.00				
FULTON	1500	omni	elect. cond.	brass	grey enamel	250	22-25 ±2.5	-155	A3F	25	swcft.	3x½	8½	5/8x27	295.00			
GROUP 128	SD-140	omni	elect. cond.	alum.	black anod.	1k	40-16 ±3	-49	phone jack	6	not furn.	¼x9	2	5/8x27	139.50			
	SD-140Z	omni	elect. cond.	alum.	black anod.	100	40-16 ±3	-49	XLR-3	6	not furn.	¼x9	2	5/8x27	189.50			
JVC	M-510	*	elect. cond.			600	40-20 ±3	-68 -71 super dir.							175.00	*Super or uni directional.		
	M-201	stereo mike	elect. cond.			600	40-18 ±3	-71							53.00			
LAFAYETTE	MU-101	uni	dyn.	alum.	alloy	600/50k	200-10 ±6		swcft.	15	not furn.	7½x1	9	5/8x27	34.95			
	MO-102	omni	dyn.	alum.	alloy	600/50k	50-13 ±6		XL	15	not furn.	7½x1	6½	5/8x27	39.95			
	99-46427	uni	elect.	alum.	alloy	600/50k	30-16 ±5			15	not furn. phone	10½x1	8	5/8x27	34.95			
	ML-1	omni	elect.	alum.	alloy	600	50-15 ±5		atch.	15	phone	1½x½	½	clip	19.50			
99-468726	omni	lect.	alum.	alloy	250	20-15 ±5	-150	XLR	15	not furn.	½x½	½	tie-tack	49.95				

Microphones

MANUFACTURER	MODEL	Directional pattern		Operating principle		Case material		External finish		Impedance, ohms		Freq. resp., Hz-KHz ± 2 dB		EIA sensitivity, dBm		Mic connection		Cable length, ft.		Cable plug type		Dimensions, in.		Weight, oz.		Mounting method		Price, \$		NOTES
NAKAMICHI	CM-1000	cardioid	cond.	metal	matte black	600	20-20 ±2.5	-67**	XLR	20	XLR	5½ x¼	5	5/8x27	290.00	*Interchangeable capsule (optional) **OdB=1V/μ bar Interchangeable capsule; set of 3 for \$300.00, *OdB=1V/μ bar *OdB=1V/μ bar														
	CM-300	cardioid	elect.	metal	matte black	200	30-18 ±3.5	-76*	XLR	17	phone plug	8x¼	6	5/8x27	110.00															
	DM-1000	cardioid	dyn.	metal	matte black	250	30-20 ±2.5	-76*	XLR	20	XLR	7½ x1¼	10	5/8x27	200.00															
NEUMANN (GOTHAM)	KM-84	cardioid	cond.	metal	satin chrome	200	40-20	-137	XLR 3	not sup.	not sup.	4½x1	3	5/8x27	230.00															
	U-87	omni	cond.	metal	satin chrome	150/250	40-16	-137	XLR 3	25	XLR 3	8x2¼	20	5/8x27	695.00															
	U-47 fet	cardioid	cond.	metal	satin chrome	200	40-16	-137	XLR 3	25	XLR 3	6¼ x2¼	24½	5/8-27	624.00															
	KM-86	omni	cond.	metal	satin chrome	200	40-20	-140	XLR 3	25	XLR 3	7¼ x1¼	7¼	5/8-27	650.00															
	SM-69 fet	omni	cond.	metal	satin chrome	200	40-16	-140	tuchel	33	XLR 3	10x2	16	5/8-27	1662.00															
	QM-69	cond.	metal	satin chrome	200	40-16	-140	tuchel	33	XLR 3	11½ x1¼ x2	16	5/8-27	1947.00																
	KM-88	omni	cond.	metal	satin chrome	200	40-16	-138	XLR 3	25	XLR 3	6x1	3½	5/8-27	650.00															
	KM-83	omni	cond.	metal	satin chrome	200	40-20	-137	XLR 3	not sup.	not sup.	4¼x1	3	5/8-27	230.00															
	KM-85	cardioid	cond.	metal	satin chrome	200	40-20	-137	XLR 3	not sup.	not sup.	4¼x1	3	5/8-27	230.00															
	KMS-85	cardioid	cond.	metal	satin chrome	200	40-16	-137	XLR 3	not sup.	not sup.	8¼x1	10½	5/8-27	588.00															
	KMA	omni	cond.	metal	gray	200	40-16	-137	attach.	tuchel	tuchel	1¼x¾ x¾	2	clip	322.00															
	KML KU-80	cond.	metal	gray black	200	40-16	-137	attach.	tuchel	tuchel	XLR 3	2x¾	2	clip	324.50															
		cond.	metal	200	40-16	-137	tuchel	XLR 3				160		1964.00																
PEARL (ERCONA)	CD20	omni	cond.	alum.	chrome	200	30-20 ±3		swcft. locking	33	PREH	3x¾	1½	5/8x27	165.00															
	OC21	cardioid	cond.	alum.	chrome	200	30-20 ±3		locking swcft locking	33	PREH	3x¾	1½	5/8x27	175.00															
	DC63	cond.	alum.	chrome	200	30-20 ±3		XLR	20	can.	6¼ x12	11½	5/8x27	495.00																
	DC73	cardioid	cond.	alum.	chrome	200	30-20 ±3		XLR	20	can.	8x1	8	5/8x27	425.00															
	VM41-4130	cardioid	cond.	alum.	chrome	200	30-20 ±3		XLR	20	can.	10x¾	5	5/8x27	495.00															
PIONEER	CM-1	omni	elect.	alum.	chrome	600	20-20	-74		18	phone	8½ x1½	10½		100.00	Switchable omni/uni.														
	CM-2S	omni	elect.	alum.	black	1k	20-20	-68		21	(2) phone	6	11½		60.00	Stereo														
RCA	77-DX	*	ribbon				30-20							425.00	*three adjustable pick-up patterns: bi-directional, omni and cardioid Full data may be obtained from the manufacturer.															
	BK-5B BK-12A	cardioid	ribbon dyn.				30-20 60-18					¾		330.00 150.00																
	BK-14A BK-16A	omni omni	dyn. dyn.		nickel nickel		40-20 40-20					8x¼ 8x¾	6 5½			155.00 145.00														
RADIO SHACK/ REALISTIC	33-919	dual	elect. cond.	alum.		600	30-15	-72	perm	10	(2) ¼ in.			29.95	dual pattern mike															
	33-1056	omni	elect. cond.	alum.		600	20-12		perm	10	¼ in.	7/16 x7/8		19.95	tie-pin mike															
	33-1045	cardioid	cond. elect.	alum.		600	30-25		perm	10	¼ in.			29.95																
	33-1044	omni	cond. elect.	alum.		600	30-15		perm	10	¼ in.			24.95																
	Highball	cardioid	dyn.			50-250 50k	80-13		perm	15	amph ¼ in.			49.95	dual impedance															
	Highball-2	omni	dyn.			90-250 50k	90-11		perm		¼ in.			15.95	dual impedance															
	33-992	cardioid	dyn.	alum.		600 50k	80-12		perm		¼ in.			24.95	dual impedance															
SENNHEISER	MD441	super card.	dyn.	met.	chrome	200	30-20	-146	XLR	15	-	10.6 x1.4 x1.3	16	5/8	275.00															
	MD421	card.	dyn.	plastic	chrome	200	30-17	-146	XLR	15	-	7 x1.8 x1.7	14	5/8	193.00															
	MD416	card.	dyn.	met.	nickel	200	50-15	-151	XLR	15	-	2x7	11	5/8	180.50															
	MD413	card.	dyn.	met.	nickel	200	50-15	-151	XLR	15	-	2x7	10	5/8	140.00															
	MD402	super card.	dyn.	met.	chrome	750	80-12.5	-151	-	15	phone	.85 x5.7	6.5	clamp	50.00															
	MKE202	omni	elect. cond.	met.	nickel	200	50-15	-135	XLR	-	-	¾x7	4	clamp	134.00															
	MKE402	super card.	cond. elect.	met.	nickel	200	50-15	-135	XLR	-	-	¾x7	4	clamp	157.00															
	MKE802	card. shot-gun	cond. elect.	met.	nickel	200	50-15	-135	XLR	-	-	¾x12	5	clamp	187.00															
MKE2002	bi-aural	cond. elect.	met.	enamel	1.5k	40-20	-141	phone plugs	10	DIN or phone	-	2	-	330.00																

MANUFACTURER	MODEL	Directional pattern		Operating principle		Cage material		External finish		Impedance, ohms		Freq. resp. Hz-KHz ±? dB		EIA sensitivity, dBm		Mic connection		Cable length, ft.		Cable plug type		Dimensions, in.		Weight, oz.		Mounting method		Price, \$		NOTES							
SHURE	SM53	cardioid	dyn.	alum.	matte metal	150	70-16			can.	20	can.	7 1/4 x 1 1/4	8																							
	SM58	cardioid	dyn.	zinc	dark grey	50/150	50-15			can.	20	can.	6 1/2 x 2	15																							
	SM61	omni	dyn.	alum.	matte metal	150	50-14			can.	20	can.	1 1/4 x 7/4	5.6																							
	300	*	dyn.	zinc	matte metal	50/150/250	40-15			can.	20	can.	9 1/4 x 1 1/2	16	1/2 in. pipe																*Bi-directional						
	330	super cardioid	dyn.	zinc	zinc	50/150/250	30-15			can.	20	can.	7 1/4 x 2	16.5	1/2 in. pipe																						
	545S	cardioid	dyn.	zinc	satin chrome	25/200	50-15			amph	15	amph	3 1/4 x 5	15																							
	548SO	cardioid	dyn.	zinc	satin chrome	25/200	40-15			can.	15	can.	6 1/4 x 1 1/2	9																							
	565	cardioid	dyn.	zinc	satin chrome	25/200	40-15			amph	15	amph	2 x 6	10.5																							
	576	cardioid	dyn.	zinc	dark chrome	50/150	40-20			can.	15	can.	3/4 x 6 1/4	7																							
	585SAV	cardioid	dyn.	zinc	gray satin chrome	40k	50-13			amph	15	amph	6 1/4 x 2 1/4	13.5																							
SONY/ SUPERSCOPE	ECM-50	omni	elect. cond.			50, 250, 600	50-16 ±3			cannon XLR-3			3/4 x 3/4	3 1/4																							
	ECM-53	cardioid	elect. cond.			50, 250, 600	40-16 ±3			cannon XLR-3	10		3/4 x 10 1/4	8																							
	ECM-54P	uni.	elect. cond.			250	20-20 ±3			cannon	20	pigtail	1 x 7 1/2	6 1/2																							
	ECM-56P	uni.	elect. cond.			250	40-16 ±3				20		2 x 8	12																							
	ECM-64P	omni	elect. cond.			250	40-20 ±3			cannon	20	pigtail	1 1/2 x 7	7 1/2																							
	ECM-65P	uni.	elect. cond.			250	70-20 ±3			cannon	20	pigtail	1 1/2 x 7	7 1/2																							
	F-115A	omni	dyn.			600	40-12 ±3				20	pigtail	1 1/4 x 6 1/4	4 1/2																							
	ECM-16	omni	elect. cond.			600	50-13 ±3				6	mini	1/2 x 1 1/2	1																							
	ECM-18	cardioid	elect. cond.			250	50-12 ±3				6 1/2	mini	6 1/4 x 1 1/4	5 1/2																							
	ECM-99	dual cardioid	elect. cond.			600	50-12 ±3				10	2-phone	7 1/2 x 2	10																							
	ECM-990	dual cardioid	elect. cond.			200	40-16 ±3				10	2-phone	3 1/2 x 8 1/2	12																							
	ECM-170	omni	elect. cond.			200	20-16 ±3				16 1/2	pigtail	1 x 6	5 1/2																							
	ECM-200	cardioid	elect. cond.			15k	50-10 ±3				6 1/2	mini	2 x 5 1/4	4 1/4																							
	ECM-220	cardioid	elect. cond.			200	50-12 ±3				16 1/2	phone	1 1/2 x 7 1/2	9 1/2																							
	ECM-250	cardioid	elect. cond.			200	50-14 ±3				16 1/2	mini	1 1/2 x 6	5																							
	ECM-270	cardioid	elect. cond.			200	40-16 ±3				16 1/2	pigtail	1 x 6 1/4	4 1/2																							
ECM-280	cardioid	elect. cond.			200	30-18 ±3			none	16 1/2	pigtail	1 x 6	5																								
F-27	cardioid	dyn.			320	80-13 ±3				6 1/2	mini	1 1/4 x 6 1/4	4 1/4																								
SUPERSCOPE	EC-15P	omni	elect. cond.	alum.	chrome	250	70-16 ±3			atch.	10	cannon	1/2 x 1 1/2	1																							
	EC-9P	uni.	elect. cond.	alum.	chrome	250	30-17 ±3			can.	10	none	1 1/4 x 7 1/4	14																							
	EC-7	uni.	elect. cond.	alum.	chrome	250	40-16 ±3			atch.	10	phone	1 1/2 x 7 1/2	10 1/2																							
	EC-12B	omni	elect. cond.	plas./alum.	chrome	250	100-15 ±3			atch.	10	mini	3/4 x 7 1/4	8																							
	EC-5	uni.	elect. cond.	alum.	chrome	250	40-15 ±3			atch.	10	mini	1 x 7	4 1/4																							
	EC-3S	uni.	elect. cond.	plas./alum.	chrome	250	50-15 ±3			atch.	6	mini	1 x 7 1/4	4																							
	EC-3	uni.	elect. cond.	plas./alum.	chrome	250	50-15 ±3			atch.	10	mini	1 x 7 1/4	4																							
	EC-1	omni	elect. cond.	plas./alum.	chrome	250	60-13 ±3			atch.	10	mini	3/4 x 4	3 1/2																							
TEAC	ME-120	cardioid	elect. cond.	steel	-	200	30-16 ±3			XLR	15	XLR	-	-																							
	ME-80	cardioid	elect. cond.	steel	-	200	40-15 +4			XLR	15	XLR	-	-																							
	ME-50	cardioid	elect. cond.	alum.	-	200	60-15 ±4			none	10	phone	-	-																							
TECHNICS BY PANASONIC	RP-3850E	cardioid	elect. cond.			600	20-16	-72		cannon swcft. A3F	17			7																							
	RP-3830E	cardioid	elect. cond.			600	50-15	-74			17			7																							
	RP-3550E	cardioid	elect. cond.			600	50-15	-74			17			6 1/2																							
TURNER	35	omni	dyn.	alum.	gold paint	150/25k	50-12	-154		atch.	25	not furn.	3 x 3/4	1 1/4																							
	500	cardioid	dyn.	zinc	chrome	150/40k	40-15	-151		A4F	20	not furn.	6 1/4 x 1 1/2	12																							
	603H	cardioid	dyn.	zinc	chrome	40k	50-15	-151		A3F	20	not furn.	6 x 1 1/4	14																							
	45	cardioid	dyn.	black chrome		hi	100-13	-151		atch. A3F	20	not furn.	7 x 1 1/4	6																							
	2300	omni	dyn.	chrome	satin	40k	50-15	-151		atch. A3F	20	not furn.	6 x 1 1/4	8																							

Phase Linear starts where state-of-the-art leaves off.

We build products with state-of-the-art specifications. But we don't stop there. Specifications are important to us, but equally vital is the achievement of *obviously audible improvements* in the reproduction of music with every separate component we make. This is the driving force behind

Phase Linear, the single-minded philosophy that has produced so many innovative features, advanced circuitry and ultimately, products with more dynamic range and bigger, more lifelike sound than any comparably priced components available on the market today. Our Research Department, headed by Robert Carver, is staffed by imaginative design engineers deeply concerned with the entire spectrum of musical reproduction. Many more new products are in the wings; in the meantime, we invite you to review the present Phase Linear line and read what the critics have said. Then ask your dealer for a demonstration, and draw your own conclusions.

The Phase Linear 700B Stereo Amplifier

Has established performance and power standards unequalled by any other amplifier on the market...regardless of price.

"the lowest distortion, in spite of it's enormous power capability, was on the Phase Linear 700..." Hirsch-Houck Labs in STEREO REVIEW.

"Hum and noise figures were also well below anything we have encountered before." C. G. McProud in AUDIO.

"...in terms of sheer power it is the most impressive we have tested." HIGH FIDELITY.

The Phase Linear 400 Stereo Amplifier

Hailed internationally as the undisputed "best buy" among all the "super amps" available today.

"We were utterly flabbergasted when we discovered in our early A-B comparisons that the amplifier which sounded dramatically cleaner and more revealing turned out to be, when we removed our blindfold status, the Phase 400... In over 100 blindfold A-B comparisons with five other amplifiers at a time, the two Phase 400's kept coming back to the surface... No other amplifier... ever even tied the Phase 400 for naturalness, clarity, and lack of distortion." SOUND ADVICE, 225 Kearny St., San Francisco.

"Harmonic distortion proved to be almost unmeasurable on this amplifier." STEREO & HI-FI TIMES.

The Phase Linear 200 Stereo Amplifier

The newest addition to our amplifier line incorporates all we have learned to date

about power amplifier design. The 200 has not been reviewed, but with its advanced LED metering system, sophisticated protection circuits and excellent performance specifications, we are optimistic!

The Phase Linear 4000 Stereo Preamplifier

The model 4000 illustrates our philosophy of delivering far more than state-of-the-art specifications. It offers revolutionary features that make music sound better by providing greater dynamic range and a quiet background.

"...a combination of noise reduction and dynamic-range-expansion circuits whose sophistication far surpasses anything previously available on the audio consumer level... even without the assistance of its special noise reducing systems, it would rank as one of the quietest units we have ever encountered... makes any program played through it sound better than through any other preamplifier we have ever used... a most impressive technical achievement!" Hirsch-Houck Labs in STEREO REVIEW.

The Phase Linear 2000 stereo preamplifier

Beyond efficient handling characteristics and excellent specifications, the 2000 is capable of reproducing more of the music on your recordings. Its ability to reproduce ambient signals is a function found on no other preamplifier.

"Super in the listening as it is smooth in the handling... The extra flexibility in the tone controls delivers worthwhile options. We find the ambience recovery feature a decided plus!" HIGH FIDELITY.

The Phase Linear 1000

A noise reduction and dynamic-range-expansion system designed to eliminate noise from all sources (records, tapes, FM, etc.) and restore the music we hear at home to its original dynamic range.

"... for any already top-quality music system, we doubt a \$350 expenditure in any other component could match the audible improvement made possible by the Phase Linear 1000!" Hirsch-Houck Labs in STEREO REVIEW.

"In theory, the circuit (AutoCorrelator) can make the distinction and reduce the level of the noise component while reproducing the signal component unaltered. In practice, its ability to do so is far from absolute, yet audibly greater (to my ears) from that of any other noise-remover on the market." Robert Long, in HIGH FIDELITY.

To be released soon—

The Phase Linear 5000 FM Tuner

Loaded with innovations, the 5000 will feature circuitry capable of increasing the dynamic range of broadcast signals up to 9 dB! It will do more than just reproduce a mediocre broadcast perfectly; it will make FM signals sound virtually as good as recorded signals. This feature alone makes the Phase Linear 5000 FM Tuner worth waiting for!

Phase Linear Corporation, 20121 48th Avenue West, Lynnwood, Washington, 98036. Manufactured in the U.S.A., Distributed in Canada by H. Roy Gray, Ltd.

Phase Linear

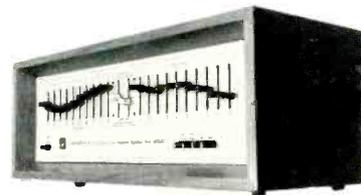


Phase Linear 2000 Preamplifier • Phase Linear 200 Power Amplifier • Phase Linear 5000 Tuner • Phase Linear 1000 Noise Reduction System • Phase Linear 4000 Preamplifier • Phase Linear 700B Power Amplifier • Phase Linear 400 Power Amplifier • Phase Linear Corporation, Lynnwood, Washington, U.S.A.

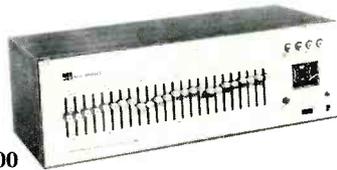
Equalizers



Dynaco Equalizer



Soundcraftsmen RP2212



ADC 500



Heath AD-1305

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MANUFACTURER	MODEL	No. of Channels	No. of Bands	Bandwidth, octaves	Boost/cut range, ±dB	Max. output, rms V	% THD at Max. output	dB S/N at Max. output	Dimensions, in.	Weight	Price, \$	NOTES
ADC	300	2	12	½	12	9	0.050	80	5¼x18 x7	10	229.95	
	500	2	12	½	12	9	0.035	85	6x18 x7½	10	299.95	
ACE AUDIO	AE2002	2	5	2	12	8	0.05	80	3½x12¼ x7	4	138.75	Lowest & highest controls, shelving type; 220 V models avail., \$89.25, kit.
ALTEC	729A	2	48	1/3	14	4.5	0.5	80	5¼x18½ x8	13	972.00	
CERWIN-VEGA	GE-2	2	13	½-1	12	2	0.05		19x5½ x7½	12	470.00	Half octave control below Middle C, full octave control above.
CROWN	EQ-2	2	11	½	15	10	—	90	19x7½ x14½	16	899.00	
DAYTON WRIGHT	SG Mk 2	2	8	1¼	12	7½	0.01	90	13x6½ x11	14	862.00	Tape Inputs/outputs, Dubbing, equalizer may be used in dubbing, two auxiliary inputs/outputs, front-panel RT sleeve as well as top phono jacks.
DECTA-GRAPH	EQ 10K	1	10	1	15	10/20	0.05	100+	9½x1½ x5¼	4	56.00 kit	
	EQ 10 SPK	2	10	1	15	10/20	0.05	100+	19x1½ x5¼	8	130.00 kit	
DYNACO	SEQ2100	2	10	7/16	±12	8	0.04*	97	13½x4¼ x12	10	349.00	*re: 2V; \$249.00 kit.
HEATH	AD-1305	2	5	—	12	1.5	0.05	90	17½x8 x4	8.5	119.95	Kit.
JVC	SEA-10	2	5	1 2/3	12	3	0.1	70	5¼x7½ x10	5¼	129.95	Low band switch 40 or 60HZ; High band switch 10 or 15kHz; records, tape mon switch.
MCINTOSH	MQ101		3							19	250.00	
	MQ102		1							3½	74.50	
PIONEER	SG-9500	2	10	1	10	6	0.05	90	16½x13½ x6	15¼	300.00	
RADIO SHACK/ REALISTIC	31-1986	2	5		12				4½x10¼ x6		59.95	
SAE	1800	2	2	3-3.6	16	2.5/10	0.02	100	19x5¼ x3½	17	300.00	2-band Parametric
	2800	2	4	3-3.6	16	2.5/10	0.02	100	19x7 x3½	27	550.00	4-band Parametric
SOUND-CRAFTSMEN	RP22-12	2	10	1	12	7	0.1	96	20x11¼ x7¼	28	369.50	LED Balance circuit; front panel tape or line EQ; unity gain controls; test record; computone charts; incl. case or rack mounts; overload indicators. Front panel tape or line EQ; unity gain controls; test record; computone charts; Inc. case or rack mounts. Unity gain controls; test record; computone charts; inc. case or rack mounts. Same features as RP2212 plus 600Ω output; 19 in. black rack panel; no case. 600Ω balanced in/out; Hi-Z in/out; Lo and Hi shelving. LED meters; 19 in. black rack panel; independent channels.
	RP2204	2	10	1	12	7	0.1	96	20x11¼ x7¼	28	329.50	
	20-12A	2	10	1	12	7	0.1	96	20x11¼ x7¼	28	299.50	
	SG2205-600	2	10	1	12	7	0.1	96	19x5¼ x11	28	399.50	
	TG2209 600	2	10	1	12				19x5¼ x11		550.00	
SPECTRO ACOUSTICS	210	2	10	1	15	10	0.05	100	17x6x6	10	295.00	Oil damped metal sliders, full range unity gain adjustments, complete switching facilities, no wound coils, 600Ω Z output. Same as 210 above except standard EIA rack mount.
	210R	2	10	1	15	10	0.05	100	19x6x7	10	295.00	



A-2300S

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**With this musical instrument,
the possibilities are indeed endless.**

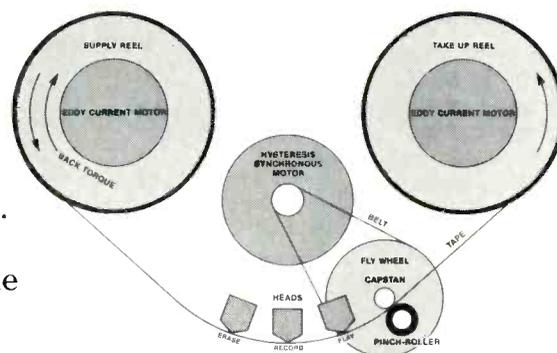
So are the rewards. Because your tape recorder becomes an extension of you. How you control and shape the audio signals, the musical selections you choose, and the sequence you determine...it's all a function of your own artistic perceptions.

The tapes you make will bear your personal imprint. Because tape recorders, like musical instruments, don't play all by themselves. And there's something else in common: quality differences between brands will determine how good the music can sound.

Buying a good one is worth it.

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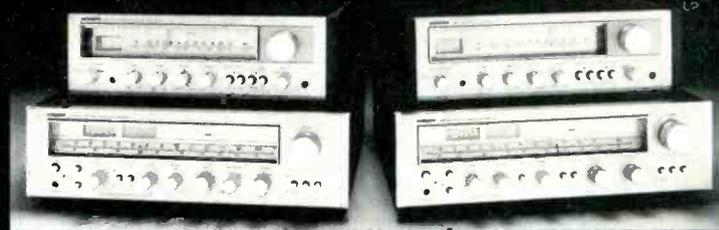
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The Column

Reggae Got Soul: Toots & The Maytals
Island ILPS 9377, stereo, \$6.98.

Night Food: Heptones
Island ILPS 9381, stereo, \$6.98.

Right Time: Mighty Diamonds
Virgin PZ 34235, stereo, \$6.98.

Legalize It: Peter Tosh
Columbia PC 34253, stereo, \$6.98.

Four strong reggae albums hot on the heels of Bob Marley & the Wailers sudden chart success is almost too much to swallow, but with hot weather, reggae is as natural as a suntan.

The new Toots & the Maytals is the very best, for the first time ever presenting Toots Hibbert's joyous music with clear and hot sound, the best yet on a studio reggae album. Credit co-producer Joe Boyd for that. The title track and *Rastaman* are as fine a pair of songs as any reggae has produced. They will become genre anthems. *Premature*, *Six and Seven Books* and the Van Morrison song *I Shall Sing*, all on the first side, make that half of the record tremendously emotional.

Next to Toots, the Mighty Diamonds sound young, rough, and aloof. Their songs like *Right Time*, *Gnashing of Teeth*, and *I Need a Roof* are more overtly political, seething with the anger and frustration of Trench Town life. The Diamonds' alternately raw and rich harmonies can haunt you.

By comparison, the Heptones are slickness incarnate. They sound like they have been singing street corner style forever. Their *Book of Rules* is brilliant, the album's best of a good selection. Their cover of *Baby, I Need Your Lovin'* is the only forced moment on the album. Only the overall coolness of the album sound bothers me. Hotter would have been better.

Peter Tosh was one of the original Wailers, and his first solo effort is classy. *Legalize It* is surely destined to become a summer radio anthem for the weed, but that is far from all of the album's delights. *No Sympathy*, recalling *400 Years of the Wailers*, *Catch a Fire* and *Why Must I Cry* co-written with Bob Marley, are simply beautiful, and *Till the Well Runs Dry* is wrenching. For most of the album Tosh has borrowed the Wailers who play passionately for him. The only sore point



Toots

is the possibly excessively raw sound that kills some of the album's brightness. **Legalize It** rocks its reggae hard.

Reggae has hit. Marley's in the Top 10 albums. It could prove to be another fad, but don't bet on it. I don't expect reggae to go the way of the Frug.
M.T.

Toots

Sound: A — Performance: A —

Heptones

Sound: C+ — Performance: B+

Diamonds

Sound: C — Performance: C+

Tosh

Sound: B — Performance: A

Sincerely: The Dwight Twilley Band
Shelter SRL-52001, stereo, \$6.98.

When I first heard Twilley's debut single *I'm On Fire* well over a year ago, this reviewer was literally knocked for a loop, and yet fairly certain that it didn't have even a faint chance of appearing in the record charts then bloated by The Eagles, Tony Orlando,

and the barrage of disco-gusting music permeating the airwaves. My aesthetic senses were still reeling when *I'm on Fire* became a top-20 single, and now a year later, when that single has finally gotten into an album, it hasn't faded a bit. After hearing **Sincerely** the only reasonable comparison I can offer is that the Dwight Twilley Band sounds like nothing so much as a fusion of **Meet the Beatles**, **The White Album**, a smattering of **Elvis Presley's Golden Decade**, along with The Zombies and The Searchers thrown in for good measure. But they're even better.

OK, so *Could Be Love* sounds like a logical successor to *Fixing A Hole*, *Three Persons* is the follow-up to *Everytime You Walk Into the Room*, and *Just Like The Sun* is the undiscovered outtake from **The Beach Boys Today**. No one has ever made a record like *Baby Let's Cruise*, and I don't think anybody but Dwight Twilley could. *Sincerely* and *You Were So Warm* are highly derivative (Zombies/Searchers respectively), but no mere regurgitations of the past since Twilley and companion/drummer Phil Seymour create their own classics in the same mold as the originals but without losing their identity. *I'm On Fire* is of course the definitive Twilley tune, and the only song on the album which could be faulted as being slightly forced is *England* because it sounds a little too much like their previous hit ... but it doesn't make the song any less good. *Release Me* harkens back to the early days of the Beatles when Lennon/McCartney were trying to be Goffin/King, and *TV* sounds exactly like what Elvis would be doing in 1976 had he kept true to the spirit of his best records (*Jailhouse Rock*, *Too Much*, *All Shook Up*, etc.). Which leaves *Feeling in the Dark* (an interesting song) and *I'm Losing You* (a great one), 12 tracks in all and not a one which is mediocre in the least, never mind an actual *bad* song. The only criticism one can make of an album like this is that when you set standards as high as *I'm on Fire* and *Baby Let's Cruise* somehow you're expected to live up to them throughout the rest of the album, and that's pretty impossible.

If this album was only as consistent quality-wise as **The White Album** we'd be in good shape, but it comes closer to **Beatles '65**. There is no shortage of variety on **Sincerely**, as the band encompasses a wide range of styles, and the stamp of Twilley is heard on every track. Dwight is simply the best rock singer out of America

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I've heard on record—he doesn't sound like anybody else. He writes superbly, both lyrically and musically—he reminds me of Todd Rundgren, but Twilley's main axe is his voice as opposed to Todd's guitar. On drums is one Phil Seymour who is consistently interesting, hard-hitting, and complementary to the songs; I don't think you'll find too many drummers who rock as intelligently, aside from Big Star's Jody Stephens.

As if all this wasn't enough, they've produced over half of the record themselves, and manage to get a wholly unique and engaging sound. I could say that I'm jealous—which is partially true—but I'm overjoyed that someone's made a great record this year which truly dwarfs everything else that's been on AM radio all year.

The Dwight Twilley Band has come to reclaim the mass-appeal radio waves which intelligent rock music deserted when The Beatles split and "heavy FM music" came into vogue. I'd hand it over to them in a second.

J.T.

Sound: A+ Performance: A+

City Boy: City Boy
Mercury SRM-1-1098, stereo, \$6.98.
Howling Wind: Graham Parker
SRM-1-1095, stereo, \$6.98.

All too rarely they leap out of the stack into jaded ears and make all the sifting worth it. Here are two solid, yet unheralded winners.

Graham Parker is backed by a fine band, partly made up of ex-Brinsley Schwarz members (including Brinsley himself) called the Rumour, who are supposed to make their own album soon. Parker works with the Rumour much like Dylan does with the Band on **The Basement Tapes**, charge along with a rambling yet wonderfully ominous energy. Most importantly Parker's songs are the real thing, engagingly rough-hewn. Check out the title track and the burning *Don't Ask Me No Questions* for starters and then sink in. **Howling Wind** is a delight.

City Boy hits even harder from farther off the wall. With a roster of total unknowns in America, they make the music of master mimics. The tinkly mandolin sound of *(Moonlight) Shake My Head and Leave* combines the charm of the defunct Lindisfarne with the artiness of Steely Dan, and followed by *Deadly Delicious*, with its 10 CC production meeting Yes, licks the ears set up for the unexpected. Almost unbelievably **City Boy** continues



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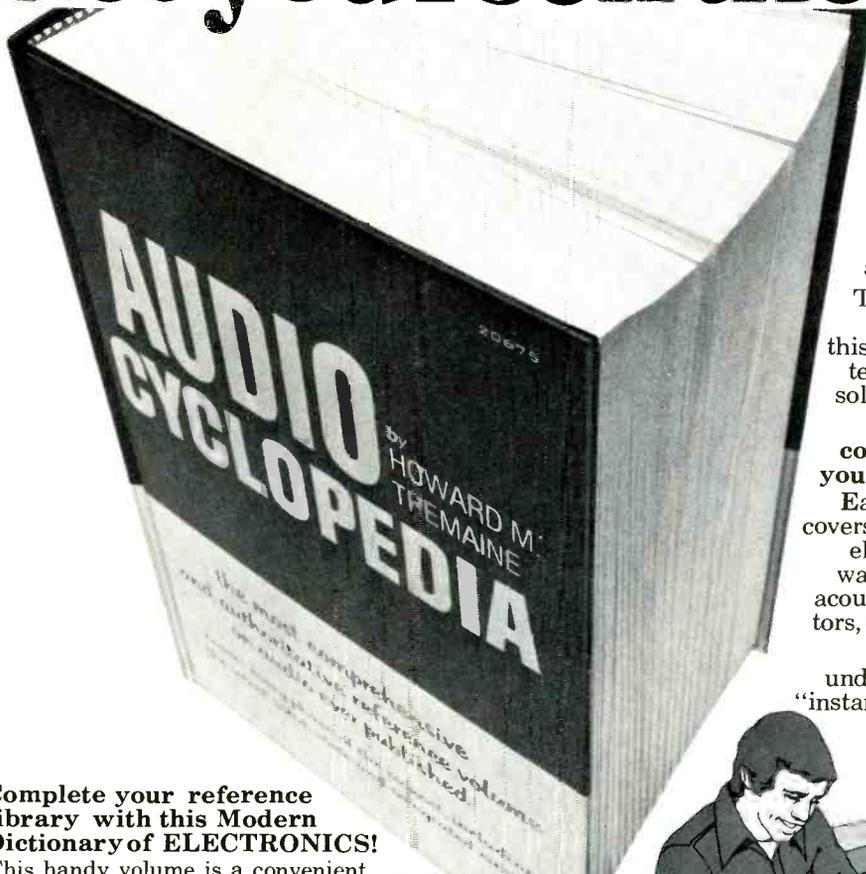
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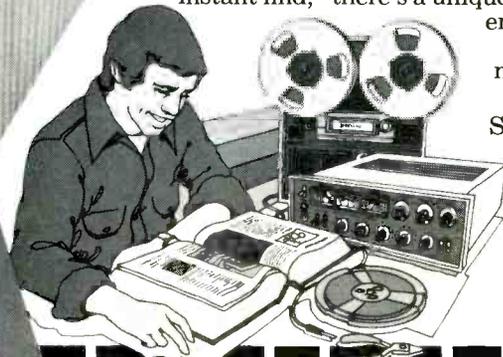
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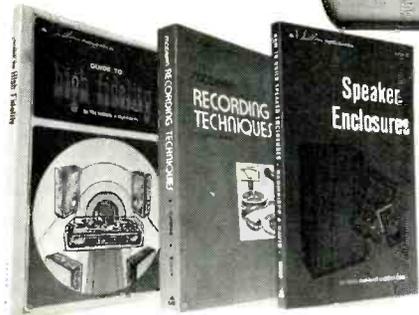
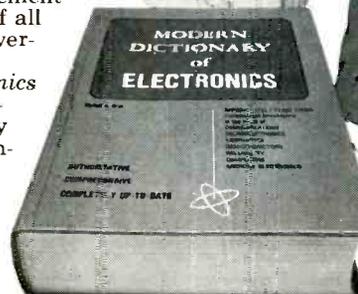
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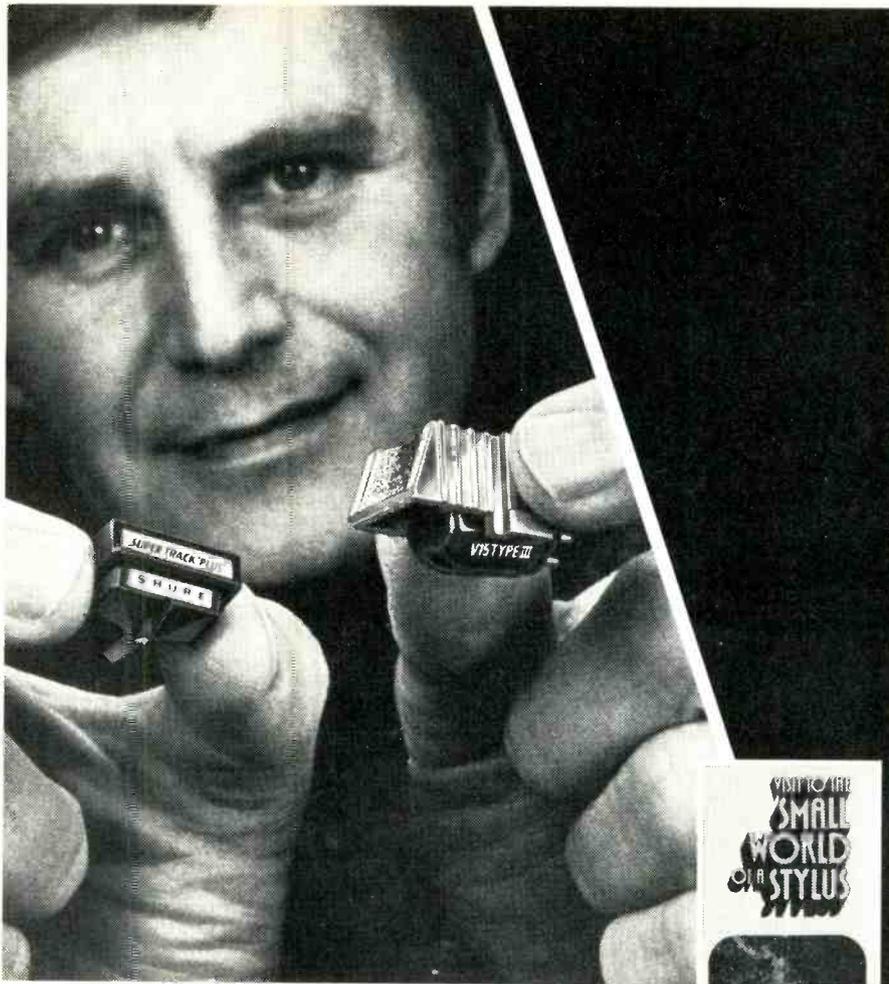
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to deliver. *Sunset Boulevard* evidently inspired by the classic Gloria Swanson flick, seethes with the **Hunky Dory/Ziggy Stardust** feel of Bowie. *The Oddball Dance* more than lives up to its name, swiping from such diverse sources as the Bonzo Dog Band and the Beach Boys, is both funny and unpredictable. And that's all on the first side. Their production is as stunning as it is audacious and absolutely



City Boy

self-confident, without self-righteousness. The sound is amazingly vibrant and clear.

At a time when the formulaic, safe and ultimately pointless rule, even two fresh talents out of nowhere is a bumper crop. Graham Parker is a good one. (The Rumour, on their own, is a healthy prospect, too.) City Boy is a pure find. Both are more than worth a shot. Try either or both for tired ears.

M.T.

City Boy

Sound: A Performance: A

Graham Parker

Sound: B- Performance: B+

Sequencer: Synergy
Passport PPSD 98014, stereo, \$6.98.

Synergy is the brainchild of Larry Fast, electronics wizard. **Sequencer** is his second Synergy album, and it is both more ambitious and more consistent than the first, therefore more successful.

Make no mistake. **Sequencer** like **Synergy** is an audiophile's delight. The full range of sound it presents makes it a superb "test" record to check the parameters of any system.

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Like the first album all sound results from synthesizers with no "standard" instruments or sound effects whatsoever. The music is complex and profound yet not imposing, combining the influence of such 19th Century composers as Prokofiev, Tchaikovsky and Dvořák with the power chord feel of the Who. Fast's constructs are fully orchestral and often stirring. *S-Scape*, *Chateau*, and *Cybersports* are sweeping pieces that grow in scope and flair as they proceed. The first side's closer, Mason Williams' 1968 hit *Classical Gas*, was the first one cut for this set, and actually it had been a system try-out for the new equipment at House of Music in West Orange, NJ, where the album was recorded. It is a welcome change of pace and delightfully fluffy.

Paradox, combining the *Largo* from Dvořák's *New World Symphony* with the lovely Ralph Towner composition *Icarus*, is a fascinating jigsaw puzzle culminating in the two being superimposed, a genuinely surprising effect. The finale *Sequence 14* sums up the entire album, resurrecting earlier themes for further development.

Sequencer is an aural treat. It is not rock & roll. It is not classical music. It is not electronic music. It defies all of these labels while incorporating all of them. As producer Marty Scott notes, "It will be interesting to see where Larry Fast is three or four years from now." The kid's growing up fast (no pun intended). M.T.

Sound: A+ Performance: A

Mother's Finest: Mother's Finest Epic PE 34179, stereo, \$6.98.

I don't know how much David Bowie or the Average White Band sound like soul music to black ears, but Mother's Finest is a primarily black band (two black singers, black bassist and keyboard man, white guitarist, white drummer) that sounds like a true meeting of r&b feeling and the rock 'n' roll soul. B. B. Queen, percussionist for this outfit, likes to call it "Grey Music," as opposed to being either black or white; but there's a heck of a lot of colors on this album. Mother's Finest is as hard rocking as The Sweet, but don't sound anywhere as white; as soulful as Isaac Hayes but nowhere as dull. Mother's Finest tries to incorporate the best of both worlds, and for the most part they succeed.

My Baby and *Rain* are, to my ears, the best songs on the record, but I

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must admit that after seeing the band, I'm certain their best numbers are still unrecorded, those being *Baby Love* and an updated version of the Motown classic *Mickey's Monkey*. Singers Joyce and Glen Murdock are as potent a duo as you'll find, and the band knows how to rock—there are really no flaws nor weak points. The only flaw I can find with the record is that while onstage they maintain a balance between the rock 'n' r&b, on record they sound a lot blacker. Believe me, on the concert trail they are going to burn it up from coast to coast with both whites and blacks. I can't wait for their second record, which will no doubt be even closer to the Mother's Finest sound—but at the moment, this one does just fine, thanks.

J.T.

Sound: B

Performance: B+

The Wild Tchoupitoulas: The Wild Tchoupitoulas

Island ILPS 9360, stereo, \$6.98.

What this is, is Mardi Gras music. The Wild Tchoupitoulas' rep is that



they are the funkiest front line in New Orleans. Allen Toussaint and Marshall Sehorn have brought them into the studio, put the Meters, the world's funkiest rhythm section, behind them, and let it roll. The happy music the session produced is at once pure root music and a damned good time for everyone.

It may sound familiar (a close friend said that the Tchoupitoulas reminded him of camp songs). These riffs have produced hit tunes for 25 years, things like *Mother-in-Law*, *Working in a Coal Mine*, and plenty more. For instance, *Brother John* fully resurrects *Iko Iko*, and *Hey Pocky A-Way* was one of the Meters' biggest on their own, done up dandy this time out. Best of all is *Meet De Boys on the Battlefield* which has a beat that marks itself indelibly on the psyche.

The Wild Tchoupitoulas is in no way profound, but it sure is fun. After all,

AUDIO • OCTOBER, 1976

how could Mardi Gras music be serious? M.T.

Sound: C+ Performance: A

15 Big Ones: The Beach Boys **Brother/Reprise MS 2251**, stereo, \$6.98.

Spitfire: Jefferson Starship **Grunt BFLI-1557**, stereo, \$6.98.

The Beach Boys and Jefferson Airplane/Starship are both American traditions by now. Both have had wide swings of popularity from hitmakers and trendsetters to commercial oblivion and with the return of key charter members (Brian Wilson for the Beach Boys, Marty Balin for the Starship), a strong return to the public eye of commercial success. Both have new releases, both heavily awaited, both squarely in the groups' respective mainstreams.

Now that the Beach Boys have proved their respectability, they have been freed to return to their original concept, to being the ultimate celebration of Fun. And that's what **15 Big Ones** is all about, their first new album in more than three years. It is half oldie favorites from *Palisades Park* to *In the Still of the Night* mixed in between new songs. The point is this: if fun is what the Beachies are all about and a good time is all they are after with this new album, to expect anything more or else is wrong. **15 Big Ones** is fun, beautifully recorded, warm and entertaining and not at all deep. It is the follow-up to the last studio album, **Holland**, just as much as it is to the retrospectives **Endless Summer** and **Spirit of America**.

Similarly, Jefferson Starship's **Spitfire** is what it sounds like, the follow-up to the immensely successful **Red Octopus**, even to the standard full but muddy sound that has marked every Airplane/Starship album since **After Bathing at Baxter's**. The show is mainstream Starship, clearly modeled on **Octopus** for balance and effect. *With Your Love* immediately recalls *Miracles*, while *Dance With the Dragon* recreates *Ride the Tiger* which itself hearkens to *Crown of Creation* and even *Somebody to Love*.

However, bad pressing of early copies, unfortunately, leaves far too much crackle in the soft spots.

Like **15 Big Ones**, **Spitfire** is there strictly for a good old-fashioned Starship good time. Both albums show bands who have come to grips with their occasionally embarrassing pasts by surviving and letting fond memories catch up to a public increasingly

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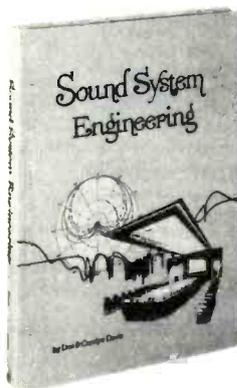
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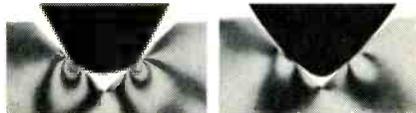
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wary of novelty and anxious to welcome comfortable old friends. Neither the Beach Boys' nor the Starship's new albums cover new ground, but neither seeks to. To paraphrase an old song, a pleasant time is guaranteed for all. M.T.

Beach Boys

Sound: A— Performance: B—

Starship

Sound: C Performance: B—

Starz: Starz

Capitol ST-11539, stereo, \$6.98.

Shouting and Pointing: Mott

Columbia 34236, stereo, \$6.98.

Rocks: Aerosmith

Columbia PC 34165, stereo, \$6.98.

Someday there will be no such thing as rock groups, and all that will reign will be the record producers. We're already dangerously close to that situation, as all three of these albums attest. Three albums, 15 "musicians" in total, and there isn't one original idea on any of these records, not one new song, nor even a single new guitar lick. The records sound all right—the record producer (that man who turns the knobs and mixes the noise) can make the most sickly guitar playing sound like it was coming from Jeff Beck himself with the help of equalization, compression, phasing, and/or double tracking—but I'll be a monkey's uncle if there is one recording artist in any of these groups. I doubt if any of these people had an original idea in their lives.

The only singer in the bunch is the guy in Mott, who are overall the best players of the lot. It should be no surprise that they'll probably sell fewer records than either of the other two, but none of these records has a whole lot to offer. Aerosmith manage to steal riffs from the Yardbirds (for whom their lead singer roaded) and teen appeal from the Rolling Stones (who they try to look like) but only occasionally do they sound even remotely like good plagiarists—and their steals have been the zenith of Aerosmith's recording history.

Starz are in same mold as Kiss, except that instead of painting their faces, they do the leather trip; they're just as faceless. Mott was a great band when they were run by mad dictator Ian Hunter, then a great songwriter, but since he exited, his career has plummeted, and Mott has lost its creative force . . . all they do is drive.

But to where? That, my friends, is the question that should be asked of Mott, Starz, and Aerosmith, three groups in search of money, having

AUDIO • OCTOBER, 1976

only an audience and the lack of a vision to guide them through the lonely nights. *J.T.*

All Three Discs

Sound: A Performance: D

Rock 'n' Roll Music: The Beatles
Capitol SKBO-11537, stereo, \$6.98.

I want out-takes! I want studio chatter! I want alternate mixes! But as is, this album deserves to be out. It's heavier than Kiss, more musical than Emerson, Lake & Palmer, more complex than Yes, gutsier than Al Green, and better written than Paul Simon. I'd like to see future repacks better put together—a little more credit as to who does what, true chronological pictures rather than spotty collections, authoritative liner notes, and maybe even an album cover that's a little more than just an eye catcher.

Still, John and Paul are still the most important beings in the history of 20th century pop music, and the fact that they can have four two-record sets in the Top-100 charts six years after they called it quits as a functional group and 10 years after they stopped performing is a credit to their legend. *J.T.*

Sound: A Performance: A

The Best of W.C. Fields: W.C. Fields
Columbia CG 34144, stereo, \$6.98.

W.C. Fields fans, familiar only with the Great Man's films, will simply be blown away by this collection of old radio bits. All of the material has been released on four single albums still in print.

About half of the set is of classic examples of that dead form of comedy, the feud which reached its height on radio. The Fields-Charlie McCarthy tiffs are outrageously funny and ageless. What is fascinating is, aside from the inevitable Edgar Bergen, the presence of the actor Don Ameche as the show's announcer/referee long before he invented the telephone.

Three short bits are included to present Fields as the deranged huckster, one of his classic poses, as he would lambaste his sponsor's product and even plug competitors. For good measure, a couple monologues are present, among them the famous *Temperance Lecture*.

There obviously was more to W.C. Fields than his movies, as attested by the film *W.C. Fields & Me* whose release this set coincides with. This is humor from the time when comedy made you laugh instead of cry.

Michael Tearson

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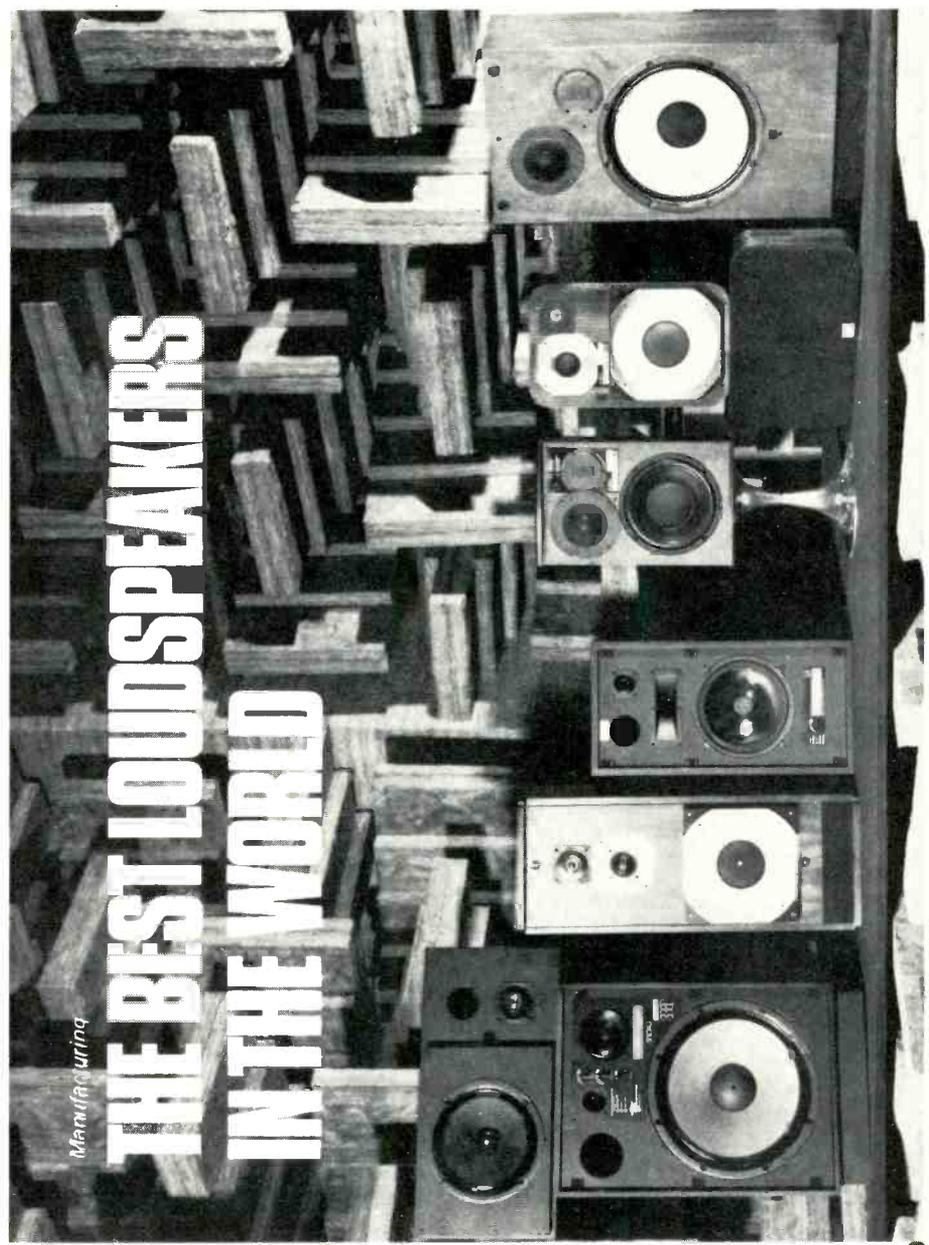
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Classical reviews

Edward Tatnall Canby



Richard Strauss Tone Poems. Vienna Philharmonic, Strauss (1944). **Vanguard Everyman SRV 325/29**, mono, \$19.90.

A coup for Vanguard! Every so often we get a side or two of the old German recordings, from the 1930s or, more significantly, during the actual WW II years when, one would think, classical recordings might have been expendable. Now, via a Japanese license, Vanguard has picked up this entire series of Strauss originals with the old man himself at the Viennese helm, spang in the middle of the approaching End for Hitler Germany. And just listen! Musically significant, as are recordings by such as Hindemith, Stravinsky, and Copland. But maybe even more significant as recordings from such an unlikely date. Unbelievable.

I'm assuming these are taped, via Magnetophone. Well before Ampex and most of us had ever heard of tape. (If not taped, then the disc recording technology is plain astonishing.) Virtually no background noise, compared with the sounds we expect from such "ancient" recordings, even via the original masters. A beautifully solid frequency range, covering everything that matters in music, both high and low, with a smooth, even distribution and no booms, no squawks nor

rattles, and no fuzz. A grand dynamic range—in a day when crude compression was all too evident in the Western or Allied recording world. The softer parts, the string sounds in particular, are silky clean. The loudest parts betray only a small bit of buzzy non-compliance (whether mechanical or electrical), the loud sound that was so extremely familiar to those of us who listened to music, over here, back in the "78" days. True, much of the fuzz was in the playback. We didn't get to hear the masters on professional equipment, nor did the pros themselves hear everything they had taken down, in a negative sense for absence of distortion. Nevertheless, I wonder how many extant 1940s classical masters in RCA Victor, Columbia or Decca vaults over here could boast sound like this?

But what strikes me as most interesting about these recordings is the ambience. Is it original? It is just possible that Vanguard (or the Japanese) added a modern reverb to the master sound. I doubt it, and assume that what I hear is the pure 1944 sonics. If so, the sound is astonishing. In a day when our recordings were still of the pre-war "dead" sort, even out of Carnegie Hall (and it continued that way for many more years); here is the modern reverb we know so well, al-

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ready full fledged, if in mono. Semi-close-up microphoning with a big hall ambience of the sort that became common in our recording as late as the 1960s. (Those Mercury "Living Presence" reissues on Philips still sound dead by current standards.) I emphasize that until the war, classical music, 1930s electric, was very rarely recorded with any sort of big reverb. Just try the old "78" Beechams, Toscaninis, Bruno Walters, Sir Henry J. Wood, etc., etc.

My first experience of big ambience came in 1946 with the then-new Lon-

don *ffrr* on "78," a clearly postwar development as far as one could tell, at least in the publication. Did the Germans do it for themselves even earlier?

The only tell-tale characteristics (aside from mono) that might give these recordings away as more than 30 years old are two. First—the solo instruments are recorded very close and loud in the old pre-war mono style. (Now we put them further back and blend them into the orchestra.) Second is the obvious absence of editing and/or retakes—perhaps accentuated

by wartime conditions. It's a miracle that this late-war playing should be so full and fresh and good, generally speaking. But there are many moments of out-of-time non-ensemble, and in *Til Eulenspiegel* the solo horn blats embarrassingly wrong notes—right in the Maestro's face. *That* could never happen today. Note that all the big tone poems are here that matter, from *Don Juan* to *Sinfonia Domestica*. Yep, even 2001, conducted by Himself.

Monteverdi: Coronation of Poppea. Donath, Söderstrom, Bergerian, Esswood, et al., Concentus Musicus Wien, Harnoncourt. **Telefunken Das Alte Werk 6.35247**, 5 discs, stereo, \$34.90.

Handel: Sixteen Organ Concertos. E. Power Biggs; London Philharmonic, Boult. **Columbia D3M 33716**, 3 discs, stereo, \$20.94.

The joys—and perils—of "authenticity!" Here they are.

Yes, it is always desirable to perform any music on the instruments—and even with the voices—for which it was intended, more or less.

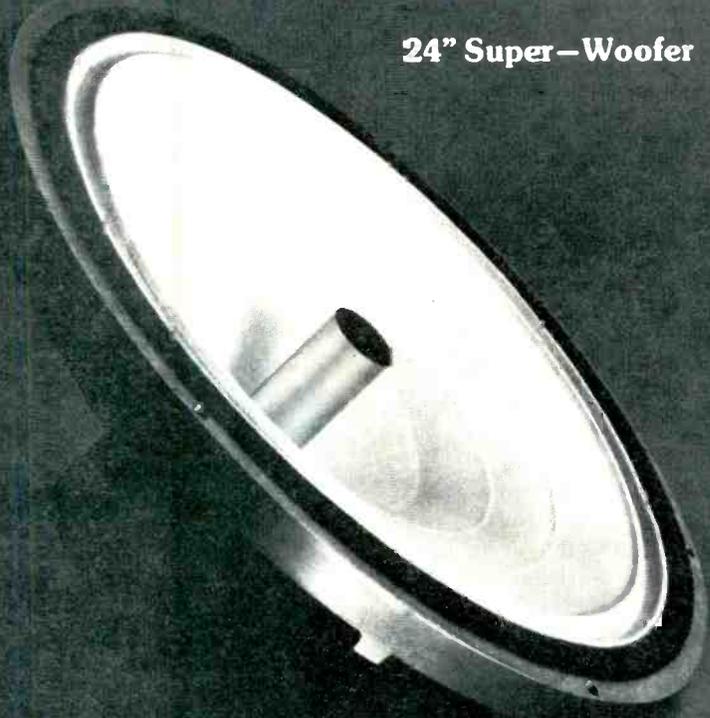
Like, say, playing the Beethoven violin concerto on a violin, not a theremin or a Moog. But we fool ourselves into thinking we really can restore music exactly as it once was. We are different, and even that is enough to unfocus all our efforts. In plain fact, almost any *authentic* performance you hear today will first of all have a present-day character, and even as to the particular place or school.

The monumental Monteverdi opera, one of the very first of any musical consequence, presents enormous musicological problems in this respect and the dedicated Harnoncourt, never one to stop halfway, has really got all the *instruments* so they sound out maybe a splendid 90 per cent as they might actually have been heard back in 1642, when Monteverdi set it to music at age 74. But what of opera's essence, the voices? Very mixed, is all I can say, and who can blame Harnoncourt? The voice is an immensely flexible instrument, trainable in a hundred different ways—professional voices today are inextricably shaped by today's vocal standards and, try as they may, cannot live down the present entirely. So, in this great recording, many of the soloists, fine musicians, project that loud, brilliant, vibrato-type sound, powerfully emotional but astonishingly inaccurate as to detail, which is the normal product of present-day singing teachers. OK

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for plenty of music, but just not suitable for this, which ever so clearly required a wholly different voice, lighter, as accurate and flexible as any instrument. The musical sense here is easy to infer thanks to fine musicianship; but you must work at it, even so.

Some of the many solo voices do match up, as you will hear. One boy soprano (I think)—superb! Sensational effect. Paul Esswood, male alto or countertenor, the heroine's young lover. (His type of voice is so "new" that its technique remains highly

adaptable.) Others too. And yet, even so, this superb and admirable undertaking in the ultimate authenticity remains, and will always remain, very much of the 1970s. As well as of the 1640s.

E. Power Biggs has pulled off many an organ trick, but his uncovering of a genuine Handel-designed and Handel-played organ, sitting unchanged in a small English village church, was his most dramatic. Handel as Handel himself heard it!! Yes—via the organ. But, of course, we also hear an unmistakable E. Power Biggs; you can

spot his organ style a mile away. More important, though, is that anachronism, the London Philharmonic and its old-timey conductor Sir Adrian Boult, both of these strictly from the pre-"authentic" era. Not only a symphonic way of playing (though with Handel's mix of instruments, more or less) but with many a rhythmic touch straight from an earlier day, not ours. Especially those slow Handelian introduction movements, where Sir A. & Co. simply will not play the now-accepted short double-dot rhythms which of course E. Power knew all about. Good music and musically performed throughout; but culturally it dates straight from the hearty thirties. *Nineteen thirties, I mean.*

Boulez Conducts Falla: The Three-Cornered Hat (complete ballet); Harpsichord Concerto. Jan DeGaetani, mezzo, Igor Kipnis, hps., New York Philharmonic. **Columbia MQ 33970**, quadraphonic/stereo, \$6.98.

The suites of dances from the *Three-Cornered Hat* are familiar to most of us who buy records, listen to radio or attend concerts, but the complete original ballet score is another thing, one of the last of the big early-century ballet scores to make it into the listening repertoire. (We've had complete *Firebirds*, *Le Sacre*, *Daphnis et Chloe*, *Petrouchka* and so on.) I was astonished at how little of this music I seem to have ever heard before, though the more Spanish-sounding parts, including the sultry mezzo-soprano solos, a la Carmen, are staples.

I see why this is an unfamiliar "complete" score. De Falla was one of those right-on-the-edge moderns whose natural language was really the old Romantic stuff, though they wanted very much to get into the new ways of composing. Falla's only secure style was the symphonic (and vocal) Spanish, a late-model version of music like that of Chabrier, Ravel, Debussy, Granados; for the rest, he floundered—if very musically—between extremes of old-fashionedness and arbitrary dissonance. Most of the unfamiliar music in the *Three-Cornered Hat* was well left out of the symphonic versions, because it swears most astonishingly with the more idiomatic parts; it's all sort of Bach-y and old-English-y, or old-Spanish-y, those fake "ancient" gavottes, minuets and what-not, which now sound so very dated. Nice but musically expendable.

The harpsichord Concerto, composed for the great Landowska, is also

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a curious anomaly and in the past, at least, a baffling problem for recording engineers, though now we do it OK. The composer really didn't have much of an idea as to what a harpsichord was and his thought seems mainly to have been—how "modern" can I be? The piece is full of rather forced dissonances, only emphasizing its lack of any real feeling for the dissonant idiom. The second movement, with acid, rolled-out polytonal chords, orchestra and harpsichord swearing, is the most uncomfortable music I know, and remains so here in spite of the intelligent efforts of Boulez and Kipnis.

The recording problem? To balance the harpsichord against the small orchestra in a proper manner. Earlier attempts by unknowing engineers used the old solo-mike treatment, blowing the harpsichord up to sound louder than the orchestra; the result was simply grotesque, awful! Here, at last, our recording people understand that the harpsichord *must* play at a very low level as compared to the orchestra. At least, with a sensible harpsichord pickup, the music is at its uneasy best, and properly balanced. But nobody can make that second movement sound other than painful. Makes me wince.



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How? Pretty much as one might expect. Pianists will simply swoon at an absolutely fabulous finger technique. A pianist-friend of mine practically did so. This man plays all those millions of little fast notes in Liszt like some super-Olympic athlete, or maybe like a well adjusted computer. He is also a powerhouse of drama, as one surely must be to play big Liszt—and to be rated as legendary.

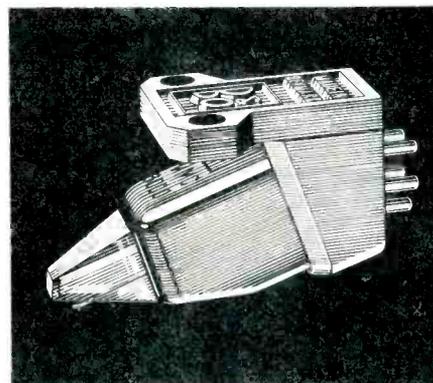
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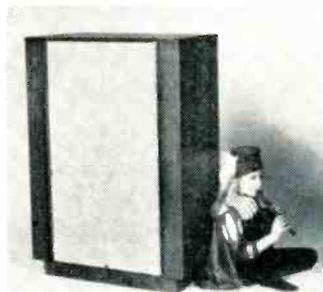


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is very subtle musically. Liszt, in particular, had a way of icing up his music with those festoons and streamers of incredible decoration, beyond any other piano composer; but beneath the festoons there is solid musical flesh. The more subtle pianists understand (as Liszt surely did in his own performing). They subordinate the festoons, shape them so that they sound ever so easy—and do not impede the basic musical sense. This can be impressive enough, after all! But the Berman approach is the opposite and all too common among virtuosi;

he makes no musical distinctions but plays all the frosting loud and clear, with much expressiveness and (of course) astonishing articulation. Thus, it all comes out with immense power, gusto, Romantic atmosphere, and a large quantity of boredom. The fireworks are perfect. The music is so-so.

Music at Magdalen: John Stainer. Choir of Magdalen College, Oxford, Dr. Bernard Rose.

Argo ZRG 811, stereo, \$6.98.

"Barnby, Dykes & Stainer!" we crass music students used to chant, back

when I was in school, deriding the sentimental Victorian school of church music. Well, Stainer still holds his own, notably with the famed **Crucifixion**, sung a thousand times each year in greater America to this day. And here is a zoom-lens close-up of the man, done in the fanciest British tradition right out of Oxford, leading off with that once-famous his, *Lead, Kindly Light*, sung by an ineffable little angel-boy named Colin Wilson.

I am afraid I'll have to agree, more soberly, with my own schoolboy thoughts on the great Stainer. His music remains the most watered-down sort of expertly imitative Victorianism—all mealy-mouthed Handel and Mendelssohn, ever so proper and impeccably composed, without guts or conviction other than the expected (and still potent) Victorian propriety. If you want Victorian propriety, instead of the much stronger stuff by Handel, Purcell, and Bach and even the vapid but *much* more alive Mendelssohn, then here is the very model of it all! Assuming you love it, these are unimaginably perfect performances. And that Colin Wilson! Little devil, I'll bet.

Telemann: Twelve Fantasies for Flute Unaccompanied. Jean-Pierre Rampal. **Columbia Odyssey PCM MS Recording Y 33200**, stereo, \$3.98.

What an oddity! Not the music itself so much as the ensemble of music and audio—for this is technically a revolutionary disc, made via Pulse Code Modulation, PCM. "A dynamic range of more than 75 dB with a flat (± 0.5 dB) frequency characteristic from d.c. to 20kHz while wow, flutter and modulation distortions are so low as to be unmeasurable"—all that, of course, in the master recording itself, though the disc, too, is specially made via a "Non-Distortion" method. All of which comes straight from Nippon Columbia in Japan, via just plain Columbia in New York, and on Columbia's low-price label, at that. What do we get for our PCM listening? One single, solitary flute, playing all by itself for two whole LP sides! Such bass you never heard. Nor ever will, since there ain't any. Such dynamic range. . .!

A superb record, nevertheless, bass or no bass. Jean-Pierre R. is surely the greatest, most musical of all current flute virtuosos, surely the man with the mostest when it comes to Baroque music, too. Old Georg Philipp Telemann, the self-trained genius of entertainment in Baroque times, wrote

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virtuoso music for the plain flute of his day, minus fancy keys, just a fingerhole model, which is to be heard to be believed even on a modern flute. The idea is the same as in the Bach Sonatas and Partitas for solo violin, to produce the effect of a whole orchestral or keyboard ensemble, complete with harmony, via a single instrument, like someone trying to whistle two tunes simultaneously. It works amazingly well, and especially in a good, reverberant location where a whole chord can be outlined and heard to sound, via individually played notes, arpeggio style, or broken-up melody.

The Telemann pieces are little suites and sonatas, alternating faster and slower movements, full of dance music as well as fugues—many-voiced—and the whole array of eighteenth century ways of expression. You will marvel at Jean-Pierre's extraordinary technique, you will "hear" the implied harmonies and the many "voices" without the slightest trouble and you will find it hard to believe that only one instrument, high treble, is producing all that big sound.

As for PCM, all I can say is that this is a very fine recording, any way you listen to it. After all, you don't expect me to hear those pulses, one after the other, do you?

Bartok: Music for Strings, Percussion and Celesta; Dance Suite. Philharmonica Hungarica, Dorati. **Philips 6500931**, stereo, \$7.98.

Two of Bartok's most spectacular middle-period show pieces, played somewhat mildly here, but clean and clear in a big, warm liveness. The difficult (low-level) beginning of the first piece, bane of recording engineers, is here deftly handled—it starts very soft, and builds. For once, the sudden percussion entrance sounds right! No rushing for the volume control. Bartok did not write for recording, but his instrumental sounds are marvelous, once the levels are figured out.

The Recording Debut of Antonia Brico. Mozart Symphony No. 35; Overtures to Marriage of Figaro, Don Giovanni, Magic Flute. Mostly Mozart Festival Orchestra.

Columbia M 33888, stereo, \$6.98.

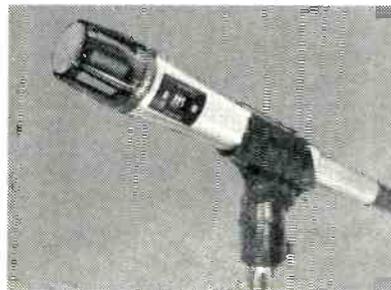
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been around New York since that time; she is obviously no beginner nor in any way to be treated other than as a seasoned and accomplished practitioner of the familiar musical leadership that makes orchestras play. But in the "Mostly Mozart" situation—this is a New York summer festival series, thanks to air conditioning—there is every likelihood of disaster in terms of the permanent and timeless medium of recording. And one can hear it on this disc. A mostly pickup orchestra, I'd guess, not permanently together and playing at too many hastily put together events in a short time. For recording, a clear and typical (American) lack of rehearsal beforehand. No time, no money.

The Mozart is knowing enough and often excellent. But there is a lack of musical togetherness, and the tempi are rushed, hurried, perhaps exactly as they were in the "live" concerts—have to quick get on to the next concert. This is not good on records, though in the normal atmosphere of a summer series it is no great problem (as concert reviews have attested to often enough). Let's hope that Columbia gives Dr. Brico a better scope for her work.

Contemporary Music for Harp Ensemble. N.Y. Harp Ensemble, Wurtzler. **Mus. Heritage MHS 1844**, stereo. (mail order: 1991 B'way, N.Y. 10023)

No use harping on too much harp. Four of them here, 'nuff to drive you harpy—but the music, at least, is all directly commissioned, not arrangements. Harps aren't for dissonance and you'll find these pieces pretty thick and twangy, not very "modern" either—though one has electronic-style snaps and boings and buzzes. Clinically recorded, to every fingernail, harpy hi fi.

Dukas: Symphony in C; Sorcerer's Apprentice, London Philharmonic, Weller. **London CS 6995**, stereo, \$6.98.

Dukas means the **Sorcerer's Apprentice**—what else? Here's what else: an 1896 Symphony, year before **Sorcerer**, which, not surprisingly, is a sort of muscular version of then-reigning Cesar Franck, the older genius of Paris. Dukas was a thorough pro, a splendid orchestrator; his music plays and sounds ever so well and generates huge energy in the last movement—but there's too much, it's all too elaborate and too borrowed. **Sorcerer** is rightly better known.

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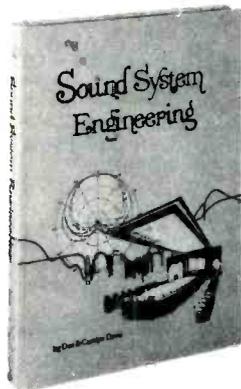
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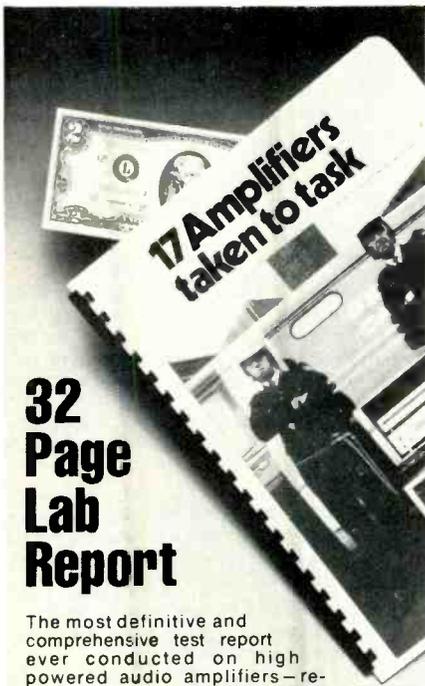
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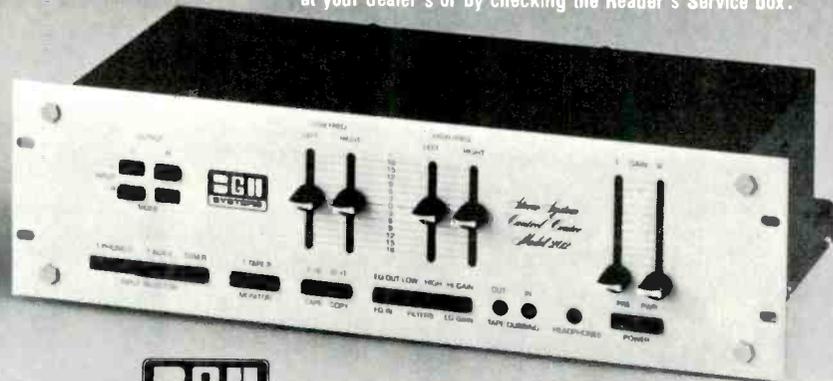
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“Marantz is just about the only component manufacturer around that’s devoted to system interfacing.”

Sound engineers and audiophiles were invited to evaluate Marantz professional components, including the 3800 Preamp, the 510M Power Amp and the 150 Tuner. The following comments were taken from that taped discussion.



The 3800 Preamp

“When you build a phono preamp, you never know what you’re going to plug it into. But the Marantz 3800 can interface with the outside world. Whatever amplifier you hang on it won’t affect the operation of the preamp one iota. The 3800 will drive any amp on the market — even the super amps.”

“Let’s say you use three Sony reel-to-reels with the nearest competitive preamp. You’d wipe out the bottom end. Not with the 3800. It’ll actually drive a load as low as 1000 ohms at a reasonable level and maintain full frequency response.”

“Until now you had to shell out over \$1000 to accomplish that with a preamp. This unit goes for what ... \$599.95*?”

“Then there’s the fact that the 3800 is virtually the quietest preamp going. Not only in specifications, but in perceived noise. Eight-tenths of a microvolt specified.”

“Another thing about systems planning — the 3800 has variable frequency turnover tone controls. Designed to complement both speakers and listeners. What that’ll let you do is bring up a string bass and leave the viola alone.”

“Or if you use the mic feature, like in a live recording, and you’re playing your string guitar and you want that nice ring you hear in recordings. You just put the tone controls in the four kiloHertz position and run the treble control up and you’ve got it.”



“It’s just one of the most versatile preamps in the world. Not only does it include a full-process Dolby** Noise Reduction System, but also the tone controls can be used for tape equalizing.”

“Maybe you want to listen to something else while you’re making tape copies. You just let one tape recorder talk to the other — one recorder is playing back and one is recording. And you can use the Dolby in that loop. Then you keep yourself entertained by listening to a regular FM or AM station at the same time. And the same preamp is available without Dolby for \$100 less. That’s the Marantz 3600.”



The 510M Power Amp

“This is a locomotive when it comes to power. Delivers 256 watts minimum continuous power per channel at 8 ohms with no more than 0.1% total

harmonic distortion and a power band of 20 Hz to 20 kHz.”

“The whole package is smaller. Heat dissipation is one reason why. That’s where this baby really moves ahead... Marantz has implemented a new method of heat dissipation. It’s based on turbulent air flow.”

“They call it a staggered finger heat dissipator. It was originally developed for the computer industry where they really have heat problems. What it does is break up the air flow. It’s aero-dynamically designed to eliminate stratification and create vortices.”

“Efficiency can be up dramatically compared to a convection system. And you do it all in a smaller, lighter package.”

“There’s one competitive unit that weighs over 140 pounds. The 510M weighs 43.”

“It’s got gain controls — two of them. Meter range switches with the advantage of not being part of the limiting circuit. And peak/overload indicators that are really sensitive to the fluctuations of line voltage.”



The 150 Tuner

“Biggest advantage to the Marantz 150 Tuner is the ease of tuning. You can go 60 to 80 kHz of detuning with little change in distortion or separation characteristics. Tuning’s less critical because good performance is obtained over a wider segment of the pass band.”

“The Model 150, in stereo, performs for almost all conditions with FM distortion under 0.2%. In mono it’s around 0.1%. And this is right down to test equipment residuals. You’d have to spend a lot of money for a tuner to match that.”

“The 150’s 18-pole linear phase I.F. filters give you this excellent performance and long-term stability of alignment. It’ll be right-on five years from now without alignment.”

“I’d go so far as to say it exceeds the performance of the original Marantz 10B and the 10B was the ultimate tuner in my estimation.”

“Gives performance so high in quality that if there’s a problem with the signal you tend to question the source, not the tuner.”

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