

Stereo Review

CAR AUDIO SYSTEMS
HEAD OF THE CLASS
CHOOSING THE RIGHT SPEAKERS

CASSETTE DECK BUYING GUIDE

TEST REPORTS:
JVC COMPACT DISC PLAYER
ALLISON LOUDSPEAKERS
SHURE PHONO CARTRIDGE



MR. DAVID S. BUCHANAN
8900 YELLOW WOOD PL
LOUISVILLE KY 40222
430492 BCH 8900V091 741J JAN90
#BCH8900V091*
#2598*****5-DIGIT 40222





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extremists, and the obsessed.



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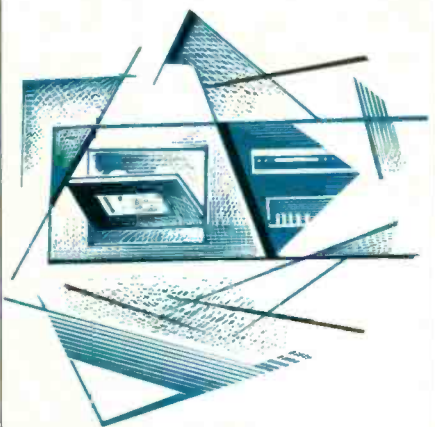
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Cover: Rockford Fosgate's SAT 44 car speakers (see page 73) and Concord's CX70 cassette receiver (page 30); wheel courtesy of BBS. Design by Sue Llewellyn, photo by Hing/Norton.

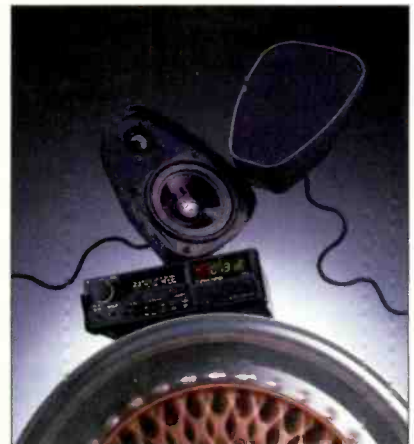
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 Please fill in if you bought equipment in the past thirty days.
READER SERVICE INFORMATION CARD, FACING PAGE 105
 Circle the items you want to know about.



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by *Christie Barter*
and *Michael Smolen*

FIRST DAT SALES IN U.S.

The first digital audio tape (DAT) machine to be sold in the U.S., Clarion's playback-only automotive DAC 2000, went on sale at Dow Stereo/Video in San Diego, California, in February. The second, Kenwood's KDT-99R car DAT player, is now also available in that state. And Harman Kardon is standing firm on its intention of selling home DAT player/recorders sometime next month.

EXPORTS UP

According to the Electronic Industries Association, the U.S. continued to import more electronics than it exported last year, but exports grew at the fastest pace since 1980. Exports rose by 20 percent to \$40 billion, from \$33.4 billion in 1986, while imports rose 15 percent to nearly \$57.9 billion (from \$50.3 billion).

BOSE GOES GOLD

Bose Limited, the Canadian subsidiary of Bose Corporation, was the official supplier of professional sound equipment for the recent Winter Olympics in Calgary. The Bose team provided full-coverage sound systems for both the indoor and outdoor competition sites throughout the games.

TECH NOTES

Pilz Compact Disc, a German company, is introducing a promotional package for under \$250 that will include a CD player and ten discs from its Vienna Master Series of classical CD's. . . . The Philips and Du Pont Optical Company has announced a new process for putting six-color art directly onto a compact disc. The process is said to overcome the durability problems sometimes associated with silkscreening. . . . Matsushita is establishing a wholly owned subsidiary in Troy, Ohio, to manufacture and sell cathode-ray tubes for color TV sets and video monitors. . . . JVC has succeeded in developing a

broadband low-noise device using gallium arsenide. The device has enormous potential for enhancing the performance of next-generation high-definition A/V equipment as well as high-density computer peripherals. . . . Sony is introducing the D-88 Pocket Discman, which is only slightly larger than a 3-inch CD but also plays a 5-inch CD. . . . Yamaha has three new CD players that feature direct-coupled output, which is said to enhance phase coherence of audio signals.

MUSIC NOTES

At recent ceremonies in New York, Sony Corporation of America presented its 1988 Master Innovator Awards to two multitalented musicians, Quincy Jones and Herbie Hancock, who had in turn selected three "rising stars" for similar honors. The younger Sony Innovators were saxophonist Donald Harrison, trumpeter Terence Blanchard, and vocalist Al B. Sure. . . . Van Halen, the Scorpions, Dokken, Kingdom Come, and Metallica will share billing on Van Halen's Monsters of Rock tour this summer. Described as the "first annual touring superstar rock festival," the show will play stadiums in twenty-five cities across the country. . . . Italian conductor Carlo Maria Giulini has been awarded the first medal of the Amici di Verdi in Milan for his outstanding interpretations of Verdi's works. . . . The Schwann catalog will begin listing prerecorded DAT's with its May issue.

HAPPY BIRTHDAY!

Irving Berlin, recipient of STEREO REVIEW's 1988 Mabel Mercer Award, will be 100 years old on May 11. In a birthday tribute to the man whom Gary Giddins described in the February issue as "the world's most famous songwriter," PolyGram Jazz has dug into its catalog to compile an album called "Irving Berlin Always." It's just been released on Verve. . . . Carnegie Hall and the American Society of Composers, Authors, and Publishers,

co-founded by Berlin, are sponsoring a birthday gala on May 11. It is being taped by CBS for broadcast at a later date.

CENTENNIAL IN AMSTERDAM

The Concertgebouw in Amsterdam and the Concertgebouw Orchestra, which calls it home, are both celebrating their hundredth anniversary this year. Launched with a series of galas in April, the centennial is being marked by a number of special events stretching well into the 1988-1989 season, including a jazz festival this summer.

COPYCODE FAILS TESTS

The National Bureau of Standards (NBS) has determined that the proposed CBS copycode system for DAT players "does not work, audibly degrades music, and can easily be bypassed." The NBS report to Congress stated that the copycode system failed each of its three major tests: It often failed to prevent taping and also often had "false positive" responses, preventing recording even when no encoding was present; the encoding audibly distorted recorded music; and the system could be easily bypassed with simple circuits costing around \$100. While the report does not open the floodgates for DAT decks in the U.S. just yet, it does remove one major obstacle to the format's release here.





SDA SRS
\$1495.00 ea.

SDA SRS 2
\$999.95 ea.

Digital Disc Ready

Matthew Polk's ultimate Dream Speakers, the Signature Reference Systems.

Stereo Review Picks Polk's SDA SRS for Their Ultimate Dream System!

"Literally a new dimension in sound"

Stereo Review Magazine

If you're looking for the ultimate loudspeaker, follow the advice of Michael Smolen, executive editor of Stereo Review who selected Polk Audio's 2 time Grand Prix Winner, SDA-SRS for his own personal "ultimate dream system" in the March, 1988 issue.

The joy of owning the ultimate.

Listening to any Polk True Stereo SDA is a remarkable experience. Listening to either of the Signature Edition SDAs is an awesome revelation. Their extraordinarily lifelike three-dimensional imaging surrounds the listener in 360 degree panorama of sonic splendor. The awe inspiring bass performance and dynamic range will astound you. Their high definition clarity allows you to hear every detail of the original musical performance; while their exceptionally smooth, natural, low distortion reproduction encourages you to totally indulge and immerse yourself in your favorite recordings for hours on end.

Julian Hirsch of Stereo Review summed it up well in his rave review of the SDA-SRS: "The composite frequency response was exceptional... The SDA system works... The effect can be quite spectacular... We heard the sound to our sides, a full 90 degrees away from the speakers... As good as the SDA feature is, we were even more impressed by the overall quality of the Polk SDA-SRS... The sound is superbly balanced and totally effortless... Exceptional low bass. We have never measured a low bass distortion level as low as that of the SDA-SRS... It is quite an experience! Furthermore it is not necessary to play the music loud to enjoy the tactile qualities of deep bass... Exceptional performance no matter how you look at it."

The awe-inspiring sonic performance of the SDA-SRS2 is remarkably similar to that of the SRS. Words alone can not express the experience of listening to these ultimate loudspeaker systems. You simply must hear them for yourself!

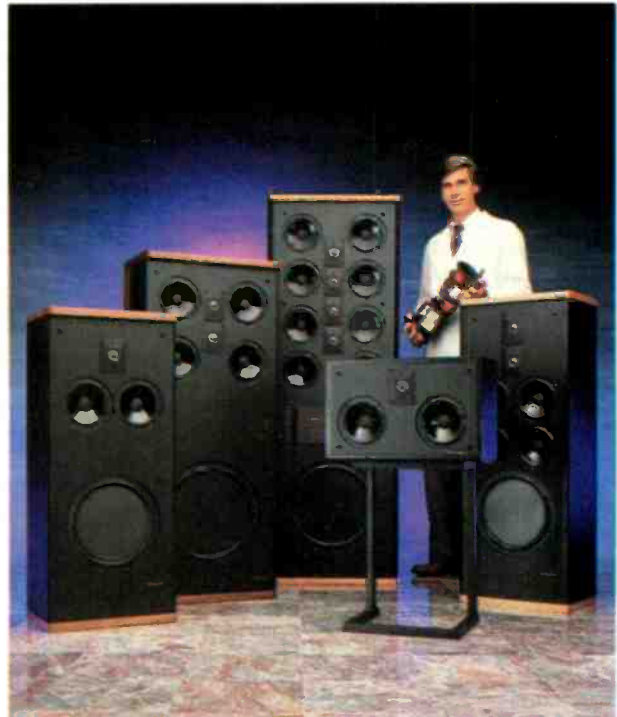
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"Simply must be heard to be appreciated!"

Stereo Review Magazine

The experts agree: Polk speakers sound better! Hear them for yourself. Use the reader service card for more information and visit your nearest Polk dealer today. Your ears will thank you.



There are 5 revolutionary Polk SDA loudspeakers, starting under \$395. ea. The experts agree, nothing else compares!

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SPEAKING MY PIECE

by Louise Boundas



Travelin' Music

MUSIC in cars is certainly not a new idea. Radios, at least, seem to have been in our dashboards for as long as most of us can remember. By now, traveling to music must be part of the American Experience, if there is such a thing. But we've come a long way from the static-filled big-band dance music my father used to try to keep himself awake with when he had to drive at night. I think of that every time the kid from across town circles the block and rolls down his windows to impress the girl across the street with that shuddering, bass-heavy heavy-metal he favors.

The revolution in car listening began with the advent of compact, portable tapes, first the eight-track cartridge and then the cassette. The tapes gave us options. The music we chose to listen to in our cars was no longer dictated by where we happened to be on the highway or the tastes of the nearest radio station's program director. You don't like to listen to country-and-western music just because you are traveling across the western part of the country? Pop in your favorite Rolling Stones concert tape and rock on. Bored with the traffic reports that fill your dial during the rush-hour commute? Zap them with a little Mozart.

Once people on the move could

listen to the music they wanted to hear, they started getting more particular about the way it sounded, and some of them set out to make it sound better. So we got more options. The autosound industry flourished. The car companies collaborated with speaker designers to come up with better acoustics; the Delco/Bose system in GM cars and the Ford/JBL system, among others, became widely available.

In component car systems, the "head units"—receivers, tape players, CD players—have become more and more sophisticated. Speakers have been improved, and there are all kinds of clever ways of installing them. Equalizers let you tailor the sound to your taste or compensate for some of the acoustic problems the interior of your car (or truck, or van) presents. Trunks are being used for subwoofers, additional amplifiers, CD changers. And where you used to have a couple of knobs and half a dozen station presets, you now have a solid panel of buttons, sliders, knobs, concentric knobs with levers, and displays. Some steering wheels have audio controls on them, and there are remote controls that duplicate front-panel functions and add a few that don't fit anywhere else.

With all that, though, listening to music in a car you're driving is not the same as listening to music in your living room. Nor should it be. Sure, the equipment we have now has helped us cope with space constraints, vibration, and ambient noise. But as long as we're driving, we cannot shut out the rest of the world as we can at home. A story in the paper today illustrates what I'm talking about: "At least 90 members of a Moslem wedding party were killed when their bus overturned and caught fire after the driver lost control while changing a cassette in the tape player, the United News of India said today."

There's no question that music can add to our enjoyment when we travel for pleasure, that it can make the road easier for us when we have to go from one place to another. I just hope the fellow driving that eighteen-wheeler coming down the road toward me is not trying to figure out how to work his equalizer right now. □

Stereo Review

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STEREO REVIEW IS PUBLISHED BY
DIAMANDIS COMMUNICATIONS INC.

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Executive Vice President: Robert F. Spillane

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For people who love music as much as they love their car.

If you love music, you won't settle for the inaccurate, inadequate sound of so many factory-installed systems. And if you love your car, you want to enhance it. You'd never do anything to compromise its looks or reduce its resale value. Like re-work the entire dashboard just to install a receiver. Or put up with a trunk that looks like an electronics store.



A DENON RECEIVER MATCHES THE DASH SO WELL, IT LOOKS LIKE ORIGINAL EQUIPMENT

At Denon, we feel the same way. That's why Denon speakers fit most cars without tedious modifications. Denon amps make even sophisticated multi-channel systems simple. Denon receivers all have DIN-E chassis so they install with a minimum of disruption. You can mount them permanently or pull them out to protect both your system and your car from Midnite Auto Inc. For a modest additional cost, the receiver lights can even be matched to



THE DCR-5520, LIKE ALL DENON RECEIVERS, HAS CONTROLS YOU CAN IDENTIFY BY TOUCH.

the color of your dashboard lights. So instead of clashing with your car's interior, a Denon system integrates seamlessly.

Of course, we never forget that superior performance is the only attribute that makes high-end car audio worth the money.

That's why we endow our car audio with such advanced technologies as the Denon Optimum Reception System to tailor FM tuning to the reception conditions. Or our Dynamic Expansion to restore

that most car stereos seemed to have been designed by people who took the bus to work. Well, Denon's designers definitely drive to the office. The DCR-7600's controls fall into logically related groups: Tape functions along the bottom, left and to the left of the display and tape slot, tuner from below the display and along the right edge of the

In terms of sheer sound quality, Denon car audio fully lives up to the standards set by Denon record production, Denon pro studio recorders and



THE DENON DCA-3500 INCLUDES FRONT AND REAR STEREO AMPS, AN ELECTRONIC CROSSOVER AND A SUBWOOFER AMP - WITH ROOM LEFT OVER FOR LUGGAGE

depth and vibrancy to compressed broadcasts and pre-recorded cassettes.

Dual Azimuth Heads assure that both sides of a tape are played with extended frequency response. Non-NFB and Non-Switching Class A Amplification substantially reduce distortion. And a special Denon circuit eliminates the interference that often occurs when an amplifier is mounted in the trunk.

“...its human engineering is about the best I have yet run across. Learning how to use it takes less than a minute.”

Audio's Ivon Berger on the DCR-7600

Denon home high fidelity. Which means, no matter what you drive, you've finally found car stereo as good as your car.

DENON

DESIGN INTEGRITY

Top Tape Decks

Craig Stark's "Five Top Tape Decks" in March was superb. I especially appreciated the remarks about his listening evaluations, particularly those concerning sharp imaging and "air" around instruments. My listening experience has led me to distinguish "mid-fi" from hi-fi equipment on the basis of three factors: sharp imaging, or definition, which lends a three-dimensional "body" to individual instruments or groups of instruments; "air" around instruments, which makes separate instruments or groups of instruments clearly stand apart from one another; and openness, which puts all the instruments into a greater volume of space.

I suspect that these three factors are interdependent, if not aspects of a single variable of sound quality, and they can only be assessed from extended listening evaluations.

ARTHUR WELLS
Gainesville, FL

Tape Systems

I have always enjoyed reading about the sound systems put together by both your editors and your readers, and "Tape Systems" in the March issue was no exception. William Burton's low-price system was well thought out and, for the money, well equipped. Michael Smolen's gathering of high-end components was a real fantasy system that, if I had the money, could certainly take a place in my listening room.

The system described by William Wolfe, however, seemed to fall short. I would expect that even a mid-price "tape system" would include two cassette decks. By slightly cutting back on the price of the receiver, eliminating the subwoofer, and upgrading the two full-range speaker systems, there would be enough left in the budget for another good cassette deck.

JOHN PAUL OSBORN
North Plainfield, NJ

I was interested and amused by Michael Smolen's choice of components for his \$33,230 "super system." I trust he has not assembled this system in reality; if he has, I very sincerely hope he has not turned the power on. If so, he is now the proud owner of some very expensive paperweights.

As Julian Hirsch pointed out in a review in the same issue, the dbx BX1 power amplifier employs a bridged configuration in its two-channel mode, which is how Mr. Smolen chose to use his pair. Unfortunately, the Polk SDA-SRS speakers use a common ground connection to derive the out-of-phase signals for the SDA effect. Connecting a

bridged amp to these speakers will blow up both the amp and the crossovers.

I understand that Polk Audio can now modify its SDA speakers to eliminate this problem; I do not know if the modification is available for the SRS models yet. (As the owner of a pair of Polk SDA-SRS 2's, I am naturally interested.) Perhaps Mr. Smolen had this in mind when he designed his system.

LES BERKLEY
Norristown, PA

The modification enabling Polk's SDA-SRS speakers to be used with a common-ground amplifier is now available. For information, write to Polk Audio, 5601 Metro Drive, Baltimore, MD 21215.

Pink Floyd

I found Ann Ferrar's article about Pink Floyd in the March issue to be quite unfair to Roger Waters. It may be true, as David Gilmour asserts, that Waters "insisted on having total control" in the making of "The Final Cut," but Ms. Ferrar nowhere mentions that Waters wanted to make it a solo album and the other band members didn't agree with his proposal (perhaps because they wanted the money from using the name Pink Floyd).

Furthermore, I disagree with Ms. Ferrar's speculation that Waters is suing his former bandmates out of "sour grapes." On the contrary, a major part of his litigation involves protecting his reputation as a songwriter and preventing Pink Floyd from becoming a formula, the "institution" described in Ms. Ferrar's article. Albums such as "The Final Cut" prove that Roger Waters's music and lyrics are far more intimate and moving than any material ever produced by Gilmour, Nick Mason, or Rick Wright.

DAVID R. STEWART
Atherton, CA

Super VHS

The appearance of Super VHS has not, as William Wolfe stated in March "Video Basics," put "the final nail in Beta's coffin." Mr. Wolfe failed to mention the upcoming introduction of the ED Beta format, which betters S-VHS in almost every measurable parameter, including a horizontal resolution of over 500 lines (100 more than S-VHS). The Beta format has historically always been first with technological advances, and as an audio tool Beta Hi-Fi is at least equal to VHS Hi-Fi, if not better.

Mr. Wolfe claims that buying trends have made VHS the only viable format currently available in this country, but buying trends and marketplace domi-

nance have nothing to do with superior quality and advanced technology. For audio/videophiles who simply want the finest tools with which to create and enjoy their recordings, Beta is still the best.

BOBB RAYNER
York, PA

In "Video Basics" in March, William Wolfe said that "Super VHS picture quality is better than that of broadcast television and of laser videodiscs." This is patently false. While Super VHS may seem superior by virtue of its somewhat exaggerated resolution, it is in reality vastly inferior. It has extremely limited chroma bandwidth, which blurs all horizontal color detail, and it uses vertical chroma line-averaging, which smears the color vertically. Add a healthy dose of video noise reduction, which gives the picture a kind of "cartoonish" look and causes vertical edges to shake and jitter, and you don't exactly have the recipe for transparent video.

BILL ROOD
Sacramento, CA

William Wolfe replies: While chroma specs are important, Super VHS's strong point, horizontal resolution, should not be summarily dismissed. As for video noise reduction, I think it makes a good picture look better.

Satisfied with DAT

Having just purchased a Sony digital audio tape (DAT) recorder, imported from Japan, for my recording studio, I'd like to say a few things about the copy-prevention controversy.

First, DAT is everything it has been promoted as. When I make a studio mix onto DAT, it sounds just like the original—no added tape hiss. And, yes, when you copy a song from a CD, it sounds just like the CD. The thing is, aside from copying two songs to see how it worked, I won't be using my deck for making copies of CD's. It's stupid to pay around ten bucks for a blank DAT just to record friends' CD's that I could buy for around \$13. I prefer to buy the CD's anyway because they won't wear out and they have the lyrics and cover art. So why are the record companies getting so bent out of shape about preventing DAT copies? Are people really going to buy a \$2,000 deck and expensive blank tapes to make CD copies? I'm not, and I don't think a lot of other people will either.

Digital audio tape is a beautiful system of recording, and it makes me mad to see a bunch of corporate guys defeat the advancement of technology by putting in chips and copycodes that might degrade the signal. They'll probably get



The price of power just went down.

For those that demand big power, total performance and state-of-the-art features at an affordable price, Yamaha introduces the YCR-420. A powerful in-dash cassette/receiver boasting 20 watts per channel x 4. And features pre-amp outputs so even more powerful amps or signal processors can be added.

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CIRCLE NO. 14 ON READER SERVICE CARD

LETTERS

everyone so confused that a great format will never catch on.

JIM PORTER
Olympia, WA

Prerecorded Cassettes

I am thoroughly disgusted with the so-called "quality" prerecorded cas-

settes, which are nine out of ten cassettes I buy. The problem is with the ninety-minute tapes, such as Eric Clapton's "Just One Night" on PolyGram. Nobody should be allowed to put such a long concert (eighty-nine minutes, forty-six seconds) on one cassette. It should have been on two! After playing it for five weeks, it began to stick or drag

and soon was eaten up. The record store told me that this happens all the time and they can't help it.

I took what was left of "Just One Night" and put it into a used Maxell UD46 shell. There has been no more dragging, no more squeaking, and no more stretching. Tell the record companies we consumers are fed up with their cheaply made cassette shells. This kind of headache only makes me return to buying LP's again!

DOUGLAS TYSON
Pearl, MS

Heaven Knows

I would like to clear up the misconceptions regarding audible differences between different audio components. Up here there is ample time for discussion and debate on various topics, and STEREO REVIEW's series of articles on how components *really* sound has been well received. I myself incline toward the view that components measuring the same sound the same, but I was recently informed of certain facts that must change my position—and the magazine's.

The Chief has broken precedent of long standing to intervene in an earthly matter. I am instructed to inform you that there are indeed some audible differences between components. As you may well guess, the accuracy of this comment is not to be questioned. He says that His new preamp (an Audio Research SP11 Mk2) is a definite improvement on the old one—and you can count on that!

I realize that most people down there don't have hearing as good as the Boss has, but that can't be helped. So quit publishing those articles until you find out why such differences exist. They all go into your files up here and may affect certain decisions that will be made later. I fear that Julian Hirsch is a lost cause already.

RABBI SIMON BAR JONA
(Saint Peter)
Judah Gate, Heaven

Corrections

The price of the Velodyne ULD-12 subwoofer was given incorrectly in William Wolfe's "Tape Systems" in March. The correct price is \$950, as was stated in Julian Hirsch's test report in the same issue. Mr. Hirsch was in error, however, in describing the ULD-12's built-in amplifier as having Class D operation. The speaker uses a 100-watt Class B amplifier.

An incorrect telephone number was given for the American Melody Company in April's "Calling All Kids" feature on children's records. The correct number is (203) 457-0881.

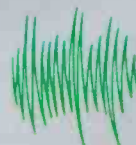


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NEW PRODUCTS



NEC

The AVX-910 Audio/Video Selector from NEC can integrate the most elaborate A/V system. It can independently switch up to five video and ten audio inputs, three video and four audio outputs, an audio/video monitor output, and an A/V recording output. To prevent interference between the video and audio circuits, they are optically coupled and separately grounded and shielded, and there are separate power

supplies for each section. The video section features S-type terminals for connecting late-model VCR's and TV sets having separate luminance and chrominance signals, and there are digital noise-reduction circuits to improve the picture sharpness from any video source, new or old. A full-function wireless remote control is included. Price: \$699. NEC Home Electronics, Dept. SR, 1255 Michael Dr., Wood Dale, IL 60191-1094.

Circle 120 on reader service card

DataPax

The flat CD Jockey carrying case from DataPax opens into an A-frame shape with eight two-sided, clear-vinyl pockets that can carry up to sixteen CD's. The reverse side of each pocket can hold the printed insert from a CD package or another disc. The exterior of the case is made of nylon, and it has a reinforced framework for durability and protection of the contents. The CD Jockey is available in black with gray pockets or navy-blue with light blue and red pockets. Price: \$19.95. DataPax, Dept. SR, 2527 W. Kennewick Ave., Suite 163, Kennewick, WA 99336.

Circle 121 on reader service card



Fox Marketing

The Fox AF275 cordless stereo headphone system allows headphone listening up to 50 feet away from a stereo system or TV set. The two-piece system includes an infrared transmitter that plugs into a normal headphone jack and a stereo headset with an infrared receiver built into the headband. The headphones themselves are circumaural types with foam-filled cushions. They have 1.6-inch-diameter Mylar diaphragms and are rated for a frequency response of 20 to 19,000 Hz \pm 2 dB. Weight of the headset is 10½ ounces. The system is powered by three AAA batteries. Price: \$149.95. Fox Marketing, Dept. SR, 4518 Taylorsville Rd., Dayton, OH 45424-2497.

Circle 122 on reader service card



Onkyo

The Grand Integra T-9090 Series II is an improved version of Onkyo's top FM tuner. It features a computer-controlled tuning system that automatically adjusts RF sensitivity, IF bandwidth, channel separation, and mono/stereo mode for optimal reception quality. In addition, there are inputs both for a conventional FM antenna and a cable feed; if both are connected, the tuner will automatically select the better signal for each station. All settings can be overridden manually or by remote control if

desired. The twenty station preset memories include optimal tuning modes. Tuning steps are 25 kHz instead of the usual 200 kHz to provide fine tuning of cable channels. The supplied remote control operates all functions including output-level adjustment.

The rated 50-dB quieting sensitivity is 37.2 dBf (20 μ V) in stereo, capture ratio is 1.0 dB, and adjacent-channel selectivity is 80 dB. Frequency response is 30 to 15,000 Hz \pm 0.5, -1.0 dB. Finish is black with wood side panels. Price: \$699.95. Onkyo, Dept. SR, 200 Williams Dr., Ramsey, NJ 07446.

NEW PRODUCTS

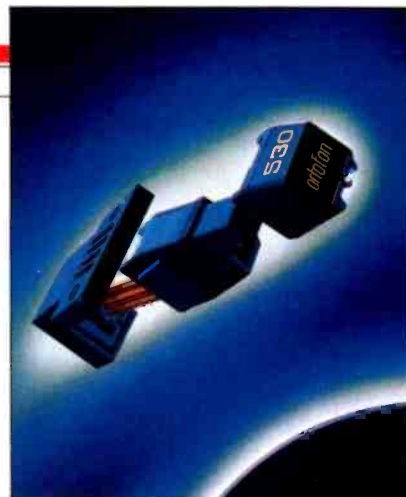


Soundstream

Soundstream's TC301 is its lowest-priced car stereo cassette receiver. The autoreverse tape section features a rotating sennest head, Dolby B, a DC servomotor, a music sensor, and ignition-off pinch-roller release. Frequency response is rated as 30 to 18,000 Hz \pm 3 dB with any kind of tape. The digital-syn-

thesis PLL tuner section has five AM and five FM presets, auto-seek tuning, and automatic channel blend and high-frequency rolloff to reduce noise on weak FM signals. Loudness compensation is also automatic, and a CD input is provided. Price \$299. Soundstream Technologies, Dept. SR, 2907 W. 182nd St., Redondo Beach, CA 90278.

Circle 123 on reader service card



Ortofon

Ortofon has introduced three moving-magnet cartridges—the Models 540, 530 (shown), and 520—that are identical except for their user-replaceable styli. The top model, the 540, has a Fritz Geiger II stylus that is said to be as close in shape to a cutting stylus as possible without risking damage to the LP's it plays. Response is rated flat from 20 to 27,000 Hz. The Model 530, with a nude-mounted Fine Line stylus, is rated for flat response to 25,000 Hz, and the Model 520, with an elliptical stylus, is rated to 23,000 Hz. All three models are available in P-mount versions. Cartridge mass is 5 grams with a standard body, 6 grams with a P-mount body. The Models 520 and 530 can be upgraded at any time simply by replacing the stylus with that of a higher-rated model. Prices: 540, \$300; 530, \$225; 520, \$150. Ortofon, Dept. SR, 122 Dupont St., Plainview, NY 11803.

Circle 126 on reader service card



Yamaha

The CDX-510U compact disc player from Yamaha features the company's Hi-bit technology, which is said to afford the equivalent of 18-bit resolution, along with a quadruple-oversampling digital filter. A tape-edit feature automatically selects a program of tracks that will fit onto a given length tape cassette. The player provides direct track access, programming for up to

twenty-four tracks in any order, index search, auto space, and repeat play of an entire disc, a single track, a program of tracks, or a user-defined segment. The three-beam laser pickup is isolated from external vibration by a floating suspension. A full-function remote control is supplied. Dimensions are 17 $\frac{1}{8}$ x 4 $\frac{3}{16}$ x 13 $\frac{1}{16}$ inches. Price: \$319. Yamaha Electronics, Dept. SR, 6660 Orange-thorpe Ave., Buena Park, CA 90620.

Circle 124 on reader service card



Roland

Roland's DSP-2000 Hi Presence Processor uses digital delay circuits to recreate the effect of sound reflections from the boundaries of various types of halls. Various parameters for the processed signals can be adjusted, and the DSP-2000 includes a program library of forty presets, each of which can be independently adjusted as desired. Dynamic

range is rated as greater than 96 dB, signal-to-noise ratio as better than 90 dB, and total harmonic distortion as less than 0.03 percent. The supplied wireless remote control operates all functions except power switching; the volume knob is motor driven for remote adjustment. Price: \$1,495. Roland, Dept. SR, 7200 Dominion Circle, Los Angeles, CA 90040.

Circle 125 on reader service card

Stereo Setup

A self-help VHS videotape, "Video/Hi-Fi Stereo Setup," explains how to install and maintain an audio/video component system. Wiring diagrams and step-by-step instructions are provided for connecting each type of component, and there is one on the cover of the tape box showing how to hook up a VCR to a TV set so the tape can be viewed. Placement options are explained along with how to adjust controls for optimal performance and how to clean those components that need such attention. Host of the 36-minute program is Vance Dickason, author of the *Loudspeaker Design Cookbook*. Price: \$19.95 (plus postage and handling for mail orders). Stereo Setup, Dept. SR, 11830 SW Kerr Parkway, Suite 350, Lake Oswego, OR 97034.

Circle 127 on reader service card

The Onkyo Integra TA-2800
Technology with Imagination.



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For most people, a cassette deck is an essential part of a high fidelity system. After all, it is the only component designed to preserve a musical event. But frustration often results when that preservation is incomplete, when the cassette deck isn't as good as the music.

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Our designers realized that the deck's mechanism and the cassette were actually one system. This resulted in a unique three motor dual capstan transport for vibration-free alignment between heads and tape. And even smoother tape motion.

The results are easy to hear. Sustained piano notes don't quaver. Symphonies end in the same key in which they began.

Separate recording and playback heads of Special Hard Permalloy feature high precision gaps optimized for full frequency response in any mode. And they provide the additional benefits of instantaneous off-tape monitoring.

Onkyo's exclusive Automatic Accubias system fine tunes bias current for optimum recording with any tape you choose. So the deck and cassette work together to bring you the music.

A precise Record Calibration circuit assures proper level matching between record and playback. And allows Dolby B & C Noise Reduction to work the way it was designed to. So you don't lose musical information along with the noise.

Dolby HX Pro provides extended high frequency response for more lifelike musical experience with any tape. And, a unique Real Time Counter shows you exactly how much tape you've already used and how much tape is left.

Remote control using Onkyo's new RI (Remote Interactive) system is standard. So you get convenience and compatibility with a growing number of equally impressive Onkyo high fidelity components.

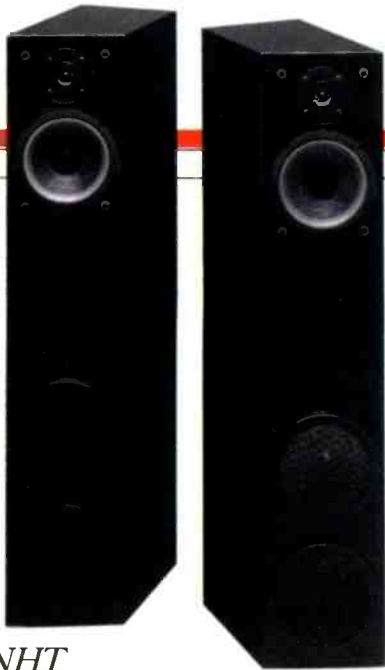
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NEW PRODUCTS



NHT

The NHT Model II is a floor-standing three-way speaker system with four drivers that is claimed to provide the relatively seamless response of a classic two-way system while cleanly reproducing the lowest bass fundamentals. The Model II has two 6½-inch woofers to cover the range below about 100 Hz (down to a -3-dB point of 43 Hz). Higher frequencies (up to 22,000 Hz) are reproduced by a 6½-inch midrange and a 1-inch dome tweeter. The cabinet's shape is said to prevent excessive wall reflections, to help maintain the stereo sound stage through a broad area between the speaker pair, and to minimize interaural crosstalk for a centrally located listener, resulting in better imaging and a more natural ambience.

Rated sensitivity is 87 dB sound-pressure level at 1 meter with 2.83 volts input, nominal impedance is 8 ohms (4 ohms minimum), and recommended amplifier power is 35 to 200 watts per channel. Dimensions are 37 inches high, 7 inches wide, and 12 inches deep. Now Hear This, Inc., Dept. SR, P.O. Box 1228, Fullerton, CA 92632.

Circle 128 on reader service card

Blaupunkt

The car speaker systems in Blaupunkt's QL series all feature long-throw woofers made of a rigid quartz-polypropylene composite, with aluminum voice coils and high-density foam surrounds, 1-inch Altanium or polycarbonate dome tweeters, and braided copper coaxial leads. The top of the line is the QL 6915T (shown), a 6 x 9-inch three-way system with a rated frequency response of 45 to 20,000 Hz, a sensitivity



of 91 dB, and a power-handling capability of 150 watts. Price: \$249.95 a pair. Blaupunkt, Dept. SR, P.O. Box 4601, North Suburban, IL 60198.

Circle 129 on reader service card

Pinnacle

The Pinnacle PN 6+ is a two-way speaker system that features a large, tuned, elliptical port whose tube is angled deeply into the enclosure for "the best possible bass response from a small box." The 6½-inch polypropylene-cone woofer crosses over at 4,500 Hz to a ¾-inch ferrofluid-filled dome tweeter. Rated frequency response is 40 to

21,000 Hz, sensitivity is 90 dB sound-pressure level at 1 meter with 1 watt input, and impedance is 4 ohms. Dimensions are 14½ x 9½ x 8½ inches. Finish is hickory-grain vinyl veneer with a black grille cloth. The speakers have a seven-year warranty. Price: \$229 a pair. Pinnacle Loudspeakers, Inter-Ego Systems Inc., Dept. SR, 517 Rt. 111, Hauppauge, NY 11788.

Circle 130 on reader service card



Denon

Denon's DRA-425 digital-synthesis AM/FM receiver features an Integral System remote control that can also operate compatible Denon CD players and

cassette decks. The amplifier section uses discrete wide-band, high-current output transistors instead of integrated circuits, and it is rated for 50 watts per

channel into 8 ohms with no more than 0.015 percent total harmonic distortion. The preamplifier features electronic function switching, a continuously variable loudness control, a high-speed phono equalizer, and a motor-driven volume-control knob. There are sixteen tuner presets, which can be assigned to any combination of AM and FM stations, as well as manual and auto-scan tuning. The speaker terminals accept spade lugs, banana plugs, or stripped wire ends. Price: \$450. Denon America, Dept. SR, 222 New Rd., Parsippany, NJ 07054.

Circle 131 on reader service card

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The GTP-500 is the most innovative and logical audio component in years. A superb tuner and preamplifier together on one chassis, completely separate from the power amplifier. This eliminates all the technical limitations of the receiver, assuring uncompromised sonic performance as well as an unrestricted choice of power. And a wireless remote controls the entire system—from your favorite chair or from several rooms in your home. The GTP-500 tuner/preamplifier is shown here with our 60 watt-per-channel* power amplifier. Up to 600 watts per channel are also available. In short, you're witnessing the dawn of a new era. To get the full story, write for our literature and reviews.

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What's behind the unique design of the Bose 901 system?

Over thirty years ago, Dr. Amar Bose of the Massachusetts Institute of Technology wondered why so-called "high fidelity" speakers didn't sound like live music. This simple question started the research that led to the original Bose 901 Direct/Reflecting® system—a speaker that, since its introduction in 1968, has earned more critical acclaim and rave reviews than any other. The new

Nine full-range Helical Voice Coil (HVC) drivers reproduce live music's balance of direct and reflected sound, and ensure *unlimited power handling* in non-commercial applications. The Acoustic Matrix™ enclosure's 14 acoustic regions improve bass and lower distortion. The Active Equalizer with Digital Dynamic Range® circuitry ensures optimum sound quality in nearly any room with all sound sources, especially digital.



Bose 901 Series VI Direct/Reflecting® system incorporates more than 350 improvements over the original. Still, it remains faithful to the original design concept, because the scientific principles behind live music haven't changed. *We submit that the use of multiple technologies makes the Bose 901 system the most advanced, lifelike-sounding speaker you can buy—regardless of size or price.*

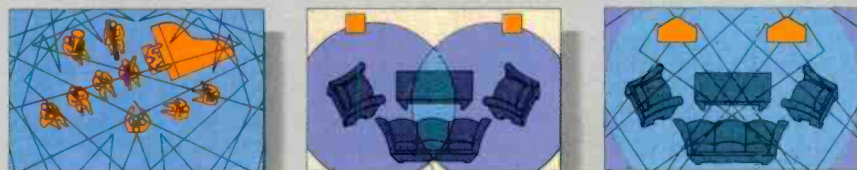
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and Direct/Reflecting® speaker design are more than innovative audio technologies. *They add up to a difference you can hear.* Visit your authorized Bose dealer and experience, in full stereo, all the spaciousness, realism and impact that the Bose 901 system is capable of delivering (see diagrams). Once you listen, you'll know why so many people consider this "the speaker to which all others must be compared." For more information, write Bose Corp., Dept. SR, 10 Speen St., Framingham, MA 01701.



Live music is a combination of direct and reflected sounds (left), but conventional speakers (middle) reproduce mainly direct sounds—and offer full stereo in a small area only. The Bose 901 Direct/Reflecting® speakers (right) accurately reproduce live music's balance of direct and reflected sound, providing greater realism in full stereo (blue area) throughout the listening room.

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VIDEO BASICS

by William Wolfe



Audio/Video Switching

KEEPING track of audio and video sources, and switching between them, has become something of a chore for owners of multicomponent audio/video systems. There are several ways to solve the problems of system connections and switching. For example, many manufacturers of audio receivers are building a full complement of video inputs and outputs into their units to accommodate VCR's, videodisc players, and stereo TV sets. But these products are of little use to audiophiles who are happy with the receivers or separates they have. For such people a dedicated audio/video switcher makes more sense.

Some switchers are very simple, providing a few inputs and outputs but nothing more—unless they add distortion to the signals passing through them. MultiVision's Model 1.1 (\$329), on the other hand, is a very sophisticated unit with a wide variety of switching functions, and it provides elaborate picture-in-picture (PIP) capabilities for any system

that has at least two video sources. (The 1.1 accepts only composite video signals, however, so if either or both of your video sources has RF outputs, you'll need to use one or two RF adaptors.) The 1.1 also offers a loop for an audio processor, such as a graphic equalizer or a surround-sound decoder, and a video processor, such as a color enhancer or a stabilizer.

Whether or not it is used to provide a PIP, the MultiVision 1.1 can be used to select audio and video sources independently. You can, for example, select a video source for the main TV picture and use your FM tuner as the audio source—an instant simulcast. Using a VCR's audio-dub feature and several audio sources to make a new soundtrack for an existing video recording is as easy as pressing a few buttons on the 1.1's remote control—there's no need for switching cables.

One of the nicest aspects of the Model 1.1 is that all of its controls are situated on its wireless remote control. The futuristic-looking main unit has only back-panel connections and front-panel back-lit indicators. The control functions of the remote are divided into two sections; the power, audio-mute, and switching functions are located on the upper half of the unit, and the PIP and audio/video processing functions are located on its lower half. Several of the remote's keys are dual-function controls. A key's secondary function is selected using the remote's SHIFT key, which works like that on a typewriter. The primary functions are labeled in white, the secondary ones in blue.

Up to four video and four audio sources can be connected to the 1.1. To select a source for the main video display, the soundtrack, or the PIP inset display, you need only hit the appropriate button (labeled 1, 2, 3, or 4) in the MAIN, AUDIO, or INSET column. Front-panel indicators on the main unit light up in response to the remote commands: red for the main video display, yellow for the soundtrack, and green for the PIP display.

You can link the audio source to either the main or the inset video source simply by pressing SHIFT and the MAIN 4 button (secondary label

A = M) or SHIFT and INSET 4 (A = I), respectively. Linking the audio input means that it will change whenever you change the video source, and you will hear the soundtrack of that source. You can also temporarily monitor the soundtrack accompanying the inset picture by pressing and holding the ASWAP (audio-swap) button. Pressing this button does not interrupt any of the other PIP functions.

The PIP capabilities of the MultiVision 1.1 are probably more sophisticated than you'll ever need, certainly for everyday use, but they are impressive nonetheless. For starters, you can turn the inset picture on or off, swap it with the main picture, change the size of the inset picture (there's a choice of four sizes, from one-third to one-eighth the size of the main screen), move the inset picture up, down, left, or right, and freeze the inset picture.

You can also use the inset picture for scanning all of your video sources. The time allotted to each scanned source is adjustable from 1½ to 12 seconds using the RATE function. Sources can be deleted from the scan sequence using the DELETE button. The inset picture can also be subjected to strobe processing, which selectively freezes a sequence of frames at an adjustable rate, and its tint and color can be adjusted as well. The inset picture is rated for a horizontal resolution of 286 lines.

The Model 1.1 is very easy to master, although you'll need to use two hands to operate the remote control effectively. It also has some impressive audio specifications: a frequency response of 20 to 40,000 Hz \pm 3 dB, A-weighted signal-to-noise ratio of 75 dB referred to 1 volt, and total harmonic distortion of 0.2 percent at 1,000 Hz with full output. The 1.1 will also have no negative effects on the video signals passing through it.

It's easy to see why a product like the MultiVision 1.1 is attractive as an audio/video switcher. Only you can decide if the PIP feature is of interest, of course. If you regularly enjoy a number of video and audio sources, do a lot of audio editing, or are simply a channel hopper, the 1.1 can make things a lot easier. □

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by Ian G. Masters



Subwoofer Placement

Q I use a pair of subwoofers, crossing over at 120 Hz, and I'm not sure where to place them in relation to my main speakers. Does it really make any difference?

ALLAN FETHEROLF
Springfield, OH

A Where you place the subwoofers is very important, but it has little to do with the position of your other speakers. For proper imaging and smoothest frequency response in the midrange and high frequencies, conventional speakers should be placed in similar acoustic environments and equally far from your usual listening position. With subwoofers, on the other hand, different requirements come into play. For one thing, at the low end of the audio spectrum sound is quite non-directional, so imaging is unimportant and a subwoofer could theoretically be placed anywhere without adversely affecting the sound stage.

But good low-frequency reproduction depends very heavily on the interaction of the speakers and the listening room's acoustics. The wavelengths of some bass notes will bear a close relationship to the room's dimensions, with the result that "standing waves" may be set up at certain frequencies, boosting some notes unbearably and effectively canceling others. Where the speakers are placed with regard to the walls and the main listening position determines which frequencies are affected and by

how much. With a pair of subwoofers, each should be placed so that room effects are minimal and—most important—so that they are *different* for each of the speakers. This will allow the anomalies to average out, resulting in much smoother bass. There is only one real way to decide on subwoofer placement: trial and error.

Accidental Tape Erasure

Q If a tape recording is erased or distorted by coming too close to a magnetic field, can it be recorded over or is it totally destroyed?

ROBERT HANSON
Exton, PA

A Stray magnetic fields will have no permanent physical effect on your tapes. A magnetic recording is made up of an orderly arrangement of magnetized particles, and external fields can disturb these, either degrading the sound quality or, in the worst cases, erasing the signal completely. Accidental scrambling of the magnetic pattern on a tape is exactly like what a recorder's erase head does intentionally, so subsequent reuse of the tape will not pose any problem.

Secure Stereo

Q My teenagers insist on blasting my stereo system into oblivion when I'm not home, despite my warnings about damaging speakers and disturbing the neighbors. I don't want to have to dismantle it every time I go out. Is there any device available that will keep meddling hands off delicate equipment?

DENEYSE ALEXANDER
Grover City, CA

A I don't know of anything designed specifically for that purpose other than parental threats (and they're not very effective, as you have noticed). One answer might be to install a switch in the power line that can only be turned on by a key. Such devices are available from electronics parts stores, and one might solve your problem—unless your kids are sufficiently resourceful and determined to bypass or remove the switch.

Depending on what your teenagers listen to, removing an important part of the equipment—the phono cartridge, say—might work as a preventive measure. Otherwise, placing the system, or a vital part of it such as the power amplifier (turned off, of course), in a locked cabinet may do the trick. If all else fails, you might consider buying your children a modest system of their own. If they ruin that, at least *your* equipment will be safe.

Amplifier Bridging

Q According to what I've read, bridging a stereo amplifier to mono means that the effective output power is doubled. How do you go about actually bridging the amplifier, and what special precautions should be taken?

ALFONSO CRANE
Bogota, Columbia

A Actually, most bridged amplifiers produce *more* power in mono than their total output in stereo, so using a pair of bridged amplifiers is an attractive way to achieve very high wattage levels. Not every amplifier can be bridged, however; the output circuits have to be specially designed for that purpose. If your amplifier *can* be bridged (or "strapped"), its instruction manual will say so and will tell you how to go about it (it's usually a matter of changing the speaker connections and flipping a switch). If the owner's manual doesn't mention bridging, don't try it.

DAT Degradation

Q If a DAT deck is similar in operation to a videocassette recorder, will a digital audio tape suffer the same sort of signal deterioration with repeated use that occurs in a videotape?

LORENZO RAMIREZ, JR.
Los Angeles, CA

A Physically, yes. The rotating heads of VCR's are notoriously hard on tapes, creating dropouts and increasing background noise, and this will be true to some extent of digital audio tapes as well, even with the high-quality oxides that medium will use. The difference between videotapes and digital audio tapes, however, is that the latter are *digital*—therefore, background noise will be inherently low, and error-correction circuitry will take care of all but the grossest dropouts.



Tape Storage

Q I have heard conflicting views as to how I should leave my audio and video tapes between plays. Some say that the tape might be deformed if left all on one reel, so it should be wound to

AUDIO Q&A

about the halfway point. Others say this exposes the tape to dust and other types of damage, so it should be rewound for storing. Which method is correct?

CARL BOGGS
Toronto, Ontario

A Leaving it halfway between reels strikes me as about the *worst* thing to do. The reels in a cassette are loosely mounted, so when it is not being played, the tape between the reels sometimes has a tendency to protrude through the opening in the shell, leaving lots of opportunity for damage. If the tape is wound completely to one end or the other, however, only the leader tape is exposed, so any damage is unimportant. Deformation or scratching of a recorded portion of a tape, on the other hand, would be immediately audible.

The ideal way to store a tape, particularly if it is only played rarely, is "tail out"—wound onto one reel at playing speed, not fast forward or rewind. The smooth tape pack this produces minimizes damage to the tape's edges and helps keep dust from between tape layers.

Speaker Listening Tests

Q When I upgrade my speakers, as I intend to do shortly, I feel that the best way to make a choice is with my own ears. Are there any recorded musical selections that are particularly well suited to demonstrating a speaker's full response under a wide variety of listening conditions?

GLENN E. ALLEN
Lincoln, NB

A Yes, thousands. And, like everything else in music, they are subject to periods of popularity and then give way to newer recordings. The ultimate demo recording has yet to be made, but the choice of good ones is so broad that you should be able to assemble a demonstration program of your own as effective as any that I might suggest. There are, however, a few guidelines to keep in mind.

First, obviously, is that only very well-recorded music should be used; it would be fruitless to try to judge speakers using material containing serious flaws. Second, use recordings you know well so that you have some reference by which to judge speaker differences. If you choose an old favorite, it might be wise to buy a fresh copy so that you won't be distracted by the effects caused by years of record wear. The cost, compared with that of a pair of speakers, will be minimal, and you will end up with a fresh version of one of your favorite recordings.

Orchestral music can be useful for

gauging a speaker's ability to handle subtle detail, and solo vocal recordings may be used to judge both the sound of the human voice—a ready reference—and the ability of a pair of speakers to produce a stable center image. Classical organ recordings, and some synthesizer-heavy pop records, are good for judging low bass, and anything with brushed cymbals is useful for evaluating the high treble. I have always found choral recordings, particularly religious music, very useful for judging midrange linearity, or depth, although this takes some practice. Beyond these hints, the best advice I can give is that you should arm yourself with as wide a variety of music as possible in the beginning. You will quickly discover which recordings are most useful to you.

Quad for Surround

Q I have an old quadraphonic receiver that contains a host of circuits for producing four-channel sound: SQ, RM, CD-4, and discrete. I am interested in taking advantage of the surround information contained in many of the tapes I rent. Is there any way I can do this with my old receiver?

GARY L. RUTLEDGE
Arlington, VA

A Because they were designed to do different things, none of the old quadraphonic systems is suitable for decoding modern Dolby Surround recordings, although they may well produce some interesting unintentional effects. But your old receiver can easily be used as the core of a surround-sound system as long as you use an up-to-date external decoder.

Even though the four-channel systems built into your receiver might be useless for today's material, the four built-in amplifiers will still work, and they offer much more control convenience than you would have with two separate stereo amplifiers. Simply connect the new surround decoder between the source component and the "discrete" inputs on your receiver. You might also try using the older matrixes to extract some rear-channel information from conventional stereo (*not* Dolby Surround) recordings. The results may be unpredictable, but one of the joys of using such equipment back when it was being produced was the discovery of hidden ambience material in ordinary recordings.

If you have a question about hi-fi, send it to Q&A, Stereo Review, 1515 Broadway, New York, NY 10036. Sorry, only questions chosen for publication can be answered.

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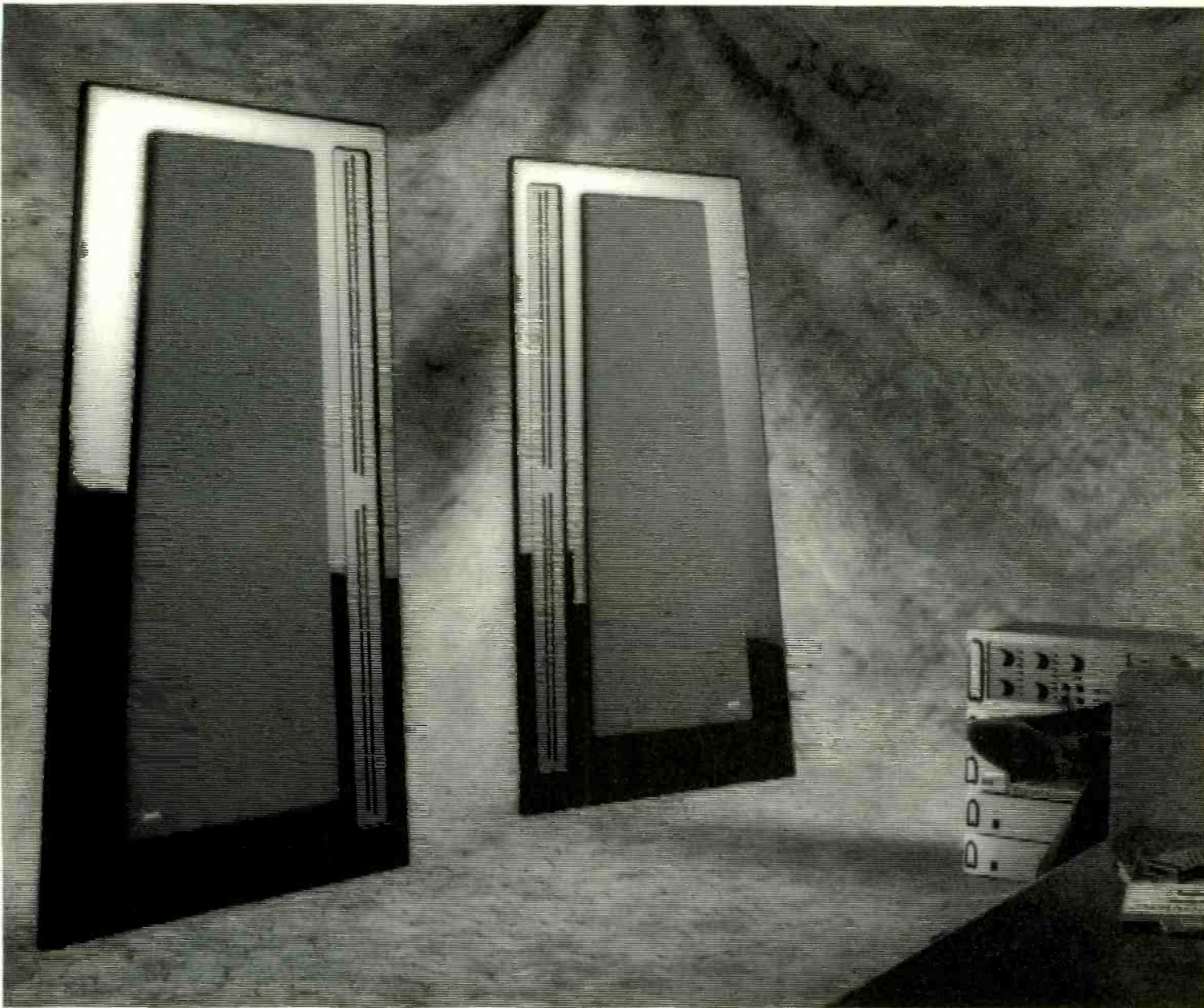
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Q. How can The Amazing Loudspeaker put out so much powerful, extended bass?

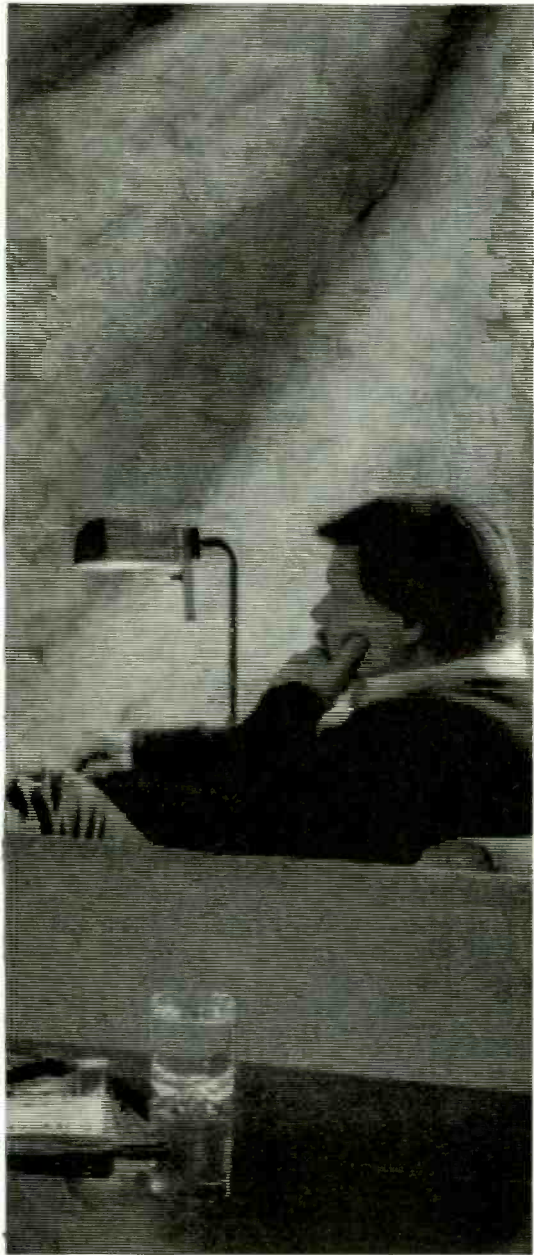
A. Brute force. A total of 8 subwoofers, each with 4 times the excursion of regular bass drivers for a total displacement (area times excursion) of almost 2000 cubic inches. The low frequency 3dB point is 18Hz!

Q. Why use a ribbon driver?

A. Because the sound of a ribbon is nothing short of glorious! Free of individual driver anomalies and crossover problems, the Amazing Loudspeaker's extended line source driver delivers a majestic sonic image that literally floats in 3-dimensional acoustic space. Simultaneously, it reproduces an amazing amount of musical detail that's simply unmatched by any point source driver.

POWERFUL

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This is not a typical speaker ad. Because The Amazing Loudspeaker is anything but a typical speaker.

This isn't even a typical *Carver* ad.

True, the Amazing Loudspeaker breaks so many conventional speaker rules — and succeeds so spectacularly at it — that we're tempted to fill this ad with a litany of hertz, watts and exotic buzz words the way our competitors' ads do.

"Its overall sound is spectacular, its bass performance surpasses that of almost any other speaker one might name."

STEREO REVIEW

Because there's bound to be quite a story behind a speaker that's 5½ feet tall and yet just 1½ inches thick. Especially when Bob Carver has a hand (or rather two hands, both feet and a year or so of lab time) in its creation.

But ingenious design is only our means to an end. The beginning of a dramatic awakening that will re-define for you the very essence of music.

"The image is as wide, deep and multi-layered as I have ever heard. Only Infinity's \$35,000 Reference Standard impressed me more."

Henry Hunt
Hi Fidelity Editor
HOUSTON POST

The Amazing Loudspeaker can etch a sonic image so detailed you can almost see rosin drift from a bow onto the polished surface of a violin.

It can brighten your listening room with the sheen of a #4 drumstick on a Ziljan hi-hat cymbal. Or darken it with the smokey midnight growl of a battered baritone sax.

"It solves certain design problems and achieves certain sonic results with a simplicity and flair that can only be called, well, amazing."

Peter Aczel
THE AUDIO CRITIC

It can stun your senses and rearrange your furniture with thunderous salvos of tight, perfectly controlled low bass.

It can meticulously separate every instrument and vocal on a dense, multi-track mix and project each in sharp relief at precise points across the sound field.

In short, the Carver Amazing Loudspeaker restores what time and reading too many speaker ads often takes away.

Sheer wonder.

We have merely touched on the highlights of this truly amazing loudspeaker. We'd be happy to send you more information including reprints of several great reviews.

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Julian Hirsch
STEREO REVIEW

However, if your immediate interest is the sensation of a listening room melting away to reveal the crystalline clarity of pure music, you need only visit your nearest Carver dealer.

Your amazement will begin when you discover just how affordable the Carver Amazing Loudspeaker really is.

Q. But aren't ribbon drivers inefficient?

A. Not when designed with enough magnetic field strength. Each Amazing Loudspeaker ribbon uses 30 feet of high energy magnets in a special, focused field gap. At 82dB efficiency, that's almost twice as efficient as any other ribbon that goes down to 100Hz. Our M-1.0t power amplifier yields peak SPLs exceeding 106dB; up to 110dB with an M-1.5t! More than ample to deliver a symphonic orchestra's sonic power, fifth row center.

CARVER

ACCURATE

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DAVID KELLEY

CONCORD CX70

by Julian Hirsch and John Roark

IF you had to describe Concord's top-of-the-line CX70 cassette receiver in just a few words, you could say that it's a foundation on which you can erect any number of autosound systems. Its combination of common and not-so-common features affords an unusual degree of flexibility. The special features include line inputs for adding a CD player, switchable center frequencies for the bass and treble tone controls, and Dolby B, Dolby C, and dbx noise-reduction circuits in the autoreverse tape player.

One feature of the CX70 that is not found very often is a four-channel amplifier section that can be bridged to two channels at the throw of a switch. The switch lets you drive four 4-ohm speakers with 4.5 watts each or two speakers with 12.5 watts each. If you want more power, you can use the CX70 to drive your front speakers and add an external amp for the rear ones.

If still higher power is in your budget, or if you'd like to reserve the option of adding more power at a later date, you can bypass the CX70's internal amplifiers altogether. It has four line-level preamplifier outputs for connection to an external four-channel amplifier or a pair of two-channel amps.

The CX70 also has a feature you

probably won't find on any other car receiver: a switchable electronic crossover at 150 Hz. This built-in crossover makes it possible to create a biamplified subwoofer/satellite system around the CX70 without needing to add an external crossover or to look for an external amplifier that has its own built-in crossover. The CX70 could, theoretically, drive a subwoofer/satellite system without external amplification at all: Two of its amplifier channels could drive a pair of full-range satellite speakers in front, and the other two could drive a subwoofer in the rear deck. Or you could bridge the CX70 to drive just the front speakers at higher power and use an external amplifier for the subwoofer. Though both of these approaches will provide better bass response than a system without a subwoofer, biamplification will produce the most dramatic results when you use two high-power external amplifiers.

The CX70's digital-synthesis tuner has six preset tuning buttons, each assignable to two FM stations and one AM station. In addition to manual selection of preset frequencies, there is a selectable automatic preset programming mode in which the tuner scans the band with its "local" sensitivity setting and stores the frequencies of the stations

whose signals are of adequate strength. If there are not enough strong signals to fill all the memories, the tuner then switches to its "distance" sensitivity setting and continues the search process.

For normal listening, stations can be tuned manually, or the tuner can automatically scan either the entire band or just the preset channels. A switchable proprietary FNR+ noise-reduction circuit can improve reception of poor-quality FM signals by automatically rolling off high frequencies in weak signal areas. The "+" part of the system, which is always active, helps filter out ignition noise from the car engine or other nearby vehicles.

The CX70 has a single volume knob, which becomes the balance control when it is pulled out. The knob is concentric with the front/rear fader control, and below it are the two small center-detented bass and treble tone-control knobs. These are normally recessed flush with the front panel but pop out for adjustment.

All of the other controls are soft-touch pushbuttons, some of them with dual functions depending on the input signal. For example, stereo/mono switching for FM and the music-search feature for tape listening share a single button (a separate button selects the number of silent intervals to be skipped). The appropriate legend on each dual-purpose button is illuminated in orange. The volume and tone-control knobs are circled by "halos" of light for ease in use at night.

The main LCD display window shows the complete operating status of the receiver. Only the pertinent markings are visible, simplifying interpretation. The center frequencies for the bass and treble tone controls are selected with the T-EQ and B-EQ buttons, each of which toggles through three frequencies on sequential operations: 80, 150, and 240 Hz for the bass control and 3,000, 6,000, and 12,000 Hz for the treble. The selected frequencies are shown on a separate small display. The system resembles a limited parametric equalizer, with a ± 12 -dB adjustment range at each center frequency. The nearby NR button toggles between no noise reduction

Not For Sale

Years ago, I was working my way through med school and bought my first system. The only place I splurged was on speakers. I bought a pair of KLIPSCH® HERESYS®, but to save money I got them in unfinished wood cabinets.

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CAR STEREO

and the Dolby B, Dolby C, and dbx systems.

The CX70's tuner is not turned off or on by the insertion or removal of a cassette; there is a button to select tuner or tape operation. Similarly, the CDI (CD input) button must be pressed to replace either internal source with a signal source plugged into the CD inputs. The tape deck has both 70- and 120-microsecond equalization, but the user must press the appropriate button to match the tape type. And unlike most car FM radios, the CX70 does

not automatically reduce stereo separation to zero to lessen noise at usable signal levels. In fact, the channel separation remains fully effective at *any* signal level unless you manually switch to mono reception. The only operations that are automatic are tape reversal at the end of each side, ejection of the cassette when the receiver is turned off, and local/distance sensitivity selection.

The Concord CX70 can be removed from the car by pulling it out of its mounting tray with the handle that is permanently hinged to its

front panel. Pulling the receiver out and replacing it are easy and straightforward, requiring no accessory tools. The operation is no more complicated than opening the glove compartment. The docking chassis is installed by sliding it into a DIN-size dashboard cutout and bending mounting tabs to secure it. Price: \$750. Concord, Dept. SR, 25 Hale St., Newburyport, MA 01950.

Lab Tests

We tested the Concord CX70 in its four-channel mode, which simplified the measurement of its audio output since the two-channel bridged mode does not allow either side of the speaker outputs to be grounded. Because the receiver is rated for 4-ohm loads, we used that value for most of our measurements. For audio measurements, our input signals were connected to the CD inputs, and except for power and distortion readings, the output was measured at the preamplifier line outputs.

For perhaps the first time in our experience with car radios, our measurements of FM usable sensitivity and 50-dB quieting sensitivity matched the published specifications exactly. Most of the CX70's other specifications were handily met or surpassed by our measurements. The only reading that was less than good was the AM rejection of 44 dB, although a figure like this is typical of car stereo receivers. One of the most striking and unexpected test results was the way the tuner maintained its stereo separation at the lowest signal levels. At 3 dBf (about 0.35 microvolt), the demodulated signal level was not much greater than the noise, but the stereo indicator was on and the channels remained solidly separated. Although the stereo reception at this level was not listenable, we appreciated that the CX70 lets the user decide when to switch from stereo to mono.

The equalizer response was essentially as rated, with a control range of about ± 12 dB at each center frequency and a typical ratio of bandwidth to frequency, or "Q," of 0.75. The loudness compensation boosted both low and high frequencies as the volume setting was reduced.

FEATURES

- Quartz-PLL digital-synthesis AM/FM tuner
- Twelve FM and six AM station presets
- Selectable automatic preset of strongest stations
- Auto scan of all stations in a band or preset stations only
- FNR+ noise reduction for FM
- Automatic local/distance sensitivity switching
- FM mono/stereo switch
- CD input with selector switch
- Tape/tuner selector switch
- Autoreverse tape deck with full-logic soft-touch transport controls
- Programmable music search
- Dolby B, Dolby C, and dbx noise reduction
- Switchable equalization for chrome/metal and normal tapes
- Matched-phase dual-azimuth tape head
- Automatic tape eject when power is switched off
- Complete LCD status display
- Three-band treble and three-band bass equalization
- Amplifiers switchable for two or four speakers
- Four preamplifier (line) outputs
- Built-in crossover for bi-amplified subwoofer system
- Loudness-compensated volume control
- Theft-deterrent removable chassis

LABORATORY MEASUREMENTS

- Tuner Section** (all measurements FM only except frequency response)
 - Usable sensitivity (mono):** 11.3 dBf
 - 50-dB quieting sensitivity:** mono, 18 dBf; stereo, 36 dBf
 - Stereo threshold:** none (see text)
 - Distortion (THD + noise):** mono, 0.31%; stereo, 0.63%
 - Channel separation (1,000 Hz):** 41 dB
 - AM rejection:** 44 dB
 - Capture ratio:** 2.7 dB
 - Selectivity:** adjacent-channel, 11 dB; alternate-channel, 67 dB
 - Image rejection:** 83 dB
 - Frequency response:** FM, 30 to 15,000 Hz ± 1 , -3 dB; AM, 20 to 3,000 Hz ± 0.5 , -6 dB
- Amplifier Section**
 - Tone-control center frequencies:** bass, 80, 150, or 235 Hz; treble, 3,100, 6,100, or 13,000 Hz
 - Tone-control range** at center frequency: ± 11 to 12 dB
 - Maximum voltage output** (preamplifier output): 2 volts
 - Power output at clipping** (four-channel mode): 5 watts per channel
 - Distortion at rated output** (4 ohms): 0.025% at 4.5 watts
- Tape Section**
 - Frequency response:** 120- μ s EQ, 40 to 17,500 Hz ± 3 dB; 70- μ s EQ, 43 to 18,000 Hz ± 3 dB
 - Noise** (A-weighted, referred to 250 nwb/m): no NR, -58 dB; Dolby B, -65 dB; Dolby C, -73 dB; dbx, -82 dB
 - Flutter:** 0.09% JIS-weighted peak; $\pm 0.15\%$ CCIR-weighted rms
 - Speed error:** $+1\%$ forward, $+0.4\%$ reverse
 - Crosstalk** (at 1,000 Hz): -34 dB
 - Fast-forward/rewind time (C-60):** 96 seconds

“It is so clearly superior to past amplifiers in the low- to mid-priced range—not to mention most amplifiers two to three times its price—that I can unhesitatingly recommend it for even the most demanding high end system.”

Anthony Cordesman

stereophile

vol. 8, no. 4



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CAR STEREO

The power output at clipping was 5 watts per channel into 4 ohms, slightly better than rated, with a total harmonic distortion of only 0.025 percent at the rated 4.5 watts. The line outputs began to distort visibly at about 2 volts, but hard clipping did not occur until 6 volts.

The tape deck's performance was equally outstanding. Its frequency response met the published specifications of 30 to 19,000 Hz \pm 3 dB with metal tape, but that does not tell the full story. From 60 to 15,000 Hz the response varied only \pm 0.75 dB with 120- μ s equalization, and with 70- μ s equalization the variation was \pm 1.5 dB from 60 to 16,000 Hz. These results represent a much more uniform response at audible frequencies than we have found in almost any other automobile tape deck we have tested. The response was virtually identical in both directions, and the random high-frequency level fluctuations (caused by poor tape-to-head contact) that are characteristic of most car cassette players were essentially absent.

The flutter readings were typical of better car cassette decks, as was the signal-to-noise ratio. Speed accuracy and the fast-forward/rewind times were also typical. In fact, the only tape measurement that was below expectations was interchannel crosstalk at 1,000 Hz, which was -34 dB (values of -50 dB or more are common in moderate-price home and auto tape decks).

In its measured performance, the Concord CX70 proved to be one of the best car stereo receivers we have tested. Not only were its measurements very good for the most part, but they did not depart significantly from the manufacturer's claims for the product. In addition, we found the CX70 to be well designed ergonomically. Although it has more features than most car receivers, its controls are easy to operate and intelligently placed and labeled. The learning period was relatively brief, and we soon felt completely comfortable using it. J.H.

Road Tests

The CX70's docking sleeve slipped right into the dash, as it should, and the CX70 in turn slipped into the sleeve without

much fuss. The unit fit snugly, but it didn't put up a fight when I pulled it out by its handle.

I used Concord's preamp-level outputs to bypass the internal amplifier and go directly to an outboard 75-watt-per-channel amplifier feeding a pair of component speakers in the front doors.

In its measured performance, the Concord CX70 proved to be one of the best car stereo receivers we have tested. And though it has more features than most car receivers, its controls are easy to operate.

The cassette section was impressive. My tapes never sounded better. The finger snaps at the beginning of Ray, Goodman, and Brown's *Special Lady* snapped tightly. The drum beats at the start of Blondie's *The Tide Is High* jumped right out of the speakers. The bass in Linda Ronstadt's *Heat Wave* pounded without sounding tubby. The guitars in Air Supply's *All Out of Love* were crisp. The flutes in a Vivaldi concerto were sweet and airy. Melissa Manchester's voice was smooth and forward in *Don't Cry Out Loud*. And the sax in John Klemmer's *Glass Dolphins* showed no signs of harshness.

The cassette section was so good, in fact, that it made some subtleties audible that had been lost in playback on some other cassette decks. The decay of the finger snaps in *Special Lady* was more pronounced than before. The back-up vocals in Linda Ronstadt's *Prisoner in Disguise* could be heard more distinctly while Ronstadt was singing.

The FM section also performed well, but it was susceptible to a little more multipath than I would have expected from an expensive receiver. About 15 miles outside of New York City, where Interstate 80 snakes around a solid rock cliff, the CX70 held onto a strong stereo signal, but multipath-induced noise was noticeable and annoying for quite a stretch. While no other tuner

I've used has passed by this section of I-80 without a lapse, a few have come through it without letting multipath-induced noise creep into the foreground.

As for sensitivity, the tuner did a good job of picking up some relatively noise-free New York stations from about 40 miles outside the city in the hilly, rural parts of northwestern New Jersey. The CX70's FNR+ system helped to minimize background noise, although the circuitry sometimes kicked in and out so quickly and frequently that listening became fatiguing. The fidelity of the FM reception was quite good. The drums in Charlie Daniels's *The Devil Went Down to Georgia* were powerfully reproduced, and, in fact, the tuner did a fine job of reproducing music up and down the frequency spectrum.

Operating the CX70 while driving was relatively painless. The large on-off/volume knob was easy to find without looking, the recessed, pop-out bass and treble controls didn't get in the way when they were not being used, and the night illumination was both aesthetically appealing and made it easier to find various controls in the dark.

There were a couple of operational drawbacks, however. For greater convenience, some two-step operations should really be one-step operations. For instance, when you hit the preset-scan button, the tuner will scan through one bank of six FM presets. To scan through the second bank, you have to hit the button again. Other cassette receivers let you scan through both banks automatically.

Also, the tuner's auto-seek function works in one direction only, up the radio spectrum but not down, although you can tune manually in either direction.

These small operational quirks, however, would not deter me from buying the CX70. The cassette section is among the best there is, the FM section performs relatively well, and if you want to build your way into a high-power multiamp, multispeaker system one step at a time, the CX70 will give you the flexibility to upgrade without scrapping your existing components. J.R.
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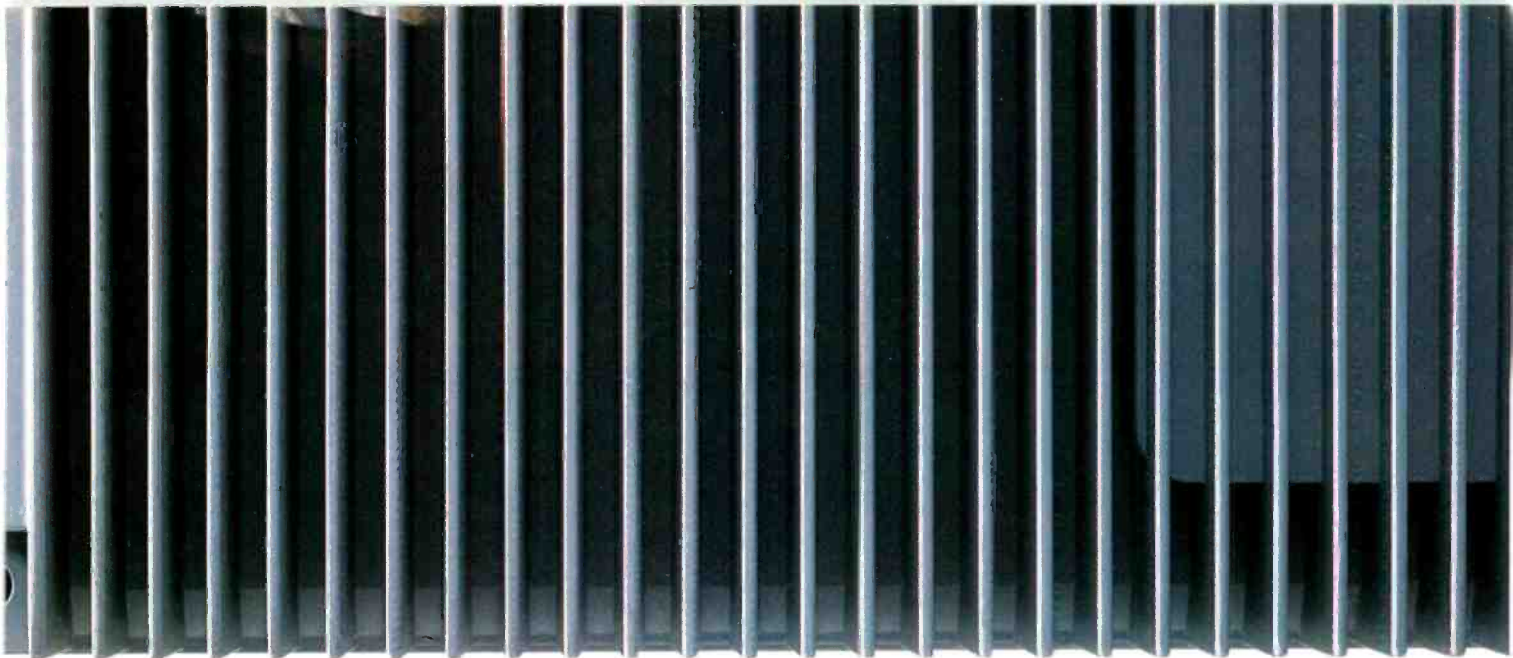
We direct your attention to the *a/d/s/* 6-channel, 300-watt, satellite-subwoofer system and its two advanced pieces of electronics. The PH15 Power Plate amplifier has the capacity to drive two front speakers, two rear speakers and two subwoofers. It's the industry's first single-component 6-channel amplifier.

And if the PH15 is the muscle of the system, the 642CSi Electronic Signal Processor is its heart. A 6-channel programmable electronic crossover network, the 642CSi splits music into highs, lows and very lows, then routes the signals left and right to the appropriate amplifier channels. It also features interface circuitry that makes an *a/d/s/* system compatible with virtually any head unit, including the AM/FM cassette that comes in the best cars today.

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The *a/d/s/* 642CSi defines system architecture. It makes any *a/d/s/* system compatible with the head units that come standard in today's cars and those that come off autosound dealers' shelves.



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If none of this comes as a shock to your system, why not visit your a/d/s/ dealer for a demonstration.

a/d/s/



The a/d/s/ 320i is universally heralded as the finest automotive loudspeaker ever treated. No other car speaker has won more awards for performance and design.

If you think custom sound has to be complicated and exorbitant, anyone here will happily disabuse you of the notion.



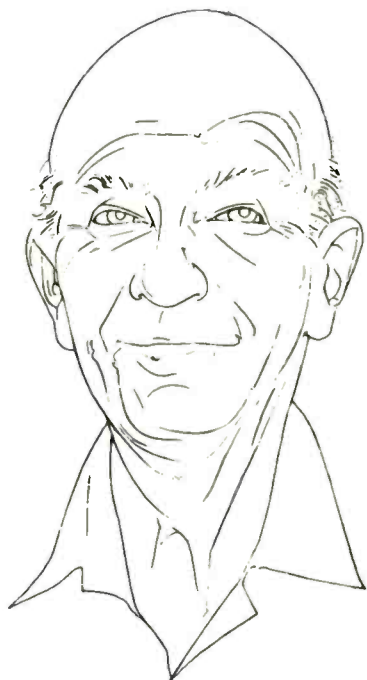
It took as many as 8 separate components in a conventional custom sound system to approximate the performance of this 300-watt, 6-channel sound system.

Sound Distributors	Huntsville	AL	Auto Radio	All Locations	GA	Ultrasmith Systems, Inc.	New York	NY
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Perfect Sound	Porterville	CA	Northeast Security & Stereo	Saugus	MA	Earmark	Addison	TX
Paradyme Consumer	All Locations	CA	Rich's Car Tunes, Inc.	Watertown	MA	Music Systems	El Paso	TX
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Radioman, Inc.	San Diego	CA	Car Stereo Systems	All Locations	MD	San Antonio Audio Concepts	San Antonio	TX
Lajolla Audio	San Diego	CA	Gramophone, Ltd.	Lutherville	MD	Custom Sounds	Austin	TX
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Pan Auto Sounds	San Mateo	CA	Gramophone Co., Inc.	Birmingham	MI	Audio Associates	All Locations	VA
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AdvanceMobile	Santa Monica	CA	Independence Audio	Independence	MO	Greg's Auto Radio	All Locations	VA
Kar Tunes Auto Stereo Alarm	Santa Monica	CA	Ideal Acoustics	Starkville	MS	Auto Sound of Virginia	Richmond	VA
Installations Unlimited	Seaside	CA	Carolina Car Stereo, Inc.	Charlotte	NC	Go Ho Auto Audio	All Locations	VA
Stereo Showcase	Torrance	CA	Dashboard Stereo	All Locations	NC	Magnolia Hi Fi	Seattle	WA
Car Fidelity	All Locations	CA	Car Stereo Unlimited, Inc.	Fayetteville	NC	Hi Fi Heaven, Inc.	Green Bay	WI
Custom Audio Video	W. Hollywood	CA	Autobahn Sound Systems, Inc.	Lincoln	NE	Flanner & Hafsoos Music Ltd.	Milwaukee	WI
Radioactive Sound	Walnut	CA	Tweeter Etc.	All Locations	NH			
Tranasonic TSS	All Locations	CA	Zippo's Car Stereo	Belleville	NJ			
Paris Audio	W. Los Angeles	CA	Soundworks	Cherry Hill	NJ			
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Madjacks	Walnut Creek	CA	Auto Audiophile	Ft. Lee	NJ			
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Car Tunes, Inc.	Denver	CO	The Rolling Tone	Ramsey	NJ			
Carston Stereo	Cromwell	CT	Rand's Camera & HiFi, Inc.	Toms River	NJ			
Audio Design	Danbury	CT	Samm Sound Distributors	West Caldwell	NJ			
Autofidelity	Fairfield	CT	Car Audio Systems	Reno	NV			
Auto Sound, Ltd.	Glastonbury	CT	Boston Road Customer Center	Bronx	NY			
Installations Unlimited, Inc.	Greenwich	CT	TCI Autosound & Security Ltd.	Bronx	NY			
Moonroof, Inc.	Milford	CT	Rabson's	All Locations	NY			
Audiocom	New Haven	CT	Phil's Auto Radio	Brooklyn	NY			
Sound Advice	Old Greenwich	CT	Sound Approach	Commack	NY			
Audio Advisors	All Locations	FL	Sounds Great	Albany	NY			
Cartronics of America	The Palm Beaches	FL	Rogers Stereo, Inc.	Freeport	NY			
Sensuous Sound Systems	Miami	FL	Hi-Way Hi-Fi	Ithaca	NY			
The Audiohouse	Tampa	FL	Bruckner Auto Radio Sales	Jackson Heights	NY			
Cartunes, Inc.	Vero Beach	FL	Auto Sound Systems, Inc.	All Locations	NY			
Audio Warehouse	Atlanta	GA	Cosmophon Sound Inc.	New York	NY			
	Savannah	GA	Martin Motor Sales, Inc.	New York	NY			

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a/d/s/

by Julian Hirsch



Car Stereo: What Price Progress?

FEW consumer electronics products today are as complex or compact as the in-dash "head units" of car stereo systems. Far more than mere "radios," these units typically include not only tuner and amplifier circuitry but also players for cassettes, CD's, and—now—digital audio tapes. Their minimum size and high performance capabilities are made possible by the use of microprocessors and memory chips whose internal operating complexity is actually many times greater than that of the products containing them. But at least the semiconductor circuit elements have no controls that must be handled by a human being.

The control panel of a typical head unit measures about 2 x 7 inches. Within that area must be placed controls for most of the functions of a full-featured home receiver (essentially everything but recording functions), as well as controls for the built-in CD or tape player. Moreover, a portion of that area must be devoted to the loading

slot for the player, and another valuable fraction must be devoted to a display showing the tuner frequency, the CD or tape program track, and other operating information. All of this takes about 3 square inches of the panel area, leaving a mere 11 square inches for the operating controls.

It does not require a mechanical-engineering degree to appreciate the difficulty of squeezing so many controls and features into so little space. The problems are formidable, and it is to the credit of the designers of car audio equipment that they have been solved so successfully in so many cases. In some head units, for instance, the display is combined with the door that covers the tape opening, an ingenious solution made possible by the development of flat liquid-crystal displays.

In some of the more complex units, portions of the circuitry, such as the tuner and certain power-supply components, are housed in out-board modules that can be installed wherever convenient. The controls, the disc- or tape-playing mechanism, and their related circuitry are in the main unit, which fits a DIN-standard dashboard cutout. Not only does this approach leave room inside the head unit for additional performance-related features, but it also extends the life of the system by removing heat-generating circuitry from an area where it can do real damage.

Still, even the most ingenious packaging solutions risk approaching a point of diminishing returns where *more* features may become *less* useful. The more sophisticated

car stereo equipment becomes, the more vital it is that due attention be paid to the "ergonomics," or human engineering, of the products.

For example, consider knobs. Years ago, home receiver designers abandoned rotary, knob-operated controls in favor of pushbuttons, even though, as many people now realize, some functions are most easily and effectively controlled with a knob or even a slider. This transition was initiated by the increased availability of inexpensive integrated circuits whose functions could easily be switched or varied smoothly by a simple contact closure. While it may take two or more buttons to replace one knob, a knowledgeable packaging designer can make a rather complex control panel look relatively uncluttered by using inconspicuous or small buttons, sometimes hiding them behind a hinged door. The misuse of pushbutton controls, however, especially in combination with multi-colored displays, can easily result in a panel more appropriate for the cockpit of an F-15 than for a consumer product!

Some car stereo head units still use a couple of knobs, mainly for tuning and volume control. A useful variant is the "pop-up" control, a small-diameter knob that is normally recessed flush with the panel but emerges sufficiently to be grasped when it is pressed and can be pushed back into the panel after use. Another, more common system is to use a single full-sized knob for several functions, depending on whether it is pulled out or pushed in from its normal placement. When a multifunction knob is combined with one or more additional concentric controls, operated by small levers extending radially from behind the knob, it is possible to fit a considerable number of control functions within the same panel area. If this approach is carried to extremes, however, it can greatly increase the time that is required for a user to become thoroughly familiar with the equipment.

Difficult as it can be to operate a head unit with many tiny buttons, the problem is compounded when the buttons must serve multiple functions. Sometimes analogous

Tested This Month

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Allison Acoustics IC20
Speaker System
Onkyo TX-SV7M
Audio / Video Receiver
Shure VST III
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TECHNICAL TALK

functions, such as auto-seek tuning and tape or CD track skipping, can be assigned to the same button. Usually there is no problem with the common functions, such as volume or tone adjustment, but occasionally a pair of volume-control buttons, say, will also be used as tone controls, balance controls, or front/rear faders, requiring still other buttons to transfer the functions. And often two or three specialized and unrelated operations—such as automatic signal-seeking tuner scans, tape noise-reduction selection, and preset selection or programming—are combined in a single control button. Space limitations on the panel can prevent adequate identification of these various functions, resulting in a cryptically marked control whose purpose may not be at all obvious to the user.

Some full-featured car stereo head units have reached the point where it is difficult for a driver to operate the controls safely while driving. Even relatively simple radios can present operating difficulties. It can be dangerous for a driver to take his eyes off the road for the time needed to find and use one control among the many crowded together on the panel. But to use a control successfully *without* looking at the panel requires skill and luck.

In lab testing full-featured head units, I frequently have to study the front panels at close range for some time to determine how to achieve a particular result. True, I have not

had the benefit of long experience using the car components I test. But do many drivers study the instruction manuals for their stereo systems enough that operating them becomes second nature before they hit the road?

I suspect that if I had one of those units in my car, I would find myself using few of its capabilities—at least not while in motion. Probably the same can be said for some of the people who buy these products for their cars. Is there a way that manufacturers can preserve a better balance between a wealth of features and ease of use? Is it necessary for a car component to have every known form of noise reduction and every operating feature found in a home tape deck or CD player?

Some car stereo designers have managed to incorporate a full gamut of features into head units without unduly complicating their operation. And when I have the opportunity to test such products, assuming that their performance is otherwise at least adequate, I praise them in unmistakable terms (see the test report on the Concord CX70 in this issue). In general, however, there needs to be a greater, more deliberate effort on the part of more manufacturers to achieve this end. I don't think my reaction to this situation is unique, and I would be interested in hearing from readers about their pro and con reactions to the present state of car stereo human engineering—or the lack of it. □



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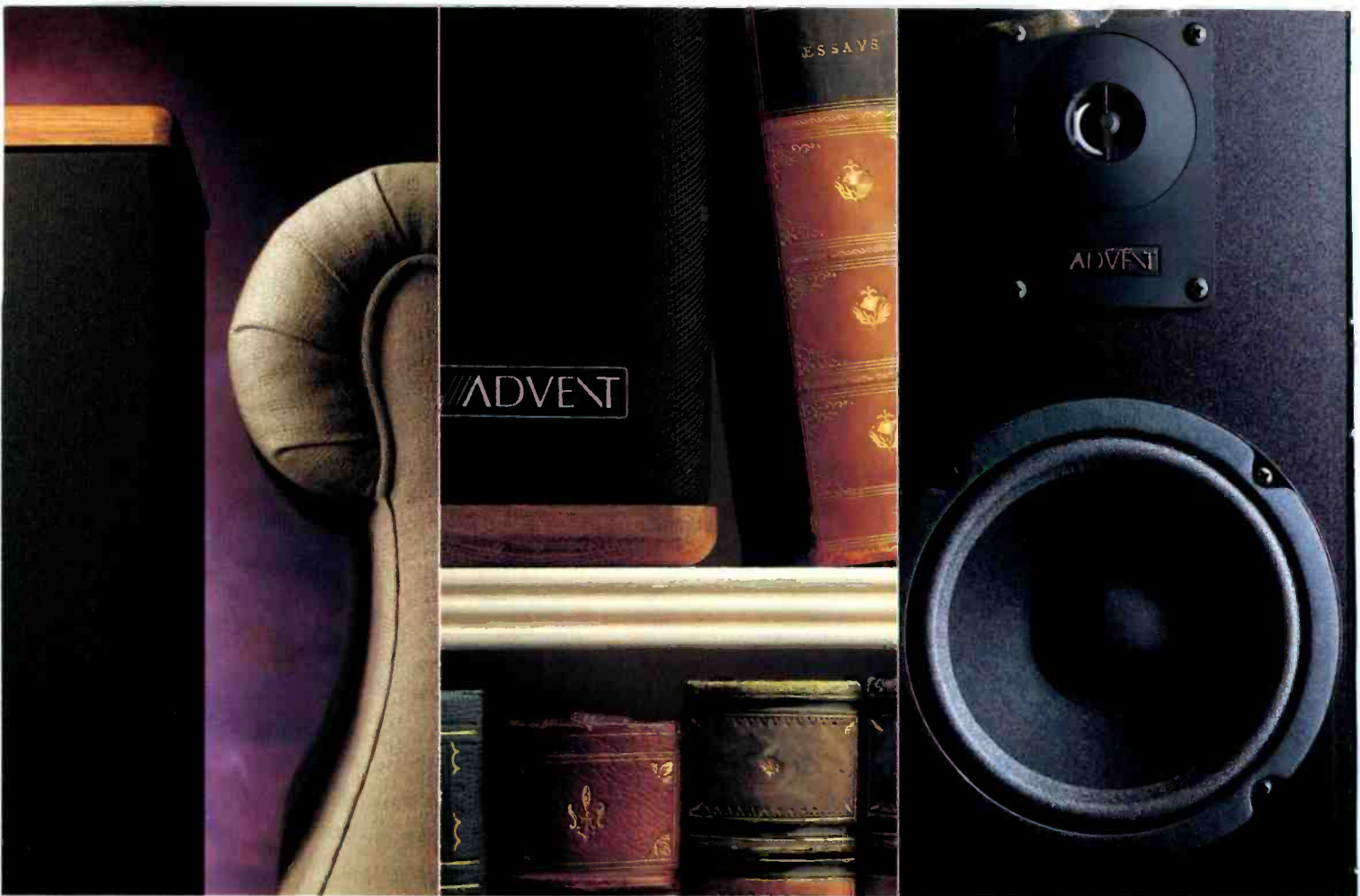
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JOOK LEUNG

PHILIPS CD960 COMPACT DISC PLAYER

Julian Hirsch, Hirsch-Houck Laboratories

FOR some years, audio (and video) products made by the Dutch electronics giant Philips—the co-developer, with Sony, of the compact disc—have been sold in the U.S. under the Magnavox, Sylvania, and Philco brand names. The Philips brand itself had been absent from the American market until recently, when a number of new Philips components were introduced here. Among them is a deluxe CD player, the CD960, that offers nearly every imaginable feature.

The CD960 has separate quadruple-oversampling digital filters and digital-to-analog (D/A) converters

for each channel. Most of its performance specifications are truly state of the art, including an amplitude flatness of ± 0.01 dB, a phase linearity of ± 0.2 degree from 20 to 20,000 Hz, and a distortion rating of 0.0015 percent over the same range.

The outstanding performance specifications of the CD960 are complemented by the great variety of its operating features. It offers direct keypad access to any track or indexed portion on a disc, and it can be set to start playing a track at any time after its starting point. Up to twenty tracks can be programmed in one playback sequence (that

number is considerably reduced if programming by index or time is also required). Any programmable sequence can also be stored in the Favorite Track Selection (FTS) memory, which retains its information, including disc identification, until erased.

Other operating modes include SCAN, which plays the first 10 seconds of each track before going on to the next; AUTO PAUSE, which stops playback after each track until the pause button is pressed; COPY PAUSE, which inserts a 4-second interval between tracks; and SINGLE PLAY, which plays only the current track. The repeat mode replays the entire disc, a selected track, or any selected portion of a disc.

The principal operating controls of the Philips CD960 are grouped by function, with the play, pause, stop, search, and skip buttons at the right of the front panel. An angled secondary control panel, containing

TEST REPORTS

the numerical keypad and the SELECT button used for track selection and programming, extends about 1¼ inches out from the bottom of the player. The lower panel can also be extended further to reveal less often used controls.

The display window shows track, index, and time information in bright blue-white fluorescent numerals as well as the status of the operating controls. A button below the window toggles the display between elapsed and remaining time. Unlike any other player we have seen, the CD960 even has the disc-drawer button located in the most logical place, on the front of the drawer itself. Below the drawer are a headphone jack and its slider volume control.

The rear apron of the CD960 has three sets of signal outputs: standard analog jacks and both optical and electrical digital outputs. There are also jacks for an optional external remote control to operate the player from another room. The

player is supplied with a normal wireless remote that duplicates virtually all of its controls except for play mode, Favorite Track Selection, and disc-drawer operation.

The Philips CD960, finished in black, measures 16½ inches wide, 14⅞ inches deep, and 3⅞ inches high. It weighs 22 pounds. Price: \$949. Philips, Dept. SR, I-40 and Straw Plains Pike, P.O. Box 14810, Knoxville, TN 37914-1810.

Lab Tests

The CD960 delivered 2.07 volts per channel into an EIA-standard load from a 0-dB test signal, with a channel imbalance of 0.2 dB. Its frequency response was one of the flattest we have yet measured, within ±0.05 dB overall from 20 to 20,000 Hz. The variations consisted entirely of high-frequency ripples above 2,000 Hz; the average playback level did not change detectably over the full range.

The 1,000-Hz total harmonic distortion (THD) was 0.0024 percent at

0 dB, increasing to 0.0057 percent at -10 dB and 0.02 percent at -20 dB. These readings were of actual harmonic components below 20,000 Hz. It was not possible to measure THD plus noise because of the presence in the output of ultrasonic signal components from the digital circuitry. While these ultrasonic components were not large enough to affect playback in any way (they measured about -70 dB, or 0.03 percent amplitude), they made it necessary to use a spectrum analyzer for our distortion measurements. We have previously encountered this same problem with other Philips-made CD players such as the Sylvania models.

The A-weighted noise from the "infinity-zero" track of a test CD was -124 dB referred to a 0-dB level, and the dynamic range was an estimated 105 dB (the broad-band noise portion of this measurement was also obscured by the player's ultrasonic output signals).

The measured channel separation surpassed the player's already impressive specifications, ranging from 118 dB at 100 Hz to 109 dB at 20,000 Hz. Interchannel phase shift was zero over most of the audio range, reaching 4 degrees at 100 Hz and 0.7 degree at 20,000 Hz. The D/A converter's linearity error at low levels was -1.2 dB at -80 dB, -5.4 dB at -90 dB, and -4.5 dB at -100 dB.

The slew time of 2.4 seconds from Track 1 to Track 15 of the Philips TS4 test disc was about average for players not using a linear motor for laser slewing. The cueing accuracy was excellent, and the player had no difficulty tracking through the largest defects on the Philips TS5A test disc. The headphone volume was excellent, sufficient for very comfortable listening levels.

The CD960 excelled in its immunity to physical shock. Even hard slaps and blows with a fist on any part of its exterior did not cause audible mistracking or other effects. We were able to induce a skip only by a truly violent blow on the top plate, above the disc mechanism.

Curious about the reasons for the CD960's considerable weight and immunity to physical impact, we removed the top cover. The chassis

FEATURES

- Separate quadruple-oversampling digital filters and D/A converters for each channel
- Track and index skipping in either direction
- Fast search with audible sound
- One-piece cast-metal chassis with separate disc-mechanism frame
- Direct keypad access to any track or indexed passage
- Programmable to play up to twenty tracks in any order
- Programmable by track, index number, or time within a track
- Repeat of entire disc, programmed sequence, single track, or any selected portion
- Favorite Track Selection (FTS) to store desired track sequences for up to 226 discs
- SCAN mode to play first 10 seconds of each track
- Single-play mode for one track only
- COPY PAUSE to insert 4-second intervals between tracks
- AUTO PAUSE to halt play after each track
- Remote control of all playing functions except special play modes and FTS
- Display of track and index numbers, status of all operating modes, and time (switchable between elapsed and remaining time)
- Slide-away panel for little-used controls
- Analog and digital electrical outputs, digital optical output

LABORATORY MEASUREMENTS

Maximum output level: 2.07 volts
Total harmonic distortion at
 1,000 Hz: 0.0024% referred to 0 dB, 0.0057% referred to -10 dB, 0.02% referred to -20 dB
Signal-to-noise ratio (A-weighted):
 124 dB
Channel separation: 113 dB at 1,000 Hz, 109 dB at 20,000 Hz
Frequency response: ±0.025 dB from 20 to 20,000 Hz

Dynamic range: 105 dB
Maximum phase shift (from 100 to 20,000 Hz): 4 degrees at 100 Hz, 0.7 degree at 20,000 Hz
Cueing time: 2.4 seconds
Cueing accuracy: A
Impact resistance: top, A; sides, A
Defect tracking: tracked maximum defect levels on Philips TS5A test disc

turned out to be a heavy, single-piece casting, with the disc mechanism constructed on a separate cast-metal frame floating on vibration isolators. Even the top cover was made of a heavier gauge of metal than is used on most compact disc players.

Comments

Not only can the Philips CD960 do an amazing number of things (many of them quite useful), but it does them as easily and naturally as one could possibly expect from such a complex piece of equipment. This is a tribute not only to the engineering acumen of its designers but also to the talents of those who wrote its instruction manual. Rarely have we seen the instructions for such a versatile and sophisticated consumer product written so clearly and logically—in plain English. The manual tells you just what to do to achieve a desired effect, and it usually follows an instruction with a list of the proper responses to the action and possible reasons for an error indication or other undesired effect. If the same care were taken with VCR manuals, imagine how many more people would be able to program their recorders successfully!

We tried each of the many operating modes of the CD960, and they all worked exactly as they were supposed to. In fact, there was not a thing in the operation of this player that left us dissatisfied or puzzled. Possibly some users with minimal patience would wish for a fast, linear-motor drive for the laser to cut its slew time from a couple of seconds to a fraction of a second, but we did not begrudge the machine its one leisurely action, especially in view of the smoothness and silence of its operation.

Whether the Philips CD960 sounds any different from a number of other top-of-the-line CD players is debatable, but in the factors that we consider really important—such as flexibility, ease of use, state-of-the-art measured performance, immunity to external vibration, substantial construction, and similar qualities—it ranks with the very finest CD players we have had the pleasure of using.

Circle 140 on reader service card



JOCK LEUNG

ALLISON ACOUSTICS IC20 LOUDSPEAKER SYSTEM

Julian Hirsch, Hirsch-Houck Laboratories

THE IC20 is the first "Image Control" loudspeaker from Allison Acoustics as well as the most expensive speaker to carry the Allison name. It represents a logical extension of Allison's approach to speaker design, including the "Room-Matched" feature

that has been a characteristic of every Allison speaker so far.

Normally, when a woofer is located a foot or two from the floor or a wall, its low-frequency response becomes irregular, with an actual loss of bass output power, because of interference between its direct

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output and the sound waves reflected from the wall and floor. Floor-mounted Allison speakers are designed to be placed against a wall, with the woofer as close as possible to the floor and the wall. This placement shifts the interference region upward in frequency, so that using a low woofer crossover frequency effectively eliminates the interference problem.

Another feature of the IC20 is the use of proprietary convex-diaphragm tweeters and midrange drivers. These drivers, designed and built by Allison Acoustics, have an extended frequency range and a very wide dispersion angle that makes them effectively omnidirectional forward of their mounting panels.

The Image Control characteristic of the IC20 refers to its switchable horizontal directional pattern, which can be changed by a wireless remote control. Each enclosure actually contains two speaker systems, mounted at right angles to each other and facing 45 degrees to the left and right of the forward axis. In each system, the middle and high frequencies are radiated by a line array of two midrange drivers and two tweeters near the top of the panel. This configuration concentrates sound energy at a listener's ear level and minimizes the effects of ceiling and floor reflections. The woofers are at the bottom, closest to the floor.

The output levels from the two groups of middle- and high-frequency drivers can be switched to shift the total radiation pattern to either side or directly forward without changing the overall sound level. When the output of one group of drivers is reduced, the other is increased to maintain a constant total output, with the overall system radiation favoring the side having the higher output. The pattern shift can be performed on the left or right speaker or on both simultaneously. When the radiation pattern of each speaker is switched outward, the sound stage is expanded beyond the speakers themselves. With both radiating inward, a tightly centered stage is produced, and when the output from both is beamed forward, the speakers have a virtually om-

nidirectional horizontal pattern in the listening area.

The two woofers at the bottom of each cabinet are mounted unconventionally. One faces outward in the normal manner, while the other faces into the enclosure. They are driven in opposite electrical phase, so that their cones move out at the

The Allison IC20 has a switchable horizontal directional pattern, which can be changed by a wireless remote control.

same time and their acoustic outputs are in phase. According to Allison, this arrangement reduces second-harmonic distortion, typically by about 10 dB, at moderate-to-high sound levels. The woofers are acoustic-suspension types operating in fully enclosed volumes.

The 10-inch woofers operate up to 350 Hz, where each crosses over to a pair of 3½-inch convex-diaphragm midrange drivers, damped and cooled by ferrofluid. The second crossover, at 3,750 Hz, is to a pair of 1-inch convex-diaphragm tweeters with silicone damping and cooling. The crossovers have 8-dB-per-octave slopes. The nominal system impedance is 6 ohms, with an average value of 8 ohms and a minimum of 5 ohms. The rated sensitivity is 87 dB sound-pressure level (SPL) at 1 meter with a 2.83-volt input. The IC20 is recommended for use with amplifiers rated between 30 and 400 watts per channel. Its power-handling capacity is specified as 175 watts for 10 seconds and 1,500 watts for 0.1 second.

Separate five-way binding post terminals for the woofers and for the mid/high drivers, with a switch to join or separate them, are recessed into the rear of the cabinet. When the terminals are separated, the speakers can be bi-wired, with separate cables carrying the low and mid/high frequencies from the amplifier, or bi-amplified, with separate amplifiers for the low and mid/high frequencies.

At the top of the rear panel are

two toggle switches. One is set to correspond to the position of the speaker (left or right), so that the remote control will switch its radiation pattern in the appropriate directions, and the other can be used to select the pattern manually. A pair of red LED's on the front of the cabinet indicate the directional setting (both light when the pattern is forward).

The Allison IC20 is a fairly large speaker, measuring 48 inches high, 21 inches wide, and 12 inches deep. It has a truncated triangular cross section, with a removable black grille over each speaker panel and a narrow wooden strip on its front face. The drive units are protected against overload by a fast-acting bistable resistor that resets automatically. Each driver is protected against physical damage by a perforated-metal cover, and since the wooden exterior is fully finished except for the back panel, the speakers can be operated with or without the grilles in place. Each speaker weighs about 100 pounds. The IC20 is available in black, oak, and walnut finishes. Price: \$4,900 a pair. Allison Acoustics Inc., Dept. SR, 7 Tech Circle, Natick, MA 01760.

Lab Tests

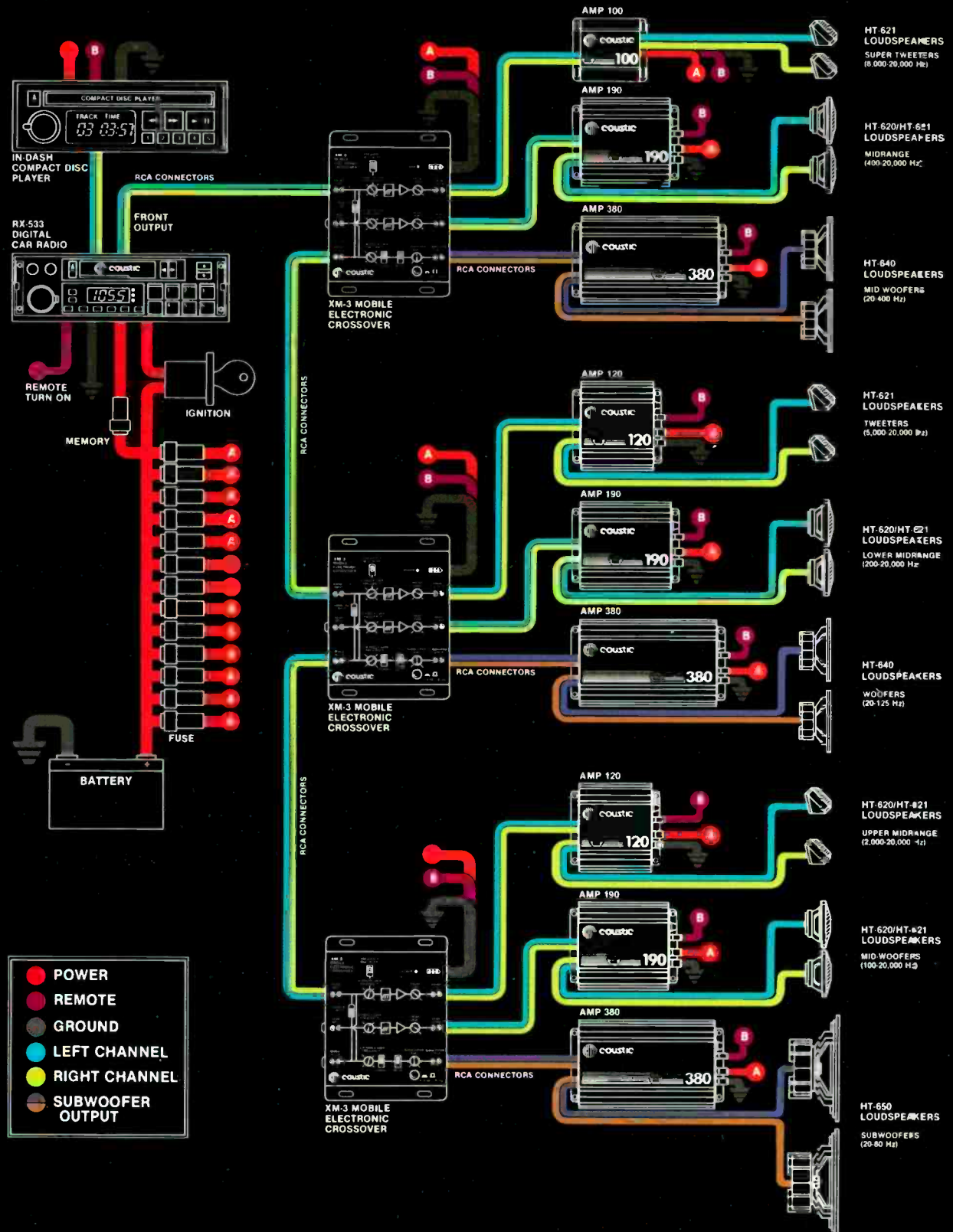
The room response of the Allison IC20 speakers was virtually unaffected by their pattern settings, confirming that their total acoustic power output was not affected by the settings of the image controls. Above 500 Hz, where room-boundary effects are minimal, the averaged response was unusually flat all the way up to 20,000 Hz. The close-miked woofer response was flat within 3 dB overall from 35 to 350 Hz. Spliced to the room curve, it resulted in a composite frequency response flat within ± 2.5 dB from 32 Hz to beyond 20,000 Hz.

Our quasi-anechoic FFT response measurements confirmed the essential properties of the speakers' room curves. Since the "off" panel is never really turned off, merely reduced in level, it produced interference-cancellation notches in the FFT response that were not present in the room response. The group delay of each panel was constant within 0.15 millisecond from 5,000 to 22,000

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Hz, with slightly greater variations at lower frequencies.

The system's impedance was 8.8 ohms around 100 Hz and reached its 4.8-ohm minimum at 15,000 Hz. Its maximum was 21 ohms at 34 Hz. The sensitivity was 86 dB SPL on the forward axis when the radiation pattern favored that direction. When we drove the system at a 4.5-volt level, corresponding to a 90-dB SPL, the woofer distortion was very low, 0.5 to 1 percent from 100 Hz to below 30 Hz and a maximum of only 1 to 1.5 percent at 20 Hz. Not surprisingly, the IC20 was able to absorb huge power inputs without significant nonlinearity. With single-cycle bursts at 100, 1,000, and 10,000 Hz, the amplifier clipped before there was visible or audible distortion on the speaker's acoustic-output waveform. The respective power levels reached were 810, 850, and 1,300 watts. The middle- and high-frequency power levels were not unusual—most speakers can handle tremendous inputs at those frequencies—but the IC20's woofer was perhaps the first we have found that could take over 800 watts input at 100 Hz without even sounding raspy!

Comments

One of the most striking characteristics of the Allison IC20 is its lack of striking characteristics. Most speakers can be described in terms of a special sound quality—brightness, heaviness, airiness, etc. To prefer one or another of these properties is perfectly acceptable, and most of us have our own ideas of what a speaker should sound like. We base our purchases in good measure on those ideas (tempered by economic considerations).

The IC20, however, is one of the most neutral speakers we have ever heard. It never sounded shrill, heavy, forward, or otherwise unlike the real music it is meant to reproduce. In many ways it is a "forgettable" speaker, since a listener easily accepts its output as music and forgets that a speaker has been interposed between the performance and the hearing.

I don't mean to say that the Allison IC20 is "perfect" (whatever that might be), but merely that it is prob-

ably one of the least colored speakers on the market today. Neither its low bass nor its extreme treble is likely to arouse comment, but when the music contains substantial energy at either end of the spectrum, it will be heard (or felt) as it was meant to be.

All of this is completely consistent with the IC20's measured frequency response and other characteristics. On the other hand, some other speakers manage to produce fairly similar measured results without sounding at all like the IC20's, which emphasizes the difficulty of determining a speaker's sound from its measurements.

I will confess that on first hearing the Allison IC20's I wondered what was so special about them and whether it was enough to justify their rather high price. Further listening soon answered the first part of the question; the second will have to be a personal decision by every potential buyer. As I listened to them, playing various CD's, I had to remind myself that those imposing black boxes against the wall were the source of the music that filled the room. This "invisibility" is a reflection of the system's ease and smoothness, resulting in an effortless, seamless sound quite different from that of lesser speakers.

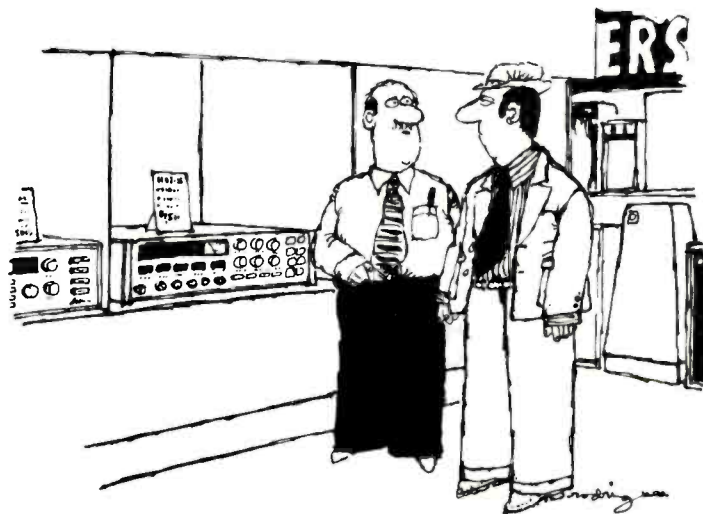
What about those spatial qualities

that the novel design of the IC20 is intended to provide? Although the sound character changed audibly when the radiation pattern was switched, I did not find the differences to be significant. After some experimenting, I remained with the forward (hemispherical) pattern, which seemed to be best suited to my room and tastes.

The bottom line on the Allison IC20 is that it is a superbly neutral, clean-sounding speaker with one of the flattest frequency-response characteristics we have measured as well as some of the lowest bass-distortion readings in our experience. It is not "flashy" sounding, but there is nothing dull about it either. Judging from my own reaction, the longer you listen to these speakers, the more they will appeal to you.

Probably the most serious weakness of the IC20 is the very high price tag. I suspect that some people will expect a \$5,000 pair of speakers to sound *strikingly* different from others; if so, they are doomed to disappointment. Nevertheless, the Allison IC20 is worth the price if you can afford it, and worth hearing even if you cannot. The experience will give you some idea of what qualities to look for in a speaker system, even if this one is beyond your means at the moment.

Circle 141 on reader service card



"... We did have some receivers with a slew rate of 60 volts per microsecond, but we sold the last one this morning."

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JOCK LEUNG

ONKYO TX-SV7M AUDIO/VIDEO RECEIVER

Julian Hirsch, Hirsch-Houck Laboratories

THE Onkyo TX-SV7M is the first audio/video receiver we have tested since 1982 (the now-discontinued Jensen AVC-1500) that includes a video tuner instead of just switching circuits for video sources. Along with the AM and FM bands, the digital-synthesis tuner section receives the audio portions of the VHF band (Channels 2 to 13), and there is an MTS/SAP decoder for stereo TV programs as well as the Separate Audio Programs transmitted by many TV stations.

The TX-SV7M also includes a decoder for Dolby Surround sound in its basic, passive form, and there is a HALL surround mode that uses the time-delay circuits of the Dolby system. Another enhancement mode, MATRIX, adds spaciousness to ster-

eo programs without using time delay. There is also a simulated-stereo circuit for mono programs and a dynamic bass expander to enhance low-bass reproduction by a boost centered at 70 Hz, the amount of boost being proportional to the level of the program's bass content.

The TX-SV7M provides four channels of amplification. The front-channel amplifiers, when used for normal stereo playback, are rated to deliver 100 watts per channel into 8 ohms from 20 to 20,000 Hz with no more than 0.04 percent total harmonic distortion. In a surround mode, their power rating is reduced to 90 watts per channel and the rear speakers are driven by a 20-watt-per-channel amplifier, which is rated at less than 0.08 percent distortion from 20 to 20,000 Hz. The

front and rear preamplifier outputs and main-amplifier inputs, brought to separate connectors on the rear apron, are normally joined by connecting links. By removing the links, external amplifiers or signal-processing accessories can be inserted into the signal path while retaining the receiver's full control capability and without sacrificing one of the tape-recording circuits.

The AM and FM bands are tuned in increments of 50 and 10 kHz, respectively. Each of the twelve preset memories can be assigned to one AM and one FM station; in the TV mode they are permanently assigned to the twelve VHF channels.

The front panel of the Onkyo TX-SV7M presents a clean, uncluttered appearance, with the large display window being its most prominent feature. A row of seven large push-buttons selects the program source: TAPE-2, TAPE-1, VCR-2, VCR-1/VDP, tuner, phono, and CD. Smaller buttons select the speaker outputs, FM/TV muting and mono/stereo mode, and loudness compensation. The large volume-control knob, with an

Prism Effect

What has prism effect, a refractive phenomenon, to do with audio equipment?

Nothing, except that it is the simplest analogy to describe what our sophisticated XM-3* Mobile Electronic Crossover does to audio signals.

When an ordinary ray of white light passes through a prism, it is systematically separated into the primary colors of the spectrum—optically much more aesthetic than the original light.

Similarly, when an audio signal enters the XM-3, the original signal is then separated, via various controls, to the front and/or rear tweeters, mid-ranges and sub-woofers, creating distinctive bands of the audio frequency spectrum that are space and user-specific.

Specially engineered features such as Front and Rear Pre-Amp Inputs and Front and Rear Outputs as well as a constant Sub-Woofer Output, Asymmetrical Electronic Crossover which has two high-pass (32-400 Hz variable)

crossover points for the front and rear outputs and a low-pass (32-400 Hz variable) crossover point for the sub-woofer output, Woofer/Enclosure Equalization engineered for optimizing bass response, Phase Inverter allowing the sub-woofer output to be shifted 180 degrees out-of-phase to compensate for in-vehicle acoustical abnormalities and Frequency Multiplier Switch which, by multiplying crossover points for the front channel, transforms the XM-3 from a **BI-AMP SYSTEM** to a **TRI-AMP SYSTEM**, etc., all contributed to create the **PRISM EFFECT** and make the XM-3 the most versatile electronic crossover ever manufactured for automotive use.

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illuminated red index pointer, is at the right along with three small, center-detented knobs for the bass and treble tone controls and the balance control. The front panel also contains a headphone jack.

A large rectangular section below the input-selector buttons hinges downward to form a sloping control panel with a number of less often used buttons, including the twelve preset selectors, the FM/AM/TV selector, and up/down tuning buttons for the radio bands, which combine manual and automatic-seek tuning functions. Four surround-mode buttons select Dolby, HALL, MATRIX, and bypass modes (BYPASS also silences the rear-channel speakers). Smaller buttons switch the delay time sequentially to 15, 20, or 30 milliseconds (the Dolby mode always comes on initially at 20 milliseconds), turn the dynamic bass enhancer on and off, and select the simulated-stereo mode. The ANTENNA button connects the tuner input to either the regular or cable antenna connectors in the rear of the receiver. The MTS button toggles between the main and subchannel programs of a stereo TV broadcast, and a TV FINE TUNING button, for use with CATV systems having non-standard channel frequencies, allows the regular tuning buttons to shift the frequencies of preset TV channels over a ± 2 -MHz range in 50-kHz steps.

The display window is exceptionally complete, showing the status of every operating mode or feature. A tuning-information section shows the status of all tuner functions, including the preset station number or the TV channel.

The receiver's rear apron has coaxial 75-ohm F connectors for an FM antenna, a TV antenna or cable-TV transmission line, and an output to the antenna input of an external TV receiver. There is also a coaxial output to a video monitor. The receiver includes a detachable, pivoted-loop AM antenna and terminals for an AM wire antenna. The signal connectors include record and play jacks for two audio tape decks and two VCR's (both audio and video circuits), inputs for a videodisc player and a CD player, and a phono input for a moving-magnet

cartridge. There are insulated binding posts for two sets of front speakers and one pair of rear speakers. Two of the three AC convenience outlets are switched.

Finally, the Onkyo TX-SV7M comes with a full-system remote control, befitting the receiver's status as a virtually complete A/V control center. The remote is considerably larger than the usual such unit, and its control panel is divided into two sections. The main portion, containing thirty-four buttons, is permanently programmed to duplicate most of the functions of the receiver's front-panel controls, including power switching and volume-control, as well as the controls of compatible Onkyo turntables and CD players. The remaining twenty-one buttons can be programmed by the user to memorize the remote-control commands for any make of TV set, cable box, and VCR.

The remote's audio-muting function (a 20-dB volume reduction) has no counterpart on the receiver itself. There is also a front/rear balance adjustment, critical to proper operation of a surround-sound system, that can *only* be made from the remote (the relative gain settings of front and rear channels are shown in the receiver's display window). Although the remote control is rather bulky for normal hand-held use, its infrared output is strong enough that, in moderate-size rooms, it can be placed on a table and need not be pointed directly at the receiver.

The Onkyo TX-SV7M is a fairly large and heavy receiver. It measures 18 $\frac{3}{8}$ inches wide (including its woodgrain side panels), 16 $\frac{7}{8}$ inches deep, and 5 $\frac{7}{8}$ inches high, and it weighs 31 pounds, 5 ounces. The remote control is 8 inches long, 4 inches wide, and 1 $\frac{1}{2}$ inches thick. Price: \$990 (including remote). Onkyo U.S.A. Corp., Dept. SR, 200 Williams Dr., Ramsey, NJ 07446.

Lab Tests

The FM tuner section of the TX-SV7M equaled or surpassed the manufacturer's ratings in all respects, within normal measurement tolerances. It had excellent sensitivity and distortion characteristics, with an 11.8-dBf usable sensitivity and typical distortion readings at a

65-dBf input level of about 0.1 and 0.15 percent in mono and stereo, respectively. The 1.1-dB capture ratio was also better than average, although the selectivity measurements (4.5 and 67 dB, respectively, for adjacent-channel and alternate-channel spacings) were average, and the 40-dB image rejection, which matched the published rating, was marginal for a receiver in this price range.

The frequency response was almost ruler-flat (+0.1, -0.3 dB) from 30 to 10,000 Hz, with a drop of just over 1 dB at 15,000 Hz. The channel separation was close to 50 dB at low to middle frequencies and better than 30 dB over almost the entire audio range. The signal-to-noise ratio was good, though not exceptional, measuring about 78 dB in mono and 72 to 75 dB in stereo (which required at least a 65-dBf input for full quieting). The AM frequency response was down 6 dB at 60 and 2,600 Hz.

The tone controls had good characteristics, although the available bass boost of about 21 dB at 20 to 30 Hz should be used with discretion in view of the receiver's considerable power capability. The loudness compensation boosted both low and high frequencies to a moderate degree (a maximum boost of 7 dB in the bass and 2.5 dB in the treble). The RIAA phono equalization was good, with a maximum error of ± 0.35 dB from 20 to 20,000 Hz. The phono input's termination was 46,000 ohms in parallel with only 56 picofarads of capacitance, and it overloaded at an input level of about 162 millivolts over the full audio range.

Although the TX-SV7M's power amplifiers are rated only for 8-ohm loads, a supplementary fact sheet from Onkyo indicates that the receiver can not only drive 4-ohm speakers but will not be damaged with two pairs of 4-ohm speakers operating at the same time. Its amplifiers and power supply are rather "robust," in the manufacturer's word, and are protected against excessive output current or overheating by a relay system. Our findings confirm those statements.

We preconditioned the receiver for 1 hour with each front channel

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- Parking Light Interface*
- Trunk Release Interface*

Dragon I Features:

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- Audible Status Signal with Defeat
- LED Status Indicator with Prior Attempt Indication
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- Multi-Sensor System
- Starter Bypass Relay
- Remote Panic Alarm
- Valet Parking Override
- External Antenna Connector



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*Optional relay(s) required.

†Patent pending.

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delivering 33 watts into 8 ohms and each rear channel operating at about 7 watts. No part of the cabinet exte-

rior became more than moderately warm to the touch. The front channels clipped at 120 watts (at 1,000

Hz) and the rear channels at 34 watts. We did not test the rear channels with less than 8 ohms, but the front channels delivered 175 watts per channel into 4 ohms. We also measured an impressive 200 watts into a 2-ohm load on one channel (the other had a 4-ohm load).

The amplifier distortion was unusually constant with frequency. At 100 watts into 8 ohms it measured about 0.02 percent from 20 to 6,000 Hz, rising to 0.046 percent at 20,000 Hz. At lower power levels the shape of the curve was similar but with lower readings (between 0.01 and 0.015 percent at 10 watts, for example). The rear channels, at their rated 20 watts, had very similar characteristics except for a rise above 4,000 Hz to a maximum of 0.15 percent at 20,000 Hz.

The 1,000-Hz distortion of the front channels reached 0.036 percent at the 120-watt clipping point into 8 ohms, 0.2 percent at 170 watts into 4 ohms, and 1 percent at 200 watts into 2 ohms. Based on the 90-watt surround-sound rating, the clipping headroom was 1.25 dB. In our dynamic power tests the front channels clipped at 156 watts into 8 ohms, 242 watts into 4 ohms, and 306 watts into 2 ohms. The dynamic headroom was 2.38 dB.

The slew factor of 3, reflecting the limited high-frequency power capability of the output transistors, was relatively low but still perfectly adequate. The waveform became triangular at about 60,000 Hz with a drive level of 100 watts into 8 ohms. Potentially more serious, the amplifier became unstable and oscillated at a high ultrasonic frequency (about 50,000 Hz) when it was loaded with a capacitance exceeding 0.035 microfarad. Although some speakers may present an appreciable capacitive load at certain frequencies, it is likely that most conventional (nonexotic) speakers will present a safe load to this receiver. We did not experience any problems with either the MB Quart 390 or the Allison IC20 speakers, both of which have rather uniform impedance characteristics. Some special high-capacitance speaker cables, or unusually long spans of ordinary speaker cable, should be avoided, however.

FEATURES

- Digital-synthesis tuner for AM, FM, and VHF TV (sound only)
- Preset station selectors for twelve AM, twelve FM, and all VHF channels
- MTS/SAP decoder
- Dolby Surround, HALL, and MATRIX surround-sound modes
- Selectable surround-mode time delays of 15, 20, or 30 milliseconds
- Four-channel amplifier; rated for 100 watts per channel in front-only stereo mode, 90 watts per channel front and 20 watts rear in surround mode
- Separate preamplifier outputs and main-amplifier inputs
- Inputs for CD, phono, two audio tape decks, and two VCR's or one VCR and one VDP
- Audio and video tape-copying facilities
- Video output to monitor
- Switchable antenna inputs for FM, TV, CATV
- TV antenna output to external TV receiver or VCR
- Bass and treble tone controls
- Switchable loudness compensation
- Dynamic bass expander
- Audio muting (remote only)
- Simulated stereo for mono programs
- Display of complete operating status
- Outputs for two pairs of front speakers, one pair of rear speakers
- Universal remote control for all receiver functions; can operate compatible Onkyo source components and memorize control codes for any brand of TV set, VCR, or cable box

LABORATORY MEASUREMENTS

- Tuner Section** (all figures for FM only except frequency response; measurements in microvolts, or μV , referred to 75-ohm antenna input)
 - Usable sensitivity** (mono): 11.8 dBf (1.05 μV)
 - 50-dB quieting sensitivity**: mono, 15.5 dBf (1.65 μV); stereo, 39 dBf (24.5 μV)
 - Signal-to-noise ratio at 65 dBf**: mono, 78.2 dB; stereo, 72 dB
 - Harmonic distortion** (THD + noise) at 65 dBf: mono, 0.09%; stereo, 0.14%
 - Capture ratio at 65 dBf**: 1.1 dB
 - AM rejection at 65 dBf**: 63 dB
 - Image rejection**: 40 dB
 - Selectivity**: alternate-channel, 67 dB; adjacent-channel, 4.5 dB
 - Stereo threshold**: 19 dBf (2.5 μV)
 - 19-kHz pilot-carrier leakage**: -62 dB
 - Hum**: -77 dB
 - Stereo channel separation at 100, 1,000, and 10,000 Hz**: 45, 47, and 30.5 dB
 - Frequency response**: FM, 30 to 15,000 Hz +0.3, -1.2 dB; AM, -6 dB at 60 and 2,600 Hz
- Amplifier Section**
 - 1,000-Hz output power at clipping**: front channels, 120 watts into 8 ohms, 175 watts into 4 ohms, 200 watts into 2 ohms; rear channels, 34 watts into 8 ohms
 - Clipping headroom** (relative to rated output, 8 ohms): front, 1.25 dB; rear, 2.3 dB
 - Dynamic power output** (front channels): 156 watts into 8 ohms, 242 watts into 4 ohms, 306 watts into 2 ohms
 - Dynamic headroom** (front channels, 8 ohms): 2.38 dB
 - Harmonic distortion** (THD + noise) at 1,000 Hz into 8 ohms: front, 0.053% at 1 watt, 0.0175% at 10 watts, 0.0165% at 100 watts; rear, 0.012% at 1 watt, 0.0139% at 10 watts, 0.021% at 20 watts
 - Maximum distortion** (20 to 20,000 Hz into 8 ohms): front, 0.05% at 50 watts (20,000 Hz); rear, 0.021% at 20 watts (20,000 Hz)
 - Sensitivity** (for a 1-watt output into 8 ohms): CD, 17.5 mV; phono, 1.84 mV
 - A-weighted noise** (referred to a 1-watt output): CD, -75.3 dB; phono, -73.6 dB
 - Phono-input overload**: 162 mV
 - Phono-input impedance**: 46,000 ohms in parallel with 56 pF
 - RIAA equalization error**: ± 0.35 dB from 20 to 20,000 Hz
 - Tone-control range**: 100 Hz, +11.5, -10 dB; 10,000 Hz, ± 10 dB
 - Slew factor**: 3
 - Stability**: Oscillated with 0.035 μF or greater capacitive load

Comments

Clearly, the Onkyo TX-SV7M is a potent receiver, not only because of its many features but because of its performance in general. Little of importance seems to have been sacrificed in either its design or its construction.

In particular, its ability to deliver a high current when needed is impressive. Although high-current capability is now a feature of a number of other receivers as well, Onkyo seems to have carried this design approach further than one would expect in a four-channel receiver from a mass-market manufacturer. We confess to some concern regarding the ability of the amplifiers in this receiver to deliver their full performance into difficult loads. Obviously, it passed our tests with a qualification: If instability with large capacitive loads is truly typical of the product, and not the result of some flaw in our test sample, some of the speakers that could benefit most from its large power reserves may be excluded from consideration. On the other hand, it is unlikely that the typical purchaser of an A/V receiver like the TX-SV7M would connect it to such a load.

The TX-SV7M had one other idiosyncrasy, which may also be a sample flaw: audible gear noise from the volume-control drive motor during remote operation. We heard a similar noise when balancing the front and rear channels; the control for this adjustment may use the same motor, though the front-panel volume knob does not turn during balancing.

The receiver's surround-sound modes worked well, although we did not have the opportunity to judge the Dolby Surround circuits with properly encoded material. And we must admit that stereo TV programs played through its tuner and MTS decoder sounded far better than what we are accustomed to hearing from TV receivers. Overall, the Onkyo TX-SV7M made a highly favorable impression. It does so much, so well, and with so little operating complexity that it should be considered by anyone in the market for an integrated audio/video receiver and control center. □



SHURE VST III PHONO CARTRIDGE

Julian Hirsch, Hirsch-Houck Laboratories

SHURE BROTHERS has introduced a new line of moving-magnet phono cartridges that brings the essential features and performance of the company's widely acclaimed V15 series to a more affordable price range. The VST (for V15 Series Technology) Special Edition Series consists of three models: the VST V, whose performance is equivalent to that of the top-ranking V15 Type V-MR; the VST III, which features Shure's distortion-reducing hyperelliptical stylus shape as well as the multipurpose Dynamic Stabilizer that is used in the V15 series; and, finally, the VST III-P, a P-mount version of the VST III that lacks the Dynamic Stabilizer.

Both the VST III and the VST III-P have Shure's Microwall/Be stylus shank, a telescoped thin-wall beryllium cantilever that combines high

rigidity with low effective tip mass, and Side-Guard stylus-protection system, which causes the stylus to move up and out of the groove if the cartridge is accidentally scraped across the record surface. And all the VST cartridges feature a fully encapsulated molded-plastic body that permanently locks in place the internal components (the coils and magnets).

The Dynamic Stabilizer, long a feature of Shure's audiophile-grade cartridges, looks like a small record-cleaning brush attached to the replaceable stylus assembly. Removing surface dust from a record, which it does very well, is perhaps the least of its benefits, however. The brush consists of a large number of microscopically fine synthetic fibers that can penetrate well into the groove. The fibers are also electrically conductive and are connect-

TEST REPORTS

ed to the system's ground through the cartridge terminals, enabling the Stabilizer to drain off the electrostatic charges that normally accumulate on a record as it is being played or when it is removed from its jacket.

In addition, the pivots of the Dynamic Stabilizer's brush assembly are viscous damped, which enables it to reduce the amplitude of the low-frequency resonance between the stylus-cantilever compliance and the total effective mass of the tonearm and cartridge. Ideally, this resonance occurs at about 10 Hz, where it is unlikely to interfere with record tracking. In a moderately massive tone arm, however, the resonance can be much lower, sometimes in the range of 5 to 7 Hz. An undamped resonance at those frequencies can exaggerate the effects of record warps, causing the tonearm to lose contact with the record and actually bounce into the air when playing a moderately warped record. Since virtually every vinyl record is warped to some degree, this can be a serious problem.

The damping afforded by the Dynamic Stabilizer makes a dramatic improvement in how well the cartridge tracks warped discs. Since the Stabilizer assembly can be swung up and locked out of position, away from the record, the actual tracking of a warped record can be compared with and without the Stabilizer in action. The viscous damping also provides added protection if the tonearm is dropped, since the brush will absorb much of the impact that might otherwise damage the stylus. And when the Stabilizer assembly is swung fully down, it becomes an excellent stylus guard.

The VST III has a rated frequency response of 20 to 20,000 Hz, with channel levels balanced within ± 2 dB, and an output of 3 millivolts at a recorded velocity of 5 centimeters per second (lateral), equivalent to 3.54 cm/s in one channel. Its channel separation is specified as 25 dB at 1,000 Hz and 13 dB at 10,000 Hz. The recommended stylus tracking force is 1.25 grams, but an added 0.5 gram is needed to compensate for the Dynamic Stabilizer if it is used. The Shure VST III comes with a small screwdriver for installation

adjustments and a stylus-cleaning brush. Price: \$100. Shure Brothers, Inc., Dept. SR, 222 Hartrey Ave., Evanston, IL 60202-3696.

Lab Tests

We installed the Shure VST III in the tonearm of a JVC QL-F6 record player. The QL-F6's arm mass of about 16 grams is a typical one, and it is compatible with cartridges having a moderate compliance. The recommended cartridge load is 47,000 ohms in parallel with a capacitance of 200 to 300 picofarads (pF). We used a termination of 47,000 ohms and 300 pF. We used the Dynamic Stabilizer throughout our tests, so we set the tracking force to 1.75 grams.

Several different test records were used to measure frequency response and channel separation. As usual, there were considerable differences between the channel-separation curves we obtained, although the frequency-response curves were very similar. The best frequency-response curves were obtained with the new CBS CTC 300 test record. The response curves from the two channels matched almost perfectly from 20 to 20,000 Hz. The overall variation was less than 1 dB up to 17,500 Hz, and the output was down 2 dB at 20,000 Hz. The average channel separation was 26 dB from about 300 to 2,500 Hz, 22 dB at 10,000 Hz, and 12 dB at 20,000 Hz. The Bruel & Kjaer QR-2009 test record gave a generally similar frequency response. The channel separation with the QR-2009 measured about 28 dB through the midrange and was still a strong 25 dB at 15,000 Hz.

The 1,000-Hz cartridge output was 2.65 millivolts (mV) at a 3.54-cm/s velocity, with the channel levels matched to within 0.1 dB. Vertical tracking angle measured 20 degrees, the industry standard. The tracking ability of the VST III—which Shure calls “trackability”—was very good, though not quite the equal of the V15 Type V-MR, whose trackability is probably the highest available from any cartridge. The VST III was able to play the 80-micrometer amplitude level of the 315-Hz test tones on the DIN 45549 test record. It also had no

problems with the high-level 32-Hz tones of the Cook Series 60 record and the 30-cm/s 1,000-Hz tones of the Fairchild 101 record.

The output of the VST III from the 1,000-Hz square waves on the CBS CTC 310 distortion test record was as close to perfect as we have seen from any cartridge, with only a single small overshoot on its flat top. Third-order intermodulation distortion, also measured with the CTC 310 record, varied from 5 percent at 0 dB to 20 percent at +12 dB, performance that ranks with the best of the five leading cartridges we tested for the January issue.

Comments

In listening tests, the Shure VST III lived up to the promise of its measurements. Its flat frequency response, freedom from resonant peaks in the audible frequency range, and excellent trackability gave it the same effortless, silky sound and quiet background that have characterized the V15 Type V-MR and other top-ranking Shure cartridges for some years.

When playing a good, quiet pressing, this cartridge made it clear that the phonograph record is far from obsolete as a means of storing music for high-quality home reproduction. Judging from the almost daily announcements of new CD players and the infrequent appearance of new turntables or cartridges, one might think that LP's and the components needed to play them are passé, like consumer-model open-reel tape decks.

Without getting involved in the CD-vs.-LP controversy, I think that the untold millions of existing LP's justify—and actually require—the inclusion of phono equipment in any reasonably complete music system. For most people, however, the considerable investment for a premium-grade cartridge may not be warranted, and Shure's VST series appears to offer a highly cost-effective alternative. Not only is the VST III arguably the finest-performing cartridge available at its price, but it would be difficult to find another cartridge that could *significantly* outperform it even for several times that price.

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MB QUART 390 SPEAKER

Julian Hirsch, Hirsch-Houck Laboratories

THE West German company MB Quart may be a new name to American audiophiles, but it has been in business for more than twenty years (formerly under the name Peerless MB) making microphones, headphones, and speaker drivers. The company's drivers are still used by many well-known speaker manufacturers in Europe and North America, and its own line of MB Quart systems are among the best-selling speakers in Germany. Unlike most other loudspeaker companies, which purchase many of their drivers and other components from outside sources, MB Quart fabricates "in house" more than 80 percent of the parts going into its speakers.

All MB Quart speakers use infinite-baffle (sealed-enclosure) woofers and 1-inch titanium-dome tweeters. Titanium is extremely rigid and light, making it an ideal material for a tweeter dome. The woofers have butyl-rubber suspensions and ceramic magnets, and the cones are aged and processed so that

they too are low in mass and highly rigid. The crossover networks use close-tolerance air-core inductors and high-quality capacitors. The cabinets are made of 7/8-inch-thick, multilayer, compressed-wood panels, with solid-wood corners and edges. The front panels are flocked with a special material whose fibers are electrostatically aligned at right angles to the panel's surface in order to minimize diffraction effects that could affect the speaker's radiation pattern.

The MB Quart 390 is a three-way bookshelf system that measures about 20½ inches high, 12¼ inches wide, and 11¾ inches deep and weighs 28 pounds. It features a 10-inch woofer, which crosses over at 400 Hz, with an 18-dB-per-octave slope, to a 4-inch midrange driver. The soft-dome midrange is constructed much like the woofer, with a compliant butyl-rubber suspension, and it is acoustically isolated from the woofer. The 12-dB-per-octave crossover to the ferrofluid-cooled tweeter is at 1,800 Hz.

The woofer is located at the bottom of the speaker panel. The two higher-frequency drivers are vertically aligned above it, slightly to the left of the center line. All the drivers are mounted flush with the panel, and the removable black cloth grille is retained by plastic snaps. The binding-post terminals, recessed into the rear of the cabinet, accept bare wires or single banana plugs, but their ⅛-inch spacing prevents the use of standard dual banana plugs (which have ¾-inch centers). There are no external balance adjustments.

According to the manufacturer, the Model 390 can handle up to 130 watts of continuous sine-wave input, and a minimum amplifier rating of 35 watts per channel is recommended. The system's rated frequency response is 40 to 32,000 Hz (no tolerance specified). Its nominal impedance is 4 ohms, and the rated sensitivity is 87 dB sound-pressure level (SPL) at 1 meter with an input of 1 watt.

The standard cabinet finish for the MB Quart 390 is matte gray, white, or black lacquer. Special-order finishes include pine, mahogany, rosewood, and cherry veneers, high-gloss white or black lacquer, and a high-gloss walnut. The speakers carry a five-year limited warranty. Price: \$849 a pair with a standard finish. MB Quart Electronics U.S.A., Inc., Dept. SR, 25 Walpole Park S., Walpole, MA 02081.

Lab Tests

Although the MB Quart 390 can be installed on a shelf, we found it more convenient to place the speakers on 16½-inch stands, which put the tweeters about 35 inches from the floor, close to a seated listener's ear level. The speakers were about 7 feet apart and 2 feet in front of a wall.

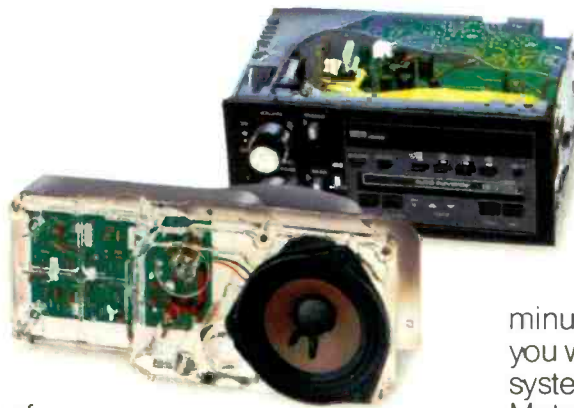
The room-response curve was notable for its smoothness and general freedom from major peaks and dips caused by boundary reflections. There was a plateau from 70 to 500 Hz and a moderate dip and rise in the 500- to 1,400-Hz range; the curve was extraordinarily smooth from 1,500 to 20,000 Hz, varying only ±2 dB. The output level in the upper part of the fre-



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quency range was about 5 dB lower than the average level in the bass/midrange plateau.

The close-miked woofer response peaked at 90 to 100 Hz, falling off at 12 dB per octave at lower frequencies and at about 5 dB per octave from 100 to 350 Hz, where the midrange crossover took effect and the slope became much steeper. The best splice of the woofer response to the room response resulted in a composite frequency response that was very similar to the room curve but with a better-defined bass range below 60 or 70 Hz. The output at 40 Hz, the lower limit of the speaker's specified frequency response, was about 10 dB below the average midrange level.

The speaker's quasi-anechoic frequency response, measured with our FFT analyzer, confirmed the general characteristics of the other measurements and also established that the titanium-dome tweeter had an extraordinarily flat and extended high-frequency response. The output variation on-axis from 14,000 to 27,000 Hz (our upper measurement limit) was only ± 1.5 dB, and the system response from 180 to 27,000 Hz was flat within ± 3 dB. The horizontal dispersion was very good; a significant difference between the frequency response on-axis and at 45 degrees off-axis became apparent only above 10,000 Hz. The system's excellent phase response was demonstrated by its overall group-delay variations of 0.2 millisecond from 3,500 to 22,000 Hz and 0.6 millisecond from 350 to 3,500 Hz.

The system's sensitivity measured 88 dB SPL at 1 meter with a 2.83-volt input of pink noise. Although the impedance averaged 6 to 9 ohms over most of the range from 400 to 20,000 Hz, its minimum was only 2.9 ohms at 125 Hz, and the maximum was 10 ohms at 60 Hz (the system's resonance frequency). The bass distortion with a drive level of 3.5 volts, corresponding to a 90-dB SPL, was just under 1 percent from 100 to 80 Hz, rising to 3.5 percent at 60 Hz and 6.6 percent at 50 Hz. Pulse power-handling tests showed that from 100 Hz upward, the Model 390 could absorb anything we could put into it. The

amplifier clipped before the acoustic-output waveform from the speaker was visibly or audibly distorted. The power level at clipping ranged from 1,100 watts at 10,000 Hz to 1,455 watts at 100 Hz. The fact that even such a huge input did not

The MB Quart 390's sound had a distinct forwardness and a clean, crisp top end that was always a pleasure to listen to. There was no accentuation of hiss and not a hint of shrillness.

drive the woofer to the limits of its suspension travel testifies to the high quality of its design and construction.

Comments

Following our usual practice, we listened to the MB Quart 390 speakers for some time before making any measurements. From the start, it was evident that these were truly excellent speakers, with a smooth, seamless overall frequency balance and a believable sound stage. The sound had a distinct forwardness and a clean, crisp top end that was always a pleasure to listen to. It was clear that the strong highs we heard

did not result from a response peak, since there was no accentuation of background hiss and not a hint of shrillness.

The speaker's bass was deceptively strong at first. There was certainly no lack of subjective bass output, and the overall balance of the sound was always superb regardless of the program content. But comparisons with other speakers having a deep and powerful bass response made it apparent that reproducing the lowest bass registers is not the strong point of the MB Quart 390. It did a creditable job down to 50 Hz or so, but the distortion rose rapidly at lower frequencies as its output fell off at 12 dB per octave. To a considerable degree, the subjective sensation of a satisfying deep-bass response can be explained by the fact that the distortion was almost purely third harmonic, which is not only relatively inoffensive at low frequencies but can also give a feeling of more true bass than is really present in the music.

Overall, we found the MB Quart 390 to be a better than average speaker in its size and price range. Although we did not see any of the special cabinet finishes (our test units were in standard matte black), they should make these speakers suitable for use in a wide variety of rooms. MB Quart has made an auspicious entry into the U.S. market. **Circle 143 on reader service card**



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Q. WHAT IS DAT?

A. DAT, short for Digital Audio Tape, is one of the most significant achievements in recent magnetic recording history, representing the collective engineering of the world's leading audio hardware and tape manufacturers. In a sophisticated ultra-compact cassette (about half the size of the analog audio cassette) DAT provides up to 2 hours (4 hours in EP mode) of uninterrupted digital recording with specs that equal the performance characteristics of professional studio digital recorders.

Q. DOES THE DAT SYSTEM MEAN I'M LIMITED TO RECORDING DIGITAL SOURCES?

A. Not at all. There is a significant improvement in sound reproduction when recording from your analog library of LPs and tapes. However, DAT's sophisticated recording technology will be fully realized when using today's highest quality digital sources.

Q. HOW GOOD IS DAT?

A. You'll have to hear DAT to believe how good the sound can be. The quality is comparable to Compact Discs. Frequency response is flat from 2 to 22,000Hz. Dynamic range is an incredible 96dB over the entire audio band. Hiss and modulation noise, wow and flutter, and distortion are essentially nonexistent. That means whatever you record suffers virtually no degradation in signal quality when played back. In addition, its unique transport system allows extremely fast track-to-track scanning and rewind time.

Q. HOW CAN DAT DO IT ALL IN SUCH A SMALL PACKAGE?

A. Achieving the required recording density of 3 million bits per second using a tape only 3.81mm wide is no easy feat. The tape is withdrawn from the cassette housing and threaded around a rotating head drum—a technique similar to that used in VCRs. Typical DAT mechanisms use a 30mm diameter drum rotating at 2,000 RPM with the tape contacting a quarter of its circumference. The tracks laid down by the rotating heads are narrower than the width of a human hair!

Q. WHAT HAPPENS IF A TAPE DROPOUT OCCURS?

A. In addition to extremely tight cassette and deck mechanism tolerances, DAT relies on a highly sophisticated error correction system. Most data losses which might be encountered are reconstructed by the built-in hardware circuitry.

Q. DOES THIS MEAN I DON'T HAVE TO WORRY ABOUT THE QUALITY OF TAPE I USE?

A. To the contrary. As with any other recording system—audio, video, or data—using inferior magnetic media is just asking for trouble. For over a decade, TDK has pioneered the development of metal particle technology, Super Finavinx, which has become an IEC standard for Type IV audio cassettes. In addition, TDK's experience with precision cassette mechanisms and shell construction helped accelerate the development of the DAT system. So, instead of depending on your DAT hardware's correction circuitry, **you can count on the dependability and reliability of TDK's DAT cassettes.**



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Q. WHAT IS SUPER VHS?

A. Super VHS, or S-VHS for short, is the latest generation of VHS. With 425 lines of horizontal resolution (nearly double the 240-line capability of standard VHS) it delivers dramatic improvements in color and clarity.

Q. IS SUPER VHS COMPATIBLE WITH STANDARD VHS?

A. Yes and no. Because Super VHS uses a higher frequency band to record the video signals, Super VHS recordings made on the new VCRs cannot be played on conventional VHS VCRs. Conventional VHS tapes, however, can be recorded, played, and freely interchanged between Super VHS and conventional VHS equipment.



Q. WHAT DO I NEED TO ENJOY THE FULL BENEFIT OF SUPER VHS?

A. You'll need a Super VHS VCR, a high-quality video monitor preferably equipped with an S-Video (or Y/C) connector, and, for live taping, a Super VHS camcorder. You'll, of course, also need a supply of Super VHS cassettes.

Q. CAN I GET THE SAME RESULTS WITH MY CONVENTIONAL TV?

A. You can use Super VHS VCRs with conventional TVs and camcorders that don't have S-Video connectors, but the resolution will be limited to the specifications of the TV or camcorder.

Q. WHAT IS S-VIDEO, AND WHY IS IT IMPORTANT?

A. S-Video is one of the ways Super VHS achieves its superior performance. S-Video cables and connectors separate the luminance and chrominance components of the video signal, which are normally combined in conventional video connections. This eliminates interference (noise) and provides cleaner, truer color pictures and greater audio fidelity.

Q. WILL I NOTICE A DIFFERENCE IN PICTURE QUALITY WHEN I USE SUPER VHS TO TAPE BROADCASTS?

A. Yes. The incoming TV broadcast signal is higher in horizontal resolution (336 lines) than conventional VHS recording. The difference you see will, of course, depend on the resolution ability of your television set or monitor. You'll see the greatest improvement when taping "live" with a Super VHS camera or camcorder because this equipment takes full advantage of Super VHS's 425-line resolution capability.

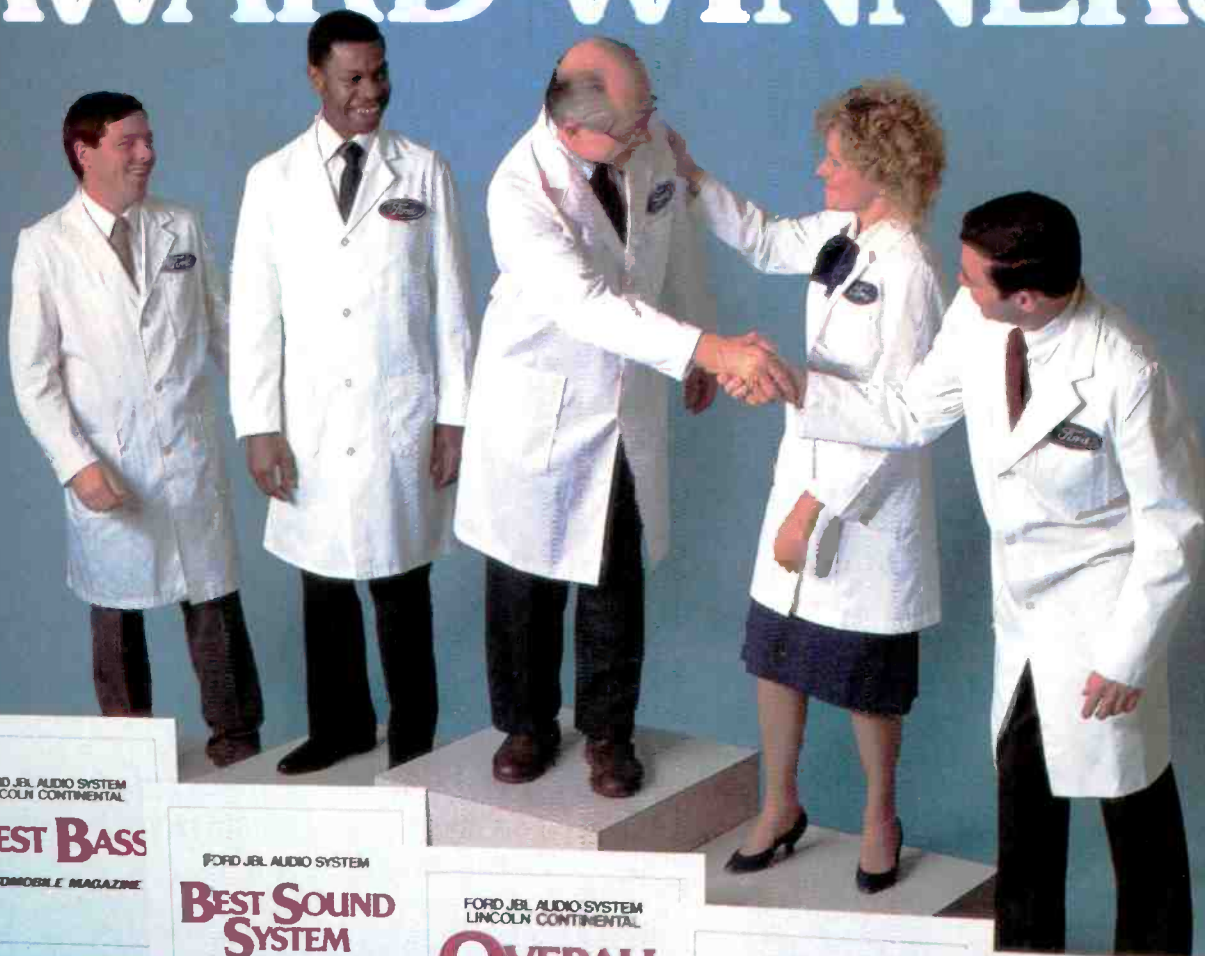
Q. WHY DO I HAVE TO USE SUPER VHS CASSETTES IN ORDER TO MAKE SUPER VHS RECORDINGS?

A. Super VHS video tape must meet short wavelength recording requirements: high output, high frequency response, and an extremely smooth tape surface, just to name a few. TDK Super VHS XP, available in VHS and VHS-C formats, utilizes an ultra-fine Super Avilyn formulation possessing all the magnetic and physical properties needed for high-quality Super VHS recording. For professional-quality performance, reliability, and durability, you need look no further than TDK XP.

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AUTOMOBILE MAGAZINE

The critics have spoken. They've praised Ford Audio Systems for superb performance and exacting quality. And they've honored them with impressive awards.

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Automobile Magazine

"...more expensive than concert tickets and probably better."

Playboy

"...the Ford JBL system gives the best value of the three." (in a comparison with the Delco/Bose and Chrysler/Infinity systems)

Popular Mechanics

Also earning recognition was the Ford Premium Sound System in the Ford Taurus and Mercury Sable:

"Its purely technical performance is among the best. The premium sound system's modest price buys a tremendous jump in performance."

Automobile Magazine

There's good reason for the high marks given to Ford Audio Systems. Each system is designed and engineered for the specific acoustic requirements of Ford, Mercury and Lincoln vehicles, giving you true custom-tailored performance.

Ford Audio Systems — the sound of quality in every car we make.



AUDIO SYSTEMS

HEAD OF THE CLASS



Ford was the first major car manufacturer to announce its intention of offering DAT players as an option for 1988 luxury cars. The estimated option price for Ford's Sony-designed player is \$1,200.

by
**MICHAEL
SMOLEN**

New technology tends to appear rapidly in high-end home audio products, but significant improvements in automotive stereo equipment have traditionally lagged far behind. In fact, the phrase "high-end car audio" has until recently been viewed as a contradiction in terms. But now bucket-seat disc-jockeys have finally gotten the edge on the armchair variety. You can actually buy a digital audio tape (DAT) player for your car, though you can't get one for your listening room yet. Both Clarion and Kenwood are selling car DAT players through authorized dealers, and Ford and GM plan to offer DAT systems for their top-drawer cars. And for those speed demons who enjoy the flexibility of home CD changers, Alpine, Pioneer, Sony, and Technics all sell sophisticated configurations of multidisc car CD players. If you're sticking with analog cassettes as the format of choice, Nakamichi, Concord, Harman Kardon, and Soundstream, to name just a few, make head units that are beginning to rival high-quality home decks. And if you'd rather let someone else be your DJ, advanced tuner circuitry such as diversity tuning and Schotz front ends will keep you happy.

I'm waiting for the car DAT changer.

The products shown here represent the head of the class in high-end car audio design. So get out your checkbooks, roll down the window, and hit the gas.

The Fujitsu Ten ECD-100 is part of the company's new Eclipse series of high-end car products. The CD tuner features a three-beam laser, digital filtering, and random-access programming. Price: \$1,375.



The CR-151 is Harman Kardon's first cassette receiver. It utilizes the same heads as H/K's home decks, and the autoreverse mechanism has a dual azimuth adjustment system. Frequency response for the tape section is rated as 20 to 18,000 Hz \pm 3 dB with any tape. Price: \$599.



Soundstream's TC 308 cassette tuner has become a favorite among high-quality head units. It offers Dolby B and Dolby C noise reduction, Scholz FM circuitry, sendust tape heads, an anti-theft chassis, a tuner-monitor option during fast tape winding, and an adjustable CD input. Frequency response is rated as 30 to 18,000 Hz \pm 3 dB. Price \$640.



Kenwood's KDT-99R AM/FM tuner and DAT player manages to fit an impressive number of features into a tiny package without any sacrifice in performance. Most of the pushbuttons on the clean control panel perform dual functions depending on the source being used. Price: \$2,000.



Sony's trunk-mounted CDX-A20 ten-disc CD changer (center, \$750) can be teamed with a variety of components and head units to offer the driver every possible program source. The XR-7300 cassette receiver (right, \$700) offers such worthwhile amenities as a dynamic-range compressor, X-tal Lock quartz-PLL tuning, adjustable azimuth control, and dual amplifier outputs. The system can also be controlled by a hand-held remote (\$230).



Special alarm circuitry is a welcome feature of Sansui's RE-7 autoreverse cassette receiver, which also offers a seven-band graphic equalizer/spectrum analyzer and three banks of six presets. The amp delivers 16 watts per channel into 4 ohms. Price: \$950.



Denon's DCD-8920 CD tuner features a super-linear D/A converter, thermal shut-down circuitry, and a built-in DC-to-DC converter to maintain a steady current supply. It also has a front-panel input for a separate cassette player. Price: \$900.



Yamaha's YCDT-1000 CD tuner has a protective cartridge-loading system, a floating suspension, shock-sensor circuitry, a continuously variable loudness control, and a four-channel preamplifier output with a front and rear fader. Price: \$699.



Nakamichi's TD-1200II is the cassette tuner of choice for many professional auto installations. Frequency response is rated as 20 to 22,000 Hz \pm 3 dB, and with Dolby C the signal-to-noise ratio is 70 dB. A microprocessor-controlled tape transport is at the heart of the system. Price: \$1,450.

One of the slickest features of Pioneer's KEX-M700/CDX-M100 system—which includes an autoreverse cassette player, a ten-disc CD changer, and an AM/FM tuner—is a tiny wireless remote control for many of the most often used tape and CD functions. System price: \$1,300.





If you want a complete, high-quality system but are on a budget, just add a pair of speakers to Sanyo's FT-5000 CD tuner. It comes with a separate 60-watt, four-channel amplifier and features twenty-track random-access programming and an isolated suspension. Price: \$600.



Now on sale in Japan, the Technics CQ-DT10 DAT player comes with a built-in AM/FM tuner, random-access programming of up to eight tape selections, and front and rear preamplifier outputs. Frequency response is rated as 15 to 22,000 Hz ± 0.05 dB for the tape section, with a signal-to-noise ratio greater than 90 dB.



Blaupunkt's Berlin is an advanced cassette tuner with a programmable security system, 16-bit/32K microprocessor control, and a future-oriented data-bus linking system. Its Codem III diversity tuner can automatically preset the sixteen best radio signals. Price: \$1,500.

DRIVERS

SENSATIONAL



Selecting the right speakers for you and your car ● by Ian G. Masters

BOPPING along the freeway surrounded by your favorite music is one of audio's most satisfying experiences. Traffic snarl ahead? Not to worry. Insane drivers all around you? No problem. You've got your Dvořák or Dire Straits to keep you company. Too often, though, it sounds more like *Bert Dvořák* or *Dire Stress*.

At its best, car stereo equipment has begun to rival its home equivalent in performance, but the interior of an automobile is a very difficult environment in which to reproduce sound. Cars are designed for just about everything but that, so finding the components able to overcome what-

ever sonic liabilities your particular vehicle has can be a time-consuming project. Fortunately, the options are many, as the audio companies offer an enormous selection of stereo equipment designed to meet virtually any automotive installation requirement you might have. The trick is in finding the components that are right for you and your car.

As with any audio system, the speakers you choose will have a decisive effect on the sound quality you end up with. The other components are very important, of course, but the speakers have the last word—unless they work well, even the best electronics will sound awful.

Altec Lansing's ALS-62 (above) is a two-way speaker featuring a 6½-inch carbon-fiber-cloth woofer, a 0.55-inch polyimide-dome midrange/tweeter, and a 13.7-ounce magnet. Suggested retail price is \$150 a pair.



The Phase Linear PL 2460 (left) is a 4 x 6-inch two-way dashboard replacement speaker with a graphite woofer mounted next to a polycarbonate-dome tweeter. Price: \$100 a pair.

Before you even begin to consider the audio performance of a pair of speakers, however, you will have to take some physical matters into account. Unlike a home listening room, a vehicle is likely to have very limited possibilities for speaker placement, so your choices will have to be restricted to what can actually be installed in your car. The more elaborate the system you contemplate, the more difficult this becomes, but the audio manufacturers have recognized this and make speakers in a wide variety of configurations, many of them designed to fit in the most cramped and awkward corners.

A few measurements of your car's doors, dashboard, trunk, rear deck, and so forth will give you some idea of what you can and can't accommodate. A qualified autosound installer will be able to help you, and he may recommend appropriate equipment, but bear in mind that any installer who goes to this trouble will naturally expect to sell you your final system; you may not be willing at that stage to restrict your choices to what any one retailer has to offer.

The simplest sort of auto speaker is a full-range device that fits into a cutout in the rear deck of a car. Most of today's cars already have such openings, which are usually accessible by making a hole of appropriate size in the surface material used to finish the deck. These factory cutouts can be very convenient, but their size and shape are by no means standardized, so you will either have to limit your choices to speakers that fit the existing openings or make new ones of the correct size and shape for the speakers you buy.

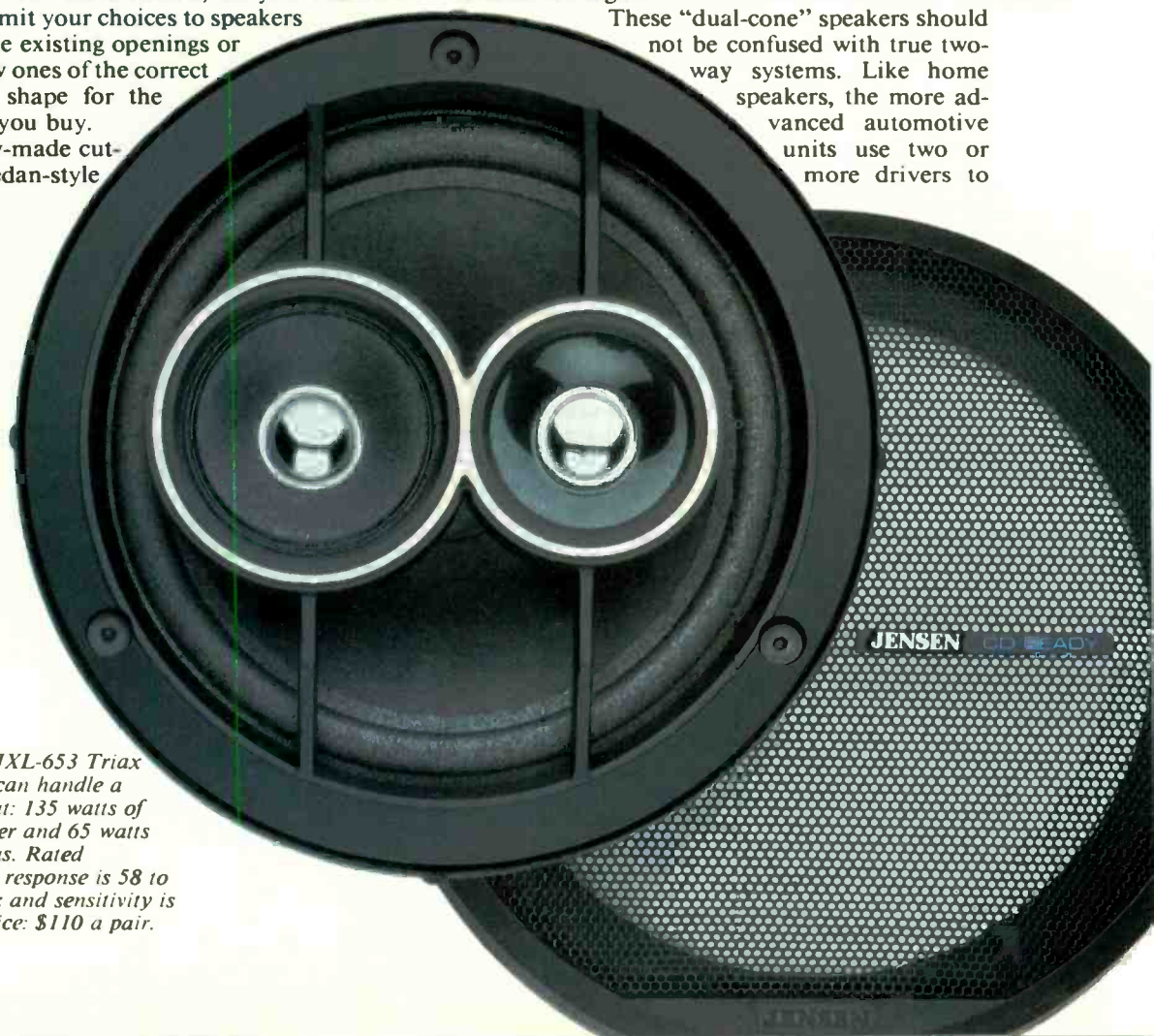
Factory-made cutouts in sedan-style

cars not only simplify speaker mounting, but also help bass performance by using the trunk as a large speaker enclosure. This isn't possible in most hatchbacks or vans, so specially designed speakers with their own enclosures must be used for these vehicles. A number of manufacturers also produce add-on boxes that can be used with virtually any car speakers. The main drawback of these enclosures is their size, which makes them appropriate for larger vehicles but rules them out for cars with limited space.

Smaller, self-contained units are usually referred to as "surface-mount" speakers to distinguish them from the "flush-mount" speakers that are recessed into a rear deck or a door. Typically, surface-mount devices are small boxes that are affixed to convenient spots within a vehicle by means of supplied brackets. In spite of their diminutive size, surface-mount systems often produce surprisingly robust bass, although most of them require considerable amplifier power if they are to live up to their potential.

Both surface-mount and flush-mount speakers are available at a number of different levels of technical sophistication. The simplest are single-cone full-range speakers, which are most economical and *can* boast good sound, although they tend to be weak at the highest frequencies. Some manufacturers compensate for this weakness by including a second, concentric cone to handle the highs.

These "dual-cone" speakers should not be confused with true two-way systems. Like home speakers, the more advanced automotive units use two or more drivers to



Jensen's JXL-653 Triax speakers can handle a huge input: 135 watts of peak power and 65 watts continuous. Rated frequency response is 58 to 23,000 Hz and sensitivity is 91 db. Price: \$110 a pair.



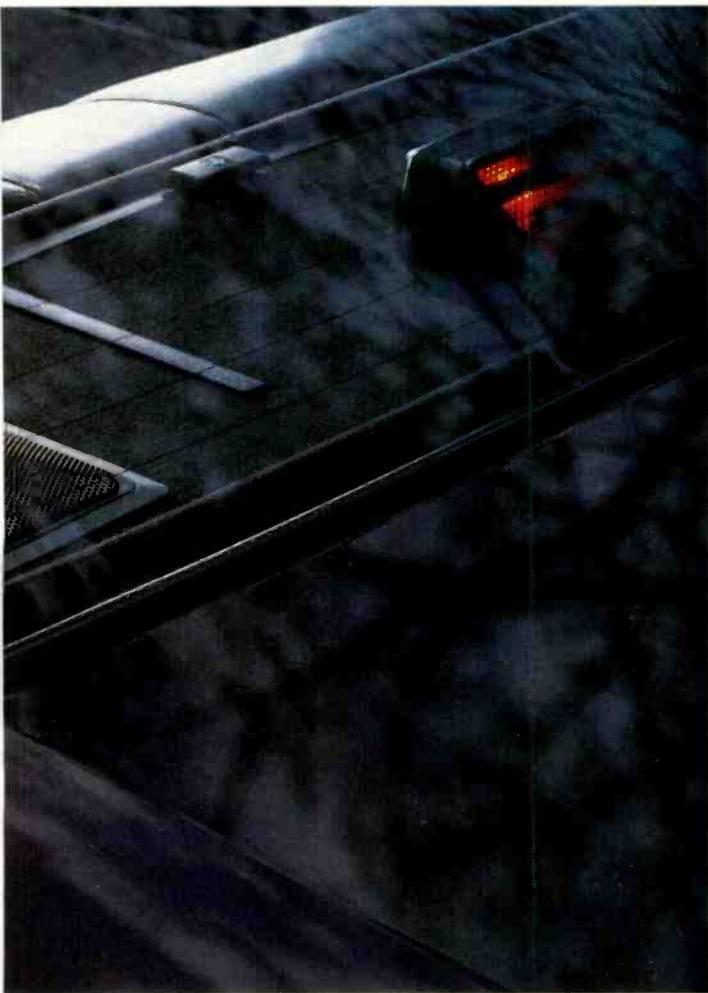
The Model 757 "uniaxial" speaker from Boston Acoustics combines a 5¼-inch long-throw woofer and a ¾-inch wide-dispersion tweeter. Frequency response is 58 to 20,000 Hz \pm 4 dB. Both drivers use weatherproof copolymer diaphragms. Price: \$119.95 a pair.

handle different parts of the audio spectrum, incorporating a crossover network to route the signals to the appropriate drivers. Two-way and three-way car speakers are common, and they generally offer the same advantages as their domestic equivalents. Most multidriver surface-mount speakers are arranged like home speakers, with the various drivers placed side by side on the front panel. Some flush-mount speakers are built the same way, but the majority of two-way models have the tweeter mounted on the axis of the woofer and fit into the cutouts designed primarily for full-range systems. Such speakers are called "coaxial"; three-way versions usually have the tweeter and midrange mounted side by side in front of the woofer, but they are called "triaxial" nonetheless. Whatever configuration is used, however, two- and three-way speakers can offer close to home-style performance even within the constraints presented by a typical automotive interior.

A popular alternative is separately mounted speakers to handle the various parts of the audio spectrum. Separate mounting allows each driver to be positioned optimally to handle its frequency range—for instance, woofers in the rear deck, midranges in the door panels, and tweeters closer to the front seats for better imaging. Such an arrangement will require a crossover network, either the passive sort often supplied with kits of matched speakers or an outboard active type. An active crossover will allow you to tailor the sound to your particular vehicle by mixing and matching speakers from different manufacturers,



State-of-the-art performance is delivered by the a/d/s/ 300i, a two-way speaker housing a 5¼-inch Stifflite woofer and a 1-inch woven soft-dome tweeter. It also features a three-way tweeter level control and a tweeter fuse. Power-handling range is 5 to 100 watts. Price: \$310 a pair.



Rockford Fosgate's teardrop-shape speaker pods are available in both 4-ohm (SAT 44) and 8-ohm (SAT 88) models. The enclosure is angled to allow for a variety of installations, and the cases are made of high-impact, injection-molded plastic. The TX-124 crossover used in both models is claimed to yield a flat response from 300 to 20,000 Hz. Price: \$270 a pair.

if you wish, or by bi-amplifying your system. Bi-amplification may be the best solution in difficult situations, but it is an expensive one, as it often requires separate amplification for each individual driver.

A specialized variant on the separate-speaker theme is the inclusion of a subwoofer for truly thunderous bass. Some subwoofers can be driven by your main amplifier, but the amount of power required for a strong bass output usually makes a separate amplifier for the subwoofer a sensible addition to any system.

Even if you are not interested in hearing the lowest organ notes as you travel the highway, multiple speakers may be an attractive option. Many systems feed a full-range signal to separate sets of speakers in the front and rear of the car, both to provide decent sound to all passengers and also to obtain the benefits of good imaging from the front speakers and reasonable bass from the rear. In such installations, the requirements for each set differ, but their combined virtues can add up to fine-sounding audio at fairly low cost.

In most cars, the front speakers will have to be mounted in the doors, which makes achieving good low-frequency response almost impossible. The closeness of these speakers to the main listeners, however, makes them well suited to handle the highs and the midrange—the most important part of the spectrum for spatial and directional information—particularly if they are angled upward toward the front-seat passenger and the driver rather than directing the sound to their knees. Because the rear speakers will be more

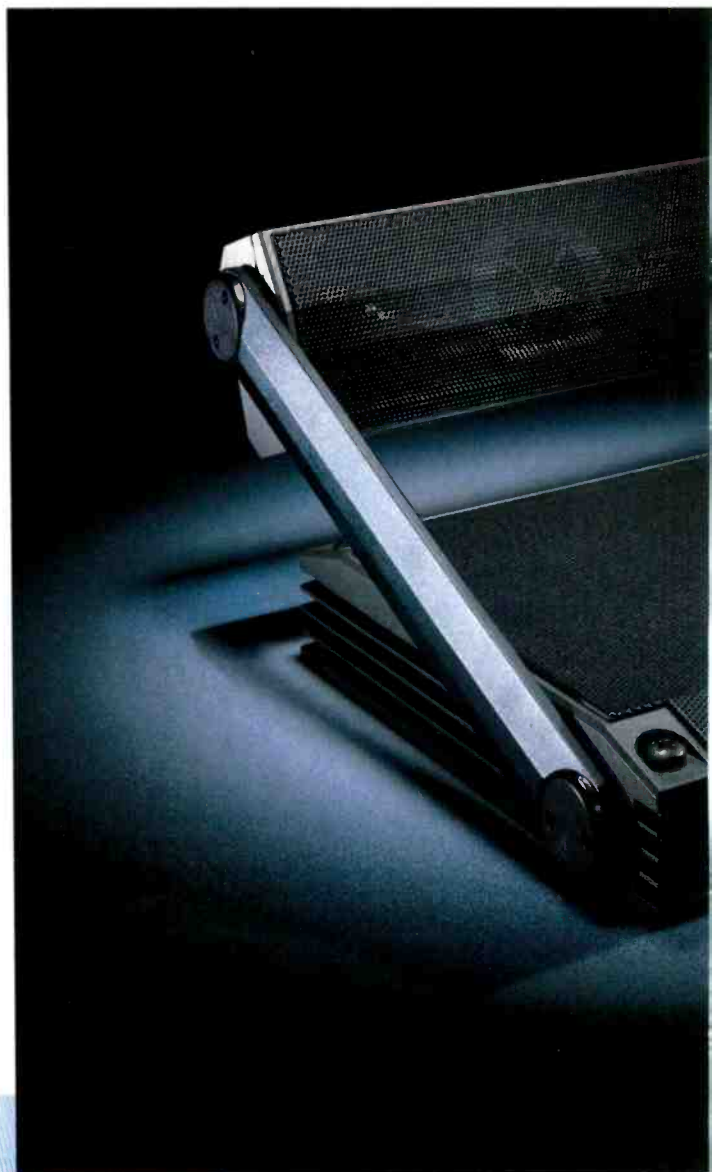


bass-oriented, full-range speakers may be appropriate for that location.

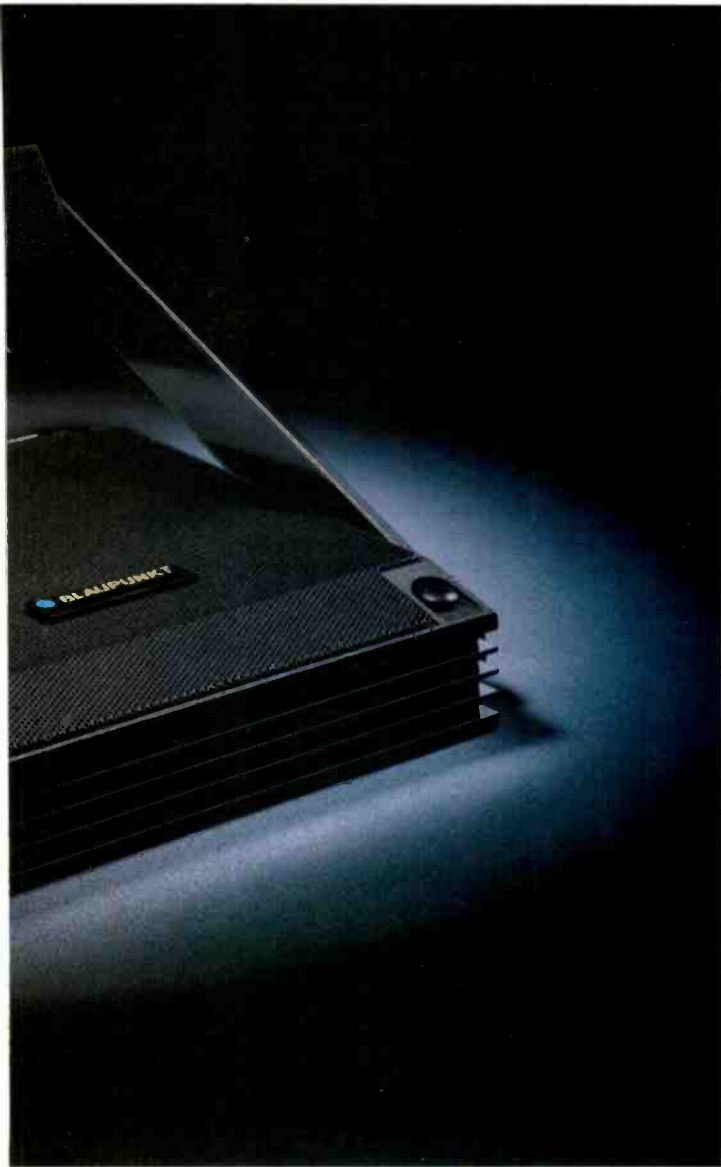
Bear in mind when selecting speakers that the arrangement you choose places some fairly specific demands on the electronics you use to drive them. If you are starting from scratch, you should select your amplifier or amplifiers to match the speakers you have selected, but if you are upgrading an existing car stereo system and are not willing to replace your head unit or amplifier, the speakers should be chosen with the capabilities of the electronics in mind. High sensitivity will be an important consideration if your amplifier is relatively low powered, and this may limit your choice to flush-mount speakers. If you have large reserves of power, on the other hand, your range of possible speakers will be much wider.

Be aware as well of your amplifier's ability to tolerate very low-impedance loads. Car speakers are typically rated at a low 4 ohms; using more than one pair can easily drop this to 2 ohms or less at some frequencies, and amplifiers vary widely in their ability to handle such low impedances. Your amplifier's owner's manual should tell you what you can and can't do; if not, ask the dealer from whom you bought it.

Once you have a basic idea of what the specific requirements and limitations are, it's time to shop for a retailer to sell it to you. Only the bravest audiophile will want to attempt installing a sophisticated car system, and very few dealers will install a system they have not sold, so you should keep in mind two things in choosing a dealer: the selection of products available and the quality of the installation work. Installation expertise can be difficult to ascertain. Usually the best way to discover a good installer is to ask around; if your friends or acquaintances have been satisfied with a particular retailer, chances



JBL's T Series speakers feature full die-cast-aluminum frames, high-temperature flat ribbon-wire voice coils, an enclosed magnetic structure, pure-titanium tweeters and midrange/tweeters, and polymer-laminate woofers. Shown left to right are the tri-element T95, with a 6 x 9-inch woofer and two dome midrange/tweeters (\$295 a pair); the T55, with a 5-inch mid/low-frequency driver and a 3/4-inch tweeter (\$150 a pair); and the T65, with a 6 1/2-inch mid/low-frequency transducer coaxially mounted with a 1-inch tweeter (\$225 a pair).



Blaupunkt's MD5054, a 5-inch, four-way multidirectional speaker, has a fiber-reinforced polycarbonate chassis, a rated frequency response of 50 to 23,000 Hz, and a 50-watt peak power-handling ability (20 watts continuous). The tweeter and midrange elements can be adjusted for individual listening preferences as well as to compensate for odd acoustical characteristics of the car's interior. Price: \$140 a pair.

are you will be too. Fortunately, the choice of autosound speakers is wide enough that any well-equipped dealer should have something very close to what you need and can afford.

As with any speakers, your final decision will have to be made on what a particular model sounds like. This may not be easy to discover, however, as few stores have demonstration facilities that will give a realistic idea of how a particular system will perform in your vehicle. The usual wall of speakers may be adequate for eliminating the obviously unsuitable ones, but when you have narrowed the field to a choice of two or three models, such arrangements give very little clue as to how they will sound in the distinctive acoustic environment of your car. The only way to tell is to listen to them *in* your vehicle, and that might not be an easy matter. With surface-mount speakers, you may be able to borrow a set and simply place them in your car without actually mounting them; this should give a fairly close idea of the sound you will end up with. Flush-mount speakers are much harder to evaluate in your own car, as very few dealers are willing to install speakers—or any other equipment—that you may end up not buying.

Checking out friends' systems may help as long as their cars are very similar to your own and their systems have the same basic configuration you intend to buy. But while this might give you some guidance as to possible brands and models, it can only be approximate. The retailer may be able to refer you to customers who have similar installations, and you might be allowed to audition their systems, but, again, the information you receive will only be a rough guide unless the system is *exactly* the same as the one you are considering. In the end, about the only way to make sure about car speakers is to buy the most promising ones, have them installed, and live with them for a while. Before you do that, though, find out whether your dealer will exchange them if you're not satisfied; if he won't, pick a different dealer.

A good autosound system can make the difference between driving as a chore and driving as a pleasure. There are numerous first-class car stereo components on the market, but the ones that will have the greatest effect on your enjoyment are the speakers. It's worth the time it takes to find the right ones. □

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Acoustic Research, 330 Turnpike St., Canton, MA 02021. (617) 821-2300.
a/d/s/, One Progress Way, Wilmington, MA 01887. (617) 658-5100.
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American Audio Corp., 636 Forbes Blvd. S., San Francisco, CA 94080. (415) 872-1331.
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Becker Electronics, Rt. 145, East Durham, NY 12423. (518) 634-2571.
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Polydax Speaker Corp., 10 Upton Dr., Wilmington, MA 01887. (617) 658-0700.

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Sentrek Industries, 751 Racket Club Dr., Addison, IL 60101. (312) 628-6767.

S.G.M., 8-1170 Burnhamthorpe Rd. W., Mississauga, Ontario L5C 4E6. (416) 848-5197.

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Sony, Sony Dr., Park Ridge, NJ 07656. (201) 930-1000.

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Speco, P.O. Box 624, 1172 Rt. 109, Lindenhurst, NY 11757. (516) 957-8700.

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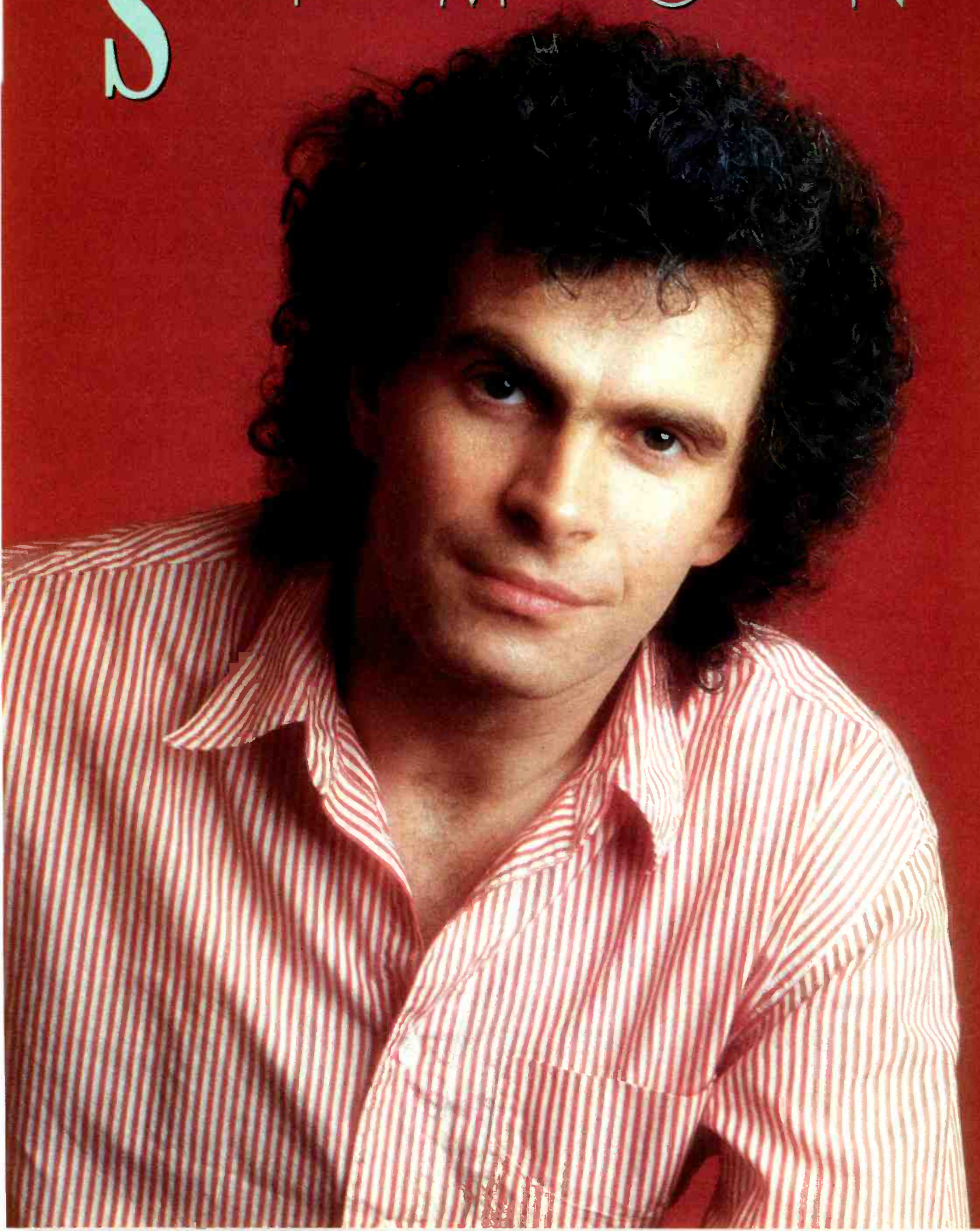
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Wald Sound, Inc., P.O. Box 1085, Sun Valley, CA 91352. (213) 875-0480.

Yamaha Electronics, 6660 Orangethorpe Ave., Buena Park, CA 90620. (714) 522-9105.

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S I M O N



RATTLE

"I've really been around a long time. Players may get mad at me, but they can't get mad because I'm a young conductor!"

NO young conductor today has compiled so impressive a track record as Simon Rattle. At only thirty-three, he is one of the most talked-about and sought-after British maestros since Sir Thomas Beecham. He has his own orchestra in Birmingham, England; he is principal guest conductor of the Los Angeles Philharmonic; he has been conducting recently at the Glyndebourne Festival; and, with the enthusiastic support of EMI-Angel, he has already made twenty-five recordings, with at least as many to come. He has also just finished leading his City of Birmingham Symphony Orchestra on its first tour of the United States, with stops in eleven cities including Los Angeles, San Francisco, Washington, Boston, and New York.

All this might convey the impression that Simon Rattle is a young man in a hurry, but nothing could be further from the truth. Part of what intrigues the musical world about Rattle is that he turns down more offers than he accepts. Among his rejected musical suitors, at least temporarily, are the Chicago Symphony, the Philadelphia Orchestra, the New York Philharmonic, and the Metropolitan Opera.

"I think conductors tend to work too much, too hard, and too promiscuously," he told me by way of explanation. "I think guest conducting should be rather restricted. It's like having a piña colada, or whatever—good, but something to limit. It's wonderful to meet other orchestras, but basically what counts is one's own orchestra. I like to rehearse very hard and in very great

detail, and that often makes orchestras that don't know me very twitchy. I don't want to spend my time like a yo-yo. Meeting an orchestra for a couple of days is not the way I want to make music. Most of the time I'm a lousy guest conductor."

Critics and audiences in cities where Rattle has appeared would disagree. Slim and handsome, with a somewhat pixie-ish face framed by an abundance of curly dark hair, he is becoming an increasingly familiar figure on world podiums. His fresh approach to familiar works and his remarkable ability to defang supposedly forbidding modern compositions stimulates listeners and sends them home happy. When he began his most recent season with the Los Angeles Philharmonic in January, he put together a typically offbeat program—the three *Leonore* Overtures of Beethoven, played in numerical order, followed by two Stravinsky works, the Concerto for Piano and Winds and the Symphony in Three Movements. The Los Angeles *Times* used such adjectives as "provocative," "bracing," and "probing" to describe the evening's music making.

Rattle's growth has been inseparable from that of his home orchestra, the City of Birmingham Symphony. Birmingham is a city with a rich musical tradition—Felix Mendelssohn composed his oratorio *Elijah* for the Birmingham Festival of 1846—but its orchestra, until now, had never aspired to world-class status. Rattle, however, has built it into an ensemble that several British critics have proclaimed at least

the equal of any in England, and it has toured with great success in Europe and Japan.

"Slowly and surely it is becoming one of the finest orchestras in Europe," Rattle said with evident pride. "It's a very young orchestra—I recently realized that the average age of the musicians is now thirty-one, so I'm actually older than they are!"

Rattle spends at least half of each year in Birmingham and also has a home in London, but he was born in Liverpool and got his early music education in Beatles country. "Rock was all around me," he said, "but I was never pulled to the rock side. Maybe it was so pervasive that I avoided it. I never realized until I became much older what wonderful songwriters the Beatles were."

Rattle's parents were both musical; his father actually headed a jazz ensemble in Oxford for a time. Young Simon took up the drums as a child and developed an interest in jazz along with his devotion to symphonic music. At the age of eleven he played as a percussionist with both the Royal Liverpool Orchestra and the National Youth Orchestra under Pierre Boulez. Subsequently he enrolled in the Royal Academy of Music, where he studied conducting. At nineteen he won the John Player Conductors' Competition, which numbered among its prizes the assistant conductorship of the Bournemouth Symphony Orchestra and the Bournemouth Sinfonietta.

"I spent the next two years with those two orchestras, and I've been conducting ever since," he said with a slight smile. "So I've really been

by Herbert Kupferberg

around a long time. Players may get mad at me, but they can't get mad because I'm a young conductor!"

After stints with the Royal Liverpool Philharmonic and the BBC Scottish Orchestra, Rattle was appointed to his present post in Birmingham. Almost simultaneously the guest-conducting offers began to pour in, including an invitation from the Metropolitan Opera to conduct Janáček's *Jenůfa*. One of the factors in his refusal, he acknowledged, was a lack of rehearsal time. "I felt I just couldn't produce the kind of performance I would like. The Met has one of the greatest living conductors in Jimmy Levine. He can work at a rate of speed ordinary mortals can't match, but then the Met is his own place. To me, it would be like trying to conduct a small village! I'm very spoiled. When I conduct at Glyndebourne, I'm used to a month or even two months with all the singers there all the time."

Rattle made his first guest appearance with the Los Angeles Philharmonic in 1981, and he was subsequently offered the job of music director, to succeed Carlo Maria Giulini. Rattle preferred to continue his work in Birmingham, however, and accepted only the post of principal guest conductor, working contentedly with André Previn, who took the main job. Rattle's New York debut in 1985 was with the Los Angeles Philharmonic, and the reviews, as elsewhere, were glowing.

Although his musical interests reach back to the Classical era, much of Rattle's programming is devoted to the unusual and the contemporary. His Birmingham recordings, for example, encompass such works as Messiaen's *Turangalila* Symphony, Shostakovich's Symphony No. 13 (*Babi Yar*), and Janáček's *Glagolitic Mass*. He is also recording all seven symphonies by Sibelius, a composer for whom he has a particular affinity. In several cities on the recent U.S. tour he conducted a program consisting in its entirety of the Sibelius Symphonies Nos. 5, 6, and 7. "I wanted to play the all-Sibelius program in New York," he said with a tinge of regret, "but both Carnegie Hall and Avery Fisher Hall turned it down."

Rattle's continuing interest in the jazz idiom is attested to by his recent Angel recording entitled



MACDOMINIE/ANGEL RECORDS

"The Jazz Album," with music by Milhaud, Gershwin, Stravinsky, and Bernstein in performances by, among others, the London Sinfonietta and Harvey and the Wallbangers. At Glyndebourne he has conducted an all-black cast in Gershwin's *Porgy and Bess*, with "a great singer in every part." EMI has just recorded that *Porgy* in London for release next spring.

"As time goes on, there are more and more things I find I love in great music," Rattle said, adding that "one blind spot" he has is the music of Tchaikovsky. "Perhaps I was exposed to him too much as a boy. But he's surviving very well without me."

Rattle is married to the American soprano Elise Ross, and they have a four-year-old son, Alexander—one more reason, the conductor said, that he doesn't like to be away from home more than two months at a time. His interests extend to non-musical areas such as playing squash and watching old movies. In 1980 he took a year off to study English literature at Oxford. "It was a wonderful sabbatical," he said. "I was a postgraduate student reading Donne, Marvell, Joyce, and Eliot,

dealing in a discipline that wasn't music, living again with the written word. I recommend it to my fellow musicians—it cleans your ears."

Asked what advice he would give to young people with ambitions to conduct, Rattle responded, "I would tell young people of all persuasions to listen to everything, all styles of music, all styles of interpreters. I would say, read as much as you can—all kinds of books. Race to your nearest art gallery. Immerse yourself in every aspect of the world of the arts, and the life around you, so that you actually have something to bring to music when your time comes. In the end, playing the right notes is the least important part."

And as for whether he himself ever thinks about life beyond Birmingham: "I think about it—and then I put it away. The notion of a career is the thing that interests me least. The making of music is much more important to me." □

Herbert Kupferberg is a senior editor of Parade magazine and the author of The Book of Classical Music Lists, which will be issued in paperback this fall by Penguin.

A/D/S/

C4 3-Head Dolby B/C/HX Pro Cassette Deck
Microprocessor operating system for digital recording; level and balance controls; full status displays; remote controlled through a/d/s/ R4 receiver or CC4 tuner/preamp; auto bias/EQ for all tape types; memorizes adjustable bias and level settings for each tape type; displays elapsed or remaining time; quartz-controlled-PLL capstan motor drive in die-cast metal chassis; timer record and play; auto repeat; music search; mic/line mixing; adjustable headphone output; LED rec-level meters; rec-level range 80 dB in 1-dB steps. Speed deviation <0.5%; w&F <0.04% wid rms; FR with all tape types 20-20,000 Hz \pm 2 dB; S/N >74 dBA with Dolby C and metal tape (>93 dBA with optional outboard NR system). 17.5" w x 2.75" h x 14.8" d \$1,400

Atelier C3 2-Speed Cassette Deck

Records and plays at 1.88 ips (standard speed) and 3.75 ips (double speed). Remote controlled through a/d/s/ R4 receiver or CC4 tuner/preamp. Quartz-PLL direct-drive-capstan multiple-pole outer-rotor motor; repeat; mic/line mixing; 3 heads; 2 motors; Dolby B; Dolby C; music search; memory stop/play; LED meters; headphone jack. w&F standard speed 0.04% wrms, high speed 0.035%; FR (with all tape types) standard speed 20-20,000 Hz \pm 2 dB, high speed 25-22,000 Hz \pm 2 dB; S/N (A-wtd, all tape types) standard speed: >58 dBA no NR, >66 dBA Dolby B, >74 dBA Dolby C, high speed: >60 dBA no NR, >68 dBA Dolby B, >76 dBA Dolby C. 17.5" w x 2.75" h x 14.8" d; 19.6 lb \$969

AIWA

AD-WX909 Autoreverse Double Cassette Deck

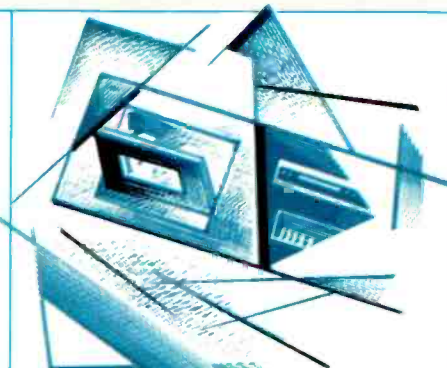
Features 3 heads with micro-grain-surfaced capstan; auto tape/source monitor selector; ADMS (auto demagnetizing system); Dolby HX Pro (deck 2); Dolby B & C (both decks); gold-plated CD inputs and LINE/CD front panel selector; high-speed dubbing; feather-touch IC logic controls; independent digital tape counters; bias fine adjustment for CrO₂/normal-bias tape (\pm 20%); music sensor (both decks); continuous playback. w&F 0.0055% deck 1, 0.028% deck 2; S/N 80 dB with Dolby C, metal tape above 5,000 Hz; FR 10-17,000 Hz normal-bias tape, 10-19,000 Hz high-bias, 10-20,000 Hz metal. 16.94" w x 4.38" h x 11.75" d; 14.5 lb \$750

AD-A70 Autoreverse Cassette Deck

Cassette deck holds up to 5 cassettes for quick-reverse 15-selection random-programmed playback and sequential-timed recording. Features 4 motors; Dolby B & C; blank skip; music search; rec mute; headphone jack; LED meters; electronic tape counter; auto tape selector. w&F 0.06% wrms; FR metal 30-15,000 Hz \pm 3 dB; S/N metal 78 dB Dolby C. 13" w x 4.25" h x 13.62" d; 13.2 lb \$650

AD-F770UB Dolby B & C Cassette Deck

Features 3 heads; 2 motors; auto bias/EQ; Dolby HX Pro; dual capstans; bias fine tuning; remaining-time counter; music search; output level control; memory stop/play; mike inputs; headphone jack; rec mute; digital automatic tape adaptation; IC logic controls; fluorescent meters with peak hold; auto Dolby NR detector; intro play ADMS. w&F 0.025% wrms; FR 20-17,000 Hz \pm 3 dB normal-bias tape, 20-18,000 Hz \pm 3 dB high bias, 20-19,000 Hz \pm 3 dB metal; S/N (A-wtd) metal: 68 dB Dolby B, 80 dB Dolby C. 16.56" w x 4.38" h x 11.31" d; 12.1 lb \$550



**CASSETTE
D · E · C · K · S
BUYING GUIDE**

CASSETTE decks should be evaluated by their sound quality, ease of use, and special features. The specifications here can give you an idea of each deck's sonic performance, and the descriptions can lead you to well-designed decks with useful features. Once in the store with a short shopping list, you can listen for yourself and push the buttons.

All of the information is from the manufacturers. Prices are *suggested*; actual prices are set by each dealer. Like any such guide, this one cannot be complete, and if a particular model is not included, that should not reflect on its quality. Manufacturers' addresses are on page 92.

AD-WX220U Double Cassette Deck

Features 2 heads; 2 motors; auto bias/EQ; bias fine tuning; music search; output level control; LED meters; mike inputs; headphone jack; rec mute; quadruple-speed dubbing; random-access programmable; dubbing playback; Dolby B & C; 1-touch synchrodubbing. w&F 0.038% wrms; FR 20-13,000 Hz \pm 3 dB normal-bias tape, 20-15,000 Hz \pm 3 dB high bias, 20-16,000 Hz \pm 3 dB metal; S/N (A-wtd) metal: 66 dB Dolby B, 78 dB Dolby C. 16.56" w x 4.38" h x 12.75" d; 12.3 lb \$550

AD-S40 Dolby B & C Cassette Deck

Features 3 heads; 2 motors; auto bias/EQ; Dolby HX Pro; dual capstans; bias fine tuning; headphone jack; rec mute; computer designed keyboard front control panel; ADMS; electronic digital tape counter; feather-touch IC logic controls; cue & review; fluorescent peak meters. w&F 0.028% wrms; FR 20-16,000 Hz \pm 3 dB normal-bias tape, 20-17,000 Hz \pm 3 dB high bias, 20-18,000 Hz \pm 3 dB metal; S/N (A-wtd) metal: 78 dB Dolby C. 16.63" w x 4.38" h x 11.63" d; 10.4 lb \$350

AD-WX707 Double Cassette Deck

Autoreverse cassette deck with Dolby B and C. Features bias fine tuning; continuous playback; feather-touch IC logic controls; high-speed dubbing; auto rec mute; auto tape selector; rec/play timer standby (deck 2). S/N 78 dB Dolby C, 65 dB Dolby B; FR 20-16,000 Hz normal-bias tape, 20-17,000 Hz high bias, 20-18,000 Hz metal. 16.94" w x 5" h x 12.31" d; 11 lb \$250

AD-R30 Autoreverse Cassette Deck

Features 3-way reverse operation for continuous, one cycle, or unidirectional operation; horizontal flat keyboard operation panel; feather-touch IC logic control; Dolby B & C; bias fine tuning; auto rec mute. w&F 0.065% wrms; FR 20-16,000 Hz normal-bias tape, 20-16,000 Hz high bias, 20-17,000 Hz metal; S/N 78 dB Dolby C; rec/play DX head; erase double-gap ferrite. 16.56" w x 4.38" h x 11.94" d; 11.4 lb \$180
AD-S15. As above without autoreverse \$150

AKAI

GX-R99-B 3-Head Autoreverse Cassette Deck

Sets and maintains optimum record level; teflon-bonded head housing of beryllium-alloyed die-cast zinc to maintain accurate azimuth; super GX (glass and crystal) head; high-tuned DC amp with Foldback Electrode Transistors (FBET) for increased midrange resolution and widened dynamic range; 5 motors; auto bias/EQ; Dolby B; Dolby C; dual capstans; bias fine tuning; direct drive; elapsed-time counter; remaining-time counter; music search; output level control; memory stop/play; rec mute; headphone jack; auto fader; FL display; record cancel; gold RCA jacks; auto tape monitor; timer start; feather-touch full-logic controls; direct lead-in; power eject. Wireless remote control optional. w&F 0.028% wrms; FR ferric 20-18,000 Hz \pm 3 dB, high bias 20-19,000 Hz \pm 3 dB, metal 20-21,000 Hz \pm 3 dB; S/N (A-wtd) metal: 70 dB Dolby B, 80 dB Dolby C, 60 dB no NR. 17.3" w x 4.1" h x 14.6" d \$649

GX-8-B 3-Head 3-NR-System Cassette Deck

Quartz-PLL direct-drive motor for low w&F; super GX (glass and crystal) head; manual bias trim; extended-range peak meter; 3 motors; Dolby B; Dolby C; dbx; dual capstans; bias fine tuning; elapsed-time counter; remaining-time counter; music search; output-level control; rec mute; headphone jack; auto mute; rec cancel; gold-plated RCA and headphone jacks; FL display; feather-touch full-logic controls; direct lead-in; power eject. w&F 0.04% wrms; FR ferric 20-19,000 Hz \pm 3 dB, high bias 20-20,000 Hz \pm 3 dB, metal 20-21,000 Hz \pm 3 dB; S/N (A-wtd) metal: 70 dB Dolby B, 80 dB Dolby C. 115 dB dbx, 60 dB no NR. 3.9" d; 14.3 lb \$609

GX-6-B 3-Head Dolby B & C Cassette Deck

Super GX (glass and crystal) heads for increased dynamic range; extended-range peak meter for music with high dynamic range; manual bias

ILLUSTRATION: BILL RUSSELL

CASSETTE DECKS

trim; auto mute; feather-touch full-logic controls; record cancel; gold-plated RCA and headphone jacks; FL display; direct lead-in; power eject; 3 motors; dual capstans; bias fine tuning; direct drive; elapsed- and remaining-time counter; music search; output-level control; rec mute. w&F 0.04% wrms; FR ferric 20-19,000 Hz ± 3 dB, high bias 20-20,000 Hz ± 3 dB, metal 20-21,000 Hz ± 3 dB; s/N (A-wid) metal: 70 dB Dolby B, 80 dB Dolby C \$549

GX-R70EX-B Autoreverse Cassette Deck

Sets and monitors optimum recording levels; twin-field Super GX head with separate gaps for recording and playback; twin active power supply for stable amplification and lower IMD; auto fader; reverse selector; peak/peak spectrum meters; auto mute; direct lead-in; power eject; rec balance; 2 heads; 3 motors; auto bias/EQ; Dolby B & C; dbx; dual capstans; elapsed-time counter; music search; output-level control; rec mute; headphone jack. Wireless remote control optional. w&F 0.05% wrms; FR ferric 20-17,000 Hz ± 3 dB, high bias 20-18,000 Hz ± 3 dB, metal 20-19,000 Hz ± 3 dB; s/N (A-wid) metal: 70 dB Dolby B, 80 dB Dolby C, 110 dB dbx; 60 dB no NR. 17.3" w x 4.1" h x 11" d \$549



Akai GX-8-B

GX-R60EX-B Autoreverse Cassette Deck

Twin-field Super GX head with separate gaps for recording and playback and twin active power supply for stable amplification and lower IMD. Features feather-touch full-logic controls; FL display; reverse selector; direct lead-in; power eject; rec balance; 2 heads; 2 motors; Dolby B & C; dbx; dual capstans; elapsed-time counter; music search; output level control; rec mute; headphone jack. Wireless remote control optional. w&F 0.05% wrms; FR ferric 20-17,000 Hz ± 3 dB, high bias 20-18,000 Hz ± 3 dB, metal 20-19,000 Hz ± 3 dB; s/N (A-wid) metal: 70 dB Dolby B, 80 dB Dolby C, 110 dB dbx, 60 dB no NR. 17.3" w x 4.1" h x 11" d; 11 lb \$429

HX-A451W-B Double Cassette Deck

High-speed cassette deck with random programmable dubbing and playback for both transports. Master driver mechanism uses 3rd motor for tape synchronization. Features feather-touch full-logic controls; auto mute; rec pause; timer start; blank skip; 3 motors; Dolby B & C; music search; elapsed-time counter; LED meters; mic inputs; rec mute; headphone jack. Wireless remote control optional. w&F 0.09% wrms; FR ferric 30-15,000 Hz ± 3 dB, high bias 30-15,000 Hz ± 3 dB, metal 30-16,000 Hz ± 3 dB; s/N (A-wid) metal: 67 dB Dolby B, 77 dB Dolby C, 57 dB no NR. 17.3" w x 4.3" h x 11.5" d \$380

HX-A305W-B Double Cassette Deck

HX heads; normal- and high-speed dubbing; sequential play; Dolby B NR \$229

BANG & OLUFSEN

Beocord 5500 Autoreverse Cassette Deck

Automated recording; Auto Azimuth Guidance; auto Dolby B and Dolby C for play; auto and manual rec level; programs 23 tracks; HX Pro headroom extension; tape loads in motorized drawer; black and silver; remote controlled by Master Control Panel. w&F <0.09% wrms;



Bang & Olufsen
Beocord 5500

speed deviation $< \pm 1.5\%$; s/N with chrome tape > 64 dB Dolby B, > 74 dB Dolby C; 16.5" w x 3" h x 12.75" d; 18.7 lb \$999

Beocord 3300 Dolby B/HX Pro Cassette Deck

Integrates with Beosystem 3300 for remote control from multiple rooms; black plexiglass and brushed aluminum; optional wall brackets; sensi-touch controls; remote controlled from Terminal 3300 remote; communicates with 3300 turntable and CD player for coordinated recording; auto search; meters adjust for tape type; sendust heads; auto demagnetization. w&F <0.07% wrms; speed deviation $< \pm 1.5\%$; s/N with chrome tape > 65 dB Dolby B; 16.5" w x 2.75" h x 9.9" d; 8.37 lb \$499

DENON

DR-M44HX 3-Head Cassette Deck

Features Dolby HX Pro; Dolby B & C NR; dual-capstan transport; full-logic control transport; computer-controlled silent mechanism; direct-drive FG servo motor; nonslip reel drive; computer-controlled bias fine-tuning; full auto-stop; SF combination head; dual power supply; MPX-filter switch; 4-digit tape counter with memory stop; FL peak level meter; real-time counter; wired remote control; rec pause/mute; 1-touch rec/standby; output level control; headphone jack. Includes wood side panels. FR 25-20,000 Hz ± 3 dB with metal tape; w&F 0.035% wrms; s/N > 75 dB (Dolby C) \$650

DR-M30HX 3-Head Cassette Deck

Features wireless remote control; Dolby HX Pro; Dolby B & C NR; dual-capstan transport; full-logic control transport; computer-controlled silent mechanism; non-slip reel drive; manual bias fine-tuning; full auto-stop; SF combination head; dual power supply; MPX-filter switch; 4-digit tape counter with memory stop; FL peak level meter; balance control; rec pause/mute; auto-space; 1-touch rec/standby; output level control; headphone jack. FR 25-20,000 Hz ± 3 dB with metal tape; w&F 0.045% wrms; s/N > 73 dB (Dolby C) \$500

DR-M20 3-Head Cassette Deck

Features Dolby B & C NR; dual-capstan transport; full-logic control transport; computer-controlled silent mechanism; non-slip reel drive; manual bias fine-tuning; full auto-stop; SF combination head; dual power supply; MPX-filter switch; 4-digit tape counter with memory stop; FL peak level meter; balance control; rec pause/mute; auto-space; 1-touch rec/standby; output level control; headphone jack. FR 25-19,000 Hz ± 3 dB with metal tape; w&F 0.045% wrms; s/N > 73 dB (Dolby C) \$400

DR-M14HX Cassette Deck

Features wireless remote control; Dolby HX Pro; Dolby B & C NR; full-logic control transport; computer-controlled silent mechanism;

non-slip reel drive; manual bias fine-tuning; full auto-stop; SF R/P head; constant current drive circuit; dual power supply; MPX-filter switch; 4-digit tape counter with memory stop; FL peak level meter; balance control; rec pause/mute; auto-space; music search; 1-touch rec/standby; output level control; headphone jack. FR 25-18,000 Hz ± 3 dB with metal tape; w&F 0.045% wrms; s/N > 72 dB (Dolby C) \$400
DR-M12HX. As above except without remote control \$340

DR-M10HX Cassette Deck

Features Dolby HX Pro; Dolby B & C NR; full-logic control transport; computer-controlled silent mechanism; non-slip reel drive; manual bias fine-tuning; full auto-stop; SF R/P head; dual power supply; 4-digit tape counter with memory stop; FL peak level meter; balance control; rec pause/mute; auto-space; music search; 1-touch rec/standby; headphone jack. FR 25-18,000 Hz ± 3 dB with metal tape; w&F 0.05% wrms; s/N > 72 dB (Dolby C) \$280

DR-M07 Cassette Deck

Features Dolby B & C NR; full-logic control transport; manual bias fine-tuning; full auto-stop; SF R/P head; 3-digit tape counter; LED 6-segment peak level meter; balance control; 1-touch rec/standby; headphone jack. FR 40-16,000 Hz ± 3 dB with metal tape; w&F 0.057% wrms; s/N > 73 dB (Dolby C) \$210

DUAL BY ORTOFON

CC5050 Cassette Deck

Three-head stereo cassette deck with Dolby B and Dolby C noise reduction. Frequency response 20-19,000 Hz ± 3 dB with metal (Type IV) tape. Black finish \$380

FISHER

CR-W98 Double Autoreverse Cassette Deck

Double autoreverse cassette deck with 6-function wireless remote control. Features autoreverse for both transports; synchronized 1-touch high-speed dubbing; sequential play; Dolby B & C NR; metal tape capability (both transports); electronic full-logic controls; FL display/level indicators. Black \$400



Fisher CR-W98

CR-W96 Double Autoreverse Cassette Deck

Features autoreverse for both transports; synchronized 1-touch high-speed dubbing; sequential play; Dolby B & C NR; metal tape capability (both transports); soft-touch controls; switchable MPX filter. Black \$300

CR-W95 Double Autoreverse Cassette Deck

Features autoreverse for both transports; synchronized 1-touch high-speed dubbing; sequential play; Dolby B & C NR; metal tape capability (both transports). Silver \$300

CR-W86 Double Autoreverse Cassette Deck

Features autoreverse record/playback for deck 1; synchronized 1-touch high-speed dubbing; sequential play; Dolby NR; metal tape capability

CASSETTE DECKS

(both transports); soft-touch controls; switchable MPX filter. Black \$250

FOSTEX

Model 160 4-Track Cassette Deck/Mixer
Records 4 tracks in 1 direction; 3.75 ips; Dolby C NR; pitch control; 2 mic inputs; 4 line outputs; overdubs and punches in; sync input to track 4 for MIDI; ch insert points for signal processors. Each input ch has straight-line fader, high and low tone controls, source/tape button, assignment button to mix buss or direct, pan control, aux send control. w&F 0.1% peak wtd; FR 40-14,000 Hz; S/N 70 dB wtd \$795

Model X-30 4-Track Cassette Deck/Mixer
Records 4 tracks in 1 direction (up to 2 at once); Dolby B and Dolby C NR; pitch control; color-coordinated controls; 4 track by 2 ch submixer for overdub monitoring; optional foot control for overdubbing, punch-in, programming. w&F 0.1% peak wtd; FR 40-12,500 Hz; S/N 70 dB wtd \$595

HARMAN KARDON

CD491 Dolby B/C/HX Pro Cassette Deck
Ultra-wideband cassette deck with direct-drive dual-capstan transport; 3 heads; 2 motors; Dolby B; Dolby C; Dolby HX Pro; bias fine trim with calibration test-tone oscillators; music search; output level control; memory stop/play; logic control; weighted peak-hold LED meters; mic inputs; mic/line mixing; headphone jack; rec mute. Timer controllable. w&F 0.025% wrms; FR with all tape types 20-24,000 Hz \pm 3 dB; S/N (A-wtd, high-bias tape) 58 dB no NR, 66 dB Dolby B, 75 dB Dolby C \$950

TD392 Dolby B/C/HX Pro Cassette Deck
3 heads; sendust record head, narrow-gap high-density ferrite play head; 1 motor; Dolby B; Dolby C; Dolby HX Pro; solenoid logic transport; bias fine trim with test-tone oscillator; output level control; weighted LED meters; headphone jack; rec mute. w&F 0.05% wrms; FR with all tape types 20-22,000 Hz \pm 3 dB; S/N (A-wtd, high-bias tape) 66 dB Dolby B, 75 dB Dolby C \$675

CD302 Cassette Deck
Cassette deck with sendust record/play head and logic-controlled solenoid transport; Dolby B; Dolby C; Dolby HX Pro; bias fine tuning; output level control; rec mute; headphone jack; defeatable multiplex filter. w&F 0.05% wrms; record-play FR, ferric 20-21,000 Hz \pm 3 dB, high-bias 20-21,000 Hz \pm 3 dB, metal 20-21,000 Hz \pm 3 dB; S/N (A-wtd), high bias 65 dB with Dolby B, 73 dB with Dolby C \$450

CD202 Cassette Deck
Narrow-gap permalloy record/play head; Dolby B and C NR; logic transport with solenoid controls; bias fine tuning; 2 heads; LED meters. w&F 0.05% wrms; record-play FR, metal 20-20,000 Hz \pm 3 dB; S/N (A-wtd) high bias 65 dB with Dolby B, 73 dB with Dolby C \$325

HITACHI

DW99 Double Autoreverse Cassette Deck
High-speed 1-touch dubbing; 20-part FL peak meter with peak-hold selector; timer rec/play; 4-digit FL counter; music scan; random memory program search; 3 motors; Dolby B and Dolby C; blank skip; memory stop/play; unified-remote-control compatibility. w&F 0.04% wrms; FR ferric 30-14,000 Hz \pm 3 dB, high bias 30-15,000 Hz \pm 3 dB, metal 30-16,000 Hz \pm 3 dB;

S/N metal 66 dB Dolby B, 72 dB Dolby C; 12.62" w x 3.5" h x 14.12" d; 15.5 lb \$500

DW77 Double Autoreverse Cassette Deck
Logic control; high-speed dubbing; Dolby B and Dolby C; music scan; random memory program search; 4 motors; auto tape selector; timer rec/play; blank skip; LED meters; rec mute; headphone jack; unified-remote-control compatibility. FR ferric 30-14,000 Hz \pm 3 dB, high bias 30-15,000 Hz \pm 3 dB, metal 30-16,000 Hz \pm 3 dB; S/N 66 dB Dolby B \$400

DW33 Double Autoreverse Cassette Deck
High speed; soft-touch controls; auto tape selector; timer rec/play; continuous play; synchronized dubbing start; 2 motors; Dolby B; blank skip; LED meters; headphone jack. w&F 0.08% wrms; FR ferric 30-14,000 Hz \pm 3 dB, high bias 30-15,000 Hz \pm 3 dB; 30-15,000 Hz \pm 3 dB; S/N metal 65 dB Dolby B \$220

JVC

DDVR77J Autoreverse Cassette Deck
Autoreverse cassette deck with Multi-Editor to create fade-ins and fade-outs after a tape is recorded. Features Dolby B & C NR; Reel Rock to locate precise edit points in forward or reverse; quick autoreverse; digital peak display; two-motor full-logic transport; direct-drive capstan; index scan; blank search; music scan; block repeat; blank skip; auto rec mute; digital counter; headphone jack with level control; optional remote control \$450

TDV66JJBK Cassette Deck
Computer-controlled discrete three-head cassette deck is remote controllable with optional remote or when used with selected JVC Compu-Link components. Features Dolby B & C NR with MPX filter; full-logic transport controls; SA head; monitor-capable discrete 3-head configuration; DC configured amps; index scan; blank search; block repeat; music scan \$450

TDW660JJBK Double Autoreverse Cassette Deck
Double autoreverse cassette deck is remote controllable when used with selected JVC Compu-Link components. Features Dolby B & C NR; twin quick autoreverse systems; two-motor full-logic mechanisms; double-speed editing with synchro start; continuous back-to-back play of two tapes; auto/synchro rec mute (deck B); auto tape selection; music scan; timer start; oversized LCD panel with electronic counter \$385

TDW60JJBK Double Autoreverse Cassette Deck
Double autoreverse cassette deck is remote controllable when used with selected JVC Compu-Link components. Features Dolby B & C NR; twin quick autoreverse systems; two-motor full-logic mechanisms; double-speed dubbing with synchro start; continuous back-to-back play of two tapes; auto/synchro rec mute (deck B); music scan; timer start; peak indicator \$385

TDX301JBK Cassette Deck
Computer-controlled autoreverse cassette deck with Dolby B & C NR. Features full-logic transport mechanism; quick autoreverse system with flip reverse head; Compu-Link remote compatible; stereo microphone inputs; 6-LED multi-peak indicator; auto rec mute \$240

KENWOOD

KX-96W Double Autoreverse Cassette Deck
Double cassette deck with dual bidirectional

rec/play system. Features quick reverse; two motors; full-logic computer control; Dolby B & C NR; high-speed dubbing; continuous relay play; relay and dual recording; direct 16-program search system; index scan; headphone jack; LED peak meters; auto tape selector. w&F 0.1% wrms; S/N 72 dB; FR 30-15,000 Hz \pm 3 dB (Type II). Remote controlled through KC-206 preamp and Kenwood receivers. 16.53" w x 4.69" h x 10.44" d; 11.4 lb \$380

KX-660HX Full-Logic Cassette Deck
Basic series cassette deck with Dolby HX Pro headroom extension system. Features Dolby B & C NR with dynamic stabilizer; manual/auto recording bias adjust control; low-imp Permlic rec/play head; silent 2-motor drive with full-logic computer control; high-rigidity mechanism and head mount; direct 16-program search system; auto rec mute; blank search; index scan; re-recording standby; repeat with auto blank skip; counter zero stop; master rec and L/R preset level controls; FL wide-range peak meters; FL linear tape counter; auto tape sel; headphone jack; L/R mic inputs; timer rec/play capable. FR 20-18,000 Hz \pm 3 dB (metal); w&F 0.06% wrms. 17.31" w x 4.44" h x 12.81" d; 11 lb \$300

KX-65CW Double Cassette Deck
Cassette deck with autoreverse play/rec deck and unidirectional playback only deck. Features full-logic computer control; Dolby B & C NR; 2 motors; high-speed dubbing; continuous relay play; relay recording; direct 16-program search system; index scan; auto tape selector; auto rec mute; headphone jack; LED peak meters. w&F 0.1%; S/N 72 dB; FR 30-15,000 Hz \pm 3 dB (Type II). Remote controlled through KC-206 and Kenwood receivers; 11.2 lb \$280

KX-76R Autoreverse Cassette Deck
Full-logic control cassette deck with 9-program search system. Features Dolby B & C NR; index scan; continuous autoreverse; auto tape selector; auto recording mute; LED peak meters; headphone jack; L/R mic inputs; remote controlled through KC-206 preamp and Kenwood receivers. w&F 0.06% wrms; S/N 73 dB; FR 30-15,000 Hz \pm 3 dB (Type II) \$250

KX-56CW Double Cassette Deck
Features 1 rec/play mechanism; Dolby B & C NR; two motors; soft-touch controls; high-speed dubbing; single relay play; auto tape selector; LED peak meters; headphone jack; L/R mic inputs; timer ready; remote controlled through KC-206 preamp and Kenwood receivers. w&F 0.15% wrms; S/N 72 dB; FR 30-15,000 Hz \pm 3 dB (Type II). 16.56" w x 4.69" h x 10.44" d; 8.8 lb \$200

KX-46C Cassette Deck
Features soft-touch controls; music search; auto tape selector; LED peak meters; L/R mic inputs; headphone jack; timer ready. w&F 0.09% wrms; S/N 72 dB; FR 30-15,000 Hz \pm 3 dB (Type II). 16.56" w x 4.81" h x 10.56" d; 8.4 lb \$175

KYOCERA

D-811 Dolby B/C/HX Pro Cassette Deck
2 heads; 3 motors; 3 preset bias/eq's; Dolby B; Dolby C; dual capstans; bias fine tuning; direct drive; digital electronic counter for elapsed and remaining time; output level control; memory repeat stop/play; LED peak-hold meters; soft-touch controls; mike inputs; headphone jack with volume control; rec mute; wireless remote. w&F 0.02% wrms; metal 20-22,000 Hz \pm 3 dB, high bias 20-20,000 Hz \pm 3 dB, normal 20-

CASSETTE DECKS

20,000 Hz ± 3 dB; S/N (A-wtd) metal: 58 dB no NR, 10 dB Dolby B, 20 dB Dolby C; line-input sens for 0-dB reading 70 mV; line output level with 0-dB indication 580 mV; mike input sens 0.5 mV \$750

D-611 Dolby B/C Cassette Deck

2 heads; 3 motors; 3 preset bias/EQ's; bias fine tuning; direct drive; output level control; memory repeat stop/play; LED meters; soft-touch controls; mike inputs; headphone jack; rec mute; wireless remote. w&F 0.035% wrms; metal 20-22,000 Hz ± 3 dB, high bias 20-20,000 Hz ± 3 dB, normal 20-20,000 Hz ± 3 dB; S/N (A-wtd) metal: 58 dB no NR, 10 dB Dolby B, 20 dB Dolby C; line-input sens for 0-dB reading 70 mV; line output level with 0-dB indication 580 mV; mike input sens 0.5 mV. 18.12" w x 4" h x 12.12" d; 16 lb \$550

LUXMAN

K-03 Direct-Drive Cassette Deck

3-head cassette deck features 3 motors; Dolby B and C NR; dual capstans; bias fine tuning; direct drive; remaining time counter; output level control; memory stop/play; rec mute; headphone jack; logic control; Duo-Beta circuitry. w&F 0.022% wrms; frequency response with metal tape 20-22,000 Hz, CrO₂ 20-20,000 Hz, normal 20-20,000 Hz; signal-to-noise ratio with metal tape and Dolby C > 73 dB, Dolby B > 67 dB, no noise reduction > 60 dB; 17.81" wide x 6.38" high x 14.38" deep; 24.64 lb \$1,200

K-106 Autoreverse Cassette Deck

Remote-capable cassette deck with timer function. Features blank search; rec mute/auto space; auto tape selector; programmable search; auto record pause; auto scan; intro scan; 2 heads; 3 motors; Dolby B; Dolby C; dbx; Dolby HX Pro; dual capstans; bias fine tuning; blank



Luxman K-03

skip; elapsed-time counter; music search; memory stop/play; LED meters; soft-touch controls; rec mute; headphone jack. w&F 0.05% wrms; FR (± 3 dB) ferric 20-17,000 Hz, high bias 20-19,000 Hz, metal 20-19,000 Hz; S/N (A-wtd) ferric: 66 dB Dolby B, 70 dB Dolby C, 89 dB dbx; high bias: 67 dB Dolby B, 71 dB Dolby C, 90 dB dbx; metal: 67 dB Dolby B, 71 dB Dolby C, 90 dB dbx. 17.25" w x 4.5" h x 12.06" d \$580

K-112 Cassette Deck

Features Dolby HX Pro, Dolby B and C; feather-touch full-logic-controls; 4-digit electronic counter with memory; fine bias control; system remote control capability. S/N metal Dolby C 73 dB, CrO₂ 72 dB; distortion 0.3%; w&F 0.05% wrms; FR metal 20-21,000 Hz ± 3 dB; CrO₂ 20-20,000 Hz ± 3 dB \$500

K-105 Autoreverse Cassette Deck

Remote-capable cassette deck with blank search. Features rec mute/auto space; auto record pause; auto scan; intro scan; 2 heads; 3 motors; Dolby B; Dolby C; dbx; dual capstans;

blank skip; elapsed-time counter; music search; LED meters; soft-touch controls; rec mute; headphone jack. w&F 0.05% wrms; FR (± 3 dB) ferric 30-16,000 Hz, high bias 30-18,000 Hz, metal 30-18,000 Hz; S/N (A-wtd) ferric: 65 dB Dolby B, 69 dB Dolby C, 90 dB dbx; high bias: 67 dB Dolby B, 71 dB Dolby C, 90 dB dbx; metal: 67 dB Dolby B, 71 dB Dolby C, 90 dB dbx. 9.9 lb; 17.25" w x 4.5" h x 12.06" d \$480

MARANTZ

SD-55 Stereo Cassette Deck

2 head cassette deck with dual motor and microprocessor control. Features Dolby B and C NR; variable bias fine tune control; auto tape type sensor; rec mute; memory tape counter with auto stop; MPX filter \$780

Double Cassette Decks

SD565 Double Autoreverse Cassette Deck

Double cassette deck with autoreverse, record, and playback for both transports. Features 15-song quick music search; auto tape selector; high-speed dubbing; mic/line mixing; auto rec mute; Dolby B & C; 2 heads; 2 motors; memory stop/play; LED meters; soft-touch controls; mic inputs; headphone jack. w&F 0.05% wrms; record/playback FR (± 3 dB) ferric 35-15,500 Hz, high bias 35-16,500 Hz, metal 35-17,500 Hz; S/N (all A-wtd) metal 65 dB Dolby B, 72 dB Dolby C. 16.5" w x 4" h x 10.25" d \$450

SD160 Double Cassette Deck

Features Dolby B NR; high-speed dubbing; mic input. LED meters. FR normal 40-13,000 Hz, CrO₂ 40-14,000 Hz, metal 40-15,000 Hz; S/N without NR 54 dB, Dolby B 64 dB; w&F 0.08%. 4.38" h x 16.5" w 7.25" d; 8.4 lb \$170

PMD 430 dbx Portable Cassette Deck

3-head AC/DC cassette deck with Dolby B. Features fine-bias control; headphone jack with adjustable volume; dual recording level controls; 2 mic inputs; switchable mic attenuation (0, -15, -30 dB); compatible with normal/high-bias/metal tape; auto replay; pitch control; 3.5 lb; 2" x 9" x 6.5" \$550

MITSUBISHI

DT-160 7 Cassette Auto-Changer

Double cassette deck features high-speed dubbing, 9-segment programmable music search, autoreverse, Dolby B \$385

NAD

6300 Monitor Series Cassette Deck

With Dolby B and Dolby C NR, Dolby HX Pro and Dyneq headroom extension; Play Trim to adjust playback EQ to compensate for differences in cassettes made on other decks (also allows for overall high-frequency compensation); 3 heads and double Dolby; fine bias tuning; elapsed time counter; compatible with normal, high-bias, metal tape; nonsymmetric dispersed-resonance dual-capstan transport; wireless remote; CAR processor to boost level of soft passages 20 dB. Speed accuracy $\pm 1\%$; w&F 0.03% wrms; FR 30-19,000 ± 3 dB; S/N 59 dB no NR. 68 dB Dolby B, 78 dB Dolby C \$898

6155 Dolby B/C/HX Pro Cassette Deck

With Play Trim; Dolby B; Dolby C; Dolby HX Pro; DC servo motors; LED meters \$448

6240 Dolby B & C Cassette Deck

Play Trim; Dyneq headroom extension for improved high-frequency response; compatible with normal, chrome, metal tape; bias fine tun-

ing; peak-reading LED meters. Speed accuracy $\pm 1\%$; w&F 0.06% wrms; FR 30-19,000 ± 3 dB; S/N 59 dB no NR, 68 dB Dolby B, 77 dB Dolby C \$298

NAKAMICHI

Dragon Autoreverse Stereo Cassette Deck

Microprocessor-controlled 3-head cassette deck with Dolby B and C. Features Auto Azimuth Correction system; asymmetrical diffused-resonance transport; Super Linear Torque direct-drive motors; auto-retracting slot guides; tape-pad lifter; auto tape slack take-up; 2-speed cueing; 2-speed master fader; auto rec pause; rec-level and bias-calibration controls with 2-tone oscillator; dual-gap ferrite/sendust erase head; separate tape and EQ switches for ZX, SX, and EX cassettes; direct-coupled recording and playback amplifiers; left, right, master input levels; output level control; rec mute; high-output headphone jack; defeatable infrasonic filter; 4-digit LED electronic counter with memory stop and repeat. w&F 0.019% wrms; FR 20-22,000 Hz ± 3 dB with ZX tape; S/N Dolby B/C on 66/72 dB at 400 Hz with 3% THD (A-wtd with ZX tape at 400 Hz, 0 dB); sep/crosstalk 37/60 dB at 1,000 Hz, 0 dB; input sens/imp 50 mV/50 kilohms line; output level/imp 1 V/2.2 kilohms line, 45 mW/8 ohm headphones; 17.75" w x 5.31" h x 11.81" d; 21 lb \$1,995

CR 7A 3-Head Cassette Deck

Discrete stereo cassette deck with asymmetrical diffused-resonance dual-capstan transport. Features 3 motors; auto bias/EQ; Dolby B; Dolby C; manual azimuth adjust; elapsed-time counter; remaining-time counter; output level control; memory stop/play; LED meters; soft-touch controls; headphone jack; rec mute; wireless remote; auto & manual tape/equalizer selection; auto fade; auto repeat. w&F 0.027% wrms; FR, ferric 18-21,000 Hz ± 3 dB; S/N (A-wtd), metal 66 dB Dolby B, 72 dB; line-input sens for 0-dB reading 50 mV; line output at 0 dB 1,000 mV. 17.12" w x 5.31" h x 12" d \$1,495

RX-505 3-Head Cassette Deck

Discrete stereo cassette deck with unidirectional auto reverse to eliminate bidirectional azimuth error. Mechanism turns cassette over at end of side during record or playback. Features asymmetrical dual-capstan closed-loop transport; auto fade (20 secs before end of tape); Dolby B and C; DC servo motors; auto record pause; LED peak level meters reading from -40 to +10 dB; dual-speed master fader; punch-in recording; memory stop/play; soft-touch controls. w&F $< 0.04\%$ wrms; FR 20-20,000 Hz ± 3 dB all tape types; S/N > 70 dB with Dolby C and metal tape; THD $< 0.9\%$ with ZX tape; line-input sens for 0-dB reading 50 mV; line-output level with 0-dB indication 1,000 mV; 17.75" w x 5.69" h x 11.81" d; 22 lb \$1,295

RX-202. Similar to above with 2 heads. w&F $< 0.06\%$ wrms. 17.75" w x 5.38" h x 10" d; 19 lb, 13 oz \$695

MR-1 Discrete 3-Head Pro Cassette Deck

Cassette deck with asymmetrical dual-capstan diffused-resonance transport. Features Dolby B and C; 3 motors; memory stop; rec mute; external NR loop accessed via standard phono jacks; dual 16-segment peak-reading electronic level meters; Crystalloy recording and play heads; subsonic filter; MPX filter; $\pm 6\%$ pitch control; front-panel 0.25" unbalanced line-input jacks; rear balanced XLR input and output jacks; unbalanced 0.25" rear jacks. Balanced inputs; imp

FIRST CAME THE CD THEN CAME THE SPEAKER

SPL **monitors**

Since the invention of the **Compact Disc**, speaker companies have been talking about how their speakers are "**digital ready**". This seems odd when except for the addition of "**digital ready**" stickers, many name brand speakers are pretty much what they were in the days of analogue.

So you still have that agonizing choice between the very efficient, very dynamic speakers versus the softer sounding brands. Isn't it time for an end to this either/or dilemma?

Finally, a speaker, designed after **CD** was invented, that can boast not only audiophile performance, but also the efficiency to deliver the "**full impact**" of digital's dynamic range...**SPL MONITORS**.

SPL Monitors challenge the best of the low efficiency audiophile brands and, "**far out perform them**" in dynamic range and efficiency. When compared to the high efficiency brands, **SPL Monitors** play as loud, but sound, "**so much smoother and more open**".

Check for yourself at your nearest **SPL Monitor Dealer**. Be surprised at how great this digital sound miracle of **CD** and **DAT** really can be.

**"FIRST CAME THE CD, THEN CAME THE SPEAKER"
SPL MONITORS.**

CIRCLE NO. 45 ON READER SERVICE CARD



Photo courtesy of NASA



SPL **monitors**

CASSETTE DECKS

600 ohms; rated input level +4 dBm; headroom 16 dB to max input level (+20 dBm); min input level -6 dBm. Unbalanced inputs: imp 100 kilohms; nominal recording level with input of -20 dBV (0.1 V); nominal input level 0.316 V. Comes with EIA standard rack-mount adaptor. Optional remote control. w&F 0.027% wrms, $\pm 0.048\%$ wtd peak; FR 20-20,000 Hz ± 3 dB at -20 dB \$945

CR 5A 3-Head Cassette Deck

Discrete cassette deck with asymmetrical difused-resonance dual-capstan transport. Features 3 motors; Dolby B; Dolby C; bias fine tuning; output level control; memory stop/play; LED meters; soft-touch controls; headphone jack; rec mute; auto repeat; dual speed-master fader control; independent L/R. w&F 0.027% wrms; FR, ferric 18-21,000 Hz ± 3 dB; S/N (all A-wtd), metal 66 dB Dolby B, 72 dB Dolby C; line-input sens for 0-dB reading 50 mV; line-output level with 0-dB indication 1,000 mV. 17.12" w x 5.31" h x 12" d; 18 lb, 2 oz. \$995

CR-3A 3-Head Cassette Deck

Features asymmetrical dual-capstan transport; Dolby B and Dolby C NR; bias fine tuning; handles levels of +10 dB with metal tape; remote controlled with optional unity or through CA-7A preamp; independent bias and EQ settings; defeatable MPX filter; 50-dB electronic peak-level meters; 1-touch rec pause; rec mute; 4-digit LED counter with memory stop and auto repeat; compatible with external timer; output level control; headphone jack; gold-plated in/out jacks. FR 20-20,000 ± 3 dB at -20; w&F <0.035 wrms \$750

BX-300 Dolby B & C Cassette Deck

Discrete 3-head cassette deck with asymmetrical dual-capstan transport driven by direct-drive capstan motor. Features 3 motors; dual capstans; bias fine tuning; direct drive; output level control; memory stop/play; LED meters; soft-touch controls; headphone jack; rec mute; pitch control; wired remote control; 2-speed master fader; defeatable MPX filter; 2-position EQ switch; 3-position tape selector; separate L + R output level. w&F 0.027% wrms; FR ferric 20-20,000 Hz ± 3 dB, high bias 20-20,000 Hz ± 3 dB, metal 20-20,000 Hz ± 3 dB; S/N (A-wtd) metal: 64 dB Dolby B, 70 dB Dolby C; line-input sens for 0-dB reading 50 mV; line output level with 0-dB indication 1,000 mV. 16.94" w x 3.94" h x 9.88" d; 12.4 lb \$750

MR-2 2-Head Pro Cassette Deck

Rack-mountable cassette deck with balanced line inputs. Features 3 motors; Dolby B; Dolby C; bias fine tuning; output level control; memory stop; LED meters; mike inputs; headphone jack; pitch control; auto repeat; hyperbolic-contour laminated sendust rec/playback head. w&F 0.06% wrms; FR, ferric 20-20,000 Hz ± 3 dB; S/N (all A-wtd), ferric 62 dB Dolby B, 68 dB Dolby C \$559

CR-2A 2-Head Cassette Deck

Features Dolby B and Dolby C NR; Silent-Mechanism Transport; defeatable MPX filter; independent bias and EQ settings; 37-dB peak-level meters; 1-touch rec pause; memory stop; auto repeat; timer rec/play; headphone jack. FR 20-20,000 Hz; distortion <1%; dynamic range >70 dB with metal tape and Dolby C \$450

CR-1A. Similar to CR-2A but lacks bias fine tuning, output level control, remote-control capability, rec mute; has 3-digit mechanical counter \$349

NEC

K-700E Double Cassette Deck

High- and normal-speed dubbing cassette deck can be remote controllable when used with NEC unified-remote integrated amps or receivers. Features 2 heads; 2 motors; 15-program random memory for recording and playback; Dolby B & C; continuous playback; music search; flying-start recording; auto play; intro play; auto rec mute; 4-digit counters; LED meters; soft-touch controls; mic inputs. w&F <0.06% wrms; FR (-2 dB) 20-16,000 Hz (Type-I tape), 20-17,000 Hz (Type-II and -IV tape); S/N (Type-IV tape) 56 dB no NR, 66 dB Dolby B, 75 dB Dolby C. 16.88" w x 4.31" h x 10.62" d; 11.5 lb \$349

K-510 Double Cassette Deck

High-speed dubbing cassette deck with Dolby B & C. Features continuous playback; syncro-start dubbing; soft-touch controls \$249

NIKKO AUDIO

D-100III Autoreverse Cassette Deck

Features 3 heads; Dolby B, C, and dbx; automatic bias programming system (ABPS); manual bias system; random program song selection (RPSS); direct program song selection (DPSS); index programming; real-time counter; intro check; auto spacer; L/R mic inputs; rec mute; multiplex filter; peak reading meters. Optional wired remote control and rack mount. FR 25-20,000 Hz metal, 25-19,000 Hz high bias, 25-17,000 Hz normal; S/N 92 dB with dbx; dynamic range 110 dB \$700

D-80II. Same as above except 2 heads and FR 20-19,000 Hz metal, 20-18,000 Hz high bias, 25-17,000 Hz normal; dynamic range 110 dB; S/N 90 dB with dbx \$470

D-60W Double Cassette Deck

Features 6 motors; high-speed dubbing; Dolby B & C; ABPS; IP; RPSS; random dubbing song search (RDSS). Optional rack mounts \$420



NEC K-700E

ND-750 Cassette Deck

Full-logic autoreverse cassette deck with Dolby B & C \$299

ONKYO

Integra TA-2090 Unidirectional Cassette Deck

Computer-controlled cassette deck with Dolby B, C, dbx NR and Dolby HX Pro. Features 3 heads; 3 motors; auto bias/EQ; dual capstans; bias fine tuning; direct drive; elapsed-time counter; remaining-time counter; music search; output level control; memory stop/play; mic input; headphone jack; rec mute; record calibration controls; sendust heads; MPX filter; fluorescent meters; 2-color peak hold. Remote control and side panels optional. w&F 0.02% wrms; FR 25-17,000 Hz ± 3 dB (Type-I tape), 25-19,000 Hz ± 3 dB (Type-II tape), 25-21,000 Hz ± 3 dB (Type-IV tape); S/N (Type-IV tape) 60 dB no

NR, 70 dB Dolby B, 80 dB Dolby C, 87 dB dbx. 17.69" w x 3.93" h x 15.44" d; 20 lb \$900

TA-RW490 Double Cassette Deck

Features double autoreverse; double recording; high-speed and real-time dubbing; continuous recording; Dolby B & C; Dolby HX Pro; 2 real-time tape counters; program music search for both decks; headphone jack; mic input. Remote control optional \$600

Integra TA-2058 Unidirectional Cassette Deck

Cassette deck with computer-controlled 3-motor transport, Dolby B & C NR, and Dolby HX Pro. Remote-control compatible with Onkyo remote-controlled receivers. Features auto bias-adjusting system to optimize FR within 5 sec; 3 heads; auto bias/EQ; elapsed-time counter; remaining-time counter; music search; memory stop/play; LED meters; mic inputs; rec mute; headphone jack; MPX filter; 3 repeat modes; master left/right level fader with balance fine tuning. w&F 0.045% wrms; FR 30-17,000 Hz ± 3 dB (Type-II tape), 30-18,000 Hz ± 3 dB (Type-IV tape); S/N (Type-IV tape) 70 dB Dolby B, 80 dB Dolby C. 17.12" w x 4.36" h x 14.12" d; 14 lb \$500

Integra TA-2048 Unidirectional Cassette Deck

Cassette deck with computer-controlled 3-motor transport and Dolby B & C NR. Remote control compatible with Onkyo remote-controlled receivers. Features 3 heads; auto bias/EQ; bias fine tuning; music search; memory stop/play; LED meters; mic inputs; rec mute; headphone jack; master left/right level fader with balance fine tuning. w&F 0.045% wrms; FR 30-17,000 Hz ± 3 dB (Type-II tape), 30-18,000 Hz ± 3 dB (Type-IV tape); S/N (Type-IV tape) 70 dB Dolby B, 80 dB Dolby C. 17.12" w x 4.36" h x 14.12" d; 14 lb \$380

TA-W460 Double Cassette Deck

Features high-speed and real-time dubbing; continuous playback; Dolby B & C; computer-controlled tape transport with 4 DC motors; automatic music control system; auto space; auto bias/EQ; LED meters; mic input; headphone jack. Remote control optional. w&F 0.07% wrms; FR 30-15,000 Hz ± 3 dB (Type-I tape), 30-16,000 Hz ± 3 dB (Type-II tape), 30-17,000 Hz ± 3 dB (Type-IV tape); S/N (Type-IV tape) 58 dB no NR. 17.12" w x 4.38" h x 10.12" d; 10.1 lb \$330

TA-R260 Autoreverse Cassette Deck

Features Dolby B & C; Dolby HX Pro; 2 heads; 2 motors; computer-controlled silent-mechanism transport; fine-tuning accu-bias; automatic music control system; auto bias/EQ; real-time 4-digit tape counter; blank skip; mic inputs; headphone jack; auto space; LED meters. Remote control optional. w&F 0.07% wrms; FR 30-14,000 Hz ± 3 dB (Type-I tape), 30-15,000 Hz ± 3 dB (Type-II tape), 30-16,000 Hz ± 3 dB (Type-IV tape); S/N (Type-IV tape) 58 dB no NR. 17.12" w x 4.38" h x 10.38" d \$330

TA-2140 Unidirectional Cassette Deck

Features Dolby B & C; Dolby HX Pro; 2 heads; 2 motors; computer-controlled silent-mechanism transport; fine-tuning accu-bias; automatic music control system; auto bias/EQ; real-time 4-digit tape counter; blank skip; mic inputs; headphone jack; auto space; LED meters. Remote control optional. w&F 0.06% wrms; FR 30-15,000 Hz ± 3 dB (Type-I tape), 30-16,000 Hz ± 3 dB (Type-II tape), 30-17,000 Hz ± 3 dB (Type-IV tape); S/N (Type-IV tape) 58 dB no NR. 17.12" w x 4.38" h x 10.38" d \$310

dB PLUS

DIGITAL MONITORS

THE 3D APPROACH TO MUSICAL ACCURACY AND EFFICIENCY

DYNAMICS:

The DB PLUS DIGITAL MONITORS are highly efficient, enabling moderately powered amplifiers or receivers to generate DYNAMIC VOLUME LEVELS, distortion free.

DIVERSITY:

The musical accuracy of the DB PLUS DIGITAL MONITORS is exceptional at all music levels. From the highest of volumes to the lowest, DB PLUS resists compression and remains sensitive enough to yield true depth and tonal balance, regardless of the music selected.

DISPERSION:

The excellent dispersion of the DB PLUS DIGITAL MONITORS provides spaciousness and stereo imaging that is as real as real can be!

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DIGITAL MONITORS —
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sound perfection**



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CASSETTE DECKS

TA-RW44 Double Cassette Deck

Features autoreverse (deck 2 only); high-speed and normal-speed dubbing; Dolby B; 2 DC-servo motors; auto bias/EQ (deck 2); rec mute; auto stop; time standby mode; music search (deck 2); soft-touch controls; master level fader. w&F 0.07% wrms; FR 30-15,000 Hz \pm 3 dB (Type-I tape), 30-16,000 Hz \pm 3 dB (Type-II tape), 30-17,000 Hz \pm 3 dB (Type-IV tape); S/N (Type-IV tape) 58 dB no NR. 17.12" w x 4.38" h x 10.12" d; 11.7 lb \$260

TA-R240 Autoreverse Cassette Deck

Features Dolby B & C; 2 heads; 2 motors; computer-controlled silent-mechanism transport; fine-tuning accu-bias; automatic music control system; auto bias/EQ; blank skip; mic inputs;



Onkyo Integra TA-2058

headphone jack; auto space; LED meters. Remote control optional. w&F 0.07% wrms; FR 30-14,000 Hz \pm 3 dB (Type-I tape), 30-15,000 Hz \pm 3 dB (Type-II tape), 30-16,000 Hz \pm 3 dB (Type-IV tape); S/N (Type-IV tape) 58 dB no NR. 17.12" w x 4.38" h x 10.38" d \$260

TA-2130 Unidirectional Cassette Deck

Features Dolby B & C; 2 heads; 2 motors; computer-controlled silent-mechanism transport; fine-tuning accu-bias; automatic music control system; auto bias/EQ; blank skip; mic inputs; headphone jack; auto space; LED meters. Remote control optional. w&F 0.06% wrms; FR 30-15,000 Hz \pm 3 dB (Type-I tape), 30-16,000 Hz \pm 3 dB (Type-II tape), 30-17,000 Hz \pm 3 dB (Type-IV tape); S/N (Type-IV tape) 58 dB no NR. 17.12" w x 4.38" h x 10.38" d \$240

PHILIPS

FC 567 Dual Autoreverse Cassette Deck

Dual autoreverse solenoid electronic cassette deck with quick music search. Features digitally controlled electronic autoreverse tape transports; continuous playback or recording with both decks; simultaneous recording on both decks; normal or double-speed dubbing; auto-space record mute; high-integration electronics; Dolby B and C NR; auto tape selection; microphone mixing for playback and dubbing; selectable cinch/DIN connections; optional remote control \$479

FC 566 Autoreverse Cassette Deck

Autoreverse solenoid electronic cassette deck. Features digitally controlled electronic autoreverse tape transport; index scan and quick music search; auto space; blank skip; automatic two-way recording; high-integration electronics; Dolby B and C NR; auto tape-type selection; selectable cinch/DIN connections \$379

PIONEER

CT-A9X Unidirectional Cassette Deck

Features 3 heads; closed-loop dual-capstan drive system; quartz-PLL servo direct-drive capstan motor; ribbon sendust record/play head;

35-segment FI level meters; real-time tape counter; Dolby B & C; DC playback EQ; auto loading; power eject; tape return; music search; auto monitor; auto tape selector; master fader; black finish with rosewood side panels. w&F 0.018% wrms; S/N 58 dB no NR. 5.12" h x 17.94" w x 14.75" d \$900

CT-1380WR Double Cassette Deck

Features Pioneer "SR" unified remote control; autoreverse recording and playback in both decks; Dolby B & C; high-speed dubbing; continuous dubbing; relay record and play; random-access programming of up to 10 songs per tape side; music search; music repeat; skip search; record mute; synchro start; timer record and playback; gold-plated headphone jack. w&F 0.06% wrms; S/N 57 dB no noise reduction. 16.56" wide x 4" high x 12.38" deep \$500

CT-V70 Double Cassette Deck

Features autoreverse; Dolby B, C, and dbx; record and playback on both decks; high-speed dubbing; simultaneous recording; relay record and play; random-access programming of up to 10 songs per tape side. S/N 57 dB NR, 92 dB with dbx. 16.56" w x 4" h x 12.38" d \$485

CT-X707WR Double Cassette Deck

Features autoreverse; Dolby B & C; high-speed dubbing; relay play; synchro start; music search; record mute. w&F 0.075% wrms; S/N >57 dB no NR. 3.94" h x 14.19" w x 12.94" d \$325

CT-1280WR Double Cassette Deck

Features autoreverse playback and recording on deck 2; autoreverse playback on deck 1; Dolby B & C; relay play; high-speed dubbing; full-logic control; music search; skip search; auto tape selector; record mute. Remote controllable with Pioneer "SR" unified remote control. w&F <0.09% wrms; S/N 57 dB no NR. 16.56" w x 4.75" h x 10.44" d \$300

CT-2070R Autoreverse Cassette Deck

Features Dolby B, C, and dbx; full-logic opera-



Pioneer CT-1380WR

tion; music search; one-touch recording; 6-segment LED level meters. Remote controllable with Pioneer "SR" unified remote control. 4" h x 16.56" w x 8.56" d \$290

PROTON

740 Autoreverse Cassette Deck

Full-logic-controlled cassette deck with Dolby B, C, and dbx. Features 2 heads; 1 motor; auto bias/EQ; elapsed-time counter; music search; output level control; memory stop/play; LED meters; soft-touch controls; mic inputs; headphone jack; rec mute; sleep timer function; 9 program memory selection; adaptable to timer for playback or record. w&F 0.05% wrms; FR ferric 25-16,000 Hz \pm 3 dB, high bias 25-18,000 Hz \pm 3 dB, metal 25-19,000 Hz \pm 3 dB; S/N (A-wtd) ferric: 49 dB no NR, 58.5 dB Dolby B, 68 dB Dolby C, 78 dB dbx, high bias: 53 dB no NR, 62 dB Dolby B, 71.5 dB Dolby C, 85 dB dbx, metal: 53 dB no NR, 60 dB Dolby B, 70 dB Dolby C, 95 dB dbx; line-input sens for 0-dB

reading 90 mV; line output level with 0-dB indication 700 mV \$329

AD-300 Autoreverse Cassette Deck

Features Dolby B & C NR; autoreverse (in play and rec); MPX filter; auto bias selector; full-logic controls; FR metal bias 40-17,000 Hz \pm 3 dB; S/N CrO₂ 70 dB; THD 1.5% (metal tape), 1.8% (CrO₂), 1.2% (normal tape) \$299

720B Dolby B & C Cassette Deck

Stereo cassette deck with Dolby B and C. Features soft-touch operation; one-touch record; bias circuit to reduce crosstalk between stereo channels; defeatable MPX filter; LED record indicators; balance control; mic inputs; headphone jack; mic/line mixing capability. w&F 0.08%; FR 30-17,000 Hz \pm 3 dB (ferric); 30-17,000 Hz \pm 3 dB (high bias), 30-18,000 Hz \pm 3 dB (metal); S/N ferric, 65.5 dB with Dolby B, 74 dB with C; high-bias/metal tape, 69.5 dB with Dolby B; 78 dB with C \$199

REALISTIC BY RADIO SHACK

SCT-100 Double Autoreverse Cassette Deck

Dolby B and Dolby C; high-speed dubbing; compatible with normal, high-bias, metal tapes; mic inputs; headphone jack; 2-color 8-LED peak-level meters; sequential play; soft-touch controls. w&F 0.08% wrms; FR (\pm 3 dB) ferric 40-12,500 Hz, high bias 40-13,000 Hz, metal 40-14,000 Hz; S/N 69 dB Dolby B, 61 dB Dolby C \$230

SCT-83 Autoreverse Cassette Deck

Dolby B; Dolby C; music search; solenoid operation; plays 1 side, both sides, or repeats continuously; compatible with normal, high-bias, metal tape; mic and headphone jacks; intro scan. w&F 0.06% wrms; FR (\pm 3 dB) ferric 40-14,000 Hz, high bias 40-15,000 Hz, metal 40-16,000 Hz; S/N 70 dB Dolby C \$220

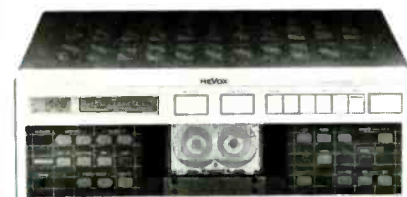
SCT-74 Double Cassette Deck

Dolby B and Dolby C; high-speed dubbing; compatible with normal, high-bias, metal tapes; LED's for power and recording; mic inputs; headphone jack. w&F 0.12% wrms; FR (\pm 3 dB) ferric 60-10,000 Hz, high bias 60-12,000 Hz, metal 60-14,000 Hz \$180

REVOX

B215 3-Head Cassette Deck

Cassette deck with 3 microprocessors for control of bias, level, EQ, transport, and real-time counter. Features 3 heads; 4 motors; digital storage of bias, level, EQ settings for 6 tape formulations; manual or auto record-level setting; die-cast transport chassis; azimuth-stable pivoting headblock; 2-programmable locate buttons; loop mode; auto start-of-record locate. Counter computes elapsed time on partially wound tapes. w&F 0.1% wrms; FR ferric 30-18,000 Hz \pm 3 dB, high bias and metal 30-20,000 Hz \pm 3 dB; S/N (A-wtd) ferric: 55 dB no NR, 64 dB Dolby B, 70 dB Dolby C, high bias: 57 dB no NR, 65 dB



Revox B215

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CASSETTE DECKS

Dolby B, 72 dB Dolby C, metal: 58 dB no NR, 66 dB Dolby B, 72 dB Dolby C; line-input sens for 0-dB reading 50 mV; line output at 0 dB 775 mV; 17.7" x 6" x 13" \$1,880

ROTEL

RD870 Dolby B/C/HX Pro Cassette Deck
Features sendust rec/play head; precision transport mechanism; 2 heads; 2 motors; bias fine tuning; direct drive; LED meters; soft-touch controls; mic inputs; headphone jack. w&F 0.05%; FR metal 30-20,000 Hz \pm 3 dB \$499

RD850 Dolby B & C Cassette Deck

Cassette deck with sendust rec/play head, ferrite core erase head. Features soft-touch controls; LED meters; mic inputs; DC servo motors; headphone jack. w&F 0.08% wrms; FR ferric 30-17,000 Hz \pm 3 dB, high bias 30-17,000 Hz \pm 3 dB, metal 30-18,000 Hz \pm 3 dB; S/N high bias: 55 dB no NR, 64 dB Dolby B, 72 dB Dolby C; 17" w x 4.5" h x 10.62" d; 9.1 lb \$229

SAE

C101 3-Head Cassette Deck

Full-logic microprocessor cassette deck with Dolby calibration adjustments. Features 3 heads; 2 motors; LED meters; Dolby B; Dolby C; bias fine tuning; manual azimuth adjust; elapsed-time counter; remaining-time counter; output level controls; memory stop/play; LED meters; soft-touch controls; sendust heads; remote control optional. w&F 0.06% wrms; FR ferric 20-20,000 Hz \pm 3 dB for all tape types; S/N (high bias) 55 dB no NR, 66 dB Dolby B, 75 dB Dolby C; line-input level for 0-dB reading 70 mV; line-output level with 0-dB indication 650 mV; 19" w x 5.25" h x 12.5" d; 17 lb \$650

C102 2-Head Cassette Deck

Full-logic microprocessor cassette deck. Features tape transport encased in electronic sliding drawer; 2 heads; 2 motors; Dolby B; Dolby C; manual azimuth adjust; elapsed-time counter; remaining-time counter; music search; blank skip; memory stop/play; LED meters; rec mute; sendust heads. w&F 0.06% wrms; FR 20-20,000 Hz for all tape types; S/N (high bias): 55 dB no NR, 65 dB Dolby B, 74 dB Dolby C; line-input sens for 0-dB reading 70 mV; line output level with 0-dB indication 650 mV. 19" w x 3.5" h x 14" d; 18 lb \$429

SANSUI

D-W11 Double Autoreverse Cassette Deck

Autoreverse high-speed dubbing cassette deck. Features 2 heads and 2 motors for each transport; Compu-Edit; 16-track RMPS; 15-track Automatic Music Program Search; auto fader; rec cancel; intro skip; timer record/play; manual and auto level controls; auto bias/EQ; Dolby B & C NR; dual capstans; auto azimuth adjust; elapsed-time counter; music search; blank skip; memory stop/play; LED meters; mic inputs; headphone jack; rec mute; black or silver. w&F 0.05% wrms; FR metal 30-17,000 Hz \pm 3 dB; S/N (A-wtd) metal: 57 dB no NR, 66 dB Dolby B, 73 dB Dolby C. 16.94" w x 4.37" h x 12" d; 13.4 lb \$600

D-705 Dolby B & C Cassette Deck

Cassette with timer record/play and real-time auto tape monitor. Features 3 heads; 2 motors; bias/EQ; dual capstans; bias fine tuning; blank skip; music search; output level control; LED meters; rec mute. w&F 0.035% wrms; FR metal 20-21,000 Hz \pm 3 dB; S/N (A-wtd) metal: 68 dB Dolby B. 16.94" w x 4.36" h x 12.25" d \$500

D-3000WR Double Autoreverse Cassette Deck

High-speed dubbing autoreverse deck. Features LED meters for each channel; full logic, soft-touch controls; Dolby B and C; AMPS (Automatic Music Program Search); rec mute. w&F 0.09% wrms; FR metal 20-17,000 Hz; S/N metal 72 dB Dolby C: 64 dB with Dolby B. 16.94" w x 5" h x 8.97" d; 9.9 lb \$450



SAE C102

D-505R Autoreverse Cassette Deck

Features timer record/play; real-time tape counter; 2 heads; 2 motors; auto bias/EQ; Dolby B; Dolby C; dual capstans; bias fine tuning; blank skip; auto azimuth adjust; music search; output level control; memory stop/play; LED meters; rec mute; headphone jack. w&F 0.45% wrms; FR metal 20-19,000 Hz \pm 3 dB; S/N (A-wtd) metal: 66 dB Dolby B. 16.94" w x 4.36" h x 12.25" d; 11.3 lb \$425

SANYO

RDW79 Double Autoreverse Cassette Deck

Features 3-way programmable autoreverse; infrared reverse sensor; autoreverse record; high-speed dubbing; synchro dubbing; Dolby NR; metal-tape capability; dual level meters; auto stop; soft-touch transport controls; tape counter; headphone jack \$190

RDW59 Double Cassette Deck

Features Dolby NR; continuous playback; high-speed dubbing; synchronous dubbing; metal-tape capability; dual level meters; auto-stop; soft-touch transport controls; 3-digit tape counter; headphone jack \$90

RDS29 Cassette Deck

Features soft-touch controls; Dolby NR; permalloy heads; metal-tape capability; 5-segment VU meters; headphone jack; input level controls; 3-digit tape counter \$60

SCOTT

DD686 Double Autoreverse Cassette Deck

Remote control; Dolby B, Dolby C, dbx NR; full-logic transports; auto program search; relay play; bias fine tuning; 3-way autoreverse selection; headphone jack with volume control. w&F 0.08% wrms; FR (\pm 3 dB) 30-14,000 ferric, 30-15,000 high-bias, 30-16,000 metal; A-wtd S/N: 62 dB with Dolby B, 70 dB with Dolby C, 90 dB with dbx I \$550

DD688 Double Cassette Deck

Dolby B and Dolby C NR; high-speed dubbing; music search; LED meters; soft-touch controls; headphone jack; continuous play. w&F 0.15% wrms; FR (\pm 3 dB) 40-13,000 ferric, 40-14,000 high-bias, 40-15,000 metal; A-wtd S/N: 62 dB with Dolby B, 70 dB with Dolby C \$250

DD677. As above but without Dolby C and music search \$200

SHARP

RT-6W800 Double Cassette Deck

Autoreverse high-speed-dubbing cassette deck with Dolby B. Features soft-touch controls; auto program search; LED peak level meters; metal-tape capability; 2 heads; 1 motor; music search; output level control; mic inputs; headphone

jack. w&F 0.08% wrms; record/playback FR ferric 40-13,000 Hz \pm 3 dB, high bias 40-14,000 Hz \pm 3 dB; metal 40-16,000 Hz \pm 3 dB; 17" w x 4.89" h x 9.89" d \$220

RT-W500 Double Cassette Deck

Cassette deck with high-speed synchronous dubbing and continuous playback capability. Features 2 heads, 1 motor; Dolby B; LED peak level meters; headphone jack; mic inputs; metal-tape capability; auto stop. w&F 0.12% wrms; record/playback FR ferric 50-11,000 Hz \pm 3 dB, high bias 50-12,000 Hz \pm 3 dB; metal 50-13,000 Hz \pm 3 dB; 17" w x 4.88" h x 8.56" d \$120

SHERWOOD

S-289RDR Double Cassette Deck

Features autoreverse dubbing capability; 2 dubbing speeds; Dolby B & C NR; compatible with Sherwood Digi-Link remote components; auto music search; auto tape select; LED peak level indicators; relay playback for continuous listening of both decks; timer/start; rec mute \$300

SONY

TC-K700ES Unidirectional Cassette Deck

Three-head cassette deck with a center-located drive system that separates the control circuitry from the audio circuits. Features twin-mono DC amp design; LC-OFC laser amorphous heads; Dolby B and Dolby C noise reduction; memory stop/play; auto playback-EQ selector; MPX filter switch; auto play; auto space; timer record and playback; linear counter; remaining-time indication; headphone jack with adjustable level. w&F 0.025% wrms; FR 20-20,000 Hz \pm 3 dB (no NR, Type-IV tape); S/N 60 dB (no NR, Type-IV tape). 17" w x 5" h x 13.75" d \$700

TC-WR950 Double Cassette Deck

Remote-controlled high-speed-dubbing cassette deck with autoreverse, record, and playback for both decks. Features Dolby B & C for both decks; super bias technology; 2 laser amorphous heads in each deck; 2 motors for each deck; 12-selection/16-memory direct-access random music sensor for programmed playing and recording; sync record; timer record and playback; auto music sensor for both decks; blank skip for both decks; auto pause; auto play; autospacer rec mute; memory stop; auto playback-EQ selector for both decks; 12-segment FL meter; linear tape counter (deck A); swichable tape counter (deck B); headphone jack with adjustable level; feather-touch controls. w&F 0.05% wrms; FR 30-17,000 Hz \pm 3 dB (Type-IV tape); signal-to-noise ratio 59 dB (without NR, Type-IV tape). 17" w x 5.38" h x 11.25" d \$700

TC-R503 Autoreverse Cassette Deck

Features remote control; Dolby B & C; Dolby HX Pro; 2 laser amorphous heads; 2 motors; record-level calibration; timer record and playback; auto music sensor; music scan; blank skip; auto play; autospacer rec mute; memory stop; auto playback-EQ selector; 24-segment FL meter; linear tape counter; headphone jack with adjustable level; feather-touch controls. w&F 0.05% wrms; FR 30-17,000 Hz \pm 3 dB (Type-IV tape); S/N 59 dB (no NR, Type-IV tape). 14" w x 4.25" h x 11.25" d \$500

TC-WR750 Double Cassette Deck

Remote-controlled high-speed-dubbing cassette deck with autoreverse, record, and playback for deck B and playback and autoreverse for deck A. Features Dolby B & C; 2 sendust heads (deck

CASSETTE DECKS

B); 1 sendust head (deck A); 2 motors for each deck; sync record; timer record and playback; auto music sensor for both decks; blank skip for both decks; auto pause; auto play; autospace rec mute; auto playback-EQ selector (deck A); manual playback-EQ selector (deck B); 12-segment LED meter; drum tape counter (deck B); headphone jack; feather-touch controls. w&F 0.07% wrms; FR 30-15,000 Hz \pm 3 dB (Type-IV tape); S/N 58 dB (no NR, Type-IV tape). 17" w x 5.12" h x 10.88" d \$400

TC-WR550 Double Cassette Deck

Remote-controlled high-speed-dubbing cassette deck with record and playback for deck B and playback for deck A. Features Dolby B & C; 2 sendust heads (deck B); 1 sendust head (deck A); 2 motors for each deck; auto music sensor for both decks; blank skip for both decks; auto play; autospace rec mute; auto playback-EQ selector (deck A); manual playback-EQ selector (deck B); 7-segment LED meter; drum tape counter (deck B); headphone jack; feather-touch controls. w&F 0.07% wrms; FR 30-15,000 Hz \pm 3 dB (Type-IV tape); signal-to-noise ratio 58 dB (without noise reduction, Type-IV tape). 17" w x 5.12" h x 10.88" d \$300

TANDBERG

TCD 3014A Cassette Deck

8-bit, 32-K, E-PROM microprocessor-controlled stereo cassette deck with 4 servo-controlled tape-transport motors. Features scan to play; scan to stop; auto rewind; auto replay; timer record/play; 3 heads; Dolby B and C; azimuth alignment; bias adjustment; record current adjustment utilizing built-in test system; linear motor to position heads and pinch-rollers to tape; instant "flying start" record/play; Dyneq record equalization; Actilinear II headroom-extension system; peak-reading meters; cue and review at half speed; real time/real revolution counter; LED indication of all transport functions. Wireless infrared remote control with built-in receiver included. Rosewood side panels and rack mounts available \$1,995

TASCAM BY TEAC

112R Autoreverse Cassette Deck

Rotating play and record heads; Hysteresis Tension Servo Control; 16-pin connector on rear for remote control and interfacing with other decks; rack mountable; optional remote control; Dolby B and Dolby C NR; index and time counter; \pm 15% pitch control; auto bias/EQ; L and R mic inputs; timer standby; auto monitor. w&F 0.03% NAB, 0.06% peak DIN/IEC/ANSI wtd; FR at -20 dB with no NR: 25-20,000 Hz \pm 3 dB metal, to 19,000 Hz \pm 3 dB chrome, to 17,000 \pm 3 dB normal; THD 1% at 0 VU, 400 Hz; S/N (ref 3% THD) 60 dB no NR, wtd, 70 dB Dolby B, over 1,000 Hz, 80 dB Dolby C, over 1,000 Hz; 18.2" w x 5.6" h w 11.7" d; 12.79 lb \$795

TEAC

W-990R Double Autoreverse Cassette Deck

Continuous recording; parallel recording; 3 motors in each transport; logic control; wireless remote control; sync reverse; 1-touch high-speed or normal speed dubbing; Random Memory Program Dubbing; cobalt amorphous linear-crystal oxygen-free copper rec/play head; Dolby B, Dolby C, dbx NR; independent counters for each transport; 2-color L/R peak meters; intro check; blank scan; timer compatible; rec mute with auto space; headphone jack. w&F 0.045%; FR 30-19,000 Hz 3 dB with metal tape; S/N (3% distortion, wtd) 59 dB no NR, 74 dB (over 1,000

Hz) Dolby C, 91 dB dbx (1,000 Hz) \$759

R-919X Autoreverse Cassette Deck

3 motors; 2 erase heads, 1 rotating record/play head; logic control; remote control; Dolby HX Pro headroom extension; double Dolby B, Dolby C, dbx NR; 2-color L/R peak meters; intro check; blank scan; memory stop/play; timer compatible; manual tape calibration; headphone jack; electronic tape counter; CD level check; program search; direct selection; block repeat; MPX filter; optional wooden side panels; output level control. w&F 0.029%; FR 25-20,000 Hz 3 dB with metal tape; S/N (3% distortion, wtd) 60 dB no NR, 80 dB (over 1,000 Hz) Dolby C, 92 dB dbx (1,000 Hz); 13.3 lb \$749

V-970X Dual-Capstan 3-Head Cassette Deck

Closed-loop transport; 3 motors; 1 erase head, 1 record head, 1 play head; logic control; remote control; Dolby HX Pro headroom extension; double Dolby B, Dolby C, dbx NR; 2-color L/R peak meters; intro check; blank scan; memory stop/play; timer compatible; manual bias calibration with oscillator (separate for L and R ch); headphone jack; electronic tape counter displays time; CD level check; program search; direct selection; block repeat; MPX filter; optional wooden side panels; output level control. w&F 0.028%; FR 25-20,000 Hz 3 dB with metal tape; S/N (3% distortion, wtd) 60 dB no NR, 80 dB (over 1,000 Hz) Dolby C, 92 dB dbx (1,000 Hz) \$699

AD-4 Cassette Deck and CD Player

Wireless remote control; random program dubbing of 16 tracks; auto space; Dolby B and Dolby C NR; 1 erase, 1 record/play head; autoreverse; synchro start auto dubbing; CD repeat. CD player section: S/N 94 dB; THD 0.02%; sep 90 dB. Cassette deck section: w&F 0.05%; FR to 16,000 Hz \$599

W660R Double Autoreverse Cassette Deck

Double quick-autoreverse cassette deck with full IC-logic transport control. Features 2 heads; 3 motors; 2 transports; RMPD; cobalt amorphous head in deck II; continuous playback; auto bias/EQ; Dolby B; Dolby C; blank skip; music search; LED meters; rec mute; headphone jack. w&F 0.05% wrms; FR ferric 25-18,000 Hz \pm 3 dB, high bias 25-19,000 Hz \pm 3 dB, metal 25-20,000 Hz \pm 3 dB; S/N (A-wtd) metal: 69 dB Dolby B, 78 dB Dolby C. 12 lb; 17.12" w x 4.36" h x 11.44" d \$599

W460-C. Similar to W660R but without autoreverse and cobalt amorphous head \$549
D-525C. Similar to W460-C without blank scan and RMPD \$349

AD-7 Cassette Deck and CD Player

Wireless remote control; random program dubbing of 15 tracks; auto space; rec mute; auto bias/EQ; Dolby B, Dolby C, dbx NR; MPX filter; erase, 1 record/play head; autoreverse; Time Edit calculates CD tracks that will fit on tape, changing order to fill tape; timer compatible; synchro start auto dubbing; blank scan; headphone jack with level control; twin rec-level controls; bias adjust control; CD repeat of disc or program; index search; 3-beam laser. CD player section: S/N 95 dB; THD 0.004% at 1,000 Hz; sep > 90 dB; w&F unmeasurable. Cassette deck section: w&F 0.05%; FR 30-19,000 Hz \pm 3 dB with metal tape. 16 lb \$569

R-616X Autoreverse Cassette Deck

2 motors; 1 erase head, 1 rotating record/play head; logic control; Dolby HX Pro headroom

extension; Dolby B, Dolby C, dbx NR; 2-color L/R peak meters; intro check; blank scan; memory stop/play; timer compatible; headphone jack with level control; electronic tape counter displays time; 1-touch recording; independent L/R input controls; program search; direct selection; block repeat; MPX filter; CD level check. w&F 0.05%; FR 25-20,000 Hz with metal tape; S/N (3% distortion, wtd) 59 dB no NR, 74 dB (1,000 Hz) Dolby C, 90 dB dbx (1,000 Hz); 11 lb \$489

V-770 3-Head Cassette Deck

Full IC-logic tape transport; 2 motors; auto bias/EQ; Dolby B and Dolby C; Dolby HX Pro; bias fine tuning; elapsed-time counter; music search; output level control; memory stop/play; LED meters; rec mute; headphone jack; intro check; gold-plated jacks; MPX filter; Compu-matic Program Search (CPS). w&F 0.05% wrms; FR (all \pm 3 dB) ferric 25-18,000 Hz, high bias 25-19,000 Hz, metal 20-20,000 Hz; S/N (A-wtd) metal 69 dB Dolby B, 74 dB Dolby C. 17.12" w x 4.75" h x 10.44" d; 10.8 lb \$469

V-550X Dolby B/C/dbx Cassette Deck

Full-IC-logic cassette deck with cobalt amorphous head. Features 2 heads; 2 motors; auto bias/EQ; elapsed-time counter; music search; memory stop/play; LED meters; mic inputs; rec mute; headphone jack; MPX filter; intro check; 1-touch recording. w&F 0.05% wrms; FR ferric 25-18,000 Hz \pm 3 dB, high bias 20-19,000 Hz \pm 3 dB, metal 20-20,000 Hz \pm 3 dB; S/N (A-wtd) metal: 69 dB Dolby B, 74 dB Dolby C, 90 dB dbx. 17.12" w x 4.75" h x 10.44" d \$429

R-435X Autoreverse Cassette Deck

Cassette deck with rotary head system. Features 2 heads; 1 motor; Dolby B, Dolby C; dbx; output level control; LED meters; soft-touch controls; mic inputs; rec mute; headphone jack. w&F 0.06% wrms; FR ferric 30-16,000 Hz \pm 3 dB, high bias 30-17,000 Hz \pm 3 dB, metal 30-17,000 Hz \pm 3 dB; S/N (A-wtd) metal: 65 dB Dolby B, 70 dB Dolby C, 90 dB dbx \$299

TECHNICS

RS-T80R Double Autoreverse Cassette Deck

Features quick autoreverse, record, and play for both transports; 4 reverse modes; parallel and 3-hr series recording on both transports; series playback; synchro start; FL display; auto bias/EQ; feather-touch controls; remote-control capability with some Technics receivers; high-speed editing; 4 heads; 2 motors; Dolby B, Dolby C, dbx NR; elapsed-time counter; music select; headphone jack. w&F 0.08% wrms; S/N (A-wtd) high bias 57 dB no NR, 67 dB Dolby B, 75 dB Dolby C, 92 dB dbx. 16.94" w x 4.36" h 10.91" d; 11.7 lb \$600

RS-T55R Double Autoreverse Cassette Deck

Features quick autoreverse for both transports; Dolby B, Dolby C, and dbx NR; high-speed dubbing; auto bias/EQ; synchro start, stop; rec mute; auto space; anti-resonant metallic feet; edit search on Transport A; soft-touch controls; 2-part digital peak readout \$420
RS-T33R. Similar to above except lacks dbx and autoreverse on Transport B \$350
RS-T22. Similar to RS-T33R except lacks synchro stop and rec mute \$225
RS-T11. Similar to RS-T22 except lacks Dolby C and digital peak readout \$195

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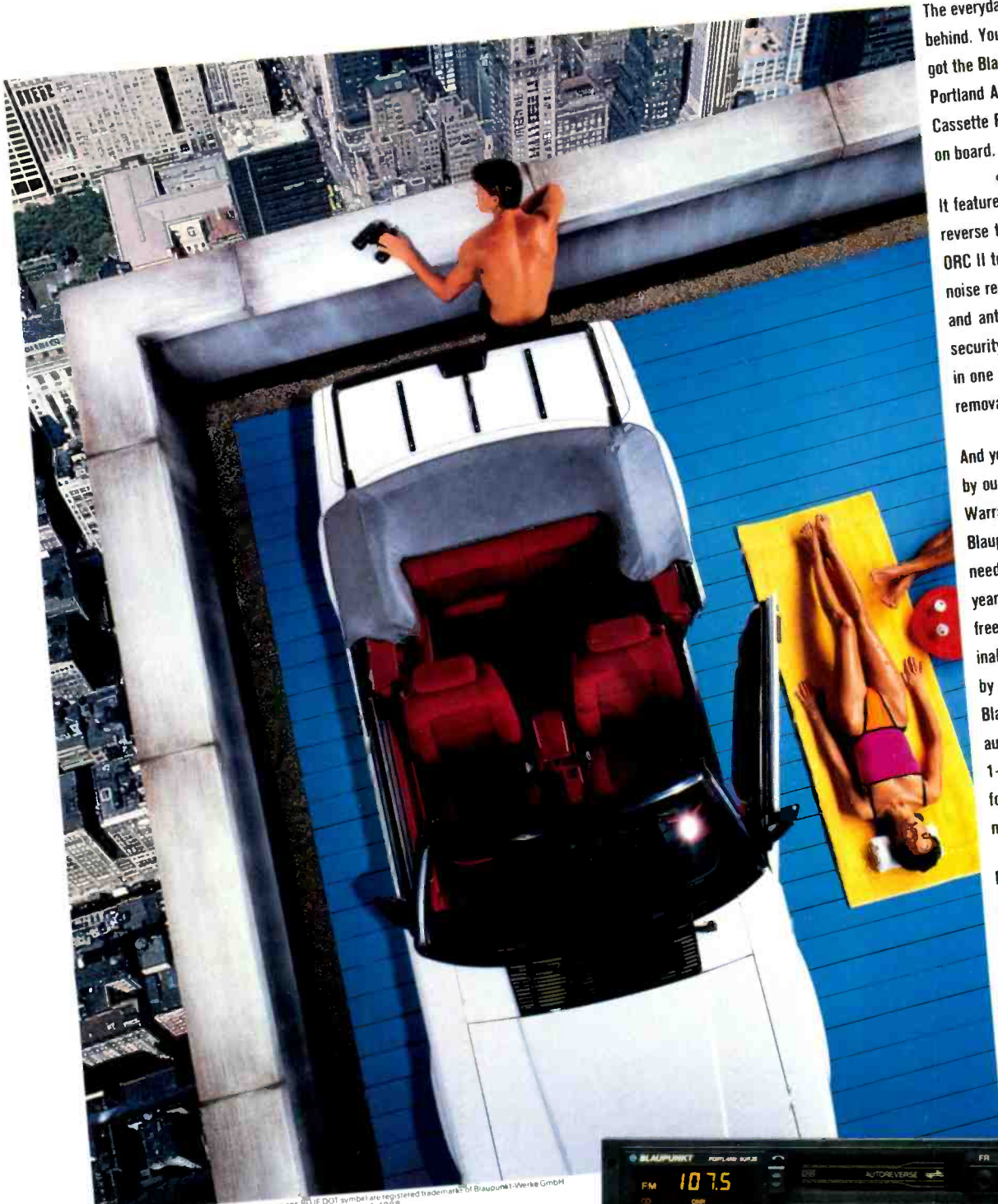
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BEST RECORDINGS OF THE MONTH

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IT'S FOLK! IT'S PUNK! IT'S THE POGUES!

THE word "pogue" is short for "pogue mahone," which is Gaelic for "kiss my . . ."—well, you know what it's Gaelic for. So the question isn't if the Pogues will fall from grace with God but *when*, how far, and can we go too? Their new album, "If I Should Fall from Grace with God," is a riotous, whirling, reeling brawl of tavern ribaldry, pockmarked love songs, boozy prayers, gutter balladry, Thatcher-bashing, and, above all, Joycean romanticism. If you're already acquainted with the Pogues, "If I Should Fall . . ." their third album in the U.S. and their first on Island, will come as a bit of a surprise. While the Pogues have always had a reputation as "folk-punks," this is the first album in which they've really made the connection.

The music here is rooted firmly in the Irish folk tradition. Every tune sounds like a variation on a well-worn reel or jig or chantey. Tom Waits has called the Pogues "drunk Clancy Brothers," and the comparison is apt. There are no synthesizers; there aren't even any electric guitars. And yet there's a frenzy in this music that pushes it out way beyond even the wildest folk improvisation. Credit producer Steve Lillywhite for making it work: eight musicians flailing away at banjo, fiddle, concertina, acoustic guitar, dulcimer, drums, piano, tin whistle, and saxophone, never stopping for breath, and yet they're as tightly knit as a band of IRA irregulars out for an evening raid.

In the middle of this tunelessly chaotic maelstrom is Shane MacGowan. MacGowan, who sings most of the lead vocals, is an expatriate Irishman living in London who shares his countrymen's natu-

ral antipathy toward the English. He is always in a rage. You may not understand a word he says, but he sings with such bloodcurdling passion that you somehow know what he means anyway. MacGowan also wrote most of the songs here, and they're a wonderful lot. Among my favorites are the title song, an absolutely irresistible double-time romp; *Bottle of Smoke*, an even faster tune about the incomparable joys of hitting a long shot at the racetrack ("Slip a fifty to the wife, and for each brat a crisp new five, to give me a break on a Saturday night"); and *Fairytale of New York*, a love duet that's sung by two derelicts ("You're a bum, you're a punk, 'You're an old slut on junk'").

There is a renegade morality and idealism at the heart of "If I Should Fall . . ." The wastrels and drunkards, the profligates and rebels who populate MacGowan's songs are the victims of demons beyond their control—social, economic, political, and psychological demons along with the evil spirits that come tumbling out of a bottle. Yet even at their most profane, they fight back with defiant dignity. With its racing snare drum and pennywhistle, "If I Should Fall from Grace with God"

goes to work first on your feet. From there, it's just a short trip to your soul.

Mark Peel

THE POGUES: *If I Should Fall from Grace with God*. The Pogues (vocals and instrumentals). *If I Should Fall from Grace with God*; *Turkish Song of the Damned*; *Bottle of Smoke*; *Fairytale of New York*; *Metropolis*; *Thousands Are Sailing*; *Fiesta*; *Streets of Sorrow/Birmingham Six*; *Lullaby of London*; *Sit Down by the Fire*; *The Broad Majestic Shannon*; *Worms*. ISLAND 90872-1, © 90872-4, © 90872-2 (44 min).

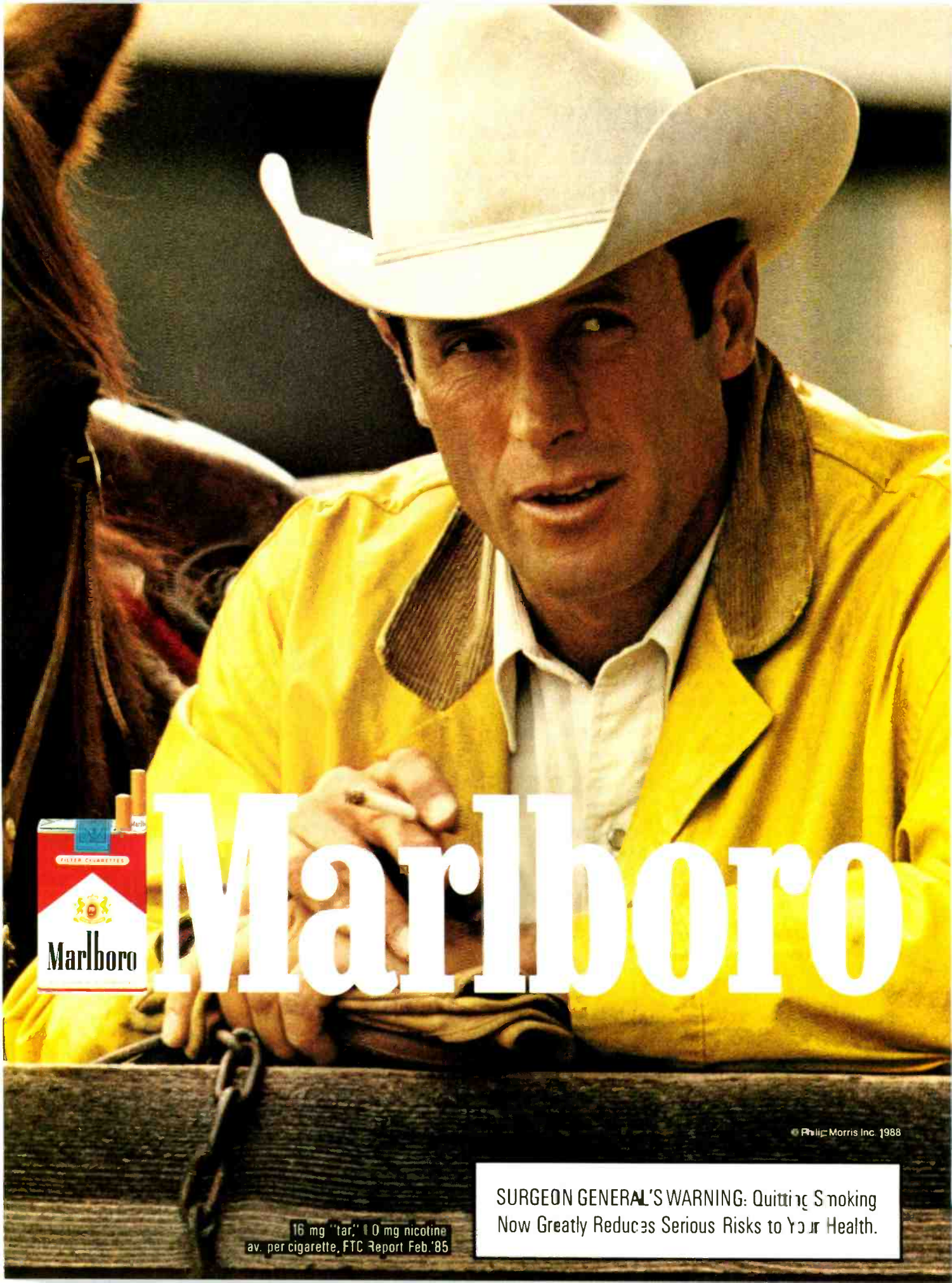
OZAWA CONDUCTS PROKOFIEV

SEIJI OZAWA'S new recording of Prokofiev's *Romeo and Juliet* with the Boston Symphony on Deutsche Grammophon is only the third stereo version of the complete ballet score. The first two, and until now the only, complete stereo recordings were Lorin Maazel's with the Cleveland Orchestra on London and André Previn's with the London Symphony on Angel, released simultaneously

The Pogues: pockmarked love songs and gutter balladry



ISLAND RECORDS



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BEST RECORDINGS OF THE MONTH

nearly fifteen years ago. Since transferred to CD, they remain appealing both sonically and musically, but Ozawa's set must now be considered the first choice.

The Ozawa recording also happens to be his first appearance with the Boston Symphony on Deutsche Grammophon in seven or eight years. One of their last DG releases was a splendid account of Tchaikovsky's *Swan Lake*. That did not stay in the catalog very long, but it did give a fine demonstration of Ozawa's feeling for Russian balletic idiom—an idiom very much shared by the Prokofiev score. And when it comes to Prokofiev, the Boston Symphony can boast an especially rich tradition, established by Serge Koussevitzky. Among the several Prokofiev recordings Koussevitzky made in Boston was one with music from *Romeo and Juliet*, and both his immediate successor, Charles Munch, and his successor, Erich Leinsdorf, made memorable recordings of greater parts of the score.

From the first bars to the last, the new recording suggests nothing less than total absorption in the special world Prokofiev created in this ballet. The playing is at all times brilliant, elegant, evocative, and compassionate. Ozawa is certainly mindful of Prokofiev's statement that he had "taken special pains to achieve a simplicity which will, I hope, reach the hearts of all listeners," but he is no less mindful of the score's remarkable richness of color and sumptuousness. Where he gains over both Maazel and Previn, I think, is in realizing the specifically *Russian* qualities in Prokofiev's

fairy-tale view of Shakespeare. We are reminded not only of the score's connections with Prokofiev's Fifth Symphony but of those with his *Alexander Nevsky* as well.

If Ozawa does not quite match the symphonic sweep of Maazel's version in terms of continuity, he is far ahead of Previn in this respect, and he is more enlivening than Maazel in the crowd scenes. He balances the elements of poignancy and earthiness a little more convincingly than either of the other conductors, and, not unexpectedly, he enjoys a clear advantage in the recorded sound itself. While both the earlier recordings stand up well, DG's sound is richer and better balanced. In sum, Ozawa's recording strikes me as combining and amplifying upon the strongest features of both previous versions.

Richard Freed

PROKOFIEV: *Romeo and Juliet*, Op. 64 (complete). Boston Symphony Orchestra, Seiji Ozawa cond. DEUTSCHE GRAMMOPHON ● 423 268-1 three LP's, © 423 268-4 two cassettes, © 423 268-2 two CD's (144 min).

WILD SEEDS: "MUD, LIES & SHAME"

SOME bands make you dance, some bands make you think, and some bands make you laugh. And occasionally a band manages a musical hat trick and makes you do all three. Such a band is Wild Seeds, an Austin outfit that has been one of the better-kept secrets of Texas rock-and-roll but whose new album, "Mud, Lies & Shame," should get it national notice in a hurry.

The basic musical mix is as rootsy and eclectic as you might expect—a little hard country (there are hints of the Gram Parsons-era Burrrito Brothers), a little blues-based Stonesish guitar rock, a little unclassifiable weirdness (Timbuk 3 comes to mind). But what holds it all together is lead singer/songwriter Michael Hall, who sounds like an adenoidal Lou Reed on a tequila bender and writes like a bastard



Wild Seeds: rootsy

relation of Randy Newman, Buddy Holly, and the young Graham Parker. Equally at home with no-subtext stompers, tuneful, keenly observed relationship songs, and caustic satire, Hall is clearly a major find. In *I'm Sorry, I Can't Rock You All Night Long*, the album's masterpiece, he's concocted a hilariously on-the-money deflation of the adolescent macho-rock mystique. "It's an interesting idea, baby," he sighs, "but it would be wrong," and you can practically hear him pulling the covers over his head.

Meanwhile, the rest of the band makes a terrific guitar-heavy racket behind him, Howard Benson's production is clean and unfussy, and, best of all, Kris McKay, clearly the band's secret weapon (mostly she's relegated to background vocals), gets to close the album with a tour-de-force country weeper, *All This Time*. It works up a sort of Janis Joplin Goes Minimalist intensity that will knock your socks off. In short, this is a little gem of an album that proves, once again, that the best rock-and-roll addresses the feet, the brains, and the heart more or less equally. You should hear it immediately.

Steve Simels

WILD SEEDS: *Mud, Lies & Shame*. Wild Seeds (vocals and instrumentals); other musicians. *Debi Came Back; I'm Sorry, I Can't Rock You All Night Long; You Will Be Married to a Jealous Man; I Have Died a Thousand Times for True Love; Long Gone Train; Like a Fall; Jack's Walking with the King; Ramblin'; If I Were a Storm; Virginia; All This Time.* PASSPORT PB 6060, © PBC 6060, © PBCD 6060 (38 min).



Seiji Ozawa: elegant

BEST RECORDINGS OF THE MONTH

NOJIMA'S KNOCKOUT LISZT

WINNING major competitions does not necessarily insure a major career, which nowadays surely requires recordings. Winning the Van Cliburn International Piano Competition in 1969 did not even get Minoru Nojima a listing in *Grove* or *Baker's*, and this Japanese pianist's name is still likely to be as unfamiliar to most American music lovers as the label on which he has just made his American recording debut, the San Francisco-based Reference Recordings. Once his new Liszt recital begins to circulate, though, it should dramatically alter that situation. It's an absolute knockout, vividly recorded and alive with the sort of pianism and the sort of music making we don't encounter every other Tuesday.

The program itself is a splendid one in both substance and contrast. It begins with the *Mephisto Waltz* No. 1, proceeds to the most intriguing of the *Paganini Études* (*La campanella*), and two sharply contrasting numbers from the *Transcendental Études*, and concludes with the great Sonata in B Minor. Nojima's technique—the rhythmic steadiness, the clarity, the regard for tone evident in every note, the marvelous dynamic shadings, the incredibly beautiful and even runs—is something that might well be admired and enjoyed for its own sake, but it is not technique alone that makes listening to his playing the experience it is. What we hear is a stunning demonstration of technique put at the service of profoundly musical ends by a pianist with an intellect and an emotional depth that are even rarer than dazzling technique.

The *Mephisto Waltz* is indeed diabolically brilliant here, but it is no mere knuckle-buster. Nojima projects the most impressive sort of power by avoiding percussiveness, and the quieter portions, without being the least bit overindulged, are

downright poetic in a way that may remind more than a few listeners of Wagner's *Tristan und Isolde*.

The sonata at the end of the program is nothing less than a triumph, but Nojima has seen to it that the triumph is Liszt's rather than his own. The "middleman" simply disappears. Nothing is laid on externally; instead, the listener is drawn into the core of the music. The contrasts are magnificently realized and particularly effective within the seamless continuity of Liszt's vision. There is an abundance of intensity, conviction, and unflinching taste—a combination so irresistibly powerful that many listeners may find themselves holding their breath through the final bars, as I did, lest the delicate line be broken, the sense of exaltation shattered.

How fortunate we are, too, that this recital comes to us at a time in which the science of sound recording has reached its present refined state. (The CD is marked DDD; the label advises, however, that the LP version is "pure analog" and Direct Metal Mastered.) The informative accompanying leaflet is handsomely designed and ornamented with drawings of Liszt. According to the notes, Nojima had until now been reluctant to make recordings; that is perhaps the one lapse in artistic judgment with which he may be charged.

Richard Freed

LISZT: *Mephisto Waltz No. 1; La campanella; Harmonies du soir; Feux follets; Sonata in B Minor.* Minoru Nojima (piano). REFERENCE RR-25, © RR-25CD (59 min).

Minoru Nojima: breathtaking



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- **FATS WALLER: *The Joint Is Jumpin'.*** BLUEBIRD/RCA 6288-2-RB. "Dec-licious" (February 1978).

CLASSICAL

- **CESTI: *Orontea.*** Jacobs. HARMONIA MUNDI HMC 90.1100/02 (three CD's). "A striking and imaginative realization" (Best of Month, April 1983).
- **COPLAND: *Our Town, Suite; The Red Pony, Suite; El salón México; Danzón cubano; Three Latin-American Sketches.*** Copland. CBS MK 42429. "A masterly performance" (July 1975).
- **DELIBES: *Lakmé.*** Mesplé; Lombard. ANGEL CDCB-49431 (two CD's). "Charming" (May 1973).
- **ORFF: *Carmina Burana.*** Ozawa. RCA PAPILLON 6533-3-RG (mid-price). "Dynamic" (Best of Month, September 1970).
- **TCHAIKOVSKY: *Symphonies Nos. 4-6.*** Mravinsky. DG 419 745-2 (two CD's). Still tops and, in light of the Russian conductor's death earlier this year, a fitting memorial reissue (C.B.).
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Discs and tapes reviewed by Chris Albertson, Phyl Garland, Alanna Nash, Mark Peel, Steve Simels

T BONE BURNETT: *The Talking Animals*. T Bone Burnett (vocals, guitar); vocal and instrumental accompaniment. *The Wild Truth; Monkey Dance; Image; Relentless; Purple Heart*; and five others. COLUMBIA BFC 40792, © FCT 40792.

Performance: *Uneven*
Recording: *Very good*

The best producers act as catalysts, helping musicians to achieve their own artistic visions without superimposing an outside sensibility. T Bone Burnett has shown a great talent for doing just that. He's successfully produced such disparate talents as Leo Kottke, Los Lobos, Peter Case, and Elvis Costello. But it's this versatility that hampers Burnett's latest solo project, "The Talking Animals." He flings himself boldly into a variety of musical experiments, and the results are very uneven.

The strongest song in the album is also the first. *The Wild Truth* is a dazzling jeremiad about the state of the world. It uses a spoken rather than sung bridge, but the biting lyrics keep this device from seeming hokey. *Image* doesn't come off as well. The song's one verse, about the failed love between the images two people have of themselves, is sung by Burnett in English, then by others in French, Spanish, and Russian. Not only does the repetition fall flat, but the song is performed to a gooey, melodramatic string arrangement by Van Dyke Parks.

Other songs get a more conventional treatment, but "The Talking Animals" just doesn't hang together. Burnett's last solo release, "T Bone Burnett," was a successful exploration of his country roots. In that album, however, he chose a simpler approach and made unforced music. This time, he tries to do more and gives us less. *Ron Givens*

THE CHRISTIANS. Garry A. Christian (vocals); Russell Christian (saxophone, vocals); Henry Priestman (keyboards, guitars, vocals); instrumental accompaniment. *Forgotten Town; When the Fingers Point; Born Again; One in a Million; Sad Songs*; and four



The Christians: Liverpool soul

others. ISLAND 90852-1, © 90852-4, © 90852-2 (42 min).

Performance: *A joy*
Recording: *Bright*

The Christians' remarkable debut album may be the best attempt yet to merge the styles of Motown and British synth-pop. The vocals will remind you again and again of the Temptations and the Four Tops. Garry A. Christian and his brother Russell are black Liverpudlians who have the gift of soul, and it runs deep. The instrumental accompaniment, primarily by Henry Priestman, a white man also from Liverpool, has the catchiness we've come to expect from U.K. techno-wizards. The combination is true to both traditions and at the same time a rich, new musical experience.

The group's name, taken from the adopted last name of the two brothers, indicates the spiritual nature of the music. But even in *Born Again* and *Save a Soul in Every Town*, the material isn't overtly religious so much as positive and uplifting. The butter-smooth singing in these tunes, and in the more secular numbers such as *Sad Songs*, is a joy. The beliefs of the Christians are not the point here. Your enjoyment of their

music will not depend on your theology but on your ears and your heart.

Ron Givens

NANCI GRIFFITH: *Little Love Affairs*. Nanci Griffith (vocals, guitar); vocal and instrumental accompaniment. *Anyone Can Be Somebody's Fool; I Knew Love; Never Mind; Gulf Coast Highway; Outbound Plane*; and six others. MCA ● MCA-42102, © MCAC-42102, © MCAD-42102 (36 min).

Performance: *Just right*
Recording: *Nice*

In producing folkabilly artist Nanci Griffith's two major-label albums, first "Lone Star State of Mind" and then this new one, MCA's Tony Brown had to walk a slippery path: He somehow had to retain the integrity of Griffith's four lyrically and instrumentally rich folk albums on Philo/Rounder and yet make her welcome on commercial country radio. If he failed, he knew there was both a record company and a fanatical cult following to answer to.

To resolve his dilemma, Brown wisely brought in many of the same master pickers Griffith had worked with at Philo, and he also opted for the live-recording approach she knew best. Then

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ISLAND RECORDS

Brown added electric bass, piano, drums, and singer Mac McAnally to beef up the backing.

If "Lone Star State of Mind" played it too radio-ready safe, with only a smattering of Griffith's unique original songs, her second MCA album, "Little Love Affairs," finds her more relaxed in her bid for commercial acceptance and savoring more of the flavor of her early progressive Texas sound.

There are several standouts here, including *Never Mind*, the Harlan Howard tune of love between itinerant fruit pickers, which seems beneath Griffith's dignity but boasts the kind of pat and simple problem/solution that country radio demands. Country radio should also eat up her rolling duet with John Stewart, *Sweet Dreams Will Come*, as well as *Outbound Plane* (co-written with Tom Russell), an energetic tune with an irresistibly infectious chorus. But the songs that burn in the memory are *Love Wore a Halo* (Back Before the War) and *Gulf Coast Highway*. Both are originals (the latter co-written with keyboardist James Hooker and guitarist Danny Flowers), and they examine the lives of two very different married couples.

Throughout the album, Griffith shapes her pliant and elastic voice into a variety of grains and fabrics—rough and gravelly one moment, soft as a new baby blanket the next. "Little Love Affairs" is a work worthy of her stunning efforts for Philo, and one that points to an even greater maturity in her writing and vocal performance. It is an album that should win Nanci Griffith her just rewards. *A.N.*

MELI'SA MORGAN: *Good Love*. Meli'sa Morgan (vocals); vocal and instrumental accompaniment. *If You Can Do It: I Can Too!!; Here Comes the Night; Just for Your Touch; Love Changes; Think It Over*; and four others. CAPITOL CLT-46943, © C4T-46943, © CCT-46943 (45 min).

Performance: *Major new talent*
Recording: *Very good*

The high visibility of Whitney Houston and Anita Baker over the past two years has tended to obscure the work of another exceptionally talented new artist, Meli'sa Morgan. Her first album, "Do Me Baby," released in 1986, was an r-&-b top seller that included the utterly spectacular ballad *Do You Still Love Me*. Morgan not only co-wrote most of the best selections in the album with keyboardist Lesette Wilson, but she co-produced them with the same partner. Such versatility and self-assurance are rare for an artist still in her early twenties.

Happily, "Good Love," Morgan's second album, is equally fine. While she delivers her material assertively, there

LYLE LOVETT

WITH his *Eraserhead* hair, El Greco body, and Lawrence-Ferlinghetti-by-way-of-Woody-Allen take on the world, Lyle Lovett is not a man to be ignored. Two years ago, his debut album on MCA stupefied the reigning popular-music critics. "He's different," his publicist said in a rare display of understatement. But "different" is hardly the word for a man who writes a song about riding a horse out on the ocean—"me upon my pony on my boat."

In "Pontiac," his follow-up effort, Lovett offers another one-two punch of formidable lyrics and original, offbeat melodies. Side one, with the high-stepping *Give Back My Heart*, about a "chipkicker-redneck woman" and a "traveling man," showcases the native Texan's penchant for writing brilliant, left-field country songs. *Walk Through the Bottomland*, with Emmylou Harris supplying background vocals, is as pure and plaintive a heartache song as you're ever likely to hear, tying a familiar theme to a decidedly uncommon image. And *L.A. County* weds an unsentimental melody to a straightforward account of a murder at a wedding—hardly your standard country-radio fare.

Side two, however, finds Lovett waltzing somewhat to the left of his progressive-country influences. With a facility he merely hinted at in his first album, Lovett sketches moody, jazz-and-blues portraits of eccentric, often brooding characters—nodding acquaintances, no doubt, of the ephemeral figures who populate the work of Tom Waits and moviemaker David Lynch.

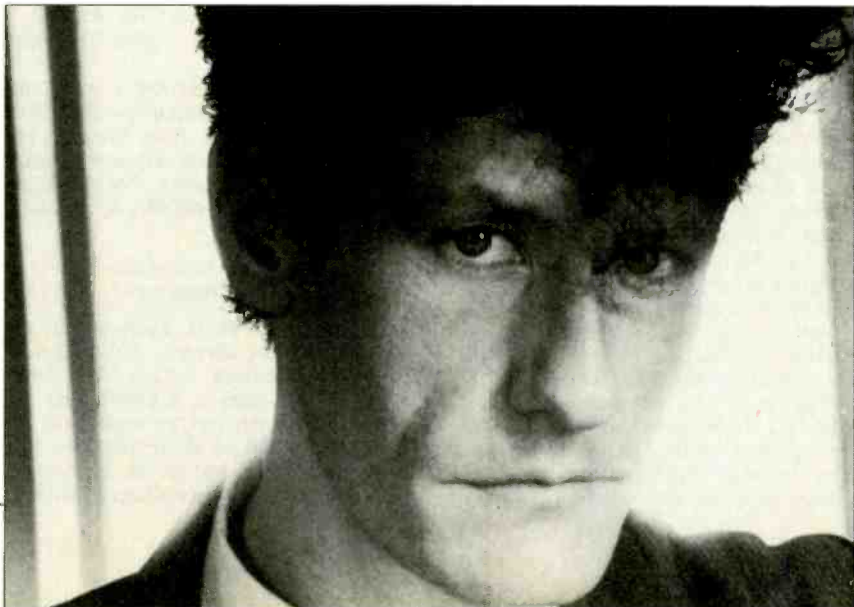
In a tone that borders on misogyny, Lovett presents six vignettes of love and war between the sexes, dressing most of them up with Forties big-band jazz arrangements or simply a few acoustic

pieces from a smoke-filled club. Often, as in *She's No Lady* and *She's Hot to Go*, Lovett sends the listener spinning with hilarity even though his humor is unabashedly and, at times, shockingly sexist. But Lovett is also no stranger to steamy, insinuating blues (*M-O-N-E-Y*), nor to the dark and disturbing netherworld of characters living on the emotional edge. *Black and Blue* traces the breakup of a couple who leave each other with bruises of assorted kinds, and the bitter war veteran who sits in the Pontiac of the title song looms like a menacing pall over the neighborhood—sinister, sleazy, sociopathic.

Lovett, now thirty, studied journalism in college, and his style owes as much to that training as to his creative, hot-wire mind. Within the framework of a single song, he often observes his figures in an objective long shot before moving in to assume their identities, slipping inside their skin to tell their stories firsthand.

Lovett obviously operates from a sensibility that owes its origin not to Nashville, and not really even to Texas, but to some dazzling neuron center known only to him. For that reason, he will probably never enjoy mainstream acceptance. No doubt Lovett doesn't care much about that anyway. And odds are you won't either. *Alanna Nash*

LYLE LOVETT: *Pontiac*. Lyle Lovett (vocals, acoustic guitar); Emmylou Harris, Vince Gill (background vocals); other musicians. *If I Had a Boat; Give Back My Heart; I Loved You Yesterday; Walk Through the Bottomland; L.A. County; She's No Lady; M-O-N-E-Y; Black and Blue; Simple Song; Pontiac; She's Hot to Go*. CURB/MCA ◊ MCA-42028, © MCAC-42028, © MCAD-42028 (35 min).



PETER NASH/CURB RECORDS

is a sweetness in her voice that's immediately appealing. And again she has co-written most of the best material, in several instances with Wilson. The dance numbers are freshly conceived and brightly executed, especially the engaging *Think It Over*, and the ballad *I'll Love No More* is of the same high quality as *Do You Still Love Me*. "Good Love" serves notice that Whitney, Anita, and the others might just have to move over and make room for Meli'sa Morgan. P.G.

OF THEE I SING/LET 'EM EAT CAKE (George and Ira Gershwin). Maureen McGovern, Larry Kert, Jack Gilford, David Garrison, Paige O'Hara (vocals); others. New York Choral Artists; Orchestra of St. Luke's, Michael Tilson Thomas cond. CBS 2 S2M 42522 two LP's, © S2T 42522 two cassettes, © M2K 42522 two CD's (143 min).

Performance: *Disappointing*
Recording: *Excellent*

This is the kind of release that will make show-music lovers jump for joy, and they will certainly want to add it to their collections—even though it is disappointing in some respects. With a score by George and Ira Gershwin, and a book by the equally legendary George S. Kaufman and Morris Ryskind, *Of Thee I Sing* (1931) was the first Broadway musical ever to win a Pulitzer Prize. *Let 'Em Eat Cake* (1933) was the less-successful sequel by the same creative team. In satirizing Presidential politics of the Twenties and Thirties, both shows were (for their time, anyway) bold hybrids of musical comedy and comic opera—or, as one contemporary critic called them, "Jazzy Gilbert and Sullivan." *Of Thee I Sing* has had a couple of revivals, on Broadway in the early Fifties and on television in 1972, but the more controversial *Let 'Em Eat Cake* has been a real rarity.

Last year, as part of the extensive tributes marking the fiftieth anniversary of George Gershwin's untimely death in 1937, both shows were revived in concert form at Brooklyn's Academy of Music. They were conducted by Michael Tilson Thomas, long an avid Gershwin champion both on records and in the concert hall. He was able to use the recently rediscovered original orchestrations of *Of Thee I Sing*, but most of the materials for *Let 'Em Eat Cake* are still lost, so he and some dedicated colleagues reconstructed them from Ira Gershwin's workbooks.

Much as I feel that such efforts to preserve classic musicals in as authentic as possible re-creations should be applauded, I find the pleasures of these recordings from those Brooklyn performances to be intermittent at best. Maybe it's just that lampoons of matters Presidential have taken on such new and more scathing dimensions in recent years, but despite good casting in



Pebbles: beyond cute

most of the major roles, neither show has the bite or sting it once had. In between such Gershwin gems as *Who Cares?*, *Love Is Sweeping the Country*, *Mine*, and *Blue, Blue, Blue*, there are recitatives and extended ensembles that Gershwin scholars may find fascinating but average listeners are likely to find rambling and boring. Thomas's sledgehammer approach to the scores is no help either. I know he has cited evidence that George Gershwin played his music faster than we're used to hearing it today, but "fast" can also have a perkiness and *élan* that are missing here. And though the lead singers come across well, the chorus is not always fully comprehensible.

Still, I guess the old cliché about half a loaf applies here—and this album is certainly more than half a loaf historically. It's also exceptionally well recorded by Steven Epstein and his CBS team.

Roy Hemming

PEBBLES. Pebbles (vocals); vocal and instrumental accompaniment. *Girlfriend*; *Two Hearts*; *First Step* (*In the Right Direction*); *Mercedes Boy*; *Do Me Right*; and five others. MCA MCA-42094, © MCAC-42094, © MCAD-42094 (51 min).

Performance: *Minimalist*
Recording: *Satisfactory*

Pebbles (born Perri McKissack) appeared on the *Beverly Hills Cop II* soundtrack before cutting this debut solo album. Hers is a minimalist approach to music. For the most part, the songs are based on short little riffs that are embellished but never developed. She coos and sings in a sharp-edged sex-

kittenish voice that can be appealing, and the approach can be effective in a catchy number like *Mercedes Boy*, which has a teasing bit of double entendre built into the lyrics. On the last two tracks, though, *Baby Love* (not the Supremes classic) and *Give Me Your Love*, Pebbles really gets the chance to sing. The results indicate that her talent goes beyond merely sounding cute, so she bears watching. P.G.

THE POGUES: *If I Should Fall from Grace with God* (see Best of the Month, page 95)

THE RAINMAKERS: *Tornado*. The Rainmakers (vocals and instrumentals). *Snakedance*; *Tornado of Love*; *The Wages of Sin*; *Small Circles*; *No Romance*; and five others. MERCURY 832 795-1, © 832 795-4, © 832 795-2 (40 min).

Performance: *Mostly terrific*
Recording: *Impressive*

There's good news and bad news about the Rainmakers' sophomore album. The good news is that their songwriting remains as intelligent as before: "Tornado" has substantial tunes, lots of clever lines, and a heartening structural directness (some of the songs on the band's debut record seemed unnecessarily fussy and eccentric). The bad news is that nothing in "Tornado" is as funny and audacious as *Downstream* (in which Chuck Berry met Harry Truman) or *Let My People Go Go* and that the band may be succumbing to Creeping Significance. Listening to *Snakedance* and *Tornado of Love*, for example, you can almost visualize a ghostly neon sign hovering over the album: THIS BAND CARRIES THE WEIGHT OF THE WORLD ON ITS SHOULDERS! Still, the Rainmakers is one of the few mainstream acts around that is even addressing the real world, so I probably shouldn't complain, especially as "Tornado" also includes songs as straightforwardly moving as *Small Circles* and *One More Summer*. And, as a bonus, lead singer Bob Walkenhorst continues to sound more eerily like Gene Pitney than ever, while the rest of the band makes appropriately Stones-ish and Who-ish noises behind him. Actually, there's nothing wrong with this band that the lift of a hit single couldn't cure. Programmers, please take note. S.S.

DAVID LEE ROTH: *Skyscraper*. David Lee Roth (vocals); Steve Vai (guitars); vocal and instrumental accompaniment. *Knucklebones*; *Just like Paradise*; *The Bottom Line*; *Skyscraper*; *Damn Good*; and five others. WARNER BROS. 25671-1, © 25671-4, © 25671-2 (41 min).

Performance: *Slipping*
Recording: *Good*

The jacket photo on "Skyscraper" shows David Lee Roth suspended from

354449.U2—The Joshua Tree. (Island)

219477 Simon & Garfunkel's Greatest Hits (Columbia)

287003. Eagles Greatest Hits 1971-1975. (Asylum)

291278. The Doobie Brothers—Best of the Doobies. (Warner Bros.)

308049. Creedence Clearwater Revival Featuring John Fogerty—Chronicle. 20 greatest hits. (Fantasy)

319996-399998. Motown's 25 = 1 Hits From 25 Years. (Motown)

321570. Beethoven: Symphony No. 5, Schubert: Symphony No. 8 (Unfinished)—Maazel, Vienna Phil. (Digital—CBS Masterworks)

324822. Ravel: Bolero, La Valse; Rhapsodie Espagnole—Maazel, cond. (Digital—CBS Masterworks)

339044. Mozart: Symphonies 40 & 41 (Jupiter)—Kubelik, Bavarian Radio Or. (Digital—CBS Masterworks)

339226. Gershwin: Rhapsody In Blue, more. Thomas, Los Angeles Phil. (Digital—CBS Masterworks)

341073. A Decade Of Steely Dan. (MCA)

342097. Barbro Streisand—The Broadway Album. (Columbia)

343251. Bach: Goldberg Variations. Glenn Gould. (Digital—CBS Masterworks)

343657. Chuck Berry—The Great Twenty-Eight. (Chess)

344184. Billy The Kid/Rodeo Ballets—Slatkin, St. Louis Sym. (Digital—Angel)

345777. Peter Gabriel—So. (Geffen)



362228. George Michael—Faith

364018. Foreigner—Inside Information

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348649. Andrew Davis, Cond.—The Pochelbel Canon & Other Digital Delights—The Toronto Chamber Orchestra. (Fanfare)

355115-395111. Prince—Sign 'O' The Times. (Paisley Park)

361402. Tiffany. (MCA)

349985. Johnny Mathis/Henry Mancini—The Hollywood Musicals. (Columbia)

352948. Wynton Marsalis—Carnaval. Hunsberger, Eastman Wind Ensemble. (Digital—CBS Masterworks)

353771. Bolling/Rampal: Suite #2 for Flute & Jazz Piano Trio. (Digital—CBS)

354902. Fleetwood Mac—Tango In The Night. (Warner Bros.)

354951. Mozart: Flute Quartets—Rampal, Siern, Accardo, Rostropovich. (Digital—CBS Masterworks)

344622. Anita Baker—Rapture. (Elektra)

361170. Yes—Big Generator. (A&M)

347955. Huey Lewis & The News—Fore! (Chrysalis)

355164. Vladimir Horowitz Plays Favorite Encores. (CBS Masterworks)

355578. Hanson: Symphony No. 2 ("Romantic"), Barber: Violin Concerto. Oliveira, Slatkin, St. Louis Sym. (Digital—Angel)

356154. Whitney Houston—Whitney. (Arista)

356287. Suzanne Vega—Solitude Standing. (A&M)

356501. Benson/Klugh—Collaboration. (Warner Bros.)

357087. Grateful Dead—In The Dark. (Arista)

357640. Wynton Marsalis—Standard Time. (Columbia)

357350. Duke Ellington Orchestra—Digital Duke. (Digital—GRP)

357616-397612. The Best Of The Doors. (Digitally Remastered—Elektra)

358127. Kronos Quartet—White Man Sleeps. Volans; Ives; Bartok; etc. (Digital—Nonesuch)

359018. Pat Metheny Group—Still Life (Talking). (Geffen)

364885. Neville Marriner, cond.—The Sound of the Academy. (Angel)

359612. Elton John's Greatest Hits, Vol. III 1979-1987. (Geffen)

365189. James Taylor—Never Die Young. (Columbia)

360016. Spyro Gyra—Stories Without Words. (Digital—MCA)

360107. Billy Idol—Vital Idol. (Chrysalis)

361048. Diane Schuur and the Count Basie Orchestra. (Digital—GRP)

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361972. Billy Joel—Kohuept (In Concert). (Columbia)

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362236. Tony Bennett—Bennett/Berlin. (Columbia)

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362640. Lindo Norstadt—Canciones De Mi Padre. (Asylum)

362657. Madonna—You Can Dance. (Sire)

363465. Dolly Parton—Rainbow. (Columbia)

363648. The Manhattan Transfer—Brasil. (Atlantic)

363655. Barry Manilow—Swing Street. (Arista)

364257. Arthur Fiedler & The Boston Pops—Capriccio Italien—Capriccio Espagnol. (Digital—UltraGroove)



365494. George Harrison—Cloud Nine



361519. Inxs—Kick



360115. Bruce Springsteen—Tunnel of Love



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a sheer mountain cliff thousands of feet in the air with no visible means of support. If you think *that's* risky, wait'll you hear what's inside. Rock's premier exponent of heavy-metal machismo actually dares to be sensitive. In *Damn Good*, for instance, Roth reminisces wistfully about good times to the dulcet accompaniment of a twelve-string acoustic guitar. In *Hina* he paints a romantic portrait of a love goddess in the deepest purple verse: "You can fairly dance beneath her light." Fairly dance? Barbara Cartland with amps? Even the title track is an attempt at New Age mysticism—either that or a bad drug trip ("I'm falling and spinning and turning. . . /Float like a butterfly, acrobatic"). These three songs are woeful duds—not enough to ruin the album, but enough to put you off your feed while you wait for Roth to get back to business.

While there are, sadly, no covers in Roth's third solo album (he has become rock's most invigorating cover artist), there are enough rough cuts—*Just Like Paradise*, *Bottom Line*, and *Hot Dog and a Shake*—to placate fans of the Visigoth of rock-and-roll. But even in these more characteristic tunes, Roth has lost a little on his fast ball. There's no truly memorable turn of phrase, none of the inspired comic pornography of "Crazy from the Heat" or "Eat 'Em and Smile." In fact, Roth ends up having to be bailed out by the extraordinary Steve Vai, who also co-produced. A perennial poll winner, Vai got his big-league break with Frank Zappa, and his guitar playing still has that demented, gypsy-mutant feel, as though the amphetamines had only kicked in on one side of his body. It's exaggerated, lightning fast, and quintessentially metal—ravenous, intoxicated, and obstreperous. And it almost renders David Lee Roth superfluous. *M.P.*

SUPERTRAMP: *Free as a Bird*. Supertramp (vocals and instrumentals); vocal and instrumental accompaniment. *It's Alright: Not the Moment; It Doesn't Matter; Free as a Bird; You Never Can Tell with Friends*; and four others. A&M SP-5181, ©CS-5181, ©CD-5181 (44 min).

Performance: *No muscle tone*
Recording: *Good*

If you're in your thirties, divorced, maybe a little disillusioned, Supertramp wants to be your rock band. The ironically titled "Free as a Bird" contains six songs about the pain of separation and betrayal, one song about drug abuse, and one up-tempo number called *Thing for You*. The jazz-rock rhythms are lively but unthreatening, a friendly dance track for a single-parent mixer. If you're a recent "ex," the lyrics will seem amazingly perceptive, but teenagers would laugh at this record. They always think they know more about rock-and-roll than grownups. *M.P.*

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Stereo Review

SWING OUT SISTER: *It's Better to Travel.* Swing Out Sister (vocals and instrumentals); other musicians. *Breakout; Twilight World; After Hours; Blue Mood; Surrender;* and four others. MERCURY 832 213-1, © 832 213-4, © 832 213-2 (40 min).

Performance: *Seamless, romantic*
Recording: *Excellent*

The appearance of retro-cool artists like Sade and Everything But the Girl may signal a mild revival of Fifties romanti-

cism, when Nelson Riddle made music for candlelit dinners and rainy evenings. Swing Out Sister is a trio squarely in that romantic tradition. Its music is synth-pop, but without the genre's arch cynicism or acute hipness—old-fashioned love songs on newfangled instruments. The biggest single from this album, *Breakout*, is really just a perky, Astrud Gilberto-style vocal with a savvy, New Wave synth overlay. Elsewhere in "Better to Travel," vocalist Corrine Drewery, keyboardist Andy Connell,

and drummer Martin Jackson fuse Fifties cool, Gamble-Huff soul, and Eighties dance rhythms into evocative, seamless pop music. Drewery's vocals are particularly appealing, free of mannerism or pretension, pure and clear as falling rain. The settings swing gently, a feathery cushion of sampled sounds along with piano, saxophone, and Jackson's smooth brush work. *M.P.*

JAMES TAYLOR: *Never Die Young.* James Taylor (vocals, guitar); vocal and instrumental accompaniment. *Never Die Young; T-Bone; Runaway Boy; Sun on the Moon; Home by Another Way;* and five others. COLUMBIA FC 40851, © FCT 40851, © CK 40851 (40 min).

Performance: *Back on track*
Recording: *Nice*

In his last album, James Taylor was halfway through a winning performance of melancholy and upbeat observations on life when he stubbed his toe on side two and sat out the dance. Now Taylor returns with his most exuberant album in a decade, a surprising tour de force that finds him sounding muscular and lithe and ready to beat the band.

Framed by his usual ensemble of elegant bass, crisp percussion, shimmering electric guitar, pastel washes of background singers, and his own spare and sparkling acoustic-guitar work, Taylor moves further into the jazzy milieu that has attracted him for some time now. He and producer Don Grolnick experiment boldly with varying rhythms—usually within each song—from Forties romance to r-&-b and reggae, and even country hoedown, in arrangements that are deft, sophisticated, but accessible.

Taylor, with his trademark calm-as-a-cantaloupe vocals, can be charmingly jaunty, as in *Home by Another Way*, or drivingly hypnotic, as in *Runaway Boy*. But in the weakest cut, *First of May*, which screams for Sergio Mendes and Brazil '66, he is also annoyingly facile, a musical dilettante. Where he especially shines is in the wistful material like *Baby Boom Baby*, which is as much about fame as panacea as it is about looking up old flames. And *Letter in the Mail*, popular music's one-millionth you-can't-go-home-again song, works in an unsettling, bare-bones way, reaching past sentimentality and nostalgia and grabbing hold of something real. In between, Taylor sends the listener spiraling from gooney-eyed euphoria to grateful contentment, with a little healthy cynicism thrown in for *Valentine's Day*.

There is still that resolute tightness about Taylor's music—a refusal really to "let go"—that has marked almost all of his work on records since *Steam Roller Blues*. But there is also such variety, such musical optimism and growth, that the criticism barely matters. *A.N.*

WILD SEEDS: *Mud, Lies & Shame* (see Best of the Month, page 97)

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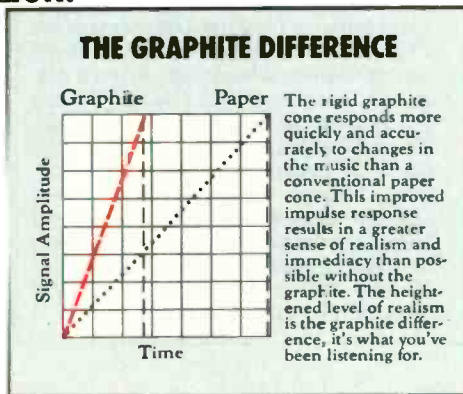
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JAZZ

OSCAR CASTRO-NEVES: *Brazilian Scandals*. Oscar Castro-Neves (acoustic guitar, synthesizer, percussion); Gilson Peranzetta (acoustic piano); other musicians. *Brazilian Scandals; Pensando; Sugarloaf Skyride; Return to Rio; Tropical Dream; Ipanema Afternoon*; and five others. JVC ©SC-3302, ©JD-3302 (45 min).

Performance: *Slick*
Recording: *Gossamer*

This album will remind you of Sergio Mendes—and for good reason. Oscar Castro-Neves, a native of Rio de Janeiro, had a lot to do with the Mendes sound, working on fifteen Mendes albums as a guitarist, a music director, and a conductor. A number of the songs in “Brazilian Scandals,” including the title track and *Sugarloaf Skyride*, combine a light chorus of wordless vocals with a sizzling bossa-nova groove. And that’s as far as this consummate producer develops his music. It simmers, but it never comes to a boil. The pristine quality of the recording, as well as the ample use of strings, makes it sound like the contemporary Brazilian version of a Creed Taylor production, but it’s as if one of Taylor’s master arrangers went to Rio and forgot to take any soloists with him.

Ron Givens

DICK HYMAN AND RUBY BRAFF: *Manhattan Jazz*. Ruby Braff (cornet); Dick Hyman (piano). *Jeepers Creepers; I’m Crazy ‘Bout My Baby, and My Baby’s Crazy ‘Bout Me; Jubilee; You’re Lucky to Me; Some Day You’ll Be Sorry*; and five others. MUSICMASTERS 20136W, © 40136T, © 60136M (44 min).

Performance: *Sparkling*
Recording: *Excellent*

Cornettist Ruby Braff and pianist Dick Hyman have each pursued their own successful careers, but since 1975 they have occasionally combined their talents to re-create a sound first established by Louis Armstrong and Earl Hines. “Manhattan Jazz,” recorded in a New York studio for a 1985 Public Radio broadcast, captures one of those intimate collaborations.

Hyman is a man who spends a good deal of time exploring great styles of the past, which has not left him much time to develop a style of his own, but he’s very good at doing what he does. Braff’s rich cornet tone virtually defines the words “listening pleasure.” Put them together and you have a set that evokes the lyricism of Bix Beiderbecke and the delicious keyboard ramblings of Art Tatum, with a whole lot of other goodies thrown in. “Manhattan Jazz” doesn’t cut any new paths, but it offers a surpassingly smooth ride over a few old ones.

C.A.



DJANGO

EUROPE provided fertile ground for jazz in the Twenties and Thirties, but it contributed little to the music itself. To be sure, there were Continental jazz musicians, but almost all were pale imitators of American counterparts. Guitarist Django Reinhardt was a notable exception.

Born in Belgium in 1910, Django (as he became known) began his musical career in the tradition of his ancestral gypsy heritage, but jazz was sweeping Europe by the time he reached the end of his teens, and it changed his course. Combining elements of guitar styles defined by Lonnie Johnson and Eddie Lang, he still imbued his playing with an unmistakable gypsy flavor, and the result was stunning. A new set in DRG Records’ ongoing reissue series of material from the French Swing label documents Django’s transition from pop accompanist to jazz soloist. Its 112 tracks range from his banjo sessions of 1928 with accordionists Victor Marceau and Jean Vaissade to his 1940 recordings with a second edition of the Quintet of the Hot Club of France. The quintet drew from Django some of his most inspired playing, but the album also features some fine cuts in which he plays with orchestras and pickup groups led by Benny Carter, Rex Stewart, Dicky Wells, and Coleman Hawkins, as well as great musical encounters with individual artists like violinist Eddie South, trumpeter Bill Coleman, and harmonica virtuoso Larry Adler. Not surprisingly, this collection also features a number of collaborations with violinist Stéphane Grappelli, Django’s alter ego.

One of Django’s most ardent admirers was Duke Ellington, who brought him to this country in the early Fifties and took him on tour with his orchestra. Django was already a legend, but World War II had rechanneled musical

tastes, and bebop was where it was at. To keep up with the times, Django began playing an electric guitar, which robbed his style of its gypsy charm and robbed him of some of his old fans. Despite Ellington’s stamp of approval, the reception given this remarkable jazz musician by American audiences was disappointing, which is hard to believe as you listen to his brilliant work in these recordings.

Each of the inner sleeves in the boxed set of seven LP’s features discographical information, photos, and authoritative notes on the material. DRG has also compiled a complete Django discography and reproduced it in an accompanying fifty-page booklet. All but the very earliest sides (1928-1935) are contained in two separately available CD sets containing two discs each.

No guitarist or jazz lover should be without these superb recordings, but you don’t have to be either of these things to enjoy the spirit and beauty of the performances.

Chris Albertson

DJANGO REINHARDT: *Djangologie/USA*. Django Reinhardt (guitar); Quintet of the Hot Club of France; other musicians. *Oriental Shuffle; I’sè A-Muggin’; Limehouse Blues; Out of Nowhere; Mabel; Solid Old Man; Baby; Easy Going; Mystery Pacific; Swing Interpretation of the First Movement of the Concerto in D Minor by J. S. Bach; Swing Guitars; Charleston; Nuages; Nagasaki; Body and Soul; Daphne; Dinah; Paramount Stomp; Boléro de Django; From You; Mademoiselle Adeline; The Sheik of Araby; You Rascal You; St. Louis Blues; Viper’s Dream; Sweet Georgia Brown*; and eighty-six others (sixty-eight others on CD). SWING/DRG SW 8420/26 seven LP’s, © CDSW 8421/23 two CD’s (143 min) and CDSW 8424/26 two CD’s (145 min).

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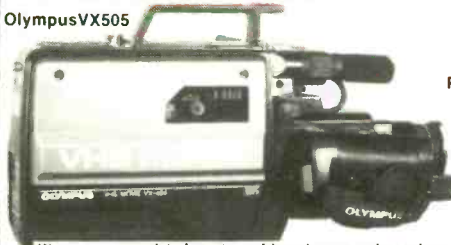
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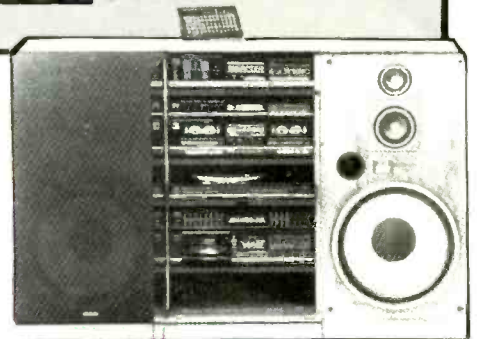
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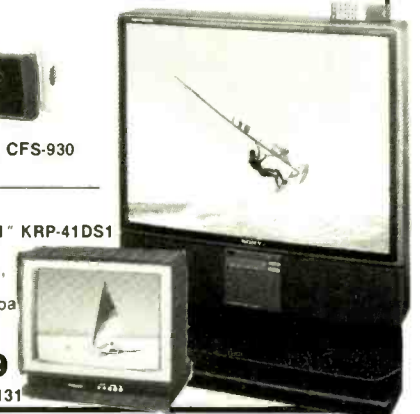


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BEETHOVEN: Piano Concertos Nos. 1-5. Daniel Barenboim (piano); Berlin Philharmonic Orchestra, Daniel Barenboim cond. ANGEL ● DSC-47974 three LP's, © CDCC-47974 three CD's (181 min).

Performance: *A bit earthbound*
Recording: *Very good*

Daniel Barenboim's latest recording of the five Beethoven piano concertos is apparently the first complete cycle yet recorded by anyone as both pianist and conductor. Beethoven himself, of course, provided the precedent, for, like Mozart, he conducted performances of his own concertos (and some of Mozart's) from the keyboard. But it is significant that Beethoven never performed the last of his five, the one we call the *Emperor*. That was the only one he did not write for himself, and it is most unlikely that he would have intended this concerto, with its truly symphonic scope and its conspicuously different relationship between the solo and orchestral elements, to be performed without a separate conductor.

Barenboim, of course, is a great pianist and a fine conductor, and his authority in both respects in these particular works is evident from his earlier cycles. If his new set does not shoot up to the head of the list of available recordings, it is not because the two elements are not successfully integrated, and certainly not because either the solo or orchestral playing at any point drops below the highest level. Indeed, one might say that the integration is almost 100 thorough, in that one misses the sense of true give and take, of interaction between partners, that can be as stimulating in a concerto performance as in chamber music or opera. What is harder to define, and to accept, is a certain lack of impulse, of thrust, of all-around vitality. There are indeed marvels of beautiful playing on Barenboim's part, with the expected abundance of delicacy and subtlety, and the orchestral contributions are trim and tidy, but there is a surprisingly earthbound quality, at times approaching stolidity, that one simply doesn't associate with this superb artist. This is not just a matter of tempo—though the slow movements

THE VOLUPTUOUS CORE OF RAVEL



Pianist Mikhail Rudy: exceptional poetry

THE composer Gabriel Fauré liked to remark that "art has every reason to be voluptuous," and the young Russian-born, Paris-based pianist Mikhail Rudy seems to have taken that dictum to heart in his new Ravel program for Angel. While other pianists may attack Ravel's solo-piano version of *La Valse* for its pyrotechnical possibilities, Rudy goes right to the core of voluptuousness around which the piece was conceived. Every phrase is opened up to its heady potentialities; in place of icy brittleness, Rudy evokes warm colors, shimmering and sumptuous—until the concluding section, which becomes all the more effective for the chilling contrast it makes with what has gone before. And he sustains the work's momentum beautifully.

The same is true of the other pieces. The *Pavane pour une infante défunte*, especially, benefits from Rudy's steady,

dignified pace, its tilt toward briskness neatly offsetting the poignancy that might have become mawkish at a more indulgent speed. There are fireworks aplenty in the *Alborada del gracioso* movement of *Miroirs* and in the *Scarbo* that concludes *Gaspard de la nuit*. Indeed, both of these suites are brought off on an exceptional level of poetry, making the most of their contrasting moods while avoiding any hint of exaggeration or excess. Rudy's tone is at all times as handsome as his impulse is sure, and the well-focused recording, made in the Church of Notre-Dame du Liban in Paris, could serve as an outstanding demonstration of how vividly and beautifully the sound of a piano can be reproduced.

Richard Freed

RAVEL: Pavane pour une infante défunte; La Valse; Miroirs; Gaspard de la nuit. Mikhail Rudy (piano). ANGEL © CDC-49275 (68 min).

do tend to be taken very deliberately—but of factors more difficult to measure: pulse, spontaneity, humor, radiance.

One needn't buy all these concertos in a single box, of course. Among recent recordings, Claudio Arrau's latest remake of the *Emperor*, Murray Perahia's recording of Nos. 3 and 4, and Emanuel Ax's disc of Nos. 1 and 2 are all rich in the very qualities missing in Barenboim's new set. *R.F.*

BRAHMS: Piano Concerto No. 1, in D Minor, Op. 15. Alfred Brendel (piano);

Berlin Philharmonic Orchestra, Claudio Abbado cond. PHILIPS ● 420 071-1, © 420 071-4, © 420 071-2 (49 min).

Performance: *Inspiring*
Recording: *Superb*

Alfred Brendel often provides a corrective to pomposity, and his approach is especially welcome in the Brahms Piano Concerto No. 1. Even more than his earlier recording of it, with Hans Schmidt-Isserstedt and the Concertgebouw Orchestra, the new performance is utterly free of any gesture resembling

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Ruth Laredo: a lovely collection of Chopin

the monumentalism with which this score has become encrusted over the years. It glows here with an unlabored profundity and a vitality sustained throughout by what can only be described as a natural momentum. There is an inspiring level of spontaneity, too, in the way Brendel and Claudio Abbado respond to each other and build upon their exchanges; this is, of course, the sort of thing one wants in a concerto performance, but it seems to have become rarer and rarer in live performances as well as recordings. There is not the only way to perform the Brahms D Minor, but it is the most refreshing statement of the work I've come across in many years, and the Philips engineers have succeeded in giving the great Berlin Philharmonic a warmth often lacking in its recordings while placing it in ideal balance with the piano. Among CD versions of this work, this is the modern recording I would choose to share top honors with the older one by Arthur Rubinstein and the Chicago Symphony under Fritz Reiner. R.F.

CHOPIN: *Mazurkas: C-sharp Minor, Op. 6, No. 2; E Major, Op. 6, No. 3; C-sharp Minor, Op. 63, No. 3; B Minor, Op. 33, No. 4; C Major, Op. 24, No. 2; C Major, Op. 56, No. 2. Waltzes: A-flat Major, Op. 34, No. 1; A Minor, Op. 34,*

No. 2; A-flat Major, Op. 42; A-flat Major, Op. 69, No. 1; B Minor, Op. 69, No. 2. Etude in A Minor, Op. 25, No. 4; Nocturne in F Major, Op. 15, No. 1; Scherzo in B Minor. Ruth Laredo (piano). NONESUCH ● 71450-1, © 71450-4.

Performance: *Committed*
Recording: *Very good*

While it is convenient to have integral collections of the Chopin waltzes, the mazurkas, the nocturnes, etc., it is good to have programs like this on records, too. The mazurkas and waltzes here are actually more scattered through the program than the heading above would suggest, and the variety this affords is altogether agreeable. So is Ruth Laredo's playing. If she brings no startling new insights to this familiar material, she is unfailingly responsive to the character of the pieces and certainly has the technical resources to back up her commitment. The fine sound of the piano in this recording only enhances this musically lovely package. R.F.

HAYDN: *The Creation.* Judith Blegen (soprano), Gabriel; Thomas Moser (tenor), Uriel; Kurt Moll (bass), Raphael; Lucia Popp (soprano), Eva; Kurt Ollmann (baritone), Adam; Bavarian Radio Chorus and Symphony Orchestra. Leonard Bernstein cond. DEUTSCHE

GRAMMOPHON ● 419 765-1 two LP's, © 419 765-4 two cassettes, © 419 765-2 two CD's (117 min).

Performance: *Wonderful*
Recording: *Excellent*

Addressing himself to the glories of Haydn's *Creation*, Leonard Bernstein reveals a particular affinity for the Viennese master. While the score is filled with delightful evocations of nature as angels relate the Biblical story of the creation, Haydn's message is essentially a serious ode to the Creator, and Bernstein achieves a perfect balance between the charm and the dignity of the work. His overall view places the narrative climax not at the end of the second part, where some conductors do, but more appropriately in the section depicting the creation of man in the third part. In many ways, Haydn actually unfolds the story in the orchestral writing, using the vocal forces to amplify upon and celebrate the individual events. And so it is in this reading, which is enriched by the glowing sonorities of the Bavarian Radio Symphony. This is by no means to belittle the work of the excellent roster of soloists nor the sumptuous singing of the Bavarian Radio Chorus. Each singer discharges his or her role with technical and artistic confidence, complementing Bernstein's profound vision of this miraculous music. S.L.

LISZT: *Mephisto Waltz No. 1; La campanella; Harmonies du soir; Feux follets; Sonata in B Minor* (see Best of the Month, page 98)

MONTEVERDI: *L'Orfeo.* Anthony Rolfe Johnson (tenor), Orfeo; Julianne Baird (soprano), Euridice; Lynne Dawson (soprano), La Musica; Anne Sofie von Otter (soprano), Messaggiera; Mary Nichols (soprano), Speranza; John Tomlinson (baritone), Caronte; Diana Montague (soprano), Proserpina; Willard White (baritone), Plutone; others. Monteverdi Choir; His Majesties Sagbutts and Cornetts; English Baroque Soloists, John Eliot Gardiner cond. ARCHIV ● 419 250-1 two LP's, © 419 250-4 two cassettes, © 419 250-2 two CD's (105 min).

Performance: *Superb*
Recording: *Superb*

Of all the recordings of *L'Orfeo*, Monteverdi's masterpiece, this is the only one I know in which every singer and instrumentalist is so at home with the singing style of Monteverdi's day and with the early Baroque style of instrumental playing that the opera comes off as naturally as though it were *Traviata* or *Carmen* being performed by the greatest international operatic celebrities. Anthony Rolfe Johnson, in the taxing role of Orfeo, is superb. The clarity and agility of his voice never fail him, and his sense of dramatic characterization is extraordinary. Julianne Baird is a wonderful Euridice; her response to

Orfeo's backward glance in Act IV, "Ahi, vista troppo dolce," is heartbreaking. The lesser parts are also beautifully sung, as are the ensembles of shepherds and spirits. The choral and instrumental work is especially strong in its movement from the deft lightness of celebration in the beginning to the austere tragedy of the ending. As usual, conductor John Eliot Gardiner draws the most from his forces and paces the work convincingly. This *Orfeo* is a must. S.L.

MOZART: *Mass in C Major (K. 317, "Coronation"); Vesperae solennes de confessore (K. 339)*. Joan Rodgers (soprano); Elisabeth von Magnus (contralto); Josef Protschka (tenor); László Polgar (bass); Arnold-Schönberg Chor; Choralschola der Wiener Hofburgkapelle; Concentus Musicus Wien, Nikolaus Harnoncourt cond. TELDEC/KOCH IMPORT SERVICE © 8.43535 ZK (57 min).

Performance: *Excellent*
Recording: *Excellent*

In contemplating Nikolaus Harnoncourt's remarkable contribution to authentic performance practice and early music, I find that I am most impressed with what he has done for Mozart. This recording of the well-known *Coronation Mass* and the rarely heard *Vespers* only reinforces that assessment. Not only does Harnoncourt observe, in the orchestral playing, the sharp accentuations and precise articulation of the Classical period, but, more important, he applies the same techniques to the choral singing, and in such a way that they sound natural rather than contrived. The result is that he imparts to the music a vigor that it often lacks and reinstates its eternal freshness. The soloists, too, obviously understand what Harnoncourt is after. It's also worth noting that Harnoncourt respects the tradition of inserting the appropriate Gregorian antiphons (or chants) in the *Vespers*, and how beautifully they are sung under his direction! S.L.

PROKOFIEV: *Romeo and Juliet, Op. 64* (see Best of the Month, page 95)

PROKOFIEV: *Symphony No. 1, in D Major, Op. 25 ("Classical"); Symphony No. 5, in B-flat Major, Op. 100*. Los Angeles Philharmonic Orchestra, André Previn cond. PHILIPS © 420 172-1, © 420 172-4, © 420 172-2 (57 min).

Performance: *Handsome*
Recording: *Very good*

In this performance of Prokofiev's heroic Fifth Symphony, André Previn proves himself more than a match interpretively for all his rivals. Of the two other versions on compact disc with which I am familiar, Leonard Slatkin's for RCA, which won a well-deserved Grammy Award, may have a slight edge in brilliance, and the rich

THE DEFINITIVE "PARSIFAL"



Tenor Peter Hofmann

THE new Philips recording of the 1985 Bayreuth Festival centennial production of Wagner's *Parsifal* may well stand as the definitive one for years to come. The performance glows with the impassioned feeling conductor James Levine imparts to the music and is enhanced throughout by his unerring sense of pacing and dynamics, which gives it the thrust needed to convey fully the work's transcendent theme. That the performance was recorded live is also an important factor. In a cogent printed interview accompanying the set, Levine remarks that, of all Wagner's operas, *Parsifal*, written after the construction of the Bayreuth Festspielhaus, benefits most from being performed in that hall, which the composer had built as a sounding board for his music. And you can hear it in the recording. The exemplary balances between the orchestra and the singers on stage, and within the orchestra itself, contribute greatly to the sonic impact of this masterly achievement.

If Levine is the recording's most luminous star, the singers also shine. In the title role, Peter Hofmann sounds more secure than he has of late, creating a believable, sympathetic character happily removed from "the innocent fool" he's called in the libretto, while Simon Estes gives an arresting portrayal of Amfortas. Hans Sotin's Gurnemanz is resonantly delivered, bringing to the

long Act I narrative considerable interest and energy; his singing is noble and movingly humane throughout. Matti Salminen and Franz Mazura, as Titirel and Klingsor, respectively, are excellent in their strongly contrasting roles.

As Kundry, Waltraud Meier is dramatically affecting; she creates a character that is both pitiable and hateful in the earlier sections of the opera and later effectively conveys her transfiguration. Meier's singing is not always marked by beauty of tone—there is some stridency at the top—but she uses her voice intelligently and with expressive purpose.

The Bayreuth Festival Chorus and Orchestra perform, as you might expect under these circumstances, with eloquence and skill. You sense, as with cast and conductor, a particular devotion to the opera and to the specific occasion in Bayreuth's history that resulted in this well-engineered, outstandingly realized recording. Robert Ackart

WAGNER: *Parsifal*. Peter Hofmann (tenor), Parsifal; Waltraud Meier (mezzo-soprano), Kundry; Hans Sotin (bass), Gurnemanz; Simon Estes (baritone), Amfortas; Matti Salminen (bass), Titirel; Franz Mazura (baritone), Klingsor; others. Chorus and Orchestra of the Bayreuth Festival, James Levine cond. PHILIPS © 416 842-1 five LP's, © 416 842-4 four cassettes, © 416 842-2 four CD's (278 min).



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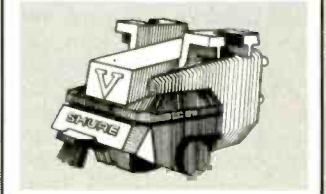


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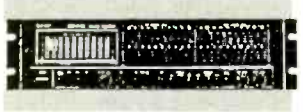


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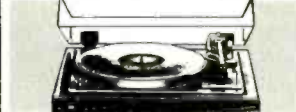
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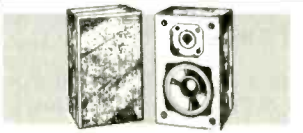
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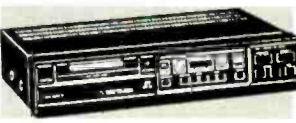
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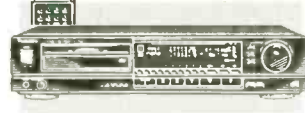
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sonics of Vladimir Ashkenazy's recording with the Concertgebouw on London are enticing. But along with impressive musicianship, Previn's package offers a very substantial and attractive coupling in the form of Prokofiev's most popular symphony, the *Classical*, or Symphony No. 1.

In this reading of the *Classical* Symphony, Previn matches the finesse of his famous London Symphony recording on Angel, and his pacing is surprisingly close to that of Koussevitzky's recording with the Boston Symphony on 78's, which for years was regarded as the ultimate realization of this piece. The Fifth Symphony is even more impressive. Previn fully plumbs the tragic depths of this symphony on "the spirit of Man." Perhaps the scherzo could have been a bit more diabolical, but the rest of the performance is a most telling amalgam of impassioned lyrical drama and overall formal command. In the finale particularly, Previn and the Los Angeles Philharmonic give their all, building up to a conclusion that packs a real visceral wallop.

UCLA's Royce Hall is not as brilliant a recording venue as some, but it serves more than adequately here, and what sounds to my ear like a fairly close microphone setup makes for a better result than that achieved by Telarc in Previn's somewhat less successful recording of *Alexander Nevsky* in the same locale. *D.H.*

SAINT-SAËNS: Piano Trio No. 2, in E Minor, Op. 92. RAVEL: Piano Trio in A Minor. Arden Trio. DELOS © D/CD 3055 (61 min).

Performance: *Lush*
Recording: *Fine*

Typically for Saint-Saëns, his E Minor Piano Trio is a monument to eclecticism, filled with bombast and passion interlarded with delightful waltzes and scherzos, and the fugal finale includes every contrapuntal device in the book. And it is marvelously presented here by the Arden Trio in a performance that milks every effect for all it's worth. Unfortunately, the players carry some of Saint-Saëns's bombast over into the Ravel Trio in A Minor, which is a very different sort of work. As a result, much of the delicacy of Ravel's writing is overwhelmed, and his supple melodic style becomes stiff. Nonetheless, this release is of interest for the rarely heard Saint Saëns, and the recorded sound is first-rate throughout. *S.L.*

SCRIABIN: Piano Sonatas Nos. 1, 6, and 8; Four Pieces, Op. 51. Vladimir Ashkenazy (piano). LONDON ① 414 353-1, © 414 353-4, © 414 353-2 (53 min).

Performance: *Splendid*
Recording: *Exemplary*

Vladimir Ashkenazy's recordings of Scriabin's seven other sonatas were is-



Ghenia Dimitrova: sensitive

sued on LP nearly ten years ago, but it has taken till now for London to bring the cycle to its completion—and by now the two earlier installments have been out of circulation for some time. Surely they will be reissued sooner or later, and in the meantime collectors who do have them will want to own the rest with Ashkenazy. But not everyone is a veteran collector waiting to complete a cycle. This particular assortment, made up for the most part of works less often performed and recorded than some of the others, happens to provide a splendid introduction for listeners who have yet to wander into Scriabin's world. The Op. 51 pieces, titled *Fragilité*, *Prélude*, *Poème ailé*, and *Danse languide*, together run less than seven minutes, yet they represent a sort of concentrated essence of Scriabin's personal style and pinpoint some of the major influences in its development.

In his exceptionally valuable annotation, Hugh MacDonald points out that Scriabin closed his First Sonata, at the age of twenty, with a funeral finale that anticipated by a year or so the famous conclusion of Tchaikovsky's *Pathétique* Symphony. That gesture was the young Scriabin's "cry against Fate, against God" for a hand injury he feared would put an end to his career as a pianist. He did recover, but he played the First Sonata in public only once—and he never played the Sixth, because he was frightened by the "nightmarish, murky, unclear, mischievous" character he himself had given it. Ashkenazy clearly is not afraid of any of this stuff; he plays the very devil out of all of it, and the sound can stand as a model of how to record a piano. *R.F.*

TCHAIKOVSKY: Arias. The Queen of Spades: It will soon be midnight; Why these tears? The Maid of Orleans: Farewell, dear fields; If you are not endowed with power. The Life-Guardsman: A nightingale sang in the oak tree. Iolanta: Are our eyes only given us for tears? The Enchantress: Let us look at the great Volga. Eugene Onegin: Letter Scene. Mazepa: Sleep my little one. Ghenia Dimitrova (soprano); Hungarian State Orchestra. Zoltán Peskó cond. CBS ① M 42174, © MT 42174, © MK 42174 (50 min).

Performance: *Satisfying*
Recording: *Good*

Ghenia Dimitrova is a variable artist. She has an unusually large soprano voice capable of an affecting *piano* as well as stridency and explosiveness. She often seems, at least on the operatic stage, to be concerned less with dramatic verisimilitude than with projecting a big sound to the uppermost gallery, which may derive from the kind of roles she is asked to sing. On this Tchaikovsky disc, however, as in her earlier recording of Puccini arias, she gives her full attention to character and interpretation.

There are two arias from *The Queen of Spades*, the more moving of which is "It will soon be midnight," and two from *The Maid of Orleans*, "Farewell, dear fields" being particularly effective. In these four pieces, the magnitude of Dimitrova's voice is not the handicap it is in Tatyana's Letter Scene from *Eugene Onegin*, where the sound is far from that of a late adolescent experiencing the surge of first love. The remaining arias—particularly Maria's Lullaby from *Mazepa*—are telling because the artist has a natural cultural familiarity and identification with the musical idiom and dramatic material. Generally, these well-conducted performances illustrate that, notwithstanding some vocal unevenness, Dimitrova is capable of more thoughtful and sensitive interpretation than we have yet had the opportunity to experience from her in live performance. *R.A.*

VILLA-LOBOS: Bachianas brasileiras Nos. 1 and 5; Suite for Voice and Violin; Four Preludes and Fugues. Jill Gomez (soprano); Peter Manning (violin); Pleth Cello Octet. HYPERION/HARMONIA MUNDI USA ① A 66257, © K.A. 66257 © CDA 66257 (54 min).

Performance: *Good*
Recording: *Good*

VILLA-LOBOS: Five Preludes; Chôro No. 1; Three Études; Suite populaire brésilienne. Philippe Lemaigre (guitar). RICERCAR © RIC 039012 (57 min).

Performance: *Committed*
Recording: *Unusually high level*

Last year marked the centenary of the birth of Heitor Villa-Lobos, and these two recordings, each containing some of

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his best-known works, are among those made in observance of that anniversary. The Hyperion release comes into fairly direct competition with a recent Delos CD of the same two *Bachianas* and a handful of Bach transcriptions played by the Yale Cellos under Aldo Parisot. It is frustrating to compare the performances of the *Bachianas*. The English team is cleaner and more precise in No. 1, but Parisot's players are even more clearly superior in No. 5, not only in their own right but thanks to Arleen Augér's truly incomparable singing of the soprano part. (The only other duplication on the Delos disc is the transcription of the Prelude in B-flat Minor from Book 1 of Bach's *The Well-Tempered Clavier*.) But Jill Gomez and Peter Manning do convey here the charm of the Suite for Voice and Violin.

Philippe Lemaigre's painting of Villa-Lobos, reproduced on the booklet with the Ricercar CD, is a touching indication of the commitment felt in his performances. The guitar pieces he has recorded are all represented on other CD's, but his seem to be the only one to bring them all together. It's a pity he recorded only three of the twelve études (although there would not have been time for all of the nine he omitted), but he does include the *Chôrinho* frequently appended to the four movements of the *Suite populaire brésilienne*. The sound level is unusually high on this disc, but the quality is pleasant enough when the playback setting is adjusted. The documentation is somewhat less satisfactory: The *Chôro No. 1* is listed as *Chôros typico*, with no reference to its being the first in the cycle of numbered works called *chôros*; the title *Chôrinho* is consistently misspelt; and Lemaigre's annotation is poorly translated. R.F.

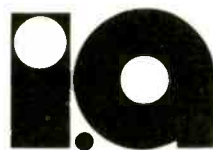
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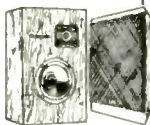
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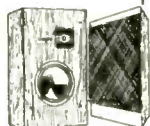
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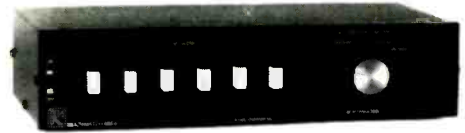
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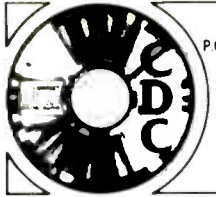
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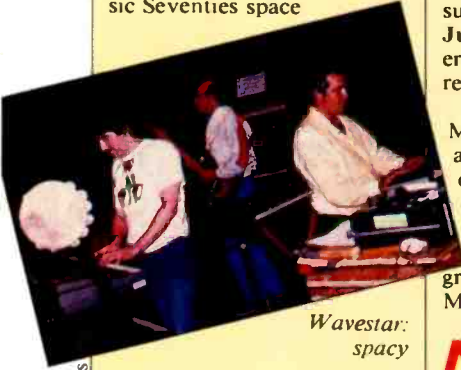
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by Christie Barter
& Steve Simels

ATENTION, Space Cadets. Is there a gaping hole in your soul where classic Seventies space



Wavestar:
spacy

music of the Tangerine Dream/Pink Floyd variety is concerned? Well, then, keep an ear out for Wavestar, a British band whose recently released album "Moonwind" (Passport) reprises the exotic sounds of vintage Dream and Floyd. It should be just your cosmic cup of tea.

Wavestar's John Dyson recently told us that the record's lush electronic textures were created on an antique eight-track tape machine with absolutely no digital gear. Even more surprising, Dyson also let it slip that the band's original musical inspirations were two decidedly un-spacy Sixties surf-guitar groups, the Ventures and the Shadows. But does he mind that Wavestar's efforts are being tagged as New Age music? "I don't know," Dyson answered. "Looking at the three of us, perhaps you should call it Middle Age music." □

THE final performance in March of the Metropolitan Opera's outstanding production of Strauss's *Ariadne auf Naxos*, with Jessye Norman in the title role, was taped for television and will be shown on PBS stations countrywide on April 27. James King sings the role of Bacchus, Kathleen Battle is Zerbinetta, and Tatiana Troyanos is the Composer. The Met's artistic director, James Levine, conducts the performance.

More good news for Norman's legion of fans is that she's just recorded *Ariadne* for Philips under Kurt Masur's direction. Opposite her as Bacchus is a newcomer to discs, Canadian tenor Paul Frey; Zerbinetta is sung by Edita Gruberova, and Julia Varady is the Composer. The recording is slated for release early next year.

More from PBS, too: On May 7 the network will carry a performance of the American Ballet Theatre's *Romeo and Juliet*. ABT's three-act *Romeo*, set to the popular Prokofiev score, is choreographed by Sir Kenneth MacMillan. □

NOT many all-instrumental rock albums on small labels get nominated for Grammys (not many get released, either), but that's exactly what happened to "Trash, Twang & Thunder," by the all-star outfit Big Guitars from Texas, when Austin-based Jungle Records released it in 1985. A killer anthology of bluesy, surfy tunes in the great tradition of Sixties Texas axemen like Freddie King and Lonnie Mack, the album is at last available on CD courtesy of



Norman as Ariadne

the eclectic folks at Rykodisc. Included on the disc is material from the album's follow-up, the aptly named "That's Cool, That's Thrash," making for a generous running time of more than sixty min-

utes. Fans of contemporary Texans like Stevie Ray Vaughan or the Fabulous Thunderbirds are advised to check it out immediately. □

A NEW compact disc from Delos, "The Symphonic Sound Stage," is more than just a sampler and more than just an audiophile demo record. It is both, but it's also a sort of sonic profile of John Eargle, a leader in the field of audio engineering who is celebrating his twenty-fifth year



Big Guitars
from Texas: bluesy, surfy

in the business. Eargle has worked with Delos for almost ten years and has engineered some of the label's most successful recordings, including Strauss's *Thus Spake Zarathustra* with the Seattle Symphony under Gerard Schwarz and Respighi's *Roman Festivals* with James DePriest and the Oregon Symphony. Containing short passages from these works and other tidbits from the Delos catalog, the new disc is appropriately subtitled "A Listener's Guide to the Art and Science of Recording the Orchestra." The annotation describes some of the engineering challenges Eargle had to meet in recording each work (often with spectacular results) and includes a valuable glossary of terms used by recording engineers and writers in the audio field. □

JUST when we thought that the Young Turks Getting Down With Old Guys trend in pop music had peaked, we

get word that the Fat Boys are at it again. The Corpulent Ones, who joined the Beach Boys last year for a rap remake of the surf classic *Wipe Out*, are now teaming up with none other than twist-meister Chubby Checker for a remake and video of—what else?—Chubby's Kennedy Era dance anthem, *The Twist*. Given today's aerobic mania, it's quite possible the new *Twist* will be a huge hit, although we're not certain that would be a good thing. In any case,

Fat Boys fans can kill time waiting for the new collaboration to be released (it's due out Memorial Day weekend) by watching the Warner Home Video version of the Boys' feature-film debut, *Disorderlies*, which also stars the eternally put-upon Ralph Bellamy. □

WE'VE asked before, but we'll ask again: Please, oh please, can't somebody at the Rock and Roll Hall of Fame be persuaded to release on home video the jam sessions highlighting their annual ceremonies? For example, this year's fete, at which the Beatles and Bob Dylan (among others) were inducted, had perhaps the most spectacular on-stage lineup yet. Wouldn't you want to see Bruce Springsteen and Mick Jagger together in *Satisfaction*, or George Harrison and Ringo Starr harmonizing in Dylan's *Like a Rolling Stone*? Clips from these affairs have been shown periodically on

PASSPORT: RECORDS

WINNIE KLOTZ/METROPOLITAN OPERA

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MTV, but the Hall of Fame has complete footage in its archives. It strikes us as monumentally unfair that the full performances are seen only by the industry bigwigs who can afford tickets to the black-tie galas themselves. C'mon, Hall of Fame: How about some power to the people? □

ENTERING the final planning stages for the Eighth International Van Cliburn Piano Competition, to be held a year from now in Fort Worth, the Van Cliburn Foundation has for the first time commissioned a poster—and commissioned it from a distinguished native Texan, painter Robert Rauschenberg. The poster will be distributed internationally for promotional purposes and will serve as the cover of the official competition program. Copies of the poster can be ordered for \$20 each from the foundation at 3505 W. Lancaster, Fort Worth, TX 76107; or telephone (817) 738-6536.

The fourteen-member jury converging on Fort Worth next May to judge the competing young pianists in-

8TH VAN CLIBURN INTERNATIONAL PIANO COMPETITION - MAY 1ST - JUNE 1ST FORT WORTH, TEXAS - 1989



Rauschenberg's poster

cludes a number of eminent pianists. Among them are **Christina Ortiz**, a Van Cliburn Gold Medalist in 1969 (she has records on the Angel and London/Decca labels), **György Sándor** (currently represented on the Vox label), **Abbey Simon** (on Turnabout), and **John Lill**, a 1970



Jagger and Springsteen (above) and Harrison and Starr (right): Hall of Fame spectacular

Tchaikovsky Competition winner (on Deutsche Grammophon and ASV). Other Van Cliburn jurists whose names may be familiar to record buyers are **John Pfeiffer**, the veteran RCA producer, and American composer **John Corigliano**. □

RCA Red Seal has signed the **Tokyo String Quartet** to an exclusive, long-term contract and set as an early priority a recording of the complete quartets of Schubert. The first release in the cycle, a coupling of the Quartets Nos. 9 and 13, is due this month.

Founded in 1969 at the Juilliard School in New York City, where its original members had come to complete their studies, the Tokyo Quartet came to worldwide attention a year later by winning an international competition in Munich. With that start in mind, the ensemble will help boost the careers of some young pianists by accompanying the semifinalists in next year's Van Cliburn Competition.

The Tokyo Quartet's cur-

rent discography spans a number of labels, including RCA, and ranges from works of Haydn (the *Prussian Quartets*, Op. 50, on Deutsche Grammophon) and Mozart (the *Flute Quartets*, with flutist **Paula Robison**, on Vanguard) to Respighi's *Il tramonto* (with soprano **Renata Scottò**, on Vox) and Bartók's quartets (again on DG). □

GRACENOTES. Vestron MusicVideo is readying a documentary entitled "Brit-

ish Rock: The Legends of Punk and New Wave." The tape features footage of the **Sex Pistols**, the **Clash**, the **Pretenders**, and the **Boomtown Rats**. . . . According to **Spring Arbor**, a distributor of gospel records, sales of albums by **Jimmy Swaggart** have not declined since the controversial TV



PHOT ROBERT'S

evangelist confessed to indiscretions with a New Orleans hooker. . . . Separated at birth? Comedian **Jay Leno**, appearing on the **David Letterman** show after the Grammy Awards, noted the resemblance between Grammy winners **U2** and the **Larry, Darryl, and Darryl** characters on CBS's *Newhart*. □

Tokyo String Quartet: moving on to Schubert



CHRISTIAN STEINER/JOHN DUDICH

VAN CLIBURN FOUNDATION

by *Ralph Hodges*



Cassette Redux

YOU'VE noticed, surely, that with the forces of digital audio now swarming freely over the land, there has been an aggravating tendency for older analog media suddenly to become "finished"—that is, to become refined to a point that would have been almost unthinkable when they had only each other as competition. Where were these advancements when we really needed them, you justifiably ask? Well, in the case of one whose acquaintance I've just recently made, it's correct to say that digital technology was a prerequisite for its existence, although the medium it serves is entirely analog. In fact, it's a very humble form of analog audio: the prerecorded tape cassette.

What makes the prerecorded cassette such a mediocrity among recorded-music formats? High-speed duplication, essentially, but that answer requires some expansion. Duplication speeds of thirty-two and sixty-four times the cassette playing speed of $1\frac{1}{8}$ ips, speeds that are standard in the duplication industry, pose no insurmountable problem for the cassette tape on which the music message is being recorded. What they hurt is the "running master" tape from which the

message comes. In the interest of quality, you'd like to record these masters at $7\frac{1}{2}$ ips, but multiplying *that* speed by sixty-four risks turning tape into tatters. So you compromise with a master recording speed of $3\frac{3}{4}$ ips. This frequently amounts to a major compromise, overall quality being dismal and azimuth problems with a wide-track format being formidable. And you're still running somewhat too fast for comfort in the duplicating stage.

Okay. Are we ready, then, to start thinking about a system with an 80:1 duplication speed and negligible transfer loss? Richard Clark of American Multimedia is. Digital Audio Analog Duplicator (DAAD) is his designation for a system based not on a duplication-master tape, but on a 14-inch computer hard disk that spews forth data at a speed of 14 megabytes per second, leading to a digital-to-analog (D/A) conversion rate of 3.58 million samples per second—somewhat above the more familiar rates of 44.1 and 48 kHz used in the CD and DAT formats, you'll grant. The system uses 16-bit linear pulse-code modulation (PCM), which Clark chose not because it makes life easier (it doesn't), but because it amounts to something of a standard in an area that needs standards.

In operation, the system is loaded with the program—from a digital tape or a CD, usually—in real time. A brief diversion into the analog domain is necessary to permit Dolby B or Dolby C encoding. Then, with a blast of super-density data, the disk unloads into the D/A converters (\$300 two-chip affairs of unique properties), which provide the analog output for the high-speed slave recorders. Clark uses Dolby HX Pro headroom extension on the slaves for Type II tapes, but he is not yet satisfied with its results on metal formulations.

The speed at which the DAAD functions does not permit any error correction or error detection beyond the simplest sort of parity check, and at first this problem loomed large. Today, error-prone conditions on the disk (which is sealed away in an evacuated chamber of the proprietary drive) cause

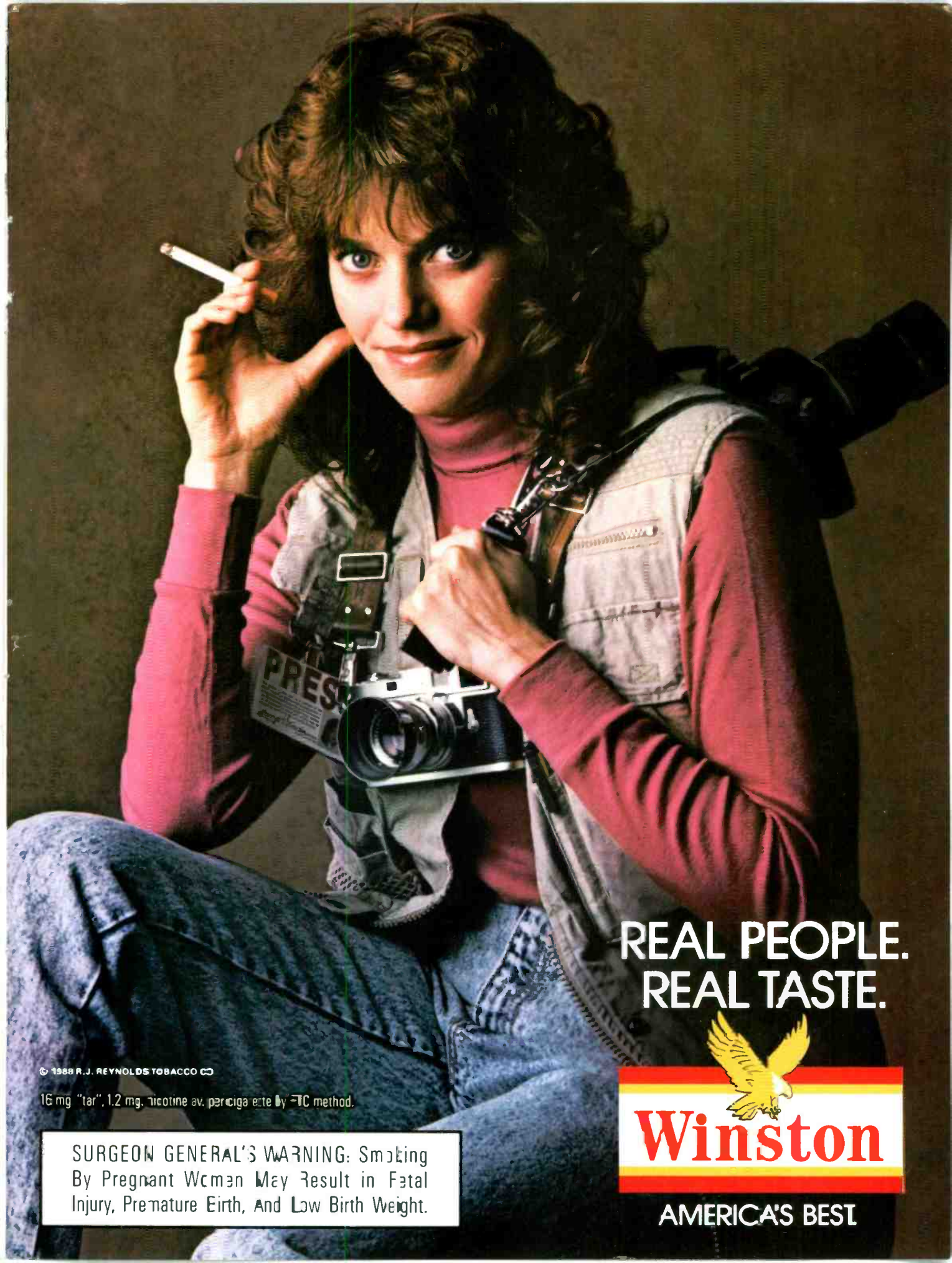
the pickup to be diverted off to another, unused portion of the disk, and the new address is stored in memory. Allowing for this mode of operation, the capacity of the system is about 50 minutes of four-track program—more than enough for a C-90 cassette.

When an invited group of audio experts visited American Multimedia's plant in Burlington, North Carolina, we amused ourselves running off copies of CD's on metal cassettes with Dolby C and trying to tell source from tape. My score with the ABX double-blind tester was a bare squeak above 50 percent, meaning I could *very occasionally* hear and correctly identify a difference. Hearing a difference, however, did not mean having a preference. On balance, I found the two formats equally satisfactory in all important listening respects—something I have decided to announce in print only after much soul searching.

Fortunately for cassette purchasers, Clark's operation is a large one, broadly based in both hardware and software manufacture (including everything from mastering through to label printing and packaging) and with sufficient buoyancy to launch new technology and keep it afloat. Interest in the DAAD system has reportedly been expressed by RCA and Telarc, and Doug Sax of Sheffield Labs went away a happy convert after our visit, particularly pleased that the system manages both to advance quality greatly *and* to reduce production time—and therefore cost—significantly.

Interestingly, Sax says he means to obtain from Clark an exclusive on metal-tape duplication. "Metal tape is a must for quality," he insists. "Type II recordings just go away within a year, steadily if you store them and even more quickly if you actually play them. Metal's magnetic properties prevent that [deterioration]."

Hmm. Could it be that metal tape, which not all that many people have found all that much use for so far, is on the brink of a vast new theater of operations? If so, it probably won't be the only big cassette change that Clark's efforts bring about. □



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