

# The World of JVC 4-Channel Sound



 **JVC**

# 4-Channel Stereo: A revolution in sound

Sound has come a long way since the days of the earliest "talking machines." It has been steadily improved on during many different eras of sound—monophonic, stereophonic, and today, 4-channel sound.

In its earliest stages, engineers were more concerned with tone quality, or to what extent sounds of instruments could be reproduced as they were in real life.

## Sound Field

But they also realized that tone quality was not enough. There was the "sound field" itself that had to be taken into consideration—the feeling of sound that one gets in a concert hall, for example. There, not only does a piano sound like a piano and a violin like a violin, but the music itself gives the listener a feeling and a sense of involvement. This is presence.

In a sound field, the direct and indirect interaction of sound is made possible by an acoustic environment in which sound reaches one's ears from different positions and at different time intervals.

How to take the same sense of presence from the concert hall and put it into your livingroom so that the same sense of involvement could be felt was the task of audio engineers for years.

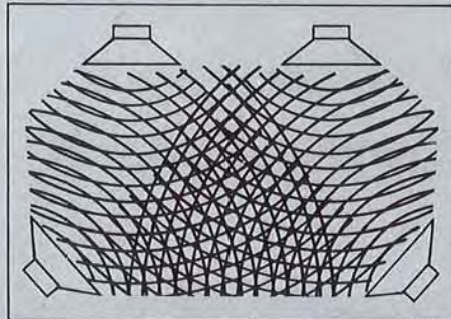
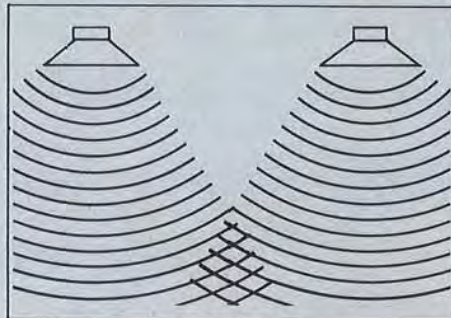
## Stereophonic sound

Progress toward this goal was made when stereophonic sound stole the scene from monophonic sound more than a decade ago. Then, we were given a wider sense of sound. In stereo, as we listened, we could almost see the piano on the stage at the left and the saxophone player on the right.

In the past decade stereophonic sound was improved on to such an extent that many people felt that this was as far as sound reproduction could go. But the engineers knew different. Two-channel sound had its limitations. To faithfully reproduce that elusive "sound field" they knew that 2-channel sound just was not sufficient.

They began working on 4-channels of sound, knowing that in theory it would be preferable to have as many channels as possible for pure sound field reproduction, but knowing also, that there

were practical limitations that had to be taken into consideration, and that 4-channels were the minimum required for sound field reproduction.



## Discrete vs Matrix

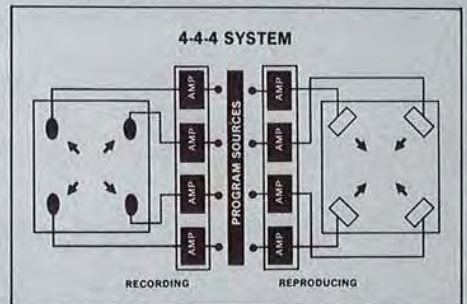
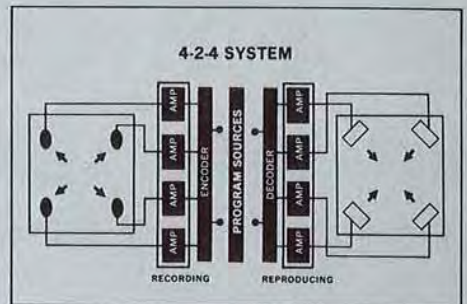
As 4-channel systems of sound began to be introduced over the past several years, two different basic systems emerged. One was the matrix system, the other was the discrete system.

In its earliest days, the matrix system of 4-channel sound had an advantage over the discrete system because it offered simulated 4-channel sound from existing 2-channel sources.

Discrete 4-channel sound—where four discretionary channels of sound were maintained from recording through reproduction and universally acknowledged as best by even the makers of matrix systems—was available only on tapes in the open reel and cartridge forms.

There was no discrete 4-channel disc—the most popular program source of all—and many people thought it would be years before a 4-channel disc could be developed.

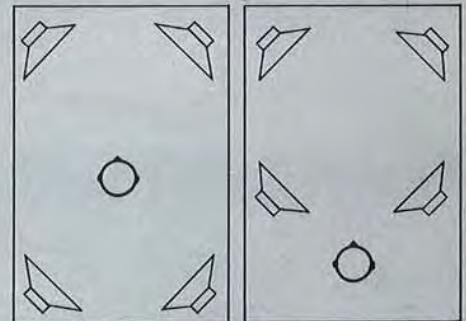
This catalog of 4-channel systems and components goes a long way towards showing how wrong they were.



## Setting up a 4-channel system

To hear either matrix or discrete systems of 4-channel sound, four speaker systems and four separate channels of amplification are required. For best reproduction of the sound field in the home, two methods of positioning of the speaker systems are recommended. One where the four systems are placed in each of the four corners of the room and the listening area is in the center of the room, or one in which the systems are placed in the front of the room and the listening area is behind the speakers.

The former method is said to be best for listening to live sound or types of sound you feel more at home being surrounded by, and the latter, for listening to music that is normally staged such as symphonies and operas.



# The JVC CD-4 System

## The Disc as a program source

Ever since Edison first started the world on its way to reproduced sound, the disc has always been the most important program source. And now, as always, it is the backbone of the recording and stereo industries.

When 4-channel sound was first introduced, most people felt that without the disc, this new format of sound would never really get off the ground, and that a discrete 4-channel disc would be long in coming because of many difficult problems that stood in the way of its development.

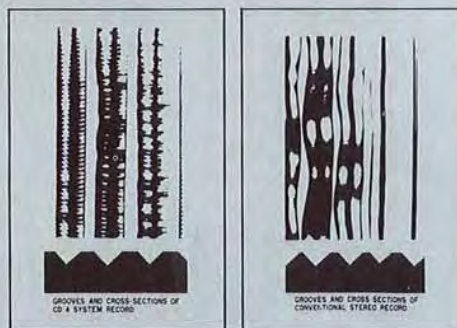
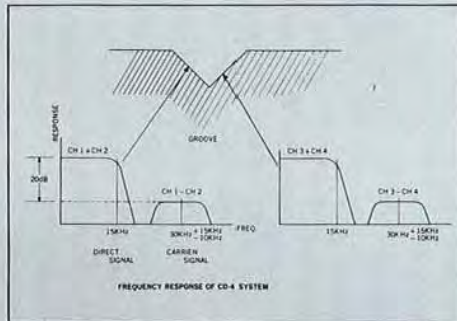
## The CD-4 Disc

In September, 1970, JVC introduced the world's first discrete 4-channel record, the CD-4 disc. "C" meant compatible; the fact that the CD-4 system was capable of reproducing regular 2-channel discs as well as discrete 4-channel ones. "D" stood for discrete and "4" stood for 4-channels.

The CD-4 disc was developed after seemingly insurmountable problems were overcome. The largest of these was how to put four discretionary channels of sound into a v-shaped record groove that already had two separate channels of sound on each wall as in the case of conventional 2-channel stereo records. JVC solved this problem by modulating the additional information into the groove in much the same way as is done in FM stereo broadcasting. On the CD-4 disc, for instance, discrete 4-channel reproducing equipment picks up the 4-channels of sound, while 2-channel equipment does not.

Other problems in the development of the disc were how to keep the same degree of fidelity as offered by 2-channel records of today, and how to keep the discrete 4-channel disc competitive in price to existing records.

JVC solved these problems through new techniques in the recording process. By low speed cutting, utilizing a carrier level controller, new cutting stylus, automatic noise reduction system and a Neutrex cutting process, to name a few. In all, JVC has applied for more than ninety patents for the CD-4 system.



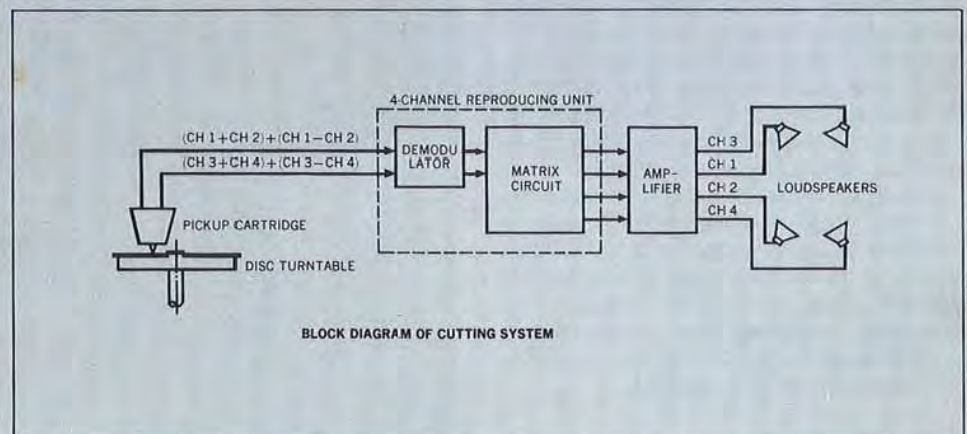
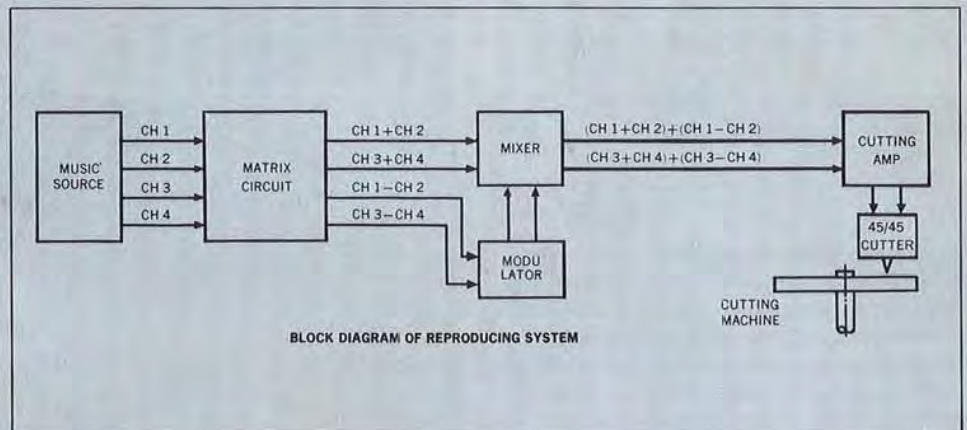
## Equipment Need to hear CD-4 discs

Provided there is a basic 4-channel reproducing system, only two additional pieces of equipment are required to reproduce CD-4 discs.

Assuming that one presently has a quality 2-channel turntable, the only equipment he would need to give it a CD-4 reproducing capability would be the JVC 4DD-10 demodulator and the 4MD-10X 4/2-channel compatible stereo cartridge.

## JVC 4-channel equipment available today

You'll find the world's most comprehensive line of 4-channel stereo products on the following pages. Products designed and built to usher you in to the breathtaking new world of 4-channel sound.



# MCA-V5

## 80/60 Watt 2/4 Channel Integrated Amplifier

A "must" component for any first-rate system, this versatile model incorporates advanced BTL (Balanced-Transformer-Less) circuitry for an 80 watt output capacity when used as a 2-channel amplifier and a 60 watt output capacity when used as a 4-channel amplifier. No matter which way it is used, it still delivers a wide power bandwidth from 30 to 30,000Hz and holds distortion to 0.5% or less. Other impressive performance credentials include an S/N ratio of better than 80dB and a damping factor of 40. JVC's SFCS (Simulated Four Channel Sound) system is built-in to permit immediate conversion of all 2-channel program sources into 4-channels. A full complement of input and output jacks has been provided for handling both 2- and 4-channel equipment.



# MCA-V7

## 60/90 Watt 2/4 Channel Integrated Amplifier

This has to be one of the greatest values in stereo. For no more than you'd pay for some control amplifiers alone, JVC gives you MCA-V7 three-in-one combination component to put you four-square in the middle of the exciting new development called 4-channel stereo. First, it includes a 60 watt 4-channel integrated amplifier to enable you to enjoy all future discrete 4-channel tapes, discs and FM stereo broadcasts. Next, it features a built-in Simulated Four Channel System (SFCS) enable you to convert all present 2-channel tapes, discs and FM stereo broadcasts into the exciting new format. And finally, it doubles as a 90 watt 2-channel stereo amplifier in conventional stereo usage. What's more, MCA-V7's pre-and power amplifier sections are independently usable in all 4-channel headphone jacks. 5½"H x 17"W x 12"D. 22 lbs.





## MCA-V9

230/180 Watt 2/4 Channel Integrated Amplifier

The search is over. This is the ultimate in integrated amplifiers. The MCA-V9's super-sophisticated circuitry includes JVC's BTL circuitry, enabling it to deliver a solid 230 watts as a 2-channel amplifier and 180 watts as a 4-channel amplifier. Further enhancing the stereo enthusiast's enjoyment of the best of both worlds of sound is JVC's Sound Field Composer System (SFCS) for converting 2-channel signals to 4-channel signals. Pure Complementary OCL circuitry is utilized in its power amplifier section to give improved damping. At the same time, superior tonal quality is registered by incorporating a 3-stage direct coupled equalizer in the preamp section. The MCA-V9 has the world's most advanced features, including 4 large VU meters, one-touch speaker terminals, 2/4-channel headphone jacks, VU meter sensitivity switch and a remote control jack.

## 4VN-990

280 Watt 4-Channel Integrated Amplifier with SEA System

A 4/2-Channel compatible amplifier that provides 70 watts per channel in 4-channel usage (at 4Ω) and 140 watts per channel in 2-channel usage (at 4Ω) thanks to JVC's built-in BTL circuit. Converted 2-channel and encoded 4-channel information are reproduced through the unit's Simulated Four Channel System. Total control over sound in all four channels is possible with built-in front and rear channel S.E.A. tone control systems, permitting complete tone control in five different frequency zones. A 4-channel balance/remote control jack has also been provided. Power bandwidth; 10 to 30,000Hz, THD; 0.5%, and S/N ratio of 75 dB. 5<sup>3</sup>/<sub>8</sub>"H x 16<sup>5</sup>/<sub>8</sub>"W x 15<sup>3</sup>/<sub>8</sub>"D. 35.2 lbs.



## Sound Ideas in 4-channels with JVC components and systems

### 4VR-5445

Now, one of the world's best discrete 4-channel stereo receivers, the JVC 4VR-5445, is ready for your living room. Incorporating a 4-channel preamplifier, a 4-channel power amplifier, JVC's unique SFCS (Simulated Four Channel System), advanced 4-channel SEA tone control system and sensitive FM and AM tuners, the 200 watt 4VR-5445 receiver is years ahead of its time in every respect. The SFCS element means you can continue to enjoy your 2-channel program sources in the new 4-channel format, as well as they become available. Rich in IC and FET circuitry, and complete with just about every type of accessory circuit imaginable, the 4VR-5445 offers a wide 20 to 30,000Hz power bandwidth and limits distortion of any kind to a mere 0.8% or less. Complete with walnut cabinetry. 5 $\frac{7}{8}$ "H x 22 $\frac{7}{8}$ "W x 14 $\frac{3}{8}$ "D. 34.1 lbs.



### 4VR-5414

120 Watt FM/AM 4-Channel Stereo Receiver with SEA System

An outstanding value as an all-around 4/2-channel compatible stereo receiver. JVC's BTL circuit enables to deliver a full 65 watts per channel in 2-channel usage. The unit also incorporates JVC's Simulated Four Channel System (SFCS) for conversion of 2-channel sources to 4-channel sound, and an FM Detector Output terminal which permits future 4-channel FM reception. Provisions have also been made for accomodating both 2- and 4-channel components, including jack to handle a 4-channel remote control unit. Complete control over front channel sound is assured by the unit's built-in S.E.A. system. And to round out this great receiver, top FM reception capabilities have been built into it with such features as an FET-equipped frontend, an IC and 3-mechanical filter IF stage, FM linear dial scale, "Bull's eye" tuning dial and FM Stereo radar circuit. 5 $\frac{7}{8}$ "H x 19 $\frac{3}{8}$ "W x 14 $\frac{3}{8}$ "D. 27.8 lbs.





## 4MM-1000

FM/AM 4-Channel Stereo Receiver

This incomparable model is fast developing into a "must" for the serious minded stereo enthusiast who has his eye and his ear on the future of 4-channel sound. Four-channel balancing is a snap with the 4MM-1000's illuminated Pin Point Control. And its built-in Simulated Four Channel System (SFCS) section permits the immediate conversion of 2-channel sources to 4-channel sound. And when 4-channel FM broadcasts develop, this model is also ready with an FM detector output. For perfect sound monitoring in 4-channels, there's a 4-channel headphone jack. Tuning is easy with a large FM/AM signal level meter. And FM reception is superb, thanks to a high selectivity FM tuner with mechanical filters and advanced ITL-OTL circuitry with four ICs. The 4MM-1000 is the one 4-channel FM/AM 4-channel stereo receiver that puts it all together.



## 4ME-4800

4- and 2-Channel Compatible 8-Track Tape Player System

You're in step with tomorrow with this advanced 48 watt 4-channel system. The 4ME-4800 not only permits you to play regular 2-channel 8-track cartridge tapes and discrete 4-channel 8-track cartridge tapes, but it also incorporates JVC's exclusive Simulated Four Channel System (S.F.C.S.) which lets you convert any existing 2-channel program source into the more life-like sounds of 4-channel stereo. Features of the system include a Pin Point Controller on the front panel that permits you to balance sound between any or all four speakers, a remote control jack, high-performance 4-IC equalizer circuit and convenient program indicators. Speaker systems each include 6½-inch woofer and 2-inch tweeter. Center unit measures 6⅛"H x 9⅞"W x 12¼"D. 17.6 lbs. Each speaker system measures 17⅞"H x 9⅞"W x 5½"D. 7.7 lbs.

## Top performance discrete 4-channel tape decks

### 1400

Professional 4-Channel 3-Head Stereo Tape Deck.

Offers realistic sound never obtainable from conventional 2-channel stereo. You feel like you're actually attending a live performance in a large concert hall. Separate recording, playback and erase heads of the highest quality. Wide 20 to 25,000Hz frequency response range. Complete with an Automatic Stop feature that restores all mechanisms to the stop condition when the tape ends. Retracting pinch roller for easy tape threading. Low-noise tape/normal tape selector switch. 8 IC's, 20 transistors, 6 diodes, 1 Zener diode. 17 $\frac{5}{8}$ "H x 16"W x 7 $\frac{1}{4}$ "D. 26.4 lbs.



### MTR-15M

4/2-channel record/playback tape deck

Discrete 4-channel tapes never sound better or easier to play than with this high performance 2-speed deck. They never were easier to record either, thanks to a newly developed 4-channel head for 4-channel recordings and playback. The MTR-15M gives you the very best of the world of 4-channel sound with maximum convenience. All controls are arranged for easy handling and a single lever controls rewind, stop, play/record, pause and fast forward functions. Offering superb tonal characteristics such as 30 to 20,000Hz in frequency response, the MTR-15M is indeed the deck of the future. 12 $\frac{9}{16}$ "H x 16 $\frac{5}{16}$ "W x 7 $\frac{3}{32}$ "D". 21.6 lbs.







## 1202

**4-channel Stereo Cartridge Tape Player Deck.**

Simply connect to a 4-channel amplifier and four speakers, slip in a 4-channel cartridge tape, and enjoy all the realism of a music hall right in your own living room. And talk about convenience. With the 1202 there's no need to turn the tape over every time it reaches its end. It goes right on playing until you stop it. Hi-Fi 4-channel stereo sound from 30 to 15,000Hz. Plays conventional 2-channel stereo music tapes as well. Walnut case. 14 transistors, 5 diodes.  $4\frac{3}{16}$ "H x  $10\frac{3}{16}$ "W x  $9\frac{7}{8}$ "D. 7.9 lbs.



## 4ME-4801

**4 1/2-channel compatible 8-track cartridge player with 4-channel preamplifier.**

Here's a handsome and compact cartridge deck ready to open up a whole new world of discrete 4-channel and conventional 2-channel sound. Just slip in an 8-track cartridge and the 4ME-4801 is ready to go. With four ICs for accurate equalization characteristics. And muting in the fast forward mode, a mode that is three times faster than the normal running speed. Whether you're using 8-track 2-channel cartridges or 8-track 4-channel ones, appropriate indicator lights tell you which is in play. The cartridge deck for today and tomorrow. A 4-channel component to complete the system of tomorrow.

# SRP-473E

4-channel "ready" 2-speed belt-drive turntable

A look at this precision component will tell you it's different, but a closer look will prove it. Notice how the TH universal tonearm houses a 4/2-channel compatible cartridge. And how the turntable's 4-pole synchronous motor and belt-drive system combine to give it the precision required for reproducing discrete 4-channel stereo records: wow and flutter of less than 0.1% WRMS and an S/N ratio of better than 50dB. In fact, all that's required to convert the SRP-473E to immediate discrete 4-channel status is JVC's 4DD-10 demodulator and stylus. 18 $\frac{3}{16}$ "W x 14 $\frac{9}{16}$ "D x 7 $\frac{1}{4}$ "H. 22 lbs.



## JVC CD-4 "Completion Kit"

To reproduce a discrete CD-4 stereo disc, the 4DD-10 demodulator, 4MD-10X cartridge and 4TD-10X stylus are required. The 4DD-10 demodulator ties in with the turntable and amplifier, and is capable of both discrete 4-channel and regular 2-channel play. It offers a high S/N ratio, low distortion and high dynamic range in decoding the discrete 4-channel signals in the record groove. The 4MD-10X 4-channel playback cartridge is specially designed to handle the higher (up to 50,000Hz) reproduction ranges of CD-4 records. The 4TD-10X stylus is designed to get all the sound out of a CD-4 record groove as was originally recorded in the groove.





# 5100

## 4-Channel Stereo Control Amplifier with S.E.A., S.F.C.S.

This is JVC's great new "Upgrader," a 100 watt power amplifier that lets you instantly upgrade your present 2-channel stereo system to enriched four-channel status. Thanks to its unique S.F.C.S. (Simulated Four Channel System), it is able to take everyday 2-channel records, tapes and FM stereo broadcasts and render them with all of the incredibly lifelike presence that the new format permits. Equipped with its own volume control and a 4-channel master volume control, the 5100 also features JVC's unique S.E.A. (Sound Effect Amplifier) tone control system. Other noteworthy features include a power output of up to 50 watts per channel and a complete system of 4-channel input, output and speaker terminals. The 5100 can also connect a remote control unit for controlling the 4-channel master volume control and balancing the sound among the four channels.  $5\frac{1}{2}''\text{H} \times 10\frac{7}{16}''\text{W} \times 14\frac{5}{16}''\text{D}$ . 17.4 lbs.

## 4-Channel Accessory Components

Both the 5910 and 5911 are Remote Control units that give the user convenient, one-touch balancing of all four channels of sound no matter where in the room he may be. They connect remotely to JVC 4-channel amplifiers and receivers, and permit both balancing and volume control. Another JVC accessory, the 5944 2/4-channel compatible stereo headphone set, features a built-in phase changeover switch which gives the feeling of dynamic presence. Operating throughout a wide 20 to 20,000Hz frequency range and limiting distortion to less than 0.5% at 1mW, this unit is tailor-made for quality listening in both two and four channels.



# JVC Wide-Dispersion Speaker Systems

## GB-1

**Rich, Powerful Omni-Directional Speaker System.**

JVC's enthralling omni-directional systems for stereo everywhere sound. The most advanced such system ever produced, the GB-1 incorporates four free edge woofers and four horn tweeters in its globular baffle which is encased in punched metal enclosure. This pulsating sphere reproduces sound with astonishing fullness and clarity. Wherever you place it in a room or wherever you sit in a room, the GB-1 fills every corner with magnificent natural sound. Omni-directionally. A full 360 degrees. You're in the midst of the concert hall. Able to handle a prodigious 80 watts input, the GB-1 features a wide 20 to 20,000Hz frequency range and an ideal 5,000Hz crossover point. Hung from the ceiling or mounted on floor stands, the stereo effect is the same. Dazzling. Diameter 13½" 26.4 lbs.



## GB-2

**6-speaker omni-directional systems**

Total diffusion of sound—the key to sound field reproduction—is possible with this unique system from JVC. Six 3-inch speakers offer total sound diffusion on both vertical and horizontal planes, for complete reproduction of the important indirect sounds as well as direct ones. Capable of being floor or ceiling mounted, a pair of GB-2Es combine to produce a complex interference fringe of sound for greater presence than obtainable from conventional systems. Four GB-2Es, of course, would deliver the excitement of 4-channel sound that much better. Diameter of each system: 11½". Weight: approximately 9 lbs.





## 5345

### 4-way 6-speaker system

This handsome system incorporates a large 15-inch conical-domed free-edge woofer. The seven conical domes provide divided vibration for better linearity, wider piston motion stroke and lower distortion. A cone midrange, two cone tweeters and two horn tweeters round out the speakers in this 50 watt system. Frequency response is from 20 to 20,000Hz for faithful reproduction of the entire sound spectrum. Covered with a handsome decorator grille, the 5345 can be placed either vertically or horizontally for the same standard of reproduction.  $24\frac{3}{8}$ "H x  $16\frac{5}{16}$ "W x  $11\frac{5}{8}$ "D. 39.6 lbs.



## 5341

### 4-Way 4-Speaker High Efficiency Speaker System.

A truly exceptional means of quality sound reproduction. Though a bookshelf-type system, the 5341 can easily handle a mighty 80 watts peak input (40 watts RMS). Features a 12" free-edge woofer with conical domes, a special cellular horn midrange, a  $3\frac{1}{2}$ " cone tweeter and a 2" horn super tweeter. The handsome front panel can be removed to gain access to midrange and tweeter level controls. The absolutely air-tight cabinet is of rich walnut.  $28\frac{1}{2}$ "H x  $16\frac{1}{2}$ "W x  $15\frac{3}{8}$ "D. 50.6 lbs.



## 5395

2-Way 2-Speaker Air Suspension Speaker System.

A quality bookshelf-type system that is unparalleled for value. The 5395 musters a full 40 watts in power, and employs a large 8" free rolled-edge woofer, and a 2" cone tweeter to carry its musical messages. Equipped with a wide 40 to 20,000Hz frequency range, and boasting a truly astounding 99dB efficiency rating, the 5395 features a luxurious furniture-finish cabinet of selected wood. Input impedance is 8 ohms. 18½"H x 10½"W x 8½"D. 11.5 lbs.



## 5321

3-way 3-Speaker Air Suspension Type Speaker System.

A happy union of efficiency and economy, the 5321 employs a large 8" woofer, an efficient 3½" midrange and a sensitive 2" tweeter to fully and flawlessly reproduce the entire sound spectrum. Operating over an exceptionally wide 37 to 20,000Hz frequency range, the system handles 30 watts RMS in a breeze and a whopping 60 watts peak input. It is suitable for use with even the most costly stereo components, and will do justice from the standpoint of appearance as well as performance. 21½"H x 13"W x 9¾"D. 21.3 lbs.



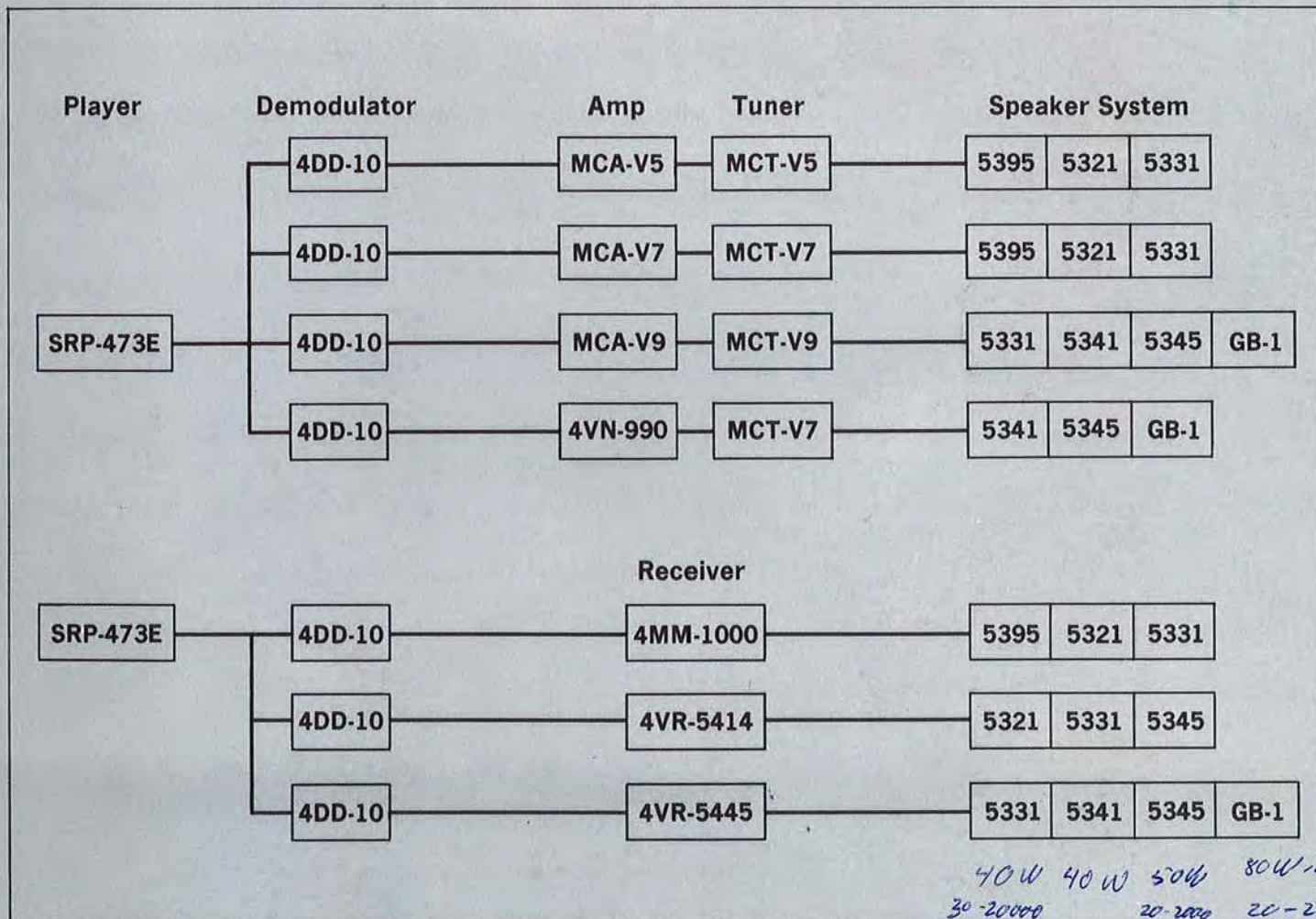
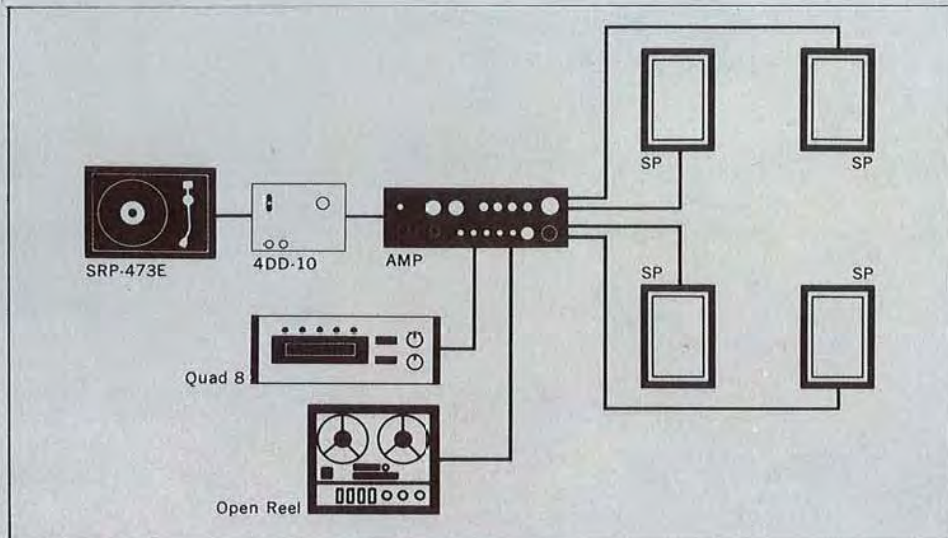
## 5331

Powerful 4-Way 4-Speaker Speaker System.

Hard to match for performance, engineering excellence and for styling. Faultlessly reproduces sound over a wide 30 to 20,000Hz frequency range, and easily handles 40 watts RMS and a resounding 80 watts peak input. The 5331 incorporates a large free-edge woofer, a 6½" midrange, a 3½" tweeter and a 2" super tweeter, all of which are mounted from outside the cabinet for superior performance characteristics. The 5331's hermetically-sealed cabinet is of specially selected natural wood, and its front grille lifts off to disclose midrange and tweeter level controls. 24¾"H x 15¾"W x 13¾"D. 33.2 lbs.

With JVC you're wired for sound—the four-channel sound that is revolutionizing the audio field. And it's as easy as connecting the receiver to four speakers and adding JVC's 4DD-10 Demodulator and SRP-473E turntable to enter the world of discrete 4-channel stereo recorders. Other 4-channel program source components could include a Quad 8 4-channel cartridge tape player and an open reel 4-channel tape deck.

You can't lose with JVC, not with all the winning combination shown here. You start with SRP-473E and the 4DD-10 and either opt for one there incomparable receivers or a combination of separate amp and tuner components, plus the speaker system. Regardless of the choice, the end result is discrete 4-channel magic.





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AUDIO EQUIPMENT DIVISION, CD-4 SECTION  
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