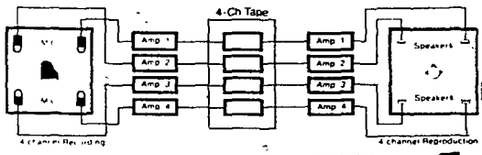
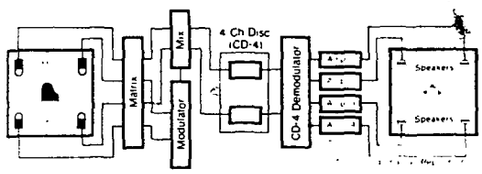
DISCRETE FOUR-CHANNEL STEREO

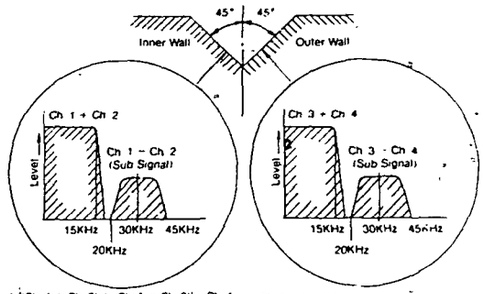
This is the most authentic system of four-channel stereo, since the original four-channel signals are transmitted in four independent ways and will pass through four independent amplifiers to drive four speakers. Four-channel tapes (open reel and cartridge) are the most popular program sources of discrete four-channel now on the market, and these sources are distinguished by a distinctive separation of sound among four independent channels. The discrete CD-4 discs were marketed from the middle of 1972. However, to hear discrete four-channel reproduction requires the use of a four-channel tape deck (for discrete tapes) and a CD-4 disc demodulator (for discrete discs), in addition to a four-channel amplifier or receiver and four speakers. At present, discrete FM broadcasts are still pending in the United States, although there have been some experimental broadcasts.



DISCRETE FOUR-CHANNEL DISC

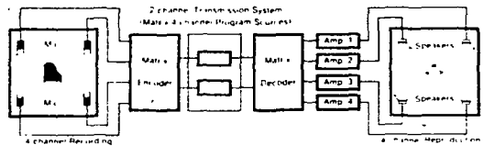
The CD-4 disc is a unique four-channel discrete record that has compatibility with both mono or stereo records. In the CD-4 disc four independent signals are recorded by using special modulation techniques. The disc maintains the conventional 45°/45° record groove, but on the inner groove wall the left channel sum signals (channel 1 + channel 2) are engraved while on the outer wall the right channel sum signals (channel 3 + channel 4) are engraved. In much the same way as conventional two-channel stereo records. These signals can be heard directly when they pass through conventional two-channel equipment. However, on the CD-4 disc, rear channel signals are also engraved on the two disc groove walls as differential signals (channel 1 – channel 2) as well as (channel 3 – channel 4). These differential signals are carried by the inaudible subcarrier in the sound ranges from 20KHz to 45KHz in the form of modulated signals. These signals with extended frequency response in the high ranges, cannot be heard directly, and this is the reason why a CD-4 demodulator and special phono cartridge are necessary to play CD-4 records. The differential signals are demodulated by the demodulator, and when we matrix the sum signals and demodulated differential signals, we obtain four independent signals, as indicated in this diagram.





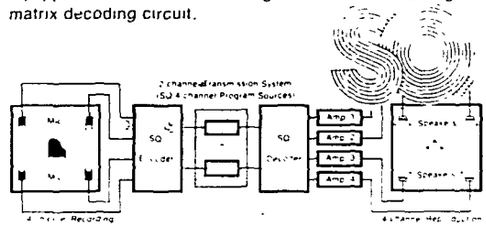
REGULAR MATRIX FOUR-CHANNEL STEREO

The most reasonable and inexpensive system of four-channel stereo is called regular matrix, in which the original four-channel signals are converted into conventional two-channel signals and then played back again in four-channel. For reproduction of this system, your present turntable or tuner or tape deck is suitable for sound transmission. What will be required is a four-channel amplifier or receiver with built-in regular matrix decoder and another two speakers for the rear channels. With the regular matrix decoder, converted two-channel signals are decoded back into the proper four-channel by a decoder that recreates the original four-channel stereo sound field. It is even possible, with quality regular matrix decoding equipment, to achieve certain four-channel sound effects from conventional two-channel tapes and discs.



SQ MATRIX FOUR-CHANNEL STEREO

The one matrix four-channel system that has no compatibility with any of the others is called the SQ system. Since its matrix encoding/decoding principle is quite different from other regular matrix systems, a special SQ decoder is required in order to reproduce an SQ disc or an FM broadcast utilizing an SQ disc. Pioneer's four-channel receivers are equipped with this SQ decoding circuit as well as regular matrix decoding circuit.



QUAD RECORDS ARE HERE NOW!

Four-channel stereo is an impressive, effective way to re-create the original sound field of a concert hall right in your own home listening room. Better yet, it makes possible a new sound of music that cannot be obtained from conventional two-channel stereo.

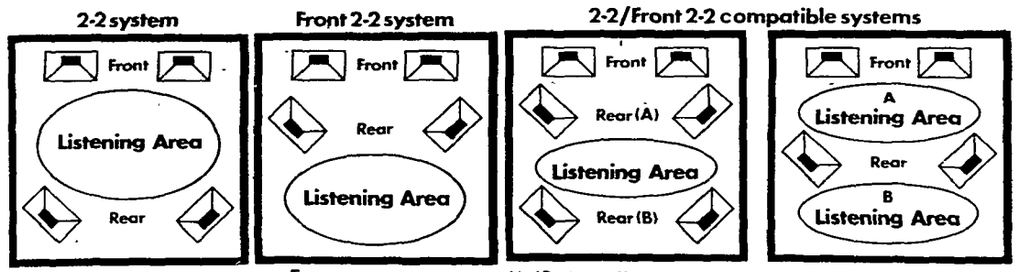
There are many different types of four-channel stereo systems now available, although they can be classified into three categories.

The first is called discrete four-channel stereo (4-ch. tape, CD-4 disc), the second is the regular matrix system, and third is the SQ matrix system. In discrete four-channel, the original four-channel signals are transmitted by four independent sound sources, say four tracks of a tape, and four independent playback amplifiers. In the CD-4 disc, four independent signals are recorded by using special modulation techniques. The regular matrix system uses four signals recorded in the form of four-channel stereo and then fed through a special encoder to be converted into two-channel signals. When you playback these signals through the decoding circuitry of four-channel equipment, the record "originates" its original four-channel sound field. This system is called the matrix, or 4-2-4 system, and, when used, does not require a special tape deck or demodulator as is the case of discrete stereo.

The SQ matrix system is also a 4-2-4 system, although its encoding/decoding function is much different than the regular matrix system. To play SQ records requires a special SQ decoder.

POSITIONING SPEAKER SYSTEMS

This is a very important aspect of the entire new format. Speaker positioning can do much to determine just how you can exploit your new system to maximum advantage. Here are four different possibilities.



2-2 System Regular 4 corner position widely accepted as "standard". Most effective for listening to mood music, rhythm and blues, vocal numbers and "recorded live" records.

Front 2-2 system: Best for symphonies, operas, chamber music and big band jazz.

Ideal Positioning Method Involves the use of six speaker systems and let you choose the regular 2-2 or front 2-2 system by the simple changeover of the rear Speakers Switch.

2-2 Front 2-2 Compatible Positioning Method With the rear speakers placed as shown here, you really can enjoy both the regular 2-2 system or the Front 2-2 system by simply [illegible] point A to point B.

Note: Whatever your preference, better effect can be obtained by placing the front two speaker systems on the floor slightly in from the extreme left and right corners of the room, and by elevating the rear systems about three feet off the floor.