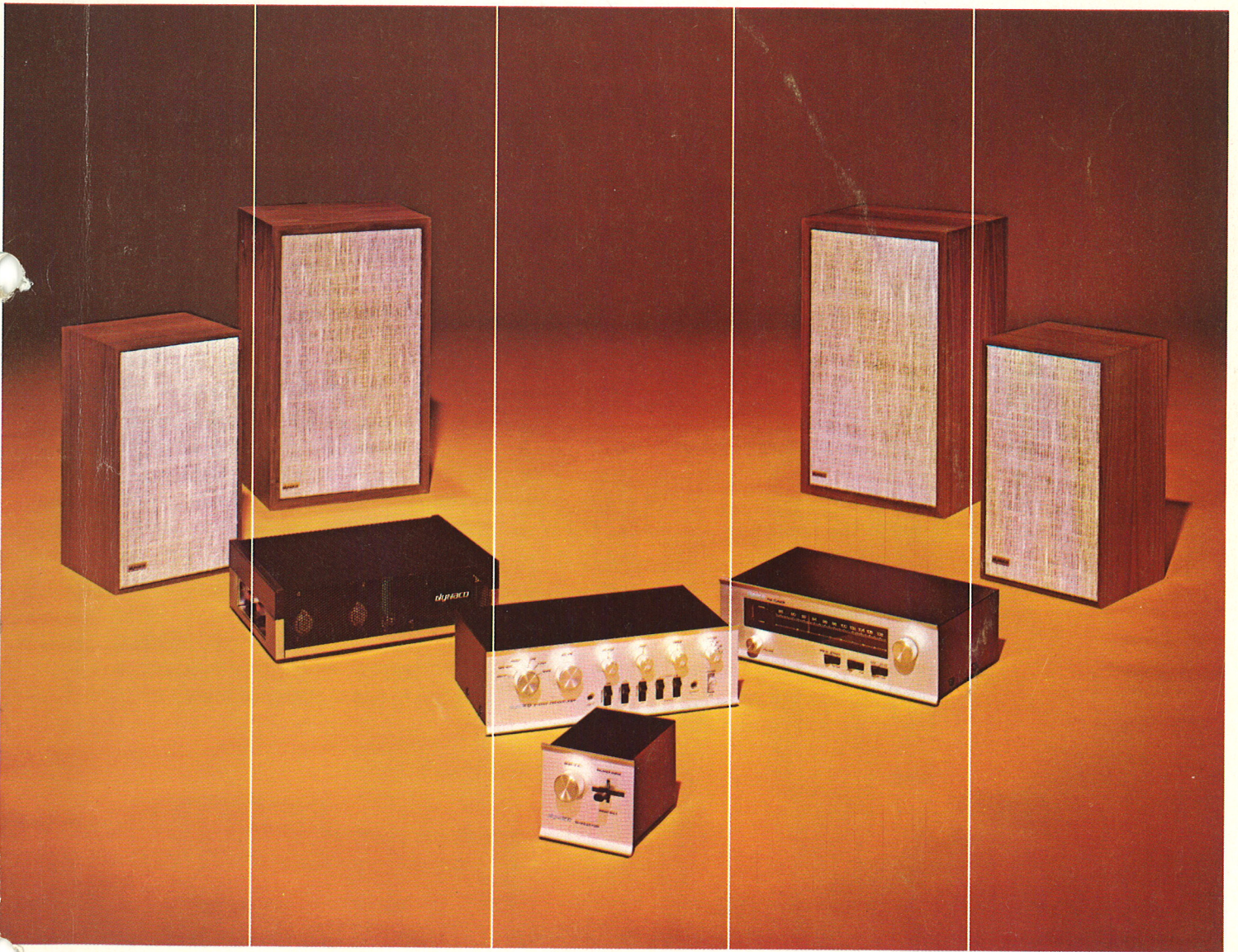


dynaco

HIGH FIDELITY COMPONENTS FOR THE AUDIO PERFECTIONIST



ANSWERS TO QUESTIONS ABOUT STEREO

Not since the advent of two-channel stereo in the late 1950's has any development had the impact and excitement of four-channel stereo. At first glance, it appears that sound reproducing equipment is about to undergo another dramatic change. Fortunately, a studied appraisal indicates that these developments need not be revolutionary, but evolutionary, with the new benefits being enjoyed with minimal additional investment. Owners of existing stereo playback components need not be faced with obsolescence of their equipment or recordings. Indeed, the new development of four-channel stereo emphasizes the inherent flexibility of the component approach to stereo which helps protect your investment over many years.

Four-channel stereo however, raises many questions to which you are entitled answers. The following discussion is centered first around what we want to accomplish with stereo reproduction, and then how the latest development in stereo—four-channel—helps fulfill this aim.

What is the purpose of stereo reproduction?

Stereo should create a listening environment in your living room as close as possible to that of the original hall in which the recording was made. The aim is to transport you to the concert hall—not to move musicians into your listening room.

Why can stereo reproduction be so close to the original?

A stereo recording is dimensional because of the difference between the left and right channels. This

difference consists of not only the difference between the primary signals (not reflections) that are detected by the microphones, but the difference between the reflected sounds as well. The acoustics of the recording hall are defined by these reflections.

The word "stereo" itself is derived from the Greek "stereos" meaning "solid"—something with depth or solidity. Until now, we have been preoccupied with just two versions (left and right) of the recording which has induced us to redefine "stereo" to mean two. Inexact analogies with double-image stereo photography has further blurred recognition of the phenomenon that the human brain requires more than two different (but related) versions of a program signal to fully appreciate the character of the reflected sounds in a recording.

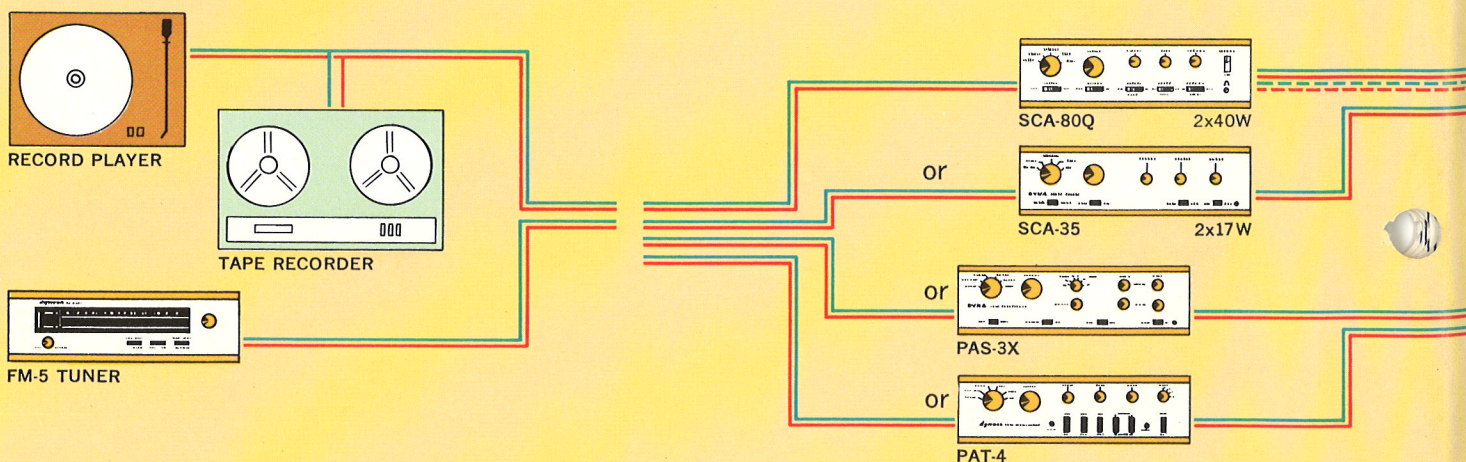
Why are more than two versions required for fuller identification of reflected sounds?

The psycho-acoustic phenomenon mentioned earlier is known as the "precedence effect" or "Haas effect" (after the scientist who first described it). Because primary sounds are slightly louder, and are reproduced slightly before their reflections, the primary sounds coming from the left and right speakers of a conventional stereo system take precedence over the reflected sounds coming from the same speakers. Even though the reflections are reproduced, we cannot enjoy their full significance because they are masked—by the direct sounds.

How can reflected sounds be more fully assimilated?

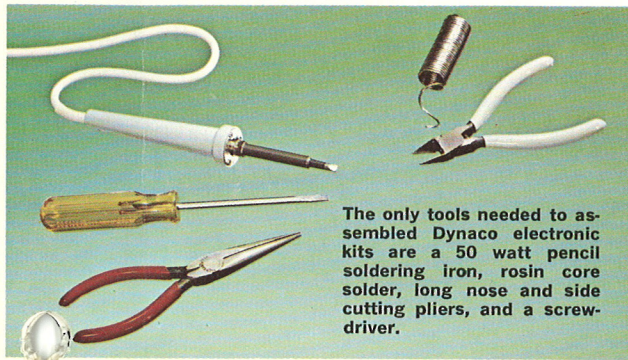
Since the reflected sounds are hidden by the direct sounds when only two loudspeakers are used at playback, an effective recording technique is to use two more microphones in the rear. These back microphones will detect, for the most part, just reflections. A master, four-channel tape then results in which there are left and right front, and left and right rear tracks.

A discrete four-channel playback system requires four channels of amplification (rather than just the two in a standard stereo system). Each tape



track feeds its own amplifier to which the corner speakers are appropriately connected. The back speakers reproduce reflections for the most part; since these reflections are separated from the front loudspeakers reproducing the primary signals, the reflections no longer are masked and the listener has far greater sense of being in the concert hall.

A second technique is matrixing, in which the two back tracks are mixed onto the two front tracks in such a way that the two front tracks carry all four signals. Matrixed stereo discs are no more difficult to prepare than standard stereo recordings since they require just two discrete channels. Furthermore, matrixed recordings can be transmitted over FM stereo.



The only tools needed to assemble Dynaco electronic kits are a 50 watt pencil soldering iron, rosin core solder, long nose and side cutting pliers, and a screwdriver.

When a matrixed recording is played back through dematrixing circuitry and four corner loudspeakers, the listener will feel transported to the concert hall because of the reflected sounds he can now identify. Front and back directionality are also established because of the sharp reduction of front signals through the back speakers.

What are the advantages of the Dynaco four-dimensional matrix system?

As opposed to a discrete system, the Dynaco four-dimensional playback system requires just a conventional stereo amplifier to which inexpensive dematrixing circuitry is added; the first advantage, therefore, is economic in terms of required playback equipment. If you now own a stereo system,

you need to add just the Dynaco Quadaptor™ (see next page) and two more speakers in back. If you wish to acquire a new stereo system, the Dynaco SCA-80Q (page 8) has built-in dematrixing circuitry so no external adaptor is required.

Unlike discrete four-channel recordings, matrixed four-dimensional material is not limited to tape. It is available on both tape and discs, and can be transmitted over FM stereo without any modification at either the transmitter or receiving end [other than the dematrixing circuitry at playback].

Material matrixed as Dynaco suggests is completely compatible with either monophonic or standard stereophonic playback; the Dynaco/Vanguard four-dimensional demonstration record (available from Dynaco dealers) will lack only directionality and ambience when played back in a format other than four-dimensional.

An unexpected, but significant advantage of the Dynaco four-dimensional system is the improvement enjoyed when existing stereo recordings are played. Many existing records—perhaps in your own library—have been processed so that concert-hall ambience can be captured when played back through the Dynaco system. In addition, some recordings (particularly those made with live audiences) place you right in the middle of the hall; the audience will be both in front and in back of you, but the music will be coming predominately from the front. The RCA Victor live Boston Pops recordings are excellent examples, as is Philips "The Last Night of the Proms." Rock recordings will often put you in the middle of the group, exemplified by the Blood Sweat & Tears recordings for Columbia.

Why Dynaco components?

Dynaco electronic kits and factory-assembled electronics and speakers are designed to fill unique needs. They enjoy unprecedented market longevity. The Dynaco four-dimensional system is only the latest in a series of dramatic examples that a Dynaco purchase today will be timely for many years.

