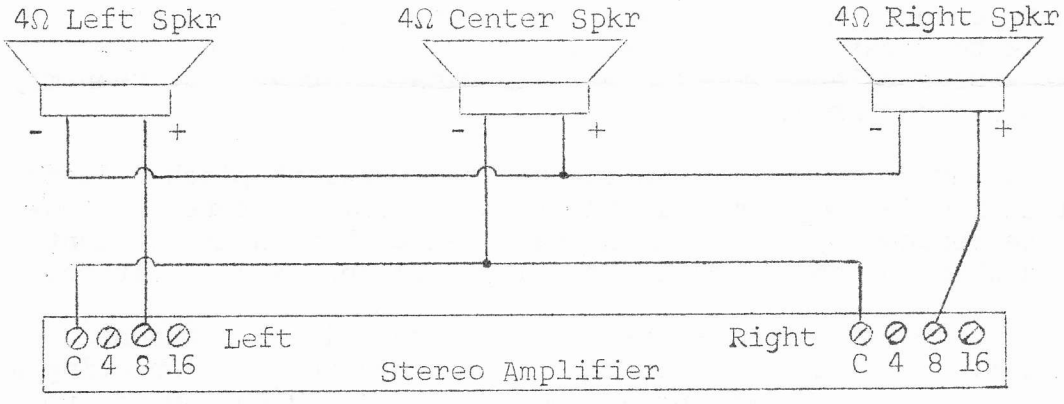
DYNACO DERIVED CENTER CHANNEL SYSTEM FOR 3 SPEAKER STEREO
(patent pending)

This method of deriving the center (third) channel of a stereo system is an exclusive Dynaco development which provides the proper in-phase (A+B) signal without loss of stereo separation and without the need for an additional amplifier. It is useful where the left and right speakers must be widely separated, and it also enables the use of the third channel speaker as a monophonic system in another location.

It should be recognized, however, that a two channel system will have a wider apparent sound source than any system utilizing a center speaker in a derived third channel arrangement, if the spacing between the left and right channel speakers is the same. In order to maintain equivalent spread of sound, somewhat greater spacing between the outside speakers is required in any three speaker system.

The connection of the three speakers is diagrammed below. Note that it requires a common ground between the stereo power amplifier outputs. If you are using other than Dynakit amplifiers, be certain that the circuit will not be harmed by such operation. Any combination of Dyna amplifiers may be used.

The use of three identical speakers is strongly recommended to achieve the most natural sound because the impedance and efficiency of the speakers should be closely matched throughout their range. In any event, all speakers should have the same efficiency, and the left and right speakers should be identical. Connection of dissimilar speakers will reduce separation and adversely affect spatial orientation. The use of individual level controls in series with any of the speakers will also reduce separation. They are neither necessary nor desirable when matched speakers are used. If the speaker systems provide controls for the adjustment of relative tweeter or midrange levels, these should be set before the system is adjusted as described below. Be sure all speakers are correctly phased.



Note: 4 ohm speakers shown connect to 8 ohm amplifier taps.
8 and 16 ohm speakers connect to 16 ohm amplifier taps.

This arrangement gives a satisfactory system in which the left and right channels are combined to make a synthetic L+R center channel. However, the nature of this connection is such that a certain amount

of crosstalk is introduced from one side to the other via the center speaker, and reduces the stereo effect. This crosstalk appears as out-of-phase information from the opposite channel. The Dyna PAS-3X and PAS-2X preamplifiers provide for complete elimination of this crosstalk by simply using the Blend Switch in the position identified by the narrowest of the three rectangles. This provides the correct amount of blending to compensate for the crosstalk introduced by the addition of the center channel speaker.

Dyna PAS-2 and PAS-3 preamplifiers can easily be modified to accomplish the same results. All that is required is the replacement of the 270K ohm resistor (red-violet-yellow) between lugs #3 and #4 of the Blend Switch with a 33K ohm (orange-orange-orange) one-half watt resistor, which is obtainable from any radio parts distributor. The Dynaco TC-3X modification kit, which includes all parts necessary to convert a PAS-2 or PAS-3 to a PAS-2X or PAS-3X, includes this resistor, and is available from any Dyna dealer.

Adjusting the system is easy. First, find the correct balance by using a monophonic source after you have turned the Blend Switch to the smallest rectangle, and set the volume control for normal listening level. Then temporarily remove one wire going to the center speaker (either wire gives the same result). With the tone controls in their flat positions, adjust the balance control for minimum sound output. If necessary, the balance control knob can be slipped off the shaft and recentered so that the pointer indicates the position of precise balance. Then reconnect the speaker.

Now all program material, both stereo and mono, can be played without changing the blend control, and generally without the need to readjust the balance control. Monophonic programs will appear predominantly in the center speaker. Stereo programs will retain their separation, and when the listener changes position, the apparent distribution of sound will not shift, so that the stereo perspective will be less dependent on the listening position.

If the third channel is to be used as a remote monophonic speaker, it is advisable to first install it as a center channel of the stereo system for proper balance adjustment as indicated above. It then may be moved to another area.

A further advantage of the system is that the vertical pinch effects and vertical rumble components in the reproduction of stereo recordings will be reduced by 6 db, in the same sense that an improvement is observed when monophonic discs are played in the "A+B" position.

If you wish to operate these speakers as a conventional 2 channel stereo system, the middle speaker can be switched out by connecting a shorting link across its terminals, and turning the Blend Switch to the position indicated by the widest rectangle (maximum separation).

If you wish to use only the center speaker, 16 ohm resistors of adequate power capacity should be connected in place of the left and right speakers.