

# DOPE FROM HOPE

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## BRIDGED CENTER LOUDSPEAKER

or

### WHO PUT THE SOLOIST on A FLYING TRAPEZE?

Benefits of using the bridged center speaker were recognized by Steinberg and Snow (Symposium on Auditory Perspective — 1934)\* and their teachings revived and reconfirmed by this writer in 1958. The basic improvement effected by adding a center speaker was analysed in "Stereo Geometry Tests" in 1962.\*

The first benefit of center speaker technique is the enlarged stereo listening area. As any listener approaches a wall against which two speakers are operating in stereo, there will be a region in which the solidity of the apparent source divides into two separate sources. Some writers refer to a "curtain" or "waterfall" of sound, referring to an apparent source that is continuous between the speakers. The addition of a center speaker permits the listener to come closer to the wall before perceiving spatial discontinuity.

The second benefit is the localization of the center-stage performer. Whether you are listening to Dylan in front of the Band or Rostropovich soloing with Boston Symphony, two channel stereo yields either two distinct soloists, or an

indistinct soloist as wide as the room. The greater the angle from listener to the two speakers, the more prominent the separation or smear. The center speaker will localize the soloist at center stage. This is because the center speaker is fed a mono\*\* left channel plus right channel mix. It closely recreates what would have been picked up by a soloist mike at center stage. Fig. 1 shows one means of deriving the left plus right signal for driving a center speaker. To extol the addition of a center speaker, it eliminates the "hole in the middle" which most stereo systems exhibit. It "puts a leg chain on the soloist". It completes a "curtain of sound" between the flanking speakers. And the "soloist" need not be at stage-center; if the Best Bloomin' Baritone Blower in Buffalo Bill's Big Brass Band By Gosh stands up in his chair at right center stage, that is where you should hear him, and that goes for all the members of the group from flank to flank.

The center loudspeaker provides the ultimate refinement in stereophonic geometry localization.

\* The Symposium, Stereo Geometry Tests and other papers are available in reprint form at \$1.00 for the Symposium and .25 cents each for the papers; or \$7.00 for the complete set of AUDIO PAPERS in loose-leaf binder from KLIPSCH and ASSOCIATES, Inc.

\*\* The late W. B. Snow, "Basic Principles of Stereophonic Sound", Nov. 1953, Jour. of the SMPTE, Vol. 61, used the term "mono-phonic" for a single sound source; "mono" is short for "mono-phonic". It is in the "AUDIO PAPERS".



... The mark of integrity in loudspeakers!

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Three speaker stereo portrays most accurately the spatial relations in a realistically recorded program. Of course many recordings are not "realistic" in that the engineer "mixed down" from 16 or 8 or 4 channels to 2 channels and his judgement isn't necessarily representative of the way you would have heard the performance in the concert hall. But 3 speakers do the best with whatever program material is available.

Even if the mix-down from 8 channels to 2 is poorly done, the bridged center speaker tends to alleviate the faults of the mix-down and restore acceptable spatial perspective.

Some preamplifiers have an output for a "center channel". Usually there is no volume control, or if there is one, the control is inconveniently located. Some receivers do not have accessible "preamp outputs".

If an accessible "center channel" control is available, one needs only to add a mono amplifier (or half of a stereo power amp) and center speaker.

If the center channel terminals are not available, Fig. 2 shows the simplest way to obtain a center signal, and again, one needs a mono power amp and speaker. Since only a few quality amplifiers are available in mono form, it may be necessary to use half a stereo pair.

#### COMMENT on "4 CHANNEL"

So-called 4-channel is aimed at enhanced realism through additional reverberation and ambience. If this is accomplished with 4 discrete channels of good quality it would add realism to a rendition involving an antiphonal organ in the

rear of the audience. If this is done with 2 sides of a groove in a disc record, one can expect gross distortion. Some demonstrations exaggerate the "geometry" by having the soloist soar from front to rear, like the "daring young man on the flying trapeze".

Sam Goldman said, "A bad picture in 3D is 3 times as bad". To paraphrase this, "Bad sound in 4-channel is 4 times as bad".

WHETHER WE USE ONE SPEAKER OR 2 OR 3 OR 5, THE QUALITY DEPENDS ON THE BASIC QUALITY OF THE SPEAKERS USED, NOT HOW MANY ARE USED. For quality and tonality good speakers are needed; for stereo geometry proper number and spacing are needed. And with only 4 speakers one still needs the center speaker in front; proper deployment of 4 speakers would be 3 speakers in front and one in the rear rather than 2 in front, 2 in rear.

The bridged center speaker is needed just as much in "4-channel" as it is in stereo. The principles drawn from "Stereo Geometry Tests"\* tell us that center stage events can be prevented from wandering only by this means. You still need 3 speakers in front regardless of the total number of speakers. And to repeat: for good tonality you need good speakers, and clean program material.

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\* Reprint available from KLIPSCH and ASSOCIATES, Inc.  
It is included in "AUDIO PAPERS".

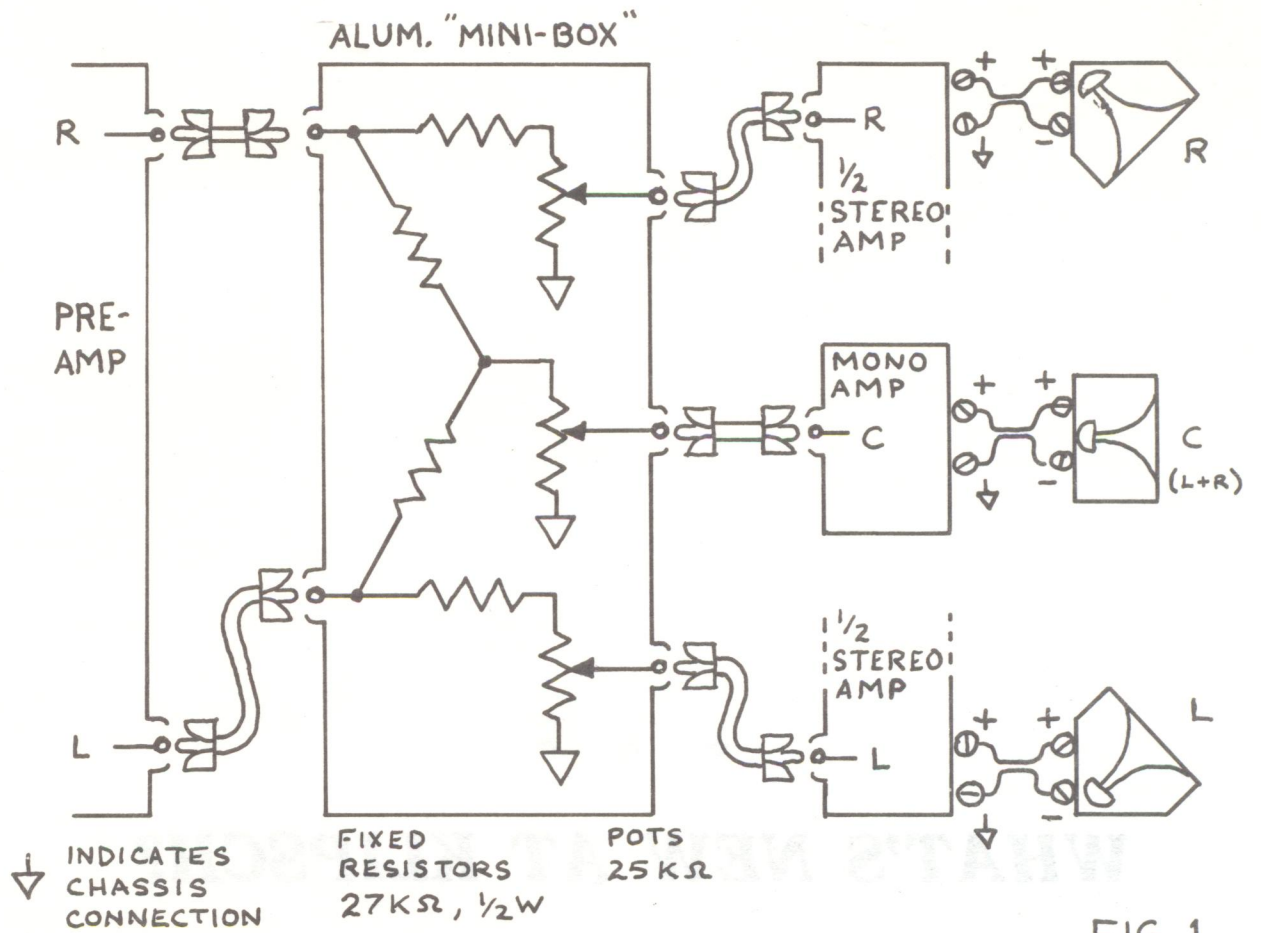


FIG. 1

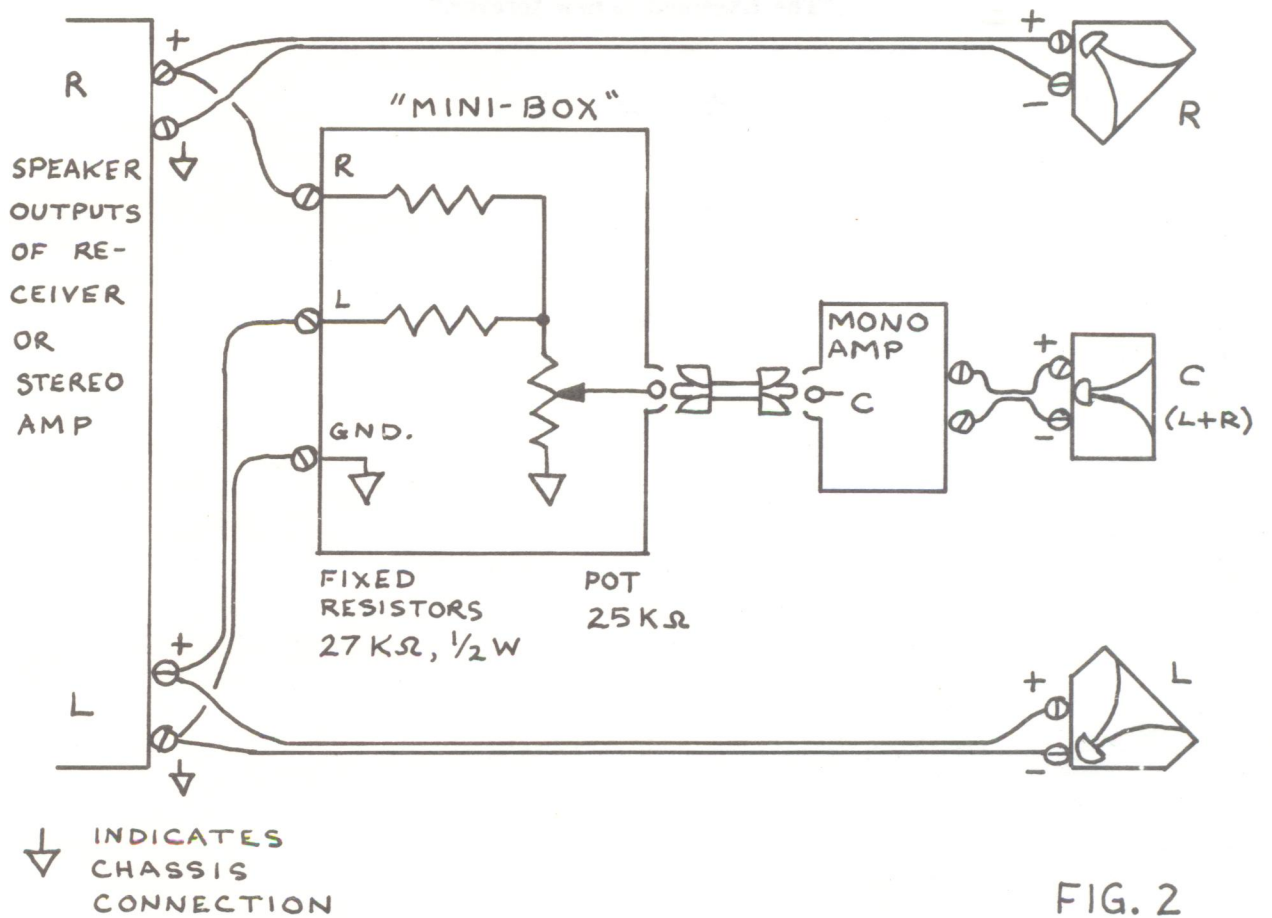


FIG. 2

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## **WHAT'S NEW AT KLIPSCH?**

Ralph Waldo Emerson said,  
"The Excellent is new forever."

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