



# DOPE FROM HOPE

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Bob Rorer of High Fidelity Unlimited, Portland, Oregon, must be given the credit for discovery of a response dip in the region of 250-500 cycles per second in the **KLIPSCHORN** woofer.

This has resulted in quite a search for causes. The major cause appears to be proximity of the woofer horn to the walls at a corner. A one inch gap on one side can cause a 7 decibel loss at 500 cycles per second. Where a fit cannot be affected, one may apply a "flap" of flexible but firm sheeting, such as U. S. Rubber Company's 1/8-inch gasket. This may be stapled to the tail board so as to project 2 or 3 inches. It then bends to conform to wall irregularities, if any, and forms an adequate seal.

A minor cause of loss at 400-500 cps was traced to driver unit variations within type and between types. This was minimized by a change in throat structure involving a multitude taper. This was investigated in 1953 but the improvement was not then regarded as significant. Considering the driver variations and the minimizing of the effect with the throat change, it was desired advisable to be put in production. Woofers with the change are designated "G" thus K-3-G means KLIPSCHORN, woofer unit, G modification.

Mr. Rorer's discovery also has given rise to a tighter control on driver units and a slight modification of the specifications.

Most important, however, is the fit against the corner. Whenever there is a known performance loss in the 250-500 cps range, the flap seals are suggested.

Back in 1948 we were aware of an interference effect from the right and left sides; a 40° off-axis microphone placement under anechoic conditions (such as an inside corner outdoors) results in a deep response dip at about 280 cps. Also under similar conditions with a hard floor or ground there is an interference between the horn radiation and its mirror image below ground, and a microphone at 4 foot height will show a dip at 350 cps.

These are typical standing wave phenomena; in spite of such effects the system radiates power and does so smoothly if all precautions are observed. In fact our claim of "10 db peak-to-trough ratio" can be bettered by several decibels.

We recommend attention to seal at the corner; the flexible gasket sheet or a felt pad or other sealing means will reduce the peak-to-trough ratio as much as 7 decibels.

Paul W. Klipsch, Editor  
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... The mark of integrity in loudspeakers!