

## GENERAL HINTS on CABINET DESIGN, CONSTRUCTION and USE

### Size

The larger enclosures always give more output at low frequencies, but the smaller designs described give a satisfactory response consistent with their size. Outside dimensions are given, together with constructional specifications and recommended materials. Plywood thinner than that specified should not be used unless lined with Celotex or building board securely glued to the plywood.

The shape of any model may be changed slightly without affecting the low frequency performance, provided the total volume does not vary by more than 10 per cent.

It is usually an advantage to mount a speaker in an enclosure designed for a larger unit. It is, however, quite wrong to reverse the procedure and fit, say, a 10" unit in one designed for an 8" model.

### Lining

Where absorbent lining is specified this should consist of bonded acetate fibre, cellulose wadding, fibre glass, cotton wool or cheap carpet felt, up to about 1" thick.

Cotton wool makes a very good absorbent and is freely available in all chemists' shops. B.P.C. quality costs about 7/6 per lb. and this works out at 10½d. per sq.ft. and is very satisfactory and economical. Where maximum absorption is necessary, a super quality under the name Verisan is sold by Timothy Whites at 9/- per lb.

Generally speaking, a 12" unit in a given compact enclosure will require more absorbent treatment than a smaller unit.

Although cotton wool is highly satisfactory as an absorbent, it requires rather more support than sheet B.A.F.—bonded acetate fibre.

### Dust Exclusion

It is important that no foreign matter or dust from fibre glass should be allowed to enter the magnet gap; the cotton bags fitted to the open voice coil speakers should therefore be permanently retained.

### Walls

The corner walls of a room, if solidly built, form an ideal backing for a corner reflex enclosure, and are superior to any cabinet. The front and top panels should make an airtight fit to the walls; gaps are easily filled up by glueing layers of cloth or felt to the edge of panels. Wall mounting is also an excellent acoustic device and is still worthy of consideration.

### Sand-filling

Next to concrete or bricks, a sand-filled panel gives the least resonance. Two sheets of plywood are spaced  $\frac{1}{2}$ " or 1" apart—the larger the area the wider the spacing—and the cavity is filled with dry sand, which adds weight and absorbs vibration. Ordinary builder's sand is satisfactory.

### Openings

Loudspeaker and port apertures can be covered with an open mesh. The placing of such openings is not critical. Avoid loose cloth which may vibrate.

### Tweeters

Treble units should not be placed in the bass enclosure without being surrounded by absorbent material and carefully boxed in, because they are fitted with open chassis and the cones would be affected by the LF sound waves, thus offsetting one of the benefits of the crossover network.

### Stereo

Carefully matched speakers are not essential because room acoustics often vary from side to side and pickups have been known to do likewise. The main thing is to have similar treble dispersion on both channels; it is wrong to use a very directional speaker on one side and a non-directional type on the other.

### Mesh

A layer of thin black cloth glued to plywood before fitting mesh will hide speaker and vent openings and will prevent vibration when expanded aluminium is used.

### Electric Guitars

Ordinary 12" and 15" speakers should *not* be used with electric guitars, as the high voltage generated by the microphone placed on the instrument can result in severe overloading of amplifiers and speakers, followed by serious damage and possible breakdown.

The speaker units should be specially constructed for the work, and the cabinets must be even more rigidly assembled than is normally necessary if resonances and vibrations are to be avoided.

Details of suitable DP and tuned enclosures are given in the *Cabinet Handbook* already referred to.

Special guitar leaflet available on request.