

Loud-Speaker Troubles

I HAVE a letter from a reader in which he complains of what he calls loudspeaker "resonance," and rattling of his loudspeaker on certain notes. He has tried all sorts of remedies, but has been unable to eliminate the effect and wants to know what is the cause.

Although rattling is in a sense an example of resonance, it is hardly what is commonly understood by that term, and it is better in considering this trouble (which, by the way, is very common) to think of the resonance and the rattling as two separate effects.

The resonance, properly speaking, is the extra amplification—I mean acoustical amplification—which is often found to occur on certain notes or more generally on one particular note. As a rule, this is due to the natural acoustical properties of the horn (it is more liable to occur with a horn speaker than with one of the cone type).

Vibrating Air Column.

It is, therefore, something which is inherent in the speaker itself and cannot be cured. You have to bear in mind that the air-column within the horn has a natural frequency of vibration and when a note is sent from the speaker, which is the same, or very nearly the same, as the natural note of the air column, you are bound to get an extra amplification set up, with correspondingly augmented re-inforcement of the sound.

Sometimes, however, you may get vibration of the horn itself, and if this is the case, it can often be cured by winding insulating tape in a spiral fashion over the outer surface of the horn.

Rattling.

AS regards the rattle, this can only occur if so screw or other part of the speaker is loose, or if the diaphragm is striking the pole-pieces of the magnet. The remedy for a rattling loose part is obvious: the various screws and other parts of the speaker should be carefully "gone over" to make sure that there is nothing that is sufficiently loose to cause the rattle.

Chattering Diaphragm.

AS regards the striking of the diaphragm against the pole-pieces of the magnet, this is due to the clearance between diaphragm and magnet being insufficient. In most loudspeakers the adjusting screw is for the purpose of varying the distance between magnet and diaphragm, and as the clearance between the two is reduced the loudness of the reproduction is increased. You may make an adjustment which gives you excellent reproduction for a selection which is fairly uniform in loudness, and yet when a note of exceptional loudness occurs you may get a rattle or "blast."

The remedy here is equally obvious: the adjusting screw must be turned in the direction to decrease sensitivity until all rattling and chatter are eliminated. As a rule, the chatter caused by the diaphragm striking the magnet is quite unmistakable, and there is very little likelihood of it being confused with any other kind of rattle.

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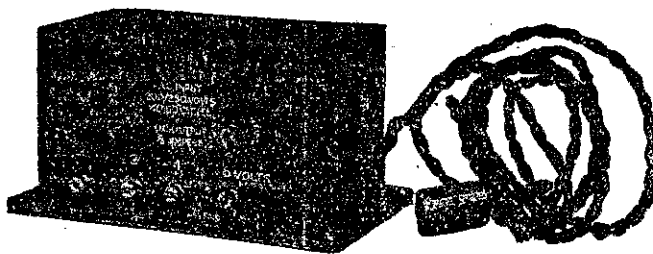
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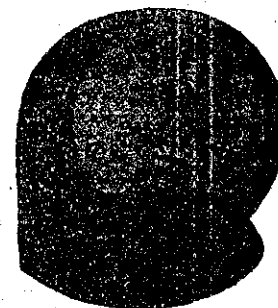
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