

pre-amplifiers we will look at volume and loudness controls and the need for low-cut filters vis-a-vis certain hearing characteristics.

VOLUME AND LOUDNESS CONTROL

A volume control is simply a variable voltage divider, supplied by preceding amplifier stages with enough signal to enable the power amplifier to enable the power amplifier to give maximum output, and passing on whatever fraction of this signal is needed to provide the output of the operators choice. It is usually situated fairly late in the pre-amplifier circuitry, so that it will attenuate (for quiet programme) not only signal but also any noise generated in the preceding stages - we say that a good signal-to-noise ratio is maintained in this way. (This situation also creates a problem. However, as will be shown when circuit matters are discussed later.) When the knob is turned or moved up or down, one simply slides a moving contact over a resistant track, designed such that the resistance is varied logarithmically. With respect to linear movement - it was mentioned earlier in this series that such a "law" will cause a linear change in volume with control position, because

On loudness controls, filters and some auditory characteristics

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the ear hears logarithmically.

In order to understand what a so-called loudness control option entails, we must understand that the frequency response of the ear changes with sudden intensity. Figure 3 shows that the ear's sensitivity

to low frequencies falls much more rapidly than is the case with middle and high frequencies (some deterioration in relative sensitivity occur at very high frequencies). These results were first recorded long ago by Messrs. Fletcher and Munson

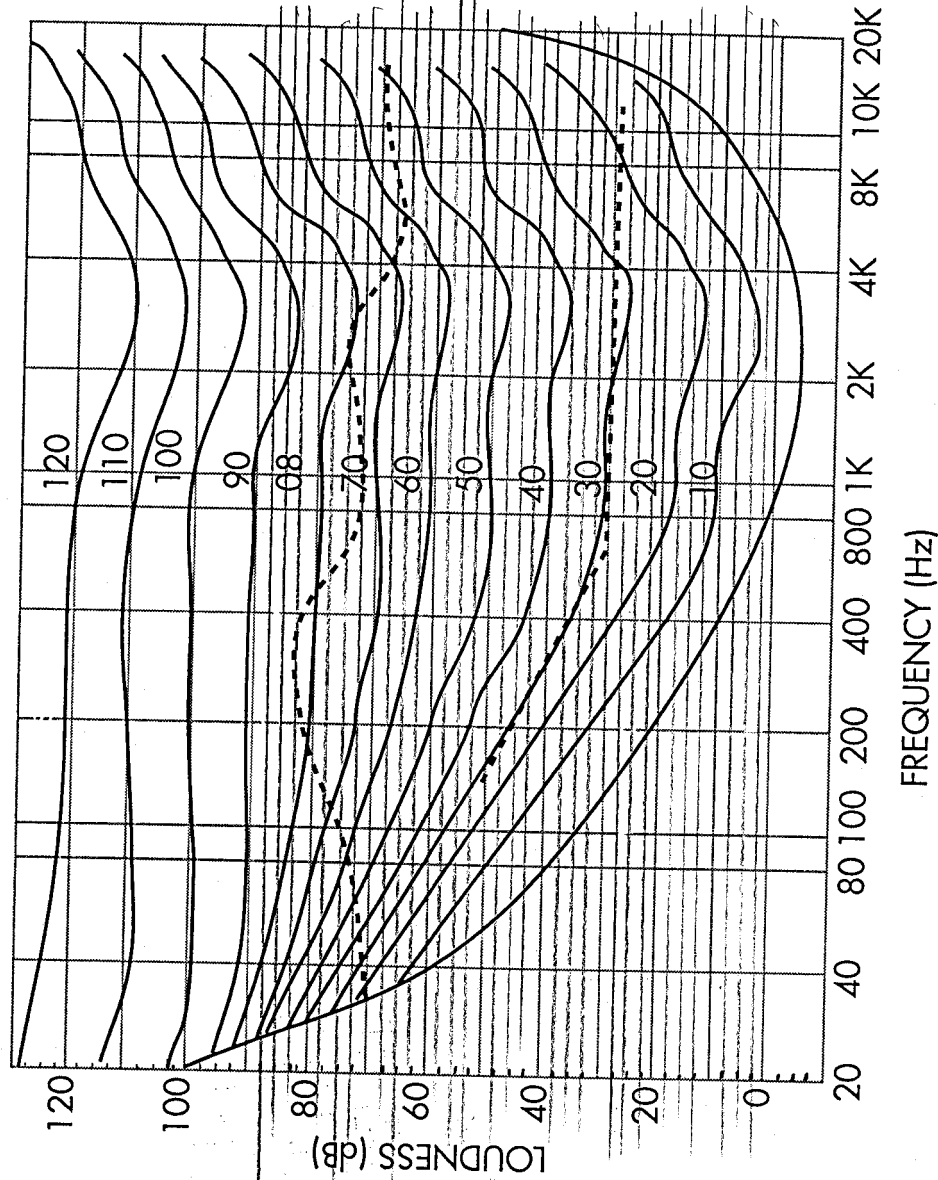


FIGURE 3: CONTOURS OF EQUAL LOUDNESS LEVEL