BLOWN TWEETERS

This is the day of 100 watt amplifiers. The popular low-priced loudspeakers are of low efficiency, but most of these I have tested go from fine to gross distortion at about 25 watts amplifier power. The lowest efficiency speaker I have tested is about 0.1%.

Our lowest efficiency speaker (HERESY) is about 2% so the suggestion arises that if 25 watts is sufficient for a low efficiency speaker, one would get the same sound pressure in our HERESY with about 1 1/4 watt of amplifier power. By the same token, about 0.1 amplifier watt would drive a KLIPSCHORN to realistic sound pressure output.

These numbers are by no means absurd. If you take a sound level meter with you to the concert you will likely measure peaks of around 110 db SPL at a seat in the middle of the auditorium. Listening at home to the same program material, you will measure 120 or 90 but not 110 db sound pressure level! In other words, the “hi-fi listener” exaggerates one way or the other.

For many years this writer used a 10 watt Brook amplifier, and demonstrated sound pressure levels from very low to “Ear Splitting”.

Now in this day of 100 watt amplifiers — 40 volts into 16 ohms, one is certain to damage the smaller speaker element if the input to the amplifier receives a switching surge. I know people who play 100 watt amplifiers “wide open” without speaker damage, but remember the smallest of the 3 speakers (the tweeter) gets only about 1/100 of the total peak power. A switching transient, on the other hand, can deliver the entire 40 volts and 100 watts to the tweeter. Tests indicate our tweeters can withstand repeated surges of 8 volts (4 watts) but they do not stand up long under 12 volts (8 watts) and a single 15 volt surge will usually open the voice coil.

It thus seems reasonable to suggest amplifiers in the 25-35 watt output rating, rather than 100 watt power powers. Also, even when using amplifiers of moderate power,
switching or changing input connections should be done only after power supply to the main amplifier has been turned off long enough for the storage capacitors to discharge.

Also one should assure himself that no oscillations like tape recorder bias or radio intermediate frequency is entering the power amplifier.

Our tweeters are the best we have tested, and are selected for level and response. Also they have the highest output capacity consistent with good response. But they can be damaged and repairs are costly.

So adopt the practice of

1. Turning off the power amplifier long enough to discharge the capacitors before switching or changing input connections. (Switching, if done with proper bleeders on switch taps, and if done between inputs of about the same level, may be done with the power amplifier “hot” but be sure these conditions are met before switching a “hot” amplifier).

2. Check for and eliminate sources of noise, pops, surges and oscillations.

3. Especially with 100 watt “stoves” and all high-power solid-state amplifiers, be careful.

It costs you about $15.00 for us to replace a blown tweeter.

Paul W. Klipsch