

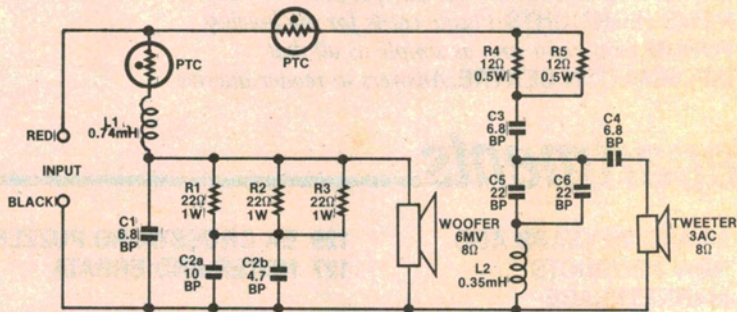
Don't blow your amplifier

I read with interest your article in the July issue under the title "Foolproof Loudspeaker Protection". Although the PTC devices concerned are no doubt capable of protecting loudspeaker drivers from damage they may, if not installed correctly, help to destroy the amplifier instead.

How? The problem is caused by the

passive crossover networks used in most two and 3-way systems. If the load impedance on the output of a typical high or low pass filter is made much higher than its design value then the input drops dangerously low at and near the crossover frequency and, in the case of no load, the filter is simply a series tuned circuit across the amplifier.

Also as the input impedance drops the output response peaks at the series resonant frequency, sending a PTC even higher in resistance.



L1 = 119T, 1.25mm ENAMELLED COPPER WIRE
ON A 43mm DIA. x 18mm WIDE FORMER.

L2 = 83T, 1.25mm ENAMELLED COPPER WIRE
ON A 43mm DIA. x 18mm WIDE FORMER.

In circumstances where the PTC has gone high, the output stage of the amplifier itself may already be close to overheating. The unusually low and reactive load presented suddenly to the amplifier could be the last straw. Of course, well-designed and electronically protected output stages can take this abuse but many others might fail due to thermal and second breakdown limits being exceeded.

The solution is simple: connect the PTCs in series with any filter circuit feeding the driver to be protected. The high source impedance will slightly alter the frequency under overdrive conditions but neither the drivers nor amplifier will be damaged. I have used this idea many times, not with PTCs but with low voltage bulbs to protect horn tweeters. The principle is exactly the same as with PTCs.

P. Allison,

Summer Hill, NSW.

Comment: This is an excellent analysis of audio networks. As an example of how PTCs should be connected we have reproduced the crossover circuit for the Vifa 60-60s published in last month's issue. The PTCs are in series with each filter section.