

# Help for the Hearing-Impaired

## — don't miss another phone call

### See the light?

**Note:** Telephone company regulations vary regarding attachment of external devices to telephone lines. You should check with your local telephone company offices before using the equipment described in this article.—Ed.

A hearing-impaired member of my family couldn't hear the telephone in some rooms of the house. Sometimes, when I called home, the phone wasn't answered even though I knew that someone was in the house. The major problem turned out to be that the bell was not clearly audible in the room that was used extensively for reading and sometimes for TV. A solution that was acceptable to all was to flash a light when the phone rang. In this case we chose to turn off the circuit that the reading light, hi-fi, and TV were on. It also incidental-

ly turns off the vacuum cleaner in that room, and nobody could hear the phone when that was running. The circuit for the device is shown in Fig. 1.

This device was constructed in one evening out of spare parts as follows: an old power transformer was selected for T, and the high-voltage winding is used for the phone line side. Since the ring frequency is around 25 Hz on most systems, this winding should be rated at a minimum of 200 V ac. The 115-volt winding is then used as the secondary of the transformer. (An audio plate-to-grid trans-

former could be used the same way if you're old enough to have one of those in the junk box.) An audio generator was then hooked to the high-voltage winding through the capacitor C, and several values were tried to get a maximum 25-Hz voltage across the secondary. In my case, 1.3  $\mu\text{F}$  did the trick, but this value will be different for every transformer.

Relay A is a sensitive dc reed relay that was removed from a computer board. A 12-volt 5k-Ohm relay should work well, but the higher the resistance of the coil, the less load it will put on the ring voltage. Resistor R also serves to raise this impedance, and also helps filter the dc produced by the diode. I would suggest starting with about 2.7k Ohms for R. I used an oscilloscope across a 100-Ohm resistor to measure the current drawn from the line at 25 Hz, and the ratio of

voltage to current for my version of the circuit came to 10,000 Ohms. That should be light enough loading not to upset the telephone company. The capacitor keeps you from drawing any dc current.

The contacts on the sensitive relay, A, should not be used to interrupt much current, so it is shown switching a 115 V ac power relay that actually handles the heavy current. I installed the circuit in a box adjacent to the circuit breaker box, and ran two small-gauge wires to the nearest telephone line junction. Now when the phone rings, most of the circuits in the living room go off with each ring and it is not possible for anyone in the room to be unaware of the ringing. The freedom of movement granted to a deaf person expecting a call is well worth the minor inconvenience of occasionally having the lights flash for a few seconds. ■

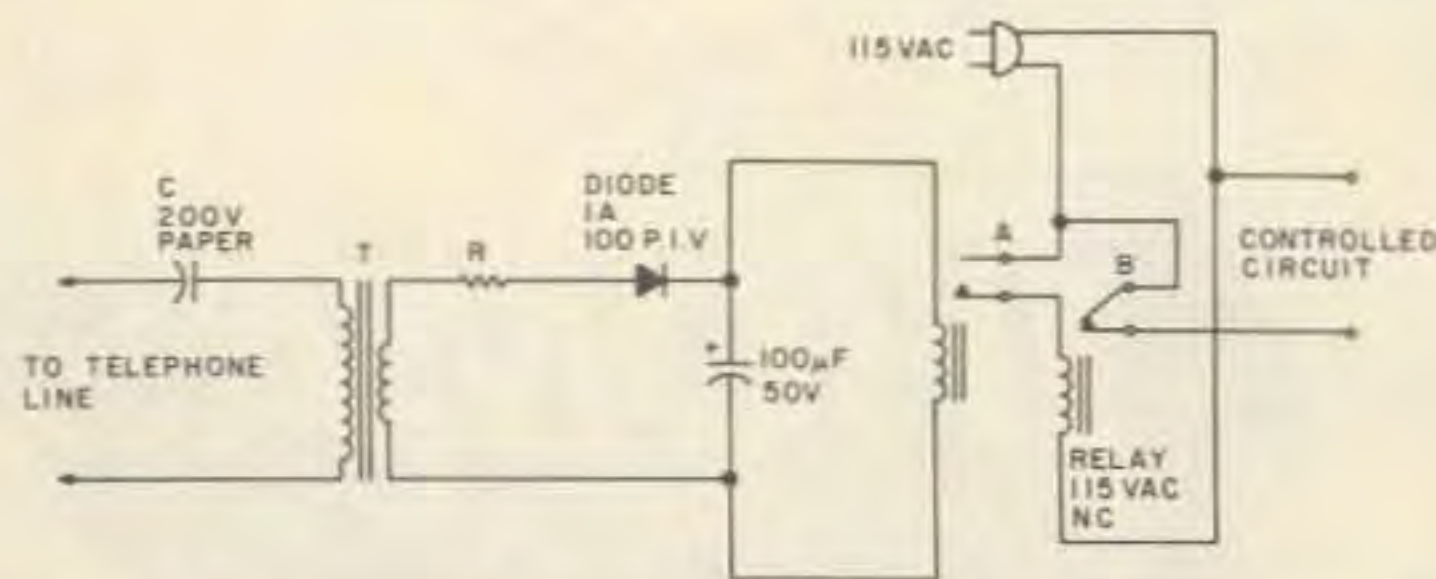


Fig. 1. See text for procedure for finding C, T, R, and A.