

Fitting Headphones to an All-Electric Receiver



MOST radio enthusiasts have at some time or other wished to connect headphones or other loudspeakers to their all-electric radio set, but they have not done so, as they have thought that the task was too complicated.

This article describes three ways of fitting headphones to an all-electric radio set; the first method is for sets whose last audio stage is push-pull and requires no alteration to the set or speaker; the second method, for sets whose audio stage is push-pull, makes a more permanent job than the first method, but entails altering the dynamic speaker. This is not a difficult task, but it is only practical if the output transformer is in the base of the speaker. The third method is for sets whose last audio stage is not push-pull.

In these instructions take no notice of the field coil wires from the set to the speaker except when counting the number of wires in the third method.

First Method.

THIS method uses two adaptors to make contact with the plate connections of the two valves in the push-pull audio stage. The first job is to make the adaptors.

Cut two strips, each 2in. x 1/4in., of very thin sheet copper. Then take the valves out of the last audio stage. Drill a hole in each strip not quite a quarter of an inch from the end. The holes

should be of such size that they make a tight contact when slipped over the plate prong of each valve. The best way to make the holes is to drill them on the small side and then to ream them (the points of an old pair of

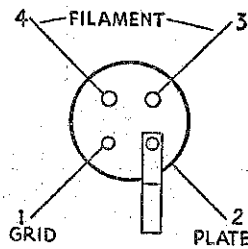


FIG. 1.

scissors will do for a reamer if you do not have one) to the exact size. To find the plate prong on the valve base, see fig. 1.

Then slip one of the strips over the plate prong of each of the valves, taken from the last audio stage. Point each

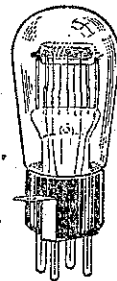


FIG. 2.

strip parallel with the pin on the side of each valve (Fig. 1), bend them up the sides of the valve bases, and then bend about a quarter of an inch outwards at the end of the strips (Fig. 2).

Then take the strips off and insulate them by glueing one thickness of ordinary writing paper over them from within half an inch of the tops to within an eighth of an inch of the holes.

Solder a piece of flexible wire of suitable length to each of the bare ends of the strips (Fig. 3).

Then connect one of the wires to a terminal of one 1mfd. condenser, and the other wire to another 1mfd. condenser, and the other wire to another 1mfd. condenser. The headphones or other speakers are then connected to the other terminal on the condensers (Fig. 4). Slip the strips over the plate prongs on each valve, and be sure that the corners of the ends of the strips cannot touch the other prongs.

If there is any doubt about it, clip the corners off, but be careful not to clip away too much round the hole, as this would weaken the hole and the adaptors might work loose. Put the valves back in their sockets, and the installation is complete. The condensers may be mounted in a small box with a phone jack in the side of it, if desired. When the valves are mounted on metal shields, be very careful that the bare

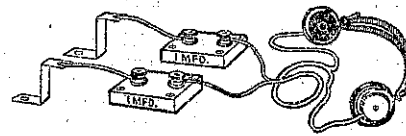


FIG. 3.

FIG. 4.

strip does not touch the metal. Insulate it carefully.

Second Method.

COUNT the number of wires going into the dynamic speaker, or if the speaker is connected by a plug or by plugs, count the total number of prongs on the plugs. (Do not forget this applies only to sets whose last audio stage is push-pull.) If there are only four wires or prongs the output transformer must be in the set, and you should use the first method of connecting phones.

If the speaker is mounted on the audio amplifier or power-pack, it is wiser to adopt the first method of connecting the phones.

Disconnect the wires going to the set from the speaker by pulling out the plugs or unscrewing the terminals and unfasten the screws and bolts securing the speaker to the cabinet. Gently lift the speaker out of the cabinet and turn it upside down so that you can see right down the base. In some speakers the connections to the output transformer are covered by a metal cover, and this must be removed by unfastening the

nuts that hold it down. You will see three wires coming in from the set and two going up to the voice coil of the speaker.

On some speakers the wires from the set go into the transformer on one side and the voice coil wires come out on the same side, but generally they come out on the opposite side. The wires going to the voice coil go right up into the speaker and are generally riveted to the frame by insulated rivets. Solder, or screw, as the case may be, pieces of flexible wire to the two outside connections from which the wires go to the set (Fig. 5).

Next drill a hole in the base of the speaker large enough to take an Igranite insulated jack, or, alternatively, an

PARTS LIST.

- First method:** 2 1 mfd. condensers.
2 strips 2in. x 1/4in. thin copper.
Flexible wire.
- Second method:** 2 1 mfd. condensers.
Flexible wire.
1 Igranite insulated jack, or 1 ordinary jack with insulated bushings.
- Third Method:** 2 1 mfd. condensers.
Flexible wire.

ordinary jack and an insulated bushing. Be careful that the drill does not go through the metal suddenly at the end and damage something on the other side. Mount the jack, and if it is an ordinary jack with a bushing be careful that no part of it is making contact with the frame of the speaker.

Mount the condensers in the base of the speaker by drilling four holes in suitable positions and bolt them in position. Run the flexible wires to a terminal on each condenser, and connect the other terminals to the jack (Fig. 6). If desired, a switch can be inserted in series with one of the voice coil leads, so that the dynamic speaker may be turned off and yet leave the headphones or other speakers on. The best switch for this purpose is the panel mounting A.C. snap-switch that is used for all-electric sets, as in this switch the knob that operates it is insulated from the electrical contacts.

Failing an A.C. snap-switch an ordinary switch with insulated bushings can be used.

Third Method.

FOLLOW the same directions given in the second method, remembering that

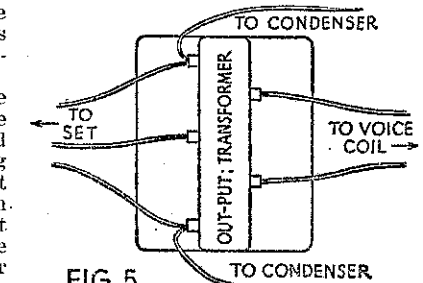


FIG. 5

(Concluded on page 30.)

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