

New Points For Listeners and Dealers-- By "Meter"

The aim of this section is to give listeners information of new and interesting devices and sets on the local market. It is free of advertising intent or influence and to the best of our ability will convey only absolutely reliable statements. Names, prices and sources of supply are mentioned for the benefit of readers and to save individual inquiry.



ALL radio traders would be well advised to test their cone loudspeakers before they are sold. It will be frequently found that a new cone loudspeaker will require adjustment. For the proper adjustment of a cone loudspeaker, it is essential that the pin be exactly centred in the collar at the apex. It often happens that in the rough handling of transportation the movement of the loudspeaker is shifted slightly from dead centre with the result that there is a strong tension on the pin. This limits the amount of power the loudspeaker can handle without distortion. The correct adjustment can be easily made with the aid of such simple apparatus as is generally found in the radio equipped home.

A 110-volt lamp of indiscriminate wattage, a house current plug, and a 1000-ohm resistor are required to make the adjustment. This apparatus is placed in series with 110 volts a.c. and the loudspeaker. The set screw on the loudspeaker collar is loosened and the circuit is closed. A cycle hum will be distinctly heard in the loudspeaker. The screws holding the frame should be loosened slightly and the actuating mechanism moved from side to side and up and down until the sound is at a minimum. With the set screw loosened the loudspeaker will rattle freely at this adjustment. The current is turned off and the set screw is tightened down upon the pin.

TWO 112'S IN PARALLEL.

Radio listeners in localities where there is no electrical alternating current power available need not feel that it is impossible to secure sufficient power to operate their loudspeakers properly just because they cannot tap the house lighting system and get high voltages and considerable plate current therefrom. For example,

two 112-A tubes will deliver considerable power without excessive plate voltage or current—which means that the up-country listener who has no power equipment may secure good quality and plenty of loudspeaker power from B batteries, and do it economically. The table below shows the relative power output and necessary grid alternating current voltage to deliver this power from a single 171 or two 112's in parallel. Note that two 112's in parallel with 157 volts on the plate require 16 milliamperes from the B batteries and deliver 400 milliwatts of power to a loudspeaker on only 10.5 input grid volts, while a 171, taking the same current from 135 volts, requires a grid voltage of 27 to produce 350 milliwatts. Two 112's in parallel will have an output impedance of about 2500 ohms which will work very well into the average loudspeaker.

Tube	Ep	Ec	Ip	Watts Output
171	90	16.5	11	.12
	135	27	16	.35
	157	31	18	.50
	180	40.5	20	.65
2-112's	90	4.5	8.0	.08
	135	9.0	11.0	.240
	157	10.5	16.0	.400

Reference.—Ep, B battery voltage; Ec, input grid volts; Ip, Milliamperes from B battery.

CORRECT NEUTRALISING.

DUE to the fact that the grid-to-plate capacities of any two valves is not exactly the same, a receiver exactly neutralised for one valve will not be neutralised for another. This is especially true if the type of valves are interchanged, but where one 201A valve, for instance, is changed for another 201A valve, the degree of unbalance will not seriously affect the operation of the receiver. The fact that a receiver is not com-

pletely neutralised does not detract from its sensitivity. Neutralisation or balancing is used to overcome the tendency to oscillate (this incidentally causing interference) and need not be carried beyond this point. To neutralise a receiver, a rather weak signal should be tuned in. The radio-frequency valve to be neutralised should have its filament circuit broken—by removing one of the filament wires on the socket, for instance—and the neutralising condenser adjusted until the signal disappears, or becomes a minimum. This is the best method of neutralisation that can be carried out without laboratory apparatus. The wire on the socket may be put back in place and the circuit and valve capacity will be neutralised to prevent oscillating in the amplifier circuit. This will be difficult with too strong a signal.

A FIRST-AID TOOL KIT.

If professional set builders are to be successful in building up their clientele, they must live down the bad reputation established by plumbers, who always seem to be minus some important tool when they are making repairs. To help radio repairmen to solve this problem, the Laboratory of "Popular Radio" has assembled what it believes to be the ideal tool kit—a kit that will meet practically every emergency that repairmen may have to solve. The ideal repair kit should contain not only hand tools, but a few spare parts as well, so that emergency repairs may be made in urgent cases. The outfit recommended is complete in practically every detail and small enough to be easily carried in a brief bag. The more rugged material is fitted into the bottom of the bag, while there is sufficient room left on the top so that the meters can be placed in a position where they will not be damaged.

This ideal tool kit contains the following items:—

- 1 soldering iron with holder;
- 1 8-inch round file;
- 1 counter sink;

- 1 square (6 inches);
- 1 scriber;
- 1 automatic centre punch;
- 1 6-inch ratchet screwdriver;
- 1 8-inch ratchet screwdriver;
- 1 small compass;
- 1 pair side cutting pliers;
- 1 pair flat-nose pliers;
- 1 8-inch round brush;
- 1 folding rule;
- 3 drills (1/4 inch, Nos. 28 and 31);
- 1 hand drill;
- 1 0-15 volt AC voltmeter;
- 1 0-50 milliammeter (DC);
- 1 0-600 high-resistance voltmeter (1000 ohms per volt);
- 1 pair 2000-ohm phones;
- 4 small fixed condensers;
- 3 by-pass condensers;
- 6 grid-leaks (miscellaneous values);
- 1 filter condenser (2 mid.);
- 1 roll solder;
- 1 roll friction tape;
- 1 jack knife;
- 20 feet connection wire (flexible);
- 6 testing wires with clips;
- 1 hydrometer;
- 1 brief bag.

The price of this model kit will depend somewhat upon the quality of the tools and meters used. While good meters are recommended, the beginner can probably struggle along with less expensive ones. In outside work, the most important thing is to establish the source of trouble, and a meter does not have to be extremely accurate, since a rough estimate of the voltage or output current is usually sufficient as a check-up. It will be noticed that small condensers and filter condensers are included. With modern high-power amplifying equipment, it often happens that condensers are ruptured. In such instances, a second trip can easily be saved if the repairman has the necessary replacement parts in his kit. The kit described can be made still more complete by the addition of one of each of the popular types of vacuum

valves used. For instance, one 201-a, one 171, one 112, one 226 and one 227. Also one Raytheon rectifier valve would prove extremely valuable in cases where defective rectifier valves are encountered.

One of the most important items is a set of flexible connector wires provided with spring clips. With these clips temporary connections may be made quickly, which is a great asset in checking up troublesome circuits, and in applying meters for current measurement and open-circuit tests.

VARNISH FOR COILS.

IN winding coils the usual finishing process is to coat the wire with some preparation that will render the insulation waterproof and moisture proof, will hold the wires in place, and at the same time give a mechanical protection to the insulation.

Ordinary varnish and shellac has a high distributed capacity effect that will lower the efficiency of your coil considerably. A much better material to use can be easily and cheaply made by dissolving some old scraps of photographic film in acetone.

Scrape the gelatinous emulsion from the film by immersing it in lye water, hot water, or household ammonia. The coating can be easily removed. Place the cleaned pieces of film in a bottle of acetone and cork tightly. Shake the bottle until the pieces dissolve. If the mixture is too thick add more acetone. If too thin add more scraps of the celluloid.

This material will be easy to apply, dries quickly, has a beautiful gloss, is transparent, and does not change the colour of the insulation of the wires, and binds the coil windings together.

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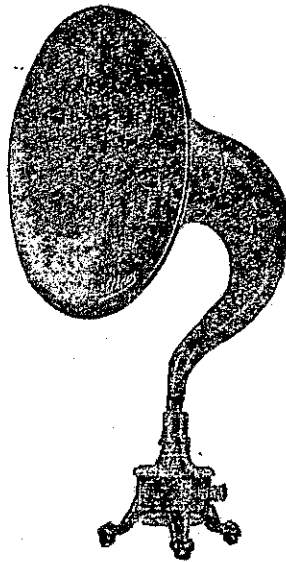
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Radio 2

THE CELEBRATED ETHOVOX Loud Speakers



This is the well-known Ethovox Loudspeaker which has become so popular because it reproduces speech and music with such remarkable purity and freedom from distortion. Its tone is deep and mellow, and it will deal with considerable volume. The demand for this model is so great that we have been able to effect economies in manufacture, and so reduce the price. The instrument is 26 inches in height, and the diameter of the horn is 15 inches. The magnet-system is adjustable. Rubber studs on the feet prevent the loudspeaker from vibrating delicate surfaces on which it is placed. The graceful mahogany-coloured swan-neck and base give the Ethovox a handsome appearance.

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