

Radio Control Review:

Aristrol 3-D Receiver Kit Utilizes Three Diodes in Voltage-Tripling Circuit



■ Intriguing name of this receiver stems from the fact that it has three diodes in the circuit. Basic circuit is quite like the popular 2-tubers, which utilize a gas tube in the first position and either gas or hard tube in the second. However, use of the diodes in a voltage-tripler circuit allows lower idling current for the first tube, and insures that the plate current of the second will be held at zero, when no signal is coming in.

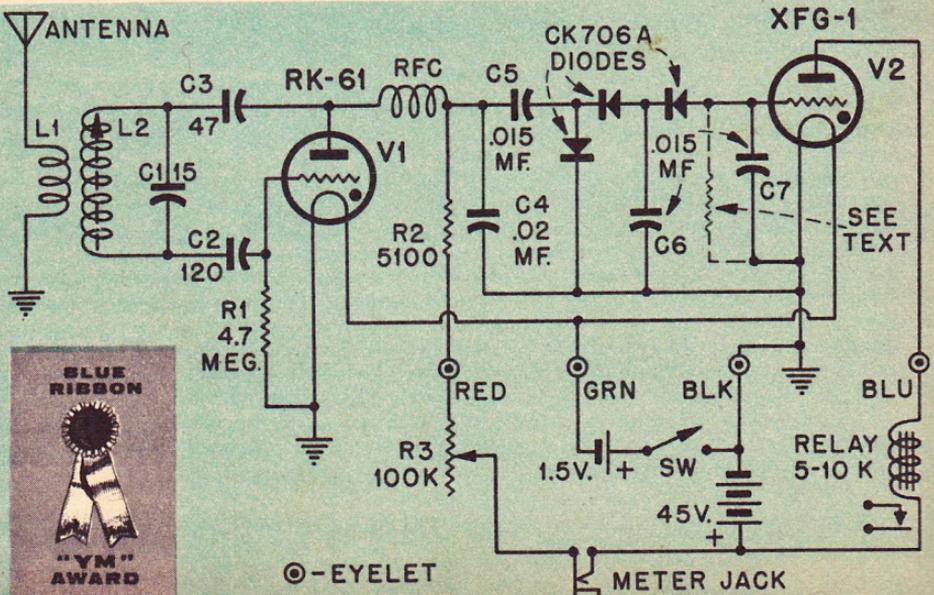
Sold only as a kit, this receiver from Aristo-Craft Miniatures (Newark 5, N. J.) comes packed in a neat little plastic box (the box would make a fine protective case for the receiver—just cut notches in it for the leads and tuning screw, and pack with sponge rubber) and includes cable plug and socket, and a sub-miniature 100,000 ohm potentiometer. Relay and tubes are not included.

A glance at the circuit will show that the first tube, which must be an RK6-1, is tuned by a slug in L2. L1 is movable to a certain extent, and is set to secure the degree of sensitivity desired. R3 is mounted externally to the receiver, and

sets the idling current of V1. The C and R numbers on the diagram correspond to those you will find on the printed-circuit plate that is furnished in the kit. The four power leads terminate on the plate in eyelets, to which are connected the four colored leads for the power cable. Colors are as indicated, but the cable plug and socket have been omitted from the diagram.

Though you have no choice in tube V1, you do have a wide selection for V2; either an XFG-1 or any of a variety of sub-miniature power pentode tubes may be used, and some of the latter have filament currents as low as 15 ma. Such tubes should not be used at a plate current much higher than 1.5 ma., however, so tubes like the 1A64 are preferable. The 1A64 can run at 4 ma. plate current, and you will get just about this with a 5000 ohm relay.

The printed-circuit plate is drilled for all components, of course, and the location of all component leads is clearly shown. As with any such base plate, an iron with a small tip, and nothing but



radio-grade rosin core solder, should be used for assembly. There are no provisions for mounting the completed receiver, but the instruction booklet shows several ways to do this, or you can put it in the plastic box, as mentioned above.

Tube leads are held in flea clips—four for each tube. If a hard tube is used at V2, there will be five leads to accommodate; plate and screen grid leads (the two nearest the red dot on most hard tubes useful in this connection) will go in the clip marked "P" on the base plate.

An extra resistor of 1 megohm value is furnished in the kit and is intended for use if the receiver is to be pulsed at a very high rate. This resistor is connected across C7, as seen in dotted lines on the diagram. We found the set pulsed at quite a high rate without this added resistor, however.

The test receiver went together with no trouble; tests were made with a 1AG4 tube as V2, and it was found that the plate current of this tube could be held at zero when V1 was idling at about .25 ma. Upon signal, V2 would rise to 3.9 ma, with a 5000 ohm relay, and to 2.75 ma. with an 8,500 ohm unit.

The relay is not mounted on the receiver chassis, so the latter does not require flexible mounting—vibration will not bother it. However, sponge rubber crash protection is good insurance. Due to the large current change available from V2, a very wide variety of relays work fine with this receiver.

The 18 page instruction booklet furnished in the kit is very complete, and the builder should have little trouble in assembling the 3-D and getting it working, providing he reads the book carefully, and follows the assembly instruction. This is particularly true of the diodes, which *must* be mounted as shown.

Specifications: Aristrol 3-D receiver—two tube Lorenz circuit using RK61 plus either hard or gas tube. Overall size (relay not included) is $1\frac{3}{4}$ x $2\frac{3}{4}$ x $\frac{7}{8}$ " thick. Tuning by means of threaded and slotted stud. Externally mounted variable resistor is required. Relay—any sensitive type with coil resistance from 5000 to 10,000 ohms. Recommended antenna length—20". Weight with tubes and power cable and plug—1.25 oz.

Power Requirements: A battery— $1\frac{1}{2}$ V. at current drain of 65 to 100 ma. (depending upon second tube selected). B battery—45 V.; first tube idles at .2- .3 ma., drops almost to zero on signal. Second tube idles at or close to zero, rises from 2 to 4 ma., depending upon type selected and relay resistance. Small B batteries usable with this receiver because of very low total idling current.

