NOVEL 12-WATT AMPLIFIER

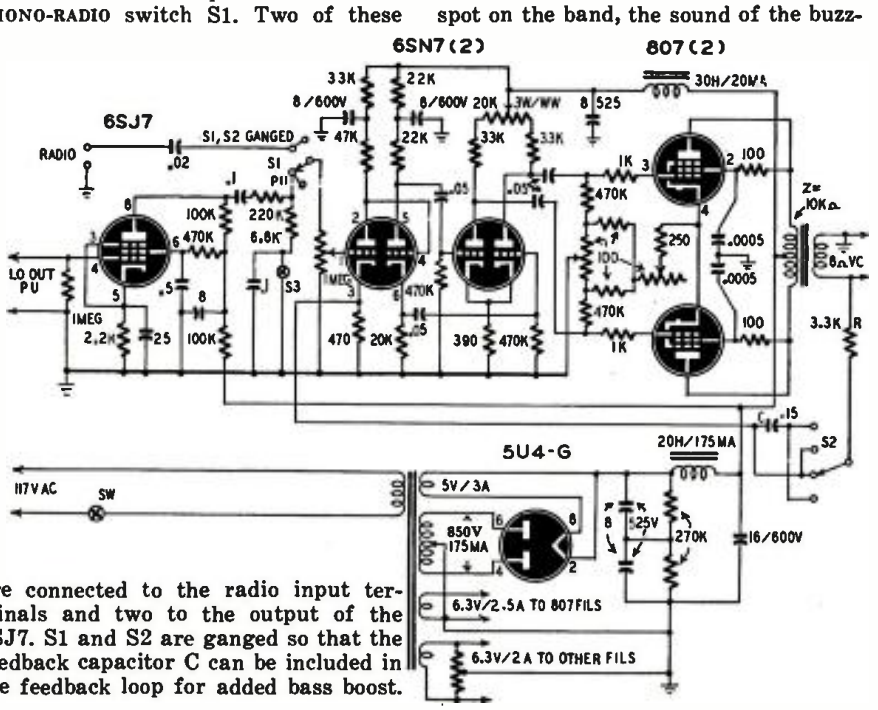
Seldom do 12-watt audio amplifiers use transmitting-type output tubes as in this circuit taken from *Radio and Hobbies* (Australia). The tube line-up consists of a 6SJ7 voltage amplifier, 6SN7 paraphase inverter, 6SN7 push-pull driver, and push-pull, triode-connected 807's. This amplifier delivers up to 12 watts output with *negligible distortion.* Input terminals are provided for phonograph and radio tuner. All inputs are high-impedance.

Inverse feedback is developed between one side of the voice-coil winding and the cathode of the input section of the phase inverter. With feedback, about 1.5 volts of input are required for full output. Without it, only 0.15 volt is required. The signals on the grids of the 807's are balanced by varying the setting of the 20,000-ohm potentiometer in series with the plate load resistors of the driver stage. Feed an oscillator signal through the amplifier and compare the a.f. voltages on the 807 grids with a v.t.v.m. Adjust the potentiometer until the voltages are equal.

If a suitable capacitor C is inserted in the feedback circuit, the gain of the stages within the feedback loop will vary inversely with frequency. The amount of feedback is controlled by the series resistor R. Values of R and C, on the diagram, are selected to give bass boost below 250 cycles of 6 db per octave when one end of the loop is connected to an 8-ohm voice coil. Combinations of 4,700 ohms-0.1 μf and 2,200 ohms-0.2 μf are for 15- and 2.3-ohm voice coils, respectively.

The 6SJ7 stage is designed to have the same bass-response characteristics as the feedback network with C in the circuit. The gain at middle frequencies is 2.5 times or about 8 db. Close S3 and short out the 6,800-ohm resistor for full gain from this stage.

There are four positions on the PHONO-RADIO switch S1. Two of these are connected to the radio input terminals and two to the output of the 6SJ7. S1 and S2 are ganged so that the feedback capacitor C can be included in the feedback loop for added bass boost.

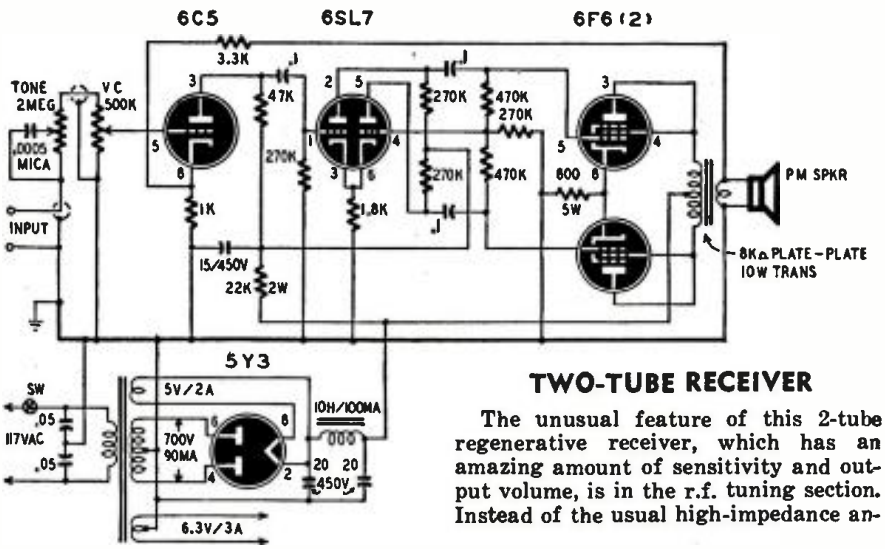


PHONO AMPLIFIER

When used with a high-level crystal pickup, this amplifier produces about 5 watts output. Inverse feedback is used from the output transformer secondary to the first cathode. If the amplifier squeals, reverse the secondary connections. Varying the 3,300-ohm feedback resistor may improve results, but if its value is too low, the circuit will motorboat.

The 6F6's are connected as triodes to reduce their plate resistance and provide better listening results. All cathode resistors are unbypassed to add additional stability.

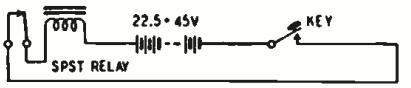
EDGAR SCHOENIKE,
Winona, Minn.



WIRELESS CODE PRACTICE

A battery and a normally closed s.p.d.t. telephone-type relay hooked up as shown make a good high-pitched buzzer for code practice. If a nearby radio is turned on and tuned to a clear spot on the band, the sound of the buzzing relay can be heard clearly through the speaker.

The tone of the buzzer usually can be adjusted over a small range by varying the spring tension and battery voltage.



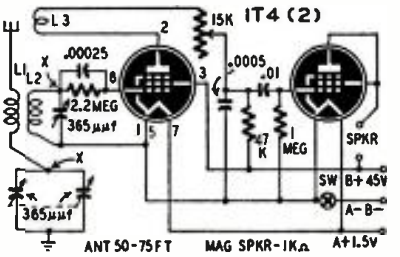
This makes a simple and satisfactory arrangement for the beginner who is learning code.

ROBERT F. CUTA,
La Crosse, Wis.

(The buzzer may create interference to nearby radios, so be careful to avoid offending the neighbors.—*Editor*)

TWO-TUBE RECEIVER

The unusual feature of this 2-tube regenerative receiver, which has an amazing amount of sensitivity and output volume, is in the r.f. tuning section. Instead of the usual high-impedance antenna coil, two similar coils are used for the antenna and grid circuits, as in Grace's crystal receiver (RADIO-CRAFT, January, 1948).



L1 and L2 are secondaries from Meissner 1410-10 coils. The primary of each assembly is removed. L3 is a primary replacement winding, Meissner 14-6852. L3 slides over L2 so that it can be set for the best regeneration point. Coupling of L1 and L2 can be varied to control selectivity, but the two should be kept as close together as possible.

For utmost sensitivity connect together the two points marked X; if selectivity is needed, do not connect them.

As the diagram indicates, I used a 1,000-ohm magnetic loudspeaker. A small PM speaker can be used instead, if a suitable output transformer is added.

JOSEPH AMOROSE,
Richmond, Va.