Eight AM Detector Systems

These detectors have stood the test of time

Detector stages have been various and numerous, and we print here diagrams of those which have continued in use. Diode detection is almost universally used today; nevertheless, pentode and triode detectors are occasionally employed and have advantages under certain conditions. In all the diagrams the tubes are: diodes, 6H6; diode-triodes, 6Q7 or 6SQ7; diode-pentodes, 6H8; triodes, 6C5 or 6J5; pentodes, 6J7 or 6SJ7.

No. 1—Grid detection

A 6J7 or equivalent tube is used. At the input end is the primary of the last i.f. or r.f. transformer; at the output, the resistance-capacitance coupling elements to the first audio stage. If the following tube is a 6V6, the capacitance may be .03 instead of .01, and the grid resistor 220,000 instead of the 750,000 ohms indicated in the diagram. This modification for the 6V6 is equally useful in the diagrams to follow.

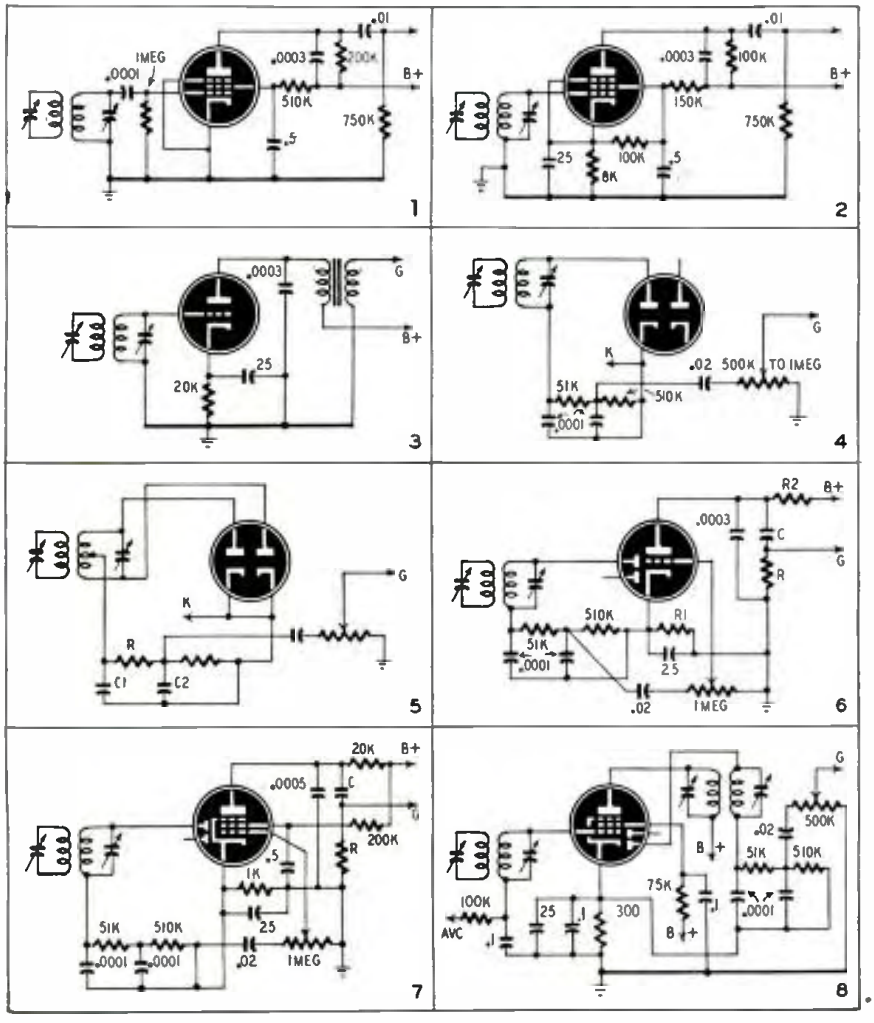
No. 2—Pentode plate detector

The same tube is used. Since the plate resistor is only 100,000 ohms, reproduction of high frequencies is better than in diagram 1.

If the pentode is replaced by a triode, the cathode resistor should be between 15,000 and 30,000 ohms. In diagram 1, however, no modification (other than omitting the screen resistor and capacitor, of course) is required if the pentode is replaced with a triode.

No. 3—Triode with transformer

This type of plate detection gives good results if the transformer is of high quality. The following tube may be a 6V6 or 6F6, with point G connected to its grid. Transformer coupling may be used with the grid detector of diagram 1, but not with pentodes, unless they are used as triodes. In that case, a 6J7 may be used by connecting the suppressor to the cathode and the screen to the plate.



No. 4—Standard diode detector

Either a single element of the 6H6 or its equivalent, or the two elements in parallel, may be used. The point K may be grounded or—if the other diode is to serve for delayed a.v.c.—it may be attached to the cathode of the preceding i.f. or following a.f. tube.

Point G is, of course, the output to the a.f. grid. If there are two following stages of audio, the 510,000-ohm resistor may be replaced with one of only 220,000 ohms. (This rule can be followed in all the diagrams.)

No. 5—Diode push-pull detector

This circuit makes it possible to reduce the values of C1 and C2—or even to eliminate these capacitors altogether, as well as R. Thus reception of high frequencies may be improved. This advantage is not obtained free, for the audio output voltage is only half as great as that obtainable from the standard diode detector.

No. 6—The diode-triode

If the tube is a 6Q7 (or 6SQ7), R1 may be 3,000 ohms and R2 100,000 ohms. The values of C and R are the same as in diagrams 1 and 2.

No. 7—Double diode-pentode

The tube is a 6H8 or similar type.

The low-value plate resistor assures uniform amplification up to approximately 10,000 cycles. The 500-μμf capacitor which shunts the plate resistor may be reduced to a size just large enough to prevent distortion.

No. 8—I.f.-detector stage

In this circuit, the pentode portion of the tube is used as an i.f. amplifier. Point G is connected to the grid of the first a.f. stage, which may be a 6J7 or equivalent. The potentiometer may be 1 megohm instead of the 500,000 ohms indicated. The cathode resistor may be increased or decreased from the 300-ohm value given, depending on tendencies toward oscillation in the i.f. section.—*Toute La Radio* (France)