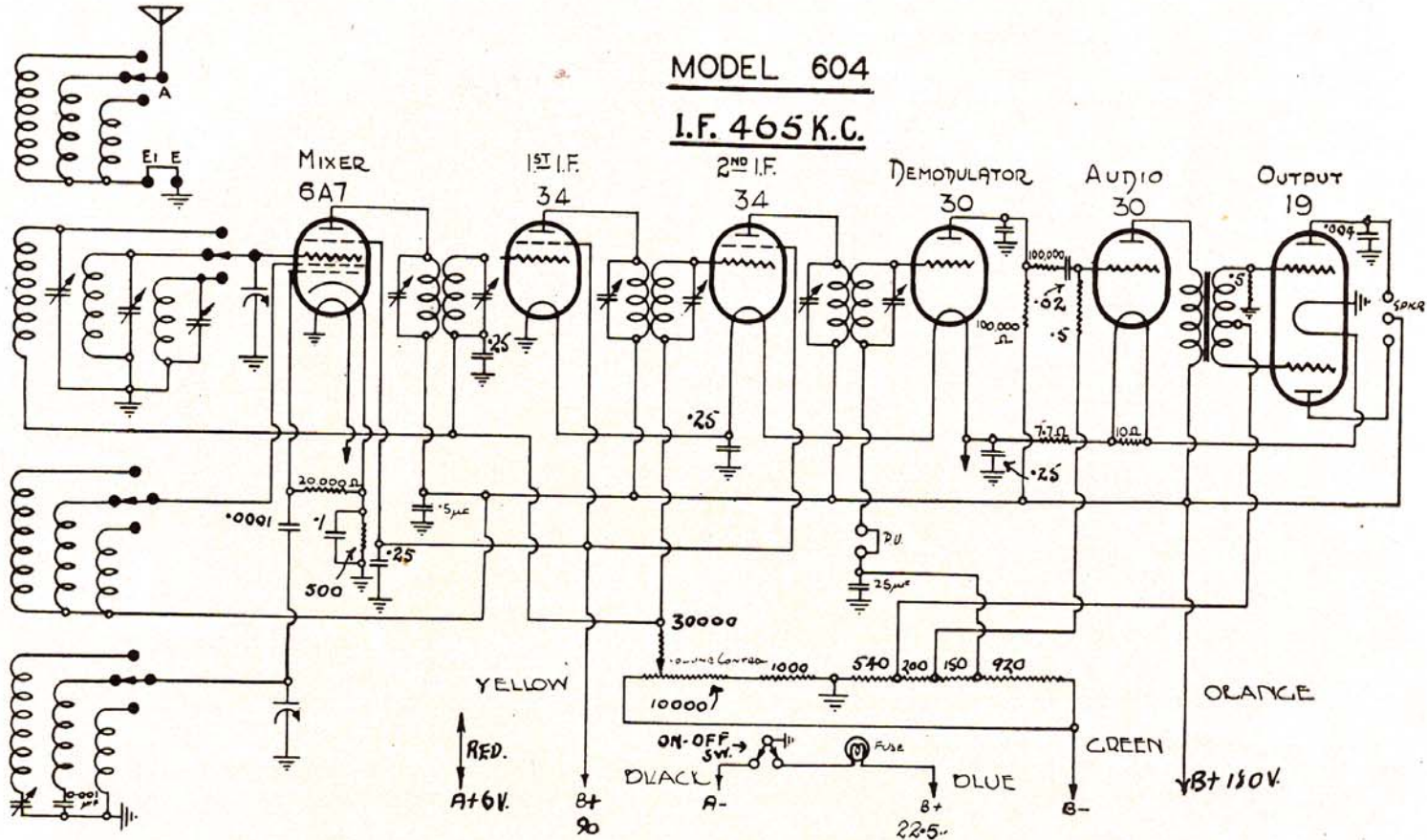


"Stromberg-Carlson" Battery 3-Band Model 604



Stromberg-Carlson model "604" is a six-valve receiver designed for three-band coverage (16/40, 40/95 metres, and broadcast) and operation from battery power supplies. This receiver is of the console type and is fitted with four controls, these being for volume, tuning, wave-change (three positions), and battery switching (2 circuit). The loudspeaker employed is an 8-inch unit of the permanent-magnet type. Power supply for this receiver is obtained from a six-volt accumulator ("A") and four series-connected 45 v. dry batteries ("B"). The first 22.5 v. section of the "B" batteries is shunted by a voltage divider network in order to provide bias and volume control voltages for the receiver. In addition a tapping is taken at 90 v. (actually 67.5 v. above earth) for screen supply. The various leads are colour-coded as shown in the diagram.

CIRCUIT FEATURES.

The design of this receiver provides a number of points of interest. First among these is, of course, the use of a type 6A7 as frequency converter and the series-parallel arrangement of the remaining two-valve filaments in order to permit of their operation from the six-volt "A" supply. The arrangement adopted is of more than usual interest because a little thought will show that the bias applied to each valve is regulated by two factors—the point to which its grid is returned on the voltage divider network and the position of its filament in the series-parallel network. For example, the output valve is entirely biased from the divider because its filament is at the earthed end of the filament

sequence, while the audio driver valve receives two volts bias by virtue of its position in the filament network and another 8.5 volts from the divider, thus making 10.5 volts in all. These points should be borne in mind when checking the operating voltages by the tabulation given below.

The next point of interest is found in the volume control system. No A.V.C. is provided in this receiver, so that volume control is effected in the "radio" stages. The actual volume control system consists of a 30,000 ohms potentiometer, with a 1,000 ohms "minimum bias" resistor in series, wired across the bias section of the "B" battery. The slider of this control is connected to the two I.F. amplifier grids on all wavebands and, in addition, to the 6A7 grid on broadcast. By this means, a negative voltage ranging from 2 to 22.5 volts can be applied to the controlled valve grids. It should be noted, however, that the 6A7 is already receiving about 2 volts bias from its cathode resistor, while the second I.F. amplifier is receiving 2 volts minimum bias by virtue of its position in the filament network; as a result, these two valves receive a grid bias variation of from 4 to 24.5 volts.

A final point of interest concerns the second detector valve. This is a straight-out "anode bend" arrangement which receives 4 volts bias from the filament network and another 10.5 volts from the bias voltage divider system—a total of 14.5 volts in all.

OPERATING VOLTAGES.

The following measurements were made, under "no signal" conditions, with a "1,000 ohms per volt" meter between chassis and the socket contact indicated. Exceptions to this are provided by the grid voltages, which are measured from the negative side of each filament (cathode in the case of the 6A7) to the grid

return point, and are derived as indicated in the foregoing text.

- 6A7, Frequency Converter. Plate, 157 v.; screen, 67 v.; grid (B.C.) 4—24.5 v. (S.W.) 2 v.; osc. anode grid, 157 v.
- 34, 1st stage, 465 KC. I.F. Amplifier. Plate, 157 v.; screen, 67 v.; grid, 2—22.5 v.
- 34, 2nd stage, 465 KC. I.F. Amplifier. Plate, 157 v.; screen, 67 v.; grid, 4—24.5 v.
- 30, "Anode-bend" second detector. Plate, 60 v.; grid, 14.5 v.
- 30, Audio Driver. Plate, 157 v.; grid, 10.5 v.
- 19, Class "B" Output Stage. Plate, 155 v.; grid, 6 v.

COMPONENT MOUNTING.

To facilitate assembly, a number of the components in this receiver are mounted on a panel under the chassis. The terminals on this panel are numbered, and the corresponding components are as follows:—

- 1—blank; 2—30,000 ohms; 3—1,000 ohms; 4—25 mfd.; 5—0.001 mfd.; 6—100,000 ohms; 7—100,000 ohms; 8—0.02 mfd.; 9—500,000 ohms; 10—0.004 mfd.; 11—500,000 ohms.

In addition, five of the fixed condensers are mounted in one metal case, with a common earth connection to the case. The "live" condenser leads are coloured, the four red leads corresponding to 0.25 mfd. units and the yellow lead to a 0.5 mfd. unit.

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