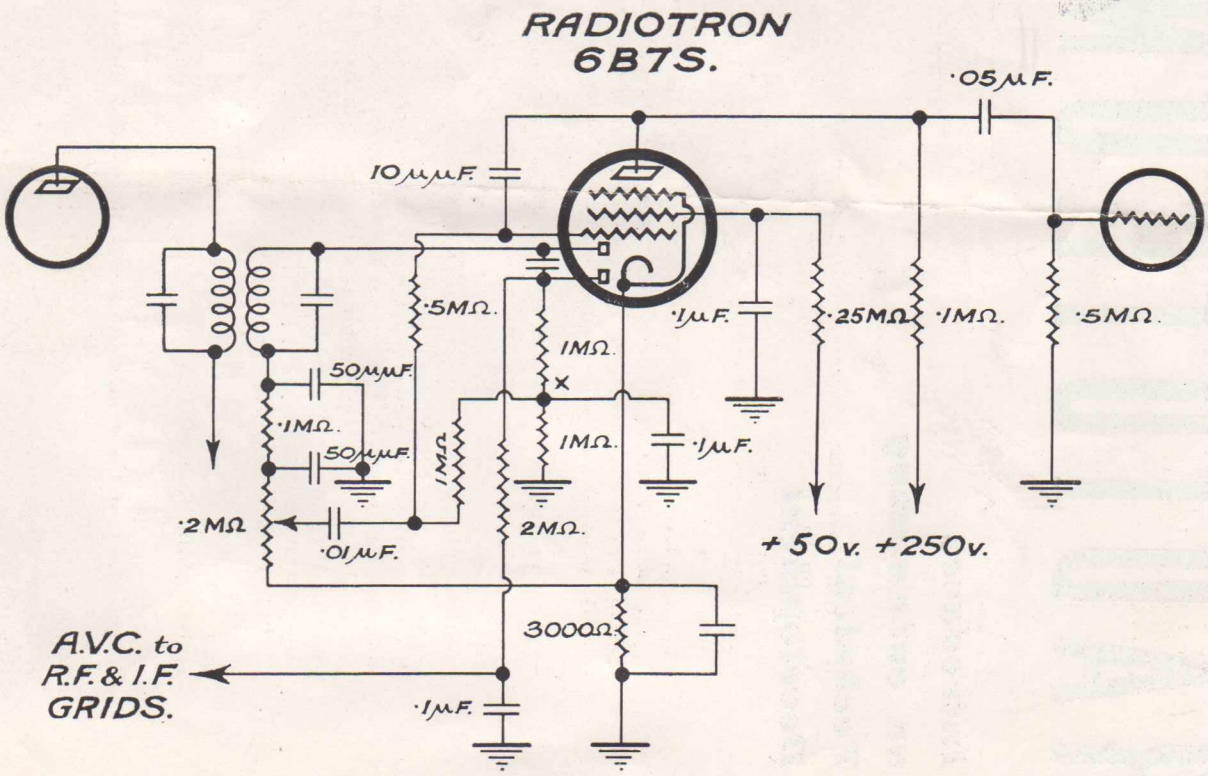
RADIOTRON

Introduces an outstanding Technical Development

AUTOMATIC TONE CONTROL



CIRCUIT FOR AUTOMATIC TONE CONTROL

AMALGAMATED WIRELESS VALVE COMPANY *has pleasure in introducing a valve development of its Australian Radiotron Laboratories —Radiotron* **6B7S**—*featuring automatic tone control.*

Radiotron 6B7S is an improved type of Radiotron 6B7, suitable for use in all circuits designed for the 6B7, but featuring, in addition, special super control characteristics. When utilised in the appropriate circuit illustrated, it supplies the following advantages:—

1. Direct Automatic Volume Control action by the use of A.V.C. on the audio as well as radio frequency amplifier.

2. Automatic Tone Control—wide range for local stations —restricted range for distant stations—reduced "between stations" noise.

The automatic tone control circuit shown may be applied to any receiver with five or more valves, providing A.V.C. is used, and the construction entails no greater difficulties than those involved for ordinary automatic volume control.

THE AUTOMATIC TONE CONTROL CIRCUIT

The values of the resistances and condensers and the applied voltages may be changed to suit varying conditions. The recommended values suit a five-valve set having A.V.C. on the first detector and I.F. amplifier, but they may also be used with a six-valve set having an R.F. stage, provided that the first detector is arranged with fixed bias and the A.V.C. used only on the R.F. and I.F. valves. Many other arrangements are also possible, but the effectiveness of the tone control depends on the amount of audio A.V.C. action. If a very good radio A.V.C. system is used, the audio A.V.C. is not called upon to exercise much control and the tone control effect is small.

Decreasing the screen voltage on the 6B7S increases the effectiveness of the tone control but if reduced too much distortion will occur with very strong signals. The circuit shows half of the total A.V.C. applied to the grid of the 6B7S but more or less control may be obtained by varying the tapping point (x) on the diode resistor. With full

A.V.C. on the grid of the 6B7S very effective tone control is obtained, but the strength of local stations may be reduced below that of distant stations. When full A.V.C. is used on the 6B7S the screen voltage should be increased to about 90 volts.

LINING UP

The completed receiver should be lined up carefully with the weakest possible input from the oscillator or signal generator, especially in the case of the I.F. transformers.

HOW IT FUNCTIONS

A manual tone control is usually arranged with a condenser and variable resistance across either plate or grid circuit in the audio amplifier. It is necessary first to have a good fidelity receiver so that the quality with the tone control out of circuit has sufficient "highs." This same requirement holds for Automatic Tone Control, except that instead of having to turn a knob there is an automatic arrangement whereby the Radiotron 6B7S controls the tone for you—wide range for local stations—restricted range for distant stations. In between stations, when a receiver with A.V.C. makes a distressing noise, a receiver with A.T.C. is quietened but still not "dead" as with a muting switch or Q.A.V.C.

This action takes place through the small condenser shown connected between plate and grid of the Radiotron 6B7S.

On strong signals this has a negligible effect but on weak signals it is equivalent to a capacity about 50 times as great by virtue of the "Miller effect."

When the receiver is completed it is suggested that the following test be made to demonstrate the tone control action:—

Remove the aerial and replace it with a very short one, just sufficient to bring in a local station at full strength.

Tune into a "wide range" transmission.

Listen, then touch the large aerial on to the aerial terminal, and listen again.