

Low-Power •••••

TRANSMITTER MODULATOR

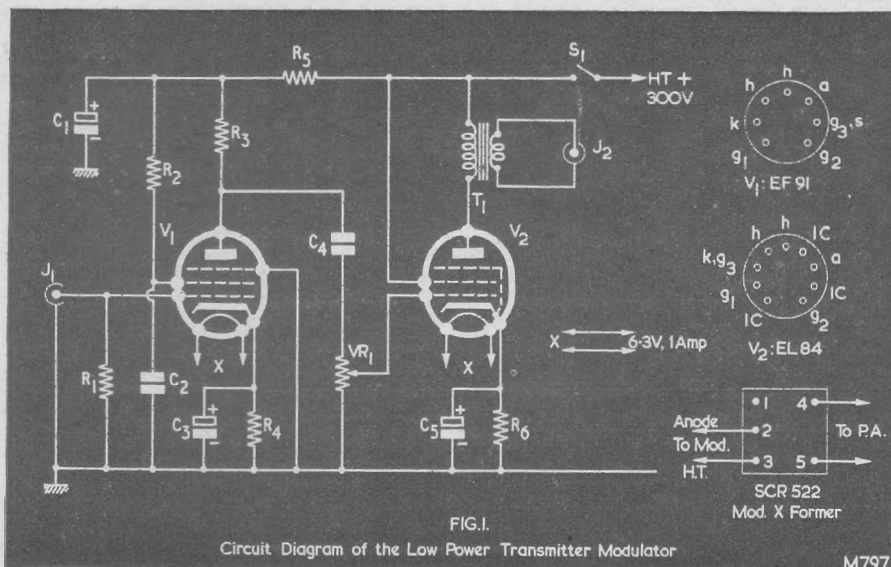
by David Noble, G3MAW, and David Pratt, G3KEP

A low power modulator designed especially for the 160 metre transmitter described in our August 1959 issue.—Editor.

SINCE THE PUBLICATION OF THE WRITERS' "Transmitter Circuit for 160 Metres" in the August 1959 issue of *The Radio Constructor*, there have been several requests from readers for a suitable modulator design. As the transmitter in question was

bands, and this larger modulator will be described at a later date.

The small modulator described herein has been used with much success on the 160 metre transmitter, and also on a low power experimental transmitter for 10 metres.*



designed for the 160 metre band, it is, therefore, only used on low power, and a single-ended modulator using a 6V6 or similar valve may be used. The writers' present modulator design used with the T111 p.a. stage is a push-pull circuit with high power ratings. This was made principally for the reason that it could be used, if desired, for a rather more higher powered transmitter for the other

Circuit

The circuit consists of a very simple straightforward and orthodox two stage amplifier using the EF91-EL84 valve types. Although the EF91 is designed as an r.f. pentode, it functions very well in this a.f.

*"ORP Transmitter for Ten" — Noble & Pratt, January 1959. *Short Wave Magazine*.

application. The input is intended for a crystal microphone, a coaxial socket being provided for this on the left-hand side of the chassis. The modulator gain control is a standard broadcast receiving type potentiometer with the switch S_1 being inserted into

transformer was that type used in the SCR522 transmitter. This transformer (A103018), connections for which are given in Fig. 1, is available quite cheaply on the surplus market. Other modulation transformers of a similar type may, however, be

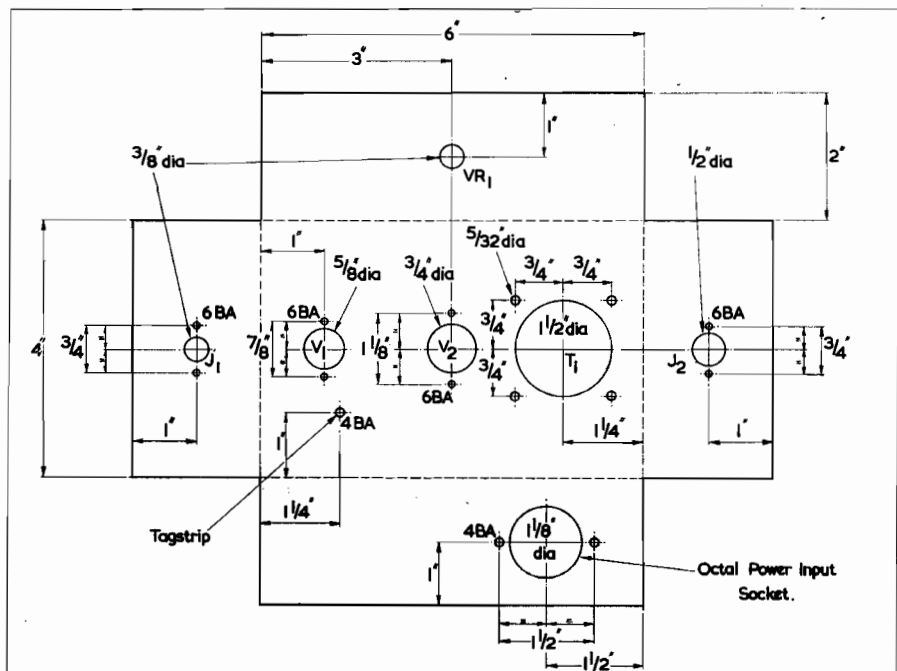


FIG. 2.
Chassis details for the Low Power Transmitter Modulator.

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the h.t. line as shown in Fig. 1. The output is taken via an insulated coaxial socket, the secondary of the modulation transformer being connected to h.t. potential at the transmitter. The modulation is fed to the transmitter via a coaxial lead fitted with insulated plugs; this merely for neatness and insulation. Jack plugs and sockets have been tried in this position but have been found to break down due to the high peak voltages involved.

In the prototype modulator, the modulation

used, but slight changes in the chassis dimensions will, of course, be necessary.

Power Requirements

An h.t. supply of 300 volts at approximately 40 milliamps is required for the modulator, and the 6.3 volt heater consumption is just over one amp. Unless the mains transformer in the transmitter has a h.t. current rating of, at least, 120 milliamps, it is recommended that the modulator be run from a separate power pack.

Components List

Resistors

- R_1, R_2 2.2M Ω 10% $\frac{1}{2}$ watt
- R_3 1M Ω 2% $\frac{1}{2}$ watt
- R_4 4.7k Ω 20% $\frac{1}{2}$ watt
- R_5 22k Ω 10% $\frac{1}{2}$ watt
- R_6 150 Ω 20% $\frac{1}{2}$ watt

Condensers

- C_1 8 μ F 350V wkg. electrolytic
- C_2 0.1 μ F 400V wkg. paper
- C_3, C_5 25 μ F 25V wkg. electrolytic

- C_4 0.01 μ F 400V wkg. paper

Miscellaneous

- VR₁ 500k Ω carbon potentiometer, log. with switch
- V₁ Valve type EF91, 6AM6, Z77, etc.
- V₂ Valve type EL84, 6BQ5, etc.
- T₁ SCR522 modulation transformer or similar
- 1 Co-axial socket
- 1 Insulated co-axial socket
- 2 Valveholders
- Chassis and front panel