

SECTION 5

VARIABLE-FREQUENCY OSCILLATORS: OS3 SERIES

OSCILLATOR OS3/3

Introduction

The oscillator is a self-contained instrument which supplies tone at any of seven frequencies, the lowest 90 Hz and the highest 10 kHz. Output level is -50 dB, from a source impedance of 10 ohms. The instrument is intended for use in testing microphone amplifiers and, utilising microphone mixers as line sending amplifiers, the checking of P.O. lines from O.B. points.

The circuit is housed in a steel case measuring $5\frac{1}{2}$ in. by $4\frac{1}{2}$ in. and, including the hinged lid, 6 in. high. Also in the case are three dry batteries (9 volts each) providing the operating supply. The output is taken through a P.O. jack.

General Arrangement

The oscillator components and the batteries are mounted on the underside of a control panel, which can be taken out of the case when screws at the corners are removed. The only control on the panel is a seven-setting switch for selecting output frequency. The battery supply is switched on automatically when a plug is pushed into the output jack, and its voltage can be checked externally at colour-coded sockets (red and black) on the panel.

Circuit Description

Fig. 5.1 shows the complete oscillator circuit. The printed-wiring board is as used in the oscillator portion of the OS2/15 unit; this is described in Section 2, which also provides information about the theory of operation. For the OS3/3 application the capacitors C1 and C2 have the value giving the lowest required frequency (90 Hz) and, by use of tags 4,5 and 6,7, their in-circuit connection is conditional on placing switch SA at setting 1. The capacitors substituted to produce other frequencies, as in Fig. 5.1, are on tag strips.

Output level is largely determined by an attenuator, R12—R14, giving the required output

impedance. The means of precise adjustment to the specified level is a presetting control, RV1, on the printed-wiring board.

Test Data

Power Requirements

27 volts at 7.5 mA approximately, from three PP7 batteries.

Typical Voltages

Values indicated by a Model-8 Avometer are:

| Ref. | Collector/Emitter (volts) | Emitter/Common-positive (volts) |
|------|------------------------------|------------------------------------|
| TR1 | 1.8 | 1.6 |
| TR2 | 6.0 | 3.2 |

Output Frequencies

90, 250 and 900 Hz; 3, 5, 7 and 10 kHz.

Output Level

-50 dB.

Output Impedance

10 ohms.

Non-linearity

Total harmonic distortion should not exceed 1 per cent at 90 Hz and 0.5 per cent at 250 Hz. Note:—The operating frequencies are outside the scope of Harmonic Routine Tester FHP/3; non-linearity must therefore be checked, if necessary, by Equipment Department.

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See overleaf for Fig. 5.1

5.2

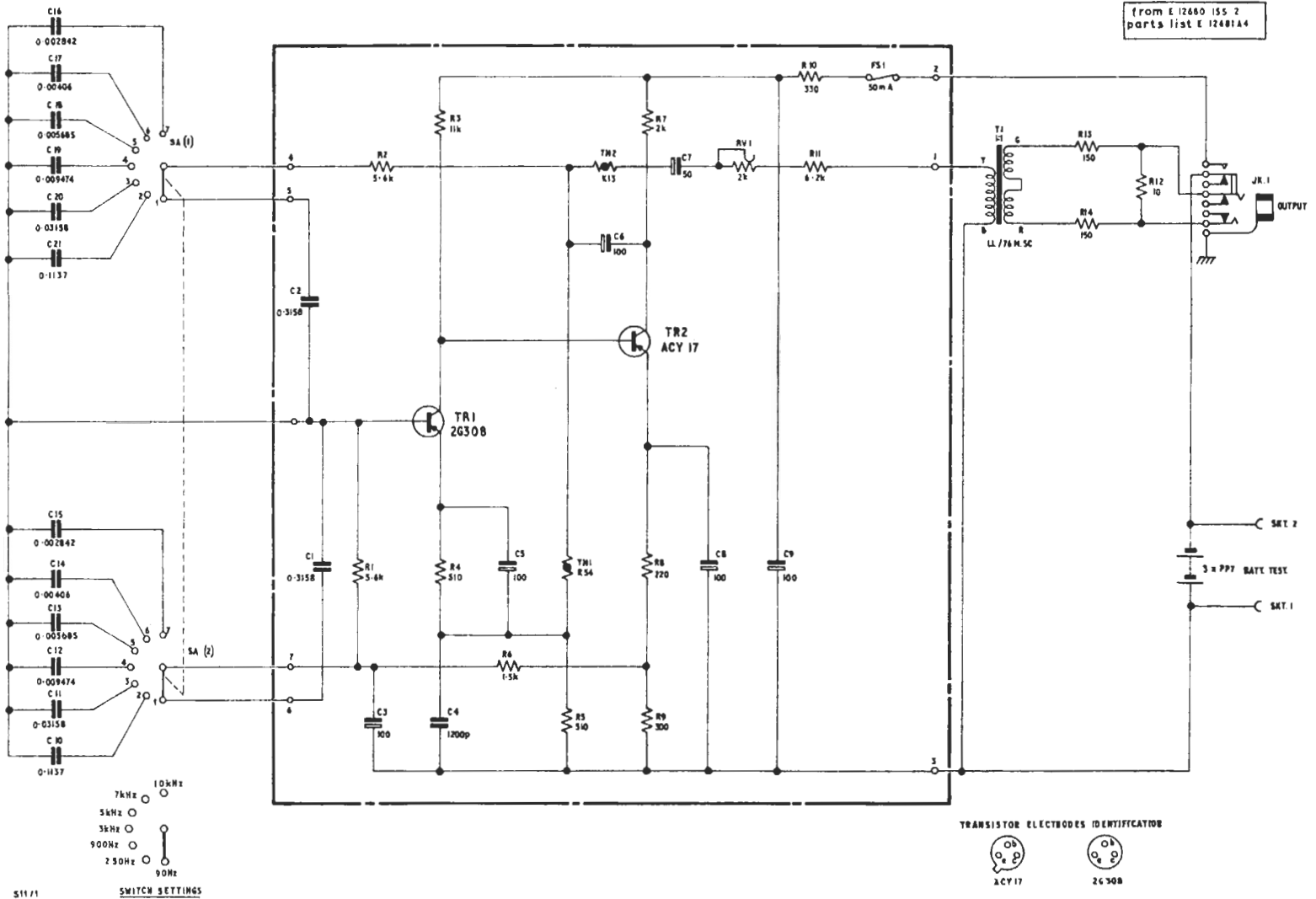


Fig. 5.1. Variable-frequency Oscillator OS3/3: Circuit