OSCILLATOR OS2/15

Introduction

The fixed-frequency oscillator OS2/15 is constructed on a CH1/18C chassis and plugs into a bay-mounting panel PN3/23. It fulfils the same function as the OS/9 and OS/10, that is, to supply 900-c/s tone from a low impedance at zero voltage level for line-up and general test-tone purposes.

It is intended for operation from a 24-volt stabilised power supplier PS2/9, so that frequency and output level are independent of mains-voltage variations. The output impedance is sufficiently low to ensure that in normal practice the output level is not affected by the impedance of the circuit into which it is fed.

General Arrangement

The oscillator is made in two parts, each on a separate printed circuit board. This enables either board to be used in other similar designs, e.g., the OS2/14. No external controls are provided. The frequency is adjusted on initial test. A preset variable resistor is fitted for output level control and this should only require re-adjustment in the event of transistor or component failure and replacement.

Circuit Description

On the first board is a two-stage Wien-bridge controlled oscillator using 2G308 and ACY17 transistors or equivalent types. Negative feedback for output-level stabilisation is applied through a thermistor TH1, and the effect of ambient temperature changes on this is in turn corrected by a second thermistor TH2 in the manner described in Instruction S.4 in connection with the TS/10. D.C. stabilisation is obtained by means of the emitter resistors, and the feedback network R8, R9 and R6. The purpose of the 1200-pF capacitor C4 across the feedback resistor R5 is to suppress h.f. instability.

The output of the oscillator section is taken via the preset control RV1 to the two-stage amplifier section which consists of a 2G308 and an ACY17, also arranged as a d.c. circuit pair. A.C. negative feedback is applied via the resistors R15 and R16. This reduces the output impedance through the 100:1 step-down of the output transformer to about 4·5 ohms.

Test Data

Power Requirements

Supply voltage, 24·5 volts d.c.
Total current, 16·5 ±1·5 mA.

Typical Voltages

Table 1 shows typical voltages indicated on an Avometer Model 8.

TABLE 1

Transistor	*Collector/Emitter*	*Emitter/Common Positive*
TR1	1·9	1·6
TR2	5	3·4
TR3	2·4	2·9
TR4	15·3	5·1

Output Frequency

900 ±20 c/s.

Output Level

The output level should be 0 dB across a 600-ohm load.

If it is required to check this level the required accuracy may be obtained from an amplifier-detector previously calibrated from a standard level panel SLP/3.

The substitution of a 62-ohm load for a 600-ohm load should cause the level to fall by not more than 0·6 dB, denoting an output impedance of about 4·5 ohms.

Non-linearity

At normal level output the total harmonic distortion should not exceed 0·4 per cent.

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