

## SECTION 6

### O.B. TESTING UNIT OBT/2

#### General Description

The O.B. Testing Unit OBT/2 has been designed specifically for carrying out routine tests on the amplifier OBA/8 where normal testing apparatus is

tion values may be selected, and an independent measuring circuit, the meter of which is calibrated in db with reference to a zero power level of 1 mW. The instrument may also be used on apparatus

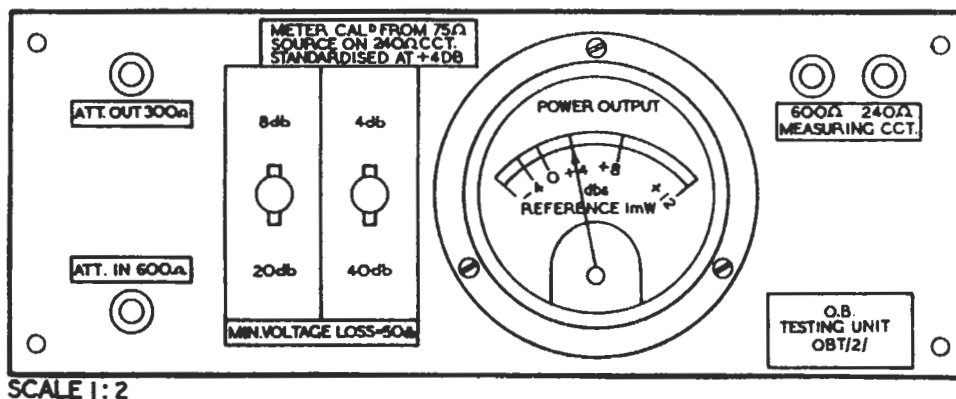


Fig. 6.1. Face Panel OBT/2

not available. It is used with a variable-frequency oscillator, such as the PTS/9 and comprises a bank of fixed attenuators, from which various attenua-

having working impedances different from those of the OBA/8, in which case, measurements are subject to errors not exceeding  $\pm 0.25$  db.

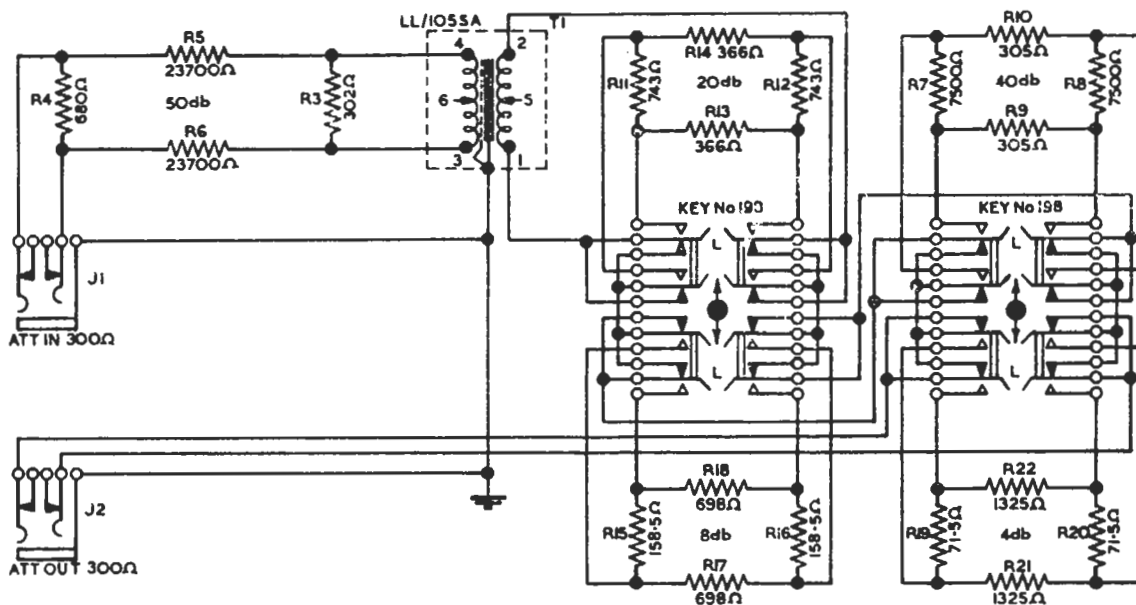


Fig. 6.2. Attenuator Circuit OBT/2

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**Attenuator Panel. Fig. 6.2**

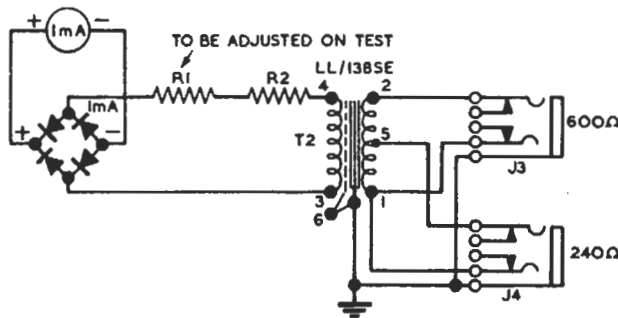
This consists of a fixed 50-db attenuator, permanently in circuit, followed by four other attenuators of values 4, 8, 20 and 40 db. Any one or two of these can be switched into circuit by operating the appropriate key; thus the total attenuation can be varied from a minimum of 50 db (both keys central) to a maximum of 110 db.

**The Measuring Circuit. Fig. 6.3**

The meter of the measuring circuit is scaled to give accurate levels in terms of power when a source impedance of 75 ohms is connected to the

which is 600 ohms. When using this circuit for measuring levels from source impedances other than 187 ohms ( $600/240 \times 75$ ), slight errors in the indicated levels will obtain because of the changing meter impedance referred to previously. These errors are not likely to exceed  $\pm .25$  db at the extreme scale readings.

Because the meter impedance has been adjusted to 240 ohms when accepting a power level of + 4 db, this reading will be accurate whatever the source impedance may be. This is not quite true for the 600-ohm circuit, for while the change from 240 to 600 ohms impedance is arranged to



*Fig. 6.3. Measuring Circuit OBT/2*

240-ohm input jack. This meets the requirements for measuring the power output level of the OBA/8 amplifier, which has an output impedance of 75 ohms.

The meter itself is a rectifier instrument, the impedance of which changes when the power accepted by it changes, i.e., the meter impedance falls as the current through it rises. To minimise this change in impedance with different applied power levels, the meter circuit is built out with swamping resistances. When using the 240-ohm circuit, the impedance transfer in the transformer is such that the apparent meter impedance is 240 ohms exactly, when accepting a power level of + 4 db. When accepting other levels, there is a slight change in meter impedance which varies from 268 ohms at - 4 db to 230 ohms at + 12 db.

This change in meter impedance does not affect the accuracy of the calibrated meter readings so long as the source impedance is 75 ohms (which is the normal output impedance of the OBA/8 amplifier).

To extend the use of the instrument, a second circuit is provided, the nominal impedance of

be accurate (by a suitable change in transformer turns ratio), a slight error occurs because of the extra winding resistance of the transformer; for normal purposes, however, the error is too small to be taken into account.

To summarise, the measuring circuit of the OBT/2 gives accurate power-level readings when the output of an OBA/8 is plugged to the 240-ohm jack, and approximate power levels when source impedances other than 75 ohms are plugged to the 240-ohm jack, or when the 600-ohm circuit is used.

When using the unit, two facts should be remembered. First, if the programme-meter circuit of the OBA/8 is correctly calibrated, with the output switch at + 4, the programme meter will read 4 when the meter on the OBT/2 reads + 4 db. Under these conditions, the output voltage level will be zero.

Second, when the 600-ohm meter circuit is used for testing other amplifiers, the indicated power level will agree with the working output voltage level only when the normal load impedance for that amplifier is 600 ohms.