

OSCILLATOR TEST NO. 1

TECHNICAL HANDBOOK - OPERATING INSTRUCTIONS

GENERAL

1. The Oscillator, Test, No. 1 provides an r.f. output over the frequency range 85kc/s to 32Mc/s in seven bands. The output, which can be varied in steps of 2dB from 1 $\mu$ V to 100mV, may be either c.w., amplitude modulated or frequency modulated, the latter provision being available only above 2Mc/s. The modulation tone is fixed at 1kc/s. For a.m. the depth is preset to approximately 30% at 1kc/s and for f.m. the deviation may be varied up to 30kc/s. In addition, the a.m. tone is available at separate terminals for checking a.f. circuits.
2. The instrument may be operated from either 12V battery or a.c. mains. The mains supply may be 100-125 or 200-250 volts 50c.p.s. To allow for the alternative a.c. supplies, adjustable tapping points are provided on the mains transformer; adjustment of the tapplings involves opening up the instrument, making the adjustment and then resealing. (See Fig. 2).

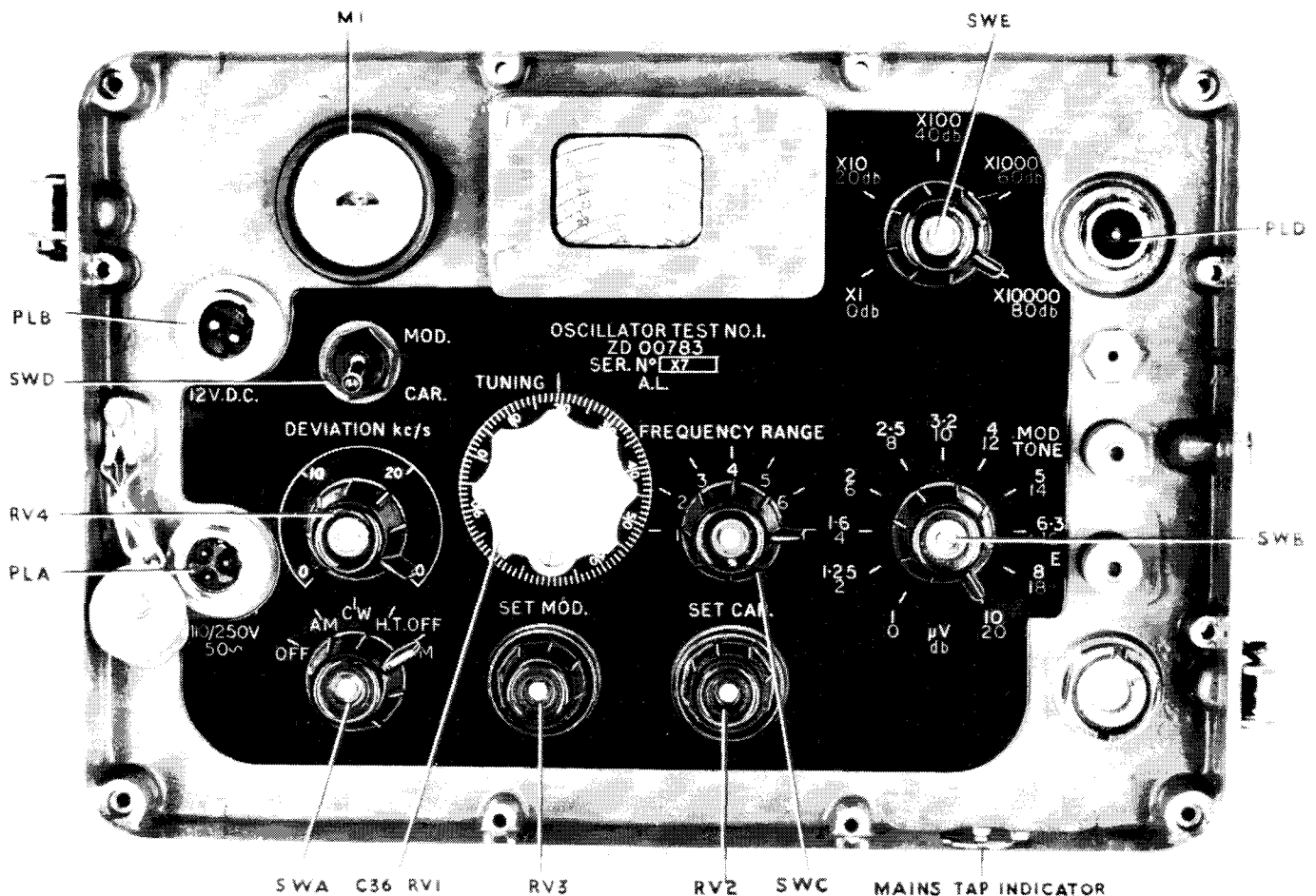
PRELIMINARY

3. If the equipment is to be operated from the mains supply, check the setting of the Mains Tap Indicator (see Fig. 1) and note whether the tapping is appropriate to the supply available. If it is necessary to alter the tapping the instrument must be opened up and the alteration made as shown in Fig. 2. The instrument should preferably be opened only under conditions of low relative humidity. When this is not possible it must be dried out before resealing using a suitable drying equipment, e.g. Oven, drying, telecommunications equipment. (Tels M602). Whenever the mains tap is altered the Mains Tap Indicator must be re-set to coincide with the tap selected.
4. Having made appropriate adjustments to suit the supply (if necessary) connect up the instrument using one or other of the supply leads provided. Although both leads are terminated in a Mk. 4 socket, mobile, the orientation of the plugs is different and care must be taken to ensure that the correct lead is used and is fitted to the correct plug. When using the 12 volt battery supply, it is important that the lead for the a.c. supply is removed and the cover replaced on PLA: similarly, when using a.c. supply, the battery lead must not be connected and the cover must be replaced on PLB. Plug in the r.f. output lead to the instrument and connect via the terminating unit to the equipment under test. The leads from the terminating unit should be as short as possible. The terminating unit provides outputs with a 75 or 7.5 ohm source impedance; using the latter, the oscillator output is reduced to nominally one tenth of the indication. (See para. 15).
5. Switch on the oscillator by setting the system switch SWA to the required setting. Allow about ten minutes for the oscillator to warm up.

CONTROLS

6. The front panel layout is shown in Fig. 1. The controls for the set are as follows:-

- (a) System switch (SWA) marked OFF: A.M.: C.W.: H.T. OFF and F.M. Selects required facility.
- (b) Deviation control (RV4) marked DEVIATION KC/S. For setting up required deviation frequency.
- (c) Meter selector switch (SWD) marked MOD. CAR. Switches meter to indicate 30% modulation depth or correct carrier level.
- (d) Modulation control (RV3) marked SET MOD. Sets modulation depth to 30%.
- (e) Carrier level control (RV2) marked SET CAR. Sets up carrier to correct level such that the output is that indicated on the attenuator controls. (See also para. 15).



TZ 341  
1 - 1

Fig. 1 Front panel layout

- (f) Band switch (SWC) marked 1 to 7. Selects required frequency band.
- (g) Signal frequency control (C36, RV1) marked TUNING. Controls the frequency of the output signal.
- (h) Coarse attenuator switch (SWE) marked X1; X10; X100 etc. To increase or decrease the signal output in 20dB steps.
- (j) Fine attenuator switch (SWB) marked 1; 1.25; 1.6; 2 etc.  $\mu$ V. To increase or decrease the signal output in 2dB steps.

#### A.M. OPERATION

7. Put the system switch SWA to A.M. Set the TUNING control C36 and the band switch SWC to the required frequency. Put the MOD/CAR switch SWD to MOD and by means of the SET MOD control RV3 set the meter M1 to read CAL. Now put the MOD/CAR switch SWD to CAR and by means of the SET CAR control RV2 again set the meter up to the CAL position. Switch the MOD/CAR switch SWD back to MOD and check that the meter still reads CAL; re-adjust SET MOD control RV3 if necessary. The carrier level is now set to agree with the calibration of the attenuator controls and the modulation depth correctly adjusted to 30%.

8. The output from the oscillator can now be varied by means of the coarse and fine attenuators SWE and SWB respectively. The coarse attenuator gives steps of 20dB, and the fine attenuator, steps of 2dB; the total range of the attenuators is therefore 100dB.

9. Normal tests may now be carried out on the equipment. For signal to noise ratio tests the system switch SWA has a position H.T. OFF and thus the oscillator may be kept immediately operative when the signal is off.

#### F.M. OPERATION

10. Put the system switch SWA to F.M. and repeat the procedure as in para. 7.

11. The deviation can be varied as necessary by means of the DEVIATION KC/S control RV4. This control indicates actual deviation irrespective of the settings of SWC and C36.

#### C.W. OPERATION

12. Set the system switch SWA to C.W. With the MOD/CAR switch SWD to CAR adjust the SET CAR control RV2 to read CAL on the meter. Proceed to operate as normal.

13. For quieting tests the system switch SWA may be set to H.T. OFF which will then maintain the oscillator in an operative condition without the usual warming up period.

#### A.F. OUTPUT

14. A source of a.f. at 1kc/s is available across the MOD TONE terminals. The output voltage can be varied to some extent by means of the SET MOD control RV3. The source impedance is of the order of 2.5k $\Omega$ .

TERMINATING UNIT

15. A co-axial cable for the r.f. output is supplied; it is terminated in a unit providing source impedances of 7.5 and 75 ohms. When connected to an equipment with a relatively high input impedance, the voltage delivered will be that as indicated on the attenuator controls. However if the input impedance of the equipment is of the same order as 75 ohms (e.g. the input of a receiver with an input impedance of 75 ohms designed to match the characteristic impedance of a co-axial line) then the usual calculation must be made in assessing the voltage delivered to the equipment under test. In the example mentioned the voltage across the input to the receiver will be the indicated voltage divided by two. Reference should be made to EMER TELS Z 441 for further information.

DIAL LAMP

16. When switching on, the dial lamp should light up immediately at full brilliance; if not, a fault associated with the l.t.circuit should be immediately suspected and the equipment switched off.

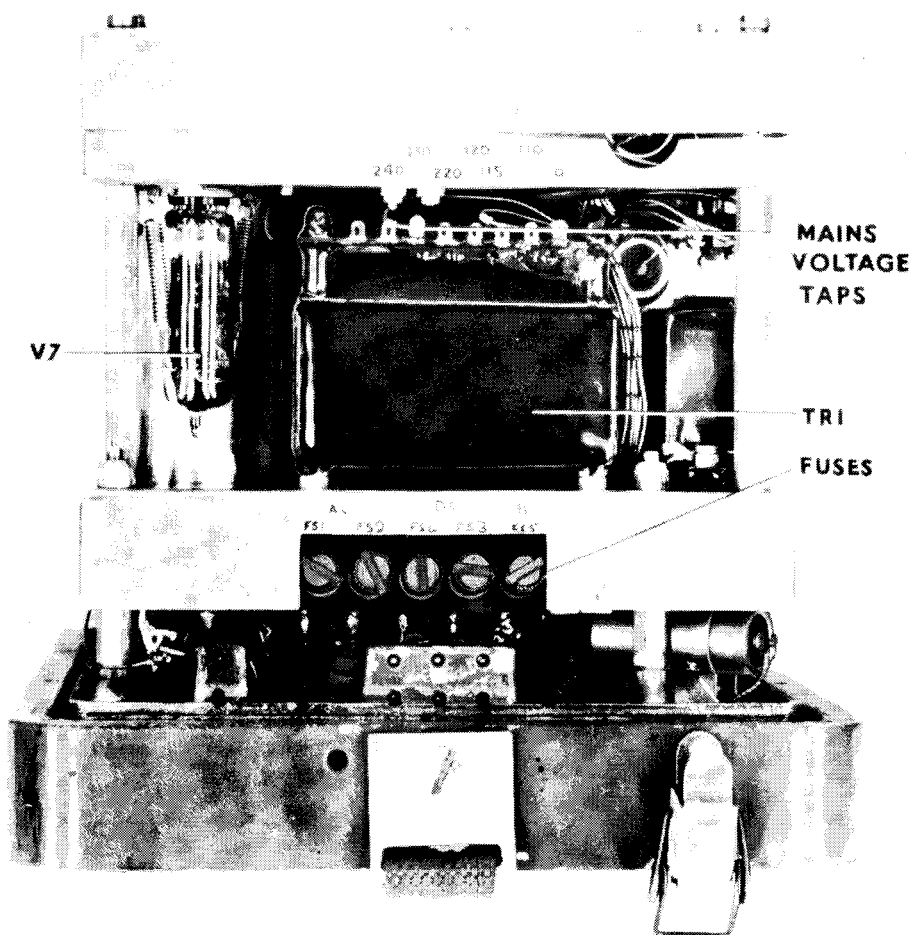


Fig. 2 Mains voltage adjustment

Z 341  
1 - 2

Unsolder the lead on the MAINS VOLTAGE TAP, 110-240, and resolder to the appropriate tap to suit the voltage of the a.c. supply available. Re-set MAINS TAP INDICATOR to show tapping connected.