

4. INSTRUCTIONS FOR TUNING.

Where a trunk sealing and earthing switch (88) is fitted, tuning or check tuning of the transmitter circuits, except the aerial circuit may be carried out with the trunk sealed. Sets should not, however, be tuned during W/T silence unless fitted also with an aerial isolating and earthing switch (103) as transmissions may be heard outside the ship on certain frequencies even with the trunk sealed.

It is assumed that the aerial links (94) inside the transmitter are set to the correct position for use with a unipole aerial system, i.e. one link across the terminals marked "AM" and "EARTH".

The position for setting the links for unipole or dipole aerial are shown in the wiring diagram pasted on the inside of the transmitter box. It is necessary to remove the Transmitter 5Q from its box to see the wiring diagram.

- (a) See that the Trunk Sealing and Earthing switch (88) is closed. This seals the trunk, earths the aerial and causes the RED light to burn in the trunk indicator box. Auxiliary contacts of the Trunk Sealing Switch also break the circuit of the aerial isolating switch, which disconnects the transmitter aerial lead from the aerial and earths it.

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- (b) Plug in the appropriate range coil units (24) (32) (43) for the frequency required and apply the approximate adjustments from the tuning card if these are available.
- (c) Pull the second stage protecting switch (34) to "OFF".
- (d) Set the power input switch (93) to "OFF".
- (e) Make the A.C. supply switch (83) on the Rectifier Unit 4Q.
- (f) Make the D.C. supply switch (85) and the Tumbler switch (84), which operates the control switch (79) in the Rectifier Unit 4Q.
- (g) Set the power input switch (93) to "C.W." or "I.C.W." as required. The H.T. supply should now be made and an indication of this should show on the absorber unit milliammeter (67).
- (h) Plug the wavemeter connection into the wavemeter socket (54) and set the wavemeter to the required frequency.
- (j) Press the morse key (86).
- (k) Tune the master oscillator circuit, by means of the wavemeter, to the required frequency.

Note:- There is no milliammeter indication to show that the master oscillator circuit is oscillating, but the ammeter in the wavemeter (or wavemeter indicator box (108) on the side of the rack) will indicate this.

- (l) Tune the first stage by means of the "1st Stage Tuning" dial (33) to obtain a maximum deflection in the first stage tuning indicator (92).
- (m) Set the aerial coupling to minimum by setting the "Coupling, 2nd Stage to Aerial" dial (22) to zero.
- (n) Push in the second stage protecting switch (34) to "ON". The second stage tuning indicator milliammeter (29) should now register.
- (o) Tune the second stage by means of the "2nd Stage Tuning" dial (25) to obtain a minimum reading in the second stage tuning indicator (29).
- (p) Set the aerial circuit of the Transmitter 5Q to the approximate tuning adjustments for the desired frequency. These should be available on the tuning card.

The above operations will ensure that a transmission taking place immediately after W/T silence is broken will be radiated on the correct wave-frequency. The aerial circuit should be readjusted, if necessary, for maximum radiation as soon as practicable.

5. INSTRUCTIONS FOR TUNING THE AERIAL CIRCUIT.

- (q) Unseal the trunk (if Trunk Sealing Switch is fitted). This causes the GREEN light to burn in the TRUNK INDICATOR BOX.
- (r) Increase the aerial coupling by setting the "Coupling, 2nd Stage to Aerial" dial (22) to about 50 degrees.
- (s) Set the aerial tuning condenser switch (19) to "Series" with the aerial coil tapping switch (21) in position "1", and tune over the whole scale of the aerial tuning condenser (18) to obtain the maximum reading in the aerial ammeter (13). Repeat as above, with the aerial tapping switch in positions "2", "3", "4", etc., until a position is found giving the greatest aerial current reading. If no reading or a very small one is obtained using the "Series" position, the aerial tuning condenser switch should be set to "Parallel" and the tuning operation repeated. It will be found that only positions "6", "7", or "8" can be used on the aerial coil tapping switch when using the "Parallel" position.

Note:- If approximate readings for the aerial in use are available, a slight adjustment of the aerial tuning condenser (18), should be all that is necessary to obtain maximum reading in the aerial ammeter.

- (t) When the maximum aerial current in the above condition has been obtained, the aerial coupling should be readjusted to obtain a further increase of aerial current, readjusting the aerial tuning condenser slightly if necessary.

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- (u) Adjust the adjustable resistance (70) of the Absorber Unit 4Q until the reading in the absorber unit milliammeter (67) remains steady when the morse key (86) is pressed and released.

6. INSTRUCTIONS FOR TUNING WHEN USING CRYSTAL CONTROL.

(i) To tune to the Crystal fundamental frequency.

- (a) Carry out operations (a) to (h) of para. 4.
- (b) With a Screw driver turn switch (105) to the crystal position switch turned to the left.
- (c) Plug in the appropriate crystal (It will be necessary to remove the M.O. coil in order to reach the crystal socket).
- (d) Press the morse key (86).
- (e) Adjust the Master Oscillator Tuning (44, 45) for maximum deflection in the wavemeter indicator (108), using the wavemeter indicator as the M.O. Stage tuning indicator. If no wavemeter indicator is fitted set approximate adjustments on the Master Oscillator Tuning Dial (44, 45) and 1st Stage Tuning Dial (33) for the frequency required and adjust for maximum deflection in the 1st Stage Tuning Indicator (92).
- (f) Line up the remaining tuned circuits, as for Master Oscillator Control (Paras. 4 and 5, operations (1) to (u)).

(ii) To Tune to double or treble the fundamental frequency of the crystal.

- (a) Tune the transmitter in Master Oscillator Control to the required frequency (See para. 4 and 5).
- (b) With a screwdriver turn switch (105) to the crystal position (Switch turned to the left).
- (c) Remove the M.O. Coil Unit and insert the appropriate crystal.
- (d) Insert the Master Coil unit which covers the fundamental frequency of the crystal.
- (e) Set the wavemeter to the crystal fundamental frequency.
- (f) Press the morse key (86).
- (g) Adjust the Master Tuning Condenser to give maximum deflection in the wavemeter indicator (108) using the wavemeter indicator as the M.O. Stage Tuning indicator. If no wavemeter indicator is fitted adjust for maximum deflection in the 1st Stage Tuning Indicator (92).
- (h) Line up the remaining tuned circuits as for Master Oscillator Control (Paras. 4 and 5 operations (1) to (u)).

NOTE:- When the crystal frequency is covered by two coil units, the coil covering the lower range will generally give best results.