

# “TROUGH-LINE” F.M. TUNER UNIT

## INSTALLATION, OPERATION and MAINTENANCE

### Connecting the F.M. tuner unit.

1. Check that all valves are correctly seated in their holders.
2. This unit will mount on a panel of any thickness through a cut-out of  $10\frac{1}{8}'' \times 6''$  (25.7 cms.  $\times$  15.2 cms.). The two fixing brackets, fitted by wing-screws to the rear panel of the tuner, should be removed; the tuner passed through the cut-out and the brackets replaced. The wing-screws should be tightened just enough to prevent the metal backing of the front plate from slipping on the panel.
3. The mains transformer primary is wound for voltages between 200 and 250 (50 to 60 c/s) or on the alternative model for voltages between 105 and 125 (50 to 60 c/s) and the voltage selector fuse plug on top of the mains transformer (T5) should be set appropriately. The cartridge type 1 amp fuse can be inspected by removing the plastic cover of the voltage selector plug which should be removed from the transformer.
4. When used with a LEAK power amplifier the mains supply for the tuner can be obtained by inserting the “A.C. POWER” plug into the A.C. outlet socket on the power amplifier. The tuner is switched on by turning the volume control.
5. The 72 ohm aerial input is balanced to earth and we recommend the use of 70-80 ohm screened twin cable together with a standard dipole aerial system. The screening of this cable should be connected to the adjacent chassis terminal.  
If a twin feeder is not available then an unbalanced 70-80 ohm feeder can be used. In this case the inner central conductor should be connected to either side of the aerial input plug, and the outer screening connected to the adjacent chassis terminal. This will result in a fall in sensitivity of 3db, but in most areas this will not affect reproduction.  
In many localities (covering perhaps 80% of the population) good reception of the B.B.C. transmissions will be possible with an indoor aerial, but it should be remembered that the signal/noise ratio will always be better with an efficient outdoor aerial. Even with a very sensitive receiver such as this it is desirable to use an outdoor aerial correctly orientated, the optimum position being indicated by maximum closure of the tuning indicator pattern.
6. The output voltage from this tuner is approximately 1 volt. Due to the use of a cathode follower output stage the output impedance does not exceed 12,000 ohms. This means that up to 20-ft. of low-loss co-axial screened cable can be used to connect the tuner to its associated pre-amplifier without audible loss of high frequencies.
7. This tuner unit is earthed to its associated pre-amplifier via the screened lead connected to the AUDIO OUTPUT socket, and no additional earth connection should be made to any part of the tuner.

**Operating the F.M. tuner unit.**

8. *Tuning Indicator.*

The tuning indicator used on this F.M. tuner is extremely sensitive and indicates frequency deviations of 2kc/s. A positive indication is given when the receiver is correctly tuned, and any deviation from this condition is instantly visible. The indicator functions as follows :—

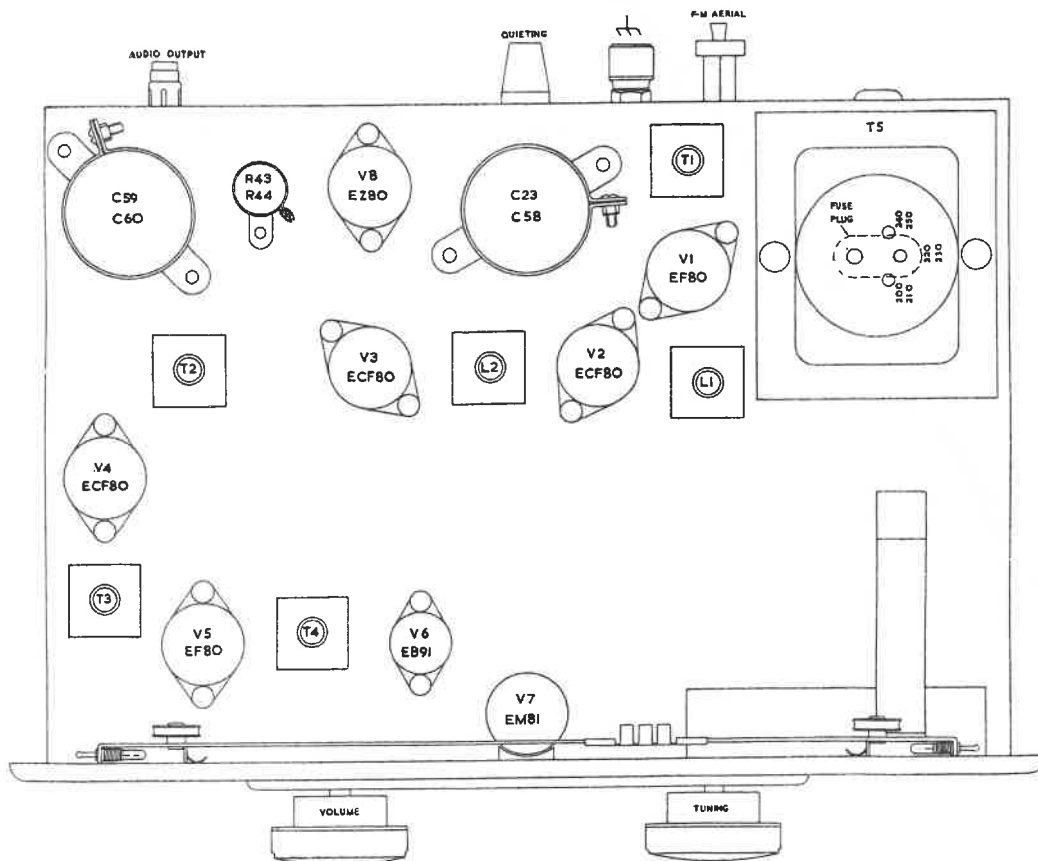
- (a) When no signal is being received the tuning indicator glows a dull green.
- (b) When a station is incorrectly tuned then two pairs of overlapping images are present which become coincident when the tuning is corrected.
- (c) When a station is correctly tuned a bright green display is visible with two sharp edges.



This system of tuning can be likened to the optical range-finder found in many present day cameras.

9. *Quieting.*

The pre-set control at the rear of the chassis controls the sensitivity of the tuner and, by turning the control in a clockwise direction, the inter-station noise generally associated with F.M. receivers can be substantially reduced. In fringe areas (locations of low signal strength), or when using a poor aerial, it may be necessary to forego some or all of the inter-station noise suppression in order to receive clear reception from the B.B.C. transmissions.



“TROUGH-LINE”  
 F.M. TUNER  
 TOP CHASSIS  
 LAYOUT

**Servicing.**

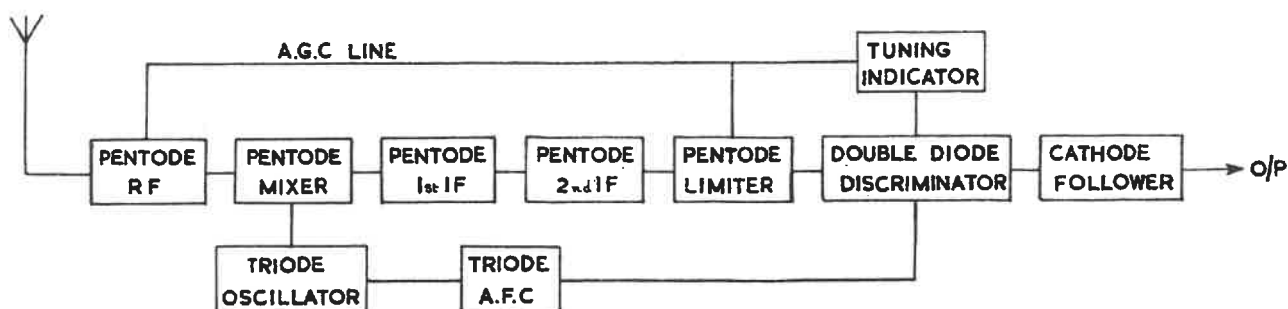
On no account should the pre-set trimmer capacitor C8 or the pre-set tuning slugs be tampered with or adjusted in any way.

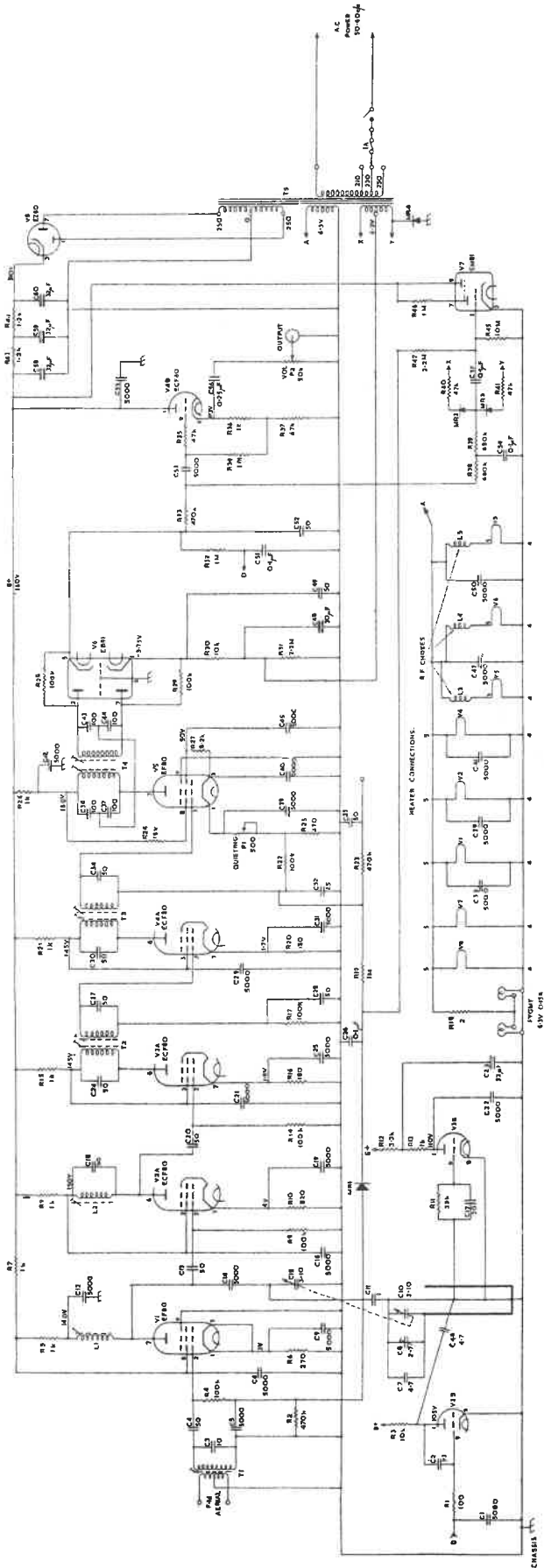
It is not possible for an F.M. tuner of this calibre to be accurately aligned without using a double beam oscilloscope, F.M. signal generator complete with an accurate 'marker' oscillator and a D.C. valve voltmeter. These requirements should be emphasised to a potential service engineer, and if all the above equipment is not available, work should not be started.

**SPECIFICATION**

- Frequency Range :** 88 – 100 M/cs.
- Sensitivity :** 2 micro-volts at the aerial terminals for full limiting.
- Aerial Impedance :** 70/80 ohms, balanced with centre tap earthed.
- Audio Output :** Cathode follower output delivers approximately 1 volt and facilitates the use of long output leads with negligible high frequency attenuation.
- A.C. Power** 200/250 volts, 50-60 c/s, 46 watts.
- Valves :** 2 × EF80, 3 × ECF80, EB91, EM81, EZ80.  
Lamps : 2 × Lilliput, 8V, 0.15A.
- Dimensions :** 10 $\frac{3}{4}$ " × 7" × 7" deep. (27.2 × 17.7 × 17.7 cms.).
- Cut-Out :** 10 $\frac{1}{8}$ " × 6" (25.7 × 15.3 cms.).
- Weight :** 10 lbs. (4.536 kgs.).

**BLOCK CIRCUIT DIAGRAM OF THE TROUGH-LINE F.M. TUNER**





Voltages measured on a meter of 20,000 ohms/volt with no aerial connected  
 Resistor values shown in ohms except where otherwise shown  
 Capacitor values shown in micro-microfarads except where otherwise shown

If transformers and L.2 are tuned to 12.5 Mc/s.

CIRCUIT DIAGRAM OF LEAK "TROUGH-LINE" F.M. TUNER

We shall be pleased to supply full details of all LEAK high fidelity home music equipment on request.

**H. J. LEAK & CO., LTD.**

BRUNEL ROAD • WESTWAY FACTORY ESTATE • LONDON W.3

Telephone :  
 SHEPHERDS Bush 1173/4/5.

Telegrams :  
 Inland : Sinusoidal, Ealux, London.  
 Foreign : Sinusoidal, London.