



'TROUGH LINE STEREO' F. M. TUNER

INSTALLATION · OPERATION · MAINTENANCE

CONNECTING THE F. M. TUNER

1. This unit may be used free-standing on a table, or it may be mounted on a panel of any thickness, through a cut-out of $10\frac{1}{8}'' \times 3\frac{3}{4}''$ (27.5×9.5 cms.). To mount on a panel: take off the cover by removing the wing-screw which passes through a hole in the cover fixing bracket and threads into a hank-bush in the centre of the rear panel of the tuner. Pass the body of the tuner through the cut-out until the front plate butts against the panel, replace the cover and wing-screw and tighten just enough to prevent the front plate on the tuner from slipping on the panel.
2. The mains transformer primary is wound for voltages of 110, 117, 130, 210, 230, 250, (40 to 60 c/s). The circular voltage selector (situated at the back of the tuner) should be withdrawn to its fullest extent, rotated so that the arrow indicates the voltage nearest to your supply and then reinserted.
3. When used with a LEAK amplifier the mains supply for the tuner can be obtained by inserting the 'SUPPLY POWER' plug into the 'A.C. OUTLET' socket on the amplifier.
4. The tuner is suitable for reception of mono broadcasts and stereo broadcasts using the world-wide standard GE-Zenith system of transmission. To obtain optimum results from stereo transmissions it is essential that the aerial terminals are fed with a strong signal. Although a short length of flex or inefficient indoor aerial may give good results from mono transmissions, to obtain the lowest background noise on a stereo transmission it is essential to use a first-class aerial correctly orientated. The optimum aerial position will be indicated by maximum closure of the tuning indicator pattern. The 300 ohm aerial input is balanced to earth. When using 300 ohm twin feeder, the conductors should be connected to the outer aerial terminals. When using an unbalanced 70-80 ohm feeder, the inner central conductor should be connected to either of the outside terminals and the outer screening connected to the centre chassis terminal.
5. **AUDIO OUTPUTS.** The two grey screened leads marked 'LEFT' and 'RIGHT' should be plugged into the L and R 'TUNER' input sockets on your stereo amplifier. The output level from these leads is much lower than from the LEAK "TROUGH-LINE II" or "TROUGH-LINE 3" tuners and the sensitivity of the 'TUNER' input of the associated audio amplifier should be approximately 50mV with an impedance of 47,000 to 100,000 ohms.
On LEAK valve pre-amplifiers the 'TUNER' pre-set input control should be turned to maximum. On the "STEREO 30" amplifier the slide switch be set to 'HI' and resistors R5L and R5R may need changing from 4,700 ohms to 15,000 ohms. Please write to us if you possess a "STEREO 30" amplifier with a serial number below Z08000 and we will send you these two resistors.
6. **TAPE RECORDING.** In addition to the audio signals the output contains some 38 kc/s and 76 kc/s signals, the level of these signals being less than 5mV (-30dB on full output).
If this tuner is directly connected to a tape recorder then in some instances spurious whistles may be experienced due to the interaction of these signals with the bias and erase oscillator in the tape recorder. Some tape recorder manufacturers are producing a filter for connection to the input of the tape recorder to eliminate this effect.
If the tuner is connected to a tape recorder, via a LEAK amplifier, then a considerable reduction in level of whistle will be obtained if during recording the pre-amplifier filter is switched to 9 kc/s.
7. The tuner is earthed to its associated amplifier via the screening of the 'AUDIO OUTPUT' leads, and no additional earth connection should be made to any part of the tuner.

OPERATING THE F. M. TUNER

8. FUNCTION SELECTOR

When receiving mono transmissions the selector switch should be set to 'MONO'. When receiving stereo transmissions the selector switch should be set to 'STEREO'.

Although mono broadcasts will be received on both channels even if the selector switch is set to 'STEREO', to obtain the lowest background noise it is preferable to use the 'MONO' position of the switch.

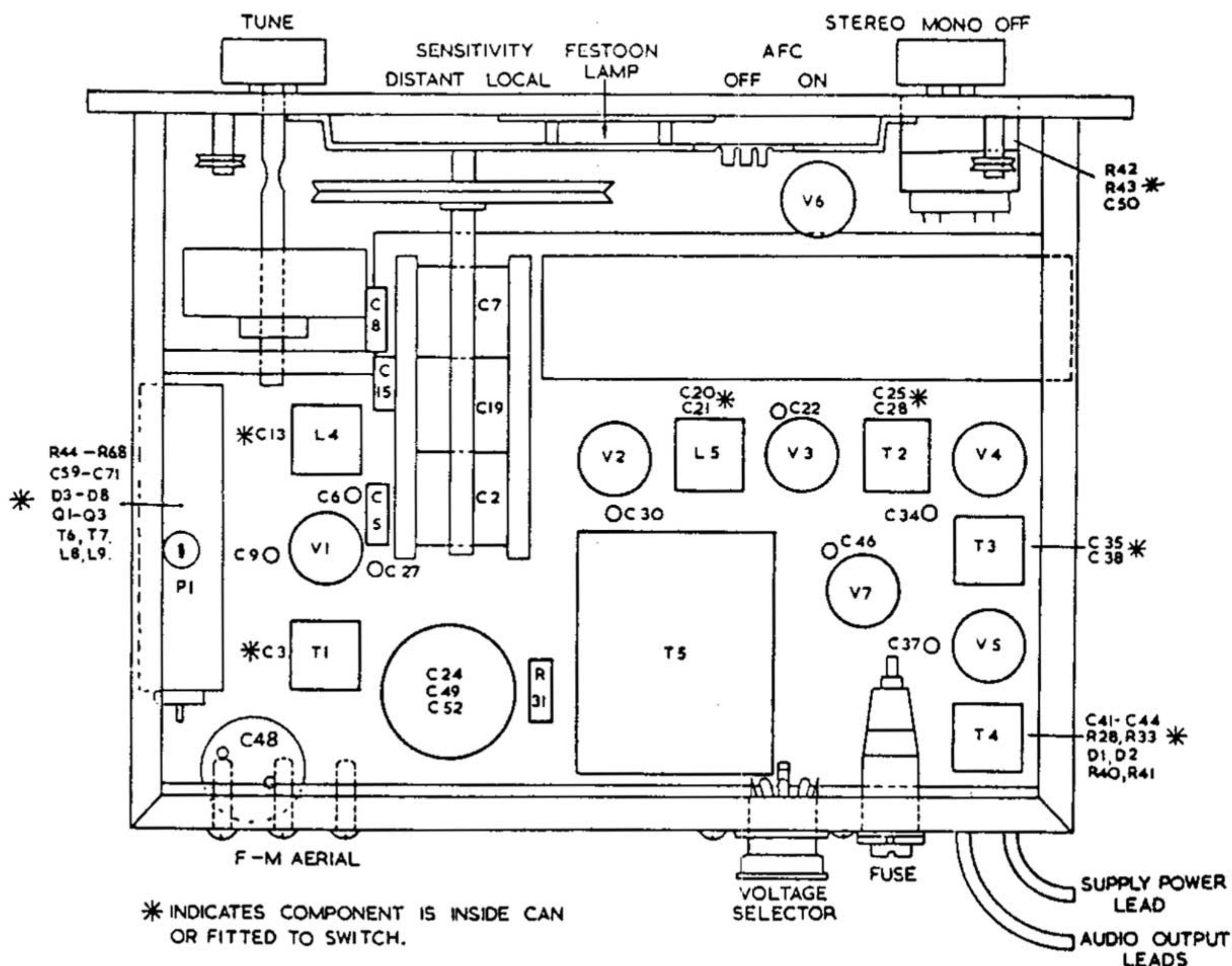
9. TUNE AND AFC

The tuning indicator used on this F.M. tuner is of the maximum closure type and only becomes operative when the AFC is switched 'OFF'. In order to tune in a station, it is therefore necessary to switch off the AFC and adjust the tuning control until a minimum gap exists between the two vertical light strips. Switching the AFC 'ON' locks the station in tune and removes the HT (B+) supply from the tuning indicator.

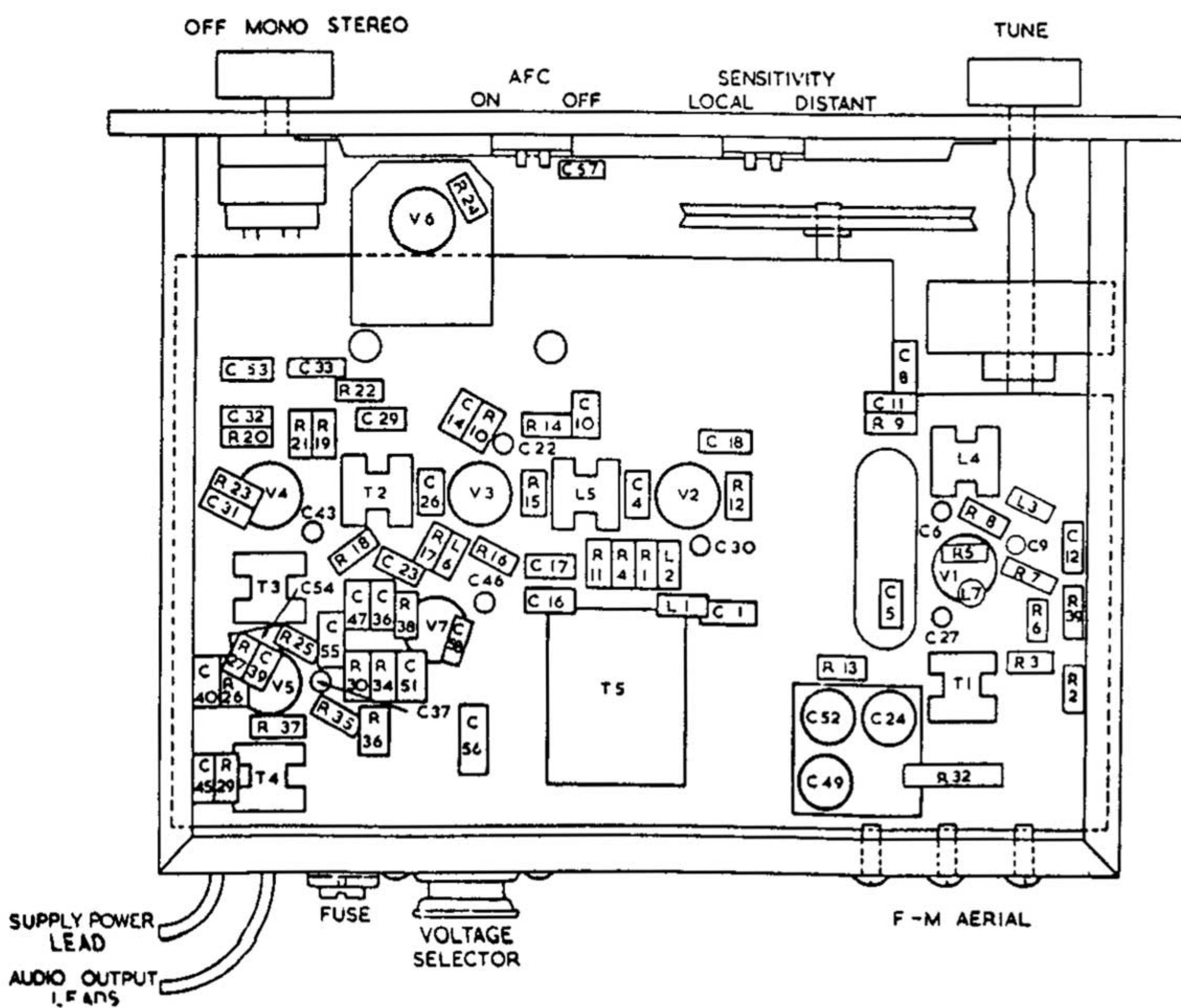
10. SENSITIVITY

In locations of very high signal strength, the sensitivity switch should be set to 'LOCAL'; following this procedure will suppress some of the unwanted inter-station noise.

TOP CHASSIS LAYOUT



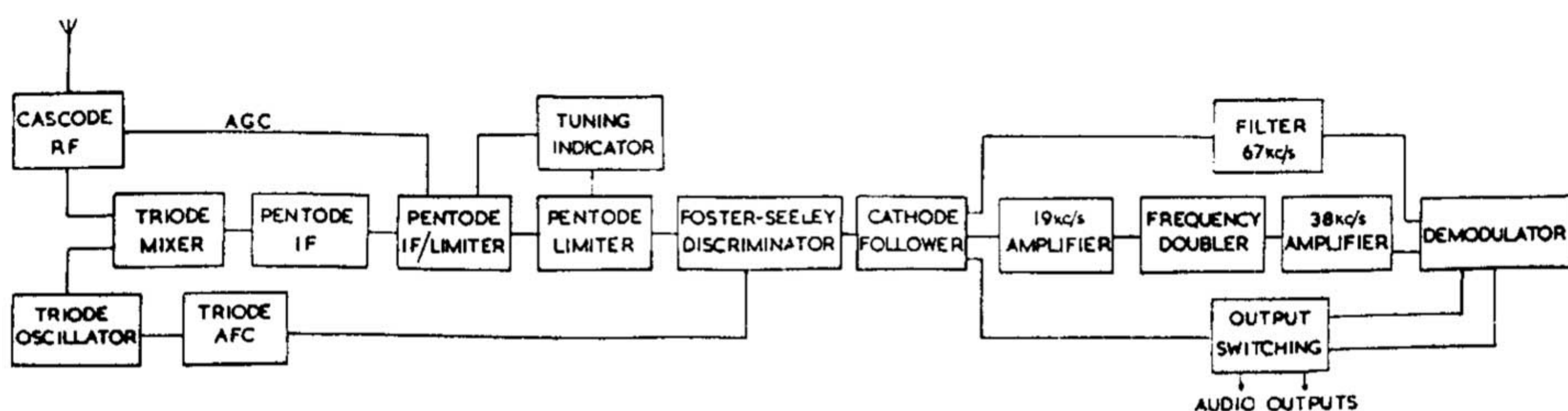
UNDER CHASSIS LAYOUT

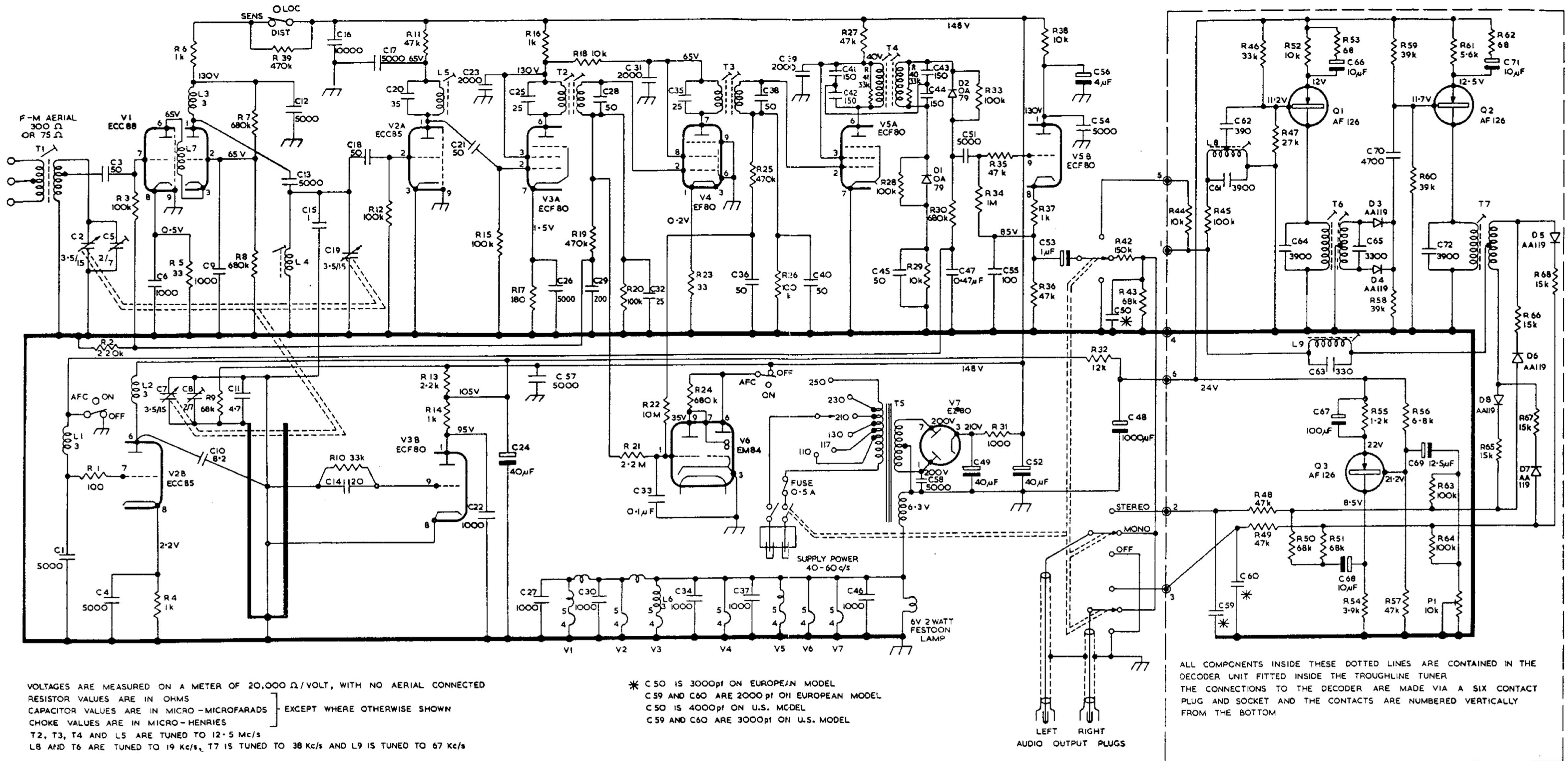


SPECIFICATION

FREQUENCY RANGE:	88-108 Mc/s.
DRIFT:	3 kc/s maximum with AFC 'ON' 15 kc/s maximum with AFC 'OFF'
SENSITIVITY:	2 micro-volts at the aerial terminals for full limiting.
AERIAL IMPEDANCE:	The choice of 300 ohms balanced or 75 ohms unbalanced.
AUDIO OUTPUT:	150mV per channel from 75 kc/s deviation. i.e. 50-80mV per channel from normal transmissions. The input impedance of the associated audio amplifier should be between 47,000 ohms and 100,000 ohms.
CROSS-TALK:	Between L & R channels approx. -26dB at 1000 c/s and -20dB at 10,000 c/s.
POWER SUPPLY:	110, 117, 130, 210, 230, 250V, 40/60 c/s. Consumption 45 watts.
VALVES (TUBES), TRANSISTORS, DIODES:	2 × ECF80, ECC88, ECC85, EF80, EM84, EZ80, 3 × AF126, 2 × OA79, 6 × AA119, 1 festoon lamp 6V 2 watts.
CONTROLS:	
'OFF', 'MONO', 'STEREO'	This switch provides power switching and enables mono or stereo broadcasts to be received with minimum background noise.
'TUNE'	Flywheel action ensures easy and accurate tuning.
'AFC'	'OFF' position facilitates accurate tuning by visual strip indicator. 'ON' position locks station on tune and removes HT from indicator to prevent burning of indicator tube.
'SENSITIVITY'	'DISTANT' position gives maximum sensitivity enabling first-class reception of distant stations. 'LOCAL' position gives reduced sensitivity for use in locations where very strong signals are received, resulting in less inter-station noise and a reduction in spurious responses.
DIMENSIONS:	11½" × 4¼" × 8¼" deep. (29.2 × 10.8 × 21 cms.).
MOUNTING:	Free-standing on non-scratch felt feet or panel mounted through a cut-out of 10⅞" × 3⅜" (27.5 × 9.5 cms.).
WEIGHT:	13 lbs. 8 ozs. (6.1 kgs.).

BLOCK CIRCUIT DIAGRAM OF 'TROUGH LINE STEREO' F. M. TUNER





CIRCUIT DIAGRAM

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, a D.C. valve voltmeter and a multiplex generator.

These requirements should be emphasised to a potential service engineer, and if all the above equipment is not available, work should not be started.