H.M.V. Model 1251

General Description : Seven-valve (including rectifier and tuning indicator), three-waveband (including V.H.F.), combined A.M./F.M. table receiver.

Power Supply : A.C. mains, 195–255 volts, 50–60 c/s. Consumption 65 watts.

Wavebands : M.W. 187·5–574·6 m.; L.W. 901–2026 m.; F.M. 87·5–100 Mc/s.

Valves : (V1) ECC85/B719 (F.M. only, first section is used as grounded-grid R.F. amplifier, second section as additive mixer); (V2) ECH81/X719 (A.M. frequency changer, heptode section used I.F. amplifier on F.M.); (V3) EF85/W719 (dual I.F. amplifier); (V4) EABC80/DH719 (one diode as signal detector/A.G.C. rectifier on A.M., two diodes as ratio detector on F.M., triode A.F. amplifier); (V5) EM80 (tuning indicator); (V6) EL84 (output); (V7) EZ80 (rectifier). Average values for valve voltages are shown on circuit diagram.

Intermediate Frequencies : A.M. 470 kc/s.; F.M. 10·7 Mc/s.

Alignment Procedure : It is important to note that distortion can result from misalignment, especially in the discriminator transformer. When distortion is thought to be due to misalignment, the I.F. stages should be checked for symmetrical response of the bandwidth, but care should be taken first to ensure that the fault does not lie in the A.F. stages.

F.M. Alignment

Before commencing re-alignment always allow approximately 10 minutes warming-up period. Screen leads must always be used for connecting the test equipment. If it is found that the cores in the R.F. and I.F. coils have become locked and are unadjustable, they should be freed by the very careful application of one or two drops of high-grade penetrating oil. The use of a small pointed brush or instrument to direct the oil on to the cores will prevent the oil from spreading. If, on the other hand, the cores are excessively free a length of cotton thread can be screwed into the former with the cores to prevent any movement after adjustment.

When the F.M. I.F. circuits have been aligned, it is recommended that small strips of adhesive tape be placed over the top and bottom of the F.M. I.F. transformers. This will eliminate the possibility of misadjustment when re-aligning the A.M. I.F. circuits.

Neosid dust cores are used in coils L4 and L7–8, and it is important that the correct type of core is inserted in the appropriate formers.

I.F. : For the recommended procedure, an oscilloscope and sweep generator are required.

(1) Screw out core of L24 (IFT4) until it is just protruding from the former.

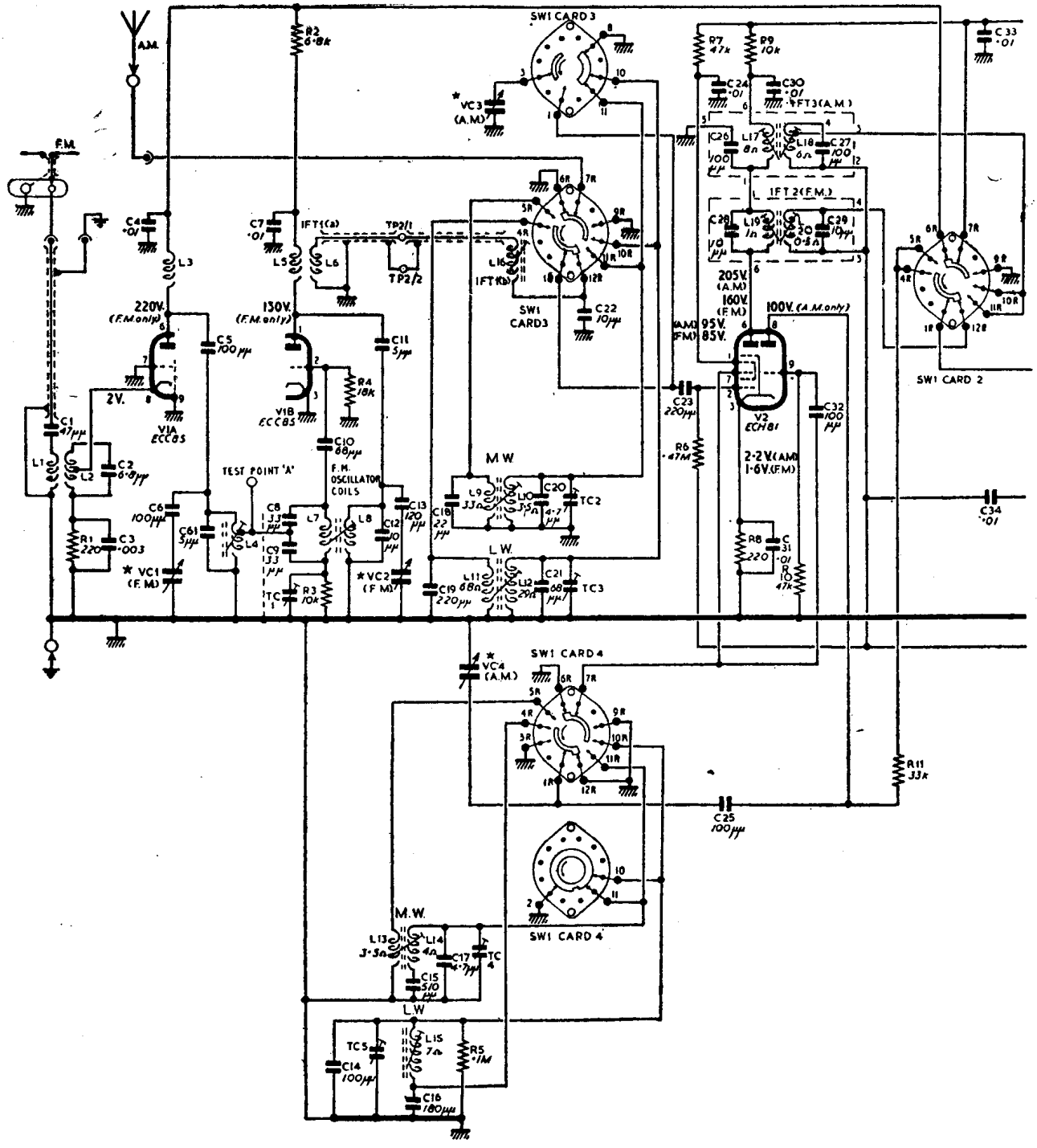
(2) Screw in core of L23 (IFT4) about 10 turns.

(3) Set volume control maximum clockwise and tone control fully anti-clockwise.

(4) Connect oscilloscope (with gain at maximum) to test point " B " via a suitable diode probe as shown in the accompanying illustration.

(5) Inject a 10·7-Mc/s. signal, deviated ± 300 kc/s. into grid of V2 (pin 2).

(6) Adjust L19 and L20 (IFT2) until double-humped response curve similar to Fig. 1 is obtained. Separation between the two peaks should be



CIRCUIT DIAGRAM—

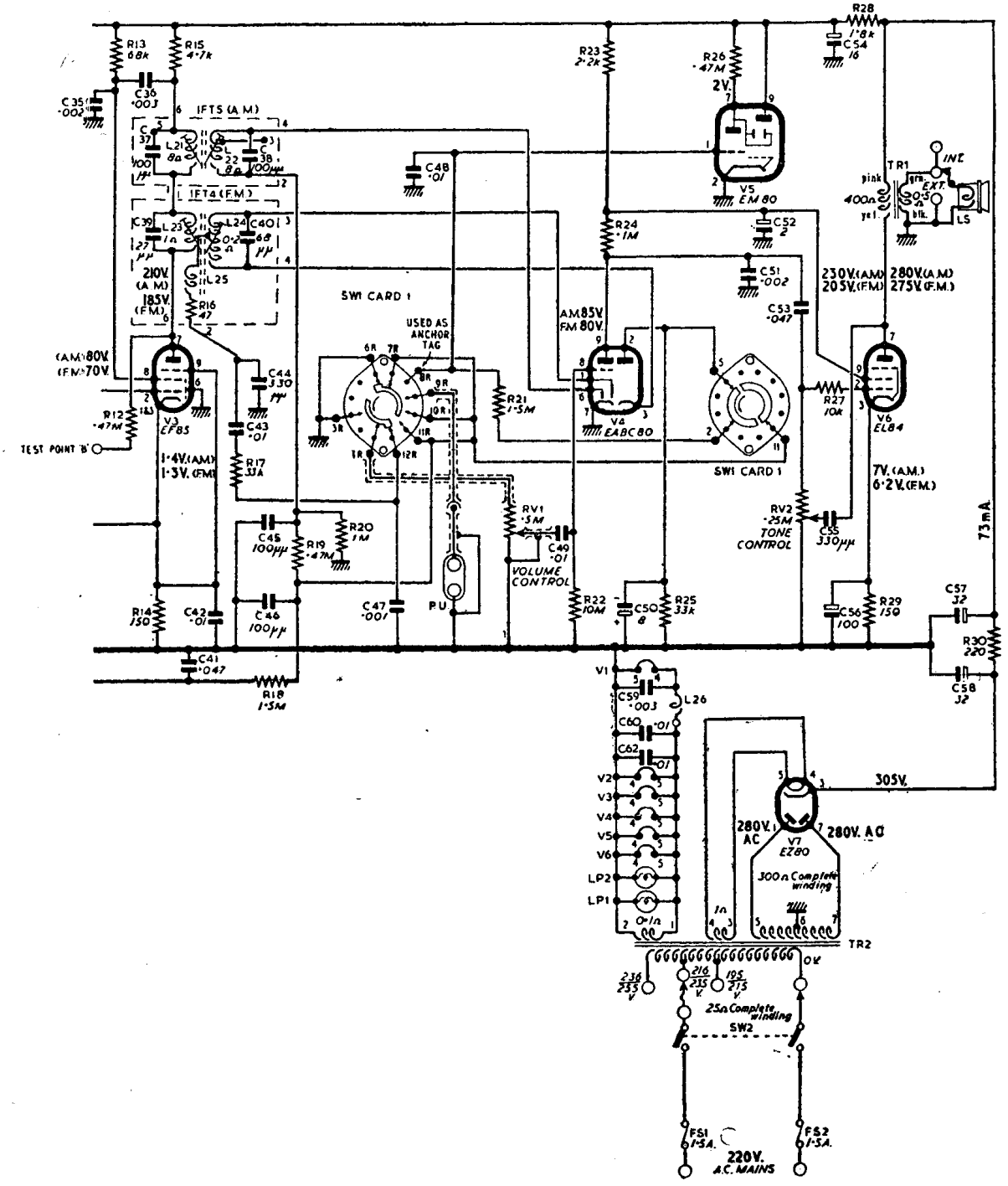
approximately 300 kc/s. Note that an accurate marker pip at 10·7 Mc/s. should be injected at the appropriate sweep-generator terminals.

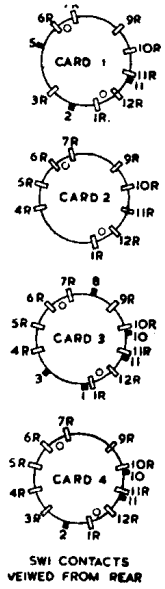
(7) Screw out core of L23 (IFT4) until a waveform which is symmetrical around 10·7 Mc/s. is obtained: see Fig. 2.

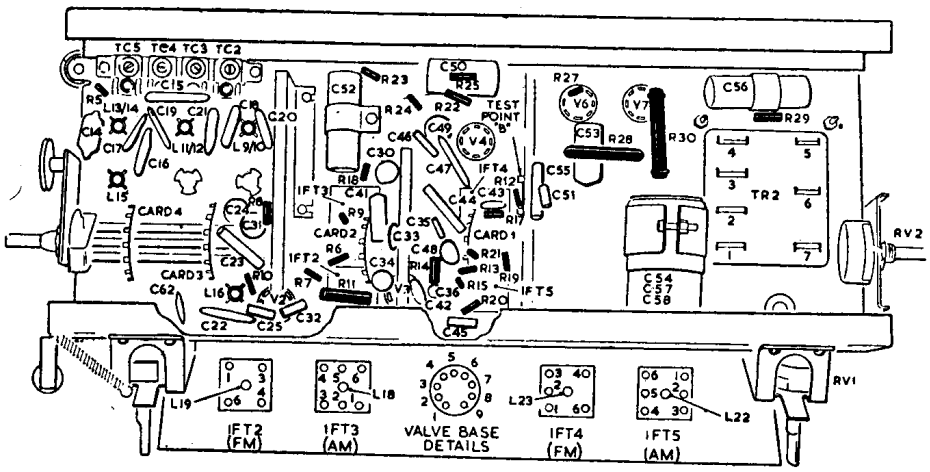
(8) Connect oscilloscope to junction of C57/R27 (on tag panel beneath chassis), less diode probe.

(9) Screw in core of L24 until a waveform similar to Fig. 3 is obtained, symmetrical around 10·7 Mc/s. Note that L23 (see operation 8) may need slight readjustment.

(10) Connect sweep generator to test point " A " and set the gang capacitor with plates fully enmeshed. The input may have to be increased.







UNDER CHASSIS VIEW—H.M.V. MODEL 1251

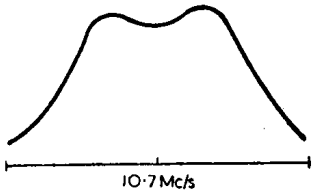


FIG 1.

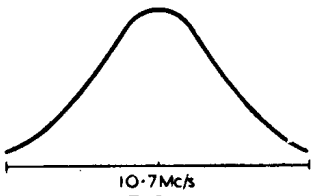


FIG 2.

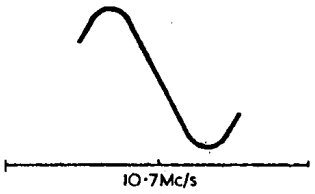


FIG 3

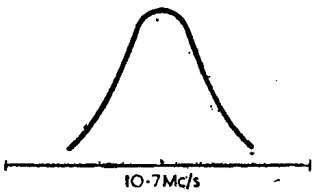
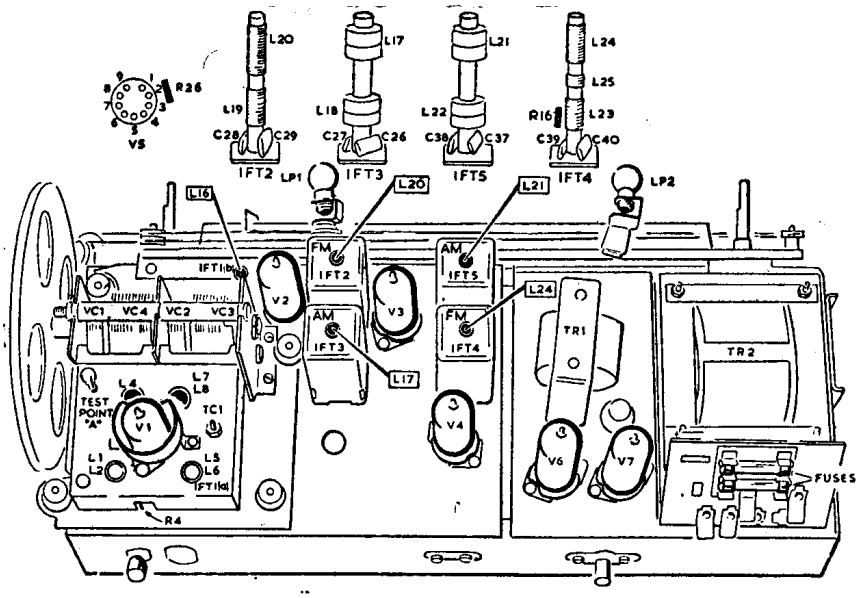
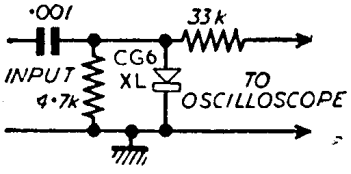


FIG 4.

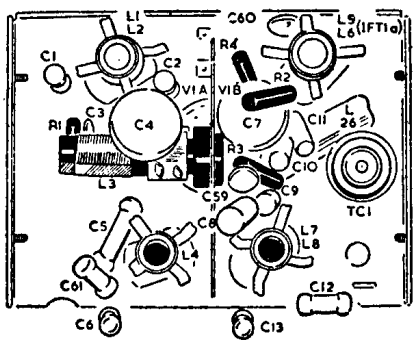
F.M. ALIGNMENT DISPLAY CURVES



TOP CHASSIS LAY-OUT



DIODE PROBE FOR OSCILLOSCOPE DISPLAY



LAY-OUT V.H.F. SUB-UNIT

(11) Return oscilloscope, with gain at maximum, to test point B.

(12) Adjust L16 (IFT1 (*b*)) to give symmetrical response similar to Fig. 4. This should be not less than 180 kc/s. wide for 3 db. down.

Note that on certain models a core may be found inserted into coils L5/L6 (IFT1 (*a*)). This core is factory set and must not be disturbed.

R.F. : Apparatus required for recommended procedure: F.M. signal generator, microammeter (500 μA. F.S.D.), and output meter.

(1) Connect output meter across loudspeaker terminals.

(2) Unsolder earthy end of R4, accessible through cut-out in screening can on V.H.F. unit, and insert microammeter in series with R4 to chassis (chassis positive).

(3) Set tuning gang with plates fully enmeshed, volume control maximum and tone control fully anti-clockwise.

(4) Adjust TC1 until shorting test point A produces minimum change in microammeter reading.

(5) Inject a 87·5-Mc/s. signal (deviation $\pm$ 15 kc/s.) into F.M. aerial sockets (larger earthy) and adjust L8 and L4 in that order for maximum.

(6) Set gang to minimum capacitance and tune in generator, which should be within $\pm$ 0·25 Mc/s. of 100 Mc/s.

(7) Set generator to 94·5 Mc/s., $\pm$ 15 kc/s. deviation, tune in receiver and re-peak L4.

(8) Repeat operations (4), (5), (6) and (7).

A.M. Alignment

I.F. : Set to M.W. with gang at minimum capacitance. Inject a modulated 470-kc/s. signal to control grid (pin 2) of V2. Adjust cores L22, L21, L18 and L17 in that order for maximum output.

R.F. : Inject signals to A.M. aerial and earth sockets via dummy aerial.

Operation	*Set Gang*	*Generator*	*Adjust for Maximum Output*
(1) M.W. . .	Maximum	522 kc/s.	L14
(2)	Minimum	1602 kc/s.	TC4
(3)		Repeat (1) and (2)	
(4)	Tune in	588 kc/s.	L10
(5)	Tune in	1427 kc/s.	TC2
(6)		Repeat (4) and (5)	
(7) L.W. . .	Maximum	148 kc/s.	L15
(8)	Minimum	333 kc/s.	TC5
(9)		Repeat (7) and (8)	
(10)	Tune in	162 kc/s.	L12
(11)	Tune in	300 kc/s.	TC3
(12)		Repeat (10) and (11)	

Before replacing the chassis, check the calibration at about the centre of the wave scale on each waveband. Adjust pointer to provide a compromise if necessary.