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SERVICE SHEET

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Models T851, T852, T853, T854 and T855 TELEVISION RECEIVERS

DESCRIPTION. Models T852, T854 and T855, 15 valve superheterody receiver—adjustable for reception of sound and vision from all present and future B.B.C. TV transmitters—12 inch C.R. tube.

Models T851 and T853 as above but including a "built-in" radio unit for normal sound reception on Medium and Long Wave bands. The chassis used in these receivers are identical with the exception that on Model T855 the TV-Radio change over switch is omitted, together with the Sensitivity Control.

WARNING

The chassis is "live" to the mains.

POWER SUPPLY. For use on 200-250v. A.C. mains by adjustment of voltage selector panel—consumption 100 watts.

AERIAL INPUT. 80 ohms—terminals for twin feed or co-axial cable.

FOCUS AND PICTURE ADJUSTMENT. To centre picture in mask adjust the three nuts on focus magnet assembly. If correct focus cannot be obtained, check mains voltage setting.

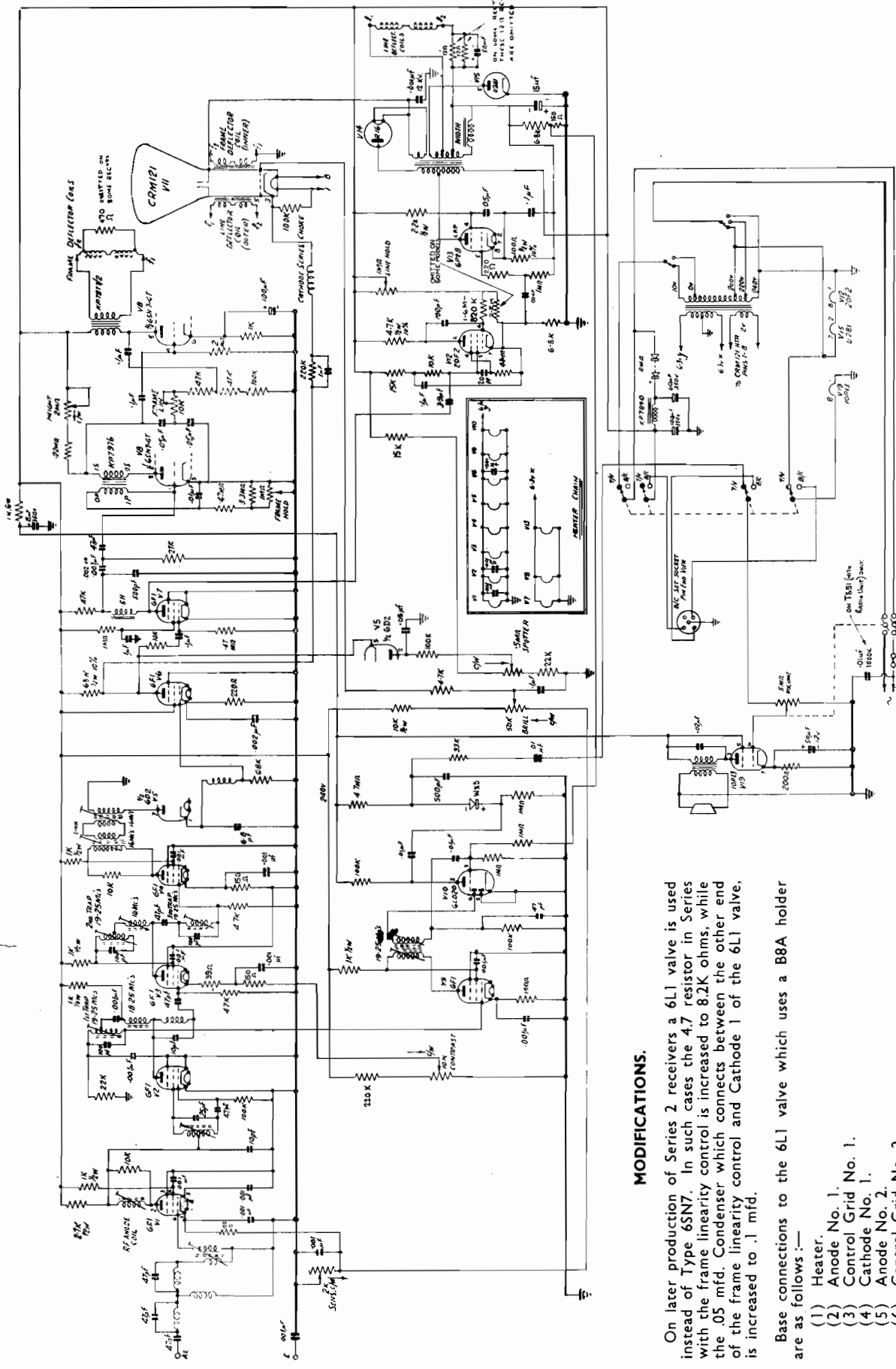
"SETTING UP" and adjustment procedure for tuning to a different B.B.C. transmitter or for checking existing settings.

1. The Sensitivity control (rear) should be turned fully clockwise. (Not fitted to Model T855).
2. With an insulated trimming tool (screwdriver ended) adjust osc. coil core on rear of chassis (see plan) until optimum sound reception is obtained. If signal is strong reduce the Sensitivity control setting otherwise overloading with sound distortion will occur.
3. When the osc. coil core has been adjusted for maximum sound reception adjust aerial and R.F. coil cores for maximum vision signals (see plan).
4. Finally set Contrast control (front) fully clockwise and reduce Sensitivity control (rear) until the picture is just over-contrasted. While these adjustments are being carried out, it will be necessary to reset the Brilliance control (front). Reduce Contrast (front) to desired level.

THE SENSITIVITY CONTROL AFFECTS BOTH SOUND AND VISION RECEPTION AND SHOULD ALWAYS BE SET TO THE MINIMUM LEVEL WHICH GIVES SATISFACTORY RECEPTION WITH CONTRAST AND SOUND VOLUME CONTROLS ALMOST AT MAXIMUM. AS NO SENSITIVITY CONTROL IS FITTED TO MODEL T855, AERIAL ATTENUATION WILL BE NECESSARY TO PREVENT SIGNAL OVERLOAD OF THE SOUND SECTION CAUSING DISTORTION.

VOLTAGE GUIDE. Using Model 40 "Avo" Meter.

Valve	Anode	Screen	Cathode	G. Bias
V1 6F1	220 +	260 +	2 + (max. sensitivity) 6 + (min. ")	
V2 6F1	250 +	210 +	—	
V3 6F1	260 +	260 +	—	(1.5 — to 6 — depending on contrast setting)
V4 6F1	260 +	260 +	—	
V5 6D2	2nd det. vision section			
V6 6F1	165 +	260 +	3.2 +	
V7 6F1	170 +	25 +	—	
V8 6SN7 or 6L1 (Frame osc.)	30 + (normal height)			
" " Frame O/p	260 +	—	3.5v	
V9 6F1	240 +	240 +	2 — 1	
V10 6LD20	50 +	—	—	1.5 — (before 1 meg. resistor)
V11 CRM121A/B & CRM123	6.5KV (10KV T853/4)			
V12 20F2	220 +	190 +	105 +	} Series 1 only
V13 6P28	320 +	220 +	8 +	
V14 EHT valve				
V15 U281 Voltage Recovery diode				
V16 10P13	250 +	260 +	14 +	
Heater Voltages.				
U281	— 30v	20F2	— 11v	10P13
				— 40v
				CRM121A/B & CRM123
				— 2v
				All other valves — 6v



Circuit Diagram. (Series II. The line linearity control is omitted).

MODIFICATIONS.

On later production of Series 2 receivers a 6L1 valve is used instead of Type 6SN7. In such cases the 4.7 resistor in Series with the frame linearity control is increased to 8.2K ohms, while the .05 mfd. Condenser which connects between the other end of the frame linearity control and Cathode 1 of the 6L1 valve, is increased to .1 mfd.

Base connections to the 6L1 valve which uses a B8A holder are as follows:—

- (1) Heater.
- (2) Anode No. 1.
- (3) Control Grid No. 1.
- (4) Cathode No. 1.
- (5) Anode No. 2.
- (6) Control Grid No. 2.
- (7) Cathode No. 2.
- (8) Heater.

On some of these instruments the EHT rectifying valve shown as R16 on the Series 2 circuit diagram is replaced with Type U25. As the heater voltage of this valve differs from Type R16, the line output transformer has increased heater turns, so that valves U25 and R16 are not interchangeable. Where a U25 valve is used, the line output transformer is marked with the Part No. 67/288. See separate details re line o/p transformers.

Models T851 and T852 (Series II) and T853 and T854 Console Models. Model T855 is similar except that TV/Radio Switch and Sensitivity Control is omitted.

LINE OUTPUT TRANSFORMERS.

Models T851, T852 and T855.

During the course of production it was necessary to use different makes of EHT valves owing to the supply position; and due to the different heater voltages two types of line output transformers are available for these Models.

Where the EHT valve is a type R16 or U37, valve Part No. 67/266 should be quoted when ordering replacement transformers.

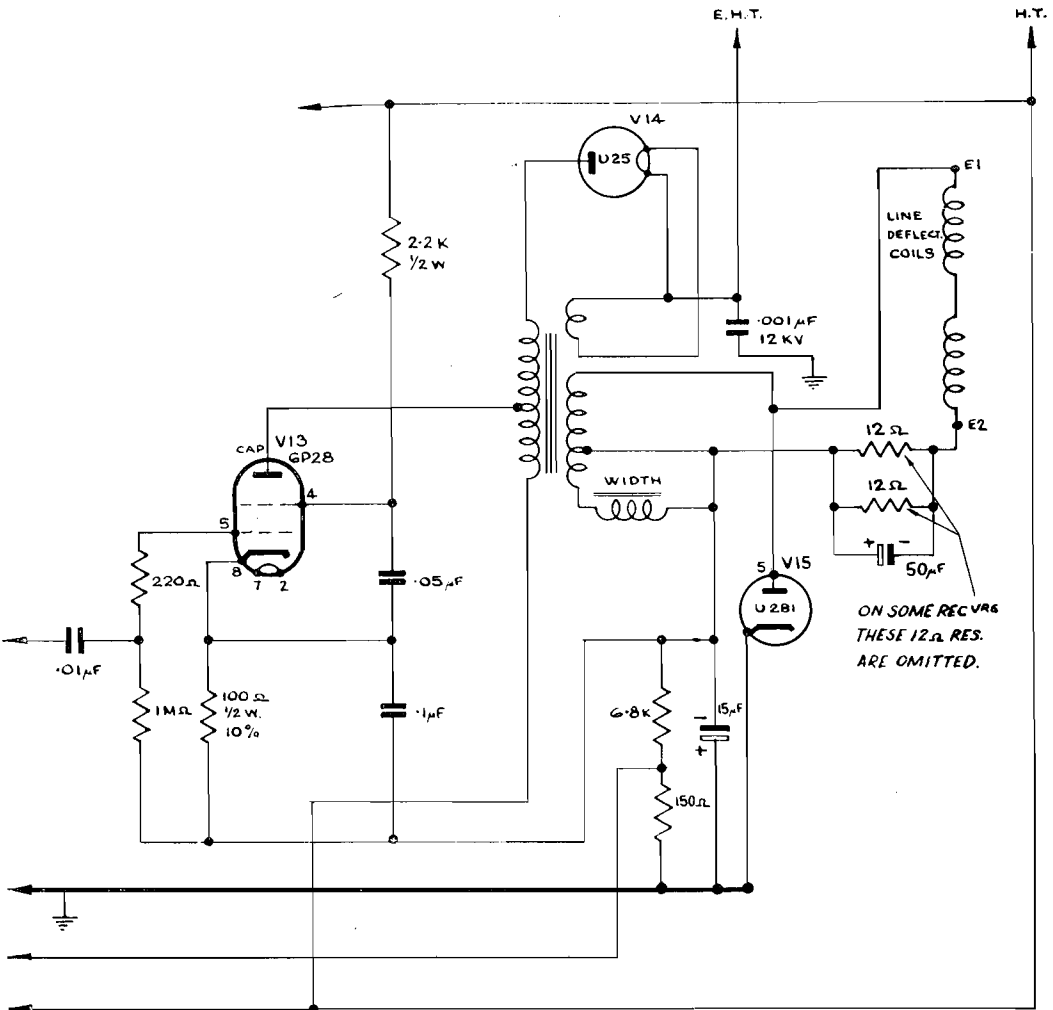
If the EHT valve is a Type U25 then the correct line transformer in this case is Part No. 67/288.

Models T853 and T854.

These models are fitted with Mazda CRM123 aluminised C.R. Tubes. The line output transformer has an increased EHT voltage output and utilises a Type U25 EHT valve.

When ordering replacement line output transformers for these models, Part No. 67/289 should be quoted.

Whilst the basic circuit of Model T853 and T854 is similar to the circuit diagram shown on Page 2, the wiring associated with the line output transformer differs slightly, as shown in Fig. 4.



LINE OUTPUT—MODELS T853 and T854.

RADIO UNIT—MODELS T851 and T853.

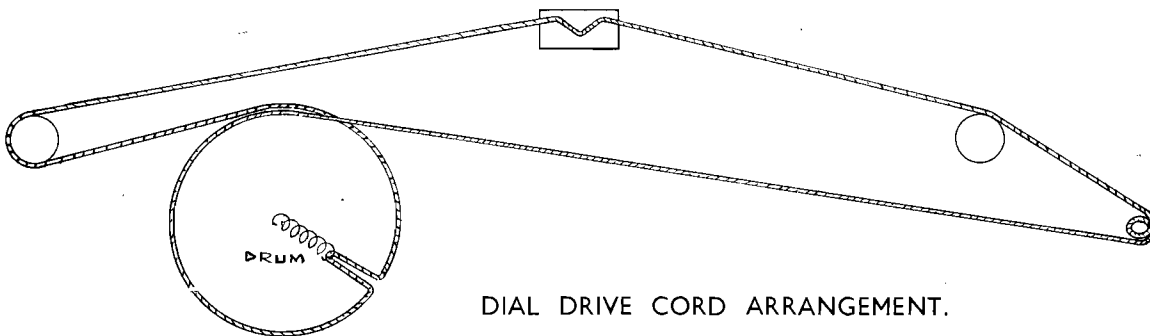
DESCRIPTION. 3 valve superhet chassis for MW & LW reception. The power supply and audio output valve of the TV chassis being utilised.

VOLTAGE GUIDE.

Using model 40 'Avo' meter. (Refer to circuit for valve pin connections).

Valve	Anode	Screen	Cathode
12BE6	235 +	100 +	—
12BA6	235 +	100 +	.8 +
12AT6	165 +	—	1.7 +

Voltage adjustment refer to circuit diagram.



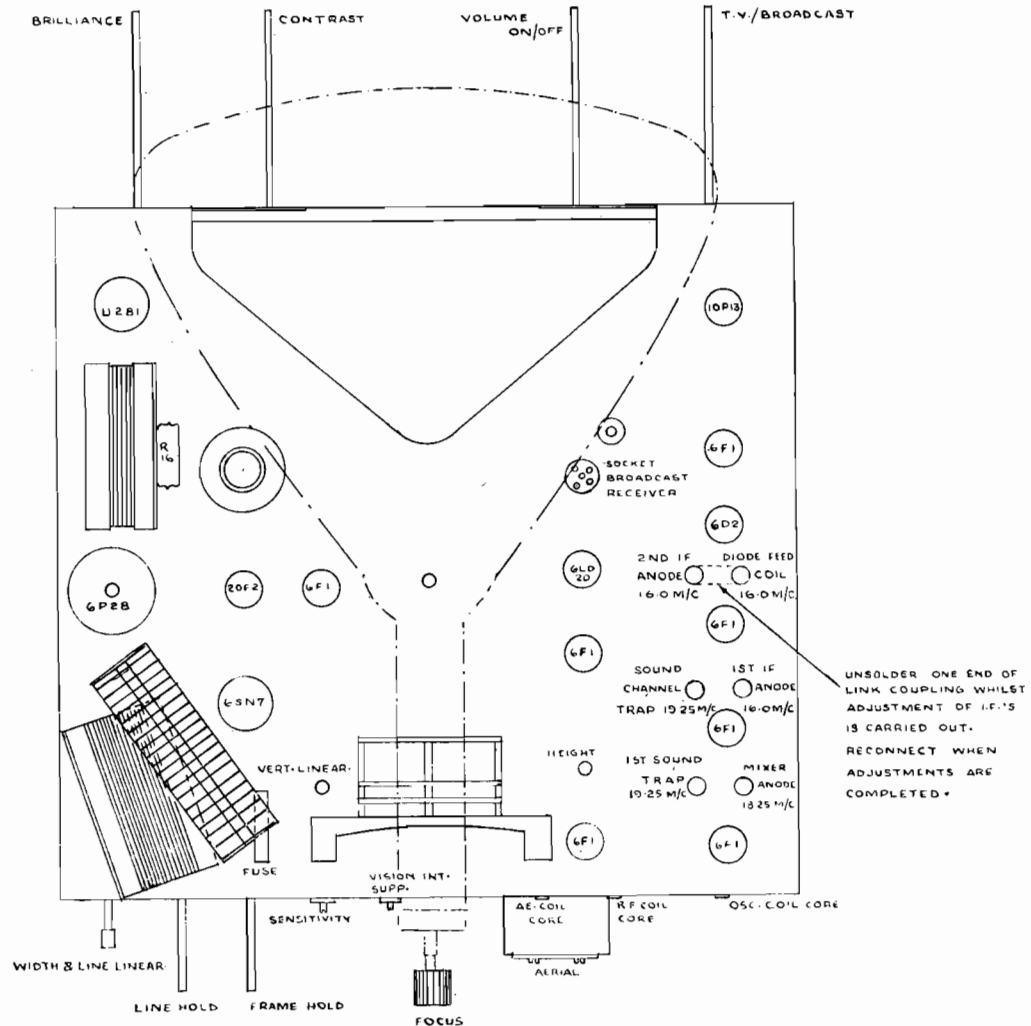
DIAL DRIVE CORD ARRANGEMENT.

I.F. & R.F. ALIGNMENT. TV CHASSIS.

Whilst no U.H.F. signal generator is required, it is essential that a reliable and accurately calibrated standard signal generator is used for the I.F. adjustments.

WARNING. As the chassis is "live" to mains, the usual safety precautions must be taken to protect personnel and test gear.
PROCEDURE.

1. Refer to plan drawing of main chassis. Apply a small amount of cellulose thinners to each core, to dissolve fixing paint.
 2. Connect generator via .005 mfd. condenser to grid (pin 6) of last I.F. valve. Unsolder the connecting link between diode feed coil and 2nd I.F. anode coil. Unsolder bottom end of 6.8k diode load resistor and reconnect to chassis via a 1 mA meter movement (see circuit diagram).
 3. Set generator to 16 mcs. and adjust 2nd I.F. anode, and diode feed coil cores for maximum reading on meter. Remove generator and resolder link between these two coils.
 4. With generator still adjusted at 16 mcs. and connected (via .005 mfd. condenser) to grid of first I.F. valve, adjust first coil core for maximum reading on meter. Reset generator to 19.25 mcs. and adjust sound channel trap for minimum reading on meter.
 5. Connect generator (via condenser) to centre tap of oscillator coil (under chassis). Set to 18.25 mcs. and adjust mixer anode coil for maximum output. Reset generator to 19.25 mcs. and adjust first sound trap for minimum output. Increase output of generator (still at 19.25 mcs.) to obtain a three-quarter scale reading on meter and adjust second sound trap (under chassis) for minimum output, disconnect 1 mA meter and resolder 6.8k resistor in place.
 6. With generator still connected to C.T. of oscillator coil and set to 19.25 mcs. connect a standard output meter (3 ohms) across the secondary of the loudspeaker transformer and adjust Sound I.F. diode and Sound I.F. anode cores for maximum reading on the L/Speaker output meter. This completes the I.F. alignment.
 7. The instrument should now be connected to an aerial system and the oscillator coil core adjusted to obtain the maximum sound reception from the local B.B.C. television transmitter. If the I.F. adjustments were carried out correctly and accurately, adjustment of the oscillator coil to receive sound will automatically give the correct frequency separation to obtain vision signals.
 8. Adjust R.F. anode and aerial coil cores for maximum vision signal. This completes the R.F. alignment.
- See also "setting up" procedure.

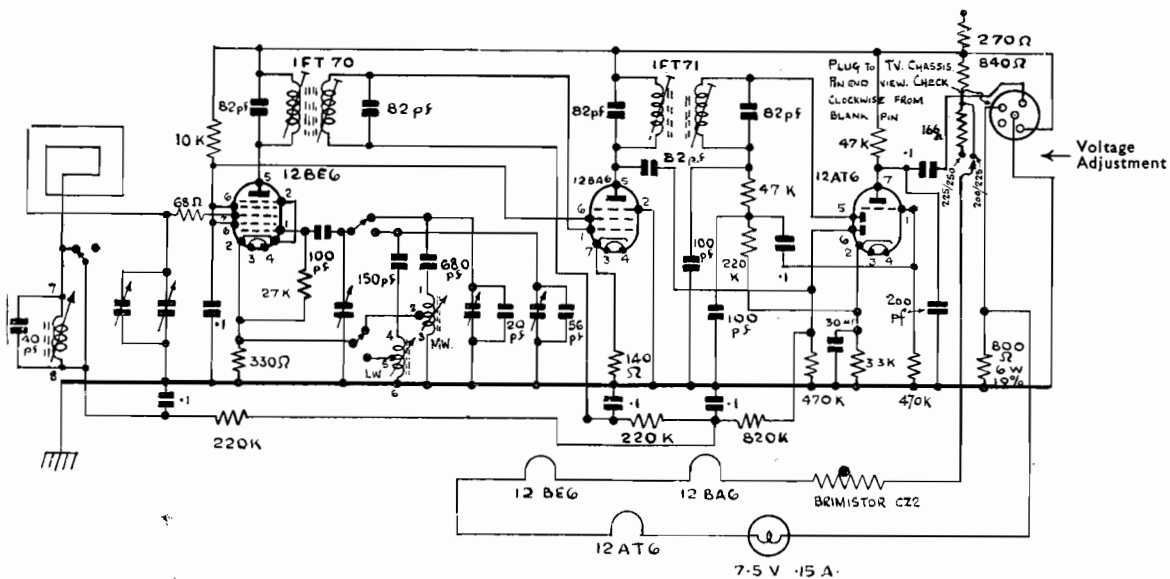


Later models have lever control focus unit

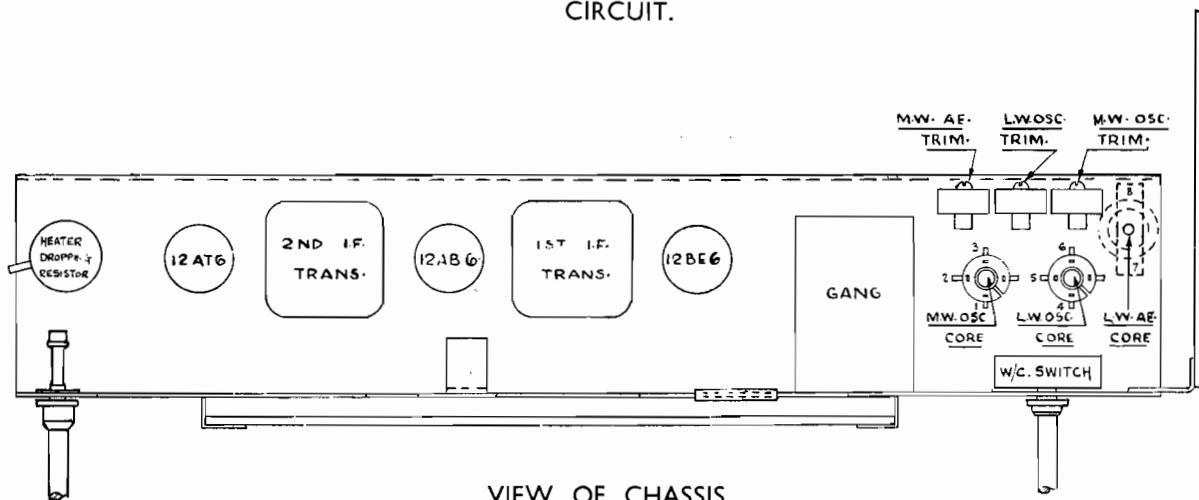
On Series II the Line Linearity control is omitted.

Plan drawing of Chassis.

On Model T855 the Sensitivity Control is omitted and the Contrast Control fitted at the rear of chassis. No TV/Broadcast Switch is incorporated.



CIRCUIT.



VIEW OF CHASSIS.

R.F. Alignment.

Refer to the above diagram of chassis, and arrange necessary safety precautions, as chassis is 'live' to the mains supply.

1. Connect Signal Generator via isolating condenser to control grid of 12BE6 valve (i.e. to rear of fixed section of tuning condenser) and inject 465 Kcs. signal. With output meter connected to Loudspeaker (3 ohms) adjust all I.F. transformer cores (4 in all) for max. output.
2. Set generator to 545 Kcs. and dial of receiver to 550 metres. Switch to MW band and adjust **MW Osc. core** for maximum output. Reset generator to 1500 Kcs., and dial to 200 metres. Adjust **MW osc. trimmer** for max. output.
3. Switch to Long Wave, set generator to 150 Kcs. and dial to 2000 metres. Adjust **LW osc. core** for maximum output. Reset generator to 300 Kcs. and dial to 1000 metres and adjust **LW osc. trimmer** for max. output.
4. Loosely couple the generator to frame aerial via 3 turns of wire placed near to the frame, and switch to MW. With generator set to 1300 Kcs. and dial to 230 metres adjust MW aerial trimmer for maximum. (Later units have a loosely coupled aerial lead already attached to the frame aerial).
5. Switch to LW. Reset generator to 200 Kcs. and dial to 1500 metres and adjust LW aerial core for maximum. This completes the alignment of the radio unit and all cores and trimmers should be sealed with a suitable fixative.

In areas where signals are weak, the loosely coupled frame aerial lead can be connected to TV aerial terminal E.