PHILIPS RADIOPLAYER

SUPEROCTODYNE MODEL 6709 A.C. OPERATED.
FOR BROADCAST AND SHORT WAVE RECEPTION.

SPECIFICATIONS.

(Subject to Alteration Without Notice.)

Voltage Rating (power Supply)	220-260 volts A.C.
	40-100 cycles.
Tuning Range	200-550 metres.
	16.3-53 metres.
Intermediate Frequency.	462.5 kc/s.

VALVE EQUIPMENT.

R.F. Amplifier	EF5	R.F. Penthode
Frequency Converter	EK2	Octode
I.F. Amplifier	EF5	R.F. Penthode
A.V.C. & Demodulator	EB4 or AB2	Diode
Audio Amplifier	EBC3	Triode
Power Amplifier	EL2	Power Penthode
Tuning Indicator	6E5 or 4678	Cathode Ray Tuning Indicator
Rectifier	EZ3	Indirectly Heated Rectifier
Dial Lamps	6 volt	Auto Tail Lamps (single contact)

INSTALLATION. Full instructions for the installation of Model 6709 are contained in the instruction book supplied with each Radioplayer.

VOLTAGE ADJUSTMENT.

The power transformer may be adapted for A.C. mains of 220-240 or 260 volts by means of a switch located at rear of chassis. This switch is normally covered by an inspection plate and the plate should not be removed unless the power plug is disconnected at the socket. It is important that the receiver should be operated with the transformer switch set at the correct position in accordance with the mains voltage in the locality.

DISMANTLING THE SET.

1. Disconnect power plug.
2. Remove knobs at front of cabinet (recessed grub screws). The wave-change switch knob should not be removed. It will clear the chassis automatically when same is withdrawn.
3. Withdraw loudspeaker plug from back of chassis.
4. Unscrew the four bolts holding chassis to floor of cabinet.
5. The chassis may now be withdrawn, but in doing so, care should be taken to tilt the chassis so that the cathode-ray tuning indicator assembly will not foul the cabinet.

REMOVING LOUDSPEAKER.

If it is desired to remove the speaker this may be accomplished by withdrawing the speaker plug from the chassis and unscrewing the four woodscrews securing the loudspeaker.

ALIGNMENT.

Precise alignment is vital to the proper functioning of this receiver. There are four trimming adjustments provided on the intermediate frequency transformers and seven at the coil box or "sentinel unit" (three short wave trimmers, three broadcast trimmers, and the broadcast padder). These trimmers are accurately adjusted at the factory and sealed. Alignment will be retained unless the receiver is affected by abnormal climatic conditions or unless alterations have been made to the trimmers or wiring for service purposes. Incorrect alignment is usually indicated by loss of selectivity coupled with poor sensitivity, although these effects may also be caused by other faults such as defective valves.

The correct performance of this Radioplayer can only be obtained if the set alignment is achieved by the use of reliable test apparatus and no attempt should be made to tamper with the trimmers unless a suitable oscillator and visual output meter is available, together with a competent operator to carry out the work.

I.F. TRIMMER ADJUSTMENTS. The position of the four I.F. trimmers is shown in the chassis layout diagram. Each must be aligned to the basic frequency of 462.5 kc/s. To accomplish this, connect an output meter and the loudspeaker to the receiver. The "hot" side of the test oscillator should be connected to the grid of the EK2 octode through an 0.5 uF condenser and the "earth" side of the oscillator should be joined to the receiver chassis. The normal grid clip should remain on the cap

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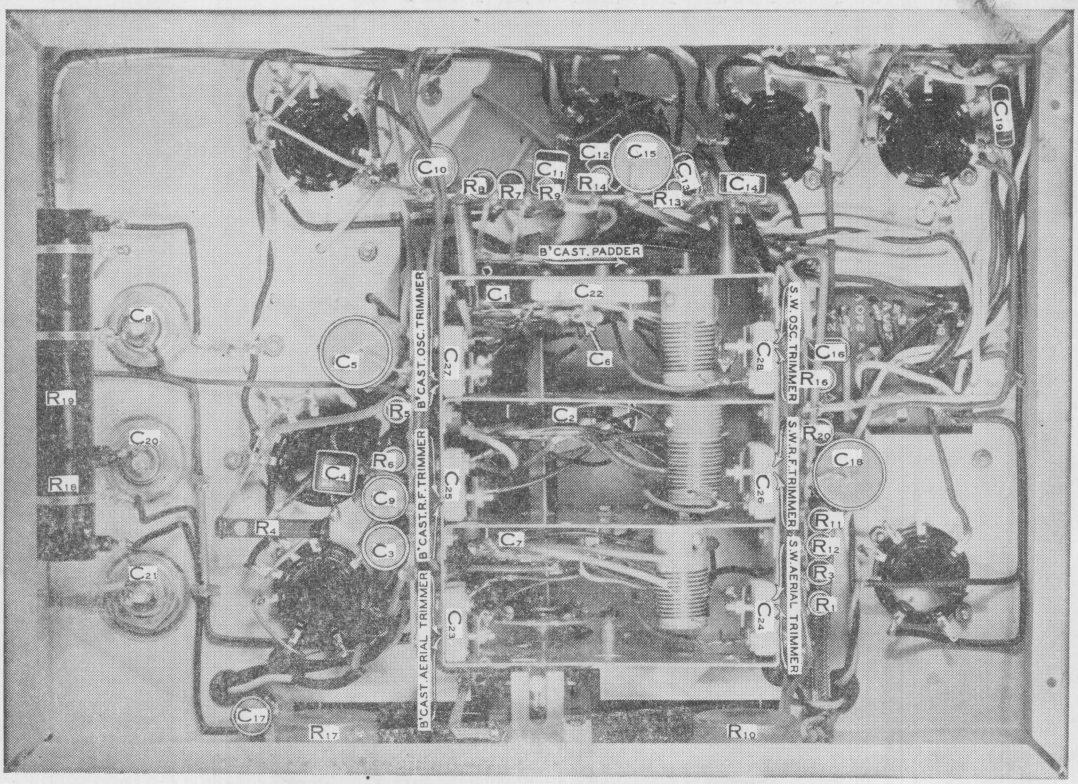
COMPONENT LOCATIONS.



COMPONENT PARTS

CONDENSERS		RESISTORS	
C.C.C.	3 gang variable	R1, R2, R11, R13	1 Megohm, ½ watt
C1, C2, C3, C7, C9, C10	0.1uF Paper	R3, R12	0.5 Megohm, ½ watt
C4, C11, C12	.0001 uF Mica	R4, R9	50,000 ohm, 1 watt
C5, C18	0.5uF Paper	R5, R14	5,000 ohm, 1 watt
C6, C19	0.004 uF Mica	R6	0.1 Megohm, 1 watt
C8, C20, C21	8uF Electrolytic	R7, R8	500 ohm, wire-wound
C13	.00025 uF Mica	R10, R17	0.5 megohm pot.
C14, C16	0.01 uF Mica	R15, R18	300 ohms, wire-wound
C15	25 uF Electrolytic	R16	0.25 Megohm, 1 watt
C17	0.02 uF Paper	R19	25,000 ohm Voltage Divider
C22	Broadcast Padder	R20	10,000 ohm, 1 watt
C23	Broadcast Aerial Trimmer		
C24	Short Wave Aerial Trimmer		
C25	Broadcast R.F. Trimmer		
C26	Short Wave R. F. Trimmer		
C27	Broadcast Oscillator Trimmer		
C28	Short Wave Oscillator Trimmer		

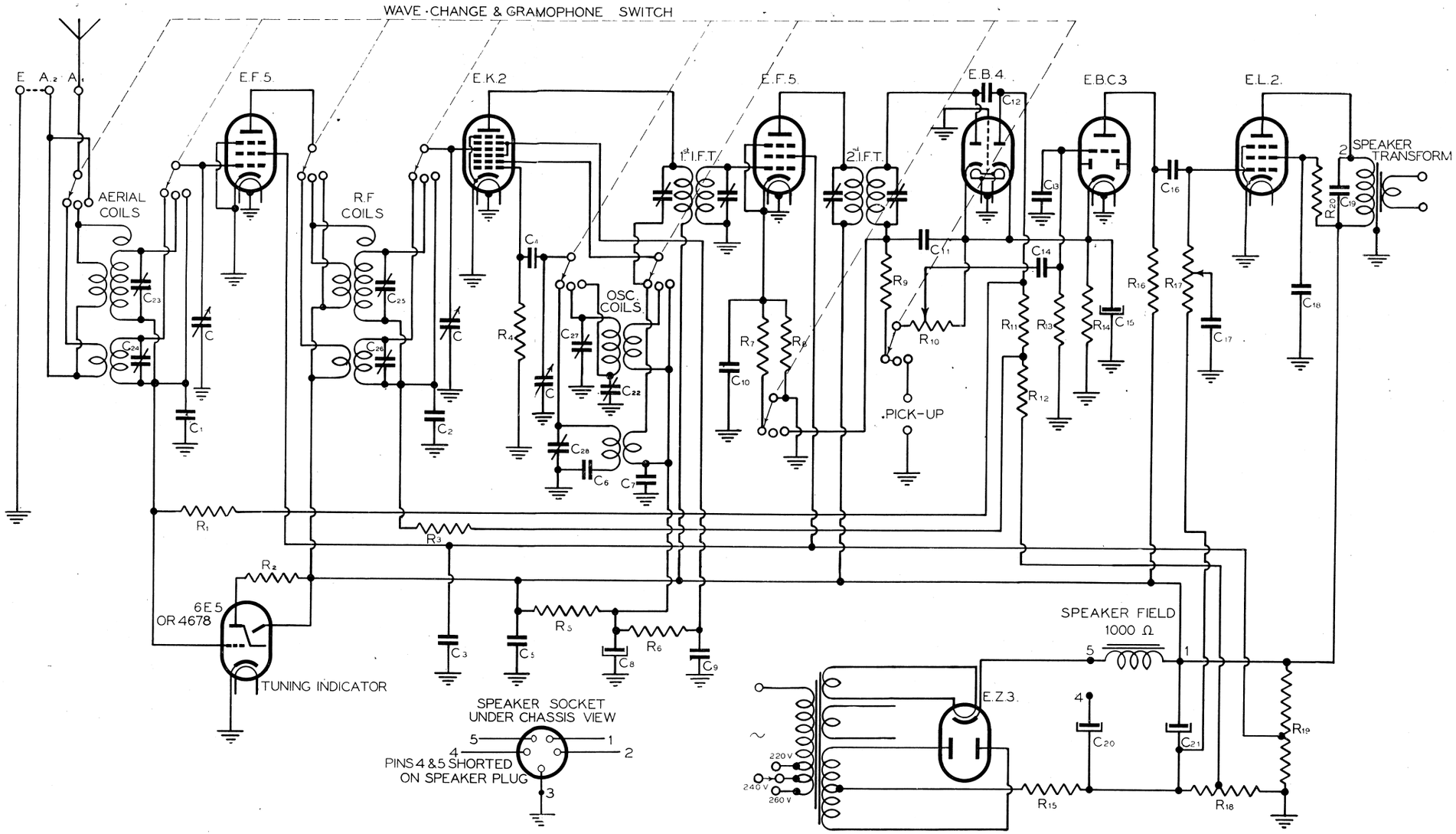
NOTE.—When the 6709 is fitted with a 4678 tuning indicator the value of R2 becomes 2 megohms. In some chassis resistor R15 is omitted. Resistor R2 is mounted inside tuning indicator socket assembly.

SERVICE DATA.

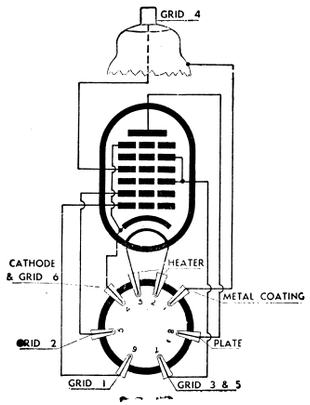
VOLTAGE ANALYSIS.

Valve Type	Plate Voltage	Plate Current	Screen Grid Voltage	Cathode Voltage	Heater Voltage A.C.
EF5 (RF)	250	10 mA	100 v.	0 v.	6.3 v.
EK2	250 v. (osc. plate) G2=200v	3.5 mA	50	0 v.	6.3 v.
EF5 (IF)	250 v.	(B/cast) 3 mA (S/w) 6 mA	100	9 v. 4 v.	6.3 v.
EB4	—	—	—	2 v.	6.3 v.
EBC3	50 v.	1.5 mA	—	2 v.	6.3 v.
EL2	220 v.	25 mA	230 v.	0 v.	6.3 v.
EZ3	—	—	—	—	6.3 v.

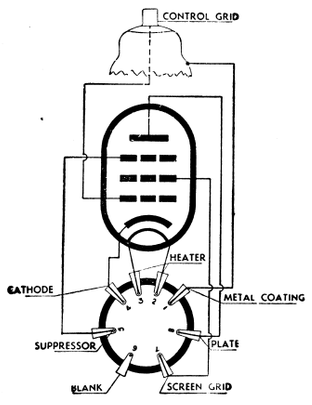
NOTE.—The above mentioned voltage values are measured between the socket points indicated and chassis with the receiver in the no signal condition and with the volume control at zero. Voltages are measured with a 1,000 ohm per volt voltmeter and may vary as much as 10% from the figures quoted.



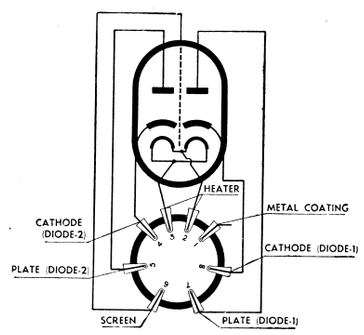
SOCKET CONNECTIONS VIEWED FROM BOTTOM OF BASE.



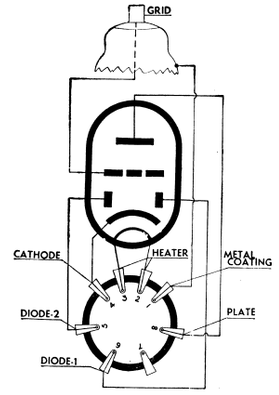
EK2



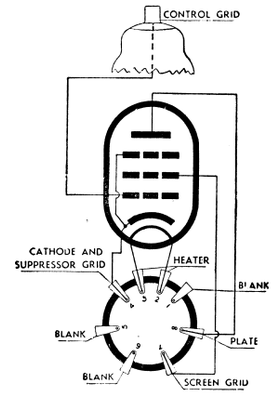
EF5



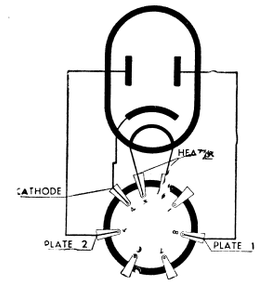
EB4



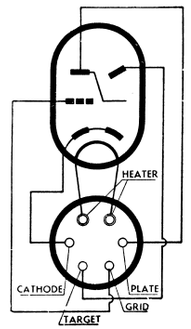
EBC3



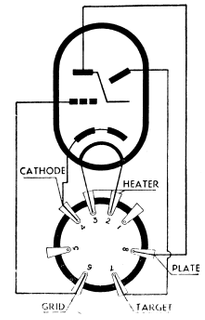
EL2



EZ3



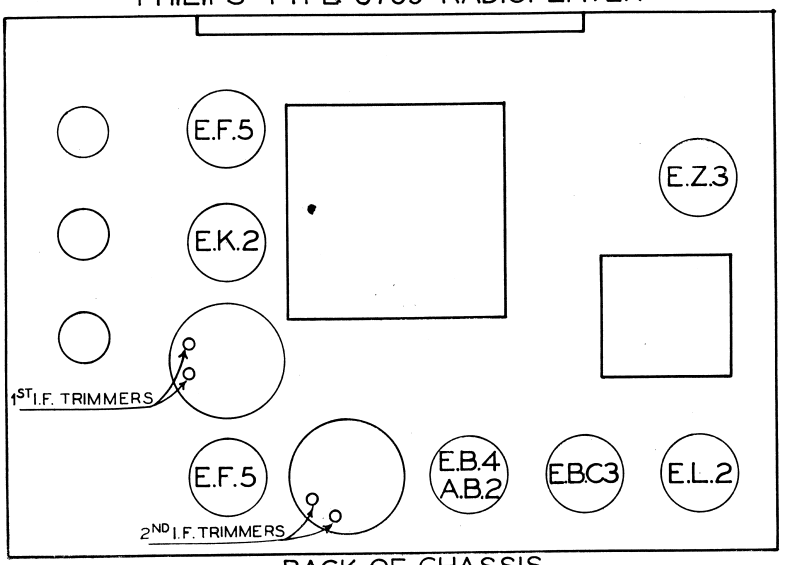
6E5



4678

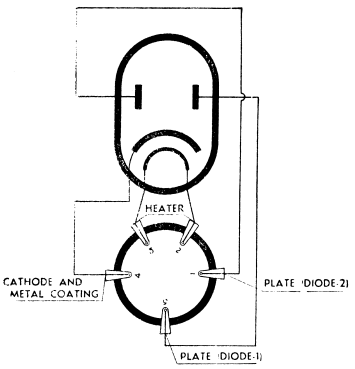
CHASSIS LAYOUT

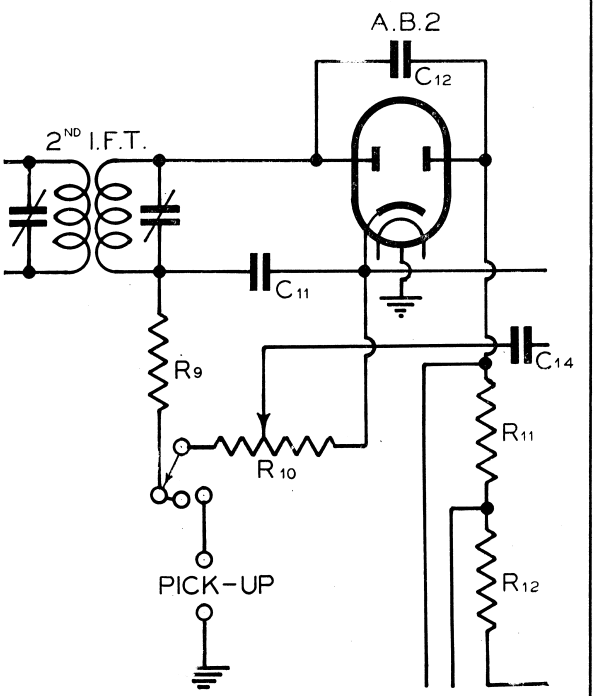
PHILIPS TYPE 6709 RADIOPLAYER



BACK OF CHASSIS

MODIFICATIONS.





Model 6709 may be fitted with the AB2 duo-diode in place of the EB4, in which case the above circuit modifications apply. Socket connections for the AB2 (viewed from bottom of base) are also provided in the diagram.

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of the valve. Tune the oscillator to exactly 462.5 kc/s. Advance the volume control to full on position and adjust the receiver tuning control to a point where the condenser plates are fully engaged. Increase the output of the test oscillator until a slight indication is observed on the output indicator. Then adjust the two trimmers on the 2nd I.F. transformer for peak receiver output. Next adjust the two trimmers on the first I.F. transformer for maximum indication on the output meter.

During these adjustments the output of the test oscillator should be regulated so that the output is as low as possible. This will prevent errors in alignment due to the A.V.C. action. The I.F. trimmers should be gone over again to ensure that mutual coupling has not displaced the original adjustment.

R.F. TRIMMER ADJUSTMENTS.

The seven trimmers for the radio-frequency alignment are embodied in the coil box underneath the chassis and are classified in the component location illustration as follows:—

Broadcast Aerial trimmer.
,, R.F. trimmer.
,, Oscillator trimmer.
,, Padder.
Shortwave Aerial trimmer.
,, R.F. trimmer.
,, Oscillator trimmer.

The adjustment of the broadcast and shortwave R.F. trimmers is an entirely separate operation, and the broadcast section alignment should be carried out first. Before proceeding with R.F. adjustments see that the dial pointer just coincides with the end of the scale when the tuning condenser plates are fully engaged. Attach the output of the test oscillator to the aerial lead and earth terminal of the receiver.

("E" and "A2" should be bridged.)

Proceed further as follows:—

BROADCAST ALIGNMENT:

(a) Connect output meter to output of set and turn volume control to maximum.
(b) Adjust test oscillator to 1500 kc/s and tune receiver until pointer indicates 1500 kc/s on dial.
(c) Increase test oscillator output until a small indication is given on output meter.
(d) Adjust the broadcast oscillator trimmer until a maximum output is recorded.
(e) Adjust test oscillator to 1400 kc/s and set dial of receiver to same frequency. Adjust broadcast aerial trimmer and broadcast R.F. trimmer for maximum output on meter.
(f) Adjust test oscillator to 600 kc/s and tune dial of set to same frequency. Adjust broadcast padder (C22) for maximum output.
(g) If padder has been altered very much it will be advisable to return to 1400 kc/s and recheck alignment as per para. (e).

SHORT WAVE ALIGNMENT.

(a) Move wavechange switch on set to shortwave position.
(b) Adjust test oscillator to 16.2 metres and tune dial of set to same wavelength. Adjust shortwave oscillator trimmer for maximum output.
(c) Adjust test oscillator to 19 metres and set dial of receiver to same wavelength. Adjust shortwave aerial and R.F. trimmers for maximum output on meter.

NOTE.—The shortwave section of this receiver is equipped with a fixed padder and consequently the above-mentioned adjustments are all that is required for optimum performance. If the service oscillator in use does not cover 16.2 and 19 metres, it is inadvisable to attempt adjustment of the shortwave trimmers.

The coil box in this receiver is a precision device and the outstanding performance of this unit depends upon very careful assembly and adjustment at the factory. No attempt should be made to tamper with or disturb the internal wiring or components, this being essentially a factory function.

REPLACING CHASSIS.

As the chassis in inserted in cabinet it is necessary to manoeuvre the wavechange switch knob so that it fits over the station selector shaft and engages correctly with the arm on the wavechange switch. This can perhaps be best accomplished by moving the wavechange switch to the broadcast position and holding the wavechange switch knob so that the lever or arm is centred and pointing downwards. Before tightening the bolts securing the chassis to the cabinet, due care should be taken that the chassis is sufficiently forward in the cabinet to engage with the wavechange switch knob. The speaker plug should be replaced in the socket at the back of the chassis before power is applied to the set.

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