

PHILIPS RADIOPLAYERS

MODELS 6604 and 6607

FOR BROADCAST AND SHORT WAVE RECEPTION.

NOTE:—The 6607 chassis is identical to the 6604 with the exception of the tuning indicator, which has been omitted. See space for MODIFICATIONS.

SPECIFICATIONS.

(Subject to alteration without notice)

Voltage Rating (power Supply)	220-260 volts A.C., 40-60 cycles.
Tuning Range	200-550 metres. 16.5-51 metres.
Intermediate Frequency	472.5 kc/s.

VALVE EQUIPMENT.

Frequency Converter	AK2	Octode
I.F. Amplifier	AF3	R.F. Penthode
A.V.C. & Demodulator	AB2	Diode
Audio Amplifier	ABC1	Triode
Power Amplifier	AL2	Power Penthode
Tuning Indicator	EM1	Cathode Ray Tuning Indicator (in 6604 only)
Rectifier	AZ3	Indirectly Heated Rectifier
Dial Lamps	6 volt	3 watt Auto Lamps (single contact)

INSTALLATION. Full instructions for the installation of Models 6604 and 6607 are contained in the instruction books 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 the rear of chassis. 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) except the wave-change switch knob.
3. Release EM1 tuning indicator from holder. First unscrew back cover of bakelite holder and slide back along the connecting leads. The two screws which hold the socket in place are then removed, allowing the socket and indicator to slide from the holder.
4. Withdraw loudspeaker plug from back of chassis.
5. Unscrew the four bolts holding chassis to floor of cabinet.
6. The chassis may now be withdrawn, leaving the wave-change switch arm with the cabinet.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. All adjustments are located under the chassis. There are four trimmers for the intermediate frequency amplifier and five for the R.F. portion of the set (two short-wave trimmers, two broadcast trimmers, and the broadcast padder). The padder adjusting screw is accessible through a hole in the front of the chassis. 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.

(Continued on back page.)

(Continued from page 1.)

Due to the particularly high quality of associated circuits, the adjustment of trimmers, etc., is fairly critical; in fact, a very small adjustment of a trimmer will have a large bearing on the performance of the set.

I.F. TRIMMER ADJUSTMENTS. The position of the four I.F. trimmers is shown in the component location diagram. Each must be aligned to the basic frequency of 472.5 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 AK2 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 of the valve. Tune the oscillator to exactly 472.5 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 five trimmers for the radio-frequency alignment are underneath the chassis and are classified in the component location illustration as follows:—

- Broadcast Aerial trimmer.
- " Oscillator trimmer.
- C6 (Broadcast Padder).
- Shortwave Aerial 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 and earth terminals of the receiver.

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** for maximum output on meter.
- (f) Adjust test oscillator to 600 kc/s and tune dial of set to same frequency. Adjust **broadcast padder (C6)** 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 16.5 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 trimmer** 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 16.5 and 19 metres, it is inadvisable to attempt adjustment of the shortwave trimmers.

REPLACING CHASSIS.

Before replacing chassis see that the wave change switch is in the broadcast position ready for connecting with the wave change switch arm. Care must be taken to see that the dial does not rattle with the tuning indicator holder when the chassis is pushed forward.

See also that the tuning control shaft fits into the wave-change switch arm spindle and when the chassis is pushed into place gently manipulate the switch arm until the forked arm connects with the rubber sleeve. Make several tests to determine that the switch is operating satisfactorily and then replace the knobs. The chassis securing bolts may now be tightened, the speaker plug replaced, and the tuning indicator refitted. If it should be necessary to remove the bakelite wave-change switch arm, release the large lock nut, pull arm forward, and unscrew recessed grub screw located under end of arm.

TO REMOVE ELECTRON STAR TUNING INDICATOR.

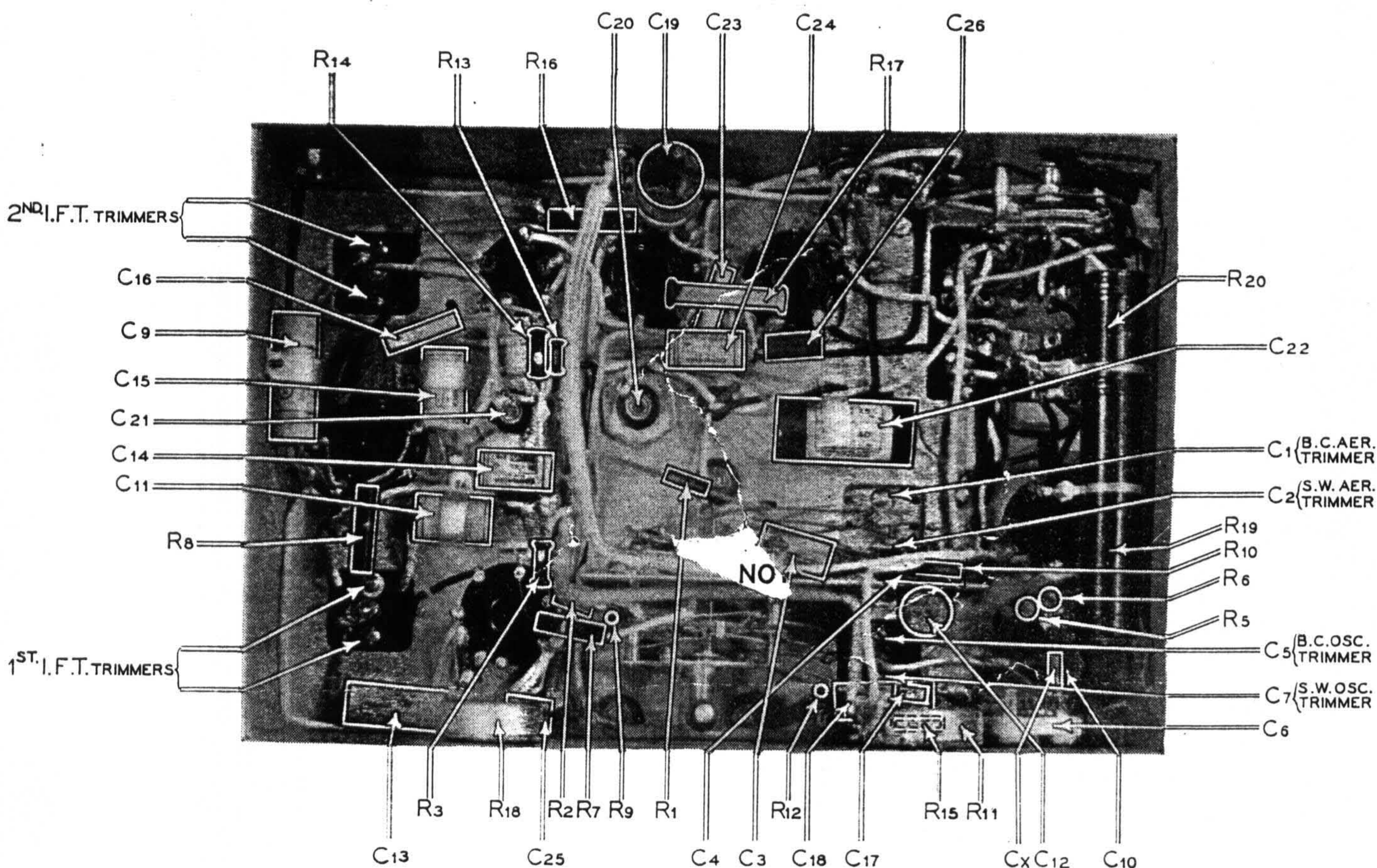
To change the EMI or to remove the chassis from the cabinet, it is necessary to carry out the following procedure:—

The back cover of the holder is first unscrewed and pushed back down the wiring. The two screws holding the "P" type socket in place are then removed allowing the socket and EMI indicator to slide from the holder.



SERVICE DATA

COMPONENT LOCATIONS



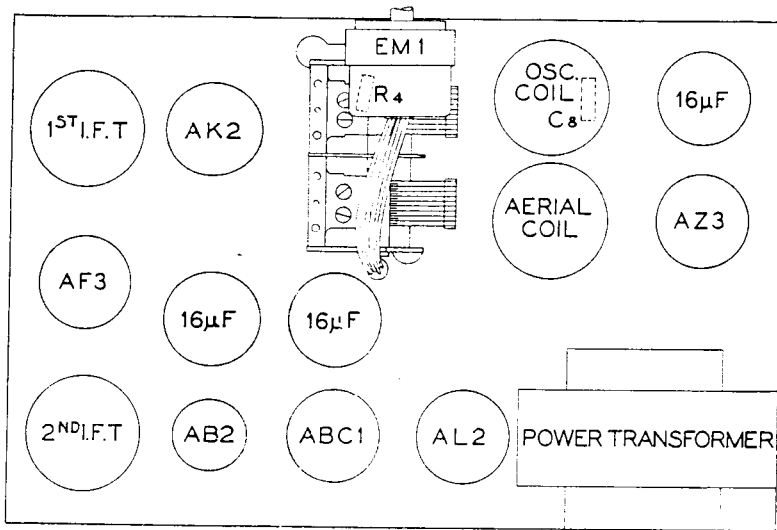
COMPONENT PARTS.

CONDENSERS.	RESISTORS.
C, C 2 gang variable	R1, R9 0.1 megohm ½ watt
C1 Broadcast aerial trimmer	R2 50 ohms ½ watt
C2 Short wave aerial trimmer	R3, R12 50,000 ohms ½ watt
C3, C4, C13, C14 0.05 uF paper	R4 (In EMI holder) 2 megohm ½ watt
C5 Broadcast oscillator trimmer	R5, R6 50,000 ohms 1 watt
C6 Broadcast padder	R7, R8, R16 5,000 ohms 1 watt
C7 Short wave oscillator trimmer	R10 2 megohm ½ watt
C8 0.0045 uF mica	R11 0.5 megohm Potentiometer
C9 0.25 uF paper	R13 1.0 megohm ½ watt
C10, C20, C21 16 uF electrolytic	R14 0.5 megohm ½ watt
C11, C12, C15 0.1 uF paper	R15 1.5 megohm ½ watt
C16, C17, C23 0.0001 uF mica	R17 0.25 megohm 1 watt
C18, C24, C25 0.02 uF paper	R18 0.25 megohm Potentiometer
C19, C22 25 uF electrolytic	R19 25,000 ohms voltage divider
C26 0.004 uF mica	R20 350 ohms wire wound

NOTE.—CX is a condenser 0.0001 uF across the broadcast padder.

SERVICE DATA

CHASSIS LAYOUT.



BACK OF CHASSIS

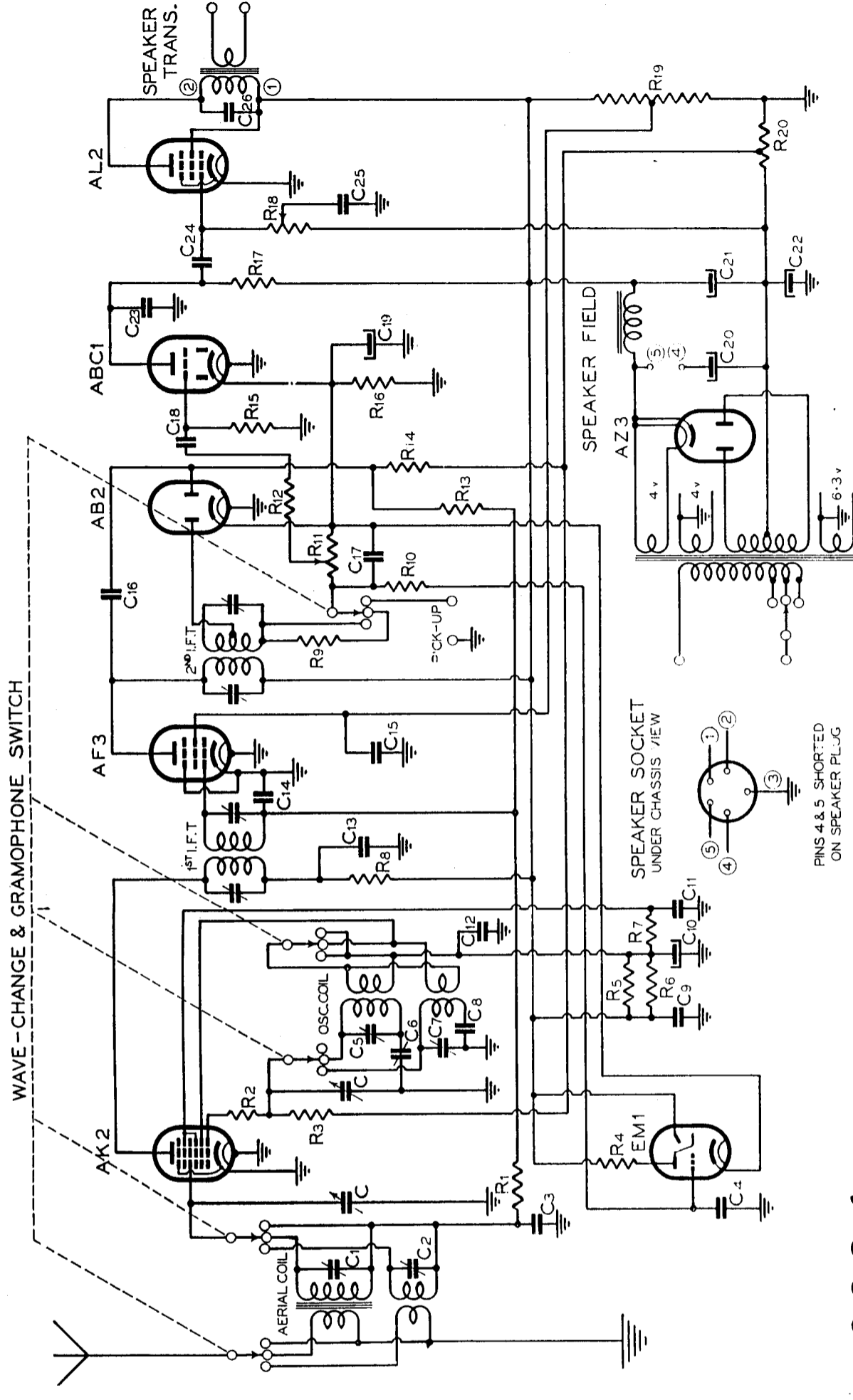
MODIFICATIONS.

In the 6607 the following parts associated with the tuning indicator have been omitted:—C4, R4, R10.

VOLTAGE ANALYSIS.

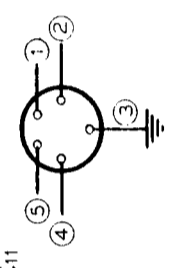
Valve Type.	Plate Voltage.	Plate Current.	Screen Grid Voltage.	Cathode Voltage.	Heater Voltage (A.C.)
AK2	230 (osc. plate) G2 = 80v.)	1.5mA	70	—	4.0
AF3	245	8mA	90	—	4.0
AB2	—	—	—	3.2	4.0
ABC1	50	0.75mA	—	3.2	4.0
AL2	230	32	245	—	4.0
AZ3	—	—	—	—	4.0

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.



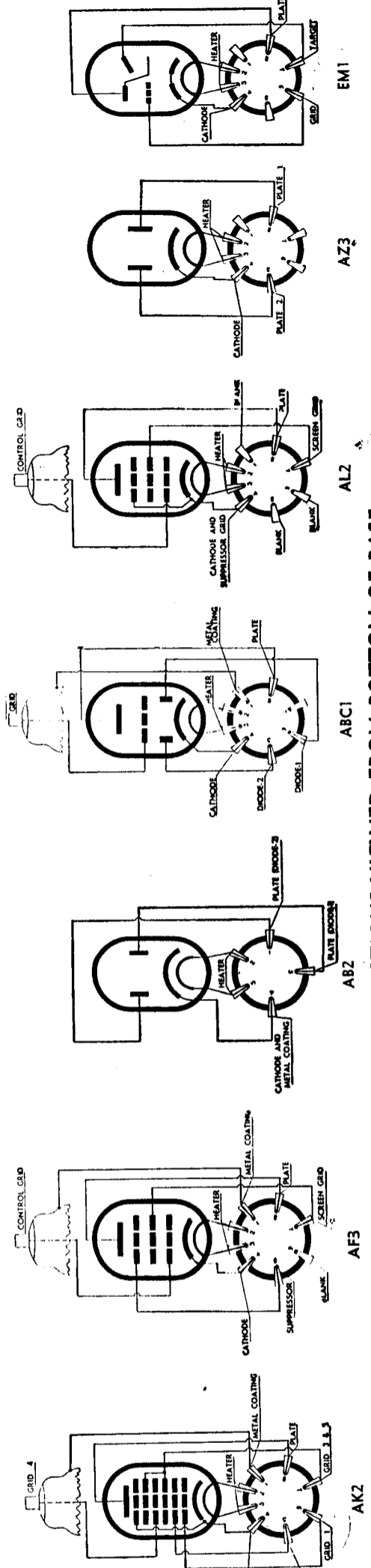
WAVE-CHANGE & GRAMOPHONE SWITCH

SPEAKER SOCKET UNDER CHASSIS VIEW



PINS 4 & 5 SHORTED ON SPEAKER PLUG

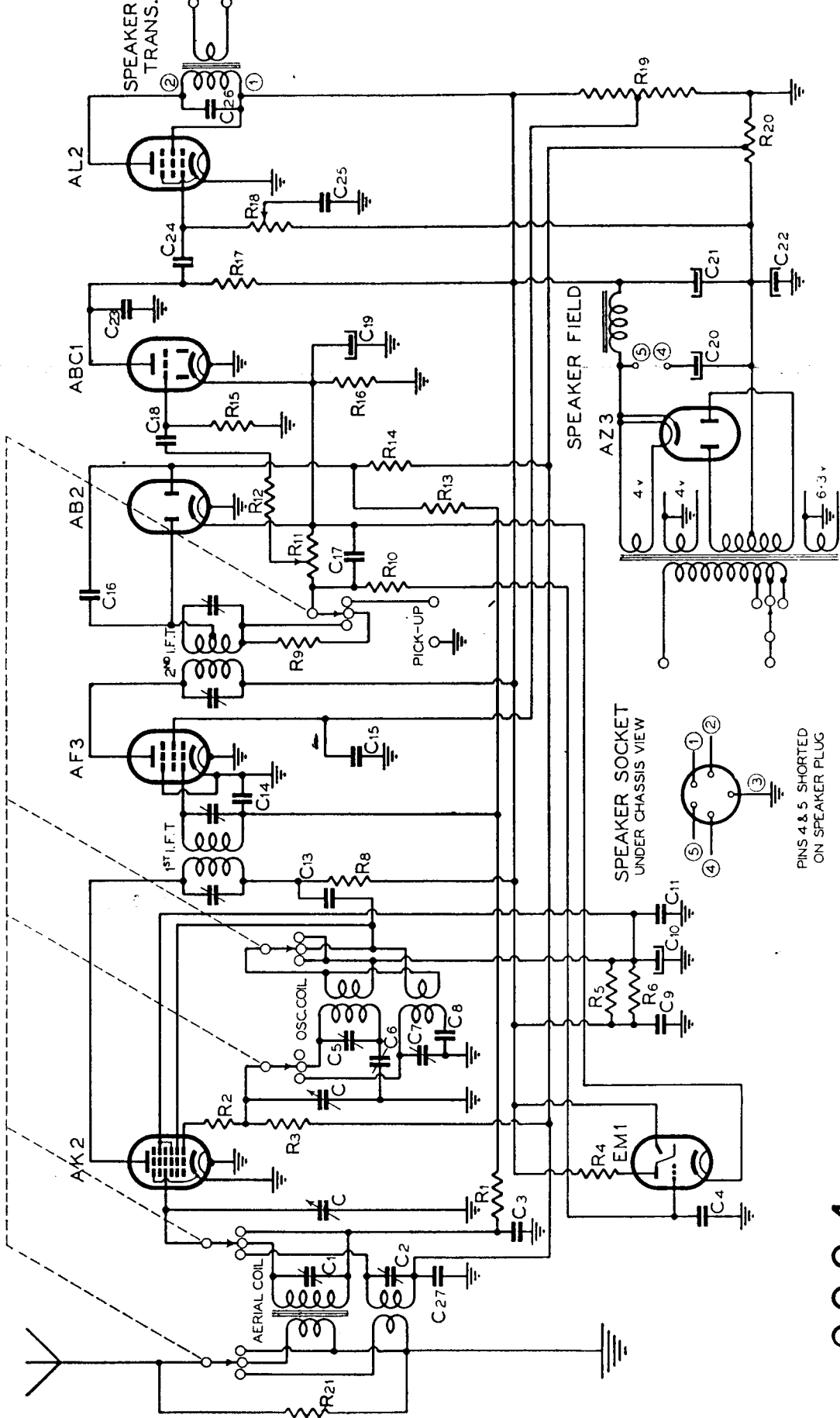
6604



SOCKET CONNECTIONS VIEWED FROM BOTTOM OF BASE.



WAVE-CHANGE & GRAMOPHONE SWITCH



mer. C3, C4, C13, C14—0.05 mfd., paper; C5—B/C osc. coil trimmer; C6—B/C padder (shunted by a 100 mmfd. fixed condenser); C7—S/W. osc. coil trimmer; C8—4,500 mmfd., S/W. padder; C9—0.25 mfd., paper; C10, C20, C21—16 mfd., high voltage, elec. tro.; C11, C12, C15—0.01 mfd., paper; C16, C17, C23—100 mmfd., mica; C18, C24, C25—0.02 mfd., paper; C19, C22—35 mfd., low voltage, electro.; C26—0.004 mfd., mica.

—2 megohms, ½ W.; R5, R6—50,000 ohms, 1 W.; R7, R8, R16—5,000 ohms, 1 W.; R11—500,000 ohms, volume control; R13—1 meg. ohm, ½ W.; R14—500,000 ohms, ½ W.; R15—1.5 megohms, ½ W.; R17—250,000 ohms, ½ W.; R19—25,000 ohms, voltage divider; R20—350 ohms, ½ W.

CONDENSERS.
C—sections of 2-gang variable; C1—B/C. aer. coil trimmer; C2—S/W. aer. coil trimmer.

RESISTORS.
R1, R9—100,000 ohms, ½ W.; R2—50 ohms, ½ W.; R3, R12—50,000 ohms, ½ W.; R4, R10

6604

I.F.

472.5 kc.

Philips "Radioplayer" Models 6604, 6607

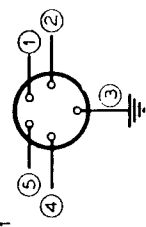
COMPONENT VALUES.

RESISTORS.

R1, R9—100,000 ohms, ½ W.; R2—50 ohms, ½ W.; R3, R12—50,000 ohms, ½ W.; R4, R10

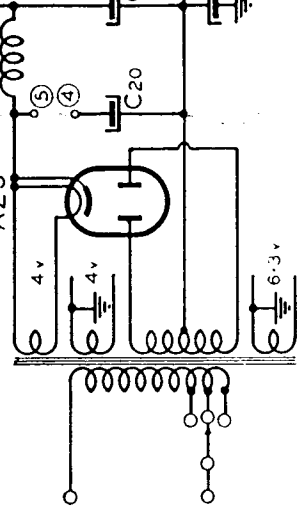
Descriptive Matter and Operating Voltages for these models will be found on page 285.

SPEAKER SOCKET UNDER CHASSIS VIEW

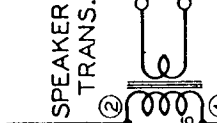


PINS 4 & 5 SHORTED ON SPEAKER PLUG

SPEAKER FIELD



SPEAKER TRANS.



RADIOPLAYER "6604"

1937 Console Model

RADIOPLAYER "6607"

1937 Table Model

Both use 8-inch, 1,500 ohms field
loudspeaker.

Circuit diagram appears on page 283.

Note: Model 6607 chassis is identical to that of model 6604 with the exception that the EMI Tuning Indicator, and associated parts, has been omitted from the former model. The parts, associated with the tuning indicator, which are not present in model 6607 are C4, R4, and R10 in the circuit diagram of model 6604.

OPERATING VOLTAGES.

The following measurements were made with a "1,000 ohms per volt" meter, and voltages are those existing between the socket contact indicated and chassis. The receiver was operating under "no signal" conditions, and the volume control in the "minimum" position. Grid bias for the AK2 (Frequency Converter) and AF3 (I.F. Amplifier) is obtained from the voltage drop developed between chassis and the tapping on the back-biasing resistor, R20.

AK2, Frequency Converter: Plate, 230 v.; screen, 70 v.; cathode, zero; osc. anode grid, 80 v. Plate current, 1.5 mA.

AF3, 472.5 kC. I.F. Amplifier: Plate, 250 v.; screen, 90 v.; cathode, zero. Plate current, 8 mA.

AB2, Diode Detector and A.V.C. Rectifier: Cathode, 3 v.

ABC1, A.F. Voltage Amplifier: Plate, 50 v.; cathode, 3 v. Plate current, 0.8 mA.

AL2, Output Pentode: Plate, 230 v.; screen, 250 v.; cathode, zero (grid bias obtained from drop across back-biasing resistor R20). Plate current, 30 mA.