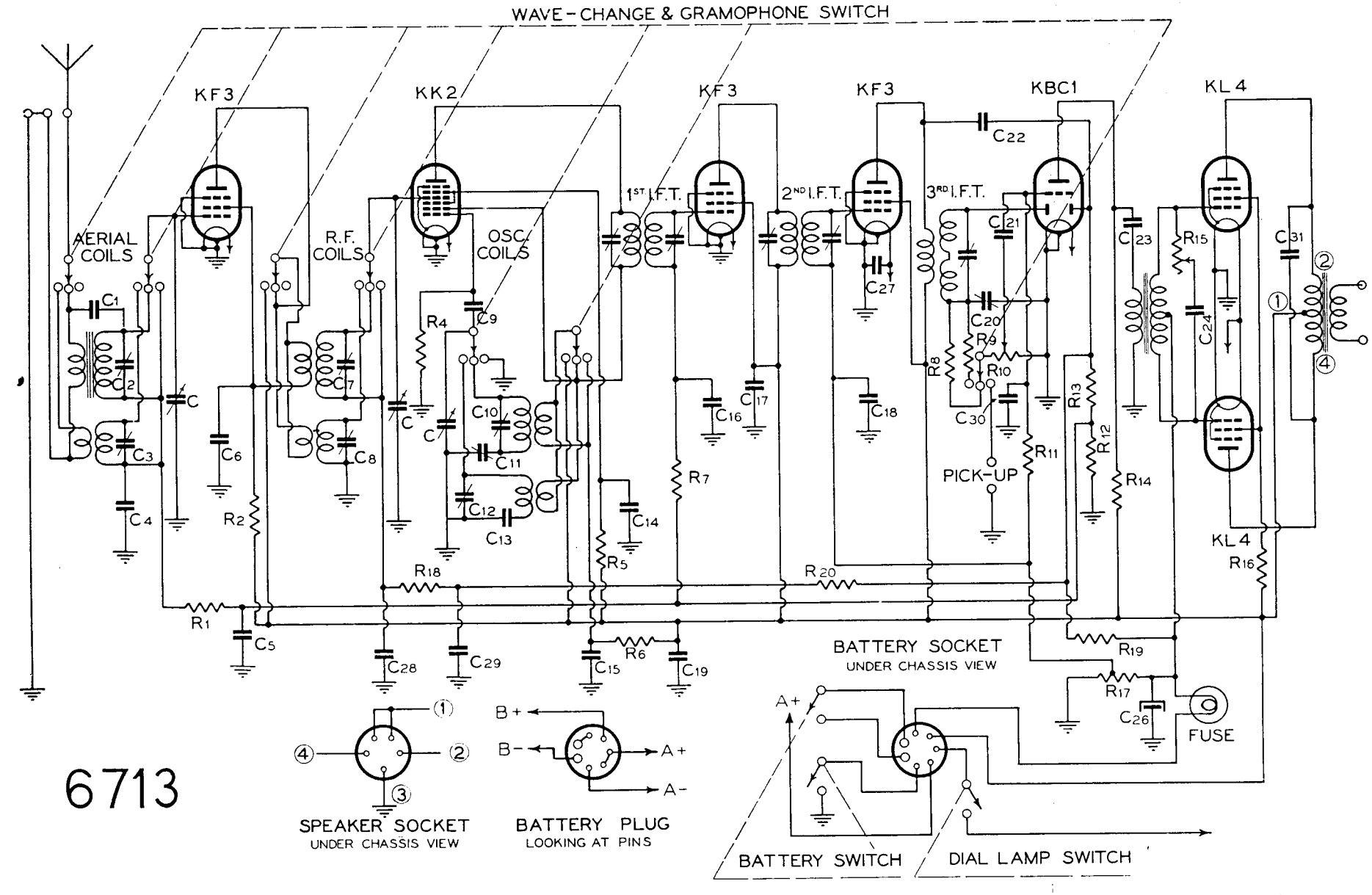
Philips' "Radioplayer" Battery Operated Dual-Wave Console Model 6713



This receiver has an I.F. of exactly 472.5 kC. and normally is operated from a 2-volt accumulator and 3—45 v. dry "B" batteries. By the use of a Philips' type "148" vibrator H.T. unit ,which may be connected directly to the specially-arranged 7-pin battery socket, the "6713" may be completely operated from a 6-volt accumulator. Component values and operating voltages for this receiver are given on the facing page.

PHILIPS' "RADIOPLAYER" MODEL 6713

1937 Console, uses 8-inch permag. loudspeaker.

COMPONENT VALUES.

RESISTORS.

R1, R3, R7, R8, R12—500,000ohms, ½ W.; **R2, R4, R5, R9**—50,000 ohms, ½ W.; **R6**—25,000 ohms, ½ W.; **R10**—500,000 ohms, volume control; **R11, R13**—1 megohm, ½ W.; **R14**—100,000 ohms, ½ W.; **R15**—500,000 ohms, variable; **R16**—10,000 ohms, ½ W.; **R17**—400 ohms, w.w.

CONDENSERS.

C—sections of 3-gang variable; **C1**—5 mmfd., special condenser mounted inside can; **C2**—B/C. aer. coil trimmer; **C3**—S/W. aer. coil trimmer; **C4, C6, C14, C16, C17, C18**—0.05 mfd. paper; **C5, C21, C25**—0.02 mfd., paper; **C7**—B/C. R.F. coil trimmer; **C8**—S/W. R.F. coil trimmer; **C9, C22**—100 mmfd., mica; **C10**—B/C. osc. coil trimmer; **C11**—B/C. padder; **C12**—S/W. osc. coil trimmer; **C12**—4,500 mmfd., mica, S/W. padder; **C15**—0.1 mfd., paper; **C19, C27**—0.5 mfd., paper; **C20**—trimming condenser mounted in the 3rd I.F.T. can (this condenser is pre-adjusted at the factory and should not be altered); **C23**—0.25 mfd., paper; **C24**—0.004 mfd., mica; **C26**—25 mfd., low voltage, electro.

OPERATING VOLTAGES.

All measurements were made with a "1,000 ohms per volt" meter, and voltages are those existing between the socket contact indicated and chassis, except where otherwise stated. Grid voltages are measured at the source of potential (i.e., across the back-biassing resistor R17), and not at the sockets. Those measurements shown in parenthesis were made with the wave-change switch in the S/W. position, whereas the alternative readings were made with the wave-change switch in the B/C. position; all other readings remain unaltered for either position of the wave-change switch. The receiver was operating under "no signal" conditions, with the volume control, in the "minimum" position.

KF3, R.F. Amplifier: Plate, 75 v. (130 v.); screen, 75 v. (130 v.); grid, —1.5 v. Plate current, 0.5 mA. (1.5 mA.).

KK2, Frequency Converter: Plate, 55 v. (130 v.); screen, 50 v. (55 v.); grid, zero; osc. anode grid, 55 v. (130 v.). Plate current, 1.5 mA. (2 mA.).

KF3, 1st Amplifier, 472.5 kC.: Plate, 130 v.; screen, 130 v.; grid, —1.5 v. Plate current, 2 mA.

KF3, 2nd I.F. Amplifier, 472.5 kC.: Plate, 130 v.; screen, 130 v.; grid, —1.5 mA. Plate current, 2 mA.

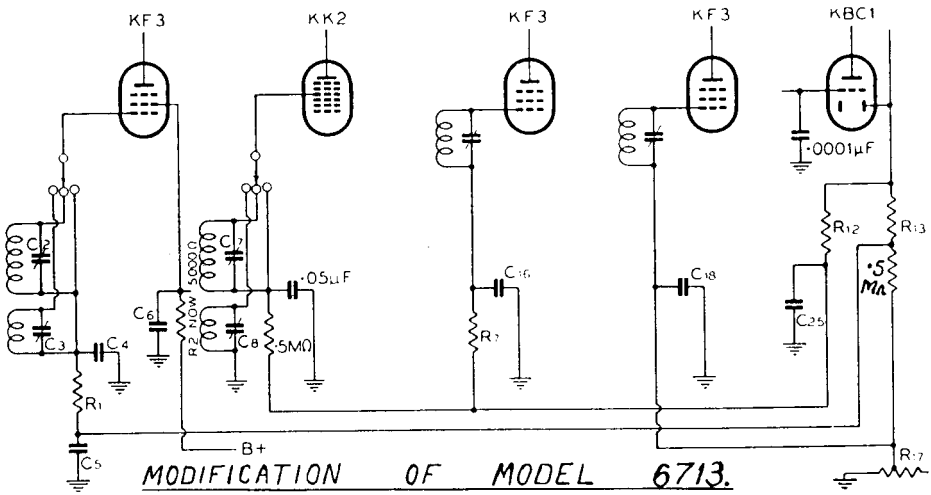
KBC1, Detector, A.V.C. Rectifier and A.F. Voltage Amplifier: Plate, 60 v.; grid, —1.5 v. Plate current, 0.7 mA.

KL4, "Push-Pull," Output Pentodes: Each plate, 130 v.; each screen, 100 v.; each grid, —6 v. Each plate current, 2 mA.

"B" battery drain, 15 mA.; "A" battery drain, 0.66 ampere.

ALTERATIONS.

It will be found that later models of this series have been slightly modified, and a circuit diagram showing these alterations is illustrated. In the modified circuit only part of the voltage developed at the A.V.C. diode is applied to the grid of the KF3 R.F. Amplifier, and A.V.C. is applied to the grid of the KK2, with the wave-change switch in the B/C. position. A further alteration will be found in the case of R2, which has been altered from 50,000 ohms to 5,000 ohms; this results in the plate and screen voltages of the KF3 R.F. Amplifier increasing to 110 v. when operating on B/C.



MODIFICATION OF MODEL 6713.

PHILIPS RADIOPLAYER

MODEL 6713

(BATTERY OPERATED)

SPECIFICATIONS.

(Subject to Alteration Without Notice).

TUNING RANGE:	200-550 metres. 16.5-51 metres.
INTERMEDIATE FREQUENCY:	472.5 kc/s.
BATTERY EQUIPMENT:	1-2 volt Accumulator (100 amp. hours capacity). 3-45 volt Triple Capacity "B" Batteries.

VALVE EQUIPMENT.

Radio Frequency Amplifier	Type KF3	R.F. Penthode
Frequency Converter	„ KK2	Octode
1st Intermediate Frequency Amplifier	„ KF3	R.F. Penthode
2nd Intermediate Frequency Amplifier	„ KF3	R.F. Penthode
Demodulator and 1st Audio	„ KBC1	Diode Triode
Power Amplifier	2 „ KL4	Power Penthodes
Dial Lamps	4 2.5 volt 0.3A Panel Lamps	

BATTERY CONSUMPTION.

"A" Battery	0.66 amp. approx.
"B" Battery	15mA. approx.

INSTALLATION. Full instructions for the installation of Model 6713 are contained in the instruction book supplied with each Radioplayer.

FUSE LAMP. A fuse lamp is fitted in series with the "B" Battery lead as a precaution against valve filament burnouts. The Radioplayer will not operate if the lamp is fused or is not properly screwed into the socket.

DISMANTLING THE SET.

1. Disconnect batteries.
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 socket.
4. Unscrew the four bolts holding the chassis to floor of cabinet. The chassis may now be withdrawn from the cabinet.

REMOVING LOUDSPEAKER.

If it is desired to remove the speaker, this may be accomplished by unscrewing the four woodscrews securing the same.

ALIGNMENT. Precise alignment is vital to the proper functioning of this receiver. There are five trimming adjustments provided on the intermediate frequency transformers and seven trimmers in the tuned circuits (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

(Continued on back page.)

(Continued from page 1.)

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 five I.F. trimmers is shown in the chassis layout 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 KK2 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 trimmer on the 3rd I.F. transformer for peak receiver output.

It should be observed that the other trimmer marked C20 on the component location illustration should not be adjusted under any circumstances.

Next adjust the two trimmers on the 2nd I.F. transformer.

The two trimmers on the 1st. I.F. transformer should similarly be trimmed for maximum output.

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 the mutual coupling has not displaced the original adjustment.

R.F. TRIMMER ADJUSTMENTS.

The seven trimmers for the radio-frequency alignment are 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 (C11)** 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 and R.F. trimmers** for maximum output on meter.

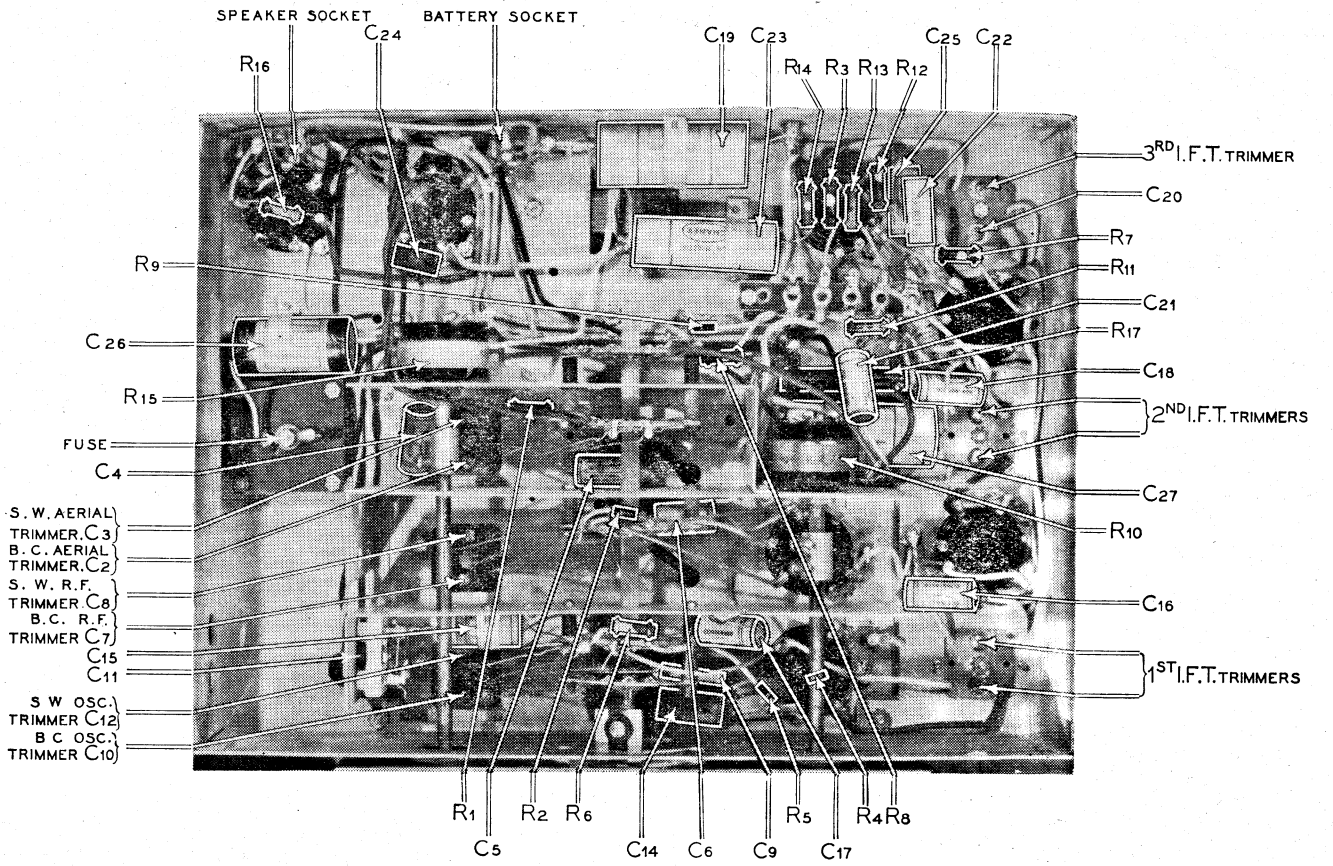
NOTE.—The shortwave section of this receiver is equipped with a fixed padder and consequently the above-mentioned adjustments are all that is required for optimum performance.. If the service oscillator in use does not cover 16.5 and 19 metres, it is inadvisable to attempt adjustment of the shortwave trimmers.

REPLACING CHASSIS.

Before replacing the chassis see that the wave-change switch arm is properly mounted on its spindle. See also that the rubber sleeve is properly in place in the forked part of this arm so that the switch arm is insulated from the switch proper.

After the chassis is placed in the cabinet, see that the chassis is far enough forward so that the wave-change switch knob can be fitted without drawing the arm away from the chassis. The chassis securing bolts may now be tightened, the speaker plug replaced, and the other knobs fitted to the respective spindles.

COMPONENT LOCATIONS



COMPONENT PARTS

CONDENSERS

C, C, C	3 Gang Variable
C1	Special condenser inside coil can
C2	Broadcast Aerial Trimmer
C3	Short Wave Aerial Trimmer
C4, C6, C14, C16, C17, C18	0.05 uF. Paper
C5, C21, C25	0.02 uF. Paper
C7	Broadcast R.F. Trimmer
C8	Short Wave R.F. Trimmer
C9, C22	0.0001 uF. Mica
C10	Broadcast Oscillator Trimmer
C11	Broadcast Padder
C12	Short Wave Oscillator Trimmer
C13	0.0045 uF. Mica
C15	0.1 uF. Paper
C19, C27	0.5 uF. Paper
C20	In 3rd I.F. can. See note
C22	0.0001 uF. Mica
C23	0.25 uF. Paper
C24	0.004 uF. Mica
C26	25 uF. Electrolytic

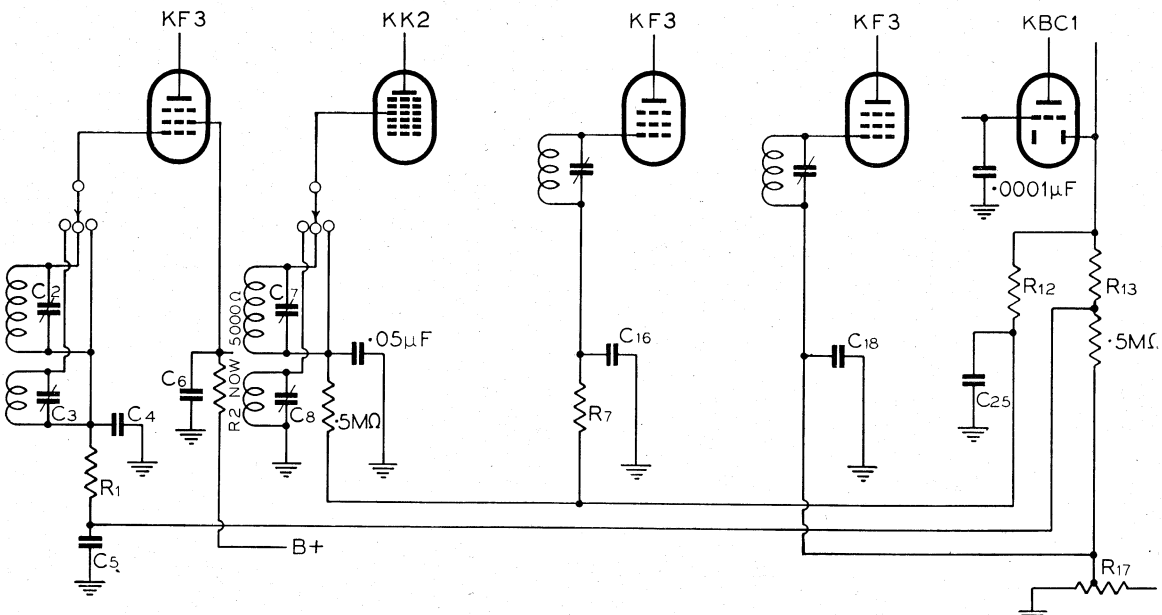
RESISTORS

R1, R3, R7, R8, R12	0.5 Megohm, ½ watt
R2, R4, R5, R9	50,000 ohm, ½ watt
R6	25,000 ohm, ½ watt
R10, R15	0.5 Megohm potentiometer
R11, R13	1.0 Megohm, ½ watt
R14	0.1 Megohm, ½ watt
R16	10,000 ohm, ½ watt
R17	400 ohm, Wire wound

NOTE: C20 is a trimming condenser mounted in the 3rd I.F. can. This condenser is pre-adjusted at the factory and should not be altered.

MODIFICATIONS

NOTE: Values indicated on this diagram are additional components and do not appear in under chassis picture. In cases where R2 = 5,000 ohms, the plate and screen potential on the R.F. value should be 110 volts.

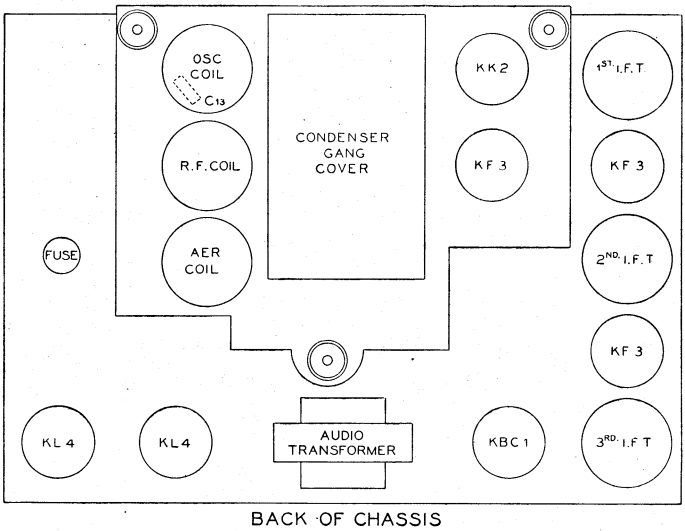


VOLTAGE ANALYSIS.

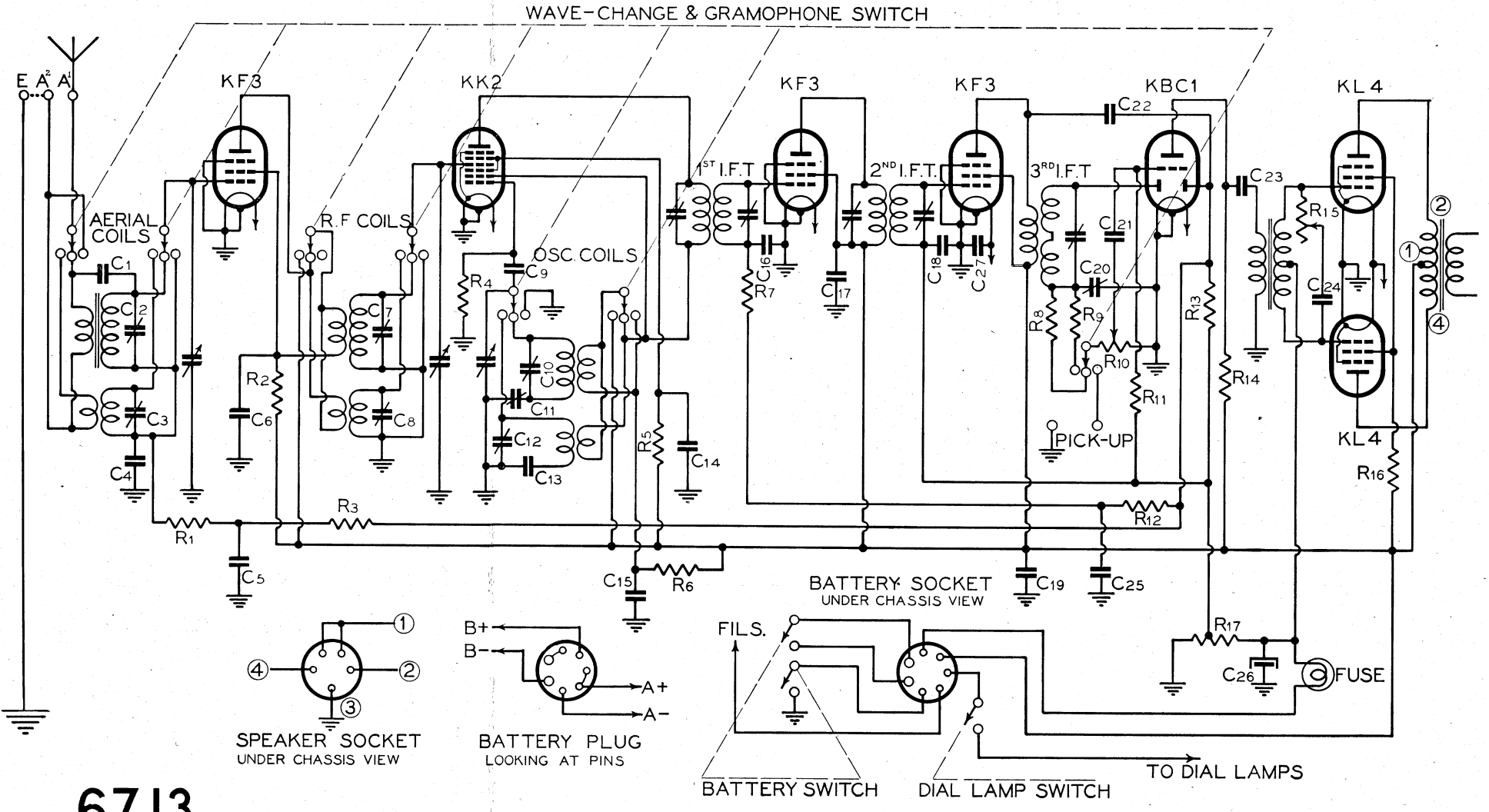
Valve Type	Plate Voltage	Plate Current (mA)	Screen Grid Voltage	Control Grid Voltage	Filament Voltage
KF3	(B/cast) 75 (S/W) 129	0.5 1.5	75 129	1.5	2
KK2	(B/cast) 55 (S/W) 129	1.5 2.0	50 55	0	2
KF3 (1st I.F.)	129	2.0	129	1.5	2
KF3 (2nd I.F.)	129	2.0	129	1.5	2
KBC1	60	0.7	—	1.5	2
KL4 (each valve)	128	2.0	100	6	2

NOTE.—The above voltages are for the no-signal condition and are measured with a 1000 ohms. per volt voltmeter between the respective valve sockets and the chassis. The grid voltages are measured at the source of potential, and not at the sockets. Measured voltages may vary, dependent on the condition of batteries.

CHASSIS LAYOUT

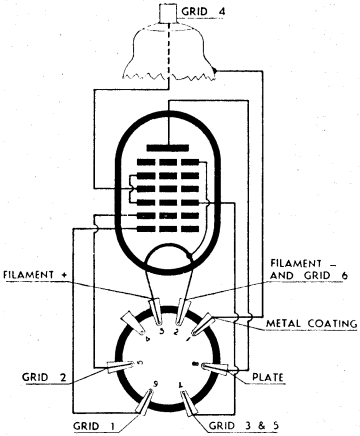


BACK OF CHASSIS

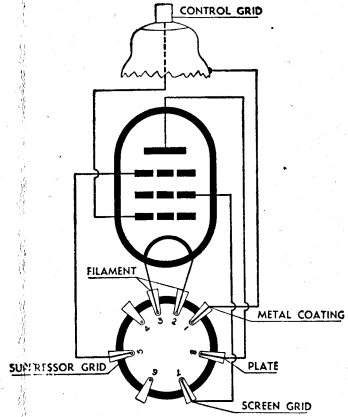

WAVE-CHANGE & GRAMOPHONE SWITCH
E A² A¹
KF3
KK2
KF3
KF3
KBC1
KL4
AERIAL COILS
R.F COILS
OSC. COILS
1ST I.F.T
2ND I.F.T.
3RD I.F.T
C1
C2
C3
C4
C5
C6
C7
C8
C9
C10
C11
C12
C13
C14
C15
C16
C17
C18
C19
C20
C21
C22
C23
C24
C25
C26
C27
R1
R2
R3
R4
R5
R6
R7
R8
R9
R10
R11
R12
R13
R14
R15
R16
R17
PICK-UP
KL4
FUSE
BATTERY SOCKET
UNDER CHASSIS VIEW
SPEAKER SOCKET
UNDER CHASSIS VIEW
BATTERY PLUG
LOOKING AT PINS
B+
B-
A+
A-
FILS.
BATTERY SWITCH
DIAL LAMP SWITCH
TO DIAL LAMPS

6713

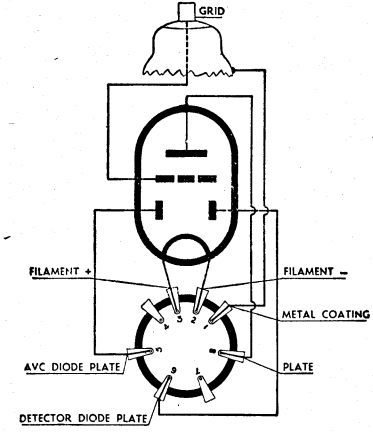
SOCKET CONNECTIONS VIEWED FROM BOTTOM OF BASE.



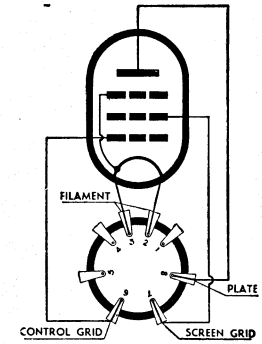
KK2



KF3



KBC1



KL4