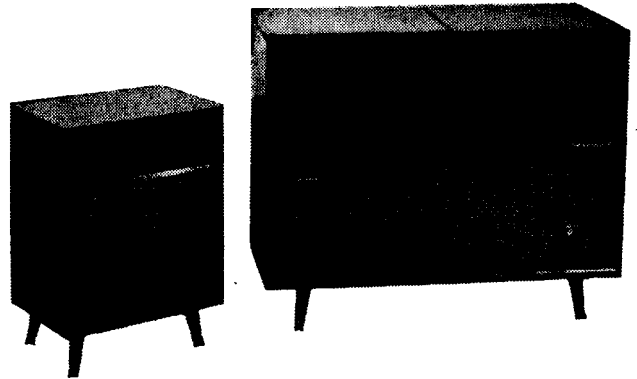


# PHILIPS RADIOPLAYER

## MODEL 218



### SPECIFICATIONS

(Subject to alteration without notice)

Power Supply	.....	.....	.....	.....	.....	200/250V, 40/50 c/s
Tuning Ranges	.....	.....	.....	.....	.....	530-1620 Kc/s 4.7-9.2 Mc/s 9.1-18.4 Mc/s
Intermediate Frequency	.....	.....	.....	.....	.....	455 Kc/s
Cabinet	.....	.....	.....	.....	.....	Radiogram
Record Changer (Stereo)	.....	.....	.....	.....	.....	Philips type AG1014SX or NG1020
Pick-up Head (Stereo 78 R.P.M.)	.....	.....	.....	.....	.....	Philips type AG3066
Pick-up Head (Stereo Microgroove)	.....	.....	.....	.....	.....	Philips type AG3063

### VALVE EQUIPMENT AND VOLTAGE ANALYSIS

Valve Function	Valve No.	Valve Type	Plate Volts	Screen Volts	Osc. P. Volts	Bias Volts
Frequency Converter	V1	6AN7	236	55	56	
I.F. Amplifier, A.V.C. and Demodulator	V2	6N8	236	55		
1st Audio Amplifier	V3	6BD7	66			
Phase Splitter	V4	6BD7	110			35
Push-Pull Power Amplifier	V5	6M5	265	236		8.4*
Push-Pull Power Amplifier	V6	6M5	265	236		8.4*
Rectifier	V7	6V4	260/260 A.C.		Unfiltered B+, 272 V. D.C. Filtered, B+, 236 V. D.C.	
Audio Amplifier	V101	6BD7	75			
Power Amplifier	V102	6M5	230	231		6.6
Rectifier	V103	6V4	229/229 A.C.		Volts across C105; 244 V. D.C. Volts across C104; 231 V. D.C.	
Dial Lamps (2)	V11, 12	6.3V, 0.32A tubular screw				
Bezel Lamp	V13					
Heater Volts 6.35V A.C.; Volts across R26, 9.2V D.C. *Measured with V.T.V.M.						

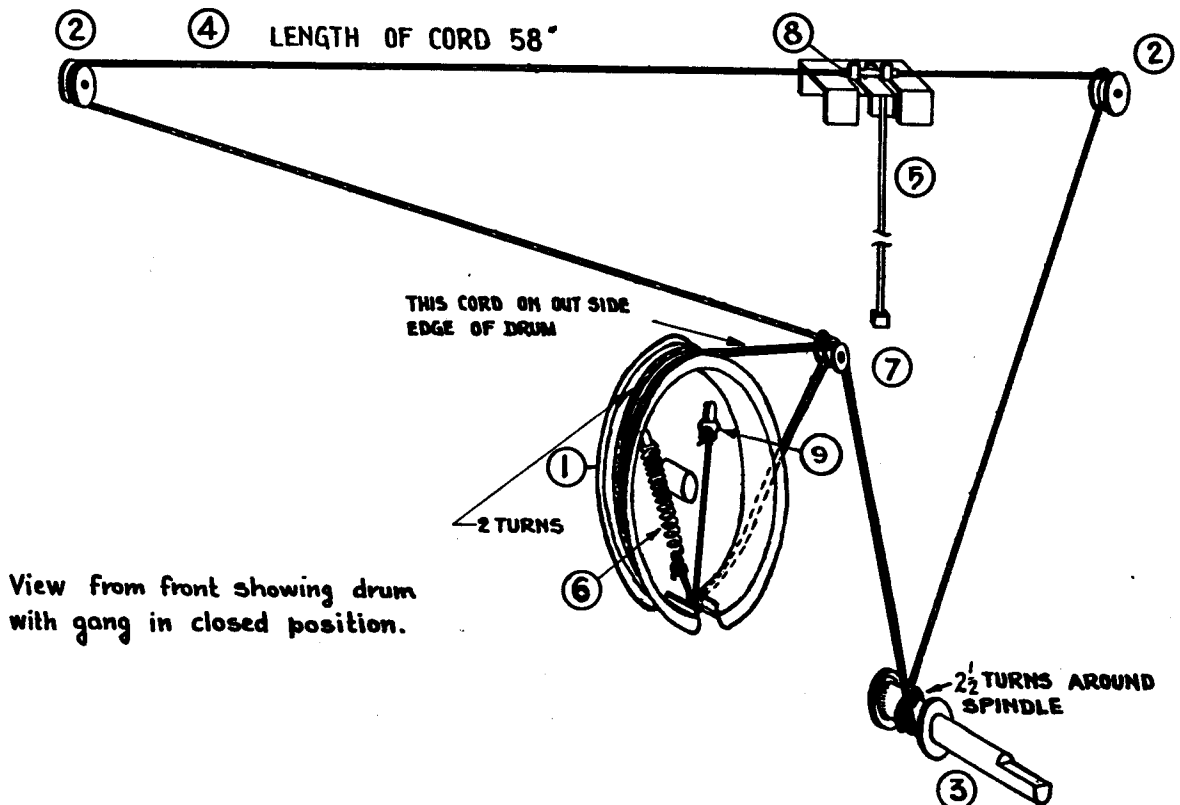
NOTE: Unless otherwise stated, all voltages are 1,000Ω per volt meter readings and may vary ± 10% from the figure quoted. They are measured from the socket points indicated to chassis or across the resistors and condensers listed. The receiver should be in a "no signal" condition.

Published by PHILIPS ELECTRICAL INDUSTRIES PTY. LIMITED

Sydney - Melbourne - Brisbane - Adelaide - Perth - Hobart

## MISCELLANEOUS COMPONENTS

Drawing Reference No.	Description	Type or Code No.	Drawing Reference No.	Description	Type or Code No.
5	Assembly, cursor	CR.480.668	—	Plate, chassis mtg., x2	CS.232.089
—	Assembly, lamp holder, x2	C/F 733-5-4	—	Plug, power (male), x2	CZ.365.115
—	Assembly, leg, walnut, x4	CR.600.770	—	Plug, 2 pin polarised, x3	C/F691-5-1
—	Assembly, leg, rose mahogany, x4	CR.600.771	—	Plug, 4 pin, x2	Teletron PS14
—	Assembly, leg, maple, x4	CR.600.772	2	Pulley, dial (large), x2	CS.359.618
3	Assembly, tuning spindle	CR.371.335	—	Scale, dial	CS.412.416
—	Badge	A3.357.10	—	Socket, power, chassis, x2	CZ.365.116
—	Bezel, indicator	CS.430.046	—	Socket, 2 pin polarised, x3	C/F 733-16-1
—	Bracket assy., pulley	CR.265.223	—	Socket, 4 pin, x2	Teletron 4QMS/C
—	Card, knob	CS.420.228	8	Spring, cursor	CS.212.016
—	Channel, rubber (scale mtg.) x2	CS.424.194	6	Spring, dial cord	CS.210.035
—	Clamp, dial, x2	CS.233.570	—	Strip, A. & E. terminal	C/F 679-2-5
—	Clip, spring (I.F.T. mtg.) x2	A3.652.58	—	Support, brkt., dial, L.H.	CR.248.458
—	Clip, spring (knob, channel reversal)	CS.281.850	—	Support, brkt., dial, R.H.	CR.248.459
4	Cord, dial drive	58" of cord required	—	Support, press button switch, L.H.	CS.232.643
1	Drum, dial	CS.360.015	—	Support, press button switch, R.H.	CS.232.642
—	Ferrule, cabinet leg, x4	CS.420.216	—	Surround, badge	CS.430.943
—	Holder, pick-up head	P4.380.35	—	Switch, channel reversal	OAK type 22
—	Knob, control, x5	CR.523.759	—	Switch, push button (comp.)	A3.790.47
—	Knob, channel reversal	CR.523.773	—	Switch, wave change	CZ.201.211
—	Name "Philips"	CR.531.437	—	Trim, dial scale border	CS.430.945
—	Name "Stereophonic"	CS.436.460			





## PARTS LIST

## CAPACITORS

No.	Description	Code No.
C1, 13, 17, 24, 33, 45	100pF mica	
C2	0.047 $\mu$ F 200V paper	
C3,5,6,14,15	30pF air trimmer	CZ.113.700
C4, 16	180pF $\pm$ 1% mica	CZ.065.722
C7	115pF $\pm$ 2 $\frac{1}{2}$ % mica	CZ.066.138
C8	0.0045 $\mu$ F $\pm$ 10% mica	
C9	475pF $\pm$ 2% mica	CZ.066.119
C10, 11	2 gang tuning condenser	CZ.107.759
C12	60pF air trimmer	49.005.58
C18	110pF $\pm$ 2 $\frac{1}{2}$ % mica	
C19, 25	195pF $\pm$ 2% ceramic	
C20, 26	110pF $\pm$ 2% ceramic	
C21	30pF mica	
C22	0.047 $\mu$ F 400V paper	
C23	470pF $\pm$ 10% mica	
C27	0.001 $\mu$ F 400V paper	
C28	0.033 $\mu$ F 400V paper	
C29, 32, 46	0.0033 $\mu$ F 400V paper	
C30	0.033 $\mu$ F 200V paper	
C31	0.01 $\mu$ F 400V paper	
C34, 35	0.0022 $\mu$ F 400V paper	
C36, 37	0.01 $\mu$ F 600V paper	
C38, 39	40 $\mu$ F 300VW electrolytic	
C40	25 $\mu$ F 25VW electrolytic	
C41	0.001 $\mu$ F 600V paper	
C42	0.0047 $\mu$ F 600V paper (part of record changer)	
C43	100 $\mu$ F 6V non-polarised electrolytic	CZ.099.873.D
C44	0.27 $\mu$ F 400V paper	
C47	0.033 $\mu$ F 200V paper	
C101	0.0047 $\mu$ F 400V paper	
C102	0.01 $\mu$ F 600V paper	
C103	0.0047 $\mu$ F 600V paper	
C104, 105	24 $\mu$ F 300VW electrolytic	
C106	50 $\mu$ F 300VW electrolytic	

All tolerances are  $\pm$  20% unless otherwise specified.

## RESISTORS

No.	Description	Code No.
R1	100 $\Omega$ $\frac{1}{2}$ W W/W	
R2	22,000 $\Omega$ $\frac{1}{2}$ W	
R3	56,000 $\Omega$ $\pm$ 10% 1W	
R4	1M $\Omega$ $\frac{1}{2}$ W	
R5	68,000 $\Omega$ $\pm$ 10% 1W	
R6, 24	220,000 $\Omega$ $\pm$ 10% $\frac{1}{2}$ W	
R7, 9	47,000 $\Omega$ $\frac{1}{2}$ W	
R8, 25	56,000 $\Omega$ $\pm$ 10% $\frac{1}{2}$ W	
R10	1M $\Omega$ $\frac{1}{2}$ W	
R12, 37	5,600 $\Omega$ $\pm$ 10% $\frac{1}{2}$ W	
R13,19,21,22	68,000 $\Omega$ $\pm$ 10% $\frac{1}{2}$ W	
R14	10M $\Omega$ $\frac{1}{2}$ W	
R15	220,000 $\Omega$ $\frac{1}{2}$ W	
R16	100,000 $\Omega$ $\frac{1}{2}$ W	
R17, 44	180,000 $\Omega$ $\pm$ 10% $\frac{1}{2}$ W	
R18	0.5M $\Omega$ potentiometer taper "A" tapped at 250,000 $\Omega$	CZ.029.153
R20	10M $\Omega$ $\frac{1}{2}$ W	
R23	10,000 $\Omega$ $\pm$ 10% $\frac{1}{2}$ W	
R26	150 $\Omega$ $\pm$ 10% 1W W/W	
R27, 28	680,000 $\Omega$ $\pm$ 10% $\frac{1}{2}$ W	
R29, 30	4,700 $\Omega$ $\frac{1}{2}$ W	
R31, 32	4,700 $\Omega$ $\pm$ 10% 1W	
R33, 34	10,000 $\Omega$ $\frac{1}{2}$ W	
R35, 36	2x1M $\Omega$ ganged potentiometer taper "C" tapped at 40,000 $\Omega$	CZ.029.333
R38	100,000 $\Omega$ $\pm$ 10% $\frac{1}{2}$ W	
R39	1M $\Omega$ potentiometer, taper "A"	CZ.029.326
R40	100,000 $\Omega$ $\pm$ 10% $\frac{1}{2}$ W	
R41	560,000 $\Omega$ $\pm$ 10% $\frac{1}{2}$ W	
R42, 43	12,000 $\Omega$ $\pm$ 10% $\frac{1}{2}$ W	
R101	10M $\Omega$ $\frac{1}{2}$ W	
R102	220,000 $\Omega$ $\frac{1}{2}$ W	
R103	1M $\Omega$ $\frac{1}{2}$ W	
R104	4,700 $\Omega$ $\frac{1}{2}$ W	
R105	160 $\Omega$ $\pm$ 10% $\frac{1}{2}$ W W/W	
R106	2,200 $\Omega$ $\pm$ 10% 1W	
R107	100 $\Omega$ $\pm$ 10% $\frac{1}{2}$ W W/W	

All tolerances are  $\pm$  20% unless otherwise specified.

## INDUCTORS

No.	Ohms	Description	Type or Code No.	No.	Ohms	Description	Type or Code No.		
L1	1.2-1.7	S/W aerial coil	CZ.323.027	L16	150/158	Output transformer	Rola K4-1		
L2	<0.5			L17	<0.5			10,000 $\Omega$ p-p	CZ.345.043
L3	19.6-26.4	B/C aerial coil	CZ.323.026	L18	—	Loudspeaker	Rola 12M,F25		
L4	1.5-2.0			L19	—	Loudspeaker	Rola 5FX, F95		
L5	<0.5	S/W oscillator coil	CZ.330.614	L20	<0.5	Choke, dividing network	Rola CH17		
L6	<0.5			L101	356-435	Output transformer	Rola K13-1		
L7	1.2-1.7	B/C oscillator coil	CZ.330.613	L102	<0.5			2nd amplifier	CZ.345.060
L8	<0.5			L103	<0.5				
L9	4.7-5.2	1st I.F. transformer	A3.126.84	L104	630-850	Power transformer	CZ.344.084		
L10	8.0-9.0			L105	<1			2nd amplifier	
L11	4.7-5.2	2nd I.F. transformer	CZ.320.444	L106	<1	2nd amplifier			
L12	8.3-9.2			L107	55-75				
L13	26-36	Power transformer	CZ.344.107	L108	—	2nd channel loudspeaker	Rola 8M F59		
L14	315-425								
L15	<0.5								

**IMPORTANT!** When ordering spare parts, quote **CODE NUMBER** of part and **MODEL NUMBER** of Receiver. In claiming free replacement under **GUARANTEE**, return defective part **PROMPTLY** and quote **MODEL** and **SERIAL NUMBER** of Receiver and **DATE OF PURCHASE**.

**TO REMOVE CHASSIS FROM CABINET.**

Withdraw the power plug from the mains outlet socket. Loosen the five knob retaining grub screws and remove knobs. Remove cabinet back panel, unscrew the aerial and earth terminal strip and withdraw through cut-out. Disconnect the internal aerial.

Remove the pick-up, speaker and bezel lamp plugs from rear of receiver chassis, together with the two mains lead plug connections. Withdraw the 2 pin polarized plug (braided lead) from the 2nd amplifier chassis.

Chassis withdrawal is best accomplished with the receiver compartment in the open position. Initially remove the two wood screws at either side extreme top edge of the dial back plate and while supporting the weight of chassis (a suitable wooden wedge between chassis back plate and rear cabinet bar will be found useful) withdraw the two  $\frac{3}{8}$ " Whit. metal thread screws at the rear of chassis side flanges. The chassis may now be withdrawn beneath compartment cross bar.

Chassis replacement procedure is the reverse of the foregoing, but care should be taken to ensure that chassis flanges locate under the lip of each front chassis supporting plate.

**MAINS VOLTAGE ADJUSTMENT.**

The power transformer primary windings are provided with two mains voltage tappings—200/230 volts and 240/250 volts—for adjustment to the supply voltage at the point of installation. The receiver is factory adjusted to the 240/250 volts tapping.

**DIAL CALIBRATION.**

In the event of an equal calibration error over the entire dial scale, the dial cursor can easily be moved on the dial drive cord to correct the error.

**ALIGNMENT.**

Check that the position of pointer is over the stop mark on the dial scale when tuning gang is fully closed. Adjust if necessary as described in the foregoing.

For I.F.T. and R.F. trimmer locations refer to the circuit diagram inset drawing.

The "Radio" and "Speech" push buttons must remain in the depressed position and the volume control be set to maximum (fully clockwise) throughout alignment procedure.

**I.F. ALIGNMENT.**

Screw out iron core of 2nd I.F.T. primary.

Apply modulated 455 Kc/s signal via a 100 pF capacitor to control grid (pin 2) of V1 and peak I.F.T. cores in the following sequences:—

- Secondary 2nd I.F.T. (L11)
- Secondary 1st I.F.T. (L10)
- Primary 1st I.F.T. (L9)
- Primary 2nd I.F.T. (L12)

Do not repeat any adjustments.

**B/C ALIGNMENT.**

Use a standard R.M.A. dummy aerial and apply a modulated R.F. signal to the aerial terminal.

Alignment frequencies are: 1,420 Kc/s, 3XY (peak oscillator (C12) and aerial (C3) trimmers), and 600 Kc/s, 7ZL (peak oscillator slug (L7, 8) whilst rocking gang).

**S/W ALIGNMENT.**

Alignment of the S/W 2 band (wave change switch in central position) should be completed before commencement of S/W 1 alignment.

Since the receiver oscillator frequency is above that of the signal, selection of the higher of the two frequencies tunable on the receiver is the correct alignment procedure.

S/W 2 (4.7 to 9.2 Mc/s) band: Alignment frequencies are 4.825 Mc/s (white triangle—peak oscillator (L5, 6) slug), and 8.9 Mc/s (white triangle—peak oscillator trimmer C15 and aerial trimmer C6 whilst rocking gang). If the oscillator slug can be peaked in two positions a core setting nearest to coil connection lugs is the correct setting. The minimum capacitance (furthest out) position of oscillator trimmer C15 is similarly the true peak setting of two possible peaks obtainable.

S/W 1 (9.1 to 18.4 Mc/s—W/C switch fully cockwise) band: Alignment frequencies are 17.8 Mc/s (green triangle—peak oscillator trimmer C14 and aerial trimmer C5 whilst rocking gang), and 9.65 Mc/s (green triangle—check calibration). The minimum capacitance setting of oscillator trimmer C14 is the correct peak of two peaks obtainable, i.e. an image response is tunable at 16.9 Mc/s.

Do not attempt adjustment of the slugs in aerial coils L1, 2, and L3, 4.

**SPEAKER PHASING.**

When speaker replacement is necessary, it is essential to determine correct phasing before connecting new speakers into circuit. Reference to the circuit diagram will show that one voice coil terminal of each speaker is marked with  $\oplus$  sign, which is designated as the positive side.

To determine the positive terminal, connect a battery across the voice coil; the positive terminal will be connected to the positive side of the battery when the cone movement is out or forward. Speakers must be connected as in the circuit diagram.

**MODIFICATION INTRODUCED PRIOR TO SERVICE DATA PUBLICATION.**

R44 introduced to reduce gain of main chassis to that of second channel amplifier, when balance control setting is in central position.