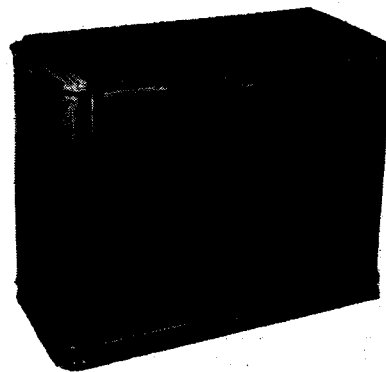


# PHILIPS RADIOPLAYER

## MODEL 178A

### SPECIFICATIONS

(Subject to alteration without notice)



Power Supply	.....	.....	.....	200-250V, 40-50 c/s.
Tuning Ranges	.....	.....	.....	530-1,620 kc/s. (B/C) 4.7-9.2 Mc/s. (SW2) 9.1-18.4 Mc/s. (SW1)
Intermediate Frequency	.....	.....	.....	455 kc/s.
Cabinet	.....	.....	.....	Radiogram
Record Changer	.....	.....	.....	Philips type AG1000.

### VALVE EQUIPMENT AND VOLTAGE ANALYSIS

Valve Function	Valve No.	Valve Type	Plate Volts	Screen Volts	Osc. P. Volts	Bias Volts	
Frequency Converter	V1	6AN7	235	50	100		
I.F. Amplifier, A.V.C. and Demodulator	V2	6N8	235	65			
1st Audio Amplifier	V3	EF86	55	70			
2nd Audio Amplifier	V4A	12AT7	95	—			
Phase Splitter	V4B		125	—			
Power Amplifier	V5	6M5	265	235		6.9	
Power Amplifier	V6	6M5	265	235		6.9	
H.F. Audio Amplifier	V9	6BD7	105	—		1.7	
H.F. Power Amplifier	V10	6M5	225	240		7.7	
Rectifier	V7	5V4G	Cathode — L15 C.T., -270V				
Tuning Indicator	V8	EM34	Target 235V				
Dial Lamps (2), bezel lamp and gramo. lamp	V11, 12, 13 & 14		6.3V, 0.32A tubular screw				
Voltage across R54, -2.3V							

NOTE: These voltages are measured with an "1,000 ohms per volt" meter and may vary  $\pm 10\%$  from the figures quoted. They are measured from the socket points indicated to chassis, or across the resistor listed. The receiver should be in a "no signal" condition.

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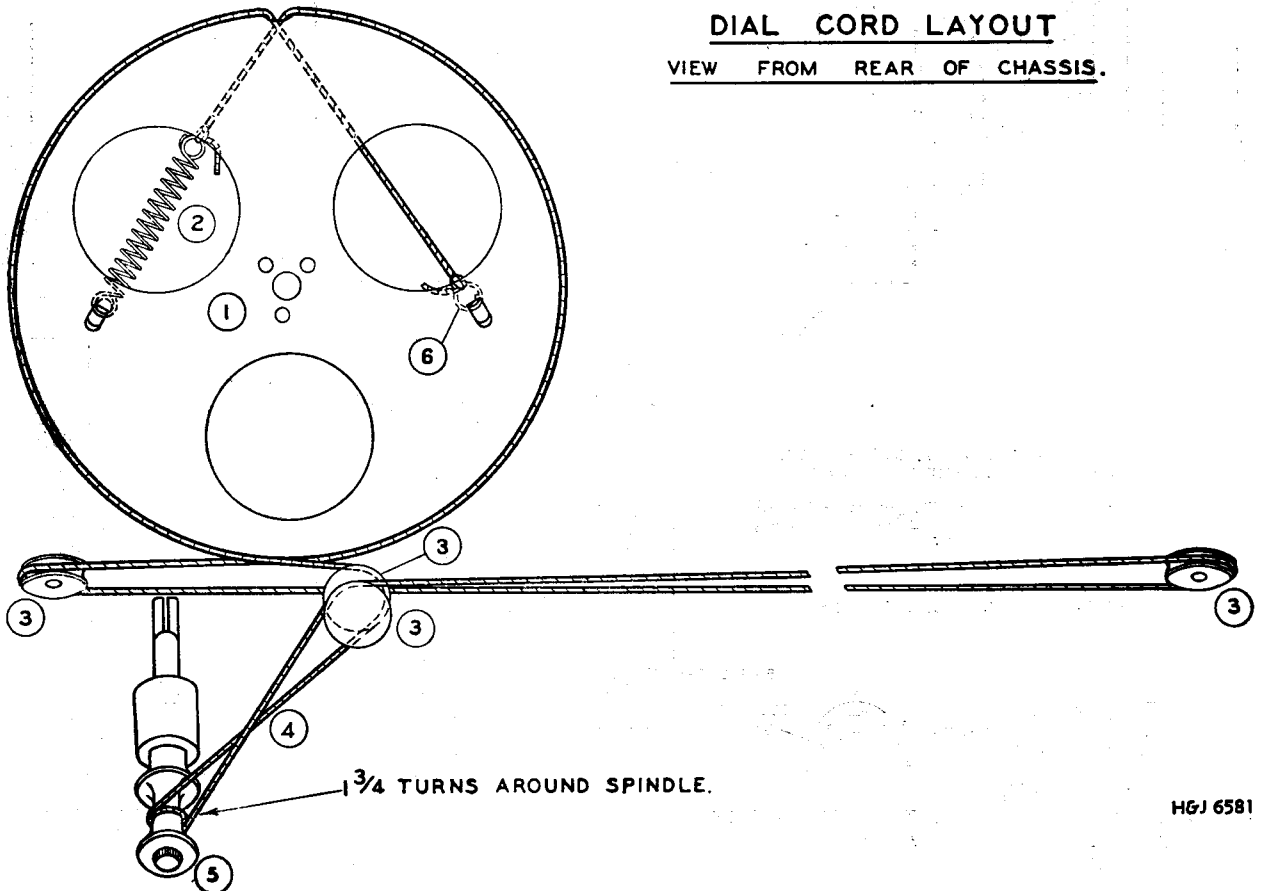
Sydney — Melbourne — Brisbane — Adelaide — Perth

### MISCELLANEOUS COMPONENTS

No. on Dial Cord Layout Drawing	Description	Code No.	No. on Dial Cord Layout Drawing	Description	Code No.
—	Assembly, cursor	CR.480.659	—	Lampholder, compartment lamp	C/F733-8-1
5	Assembly, tuning spindle	CR.371.331	—	Lampholder, bezel lamp	CZ.367.920
—	Assembly, W/C clicker	CR.450.046	—	Plug, male (gramo. unit power)	CZ.365.115
—	Badge, Philips	CR.531.408	—	Plug, 2 pin polarised, 4x	C/F691-5-1
—	Bank, W/C switch (A1)	CZ.200.062	—	Plug, 4 pin (speaker)	PS14
—	Bank, W/C switch (A2)	CZ.200.063	3	Pulley, dial, 4x	CS.359.602
—	Bank, on/off switch	CZ.210.108	—	Scale, dial	CS.412.396
—	Bezel (green)	CS.430.025	—	Socket, female (gramo. unit power)	CZ.365.116
—	Clip, spring (on/off knob)	CS.281.832	—	Socket, valve (noval)	C/F732-2-14
4	Cord, dial drive 63" of cord required		—	Socket, valve (octal)	C/F733-2-11
1	Drum, dial	CS.360.007	—	Socket, 2 pin polarised, 4x	C/F733-16-1
—	Knob, control, 4x	CR.523.693	—	Socket 4 pin (speaker)	SS24
—	Knob, volume control	CS.432.629	2	Spring, dial drum	CS.210.021
—	Knob, on/off switch	CR.523.711	—	Switch, lid	Alpha type S
—	Lampholder, dial lamps, 2x	CZ.367.900			

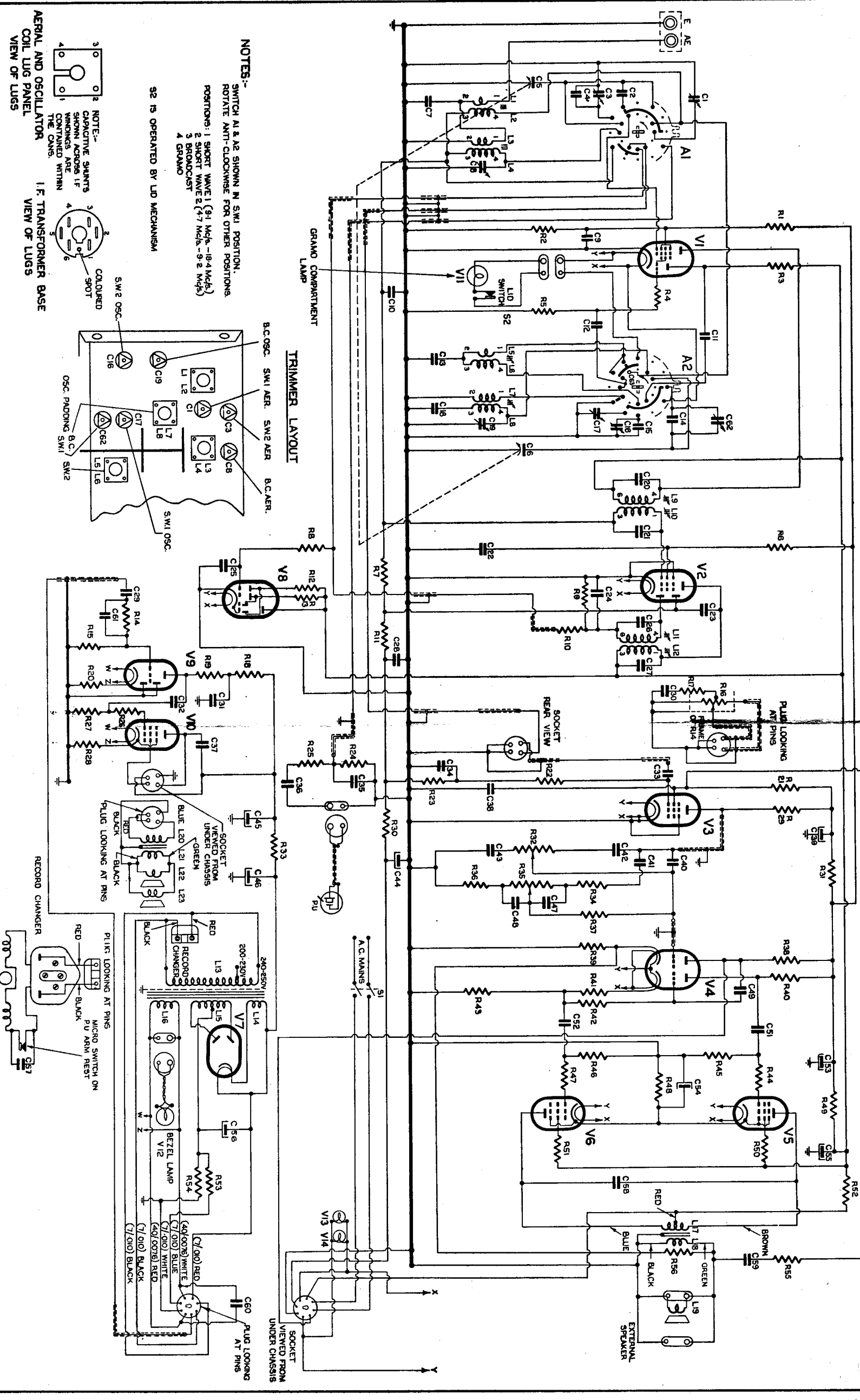
### DIAL CORD LAYOUT

VIEW FROM REAR OF CHASSIS.

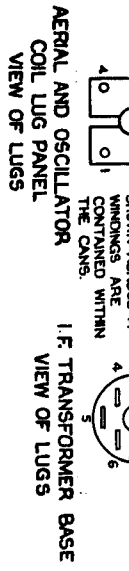
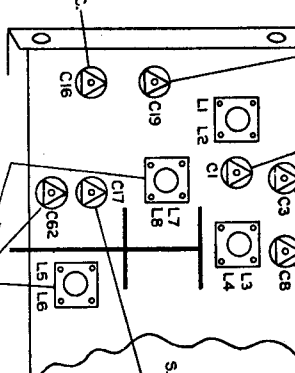


L	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
C	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
L	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
C	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60

**NOTE:-**  
NEUTRALIZING CONDENSER C63 IS FORMED BY THE CAPACITY BETWEEN THIS STATOR LUG AND THE ADJACENT STATOR CONTACT



**NOTES:-**  
SWITCH A1 & A2 SHOWN IN S.W1 POSITION.  
ROTATE ANTI-CLOCKWISE FOR OTHER POSITIONS.  
POSITIONS: 1 SHORT WAVE 1 (91 Mc/s - 18.4 Mc/s)  
2 SHORT WAVE 2 (47 Mc/s - 9.2 Mc/s)  
3 BROADCAST  
4 GRAMO  
52 IS OPERATED BY LID MECHANISM



**NOTE:-**  
CAPACITIVE SHUNTS SHOWN ACROSS IF WINDINGS ARE CONTAINED WITHIN THE CANS.  
I.F. TRANSFORMER BASE VIEW OF LUGS

**ALIGNMENT.**

During alignment, set volume control at maximum and both tone controls in their mid-position. With the tuning gang fully closed, set the dial cursor at 120 on the relocation scale.

I.F. channel alignment is carried out in the following manner—

Connect a shunt capacitor of 100 pF from 6N8 signal grid to chassis.

Trim in order:

Secondary 2nd I.F.T.

Primary 2nd I.F.T.

Primary 1st I.F.T.

Check the above adjustments.

Remove the capacitive shunt and trim secondary 1st I.F.T.

Adjustable cores for the secondaries of the I.F. transformers are located in the tops of the cans, those for the primaries are in the bottom of the cans.

The trimmer layout drawing is shown as an inset to the circuit diagram drawing.

B/C band alignment frequencies are : 1,420 kc/s, 3XY (oscillator and aerial trimmers) and 600 kc/s, 7ZL (slug padding with gang rocking).

On the short wave bands, the oscillator frequency is higher than signal frequency, so of the two signals tunable on the receiver, the high frequency one is correct. In short wave alignment, SW2 band (4.7-9.2 Mc/s) should be adjusted first before attempting alignment of SW1 band.

SW2 band alignment frequencies are 4.825 Mc/s (small white triangle), (slug padding) and 8.9 Mc/s (small white triangle), (oscillator and aerial trimmers).

SW1 band alignment frequencies are 9.65 Mc/s (small green triangle), (oscillator padding capacitor) and 17.8 Mc/s (small green triangle), (oscillator and aerial trimmers).

**DIAL CALIBRATION.**

If it is required to correct dial calibrations for an equal error on all stations, provision is made for moving the cursor assembly with respect to the dial cord. Loosen the clamping screw, make the necessary adjustment to the cursor position and securely retighten the clamping screw.

**MAINS VOLTAGE ADJUSTMENT.**

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

**TO REMOVE CHASSIS FROM CABINET.**

Remove the power plug from the mains outlet socket. Remove the six control knobs (a firm pull is all that is necessary). Remove the cabinet back and aerial and earth terminal panel. Withdraw the five plugs along the back of the chassis from their respective sockets. The chassis is held to the cabinet by four screws, two at the top of the dial back plate and two at the rear of the chassis. Removal of these four screws allows the chassis to be withdrawn.

To remove the sub-chassis, withdraw the three plugs from their respective sockets, remove the four screws which mount the sub-chassis.

To remove the volume control potentiometer, remove the strip panel at the back of the cabinet; after the volume knob is removed it is possible to remove the potentiometer mounting nut. The potentiometer may now be withdrawn from the housing.

Replacement of these units is a reversal of the above procedure.

## PARTS LISTS

### CAPACITORS

No.	Description	Code No.
C1, 3, 8, 16, 17, 62	30 pF air trimmer	CZ.113.700
C2	180 pF mica 1%	CZ.065.722
C4	120 pF mica 2½%	CZ.066.139
C5-6	2 gang tuning	CZ.107.746
C7, 24	100 pF mica	
C9, 51	0.02 mF 400V paper	
C10, 28	0.05 mF 200V paper	
C11, 12	100 pF mica 10%	
C13	0.0045 mF mica 10%	
C14	170 pF mica 1%	CZ.065.727
C15	110 pF mica 2½%	CZ.066.140
C18	475 pF mica 2%	CZ.066.119
C19	60 pF air trimmer	49.005.58
C20, 21	Part of 1st I.F.T.	
C22, 49	0.01 mF 400V paper	
C23	30 pF mica	
C25, 30, 48, 52	0.02 mF 200V paper	
C26, 27	Part of 2nd I.F.T.	
C29, 32	0.001 mF 600V paper	
C31	0.1 mF 400V paper	
C33, 57, 58, 59	0.01 mF 600V paper	
C34, 60	0.1 mF 200V paper	
C35	700 pF mica 10%	
C36	0.002 mF 600V paper	
C37	500 pF mica	
C38	0.03 mF 400V paper	
C39	8 mF 350V electrolytic	
C40	20 pF mica	
C41	0.05 mF 400V paper	
C42	150 pF mica 10%	
C43	0.0015 mF mica	
C44, 54	25 mF 10V electrolytic	
C45, 53, 55, 56	24 mF 450V electrolytic	
C46	16 mF 450V electrolytic	
C47	0.002 mF 400V paper	
C61	50 pF mica	

All tolerances are ± 20% unless otherwise specified.

### RESISTORS

No.	Description	Code No.
R1	47,000 ohms 1W carbon 10%	
R2, 3	33,000 ohms 1W carbon	
R4	100 ohms ½W carbon	
R5	33,000 ohms ½W carbon 10%	
R6	82,000 ohms 1W carbon 10%	
R7, 8, 11	2.2 megohms ½W carbon	
R9, 12, 13, 14, 22, 23	1 megohm ½W carbon	
R10, 15, 18, 19, 24, 29, 34, 37	100,000 ohms ½W carbon	
R16	0.5 megohm, tapped at 40,000 ohms, carbon potentiometer	CZ.029.148
R17	22,000 ohms ½W carbon	
R20	3,300 ohms ½W carbon 10%	
R21, 30	0.33 megohm ½W carbon	
R25, 42, 45, 46	0.47 megohm ½W carbon	
R26, 31, 38, 44, 47	47,000 ohms ½W carbon	
R27, 53	0.22 megohm ½W carbon	
R28	270 ohms ½W Carbon 10%	
R32	1 megohm carbon potentiometer	CZ.029.312
R33, 52	1,000 ohms 1W carbon 10%	
R35	1 megohm carbon potentiometer	CZ.029.311
R36	10,000 ohms ½W carbon	
R39	1,000 ohms ½W carbon 10%	
R40, 43	47,000 ohms ½W carbon 10%	
R41	2,200 ohms ½W carbon 10%	
R48	82 ohms 1W W/W 10%	
R49	10,000 ohms 1W carbon	
R50, 51	47 ohms ½W W/W 10%	
R54	18 ohms ½W W/W 10%	
R55	1.5 megohms ½W carbon	
R56	22,000 ohms ½W carbon 10%	

All tolerances are ± 20% unless otherwise specified.

### COILS

No.	Ohms	Description	Code No.	No.	Ohms	Description	Code No.
L1	1.0-1.4	S/W aerial coil	CZ.323.028	L13	13-18	Power transformer	CZ.344.090
L2	<0.5						
L3	25-33						
L4	1.7-2.3						
L5	<0.5	B/C aerial coil	CZ.323.024	L15	105-145	Output transformer	type BRL33
L6	<0.5						
L7	1.0-1.4	S/W oscillator coil	CZ.330.615	L16	<0.5	7,000 ohms p-p	type BRL33
L8	2.9-3.9						
L9	11.5-12.5	B/C oscillator coil	CZ.330.600	L17		Speaker	type 12-0, F22
L10	11.5-12.5						
L11	11.5-12.5						
L12	11.5-12.5	1st I.F. transformer	CZ.320.429	L18		Output transformer	type 5F, F87
L13	11.5-12.5						
L14	11.5-12.5	2nd I.F. transformer	CZ.320.430	L19		7,000 ohms	type EBG68
L15	11.5-12.5						
L16	11.5-12.5			L20		Speaker	type 5F, F87
L17	11.5-12.5			L21			
L18	11.5-12.5			L22			
L19	11.5-12.5			L23			

**IMPORTANT!** In 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**.