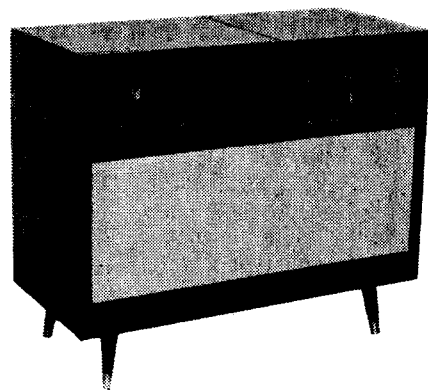


PHILIPS RADIOPLAYER

MODEL 210



SPECIFICATIONS

(Subject to alteration without notice)

Power Supply	.....	.....	.....	.....	.....	200/250V, 40-50 c/s
Tuning Ranges	.....	.....	.....	.....	.....	530-1620 Kc/s
Intermediate Frequency	.....	.....	.....	.....	.....	455 Kc/s
Cabinet	.....	.....	.....	.....	.....	Radiogram
Record Changer (Stereo)	.....	.....	.....	.....	.....	Philips Type AG1024 or NG1020
Pick-up Head (Stereo—78 r.p.m.)	.....	.....	.....	.....	.....	Philips Type AG3066
Pick-up Head (Stereo—Microgroove)	.....	.....	.....	.....	.....	Philips Type AG3063

Philips No. 10 speaker box may be used as an external second channel speaker unit in conjunction with Model 210.

VALVE EQUIPMENT AND VOLTAGE ANALYSIS

Valve Function	Valve No.	Valve Type	Plate Volts	Screen Volts	Osc.P. Volts	Cathode Volts	
Frequency Converter	V1	6AN7	238	60	95		
I.F. Amplifier, A.V.C., and Demodulator	V2	6N8	238	60			
Audio Amplifier	V3a	12AX7	87				
Audio Amplifier	V3b		87				
Power Amplifier	V4	6M5	275	238		6.5	
Power Amplifier	V5	6M5	275	238		6.5	
Rectifier	V6	6CA4	262/262	Unfiltered B+ 280V Filtered B+ 238V			
Dial Lamps (2)	V11, 12	6.3V 0.32A Tubular Screw					

Filament Volts, 6.35V. Voltage across R34 1.73V.

NOTE: All voltages are "20,000 Ω per volt" meter readings 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.

MODIFICATION.

Some chassis have resistors R32/R33, with resistance values of 2.7k Ω . This results in voltage readings being slightly higher than those published in the voltage analysis table.

MAINS VOLTAGE ADJUSTMENT.

The power transformers are provided with two mains voltage tapings on the primary winding—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.

MISCELLANEOUS COMPONENTS

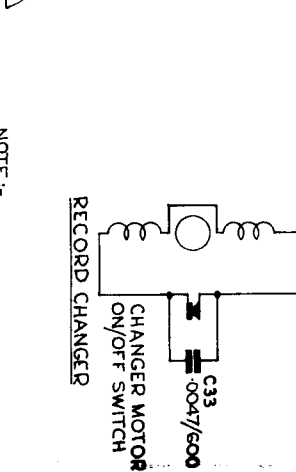
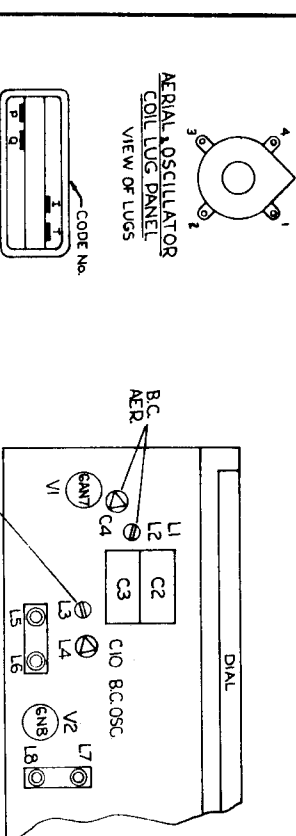
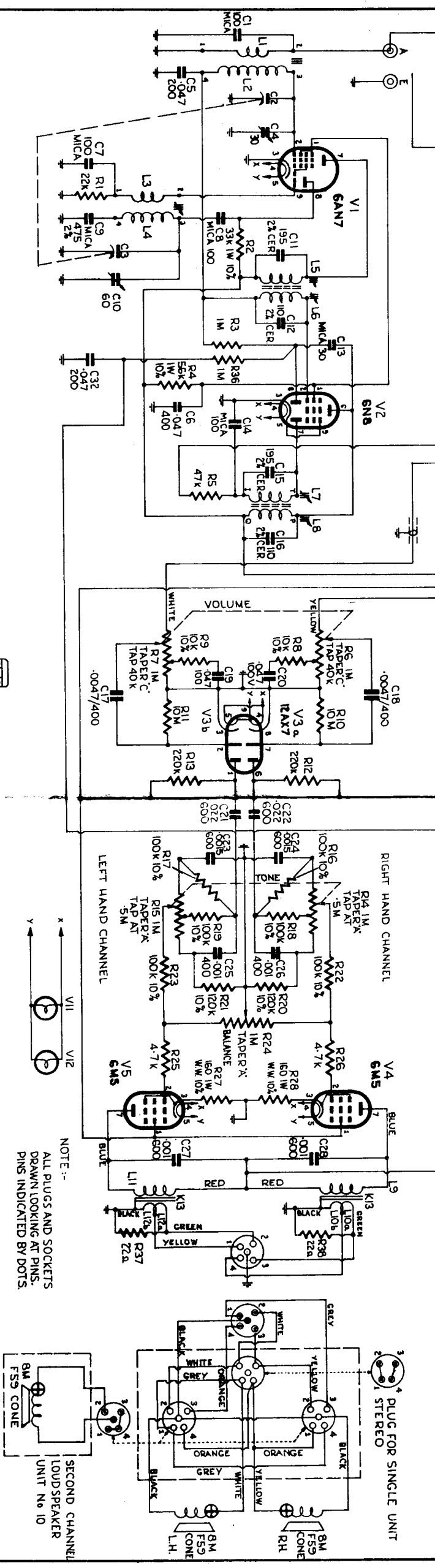
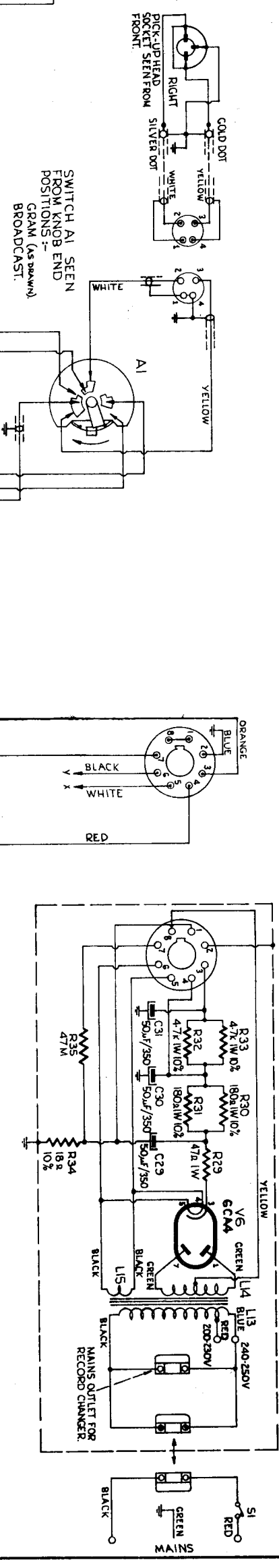
Drawing Reference No.	Description	Type or Code No.	Drawing Reference No.	Description	Type or Code No.
5	Assembly, cursor	CR.480.671	—	Plug, 5 pin	CZ.365.318
—	Assembly, lampholder, x2	C/F733-5-4	7, 10	Pulley, small, x2	CS.359.617
—	Assembly, leg walnut, x4	CR.600.682	2	Pulley, large, x2	CS.359.618
—	Assembly, leg maple, x4	CR.600.683	—	Scale, dial	CS.412.422
—	Assembly, leg rose mahogany, x4	CR.600.684	—	Socket, power female, x2	CZ.365.116
3	Assembly, tuning spindle	CR.371.337	—	Socket, 4 pin, x2	Teletron type 4QMS/C
—	Badge	A3.357.10	—	Socket, 5 pin, x2	CZ.370.513
—	Bracket assy., pulley	CR.265.223	8	Spring, cursor	CS.212.016
—	Card, knob	CS.420.227	—	Spring, I.F.T. retaining	A3.652.58
—	Channel, rubber scale mtg., x2	CS.424.194	—	Stay, cabinet lid	EFFCO C41 CR.285.809
—	Clamp, dial, x2	CS.233.570	—	Strip, A & E terminal	C/F679-2-5
4	Cord, dial drive	56" of cord required	—	Surround, badge	CS.430.943
1	Drum, dial	CS.360.015	—	Switch, gram/radio	OAK type 26 M.S.P. CZ.200.254
—	Ferrule, cabinet leg, x4	CS.420.216	—	Transfer "Philips" (walnut & r/mah. cabinets)	CS.442.040
—	Holder, pick-up head	P4.380.35	—	Transfer "Philips" (maple cabinets)	CS.442.041
—	Knob, x5	CR.523.762	—	Trim, dial scale	CS.430.945
—	Name "Stereophonic"	CS.436.460			
—	Plug, power male, x2	CZ.365.115			
—	Plug, 4 pin, x2	Teletron type PS14			



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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	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
C	1	5	2	4	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	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100		
R	1	5	2	4	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	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100		
V	1	5	2	4	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	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100		

NOTE:- SWITCH S1 MOUNTED ON VOLUME CONTROL RE/R7



VOLTAGE ANALYSIS

VALVE No.	PLATE VOLTS	SCREEN OSC. PL. VOLTS	CATHODE VOLTS	UNFILTERED B+ 280	FILTERED B+ 238	MEASURED WITH 20,000Ω PER VOLT METER.
V1	238	60	95			
V2	238	60				
V3a	87					
V3b	87					
V4	275	238	6.5			
V5	275	238	6.5			
V6	267/262					

ALL VOLTAGES MEASURED FROM CHASSIS



NOTE:- CONDENSER VALUES WHOLE NUMBERS - pf DECIMALS - μf SECOND FIGURE - D.C.V.W. TOLERANCE ± 20% UNLESS OTHERWISE SHOWN. RESISTORS ARE ± 20% 1/4 W UNLESS OTHERWISE SHOWN.

NOTE:- ALL PLUGS AND SOCKETS DRAWN LOOKING AT PINS. PINS INDICATED BY DOTS.

NOTE:- SWITCH S1 MOUNTED ON VOLUME CONTROL RE/R7

NOTE:- SECOND CHANNEL LOUD SPEAKER UNIT No 10

NOTE:- PRIMARY AND SECONDARY WINDINGS ARE NOT SYMMETRICAL. CORRECT CONNECTION AS SHOWN IS ESSENTIAL

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 disconnect the internal aerial wire.

Remove octal plug from socket on sub chassis. Withdraw the pick-up, change over panel and mains supply plugs from their respective sockets on the main chassis. Release mains input lead from retaining clamp at lower left hand side of cabinet. Unscrew two 3/16" metal thread screws from chassis side flanges and withdraw chassis from cabinet.

The replacement of the chassis is a reversal of the above procedure.

DIAL CALIBRATION.

In the event of an equal calibration error existing over the entire dial scale band, correction can be effected by simply sliding the cursor assembly on the dial cord as required. A pointer position centrally over the scale stop mark (top border right hand side of scale) should correspond with a tuning gang fully closed setting.

ALIGNMENT.

Check dial calibration and if necessary adjust cursor position as described in the foregoing.

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

Set volume control to maximum, tone and balance control to a central position.

I.F. Alignment.

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

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

- Secondary 2nd I.F.T.
- Secondary 1st I.F.T.
- Primary 1st I.F.T.
- Primary 2nd I.F.T.

Do not repeat any adjustments.

R.F. Alignment.

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

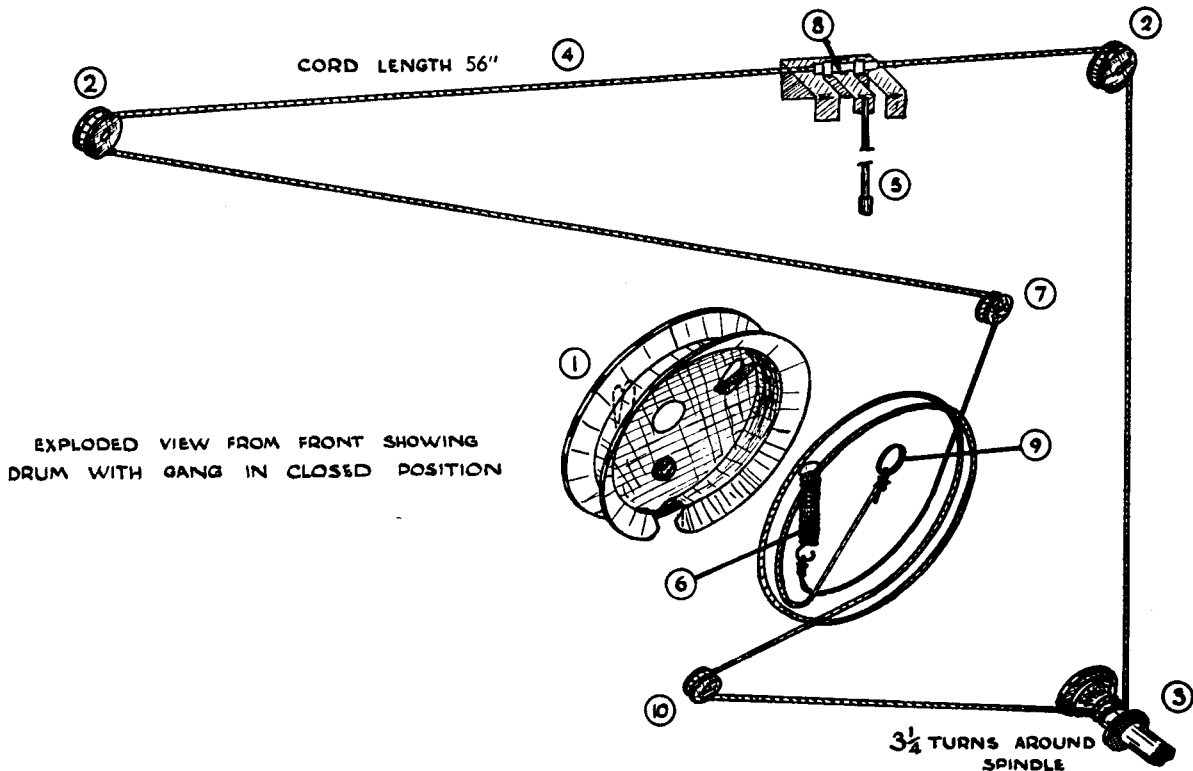
Alignment frequencies are: 1,420 Kc/s, 3XY (peak oscillator (C10) and aerial (C4) trimmers), and 600 Kc/s, 7ZL (peak L3, 4 oscillator slug while rocking gang).

Do not attempt to adjust the iron core of the aerial coil.

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.



PARTS LIST

CAPACITORS

No.	Description	Code No.
C1, 7, 8, 14	100pF mica	
C2, 3	2 gang tuning	CZ.107.759
C4	30pF air trimmer	CZ.113.700
C5	0.047 μ F 200V paper	
C6	0.047 μ F 400V paper	
C9	475pF \pm 2% mica	CZ.066.119
C10	60pF air trimmer	49.005.58
C11, 12	Part of 1st I.F. transformer	
C13	30pF mica	
C15, 16	Part of 2nd I.F. transformer	
C17, 18	0.0047 μ F 400V paper	
C19, 20	0.047 μ F 100V paper	
C21, 22	0.022 μ F 600V paper	
C23, 24	0.0015 μ F 400V paper	
C25, 26	0.001 μ F 400V paper	
C27, 28	0.001 μ F 600V paper	
C29, 30, 31	50 μ F 350VW electrolytic	CZ.099.925
C32	0.047 μ F 200V paper	
C33	0.0047 μ F 600V paper (anti-click)	

All tolerances are \pm 20% unless otherwise specified.

RESISTORS

No.	Description	Code No.
R1	22,000 Ω $\frac{1}{2}$ W carbon	
R2	33,000 Ω \pm 10% 1W carbon	
R3	1M Ω $\frac{1}{2}$ W carbon	
R4	56,000 Ω \pm 10% 1W carbon	
R5	47,000 Ω $\frac{1}{2}$ W carbon	
R6, 7	Ganged potentiometer 2x1M Ω taper "C", tapped at 40,000 Ω with S.P.S.T. switch	CZ.032.304
R8, 9	10,000 Ω \pm 10% $\frac{1}{2}$ W carbon	
R10, 11	10M Ω $\frac{1}{2}$ W carbon	
R12, 13	220,000 Ω $\frac{1}{2}$ W carbon	
R14, 15	Ganged potentiometer 2x1M Ω taper "A", tapped at 500,000 Ω	CZ.029.328
R16, 17, 18,		
19, 22, 23	100,000 Ω \pm 10% $\frac{1}{2}$ W carbon	
R20, 21	120,000 Ω \pm 10% $\frac{1}{2}$ W carbon	
R24	1M Ω potentiometer, taper "A"	CZ.029.327
R25, 26	4,700 Ω $\frac{1}{2}$ W carbon	
R27, 28	160 Ω \pm 10% 1W WW	
R29	47 Ω \pm 10% 1W WW	
R30, 31	180 Ω \pm 10% 1W WW	
R32, 33	4,700 Ω \pm 10% 1W carbon	
R34	18 Ω \pm 10% 1W WW	
R35	470,000 Ω $\frac{1}{2}$ W carbon	
R36	1M Ω $\frac{1}{2}$ W carbon	
R37, 38	22 Ω $\frac{1}{2}$ W carbon	

All tolerances are \pm 20% unless otherwise specified.

INDUCTORS

No.	Ohms	Description	Type or Code No.
L1	19.6-26.4	B/C aerial coil	CZ.323.026
L2	1.5-2.0		
L3	1.2-1.7	B/C oscillator coil	CZ.330.613
L4	<0.5		
L5	4.7-5.2	1st I.F. transformer	A3.126.84
L6	8.0-9.0		
L7	4.7-5.2	2nd I.F. transformer	CZ.320.444
L8	8.3-9.2		
L9	356-435	Output transformer	Rola type K13 CZ.345.060
L10	<0.5		
L11	356-435	Output transformer	Rola type K13 CZ.345.060
L12	<0.5		
L13	20	Power transformer	CZ.344.108
L14	135/140		
L15	<0.5		
L16	—	Loudspeaker 8"	Rola type 8M, F59
L17	—	Loudspeaker 8"	Rola type 8M, F59

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**.