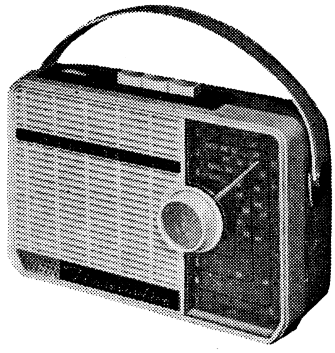
PHILIPS RADIOPLAYER MODEL 200



SPECIFICATIONS

Tuning Range	530-1620 Kc/s
Intermediate Frequency	455 Kc/s
Power Supply—Battery	9V Type 2364
Battery Consumption	12mA no signal 33mA for 50mW output

TRANSISTOR EQUIPMENT AND VOLTAGE/CURRENT ANALYSIS

Transistor Function	Transistor No.	Transistor Type	Collector		Base Volts	Emitter Volts
			Volts	mA		
Frequency Converter	TR1	OC170	5.4	0.42	1.05	0.97
1st I.F. Amplifier	TR2	OC169	4.74	0.66	1.67	1.45
2nd I.F. Amplifier	TR3	OC169	5.8	0.92	1.16	0.9
Demodulator and 1st Audio Amplifier	TR4	OC169	6.10	0.42	1.63	1.38
2nd Audio Amplifier	TR5	OC71	8.43	1.50	1.64	1.51
Push-Pull Audio Amplifier	TR6	OC74	9	2.75	0.16	0.03
Push-Pull Audio Amplifier	TR7	OC74	9	2.75	0.16	0.03

V.T.V.M. measurements with receiver in "no signal" condition.

TO REMOVE CHASSIS FROM CASE.

Release screw and remove rear case cover. Remove plug from battery, withdraw tuning knob (push fitted) from tuning gang spindle. Loosen retaining screw and remove bracket from speaker magnet. Unscrew four screws securing chassis to front cover (refer resistor/condenser layout drawing for mounting points). Withdraw chassis complete with dial scale and cursor attached.

Replacement of chassis in case is a reversal of the above procedure, however, the following point should be noted:—

NOTE:—

When replacing clamping bracket on speaker magnet, initially determine correct position, that is, with the locating hole in bracket corresponding with hole in the rear case. Axial adjustment along speaker magnet may be necessary to bring the bracket into correct plane with rear case. This adjustment is necessary to prevent excessive distorting of rear case when the securing screw is tightened.

PRE SET BIAS ADJUSTMENT.

Pre set potentiometer R28 provides for adjustment of bias applied to TR6, TR7. Set the volume control to the minimum position and adjust R28 to achieve a combined TR6, TR7 collector current of 5.5mA. For convenience, a link is provided (adjacent to output transformer) for the purpose of inserting a milliameter into the collector circuitry.

NOTE:—

It is desirable to operate the receiver for approximately three minutes before checking current readings.

CAPACITORS

No.	Description	Type or Code No.
C1, 2, 6, 7	2 gang tuning with trimmers	CZ.107.770
C3	0.0047μF 400V paper	Hi-Seal 85 Type TPB448
C4	0.01μF 200V paper	Hi-Seal 85 Type TPB240
C5, 9, 12, 15, 16	Part of I.F. Transformers	
C8, 10, 13, 14, 17, 18, 21	0.04μF 200V met. paper	AEE Type W99 CZ.076.014
C11	150μF 3V electrolytic	Ducon Type ES 308 CZ.100.137
C19	0.001μF 600V met. paper	AEE Type W99 CZ.073.000
C20	0.047μF $^{+80\%}_{-20\%}$ 33V ceramic	Hi-K Type CPT Thin sheet ceramic CZ.097.901
C22	10μF 6V electrolytic	Ducon Type ES 603 CZ.099.210
C23, 25	100μF 10V electrolytic	Ducon Type ES 1209 CZ.100.102
C24	50μF 3V electrolytic	Ducon Type ES 305 CZ.099.807
C26	470pF ± 10% 600V Styroseal	Ducon Type D.F.B. 608 CZ.088.601
C27	0.25μF ± 25% 200V met. paper	AEE Type W48 CZ.078.006

All tolerances are ± 20% unless otherwise specified.

RESISTORS

No.	Description	Type or Code No.
R1	6.8kΩ ± 20% ½W carbon	
R2	6.8kΩ ½W carbon	
R3, 11, 16	33kΩ ½W carbon	
R4, 8	2.2kΩ ½W carbon	
R5	1.8kΩ ½W carbon	
R6	22kΩ ½W carbon	
R7, 10	8.2kΩ ½W carbon	
R9, 19	330Ω ½W carbon	
R12	22kΩ ± 20% ½W carbon	
R13, 18, 23	1kΩ ½W carbon	
R14, 17	470Ω ½W carbon	
R15	3.3kΩ ½W carbon	
R20	250kΩ carbon potentiometer taper "E"	CZ.034.002 I.R.C. Type Q
R21	10kΩ ½W carbon	
R22	27kΩ ½W carbon	
R24	820Ω ½W carbon	
R25	220kΩ ½W carbon	
R26	470kΩ ½W carbon	
R27	4.7kΩ ½W carbon	
R28	5kΩ carbon potentiometer (preset)	E097 AC/5k
R29	150Ω ½W carbon	
R30, 31	10Ω ½W carbon	
R32	180Ω ½W carbon	
R33	22Ω ½W carbon	

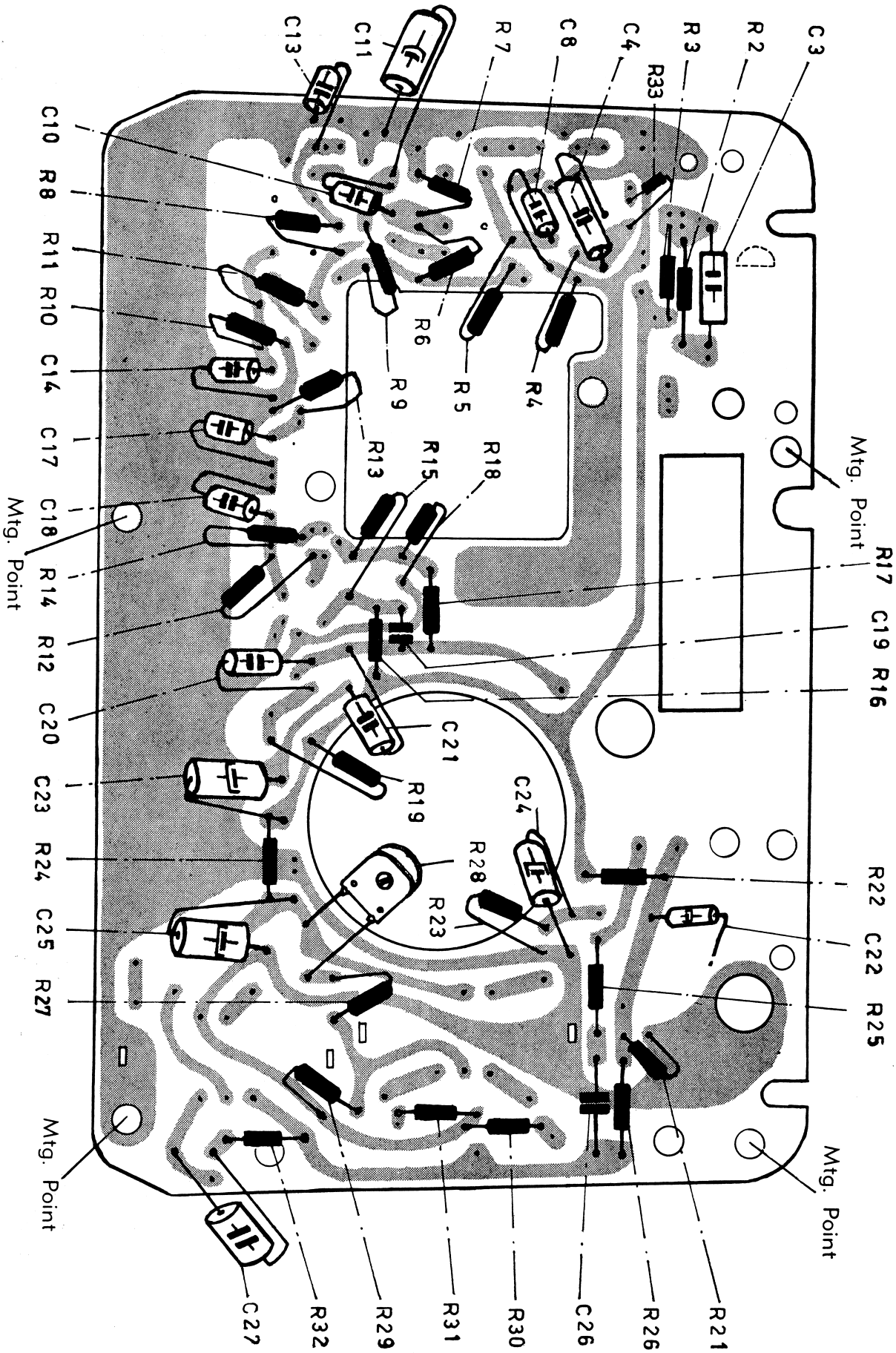
All tolerances are ± 10% unless otherwise specified.

INDUCTORS

No.	D.C. Resistance (ohms)	Description	Type or Code No.
L1	1.0	Rod Aerial Assy.	CZ.323.046
L2	<0.5		
L3	18.2	Loading Coil	CZ.321.292
L4	<0.5	Oscillator Coil	CZ.330.620
L5	3.3		
L6			
L7	3.9	1st I.F.T.	CZ.320.466
L8			
L9	3.9		
L10			
L11	3.9	2nd I.F.T.	CZ.320.466
L12			
L13	3.9		
L14			
L15	3.9	3rd I.F.T.	CZ.320.467
L16			
L17	1.8		
L18	330	Driver Transformer	Rola Type SDR 62 CZ.345.827
L19	86		
L20			
L21	8	Output Transformer	Rola Type STR 62 CZ.345.076
L22			
L23	<0.5		
L24		Loudspeaker	Rola 5C-F 52 cone.

All "D.C. Resistance" tolerances are ± 10% unless otherwise specified.

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.


C3
R2
R3
R33
C4
C8
R7
C11
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R32
C27
R6
R9
R5
R4
R13
R15
R18
C21
R19
C24
R28
R23

MISCELLANEOUS COMPONENTS

Description	Code No.
Bracket, chassis mtg.	CS.233.010
Bracket, speaker mtg., x4	CS.282.493
Bracket, switch mtg., x2	CS.233.011
Case Assy. front (incl. window, wordmarks, Philips and Transistor)	CR.570.703
Case Assy. rear, fawn (incl. grille, handle retainer, battery holding springs)	CR.570.705
Case Assy. rear, grey ,, ,,	CR.570.706
Case Assy. rear, black ,, ,,	CR.570.707
Case Assy. rear, red ,, ,,	CR.570.708
Clamp, rear case retaining	CS.233.017
Cursor	CS.410.657
Escutcheon, switch	CS.430.096

Description	Code No.
Grille, rear cover	CS.430.706
Handle Assy. fawn (incl. decorative pivots)	CR.523.435
Handle Assy. red ,, ,,	CR.523.436
Handle Assy. black ,, ,	CR.523.433
Handle Assy. grey ,, ,,	CR.523.434
Knob, tuning	CR.523.790
Knob, volume control	CR.523.537
Scale, dial	CS.412.452
Screw, rear mtg.	CS.258.873
Switch, push button	A3.132.95
Wordmark, 'Philips'	CS.436.491
Wordmark, 'Transistor'	CS.436.495

RECENT MODIFICATIONS

The following modifications introduced to improve trimming range in both aerial and oscillator circuits.

C28: 6·8pF ± 1pF Ceramic Capacitor in parallel with C1.
C29: 6·8pF ± 1pF Ceramic Capacitor in parallel with C2.

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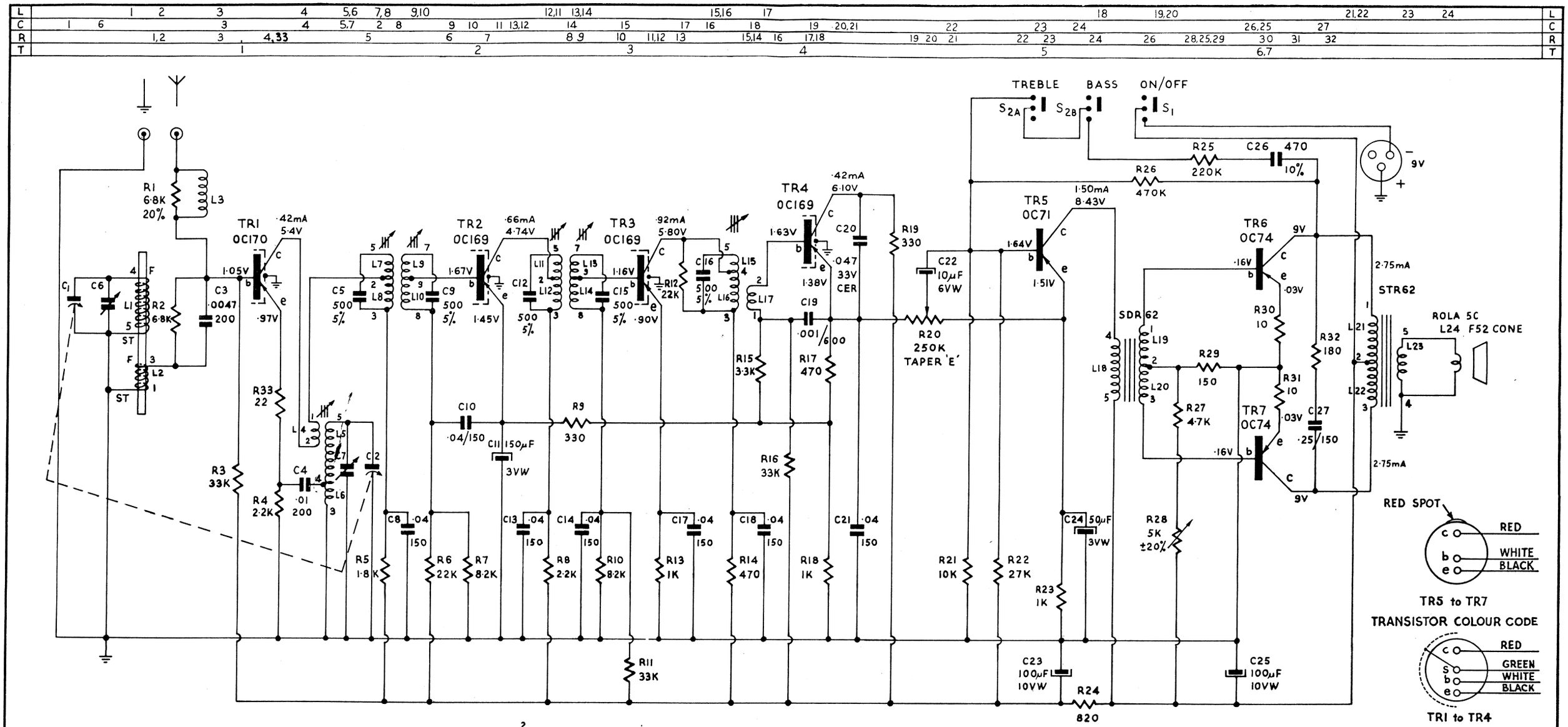

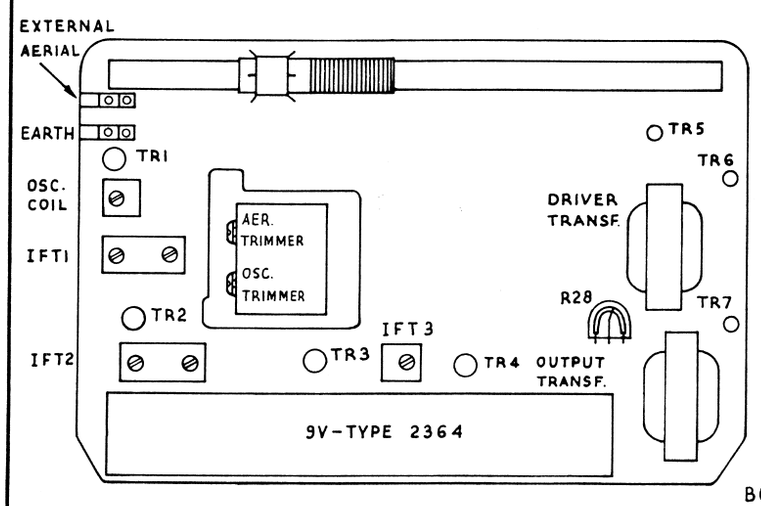

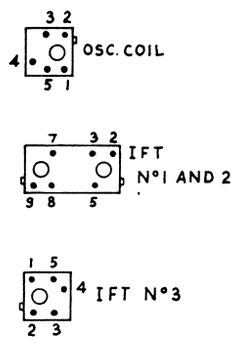

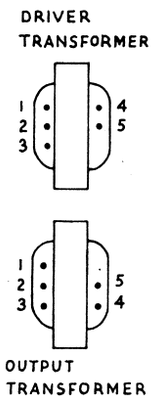

BOTTOM VIEW OF COILS AND TRANSFORMERS

NOTES:

ADJUST R28 FOR COMBINED TR6-TR7 COLLECTOR CURRENTS OF 5·5mA. UNSOLDER BRIDGE BETWEEN TWO SOLDERLUGS NEXT TO OUTPUT TRANSFORMER TO MEASURE THIS.

CAPACITOR VALUES
WHOLE NUMBERS-pF
DECIMALS-μF
SECOND FIGURE-D.C.V.W.
TOLERANCE ± 20% UNLESS OTHERWISE SHOWN
RESISTORS ARE ½W 10% UNLESS OTHERWISE SHOWN.
VOLTAGES MEASURED WITH V.T.V.M.

ALIGNMENT.

I.F. ALIGNMENT.

Set volume control to maximum, tuning capacitor to fully open position. Apply a modulated 455 Kc/s signal through an 0.1μF capacitor to TR1 base.

Detune L9/10 and L13/14 by screwing slugs clockwise one turn. Peak coils in the following sequence:—

1. 3rd I.F.T. L15/16.
2. 2nd I.F.T. Primary L11/12.
3. 1st I.F.T. Primary L7/8.
4. 2nd I.F.T. Secondary L13/14.
5. 1st I.F.T. Secondary L9/10.

Finally adjust generator to 460 Kc/s and re-peak 1st I.F.T. secondary (L9/10). Do not re-adjust slugs.

NOTE:—
Slugs peaked at bottom of coil.

R.F. ALIGNMENT.

Location of R.F. trimmers is shown as an inset to the Circuit Diagram. It is advisable to use an insulated tool when adjusting the trimmers mounted on the tuning gang, as the possibility of short circuiting and damage to components exists if a non-insulated tool is used.

With the gang in closed position adjust cursor to stop mark on dial (near figure 6). With the volume control at maximum connect generator through a series network comprising an 0.1μF capacitor and 4,700Ω resistor to aerial and earth terminals.

Alignment frequencies are:—
600 Kc/s (7ZL) Oscillator coil slug.
1,500 Kc/s (3AK) Oscillator and aerial trimmers.