

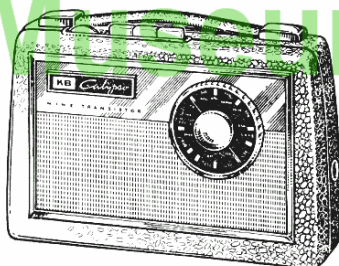
KB

SERVICE MANUAL

MODELS

WP 21
LYRIC

WP 31
CALYPSO



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AN  ASSOCIATE

Issued JULY 1963

COMBINED RADIO AND TELEVISION SERVICE LTD

REGENT WORKS, SIDCUP, KENT. Tel: FOOTscray 3333

SERVICING ORGANISATION FOR K.B. REGENTONE. R.G.D.

ALSO PROVINCIAL DEPOTS AT

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CHEETHAM, MANCHESTER
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87 McALPINE STREET,
GLASGOW
CENTral 1779

Service Data

for

RADIO RECEIVERS WP.21 & WP.31

WP. 21 — LYRIC.

WP. 31 — CALYPSO.

GENERAL DESCRIPTION

A Nine Transistor Portable supplied in either a moulded or fabric covered wood cabinet. The controls are push button wave change and off, thumb edge volume control and slow motion tuning.

Both receivers take a car aerial connection, and sockets are provided for microphone/telephone attachment and output for extension loudspeaker, earpiece, and tape recording facilities. The loudspeaker is 10Ω impedance and the earphone between 25 and 250Ω . The microphone may be used as a baby alarm, and the telephone attachment may be used to provide loudspeaking facilities on a telephone, manual gain control being available on both when the M.W. & L.W. Buttons are pressed together.

SPECIFICATION

Names:	WP.21 — Lyric. WP.31 — Calypso.	
Type Nos:	WP.21 and WP.31.	
Description:	Transistor portable radio receivers.	
Dimensions:	WP.21 Depth: $3\frac{1}{8}"$ (7.95 cms) Height: $6\frac{1}{2}"$ (16.5 cms) Width: $10\frac{3}{16}"$ (25.8 cms)	WP.31 Depth: $3\frac{1}{4}"$ (8.25 cms) Height: $6\frac{1}{2}"$ (16.5 cms) Width: $10\frac{1}{4}"$ (26 cms)
Weight:	WP.21 — 3 lbs. 3 ozs. WP.31 — 3 lbs. 11 ozs.	
Cabinets:	WP.21 — Polystyrene. WP.31 — Fabric covered wooden de luxe cabinet.	
Loudspeaker:	4" (10.2 cms) (diameter).	
Battery:	PP.9.	
Technical Specification:	Suitable for reception of A.M. signals on Medium and Long Wave Bands.	
Transistor Types:	AF117 (2 off), Y159, OC70, OC75, OC81D, OC81+AC127 (Matched Pair).	
Features:	9 Transistor complement. N.P.N., P.N.P. Output Pair. High Flux Loudspeaker. Push Button Wave Band Selection, and on/off switch. Earpiece socket. $6" \times \frac{5}{16}"$ dia. ferrite rod aerial. Telephone and baby alarm input socket. Optional Extras: Telephone adaptor, microphone, earpiece.	

TRANSISTOR COMPLEMENT:

	Mullard	T.I.	
TX1	AF117	2G417	Oscillator Mixer.
TX2	—	Y159	Transistor Diode.
TX3	AF117	2G417	I.F. Amplifier.
TX4	OC70	2G317B	Detector.
TX5	OC75	2G374B	Pre-Driver.
TX6	OC81D	2G374B	Driver.
TX7	OC81	2G381A	Push-Pull Output. Microphone Amplifier.
TX8	AC127	2G339A	
TX9	—	2G309	

WAVE RANGES

Long Wavebands — 155 - 280 Kc/s.
 Medium Wavebands — 540-1600 Kc/s.

POWER OUTPUT

400 mW for 10% distortion.

POWER CONSUMPTION

Standing Current	-	-	-	-	-	-	-	-	-	-	-	-	-	-	20 mA.
50 mW output	-	-	-	-	-	-	-	-	-	-	-	-	-	-	45 mA.
400 mW output-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	110 mA.
Average listening Level	-	-	-	-	-	-	-	-	-	-	-	-	-	-	26 mA.
Average Listening Level with earpiece	-	-	-	-	-	-	-	-	-	-	-	-	-	-	20 mA.

REMOVAL OF CHASSIS

1. Pull off Tuning Knob and remove back by means of the coin slotted head.
2. Remove battery and unsolder both leads to car aerial socket.
3. Remove the three slotted screws securing the metal chassis.
4. Detach the microphone and earpiece sockets by means of their fixing rings.
5. Lift lower portion of chassis off speaker, and ease wavechange buttons clear of cabinet, unsolder speaker leads to free chassis.

CIRCUIT DESCRIPTION

The aerial circuit has coils which fit on a tube containing the ferrite rod. This gives a robust construction. TX1 is an oscillator mixer transistor in the collector of which is a double tuned I.F. transformer circuit, which includes a damping transistor TX2 to eliminate overload from strong signals. A single tuned I.F. amplifier TX3 is employed feeding a combined detector and audio amplifier TX4.

Audio signals from the volume control are fed into the pre-amplifier TX5, and after amplification to the driver transistor TX6. This stage provides drive to the base of the output pair which is comprised of a complementary pair of transistors TX7 and TX8. This arrangement means that the same voltage applied to the base circuits of these two transistors gives a normal Class ‘B’ operation.

A separate low noise transistor amplifier TX9, is included to provide the microphone and telephone facilities, and an earpiece socket, which can be used for tape recording, is also included. Gain control of the microphone and telephone adaptor facilities is achieved by pressing the M.W. and L.W. buttons together, this introduces the volume control in the amplifier output.

The following equipment will be required:—

1. A.M. Signal Generator covering the range 140–1700 Kc/s.
2. Output power meter.
3. Shielded test coil (85 turns of enamel covered wire on 2" diameter former).

Procedure

1. All measurements made with signal modulated 30% at 400 c.p.s.
2. Progressively reduce signal input as the sensitivity increases with alignment maintaining approximately 50 mW. output.

I.F. Alignment

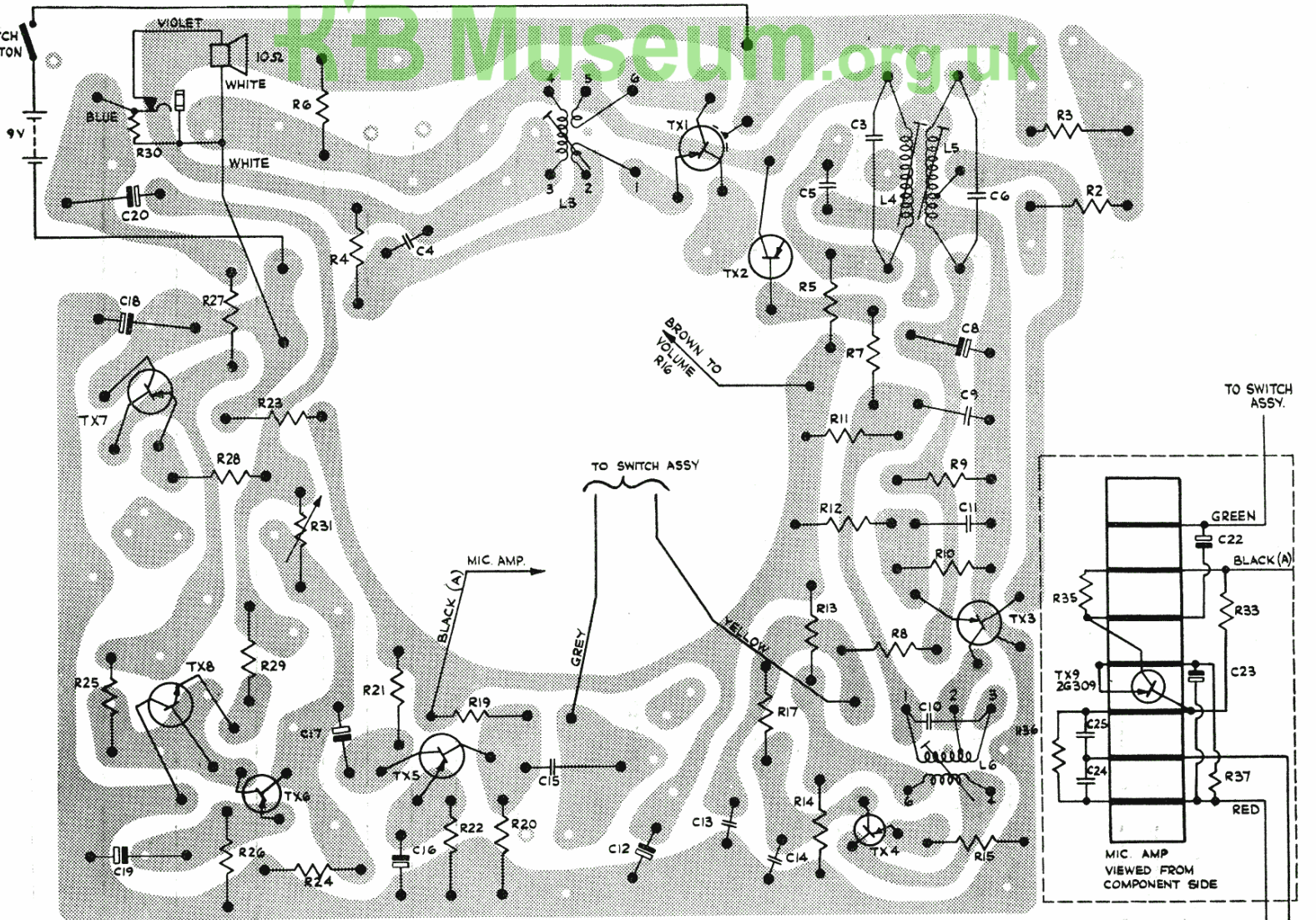
1. Set generator to 470 Kc/s. and connect via a 0.1 μ F. condenser to base winding of mixer transistor, set switch to M.W.
2. Set gang to minimum capacity.
3. Trim for maximum gain by adjusting cores in the following order:—L6, L5, L4 and then readjust if required.

R.F. Alignment

1. Connect signal generator to test coil.
2. The following operation should be carried out in the order indicated being repeated until maximum sensitivity is attained.

Operation	Input Frequency	Waveband	Gang Position	Adjustments
1	540 Kc/s.	M.W.	180° (max. C)	Osc. core. L3.
2	1600 Kc/s.	M.W.	0° (min. C)	Osc. trimmer T2.
3	Check Operation 1.			
4	600 Kc/s.	M.W.	—	Move MW aerial L1 coil for maximum gain.
5	1430 Kc/s.	M.W.	—	Adjust aerial trimmer T1 for maximum gain.
6	225 Kc/s.	L.W.	—	Adjust LW aerial coil L2 for maximum gain.

ON/OFF SWITCH
ON PUSH BUTTON
ASSY

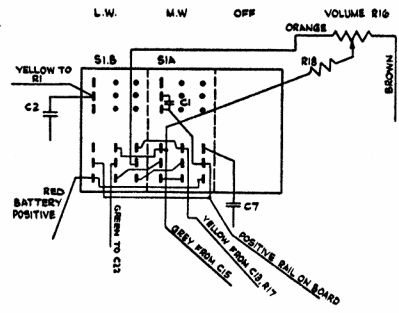


PRINTED BOARD VIEWED FROM COPPERED SIDE

MICROPHONE &
TELEPHONE INPUT

YELLOW

KB WP21



PINS

L1	2-5Ω	L3	3 & 4	2-25Ω
L2	9Ω	L4	1 & 3	5-2Ω
		L5	4 & 6	5-2Ω
		L6	1 & 3	4-2Ω

OSC. MIXER
TX1 TX2
AF117 Y159

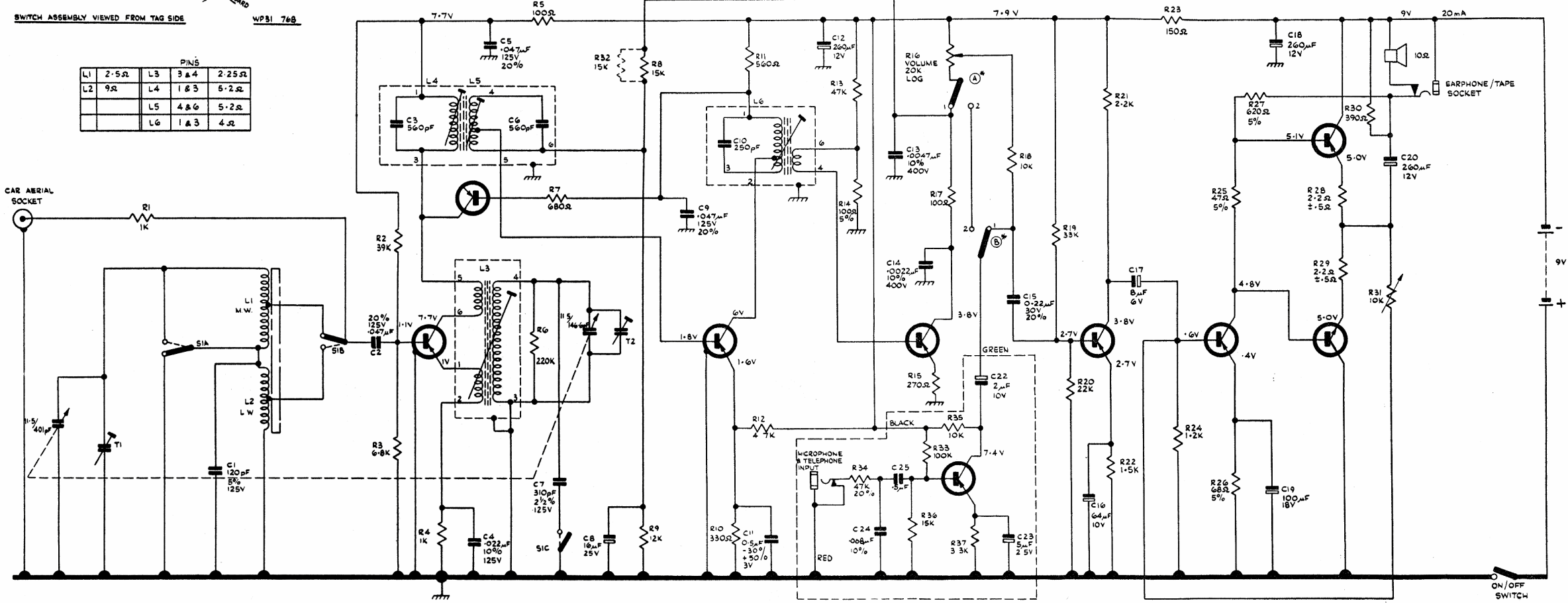
I.F. AMP
TX3
AF117

DET
TX4
OC70

PRE AMP
TX5
OC75

DRIVER
TX6
OC81D

OUTPUT PAIR
TX7 OC81
&
TX8
AC127



ALL RESISTORS 10% UNLESS STATED

TELEPHONE & MIC. AMP
TX9
2G309

* SWITCHES A AND B ONLY MOVE TO POSITION 2 WHEN THE MW AND L.W. BUTTONS ARE PRESSED TOGETHER

COMPONENT	CIRCUIT REF.	PART NO.	PRICE
WP.31 Cabinet—Grey		768/4	£5. 0. 0.
WP.31 Cabinet—Green		768/4/1	£5. 0. 0.
WP.31 Cabinet—Beige		768/4/2	£5. 0. 0.
WP.21 Cabinet—Green		769/4	£3. 7. 6.
WP.21 Cabinet—Blue		769/4/1	£3. 7. 6.
Push Button Switch	SI, A, B, C	13/67/3	15. 3.
Aerial Coil Assembly	L1, L2	768/30	5. 3.
Ferrite Rod		43/32	3. 3.
Ganged Cond.		38/33	£1. 2. 6.
Volume Control	R16	9/95	3. 3.
Jack Socket		13/211	2. 3.
Osc./Mixer Coil	L3	32/28	6. 9.
Double Tuner I.F.	L4, 5	32/29	14. 0.
Single Tuner I.F.	L6	32/30	8. 0.
SPECIAL CONDENSERS			
5 μ F 2.5v.	C23	KEM200/G/S	1. 9.
2 μ F 10v.	C22	KEM186/G/S	1. 9.
.5 μ F 3v.	C11	KC229	1. 0.
260 μ F 12v.	C12, C18, C20	KEM197/S	2. 6.
100 μ F 18v.	C19	KEM196/S	1. 9.
64 μ F 10v.	C16	KEM199/S	1. 9.
16 μ F 25v.	C8	KEM194/S	1. 9.
8 μ F 6v.	C17	KEM193/S	1. 9.
310pF 2 $\frac{1}{2}$ % 125v.	C7	KST335	1. 0.
120pF 5% 125v.	C1	KST336	1. 0.
SPECIAL RESISTOR			
2.2 Ω \pm .5 Ω	R28, R29	R2D2KCZ/d	1. 0.