

MURPHY RADIO SERVICE INSTRUCTIONS



A96 RECEIVER

MAINS SUPPLY	105/115v. and 200/250v. 50-100 c.p.s.
WAVE RANGES	M.W. 190-550 metres. S.W.2 40-108 metres. S.W.1 13- 33 metres.
INTERMEDIATE FREQUENCY	465 Kc.
VALVES	Mazda TH41, VP41, HL41DD, PEN 45, UU6.
SPEECH COIL IMPEDANCE	3 ohms.

TABLE OF VOLTAGES

Valve	Type	Electrode	Test Point	Square	Voltage
V.1	Mazda TH 41	Hexode Anode	20	23 L	105
		Hexode Screen	19	23 L	105
		Triode Anode	22	23 L	42
V.2	Mazda VP 41	Anode	54	19 N	188
		Screen	38	19 N	190
V.3	Mazda HL 41 DD	Anode	72	15 N	85
		Cathode	64	15 N	- 2.9
		Control Grid	63	4 C	- 4.2
V.4	Mazda PEN 45	Anode	77	14 N	183
		Screen	38	14 N	190
		Cathode	78	14 N	6
V.5	UU 6	Cathode	92	3 F	345

Voltages measured to chassis, under no signal conditions with V/C at minimum, using Avometer Model 7.

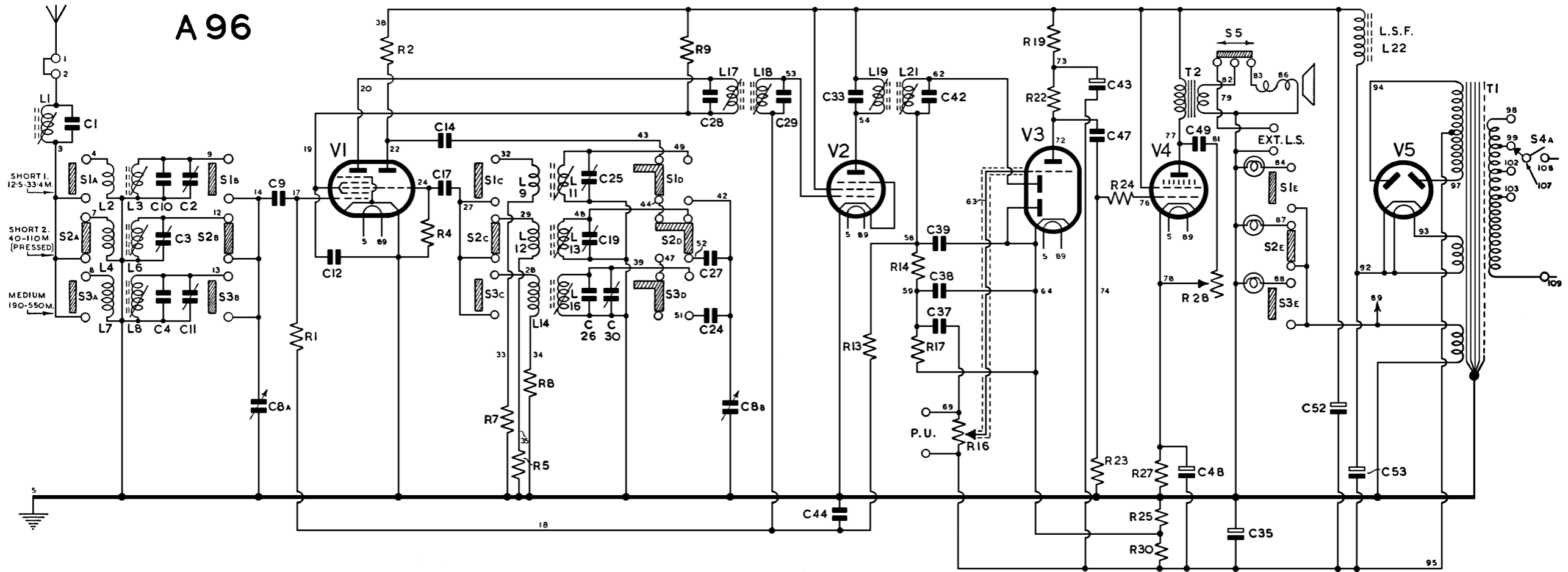
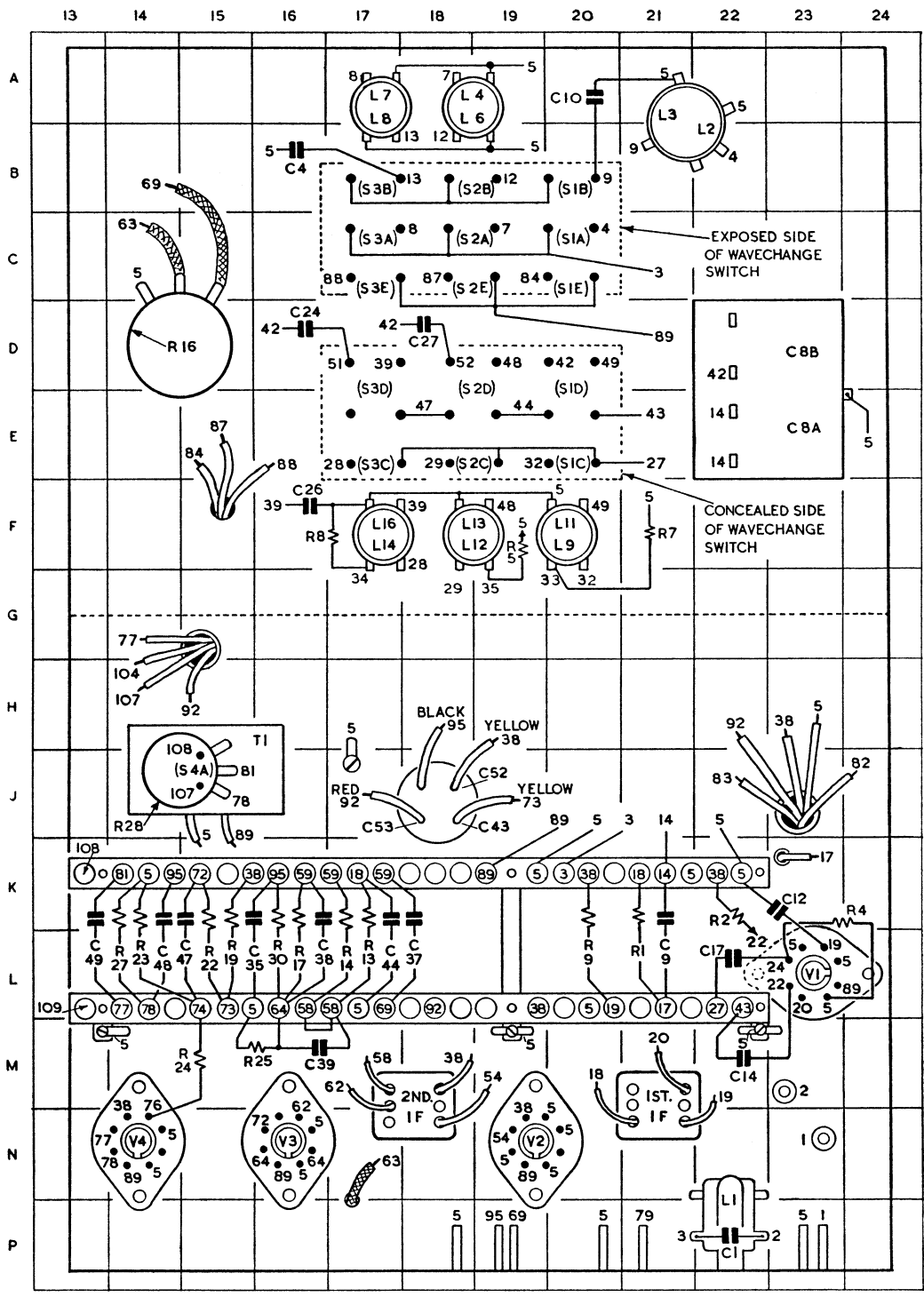


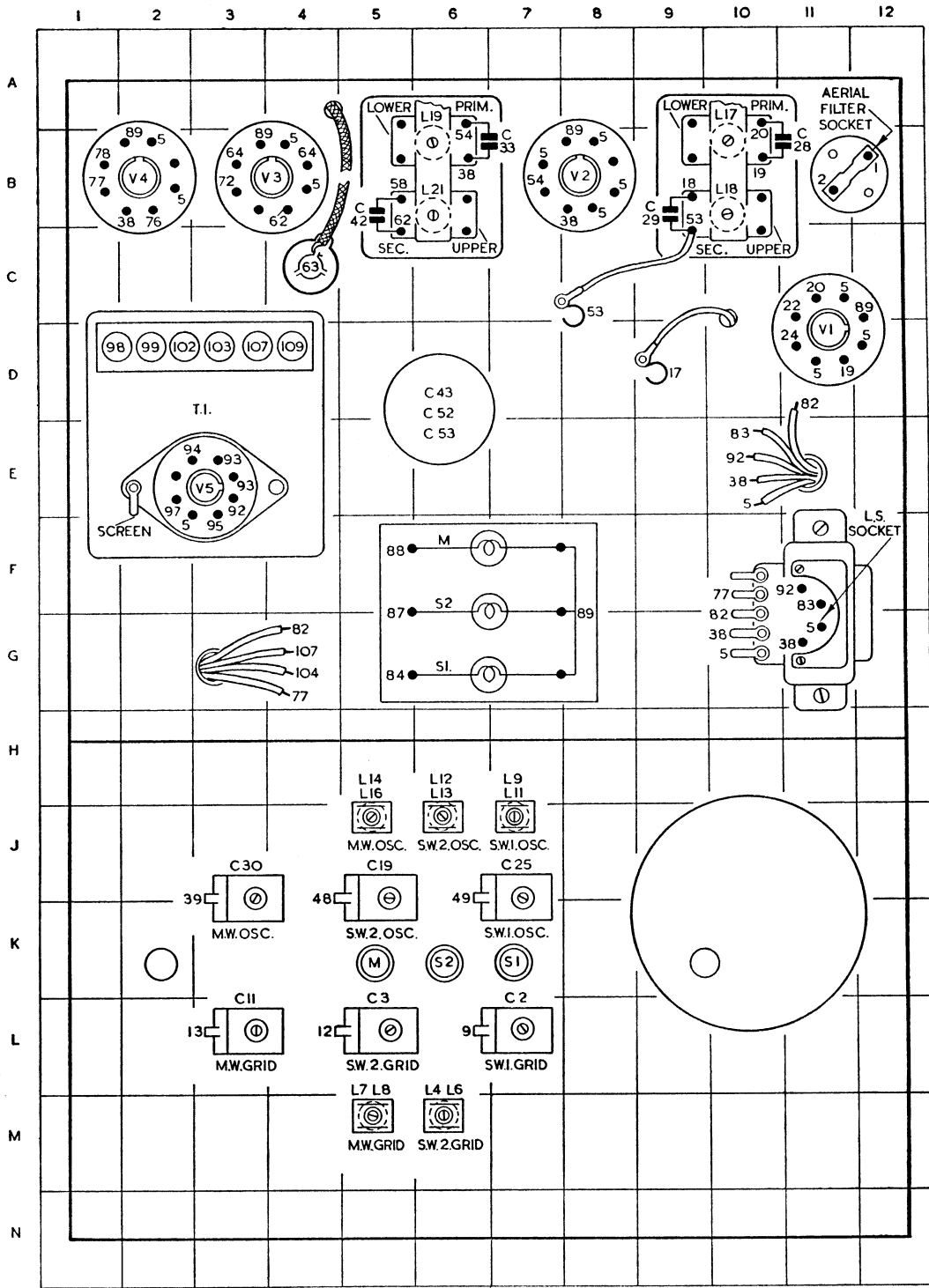
TABLE OF COMPONENTS

Code	Value	Test Point	Square	Code	Value	Test Point	Square	Code	Value	Test Point	Square	Code	Value	Test Point	Square	Code	Value	Test Point	Square
C.1	500 pf.	2-3	22 P	C.33	139 pf.	38-54	6 B	R.8	470 Ω	5-34	17 F	L.6	*	5-12	19 A	T.1			
C.2	5-35 pf. (Preset)	5-9	7 L	C.35	50 μf. (12 V.W.)	5-95	16 L	R.9	9,100 Ω 1 Watt	19-38	20 L	L.7	1 Ω	5-8	17 A	Prim			
C.3	5-35 pf. (Preset)	5-12	5 L	C.37	.005 μf. (Mica)	59-69	18 L	R.13	2.2 M Ω	18-58	17 L	L.8	2.5 Ω	5-13	17 A	C-115v.	5 Ω	109-103	3 D
C.4	20 pf.	5-13	16 B	C.38	100 pf.	59-64	16 L	R.14	100,000 Ω	58-59	17 L	L.9	*	32-33	20 F	C-210v.	15 Ω	109-102	3 D
C.8a	500 pf. (Variable)	5-14	23 E	C.39	100 pf.	58-64	17 M	R.16	1 M Ω	69-95	15 D	L.11	*	5-49	20 F	C-230v.	18 Ω	109-99	3 D
C.8b	500 pf. (Variable)	5-42	23 D	C.42	150 pf.	58-62	5 C	R.17	470,000 Ω	59-64	16 L	L.12	*	35-29	19 F	C-250v.	20 Ω	109-88	3 D
C.9	500 pf.	14-17	21 L	C.43	8 μf.	73-95	18 J	R.19	10,000 Ω	38-73	15 L	L.13	*	5-48	19 F	H.T. Sec.	150 Ω	94-95	3 D
C.10	10 pf.	5-9	20 A	C.44	.05 μf.	5-18	17 L	R.22	47,000 Ω	72-73	15 L	L.14	2 Ω	34-28	17 F		160 Ω	97-95	3 D
C.11	5-35 pf. (Preset)	5-13	4 L	C.47	.005 μf (Mica)	72-74	15 L	R.23	1 M Ω	5-74	14 L	L.16	1.5 Ω	5-39	17 F				
C.12	.002 μf. (Minimum)	5-19	23 K	C.48	50 μf. (12 V.W.)	78-95	14 L	R.24	47,000 Ω	74-76	15 M	L.17	5.5 Ω	19-20	10 B	T.2			
C.14	100 pf.	22-43	22 M	C.49	.04 μf. (Type 1619)	77-81	13 L	R.25	47 Ω	5-64	15 M	L.18	5.5 Ω	18-53	10 B	Prim	270 Ω	38-77	11 G
C.17	200 pf.	24-27	22 L	C.52	8 μf.	38-95	18 J	R.27	200 Ω ½ Watt	5-78	14 L	L.19	5.5 Ω	38-54	6 B	Sec.	*	5-82	—
C.19	5-35 pf. (Preset)	5-48	5 J	C.53	16 μf.	92-95	18 J	R.28	50,000 Ω	81-78	14 J	L.21	5.5 Ω	58-62	6 B	L.S. Speech			
C.24	700 pf.	42-51	16 D					R.30	27 Ω	64-95	16 K	L.22	2,300 Ω	38-92	L.S.F.	Coil	2.5 Ω		
C.25	5-35 pf.	5-49	7 J	R.1	1 M Ω	17-18	21 L												
C.26	20 pf.	5-39	16 F	R.2	33,000 Ω 1 Watt	22-38	22 L	L.1	2.5 Ω	2-3	22 P								
C.27	2,650 pf.	42-52	18 D	R.4	22,000 Ω	5-24	24 J	L.2	*	4-5	22 B								
C.28	139 pf.	19-20	11 B	R.5	47 Ω	5-35	19 G	L.3	*	5-9	22 B								
C.29	150 pf.	18-53	9 C	R.7	12 Ω	5-33	21 F	L.4	*	5-7	19 A								

D.C. Resistances of inductances and speech coil are quoted in these tables and where values are less than 1 Ω they are indicated by an asterisk.



A96 UNDERSIDE VIEW



A96 TOP VIEW

Trimming

THE I.F. CIRCUITS—Tuned to 465 Kc/s

Unless an oscilloscope is used for the adjustment, it is essential to damp one of each pair of tuned circuits while the other is being adjusted, otherwise an uneven "double humped" resonance curve is likely to be obtained.

The I.F. circuits are tuned by variable inductances, and the following procedure should be adopted for making adjustment:

1. Connect the service oscillator, tuned to 465 Kc/s., between V₂ control grid (square 8C test pt. 53) and chassis. Connect the output meter across the L.S. terminals.

2. Connect the damping unit between V₂ anode (square 19N test pt. 54) and chassis, and adjust L₂₁ (square 6C) for maximum reading in the output meter.

3. Connect the damping unit between V₃ diode anode (square 16N test pt. 62) and chassis and adjust L₁₉ (square 6B) for maximum reading in the output meter.

4. Switch the receiver to M.W. Connect the service oscillator to V₁ control grid (square 9D test pt. 17) and the damping unit between V₁ hexode anode (square 23L test pt. 20) and chassis. Adjust L₁₈ (square 10C) for maximum gain.

5. Connect the damping unit between V₂ control grid (square 8C test pt. 53) and adjust L₁₇ (square 10B) for maximum gain.

THE I.F. FILTER—Tune to 465 Kc/s

This filter is adjusted to give minimum signal at 465 Kc/s, and the adjustment can be judged more accurately by ear than with an output meter.

1. Connect the service oscillator, tuned to 465 Kc/s, to the aerial and earth terminals of the receiver.

2. Reduce the output from the oscillator until the signal is only just audible.

3. Adjust L₁ (square 22P) until the signal is at minimum.

R.F. AND OSCILLATOR CIRCUITS

The R.F. and oscillator circuits have trimming condensers in addition to variable inductances. The condensers are trimmed at the low (wavelength) end of the band and the inductances are adjusted to correct any tracking errors at the top end of the band. In practice it will be found that the inductances very rarely require adjustment.

M.W. BAND

1. Connect the service oscillator through a dummy aerial between the aerial and earth

terminals, and the output meter to the L.S. terminals. Tune the oscillator and the receiver to 220 metres.

2. Adjust C₃₀ (square 3J) to correct any calibration errors and C₁₁ (square 3L) for maximum gain.

3. Tune the receiver and the oscillator to 500 metres and adjust L₁₆ (square 5J) to L₈ (square 6M) to correct any errors in alignment. If these inductances are varied appreciably it will be necessary to realign the condensers at the bottom end of the band.

S.W.2 BAND

Extreme accuracy is necessary on the short-wave band, and the adjustments are made in the factory with the aid of crystal controlled oscillators. If adjustments are made to the oscillator circuits with the aid of an ordinary service oscillator, the receiver should afterwards be checked under broadcast conditions to see that the waveband coverage is correct.

1. Connect the service oscillator through a dummy aerial to the aerial and earth terminals, and the output meter to the L.S. terminals. Tune the oscillator and the receiver to exactly 42 metres. Adjust C₁₉ (square 5J) to correct any calibration errors, and C₃ (square 5L) for maximum gain.

2. Tune the receiver and also the service oscillator to exactly 120 metres and adjust L₁₃ (square 6J) and L₆ (square 6M) to take up any tracking errors. If these inductances are varied appreciably, readjust the condensers at the bottom end of the band.

S.W.1 BAND

1. Connect the service signal generator, through the dummy aerial to the aerial and earth terminals and the output meter to the L.S. terminals. Tune the oscillator and the receiver to 14 metres.

2. Adjust C₂₅ (square 7J) to correct any calibration errors and C₂ (square 7L) for maximum gain.

3. Tune the service signal generator and the receiver to 31 metres and adjust the inductances L₁₁ (square 7J) and L₃ (square 21B) to correct any tracking errors. The inductance L₃ is adjusted by moving the loop of wire inside the coil former. The maximum inductance is obtained when the loop is parallel with the turns of the coil and at minimum when the loop is at right angles to them. It should be adjusted for maximum gain after the oscillator coil L₁₁ has been adjusted.