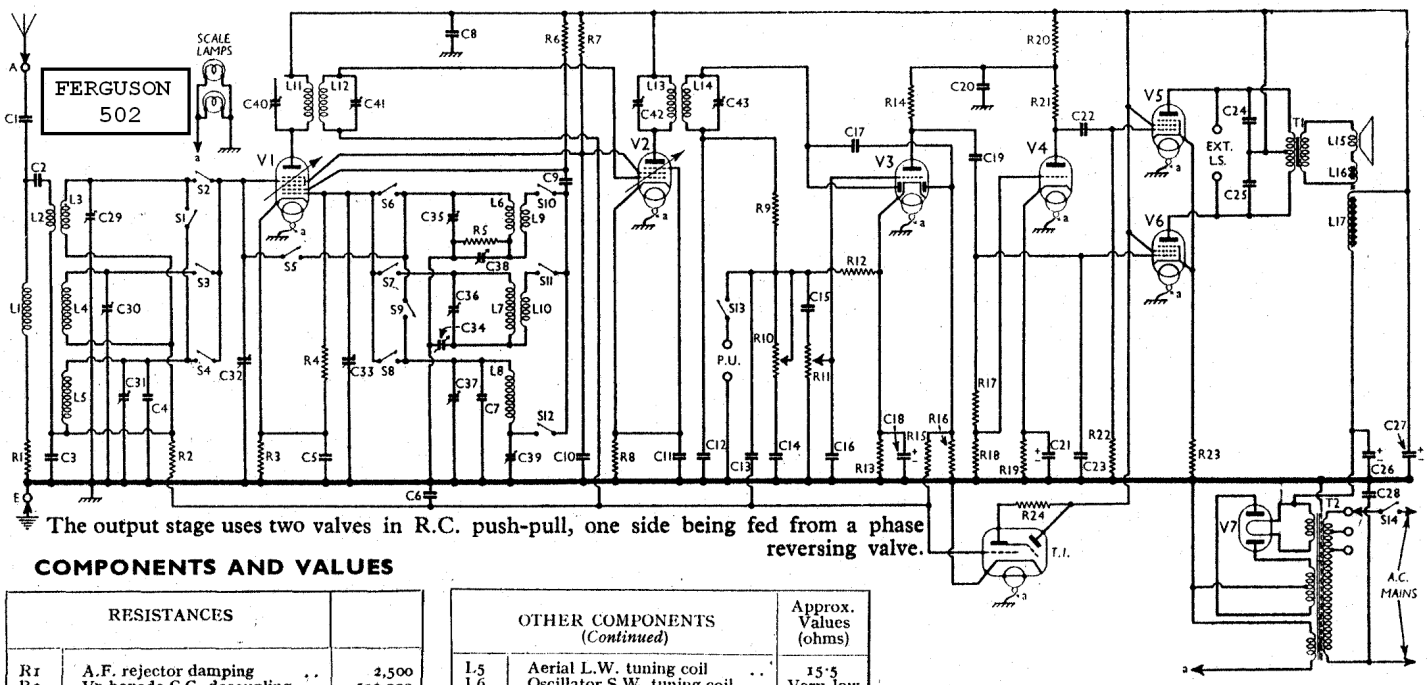

The output stage uses two valves in R.C. push-pull, one side being fed from a phase reversing valve.

COMPONENTS AND VALUES

	RESISTANCES	
R1	A.F. rejector damping	2,500
R2	V1 hexode C.G. decoupling	500,000
R3	V1 fixed G.B. resistance	200
R4	V1 osc. C.G. resistance	25,000
R5	Oscillator S.W. circuit stabiliser	500,000
R6	V1 osc. anode H.T. feed	25,000
R7	V1, V2 S.G. H.T. feed	50,000
R8	V2 fixed G.B. resistance	300
R9	I.F. stopper	25,000
R10	Variable tone control	500,000
R11	Manual volume control	500,000
R12	V3 signal diode load	500,000
R13	V3 G.B. and A.V.C. delay resistance	10,000
R14	V3 triode anode load	250,000
R15	A.V.C. line decoupling	500,000
R16	V3 A.V.C. diode load	500,000
R17	V4 C.G. resistances	500,000
R18	V4 C.G. resistances	50,000
R19	V4 G.B. resistance	10,000
R20	V3 triode, V4 anodes H.T. feed	100,000
R21	V4 anode load	250,000
R22	V5 C.G. resistance	500,000
R23	V5, V6 G.B. resistance	300
R24	T.I. anode H.T. feed	250,000

	CONDENSERS	Values (μF)
C1	Aerial series condenser	0·00025
C2	Aerial coupling condenser	0·00025
C3	M.W. and L.W. aerial coupling	0·002
C4	Aerial L.W. fixed trimmer	0·00002
C5	V1 cathode by-pass	0·1
C6	A.V.C. line decoupling	0·1
C7	Oscillator L.W. fixed trimmer	0·00005
C8	H.T. circuit R.F. by-pass	0·1
C9	V1 osc. anode coupling	0·00025
C10	V1, V2 S.G. decoupling	0·1
C11	V2 cathode by-pass	0·1
C12	I.F. by-passes	0·00025
C13	I.F. by-passes	0·00025
C14	Part of variable T.C. circuit	0·01
C15	A.F. coupling to V3 triode	0·01
C16	Fixed tone corrector	0·00025
C17	Coupling to V3 A.V.C. diode	0·00025
C	cathode by-pass	25·0
C	triode to V4 and V6 A.F. coupling	0·01
C20	V3, V4 anodes decoupling	0·1
C21*	V4 cathode by-pass	5·0
C22	V4 to V5 A.F. coupling	0·01
C23	Fixed tone correctors	0·001
C24	Fixed tone correctors	0·002
C25	Fixed tone correctors	0·002
C26*	H.T. smoothing	8·0
C27*	H.T. smoothing	8·0
C28	Mains R.F. by-pass	0·01
C29‡	Aerial circuit S.W. trimmer	—
C30‡	Aerial circuit M.W. trimmer	—
C31‡	Aerial circuit L.W. trimmer	—
C32†	Aerial circuit tuning	—
C33†	Oscillator circuit tuning	—
C34‡	Osc. circuit M.W. tracker	—
C35‡	Osc. circuit S.W. trimmer	—
C36‡	Osc. circuit M.W. trimmer	—
C37‡	Osc. circuit L.W. trimmer	—
C38‡	Osc. circuit S.W. tracker	—
C39‡	Osc. circuit L.W. tracker	—
C40‡	1st I.F. trans. pri. tuning	—
C41‡	1st I.F. trans. sec. tuning	—
C42‡	2nd I.F. trans. pri. tuning	—
C43‡	2nd I.F. trans. sec. tuning	—

* Electrolytic. † Variable. ‡ Pre-set.

	OTHER COMPONENTS	Approx. Values (ohms)
L1	Aerial A.F. modulation rejector	20·0
L2	Aerial S.W. coupling coil	Very low
L3	Aerial S.W. tuning coil	0·05
L4	Aerial M.W. tuning coil	3·0

	OTHER COMPONENTS (*Continued*)	Approx. Values (ohms)
L5	Aerial L.W. tuning coil	15·5
L6	Oscillator S.W. tuning coil	Very low
L7	Oscillator M.W. tuning coil	2·0
L8	Osc. L.W. tuning and reaction	5·0
L9	Oscillator S.W. reaction coil	0·15
L10	Oscillator M.W. reaction coil	0·7
L11	1st I.F. trans. Pri.	9·5
L12	1st I.F. trans. Sec.	13·0
L13	2nd I.F. trans. Pri.	13·0
L14	2nd I.F. trans. Sec.	9·5
L15	Speaker speech coil	1·5
L16	Hum neutralising coil	0·1
L17	Speaker field coil	1,000·0
T1	Speaker input trans. Pri., total	650·0
T1	Speaker input trans. Sec.	0·15
T2	Mains trans. Pri., total	15·0
T2	Mains trans. Heater sec.	Very low
T2	Mains trans. Rect. heat. sec.	0·1
T2	Mains trans. H.T. sec., total	175·0
S1-S12	Waveband switches	—
S13	Gram. pick-up switch	—
S14	Mains switch, ganged R10	—

VALVE ANALYSIS

Valve voltages and currents given in the table below are those measured in our receiver when it was operating on mains of 219 V, using the 220-230 V tapping on the mains transformer. The receiver was tuned to the lowest wavelength on the medium band and the volume control was at maximum, but there was no signal input, and the aerial and earth leads were connected together.

Voltages were measured on the 400 V scale of a model 7 Universal Avometer, chassis being negative.

If **V2** should become unstable when its screen current is being measured, as in our case, it can be stabilised by connecting a non-inductive condenser of about 0·1 μF from grid (top cap) to chassis.

Valve	Anode Voltage (V)	Anode Current (mA)	Screen Voltage (V)	Screen Current (mA)
V1 6A7	257	1·8	62	2·3
	Oscillator			
	168	3·1		
V2 6D6	257	4·2	62	1·2
V3 75	63	0·2	—	—
V4 76	45	0·4	—	—
V5 42	248	26·0	257	5·8
V6 42	248	26·0	257	5·1
V7 80	325†	—	—	—
T.I. 6G5	47	0·9	—	—
	Target	anode		
	257	0·1		

† Each anode, A.C.

GENERAL NOTES

Switches.—**S1-S12** are the waveband switches and **S13** the pick-up switch, all ganged in a double-sided rotary unit beneath the chassis. The two sides are marked with the letters A and B in circles in our under-chassis view, and are shown in detail in the diagrams on page VIII. Note that in many cases tags opposite each other on either side of the paxolin support are common.

The table below gives the switch positions for the four control settings, starting from fully anti-clockwise. A dash indicates open, and **C** closed.

Switch	S.W.	M.W.	L.W.	Gram.
S1	—	C	—	—
S2	C	—	—	—
S3	—	C	—	—
S4	—	—	C	—
S5	—	—	—	C
S6	C	—	—	—
S7	—	C	—	—
S8	—	—	C	—
S9	—	C	—	—
S10	C	—	—	—
S11	—	C	—	—
S12	—	—	C	—
S13	—	—	—	C

S14 is the Q.M.B. mains switch, ganged with the tone control, **R10.**

Coils.—**L1** is unscreened, and is mounted beneath the chassis. **L2-L5**; **L6-L10**; **L11, L12** and **L13, L14** are in four screened units on the chassis deck, with their associated trimmers.

Scale Lamps.—These are two miniature bayonet cap types, rated at 4·5 V, 0·3 A.

CIRCUIT ALIGNMENT

The scale pointer should be vertical when the gang is fully meshed, marks being provided for accurate setting.

I.F. Stages.—Connect signal generator to grid (top cap) of **V2** and earth lead, feed in a 465 KC/S signal and adjust **C42** and **C43** for maximum output. Transfer signal generator to grid (top cap) of **V1,** switch set to L.W., see that gang is fully meshed, and adjust **C40** and **C41** for maximum output. Keep input low.

If necessary, re-adjust **C42** and **C43.**

R.F. and Oscillator Stages.—First adjust trackers for maximum output at the top of each band, with the gang fully meshed. To do this, connect a high frequency buzzer via a 50 μμF condenser to the aerial lead of the set, and adjust **C38** on the S.W. band, **C34** on the M.W. band and **C39** on the L.W. band for maximum output.

Switch set to S.W., connect signal generator to **A** and **E** leads and feed in a 21 m. signal. Tune to 21 m. on scale (about 235 m. on M.W. calibrated scale). Adjust **C35** and **C29** for maximum output. Fully mesh the gang again and re-track **C38** as above. Return to 21 m. and re-adjust **C35** and **C29**. Re-track **C38** again.

On the M.W. band, repeat above procedure, trimming **C36** and **C30** at 250 m. and tracking **C34** at the top of the scale.

On L.W., trim **C37** and **C31** at 1,200 m., and track **C39** at top of scale.

On the S.W. band, if **C35** peaks at two places, that with the least trimmer capacity is correct.