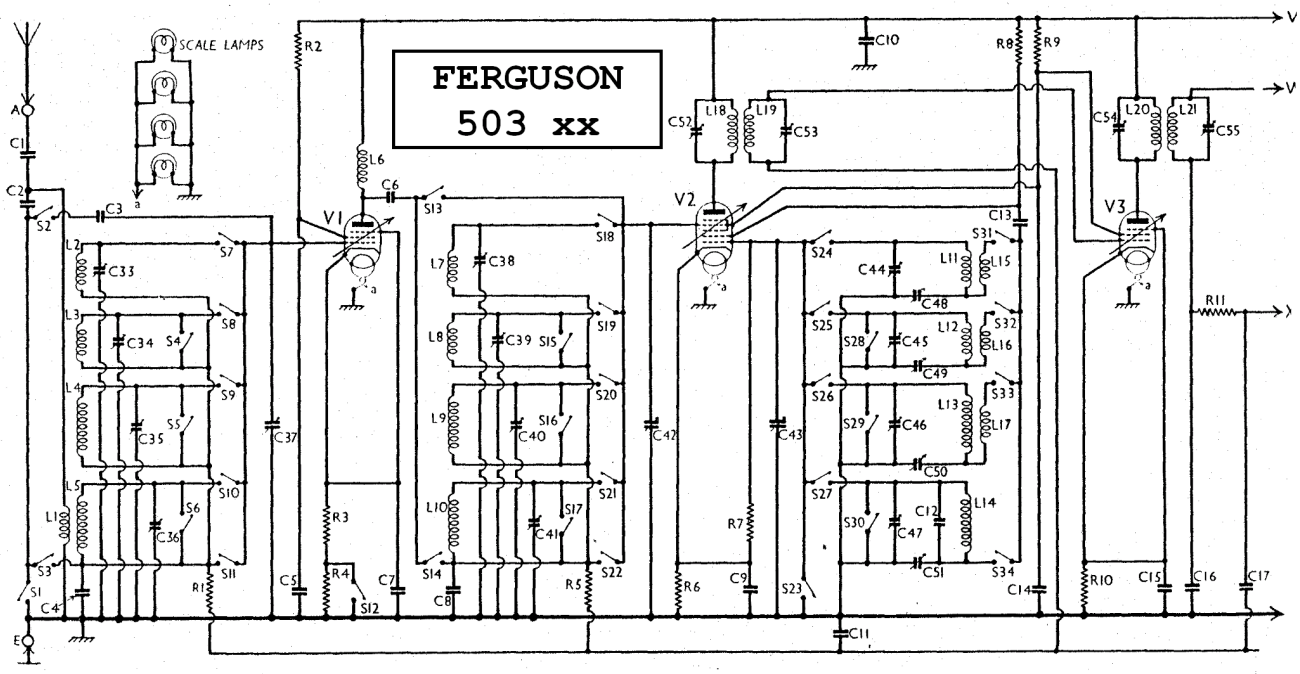


COMPONENTS AND VALUES

	RESISTANCES	Values (ohms)
R1	V1 CG decoupling	500,000
R2	V1 SG HT feed	100,000
R3	V1 fixed GB resistances	300
R4	V1 fixed GB resistances	5,000
R5	V2 tetrode CG decoupling	500,000
R6	V2 fixed GB resistance	200
R7	V2 osc. CG resistance	25,000
R8	V2 osc. anode *HT feed*	25,000
R9	V2, V3 SG's HT feed	50,000
R10	V3 fixed GB resistance	300
R11	IF stopper	25,000
R12	Variable tone control	500,000
R13	Manual volume control	500,000
R14	V4 signal diode load	500,000
R15	V4 GB resistance	10,000
R16	V4 triode and V5 anodes' decoupling	100,000
R17	V4 triode anode load	250,000
R18	AVC line decoupling	500,000
R19	V4 AVC diode load	500,000
R20	V5, V7 CG resistances	500,000
R21	V5, V7 CG resistances	50,000
R22	V5 GB resistance	10,000
R23	V5 Anode load resistance	250,000
R24	V6 CG resistance	500,000
R25	V6, V7 GB resistance	300
R26	*T1* anode *HT feed*	250,000

	CONDENSERS	Values (μF)
C1	Aerial series condenser	0·00025
C2	Aerial coupling condenser	0·00025
C3	Aerial SW1, SW2 coupling	0·00002
C4	Aerial MW coupling	0·002
C5	V1 SG decoupling	0·1
C6	Part of V1 to V2 RF coupling	0·00005
C7	V1 cathode by-pass	0·1
C8	V1 to V2 MW and LW coupling	0·002
C9	V2 cathode by-pass	0·1
C10	HT circuit RF by-pass	0·1
C11	AVC line decoupling	0·1
C12	Osc. circuit LW trimmer	0·00007
C13	V2 osc. anode coupling	0·00025
C14	V2, V3 SG's decoupling	0·1
C15	V3 cathode by-pass	0·1
C16	IF by-pass condensers	0·00025
C17	IF by-pass condensers	0·00025
C18	Part of variable tone control	0·004
C19	AF coupling to V4 triode	0·01
C20	Coupling to V4 AVC diode	0·00025
C21	IF by-pass	0·00025
C22*	V4 cathode by-pass	25·0
C23	V4, V5 anodes' decoupling	0·1
C24	V4 triode to V5 and V7 AF coupling	0·01
C25*	V5 cathode by-pass	5·0
C26	V5 to V6 AF coupling	0·01
C27	Fixed tone correctors	0·001
C28	Fixed tone correctors	0·002
C29	Fixed tone correctors	0·002
C30*	HT smoothing	8·0
C31*	HT smoothing	16·0
C32	Mains RF by-pass	0·01
C33‡	Aerial circuit SW1 trimmer	—
C34‡	Aerial circuit SW2 trimmer	—
C35‡	Aerial circuit MW trimmer	—
C36‡	Aerial circuit LW trimmer	—
C37†	Aerial circuit tuning	—
C38‡	V2 CG circuit SW1 trimmer	—
C39‡	V2 CG circuit SW2 trimmer	—
C40‡	V2 CG circuit MW trimmer	—
C41‡	V2 CG circuit LW trimmer	—
C42†	V2 CG circuit tuning	—
C43†	Oscillator circuit tuning	—
C44‡	Osc. circuit SW1 trimmer	—
C45‡	Osc. circuit SW2 trimmer	—
C46‡	Osc. circuit MW trimmer	—
C47‡	Osc. circuit LW trimmer	—
C48‡	Osc. circuit SW1 tracker	—
C49‡	Osc. circuit SW2 tracker	—
C50‡	Osc. circuit MW tracker	—
C51‡	Osc. circuit LW tracker	—
C52‡	1st IF trans. pri. tuning	—
C53‡	1st IF trans. sec. tuning	—
C54‡	2nd IF trans. pri. tuning	—
C55‡	2nd IF trans. sec. tuning	—

* Electrolytic. † Variable. ‡ Pre-set.

	OTHER COMPONENTS	Approx. Values (ohms)
L1	Aerial LW coupling coil	125·0
L2	Aerial SW1 tuning coil	Very low
L3	Aerial SW2 tuning coil	0·05
L4	Aerial MW tuning coil	3·2
L5	Aerial LW tuning coil	18·0
L6	V1 anode RF choke	117·0
L7	V2 CG SW1 tuning coil	Very low
L8	V2 CG SW2 tuning coil	0·05
L9	V2 CG MW tuning coil	3·2
L10	V2 CG LW tuning coil	17·5
L11	Osc. circuit SW1 tuning coil	Very low
L12	Osc. circuit SW2 tuning coil	Very low
L13	Osc. circuit MW tuning coil	2·2
L14	Osc. LW tuning and reaction	4·0
L15	Oscillator SW1 reaction	0·4
L16	Oscillator SW2 reaction	1·0
L17	Oscillator MW reaction	0·7
L18	1st IF trans. Pri.	9·0
L19	1st IF trans. Sec.	13·0
L20	2nd I.F trans Pri.	13·0
L21	2nd I.F trans Sec.	9·0
L22	Speaker speech coil	1·8
L23	Hum neutralising coil	0·1
L24	Speaker field coil	1,000·0
T1	Speaker input trans. Pri., total	725·0
T1	Speaker input trans. Sec.	0·3
T2	Mains trans. Pri., total	17·0
T2	Mains trans. Heater sec.	0·05
T2	Mains trans. Rect. heat. sec.	0·1
T2	Mains trans. HT sec., total	220·0
S1-S34	Waveband switches	—
S35	Gram. PU switch	—
S36	V9 control switch	—
S37	Local-distant switch	—
S38	Mains switch, ganged R12	—

VALVE ANALYSIS

Valve	Anode Voltage (V)	Anode Current (mA)	Screen Voltage (V)	Screen Current (mA)
V1 6D6	255	5·6	72	1·5
V2 6A7	255	2·1	62	2·7
	Oscillator			
	133	4·4		
V3 6D6	255	4·5	62	1·2
V4 75	61	0·2	—	—
V5 76	45	0·4	—	—
V6 42	245	24·0	255	5·2
V7 42	242	31·0	255	6·2
V8 80	313†	—	—	—
V9 76	—	—	—	—
T.I. 6G5	43	0·9	—	—
	Target			
	255	0·7		

† Each anode AC.

Valve voltages and currents given in the table above are those measured in our receiver when it was operating on mains of 226 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 and local-distant controls were at maximum (the latter down), but there was no signal input.

FERGUSON 503 xx

(suite)

SWITCH TABLE AND DIAGRAM

Switch	SW1	SW2	MW	LW	Gram
S1	—	—	—	C	—
S2	C	C	—	—	—
S3	—	—	C	—	—
S4	C	—	—	—	—
S5	C	C	—	—	—
S6	C	C	C	—	—
S7	C	—	—	—	—
S8	—	C	—	—	—
S9	—	—	C	—	—
S10	—	—	—	C	—
S11	—	—	—	—	C
S12	C	C	C	—	C
S13	C	C	—	—	—
S14	—	—	C	C	—
S15	C	—	—	—	—
S16	C	C	—	—	—
S17	C	C	C	—	—
S18	C	—	—	—	—
S19	—	C	—	—	—
S20	—	—	C	—	—
S21	—	—	—	C	—
S22	—	—	—	—	C
S23	—	—	—	—	C
S24	C	—	—	—	—
S25	—	C	—	—	—
S26	—	—	C	—	—
S27	—	—	—	C	—
S28	C	—	—	—	—
S29	C	C	—	—	—
S30	C	C	C	—	—
S31	—	—	—	—	—
S32	—	C	—	—	—
S33	—	—	C	—	—
S34	—	—	—	C	—
S35	—	—	—	—	C
S36	—	—	C	C	—

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

If, as in our case, **V2** should become unstable when its anode current is being measured and **V3** should become unstable when its screen current is being measured, they can be stabilised by connecting a non-inductive condenser of about 0.1 μF from grid (top cap) to chassis.

GENERAL NOTES

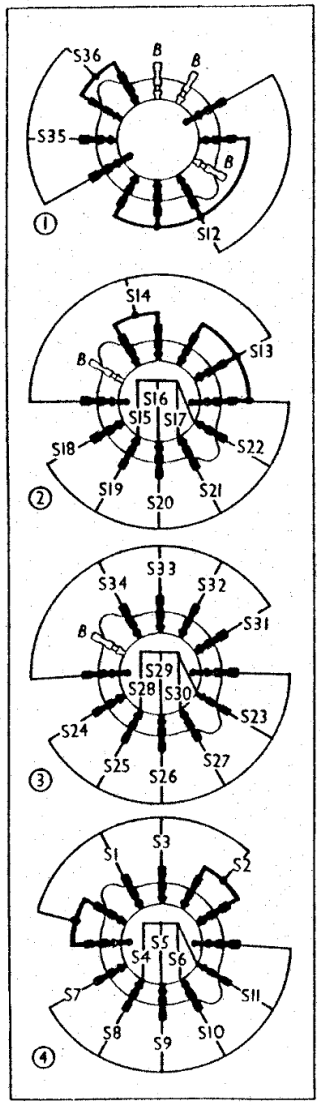
Switches.—S1-S34 are the waveband switches, **S35** the gram. pick-up switch and **S36** the **V9** CG switch, ganged in four rotary units beneath the chassis, which are indicated in our under-chassis view, and shown in detail in diagrams on page VIII. The table (page VIII) gives the switch positions for the four control settings, starting from fully anti-clockwise. A dash indicates open, and C, closed.

S37 is the QMB local-distant switch, at the rear of the chassis. It is closed when the lever is up (local).

S38 is the QMB mains switch, ganged with the tone control **R12**.

Coils.—L1-L5, L7-L10, L11-L17 and the IF transformers **L18, L19** and **L20, L21** are in five screened units on the chassis deck, with their associated trimmers. **L6** is an RF choke, beneath the chassis.

Scale Lamps.—These are four 6V National Union N 51 types, fitted with miniature centre contact bayonet caps.



Switch diagrams, as seen from the underside of the chassis, looking in the directions of the arrows in the under-chassis view.

External Speaker.—Two sockets are provided at the rear of the chassis for a high impedance (14,000 O) external speaker.

Condensers C30, C31.—These are two dry electrolytics in a single tubular metal can on the chassis deck, the can being the common negative connection. The red lead is the positive of **C30** (8 μF) and the yellow the positive of **C31** (16 μF).

Condensers C22, C25.—These are two dry electrolytics in a single carton beneath the chassis. Looking at our under-chassis view, the tag on the left of the unit is the common negative connection, the upper tag on the right is the positive of **C22** (25 μF), and the lower tag on the right is the positive of **C25** (5 μF).

Resistance R26.—This is fitted inside the TI holder, and is indicated in our plan chassis view.

Chassis Divergencies.—Our chassis differs in a number of minor points from the makers' original circuit diagram. Our diagram is based entirely on our chassis.

Models 503T, 503CT and 503RGT.—The only difference from the standard 503 chassis in these models is in the two SW bands. SW1 covers 16-50 m (instead of 12-35 m), and SW2 covers 75-175 m (instead of 25-70 m), thus including the trawler band.

The circuit in each case is the same, but **L2** and **L7** each have a resistance of 0.2 O, and **L11**, 0.15 O, while **L3** and **L8** each have a resistance of 0.4 O, and **L12**, 0.3 O. The alignment frequencies are also different for these bands in the 503 T chassis.

CIRCUIT ALIGNMENT

IF Stages.—Connect signal generator to control grid (top cap) of **V3** and chassis. Feed in a 465 KC/S signal, and adjust **C54** and **C55** roughly for maximum output. Switch set to MW, and turn gang to maximum. Transfer signal generator to grid (top cap) of **V2** and adjust **C52** and **C53** for maximum output, keeping input low. The local-distant switch **S37** should be down (distant). Now re-check **C52-C55**.

RF and Osc. Stages.—Signal generator should be connected to **A** and **E** leads via a 50 μμF condenser.

LW.—Switch set to LW, tune to 1,300 m on scale, feed in a 1,300 m (230 KC/S) signal, and adjust **C47, C41** and **C36** for maximum output. Tune to 2,000 m on scale, and feed in the output from a high frequency buzzer. Adjust **C51** for maximum output. Return to 1,300 m and re-check settings.

MW.—Switch to MW, tune to 300 m on scale, feed in a 300 m (1,000 KC/S) signal, and adjust **C46, C40** and **C35** for maximum output. Tune to 550 m on scale, feed in the buzzer signal, and adjust **C50** for maximum output. Return to 300 m and re-check.

SW2.—Switch to SW2, and tune to 30 m on scale (pointer directly over the O in Melbourne on the 31 m band). Feed in a 30 m (10 MC/S) signal, and adjust **C45, C39** and **C34** for maximum output. Tune to middle of 67 m band, feed in the buzzer signal, and adjust **C49** for maximum output. Return to 30 m and re-check.

SW1.—Switch to SW1, and tune to 15 m on scale (pointer directly over 1,000 mark on LW scale). Feed in a 15 m (20 MC/S) signal and adjust **C44, C38** and **C33** for maximum output. **C44** should be adjusted to the peak requiring the least trimmer capacity. Tune so that pointer is over the 2,000 m mark on the LW band, feed in the buzzer signal, and adjust **C48** for maximum output. Return to 15 m and re-check.

503T Chassis.—With these models the SW2 band should be adjusted at 100 m (3 MC/S) and 161 m (1,860 KC/S), while the SW1 band should be adjusted at 20 m (15 MC/S) and 50 m (6 MC/S).