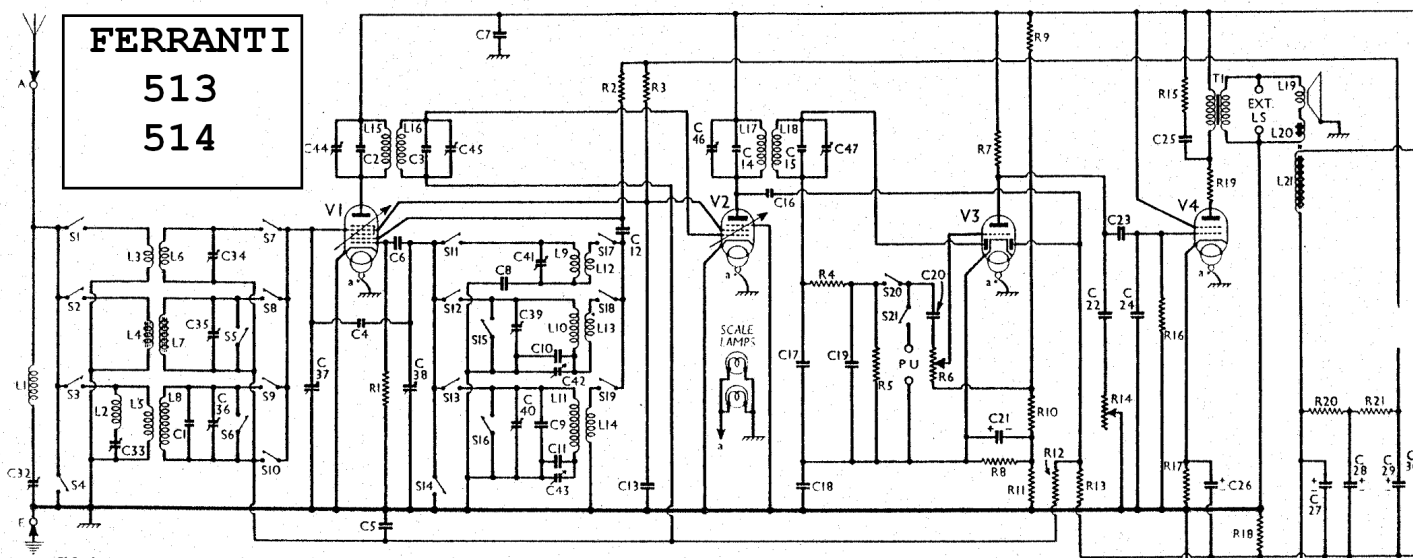


FERRANTI

513

514



C4 is a very small coupling condenser. L1, C32 form an IF filter in use on MW, while L2, C33 form a 261 m filter in use on LW.

# COMPONENTS AND VALUES

CONDENSERS		Values (μF)
C1	Aerial LW fixed trimmer	0.00005
C2	1st IF trans. pri. trimmer	0.00009
C3	1st IF trans. sec. trimmer	0.00009
C4	Small coupling	Very low
C5	AVC line decoupling	0.05
C6	V1 osc. CG condenser	0.0001
C7	HT circuit RF by-pass	0.1
C8	Osc. circuit SW tracker	0.004
C9	Osc. circuit LW fixed trimmer	0.0001
C10	Osc. circuit MW fixed tracker	0.0004
C11	Osc. circuit LW fixed tracker	0.00015
C12	V1 osc. anode coupling	0.001
C13	V1, V2 SG's decoupling	0.1
C14	2nd IF trans. pri. trimmer	0.00009
C15	2nd IF trans. sec. trimmer	0.00009
C16	Coupling to V3 AVC diode	0.00005
C17	IF by-pass	0.00018
C18	V3 cathode RF by-pass	0.05
C19	IF by-pass	0.00018
C20	AF coupling to V3 triode	0.02
C21	V3 cathode AF by-pass	6.0
C22	Part of variable tone control	0.005
C23	V3 triode to V4 AF coupling	0.02
C24	V4 CG IF by-pass	0.0001
C25	Part of fixed tone corrector	0.01
C26	V4 cathode by-pass	50.0
C27	HT smoothing	12.0
C28		4.0
C29		4.0
C30		12.0
C31	Mains RF by-pass	0.002
C32	Aerial IF filter tuning	—
C33	Aerial 261 m filter tuning	—
C34	Aerial circuit SW trimmer	—
C35	Aerial circuit MW trimmer	—
C36	Aerial circuit LW trimmer	—
C37	Aerial circuit manual tuning	—
C38	Oscillator circuit manual tuning	—
C39	Osc. circuit MW trimmer	—
C40	Osc. circuit LW trimmer	—
C41	Osc. circuit SW trimmer	—
C42	Osc. circuit MW tracker	0.0002
C43	Osc. circuit LW tracker	0.00007
C44	1st IF trans. pri. tuning	0.00007
C45	1st IF trans. sec. tuning	0.00007
C46	2nd IF trans. pri. tuning	0.00007
C47	2nd IF trans. sec. tuning	0.00007

\* Electrolytic, † Variable, ‡ Pre-set.

RESISTANCES		Values (ohms)
R1	V1 osc. CG resistance	50,000
R2	V1 osc. anode HT feed	10,000
R3	V1, V2 SG's HT feed	40,000
R4	IF stopper	100,000
R5	V3 signal diode load	500,000
R6	Manual volume control	1,000,000
R7	V3 triode anode load	250,000
R8	Part V3 triode GB circuit	10,000
R9	HT potential divider resistances	20,000
R10	—	250
R11	—	1,000
R12	AVC line decoupling	2,000,000
R13	V3 AVC diode load	2,000,000
R14	Variable tone control	500,000
R15	Part of fixed tone corrector	20,000
R16	V4 CG resistance	500,000
R17	V4 GB resistance	150
R18	V1, V2, fixed GB: part AVC delay	50
R19	V4 anode stabiliser	100
R20	V1 osc. anode and V1, V2 SG	10,000
R21	HT feed resistances	10,000

OTHER COMPONENTS		Approx. Values (ohms)
L1	MW aerial IF filter coil	35.0
L2	LW aerial 261 m filter coil	5.0
L3	Aerial SW coupling coil	0.25
L4	Aerial MW coupling coil	35.0
L5	Aerial LW coupling coil	0.5
L6	Aerial SW tuning coil	Very low
L7	Aerial MW tuning coil	2.5
L8	Aerial LW tuning coil	25.0
L9	Osc. circuit SW tuning coil	0.05
L10	Osc. circuit MW tuning coil	5.0
L11	Osc. circuit LW tuning coil	12.0
L12	Oscillator SW reaction	Very low
L13	Oscillator MW reaction	1.5
L14	Oscillator LW reaction	3.0
L15	1st IF trans. Pri.	0.5
L16	1st IF trans. Sec.	0.5
L17	2nd IF trans. Pri.	0.5
L18	2nd IF trans. Sec.	0.5
L19	Speaker speech coil	2.0
L20	Hum neutralising coil	0.25
L21	Speaker field coil	1,000.0
T1	Speaker input trans. Pri.	220.0
	Heater sec.	0.4
T2	Mains trans. Rect. heat. sec.	15.0
	HT sec., total	0.2
	—	0.2
	—	150.0
S1-S19	Waveband switches	—
S20-21	Radio/gram. change switches	—
S22	Mains switch, ganged R6	—

## VALVE ANALYSIS

Valve voltages and currents given in the table below are those measured in our receiver when it was operating on mains of 230 V, using the centre tapping on the mains transformer. The receiver was tuned to the lowest wavelength on the medium band.

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

Valve	Anode Voltage (V)	Anode Current (mA)	Screen Voltage (V)	Screen Current (mA)
V1 N63	290	2.8	85	1.6
	Oscillator	1.9		
V2 6K7G	290	4.6	85	1.1
V3 6Q7G	85	0.5	—	—
V4 6F6G	275	38.0	290	7.0
V5 5Y3G	360†	—	—	—

† Each anode, A.C.

## GENERAL NOTES

**Switches.**—S1-S19 are the waveband switches, and S20, S21 the radio-gram change switches, ganged in two rotary units beneath the chassis. These are indicated in our underchassis view, and shown in detail in the diagrams in col. 3. The table (col. 2) gives the switch positions for the four control settings, starting from fully anti-clockwise. A dash indicates open, and C closed.

S22 is the QMB mains switch, ganged with the volume control R6.

**Coils.**—L1 is on the chassis deck, and the remainder of the RF and oscillator coils are beneath the chassis. The IF transformers L15, L16 and L17, L18 are in two screened units on the chassis deck. Each contains a number of additional components.

**Scale Lamps.**—These are two Osram MES type bulbs, rated at 6.5 V, 0.3 A. They have small bulbs (type S).

**External Speaker.**—Two sockets are provided on the internal speaker connection panel for a low impedance (2 to 3 Ω) external speaker.

**Condensers C27, C30.**—These are two 12 μF dry electrolytic types, in a large tubular unit fitted to one side of the chassis. The black lead is the common negative, the red lead to V5 holder is the positive of C27, and the other red lead the positive of C30.

**Condensers C28, C29.**—These are two 4 μF dry electrolytic types, in a carton beneath the chassis having a common negative (black) lead. The red lead to the junction of R20 and R21 is the positive of C28, and the red lead to the junction of R21 and R2, R3 is the positive of C29.

**Pre-Set Condensers.**—Apart from the four IF trimmers, reached through holes in the IF cans, there are ten other trimmers, all reached through holes in the chassis deck. Note that one of these (C41) is close to the gang condenser and V1 holder.

**Condenser C4.**—This is formed by an insulated wire twisted round one of the tags of the rear section of the gang condenser (C37).

**Voltage Adjustment.**—The receiver is sent out adjusted for 225 V, by means of the red mains lead on the centre tag on the cheek of T2 bobbin. This tap is suitable for 220-230 V mains. For lower voltages (200-215 V), solder the lead to the lower tag (marked 200 V), while for higher voltages, use the upper tag (marked 255 V).

## CIRCUIT ALIGNMENT

**IF Stages.**—Turn volume control to maximum, gang condenser to minimum, and switch set to LW. Connect signal generator to control grid (top cap) of V1 (via a 0.05 μF fixed condenser) and chassis. Feed in a 450 KC/S signal, and adjust C44, C45, C46 and C47 for maximum output.

**RF and Oscillator Stages.** Connect signal generator via a suitable dummy aerial to A and E sockets.

**MW.**—Switch set to MW, keep gang at minimum, feed in a 200 m (1,500 KC/S) signal and adjust C39 for maximum output. Feed in a 228 m (1,316 KC/S) signal, tune it in, and adjust C35 for maximum output.

Feed in a 500 m (600 KC/S) signal, tune it in, and adjust C42 for maximum output, rocking the gang for optimum results.

# TABLE AND DIAGRAMS OF THE SWITCH UNITS

Switch	SW	MW	LW	Gram.
S1	C	—	—	—
S2	—	C	—	—
S3	—	—	C	—
S4	—	—	—	C
S5	C	—	—	—
S6	C	C	—	—
S7	C	—	—	—
S8	—	C	—	—
S9	—	—	C	—
S10	—	—	—	C
S11	C	—	—	—
S12	—	C	—	—
S13	—	—	C	—
S14	—	—	—	C
S15	C	—	—	—
S16	C	C	—	—
S17	C	—	—	—
S18	—	C	—	—
S19	—	—	C	—
S20	C	C	C	—
S21	—	—	—	C

Turn gang to maximum, feed in a 450 KC/S signal, and adjust **C32** for minimum output.

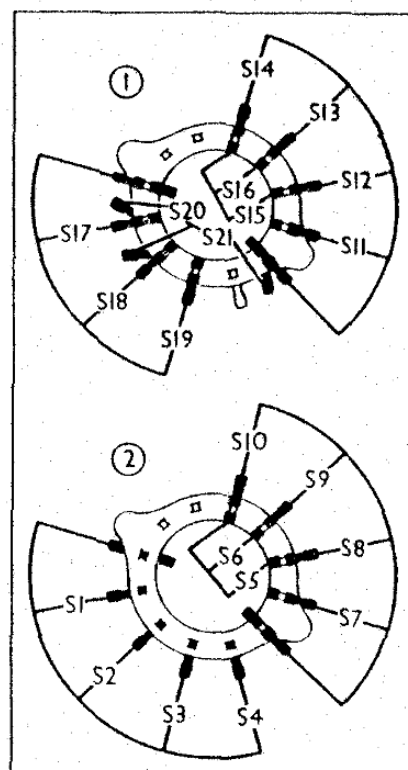
Repeat the 200, 228 and 500 m adjustments.

**LW.**—Switch set to LW, tune to 1,128 m on scale, feed in a 1,128 m (266 KC/S) signal, and adjust **C40**, then **C36**, for maximum output.

Feed in a 1,800 m (166.5 KC/S) signal, tune it in, and adjust **C43** for maximum output, while rocking the gang for optimum results.

Tune to 1,200 m on scale, feed in a strong 261 m (1,149 KC/S) signal, and adjust **C33** for minimum output.

Switch diagrams, as seen from the rear of the underside of the chassis.



Return to 1,128 m and re-adjust **C40** and **C36**, then re-adjust **C43** at 1,800 m.

Repeat until no further improvement results.

**SW.**—Switch set to SW, and use a SW dummy aerial. Turn gang to minimum, feed in a 16.67 m (18 MC/S) signal, and adjust **C41** for maximum output. The peak requiring the least trimmer capacity is the correct one. Now tune to 20 m on the scale, feed in a 20 m (15 MC/S) signal, and adjust **C34** for maximum output.