FERGUSON - 238U

Valves	Anode V	Anode mA	Screen V	Screen mA	Cath. V
V1 UCH42	152·0	1·84	56·5	2·6	—
	Oscillator				
	80·7	2·93			
V2 UF41	169·5	4·4	56·5	1·26	—
V3 UBC41	47·5	0·33	—	—	—
V4 UL41	152·0	41·0	151·0	7·2	7·44
V5 UY41	†213·0	—	—	—	202·0

† A.C. Volts.

OTHER COMPONENTS		Approx. Values (ohms)	Locations
L1	Aerial coupling coils	—	H3
L2		1·2	A1
L3	Aerial tuning coils	—	H3
L4		3·0	A1
L5		26·0	H3
L6	Oscillator tuning coils	—	B2
L7		1·6	G4
L8		9·5	B2
L9	Oscillator reaction coils	—	B2
L10		1·6	G4
L11		3·0	B2
L12	S.W. booster coil	—	B2
L13	1st I.F. trans.	8·0	C2
L14		8·0	C2
L15	2nd I.F. trans.	8·0	D2
L16		6·0	D2
L17	Speech coil	2·8	—
L18	Mains R.F. chokes	3·7	D1
L19		3·7	D1
T1	Primary	380·0	C1
	Secondary	—	C1
S1-S12	Waveband switches	—	A2
S13, S14	Mains sw., g'd R8	—	D2

Intermediate frequency 470 kc/s.

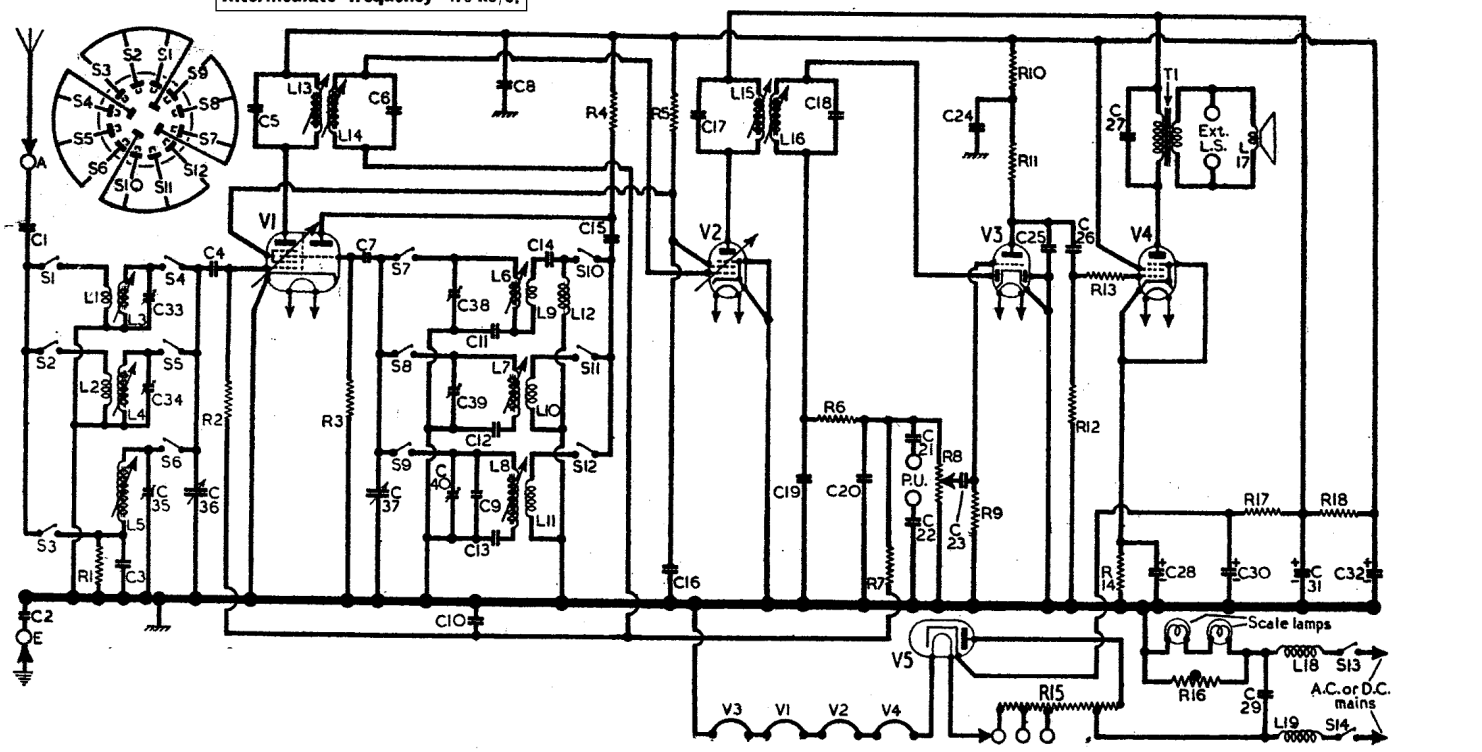
Switch	S.W.	M.W.	L.W.
S1	C	—	—
S2	—	C	—
S3	—	—	C
S4	C	—	—
S5	—	C	—
S6	—	—	C
S7	C	—	—
S8	—	C	—
S9	—	—	C
S10	C	—	—
S11	—	C	—
S12	—	—	C

RESISTORS		Values	Locations
R1	L.W. aerial shunt	4·7kΩ	H3
R2	V1 hex. C.G.	1MΩ	H3
R3	V1 osc. C.G.	47kΩ	H4
R4	Osc. H.T. feed	22kΩ	H4
R5	V1, V2 S.G. feed	22kΩ	F3
R6	I.F. stopper	100kΩ	E3
R7	A.G.C. decoupling	1MΩ	E4
R8	Volume control	500kΩ	D2
R9	V3 C.G.	20MΩ	E4
R10	H.T. decoupling	100kΩ	F4
R11	V3 anode load	220kΩ	F4
R12	V4 C.G.	680kΩ	E4
R13	V4 C.G. stopper	4·7kΩ	E4
R14	V4 G.B.	150Ω	E4
R15	Ballast resistor	†1·36kΩ	—
R16	Brimistor, type CZ3	—	D1
R17	H.T. smoothing	470Ω	F3
R18		1·2kΩ	F3

† Tapped at 200Ω + 200Ω + 830Ω + 130Ω from V5 heater.

CAPACITORS		Values	Locations
C1	Aerial series	0·005μF	H4
C2	Chassis isolator	0·05μF	H4
C3	L.W. aerial coup.	0·0025μF	H3
C4	V1 hex. C.G.	200pF	A2
C5	1st I.F. trans.	100pF	C2
C6	tuning	100pF	C2
C7	V1 osc. C.G.	50pF	H4
C8	H.T. decoup.	0·1μF	E3
C9	L.W. osc. trimmer	30pF	B2
C10	A.G.C. decoup.	0·1μF	G4
C11	S.W. osc. tracker	0·008μF	B2
C12	M.W. osc. tracker	605pF	G4
C13	L.W. osc. tracker	155pF	B2
C14	Oscillator coupling	100pF	A2
C15		200pF	H4
C16	V1, V2 S.G. decoup.	0·1μF	G4
C17	2nd I.F. Trans.	100pF	D2
C18	tuning	180pF	D2
C19	I.F. by-passes	100pF	E4
C20		100pF	E4
C21	P.U. isolators	0·01μF	E3
C22		0.1pF	F3
C23	A.F. coupling	0·002μF	E4
C24	H.T. decoupling	0·1μF	F4
C25	I.F. by-pass	100pF	F4
C26	A.F. coupling	0·002μF	E4
C27	Tone corrector	0·005μF	B1
C28*	V4 cath by-pass	25μF	E4
C29	R.F. filter	0·01μF	D1
C30*	H.T. smoothing	16μF	D1
C31*		24μF	D1
C32*		8μF	D1
C33‡	S.W. aerial trim.	50pF	A2
C34‡	M.W. aerial trim.	50pF	A1
C35‡	L.W. aerial trim.	50pF	A1
C36†	Aerial tuning	528pF	B1
C37†	Oscillator tuning	528pF	B1
C38‡	S.W. osc. trimmer	50pF	B2
C39‡	M.W. osc. trimmer	50pF	B2
C40‡	L.W. osc. trimmer	50pF	B2

* Electrolytic. † Variable. ‡ Pre-set.



CIRCUIT ALIGNMENT

I.F. Stages.—Remove chassis from cabinet and stand it on bench so that adjustments are easily accessible. Disconnect **C4** (location reference A2) from its junction on **C36** and connect the signal generator, via a 0.01 μF capacitor in the earth lead, to the free end of **C4** and chassis. Switch set to M.W. and turn gang and volume controls to maximum. Feed in a 470 kc/s (638.3 m) signal and adjust the cores of **L16** (E4), **L15** (D2), **L14** (F4) and **L13** (C2), reducing the input as the circuits come into line to avoid A.G.C. effects. Remove "live" lead from **C4** and reconnect the free end of **C4** to **C36**.

R.F. and Oscillator Stages.—As the tuning scale remains fixed in the cabinet when the chassis is removed, reference must be made during alignment to the three calibration marks on the bottom edge of the scale backing plate. On our chassis these calibration marks took the form of holes drilled through the backing plate, and they will be numbered from 1-3 (looking at the front of the chassis and counting from left to right) in the following instructions.

Check that with the gang at maximum capacitance the cursor coincides with calibration mark 3. This may be adjusted by slackening the two grub screws on the drive drum.

S.W.—Switch set to S.W., tune to calibration mark 1, feed in a 18.75 m (16 Mc/s) signal and adjust **C38** (B2) and **C33** (A2) for maximum output. Tune to calibration mark 2, feed in a 52.2 m (5.75 Mc/s) signal and adjust the cores of **L6** (B2) and **L3** (A2) for maximum output. Repeat these adjustments until no further improvement results.

M.W.—Switch set to M.W., tune to calibration mark 1, feed in a 212 m (1,415 kc/s) signal and adjust **C39** (B2) and **C34** (A1) for maximum output. Tune to calibration mark 2, feed in a 555.5 m (540 kc/s) signal and adjust the cores of **L7** (B2) and **L4** (A1) for maximum output. Repeat these adjustments until no further improvement results.

L.W.—Switch set to L.W., tune to calibration mark 1, feed in a 845 m (355 kc/s) signal and adjust **C40** (B2) and **C35** (A1) for maximum output. Tune to calibration mark 2, feed in a 1,935 m (155 kc/s) signal and adjust the cores of **L8** (B2) and **L5** (A1) for maximum output. Repeat these adjustments until no further improvement results.

Drive Cord Replacement.—About 30 inches of high-grade fishing line, plaited and waxed, is required for a new drive cord, which should be run as shown in our underside drawing of the chassis.