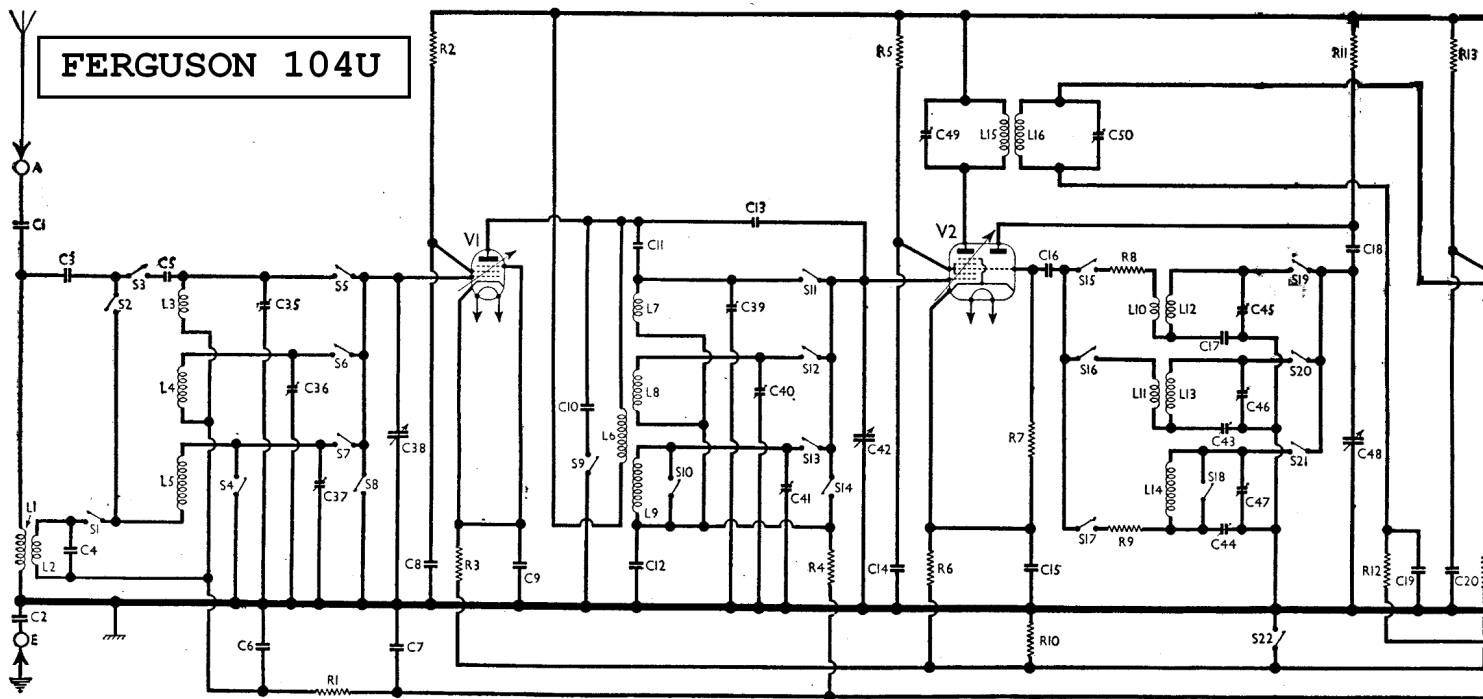


# FERGUSON 104U



RESISTANCES	Values (ohms)
R1 V1 G1 decoupling	250,000
R2 V1 S1 HT feed	100,000
R3 V2 fixed GB resistance	400
R4 V2 pentode G1 decoupling	250,000
R5 V2 S1 HT feed	100,000
R6 V2 fixed GB resistance	400
R7 V2 osc. G1 resistance	80,000
R8 Osc. SW reaction damping	25
R9 Osc. L.W. reaction damping	10,000
R10 V1 V2 V3 MW and LW	200
R11 V2 osc. anode HT feed	25,000
R12 V3 G1 decoupling	500,000
R13 V3 S1 HT feed	100,000
R14 V3 fixed GB resistance	400
R15 IF stopper	100,000
R16 V4 signal diode load	200,000
R17 Manual volume control	2,000,000
R18 V4 triode anode load	50,000
R19 V4 AVC diode load	1,000
R20 V4 AVC diode load	2,000,000
R21 V5 G1 resistance	100,000
R22 V5 G1 resistance	500,000
R23 V5 anode stopper	150
R24 V5 anode stopper	150
R25 Variable tone control	100,000
R26 V6 anode surge limiter	100
R27 Scale lamp	200

CONDENSERS	Values (pF)
C1 Aerial isolating condenser	0-002
C2 Aerial SW coupling	0-0005
C3 Aerial LW coupling	0-0005
C4 Part L.W. coupling	0-0001
C5 Aerial SW coupling	0-0001
C6 V1 G1 decoupling	0-02
C7 V1 G1 decoupling	0-01
C8 V1 cathode by-pass	0-1
C9 V1 cathode by-pass	0-0004
C10 V2 S1 coupling	0-000005
C11 V2 pentode G1 decoupling	0-000005
C12 V2 S1 coupling	0-1
C13 V2 S1 coupling	0-0001
C14 V2 S1 coupling	0-0001
C15 V2 S1 coupling	0-0001
C16 V2 S1 coupling	0-0001
C17 V2 S1 coupling	0-0001
C18 V2 S1 coupling	0-0001
C19 V2 S1 coupling	0-0001
C20 V2 S1 coupling	0-0001
C21 V2 S1 coupling	0-0001
C22 V2 S1 coupling	0-0001
C23 V2 S1 coupling	0-0001
C24 V2 S1 coupling	0-0001
C25 V2 S1 coupling	0-0001
C26 V2 S1 coupling	0-0001
C27 V2 S1 coupling	0-0001
C28 V2 S1 coupling	0-0001
C29 V2 S1 coupling	0-0001
C30 V2 S1 coupling	0-0001
C31 V2 S1 coupling	0-0001
C32 V2 S1 coupling	0-0001
C33 V2 S1 coupling	0-0001

OTHER COMPONENTS	Approx. Value (ohms)
L1 Aerial circuit choke	350-0
L2 Aerial L.W. coupling	20-0
L3 Aerial SW tuning coil	3-0
L4 Aerial LW tuning coil	3-0
L5 Aerial LW tuning coil	3-0
L6 RF trans. primary	40-0
L7 SW RF tuning coil	Very low
L8 RF trans. MW sec.	2-0
L9 RF trans. LW sec.	1-0
L10 Oscillator SW reaction	0-1
L11 Oscillator MW reaction	0-1
L12 Osc. circ. SW tuning coil	Very low
L13 Osc. circ. MW tuning coil	2-0
L14 Osc. circ. LW tuning coil	2-0
L15 1st IF trans. 1st sec.	8-5
L16 1st IF trans. 2nd sec.	8-5
L17 2nd IF trans. 1st sec.	8-5
L18 2nd IF trans. 2nd sec.	8-5
L19 Speaker speech coil	800-0
L20 HT smoothing choke	8-5
L21 Main filter chokes	0-4
L22 Speaker input P.T. trans.	400-0
L23 Wavelength indicator	0-4
L24 Gram pick-up switch	—
L25 Main switch, gauged R17	—
L26 Main circuit fuse, 5A	—

CONDENSERS	Values (pF)
C1 Aerial isolating condenser	0-002
C2 Aerial SW coupling	0-0005
C3 Aerial LW coupling	0-0005
C4 Part L.W. coupling	0-0001
C5 Aerial SW coupling	0-0001
C6 V1 G1 decoupling	0-02
C7 V1 G1 decoupling	0-01
C8 V1 cathode by-pass	0-1
C9 V1 cathode by-pass	0-0004
C10 V2 S1 coupling	0-000005
C11 V2 pentode G1 decoupling	0-000005
C12 V2 S1 coupling	0-1
C13 V2 S1 coupling	0-0001
C14 V2 S1 coupling	0-0001
C15 V2 S1 coupling	0-0001
C16 V2 S1 coupling	0-0001
C17 V2 S1 coupling	0-0001
C18 V2 S1 coupling	0-0001
C19 V2 S1 coupling	0-0001
C20 V2 S1 coupling	0-0001
C21 V2 S1 coupling	0-0001
C22 V2 S1 coupling	0-0001
C23 V2 S1 coupling	0-0001
C24 V2 S1 coupling	0-0001
C25 V2 S1 coupling	0-0001
C26 V2 S1 coupling	0-0001
C27 V2 S1 coupling	0-0001
C28 V2 S1 coupling	0-0001
C29 V2 S1 coupling	0-0001
C30 V2 S1 coupling	0-0001
C31 V2 S1 coupling	0-0001
C32 V2 S1 coupling	0-0001
C33 V2 S1 coupling	0-0001

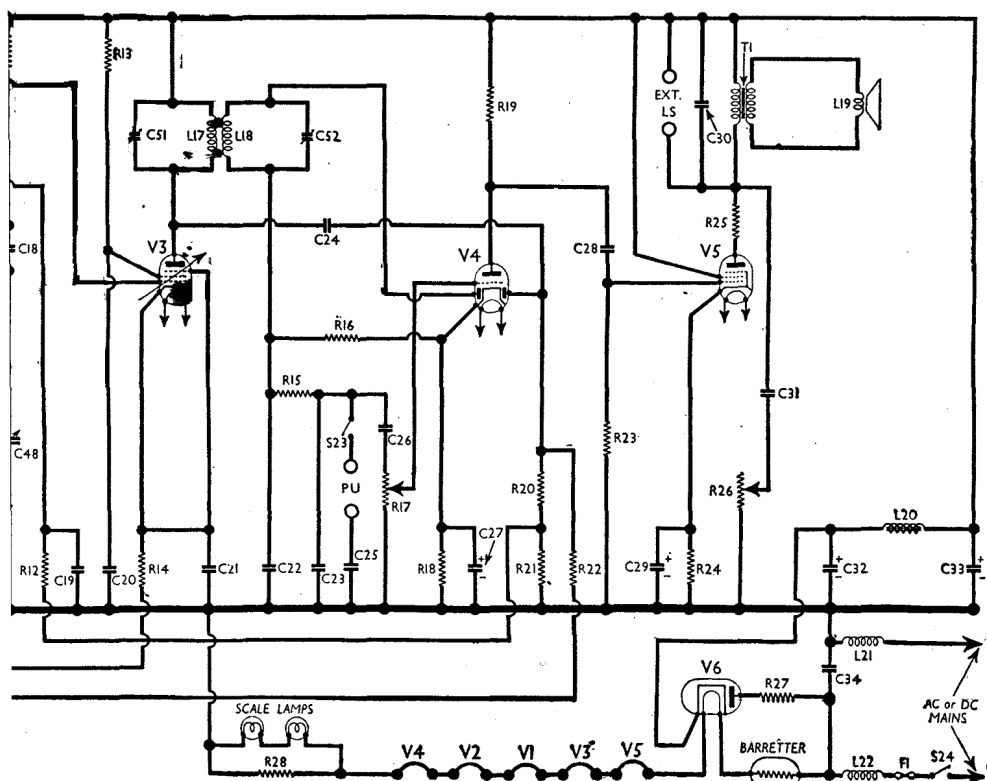
**VALVE ANALYSIS**

Valve voltages and currents given in the table in col. 2 are those measured in our receiver when it was operating on AC mains of 235 V.

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.

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 6X4	215	3-2	93	0-9
V2 6CH5	215	0-9	88	1-3
V3 6X4	215	3-2	93	0-9
V4 6CH5	215	0-9	88	1-3
V5 6X4	215	3-2	93	0-9
V6 6CH5	215	0-9	88	1-3



## CIRCUIT ALIGNMENT

**IF Stages.**—Switch set to SW, and turn gang and volume control to maximum. Remove the top cap connector of V2 and connect a 500,000 O resistance between the connector and the top cap of the valve. Connect the signal generator, via a 0.0002  $\mu$ F condenser, between the grid (top cap) of V2 and the earth lead.

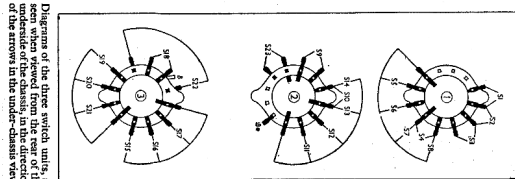
Feed in a 470 KC/S (638.3 m) signal and adjust C52, C51, C50 and C49 in turn for maximum output. Repeat these adjustments until no further improvement results.

**RF and Oscillator Stages.**—With the gang at maximum, pointer should be horizontal. Connect signal generator, via a suitable dummy aerial, to aerial and earth leads.

**SW.**—Switch set to SW, tune to 15 m on scale, feed in a 15 m (20 MC/S) signal, and adjust C45, using the peak involving the lesser capacity, then adjust C39 and C35 in that order for maximum output. There is no adjustable tracking on this band, but performance should be checked at 50 m (6 MC/S).

**MW.**—Switch set to MW, tune to 214 m on scale, feed in a 214 m (1,400 KC/S) signal, and adjust C46, then C40 and C36 for maximum output. Feed in a 500 m (600 KC/S) signal, tune it in, and adjust C43 for maximum output while rocking the gang for optimum results. Repeat the 214 m adjustments.

**LW.**—Switch set to LW, tune to 1,250 m on scale, feed in a 1,250 m (240 KC/S) signal, and adjust C47, then C41 and C37 for maximum output. Feed in a 2,000 m (150 KC/S) signal, tune it in, and adjust C44 for maximum output while rocking the gang for optimum results. Repeat the 1,250 m adjustments.



## Switch Table

Switch	SW	MW	LW	Gram
S1	—	—	—	—
S2	—	—	—	—
S3	—	—	—	—
S4	—	—	—	—
S5	—	—	—	—
S6	—	—	—	—
S7	—	—	—	—
S8	—	—	—	—
S9	—	—	—	—
S10	—	—	—	—
S11	—	—	—	—
S12	—	—	—	—
S13	—	—	—	—
S14	—	—	—	—
S15	—	—	—	—
S16	—	—	—	—
S17	—	—	—	—
S18	—	—	—	—
S19	—	—	—	—
S20	—	—	—	—
S21	—	—	—	—
S22	—	—	—	—
S23	—	—	—	—