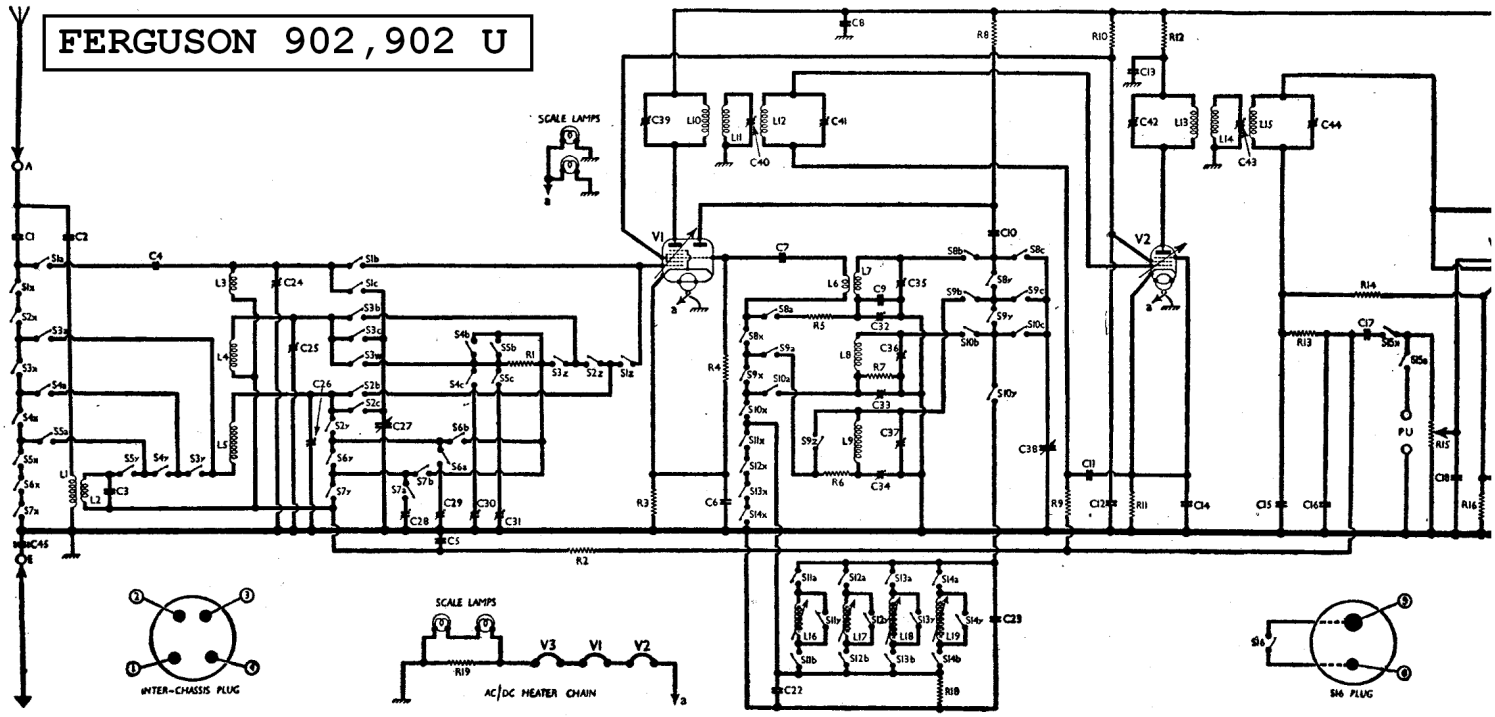
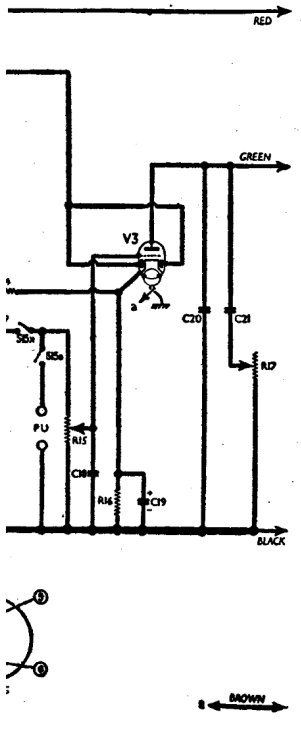
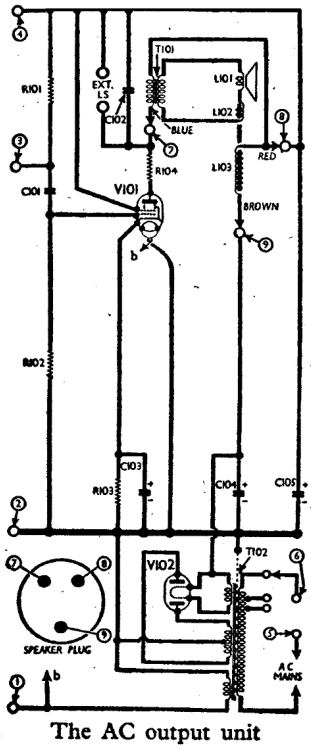
FERGUSON 902, 902 U



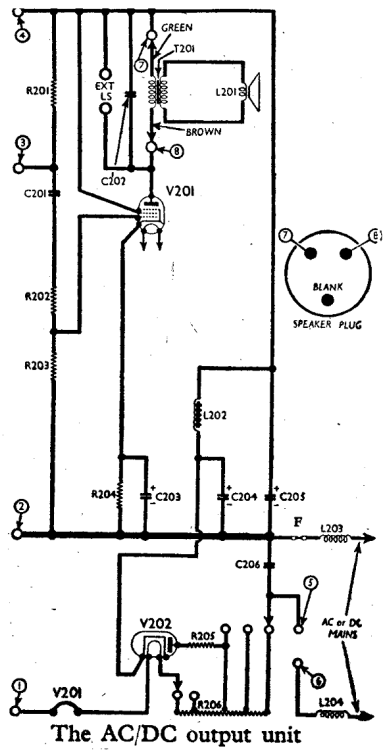
CONDENSERS		Values (μF)
C1	Aerial series condensers ...	0·00025
C2		0·00025
C3	Part LW aerial coupling ...	0·002
C4	Aerial SW coupling	0·00001
C5	V1 heptode CG decoupling	0·1
C6	V1 cathode by-pass... ...	0·1
C7	V1 osc. CG condenser ...	0·0001
C8	HT circuit RF by-pass ...	0·1
C9	Osc. circ. SW fixed tracker	0·001
C10	V1 osc. anode coupling ...	0·0001
C11	V2 CG decoupling	0·1
C12	V1, V2 SG's decoupling ...	0·1
C13	V2 anode decoupling ...	0·1
C14	V2 cathode by-pass... ...	0·1
C15	IF by-pass condensers ...	0·00025
C16		0·00025
C17	AF coupling to V3 triode ...	0·01
C18	IF by-pass	0·0001
C19*	V3 cathode by-pass	25·0
C20	IF by-pass	0·00025
C21	Part of variable tone control	0·01
C22	Osc. auto reaction coupling	0·00025
C23	Osc. auto tuning condenser	0·0002
C24‡	Aerial circuit SW trimmer	—
C25‡	Aerial circuit MW trimmer	—
C26‡	Aerial circuit LW trimmer	—
C27†	Aerial circuit manual tuning	—
C28‡	Aerial circuit auto tuning trimmers	—
C29‡		—
C30‡		—
C31‡		—
C32‡	Osc. circuit SW tracker ...	—
C33‡	Osc. circuit MW tracker ...	—
C34‡	Osc. circuit LW tracker ...	—
C35‡	Osc. circuit SW trimmer ...	—
C36‡	Osc. circuit MW trimmer ...	—
C37‡	Osc. circuit LW trimmer ...	—
C38†	Osc. circuit manual tuning	—
C39‡	1st IF trans. pri. tuning ...	—
C40‡	1st IF trans. sec. tuning ...	—
C41‡	1st IF trans. tert. tuning ...	—
C42‡	2nd IF trans. pri. tuning ...	—
C43‡	2nd IF trans. sec. tuning ...	—
C44‡	2nd IF trans. tert. tuning...	—
C45	Earth isolating condenser (AC/DC model only) ...	0·1
	AC MODEL	
C101	V3triode toV101 AFcoupling	0·01
C102	Fixed tone corrector ...	0·001
C103*	V101 cathode by-pass ...	25·0
C104*	HT smoothing condensers...	16·0
C105*		8·0
	AC/DC MODEL	
C201	V3triode toV201 AFcoupling	0·01
C202	Fixed tone corrector ...	0·001
C203*	V201 cathode by-pass ...	25·0
C204*	HT smoothing condensers...	16·0
C205*		16·0
C206	Mains RF by-pass	0·1

* Electrolytic. † Variable. ‡ Pre-set.





The AC output unit

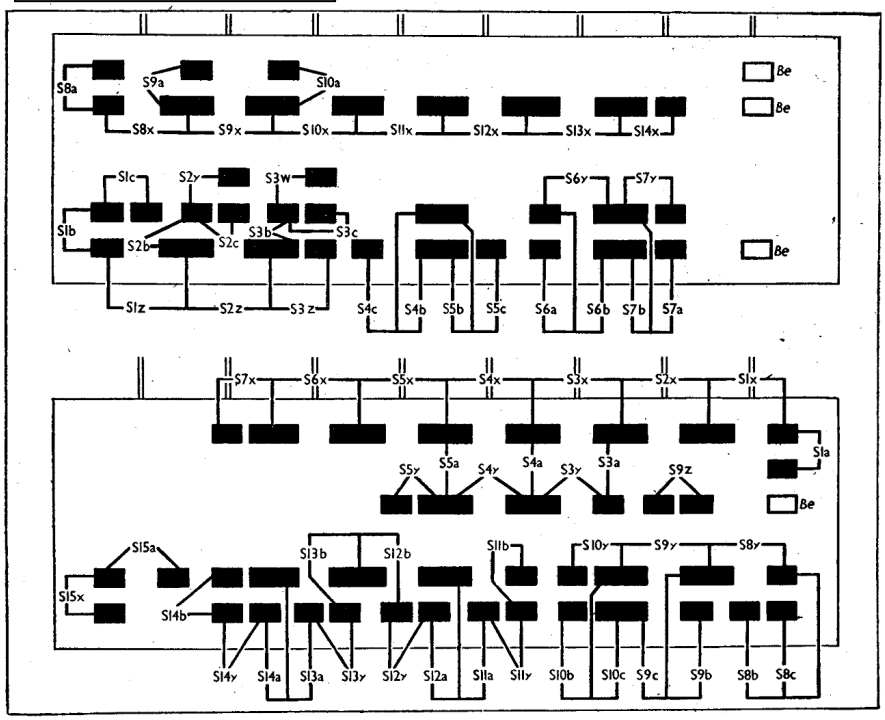


The AC/DC output unit

RESISTANCES		Values (ohms)
R1	V1 heptode CG resistance...	3,000,000
R2	V1 heptode CG decoupling	500,000
R3	V1 fixed GB resistance ...	500
R4	V1 osc. CG resistance ...	50,000
R5	Osc. SW reaction damping	20
R6	Osc. LW reaction damping	5,000
R7	Osc. circuit MW damping...	5,000
R8	V1 osc. anode HT feed ...	25,000
R9	V2 CG decoupling	500,000
R10	V1, V2 SG's HT feed ...	50,000
R11	V2 fixed GB resistance ...	500
R12	V2 anode HT feed	1,000
R13	IF stopper	25,000
R14	V3 diodes load resistance ...	500,000
R15	Manual volume control ...	500,000
R16	V3 triode GB resistance ...	2,500
R17	Variable tone control ...	100,000
R18	Osc. auto circuit damping...	5,000
R19	Scale lamps shunt (AC/DC model only)...	200
	AC MODEL	
R101	V3 triode anode load ...	250,000
R102	V101 CG resistance	500,000
R103	V101 GB resistance	300
R104	V101 anode stabiliser ...	100
	AC/DC MODEL	
R201	V3 triode anode load ...	250,000
R202	V201 CG input potential divider	100,000
R203		250,000
R204	V201 GB resistance	300
R205	V202 anode surge limiter ...	100
R206	Heater circuit ballast, total	830*

* Tapped at 30 O, 630 O, 730 O and 830 O from V202 heater end.

OTHER COMPONENTS			Approx. Values (ohms)
L1	Aerial circuit choke ...		224·0
L2	Aerial LW coupling coil		13·0
L3	Aerial SW tuning coil...		Very low
L4	Aerial MW tuning coil		4·2
L5	Aerial LW tuning coil		26·5
L6	Oscillator SW reaction...		0·5
L7	Osc. circuit SW tuning coil		Very low
L8	Osc. circuit MW tuning coil		4·7
L9	Osc. circuit LW tuning coil		19·3
L10	1st IF trans.	Pri. ...	16·5
L11		Sec. ...	16·5
L12		Tert. ...	16·5
L13	2nd IF trans.	Pri. ...	16·5
L14		Sec. ...	16·5
L15		Tert ...	16·5
L16	Oscillator circuit auto tuning coils		4·0
L17			4·5
L18			9·5
L19			9·5



Diagrams of the press-button switch unit. Top, as seen from above the chassis; bottom, as seen from beneath the chassis

PRESS-BUTTON ADJUSTMENT

The press-buttons, from left to right, looking at the front of the set are: 1, Gram; 2, LW station, 1,300-2,000m; 3, LW station, 1,200-1,870m; 4, MW station, 320-560m; 5, MW station, 200-400m; 6, MW manual; 7, LW manual; 8, SW manual.

Stations within the tuning range of the buttons 2-5 are selected by pressing the appropriate button, tuning the oscillator circuit by the *core adjustment* beneath the button shaft, then tuning the aerial circuit by the trimmer above and to the left of the button shaft.

CIRCUIT ALIGNMENT

IF Stages.—Press MW manual button and turn gang to maximum. Remove top cap connector of **V1** and connect a 500,000Ω resistance between the connector and the top cap of the valve. Connect signal generator, via a 0.00025μF condenser, between top cap of **V1** and earth lead. Feed in a 470 KC/S signal, and adjust **C44, C43, C42, C41, C40** and **C39** in turn for *maximum output*. Repeat these adjustments.

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

SW.—Press SW manual button, tune to 16 MC/S on scale, feed in a 16 MC/S (18.75 m) signal, and adjust **C35** for maximum output, using the peak involving the lesser trimmer capacity. Then adjust **C24** for maximum output. Feed in a 6 MC/S (50 m) signal, tune it in, and adjust **C32** for maximum output, while rocking the gang for optimum results. Repeat the 16 MC/S adjustments.

MW.—Press MW manual button, tune to 214 m on scale, feed in a 214 m (1,400 KC/S) signal, and adjust **C36,** then **C25,** for maximum output. Feed in a 500 m (600 KC/S) signal, tune it in, and adjust **C33** for maximum output, while rocking the gang for optimum results. Repeat the 214 m adjustments.

LW.—Press LW manual button, tune to 1,250 m on scale, feed in a 1,250 m (240 KC/S) signal, and adjust **C37,** then **C26,** for maximum output. Feed in a 2,000 m (150 KC/S) signal, tune it in, and adjust **C34** for maximum output, while rocking the gang for optimum results. Repeat the 1,250 m adjustments.

VALVE ANALYSIS

Valve voltages and currents given in the table below are those measured in our receiver when it was operating on AC mains of 233 V, using the 220-230 V tapping on the mains transformer in the case of the AC model and the 230 V tapping on the mains resistance in the case of the AC/DC model. The receiver was tuned to the lowest wavelength on the MW 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.

OTHER COMPONENTS (Continued)		Approx. Values (ohms)
S1 a, b, c, x, z to S3 a, b, c, w, x, y, z	Aerial circuit manual waveband switches	—
S4 a, b, c x, y to S7 a, b x, y	Aerial circuit auto tuning selector switches	—
S8a, b, c, x, y to S10a, b, c, x, y	Oscillator circuit manual waveband switches	—
S11a, b, x, y to S14a, b, x, y	Oscillator circuit auto tuning selector switches	—
S15a, x	Radio/gram change switches	—
S16	Mains switch, ganged R15	—
	AC MODEL	
L101	Speaker speech coil ...	2·2
L102	Hum-neutralising coil...	0-15
L013	Speaker field coil ...	1,500·0
T101	Speaker input trans. Pri ...	620·0
	Speaker input trans. Sec. ...	0·3
T102	Mains trans. Pri., total ...	38·0
	Mains trans. Heater sec. ...	0·2
	Mains trans. Rect. heat sec.	0·2
	Mains trans. H.T. sec., total	410·0
	AC/DC MODEL	
L201	Speaker speech coil ...	2·2
L202	HT smoothing choke ...	300·0
L203	Mains filter chokes ...	3·5
L204	Mains filter chokes ...	3·5
T201	Speaker input trans. Pri. ...	620·0
	Speaker input trans. Sec. ...	0·3
F	Mains circuit fuse, 5A...	—

Valve		Anode Voltage (V)	Anode Current (mA)	Screen Voltage (V)	Screen Current (mA)
		AC MODEL			
V1	ECH3	258	2·2	95	1·0
		Oscillator			
		130	4·8		
V2	EF9	252	5·7	95	1·8
V3	EBC3	53	1·0	—	—
V101	6V6G	226	41·0	258	3·3
V102	5Y3G	335*	—	—	—
		AC/DC MODEL			
V1	ECH3	202	2·0	77	0·8
		Oscillator			
		109	3·0		
V2	EF9	198	4·3	77	1·3
V3	EBC3	45	0·6	—	—
V201	CL4	186	26·0	202	4·5
V202	CY1†	—	—	—	—

* Each anode, AC.
† Cathode to chassis 215 V. DC.