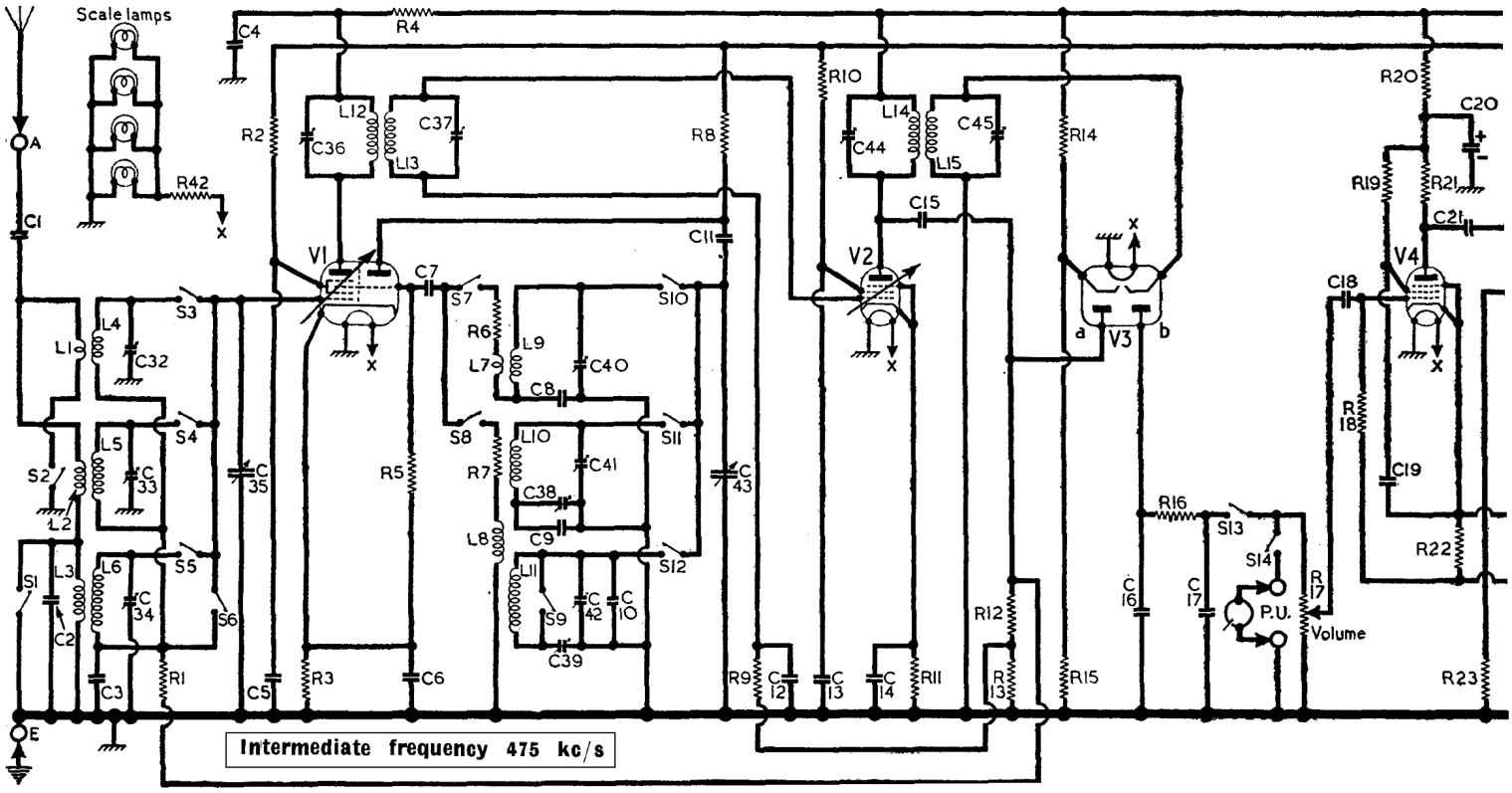


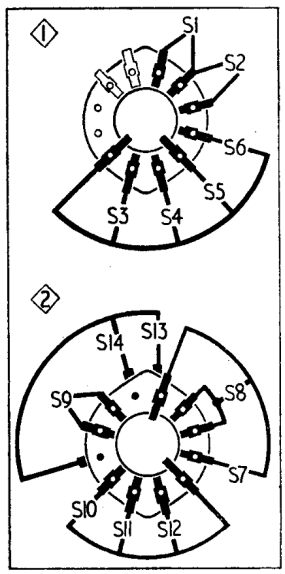
FERGUSON - 299RG

Valve	Anode		Screen		Cath.
	V	mA	V	mA	V
V1 ECH35	211	1·0	52	1·5	1·3
	Oscillator				
	100	3·5			
V2 EF39	220	4·9	74	1·5	2·0
V3 EB34	—	—	—	—	—
V4 EF39	37	0·8	22	0·25	0·9
V5 EL33	280	36·0	290	4·0	39·0
V6 EL33					
V7 AZ31	300†	—	—	—	290·0

† A.C., each anode.

Switch	S.W.	M.W.	L.W.	Gram.
S1	—	C	—	—
S2	C	—	—	—
S3	C	—	—	—
S4	—	C	—	—
S5	—	—	C	—
S6	—	—	—	C
S7	C	—	—	—
S8	—	C	C	—
S9	—	C	—	—
S10	C	—	—	—
S11	—	C	—	—
S12	—	—	C	—
S13	C	C	C	—
S14	—	—	—	C

Diagrams of the wave-band switch units, drawn as seen from the rear of an inverted chassis.



FERGUSON - 299RG

CAPACITORS		Values	Locations
C1	Aerial coupling ...	100pF	J5
C2	L.W. aerial shunt	150pF	H4
C3	A.G.C. decoupling	0·05μF	G4
C4	V1 anode decoup....	0·1μF	H5
C5	V1 S.G. decoup. ...	0·1μF	H4
C6	V1 cath. by-pass ...	0·1μF	J4
C7	V1 osc. C.G. ...	100pF	H5
C8	S.W. tracker ...	0·004μF	H5
C9	M.W. tracker ...	250pF	G4
C10	L.W. trimmer ...	30pF	H4
C11	Osc. anode coup....	100pF	H4
C12	A.G.C. decoupling	0·05μF	G5
C13	V2 S.G. decoup. ...	0·1μF	G5
C14	V2 Cath. by-pass	0·1μF	G5
C15	A.G.C. coupling ...	100pF	G5
C16, C17	I.F. by-passes ...	100pF	G5
		100pF	F5
C18	A.F. coupling ...	0·01μF	G4
C19	V4 S.G. decoup. ...	0·5μF	F3
C20*	H.T. decoupling ...	4·0μF	E3
C21	A.F. coupling ...	0·05μF	F4
C22	Push-pull coup. ...	0·05μF	E5
C23, C24	Neg. feed-back ...	0·05μF	F4
		0·02μF	F3
C25	Tone correction ...	0·005μF	E4
C26, C27	Neg. feed-back ...	0·05μF	G3
		0·5μF	G3
C28*, C29*, C30*	H.T. smoothing ...	8μF	K6
		16μF	K6
		24μF	K6
C31	R.F. by-pass ...	0·01μF	K6
C32‡	S.W. aerial trim. ...	40pF	H4
C33‡	M.W. aerial trim....	40pF	H4
C34‡	L.W. aerial trim....	40pF	H4
C35†	Aerial tuning ...	528pF	A1
C36‡, C37‡	1st I.F. trans. tuning ...	100pF	B2
		100pF	B2
C38‡	M.W. osc. tracker	300pF	G4
C39‡	L.W. osc. tracker	300pF	G4
C40‡	S.W. osc. trimmer	40pF	H4
C41‡	M.W. osc. trimmer	40pF	H4
C42‡	L.W. osc. trimmer	40pF	H4
C43†	Oscillator tuning...	528pF	B1
C44‡, C45‡	2nd I.F. trans. tuning ...	100pF	C2
		180pF	C2

* Electrolytic. † Variable. ‡ Pre-set.

RESISTORS		Values	Locations
R1	A.G.C. decoupling	1.47MΩ*	G4
R2	V1 S.G. feed ...	100kΩ	H5
R3	V1 G.B.	220Ω	H5
R4	V1 anode decoup.	4.7kΩ	G5
R5	V1 osc. C.G. ...	47kΩ	H5
R6, R7	Osc. stabilisers ...	47Ω	H5
		2.2kΩ	H5
R8	Osc. anode feed ...	22kΩ	H5
R9	A.G.C. decoupling	1MΩ	F5
R10	V2 S.G. feed ...	68kΩ	G5
R11	V2 G.B.	330Ω	G5
R12, R13	A.G.C. diode load	470Ω	F5
		470Ω	F5
R14, R15	V3a G.B. pot. ... divider ...	470kΩ	F4
		3.3kΩ	F5
R16	I.F. stopper ...	47kΩ	F5
R17	Volume control ...	500kΩ	J3
R18	V4 C.G.	2MΩ	G4
R19	V4 S.G. feed ...	330kΩ	F4
R20	V4 H.T. decoup.	100kΩ	E4
R21	V4 anode load ...	100kΩ	F4
R22	V4 G.B.	1kΩ	F4
R23	V5, V6 cath. coup.	425Ω	D2
R24	V5, V6 G.B. ...	75Ω	E5
R25, R26	V5, V6 C.G. ...	500kΩ	F5
		500kΩ	E5
R27, R28	V5 stoppers ...	4·7Ω	F5
		100Ω	E5
R29, R30	V6 stoppers ...	4·7Ω	E5
		100Ω	E5
R31	Neg. feed-back ...	5Ω	F4
R32, R33	Hum neut. pot. divider ...	250kΩ	E4
		2kΩ	D1
R34	Tone correction ...	10kΩ	E4
R35	Treble control ...	2·5kΩ	F3
R36, R37	Neg. feed-back ...	1·5kΩ	G3
		4·7kΩ	G3
R38	Bass control ...	25kΩ	G3
R39	Neg. feed-back ...	1kΩ	G3
R40, R41	H.T. smoothing	4·7kΩ	K6
		4.7kΩ	K6
R42	Scale l'mp ballast	0.75Ω†	F4

* Made up of a 1 MΩ and a 470kΩ resistor in series.

† Made up of two 1.5Ω resistors in parallel.

OTHER COMPONENTS		Approx. Values (ohms)	Locations
L1, L2, L3	Aerial coupling coils	3·6	G4
		3·6	J4
		54·0	J4
L4, L5, L6	Aerial tuning coils	Very low	G4
		2·3	J4
		28·0	J4
L7, L8	Osc. reaction coils...	Very low	J5
		4·4	H5
L9, L10, L11	Osc. tuning coils ...	Very low	J5
		2·4	H5
		6·0	H5
L12, L13	1st I.F. trans. Pri.	8·5	B2
	Sec.	8·5	B2
L14, L15	2nd I.F. trans. Pri.	8·5	C2
	Sec.	7·5	C2
L16	Speech coil ...	2·3	—
T1	Primary, d–e ...	150·0	
	Primary, e–f ...	140·0	C2
	Secondary ...	Very low	—
T2	Primary, total ...	20·0	
	H.T. sec., total ...	440·0	
	Rect. htr. sec. ...	Very low	K6
	V1–V4 htr. sec. ...	Very low	
	V5, V6 htr. sec. ...	Very low	
S1–S14	Waveband and gram switches ...	—	H4
S15	Speaker switch ...	—	—
S16, S17	Mains switches ...	—	—

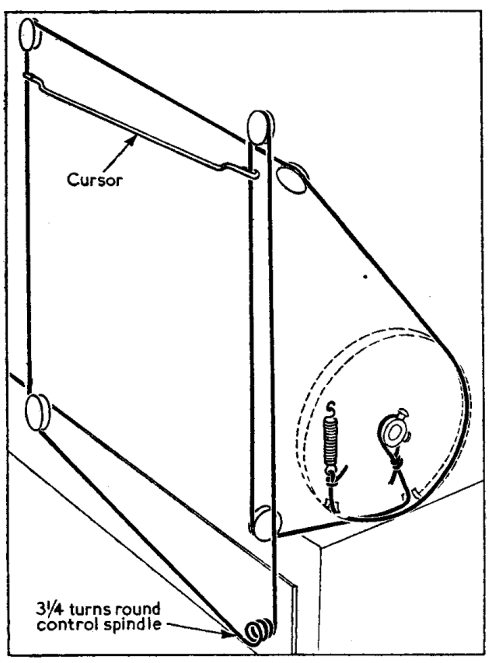
DRIVE CORD REPLACEMENT

About seven feet of high-grade plaited and waxed flax fishing line is required for a new tuning drive cord, which should be run as shown in the sketch below, where the system is drawn as seen from the right-hand front corner of the chassis, when the gang is at maximum capacitance.

It is advisable to start by making a non-slip loop with a diameter of about $\frac{5}{8}$in at one end of the cord, turning the gang to maximum, and slipping the loop over the drive drum fixing boss. Thereafter the cord can be held in position by pulling the drum against the gang stop.

The cursor is fixed by bending its ends round and clamping them to the cord, and for this purpose the glass scale panel must be removed. It is held by three springy clips on the top rail of the scale assembly and three more at the bottom.

The clips can be prised off with a screw-



Sketch showing the tuning drive system in both models. It is drawn as seen from the front right-hand corner of the chassis.

CIRCUIT ALIGNMENT

299RG.—I.F. alignment may be carried out with the chassis in the cabinet, but to gain access to all the R.F. adjustments the chassis should be removed.

289A.—Access can be gained to all the I.F. and R.F. adjustments by removing the back and base covers.

I.F. Stages.—Remove **V1** top cap lead and connect a 500 kΩ resistor between the top cap (grid) and chassis. Connect the signal generator via a 0.01 μF capacitor in each lead, across the 500 kΩ resistor. Switch set to M.W., turn volume control and gang to maximum, feed in a 475 kc/s (631.6 m) signal and adjust **C45, C44** (location reference C2) and **C37, C36** (B2) for maximum output, reducing the input as the circuits come into line to avoid A.G.C. action. Repeat these adjustments.

R.F. and Oscillator Stages.—With the gang at maximum capacitance, the cursor should coincide with the high wavelength ends of the tuning scales. Remove the 500 kΩ resistor, re-connect **V1** top cap lead and transfer the signal generator leads, via a suitable dummy aerial, to the **A** and **E** sockets.

S.W.—Switch set to S.W., tune to 20 m on scale, feed in a 20 m (15 Mc/s) signal and adjust **C40** (H4) and **C32** (H3) for maximum output. Tune to 50 m, feed in a 50 m (6 Mc/s) signal and check calibration. If the calibration error is large, as may occur when **L7, L9** have been replaced, the position of the top turn of **L9** (J5) should be adjusted and the alignment repeated until satisfactory calibration results.

M.W.—Switch set to M.W., tune to 200 m, feed in a 200 m (1,500 kc/s) signal and adjust **C41** (H4) and **C33** (H3) for maximum output. Tune to 500 m, feed in a 500 m (600 kc/s) signal and adjust **C38** (G4) for maximum output. Repeat these adjustments.

L.W.—Switch set to L.W., tune to 800 m, feed in a 800 m (375 kc/s) signal and adjust **C42** (H4) and **C34** (H3) for maximum output. Tune to 1,875 m, feed in a 1,875 m (160 kc/s) signal and adjust **C39** (G4) for maximum output. Repeat these adjustments.