FERGUSON Models 321A, 322RG

General Description : Five-valve (including rectifier), three-waveband superheterodyne receiver. The 321A is a table model, while 322RG is a radiogramophone with three-speed auto-changer.

Power Supply : A.C. mains, 200–250 volts, 40–60 c/s.

Intermediate Frequency : 470 kc/s.

Valves : (V1) ECH42; (V2) EBF80; (V3) EF41; (V4) EL41; (V5) EZ40.

Audio Output : 3·5 watts.

Alignment Procedure : Re-alignment may be effected without removing the chassis from the cabinet.

I.F.: A 470-kc/s. signal should be injected into the front gang section with the gang and volume controls set at maximum and the waveband switch at M.W. L13, L12, L11 and L10 are then adjusted for maximum response.

R.F.: A modulated signal should be injected into the aerial socket (via dummy aerial) with the volume control at maximum. Align at the following frequencies in the order given :

L.W.: 350 kc/s. (857 m.).—Trim C18, then C5 for maximum response. 160 kc/s. (1875 m.).—Adjust C21 for maximum response. Repeat until no further improvement can be obtained.

M.W.: 1500 kc/s. (200 m.).—Trim C17, then C4 for maximum response. 580 kc/s. (517 m.).—Check calibration.

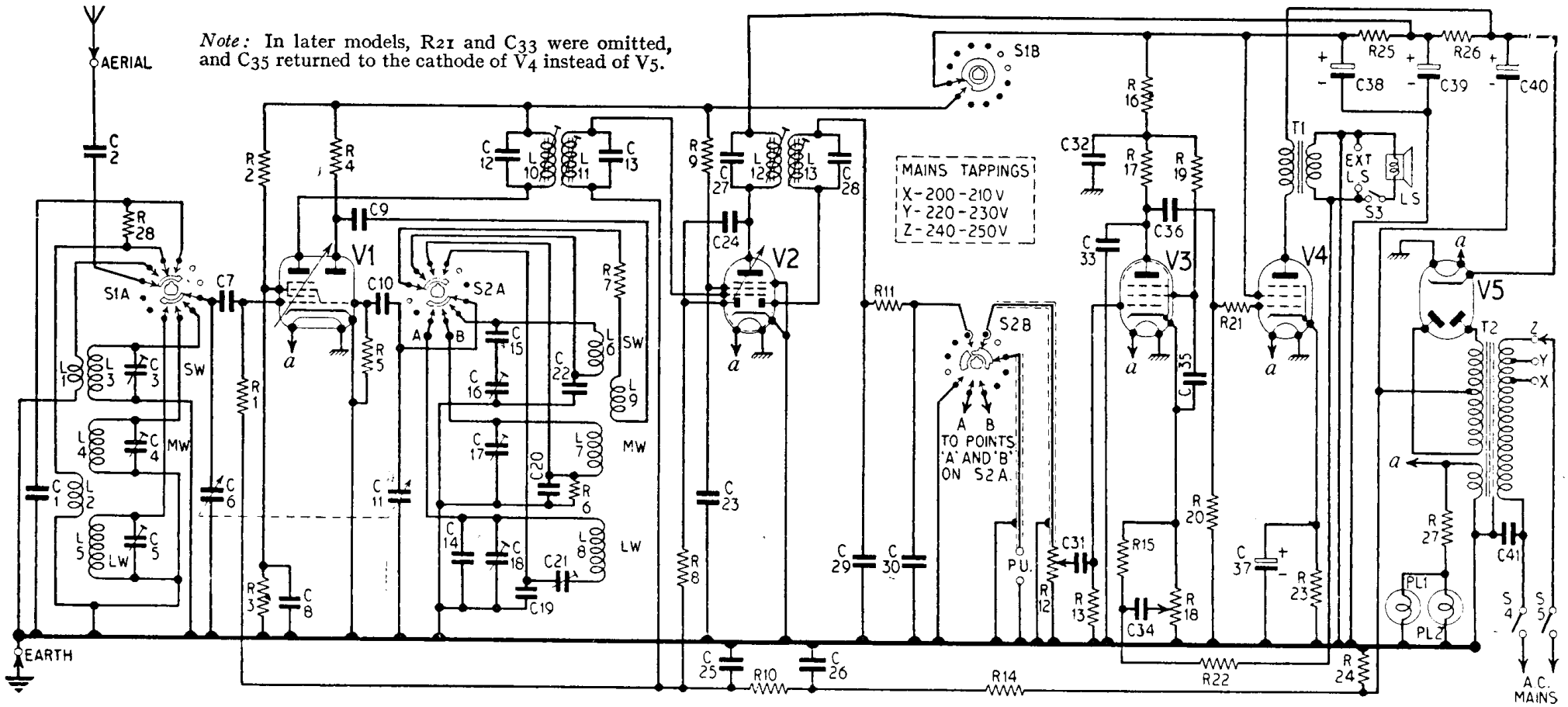
S.W.: 17 Mc/s. (17·7 m.).—Trim C16 for maximum response and then adjust C3 whilst slightly rocking tuning gang. 6 Mc/s. (50 m.).—Check calibration.

Note : Fixed tracking is used on M.W. and S.W. If the calibration checks show discrepancies, test C20 (560 pF. ± 1 per cent) or C22 (3550 pF. ± 5 per cent). Should these be within correct limits, the coils may have to be replaced.

Valve Analysis : Values given below are those measured with a Model 7 Avometer on a sample receiver operating on 230 volts applied to the 220–230-volt tapping. Set switched to M.W. with gang fully enmeshed, no-signal condition. Total H.T. current 61 mA. H.T. voltage (reservoir) 285 volts. H.T. voltage (1st section smoothing) 268 volts. H.T. voltage (2nd section smoothing) 250 volts. Voltage across R24 2·6 volts.

Valve	*Anode Voltage (v.)*	*Anode Current (mA.)*	*Screen Voltage (v.)*	*Screen Current (mA.)*	*Cathode Voltage (v.)*
V1	250	2·7	100	3·7	—
(osc.)	115	4·7	—	—	—
V2	268	4·3	80	1·7	—
V3	35	0·5	20	0·1	1·0
V4	265	35	250	5·0	6·8

Note: In later models, R21 and C33 were omitted, and C35 returned to the cathode of V4 instead of V5.



Circuit Diagram—Ferguson Models 321A and 322RG

Capacitors.

C1	500 pF.
C2	0·001 (1000 v.)
C3	40 pF.
C4	40 pF.
C5	40 pF.
C6	528 pF.
C7	200 pF.
C8	0·1
C9	200 pF.
C10	50 pF.
C11	528 pF.
C12	100 pF. (2%)
C13	100 pF. (2%)
C14	30 pF.
C15	20 pF.
C16	40 pF.
C17	40 pF.
C18	40 pF.
C19	500 pF.
C20	560 pF. (1%)
C21	350 pF.
C22	3550 pF. (5%)
C23	0·1
C24	50 pF.
C25	0·1
C26	0·1
C27	100 pF. (2%)
C28	180 pF. (2%)
C29	100 pF.
C30	100 pF.
C31	0·005
C32	0·1
C33	500 pF.
C34	0·02
C35	0·05
C36	0·001†
C37	50 (12 v.)
C38	24
C39	24
C40	32
C41	0·01 (1000 v.)

Resistors.

R1	1M
R2	22k (1 W.)
R3	33k (½ W.)
R4	27k (½ W.)
R5	47k
R6	3·3k
R7	250
R8	470k
R9	100k
R10	470k
R11	100k
R12	500k (Pot.)
R13	3·3M
R14	470k
R15	27k
R16	100k
R17	220k
R18	2·5k (Pot.)
R19	1M
R20	1M
R21	4·7k
R22	3·3k
R23	180
R24	47*
R25	820 (½ W.)
R26	680 (½ W.)
R27	1·5 (½ W.)
R28	3·3k

* The value of this resistor may affect the overall sensitivity of the receiver.

† May vary in earlier models.