

ALBA 3211 series a.m.-f.m. radio receivers

MODEL 3211 is a 4-band a.m.-f.m. table radio using seven valves, including rectifier and tuning indicator. Models 6221, 6231, 6241 and 6251 are radiogram versions using the same chassis except that Model 6241 has no tuning indicator.

For a.m. operation, the aerial input is coupled to the mixer (V2A) via L6/Cx1 (s.w.), L7/Cx2 (m.w.) or L8/Cx3/C17 (l.w.), tuned by Vc1. The oscillator (V2B) grid coils L13 (s.w.), L14 (m.w.) and L15 (l.w.) are trimmed by Cx4, Cx5 and Cx6/C23, and tuned by Vc2. Coupling to oscillator anode is across common impedance of padders C24, C25, C26. Addition coupling (and stabilising resistors R11, R12) is provided on s.w. and l.w. bands.

The V2 output is coupled via L9/L10 to the i.f. amplifier V3, the f.m. transformers being shorted out. V3 output is coupled to V4B diode via L16/L17, the rectified output of which is developed across the load R26/R20. Part of the audio voltage is fed via C37, VR1 to the V4B triode. The d.c. potential across R20 is fed back as a.g.c. bias to V2A and V3.

The V4 triode drives a pentode output stage V5, which incorporates a negative feedback tone control C41/VR2. Negative feedback is also used for tone corrected volume control circuit R34, R35/C46, R27.

For f.m. operation, V1A operates as a grounded grid r.f. amplifier, followed by a self-oscillating mixer V1B. The i.f. output is coupled to the V2A grid, this now functioning as 1st i.f. amplifier, the triode section being rendered inoperative.

V3 is the 2nd i.f. stage and two diodes of V4A are connected in a ratio detector circuit. The audio output is developed across the load C34 and fed via de-emphasis components R17/C33 to the volume control and audio stages.

SERVICE SNAPS

ALBA 3211 Series

Valves: ECC85, ECH81, EF85, EABC80, EL84, EM80, EZ80.

Dial Lamps: Two 6.3V 0.115A.

Volume Control: 500kΩ with d.p. switch.

Tone Control: 500kΩ.

I.F.: 470 kc/s a.m., 10.7 Mc/s f.m.

Electrolytics: 5μF, 150V; 25μF, 12V; 8+32+32μF, 350V.

Mains Input: 190-260V a.c. only.

ALIGNMENT

A.M. Circuits

I.F. Alignment: Switch to m.w., gang fully meshed, volume maximum and tone control at zero top cut. Short out Vc2. Inject 470 kc/s modulated to VC1 and trim L9, L10, L16 and L17 for maximum output. Repeat.

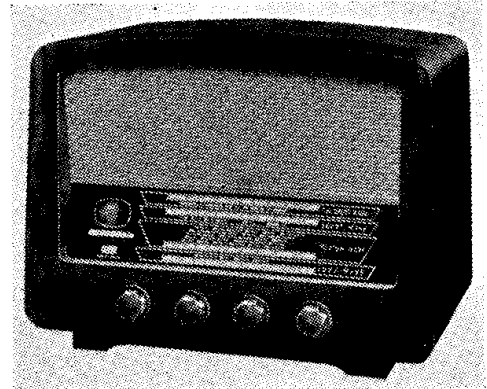
R.F. Alignment: Remove short from Vc2, tune set to 500m and inject 600 kc/s to aerial socket via dummy aerial. Trim L14 and L17 for maximum output. Retune set to 200m, inject 1,500 kc/s and trim Cx5 and Cx2 for maximum output.

Switch to l.w. and tune to 1,950m. Inject 154 kc/s and trim L15 and L8. Retune to 1,200m., inject 250 kc/s and trim Cx6 and Cx3.

Switch to s.w. and tune to 50m. Inject 6 Mc/s and trim L13 and L6. Retune set to 17m., inject 17.65 kc/s and trim Cx4 and Cx1. Repeat.

F.M. Circuits

I.F. Alignment: Set cores of L2 and L3 to minimum frequency (fully in) and set C5 and C9 to their mid-positions. Connect valve voltmeter between chassis and junction of C7/C8 and adjust C10 for minimum meter reading, using the smaller capacitance peak if two are found.



RELEASE DATES AND ORIGINAL PRICES

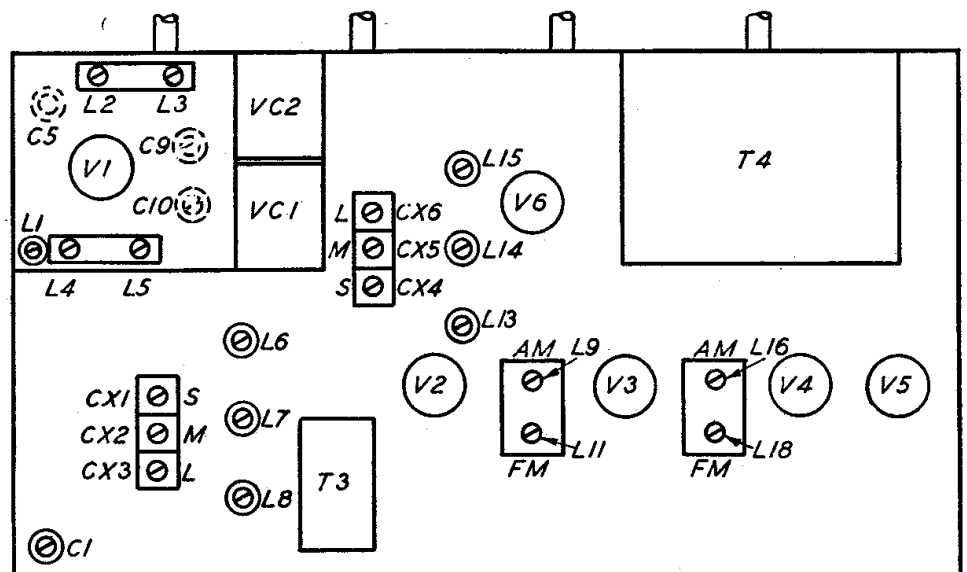
3211:	33 gns.,	June, 1955
6221:	75 gns.,	June, 1955
6231:	65 gns.,	August, 1955
6241:	59 gns.,	April, 1956
6251:	69 gns.,	April, 1956
All prices tax paid		

Connect 50μA meter, with 200kΩ resistor in series, across C36, positive to chassis. Inject 10.7 Mc/s unmodulated to L5 and chassis and trim L18, L12 and L11 for maximum output, noting the meter reading. Transfer meter to junction R17/C34 and trim L19 for half the observed reading. Repeat the L18 and L19 adjustments.

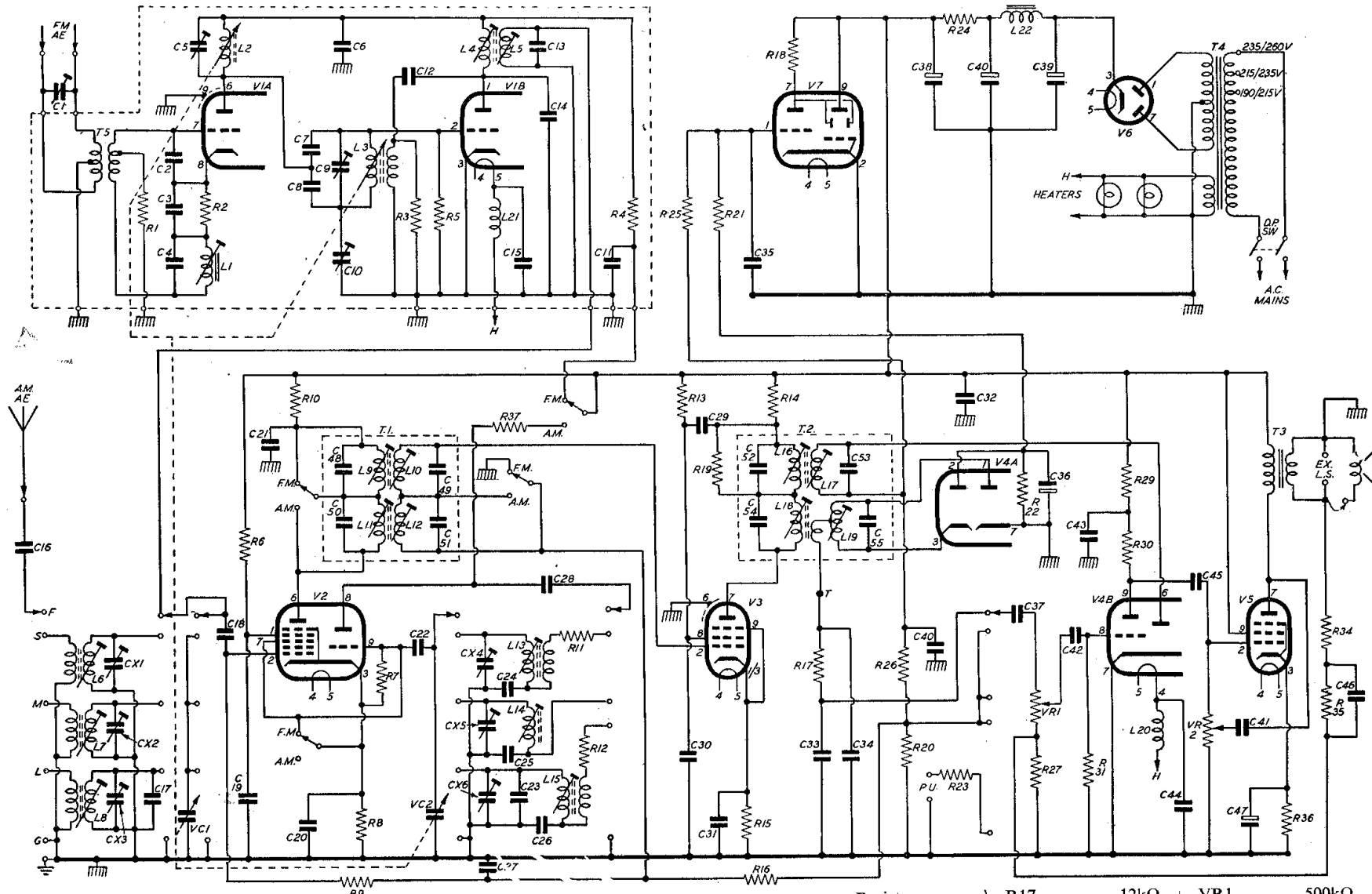
Reconnect meter across C36, inject 10.7 Mc/s to tight loop around V1 and trim L4 and L5 for maximum output. Check bandwidth—response at 10.6 and 10.8 Mc/s to be not less than 3dB down.

Transfer signal generator to f.m.

(continued overleaf)



Above-chassis layout sketch showing positions of valves, trimmers and i.f. transformers. C5, C9 and C10, in the f.m. unit, are below chassis.



- C15 0.0022µF
- C16 200pF
- C17 100pF
- C18 100pF
- C19 0.002µF
- C20 0.05µF
- C21 0.005µF
- C22 100pF
- C23 190pF
- C24 5343pF
- C25 600pF
- C26 270pF
- C27 0.1µF
- C28 100pF
- C29 0.05µF
- C30 0.0039µF
- C31 0.1µF
- C32 0.25µF
- C33 0.0025µF
- C34 330pF
- C35 0.005µF
- C36 5µF
- C37 0.02µF
- C38 32µF
- C39 32µF
- C40 8µF
- C41 200pF
- C42 0.02µF
- C43 0.1µF
- C44 0.001µF
- C45 0.01µF
- C46 0.1µF
- C47 25µF
- C48 100pF
- C49 100pF
- C50 27pF
- C51 27pF
- C52 100pF
- C53 100pF
- C54 10pF
- C55 10pF

- Valves**
- V1 ECC85
 - V2 ECH81
 - V3 EF85
 - V4 EABC80
 - V5 EL84
 - V6 EZ80
 - V7 EM80

- Inductors**
- L1 0.5Ω
 - L4 0.8Ω
 - L5 1.0Ω
 - L7 pri 1.2Ω
 - sec. 3.0Ω
 - L8 pri. 48Ω
 - sec. 22.5Ω
 - L9 12Ω
 - L10 15Ω
 - L11/L12 0.3Ω
 - L14 3.3Ω
 - L15 pri. 7.5Ω
 - sec. 3.4Ω
 - L16 12Ω
 - L17 12Ω
 - L18 1.2Ω
 - L19 1.2Ω*
 - L22 70Ω
 - T3 pri. 530Ω
 - T4 pri. 25Ω
 - sec. 450Ω

ALIGNMENT—continued

aerial socket and trim L1 for minimum output.

R.F. Alignment: Tune set to 87.9 Mc/s mark, inject 87.9 Mc/s, deviated ±25 kc/s, and trim C9 and C5 for maximum output. Inject 95 Mc/s, tune receiver, and check calibration. If necessary C7 and C8 can be moved nearer together or farther apart to correct calibration. Then trim C1 for optimum gain, using the aerial on which set is to operate.

VALVE VOLTAGES						
	Anode		Screen		Cathode	
	A.M.	F.M.	A.M.	F.M.	A.M.	F.M.
V1A	—	170	—	—	—	2.4
V1B	—	165	—	—	—	—
V2A	250	230	75	90	2	1.9
V2B	150	—	—	—	2	—
V3	130	120	95	85	2	1.85
V4	50	50	—	—	—	—
V5	230	215	255	240	7.7	7.1
V6	295*	295*	—	—	305	300

* a.c. reading, each anode.

Resistors		Capacitors	
R1	120Ω	C1	30pF
R2	220Ω	C2	8.2pF
R3	2.2kΩ	C3	0.001µF
R4	4.7kΩ	C4	47pF
R5	1MΩ	C5	30pF
R6	47kΩ	C6	570pF
R7	47kΩ	C7	39pF
R8	220Ω	C8	39pF
R9	1MΩ	C9	30pF
R10	1.5kΩ	C10	30pF
R11	220Ω	C11	0.0022µF
R12	10kΩ	C12	18pF
R13	56kΩ	C13	15pF
R14	10kΩ	C14	12pF
R15	150Ω		
R16	1MΩ		
R17	12kΩ	VR1	500kΩ
R18	470kΩ	VR2	500kΩ
R19	68kΩ		
R20	220kΩ		
R21	2.2MΩ		
R22	56kΩ		
R23	100kΩ		
R24	600Ω		
R25	2.2MΩ		
R26	220kΩ		
R27	100Ω		
R29	220kΩ		
R30	220kΩ		
R31	10MΩ		
R34	1.5kΩ		
R35	10kΩ		
R36	150Ω		
R37	27kΩ		