"TRADER" SERVICE SHEET

1256/T104

AMBASSAD

Covering Nineteen

EMPLOYING a 12-position turret tuner and non-gated vision A.G.C., the Ambassador TV17TM is a 17in table receiver designed for operation from A.C. mains of 200-250V, 40-60 c/s. The receiver is fitted with sixteen Mazda valves and a Mazda C.R. tube.

Models TV14TM and TV14CC are 14in versions, and models TV15C, TV15CC, TV15CR, TV17C, TV17CC, TV17CR are 15in and 17in versions of TV17TM. Models 21CC and TV21C are 21in console versions. Baird receivers employing the same chassis are T5614, C5614, T5617, C5617, CD5617, CR5617, C5717 and C5621. Further details of all these models are given under "Associated Models" overleaf.

Release dates and original prices:—
Ambassador Models: TV14TM, August, 1955, £52 3*s* 7*d*; *TV14CC, August,* 1955, £60 0*s* 10*d*; *TV15CC, August,* 1954, £66 3*s* 10*d*; *TV15C, August,* 1954, £77 12*s* 4*d*; *TV15CR, August,* 1954, £90 12*s* 4*d*; *TV17TM, May,* 1955,

£6(
£6
£7
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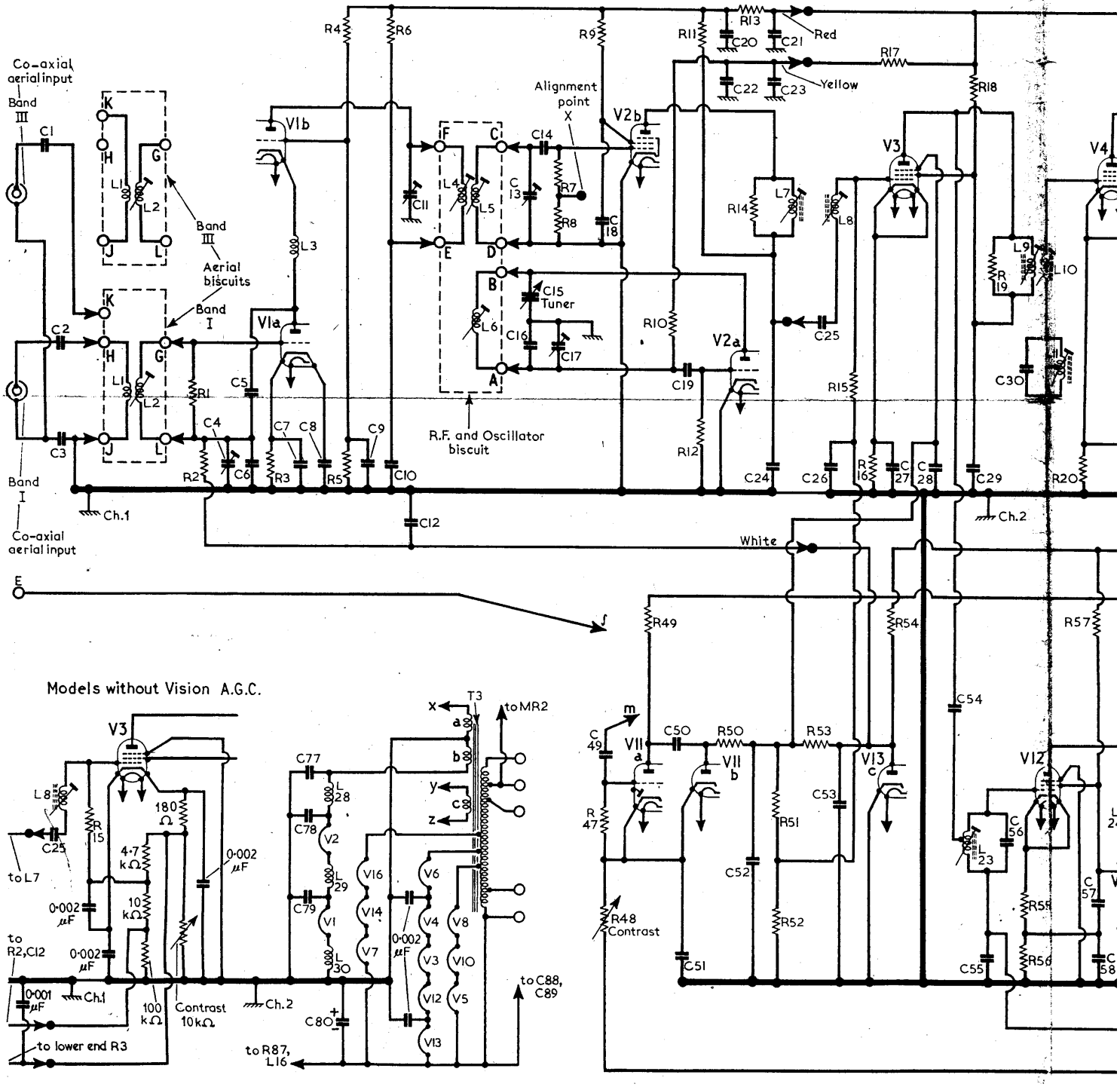
£9
Pu



Supplement to Wireless & Electrical Trader, 30 June 1956

ADOR TV17TM Series

Nineteen Ambassador and Baird Television Receivers.

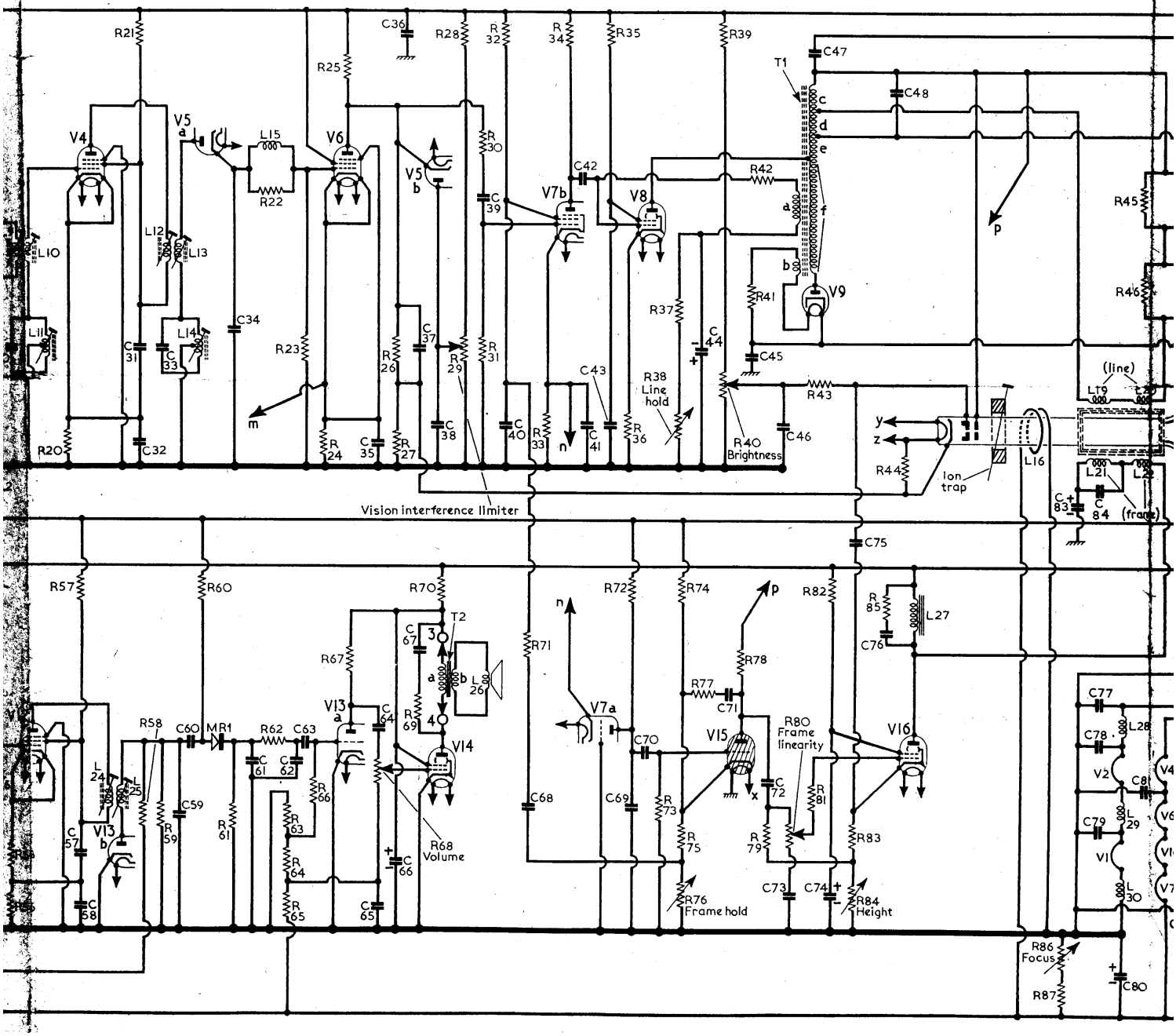
£60 15*s* 2*d*; *TV17CC*, *May*, 1955, £68 5*s* 2*d*; *TV17C*, *May*, 1955, £79 6*s* 10*d*; *TV17CR*, *November*, 1955, £99 7*s* 2*d*; *TV21C*, *November*, 1955, £97 11*s* 5*d*; *21CC*, *June*, 1956, £78 16*s* 2*d*. *Purchase tax extra.*

Baird Models: *T5614*, *August*, 1955, £50 5*s* 9*d*; *C5614*, *August*, 1955, £60 0*s* 10*d*; *T5617*, *May* 1955, £57 9*s* 10*d*; *C5617*, *May*, 1955, £66 16*s* 0*d*; *CD5617*, *May*, 1955, £78 16*s* 0*d*; *CR5617*, *November*, 1955, £102 1*s* 6*d*; *C5621*, *November*, 1955, £77 6*s* 6*d*; *C5717*, *November*, 1955, £60 15*s* 11*d*. *Purchase tax extra.*

CIRCUIT DESCRIPTION

Separate Band I/Band III 80Ω coaxial inputs to 12-channel turret tuner unit employing a cascode connected double triode **(V1, 30L1)** as R.F. amplifier and a triode pentode **(V2, 30C1)** as frequency changer. **V1a** is neutralized by **C4, C5 and C6. L3** resonates with the internal capacitances of **V1b** to maintain the gain at the high frequency end of Band III.

Output from local oscillator **V2a** is coupled by inter-electrode and circuit



capacitances to the mixer **V2b** where it combines with the output of **V1** to produce separate sound and vision intermediate frequencies of 37.75 Mc/s and 34.25 Mc/s respectively.

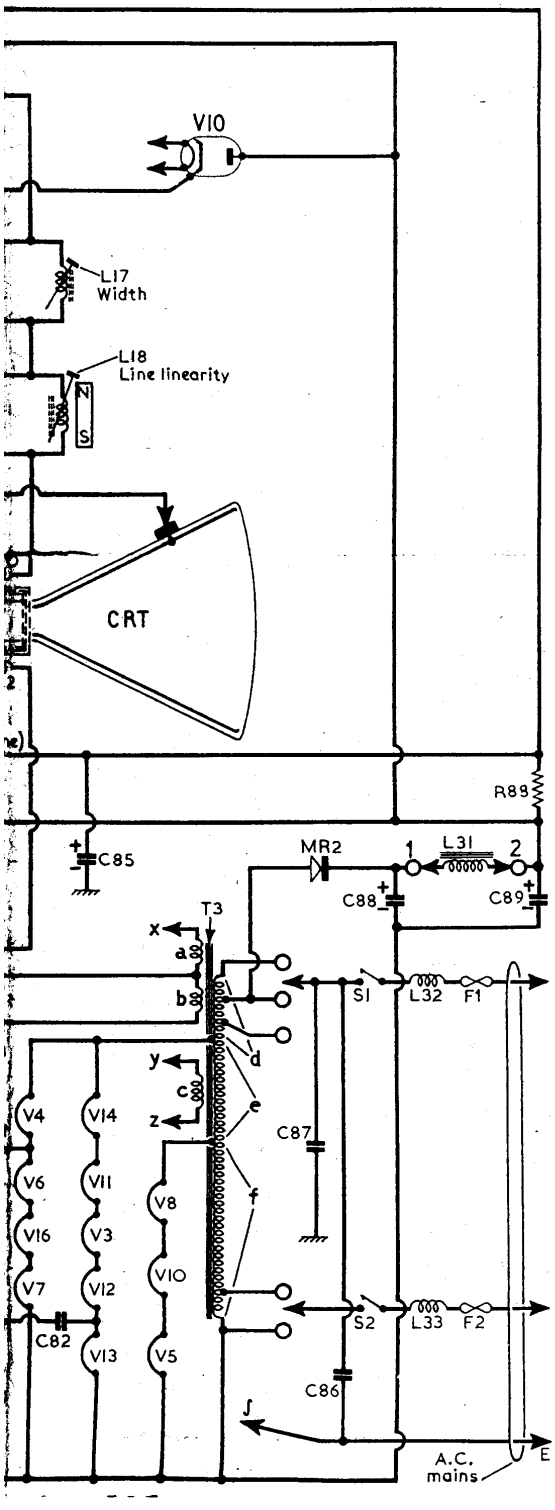
Two-valve vision I.F. amplifier **(V3, V4, 10F1's)** is coupled by stagger-tuned I.F. transformers to vision detector diode, section **a** of **V5 (20D1).** Sound channel rejection by **C30, L11,** and **C33, L14.**

Positive-going output from **V5a** is developed across **R23** and passed to video amplifier **V6 (10F1).** Video correction by **L15** which resonates with stray capacitances at about 2.5 Mc/s. Negative-going output from **V6** is coupled via D.C. step-down potential divider **R26, R27, C37** to cathode of C.R. tube **(CRT, CRM141** or **CRM142** (14 in models) or **CRM153** (15 in models) or **CRM171** (17 in models) or **CRM211** (21 in models)**).** The C.R. tube is focused via **L16** which is energized by connecting it in series with the H.T. negative circuit. **R86, R87** shunt the coil to give control of focus.

Interference pulses in **V6** output drive the cathode of vision interference limiter diode **V5b** negative, causing it to conduct and short-circuit the video output via **C38.** Limiter control **R29** biases **V5b** anode positively and determines the level at which the diode conducts.

Positive-going video signal appearing in **V6** cathode circuit is passed via **C49** to section **a** of **V11 (10LD11),** where it is amplified and passed on to diode section **b** of **V11.** The resulting rectified output of **V11b** is developed across **R51, R52** and is fed as vision A.G.C. bias to **V1a** and **V3.** Contrast control **R48**

(*Continued col.* 1 *overleaf*)



Capacitors		
C1	0·001μF	H5
C2	0·001μF	H5
C3	0·001μF	H5
C4	—	K11
C5	2pF	K11
C6	7pF	K11
C7	500pF	K11
C8	500pF	K11
C9	0·001μF	C1
C10	500pF	J11
C11	—	C1
C12	0·001μF	D1
C13	—	J11
C14	33pF	J10
C15	—	J10
C16	10pF	J11
C17	—	J11
C18	500pF	J10
C19	22pF	J11
C20	0·002μF	K10
C21	0·002μF	K10
C22	0·001μF	C1
C23	0·002μF	K10
C24	150pF	J10
C25	500pF	C1
C26	0·002μF	G5
C27	0·002μF	G5
C28	0·002μF	G5
C29	0·001μF	G5
C30	140pF	B1
C31	0·001μF	G5
C32*	0·003μF	G5
C33	140pF	G6
C34	6pF	H6
C35	1,500pF	H6
C36	0·002μF	H6
C37	0·25μF	H6
C38	0·1μF	H5
C39	0·1μF	H6
C40	0·05μF	G7
C41	0·25μF	G8
C42	300pF	H7
C43	300pF	H7
C44	2μF	H7
C45	0·001μF	C2
C46	0·1μF	G7
C47	1·25μF	H7
C48‡	200pF	B3
C49	0·002μF	G6
C50	0·001μF	H6
C51	0·1μF	G6
C52	0·25μF	G6
C53	0·05μF	G6
C54	3pF	G6
C55¶	·053μF	G6
C56	120pF	B1
C57	0·003μF	G6
C58	0·003μF	G6
C59	25pF	G6
C60	0·02μF	F6
C61	0·001μF	F6
C62	300pF	F6
C63	0·02μF	F6
C64	0·05μF	F6
C65	0·25μF	F8
C66	32μF	C4
C67	0·005μF	F9
C68	0·02μF	G7
C69	0·01μF	G7
C70	100pF	G8
C71§	0·2μF	F8
C72	0·5μF	G9
C73	0·01μF	G9
C74	32μF	C4
C75	0·005μF	G7
C76	0·1μF	F9
C77	0·002μF	K10
C78	500pF	J10
C79	0·002μF	K10
C80	25μF	F7
C81	0·002μF	G5
C82	0·002μF	G6
C83	32μF	E7
C84	0·001μF	B2
C85	32μF	E7
C86	0·05μF	G8
C87	0·05μF	H8
C88	100μF	C4
C89	200μF	C4
Resistors		
R1	22kΩ	K10
R2	47kΩ	K10
R3	120Ω	K10
R4	120kΩ	J10
R5	100kΩ	J10
R6	2·2kΩ	J10
R7	10kΩ	J10
R8	22kΩ	J10
R9	15kΩ	J10
R10	6·8kΩ	J10
R11	4·7kΩ	J10
R12	47kΩ	J11
R13	470Ω	K10
R14	15kΩ	J10
R15	47kΩ	G5
R16	180Ω	G5
R17	10kΩ	F6
R18	3·3kΩ	G5
R19	10kΩ	B1
R20	180Ω	G5
R21	1kΩ	G5
R22	47kΩ	H6
R23	5·6kΩ	H6
R24	270Ω	H6
R25	6·8kΩ	H6
R26	150kΩ	H6
R27	470kΩ	H7
R28	220kΩ	H6
R29	1MΩ	H6
R30	10kΩ	H6
R31	470kΩ	G8
R32	100kΩ	G7
R33	470Ω	G8
R34	68kΩ	H8
R35	3kΩ	G8
R36	33Ω	H8
R37	680Ω	G7
R38	10kΩ	B1
R39	68kΩ	F8
R40	100kΩ	E9
R41	10Ω	A2
R42	1kΩ	H8
R43	47kΩ	G7
R44	100kΩ	H8
R45	2·8kΩ	B2
R46	2·8kΩ	B2
R47	220kΩ	G6
R48	15kΩ	E6
R49	39kΩ	H7
R50	100kΩ	H6
R51	3·3MΩ	G6
R52	100kΩ	G6
R53	470kΩ	G6
R54	4·7MΩ	H6
R55	33Ω	G6
R56	180Ω	G6
R57	2·2kΩ	G6
R58	1MΩ	G6
R59	100kΩ	G6
R60	10MΩ	F6
R61	1MΩ	F6
R62	33kΩ	F6
R63	150kΩ	E8
R64	680kΩ	F7
R65	1MΩ	F7
R66	1MΩ	F6
R67	100kΩ	F6
R68	500kΩ	E9
R69	4·7kΩ	F9
R70	720Ω	F8
R71	47kΩ	G7
R72	47kΩ	G7
R73	47kΩ	G8
R74	220kΩ	G7
R75	3·3kΩ	G7
R76	2·5kΩ	B1
R77	68Ω	F9
R78	680kΩ	G7
R79	1MΩ	H9
R80	1MΩ	H9
R81	47kΩ	G8
R82	10kΩ	F9
R83	180Ω	H8
R84	1kΩ	H9
R85	15kΩ	F9
R86	400Ω	E8
R87	110Ω	E7
R88	720Ω	F8
Coils†		
L1	—	K11
L2	—	K11
L3	—	K11
L4	—	J11
L5	—	J11
L6	—	J11
L7	—	J10
L8	—	C1
L9	—	B1
L10	—	B1
L11	—	B1
L12	—	B1
L13	—	B1
L14	—	G6
L15	4·5	H6
L16	140·0	A3
L17	1·3	B2
L18	1·75	B2
L19	total 8·3	B2
L20		B2
L21	1,100·0	B2
L22	total	B2
L23	—	C1
L24	—	B2
L25	—	B2
L26	3·5	—
L27	1,000·0	C4
L28	—	J10
L29	—	J10
L30	—	K10
L31	19·0	H9
L32	—	H8
L33	—	H8
Transformers†		
T1 a	9·2	B2
T1 b	—	
T1 c	3·6	
T1 d	1·0	
T1 e	4·2	
T1 f	68·4**	
T2 a	340·0††	H9
T2 b	1·2‡‡	
T3 a	—	H7
T3 b	1·5	
T3 c	1·0	
T3 d	11·0	
T3 e	2·5	
T3 f	5·5	
Miscellaneous		
MR1	M1§§	F6
MR2	RM5§§	F7
F1, F2	2A fuse	H8
S1, S2	—	E9

*Two capacitors, 0·001μF + 0·002μF, in parallel. †Approximate D.C. resistance in ohms. ‡260pF in 14in models. §Two 0·1μF capacitors in parallel. ¶Two capacitors, 0·05μF + 0·003μF in parallel. **May be 114·4Ω. ††270Ω in 14in models. ‡‡0·4Ω in 14in. models. §§S.T.C.

Left: Circuit diagram of Ambassador TV17TM. **C71** is the charging capacitor associated with the frame time-base thyraton oscillator **V15.** Non-A.G.C differences are shown inset.

Circuit Description—*continued*

varies the cathode bias on **V11b** and control the level of A.G.C. voltage.

In order to prevent the input impedance of **V3** from varying with changes in the A.G.C. level, the full A.G.C. voltage is applied to its supressor grid, but only a proportion of it, that developed across **R52** to its control grid.

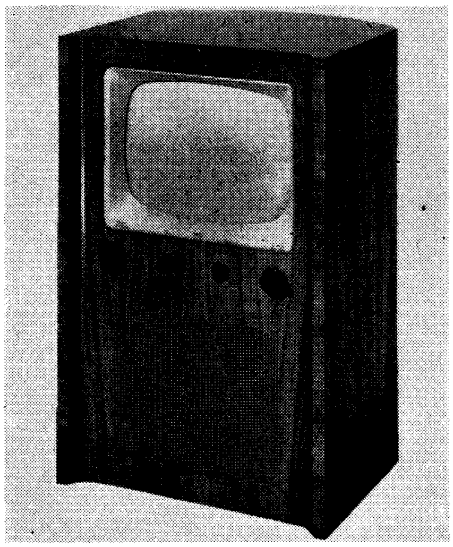
V6 output is also fed via **R30, C39** to sync separator valve, section **b** of **V7 (10C2).** Line sync pulses in **V7b** output are coupled via differentiator **C42** to single-valve line time-base and output stage **(V8, 20P4).** Reaction coupling via grid winding **a** on line output transformer **T1.** Output from **V8** is coupled via winding **c-e** on **T1** to line deflector coils **L19, L20.**

Efficiency diode **V10 (U301)** is fed with energy from windings **c, d** on **T1,** and the resulting rectified output is developed across reservoir capacitor **C47** and is used to boost the H.T. supply to **V8** anode, **CRT** first anode and **V15.**

E.H.T. current is obtained from the line fly-back energy and is rectified by **V9 (U25),** sections **c-e** and **f** on **T1** forming an auto-transformer to step-up the fly-back pulse voltage. **V9** draws its heater current from winding **b** on **T1** via **R41,** which drops excess volts.

To maintain a steady frame time-base interlace, the frame time-base is synchronized via two separate sync pulse paths. The first feeds sync pulses developed in **V7b** screen grid circuit via **R71, C68** to the cathode circuit of the thyraton frame time-base oscillator valve **(V15, 6K25);** the second feeds sync pulses developed in **V7b** cathode circuit, via earthed-grid sync amplifier **V7a,** to the grid circuit of **V15.**

Saw-tooth voltage appearing at **V15** anode is resistance-capacitance coupled via **R78, C72, R79** to frame output valve **V16 (10P14).** Frame linearity control by **R80, C73** in **V16** control grid circuit. Frame pulses appearing in **V16** cathode circuit are fed via **C75** to **CRT** grid circuit where they suppress the frame fly-back trace. **V16** output is choke-capacitance coupled by **L27, C83** to the frame deflector coils **L21, L22.**



Appearance of the Baird C5617.

ASSOCIATED MODELS

This Service Sheet was prepared from an Ambassador TV17TM, a 17in table receiver employing a CRM171 C.R. tube.

Model TV14TM.—This is a 14in version of the TV17TM employing a CRM141 or CRM142 C.R. tube.

Model TV14CC.—Corner console version of the TV14TM.

Model TV15CC.—This is a 15in corner console version of the TV17TM employing a CRM153 C.R. tube. Vision A.G.C. is omitted in this model (see "Modification").

Model TV15C.—This is a de-luxe version of the TV15CC.

Model TV15CR.—This is a de-luxe version of the TV15CC employing a 5-valve 3-band Ambassador "Coronet" radio chassis.

Model TV17CC.—This is a corner console version of the TV17TM.

Model TV17C.—This is a corner console version of the TV17TM with doors.

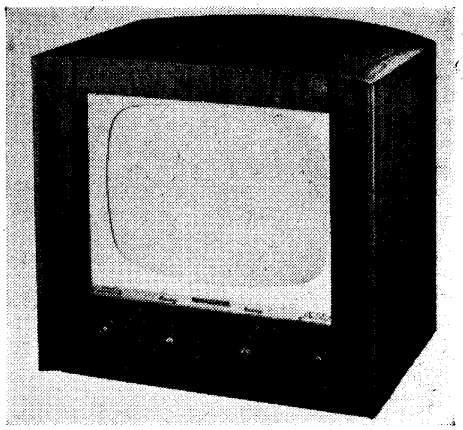
Model TV17CR.—This is a corner console receiver fitted with a TV17TM chassis and the Ambassador A.M./F.M. radio chassis.

Model TV21C.—This is a 21in console version of the TV17TM with doors. It employs a CRM211 C.R. tube.

Model 21CC.—This is a 21in Continental-styled console version of the TV17TM. It employs a CRM211 C.R. tube.

Baird receivers employing a basic TV17TM *chassis are as follows:—*

Model T5614.—14in table receiver employing CRM141 or CRM142 C.R. tube.



Appearance of the Ambassador TV17TM.

Model C5614.—Corner console version of the T5614.

Model T5617.—17in version of the T5614 employing a CRM171 C.R. tube.

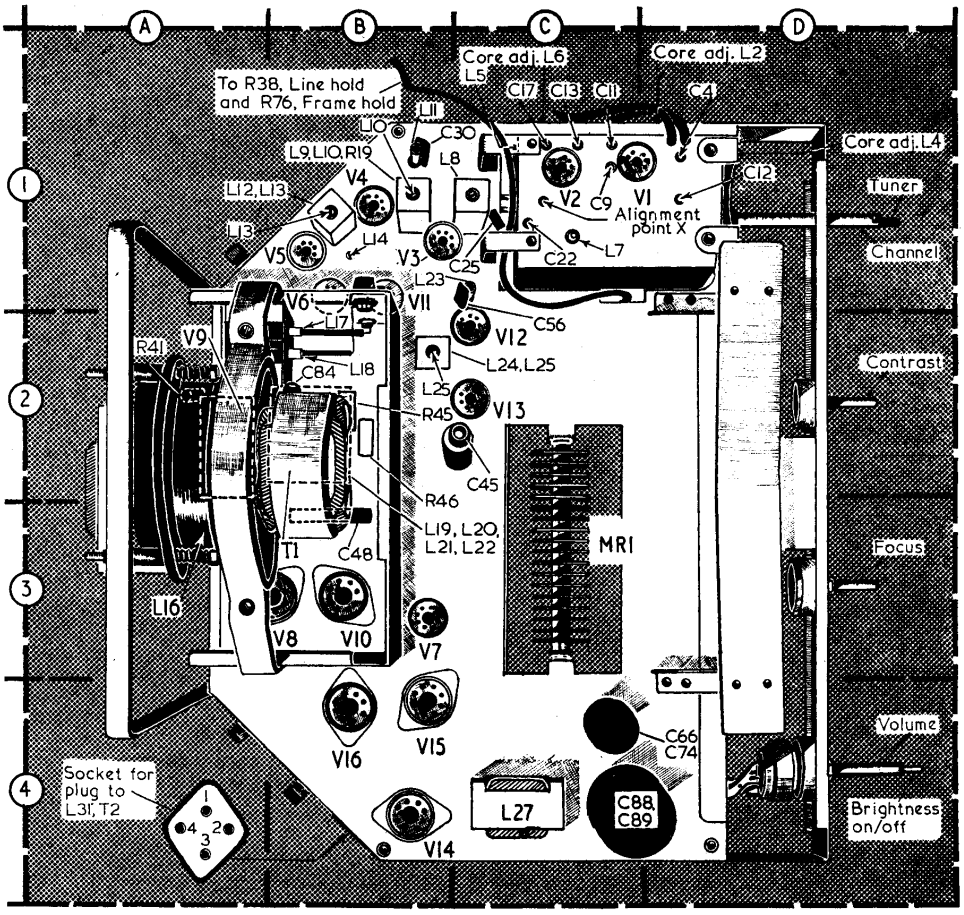
Model C5617.—17in corner console version of the T5614 employing a CRM171 C.R. tube.

Model CD5617.—As model C5617 but with doors.

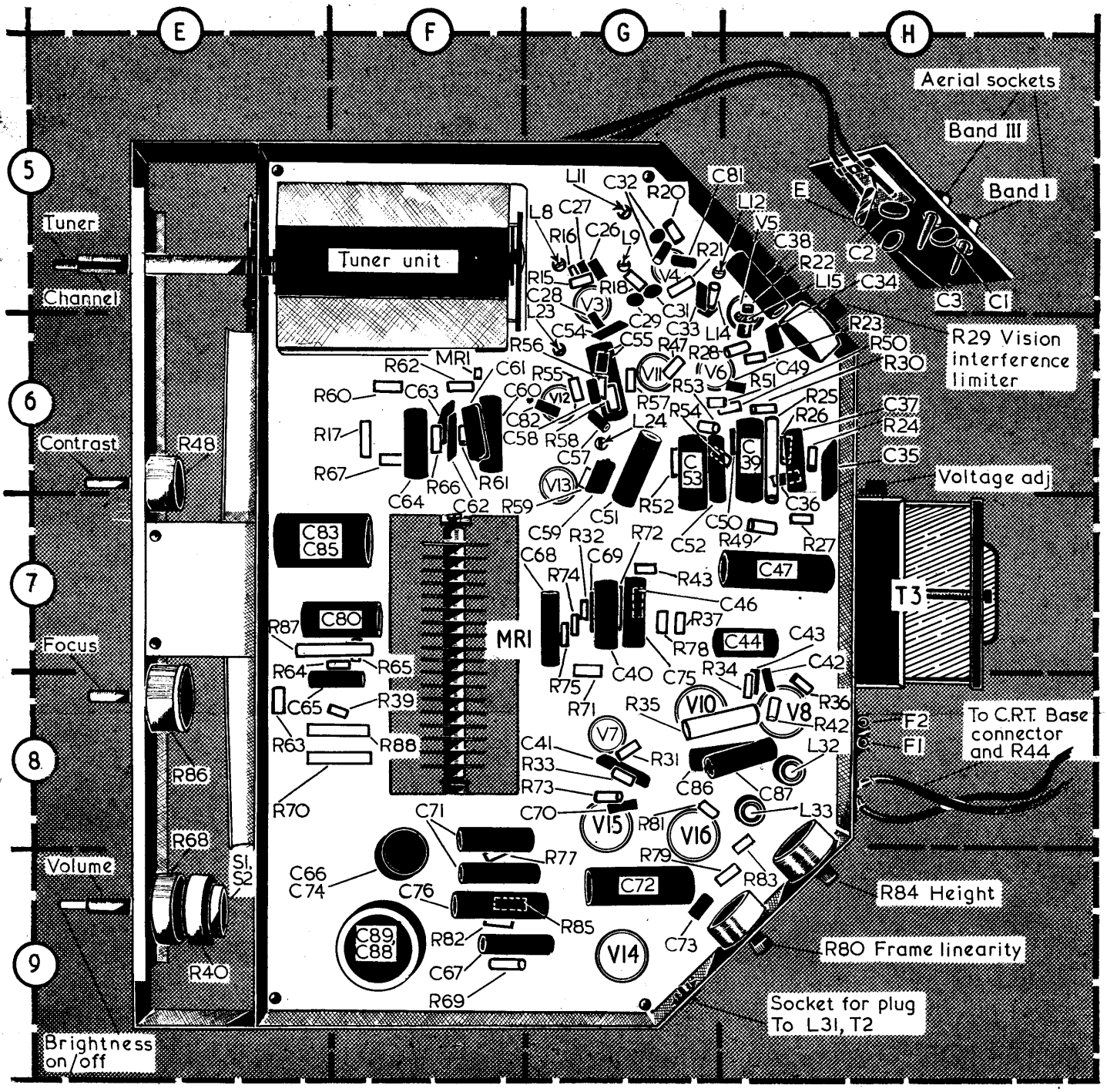
Model CR5617.—As model C5617 but with doors and Baird 301 A.M./F.M. radio chassis.

Model C5621.—21in console version of the T5614 employing CRM211 C.R. tube.

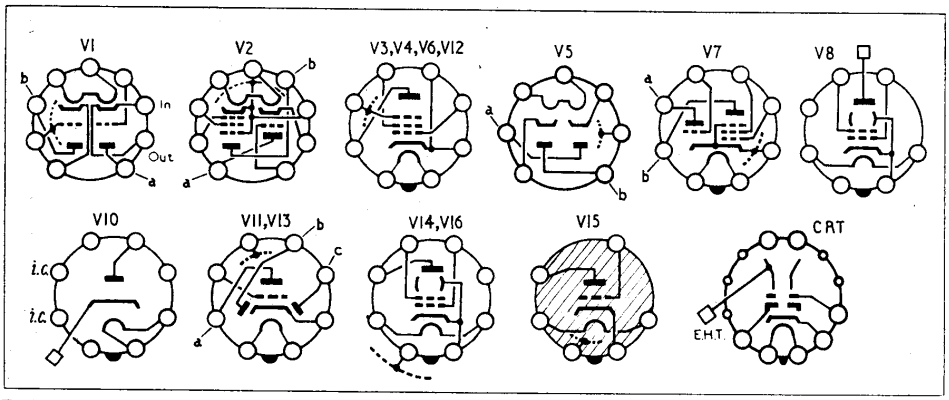
Model C5717.—As model C5617 but in cheaper cabinet.



Plan view of the chassis. The H.T. choke and speaker transformer are connected to the chassis via the 4-pin socket shown, location reference **A4.**



Above : Under-chassis illustration. *Below :* Valve base diagrams.



MODIFICATION

The vision A.G.C. circuit was not fitted to any of the 15in models, or to early versions of the 14in and 17in models. A section of circuit showing the differences in **V3** cathode circuit and in the heater circuit in models not employing vision A.G.C. is inset the lower left corner of the diagram overleaf. The lower end of **R3** was returned to the top of the contrast control in **V3** cathode instead of to chassis. **V13c** anode was strapped to chassis.

VALVE ANALYSIS

Valve voltages and currents given in the table (next col.) are derived from the manufacturers' information. They

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were measured with the receiver operating from 230 V mains. The contrast control was turned to maximum and the remaining controls were set as for normal operation. There was no signal input.

Voltages were measured on a Model 8 Avometer, chassis being the negative connection in every case. The voltage measured across **C80** was 22 V positive connection to chassis.

Valve		Anode (V)	Screen (V)	Cath. (V)
V1 30L1	a	85	—	0·6
	b	175	—	85·0
V2 30C1	a	40	—	—
	b	145	145	—
V3 10F1	...	150	150	1·5
V4 10F1	...	175	175	1·7
V5 20D1	...	—	—	—
V6 10F1	...	140	185	2·0
V7 10C2	a	45	—	2·0
	b	150	120	2·0
V8 20P4	...	*	175	4·8**
V9 U25	...	*	—	11·5kV†
V10 U301	...	225	—	430·0‡
V11 10LD11	a	80	—	—20·0
	b	*	—	—20·0
V12 10F1	...	165	165	1·8
V13 10LD11	a	65	—	—
	b	—	—	—
	c	—	—	—
V14 10P14	...	160	178	—
V15 6K25	...	80	—	7·5
V16 10P14	...	165	155	45·0††
MR1 RM5	...	230¶	—	230·0‡‡
CRT CRM171§		Cathode 105V; 1st anode 430V; final anode 11·5kV†.		

*No reading given. †Measured on electrostatic meter; 10·5kV in 14in models; 15·5kV in 21in. models. ‡Measured at junction C47, C48. §CRM141 or CRM142 (14in models); CRM153 (15in models) CRM211 (21in models). ¶A.C. reading.

**125mA, ††45mA, ‡‡285mA } Cathode currents.

CIRCUIT ALIGNMENT

Apparatus Required.—An accurately calibrated signal generator with an output impedance of 80 Ω; a 0-100 V D.C. voltmeter for use as vision output meter; a 0-200 mW meter for use as sound output meter; and a damping unit consisting of a 470 Ω resistor in series with an 0.003 μF capacitor.

Connect vision output meter across **R25** (location reference H6); connect sound output meter across **T2** secondary winding. Feed in an unmodulated signal for vision alignment, and a 30% modulated signal for sound alignment. "V" under "Meter deflection" in the alignment tables means vision, and "S" means sound. "Max. V" means maximum reading on the vision meter.

I.F. Alignment Table

Sig. Gen. Output (Mc/s)	Shunt	Adjust	Location	Meter deflection
35·5*	L13‡	L12	H5	Max. V
36·0*	L12	L13	B1	Max. V
37·75*	—	L14	B1	Min. V
Repeat these adjustments				
35·5*	L10§	L9	G5	Max. V
36·75*	L9	L10	B1	Max. V
37·75*	—	L11	G5	Min. V
Repeat last three adjustments.				
37·75*	—	L24	G6	Max. S
37·75*	—	L25	B2	Max. S
Repeat last two adjustments.				
37·75*	—	L23	G6	Min. V
37·75*	—	L14	B1	Min. V
37·75*	—	L11	G5	Min. V
37·75*	—	L23	G6	Min. V
37·0†	L8	L7	C1	Max. V
35·0†	L7	L8	G5	Max. V
Repeat last two adjustments.				

*Feed in at **V3** control grid (pin 6).
†Feed in at alignment point X (location C1).
‡Connect damping unit between chassis and **V5a** anode (pin 2).
§Connect damping unit between chassis and **V4** control grid (pin 6).

I.F. STAGES

Connect output of signal generator as indicated in the I.F. alignment table. Connect damping unit as indicated under "Shunt" in the table. If two peaks are found when making a core adjustment, the core should be set to the one nearer the adjusting end of the former. Adjust as instructed in the I.F. table.

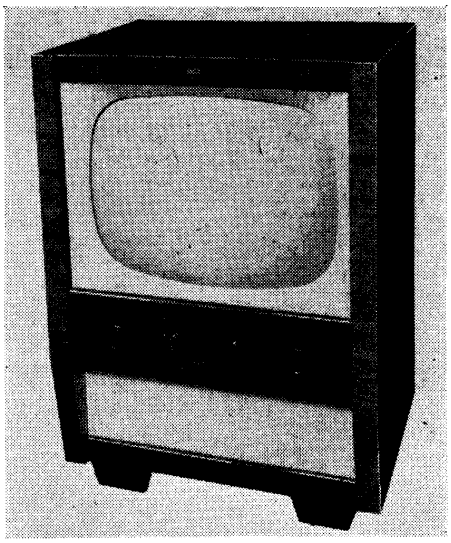
Tuner Unit Alignment Table

Sig. Gen. Output	Shunt	Adjust	Location	Meter deflection
*	—	L6	C1	Min. V
†	L5	L4	D1	Max. V
†	L4	L5	C1	Max. V
Repeat last two adjustments.				
†	—	L2	D1	Max. V

*Sound carrier frequency.
†Sound carrier plus 2 Mc/s for ch. 1; plus 2·25 Mc/s for ch. 2-5; or plus 1·75 Mc/s for ch. 6-13.

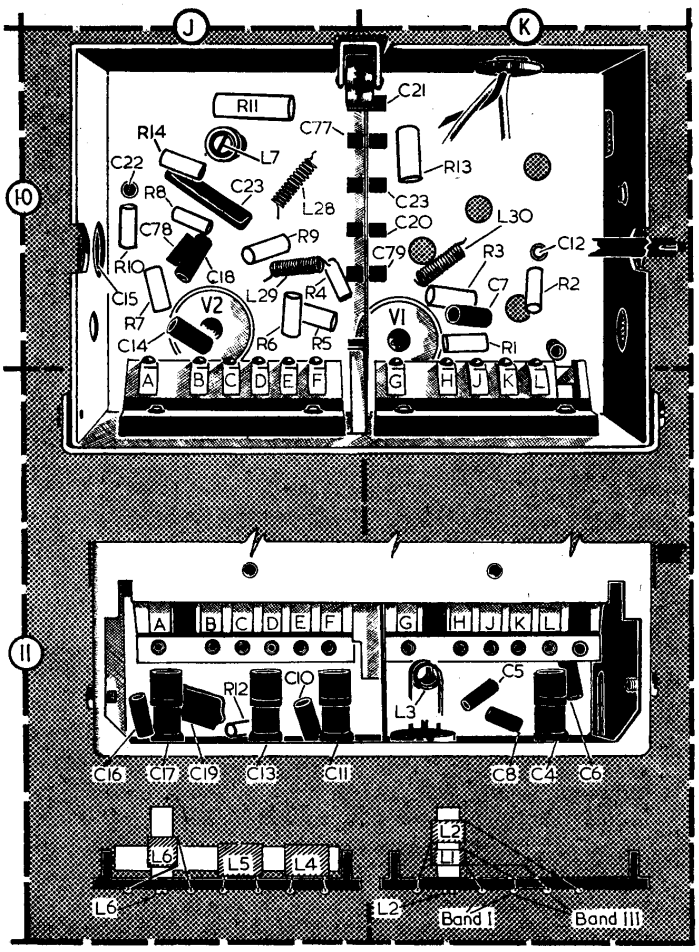
R.F. and Oscillator Stages

Switch receiver to local channel and transfer signal generator leads to appropriate aerial socket. Adjust tuner control **C15** to its mid-position. Trimmers **C4, C11, C13** and **C17** have been accurately adjusted at the factory and should not normally be disturbed. If, however, the replacement of a valve in the tuner unit affects the alignment of the unit, the appropriate trimmers **(C4, C11** for **V1; C13, C17** for **V2)** should be carefully adjusted to correct this. Carry out the adjustments in the order given in the tuner unit alignment table.



Appearance of the Baird C5621.

Carrier	Band III Channel Frequencies in Mc/s							
	6	7	8	9	10	11	12	13
Sound ...	176·25	181·25	186·25	191·25	196·25	201·25	206·25	211·25
Vision ...	179·75	184·75	189·75	194·75	199·75	204·75	209·75	214·75



Underside view of the turret tuner unit, with, below it, a side view of the unit showing components hidden by the switch contacts.