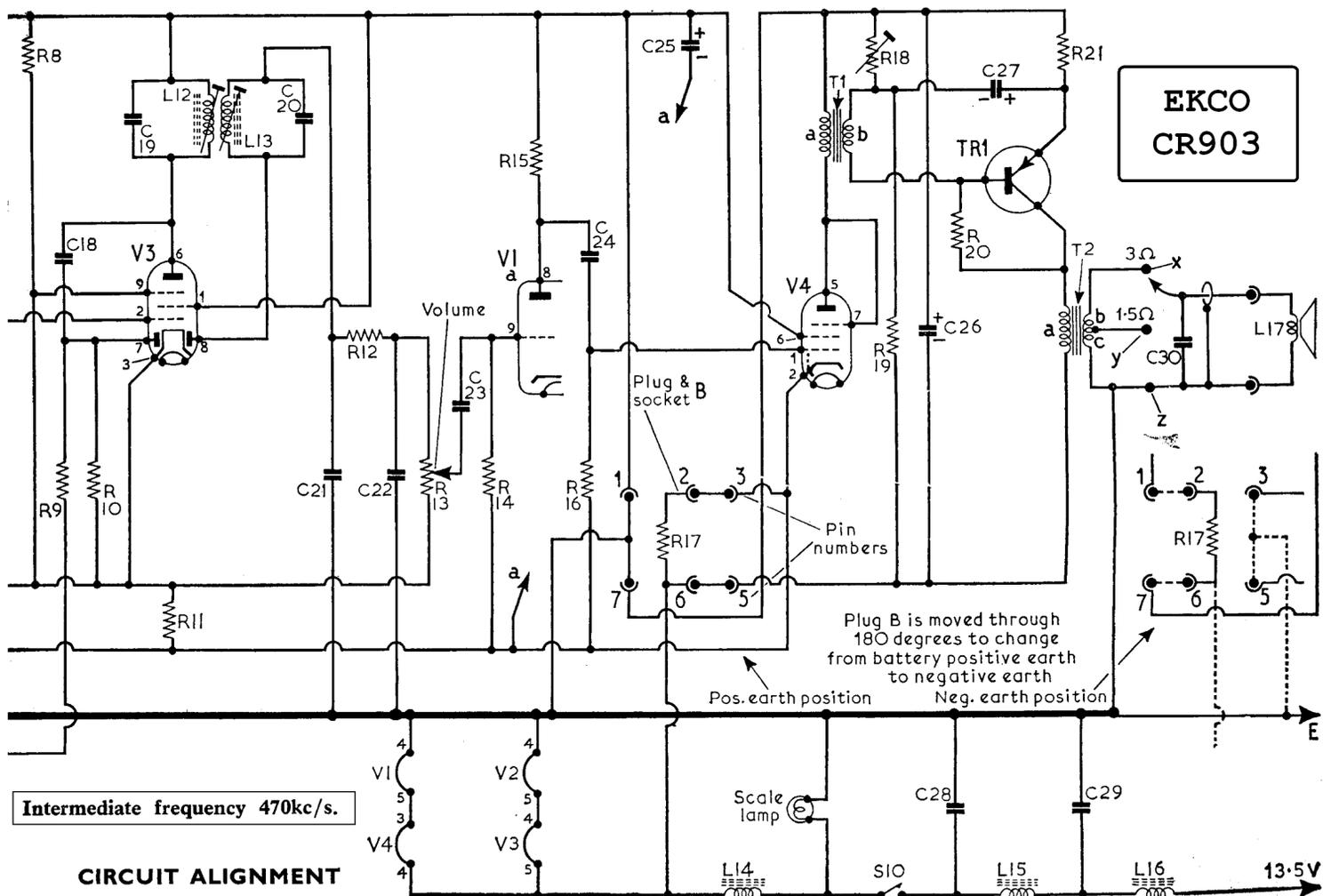
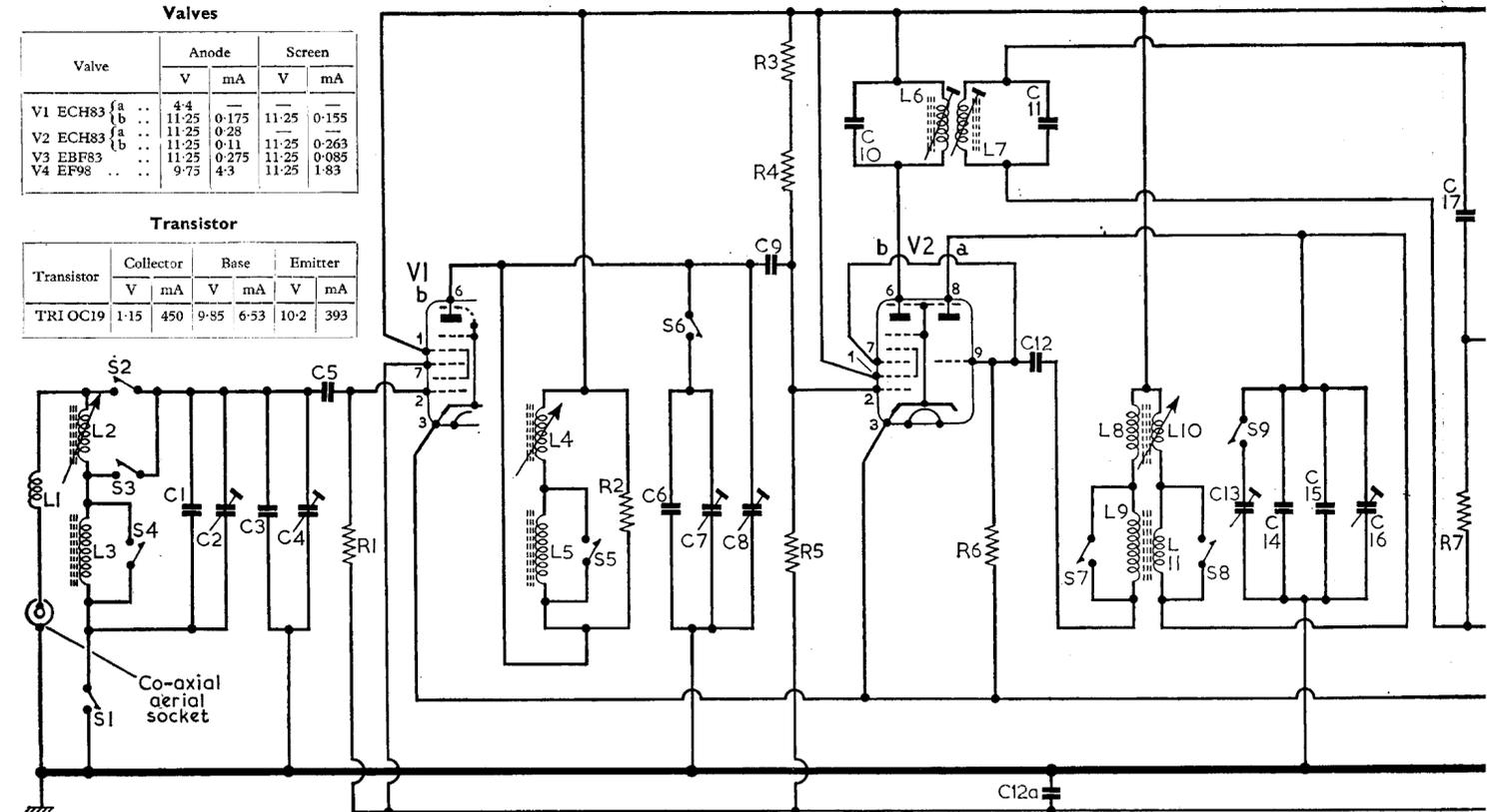


**Valves**

Valve	Anode		Screen	
	V	mA	V	mA
V1 ECH83	4.4	—	—	—
V2 ECH83	11.25	0.175	11.25	0.155
V3 EBF83	11.25	0.28	—	—
V4 EBF83	11.25	0.11	11.25	0.263
V4 EBF83	11.25	0.275	11.25	0.085
V4 EBF83	9.75	4.3	11.25	1.83

**Transistor**

Transistor	Collector		Base		Emitter	
	V	mA	V	mA	V	mA
TRI OC19	1.15	450	9.85	6.53	10.2	393



**EKCO  
CR903**

Intermediate frequency 470kc/s.

**CIRCUIT ALIGNMENT**

- 1.—Remove the chassis from the case as described under "General Notes" in col. 5. Connect an output meter (3Ω loading) across T2 secondary winding in place of the speaker. Connect a signal generator to V2b control grid (pin 2) via a 0.1μF capacitor.
- 2.—Turn the volume and tuning controls fully clockwise. Feed in a modulated 470kc/s signal and adjust the cores of L12, L13 (location reference D4) and L6, L7 (location reference C4) in that order for maximum output. Repeat these adjustments until no further improvement in output can be obtained.
- 3.—Connect the signal generator to the aerial socket via a dummy aerial comprising a 33pF capacitor connected across the aerial socket, and a 27pF capacitor in series with the generator output lead. Switch the receiver to M.W. and turn the tuning control fully anti-clockwise. Feed in a 1,620kc/s signal and adjust C16 (C4), C8 (C4) and C4 (B3) for maximum output.

# EKCO CR903

### Resistors

R1	1MΩ	C1
R2	100kΩ	B1
R3	10MΩ	B1
R4	10MΩ	B1
R5	1MΩ	C1
R6	47kΩ	C1
R7	3.3MΩ	C2
R8	820Ω	D2
R9	2.2MΩ	C1
R10	1MΩ	C2
R11	22Ω	C1
R12	100kΩ	D1
R13	1MΩ	A5
R14	10MΩ	B2
R15	150kΩ	B2
R16	10MΩ	B2
R17	100Ω	B3
R18	33Ω	C3
R19	150Ω	C3
R20	560Ω	C3
R21	1.6Ω	C3

### Capacitors

C1	250pF	C5
C2	130pF	C5
C3	33pF	B4
C4	80pF	B3
C5	75pF	B1

C6	450pF	C4
C7	130pF	C4
C8	80pF	C4
C9	30pF	B1
C10	100pF	C4
C11	100pF	C4
C12	50pF	B4
C12a	0.03μF	C1
C13	130pF	C4
C14	47pF	C4
C15	75pF	C4
C16	80pF	C4
C17	0.001μF	C2
C18	75pF	C1
C19	100pF	D4
C20	100pF	D4
C21	75pF	D2
C22	75pF	D2
C23	0.005μF	A5
C24	0.005μF	B1
C25	500μF	C1
C26	500μF	C3
C27	1,000μF	C3
C28	0.001μF	B4
C29	0.001μF	B4
C30	0.001μF	D3

### Coils\*

L1	—	D4
----	---	----

L2	13.0	B1
L3	4.1	B4
L4	13.0	B2
L5	3.7	B3
L6	8.2	C4
L7	8.2	C4
L8	4.7	B1
L9	2.7	B5
L10	3.6	B1
L11	2.7	B5
L12	8.2	D4
L13	8.2	D4
L14	—	A4
L15	—	A4
L16	—	A3
L17	3.0	—

### Miscellaneous\*

T1	{ a 298.0 } C3
	{ b 1.0 } C3
T2	{ a 1.98 } C3
	{ b — } C3
	{ c — } C3
S1-S9	— B4
S10	— A5

\*Approximate D.C. resistance in ohms.

**Switches.**—The waveband switches **S1-S9** are ganged in a 2-position slide-type unit and indicated in our chassis illustration in location reference **B4**. The switch contacts are identified in the diagram shown below. **S3, S4, S5, S7** and **S8** close on M.W.; **S1, S2, S6** and **S9** close on L.W.

**R18 Adjustment.**—This pre-set resistor is included in the base bias circuit of **TR1** to enable the collector current to be adjusted if a replacement transistor or an associated component is fitted. To adjust the collector current, connect a 1mA meter in series with the collector circuit; this is most easily done by unsoldering the green lead which connects the primary winding of output transformer **T2**. Then connect the meter between the now disconnected lead and the primary winding tag on **T2**, with the negative meter terminal to the transformer. The speaker lead must be connected during this adjustment. Switch the receiver on and allow a few minutes for the collector current to stabilize. Then adjust **R18** (location reference **C3**) to obtain a reading of 450mA with a battery voltage of 14V. Disconnect the meter and reconnect the yellow lead.

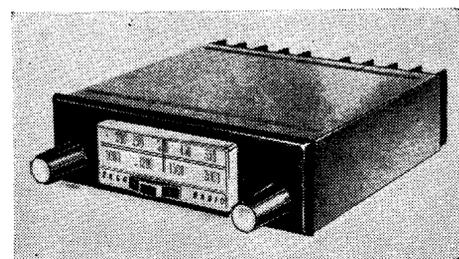
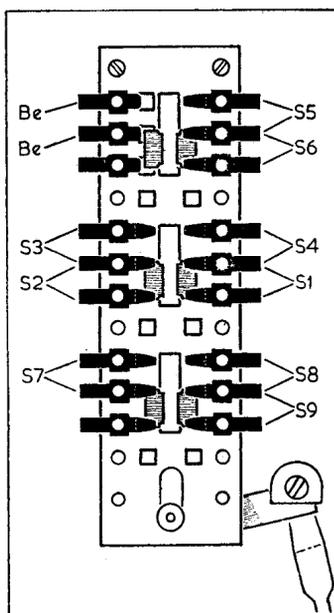
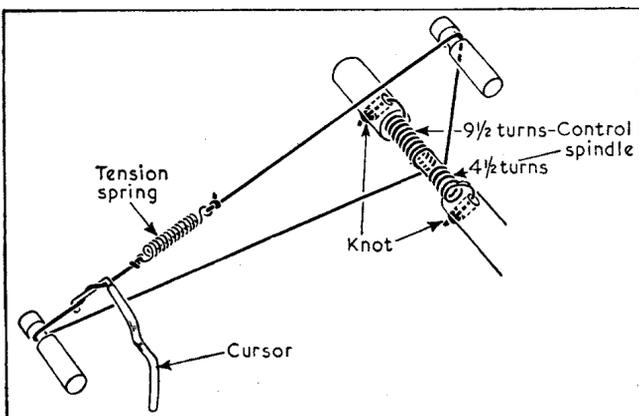
- 4.—Set the tuning control exactly  $1\frac{3}{4}$  turns from its fully anti-clockwise position. Feed in a 1,200kc/s signal and adjust the cores of **L10, L4** and **L2** (location reference **B5**) for maximum output.
  - 5.—Repeat operations 3 and 4.
  - 6.—Feed in a 700kc/s signal and tune it in on the receiver. Re-adjust **L4** and **L2** for maximum output.
  - 7.—Repeat operations 3, 4 and 6 until no further improvement in output can be obtained.
  - 8.—Switch the receiver to L.W. and turn the tuning control fully anti-clockwise. Feed in a 300kc/s signal and adjust **C13** (**C4**) for maximum output.
  - 9.—Feed in a 200kc/s signal and tune it in on the receiver. Adjust **C2** and **C7** (location reference **C4**) for maximum output.
- Calibration.**—The calibration error should not exceed  $\frac{3}{32}$ in at 350m (857kc/s) M.W. or  $\frac{1}{8}$ in at 1,200m (350kc/s) and 1,500m (200kc/s) L.W. If these limits are exceeded, the alignment process should be repeated.

**Aerial Trimmer C4.**—This should be finally adjusted after installation in the car as follows:  
Tune the receiver to a weak station at the low frequency end of the M.W. band and adjust **C4** (**B3**) for maximum output. Access to **C4** is gained through a hole in the base of the case. On low capacity aerial systems the trimmer setting will be at maximum (fully clockwise).

**Drive Cord Replacement.**—Two separate lengths of nylon cord are required for a new tuning drive cord; one is 8in long, and the other 14in long. To fit a new cord, first turn the tuning control fully anti-clockwise. Then tie a knot in one end of the 8in length of cord, and thread the other end through the outer hole in the control spindle, pulling it through until the knot anchors. Wind  $4\frac{1}{2}$  turns anti-clockwise round the control spindle as shown in the sketch of the tuning drive system in col. 4. Holding the free end of the cord taut, turn the tuning control fully clockwise to allow 5 more turns to wind round the spindle. Pass the cord round the right-hand guide pin and secure the tension spring to its end so that the spring is not more than  $\frac{1}{8}$ in from the guide pin. Temporarily anchor the free end of the spring to the chassis.

Tie a knot in one end of the 14in length of cord and pass the other end through the inner hole in the control spindle, pulling it through until it anchors. Wind  $3\frac{1}{2}$  turns clockwise round the control spindle and then lead the cord round the left-hand guide pin as shown in the sketch. Finally, remove the tension spring from its temporary anchorage and tie the free end of the cord to the spring so that the spring is under slight tension. Fit the cursor to the cord as shown in the sketch and adjust it so that with the tuning control fully clockwise the cursor is at the extreme right-hand end of the tuning scale.

Right: Diagram of the waveband switch unit shown in the L.W. position. Below: Sketch of the tuning drive system drawn as seen with the tuning control turned fully anti-clockwise.



Appearance of the Ekco CR903. The speaker is a separate unit.