

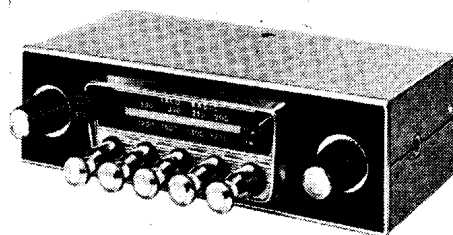
## "TRADER" SERVICE SHEET

1744

## EKCO CR932

All Transistor Car  
Radio Receiver

## CIRCUIT NOTES



**D**ESIGNED for operation from either positive or negative earth 12V car systems, Ekco CR932 is an all-transistor car radio covering medium and long wavebands with press-button selection of five pre-tuned stations. It comprises two main units, a receiver unit and a separate 7in by 4in loudspeaker unit, and employs four transistors and two diodes. A reflex circuit is featured. Waveband ranges are 185-575m (m.w.) and 1,200-1,940m (l.w.). Battery consumption is 700mA and audio power output 2½W.

**TR2** is designed to operate as the i.f. amplifier and audio pre-amplifier in a reflex circuit. I.f. signals in **T2** secondary are detected by **MR2** and the audio component developed across the detector load **R19** is fed via **C25** to the volume control **R22**.

Audio signals from the slider of the volume control are taken via **C17** and **R13** back to **TR2** base, are amplified and developed across the audio load resistor **R17** connected in **TR2** collector circuit. From here they are coupled via **R18** and **C26** to the driver **TR3**.

## TRANSISTOR ANALYSIS

Transistor voltages given in the table below were taken from information supplied by the manufacturer. They were measured on a 20,000Ω/V testmeter with the receiver connected to a 14V d.c. supply. There was no signal input and the volume control was set at minimum. All voltages are negative with respect to the positive supply line.

**D.C. Conditions.**—Connect a 0-1 ammeter in series with **TR4** collector and, with no signal input, adjust **R30** for 550mA collector current.

Connect a model 8 Avometer (switched to its 2.5V d.c. range) between **R3** slider and the junction of **R5** and **R9** positive terminal to **R3** slider. Adjust **R3** for a meter reading of 0.1V.

## CIRCUIT ALIGNMENT

**Equipment Required.**—An a.m. signal generator; an audio output meter; a 0.1μF capacitor and a dummy aerial comprising a 27pF capacitor in series with the "live" generator lead followed by a 33pF capacitor connected across the generator leads.

During alignment the input-signal level (Continued overleaf Col. 1)

## Transistor Table

Transistor	Emitter (V)	Base (V)	Collector (V)
TR1 AF117	1.1	1.16	7.7
TR2 AF117	1.5	1.77	10.4
TR3 OC82DM	3.5	3.63	12.4
TR4 AD140	0.56	0.84	12.7

C35	820pF	B1
C36	250pF	B1
C37	180pF	B2

## Coils &amp; Transformers

L1	—	A1
L2	—	—
L3	—	A2
L4	—	—
L5	—	A2
L6	—	C2
L7	—	C2
L8	—	C2
L9	—	—
T1	—	B1
T2	—	B2
T3	—	B2
T4	—	C1

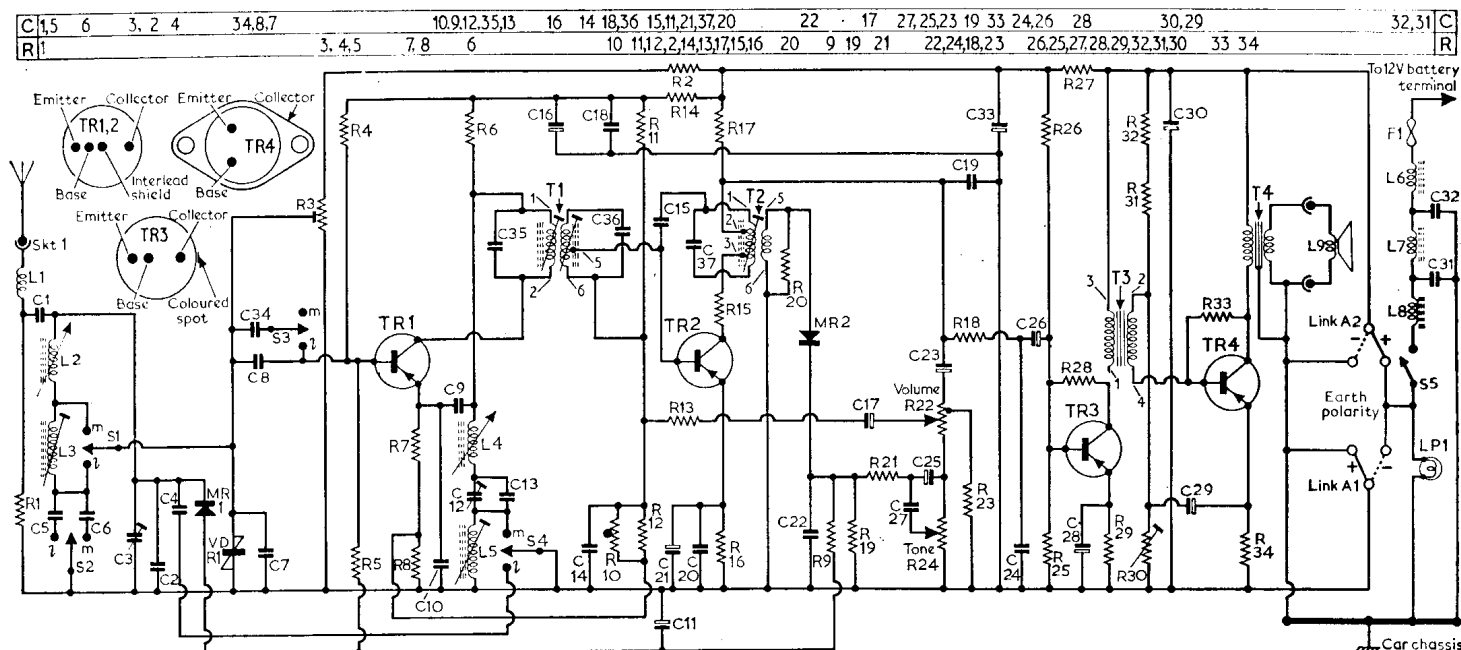
## Miscellaneous

F1	2A	B3
LP1	14V 0.75A	B3
MR1	OA81	A1
MR2	OA70	B2
S1-S4	—	A2
S5	—	C2

\*Thermistor type VA1055.

†**R20** is not fitted in some receivers.

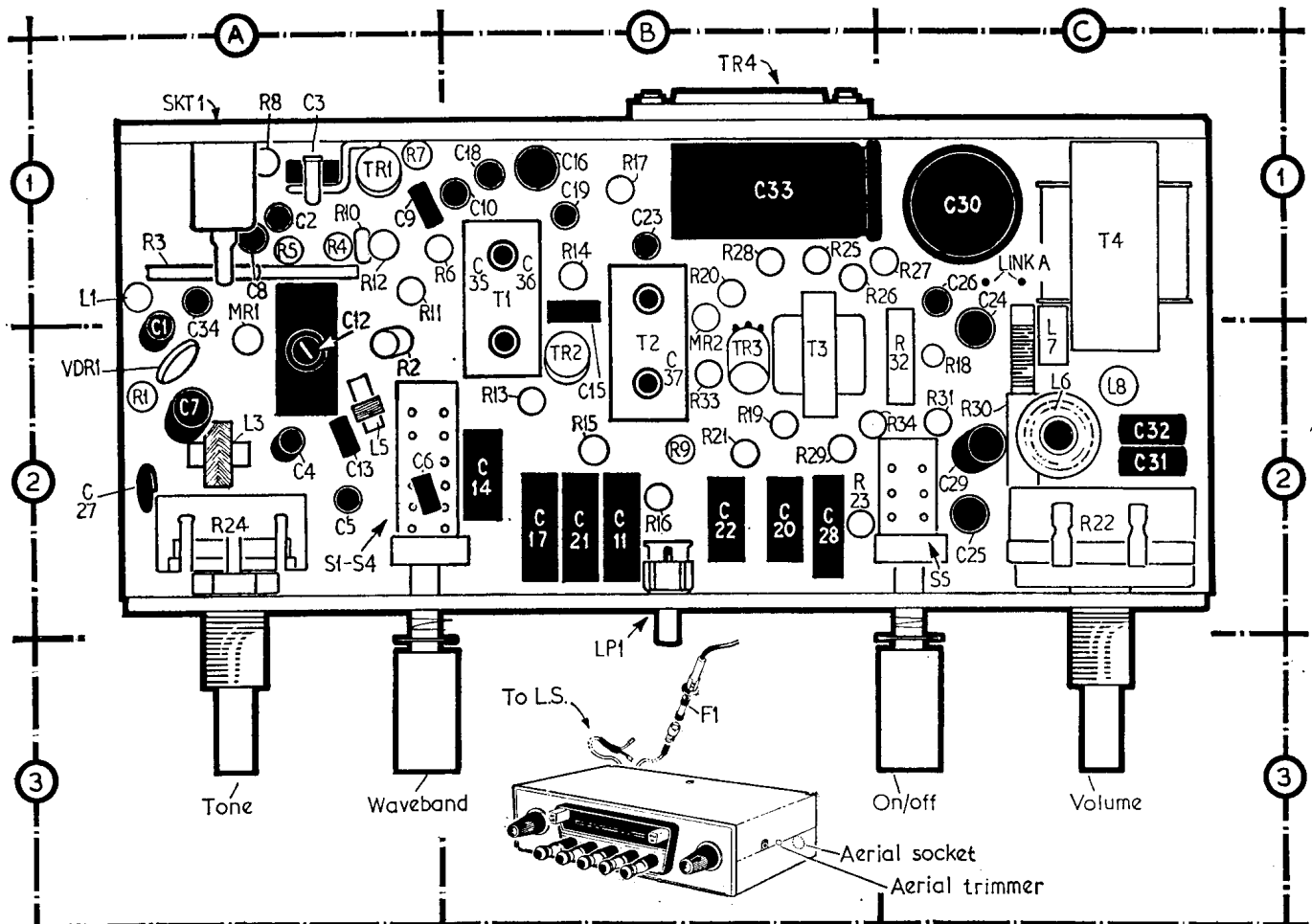
§Value of **R23** is different in some receivers. In others it is omitted with **R22** tap connected direct to positive line.



Circuit diagram of Ekco CR932 car radio receiver. **TR2** is connected in a reflex circuit operating as an i.f. amplifier and audio pre-amplifier

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View of the receiver unit from above with the screening cover removed. The polarity reversing link (Link A) is shown in location reference C1 adjacent to T4. Adjustment to preset controls R3 (A1) and R30 (C2) is described under "Transistor Analysis"

#### Circuit Alignment—continued

should be kept as low as possible to avoid a.g.c. action.

Note: The receiver should be connected for positive earth operation.

- 1.—Connect the audio output meter to the loudspeaker sockets. Turn volume and tone controls fully clockwise.
- 2.—Switch receiver to m.w. and tune to approximately 291m. Connect the signal generator via the 0.1μF capacitor to TR2 base. Feed in a 470kc/s signal and adjust the cores of T2 primary and T1 primary and secondary, tuning to the outer peak, for maximum output. Repeat until there is no further improvement.
- 3.—Transfer the signal generator to the aerial socket. With the signal generator and receiver tuned as in operation 2, adjust l.w. loading coil L3 (i.f. rejector on m.w.) for minimum output by sliding the coil on the former.
- 4.—Tune receiver to approx. 185m (end stop). Switch to m.w. and depress any one of the buttons. Connect the signal generator via the dummy aerial to the aerial socket.
- 5.—Feed in a 1,620kc/s modulated signal and adjust C12 and C3 for maximum output.
- 6.—Feed in a 600kc/s signal, tune to this signal (500m) and check calibration.
- 7.—Switch receiver to l.w. and tune to 1,200m. Feed in a 250kc/s signal and adjust L5 for maximum output.

**Aerial Trimmer Adjustment.**—To obtain optimum results, the receiver should be

matched to the car aerial by adjusting C3 at rear of casing for maximum output when tuned to a weak station near 200m. In the absence of a signal, adjust for maximum background noise level.

#### PRESS-BUTTON SETTING

To set up the press-buttons, proceed as follows: Switch on and select m.w. or l.w. as required. Depress any one of the press-buttons so that it clicks into the tuning position. Rotate the press-button knob to obtain the required station. Repeat for the other four buttons selecting m.w. or l.w. as required.

#### GENERAL NOTES

**Dismantling.**—For normal servicing access the back covers can be hinged at 90 deg. from the chassis by taking out two screws at the rear of the casing.

To remove the bezel assembly and covers, remove the volume and tone control knobs (grub screw) and locking nuts and washers. Take out the bezel insert when the bezel assembly can be increased by removing four screws and the control spindle nuts. Remove two screws securing the top and bottom covers to the chassis.

To remove the press-button unit, after removing the bezel and covers, slacken the grub screws and remove all five press-buttons. Unclip the scale cursor. Remove four 6BA screws at the front allowing the press-button unit to be eased out to the extent of its connecting leads.

**Note:** If all five press-buttons are depressed simultaneously it is possible for the shafts to become "locked-in." In this event they can be released by the following method: Take off the bezel assembly as just described and remove the 6BA screw located between the two extreme right-hand buttons. Insert a stout piece of wire (e.g., straightened paper clip) through the screw hole and push to free the latch bar.

**Replacing the Power Transistor.**—To remove the power transistor TR4 undo and remove the two 6BA nuts, screws and washers securing the transistor to the chassis taking care not to damage the mica washer located between the transistor and chassis.

The case of the transistor is also the collector terminal which should be insulated from the chassis. When fitting a new transistor therefore the mica washer should be placed correctly in position, after smearing with a thin film of silicon grease, and the 6BA securing screws should be isolated from the transistor case by correct use of the Bakelite insert washers.

**Installation.**—An installation kit type MI4026 is available from the receiver manufacturers.

**Operating Polarity.**—The receiver is connected for positive earth operation when despatched from the factory. To convert for negative earth operation, take off the bottom cover to reveal the component side of the printed panel. Reverse the green and blue leads adjacent to T4.