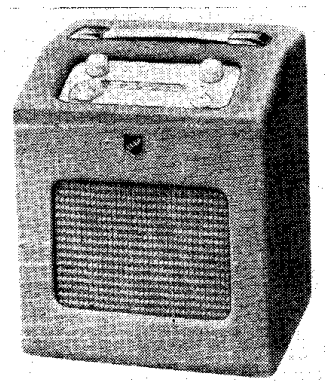
# ALBA ROVER



Model 2725

*Four-valve two-waveband AC-DC-battery portable with self-contained frame aerial. Housed in fabric covered cabinet fitted with plastic carrying handle. Suitable for operating from all-dry batteries and 200-250V AC-DC mains. Weight with batteries, 13½ lb. Made by A. J. Balcombe, Ltd., 52/58, Tabernacle Street, London, EC2.*

**AERIAL.** The receiver is fitted with a MW frame aerial L1 and a LW loading coil L2, which are wired in series and connected across aerial tuning capacitor VC1 and coupled to g3 of heptode frequency changer V1.

On MW band L2 is shorted out by S1 and L1 is tuned by VC1 and trimmed by T2. On LW band S1 is open and L1, L2 are tuned by VC1 and trimmed by T1.

AVC decoupled by R5, C1 is fed through L1, L2 to g3 of V1.

Primary L3, C4 of IFT1 is in the anode circuit.

**Oscillator** is connected in a tuned grid shunt fed circuit. The grid coils L7 (MW), L9 (LW) are switched by S2 to oscillator tuning capacitor VC2 and coupled by C6 to oscillator grid (g1) of V1. T3 (MW), T4 (LW) are trimmers and C9 (MW), C8 (LW) are padders. Automatic bias for g1 is developed on C6 with R1 as leak.

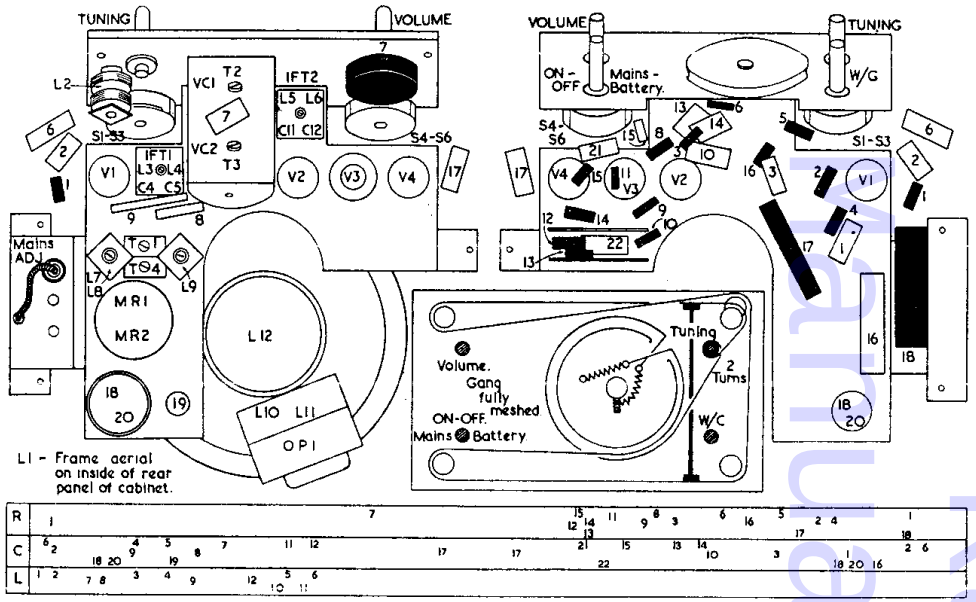
Anode reaction voltages are obtained inductively from L8 (MW) and capacitively from across padder C8 (LW) and are switched by S3 to oscillator anode (g2, g4) of V1, of which R2 is the load.

**IF amplifier** operates at 470 kc/s. Secondary L4, C5 of IFT1 feeds signal and AVC voltages, decoupled by R5, C1 to IF amplifier V2. Screen voltage is obtained from R3 decoupled by C10. Suppressor is internally strapped to negative side of filament. Primary L5, C11 of IFT2 is in the anode circuit.

**Signal rectifier.** Secondary L6, C12 of IFT2 feeds signal to diode anode of V3. R7 the volume control, is the diode load and R6, C13, C14 an IF filter.

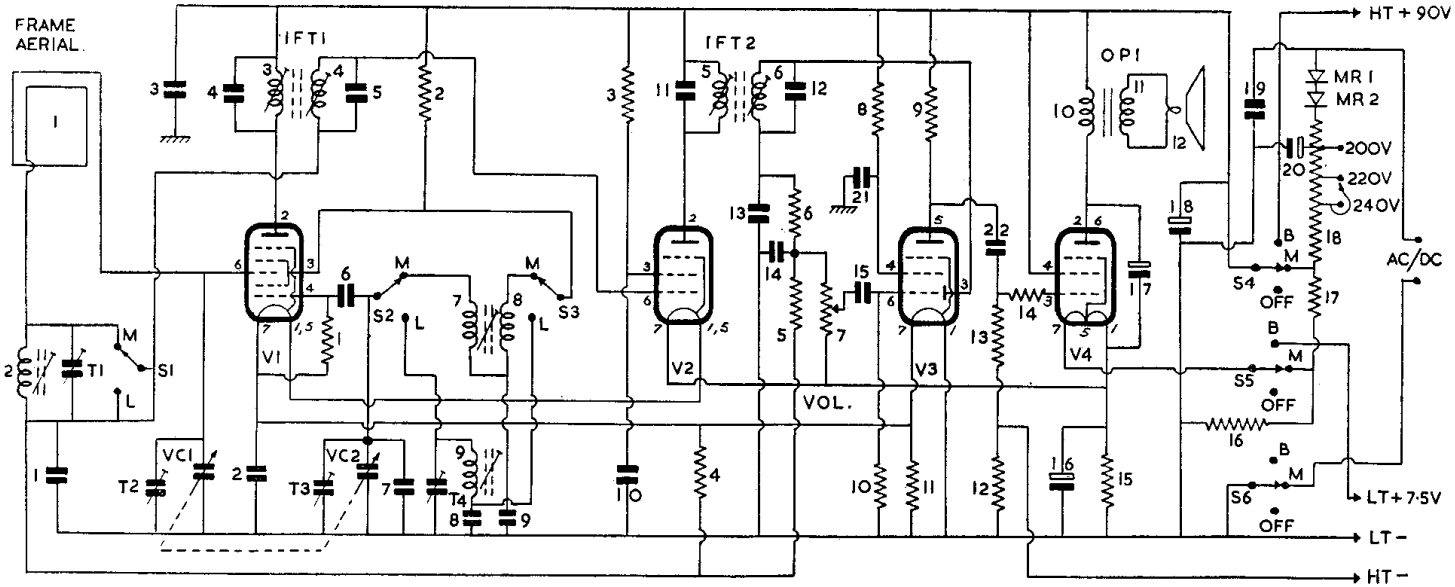
**AVC.** The DC component of the rectified signal developed across R7 is divided by R5, R4 decoupled by C1 and applied to g3 of V1 and g1 of V2. R4 is returned to chassis through R11 for circuit stability.

*Continued on page 8.*




| V1 — DK 91 | V2 — DF 91 | V3 — DAF 91 | V4 — DL 92 | |
|---|---|---|---|---|
| G2 G4 G1 F-G5<br>40V 1·6MA<br>A 86·5V 2·5MA<br>G3<br>F-, G5 F+ | G2 36V 3·5MA F-G3<br>A 86·5V 1·3MA G1<br>F-, G3 F+ | G2 0·1MA A<br>D 0·75 MA G1<br>F-, G3 F+ | G2 86·5V 12·5MA Fct G3<br>G1<br>A 80V 10·5MA<br>A 80V 10·5MA<br>F- F+ | Total HT current = 16·8 MA<br>Total LT current = 50MA<br>Bias Developed across R12 = 3·5 V -ve<br>To chassis. |

ALL READINGS TAKEN WITH BATTERY INPUT




## RESISTORS

| R | Ohms | Watts |
|---|---|---|
| 1 | 100K | ¼ |
| 2 | 22K | ¼ |
| 3 | 68K | ¼ |
| 4 | 10M | ¼ |
| 5 | 4.7M | ¼ |
| 6 | 47K | ⅛ |
| 7 | 2M | Potr. |
| 8 | 4.7M | ¼ |
| 9 | 1M... | ¼ |
| 10 | 2.2M | ¼ |
| 11 | 220... | ¼ |
| 12 | 220... | ¼ |
| 13 | 1M... | ¼ |
| 14 | 10K | ¼ |
| 15 | 330... | ¼ |
| 16 | 10K | ½ |
| 17 | 1,750 | WW |
| 18 | 2,300 | WW |

(Tapped at 200-550-900)

## CAPACITORS

| C | Capacity | Type |
|---|---|---|
| 1 | .05 | Tubular 250V |
| 2 | .1 | Tubular 150V |
| 3 | .1 | Tubular 150V |
| 4 | 100pF | Mica |
| 5 | 100pF | Mica |
| 6 | 500pF | Silver Mica |
| 7 | 15pF | Silver Mica |
| 8 | 250pF | Silver Mica |
| 9 | 625pF | Silver Mica |
| 10 | .05 | Tubular 150V |
| 11 | 100pF | Mica |
| 12 | 100pF | Mica |
| 13 | 100pF | Silver Mica |
| 14 | 100pF | Silver Mica |
| 15 | .001 | Tubular |
| 16 | 50 | Electrolytic 12V |
| 17 | .005 | Tubular 350V |
| 18 | 32 | Electrolytic 275V |
| 19 | .01 | Tubular 1,000V |
| 20 | 32 | Electrolytic 275V |
| 21 | .05 | Tubular 250V |
| 22 | .005 | Tubular 350V |

## INDUCTORS

| L | Ohms |
|---|---|
| 1 | 1.4 |
| 2 | 10.5 |
| 3 | 9 |
| 4 | 9 |
| 5 | 9 |
| 6 | 10 |
| 7 | 3 |
| 8 | 1.75 |
| 9 | 9.5 |
| 10 | 500 |
| 11 | Very low |
| 12 | 2.5 |



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Radio Manuals Info

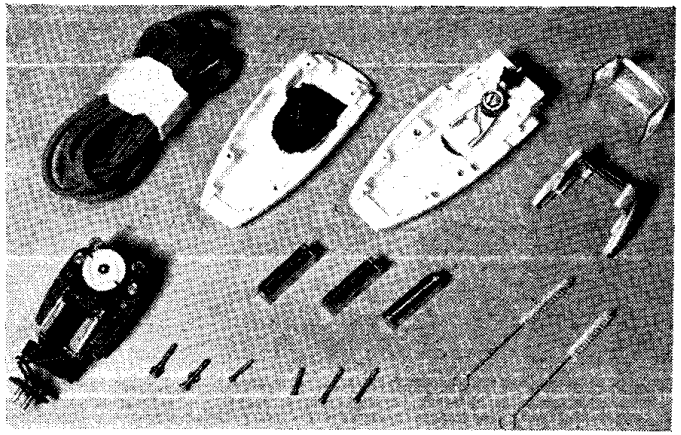

**Fig. 6—Parts of the Remington "Five" and "Foursome" shavers. Adjustment to contacts and to heads should be left to the maker's service depots**

gently in order not to damage the fine cutting surfaces.

Replace cutters in sheaths so that notched ends are at the numbered ends of sheaths. (A number is stamped on ends of sheath baseplates.)

In the case of the Round Head, line up cutter so that rectangular operating lever slot is in centre of baseplate aperture. Before replacing heads on body, blow or clean out hair clippings from rubber cups on ends of operating levers.

Replace heads on shaver with lateral grooves fitting over ridges on body moulding. When tightening retaining screws be very careful not to over-tighten. Unless disturbed during cleaning process the screws should require only three complete turns to lock head units securely in place.

### SERVICE

Should adjustment of the motor or other repair become necessary, retailers are advised to return shavers to the manufacturers.

The firm states that repairs to this precision-built instrument entail the use of special tools and test equipment and the attention of specially trained mechanics.

Damage caused by attempts at repair and the use of abrasives in the heads automatically cancels the 12-month warranty.

At present repairs should be sent by post to Remington Rand Ltd., Stephenson Road, Hillington, Glasgow, or taken to Commonwealth House, New Oxford Street, London, WC1, where a while-you-wait service is available.

Shortly the firm will introduce a number of service depots throughout the country.

## EKCO A21

AN Ekco A.21 gave weak and distorted reproduction, and routine measurements showed a large positive potential on the detector diode. Examination of the IF transformer indicated a short-circuit between secondary and primary caused by insulation breakdown between the primary and the small additional coupling coil wound in series with the secondary and located underneath the primary. To save time and expense it was decided to repair this component.

The wax of the primary was softened with a soldering iron and the coil, plus coupling winding, slid off the former. The coupling coil was removed by pulling out the wire and the main winding was replaced in its original position and refixed with wax.

A new coupling winding was wound as closely as possible to the primary winding and connected in series with the secondary in the same manner as the original coil. The tuned circuits were then realigned and the receiver functioned perfectly.

—C. F. T., London.

## PHILIPS 209U

A Philips 209U came in for service because of intermittent noises after it had thoroughly warmed up. The false bottom and back were removed and the set stood on its face so that we could have a quick view of everything should the fault develop on test.

As is often the case, no noises were apparent for the first day, so it was decided to run it in it's normal upright position. Sure enough, after two hours use, on came the long awaited noises.

The cause was found to be the metallised paper aerial fixed inside the top of the cabinet, which owing to the heat, had peeled off along one edge and was touching lightly on the tuning pointer assembly. To prove our point, the set was allowed to cool off, with the result that the paper retracted sufficient to clear the trouble. Of course, with the set in the face down position, little of the heat from the set was going to the metallised paper.

The obvious cure was to trim up the edge of the paper so that it would be virtually impossible for it to touch again should it move, and to glue it well back in position.—H. L. MITCHELL, Portsmouth.

## SERVICE CHART MANUAL

NINETEEN service charts, two articles and numerous casebook items published from September 1950 to February 1951 are reprinted in Volume 4 of SERVICE CHART MANUAL.

Most readers know that these half-yearly reprints of the monthly supplements constitute the neatest, simplest and best-lasting method of filing service data. Bound between durable covers, indexed on the front, sheets are easily located and not being separate, do not get crumpled or lost.

By buying one or more copies as each Volume becomes available engineers acquire a library that becomes increasingly valuable as time passes. Published as a service to ELECTRICAL AND RADIO TRADING's regular subscribers, each Volume costs only 3s. post free.

Volumes 2 and 3 are still available and may be ordered with Volume 4 from the Publisher, ELECTRICAL AND RADIO TRADING, 6 Catherine Street, London, WC2.

## ALBA ROVER—*Cont. from p. 6*

**AF amplifier.** C15 feeds signal from volume control R7 to pentode section of V3. Automatic bias for grid is developed on C15 with R10 as leak. Screen voltage is obtained from R8 decoupled by C21. Suppressor is internally strapped to negative side of filament. R9 is anode load.

**Output stage.** C22 feeds signal through stopper resistor R14 to pentode output amplifier V4. Grid is biased negatively by virtue of its filament being at the high potential side of LT supply. On battery operation anode current of V4 is reduced to prolong life of HT battery by increasing negative bias on g1 by returning its grid resistor R13 to chassis through R12 in the HT battery negative lead.

Screen voltage is obtained direct from HT line, decoupling being by C18. Suppressor is internally connected to centre tap of filament. Primary L10 of output matching transformer OP1 is in the anode circuit. C17 gives fixed tone control. Secondary L11 of OP1 feeds signal to a 5-in. PM speaker L12.

HT of 90V is provided by an Ever Ready Batrymax type B107, or alternatively from the mains. S4 switches the receiver HT line to whichever source of supply is desired.

C21 decouples HT battery and functions as smoothing capacitor on mains generated HT.

Input mains is rectified by the series connected metal rectifiers MR1, MR2, and applied through combined dropper and smoothing resistor R18 to S4, which in its mains position switches supply through to receiver HT line. Resistance-capacity smoothing is given by R18 with C18, C20.

To compensate for the lower resistance of MR1, MR2 when used on DC the reservoir smoothing capacitor C20 is connected to the 200V tapping on dropper R18. Thus, with the receiver operated from either AC or DC mains of the correct nominal voltage, the HT line voltage will be the same.

Reservoir smoothing capacitor C20 should be rated to handle 150 mA ripple.

LT of 7.5V for the series connected filaments of V1 to V4 is provided by an Ever Ready All-dry 31 battery, or, if the receiver is operated from the mains, from the rectified and smoothed HT supply through potential divider R17, R16. S5, which is ganged to S4, switches receiver filament line to appropriate source of supply.

R15 decoupled by C16 and R11 decoupled by C2 are current by-pass resistors to maintain correct voltage across each valve filament. S6, which is ganged to S4, S5 is mains ON/OFF switch. S4, S5, apart from switching HT and LT lines to battery or mains supply, also serve as ON/OFF switch when receiver is battery operated.

**Chassis removal.** Remove rear panel by inserting small coin in slot of quick release button at top and turning until slot is in vertical position.

Un-plug battery leads and remove batteries. Remove the four control knobs and unsolder the two leads to OP1 on LS and also earth wire to tag under LS fixing bolt.

Remove frame aerial and mains lead from cleat on side of cabinet. Undo the three Philips' screws situated one on either side of voltage adjusting panel bracket and one on bracket attached to right-hand side of chassis.

### TRIMMING INSTRUCTIONS

| Apply signals as stated below | Tune Receiver to | Trim in Order stated for Max. Output |
|---|---|---|
| (1) Assemble chassis and frame aerial on bench in approximate position occupied when in cabinet and connect up to HT and LT batteries | | |
| (2) 460 kc/s to g3 of V1 via .01 mF capacitor | — | Cores L6, L5, L4, L3 |
| (3) 1.5 mc/s to frame AE via loop | 200 metres | T3, T2 |
| (4) 600 kc/s as above | 500 metres | Core L7/8. Repeat (3) and (4) |
| (5) 300 kc/s as above | 1000 metres | T4, T1 |
| (6) 154 kc/s as above | 1950 metres | Cores L9, L2. Repeat (5) and (6) |
| (7) Replace chassis in cabinet and check alignment, using batteries and mains | | |

## HINTS ON REPLACEMENT OF LINECORDS

THERE are three types of linecord available in both 2-way and 3-way varieties. They are made for receivers using .15, .2 and .3A valves and, although their resistance per yard would appear to vary with make, the following are average values:—

.15A, 360 ohms per yard,
.2A, 300 ohms per yard,
.3A, 180 ohms per yard.

The simplest way of calculating what length of linecord is required for a particular set is as follows.

If the receiver is American it will be intended for 115V supply (not 110V as generally believed) so that to use it on say 240V mains we must drop 240-115 = 125V.

A glance at any of the receiver's valves and reference to a valve chart discloses whether the heaters require .15, .2 or .3A supply. By Ohms Law (R = E/I) we speedily find the amount of linecord resistance: assuming that .2A valves are used in our particular receiver, the resistance needed would be 125/.2 = 625 ohms.

As .2A linecord has a resistance of 300 ohms per yard, we obviously require 2 yards and 3 inches.

If a British type AC/DC receiver requires a new linecord, the best procedure is to add the voltages required by each valve and the dial-bulb, subtract this sum from the mains supply voltage and proceed as before.

Very frequently 3-way linecords are used so that, while the mains voltage is dropped to suit the heater circuit of the receiver, the full AC can be applied to the rectifier.

For instance, a universal receiver might have a 12V 12K8 frequency-changer, 12K7 IF amplifier and 12Q7 duo-diode-triode plus a 35V 35L6 output tetrode and a 35Z4 rectifier, making a grand total of 106 volts. If a 2-way linecord was used to break the 240V supply to this, only 106 volts would be available for rectification by the HT rectifier.

In conclusion, American-type tablegrams can be operated only from a step-down transformer since the current required varies with operation of the gram motor.



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