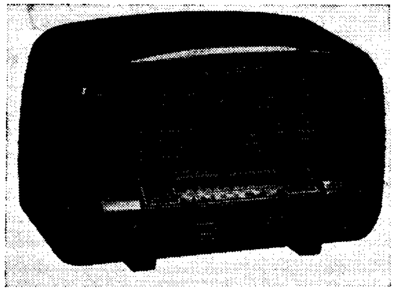
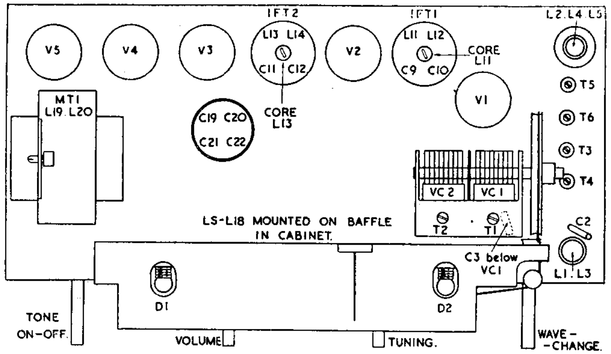
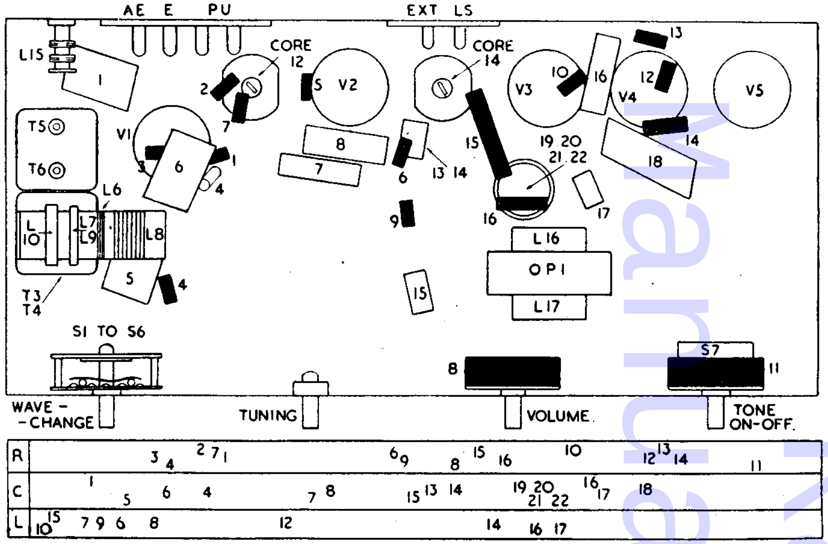
STRAD 511

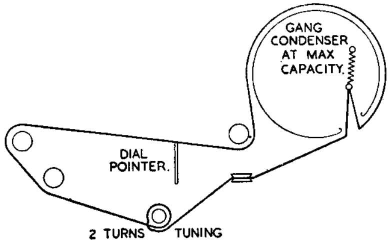


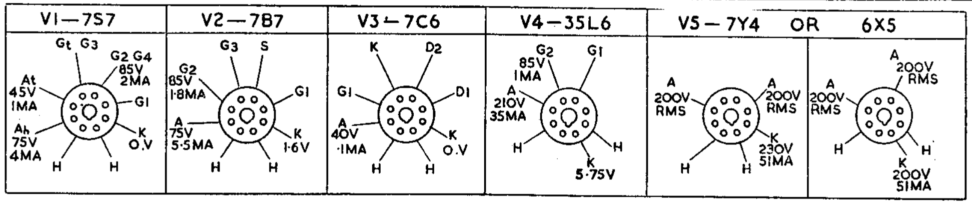


Five-valve three-waveband superhet with sockets for aerial, earth, high-resistance magnetic or crystal pickup and low-impedance extension speaker. Brown moulded cabinet. Suitable for 110—120, 210—250 V 40—100c/s. Manufactured by R. M. Electric, Ltd., Team Valley, Gateshead 11.

Text, see page 22.







RESISTORS

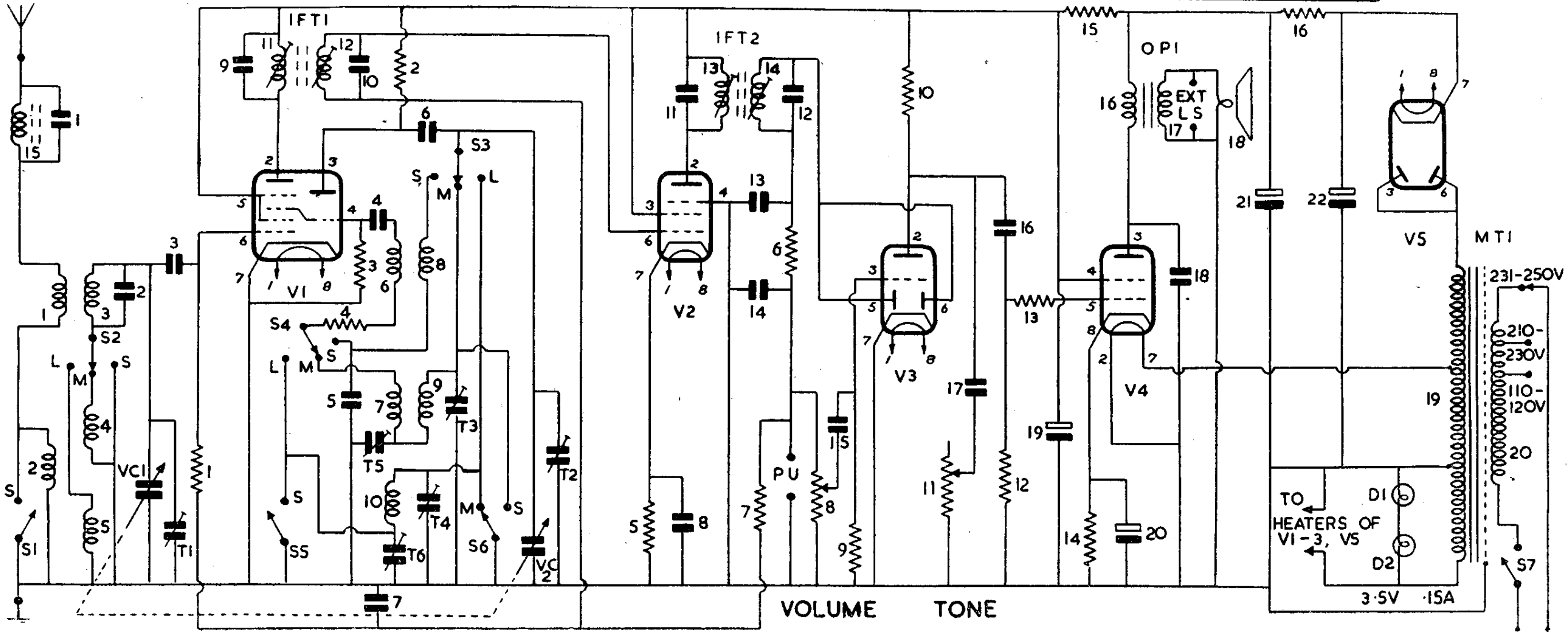
R	Ohms	Watts
1	820K or 1M	¼
2	47K or 22K	¼
3	47K	¼
4	100	¼
5	270	¼
6, 12, 13	47K	¼
7	2.2M	¼
8	500K Log Law Potr.	
9	10M	¼
10	220K	¼
11	500K Potr. with SP switch	
14	180	½
15	10K	1W
16	180	½

CAPACITORS

C	Capacity	Type
1	560pF	Silver Mica
2	22pF	Tubular Cer.
3	100pF	Tubular Cer.
4	100pF	Tubular Cer.
5	3790 pF or 3200pF	Silver Mica
6	560pF	Silver Mica
7	.01	Tubular 600V
8	.1	Tubular 350V
9	120pF	Silver Mica
10, 11, 12	120pF	Silver Mica
13, 14	100 x 100pF	Silver Mica
15, 17	.005	Tubular 500V
16	.01	Tubular 500V
18	2400pF	Silver Mica
19	20	Electrolytic 275V
20	25	Electrolytic 25V
21	30	Electrolytic 275V
22	40	Electrolytic 275V

INDUCTORS

L	Ohms
1	.5
2	4.5
3, 8	Very low
4	4.5
5	16
6	1
7	.5
9	3
10	6.5
11, 12	10
13	12
14	9.5
15	3.5
16	220
17	.5
18	3
19	38 Total
20	36 Total



the motor, the speed drops and the contacts close; thus intermittent operation continues. Increase of contact pressure raises the speed at which the switch operates and shortens the periods during which the power is reduced.

The centrifugal switch consists of a fixed contact riveted to outer edge of a Bakelite rotor and a moving contact attached to a steel leaf spring riveted to a pivoted arm on end face of rotor. The pivoted arm is fitted with a tungsten carbide tipped pad sandwiched between a steel ball on tip of regulator pin and a coil spring under the arm.

Position of regulator pin is controlled, through a spring loaded pivoted link, by a plunger in contact with a cam track on inside of calibrated control knob. In No. 1 position of knob plunger is almost fully depressed and switch contact pressure of the leaf spring on which the moving contact is mounted is at its minimum. Therefore speed is slow.

With knob in position five, the following action takes place. Due to the centrifugal force, the pressure exerted by contact-leaf spring is at its maximum and the coil spring is then fully extended, thus allowing maximum speed.

Control knob provides a continuously variable motor speed of from 4,000 to 12,500 rpm.

MAINTENANCE

Excessive arcing on commutator or slip rings may be due to worn brushes or carbon deposits on running surfaces. Brushes should be renewed when worn down to approximately ¼ in.

Commutator and slip rings should be thoroughly cleaned with a rag moistened with carbon tetrachloride and then polished with dry clean cloth pad. As gearbox is packed with grease and motor bearings are of the oil retaining type, no attention should normally be required. If, however, the gearbox is removed or dismantled, then grease should be topped up or, if contaminated, replaced. Use Price's grease type G5.

Beater height is adjusted by raising or lowering the small screw rest stud on top of pedestal.

DISMANTLING

Remove calibrated control knob by prising off small chromium-plated cap in centre and unscrewing the hexagonal nut in recess (Fig. 2). Next withdraw speed regulator plunger from its seating just above control knob bush on vertical bridge of body end cover. End cover is removed by undoing two screws located in sunk holes in flange (Fig. 3). Unscrew and remove the two slip ring brushes positioned in holders at top and bottom of plastic panel.

Slip-ring and rotor switch assembly is removed from end of motor armature shaft by restraining movement of beaters with one hand whilst unscrewing assembly in a clockwise direction (Fig. 4). Remove beaters by withdrawing downward. Undo two sunk screws on front and lift away gearbox.

Undo two screws securing mains dropper resistor leads to top and bottom slip ring brush holders and unclip resistor and condenser on opposite side from their supports. Remove plastic panel by undoing two screws on opposite sides of armature shaft bearing. Undo screw securing field coil lead to tag at bottom righthand side of panel.

Undo and remove the screw securing filter condenser earth strap and rear of handle to body.

Finally, remove front endplate fixing nuts and ease off endplate complete with handle attached and withdraw armature from body (Fig. 6).

STRAD 511 *from page 20*

AERIAL signal is fed through IF filter L15 C1 to series connected aerial coupling coils L1 (SW), L2 (MW, LW). When SW band is in use L2 is shorted by S1.

Inductively coupled grid coils L4 (MW), L5 (LW), are switched by S2 through L3 (SW) to aerial tuning capacitor VC1, and thence coupled by C3 to triode-hexode frequency-changer V1. T1, with C2, is used as SW trimmer. No aerial trimmers are provided on MW or LW coils.

AVC, decoupled by R7 C7, is applied through R1 to V1. Cathode is connected down to chassis. Screen (g2, g4) voltage is obtained direct from HT line. Primary L11 C9 of IFT1 is in the hexode anode circuit.

Oscillator is connected in a tuned-anode shunt-fed circuit. Anode coils L8 (SW), L9 (MW), L10 (LW), trimmed by T2 T3 T4 respectively and padded by C5 (SW), T5 (MW), T6 (LW), are switched by S3 to oscillator tuning capacitor VC2 and coupled by C6 to oscillator anode of V1, of which R2 is the load.

On SW the MW tuned circuit and LW padder T6 are shorted to chassis by S6 S5 respectively. On MW the LW tuned circuit is shorted to chassis by S6.

The LW and MW reaction voltages, developed on T6 and L7 respectively, are switched by S4 through limiter R4 and SW reaction coil L6 and coupled by C4 to oscillator grid of V1. When S4 is switched to SW, then bottom end of L6 is connected to bottom of SW tuned anode coil L8. Self-bias for oscillator grid is developed on C4 with R3 as leak.

IF amplifier operates at 465kc/s. Secondary L12 C10 of IFT1 feeds signal and AVC voltages, decoupled by R7 C7 to IF amplifier V2. Cathode bias is provided by R5 decoupled by C8. Screen voltage is obtained direct from HT line. Primary L13 C11 of IFT2 is in the anode circuit.

Signal rectifier. Secondary L14 C12 of IFT2 feeds signal to strapped diodes of V3. R8, the volume control, is the diode load and R6 C13 C14 form an IF filter.

Pickup. Sockets are provided on rear of chassis for any high-resistance magnetic or crystal pickup. Signal from pickup is applied across volume control R8.

AVC. The DC component of the rectified signal across R8 is decoupled by R7 C7 and fed to V1 and V2 for AVC.

AF amplifier. Rectified signal across R8 is fed by C15 to grid of triode section of V3. Negative bias for grid is developed on C15 with R9 as leak. R10 is anode load and C17 with R11 provide variable top-cut.

Output stage. Signal at anode V3 is fed by C16 through stopper R13 to beam-tetrode output valve V4. R12 is grid resistor and cathode bias is provided by R14 decoupled by C20. Screen voltage is obtained from HT line to V1 to V3, decoupling being given by C19.

Primary L16 of output matching transformer OP1 is in the anode circuit. Fixed degree of top-cut tone control is given by C18. Secondary L17 of OP1 feeds signal to a 7-in. elliptical PM speaker L18.

Sockets are fitted on L17 for connection of a low-impedance extension speaker.

HT is provided by indirectly-heated rectifier V5 in a halfwave circuit. Anode voltage is obtained from HT secondary L19 of mains input transformer MT1. Resistance-capacity smoothing is by R16 C21 C22. HT line to V1 to V3 and screen V4 is further dropped and resistance-capacity smoothed by R15 C19. Reservoir smoothing capacitor C22 should be rated to handle 125mA ripple.

Heaters V1 to V3, V5 and the series connected dial lights D1 D2 obtain their current from 6.3V tapping on secondary L19. Heater of V4 is fed from a 35V tapping on secondary L19. Primary L20 of MT1 is tapped for inputs of 110—120, 210—230, 231—250V 40—100c/s.

S7, ganged to tone control spindle, is ON/OFF switch.

Modifications. Earlier versions of this receiver differed from the above as follows :—

IF rejector L15 C1 and V2 cathode biasing network R5 C8 are not fitted. HT dropper R15 is an 8.2K 1W resistor. Screens of V1 V2 fed from HT line through 10K ½W resistor decoupled by .1mF capacitor. AVC line connected direct to second diode of V3 which is coupled to signal diode through R7.

Primary L20 of MT1 tapped for inputs of 200—210, 220—230, 240—250V 40—100c/s.

TRIMMING INSTRUCTIONS

Apply signal as stated below	Tune receiver to	Trim in order stated for maximum output
(1) 465kc/s to g1 of V1 via .01 capacitor	MW band	Cores L14, L13, L12, L11.
(2) With gang at max. capacity see that dial pointer coincides with calibration mark at righthand side of dial plate. Attach the calibration card by clips to dial plate.		
(3) 17.64mc/s to Ae socket via dummy aerial.	17.64mc/s	T2, T1.
(4) 1.5mc/s as above	1.5mc/s	T3 whilst rocking VC1-2
(5) 575kc/s as above	575kc/s	T5. Repeat (4) and (5)
(6) 300kc/s as above	300kc/s	T4 whilst rocking VC1-2.
(7) 150kc/s as above	150kc/s	T6. Repeat (6) and (7)
(8) Remove calibration card from dial plate and replace chassis in cabinet.		

REGENTONE U121

A REGENTONE U121 all-wave AC/DC table superhet came in with the complaint that performance was poor on all bands. A short test confirmed this and showed the fault was in the pre-detector part of the circuit.

Voltages everywhere were as specified, all the trimmers and all the iron-cores of the IF transformers were still sealed.

We suspected an O/C decoupling condenser or possibly an O/C fixed trimmer but shunting a good replacement across each suspect failed to improve results.

Things began to look a little involved so we commenced checking the values of resistors that might be at fault, and we also checked the condensers for leaks. Ultimately we found the cause of the trouble—a leak of about 20,000 ohms in the .1 mF condenser that decouples the secondary winding of the IF transformer feeding the 7B7 IF amplifier.—GRW, Liverpool.

STRAD 511

WE had a Strad 511 with no volume worth mentioning, no sensitivity, and a tendency to be hissy. New valves effected no improvement, all voltages were OK, complete re-alignment gave no improvement, and after a great deal of component checking we were no nearer the cause of the trouble.

We suspected an O/C IF transformer secondary, a faulty aerial coil assembly, even a faulty valve-holder, but when carefully checked, all these components were perfect.

We got the sig. gen. on the job and quickly found that, although the detector diode was really "live," when we fed an IF signal to V2 (the IF amplifier preceding it) the output dropped. The valve seemed to effect no amplification whatsoever but the valve, voltages, IFT and padders were all perfect.

We formed the opinion then that although the valve must be amplifying normally its output was not being supplied to the diode. This was so, for a 100pF condenser connecting the earthy end of the IFT secondary to chassis was completely O/C and this had the effect of putting the 47,000 ohm IF stopper resistor in series with the tuned circuit.—GRW, Liverpool.

FORWARD, INVENTORS

REGARDING your recent article, "My Method of Rapid Radio Receiver Testing" (a service engineer writer) I agree with the author that some quick means of testing picofarad condensers is overdue.

Testing picofarad condensers is an exasperating business. In 90 per cent. of cases it means disconnecting the suspect and soldering in a known good one. You can't temporarily hold one in place owing to hand-capacity effects, as these small components are nearly always in RF, IF or oscillator circuits.

A quick means of testing would be welcomed.