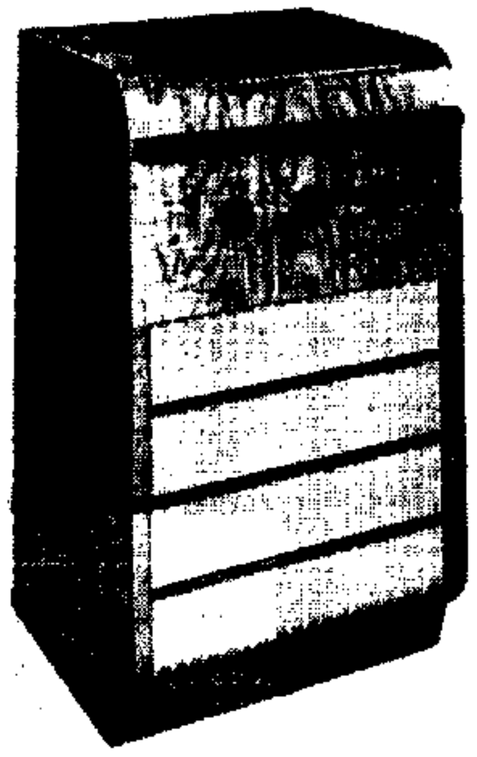
KOLSTER-BRANDES DRP20

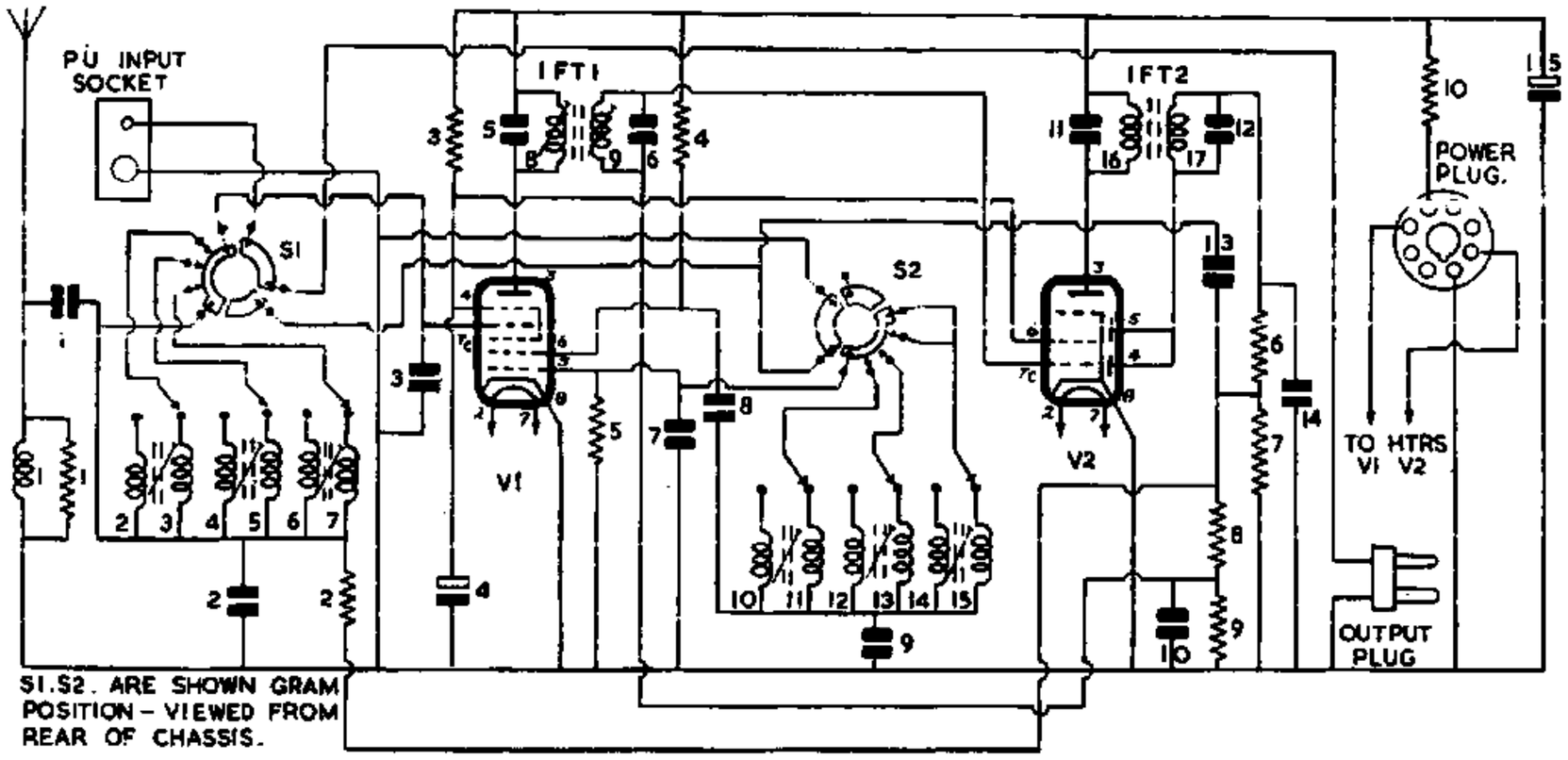
High-fidelity record reproducer consisting of a five-valve amplifier with push-pull output with a Garrard type V single record player fitted with a Decca FFR lightweight pickup with sapphire stylus. Suitable for 110-135, 200-250V 40—60c/s mains. Walnut veneered cabinet. Provision is made in the amplifier chassis and in the cabinet for installation of a two-valve preset tuned superhet radio unit type CRP20/R giving a choice of three programmes. Made by Kolster-Brandes, Ltd., Footscray, Kent.

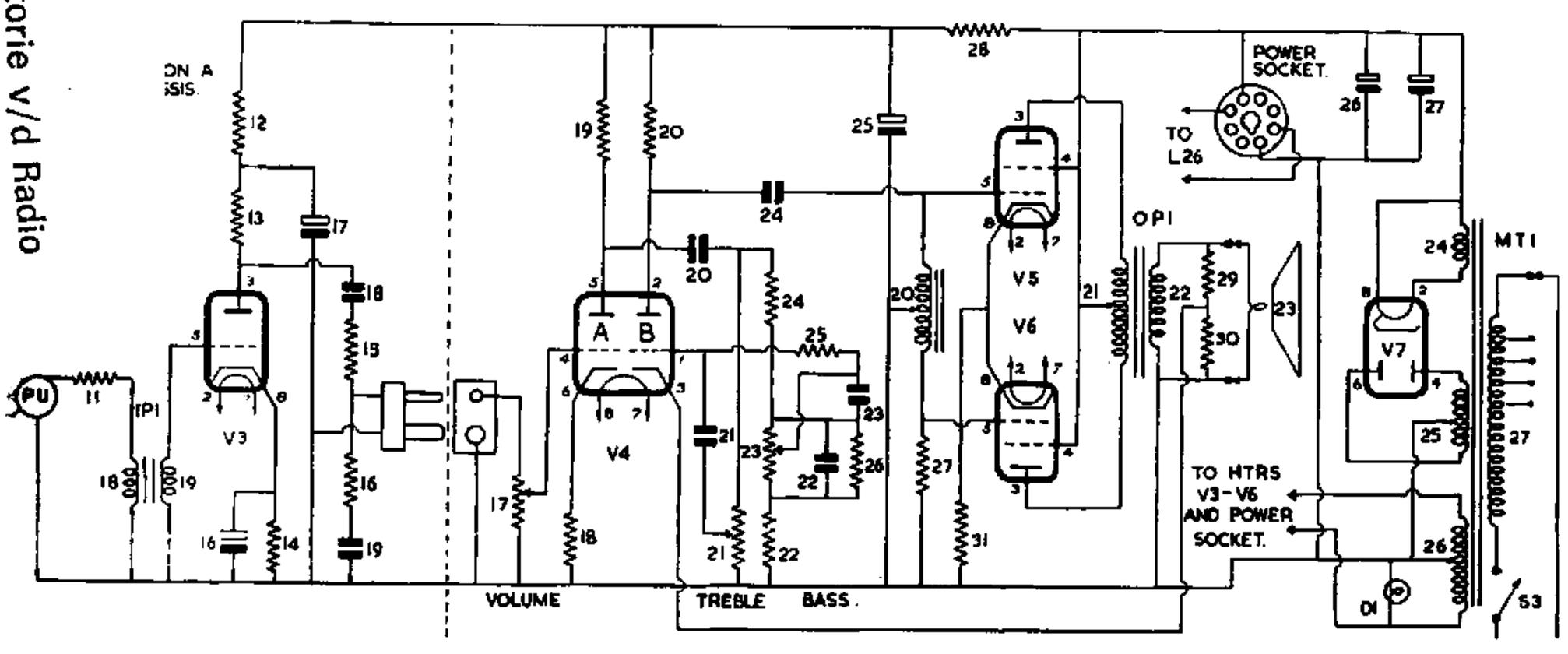


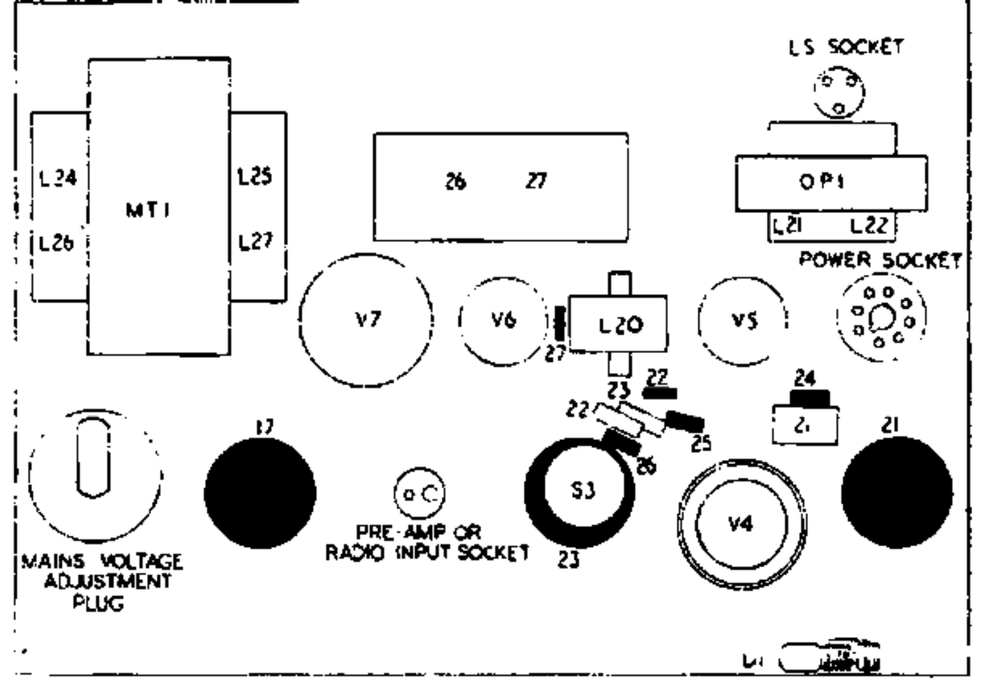
AMPLIFIER consists of a pickup pre-amplifier V3, and AF amplifier V4A followed by a variable
[illegible] tone control stage V4B, the output
[illegible] applied to the push-pull beam-tetrode
[illegible] V5, V6.
[illegible] output of 8W is transformer fed to a
[illegible] ux PM speaker. Negative feedback
[illegible] condary of output transformer is applied to cathode of tone control valve V4B.

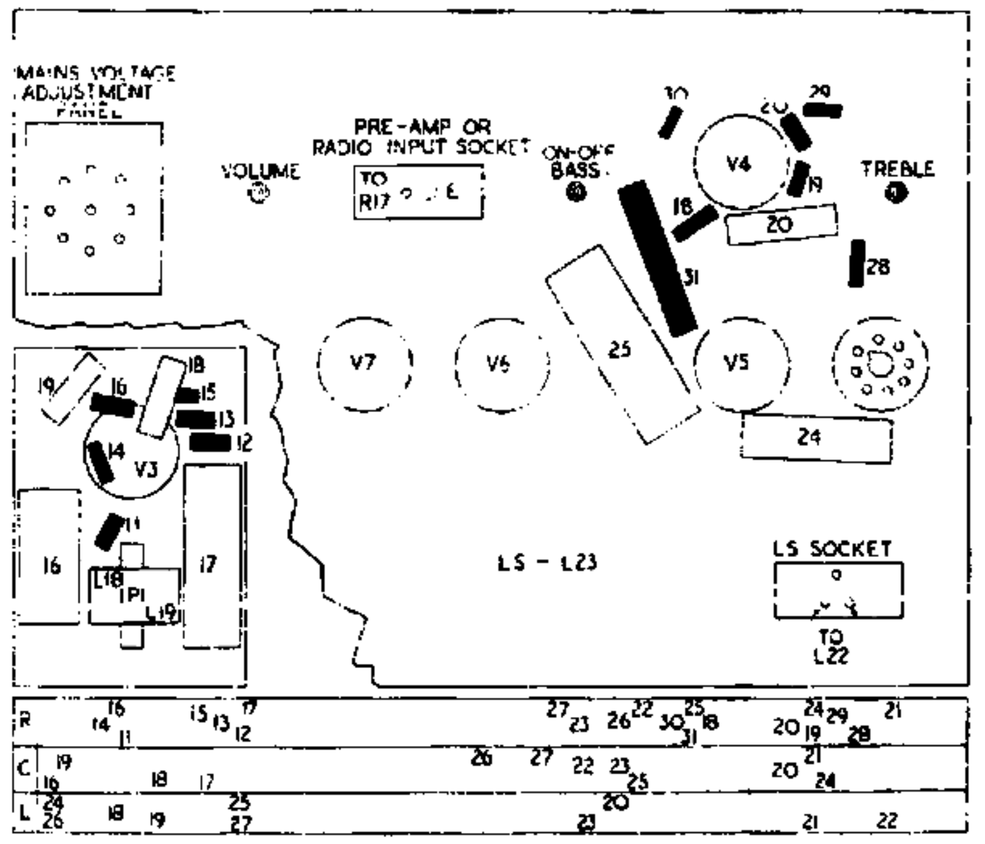
Pickup is a Decca FFR lightweight type.

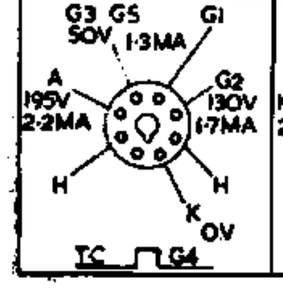
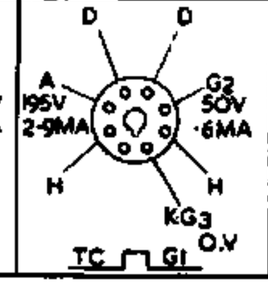
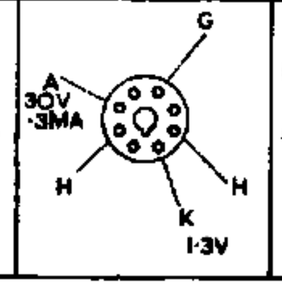
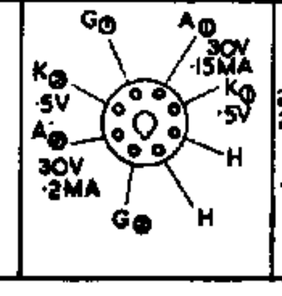
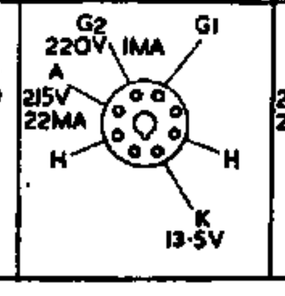
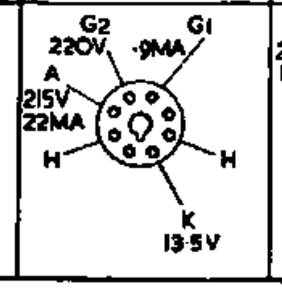
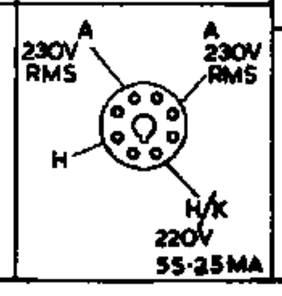
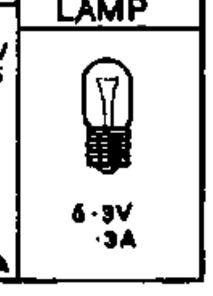
Continued overleaf









V1—6A8GT	V2—6B8GT	V3—6J5GT	V4—6SL7GT	V5—6V6GT	V6—6V6GT	V7—5Z4	INDICATOR LAMP
							

RESISTORS

R	Ohms	Watts
1	4.7K	
2	2.2M	
3	68K	
4	33K	
5	47K	
6	220K	
7	330K	
8	2.2M	
9	2.2M	
10	2.2K	
11	1.5K	
12	47K	
13	220K	
14	4.7K	
15	220K	
16	12K	
17	500K	Potr.
18	6.8K	
19	470K	
20	470K	
21	1M	Potr.
22	47K	
23	1M	Potr. with Sp. Switch
24	470K	
25	150K	
26	180K	
27	220K	
28	100K	
29	27K	
30	6.8K	
31	270	2W

CAPACITORS

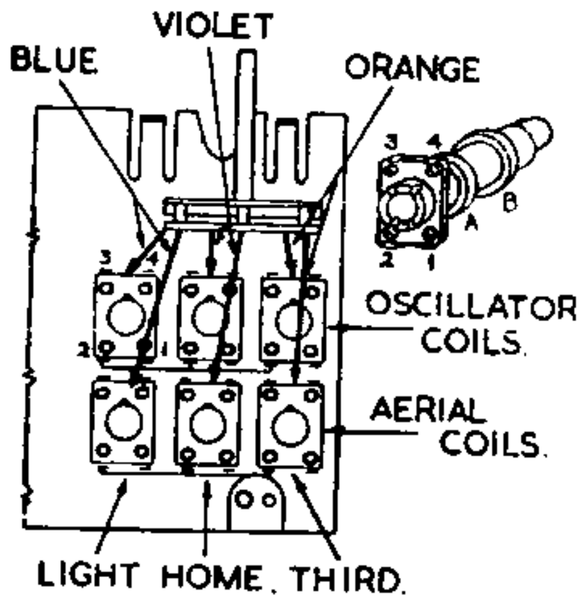
C	Capacity . Type
1	.005 Tubular 500V
2	.002 ,, 350V
3	400pF Silver Mica
4	8 Electrolytic 350V
5	150pF Silver Mica
6	150pF ,, ,,
7	800pF ,, ,,
8	500pF Tubular 500V
9	800pF Silver Mica
10	.02 Tubular 500V
11	150pF Silver Mica
12	150pF ,, ,,
13	500pF Tubular 500V
14	100pF Silver Mica
15	8 Electrolytic 350V
16	25 Electrolytic 25V
17	2 ,, 350V
18	.02 Tubular 350V
19	.03 ,, 350V
20	.02 ,, 350V
21	100pF Silver Mica
22	.01 Tubular 500V
23	.001 ,, 500V
24	.1 ,, 500V
25	8 Electrolytic 350V
26	16 ,, 450V
27	24 ,, 450V

INDUCTORS

L	Ohms
1	15
2	1.25
3	4
4	2
5	3
6	2
7	12.5
8	3.25
9	3.25
10	1
11	2
12	1.5
13	2
14	1.25
15	3
16	3.25
17	3.25
	Pickup = 550 ohms
18	87
19	3,500
20	7000 Total
21	600 ,,
22	.25
23	2.5
24	Very low
25	220 Total
26	Very low
27	22 Total

KOLSTER-BRANDES

DRP20—*Continued*



Coil layout and connections

COIL CONNECTIONS AND COVERAGE

Frequency coverage for each set of coils is given and change from coil "A" to coil "B" or *vice versa* is achieved by simply disconnecting the switch lead and reconnecting to the appropriate terminal tag. Oscillator and aerial coils should have their appropriate switch-leads connected to the same numbered terminal tag.

Circuit	Station	Metres	Coil	Tags	Carr. Freq. Coverage	Switch Lead
Aerial	Droitwich Brookmans Pk.	1,500 261.1	A B	2 & 4 2 & 3	173-225Kc/s 900-1250Kc/s	Blue
Aerial	N. Ireland Midland West London	285.7 296.2 307.1 342.1	B	2 & 3	762-1075Kc/s	Violet
	Welsh Scottish North	373.1 391.1 449.1	A	2 & 4	618-857Kc/s	
Aerial	Local Droitwich	203.5 514.6	B A	2 & 3 2 & 4	1230-1731Kc/s 484-669Kc/s	Orange
Oscillator	Droitwich Brookmans Pk.	1,500 261.1	A B	2 & 4 2 & 3	173-225Kc/s 900-1250Kc/s	Blue
Oscillator	N. Ireland Midland West London	285.7 296.2 307.1 342.1	B	2 & 3	762-1075Kc/s	Violet
	Welsh Scottish North	373.1 391.1 449.1	A	2 & 4	618-857Kc/s	
Oscillator	Local Droitwich	203.5 514.6	B A	2 & 3 2 & 4	1230-1731Kc/s 484-669Kc/s	Orange

N.B. When the Long Wave portion of coil part number 131/31 *is not in use it should be short circuited to chassis to avoid interaction.*

TRIMMING INSTRUCTIONS

Apply signal a stated below	Tune Receiver to	Trim in Order stated for Max. Output
(1) 465 kc/s to g4 of V1, via .1mF	—	Cores L17, L16, L9, L8
(2) Appropriate frequency via dummy ae. to aerial	Switch to Light	Cores L14,15. L6, 7.
(3) As above	Home	Cores L12, 13 L4, 5.
(4) As above	Third	Cores L10, 11 L2, 3

Pre-amplifier. Pickup signal is fed through R11 to primary L18 of input matching transformer 1P1, the secondary L19 of which feeds signal to grid of triode V3. Cathode bias is provided by R14 decoupled by C16. R13 is the anode load and R12, C17 decouple the HT to anode V3. C18 feeds signal through R15 to bass compensating network R16, C19.

Output of the pre-amplifier, which is taken from junction of R15, R16 is terminated on a two-pin plug. Normally the plug fits into a socket on the main amplifier chassis and the pre-amp signal is passed direct to volume control R17. When the radio unit is installed however the pre-amp output is plugged into a socket provided on the radio chassis and is only switched through to main amplifier when the station selector switch is placed in the gram position.

Amplifier. Input from either pre-amp or radio is fed to volume control R17 and thence to grid of triode amplifier V4A. Cathode bias and a degree of negative feedback is provided by R18. R19 is the anode load. Signal at anode of V4A is fed by C20 to treble control network R21, C21 and also to bass control network consisting of R22 to R26, C22, C23.

The variable controls R21, R23 provide independent attenuation or boost of both treble and bass frequencies. Signals from tone control networks are fed to grid of second triode V4B for amplification. Cathode of V4B is returned to chassis through potential divider R29, R30 across secondary L22 of output matching transformer OP1 in order to introduce heavy negative feedback to this stage.

R20 is anode load. Signal at anode V4B is fed by C24 to centre-tapped choke L20. Centre tap is earthed and the opposite phase signals appearing at each end of L20 are applied to push-pull beam tetrode output valves V5, V6.

Cathodes of V5, V6 are strapped and connected a common bias resistor R31. Screen voltages are obtained direct from reservoir smoothing capacitor formed by C26, C27. Anodes are connected to primary L21 of output matching transformer OP1, the centre tap of which is fed with HT direct from C26, C27.

Secondary L22 feeds signal to a 10-in. PM speaker L23. R29, R30 form a potential divider across L22 to apply negative feedback to cathode of V4B.

HT is provided by an indirectly heated full-wave rectifier V7. Its anode voltages are obtained from HT secondary L25 of mains input transformer MT1, and its heater current from secondary L24. HT for the output valves V5, V6 is obtained direct from the reservoir smoothing capacitors C26, C27. HT for the remainder of amplifier is resistance-capacity smoothed by R28, C25.

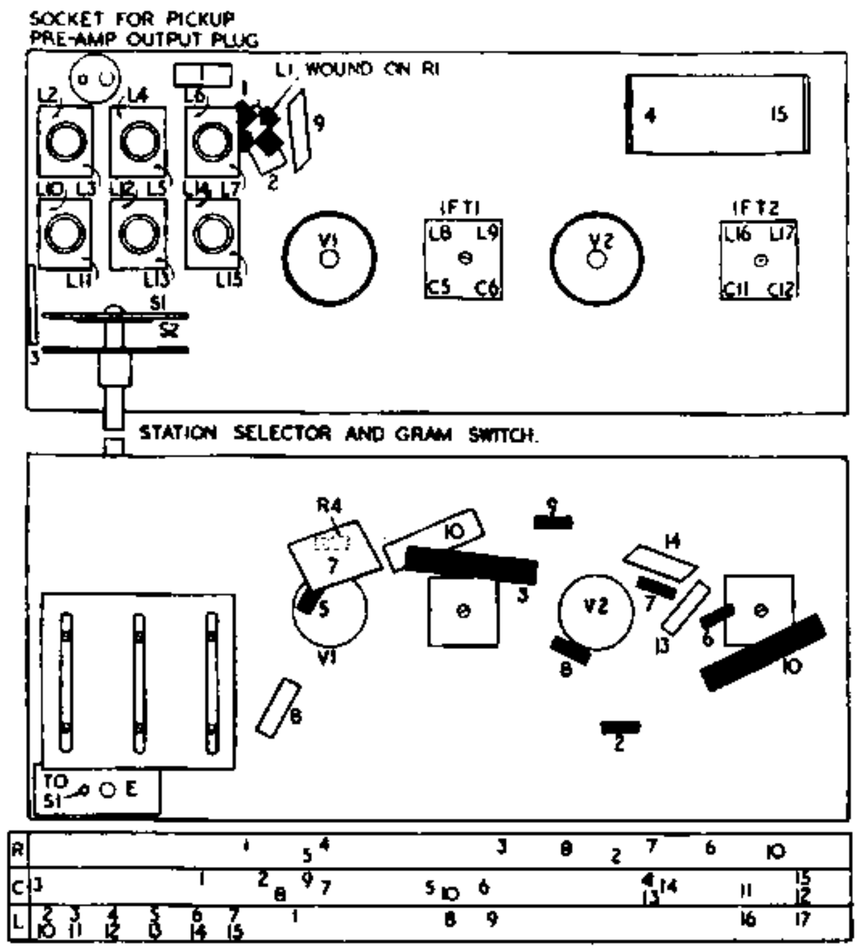
Reservoir smoothing capacitors C26, C27 should be capable of handling 100mA ripple current.

Heaters of V3 to V6 are connected in parallel and obtain their current from secondary L26 of MT1, the centre tap of which is earthed to chassis.

Indicator lamp is connected across half of secondary L26.

HT and heater supplies are also connected to an octal power output socket into which fits the plug of the radio unit.

Primary L27 of MT1 is tapped for inputs of 110, 130, 200, 225, 250V 40-60c/s. S3, ganged to bass control spindle, is the ON/OFF switch.



Chassis layouts of radio unit

RADIO UNIT consists of a heptode frequency changer V1, followed by a double-diode pentode IF amplifier and signal rectifier V2.

Aerial is coupled through C1 to bottom ends of grid tuned coils L2 to L7. L1 shunted by R1 form an aerial filter circuit. The grid coils are permeability tuned and have twin windings in order to cater for reception in different areas. The coils used are switched by S1 to heptode frequency changer V1. AVC decoupled by R2, C2 is fed through the tuned coils to V1.

Cathode is connected down to chassis. Screen voltage is obtained from R3 decoupled by C4. Primary L8 C5 of IFT1 is in the anode ciruit.

Oscillator is connected in a tuned-grid shunt-fed circuit. The permeability tuned-grid coils L10 to L15 which, as in the case of the aerial coils are double wound, are switched by S2 to oscillator grid of V1. Bias for g1 is developed on C7 with R5 as leak.

Reaction voltages are developed on padder C9 and fed by C8 to oscillator anode (g3) of V1, of which R4 is the load.

IF amplifier operates at 465kc/s. Secondary L9, C6 of IFT1 feeds signal and AVC voltages decoupled by C10 to V2. Cathode is connected down to chassis. Screen voltage is obtained from R3 decoupled by C4. Primary L16, C11 of IFT2 is in the anode circuit.

Signal rectifier. Secondary L17, C12 of IFT2 feeds signal to the strapped diodes of V2. R6, R7 form a tapped diode load with C14 as reservoir.

Rectified signal is taken from junction of R6, R7 and fed through C13 to S1, which in the three radio positions passes the signal via the output plug into main amplifier chassis. In gram position, C13 is earthed to chassis S2.

AVC. The full DC component of the rectified signal is fed through decoupling network R2, C2 to g4 of V1 and approximately half from junction of R8, R9 decoupled by C10 is fed to g1 of V2.

Pickup. The output of pickup pre-amplifier V3 is plugged into receiver chassis and is then switched by S1 in its gram position through the receiver output plug to main chassis. When pickup is in use the control grid (g4) of V1 is connected down to AVC line to prevent any possibility of radio breakthrough.

HT and heater current for V1, V2 is obtained from the amplifier chassis. HT is resistance-capacity smoothed by R10, C15.

Removal of chassis. Remove the three knobs and back of the cabinet, and disconnect the mains lead from the turntable motor (on Garrard type motors the turntable must first be removed to expose the mains terminals on the motor).

Remove loudspeaker plug from chassis and disconnect the pickup from the pre-amplifier by unsoldering the leads. Remove eight cup-headed screws which secure the motor board and lift out the motor board complete.

Slacken off the two bottom chassis-fixing bolts and remove the two top ones. Unscrew the amplifier from the cabinet. The chassis can now be withdrawn through the top of the cabinet.

To replace needle. Remove pickup head and unscrew the two body-securing screws. This allows the hinged coil moulding to swing away from the body, exposing the armature and needle assembly. Withdraw complete armature assembly. Insert new armature and needle assembly from the top, taking great care that the sapphire tip enters the same hole in the rubber diaphragm as the old one. The rubber diaphragm maintains the needle exactly central in the head and should be replaced if damaged.

Swing the hinged coil moulding back into the body and secure with the two body-securing screws.