Continued from opposite page

wave rectifier V10. Smoothing is provided for the output stage by CK5 in series with the field winding of the loudspeaker, while CK4 gives additional smoothing to all the other valve anode circuits.

S3 is the main on-off switch, and S4 the motor switch, which is adjacent to the pickup rest on the motorboard.

GANGING

IF Circuits.—Remove test link between terminals 4 and 5 on the radio chassis and insert a milliammeter having a range of about 0-5 or 0-10 ma. This meter will now be showing the emission of the second detector, which should pass approximately .6 ma., when no signal is being received. Switch the instrument to medium waves, and set the gang condenser to a position about half open.

Remove the oscillator valve, V2, and connect the output from a signal generator to the chassis, and *via* a .01 mfd. condenser to the grid of the mixer, V3. Adjust the signal generator to 125.2 kc.

(1) Adjust T1, T2, T3, T4, T5, T6, to give maximum reading on the meter. It is immaterial whether the output of the signal generator is modulated or not, as in either case an indication will be shown on the meter connected in the anode circuit of V6.

(2) Switch off the signal generator and note the change in current indicated on the meter. For instance, with a fairly strong signal being fed into the circuit, the second detector anode current will be approximately 3 ma., and when the signal generator is switched off, this will drop to approximately .6, giving a change in anode current of 2.4 ma. It is advisable to adjust the output of the signal generator so that the anode current of V6 does not exceed 3 ma., otherwise the early stages of the receiver may be overloading.

(3) Switch on the signal generator and increase the capacity of T2 by rotating in a clockwise direction, until the change in anode current caused by switching off the signal generator has been reduced by 18 per cent., *i.e.*, had the original change been 2.4, this trimmer should be adjusted until the change is 1.97 ma.

(4) Again switch on the signal generator, and increase the capacity of T4 by rotating in a clockwise direction until the change in anode current is decreased a further 18 per cent. Assuming the original change of 2.4, this latter change should now be 1.62 ma.

MW Band.—(1) Connect the output of the signal generator to the aerial and earth terminals, replace the oscillator valve V2, and tune the instrument to 200 metres. Set the signal generator to 200 metres and adjust T7, the parallel trimmer on the oscillator section of the gang condenser, until maximum output is obtained. If two maximum settings are found, use the one nearest the fully unscrewed position of T7.

(2) Set the signal generator to 250 metres, and tune in the signal on the instrument to give maximum indication on the meter, and adjust T8 and T9.

(3) Set the signal generator to 500 metres and tune in this signal on the receiver to give maximum reading on the meter, and adjust the oscillator series tracking condenser, T10, at the same time rocking the gang condenser until a point is found where no further increase in signal strength is possible.

(4) The pointer of the instrument should now be set to indicate 500 metres on the scale.

(5) Repeat operations 1, 2 and 3, and readjust the position of the pointer at 500 metres, if necessary, this procedure being repeated until the calibration throughout the medium waves is reasonably accurate.

There are no LW trimmers on these models.

On installation, the aerial trimmer T11 should be adjusted to give maximum signal strength at about 250 metres.

HMV 532C

Ten-valve, two waveband superhet automatic radiogram (incorporating AVC) with provision for extra loudspeakers and switching. Suitable for operation from mains supplies 100-160v, 200-260v, 50-60 cycles. Manufactured in 1933 by the Gramophone Co., Ltd., Hayes, Middlesex.

THE basic chassis of the Model 532A is used in this instrument with variations which will be appreciated from the circuit diagram. The differences are as follows :—

V1, V3 and V4 are changed to VMS4B valves and their grid circuits are taken to the load resistances of the metal rectifier MR, fed from the anode of V5, the second IF amplifier, *via* C16. Delay volts for the metal rectifier are obtained from a tapping on the HT potential divider network, comprising R17, R13, R14. The load resistances are R11 and R12, the latter being filtered by C15.

V1 has full AVC voltage applied to it *via* filter components R10, C14, and decoupling components R1 and C1.

V3 and V4 grid circuits are fed from the junction of R11, R12, *via* R4 and C6, the decoupling components for the grid circuit of V3 and R5 and C9 the decoupling components for V4.

Signals from the secondary, L18, of the last IF transformer are developed across the network R18, R19, and the grid of V6, the second detector valve, is fed from the junction of these two resistances. Grid circuit decoupling components are R15 and C19.

Due to the incorporation of AVC, the radio section of the volume control is dispensed with and a single element control VR1 is used to control the input from the radio chassis and pickup to the amplifier. It will be noted that on gram, switch contacts D, C, bring in resistance R23 across the volume control to prevent overloading.

In the power pack, V7 is changed from an MHL4 to an MH4 and a high note or whistle rejector circuit (CK6, C31) is incorporated in the coupling between V7 and the primary of the inter-valve transformer. In other respects, the amplifier is similar to those in previous models.

GANGING

IF Circuits.—It is advised by the manufacturers that one end of the AVC Westector metal rectifier should be disconnected for IF adjustments, but if the input signal is kept low, this may not be necessary. The trimmers are adjusted as for the Models 532, 640.

MW and LW Bands.—Adjust the HF circuits as described in the review covering the Models 532A, 640A.

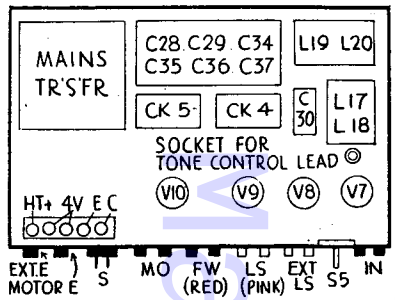
VALVE READINGS

V	Type	Electrode	Volts	Ma*
1	VMS4B	Anode	200	1.0–4.0
	(Met)	Screen	80	.2–.6
2	MHL4	Anode	80	5
3	VMS4B	Anode	200	.1–.4
	(Met)	Screen	80	.05–.1
4	VMS4B	Anode	200	1.25–3.5
	(Met)	Screen	80	.2–.4
5	MS4B	Anode	200	1.75
	(Met)	Screen	80	1.5
6	ML4	Anode	180	.5
7	MH4	Anode	110	2
8	PX4	Anode	300	28
9	PX4	Anode	300	28
10	U14	Anodes	—	40 each

*First figure is for good signal; second figure for weak signal.

RESISTANCES

R	Ohms	R	Ohms
1	100,000	15	100,000
2	1,000	16	10,000
3	3,000	17	10,000
4	100,000	18	250,000
5	100,000	19	500,000
6	40,000	20	110,000
7	500	21	23,000
8	1,000	22	15,000
9	1,000	23	100,000
10	250,000	24	2 meg
11	250,000	25	50,000
12	250,000	26	1,000
13	10,000	27	1,400
14	2,000	28	1,400



Power pack layout diagram for the Model 532C. The layout of the radio chassis is the same as for the "A" models which are reviewed overleaf.

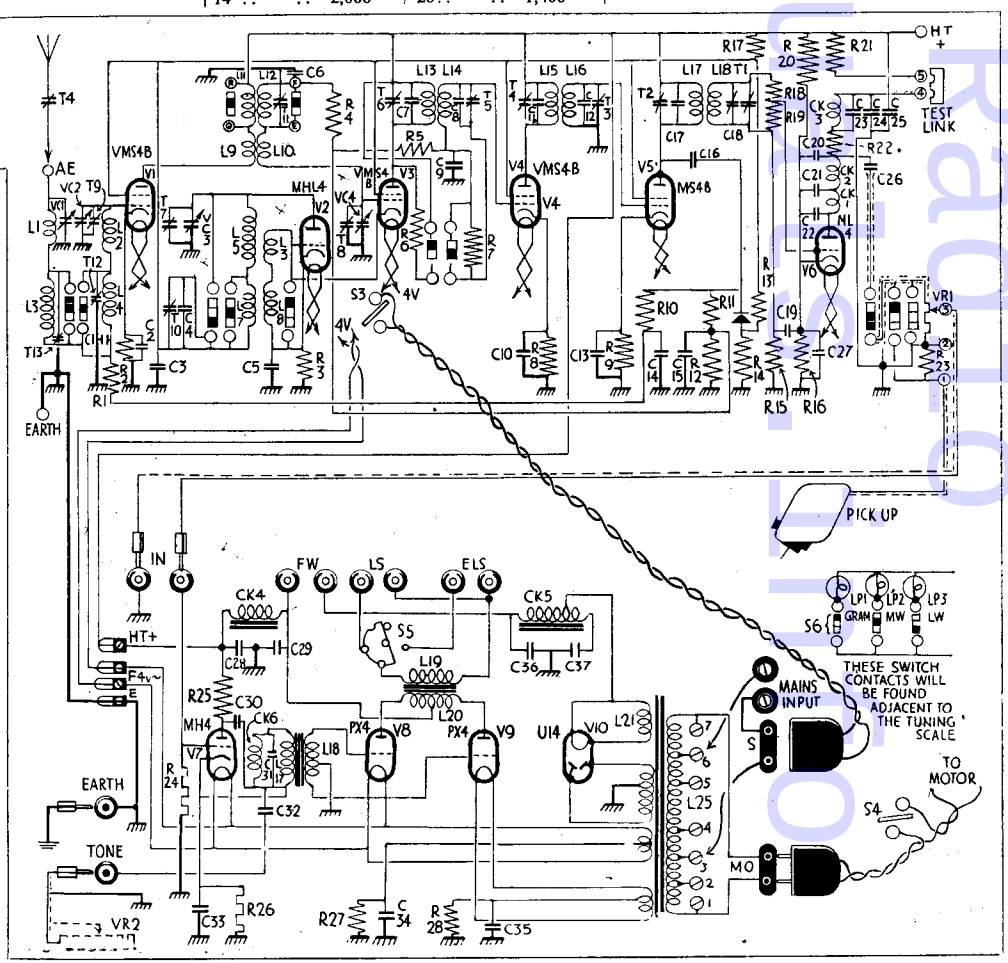
The circuit of the 532C. For details of the "A" models see page vi.

CONDENSERS

C	Mfds
1	.1
2	.1
3	.5
4	.00005
5	.1
6	.1
7	.00025
8	.00022
9	.1
10	.5
11	.00025
12	.00022
13	.1
14	.01
15	.01
16	.00005
17	.00025
18	.00022
19	.1
20	.001
21	.001
22	.001
23	.001
24	2
25	1
26	.001
27	1
28	2
29	2
30	.2
31	.001
32	.1
33	1
34	6
35	6
36	4
37	2

WINDINGS

See table on page vi for Models 532A, 640A.



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wave rectifier V10. Smoothing is provided for the output stage by CK5 in series with the field winding of the loudspeaker, while CK4 gives additional smoothing to all the other valve anode circuits.

S3 is the main on-off switch, and S4 the motor switch, which is adjacent to the pickup rest on the motorboard.

GANGING

IF Circuits.—Remove test link between terminals 4 and 5 on the radio chassis and insert a milliammeter having a range of about 0-5 or 0-10 ma. This meter will now be showing the emission of the second detector, which should pass approximately .6 ma., when no signal is being received. Switch the instrument to medium waves, and set the gang condenser to a position about half open.

Remove the oscillator valve, V2, and connect the output from a signal generator to the chassis, and *via* a .01 mfd. condenser to the grid of the mixer, V3. Adjust the signal generator to 125.2 kc.

(1) Adjust T1, T2, T3, T4, T5, T6, to give maximum reading on the meter. It is immaterial whether the output of the signal generator is modulated or not, as in either case an indication will be shown on the meter connected in the anode circuit of V6.

(2) Switch off the signal generator and note the change in current indicated on the meter. For instance, with a fairly strong signal being fed into the circuit, the second detector anode current will be approximately 3 ma., and when the signal generator is switched off, this will drop to approximately .6, giving a change in anode current of 2.4 ma. It is advisable to adjust the output of the signal generator so that the anode current of V6 does not exceed 3 ma., otherwise the early stages of the receiver may be overloading.

(3) Switch on the signal generator and increase the capacity of T2 by rotating in a clockwise direction, until the change in anode current caused by switching off the signal generator has been reduced by 18 per cent., *i.e.*, had the original change been 2.4, this trimmer should be adjusted until the change is 1.97 ma.

(4) Again switch on the signal generator, and increase the capacity of T4 by rotating in a clockwise direction until the change in anode current is decreased a further 18 per cent. Assuming the original change of 2.4, this latter change should now be 1.62 ma.

MW Band.—(1) Connect the output of the signal generator to the aerial and earth terminals, replace the oscillator valve V2, and tune the instrument to 200 metres. Set the signal generator to 200 metres and adjust T7, the parallel trimmer on the oscillator section of the gang condenser, until maximum output is obtained. If two maximum settings are found, use the one nearest the fully unscrewed position of T7.

(2) Set the signal generator to 250 metres, and tune in the signal on the instrument to give maximum indication on the meter, and adjust T8 and T9.

(3) Set the signal generator to 500 metres and tune in this signal on the receiver to give maximum reading on the meter, and adjust the oscillator series tracking condenser, T10, at the same time rocking the gang condenser until a point is found where no further increase in signal strength is possible.

(4) The pointer of the instrument should now be set to indicate 500 metres on the scale.

(5) Repeat operations 1, 2 and 3, and readjust the position of the pointer at 500 metres, if necessary, this procedure being repeated until the calibration throughout the medium waves is reasonably accurate.

There are no LW trimmers on these models.

On installation, the aerial trimmer T11 should be adjusted to give maximum signal strength at about 250 metres.

HMV 532C

Ten-valve, two waveband superhet automatic radiogram (incorporating AVC) with provision for extra loudspeakers and switching. Suitable for operation from mains supplies 100-160v, 200-260v, 50-60 cycles. Manufactured in 1933 by the Gramophone Co., Ltd., Hayes, Middlesex.

THE basic chassis of the Model 532A is used in this instrument with variations which will be appreciated from the circuit diagram. The differences are as follows :—

V1, V3 and V4 are changed to VMS4B valves and their grid circuits are taken to the load resistances of the metal rectifier MR, fed from the anode of V5, the second IF amplifier, *via* C16. Delay volts for the metal rectifier are obtained from a tapping on the HT potential divider network, comprising R17, R13, R14. The load resistances are R11 and R12, the latter being filtered by C15.

V1 has full AVC voltage applied to it *via* filter components R10, C14, and decoupling components R1 and C1.

V3 and V4 grid circuits are fed from the junction of R11, R12, *via* R4 and C6, the decoupling components for the grid circuit of V3 and R5 and C9 the decoupling components for V4.

Signals from the secondary, L18, of the last IF transformer are developed across the network R18, R19, and the grid of V6, the second detector valve, is fed from the junction of these two resistances. Grid circuit decoupling components are R15 and C19.

Due to the incorporation of AVC, the radio section of the volume control is dispensed with and a single element control VR1 is used to control the input from the radio chassis and pickup to the amplifier. It will be noted that on gram, switch contacts D, C, bring in resistance R23 across the volume control to prevent overloading.

In the power pack, V7 is changed from an MHL4 to an MH4 and a high note or whistle rejector circuit (CK6, C31) is incorporated in the coupling between V7 and the primary of the inter-valve transformer. In other respects, the amplifier is similar to those in previous models.

GANGING

IF Circuits.—It is advised by the manufacturers that one end of the AVC Westector metal rectifier should be disconnected for IF adjustments, but if the input signal is kept low, this may not be necessary. The trimmers are adjusted as for the Models 532, 640.

MW and LW Bands.—Adjust the HF circuits as described in the review covering the Models 532A, 640A.

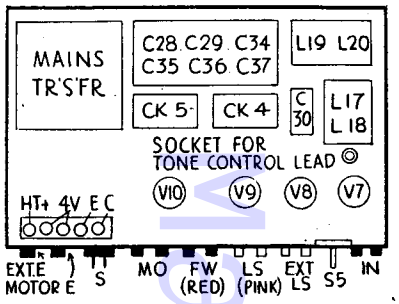
VALVE READINGS

V	Type	Electrode	Volts	Ma*
1	VMS4B	Anode	200	1.0–4.0
	(Met)	Screen	80	.2–.6
2	MHL4	Anode	80	5
3	VMS4B	Anode	200	.1–.4
	(Met)	Screen	80	.05–.1
4	VMS4B	Anode	200	1.25–3.5
	(Met)	Screen	80	.2–.4
5	MS4B	Anode	200	1.75
	(Met)	Screen	80	1.5
6	ML4	Anode	180	.5
7	MH4	Anode	110	2
8	PX4	Anode	300	28
9	PX4	Anode	300	28
10	U14	Anodes	—	40 each

*First figure is for good signal; second figure for weak signal.

RESISTANCES

R	Ohms	R	Ohms
1	100,000	15	100,000
2	1,000	16	10,000
3	3,000	17	10,000
4	100,000	18	250,000
5	100,000	19	500,000
6	40,000	20	110,000
7	500	21	23,000
8	1,000	22	15,000
9	1,000	23	100,000
10	250,000	24	2 meg
11	250,000	25	50,000
12	250,000	26	1,000
13	10,000	27	1,400
14	2,000	28	1,400



Power pack layout diagram for the Model 532C. The layout of the radio chassis is the same as for the "A" models which are reviewed overleaf.

The circuit of the 532C. For details of the "A" models see page vi.

CONDENSERS

C	Mfds
1	.1
2	.1
3	.5
4	.00005
5	.1
6	.1
7	.00025
8	.00022
9	.1
10	.5
11	.00025
12	.00022
13	.1
14	.01
15	.01
16	.00005
17	.00025
18	.00022
19	.1
20	.001
21	.001
22	.001
23	.001
24	2
25	1
26	.001
27	1
28	2
29	2
30	.2
31	.001
32	.1
33	1
34	6
35	6
36	4
37	2

WINDINGS

See table on page vi for Models 532A, 640A