

13,7-45 m

45-160 m

160-585 m

9636, Z = 5 Ω

~ 110 V, 125 V, 145 V,

200 V, 225 V, 245 V

30 watt

	160-585 m	A	13,7-45 m	B	160-585 m	B
	C3, C4, C5 max.		20,5 Mc/s ~	C3, C4, C5 + 15°	C3, C4, C5 + 15°	
	452 kc/s-33000 pF-gLB2			1740 kc/s ~		
↑↓	S25-30 pF			C26, C17, C10 max.		
	S25, S27 max.			-25 pF-aB2		
↑↓	S24-30 pF			C5		
	S25 max.			600 kc/s		
↑↓	S23-30 pF			600 kc/s ~		
	S24 max.			C3, C4, C5 + 15°		
↑↓	S24-30 pF			6,1 Mc/s ~		
	S25 max.			C25, C16, C9 max.		
				C30 max.		
				C3, C4, C5 + 15°		
				1740 kc/s ~		
				C26, C17, C10 max.		
	160-585 m	D				
	857 kc/s ~					
	C3, C4, C5					
↑	857 kc/s					
	350 m					

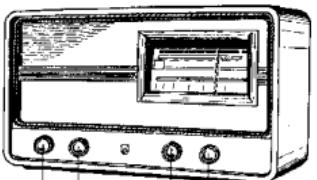
15° - 09 992 44.8

9636, Z = 5 Ω

~ 110 V, 125 V, 145 V,

200 V, 225 V, 245 V

30 watt



~ VOL.

WAVES

RF0350

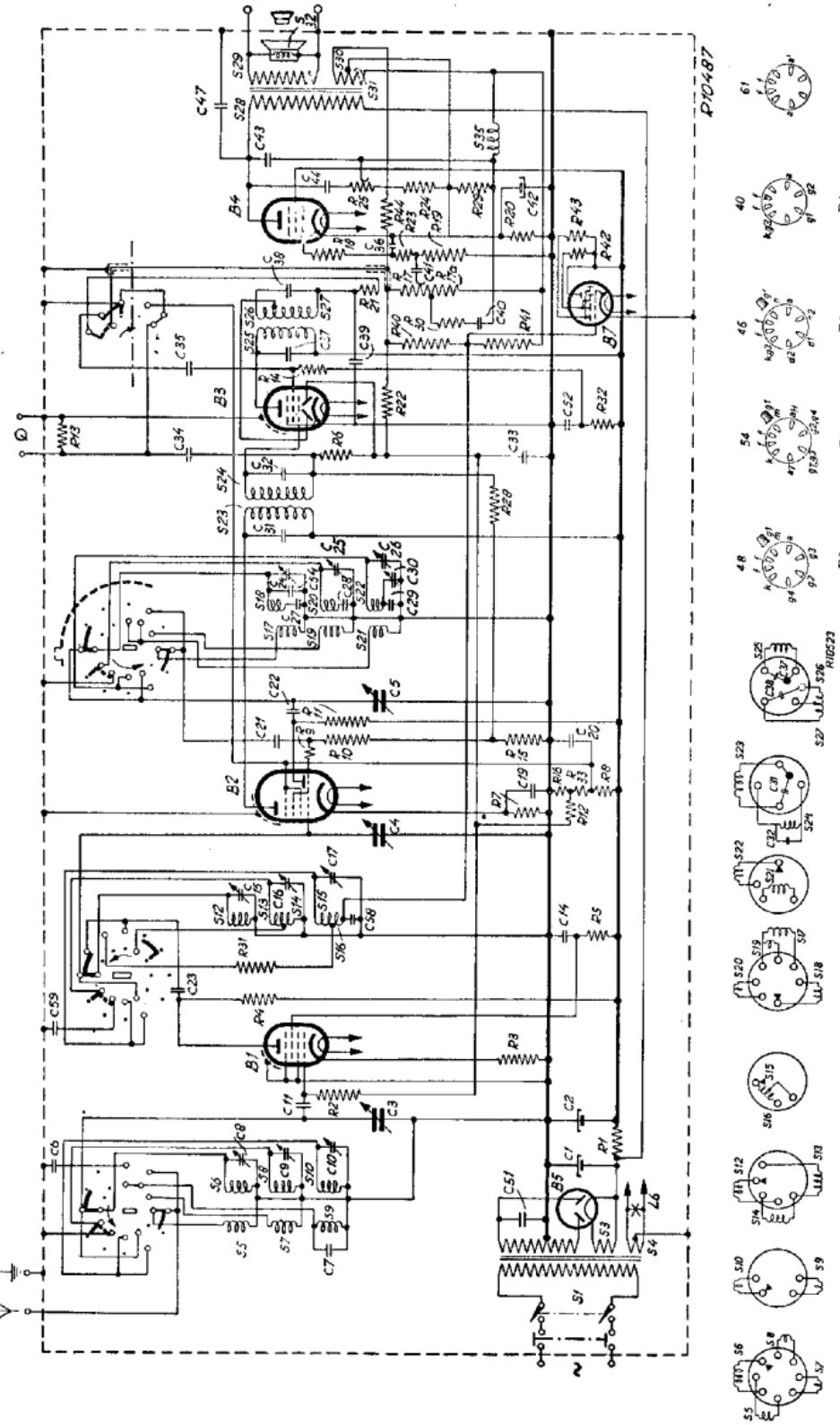
C1	45 pF	49 032 01.0	R1	1800 Ω	49 356 30.0
C2	45 pF	49 032 01.0	R2	0,82 MΩ	49 375 59.0
C3	11,499 pF	49 032 01.0	R3	39	49 375 67.0
C4	11,499 pF	49 030 09.0	R4	10000 Ω	49 377 36.0
C5	11,499 pF	49 030 09.0	R5	0,1 MΩ	49 375 44.0
C6	10000 pF	49 127 44.0	R6	3,3 MΩ	49 375 66.0
C7	68 pF	49 055 48.0	R7	150	49 375 14.0
C8	20 pF	49 055 48.0	R8	50000 Ω	49 377 48.0
C9	20 pF	49 065 05.2	R9	220	49 375 16.0
C10	20 pF	49 065 05.2	R10	33000 Ω	49 375 42.0
C11	100 pF	49 055 28.0	R11	20000 Ω	49 376 36.0
C12	100 pF	49 055 28.0	R12	5,6 MΩ	49 377 69.0
C13	20 pF	49 065 32.0	R13	40000 Ω	49 375 44.0
C14	20 pF	49 065 32.0	R14	47000 Ω	49 375 44.0
C15	20 pF	49 065 05.2	R15	22000 Ω	49 375 40.0
C16	10000 pF	49 127 14.0	R16	68000 Ω	49 375 46.0
C17	20 pF	49 065 05.2	R17	0,65 MΩ	49 306 19.0
C18	100 pF	49 128 63.0	R18	1000	49 376 24.0
C19	100 pF	49 055 28.0	R19	1 MΩ	49 376 60.0
C20	220 pF	49 055 32.0	R20	12000 Ω	49 375 15.0
C21	220 pF	49 055 32.0	R21	47000 Ω	49 375 42.0
C22	220 pF	49 055 30.0	R22	1,5 MΩ	49 375 42.0
C23	220 pF	49 055 32.0	R23	42000 Ω	49 375 47.0
C24	20 pF	49 065 13.0	R24	180	49 376 24.0
C25	20 pF	49 065 13.0	R25	47000 Ω	49 375 42.0
C26	20 pF	49 065 05.2	R26	1,5 MΩ	49 375 42.0
C27	5750 pF	28 195 49.0	R27	1 MΩ	49 375 42.0
C28	1600 pF	49 050 34.0	R28	1800	49 375 27.0
C29	400 pF	49 057 00.0	R29	0,35 MΩ	49 470 31.0
C30	120 pF	28 212 07.0	R30	5,6 MΩ	49 377 69.0
C31	100 pF		R31	120000 Ω	49 375 57.0
C32	100 pF		R32	120000 Ω	49 375 37.0
C33	47000 pF	49 127 61.0	R33	1,2 MΩ	49 375 29.0
C34	10000 pF	49 127 57.0	R34	47000 Ω	49 375 42.0
C35	10000 pF	49 128 57.0	R35	39000 Ω	49 375 45.0
C36	100 pF	49 055 28.0	R36	2,2 MΩ	49 377 64.0
C37	100 pF	49 127 19.0	R37	2,2 MΩ	49 377 64.0
C38	113 pF	49 127 57.0	R38	1 MΩ	49 376 60.0
C39	100 pF	49 055 28.0	R39	1,5 MΩ	49 376 62.0
C40	27000 pF	49 127 57.0	R40	0,82 MΩ	49 375 59.0
C41	33000 pF	49 128 57.0	R41		
C42	22 pF	49 020 00.0	R42		
C43	330 pF	49 055 05.0	R43		
C44	4700 pF	49 126 54.0	R44		
C45	1000 pF	49 126 53.0			
C51	22000 pF	49 129 90.0			
C52	0,22 pF	49 128 65.0			
C54	2,12 pF	49 035 61.0			
C55	47000 pF	49 127 61.0			
C56	47000 pF	49 127 61.0			
C57	47000 pF	49 127 61.0			

RF0364

	B1	B2	B3	B4	B5	B7
	EF8	ECH 3B	EBF 2	EL 3	AZ 1	EM4
V _m	150	aH 220 aT 115	225	255	20	
V _{g2}	170	80	35	225		
V _b	0,3	1,2	0	6,2	0	
I _a	7,6	aH 1,4 aT 4,6	4,6	32	6,2 0,1	
I _{g2}	0,2	2,2	1,5	3,1	0,6	

S1, S2, S3, S4	A1 035 44.3		
S5, S6, S7, S8	A1 035 61.1		
S9, S10	A1 035 64.0		
S11, S13, S14	A1 035 62.2		
S15, S16	A1 035 65.1		
S17, S18, S19, S20	A1 035 63.5		
S21, S22	A1 035 66.1		
S23, S24, C31, C32	A1 035 67.3		
S25, S26, S27			
C37, C38	A1 035 68.5		
S28, S29, S30, S31	A1 103 29.0		
S32	28 220 51.0		
S33	A1 000 32.0		

93 950 64.1



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PHILIPS

SERVICE DOCUMENTATION

for receiver

494 A

FOR A.C. MAINS FEEDING.

WAVERANGES

Short wave 1: 13.7—45 m (21.9 — 6.67 Mc)
Short wave 2: 45 —160 m (6.67— 1.87 Mc)
Medium wave: 160 —560 m (875 —535 Ke).

CONTROL KNOBS

From right to left:

1. Tuning.
2. Waveband switch.

3. Volume control with mains switch.

4. Tone control.

DIMENSIONS.

Width: 53.5 cm
Height: 31 cm
Depth: 24 cm } knobs included.

WEIGHT: 11 kg, tubes included.

TRIMMING THE RECEIVER.

Retrimming is necessary:

- a. When a coil or condenser in the I.F., H.F. or oscillator part has been renewed.
- b. When the receiver is not sufficient sensitive or selective. It is not necessary to take the receiver out of its cabinet; all trimmers become accessible after removal of the rear panel and the base plate. The positions of the trimmers are indicated in figs. 4 and 5. As regards the necessary trimming tools vide the list of parts and tools.

On all wavebands the oscillator frequency is higher than the tuning frequency of the H.F. circuits.

The I.F. is 452 kc.

The I.F. bandwidth 1 : 10 is $11\frac{1}{4}$ kc.

The bandwidth at 1000 kc 1 : 10 is $10\frac{1}{4}$ kc.

A. LF. CIRCUITS.

1. Earth the set and switch to medium wave band. Turn the variable condenser to minimum position.
2. Connect the output indicator via a trimming transformer to the extension loudspeaker sockets.
3. Apply a modulated signal of 452 kc via a condenser of 32000 pF to the first grid of L2.
4. Detune the third circuit by connecting a condenser of 80 pF in parallel with S25.
5. Tune S26-S27 to maximum output, then remove detuning condenser from S25.
6. Detune the second circuit by connecting a condenser of 80 pF in parallel with S24.
7. Tune S25 to maximum output.
8. Remove the detuning condenser from S24 and detune the first circuit by connecting a condenser of 80 pF in parallel with S23.
9. Tune S24 to maximum output.
10. Remove the detuning condenser and detune the second circuit by connecting a condenser of 80 pF in parallel with S24.
11. Tune S23 to maximum output. Remove detuning condenser and seal the cores.

B. H.F. AND OSCILLATOR CIRCUITS.

I. SHORT WAVE 1 (13.7—45 m).

1. Earth the set and switch to short wave band 1.
2. Connect the output indicator to the set to be trimmed.
3. Apply to the aerial socket, via the short wave dummy aerial, a modulated signal of 20.5 Mc.
4. Accurately tune the receiver to this frequency by means of the variable condenser (first maximum starting from minimum capacity).

5. Tune C15, C8 to maximum output. Seal trimmers C8, C15.
NOTE. C24 is tuned to a fixed capacity and may not be altered.

II. SHORT WAVE 2 (45—160 m).

1. Fit the 15° gauge.
Switch the set to short wave band 2.
2. Apply a modulated signal of 6.1 Mc via the short wave dummy aerial to the aerial socket.
3. Accurately tune the set to this frequency with the aid of C25, C16 and C9.
4. Seal the trimmers.

III. MEDIUM WAVES (160—560 m).

1. Fit the 15° gauge.
Switch the set to medium waves.
2. Apply a modulated signal of 1740 kc to the aerial socket via the normal dummy aerial.
3. Accurately tune the set to this frequency with the aid of C26, C17 and C10.
4. Connect an auxiliary receiver to the anode of L2 via a condenser of 25 pF, and the output indicator to the auxiliary receiver. Short-circuit C5.
5. Apply to the aerial socket of the set to be trimmed via the normal dummy aerial, a modulated signal of 600 kc.
6. Accurately tune the set to this frequency with the tuning knob.
7. Take away the auxiliary receiver; connect the output indicator to the set to be trimmed. Remove the short-circuit of C5.
DO NOT TURN THE VARIABLE CONDENSER.
8. Tune C30 to maximum output.
9. Turn the variable condenser against the 15° gauge.
10. Apply to the aerial socket of the set to be trimmed, via the normal dummy aerial, a signal of 1740 kc.
11. Tune C26, C17 and C10 to maximum output. Seal C10, C17, C26 and C30.

C. ADJUSTING THE DIAL.

1. Switch the receiver to the medium wave band. Connect the output indicator.
2. Apply to the aerial socket, via a normal dummy aerial, a modulated signal of 857 kc. (350 m).
3. Accurately tune the receiver to this frequency.
4. Slightly loosen the screw on the pointer for attaching the string and move the pointer until it points exactly to 350 m.
5. Tighten the screw.

REPAIRS AND RENEWAL OF PARTS.

For various kinds of repairs it is not necessary to take the receiver out of the cabinet as often removal of the rear panel and the base plate suffices.

TAKING THE CHASSIS OUT OF THE CABINET.

1. Remove the rear panel.
2. Remove the knobs.
3. Unscrew the connection of the chassis with the bottom-screening.
4. Unsolder the connections to the loudspeaker.
5. Take off the tuning cross.
6. Slightly loosen the screw on the pointer for fixing the string, so that the string is released.
7. Unscrew the chassis from the bottom.
8. Slide the chassis out of the cabinet.

After having returned the chassis into the cabinet, the pointer must be correctly adjusted (vide sheet 1 "Adjusting the dial").

RENEWING THE DIAL.

1. Unscrew the 4 screws A (fig. 8).
The ornamental window can now be removed together with the scale, that can now be renewed easily.

RENEWING THE POINTER.

1. Slightly loosen the screw on the pointer for fixing the string, so that the string is released.
2. Undo the lower guide shaft for the pointer by loosening the two nuts near the end of this shaft.
3. Loosen the pointer from the pointer runner and screw on a new one.

NOTE. The new pointer must be covered at the extremities with silk yarn; the length of the covered part is ± 8 mm.

ADJUSTMENT OF THE LINE OF LIGHT.

If the line of light is not clearly defined, this can be corrected by adjusting the distance of the guide shafts till the scale by means of the nuts at the end of the shafts.

MICROFONIC EFFECT.

To avoid microphony, the variable condenser with the driving mechanism is fixed resiliently to the chassis by means of rubber ducts. This combination must therefore always be set up freely.

The following faults may lead to microphony:

1. Rubber ducts worn out.
2. Connections at the variable condenser too stiff or too taught.
3. The fixing strip 18 (fig. 6) is clamped to tight between the bracket on the variable condenser and the bracket on the chassis. This is to be remedied by unscrewing and fixing again the bracket on the variable condenser.

DRIVING CABLES.

The way the driving cables have to run is indicated in fig. 6. Length of the string for driving the pointer 970 mm. Length of the cord for driving the variable condenser 660 mm. The length of the driving strings is measured from fixing point to fixing point. To allow for the loops, the strings must be cut slightly longer.

LIST OF PARTS AND TOOLS.

When ordering parts, please always mention:

1. Codenumber;
2. Description;
3. Typenumber of the receiver.

Fig.	Pos.	Description	Codenumber	Price
7	1	Cabinet (colour 038)	23 661	35.0
7	2	Ornamental window (colour 038)	23 690	47.1
7	3	Stationnamedial	A1 896	38.0
		Stationnamedial for British India	A1 896	39.0
		Stationnamedial for South-Africa	A1 896	40.0
		Stationnamedial for the Mediterranean	A1 896	41.0
7	4	Knob for wavebandswitch (colour 038)	23 613	02.0
7	5	Knobs, other than pos. 4 (colour 038)	23 612	29.0
7	6	Wooden panel	A1 981	38.1
7	7	Loudspeakercloth	06 601	40.0
7	8	Decorative strip (long one)	A1 343	28.0
7	9	Decorative strip (short one)	A1 343	27.0
		Trade mark	28 713	27.1
		Rear panel	A1 356	84.0
8	10	Glass pointer	57 027	76.0
8	11	Screw for fixing the shafts for guiding the pointer	A1 854	62.0
8	12	Flat spring under the two higher screws of pos. 11	A1 978	92.1
8	13	Spiral spring under the two lower screws of pos. 11	A1 973	18.0
6	37	Driving drum	23 687	13.1
6	32	Spring for the pointerstring	28 740	59.0
6	31	Spring for the driving cord	28 740	51.0
6	34	Vernier unit	A1 322	06.0
6	35	Flat spring for pos. 34	28 751	81.1
6	36	Fibre strip for pos. 34	28 681	11.1
6	39	Cogwheel	A1 346	10.0
6	38	Spring for pos. 39	28 730	85.0
6	33	Shaft for wavebandswitch	A1 436	68.0
		Switch element no. 1	49 543	08.1
		Switch element no. 2	49 543	30.1
		Switch element no. 3	49 543	44.0
		Mains voltage connecting plate	28 875	39.0
		Valveholder for L2 (colour 344)	28 839	81.0
		Gramophone switch	A1 133	35.0
		Rubber grommet under the variable condenser	28 725	52.0
		LOUDSPEAKER.		
		Service clamping ring	25 871	81.0
		Paper ring	28 451	54.0
		Cone with coil	28 220	51.1
		TOOLS.		
		Service oscillator	GM 2880F	
		Universal Measuring Apparatus	GM 4256	
		Universal and Valve Measuring Apparatus	GM 7629	
		15°-gauge	09 992	44.0
		Centring-gauge for loudspeaker	09 991	53.0
		Insulated trimming screw driver	M646	38.2
		Insulated trimming key 6 mm	23 685	66.0

COILS.

	Value	Codenumber	Price		Value	Codenumber	Price
S1	—			S21	2 Ohm {	A1 035	66.1
S2	200 Ohm {			S22	5.5 Ohm {		
S3	< 1 Ohm {	A1 055	44.3	S23	7 Ohm {		
S4	< 1 Ohm {			S24	7 Ohm {	A1 035	67.1
S5	3 Ohm {			C31	100 pF {		
S6	< 1 Ohm {	A1 035	61.1	C32	106 pF {		
S7	7 Ohm {			S25	10 Ohm {		
S8	0.8 Ohm {			S26			
S9	20 Ohm {	A1 035	64.0	S27	6 Ohm {	A1 035	68.2
S10	4 Ohm {			C37	106 pF {		
S12	< 1 Ohm {			C38	113 pF {		
S13	< 1 Ohm {	A1 035	62.2	S28	600 Ohm {		
S14	< 1 Ohm {			S29	< 1 Ohm {	A1 103	29.0
S15	3 Ohm {	A1 035	65.1	S30	230 Ohm {		
S16	< 1 Ohm {			S31	230 Ohm {		
S17	< 1 Ohm {			S32	4 Ohm	28 220	51.1
S18	< 1 Ohm {	A1 035	63.5	S35	700 Ohm	A1 000	32.0
S19	1 Ohm {						
S20	< 1 Ohm {						

RESISTANCES.

	Value	Codenumber	Price
R1	1800 Ohm	49 356	30.0
R2	0.82 M.Ohm	49 375	59.0
R3	39 Ohm	49 375	07.0
R4	10000 Ohm	49 377	36.0
R5	0.15 M.Ohm	49 375	50.0
R6	3.3 Ohm	49 377	66.0
R7	150 Ohm	49 375	14.0
R8	0.1 M.Ohm/2	49 377	48.0
R9	50,000 Ohm	49 375	16.0
R10	220 Ohm	49 375	42.0
R11	2×10,000 Ohm	49 376	36.0
R12	20,000 Ohm	49 376	36.0
R13	5.6 M.Ohm	49 377	69.0
R14	47000 Ohm	49 375	44.0
R15	47000 Ohm	49 375	44.0
R16	22000 Ohm	49 375	40.0
R17	68000 Ohm	49 375	46.0
R17a	0.65 M.Ohm	49 500	19.0
R18	0.2 M.Ohm	49 375	19.0
R19	1000 Ohm	49 375	24.0
R20	1 M.Ohm	49 376	60.0
R21	180 Ohm	49 376	15.0
R22	47000 Ohm	49 375	44.0
R23	1.5 M.Ohm	49 376	62.0
R24	82000 Ohm	49 375	47.0
R25	1800 Ohm	49 375	27.0
R26	0.35 M.Ohm	49 470	31.0
R28	5.6 M.Ohm	49 377	69.0
R29	12000 Ohm	49 375	37.0
R30	12000 Ohm	49 375	37.0
R31	2700 Ohm	49 375	29.0
R32	47000 Ohm	49 375	44.0
R33	39000 Ohm	49 375	43.0
R40	2.2 M.Ohm	49 377	64.0
R41	2.2 M.Ohm	49 377	64.0
R42	1 M.Ohm	49 376	60.0
R43	1.5 M.Ohm	49 376	62.0
R44	0.82 M.Ohm	49 375	59.0

TUBES.

L1	L2	L3	L4	L5	L6	L7
EF8	ECH3 B	EBF2	EL3	AZ1	8091 D-00	EM4

CURRENTS AND TENSIONS.

	Va	Va tr.	Vg2	Vkath	Ia	Ia tr.	Ig2
L1	150		170	0.3	7.6		0.2
L2	220	115	80	1.2	1.4	4.6	2.2
L3	225		85	0	4.6		1.5
L4	255		225	6.2	32		3.1
L7	20		225	0	0.2 and 0.1		0.6

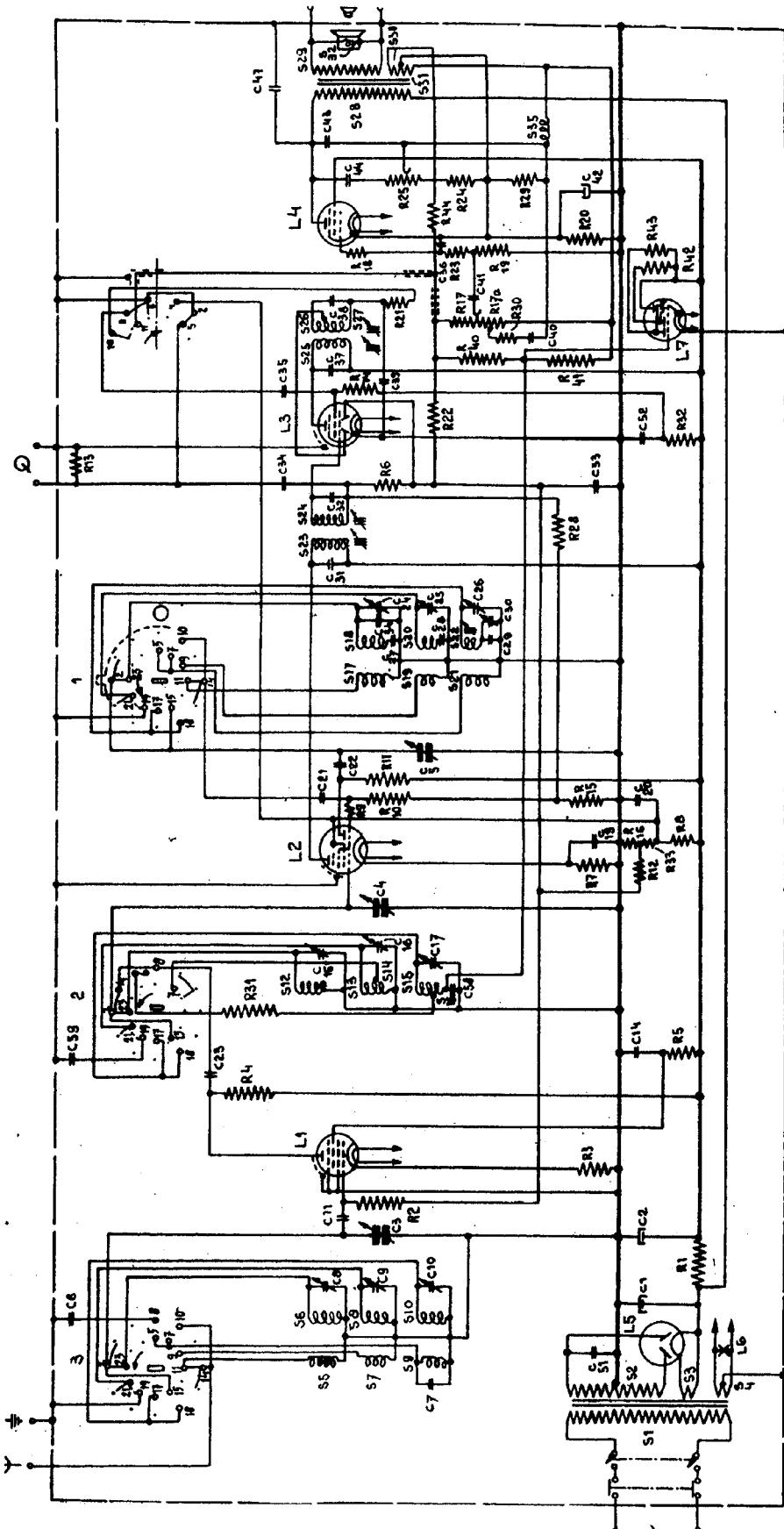
Vel = 275 V. Ve2 = 225 V.

Primary consumption = 50 Watt.

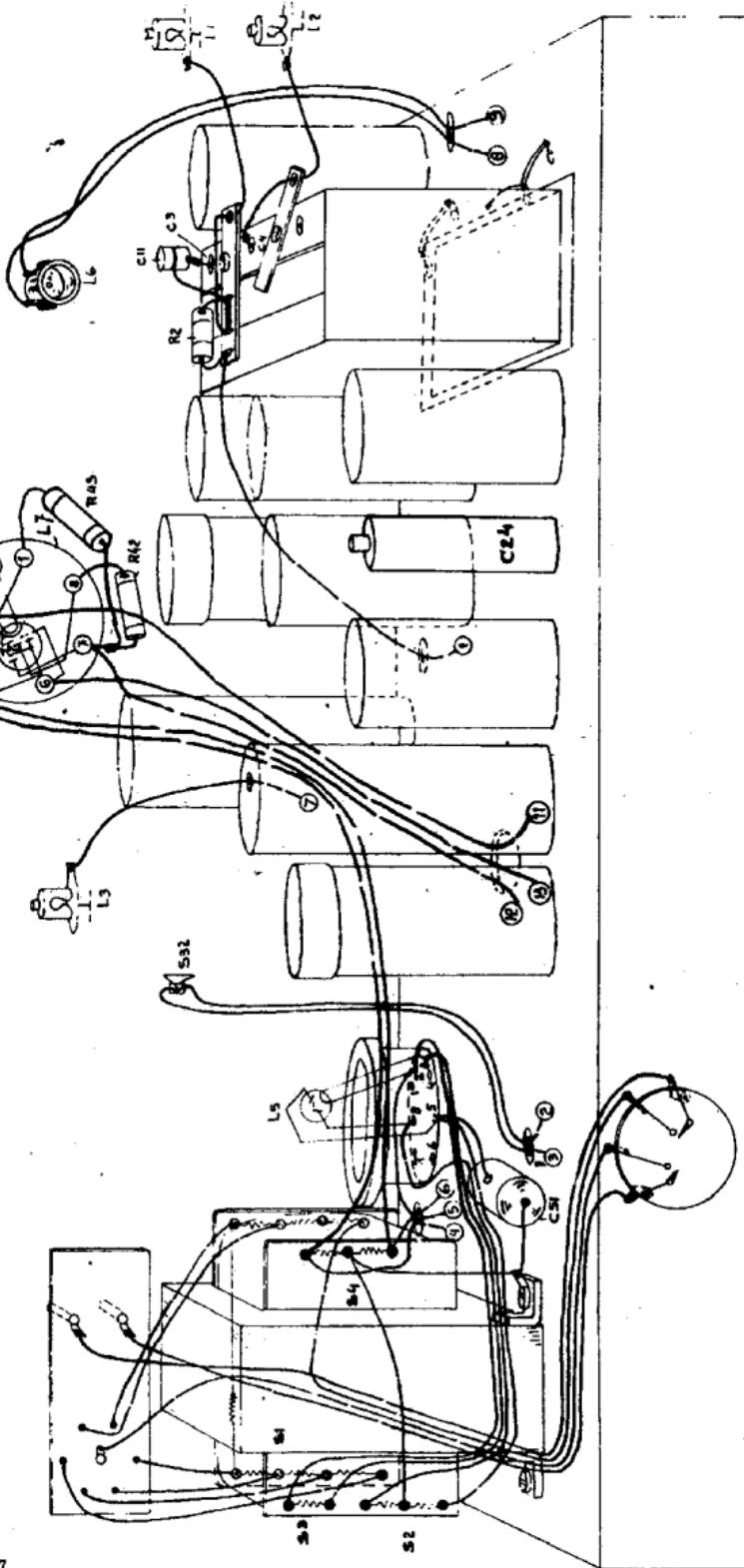
CONDENSERS.

	Value	Codenumber	Price
C1	48 μ F	49 025	22.0
C2	48 μ F	49 025	22.0
C3	11—490 pF	49 000	09.0
C4	11—490 pF	49 000	09.0
C5	11—490 pF	49 000	09.0
C6	10000 pF	49 127	14.0
C7	68 pF	49 005	48.0
C8	20 pF	49 005	03.0
C9	20 pF	49 005	03.0
C10	20 pF	49 005	03.0
C11	100 pF	49 055	49.0
C14	10000 pF	49 128	57.0
C15	20 pF	49 005	03.0
C16	20 pF	49 005	03.0
C17	20 pF	49 005	03.0
C19	10000 pF	49 127	14.0
C20	0.1 μ F	49 128	63.0
C21	100 pF	49 055	28.0
C22	150 pF	49 055	30.0
C23	220 pF	49 055	32.0
C24	20 pF	49 005	13.0
C25	20 pF	49 005	05.0
C26	20 pF	49 005	03.0
C27	5750 pF	28	195.60
C28	1600 pF	49 080	34.0
C29	400 pF	49 057	00.0
C30	125 pF	28	212.07
C31	100 pF	Vide "Coils"	
C32	106 pF		
C33	47000 pF	49 127	61.0
C34	10000 pF	49 127	57.0
C35	10000 pF	49 128	57.0
C36	100 pF	49 055	28.0
C37	106 pF	Vide "Coils"	
C38	113 pF		
C39	100 pF	49 055	28.0
C40	27000 pF	49 127	19.0
C41	3300 pF	49 128	08.0
C42	25 μ F	49 020	00.0
C43	330 pF	49 055	05.0
C44	4700 pF	49 126	54.0
C47	1000 pF	49 128	53.0
C51	22000 pF	49 129	90.0
C52	0.22 μ F	49 128	65.0
C54	2×2.2 pF par.	49 055	61.0
C58	47000 pF	49 127	61.0
C59	47000 pF	49 127	61.0

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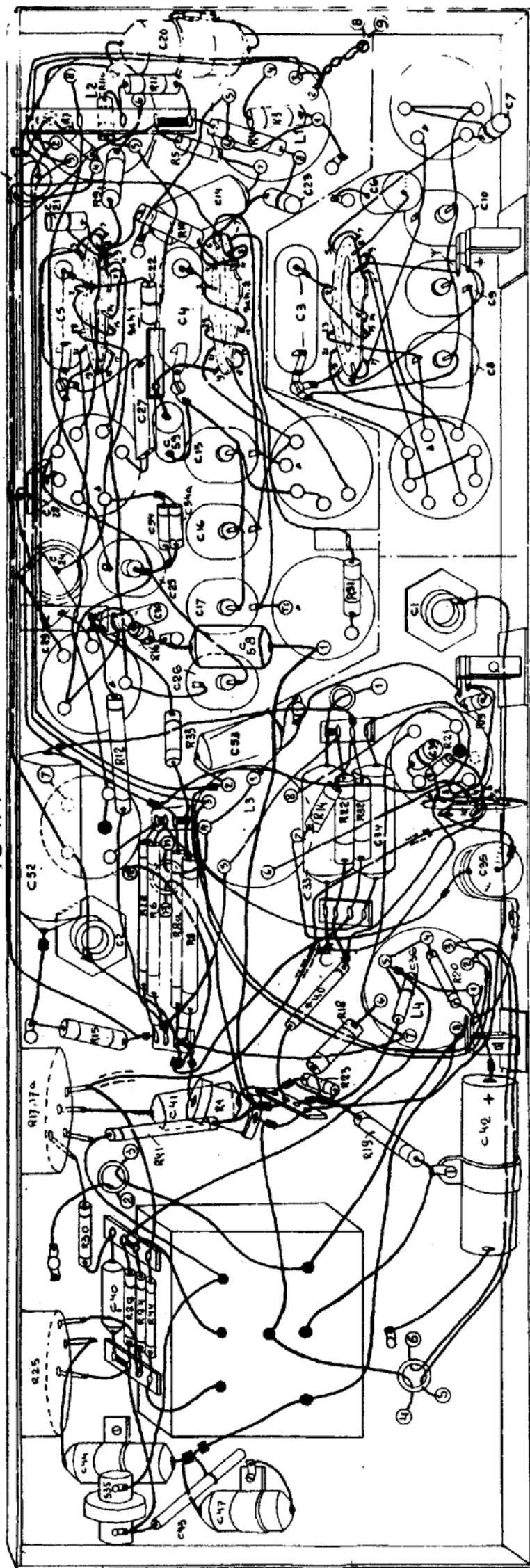


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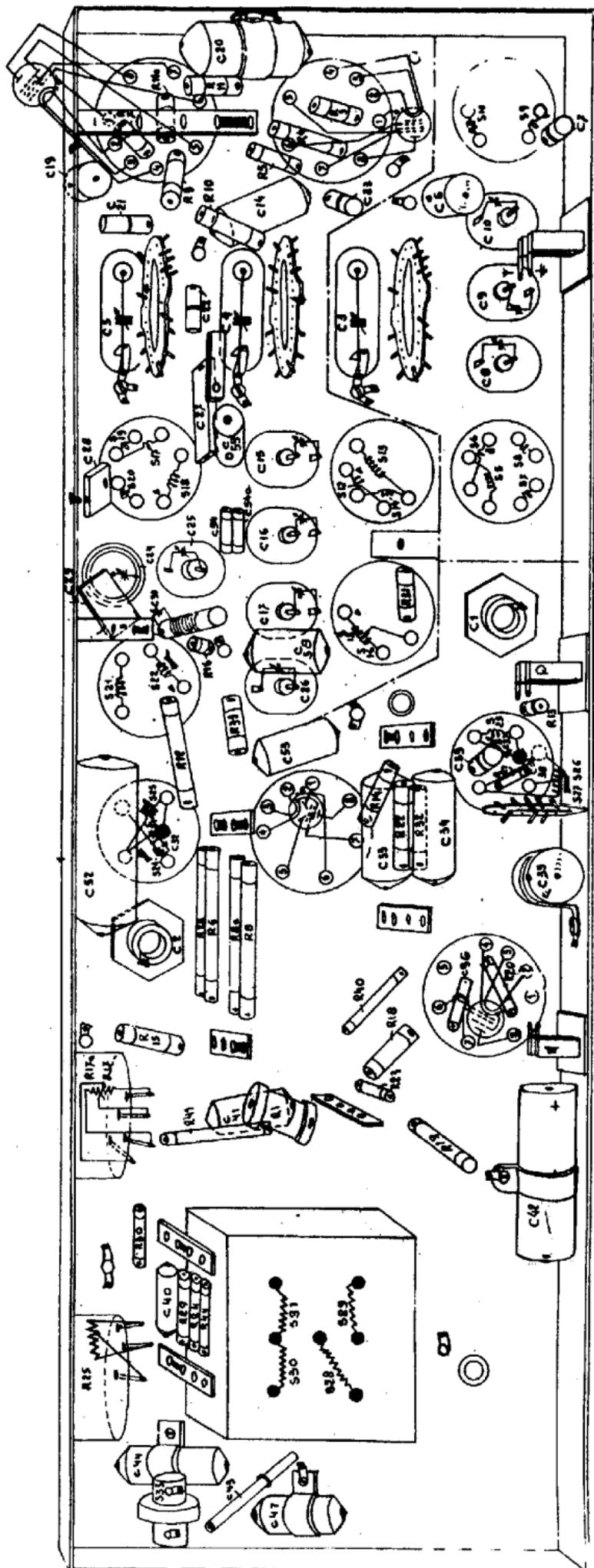
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Fig



494A

5	35	52-28-31-32	49-31-41-35-34-33-35-31-30-22-16	5	49-50-51-52-53-54-55-56-57-58-59	49-50
C.	47-3	49-	40-	36-	30-31-32-33-34-35-36-37-38-39-30	47-50
Q.	25.	49-42-39-	30-	41-43-45-47-48-49-50-51-52-53-54-55-56-57-58-59	49-50	51-52-53-54-55-56-57-58-59



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Fig. 4

494 A

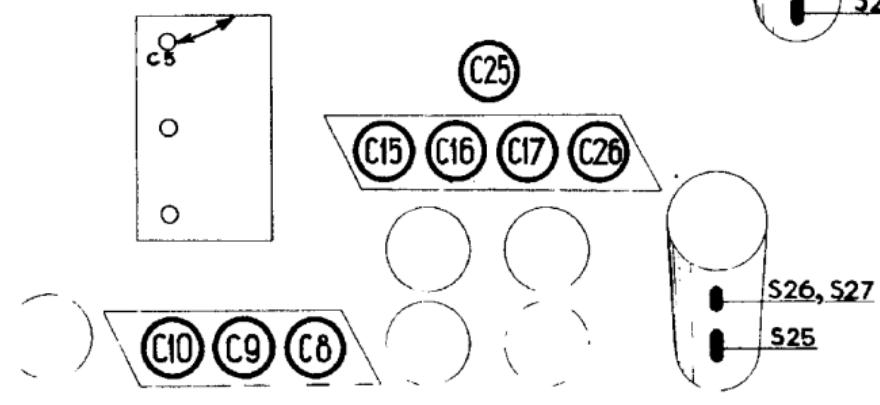


Fig 5

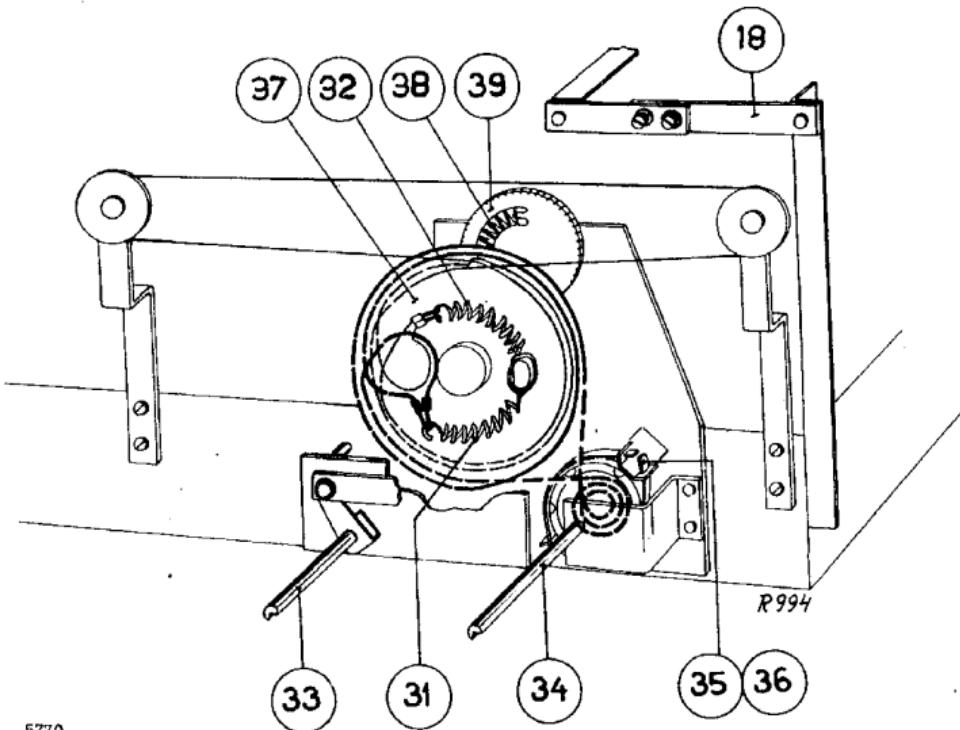


Fig 6

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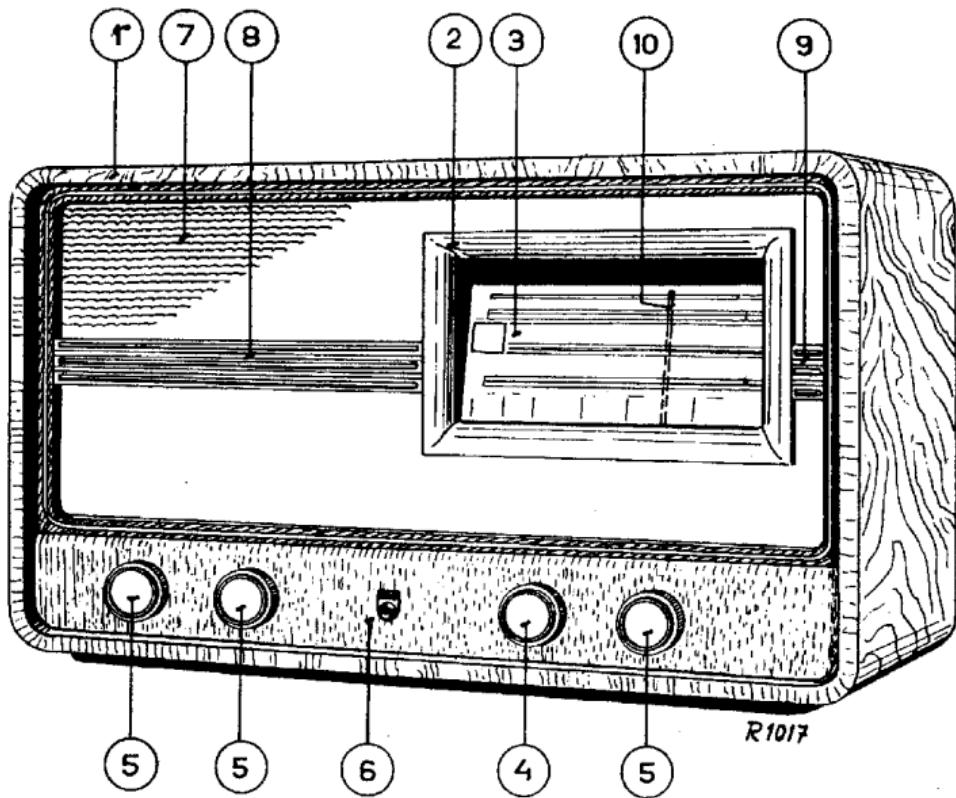


Fig 7

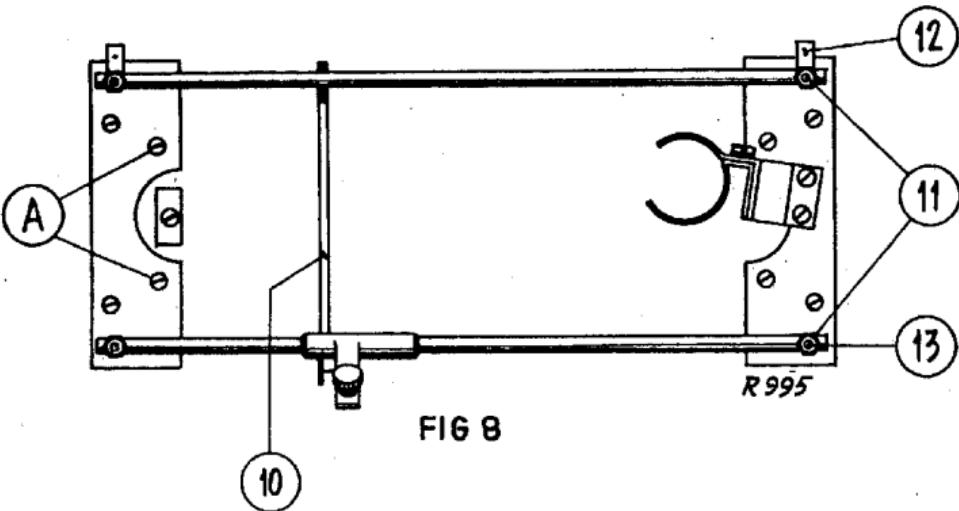


FIG 8