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Despite the above, we will be making copies of essential technical information (circuit diagram, parts list, layout) freely available to all via our website from late 2004 onwards. This will be done to try and encourage and enable the maintenance of our remaining stock of vintage electronic equipment.

Guidance on using this electronic document

Acrobat Reader version

You need to view this document with Acrobat Reader **version 5.0** or later. It is possible that the document might open with an earlier version of the Acrobat Reader (thus allowing you to get this far!), but is also likely that some pages will not be shown correctly. You can upgrade your Acrobat Reader by direct download from the internet at http://www.adobe.com/products/acrobat/readermain.html or going to http://www.adobe.com/ and navigating from there.

Don't miss the index!

This document has had "bookmarks" added – which provide you with an "on-screen index". These allow you to quickly move to particular parts of the document, a numbered section or maybe the circuit diagrams for instance, merely by clicking on the page title. Click on the "Bookmarks" tab on the left hand side of the Acrobat Viewer window to access this feature – move the cursor over these titles and notice it change shape as you do so. Click on any of these titles to move to that page.

Large diagrams

The large diagrams are given in two formats – in A4 size sheets to allow easy printing, and complete as originally published to allow easy on-screen viewing. These versions are in different sections of the document, which can be found within the bookmarks.

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The document has been optimised for printing on A4 size paper (this is the common size available in UK and Europe, which measures 29.7cm by 21.0cm). Please follow these steps (these are based on Acrobat Reader version 6.0 – other versions may differ in detail):

1. Work out the page numbers you want to print. If you want to print the whole document, then within "Bookmarks" (see above), first click on "**Front**", and note the page number given at the bottom of the Acrobat window – this will give you the page number of the first page to be printed. Similarly click on "**End of A4 printable copy**", to determine the last page to be printed.

2. Select "File – Print" or click on the printer icon. This will bring up the print dialog box.

3. Select the correct printer if necessary.

4. In the area marked "Print Range" click on the radio button marked "Pages from..", then enter the first and last page numbers worked out in step 1 into the "from" and "to" boxes.

5. In the "Page Handling" area, next to "Page Scaling", select "Fit to paper". The press "OK"

Note that the document is set up for double-sided printing – if you print it out single-sided then you will find a number of blank pages present, which may be removed and reused.

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Since A4 and US Letter sizes are similar, it is expected that this document should print satisfactorily on the latter format paper. This has not been tested however, and is not guaranteed. Follow the steps as for A4 printing, and make doubly sure that "Fit to paper" is selected (step 5).

Any other problems?

Please get in touch with me at archivist@vmarsmanuals.co.uk.

Richard Hankins, VMARS Archivist, Summer 2004

OSCILLATOR TEST NO. 1

TECHNICAL HANDBOOK - FAULT FINDING AND REPAIR DATA

Index to Figures

Index to Tables

This EMER contains fault finding and repair data in tabular and diagrammatic form for ready reference. The text describing how various operations are to be carried out will be found in the appropriate EMERs dealing with unit, field and base repairs.

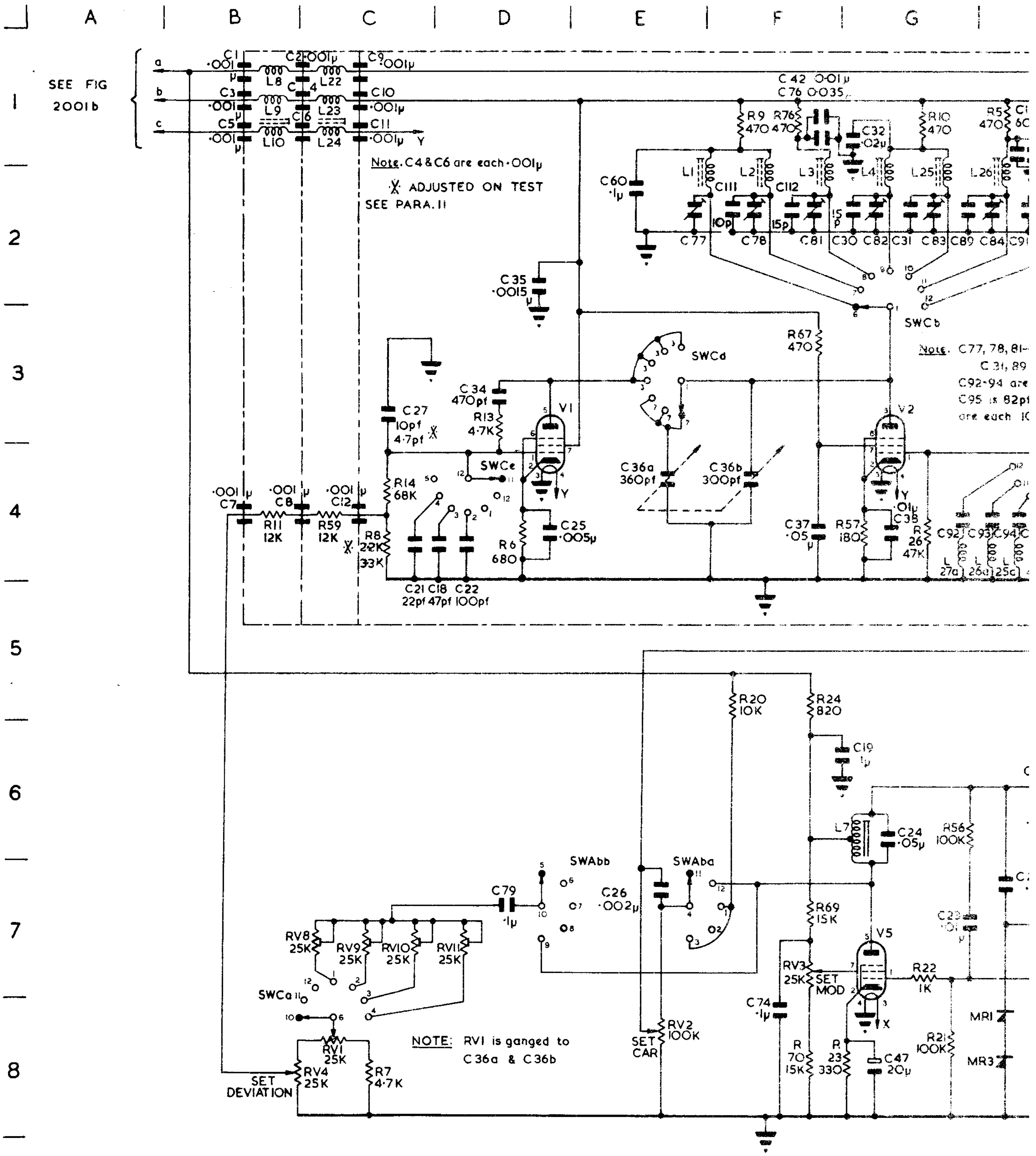
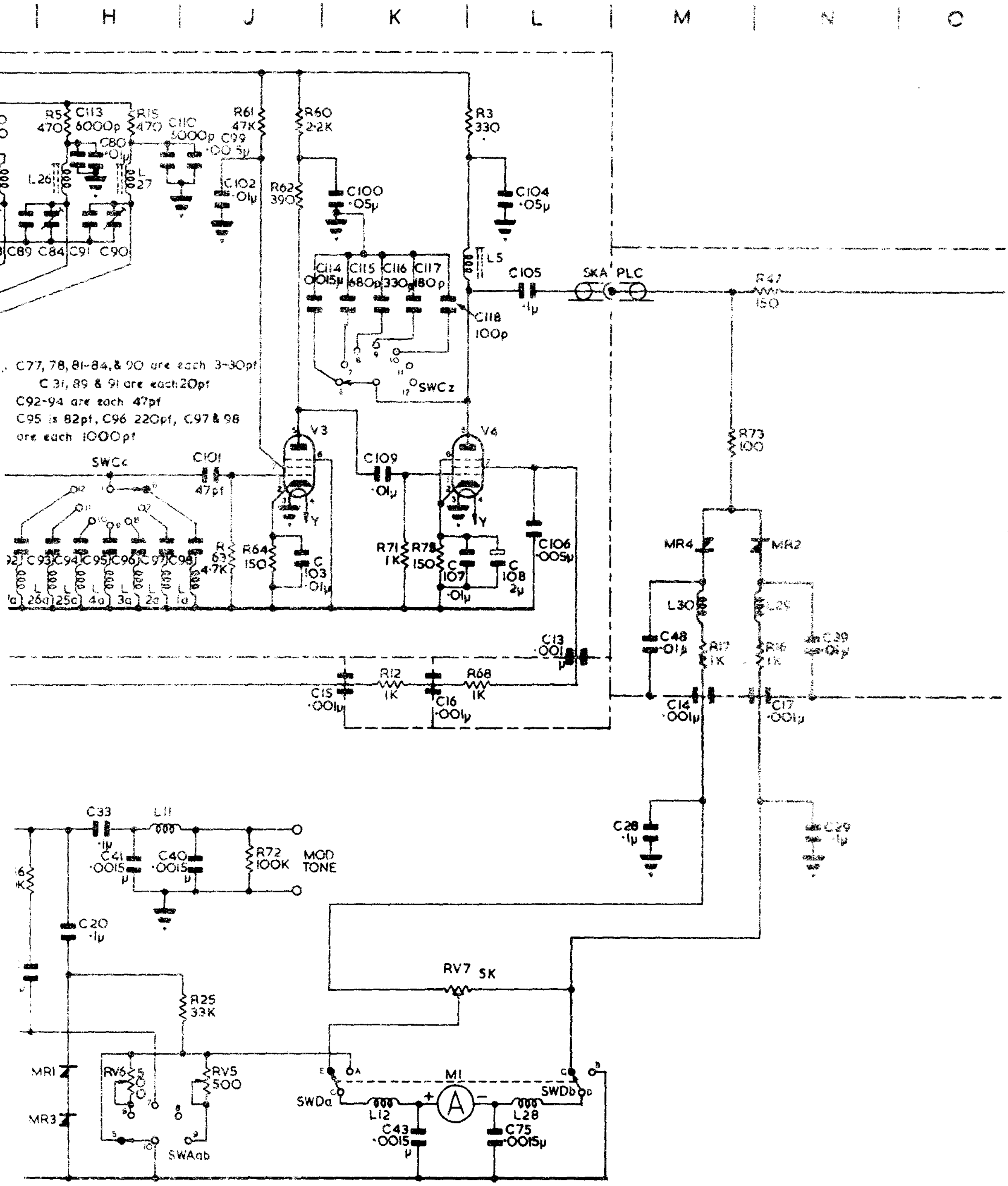
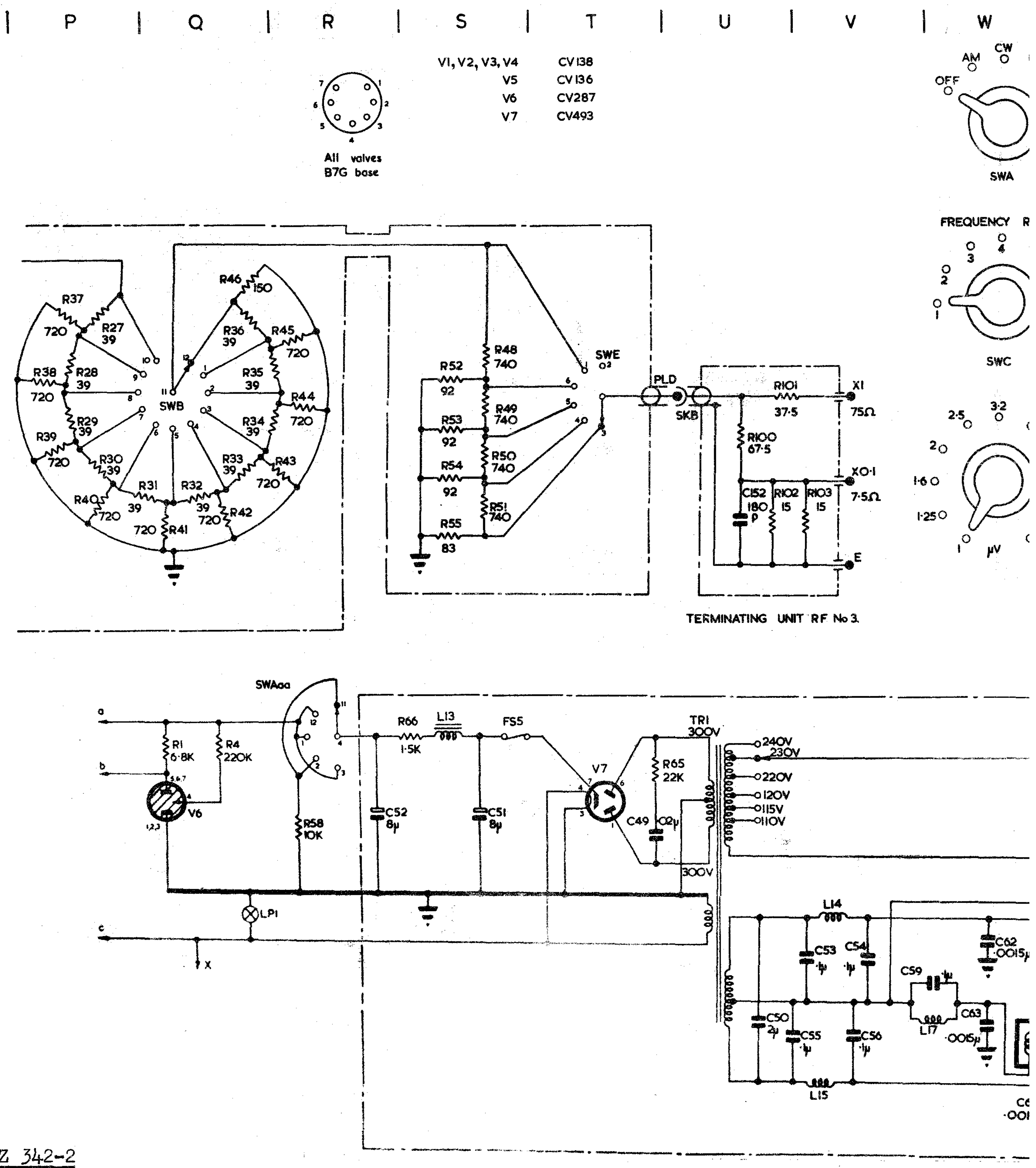


Fig. 2001(a) - Test oscillator No. 1 -

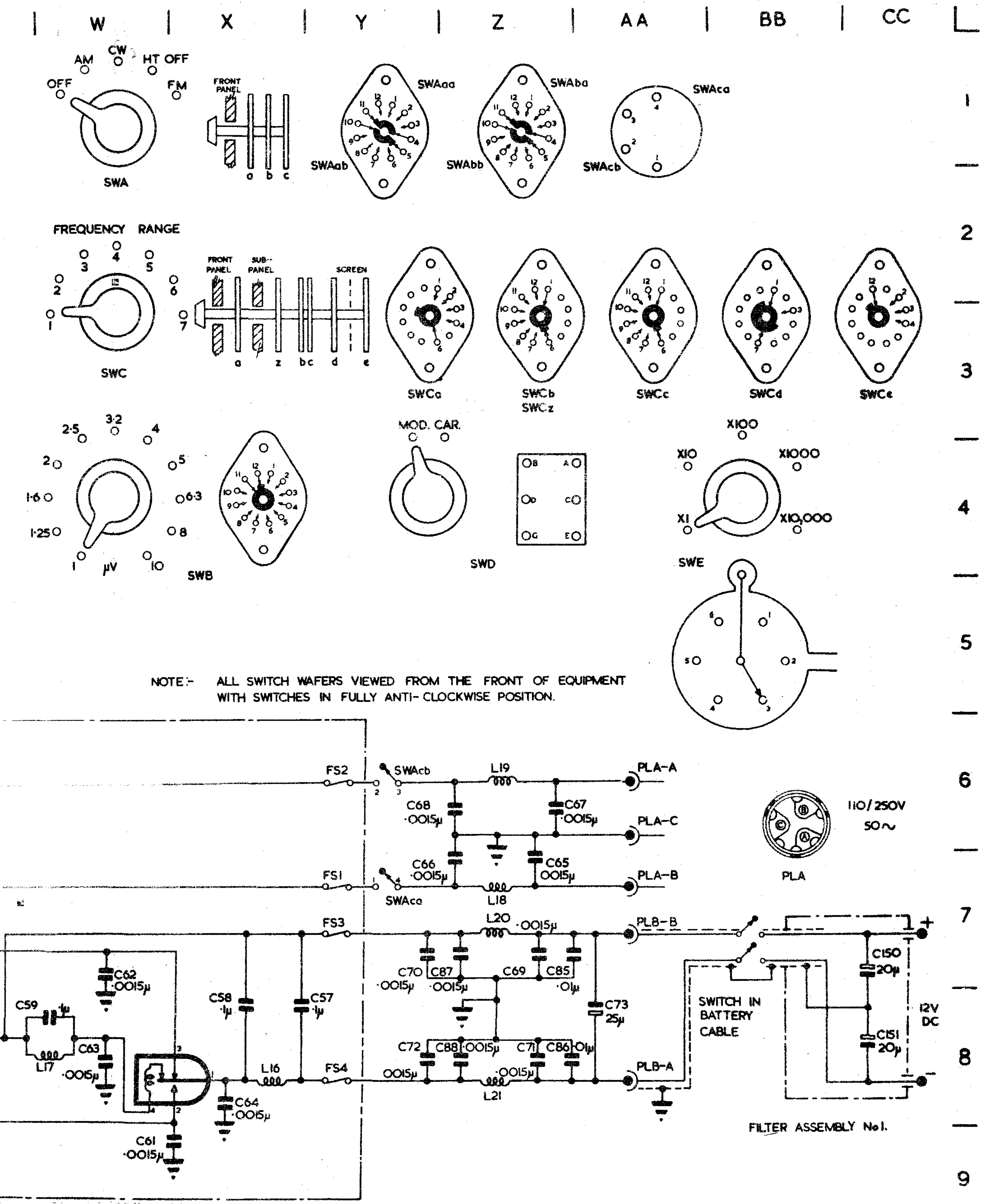


. 1 - Circuit Diagram

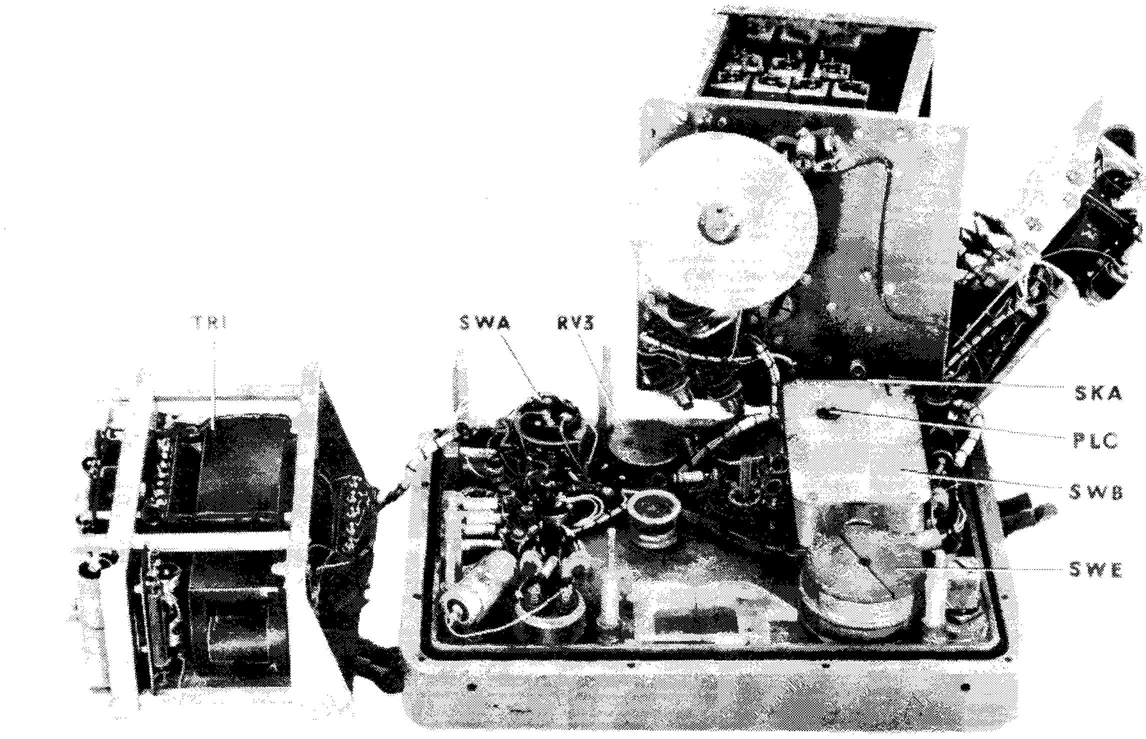


Z 342-2
T1-2001(b)

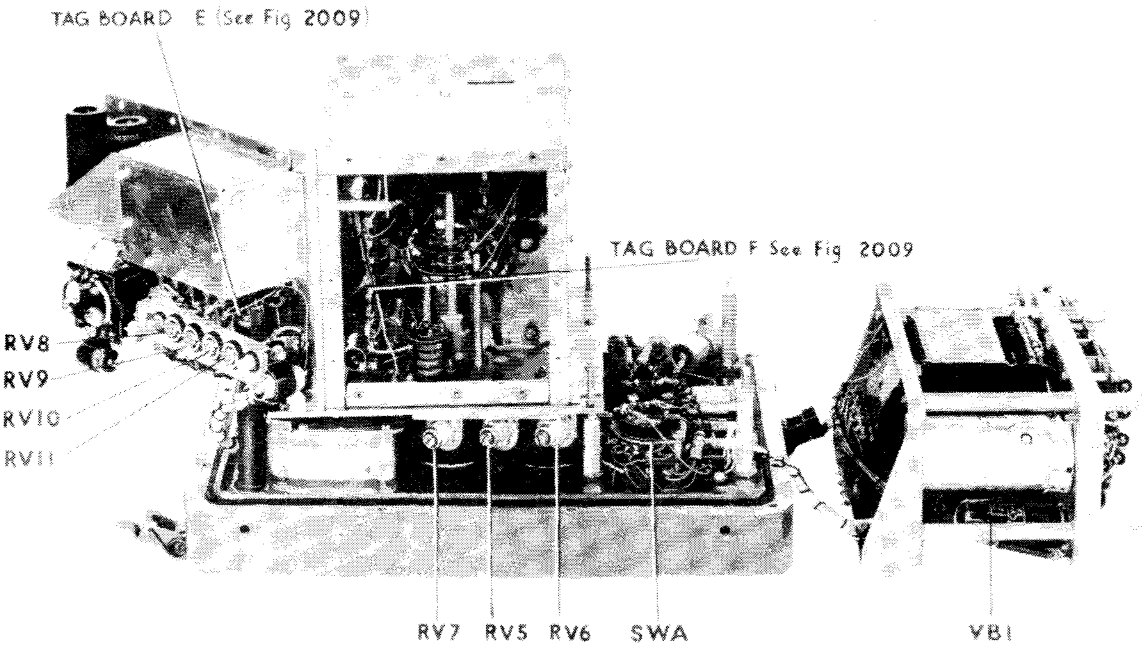
Fig. 2001(b) - Test Oscillator No. 1 - C



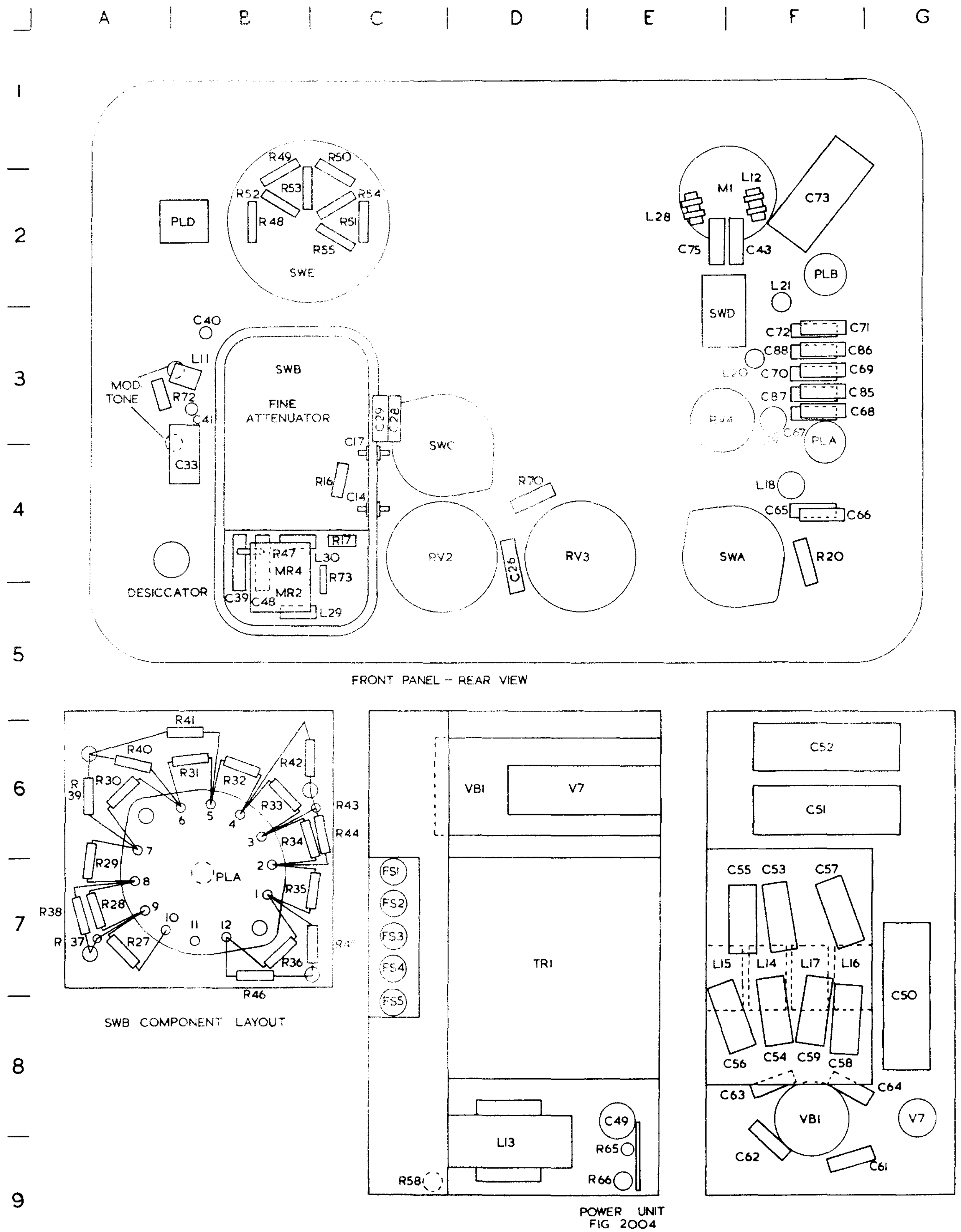
ator No. 1 - Circuit Diagram



T Z342-2 / 1-2002 Fig. 2002 - Test oscillator No. 1 - Exploded view of Sub-assemblies - Top view

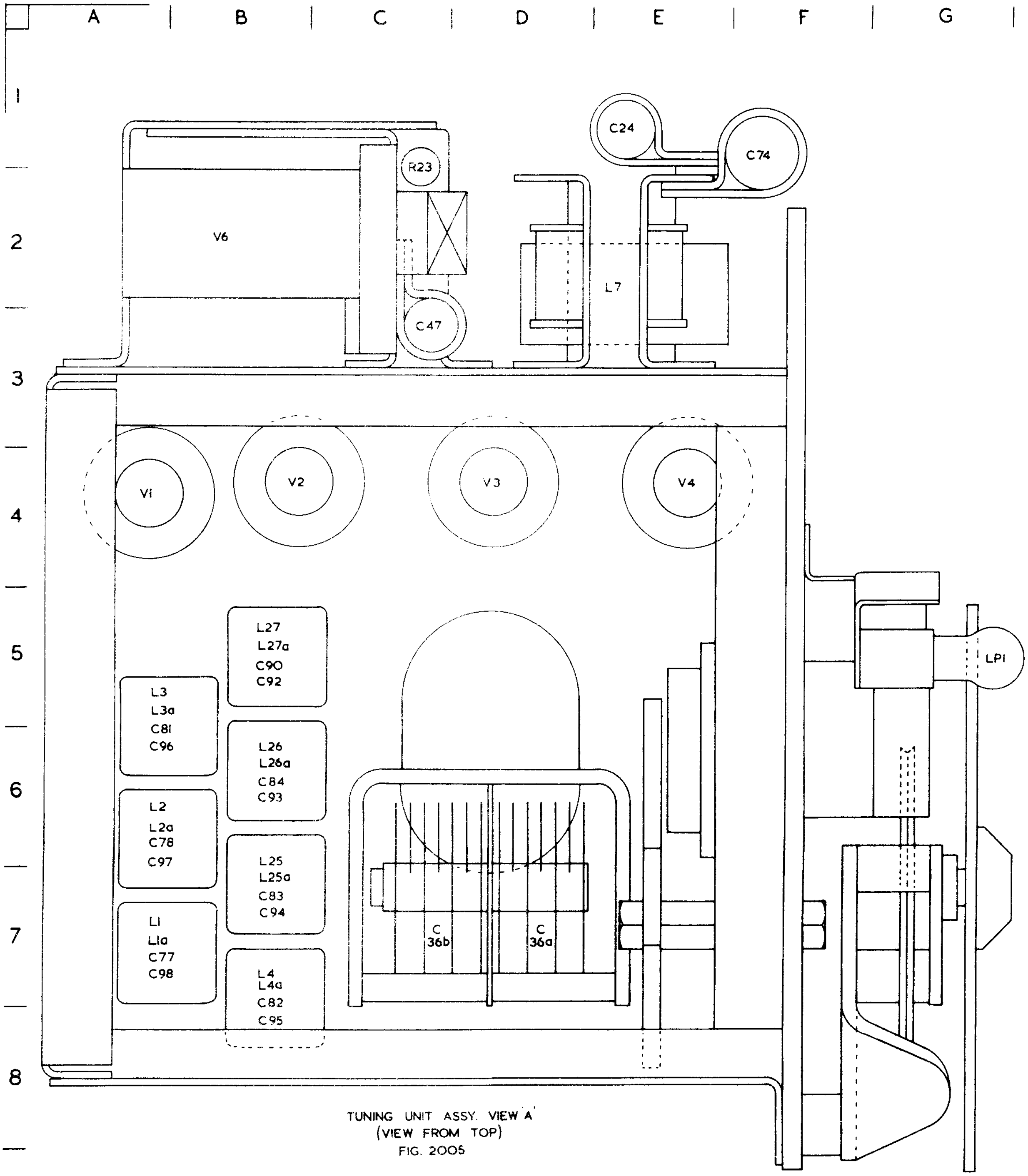


T Z342-2 / 1-2003 Fig. 2003 - Test oscillator No. 1 - Exploded view of Sub-assemblies - Bottom view



T Z 342-2
1-2004

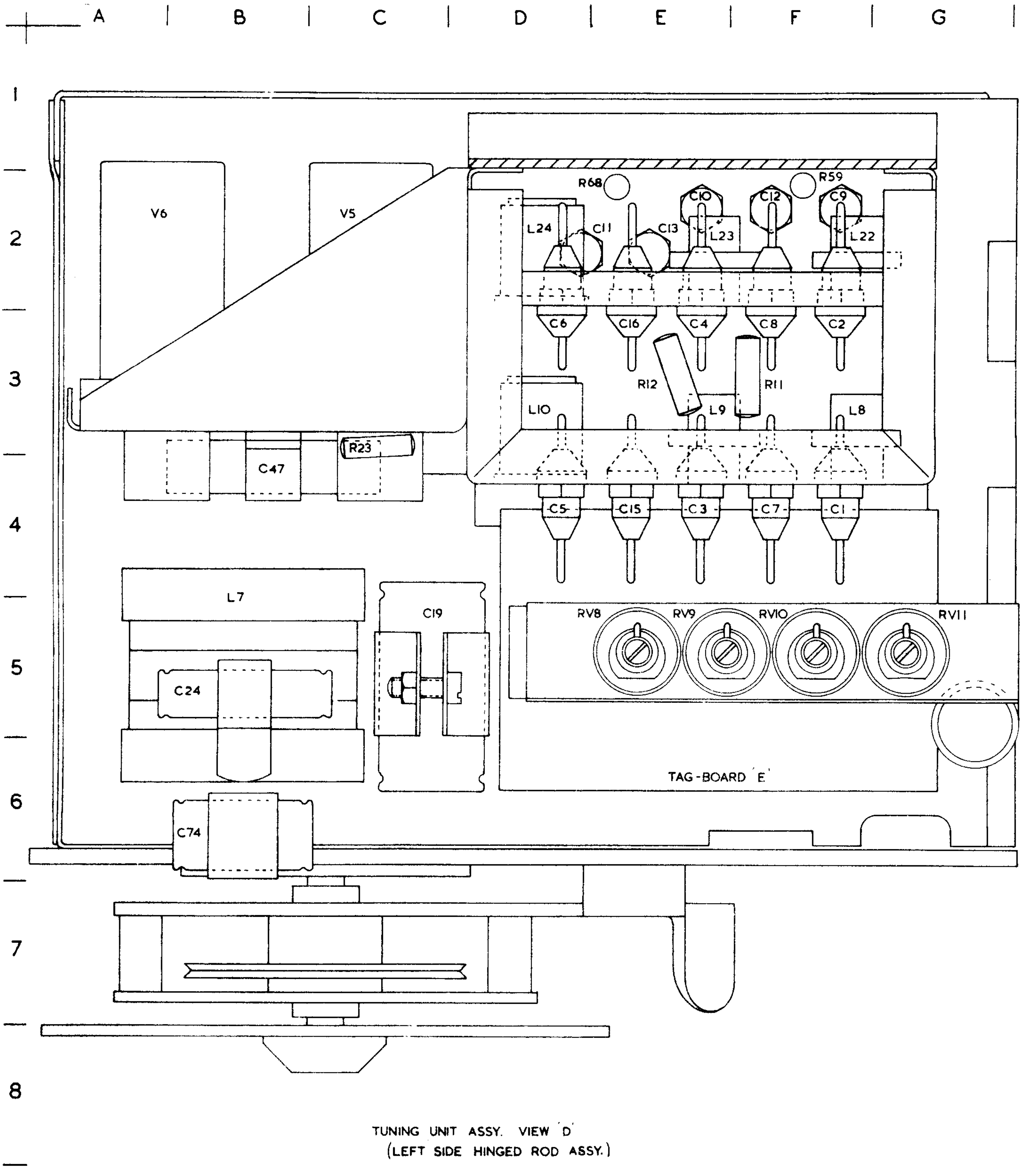
Fig. 2004 - Test oscillator No. 1 - component layout



TUNING UNIT ASSY. VIEW 'A'
(VIEW FROM TOP)
FIG. 2005

T Z 342-2 / 1-2005

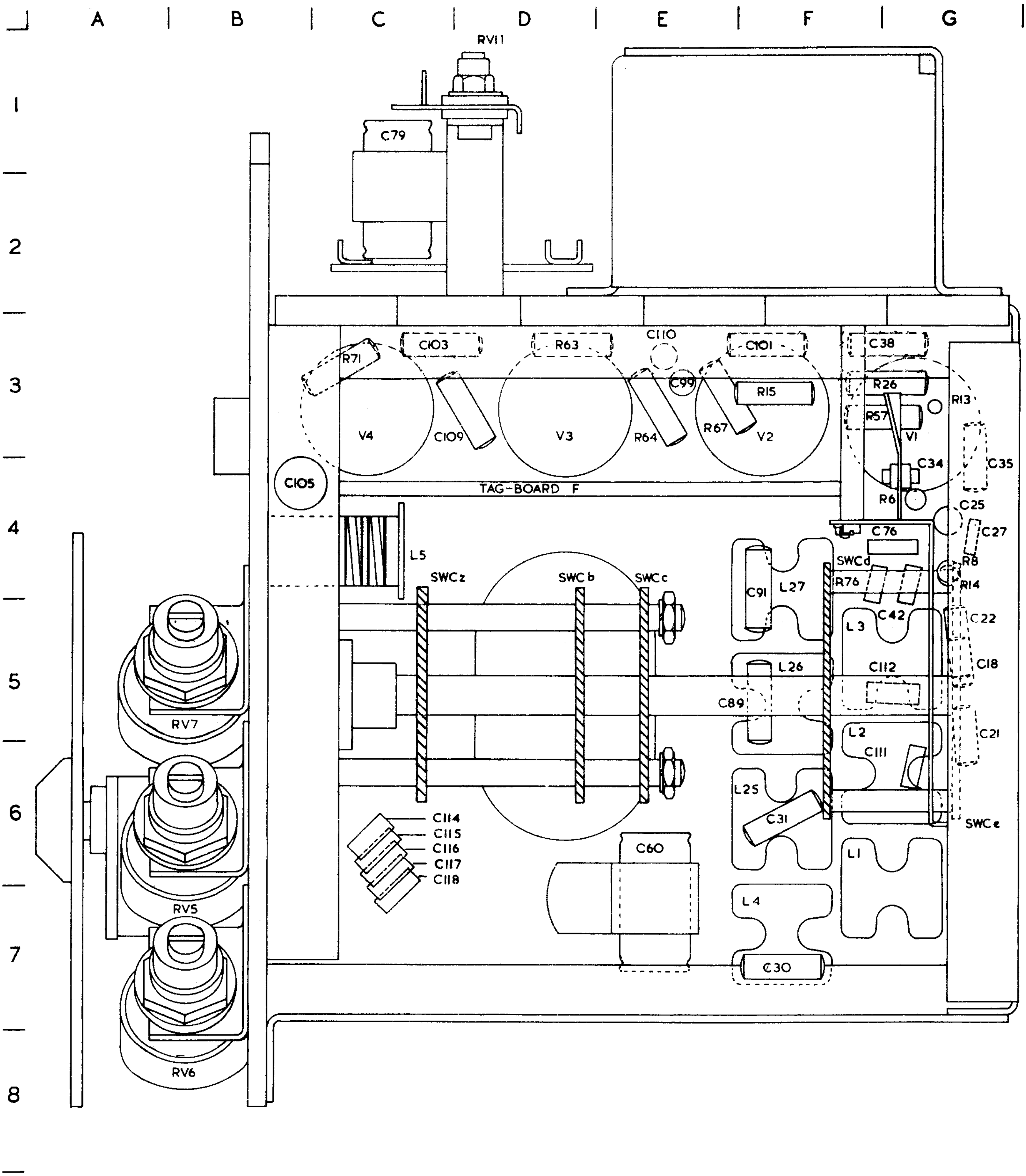
Fig. 2005 - Tuning unit assembly - top view



TUNING UNIT ASSY. VIEW 'D'
(LEFT SIDE HINGED ROD ASSY.)

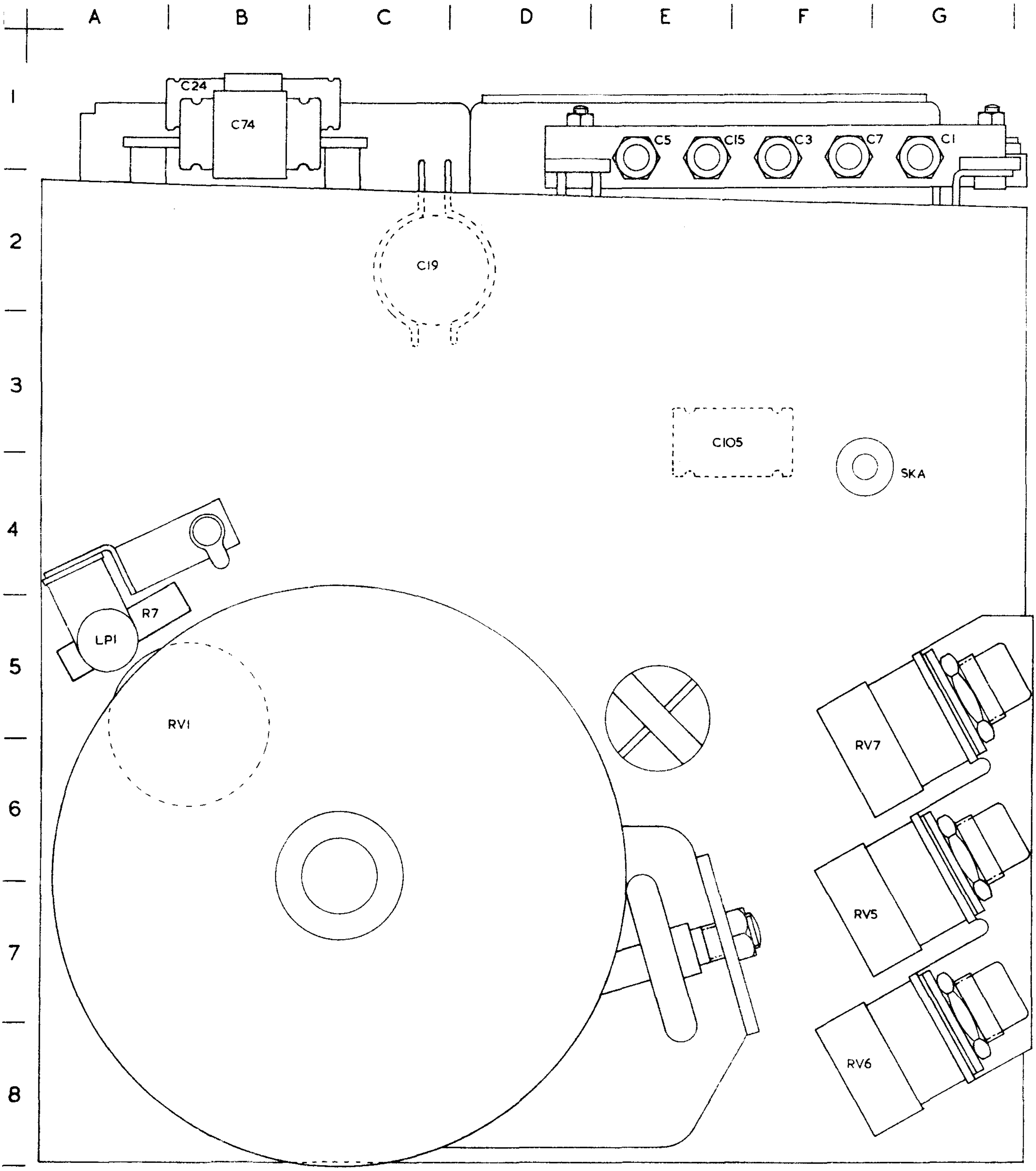
T Z 342-2 / 1-2006

Fig. 2006 - Tuning unit assembly - L.H. side view



T Z 342-2
1-2007

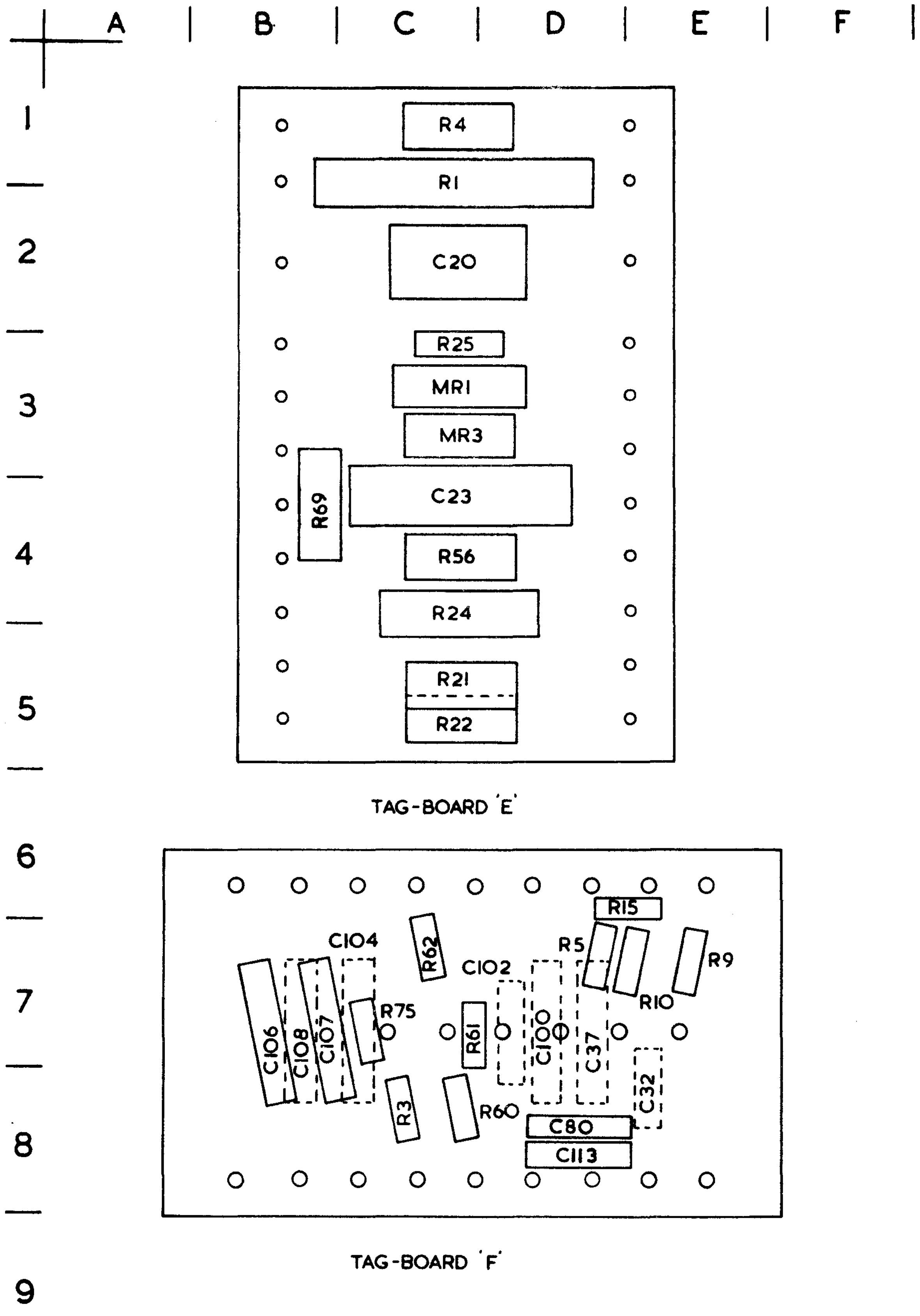
Fig. 2007 - Tuning unit assembly - bottom view



TUNING UNIT ASSY. VIEW 'B'
(FRONT VIEW)
FIG. 2008

T Z 342-2 / 1-2008

Fig. 2008 - Tuning unit assembly - front view



TZ 342-2
1-2009

Fig. 2009 - Tag boards (see Fig. 2003)

Test oscillator No. 1

Table 2001. List of components

Circuit reference	Location of components Circuit diagram	Layout diagram	Value	Rating	Tolerance and type
RESISTORS					
R1	1Q6	9C1	6.8K	4.5W	±5% Wirewound vitreous
R3	1K1	9C8	330	½W	±10% Comp. ins. Gr. 2
R4	1Q6	9C1	220K	½W	±10% Comp. ins. Gr. 2
R5	1H1	9D7	470	½W	±10% Comp. ins. Gr. 2
R6	1D4	7G4	680	½W	±10% Comp. ins. Gr. 2
R7	1C8	8K5	4.7K	½W	±10% Comp. ins. Gr. 2
R8*	1C4	7G4	3.3K or 2.2K	½W	±10% Comp. ins. Gr. 2
R9	1F1	9E7	470	½W	±10% Comp. ins. Gr. 2
R10	1G1	9D7	470	½W	±10% Comp. ins. Gr. 2
R11	1B4	6F3	12K	½W	±10% Comp. ins. Gr. 2
R12	1K5	6E3	1K	½W	±10% Comp. ins. Gr. 2
R13	1D3	7G3	4.7K	¼W	±5% High stab. comp.
R14	1C4	7C4	68K	½W	±10% Comp. ins. Gr. 2
R15	1H1	9D6 7F3	470	½W	±10% Comp. ins. Gr. 2
R16	1N5	4C4	1K	¼W	±5% High stab. comp.
R17	1M5	4C4	1K	¼W	±5% High stab. comp.
R20	1F5	4F4	10K	¾W	±10% Comp. ins. Gr. 2
R21	1G8	9C5	100K	½W	±10% Comp. ins. Gr. 2
R22	1G7	9C5	1K	½W	±10% Comp. ins. Gr. 2
R23	1G8	6C3 5C1	330	½W	±10% Comp. ins. Gr. 2
R24	1F5	9C4	820	¾W	±10% Comp. ins. Gr. 2
R25	1J7	9C3	33K	¼W	±5% High stab. comp.
R26	1E4	7G3	47K	½W	±10% Comp. ins. Gr. 2
R27	1P3	4A7	39	¼W	±5% High stab. comp.
R28	1P3	4A7	39	¼W	±5% High stab. comp.
R29	1P3	4A7	39	¼W	±5% High stab. comp.
R30	1P4	4A6	39	¼W	±5% High stab. comp.
R31	1P4	4B6	39	¼W	±5% High stab. comp.
R32	1Q4	9E9 4B6	39	¼W	±5% High stab. comp.
R33	1Q4	4B6	39	¼W	±5% High stab. comp.
R34	1Q4	4B6	39	¼W	±5% High stab. comp.
R35	1Q3	4C7	39	¼W	±5% High stab. comp.
R36	1Q3	4B7	39	¼W	±5% High stab. comp.
R37	1P3	4A7	720	¼W	±5% High stab. comp.
R38	1P3	4A7	720	¼W	±5% High stab. comp.
R39	1P4	4A6	720	¼W	±5% High stab. comp.
R40	1P4	4A6	720	¼W	±5% High stab. comp.
R41	1Q4	4B6	720	¼W	±5% High stab. comp.
R42	1Q4	4C6	720	¼W	±5% High stab. comp.
R43	1R4	4C6	720	¼W	±5% High stab. comp.

Components marked * to be adjusted during test

NOTE The first number in the component location, layout diagram, refers to the last number of the layout diagram figure number.

Circuit reference	Location of components: Circuit diagram	Location of components: Layout diagram	Value	Rating	Tolerance and type
RESISTORS (Contd.)					
R44	1R3	4C6	720	¼W	±5% High stab. comp.
R45	1R3	4C7	720	¼W	±5% High stab. comp.
R46	1Q3	4B7	150	¼W	±5% High stab. comp.
R47	1N3	4B4	150	¼W	±5% High stab. comp.
R48	1S3	4B2	740	¼W	±2% High stab. comp.
R49	1S3	4B2	740	¼W	±2% High stab. comp.
R50	1S4	4C2	740	¼W	±2% High stab. comp.
R51	1S4	4C2	740	¼W	±2% High stab. comp.
R52	1S3	4B2	92	¼W	±2% High stab. comp.
R53	1S4	4B2	92	¼W	±2% High stab. comp.
R54	1S4	4C2	92	¼W	±2% High stab. comp.
R55	1S4	4C2	83	¼W	±2% High stab. comp.
R56	1G6	9C4	100K	½W	±10% Comp. ins. Gr. 2
R57	1G4	7G3	180	½W	±10% Comp. ins. Gr. 2
R58	1R7	4C9	10K	6W	±5% Wirewound vitreous
R59	1C4	6F2	12K	½W	±10% Comp. ins. Gr. 2
R60	1J1	9C8	2.2K	½W	±10% Comp. ins. Gr. 2
R61	1J1	9C7	47K	½W	±10% Comp. ins. Gr. 2
R62	1J2	9C8	390	½W	±10% Comp. ins. Gr. 2
R63	1J4	7D3	4.7K	½W	±10% Comp. ins. Gr. 2
R64	1J4	7E3	150	½W	±10% Comp. ins. Gr. 2
R65	1T6	4E9	22K	¾W	±10% Comp. ins. Gr. 2
R66	1S6	4E9	1.5K	6W	±5% Wirewound vitreous
R67	1F3	7F3	470	½W	±10% Comp. ins. Gr. 2
R68	1L5	6E2	1K	½W	±10% Comp. ins. Gr. 2
R69	1F7	9B4	15K	¾W	±10% Comp. ins. Gr. 2
R70	1F8	4D4	15K	¾W	±10% Comp. ins. Gr. 2
R71	1K4	7C3	1K	½W	±10% Comp. ins. Gr. 2
R72	1J6	4A3	100K	½W	±10% Comp. ins. Gr. 2
R73	1M3	4C4	100	¼W	±5% High stab. comp.
R75	1K4	9C7	150	½W	±10% Comp. ins. Gr. 2
R76	1F1	7F4	470	½W	±10% Comp. ins. Gr. 2
R100	1U4	-	67.5	1/10W	±2% High stab. comp.
R101	1U3	-	37.5	1/10W	±2% High stab. comp.
R102	1U4	-	15	1/10W	±2% High stab. comp.
R103	1V4	-	15	1/10W	±2% High stab. comp.
CAPACITORS					
C1	1B1	6F4 8G1	.001		±20% Erie feed thru ceramic
C2	1C1	6F2	.001		±20% Erie feed thru ceramic
C3	1B1	6E4 8F1	.001		±20% Erie feed thru ceramic
C4	1C1	6E2	.001		±20% Erie feed thru ceramic
C5	1B1	6D4 8E1	.001		±20% Erie feed thru ceramic
C6	1C1	6D3	.001		±20% Erie feed thru ceramic
C7	1B4	6F4 8F1	.001		±20% Erie feed thru ceramic

Circuit reference	Location of components: Circuit diagram	Location of components: Layout diagram	Value	Rating	Tolerance and type
CAPACITORS (Contd.)					
C8	1C4	6F2	.001		±20% Erie feed thru ceramic
C9	1C1	6F2	.001		±20% Erie feed thru ceramic
C10	1C1	6E2	.001		±20% Erie feed thru ceramic
C11	1C1	6D2	.001		±20% Erie feed thru ceramic
C12	1C4	6F2	.001		±20% Erie feed thru ceramic
C13	1L5	6E2	.001		±20% Erie feed thru ceramic
C14	1M5	4C4 6E4	.001		±20% Erie feed thru ceramic
C15	1K5	8E1	.001		±20% Erie feed thru ceramic
C16	1K5	6E2	.001		±20% Erie feed thru ceramic
C17	1N5	4C4	.001		±20% Erie feed thru ceramic
C18	1D4	7G5	47pF	500V	±10% Ceramic tub.
C19	1G6	8D2 6C5	1µ	250V	±25% Paper tub. metal case
C20	1H6	9C2	.1µ	250V	±25% Paper tub. metal case
C21	1C4	7G6	22pF	500V	±10% Ceramic tub.
C22	1D4	7G5	100pF	500V	±10% Ceramic tub.
C23	1G7	9C4 6B5	.01	350V	±20% Paper tub. metal case
C24	1G6	5E1 8B1	.05	350V	±20% Paper tub. metal case
C25	1D4	7G4	.005	350V	±20% Paper tub. metal case
C26		4D4	.002µF		
C27*	1D4	7G4	10p or 4.7p	750V	±0.5pF
C28	1M6	4C3	.1	150V	±25% Paper tub. metal case
C29	1N6	4C3	.1	150V	±25% Paper tub. metal case
C30	1G2	7F7	15pF	750V	±20% Temp. comp. ceramic
C31	1G2	7F6	20pF	750V	±20% Temp. comp. ceramic
C32	1G1	9E8	.02	150V	±20% Paper tub. metal case
C33	1H6	4B4	.1	250V	±25% Paper tub. metal case
C34	1D3	7G4	470pF	350V	±10% Hi-K ceramic
C35	1D2	7G4	.0015µ	350V	±20% Ceramic tub.
C36a	1E4	5C7	360pF	350V	Two gang variable
C36b	1F4	5D7	300pF	-	Two gang variable
C37	1F4	9D7	.05	350V	±20% tub. metal case
C38	1G4	7G3	.01	350V	±20% Tub. metal case
C39	1N5	4B5	0.01	350V	±20% Tub. metal case
C40	1J6	4B3	.0015		±20% Tub. ceramic
C41	1H6	4B3	.0015		±20% Tub. ceramic
C42	1F1	7G4	0.01	350V	±20% Tub. ceramic
C43	1K8	4F2	.0015	350V	±20% Tub. ceramic
C47	1G8	5C3 6B4	20µ	12V	+50% -20% Tub. electrolytic
C48	1M5	4B5	0.01	350V	±20% Tub. metal case
C49	1T7	4E8	.02	600V a.c.	±20% Tub. paper
C50	1U8	4G7	2µ	150V	±25% Tub. paper metal case

Components marked * to be adjusted during test

Circuit reference	Location of components		Value	Rating	Tolerance and type
	Circuit diagram	Layout diagram			
CAPACITORS (Contd.)					
C51	1S6	4F6	8µ	350V	+50% -20% Tub. metal case elec.
C52	1R6	4F6	8µ	350V	+50% -20% Tub. metal case electrolytic
C53	1V8	4F7	.1µ	150V	±25% Tub. paper metal case
C54	1V8	4F8	.1µ	150V	±25% Tub. paper metal case
C55	1V8	4F7	.1µ	150V	±25% Tub. paper metal case
C56	1V8	4F8	.1µ	150V	±25% Tub. paper metal case
C57	1Y8	4F7	.1µ	150V	±25% Tub. paper metal case
C58	1X8	4F8	.1µ	150V	±25% Tub. paper metal case
C59	W8	4F8	.1µ	150V	±25% Tub. paper metal case
C60	E2	7E7	.1µ	250V	±25% Tub. paper metal case
C61	X9	4F2	.0015	350V	±20% Tub. ceramic
C62	W7	4F9	.0015	350V	±20% Tub. ceramic
C63	W8	4F8	.0015	350V	±20% Tub. ceramic
C64	X8	4F8	.0015	350V	±20% Tub. ceramic
C65	Z7	4F4	.0015		±20% Stand off ceramic
C66	Z7	4F4	.0015		±20% Stand off ceramic
C67	Z6	4F3	.0015		±20% Stand off ceramic
C68	Z6	4F3	.0015		±20% Stand off ceramic
C69	Z7	4F3	.0015		±20% Stand off ceramic
C70	Y7	4F3	.0015		±20% Stand off ceramic
C71	Z8	4F3	.0015		±20% Stand off ceramic
C72	Y8	4F3	.0015		±20% Stand off ceramic
C73	AA8	4F2	25µ	25V	+100% -20% Tub. electrolytic
C74	F7	5F1 8B1	.1µ	250V	±25% Tub. paper metal case
C75	L8	4E2	.0015µ	350V	±20% Tub. ceramic
C76	F1	7F4	1035µ	600V Peak	+100% - 0%
C77	E2	5A7	3-30pF	300V	Air dielectric trimmer
C78	F2	5A6	3-30pF	300V	Air dielectric trimmer
C79	D7	7C2	.1	250V	±25% Tub. paper metal case
C80	H2	9D8	.01	350V	±20% TCC Metalmite
C81	F2	5A6	3-30pF	300V	Air dielectric trimmer
C82	G2	5B7	3-30pF	300V	Air dielectric trimmer
C83	G2	5B7	3-30pF	300V	Air dielectric trimmer
C84	H2	5B6	3-30pF	300V	Air dielectric trimmer
C85	AA7	4F3	.01µ	350V	±20% TCC Metalmite
C86	AA8	4F3	.01µ	350V	±20% TCC Metalmite
C87	Z7	4F3	.0015	350V	±20% Erie Hi-K ceramic
C88	Z8	4F3	.0015	350V	±20% Erie Hi-K ceramic
C89	G2	7F4	20pF	350V	±20% Temp. comp. ceramic
C90	H2	5B5	3-30pF	300V	Air dielectric trimmer
C91	H2	7F4	20pF	350V	±20% Temp. comp. ceramic
C92	H4	5B5	47pF	350V	±10% Silver mica
C93	H4	5B6	47pF	350V	±10% Silver mica

Circuit reference	Location of components: Circuit diagram	Location of components: Layout diagram	Value	Rating	Tolerance and type
			CAPACITORS (Contd.)		
C94	H4	5B7	47pF	350V	±10% Silver mica
C95	H4	5B7	82pF	350V	±10% Silver mica
C96	H4	5A5	220pF	350V	±10% Silver mica
C97	J4	5A6	1000pF	350V	±10% Silver mica
C98	J4	5A7	1000pF	350V	±10% Silver mica
C99	J1	7E3	.005	350V	±20% Tub. ceramic
C100	K2	9D7	.05	350V	±20% Tub. paper metal case
C101	J4	7F3	47pF	500V	±20% Tub. ceramic
C102	J2	9D7	.01	350V	±20% Tub. paper metal case
C103	J4	7C3	.01	350V	±20% Tub. paper metal case
C104	L2	9C7	.05	350V	±20% Tub. paper metal case
C105	L2	8F3 7C4	.1	250V	±25% Tub. paper metal case
C106	L4	9B7	.005	350V	±20% Tub. paper metal case
C107	L4	9C7	.01	350V	±20% TCC Metalmite
C108	L4	9B7	2	150V	+100% -20% Tub. elec.
C109	K4	7D3	.01µ	350V	±20% Hi-K ceramic
C110	H2	7E3	6000pF	300V	±20% Hi-K ceramic
C111	E2	7G6	10pF	750V	±0.5pF
C112	F2	7G5	15pF	750V	±0.5pF
C113	H1	9D8	6000pF	500V	±20%
C114	K2	7C6	1500pF	350V	±10%
C115	K2	7C6	680 pF	350V	±10%
C116	K2	7C6	330pF	750V	±10%
C117	K2	7C6	180pF	750V	±10%
C118	K2	7C6	100pF	750V	±10%
C150	CC7	-	20µ		
C151	CC8	-	20µ		
C152	U4	-	180pF	750V	±10% Moulded mica
			RESISTORS VARIABLE		
RV1	C8	8B5	25K	¼W	±20% Linear composition
RV2	E8	4D4	100K	1W	±10% Linear wirewound
RV3	F7	4D4	25K	1W	±10% Linear wirewound
RV4	B8	4E3	25K	¼W	±20% Linear composition
RV5	J7	7B6 8G7	500	½W	±10% Linear wirewound
RV6	H7	7B7 8G8	500	½W	±10% Linear wirewound
RV7	K7	7B5 8G5	5K	½W	±10% Linear wirewound
RV8	C7	6E5	25K	¼W	±20% Linear composition
RV9	C7	6E5	25K	¼W	±20% Linear composition
RV10	C7	6F5	25K	¼W	±20% Linear composition
RV11	D7	7D1 6G5	25K	¼W	±20% Linear composition

Circuit reference	Location of components Circuit diagram	 Layout diagram	Value	Rating	Tolerance and type
			INDUCTORS		
L1	F2	5A7			Osc. anode coil, band 1
L1a	J4	5A7			Osc. grid coil, band 1
L2	F2	5A6			Osc. anode coil, band 2
L2a	H4	5A6			Osc. grid coil, band 2
L3	F2	5A5			Osc. anode coil, band 3
L3a	H4	5A5			Osc. grid coil, band 3
L4	G2	5B7			Osc. anode coil, band 4
L4a	H4	5B7			Osc. grid coil, band 4
L5	K2	7C4	1.42mH	@ 1.5kc/s	±5% Anode load V4
L7	G6	5E2	.5H	@ 1.5kc/s	±5% AF osc., load V5
L8	B1	6F3	35μH	@ 1.5kc/s	±20% RF filter choke
L9	B1	6E3	35μH	@ 1.5kc/s	±20% RF filter choke
L10	B1	6D3	6μH min.	@ 1 kc/s	RF filter choke
L11	H6	4B3	35μH	@ 1.5kc/s	±10% RF filter choke
L12	K8	4F2	35μH	@ 1.5kc/s	±10% RF filter choke
L13	S6	4D9	7H min.	@ 50 c/s	HT smoothing choke
L14	V7	4F7	10μH	@ 1.5Mc/s	±20% Vibrator filter
L15	V9	4F7	10μH	@ 1.5Mc/s	±20% Vibrator filter
L16	X8	4F7	10μH	@ 1.5Mc/s	±20% Vibrator filter
L17	W8	4F7	10μH	@ 1.5Mc/s	±20% Vibrator filter
L18	Z7	4F4	35μH	@ 1.5kc/s	±10% Mains input RF filter
L19	Z6	4F3	35μH	@ 1.5kc/s	±10% Mains input RF filter
L20	Z7	4F3	.4μH	@ 1.5kc/s	±25% Bty input RF filter
L21	Z8	4F2	.4μH	@ 1.5kc/s	±25% Bty input RF filter
L22	C1	6F2	35μH	@ 1.5kc/s	±20% RF filter choke
L23	C1	6E2	35μH	@ 1.5kc/s	±20% RF filter choke
L24	C1	6D2	6μH min.	@ 1kc/s	±20% RF filter choke
L25	G2	5B6			Osc. anode coil, band 5
L25a	H4	5B7			Osc. grid coil, band 5
L26	H2	5B6			Osc. anode coil, band 6
L26a	H4	5B6			Osc. grid coil, band 6
L27	H2	5B5			Osc. anode coil, band 7
L27a	G4	5B5			Osc. grid coil, band 7
L28	L8	4E2	35μH	@ 1.5kc/s	±10% RF filter choke
L29	N4	4B5	35μH	@ 1.5kc/s	±10% RF filter choke
L30	M4	4B4	35μH	@ 1.5kc/s	±10% RF filter choke
			VALVES		
V1	D3	7G3 5A4			CV138
V2	G3	7F3 5B4			CV138
V3	J3	7D3 5D4			CV138
V4	L3	7C3 5E4			CV138

Circuit reference	Location of components		Value	Rating	Tolerance and type
	Circuit diagram	Layout diagram			
VALVES					
V5	G7	6C2			CV136
V6	Q7	6A2 5B2			CV287
V7	T6	4G8 4D6			CV493
MISCELLANEOUS					
FS1	Y7	4C7	1 Amp	250a.c./ 230d.c.	
FS2	Y6	4C7	1 Amp	250a.c./ 230d.c.	
FS3	Y7	4C7	10 Amp		
FS4	Y8	4C7	10 Amp		
FS5	S6	4C8	250mA	250a.c./ 230d.c.	
M1	L8	4F2			100μA FSD
MR1	H8	9C3			Westinghouse WX6
MR2	N4	4B5			CV103
MR3	H8	9C3			Westinghouse WX6
MR4	M4	4B4			CV103
LP1	Q7	5G5 8A5	2.36W	6.5V	Pilot lamp
PLA	AA6	4F4			Mains input
PLB	AA8	4F2			Battery input
PLC	M2	4B7			Input to attenuator
PLD	U3	4B2			RF out front panel
SKA	L2	8E5			RF out from RF box
SKB	U3				
SWAaa	R6	4E4			Functional switch
SWAab	H8	4E4			Functional switch
SWAba	E7	4E4			Functional switch
SWAbb	D7	4E4			Functional switch
SWAcb	Y6	4E4			Mains/battery
SWB	Q3	4B7			Fine attenuator
SWCa	C8	4D4			Frequency band switch
SWCb	G2	7D5			Frequency band switch
SWCc	H4	7E5			Frequency band switch
SWCd	E3	7F5			Frequency band switch
SWCe	D4	7G5			Frequency band switch
SWD a b	K8 M8	4E3			MOD/CAR Switch
SWE	T3	4B2			Coarse attenuator
TR1	U7	4C7			Mains/Vib. transformer
VB1	X8	4D6 4F8			12V 3 Amp SV2

PERFORMANCE TESTS

1. The equipment is of the sealed type and should not be removed from its case unless Oven, Drying, Telecommunications Equipment and Apparatus, Seal Testing are available. (See paras. 3 and 4).

2. Abridged specification data is given in Table 2002. Detailed procedure for alignment and specification testing is given in Tels Z 344. The r.f. box, power supply unit, and etc. may be removed from the front panel without making any disconnections other than breaking SKA/PLA (see Figs. 2002 and 2003), the units being interconnected by flexible cable forms.

3. Prior to repairs and resealing the equipment should be thoroughly dried out in the oven unit of the drying equipment. When time permits, the equipment together with the case should be left in the oven for at least two hours. On removal from the oven the equipment should be sealed without delay and tests carried out as detailed in para. 4.

Hermetic Resealing

4. After resealing, the equipment should be tested for leakage by raising the internal air pressure to 10 lb./sq. in. using the Apparatus seal testing. Immersed in water no air bubbles should be visible. In accordance with EMER TELS M631 the time constant shall be at least 100 hours with a starting pressure of 5 lb./sq. in. Dry air drawn from the appropriate outlet on the drying apparatus should be used for these tests in all cases when the ambient humidity is high. After satisfactory completion of these tests an active desiccator should be fitted.

Performance test figures

5. The methods of checking the specification figures are detailed in Tels Z 344. The figures quoted are those considered necessary to check the serviceability of an instrument. They do not include all figures quoted in the original specification which are purely of design interest. The figures are quoted from the original design specification, during production these are sometimes modified. Any modifications will be included in the Inspection Standard, Tels Z 348.

Table 2002
Abridged Specification Figures

Power Supplies

(a) With an appropriate a.c. supply and the mains tap adjusted accordingly, or alternatively, a 12 volt d.c. supply, connected to the equipment, the heater voltages of all valves shall be measured. These shall be within the limits 6.0 to 6.6 volts.

(b) The instrument shall be correctly adjusted and set for a.m. operation at 1.0 Mc/s. The h.t. voltages shall then be measured with an AVO model 7 or similar instrument, and shall be as follows:-

(i) Measured across C52, with either mains or d.c. input, 260 ±15 volts.

(ii) Measured across C3 within the limits 145-160 volts.

The a.c. ripple across C52 shall be measured with a valve voltmeter and shall not exceed 0.75 volts.

(c) When operated from d.c. it should be possible to set both carrier and modulation to the normal level when the input is reduced to 11.5 volts.

Main Tuning Assembly and Dial Accuracy

(d) The main tuning assembly shall run smoothly and the end stops operate in the correct position. The amount of backlash in the drive shall be negligible. The main dial indication shall be checked against a crystal standard in a suitable receiver. The frequency indication shall be accurate to within ±2%.

R.F. Output Level

(e) When the instrument is set up at any frequency within the range, the SET CAR knob should not be within 45° of its maximum end stop.

R.F. Attenuators

(f) 0-20dB (Fine) Attenuator.

Checked on all positions; maximum total error at any position shall be ±0.5dB.

0-80dB (Coarse) Attenuator.

Checked at each 20dB position; each step 20.0 ±0.5dB and sum total of steps shall be 80.0 ±1.5dB.

Both attenuators will be checked at both 1.0Mc/s and 32Mc/s. The sum total of both attenuators at any frequency shall be 100 ±2dB.

Terminating Unit

(g) At 32Mc/s the output voltage across the 7.5 ohm terminals shall be 1/10th of the voltage across the 75 ohm terminals within ±0.5dB.

R.F. Harmonic Content

(h) The maximum harmonic content for either the 2nd or 3rd harmonic shall not exceed -10dB at any frequency.

Modulation Oscillator

(i) With the oscillator adjusted as in para. 3, the modulation oscillator should be 1,000c/s ±100c/s. The total harmonic content should not exceed 4%. The SET MOD control should not be within 45° of its end stops at any carrier frequency.

Amplitude Modulation

(j) The modulation depth shall be between 25% and 35% at any carrier frequency.

Frequency Modulation

(k) The deviation shall be within ±20% or 2kc/s, whichever is the greater, at each of the calibrated marks; the zero mark shall correspond to zero deviation.

Spurious Modulation

(l) The spurious f.m. on a.m. shall not exceed 1kc/s at 30Mc/s. The spurious a.m. on f.m. shall not exceed 3% at any carrier frequency. With the equipment operating from 12 volts d.c. any vibrator "hash" should be small compared with 1μV when the equipment is connected to a mains-operated receiver at any frequency between 85kc/s and 32Mc/s.

Frequency Drift

(m) After a warm-up period of 15 mins. the drift shall not exceed 0.1% or 1,000c/s, whichever is greater, in the following thirty mins. and shall not exceed the same limits in the succeeding eighty mins.

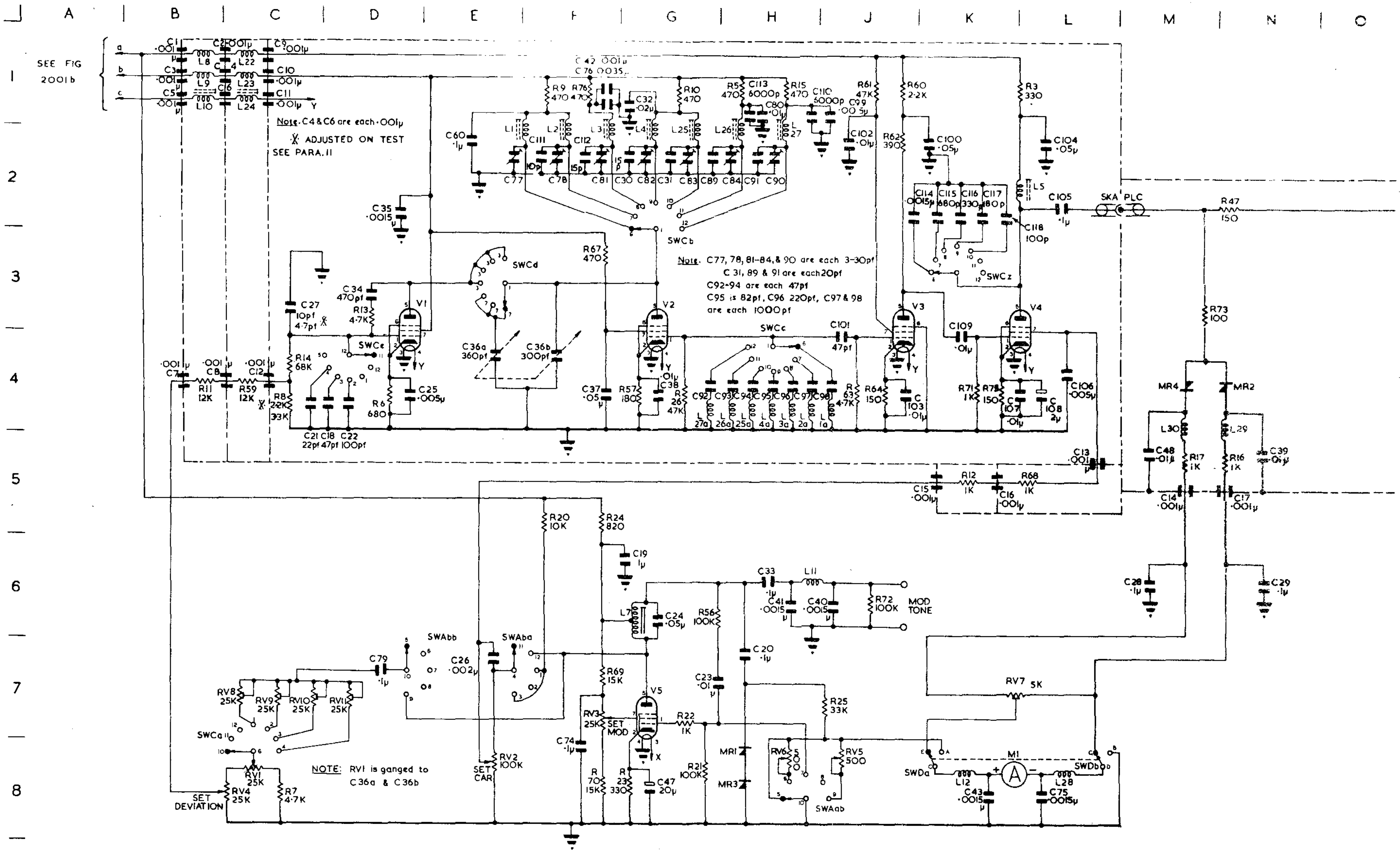


Fig. 2001(a) - Test oscillator No. 1 - Circuit Diagram

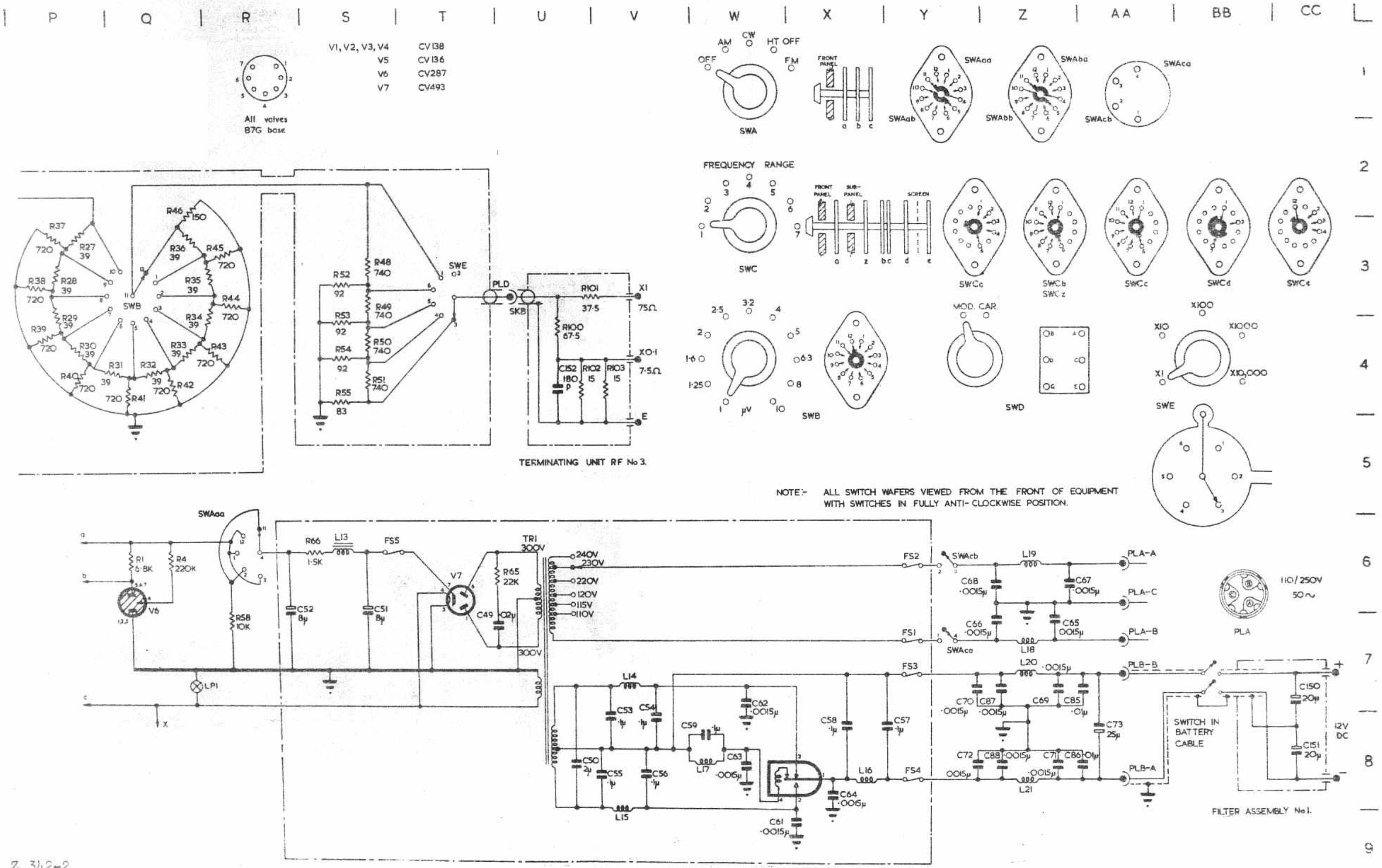


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Fig. 2001(b) - Test Oscillator No. 1 - Circuit Diagram