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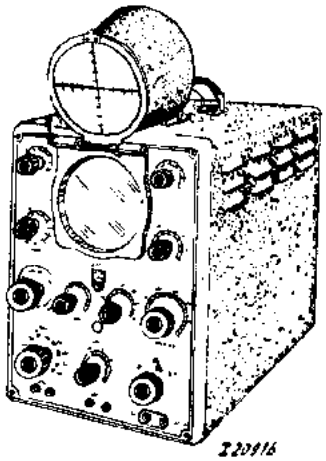
SERVICE NOTES

For the oscilloscope

GM5653-02



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GENERAL

N.B. These Service Notes deal with GM5653-02 and GM5653-02F. By the former type is meant the one without a codeletter behind the SERIAL NUMBER and by the latter is meant the type with the letter F behind the SERIAL NUMBER.

Both types GM5653-02 are derived from the GM5653-00. For the description of the electrical system and alignment see the service notes of the GM5653-00.

In the following the differences with respect to the GM5653-00 are described in detail.

DIFFERENCES OF TYPE /02 WITH RESPECT TO TYPE /00

Supply circuit: A PL81 is used for B11 instead of a UL41.

Amplifier for vertical deflection: R34 and R40 are both shunted by C28 and C87 for symmetry. The amplifier can be more easily aligned.

Tune base:

a) A potentiometer (R57) is inserted in the screen grid circuit of B7 for the adjustment of the current through this valve.
b) In the 10th position of SK3 (100-500 kc/s) R144 is shunted by R146, thus improving the linearity of the sawtooth. In this position the frequency-range is enlarged also.
c) The flyback-pulse is taken from R47 and applied to the control grid of the C.R.T. (cathode ray tube) via SK10, C72, and C71.
d) SK9 (mechanically coupled to R8) is added. With SK9 in the top position and SK2 in position 4 it is possible to reproduce the positive half cycle of a signal only. The action is as follows: A signal from the amplifier is applied to the control grid of B7 via R58. The time base is controlled by this signal. If no signal is applied, the capacitors C33-C41 are charged and the cathode of B6 is at a low potential with respect to earth, because B6 is blocked (B7 conducts). If sufficient negative voltage is applied to the control grid of B7, B7 will be blocked and B6 will conduct. The capacitors discharge via B6 (flyback of the time base). If the potential of the control grid of B7 becomes zero and then positive, B7 starts conducting again.

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B6 is blocked and a scan of the sawtooth voltage follows. The result is that the time-base operates only during a positive half cycle of the signal from the amplifier. This corresponds to the positive half of signal applied to Bu5-Bu6.

e) In the 6th position of SK2 a sine-wave voltage of 50 c/s is taken from C78-R106 and C79-R107 and applied to the X plates. By means of this sine wave time-base Lissajous can be reproduced on the screen. A voltage of approx. 6V RMS can be taken from the plugs Bu3-Bu4. Section II of SK2 has two more contacts than the corresponding section of SK2 in the GM5653-00.

f) For better alignment of the time-base the circuit of B8 has been altered a little.

CHECKING AND ALIGNMENT

This is entirely the same as for the /00 design except for the following points:

a) Amplifier: under 3 frequency characteristic; adjust with C28 at 150 kc/s until the waveform is straight.

b) Time-base: under 4; replace B8 and double the amplitude with R53. The amplitude may be enlarged with C61 at high frequencies if necessary.

c) SK2 in position 6: the C.R.T. is driven in the X direction with a sine-wave voltage of 50 c/s, which can be taken from Bu1 and Bu2 with respect to Bu3. For each plug this voltage is approx. 30V with respect to Bu1. A voltage of 6V R.M.S. can be taken from Bu3-Bu4.

d) SK3 in 10th position: has a frequency range of 100-500 kc/s.

DIFFERENCES OF /02F WITH RESPECT TO TYPE /00.

This design has the same differences as the /02 design, but the phase inverter stage has been modified (see fig.2). To prevent distortion of the beginning of the pulse at a single-stroke of the time-base, the control grid of B8 is connected to a potentiometer via R144.

Q and R are at a potential of approx. -85 V and +85 V resp. the current through B8 is adjusted in such a way that no grid-current is drawn by the saw-tooth voltage. A single-stroke of the time-base can be obtained by connecting Bu3 to Bu4 and opening and closing this connection very rapidly. If Bu3-Bu4 is opened a fly-back follows, on closing the connection a scan is the result. The fly-back, which is the beginning of the time-base stroke, may be so large as to draw grid-current (B8) and consequently also the beginning of the following scan takes place partly in the grid current region and is distorted.

With R53 the current through B8 is so adjusted that the flyback starts as close as possible to the cut-off point and therefore the entire space is utilized. Due to the improvement of the "single-stroke time-base", the current distribution is modified; the stabilizing valve receives not enough current and under certain circumstances it could extinguish and disturb the correct action of the time-base and the attenuator B16. The circuit of B16 has therefore been modified. R128 and R10 have been removed and replaced by R10=5600 Ω 1,5W. Moreover, R42 and R2, R2' are connected to the top of R146. Also the synchronisation has been improved in this design. The synchronisation signal is now taken from the anode of B3 and is applied to R8 via R148/C95, C60, R66/C89, SK2^{I}, C96/R153.

Finally the circuit that prevents hum in the synchronising signal has been improved; R150, R151 and R152 have been added for this purpose.

The dotted lines in the circuit diagram indicate the connection of the plug for large-screen oscillography. The connections to the plug have

not yet been made because this reduces the frequency response of the amplifier. The connection should be made only when the apparatus is to be used for large-screen purpose.

CHECKING AND ALIGNMENT

This is entirely the same as for the /00 design, except for the time-base which is aligned as follows:

1. Time-base swicth SK3 at 1500 and R6 at 1x. R8 in position "trigg" (fully anti-clockwise). SK2 in position 4. Wait until the spot appears on the screen and no longer moves. R3 fully anti-clockwise. Turn R53 slowly to the right. The spot moves along the screen now, until the valve is cut-off. The valve should be biased at just a little before cut-off. This is done as follows:
   Connect a voltmeter between the cathode of B8 and earth and adjust R53 until the voltmeter reads approx. +1,4V.
   Another method is to adjust R53 in such a way that the spot moves a little more and then stops. The adjustment is as follows:
   Turn R53 to the right until the spot no longer moves, then turn R53 a few degrees in the reverse direction. Both methods give a correct biasing of the valve.
2. SK3 at 1500 and R6 at 1x, R8 in position 10 (fully clockwise). SK2 at position intern . Adjust with R5 so that both the beginning and intern
   the end of the time-base line appears on the screen. Produce ten peaks on the screen by means of a GM2315 and align with C57 for linearity.
3. SK3 at 10,000 and R6 at 5x, produce again ten peaks on the screen by means GM2883 and align for linearity with C61.
4. All positions of SK3 with R6 fully anti-clockwise and fully clockwise should be checked for linearity. The amplitude of the time-base should be at least 86 mm for frequencies from 5-25000 c/s and for higher frequencies at least 60 mm (R5 and R6 fully clockwise).

MECHANICAL DIFFERENCES OF/02 AND /02F DESIGN WITH RESPECT TO /00 DESIGN

The main differences are:

a) Another textplate.
b) SK7, SK10, SK11 are plugs with internal switches.
c) Bu16 and Bu17 are electrostatically screened with a metal cap.
d) Plug for large screen connection; not connected.

LIST OF MECHANICAL PARTS

Fig.	Item	Description	Codenumber
7	1	Spindle	E3 870 19.0
	2	Bush	A1 612 06.0
	3	Spring	A1 986 06.1
	4	Textplate	M7 756 06.0
	5	Terminal plate	M7 111 58.1
	6	Plug socket	E2 490 08.0
	7	Knob with pointer ø 30	E2 440 67.0
		Cap for same	23 653 38.0
		Pointer for same	23 680 53.0
		Countersunk screw	07 810 06.1
	8	Knob with pointer, ø22	E2 440 54.0
		Cap for same	23 653 40.0
	9	Transparent screen	M7 748 11.0
	10	Rubber ring for window	E2 475 44.0
		Felt ring in light cap	M7 133 82.0
	11	Safety cartridge VP2, VP3, 5A	08 140 33.2
	12	Safety cartridge holder	B1 505 06.0
	13	Set screw 2,6 x 4	07 461 00.0
	14	Milled knob	E1 920 06.2
	15	Nut	07 094 02.0
	16	Switch SK8	M7 429 75.0
	17	Mains connection	E2 555 65.0
	18	Rubber	E2 475 56.0
	20	Voltage adaptor	A1 138 14.1
	21	Plug socket	E2 490 08.0
	22	Knob for SK6	M7 071 04.0
	25	Connecting strip	M7 411 74.0
	26	Valve holder B9	B1 505 67.0
	27	Switch SK6	M7 429 66.0
	28	Spacer 3.2x5.x14 for R90	07 005 27.0
	29	Strip	M7 411 67.0
	30	Hard paper ring for L7	M7 134 07.0
	31	Valve holder B11	B1 505 22.0
	31	Top cap for B11	A3 307 24.0
	32	Milled nut	07 601 90.0
	35	Valve holder B16	B1 505 00.3
	36	Mounting support	E2 544 21.0
	37	Lamp holder	08 515 21.1
	38	Strip	M7 411 76.0
	39	Strip	M7 411 77.0
	41	Ceramic sleeve	M7 210 50.2
	42	Flanged bush	M7 043 04.0
	44	Insulating ring for C64, C65, C67	49 654 45.0
	45	Soldering lug for same	M7 315 51.0
		Locker for pos.41 and 42	E1 581 22.0
19	46	Soldering lug	M7 315 50.0
	48	Strip	M7 411 98.0
	49	Strip	M7 412 52.0
	51	Milled nut	07 611 40.0

Fig.	Item	Description	Codenumber
19	52	Valve holder B12-B15	B1 505 47.0
	53	Terminal plate	M7 412 18.0
	55	Terminal plate	M7 412 24.0
	56	High tension terminal	M7 412 05.1
	57	Cable	34 008 12/1
	58	Milled screw	07 741 21.0
	59	Grip	M7 716 16.1
	60	Screw 3 x 12	07 763 12.0
	61	Anode contact	B1 885 06.0
	62	Strip	M7 412 46.0
	63	Strip	M7 412 47.0
22	66	Metal can	M7 696 68.0
	67	Text plate	M7 182 68.0
	68	Rivet 1,7 x 4	07 136 01.0
	69	Pin	E2 261 41.2
	70	Dise with bush	A9 864 12.1
	71	Screw	E2 466 54.0
	72	Milled nut	07 601 90.1
	73	Plug	E2 796 43.1
	74	Bush, over cable	E2 098 49.0
	75	Bush	E2 098 50.0
	76	Screened, insulated cable	34 090 08/134 Z
	77	Milled nut 3 mm	07 601 90.1
	78	Screw	E2 467 61.0
	79	Cable cyclet	08 190 12.1
	80	Plug	E2 556 38.0
		Type 02F only	
		Locker	E1 581 22.0
		Fixing bush	M7 043 04.0
		Rubber sleeve	M7 210 50.2
		Plug (multi-pole)	E2 555 57.0
8	22a	Plug socket with switch	A3 186 07.0
8	22b		
8	19	Text plate *	M7 183 99.0

T1			M7 614 28.1
L1			M7 450 01.0
L2			M7 573 04.0
L3			M7 573 04.0
L4			M7 573 04.0
L5			M7 573 04.0
L6			M7 513 06.0
L7			M7 513 06.0
L8			M7 573 03.0
R1	1	Mohm	49 473 58.0
R1'	1	Mohm	49 473 58.0
R2	1	Mohm	49 473 58.0
R2'	1	Mohm	49 473 58.0
R3	20000	ohm	49 501 04.0
R4	0,5	Mohm	49 473 13.0
R5	1000	ohm	49 472 41.0
R6	5000	ohm	49 473 56.0
R7	5000	ohm	49 473 56.0
R8	1	Mohm	49 500 38.0
R9	39000	ohm	48 767 05/39K
R10	22000	ohm	48 767 05/22K
R11	33000	ohm	48 557 05/33K
R12	560	ohm	48 556 05/560E
R13	56	ohm	48 556 05/56E
R14	470	ohm	48 556 10/470E
R15	10000	ohm	49 472.20.0
R16	5600	ohm	48 556 05/5K6
R17	4,7	Mohm	48 557 10/4M7
R18	330	ohm	48 556 05/330E
R19	47	ohm	48 555 10/47E
R20	470	ohm	48 556 10/470E
R21	220	ohm	48 556 10/220E
R22	3300	ohm	48 556 05/3K3
R23	150	ohm	48 556 05/150E
R24	47	ohm	48 555 10/47E
R25	2200	ohm	48 556 05/2K2
R26	470	ohm	48 555 10/470E
R27	0,68	Mohm	48 656 05/680K
R28	1	Mohm	49 472 54.0
R29	150	ohm	48 556 05/150E
R30	47	ohm	48 555 10/47E
R31	470	ohm	48 555 10/470E
R32	1	Mohm	48 556 10/1M
R33	10000/2	ohm	2x48 557 05/10K
R34	150	ohm	48 556 05/150E
R35	47	ohm	48 555 10/47E
R36	2200	ohm	48 552 05/2K2
R37	470	ohm	48 555 10/470E
R38	1	Mohm	48 556 10/1M
R39	10000/2	ohm	2x48 557 05/10K
R40	150	ohm	48 556 05/150E
R41	47	ohm	48 555 10/47E
R42	0,1	Mohm	49 473 28.0
R43	47	ohm	48 555 10/47E
R44	6800	ohm	48 556 10/6K8
R45	100	ohm	48 556 10/100E
R46	2200	ohm	48 552 05/2K2

R47	1000	ohm	48 556 10/1K
R48	47	ohm	48 555 10/47E
R49	10000	ohm	49 472 20.0
R50	47	ohm	48 558 10/47E
R51	47	ohm	48 555 10/47E
R52	10000	ohm	48 556 05/10K
R53	1	Mohm	49 472 28.0
R54	82000	ohm4xpar.	4x48 557 10/82K
R55	47	ohm	48 555 10/47E
R56	47	ohm	48 555 10/47E
R57	20000	ohm	49 472 24.0
R58	6800	ohm	48 556 10/6K8
R59	10	Mohm	48 557 10/10M
R60	47	ohm	48 555 10/47E
R61			
R62	2200	ohm	48 556 05/2K2
R63	33000	ohm	48 557 05/33K
R64	8200	ohm	48 556 05/8K2
R65			
R66	1	Mohm	48.556 10/1M
R67	47	ohm	48 556 10/47E
R69	0,47	Mohm	48 556 10/470K
R70	5,6	Mohm	48 557 10/5M6
R71	10	Mohm	48 557 10/10M
R72	0,47	Mohm	48 557 10/470K
R73	10	Mohm	48 557 10/10M
R74	39000	ohm	48 557 10/39K
R75	82000	ohm	48 557 10/82K
R76	27000	ohm	48 556 10/27K
R77	0,18	Mohm) par.	48 557 10/180K
	0,15	Mohm)	48 557 10/150K
R78	10000	ohm	48 556 10/10K
R79	0,47	Mohm	48 556 10/470K
R80	1	Mohm	48 556 10/1M
R81	900	ohm	48 516 10/900L
R82	47	ohm	48 555 10/47E
R83	47	ohm	48 555 10/47E
R84	47	ohm	48 555 10/47E
R85	6800	ohm	48 557 10/6K8
R86	47	ohm	48 555 10/47E
R87	22000	ohm	48 557 10/22K
R88	0,22	Mohm	48 556 10/220K
R89	0,15	Mohm	48 556 10/150K
R90	0,1	Mohm	49 472 28.0
R91	10000	ohm	48 556 10/10K
R92	56000	ohm	48 557 10/56K
R93	68000	ohm	48 557 10/68K
R94	56000	ohm	48 557 10/56K
R95	68000	ohm	48 557 10/68K
R96	10000	ohm	48 556 10/10K
R97	100	ohm	48 557 10/100E
R98	100	ohm	48 557 10/100E
R99	100	ohm	48 557 10/100E
R100	100	ohm	48 557 10/100E
R101	50	ohm	E5 153 29.1
R103	18000	ohm) par.	(48 557 05/18K
	22000	ohm)	*(48 557 05/22K

R104	5,6	Mohm	48 557 10/5M6
R105	1800	ohm	48 496 10/1K8
R106	2,2	Mohm	48 557 10/2M2
R107	2,2	Mohm	48 557 10/2M2
R108	820	ohm	48 556 05/820E
R109	2700	ohm	48 556 05/2K7
R110	56000	ohm	48 557 10/56K
R111	68000	ohm	48 557 10/68K
R112	56000	ohm	48 557 10/56K
R113	68000	ohm	48 557 10/68K
R114	56000	ohm	48 557 10/56K
R115	68000	ohm	48 557 10/68K
R116	56000	ohm	48 557 10/56K
R117	68000	ohm	48 557 10/68K
R118	1000	ohm	48 556 10/1K
R119	4,7	Mohm	48 557 10/4M7
R120	47	ohm	48 556 10/47E
R121	47	ohm	48 556 10/47E
R122	1,5	Mohm	48 558 10/1M5
R124	10	Mohm	M7 632 15.0
R125	1	Mohm	48 555 10/1M
R126	0,22	Mohm	48 552 02/220K
R127	220	ohm	48 556 10/220E
R128	82000	ohm	48 557 10/82K
R130	1	Mohm	48 557 10/1M
R131	10	Mohm	48 557 10/10M
R132	10	Mohm	48 557 10/10M
R133	10	Mohm	48 557 10/10M
R134	1,2	Mohm	48 552 02/1M2
R135	0,22	Mohm	48 556 10/220K
R136	2200	ohm	48 556 10/2K2
R137	33000	ohm	48 557 05/33K
R138	33000	ohm	48 556 10/33K
R139	8200/2	ohm	2x48 557 05/8K2
R140	8200/2	ohm	2x48 557 05/8K2
R141	10000	ohm	48 556 10/10K
R142	10000	ohm	48 558 10/10K
R143	2,2	Mohm	48 556 10/2M2
R144	1,5	Mohm	48 557 05/1M5
R145	0,1	Mohm	48 556 10/100K
R148	2,2	Mohm	48 556 10/2M2
La1			85A1
La2			85A1
La3			8043D/00
V12			C3 140 33.2
V13			C3 140 33.2
C1	0,1	uF	48 792 10/100K
C2	12,5+12,5	uF	48 317 09/12,5+12,5
C3	360	pF	48 429 05/360E
C4	25+25	uF	48 317 08/25+25
C5	12,5+12,5	uF	48 317 11/12,5+12,5

C6	12,5+12,5	uF	48 317 11/12,5+12,5
C7	12,5+12,5	uF	48 317 11/12,5+12,5
C8	12,5+12,5	uF	48 317 11/12,5+12,5
C22	8,2	pF	48 211 20/8E2
C23	0,47	uF	48 790 10/470K
C24	0,22	uF	48 791 10/220K
C25	16	uF	48 112 10/C16M
C26	330	pF	48 429 10/330E
C27	0,1	uF	48 791 10/100K
C28	400	pF	49 005 54.0
C29	0,22	uF	48 791 10/220K
C30	0,1	uF	48 791 10/100K
C31	0,1	uF	48 791 10/100K
C32	0,1	uF	48 791 10/100K
C33	27	pF	48 429 05/27E
C34	150	pF	48 429 10/150E
C35	270	pF	48 429 10/270E
C36	1000	pF	48 104 10/V1K
C37	3300	pF	48 104 10/V3K3
C38	10000	pF	48 104 10/E10K
C39	33000	pF	48 105 10/T33K
C40	0,15	uF	48 105 10/C150K
C41	0,39	uF	48 106 10/C390K
C42	0,1	uF	48 791 10/100K
C43	0,1	uF	48 791 10/100K
C46	22000	pF	48 791 10/22K
C47	68	pF	48 429 10/68E
C48	150	pF	48 429 10/150E
C49	270	pF	48 429 10/270E
C50	1000	pF	48 104 10/V1K
C51	3300	pF	48 104 10/V3K3
C52	10000	pF	48 104 10/E10K
C53	33000	pF	48 105 10/T33K
C54	0,15	uF	48 105 10/C150K
C55	0,39	uF	48 106 10/C390K
C56	270	pF	48 213 05/270E
C57	12,5	pF	XU 052 16.0
C58	27	pF	48 429 10/27E
C59	0,47	uF	48 791 10/470K
C60	0,22	uF	48 791 10/220K
C61	draadtrimmer wire trimmer Condensateur de réglage à fil trimer de alambre Drahtabgleich-kondensator		49 005 53.2
C62	0,47	uF	48 791 10/470K
C63	220	pF	48 213 10/220E
C64	50+50	uF	48 317 59/50+50
C65	50+50	uF	48 317 59/50+50
C66	0,22	uF	48 791 10/220K
C67	25+25	uF	48 317 11/25+25

C68	25+25	uF	48 317 11/25+25
C69	0,22	uF	48 792 10/220K
C71	47000	pF	48 105 10/V47K
C72	47000	pF	48 105 10/V47K
C73	0,47	uF	48 791 10/470K
C74	12,5+12,5	uF	48 317 11/12,5+12,5
C75	12,5+12,5	uF	48 317 11/12,5+12,5
C78	12,5+12,5	uF	48 317 11/12,5+12,5
C77	12,5+12,5	uF	48 317 11/12,5+12,5
C78	15000	pF	48 791 10/15K
C79	15000	pF	48 791 10/15K
C80	10000	pF	48 797 20/10K
C81	10000	pF	48 797 20/10K
C82	0,22	uF	48 791 10/220K
C83	10000	pF	48 791 10/10K
C84	10000	pF	48 791 10/10K

C85	4	pF	XU 052 19.0
C86	3-30	pF	28 212 36.4
C87	270	pF	48 213 05/270E
C89	47	pF	48 213 05/47E
C90	18	pF	48 211 05/18E
C91	4,7	pF	48 210 20/4E7
C92	0,15	uF	48 791 10/150K
C93	0,47	uF	48 791 10/470K
B1			EF42
B2			EF42
B3			EL41
B4			EL41
B5			EF42
B6			UF42
B7			EF42
B8			EF42
B9			DG10-8
B10			EF42
B11			PL81
B12			AZ41
B13			AZ41
B14			AZ41
B15			EF42
B16			

T1			M7 C11 28.0		.17	1000	ohm	48 556 10/1K	
					R48	47	ohm	48 555 10/47E	
L1			M7 450 01.0		R49	10000	ohm	49 472 20.0	
L2			M7 573 04.0		R50	47	ohm	48 556 10/47E	
L3			M7 573 04.0		R51	47	ohm	48 555 10/47E	
L4			M7 573 04.0		R52	10000	ohm	48 556 10/10K	
L5			M7 577 04.0		R53	1	Mohm	49 472 28.0	
L6			M7 513 06.0		R54	82000	ohm	4x48 557 10/82K	
L7			M7 513 06.0		R55	47	ohm	48 555 10/47E	
L8			M7 577 04.0		R56	47	ohm	48 555 10/47E	
					R57	20000	ohm	49 472 24.0	
R1	1	Mohm	49 473 58.0		R58	6800	ohm	48 556 10/6K8	
R1'	1	Mohm	49 473 58.0		R59	10	Mohm	48 557 10/10M	
R2	1	Mohm	49 473 58.0		R60	47	ohm	48 555 10/47E	
R2'	1	Mohm	49 473 58.0		R61				
R3	20000	ohm	49 501 04.0		R62	1000	ohm	48 556 05/1K1	
R4	0,5	Mohm	49 477 13.0		R63	47000	ohm	48 557 05/47K	
R5	1000	ohm	49 472 41.0		R64	47	ohm	48 556 10/47E	
R6	5000	ohm	49 473 56.0		R65				
R7	5000	ohm	49 473 56.0		R66	1	Mohm	48 556 10/1M	
R8	1	Mohm	49 500 38.0		R67	47	ohm	48 556 10/47E	
R9	39000	ohm	48 767 05/39K						
R10	5600	ohm	48 558 10/5K8		R69	0,47	Mohm	48 556 10/470K	
R11	33000	ohm	48 557 05/33K		R70	5,6	Mohm	48 557 10/5M6	
R12	560	ohm	48 556 05/560E		R71	10	Mohm	48 557 10/10M	
R13	56	ohm	48 556 05/56E		R72	0,47	Mohm	48 557 10/470K	
R14	470	ohm	48 556 10/470E		R73	10	Mohm	48 557 10/10M	
R15	10000	ohm	49 472 20.0		R74	39000	ohm	48 557 10/39K	
R16	5600	ohm	48 556 05/5K6		R75	82000	ohm	48 557 10/82K	
R17	4,7	Mohm	48 557 10/4M7		R76	27000	ohm	48 556 10/27K	
R18	330	ohm	48 556 05/330E		R77	0,18	Mohm) par.	48 557 10/180K	
R19	47	ohm	48 555 10/47E			0,15	Mohm)	48 557 10/150K	
R20	470	ohm	48 556 10/470E		R78	10000	ohm	48 556 10/10K	
R21	220	ohm	48 556 10/220E		R79	0,47	Mohm	48 556 10/470K	
R22	3300	ohm	48 556 05/3K3		R80	1	Mohm	48 556 10/1M	
R23	150	ohm	48 556 05/150E		R81	900	ohm	48 516 10/900E	
R24	47	ohm	48 555 10/47E		R82	47	ohm	48 555 10/47E	
R25	2200	ohm	48 556 05/2K2		R83	47	ohm	48 555 10/47E	
R26	470	ohm	48 555 10/470E		R84	47	ohm	48 555 10/47E	
R27	0,33	Mohm	48 556 05/330K		R85	6800	ohm	48 557 10/6K8	
R28	1	Mohm	49 472 34.0		R86	47	ohm	48 555 10/47E	
R29	150	ohm	48 556 05/150E		R87	22000	ohm	48 557 10/22K	
R30	47	ohm	48 555 10/47E		R88	0,22	Mohm	48 556 10/220K	
R31	470	ohm	48 555 10/470E		R89	0,15	Mohm	48 556 10/150K	
R32	1	Mohm	48 556 10/1M		R90	0,1	Mohm	49 472 28.0	
R33	10000	ohm	2x48 557 05/10K		R91	10000	ohm	48 556 10/10K	
R34	150	ohm	48 556 05/150E		R92	56000	ohm	48 557 10/56K	
R35	47	ohm	48 555 10/47E		R93	68000	ohm	48 557 10/68K	
R36	2200	ohm	48 556 05/2K2		R94	56000	ohm	48 557 10/56K	
R37	470	ohm	48 555 10/470E		R95	68000	ohm	48 557 10/68K	
R38	1	Mohm	48 556 10/1M		R96	10000	ohm	48 556 10/10K	
R39	10000/2	ohm	2x48 557 05/10K		R97	100	ohm	48 557 10/100E	
R40	150	ohm	48 556 05/150E		R98	100	ohm	48 557 10/100E	
R41	47	ohm	48 555 10/47E		R99	100	ohm	48 557 10/100E	
R42	0,1	Mohm	49 472 28.0		R100	100	ohm	48 557 10/100E	
R43	47	ohm	48 555 10/47E		R101	50	ohm	E5 133 29.1	
R44	6800	ohm	48 556 10/6K8						
R45	100	ohm	48 556 10/100E		R103	18000	ohm) par.	(48 557 05/18K	
R46	2200	ohm	48 556 05/2K2			22000	ohm)	(48 557 05/22K	

R104	5,6	Mohm	48 557 10/5M6
R105	1800	ohm	48 496 10/1K8
R106	2,2	Mohm	48 557 10/2M2
R107	2,2	Mohm	48 557 10/2M2
R108	820	ohm	48 556 05/820E
R109	2700	ohm	48 556 05/2K7
R110	56000	ohm	48 557 10/56K
R111	68000	ohm	48 557 10/68K
R112	56000	ohm	48 557 10/56K
R113	68000	ohm	48 557 10/68K
R114	56000	ohm	48 557 10/56K
R115	68000	ohm	48 557 10/68K
R116	56000	ohm	48 557 10/56K
R117	68000	ohm	48 557 10/68K
R118	1000	ohm	48 556 10/1K
R119	4,7	Mohm	48 557 10/4M7
R120	47	ohm	48 556 10/47E
R121	47	ohm	48 556 10/47E
R122	1,5	Mohm	48 556 10/1M5
R124	10	Mohm	M7 632 15.0
R125	1	Mohm	48 555 10/1M
R126	0,22	Mohm	48 552 02/220K
R127	220	ohm	48 556 10/220E
R130	1	Mohm	48 557 10/1M
R131	10	Mohm	48 557 10/10M
R132	10	Mohm	48 557 10/10M
R133	10	Mohm	48 557 10/10M
R134	1,2	Mohm	48 552 02/1M2
R135	0,22	Mohm	48 556 10/220K
R136	2200	ohm	48 556 10/2K2
R137	47000	ohm	48 557 05/47K
R138	33000	ohm	48 556 10/33K
R139	8200	ohm	2x48 557 05/6K2
R140	8200	ohm	2x48 557 05/6K2
R141	10000	ohm	48 556 10/10K
R142	10000	ohm	48 556 10/10K
R143	0,22	Mohm	48 556 10/220K
R144	0,68	Mohm	48 556 05/680K
R145	68000	ohm	48 556 10/68K
R146	6800	Mohm	48 556 10/6K8
R147	10	Mohm	48 557 10/10M
R148	0,1	Mohm	48 556 10/100K
R149	15000	ohm	48 556 10/15K
R150	470	ohm	48 556 10/470E
R151	470	ohm	48 556 10/470E
R152	10	Mohm	48 557 10/10M
R155	2,2	Mohm	48 556 10/2M2
C1	0,1	uF	48 792 10/100K
C2	12,5+12,5	uF	48 317 09/12,5+12,5
C3	380	pF	48 429 05/360E
C4	25+25	uF	48 317 08/25+25
C5	12,5+12,5	uF	48 317 11/12,5+12,5
C6	12,5+12,5	uF	48 317 11/12,5+12,5
C7	12,5+12,5	uF	48 317 11/12,5+12,5
C8	12,5+12,5	uF	48 317 11/12,5+12,5
C23	0,47	uF	48 790 10/470K
C24	0,22	uF	48 791 10/220K
C25	16	uF	48 112 10/C16M
C26	330	pF	48 429 10/330E
C27	0,1	uF	48 791 10/100K
C28	400	pF	49 005 54.0
C29	0,22	uF	48 791 10/220K
C30	0,1	uF	48 791 10/100K
C31	0,1	uF	48 791 10/100K
C32	0,1	uF	48 791 10/100K
C33	27	pF	48 429 05/27E
C34	150	pF	48 429 10/150E
C35	270	pF	48 429 10/270E
C36	1000	pF	48 104 10/V1K
C37	3300	pF	48 104 10/V3K3
C38	10000	pF	48 104 10/E10K
C39	33000	pF	48 105 10/T33K
C40	0,15	uF	48 105 10/C150K
C41	0,39	uF	48 106 10/C390K
C42	0,1	uF	48 791 10/100K
C43	0,1	uF	48 791 10/100K
C46	22000	pF	48 791 10/22K
C47	68	pF	48 429 10/68E
C48	150	pF	48 429 10/150E
C49	270	pF	48 429 10/270E
C50	1000	pF	48 104 10/V1K
C51	3300	pF	48 104 10/V3K3
C52	10000	pF	48 104 10/E10K
C53	33000	pF	48 105 10/T33K
C54	0,15	uF	48 105 10/C150K
C55	0,39	uF	48 106 10/C390K
C56	270	pF	48 213 05/270E
C57	12,5	pF	XU 052 16.0
C58	27	pF	48 429 10/27E
C59	0,47	uF	48 791 10/470K
C60	0,22	uF	48 791 10/220K
C61	draadtrimmer wire trimmer condensateur de réglage à fil trimer de alambre Drahtabgleich-kondensator		49 005 53.2
C62	0,47	uF	48 791 10/470K
C63	1200	pF	48 791 10/1K2
C64	50+50	uF	48 317 59/50+50
C65	50+50	uF	48 317 59/50+50
C66	0,22	uF	48 791 10/220K
C67	25+25	uF	48 317 11/25+25

C68	25+25	uF	48 317 11/25+25
C69	0,22	uF	48 792 10/220K
C71	47000	pF	48 105 10/V47K
C72	47000	pF	48 105 10/V47K
C73	0,47	uF	48 791 10/470K
C74	12,5+12,5	uF	48 317 11/12,5 +12,5
C75	12,5+12,5	uF	48 317 11/12,5 +12,5
C76	12,5+12,5	uF	48 317 11/12,5 +12,5
C77	12,5+12,5	uF	48 317 11/12,5 +12,5
C78	15000	pF	48 791 10/15K
C79	15000	pF	48 791 10/15K
C80	10000	pF	48 797 20/10K
C81	10000	pF	48 797 20/10K
C82	0,22	uF	48 791 10/220K
C83	10000	pF	48 791 10/10K
C84	10000	pF	48 791 10/10K
C85	4	pF	XU 052 19.0
C86	3-30	pF	28 212 36.4
C87	270	pF	48 213 05/270E
C89	47	pF	48 213 05/47E
C90	18	pF	48 211 05/18E
C91	4,7	pF	48 210 20/4E7
C92	0,15	uF	48 791 10/150K
C94	zie C64		
C95	22	pF	48 211 10/22E
C96	220	pF	48 213 10/220E
B1			EF42
B2			EF42
B3			EL41
B4			EL41
B5			EF42
B6			UF42
B7			EF42
B8			EF42
B9			DG10-6
B10			EF42
B11			PL81
B12			AZ41
B13			AZ41
B14			AZ41
B15			AZ41
B16			EF42

GM5653-02

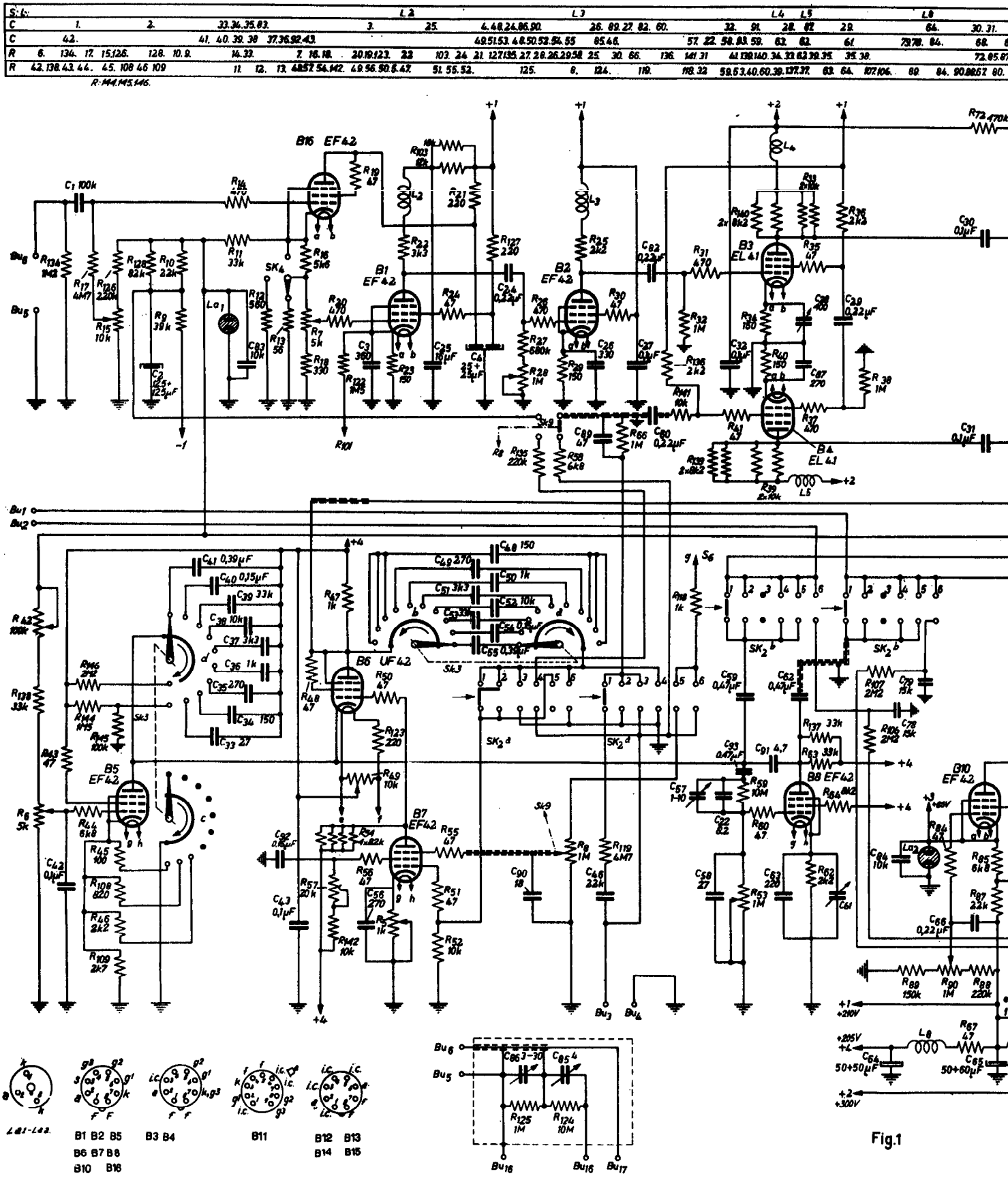


Fig.1

GM5653-02

L4	L5	L8	L1	S1–S11	L6 L7
28. 62.	29.	64. 30. 31.	76. 77. 23.	5. 6.	69. 73. 71. 72.
63. 62.	61.	79 78. 84. 66. 65.	74. 75. 67 89	7. 8.	60 81
4. 32 62 39. 35.	35. 36.	72. 85. 87. 83. 86. 60. 70.	104. 97. 1'. 1. 2'. 2. 73.	71. 114. 115. 116. 117. 100. 130. 101.	89. 79. 131.
9. 137. 37.	63. 64.	107 106. 89. 84. 60. 88. 67. 60. 105. 81. 82.	92. 93. 94. 95. 91. 96. 98.	110. 111. 112. 113. 99. 132. 133. 74. 120. 121. 75. 4. 76. 77. 78. 76. 78.	3.

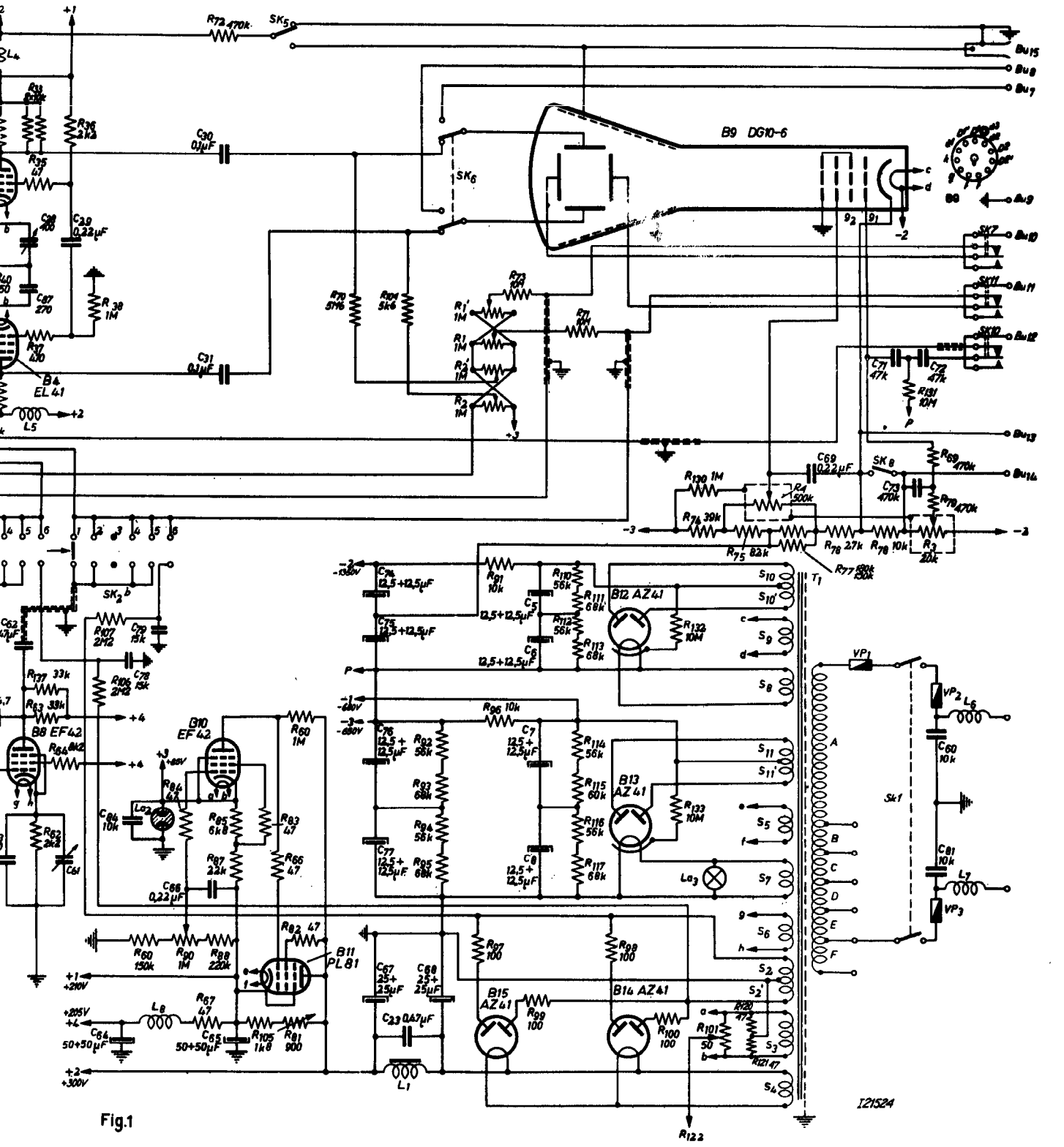


Fig.1

GM5653-02F

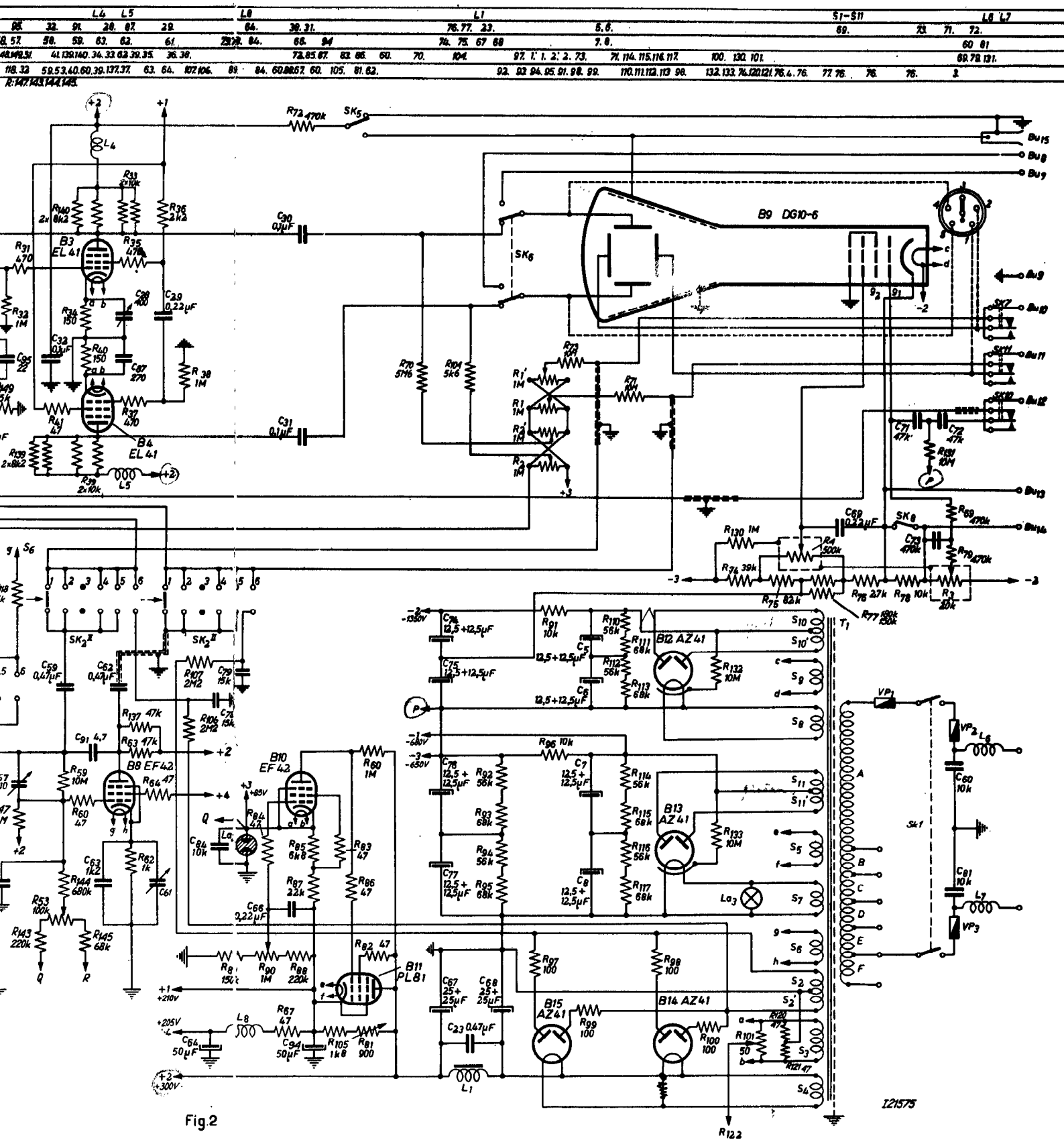


Fig.2

GM5653-02F

S.L.:	L2	L3	L4	L5	L8
C	1. 2. 33.34.35.83.	3. 25. 4.48.24.86.90. 85. 26. 89.27 62. 60.	95. 32. 91. 28. 87. 29.		64. 30. 31.
C	43.	41. 40. 30. 38.85.37.36.92.43.	49.51.53. 48.50.52. 54.55	86.46.	58. 57. 59. 52. 63. 62. 61. 29. 84. 66. 94
R	6. 134. 17. 15.126. 10.9.	146. 14.33. 151.76.88.150. 20.19	22.152. 103. 24. 31. 127.135. 27. 28. 26. 29.58. 25. 30. 66.	148.149.91.	41.139.140. 34. 33. 62. 39. 35. 36. 38. 73. 85. 87. 82. 86. 60.
R	42.138.43.44. 45. 109 46 109	11. 12. 13. 48.57. 54.142. 49.56.50.5.47.	51. 55.52. 125. 8. 124.153. 119.	118. 32. 59.53.40.60.39.137.37. 63. 64. 107.106. 89. 84. 90.88.57. 60. 105. 81. 83.	R:147.145.144.146.

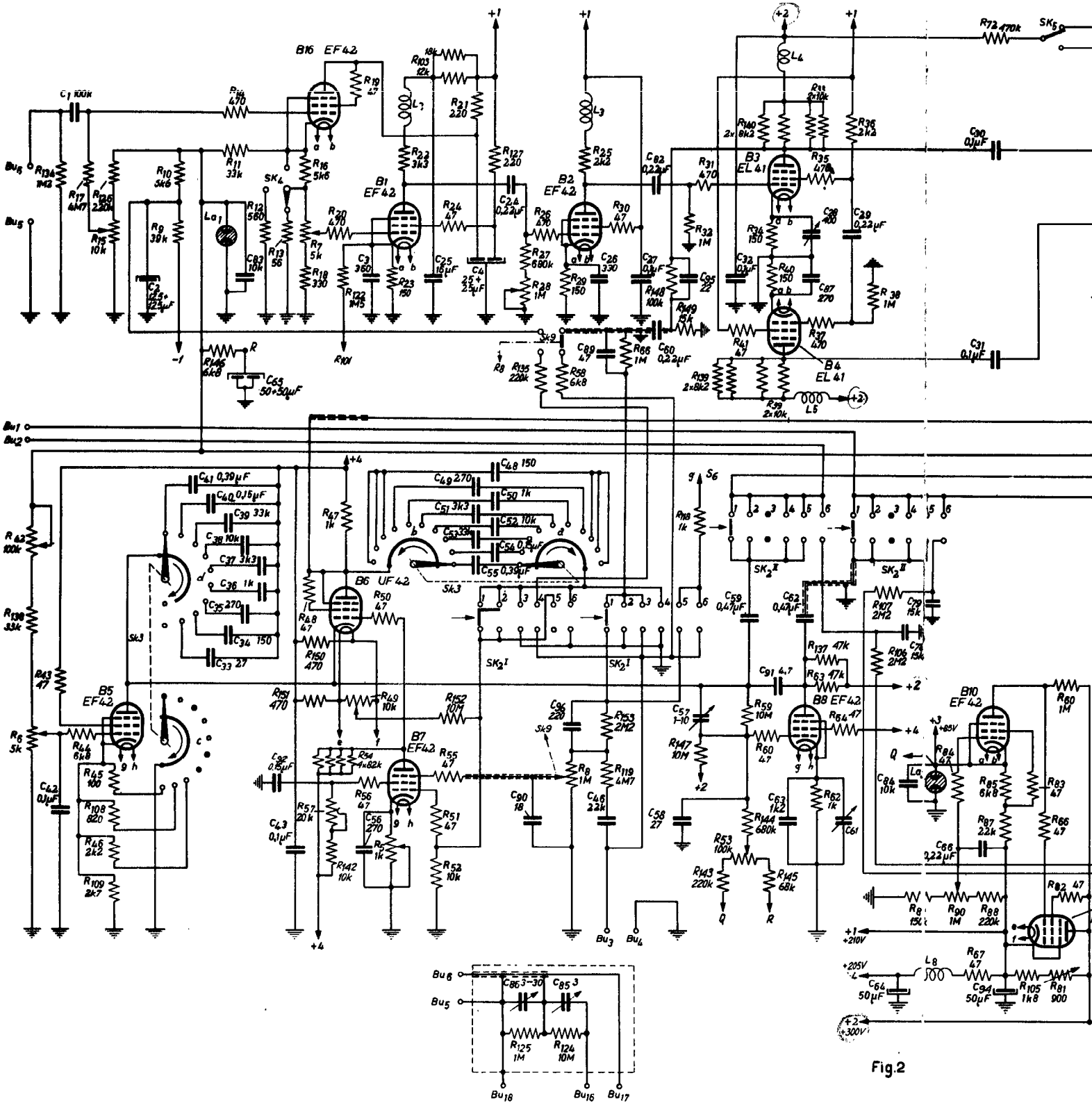


Fig.2

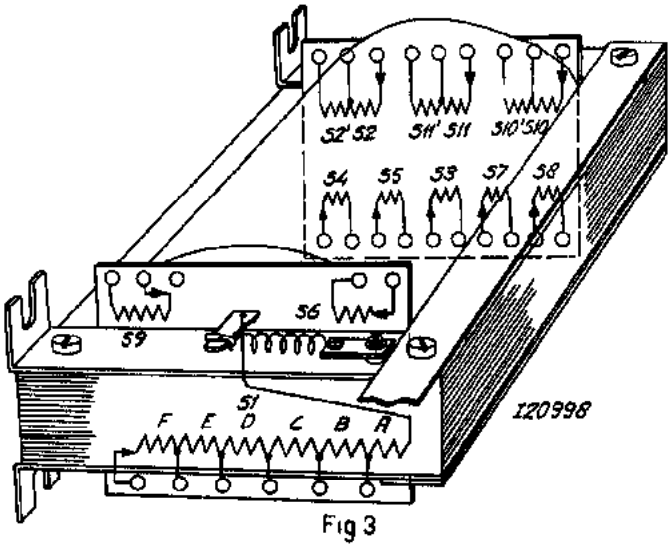


Fig 3

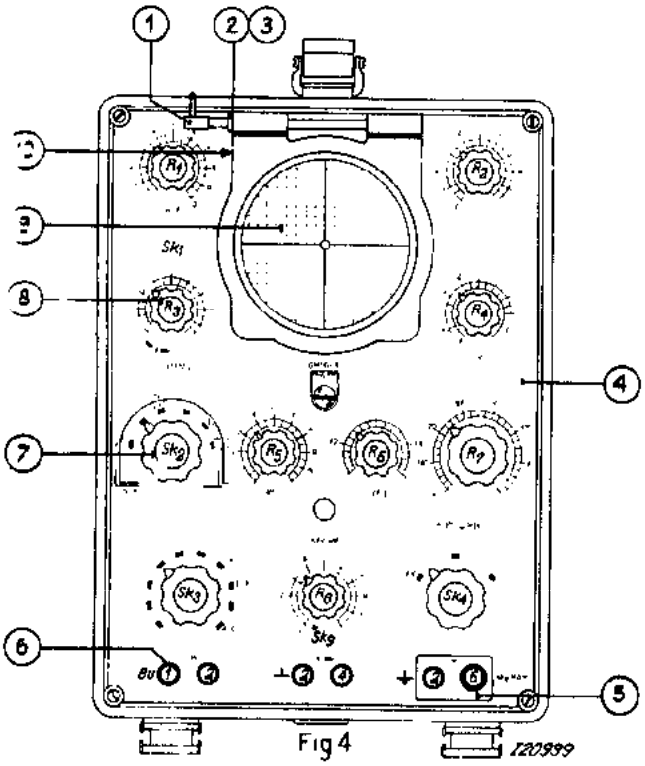


Fig 4

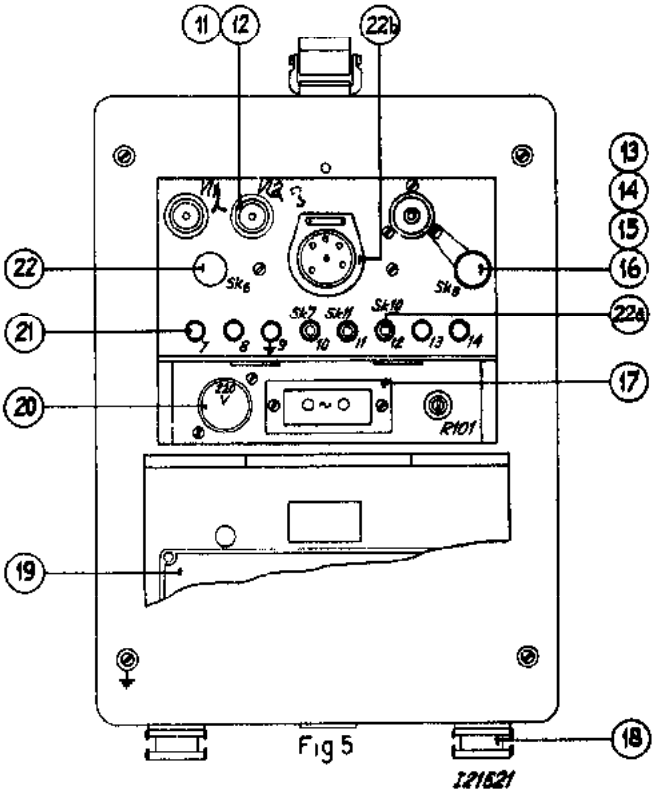
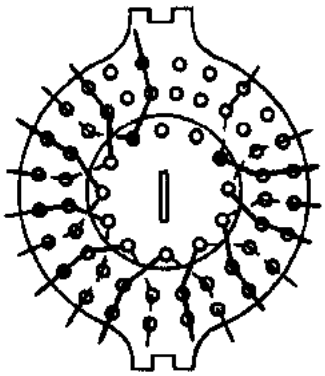
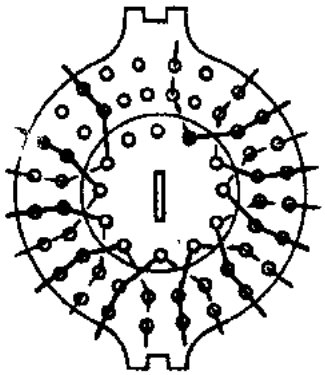


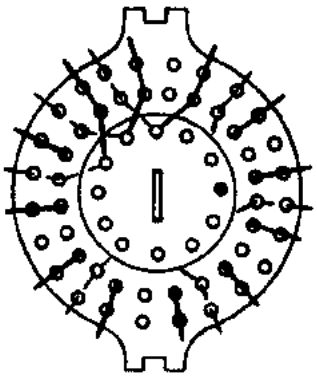
Fig 5



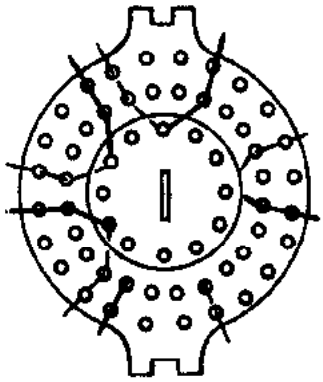
sk3a



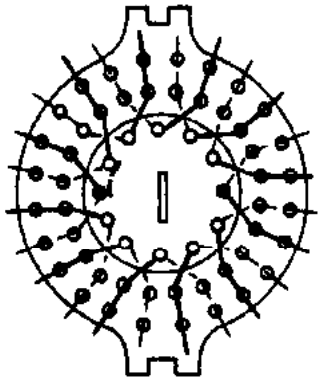
sk3b-sk3d



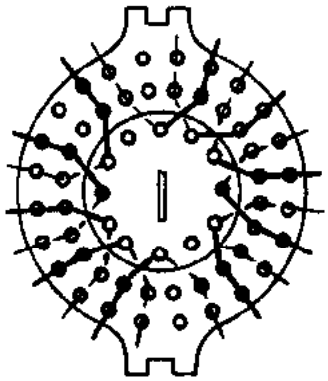
sk3c



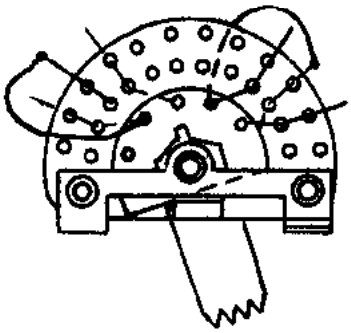
sk4



sk2a



sk2b



sk6 1214 78

Fig.6

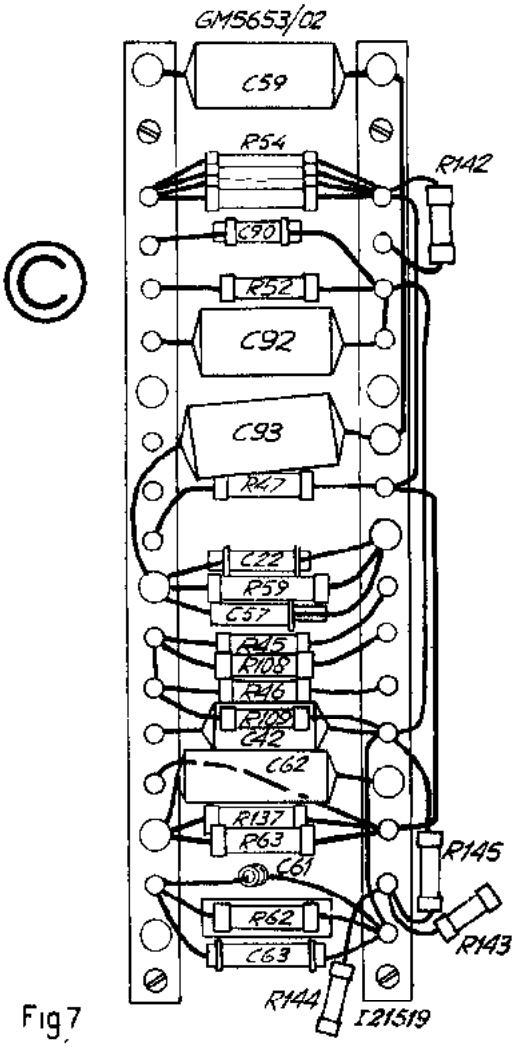


Fig 7

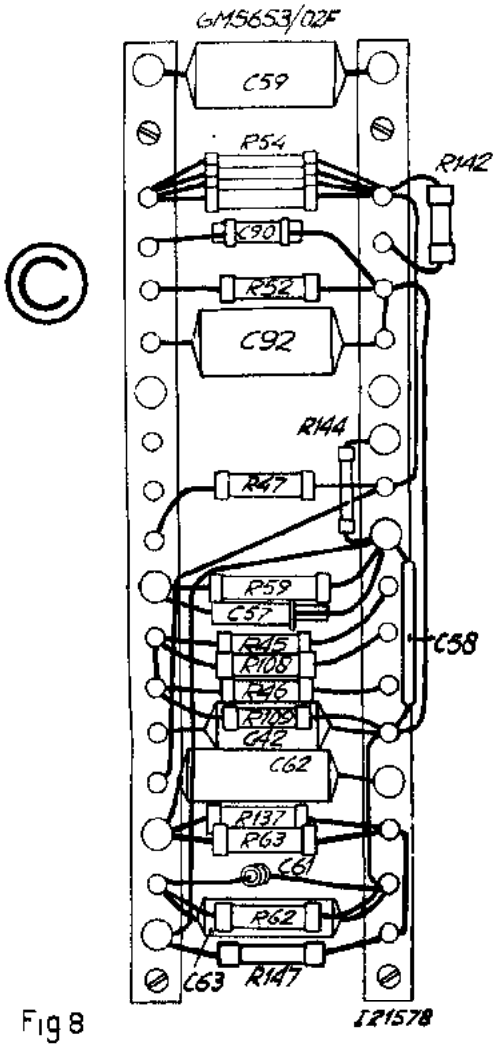


Fig 8

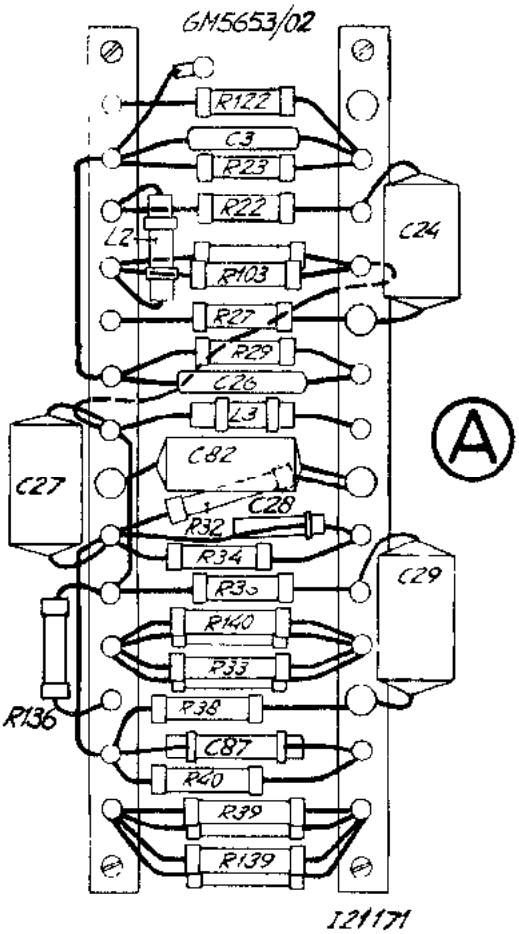


Fig 9

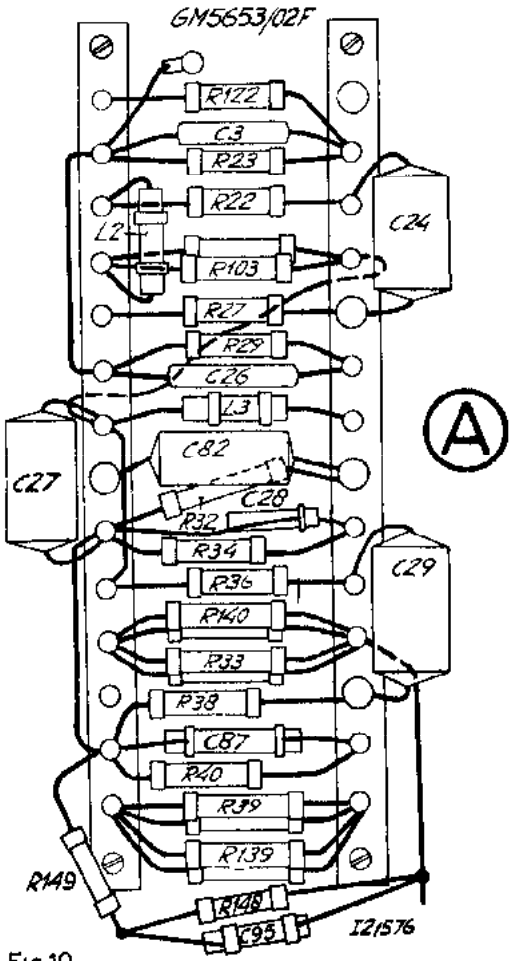


Fig 10

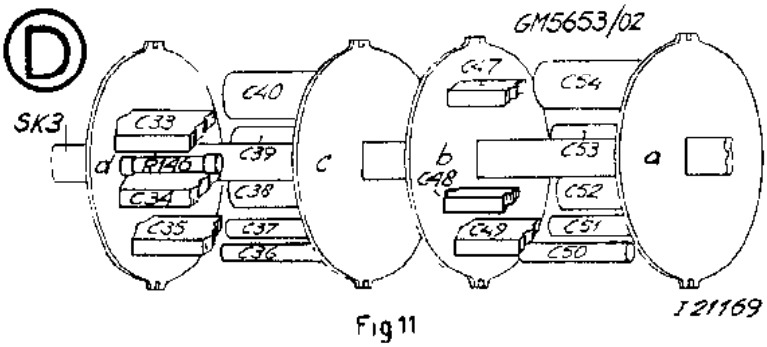


Fig 11

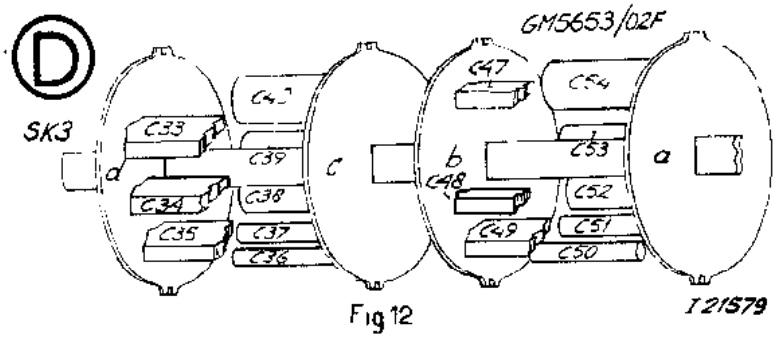
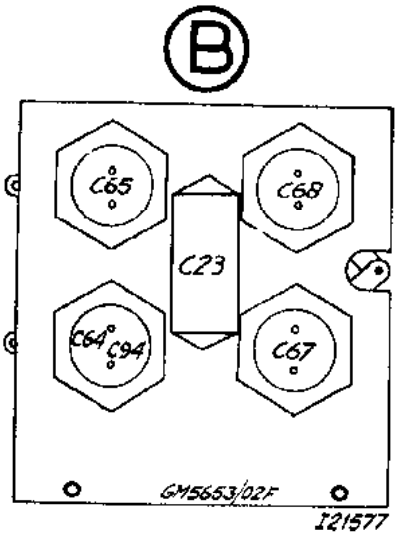


Fig 12



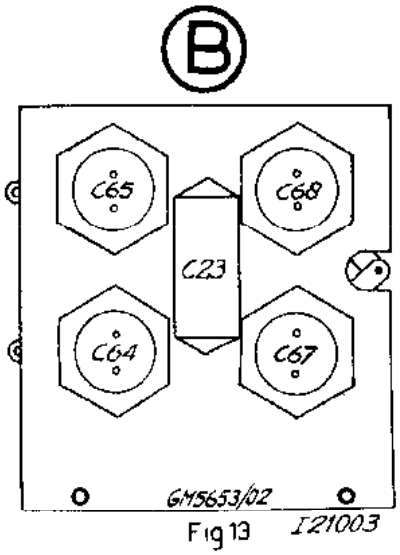


Fig 13

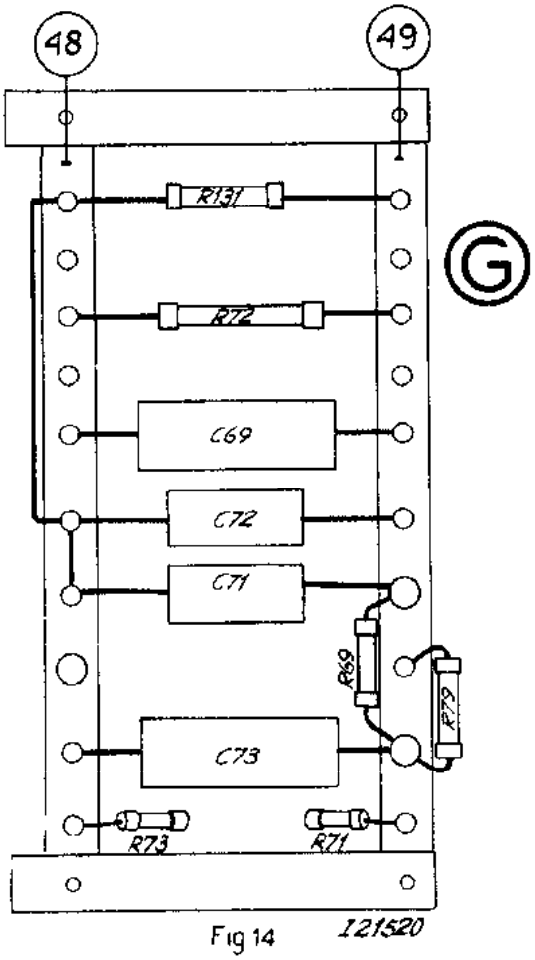


Fig 14

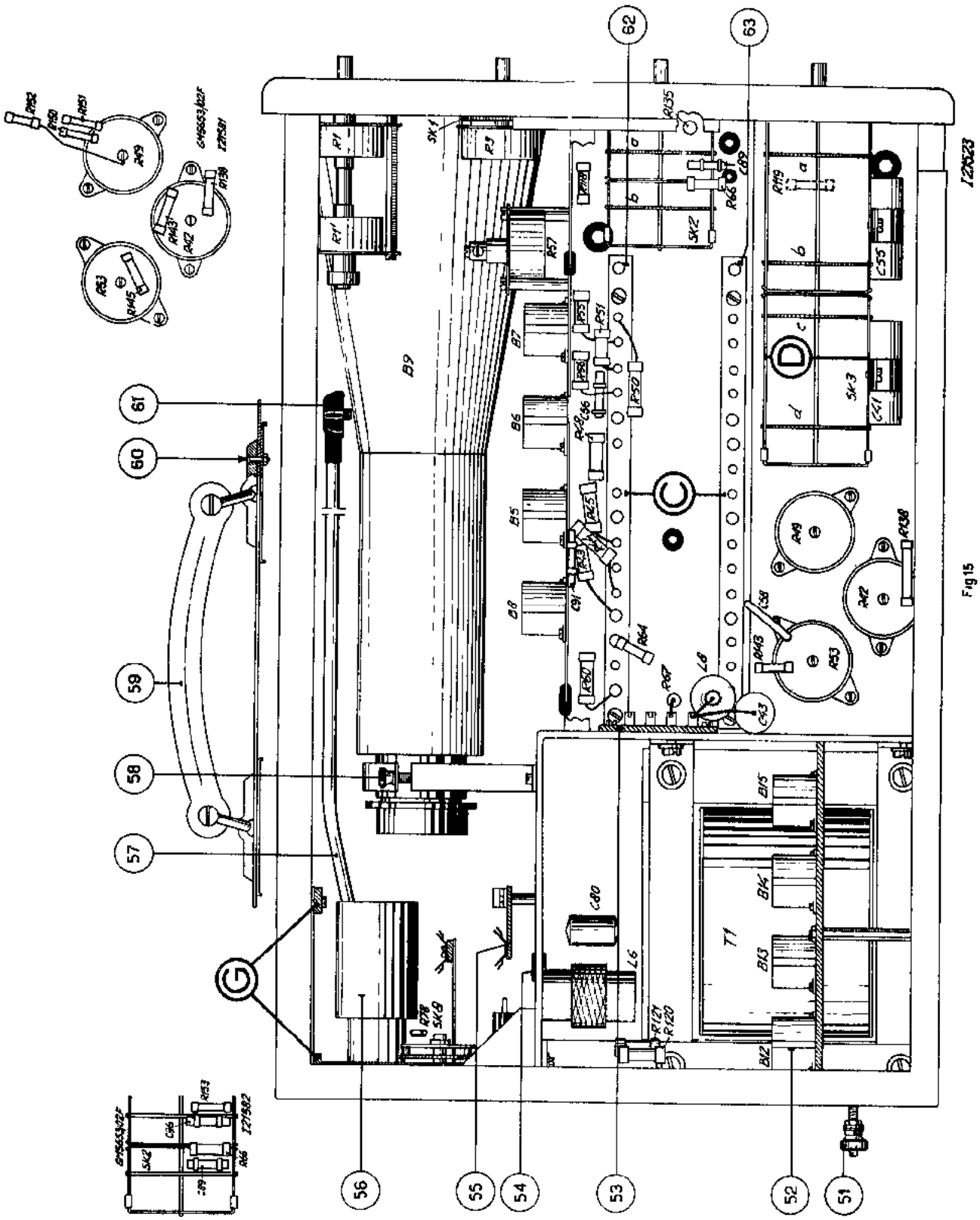


Fig 15

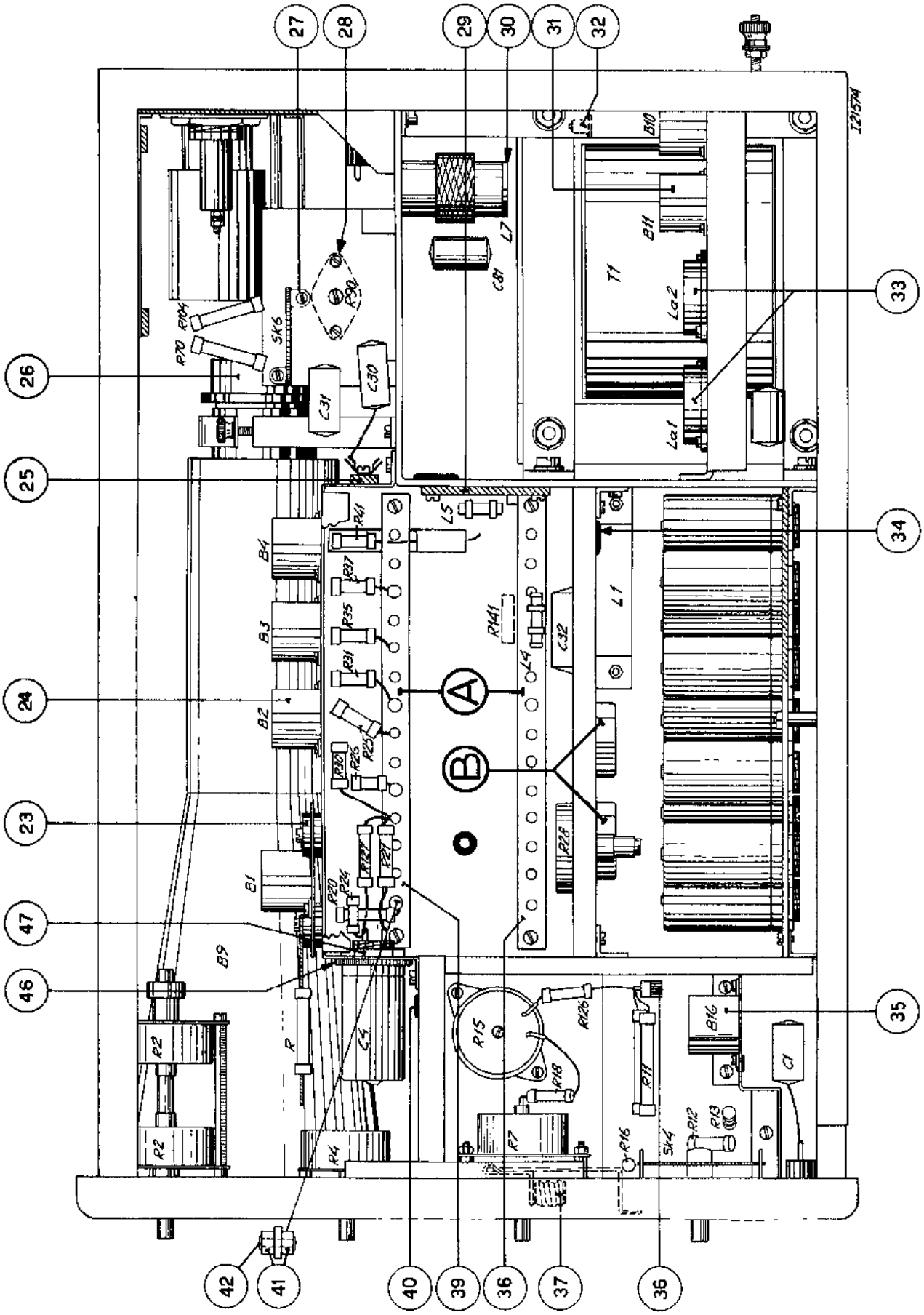


Fig 16

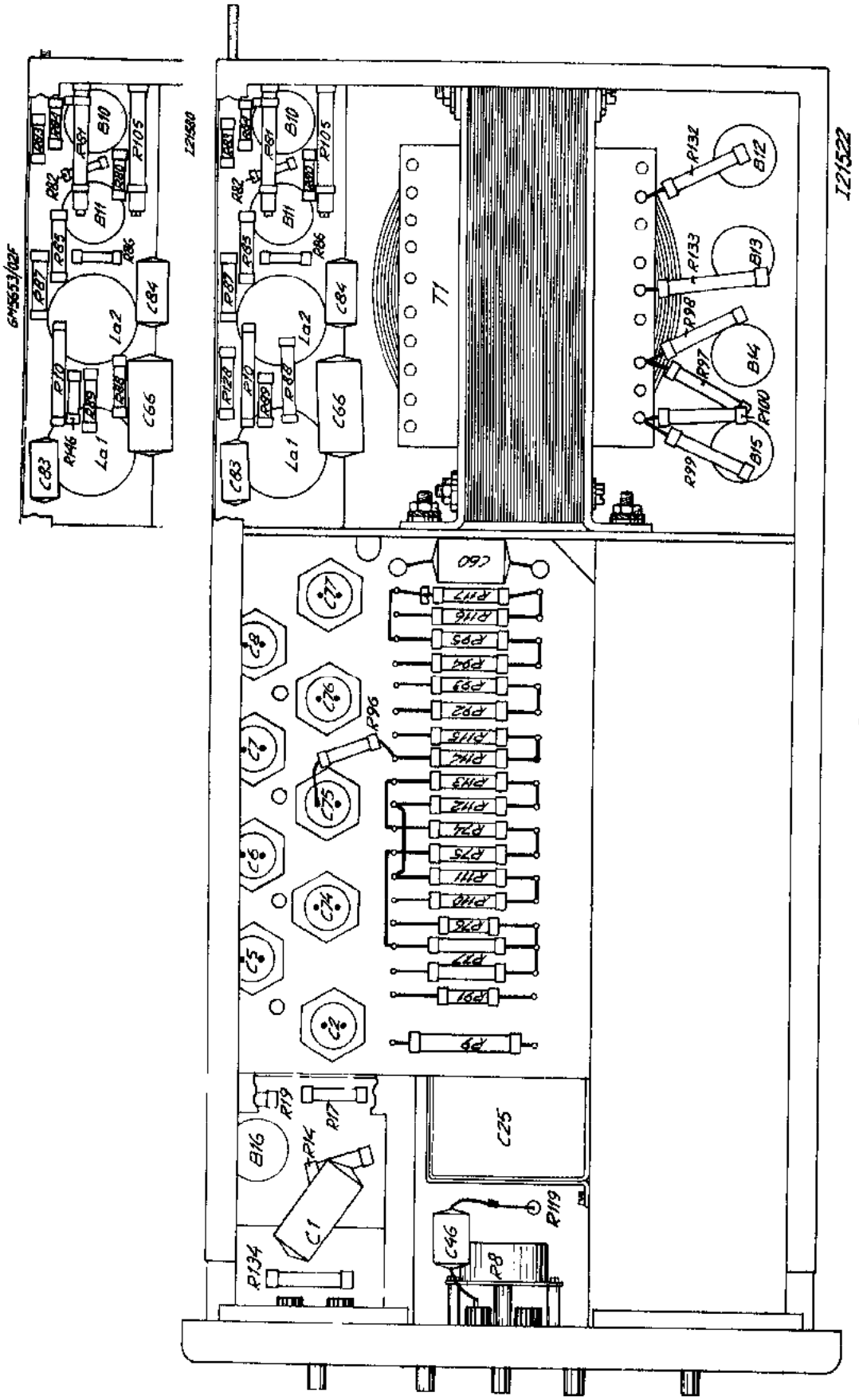


Fig 1.7

GM5653-02/02F

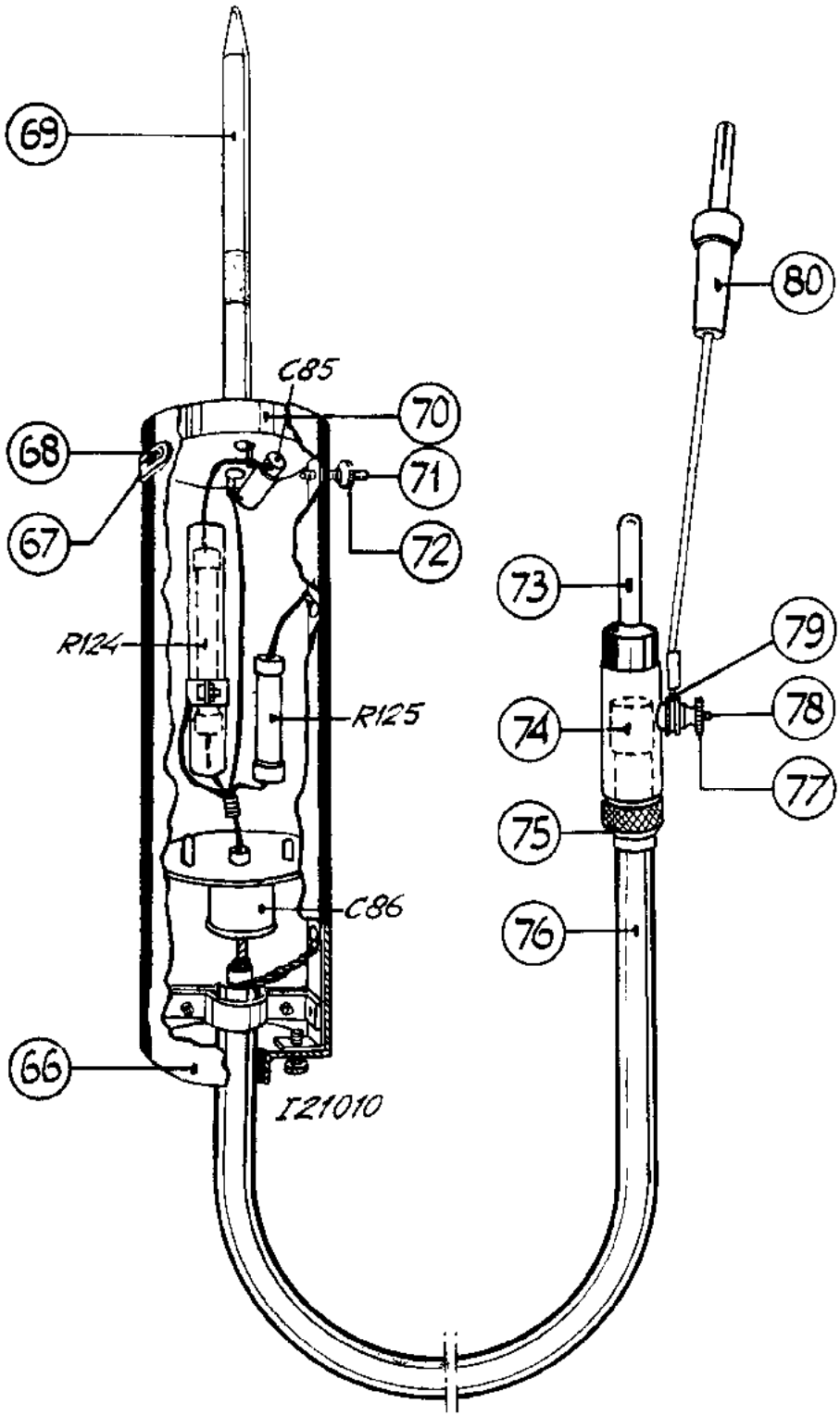


Fig 18

N.V. PHILIPS' GLOEILAMPENFABRIEKEN EINDHOVEN	GM 5653	1	WD 726
SERVICE			5 - 8 - 1953

ERRATA

1. Circuit diagrams GM 5653/00/01/02 and /02F

The heaters of valves B14 and B15 are connected in series, as shown in the figure below and not in parallel as shown in the circuit diagrams.

2. GM 5653/00/01 - Fig. 8 - GM 5653/02/02F - Fig. 5

For V11 please read VP 2
For V12 please read VP 3

3. GM 5653/00/01 - List of mechanical parts

Please delete - Item 32 - Milled nut - 07 601 90.0

4. GM 5653/02/02F - list of mechanical parts

Item 31 - Top cap for B11-A3 307 24.0 should be: item 32.
Please delete; Item 32 - milled nut - 07 601 90.0
Please add - Item 33 - lamp fitting La1, La2 - 49 231 31.2.

ERRATA

1. Esquemas de conexionado GM 5653/00/01/02 y /02F

Los filamentos de las válvulas B 14 y B 15 se han acoplado en serie, como se indica en la figura indicada a continuación y no en paralelo como se ha indicado en los esquemas de conexionado.

2. GM 5653/00/01 - Fig. 8 - GM 5653/02/02F - Fig. 5

V11 debe ser VP2
V12 debe ser VP3

3. GM 5653/00/01 - lista de piezas mecánicas

Pos 32 - tuerca fresada - 07 601 90.0 queda suprimido

4. GM 5653/02/02F - lista de piezas mecánicas

Pos 31 - terminal superior - A3 307 24.0 debe ser pos. 32
Pos 32 - tuerca fresada - 07 601 90.0 que da suprimido
Anádase : Pos 33 - Soporta - lámpara La1 y La2 - 49 231 31.2

ERRATA

1. Schémas GM 5653/00/01/02 et /02F

Les filaments des tubes B14 et B15 ont été branchés en série, comme il est indiqué à la figure ci-dessous et non en parallèle comme il est indiqué dans les schémas.

2. GM 5653/00/01 - fig. 8 - GM 5653/02/02F - fig. 5

V11 doit être VP2
V12 doit être VP3

3. GM 5653/00/01 - liste de pièces mécaniques

Pos. 32 - écrou molette - 07 601 90.0 doit être supprimée.

4. GM 5653/02/02F - liste de pièces mécaniques

Pos 31 - connexion sur crête A3 307 24.0 doit être pos. 32
Pos 32 - écrou molettée - 07 601 90.0 doit être supprimée.
Ajouter:Pos 33 - support de lampe La1 et La2 - 49 231 31.2

ERRATA

1. Prinzipschaltbilder GM 5653/00/01/02 und /02F

Die Heizfäden der Röhren B14 und B15 sind in Reihe geschaltet worden wie in untenstehender Abbildung angegeben und nicht parallel wie in den Prinzipschaltbildern gezeichnet.

2. GM 5653/00/01 - Abb. 8 - GM 5653/02/02F - Abb. 5

V11 muss sein VP2
V12 muss sein VP3.

3. OM 5653/00/01 - Liste der mechanischen Ersatzteile

Pos. 32 - Rändelmutter - 07 601 90.0 wird hinfällig

4. GM 5653/02/02F - Liste der mechanische Ersatzteile

Pos 31 - Röhrenkappe - A3 307 24.0 muss sein Pos. 32
Pos.32 - Rändelmutter - 07 601 90.0 wird hinfällig
Hinzufügen: Pos 33 - Lampenfassung La1 und La2 - 49 231 31.2

ERRATA

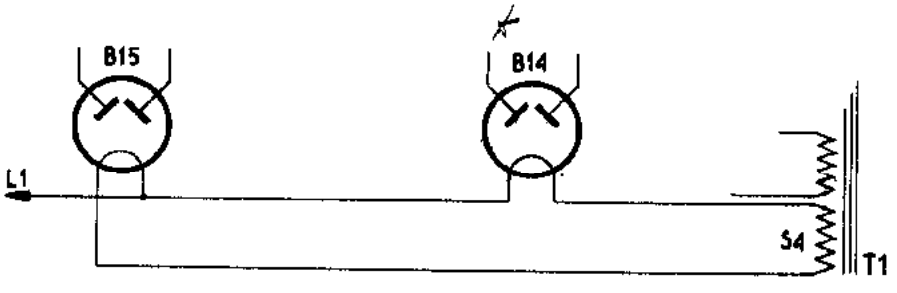
1. Principeschema's GM 5653/00/01/02 en /02F.

De gloeidraden van de buizen B14 en B15 zijn in serie geschakeld, zoals aangegeven in onderstaande figuur en niet parallel zoals aangegeven in de principeschema's

2. GM 5653/00/01 - fig. 8 - GM 5653/02/02F - fig. 5
V11 moet zijn VP2 en V12 moet zijn VP3.

3. GM 5653/00/01 - mechanische stuklijst
Pos. 32 - kartelmoer - 07 601 90.0 vervalt.

4. GM 5653/02/02F - mechanische stuklijst
Pos. 31 - Topaansluiting - A3 307 24.0 moet zijn: pos. 32
Pos. 32 - kartelmoer - 07 601 90.0 vervalt.
Toevoegen: Pos. 33 - Lamphouder La1 en La2 - 49 231 31.2



Ra/RSw

N.V. PHILIPS' GLOEILAMPENFABRIEKEN EINDHOVEN	Re: GM 5653/01 and 02	M 122
SERVICE		31.7.52

In position 4 of SK2 (single stroke time-base) the beginning of the time-base is non-linear, and the first part of a pulse will be somewhat distorted.

The circuit of the phase-inverter B8 should therefore be modified. In fig.1 the present situation is drawn, whilst in fig.2 the new circuit is shown. The anode of B8 is now fed by the non-stabilized voltage via R137/R63 and the controlgrid of B8 is connected to a variable voltage via R53 (-85V to + 85V). This voltage is taken from the ends of R1.

ALIGNEMENT

1. Time-base switch SK3 at 1500 and R6 at 1x. R8 in position "trigg" (fully anti-clockwise), SK2 in position 4. Wait until the spot appears on the screen and no longer moves. R3 fully anti-clockwise. Turn R53 slowly to the right. The spot moves along the screen now; until the valve is cut off. The valve should be biased at a point near cut-off. This is done as follows:

   Connect a voltmeter between the cathode of B8 and earth and adjust with R53 to approx. + 1,5 V.
   Another method is to adjust R53 in such a way that the spot moves a little more and then stops. The adjustment is as follows:

   Turn R53 to the right until the spot no longer moves, then turn R53 a few degrees in the reverse direction. Both methods give a correct biassing of the valve.

2. SK3 at 1500 and R6 at 1x, R8 in position 10 (fully clockwise), SK2 in position intern / intern. Adjust with R5 so that both the beginning and the end of the time-base line appears on the screen. Produce ten peaks on the screen by means of a GM 2315 and align with C57 for linearity.

3. SK3 at 10000 and R6 at 5x, produce again ten peaks on the screen by means of a GM 2883 and align for linearity with C61.

4. All positions of SK3 and with R6 fully anti-clockwise and fully clockwise should be checked for linearity. The amplitude of the time-base should be at least 86 mm for frequencies from 5-25000 c/s and for higher frequencies at least 60 mm (R5 and R6 fully clockwise).

CENTRAL SERVICE DEPARTMENT

Be/LB Ph. Salverda

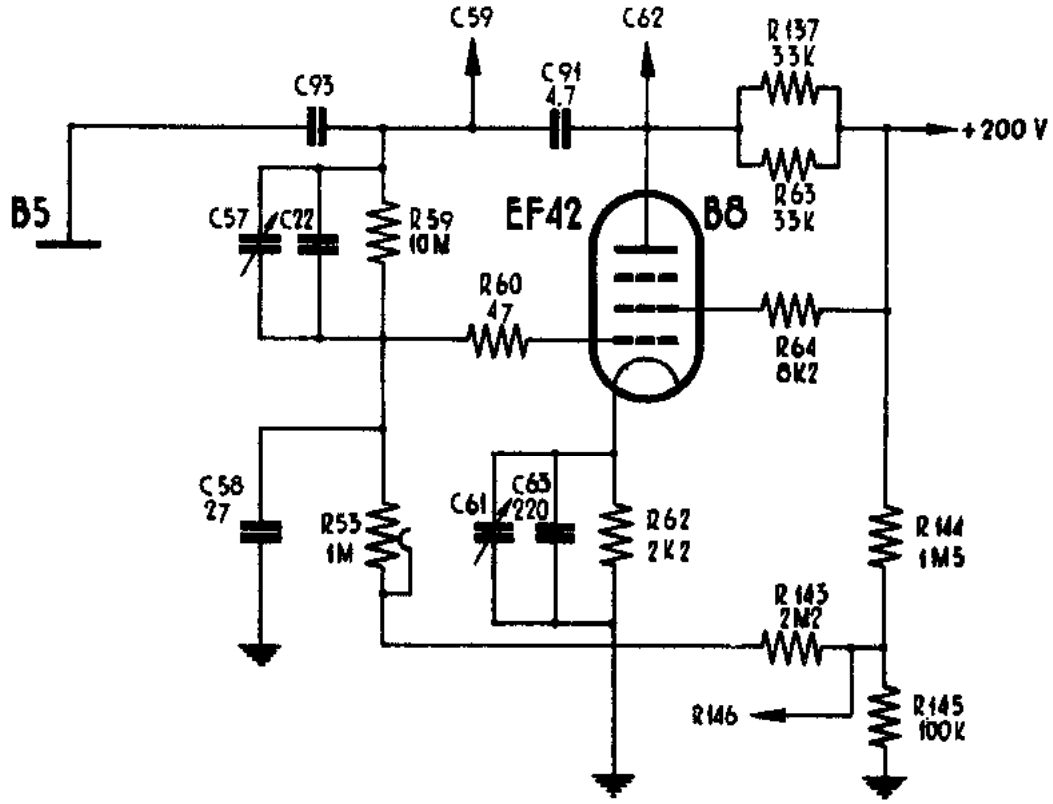


Fig.1

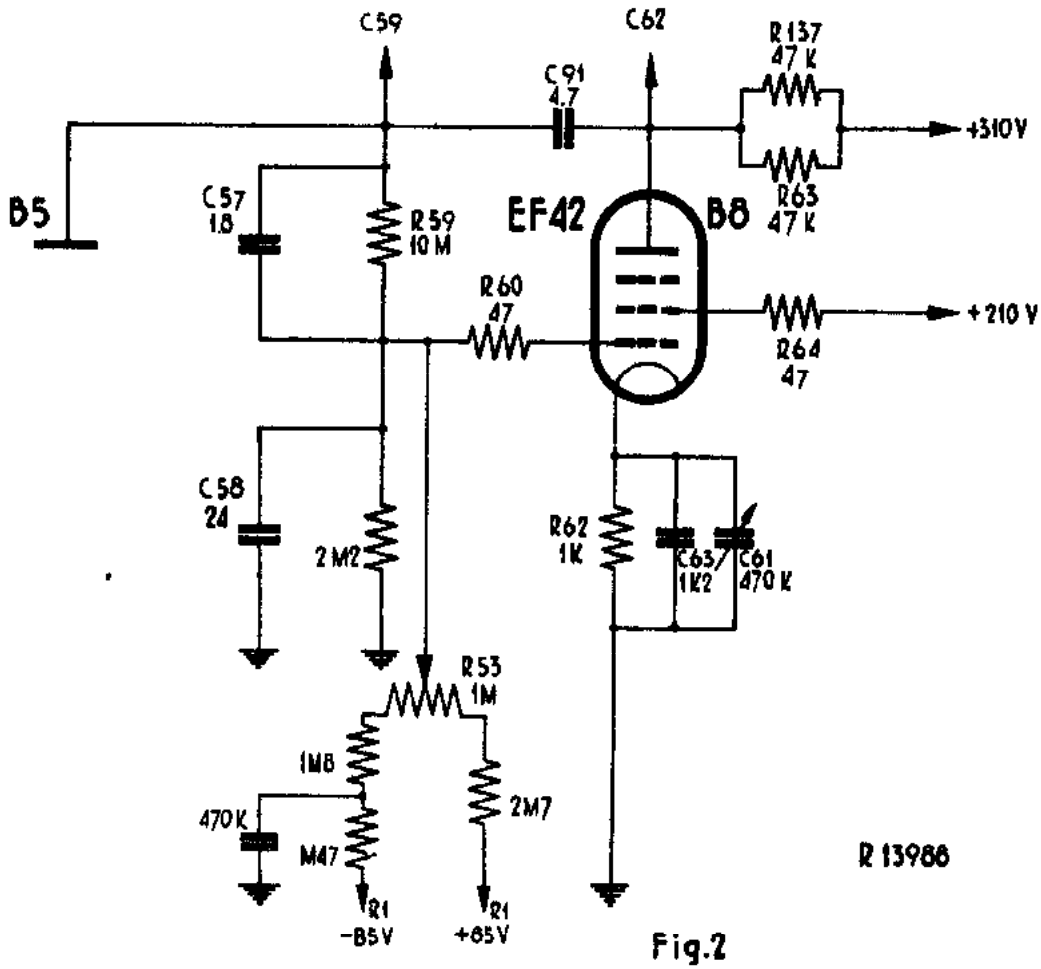


Fig.2

N.V. PHILIPS' GLOEILAMPENFABRIEKEN EINDHOVEN	GM 5653-02	M 134
SERVICE		1.9.1952

In de anode-circuits van B12 en B13 zijn stopweerstanden R154, R155, R156 en R157 aangebracht.
Reden: Bescherming van de transformator bij het eventueel defectraken van een electrolytische condensator.

R154 470 Ohm codenummer 48 555 10/470E
R155 470 Ohm codenummer 48 555 10/470E
R156 470 Ohm codenummer 48 555 10/470E
R157 470 Ohm codenummer 48 555 10/470E

In the anode-circuits of B12 and B13 anodestoppers R154, R155. R156 and R157 have been added.
Reason: Protection of the transformer when there is a short-circuit in an electrolytic condenser.

R154 470 Ohm codenumber 48 555 10/470E
R155 470 Ohm codenumber 48 555 10/470E
R156 470 Ohm codenumber 48 555 10/470E
R157 470 Ohm codenumber 48 555 10/470E

Dans les circuits anodiques de B12 et B13 les résistances R154, R155, R156 et R157 ont été appliquées.
Raison: Protection du transformateur quand il y a un court-circuit dans un condensateur électrolytique.

R154 470 Ohm numéro de code 48 555 10/470E
R155 470 Ohm numéro de code 48 555 10/470E
R156 470 Ohm numéro de code 48 555 10/470E
R157 470 Ohm numéro de code 48 555 10/470E

Vor den Anoden von B12 und B13 sind die Widerstände R154, R155, R156 und R157 geschaltet worden.
Grund: Schutz des Transformators bei defektem Elektrolyt-Kondensator.

R154 470 Ohm Kodenummer 48 555 10/470E
R155 470 Ohm Kodenummer 48 555 10/470E
R156 470 Ohm Kodenummer 48 555 10/470E
R157 470 Ohm Kodenummer 48 555 10/470E

Se han conectado las resistencias R154, R155, R156 y R157 en los circuitos anódicos de B12 y B13.
Razón: Protección del transformador en caso de un condensador defectuoso.

R154 470 Ohm Numéro de code 48 555 10/470E
R155 470 Ohm Numéro de code 48 555 10/470E
R156 470 Ohm Numéro de code 48 555 10/470E
R157 470 Ohm Numéro de code 48 555 10/470E

Central Service Department
Ph. Salverda

9563 65

1.9.1952
Be/WvL

N.V. PHILIPS' GLOEILAMPENFABRIEKEN EINDHOVEN	Betr.: GM5653/02	M143
SERVICE		11-11-52

R27 en C95 moeten gewijzigd worden ter verbetering van de sprongkarakteristiek van de versterker voor verticale afbuiging.

R27	0,68	MΩ	48 556 05/680K	wordt	R27	1	MΩ	48 556 05/1M
C95	22	pF	48 211 10/22E	wordt	C95	12	pF	48 211 10/12E

R27 and C95 must be altered in order to improve the transient response of the amplifier for vertical deflection.

R27	0,68	MΩ	48 556 05/680K	becomes	R27	1	MΩ	48 556 05/1M
C95	22	pF	48 211 10/22E	becomes	C95	12	pF	48 211 10/12E

R27 et C95 doit être modifier pour correction de la charactéristique de saut d'amplificateur pour la déflection verticale.

Remplace									
R27	0,68	MΩ	48 556 05/680K	par	R27	1	MΩ	48 556 05/1M
C95	22	pF	48 211 10/22E	par	C95	12	pF	48 211 10/12E

R27 und C95 müssen geändert werden zur Verbesserung der Sprungkarakteristik des Verstärkers für die vertikale Ablenkung.

R27	0,68	MΩ	48 556 05/680K	wird	R27	1	MΩ	48 556 05/1M
C95	22	pF	48 211 10/22E	wird	C95	12	pF	48 211 10/12E

Para mejarar la característica de salta del amplificador vertical daban modificarse R27 y C95.

R27	0,68	MΩ	48 556 05/680K	se hace	R27	1	MΩ	48 556 05/1M
C95	22	pF	48 211 10/22E	se hace	C95	12	pF	48 211 10/12E

CENTRAL SERVICE DEPARTMENT

Ch. Salverda.

Be/TV

N.V. PHILIPS' GLOEILAMPENFABRIEKEN EINDHOVEN	Betr. Conc.: GM5653-01-02	M149
SERVICE		15-1-53

De principeschema's van de GM5653-01 en GM5653-02 in de respectieve Service Documentaties GM5653-00-01 en GM5653-02 moeten worden verbeterd als volgt: (zie fig.)

1. R8 en R119 moeten met elkaar verbonden worden.
2. R143 moet worden toegevoegd tussen punt C58-R53 en punt R144-R145. De aarding van R53 vervalt.

In de tekst van de documentatie van de GM5653-02 moet het volgende toegevoegd worden:

1. Onder: A Contrôle en instelling
   e) Voedingsspanning. De spanning over C65 (C94 in 02F) moet met R90 op 230V ingesteld worden.
2. Onder: B Verschillen van type 02F met type 00
   In de stand "Trigg" van SK9 wordt nu de negatieve helft van het ingangssignaal op het scherm afgebeeld, omdat hier de synchronisatiespanning van de anode van B3 wordt afgenomen.

The circuit diagrams of the GM5653-01 and GM5653-02 in the respective Service Notes GM5653-00-01 and GM5653-02 must be corrected as follows: (See fig.)

1. R8 and R119 must be connected to each other.
2. R143 must be added between C58-R53 and R144-R145. The earth connection of R53 must be omitted.

In the Service Notes of the GM5653-02 the following must be added in the text:

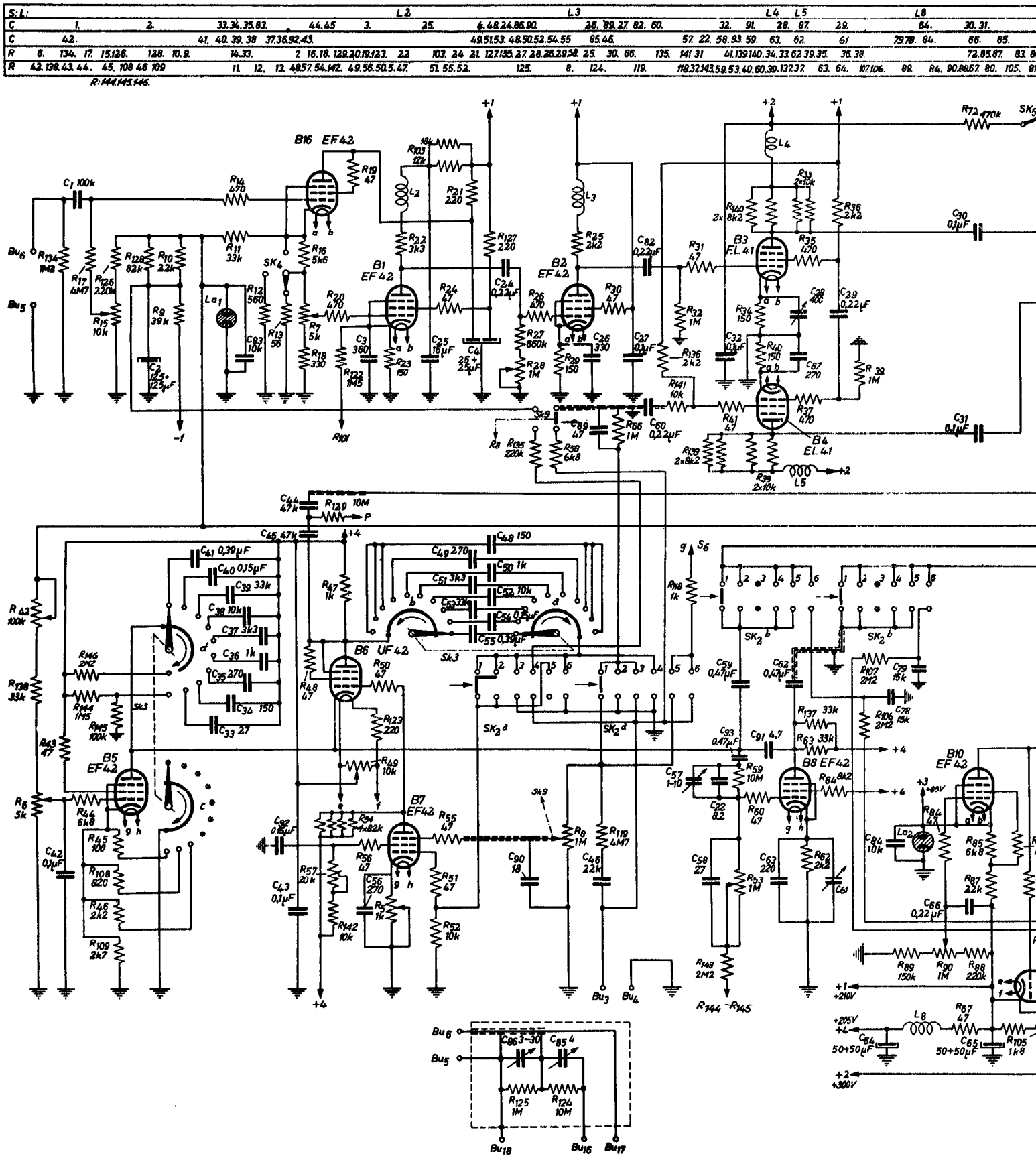
1. Under: A Alignment and checking
   e) Power supply. The voltage across C65 (C94 in 02F) must be adjusted to 230V with R90.
2. Under: B Differences between type 02F and type 00
   If SK9 is in position "Trigg" the negative half of a signal is reproduced on the screen, because here the synchronisation voltage is taken from the anode of B3.

CENTRALE SERVICE AFDELING

Be/TV

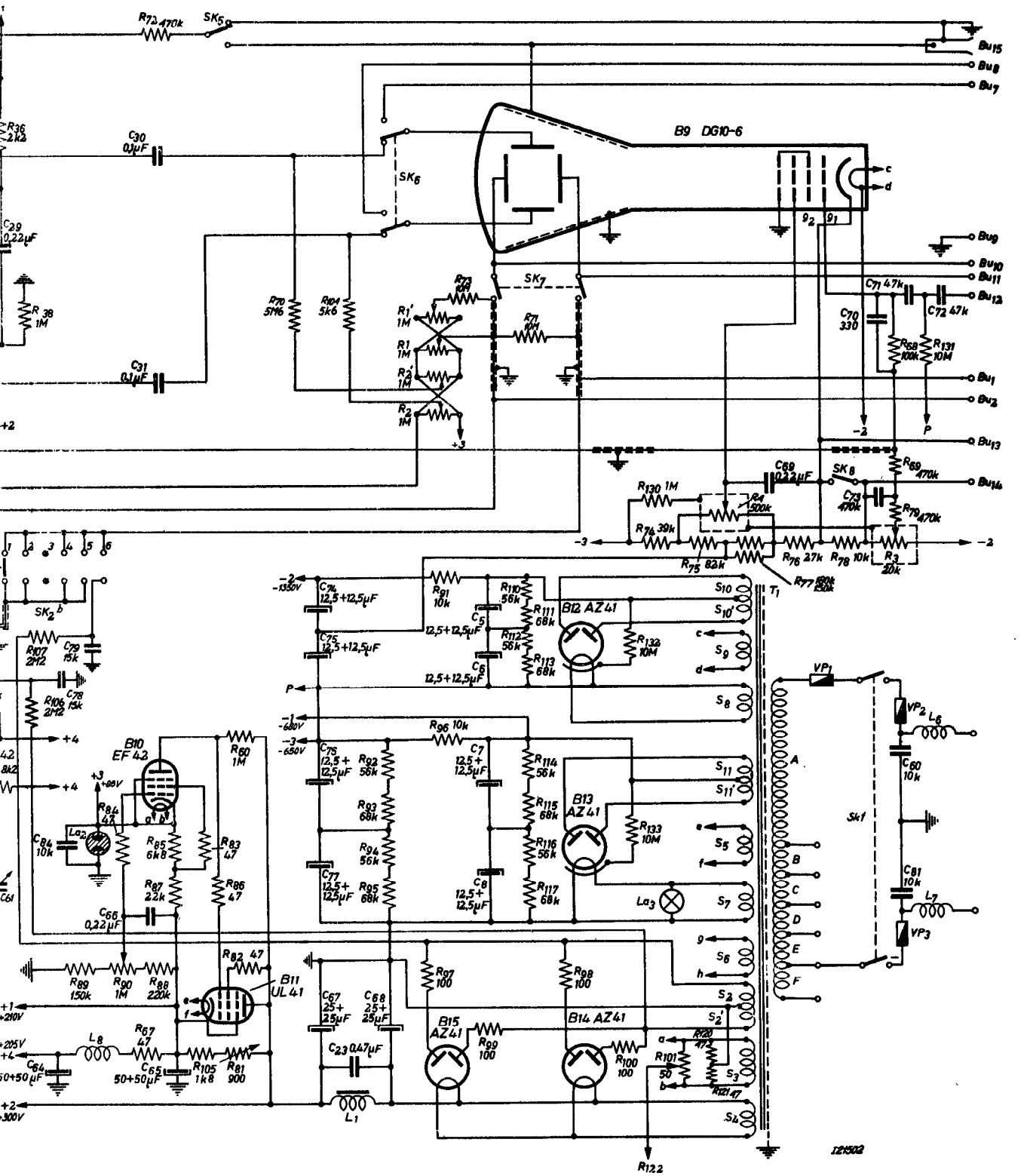
H. Calverda.

GM5653-01

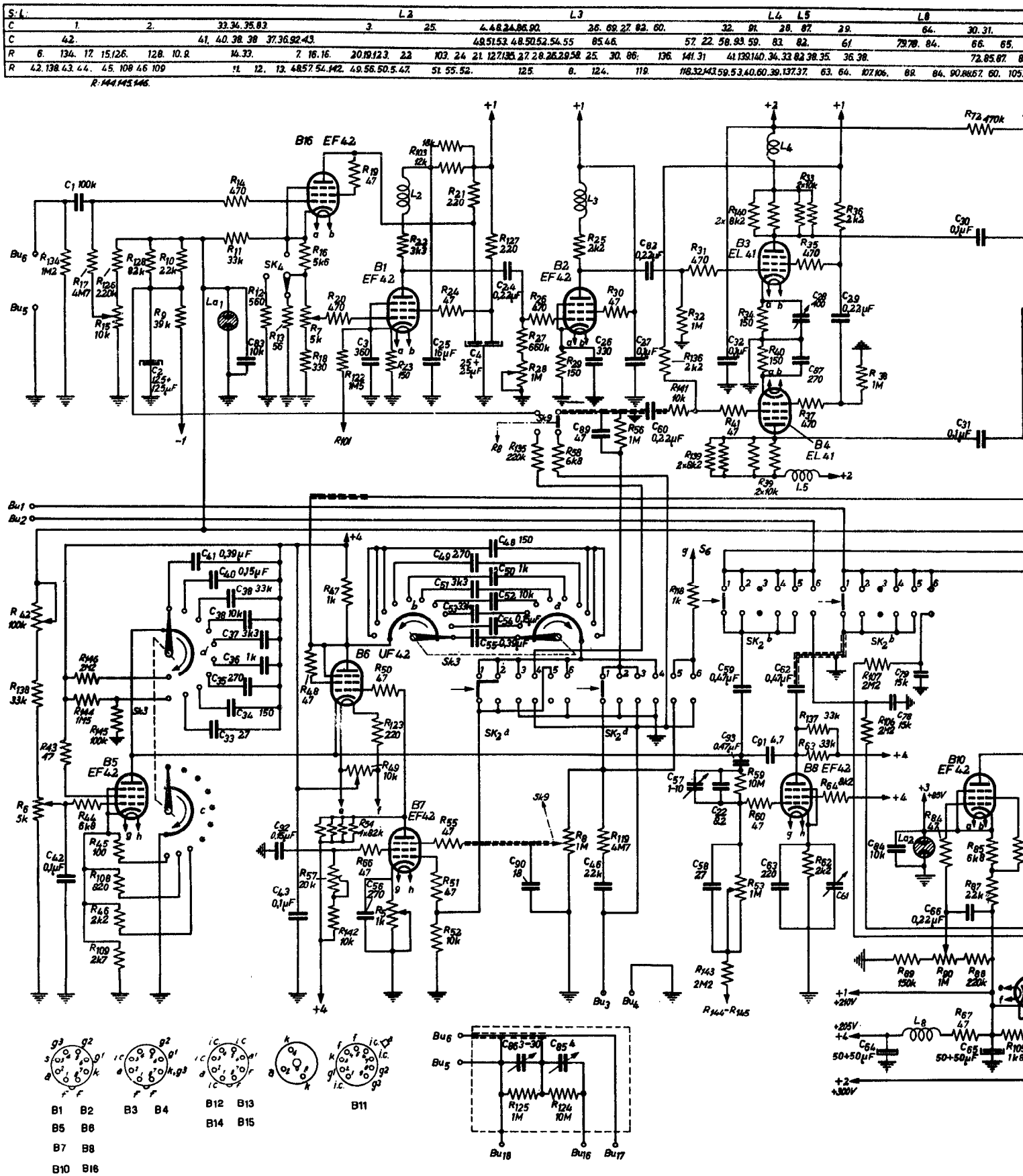


M5653-01

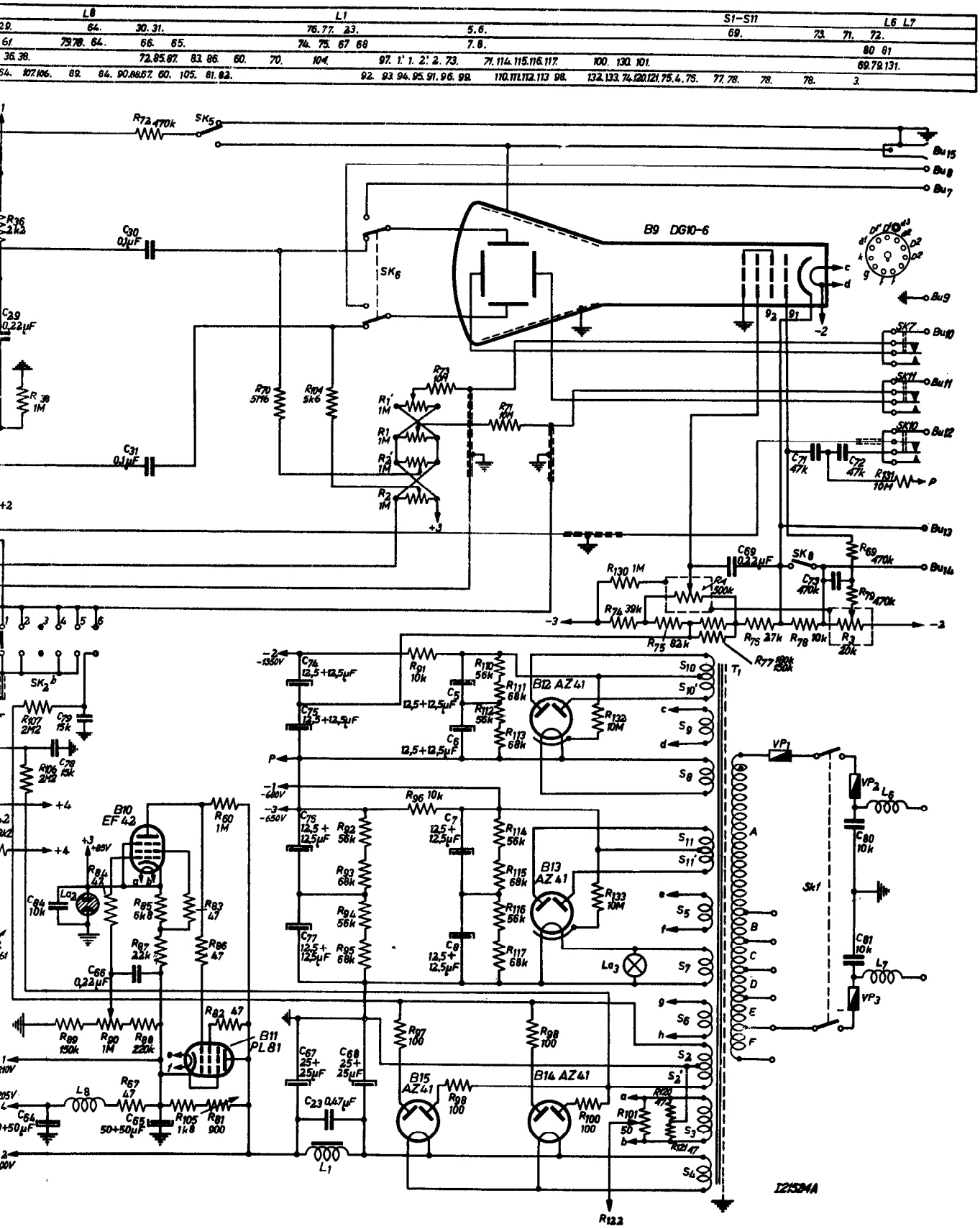
L8	L1	S1–S11	L6 L7
29. 84. 30. 31.	78. 77. 23. 5. 6.	69.	73. 70. 71. 72.
61 " 79. 78. 84. 66. 65.	74. 75. 67 68 7. 8.		80 81
36. 38. 72. 85. 87. 83. 86. 60. 70.	104. 97. 1. 1. 2. 2. 73. 71. 114. 115. 116. 117.	100. 130. 101.	68. 69. 79. 131.
54. 107. 106. 82. 84. 90. 88. 89. 80. 105. 81. 82.	92. 93. 94. 95. 91. 96. 99. 110. 111. 112. 113. 98.	132. 133. 74. 120. 121. 75. 4. 75. 77. 78. 76.	78. 3.



GM5653-02



3M5653-02



N.V. PHILIPS' GLOEILAMPENFABRIEKEN EINDHOVEN	GM5653-01-02-02F	X 157
SERVICE		30-3-1953

ERRATA

De principe schema's van de GM5653-01 en GM5653-02-02F in de respectieve Service Documentaties GM5653-00-01 en GM5653-02 moeten als volgt worden verbeterd:

1 In de 10e stand van SK3ab wordt C47=68pF ingeschakeld, zie fig.
2 De waarde van R90 in deze schema's moet zijn 100 KΩ
3 De waarde van R53 staat in het schema en de electrische sruklijst van de GM5653/02 opgegeven als 1 MΩ, dit moet zijn: 100 KΩ.

-.-.-.-.-.-.-.-.-.-

The circuit diagrams of the GM5653-01 and GM5653-02-02F in the Service Manuals of the GM5653-00-01 and GM5653-02 respectively must be corrected as follows:

1 In the tenth position of SK3ab C47= 68pF is switched into circuit, see fig.
2 The value of R90 as indicated in these circuit diagrams must be 100 KΩ
3 The value of R53 in the circuit diagram and the list of electrical parts of the GM5653/02 must be 100 KΩ instead of 1 MΩ

-.-.-.-.-.-.-.-.-.-

Dans les schémas de principe du GM5653-01 et 02-02F des Documentations de Service GM5653-00-01 et GM5653-02 les corrections suivantes doivent être appotées:

1 Dans la dixième position de SK3ab C47=68 pF est connecté: voir fig.
2 La valeur de R53 dans la liste des pièces électriques et dans le schéma du type 02 doit être 100 KΩ au lieu de 1 MΩ.
3 La valeur de R90 dont ces schémas doit être 100 KΩ, au lieu de 1 MΩ

-.-.-.-.-.-.-.-.-.-

Folgende Korrektionen müssen angebracht werden in den Schaltbildern vom GM5653-01 und 02-02F in den Kundendienstanleitungen für GM5653-00-01 und GM5653-02.

1 In Stellung 10 von SK3ab wird C47=68F eingeschaltet (siehe Abb.)
2 Der Wert von R90 in diesen Schaltbildern muss 100 KΩ sein, anstatt 1 MΩ.
3 Der Wert von R53 in der Liste der elektrischen Bestandteile und in dem Schaltbild des GM5653-02 muss 100 KΩ sein, anstatt 1 MΩ.

-.-.-.-.-.-.-.-.-.-

En los esquemas de principio del GM5653-01 y 02-02F de las Documentaciones de Servicio del GM5653-00-01 y GM5653-02 las siguientes enmiendas deben hacerse:

1 En la posición de SK3ab se intercala C47=68F (véase fig.)
2 El valor de R90 en estos esquemas debe ser 100 Kohmios en lugar de 1 Megohmio.
3 El valor de R53 en la lista de piezas eléctricas y en los esquemas del tipo GM5653/02 debe ser 100 Kohmios en lugar de 1 Megohmio.

CENTRAL SERVICE DEPARTMENT

M. Salverda.