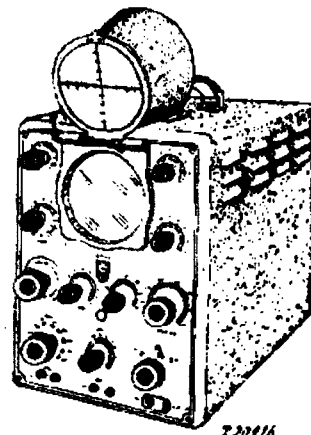


PHILIPS

SERVICE NOTES

For the oscilloscope

GM5653-02



1952

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.

93 976 71.1.05

- 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, SK2¹, 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 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 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/O2 AND /O2F 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 ϕ 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, ϕ 22	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 pcs.41 and 42	E1 581 22.0
19	46	Soldering lug	M7 315 50.0
	48	Strip	M7 411 98.0
	49	Strip	E7 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	O7 741 21.0
	59	Grip	M7 716 16.1
	60	Screw 3 x 12	O7 763 12.0
	61	Anode contact	B1 885 06.0
	62	Strip	M7 412 46.0
	63	Strip	M7 412 47.0
	66	Metal can	M7 696 68.0
22	67	Text plate	M7 182 68.0
	68	Rivet 1,7 x 4	O7 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	O7 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	O7 601 90.1
	78	Screw	E2 467 61.0
	79	Cable cyclet	O8 190 12.1
	80	Plug	E2 556 38.0
	Type O2 ^F 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
		Plug socket with switch	A3 186 07.0
8	22a		
8	22b		
8	19	Text plate	M7 183 99.0

T1			M7 614 28.1	R47	1000	ohm	48 556 10/1K
L1			M7 450 01.0	R48	47	ohm	48 555 10/47E
L2			M7 573 04.0	R49	10000	ohm	49 472 20.0
L3			M7 573 04.0	R50	47	ohm	48 556 10/47E
L4			M7 573 04.0	R51	47	ohm	48 555 10/47E
L5			M7 573 04.0	R52	10000	ohm	48 556 05/10K
L6			M7 513 06.0	R53	1	Mohm	49 472 28.0
L7			M7 513 06.0	R54	82000	ohm4xpar.	48 557 10/82K
L8			M7 573 03.0	R55	47	ohm	48 555 10/47E
R1	1	Mohm	49 473 58.0	R56	47	ohm	48 555 10/47E
R1'	1	Mohm	49 473 58.0	R57	20000	ohm	49 472 24.0
R2	1	Mohm	49 473 58.0	R58	6800	ohm	48 556 10/68K
R2'	1	Mohm	49 473 58.0	R59	10	Mohm	48 557 10/10M
R3	20000	ohm	49 501 04.0	R60	47	ohm	48 555 10/47E
R4	0,5	Mohm	49 473 13.0	R61			
R5	1000	ohm	49 472 41.0	R62	2200	ohm	48 556 05/22K
R6	5000	ohm	49 473 56.0	R63	33000	ohm	48 557 05/33K
R7	5000	ohm	49 473 56.0	R64	8200	ohm	48 556 05/82K
R8	1	Mohm	49 500 38.0	R65			
R9	39000	ohm	48 767 05/39K	R66	1	Mohm	48 556 10/1M
R10	22000	ohm	48 767 05/22K	R67	47	ohm	48 556 10/47E
R11	33000	ohm	48 557 05/33K	R69	0,47	Mohm	48 556 10/470K
R12	560	ohm	48 556 05/560E	R70	5,6	Mohm	48 557 10/56K
R13	56	ohm	48 556 05/56E	R71	10	Mohm	48 557 10/10M
R14	470	ohm	48 556 10/470E	R72	0,47	Mohm	48 557 10/470K
R15	10000	ohm	49 472 20.0	R73	10	Mohm	48 557 10/10M
R16	5600	ohm	48 556 05/56K	R74	39000	ohm	48 557 10/39K
R17	4,7	Mohm	48 557 10/47E	R75	82000	ohm	48 557 10/82K
R18	330	ohm	48 556 05/330E	R76	27000	ohm	48 556 10/27K
R19	47	ohm	48 555 10/47E	R77	0,18	Mohm)	48 557 10/180K
R20	470	ohm	48 556 10/470E		0,15	Mohm)	48 557 10/150K
R21	220	ohm	48 556 10/220E	R78	10000	ohm	48 556 10/10K
R22	3300	ohm	48 556 05/33K	R79	0,47	Mohm	48 556 10/470K
R23	150	ohm	48 556 05/150E	R80	1	Mohm	48 556 10/1M
R24	47	ohm	48 556 10/47E	R81	900	ohm	48 516 10/900E
R25	2200	ohm	48 556 05/22K	R82	47	ohm	48 555 10/47E
R26	470	ohm	48 555 10/470E	R83	47	ohm	48 555 10/47E
R27	0,68	Mohm	48 556 05/680K	R84	47	ohm	48 555 10/47E
R28	1	Mohm	49 472 54.0	R85	6800	ohm	48 557 10/68K
R29	150	ohm	48 556 05/150E	R86	47	ohm	48 555 10/47E
R30	47	ohm	48 555 10/47E	R87	22000	ohm	48 557 10/22K
R31	470	ohm	48 555 10/470E	R88	0,22	Mohm	48 556 10/220K
R32	1	Mohm	48 556 10/1M	R89	0,15	Mohm	48 556 10/150K
R33	10000/2	ohm	48 557 05/10K	R90	0,1	Mohm	49 472 28.0
R34	150	ohm	48 556 05/150E	R91	10000	ohm	48 556 10/10K
R35	47	ohm	48 555 10/47E	R92	56000	ohm	48 557 10/56K
R36	2200	ohm	48 556 05/22K	R93	68000	ohm	48 557 10/68K
R37	470	ohm	48 555 10/470E	R94	56000	ohm	48 557 10/56K
R38	1	Mohm	48 556 10/1M	R95	68000	ohm	48 557 10/68K
R39	10000/2	ohm	48 557 05/10K	R96	10000	ohm	48 556 10/10K
R40	150	ohm	48 556 05/150E	R97	100	ohm	48 557 10/100E
R41	47	ohm	48 555 10/47E	R98	100	ohm	48 557 10/100E
R42	0,1	Mohm	49 472 28.0	R99	100	ohm	48 557 10/100E
R43	47	ohm	48 555 10/47E	R100	100	ohm	48 557 10/100E
R44	6800	ohm	48 556 10/68K	R101	50	ohm	48 557 10/100E
R45	100	ohm	48 556 10/100E				48 557 10/100E
R46	2200	ohm	48 556 05/22K	R103	18000	ohm) par.	48 557 05/18K
					22000	ohm)	48 557 05/22K

R104	5,6	Mohm	48 557 10/5M8	C6	12,5+12,5	uF	48 317 11/12,5+
R105	1800	ohm	48 496 10/1K8				12,5
R106	2,2	Mohm	48 557 10/2M2	C7	12,5+12,5	uF	48 317 11/12,5+
R107	2,2	Mohm	48 557 10/2M2				12,5
R108	820	ohm	48 556 05/820E	C8	12,5+12,5	uF	48 317 11/12,5+
R109	2700	ohm	48 556 05/2K7				12,5
R110	56000	ohm	48 557 10/56K	C22	8,2	pF	48 211 20/8E2
R111	68000	ohm	48 557 10/68K	C23	0,47	uF	48 790 10/470K
R112	56000	ohm	48 557 10/56K	C24	0,22	uF	48 791 10/220K
R113	68000	ohm	48 557 10/68K	C25	16	uF	48 112 10/C16E
R114	56000	ohm	48 557 10/56K	C26	330	pF	48 429 10/330E
R115	38000	ohm	48 557 10/68K	C27	0,1	uF	48 791 10/100K
R116	56000	ohm	48 557 10/56K	C28	400	pF	49 005 54.0
R117	68000	ohm	48 557 10/68K	C29	0,22	uF	48 791 10/220K
R118	1000	ohm	48 556 10/1K	C30	0,1	uF	48 791 10/100K
R119	4,7	Mohm	48 557 10/4M7	C31	0,1	uF	48 791 10/100K
R120	47	ohm	48 556 10/47E	C32	0,1	uF	48 791 10/100K
R121	47	ohm	48 556 10/47E	C33	27	pF	48 429 05/27E
R122	1,5	Mohm	48 556 10/1M5	C34	150	pF	48 429 10/150E
				C35	270	pF	48 429 10/270E
R124	10	Mohm	M7 832 15.0	C36	1000	pF	48 104 10/V1K
R125	1	Mohm	48 556 10/1K	C37	3300	pF	48 104 10/V3K3
R126	0,22	Mohm	48 552 02/220K	C38	10000	pF	48 104 10/E10K
R127	220	ohm	48 556 10/220E	C39	33000	pF	48 105 10/T33K
R128	82000	ohm	48 557 10/82K	C40	0,15	uF	48 105 10/C150K
				C41	0,39	uF	48 106 10/C390K
R130	1	Mohm	48 557 10/1M	C42	0,1	uF	48 791 10/100K
R131	10	Mohm	48 557 10/10M	C43	0,1	uF	48 791 10/100K
R132	10	Mohm	48 557 10/10M				
R133	10	Mohm	48 557 10/10M	C46	22000	pF	48 791 10/22K
R134	1,2	Mohm	48 552 02/1M2	C47	68	pF	48 429 10/68E
R135	0,22	Mohm	48 556 10/220K	C48	150	pF	48 429 10/150E
R136	2200	ohm	48 556 10/2K2	C49	270	pF	48 429 10/270E
R137	33000	ohm	48 557 05/33K	C50	1000	pF	48 104 10/V1K
R138	33000	ohm	48 556 10/33K	C51	3300	pF	48 104 10/V3K3
R139	8200/2	ohm	2x48 557 05/8K2	C52	10000	pF	48 104 10/E10K
R140	8200/2	ohm	2x48 557 05/8K1	C53	33000	pF	48 105 10/T33K
R141	10000	ohm	48 556 10/10K	C54	0,15	uF	48 105 10/C150K
R142	10000	ohm	48 556 10/10K	C55	0,39	uF	48 106 10/C390K
R143	2,2	Mohm	48 556 10/2M2	C56	270	pF	48 213 05/270E
R144	1,5	Mohm	48 557 05/1M5	C57	12,5	pF	XU 052 16.0
R145	0,1	Mohm	48 556 10/100K	C58	27	pF	48 429 10/27E
R146	2,2	Mohm	48 556 10/2M2	C59	0,47	uF	48 791 10/470K
				C60	0,22	uF	48 791 10/220K
La1			85A1	C61	draadtrimmer		49 005 53.2
La2			85A1		wire trimmer		
La3			8043D/00		Condensateur		
V12			03 140 33.2		de réglage à fil		
V13			03 140 33.2		trimmer de alambre		
					Drahtabgleich-		
C1	0,1	uF	48 792 10/100K		kondensator		
C2	12,5+12,5	uF	48 317 09/12,5+	C62	0,47	uF	48 791 10/470K
			12,5	C63	220	pF	48 213 10/220E
C3	360	pF	48 429 05/360E	C64	50+50	uF	48 317 59/50+50
C4	25+25	uF	48 317 09/25+25	C65	50+50	uF	48 317 59/50+50
C5	12,5+12,5	uF	48 317 11/12,5+	C66	0,22	uF	48 791 10/220K
			12,5	C67	25+25	uF	48 317 11/25+25

C68	25+25	uF	48 317 11/25+25	C85	4	pF	XU 052 19.0
C69	0,22	uF	48 792 10/220K	C86	3-30	pF	28 212 36.4
C71	47000	pF	48 105 10/V47K	C87	270	pF	48 213 05/270E
C72	47000	pF	48 105 10/V47K	C89	47	pF	48 213 05/47E
C73	0,47	uF	48 791 10/470K	C90	18	pF	48 211 05/18E
C74	12,5+12,5	uF	48 317 11/12,5+ 12,5	C91	4,7	pF	48 210 20/4E7
C75	12,5+12,5	uF	48 317 11/12,5+ 12,5	C92	0,15	uF	48 791 10/150K
C76	12,5+12,5	uF	48 317 11/12,5+ 12,5	C93	0,47	uF	48 791 10/470K
C77	12,5+12,5	uF	48 317 11/12,5+ 12,5	B1			EF42
C78	15000	pF	48 791 10/15K	B2			EF42
C79	15000	pF	48 791 10/15K	B3			EL41
C80	10000	pF	48 797 20/10K	B4			EL41
C81	10000	pF	48 797 20/10K	B5			EF42
C82	0,22	uF	48 791 10/220K	B6			UF42
C83	10000	pF	48 791 10/10K	B7			EF42
C84	10000	pF	48 791 10/10K	B8			EF42
				B9			DG10-6
				B10			EF42
				B11			PL81
				B12			AZ41
				B13			AZ41
				B14			AZ41
				B15			EF42
				B16			

T1			R7 C14 28.0	.17	1000	ohm	48 556 10/1K
L1			R7 450 01.0	R48	47	ohm	48 555 10/47E
L2			R7 573 04.0	R49	10000	ohm	49 472 20.0
L3			R7 573 04.0	R50	47	ohm	48 556 10/47E
L4			R7 573 04.0	R51	47	ohm	48 555 10/47E
L5			R7 573 04.0	R52	10000	ohm	48 556 10/10K
L6			R7 513 06.0	R53	1	Mohm	49 472 28.0
L7			R7 513 06.0	R54	82000	ohm	48 557 10/92K
L8			R7 573 08.0	R55	47	ohm	48 555 10/47E
				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 10/68K
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	49 473 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 53.0	R66	1	Mohm	48 556 10/1K
R8	1	Mohm	49 500 38.0	R67	47	ohm	48 556 10/47E
R9	38000	ohm	48 767 05/39K				
R10	5800	ohm	48 558 10/5K8	R69	0.47	Mohm	48 556 10/470K
R11	32000	ohm	48 557 05/33K	R70	5.6	Mohm	48 557 10/56K
R12	560	ohm	48 556 05/560E	R71	10	Mohm	48 557 10/10M
R13	58	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 10/47E	R76	27000	ohm	48 556 10/27K
R18	330	ohm	48 556 05/330E	R77	0.18	Mohm	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 05/33E	R80	1	Mohm	48 556 10/1K
R23	150	ohm	48 556 05/150E	R81	300	ohm	48 516 10/300E
R24	47	ohm	48 555 10/47E	R82	47	ohm	48 555 10/47E
R25	2200	ohm	48 556 05/22K2	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 10/68K
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 10/1K	R90	0.1	Mohm	49 472 28.0
R33	10000	ohm	48 557 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 05/22K2	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 10/1K	R96	10000	ohm	48 556 10/10K
R39	10000/2	ohm	48 557 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	48 133 29.1
R44	5800	ohm	48 556 10/58K				
R45	100	ohm	48 556 10/100E	R103	18000	ohm	48 557 05/18K
R46	2200	ohm	48 556 05/22K2		22000	ohm	48 557 05/22K

R104	5,6	Mohm	48 557 10/5M6	C6	12,5+12,5 uF	48 317 11/12,5+12,5
R105	1800	ohm	48 496 10/1K8	C7	12,5+12,5 uF	48 317 11/12,5+12,5
R106	2,2	Mohm	48 557 10/2M2	C8	12,5+12,5 uF	48 317 11/12,5+12,5
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	C23	0,47 uF	48 790 10/470K
R113	68000	ohm	48 557 10/68K	C24	0,22 uF	48 791 10/220K
R114	56000	ohm	48 557 10/56K	C25	18 uF	48 112 10/C18M
R115	68000	ohm	48 557 10/68K	C26	330 pF	48 429 10/330E
R116	56000	ohm	48 557 10/56K	C27	0,1 uF	48 791 10/100K
R117	68000	ohm	48 557 10/68K	C28	400 nF	49 005 54.0
R118	1000	ohm	48 556 10/1K	C29	0,22 uF	48 791 10/220K
R119	4,7	Mohm	48 557 10/4M7	C30	0,1 uF	48 791 10/100K
R120	47	ohm	48 556 10/47E	C31	0,1 uF	48 791 10/100K
R121	47	ohm	48 556 10/47E	C32	0,1 uF	48 791 10/100K
R122	1,5	Mohm	48 556 10/1M5	C33	27 pF	48 429 05/27E
				C34	150 pF	48 429 10/150E
R124	10	Mohm	M7 632 15.0	C35	270 pF	48 429 10/270E
R125	1	Mohm	48 555 10/1M	C36	1000 pF	48 104 10/V1K
R126	0,22	Mohm	48 552 02/220K	C37	3300 pF	48 104 10/V3K3
R127	220	ohm	48 556 10/220E	C38	10000 pF	48 104 10/E10K
				C39	33000 pF	48 105 10/T33K
R130	1	Mohm	48 557 10/1M	C40	0,15 uF	48 105 10/C150K
R131	10	Mohm	48 557 10/10M	C41	0,39 uF	48 106 10/C390K
R132	10	Mohm	48 557 10/10M	C42	0,1 uF	48 791 10/100K
R133	10	Mohm	48 557 10/10M	C43	0,1 uF	48 791 10/100K
R134	1,2	Mohm	48 552 02/1M2			
R135	0,22	Mohm	48 556 10/220K	C46	22000 pF	48 791 10/22K
R136	2200	ohm	48 556 10/2K2	C47	68 pF	48 429 10/68E
R137	47000	ohm	48 557 05/47K	C48	150 pF	48 429 10/150E
R138	33000	ohm	48 556 10/33K	C49	270 pF	48 429 10/270E
R139	8200	ohm	2x48 557 05/8K2	C50	1000 pF	48 104 10/V1K
R140	8200	ohm	2x48 557 05/8K2	C51	3300 pF	48 104 10/V3K3
R141	10000	ohm	48 556 10/10K	C52	10000 pF	48 104 10/E10K
R142	10000	ohm	48 556 10/10K	C53	33000 pF	48 105 10/T33K
R143	0,22	Mohm	48 556 10/220K	C54	0,15 uF	48 105 10/C150K
R144	0,68	Mohm	48 556 05/680K	C55	0,39 uF	48 106 10/C390K
R145	68000	ohm	48 556 10/68K	C56	270 pF	48 213 05/270E
R146	6800	Mohm	48 556 10/6K8	C57	12,5 pF	XU 052 16.0
R147	10	Mohm	48 557 10/10M	C58	27 pF	48 429 10/27E
R148	0,1	Mohm	48 556 10/100K	C59	0,47 uF	48 791 10/470K
R149	15000	ohm	48 556 10/15K	C60	0,22 uF	48 791 10/220E
R150	470	ohm	48 556 10/470E	C61	draadtrimmer	49 005 53.2
R151	470	ohm	48 556 10/470E		wire trimmer	
R152	10	Mohm	48 557 10/10M		condensateur	
R153	2,2	Mohm	48 556 10/2M2		de réglage à fil	
					trimmer de alambre	
					Drahtabgleich-	
					kondensator	
C1	0,1	uF	48 792 10/100K	C62	0,47 uF	48 791 10/470K
C2	12,5+12,5 uF		48 317 09/12,5+12,5	C63	1200 pF	48 791 10/1K2
C3	360	pF	48 429 05/360E	C64	50+50 uF	48 317 59/50+50
C4	25+25	uF	48 317 08/25+25	C65	50+50 uF	48 317 59/50+50
C5	12,5+12,5 uF		48 317 11/12,5+12,5	C66	0,22 uF	48 791 10/220K
				C67	25+25 uF	48 317 11/25+25

C68	25+2/	uF	48 317 11/25+25	C35	4	pF	XU 052 19.0
C69	0,22	uF	48 792 10/220K	C86	3-30	pF	28 212 36.4
				C87	270	pF	48 213 05/270E
C71	47000	pF	48 105 10/V47K	C89	47	pF	48 213 05/47E
C72	47000	pF	48 105 1C/V47K	C90	18	pF	48 211 05/18E
C73	0,47	uF	48 791 10/470K	C91	4,7	pF	48 210 20/4E7
C74	12,5+12,5	uF	48 317 11/12,5 +12,5	C92	0,15	uF	48 791 10/150K
C75	12,5+12,5	uF	48 317 11/12,5 +12,5	C94	zie C64		
C76	12,5+12,5	uF	48 317 11/12,5 +12,5	C95	22	pF	48 211 10/22E
C77	12,5+12,5	uF	48 317 11/12,5 +12,5	C96	220	pF	48 213 10/220E
C78	15000	pF	48 791 10/15K	B1			EF42
C79	15000	pF	48 791 10/15K	B2			EF42
C80	10000	pF	48 797 20/10K	B3			EL41
C81	10000	pF	48 797 20/10K	B4			EL41
C82	0,22	uF	48 791 10/220K	B5			EF42
C83	10000	pF	48 791 10/10K	B6			UF42
C84	10000	pF	48 791 10/10K	B7			EF42
				B8			EF42
				B9			DG10-6
				B10			EF42
				B11			PL81
				B12			AZ41
				B13			AZ41
				B14			AZ41
				B15			AZ41
				B16			EF42



L5				L8				L1				S1-S11				L6 L7			
28. 62	28	64.	30. 31.	76. 77. 23.	5. 6.	69.	73.	71.	72.										
53. 62	61	79. 78. 84.	66. 65.	76. 75. 67. 68.	7. 8.														
4. 33. 63. 36. 35.	36. 36.		72. 85. 87.	63. 66. 60.	70.	80. 4.	92. 1. 1. 2. 2. 73.	71. 114. 115. 116. 112.	100. 132. 101.										
9. 137. 37.	63. 64.	107. 106.	89.	84. 90. 88. 67.	90. 105. 61. 82.		92. 83. 94. 95. 91. 96. 98.	110. 111. 112. 113. 98.	133. 133. 74. 120. 121. 75. 4. 76.	71. 78.	78.	78.	78.	78.	78.	78.	78.	78.	78.

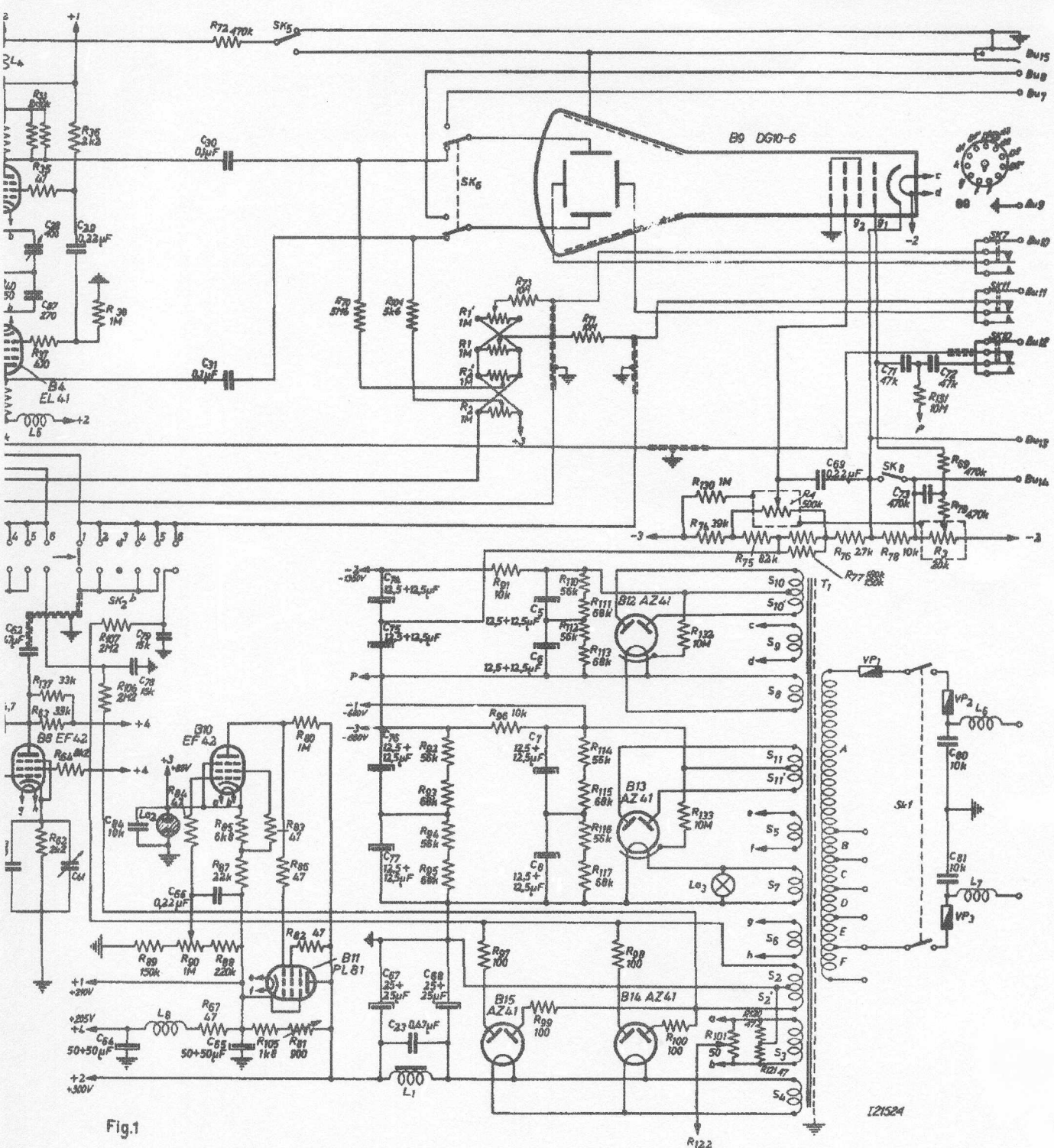


Fig.1

121524

GM5653-02F

L1			L2			L3			L4			L5			L6		
C	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	
C	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	
C	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	
R	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	
R	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	

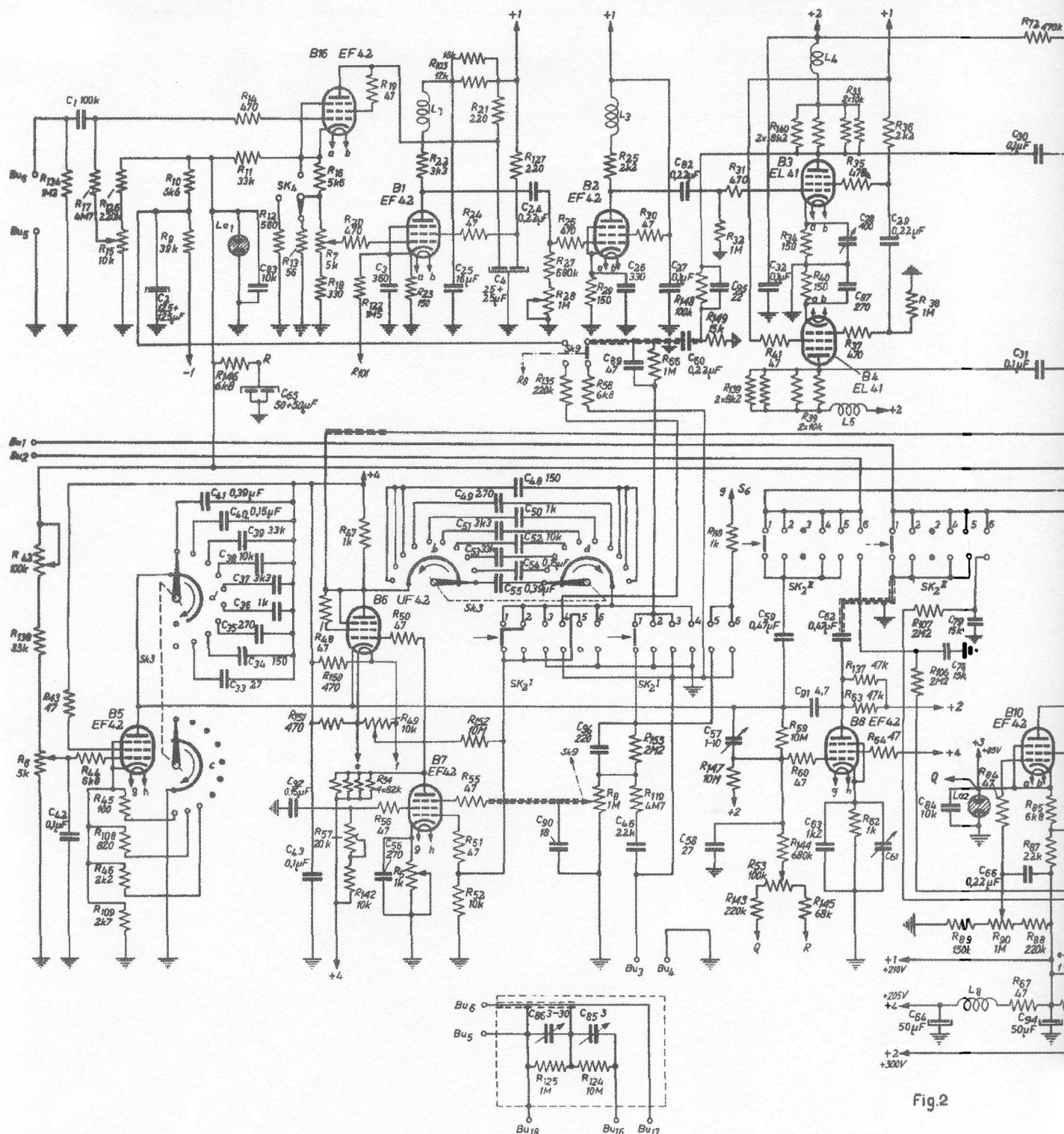


Fig.2

L4 L5				L8				L1				S1-S11				L6 L7			
12	91	28	87	29	84	30	31	78	72	23	8.8	69	73	71	74	80	81		
58	59	63	62	61	28	84	86	74	75	67	88	7.8				80	81		
41	139	140	34	33	63	38	35	73	85	87	83	86	80	70	84	92	93	94	95
59	53	40	60	30	137	37	63	64	107	106	81	84	90	88	87	80	105	81	82
47	143	144	145					92	93	94	95	91	96	98	170	171	172	173	98
								132	133	74	120	121	75	4	76	77	78	76	78

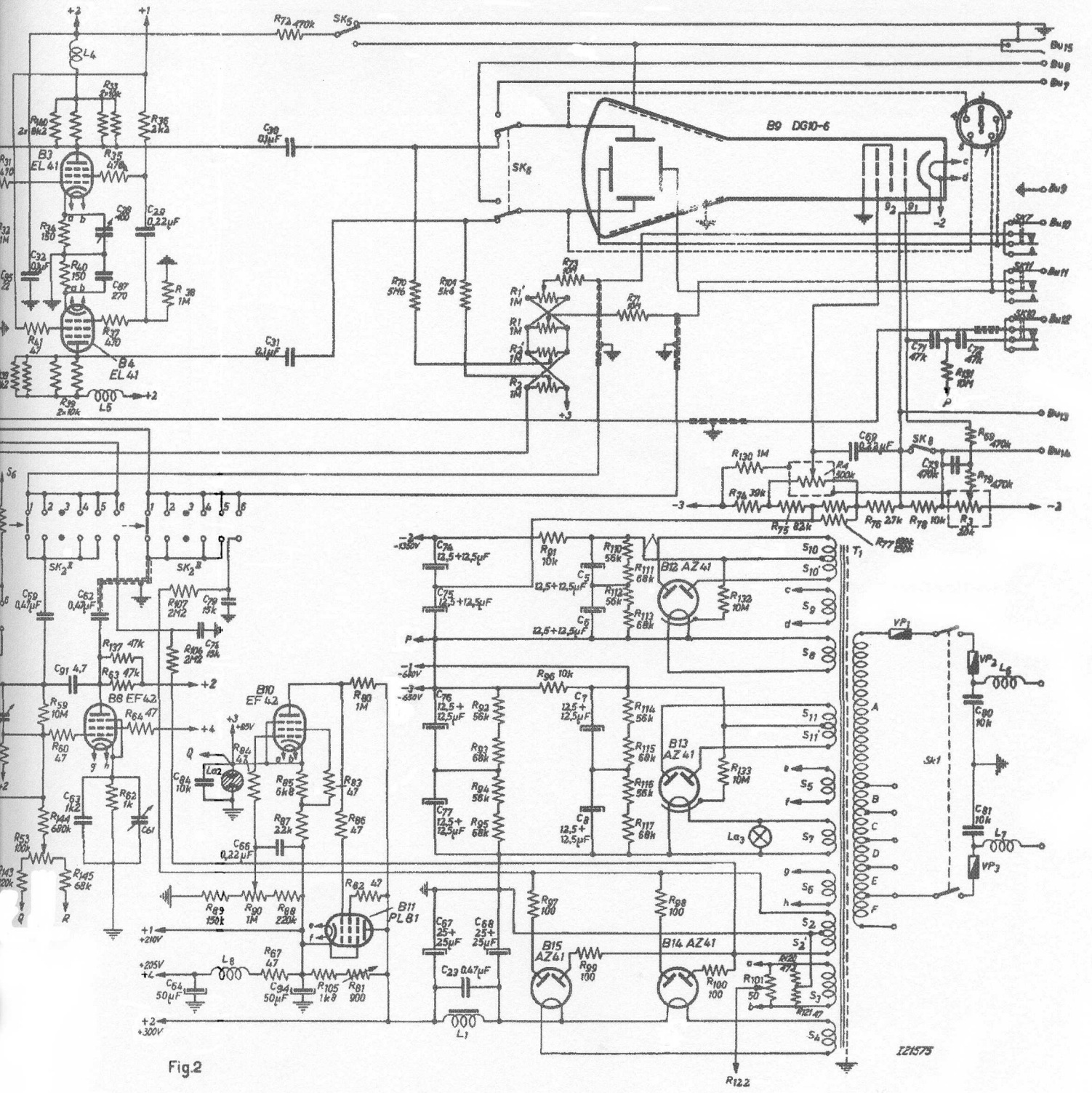


Fig.2

121575

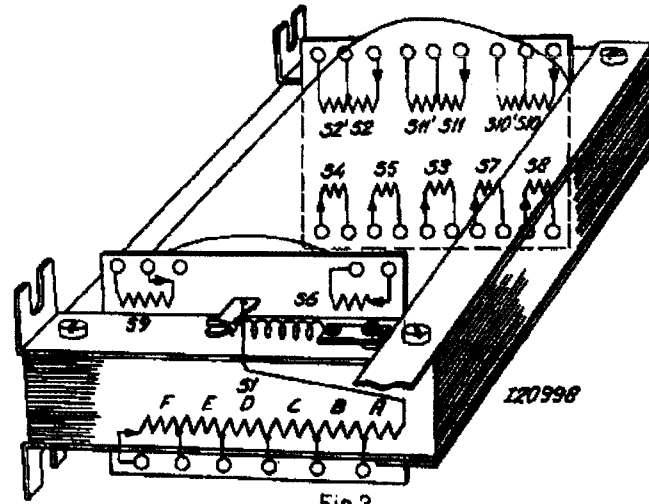


Fig.3

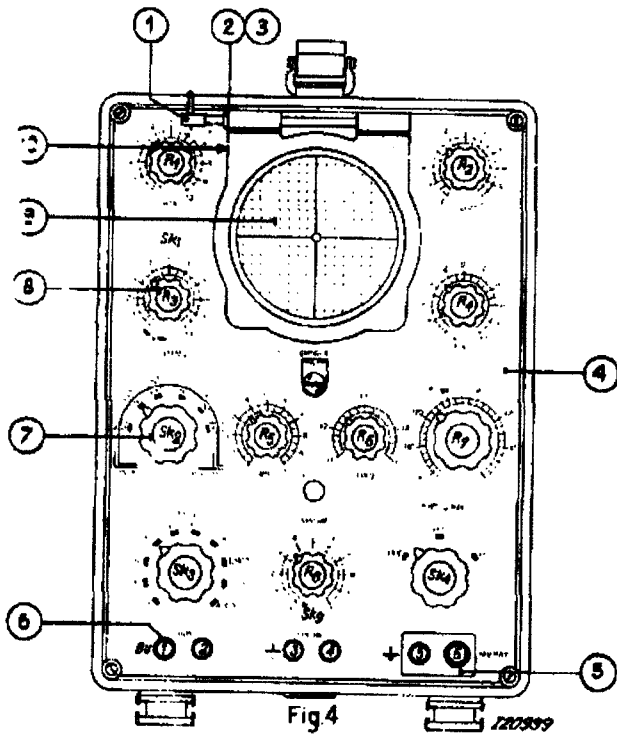


Fig.4

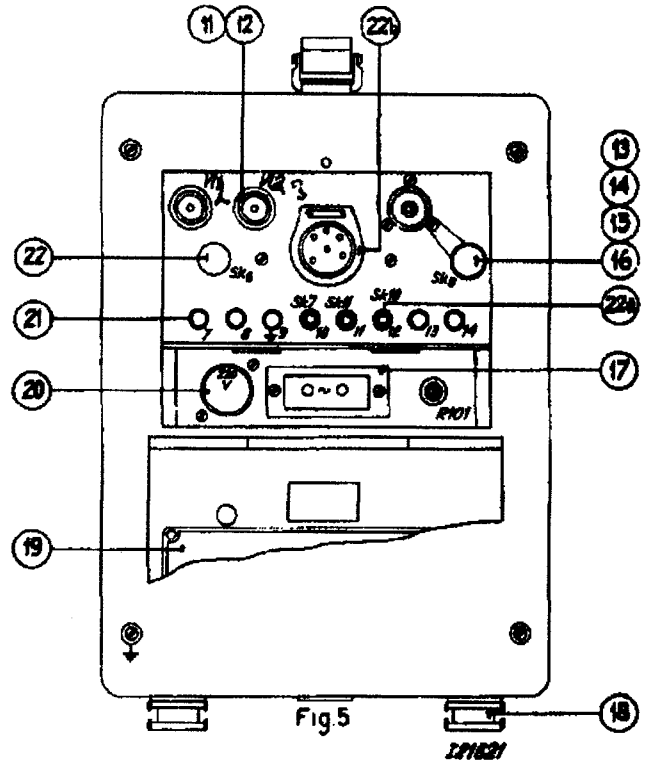
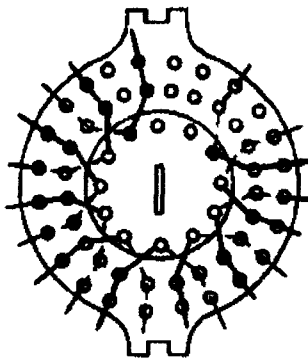
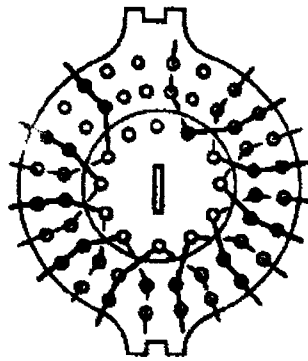


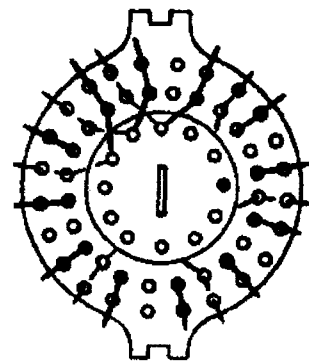
Fig.5



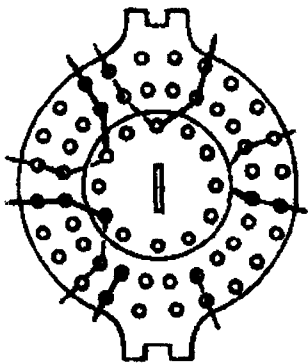
sk3a



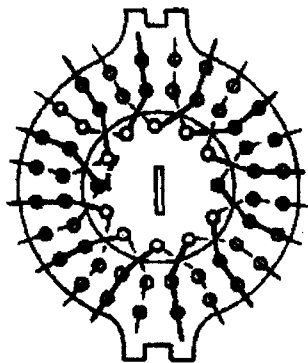
sk3b-sk3d



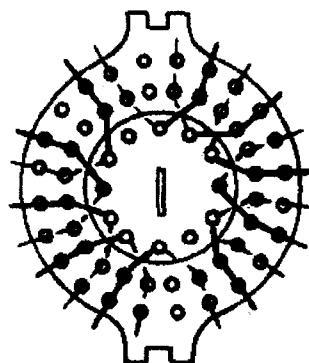
sk3c



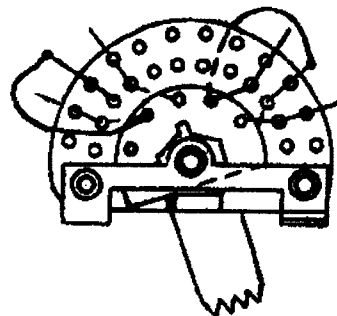
sk4



sk2a



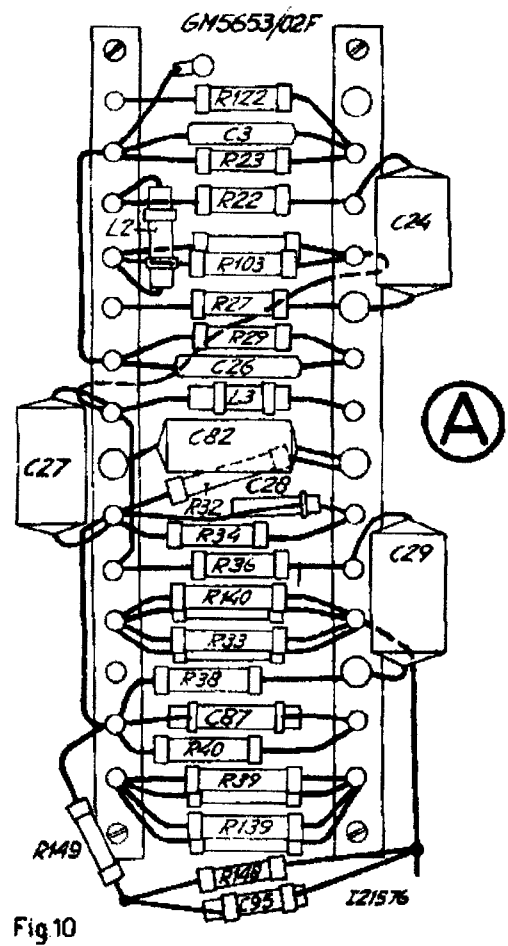
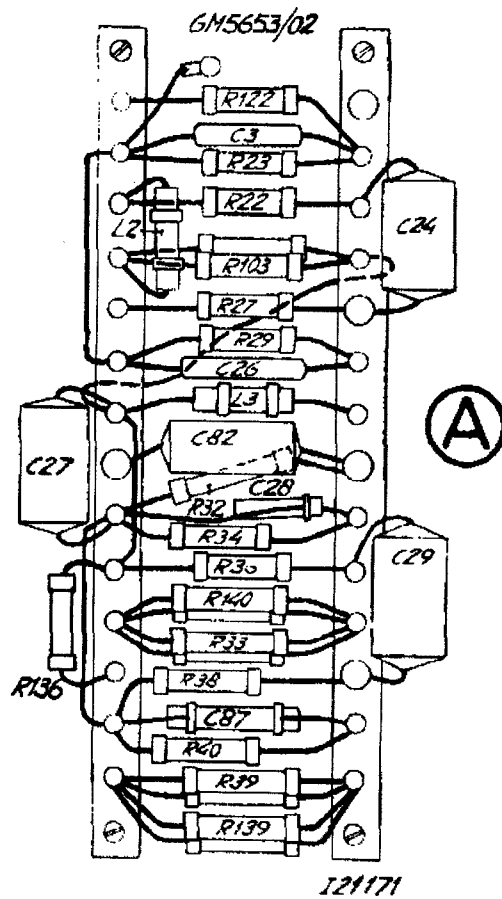
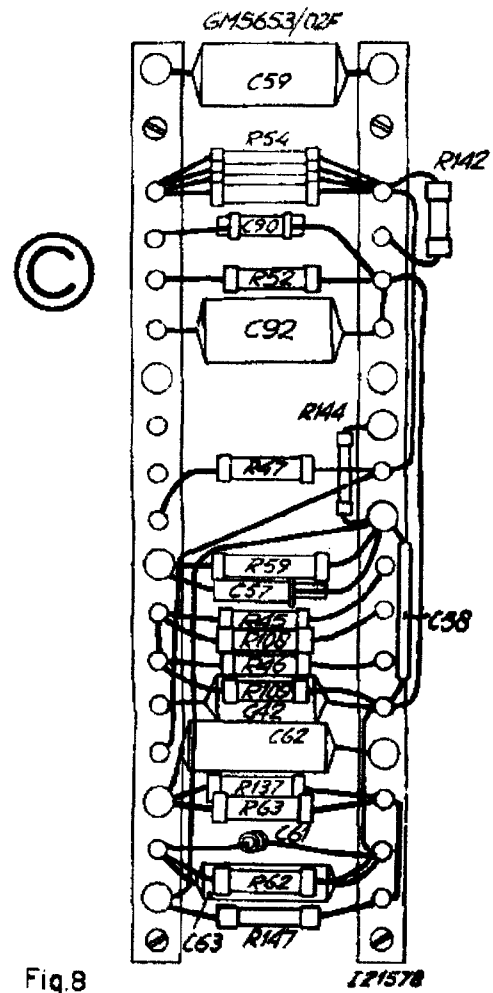
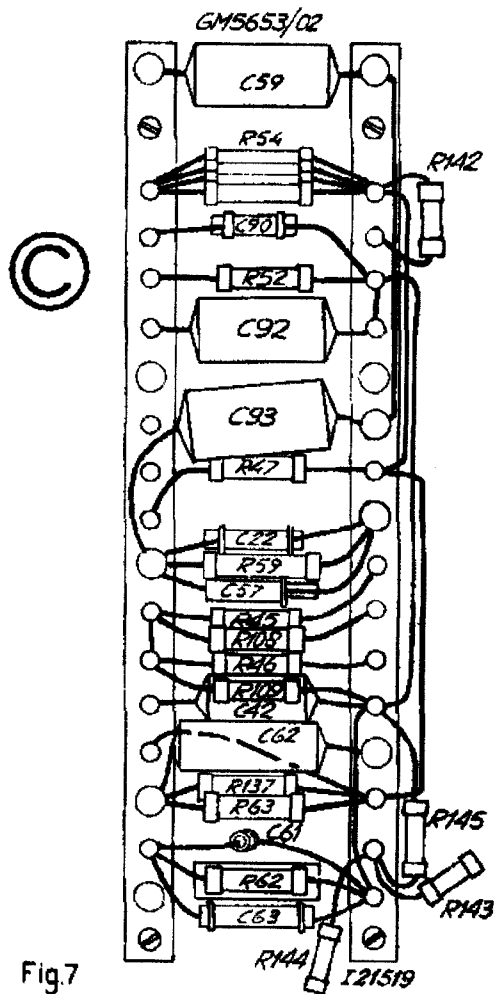
sk2b



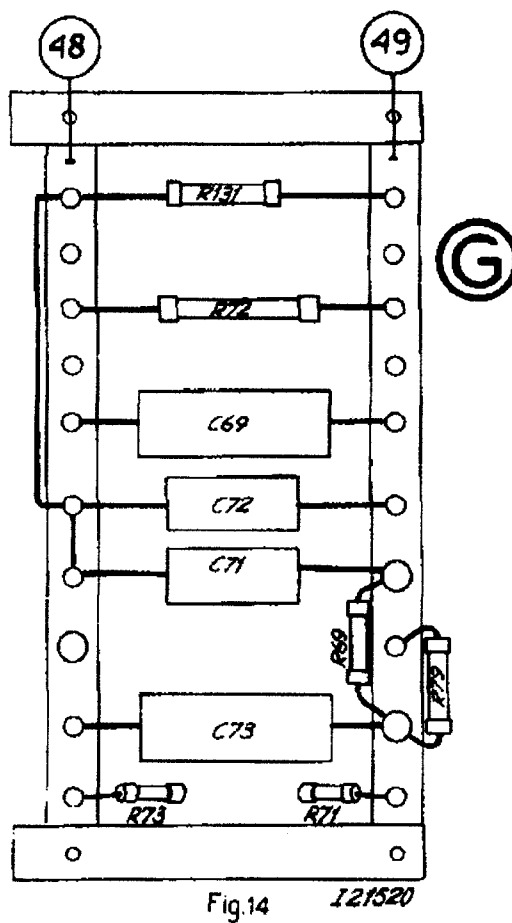
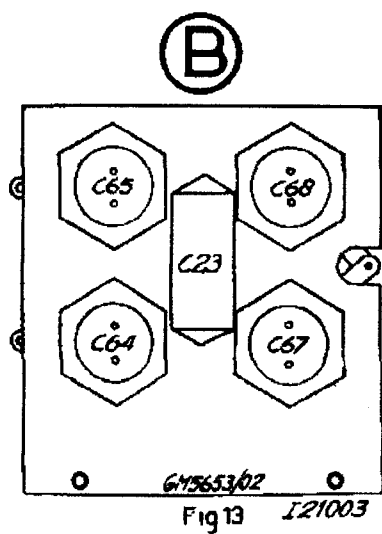
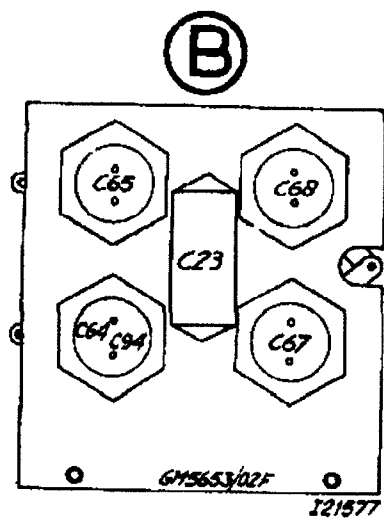
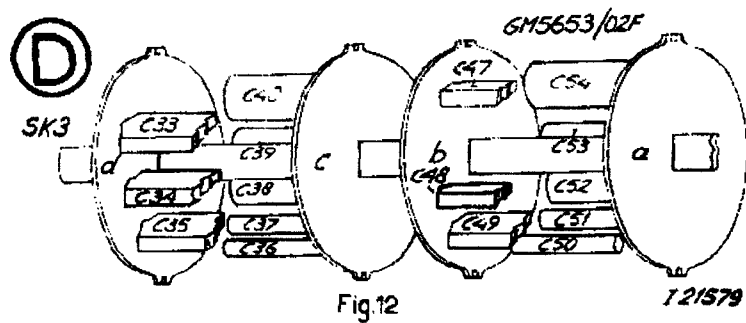
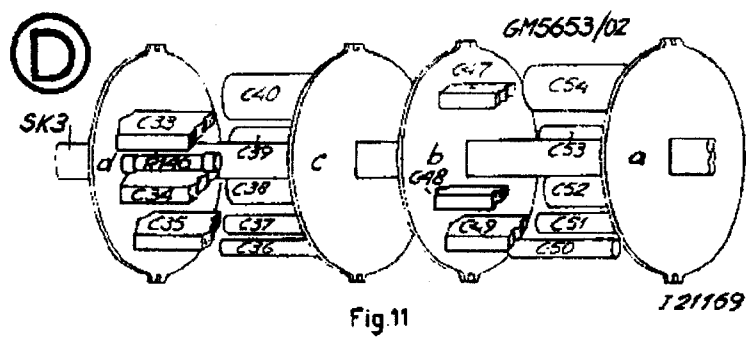
sk6

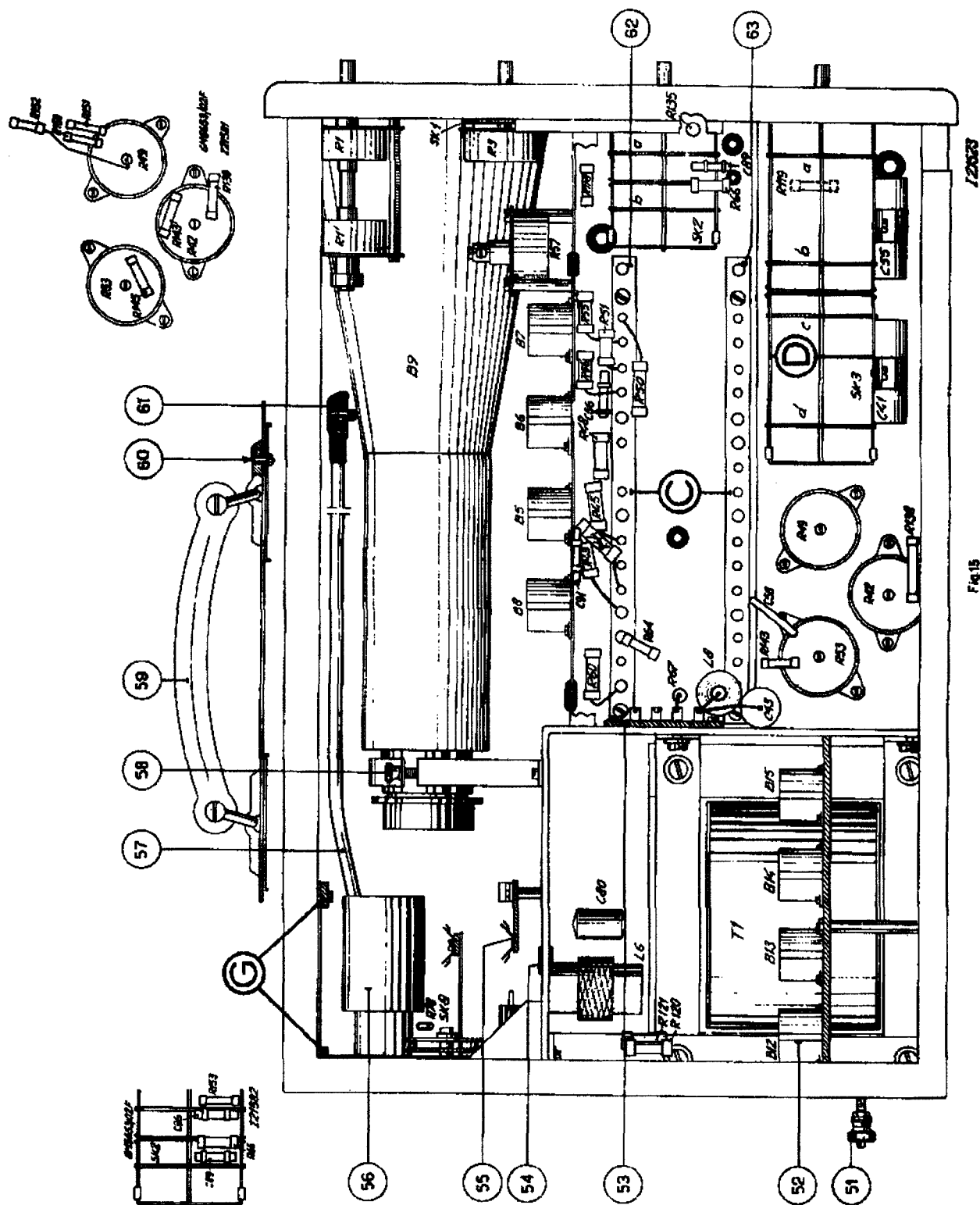
121478

Fig.6



GM5653-02/02F





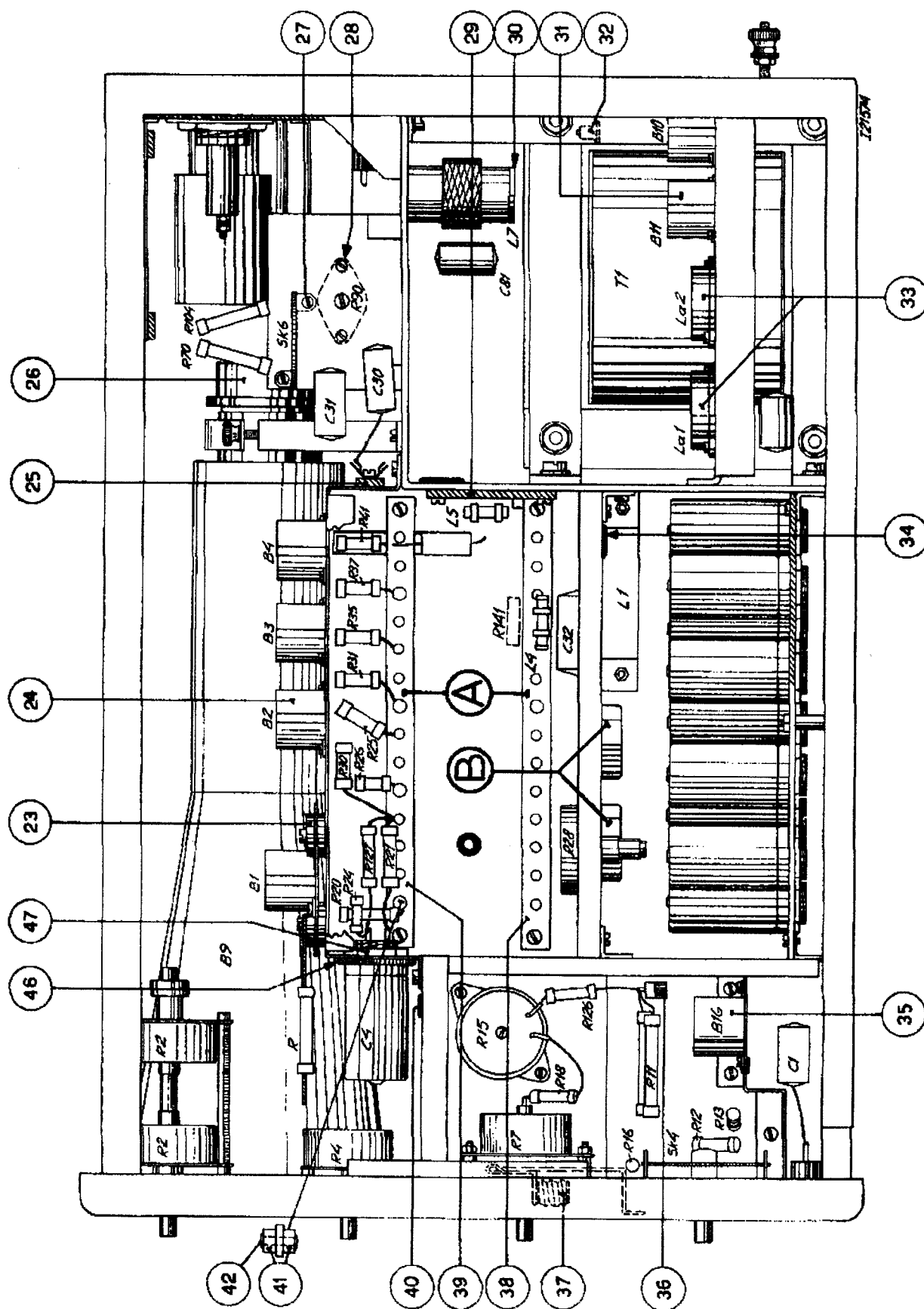


Fig. 18

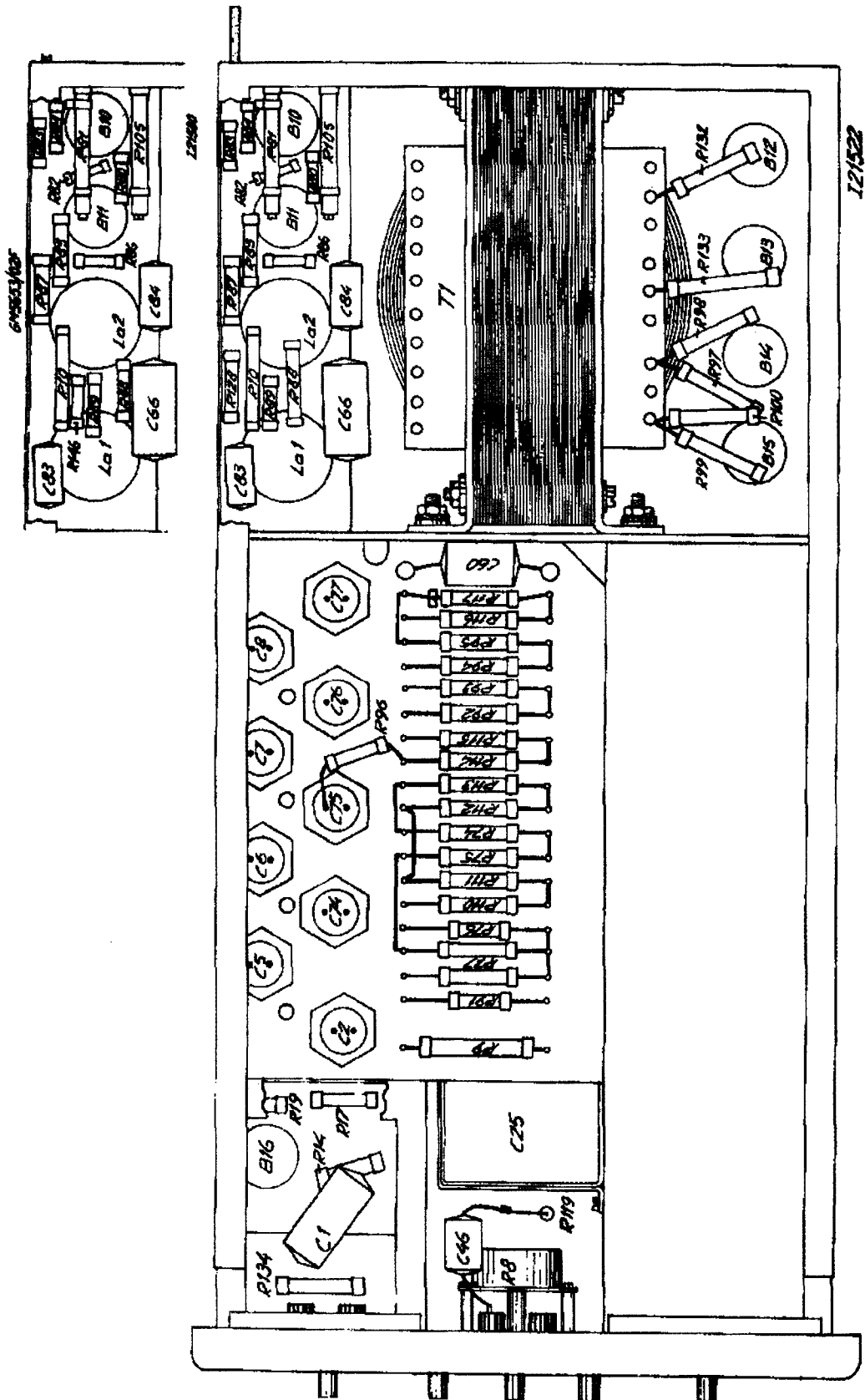


Fig.17

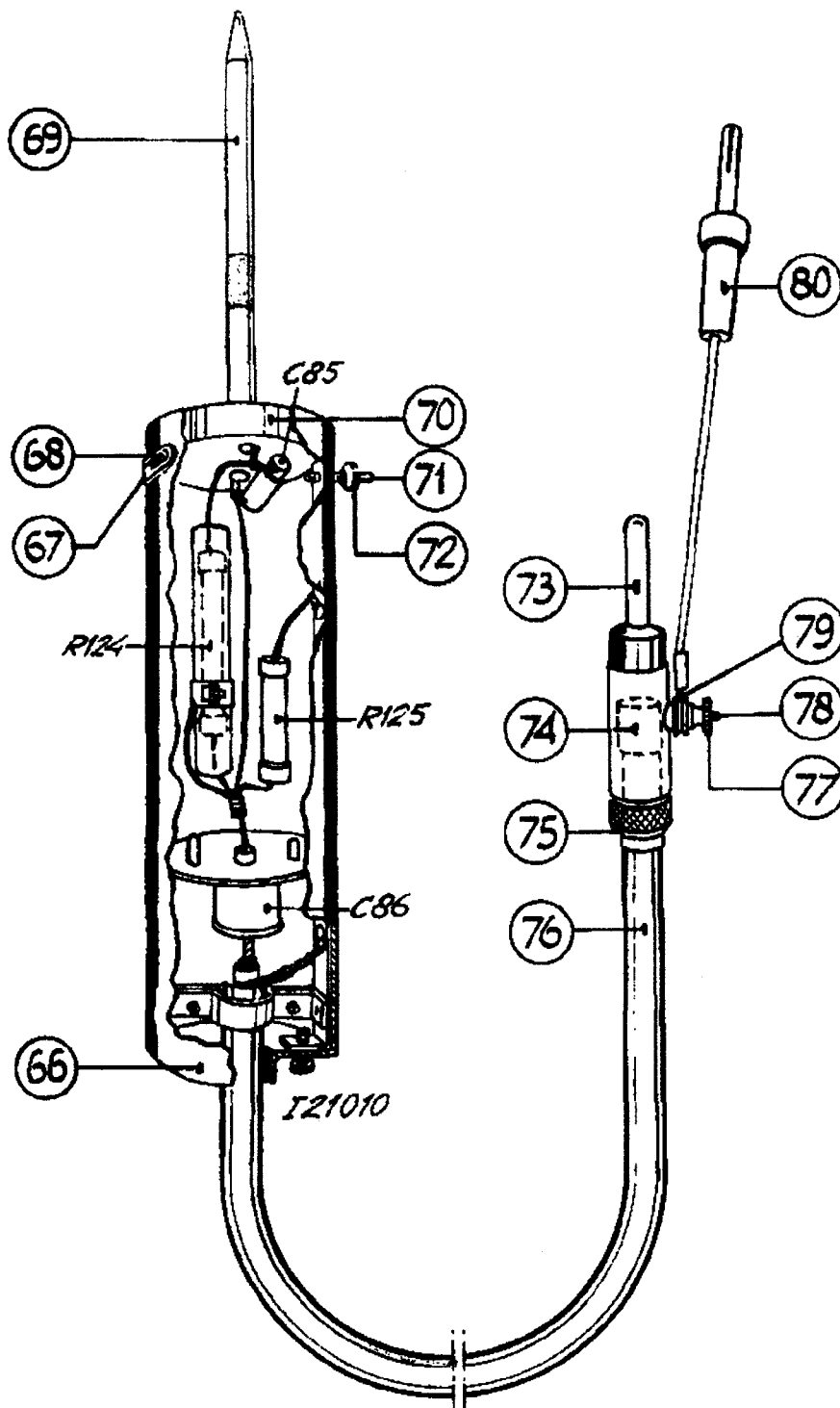


Fig 18

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. + 1,4 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 biasing of the valve.

2. SK3 at 1500 and R6 at 1x, R8 in position 10 (fully clockwise), SK2 in 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 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 o/s and for higher frequencies at least 60 mm (R5 and R6 fully clockwise).

CENTRAL SERVICE DEPARTMENT

Be/LB

Ph. Salverda

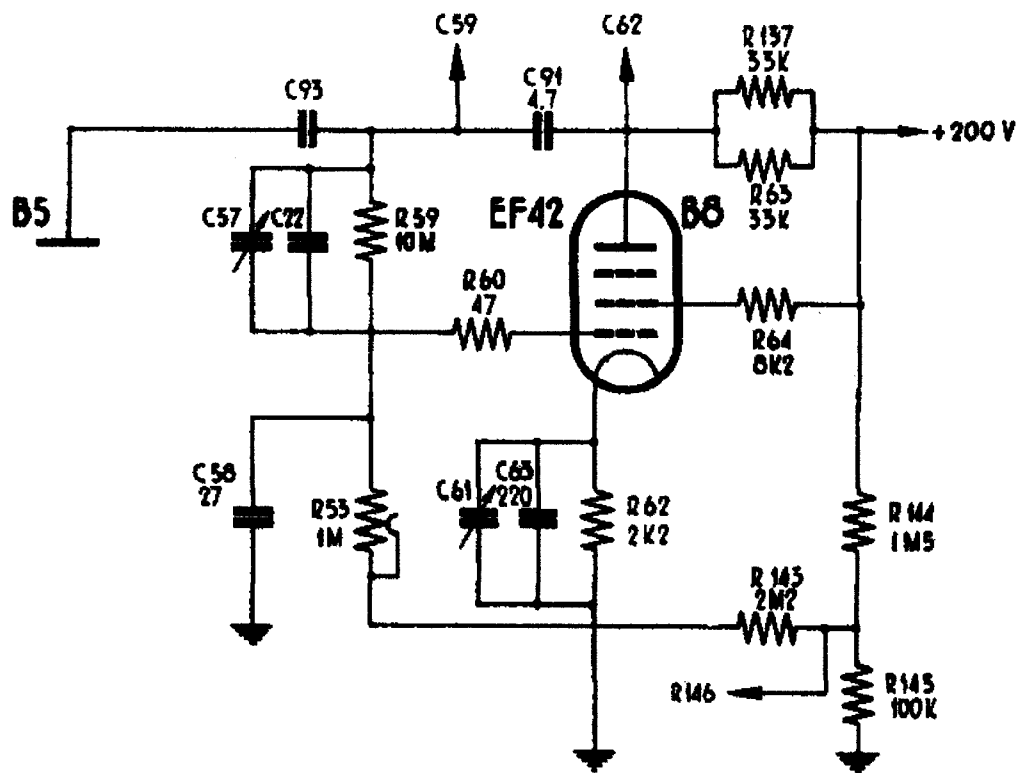


Fig.1

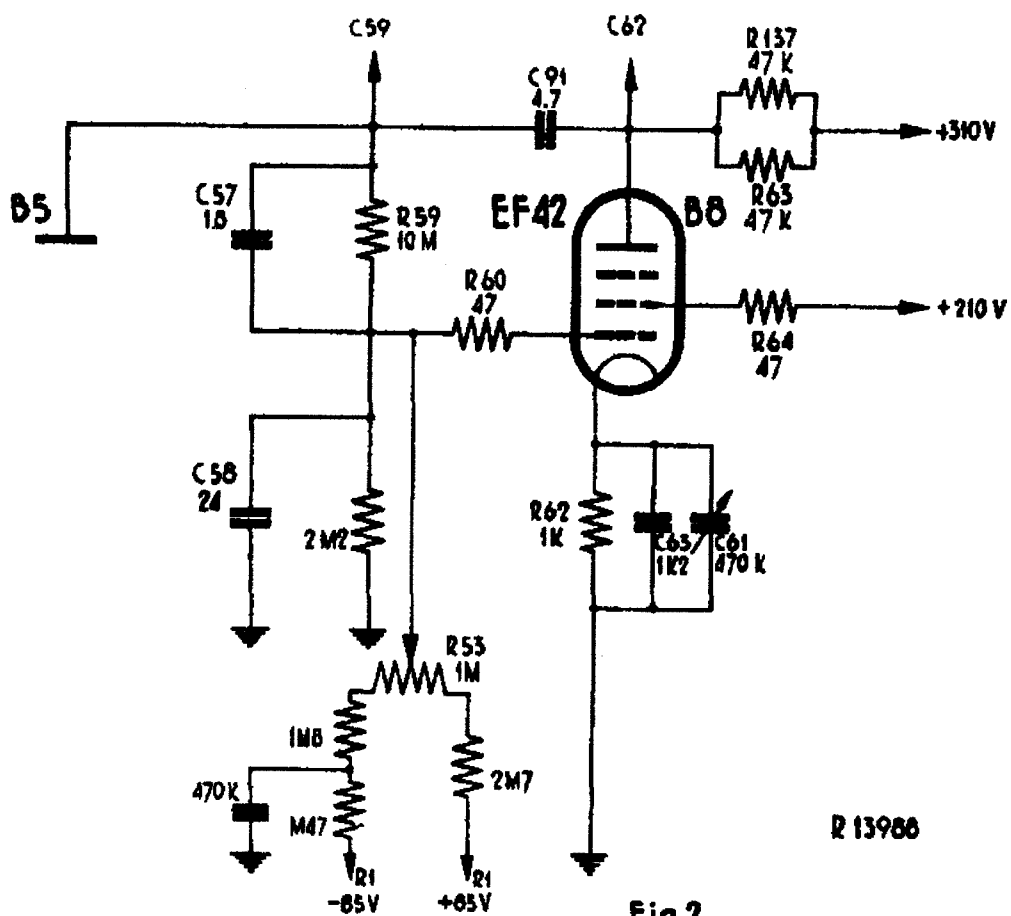


Fig.2

R 13986

N.V. PHILIPS' GLOEILAMPENFABRIEKEN EINDHOVEN	OM 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 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

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

9660 44

1.9.1952
Be/WvL

Central Service Department

Ph. Salverda

N.V. PHILIPS' GLOELAMPENFABRIEKEN EINDHOVEN	Betr.: 5653/02	M143
SERVICE		11-11-52

R27 en C95 moeten gewijzigd worden ter verbetering van de sprong-
karakteristiek 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 48 221 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 caractéristique
de saut d'amplificateur pour la déflexion 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 Sprung-
karakteristik 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 48 221 10/22E wird C95 12 pF 48 211 10/12E

Para mejorar 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

Be/TV

CENTRAL SERVICE DEPARTMENT

[Signature]
Ch. Salverda.

N.V. PHILIPS' GLOEIAMPENFABRIEKEN EINDHOVEN	Betr.: GM5653-01-02 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 O2F) moet met R90 op 230V ingesteld worden.
2. Onder: B Verschillen van type O2F 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.)

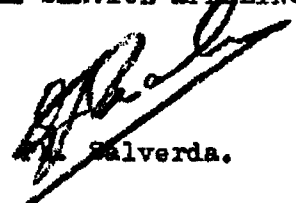
1. R8 and R119 must be connected to each other.
2. R143 must be added between C58-R53 and R144-R145.
The earth connection of R53 must be omitted.

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 O2F) must be adjusted to 230V with R90.
2. Under: B Differences between type O2F 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.

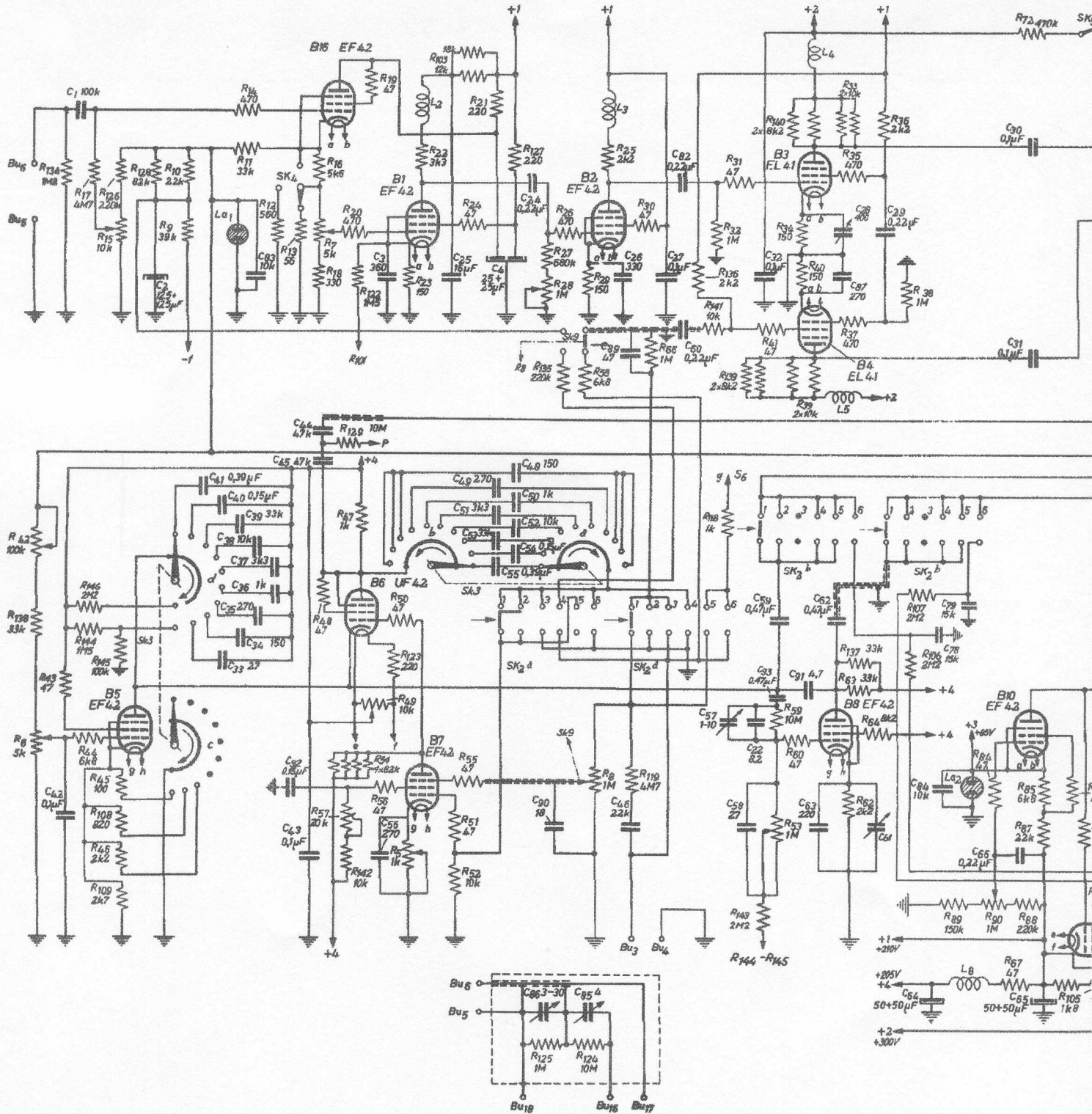
CENTRALE SERVICE AFDELING

Be/TV

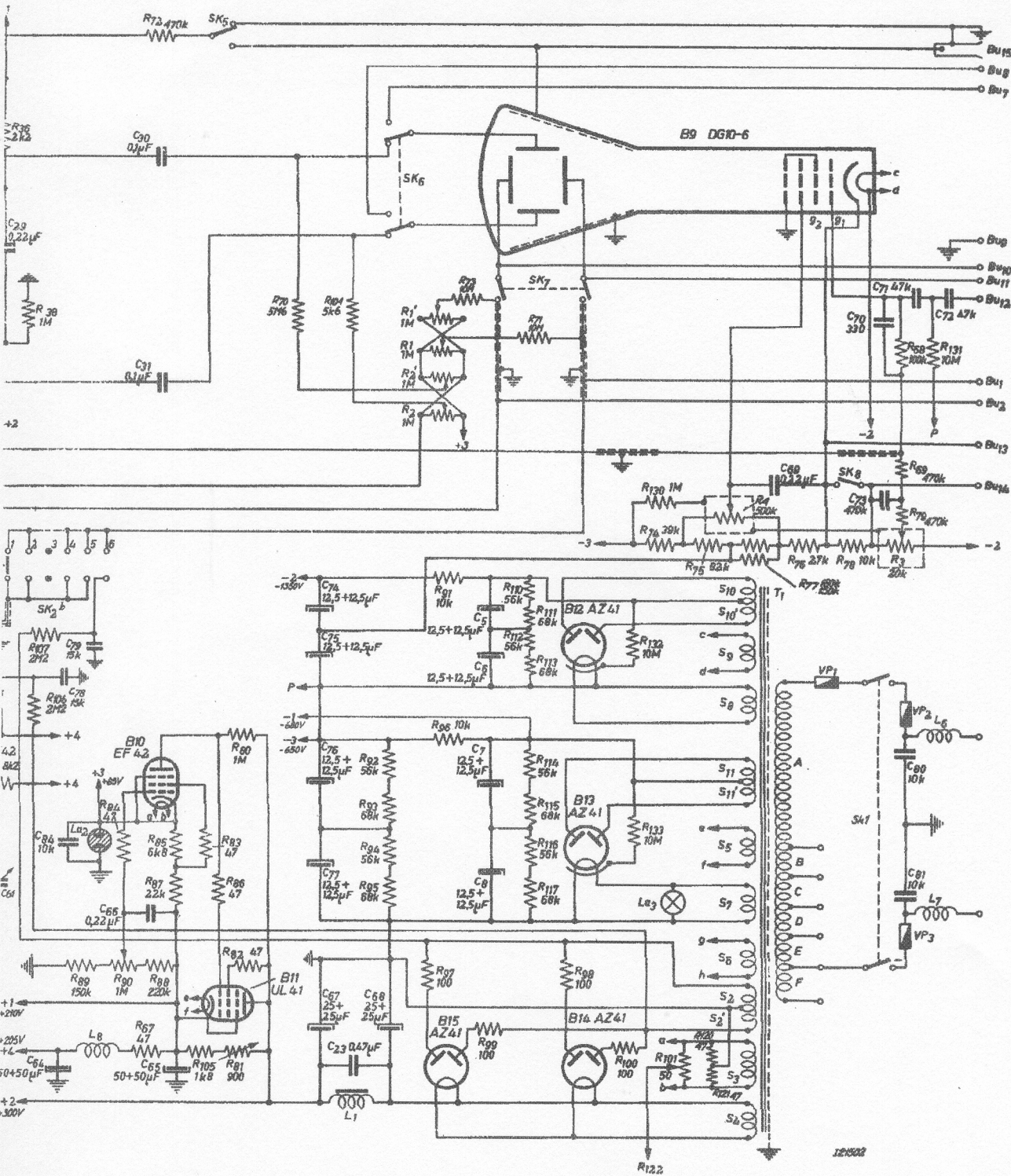

J. Salverda.

S. I.	L. 2										L. 3										L. 4										L. 5										L. 6																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			
C	1.	2.	32.34.35.32.	44.45	3.	25.	4.48.24.86.90.	26.28.27.82.80.	32.	91.	28.	87.	29.	64.	30.31.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																													
C	4.2.		41.40.39.38	37.36.32.43.			48.51.53.48.50.52.54.55	85.4.6.		57.22.58.93.59.	63.	62.	61.	79.78.	84.	65.	65.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																											
R	6.	136.	17.	15.124.	128.	10.8.	14.33.	7.	16.18.	128.30.19.123.	22.	103.	24.	21.	127.135.27.	28.28.29.58.	25.	30.	66.	136.	141.31.	41.	139.140.34.	33.	63.	39.35.	36.38.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	

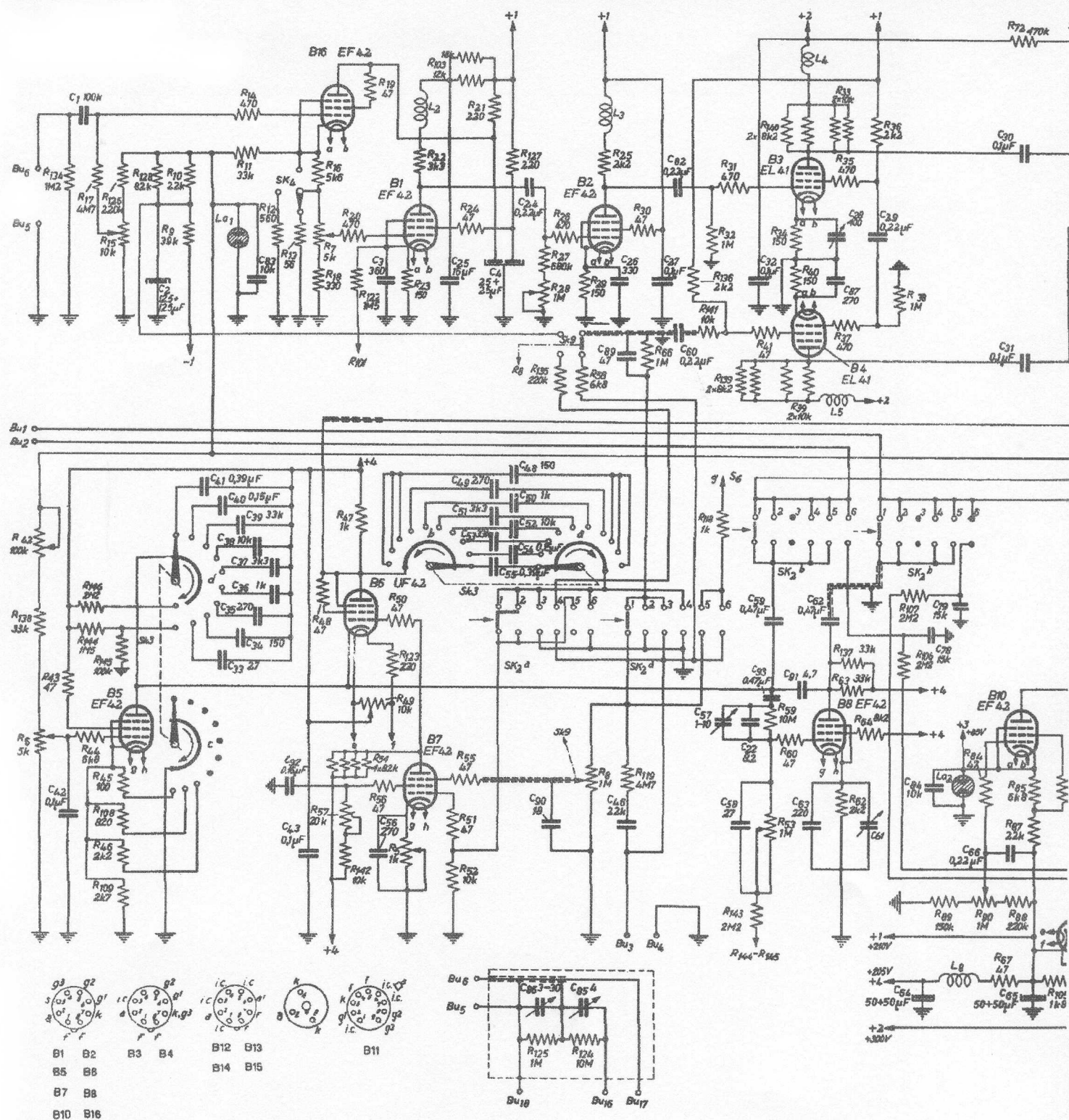
R. 144. 145. 146.

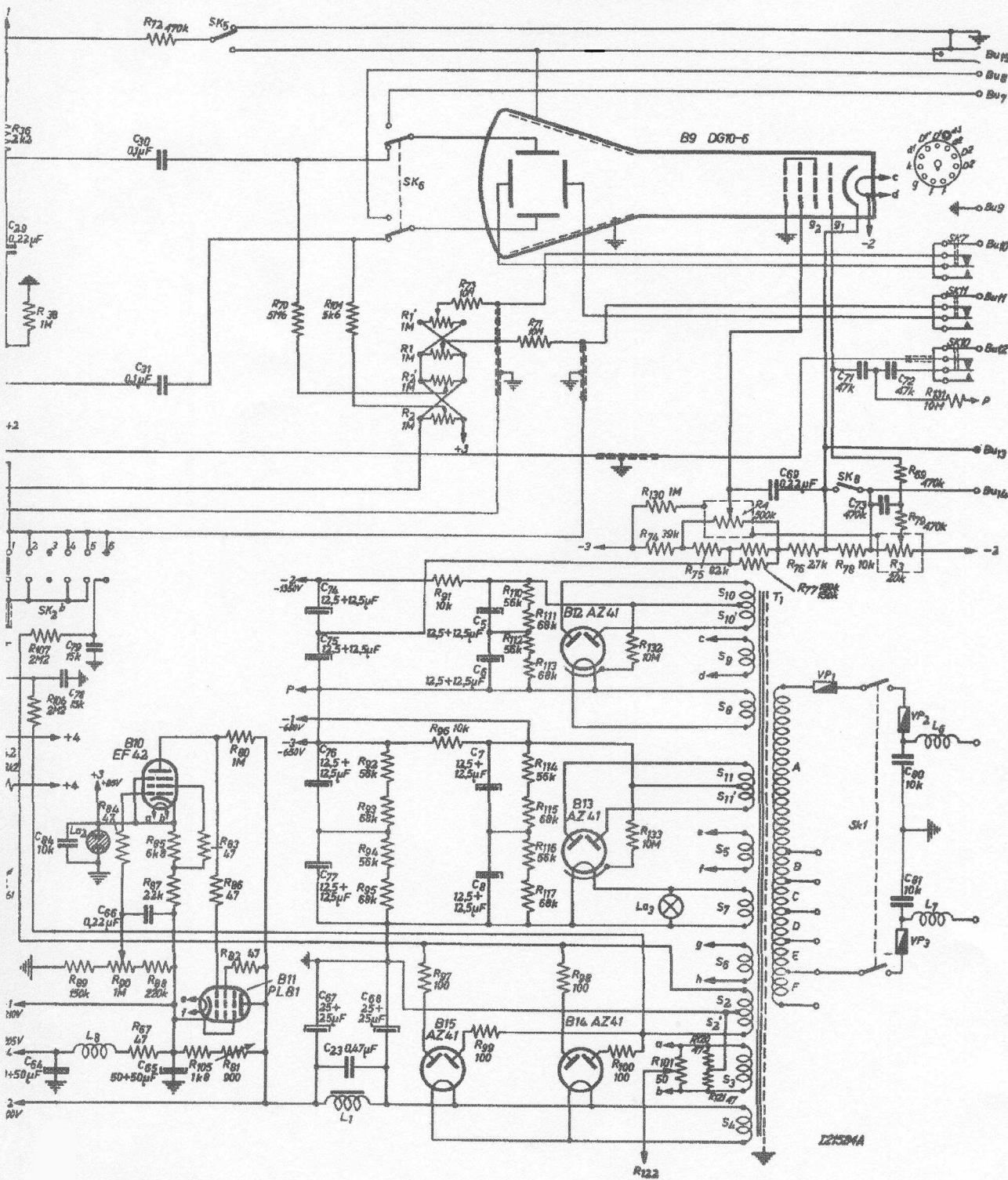


L8				L1				S1-SH				L6 L7	
29.	64.	30.31.		73.77.23.			5.6.			69.		73.70.71.	72.
61	"	73.70.84.		66.65.			7.0.						80.81
36.38.				72.85.87.	83.88.	80.	70.	104		97.1'.1'.2'.2'.2.3.		71.114.115.116.117.	100.130.101.
													88.89.72.131.
56.	102.106.	82.	84.	90.88.87.80.	105.	81.82.			92.93.94.95.91.96.98.		110.111.112.113.98.	132.133.74.120.121.75.4.76.	77.78.76.78.7.



S. 1			L2			L3			L4			L5			L8		
C	1.	2.	33.34.35.33	3.	25	4.48.34.85.00	36.82.27.82.60.		32.	91	28.87	29.			84.	30.31.	
C	42.		41. 40. 39. 39	37.36.82.43.		48.51.53. 48.50.52.54.55	85.46.		57. 22.	58.93.59.	63. 62.	65.		73.78.	84.	66. 65.	
R	6.	134.	17. 15126.	128. 10.8	14.33.	7. 16.16.	2019.123. 2.3	103. 24. 21	127.73. 27. 28.26.29.58	25. 30. 66.	136.	141. 31	41.138.160.34.33.62.39.35.	36.38.		72.85.87. 6.	
R	42.138.43.44.	45. 108.46.109		71. 12. 12	48.57.54.482.	48.56.50.54.47	51.55.52.	125.	8.	124.	119.	118.32.443.59.83.40.60.30.137.37.	63. 64.	107.106.	89.	84. 90.88.67. 80. 105.	
R. 16. 14. 15. 14. 16.																	



[illegible]

ERRATA

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

- 1 In de 10^e 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 elektrische 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 apportées:

- 1 Dans la dixième position de SK3ab C47=68 pF est connecté: voir fig.
- 2 La valeur de R90 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

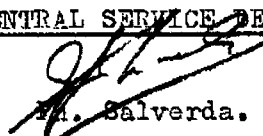
Folgende Korrekturen müssen angebracht werden in den Schaltbildern vom GM5653-01 und 02-02F in den Kundendienstanleitungen für GM5653-00-01 und GM5653-02.

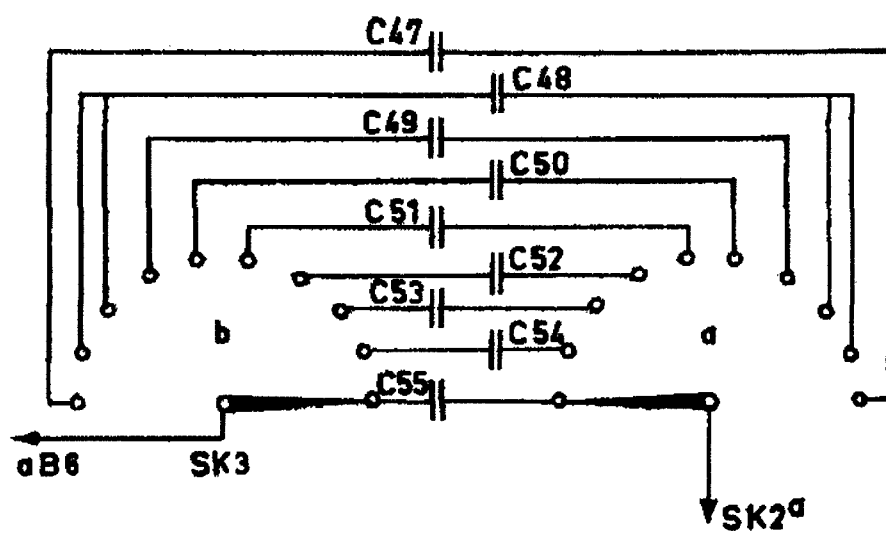
- 1 In Stellung 10 von SK3ab wird C47=68F eingeschaltet (siehe Abb.)
- 2 Der Wert von R90 in diesen Schaltbildern muss 100 KΩ sein, anstatt 1 MΩ.
- 3 Der Wert von R53 in der Liste der elektrischen Bestandteile und in dem Schaltbild des GM5653-02 muss 100 KΩ sein, anstatt 1 MΩ.

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


J. Salverda.



N.V. PHILIPS' GLOBELAMPENFABRIEKEN EINDHOVEN	1	WD 726
SERVICE	GM 5653	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

Añádase : 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 moletté - 07 601 90.0 doit être supprimée.

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

Pos 31 - connexion sur orête A3 307 24.0 doit être pos. 32

Pos 32 - écrou moletté - 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. GM 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

