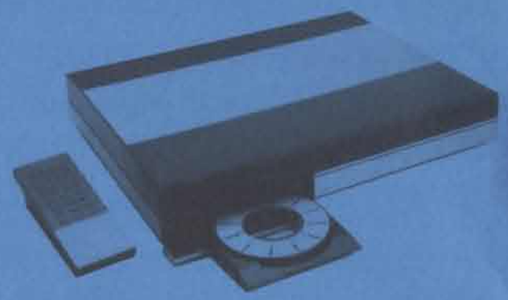
BANG & OLUFSEN
DK – 7600 STRUER
DENMARK

TELEPHONE 07 – 851122* – TELEX 66549
CABLE ADDRESS BANGOLUF
TELEFAX 07 – 852650

3538632 08-85

PRINTED IN DENMARK BY SCANDINAVIAN REPRODUCTION AS, STRUER 08-85

Bang&Olufsen

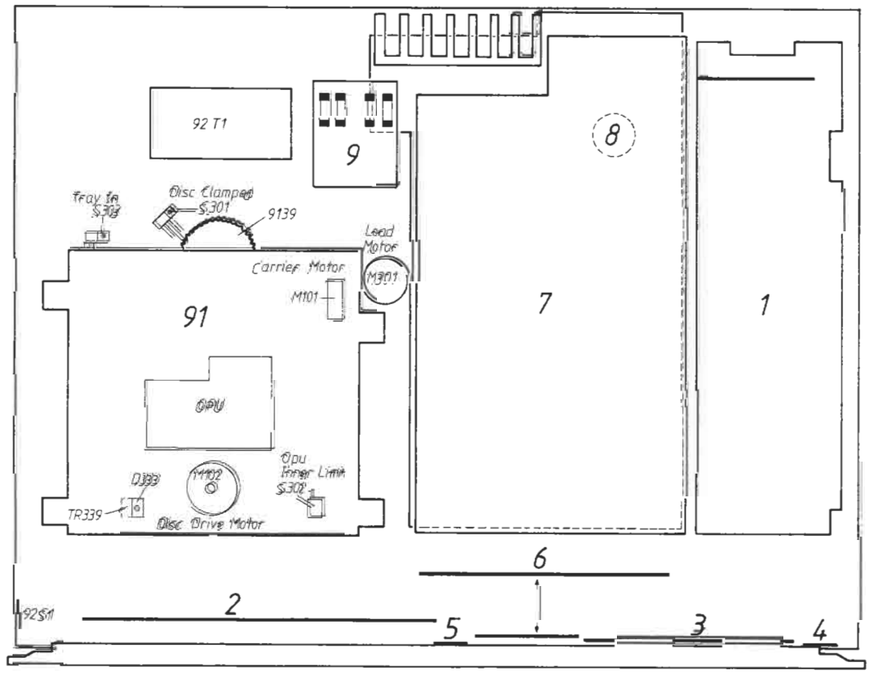


Beogram CD 50
Type 5111/12/13/14/15

CD-Terminal
Type 5005

SERVICE MANUAL

MODULES



CAUTIONS

The light pin (OPU unit) is much more sensitive to static charge than a MOS IC.
Careless treatment during servicing may reduce life expectancy drastically. For this reason care should be taken that during servicing the potentials of the aids and yourself equal the potential of the mechanism.

The product contains a laser component with a laser radiation exceeding the laser limit class 1.

CLASS 1
LASER PRODUCT

Symbol for Safety Components

When replacing components with this symbol components with identical part numbers are to be used. The new component must be fitted in the same way as the one replaced.

EXPLANATION OF DIAGRAM

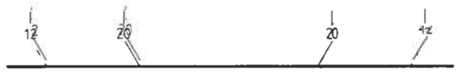
System of Co-ordinates

The largest PC-board drawings have been provided with a co-ordinate system. The components on these PC-boards are provided with a grid reference on the diagram indicating in what grid they are positioned on the PC-board (smaller typing than position numbers – e.g. B3).

Wiring Connections

The wiring connections on the diagram are assembled in "bundless". The individual wires are coded to indicate to where they are leading.

INTERNAL CONNECTION
ON ONE DIAGRAM PAGE

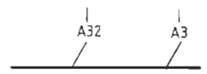


Internal connections on a diagram page are indicated by a number. The bend of the wire indicates in which direction the other end of the wire may be found.

CONNECTION TO ANOTHER
DIAGRAM PAGE

DIAGRAM A

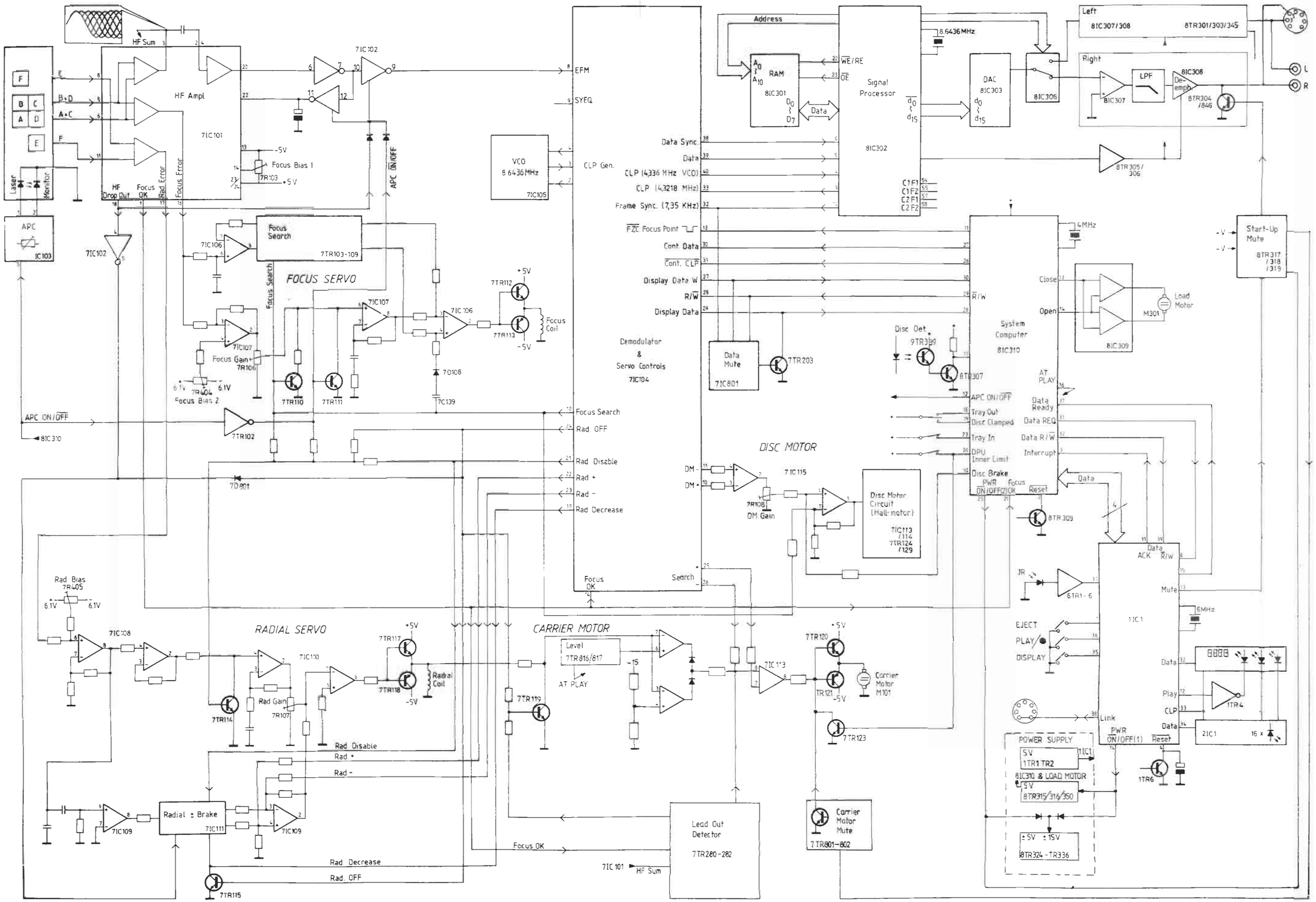
DIAGRAM C

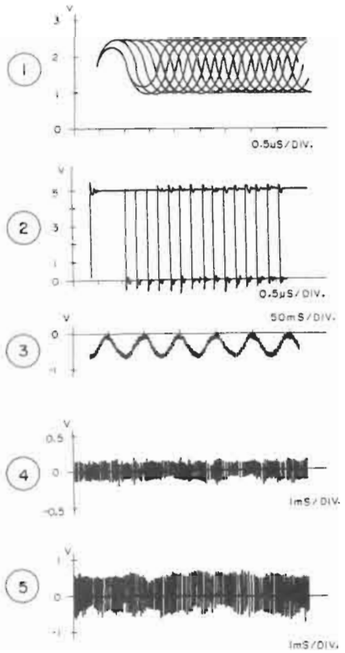


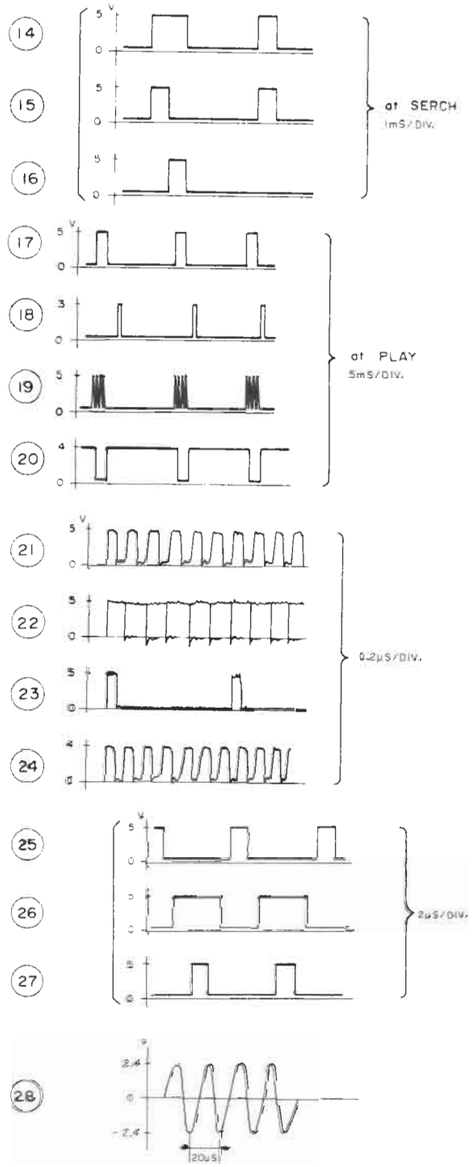
Connections to another diagram page are indicated by a number, as well as by a letter of the diagram to which the connections lead.

1-3
1-3

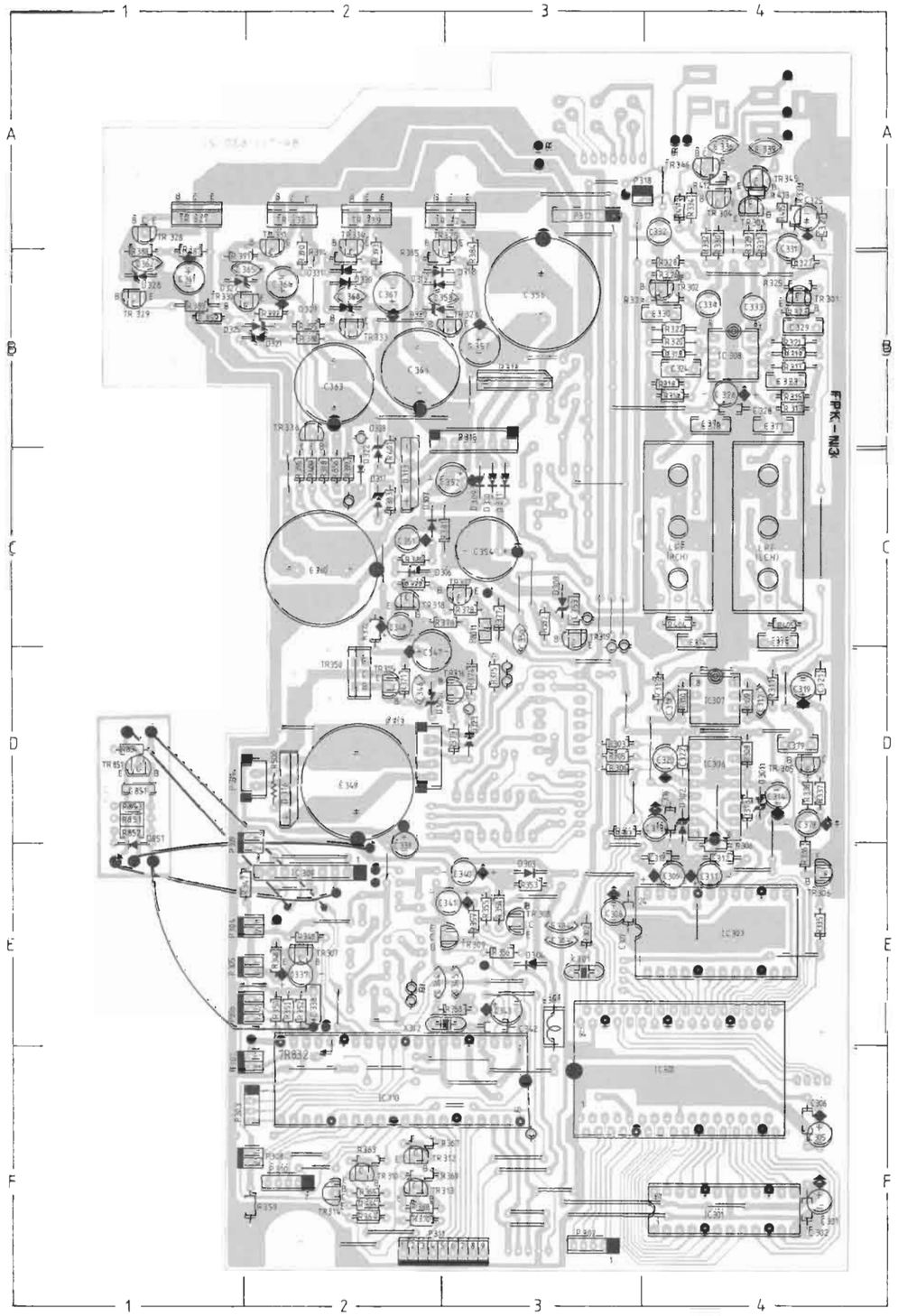
BLOCK DIAGRAM



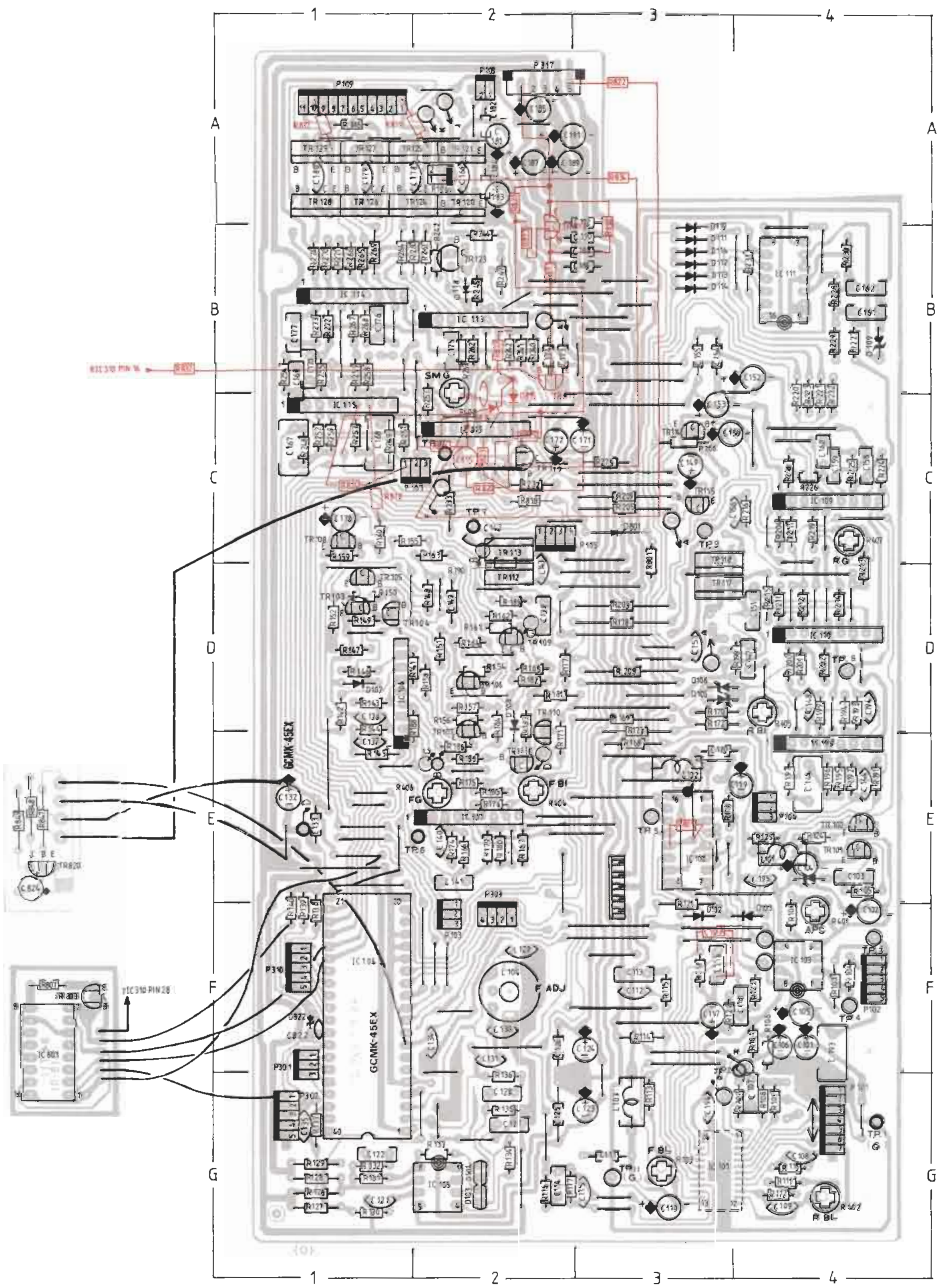

1
0.5uS/DIV.
2
0.5µS/DIV.
50mS/DIV.
3
4
1mS/DIV.
5
1mS/DIV.
6
1mS/DIV.
7
8
0.5 Sec/DIV.
PLAY
9
0.2uS/DIV.
10
0.2uS/DIV.
11
at STOP
at PLAY
0.2uS/DIV.
12
13
at PLAY
50uS/DIV.

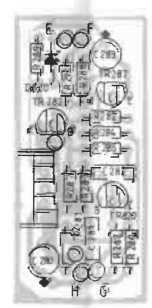

14
15
16
at SERCH
1mS/Div.
17
18
19
20
at PLAY
5mS/DIV.
21
22
23
24
0.2µS/DIV.
25
26
27
2uS/DIV.
28
20uS

DECODER


1
2
3
4
A
B
C
D
E
F
FPK-RN3

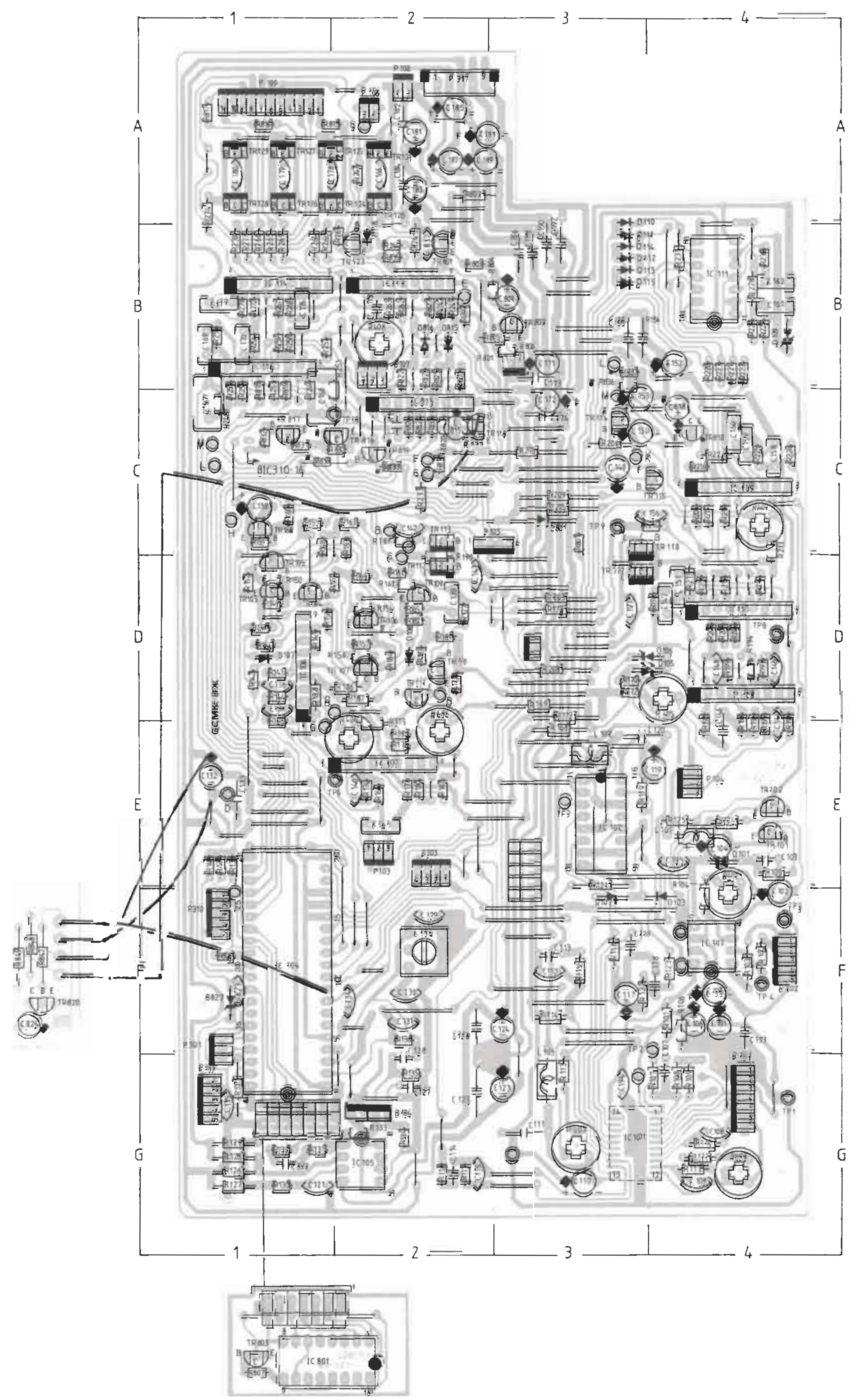
SERVO The first manufactured products





Bang&Olufsen

SERVO



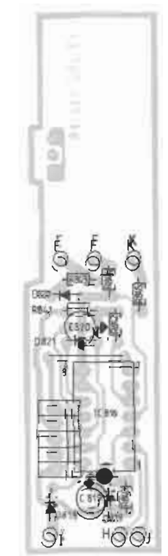


DIAGRAM A Focus & Radial Servo

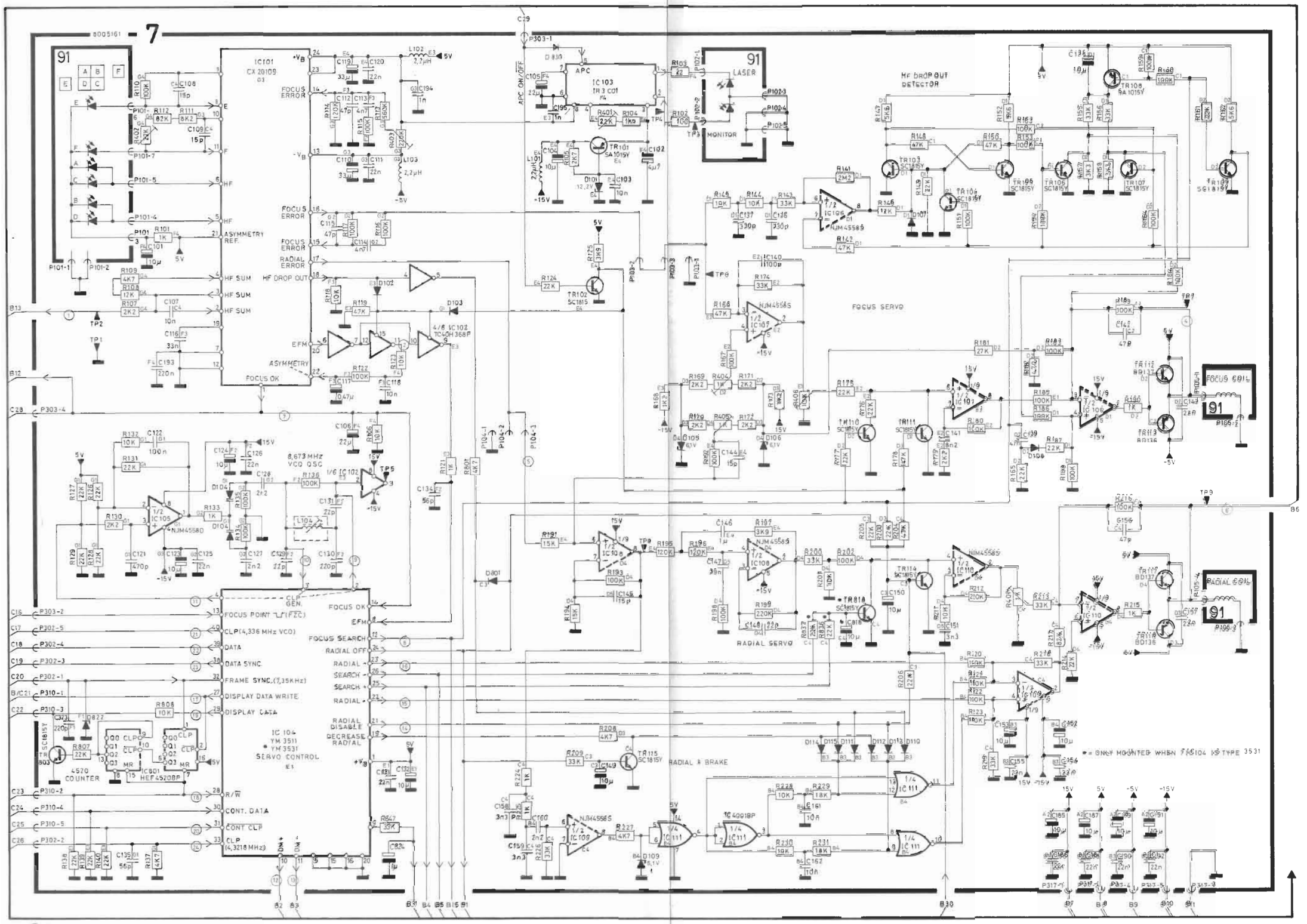
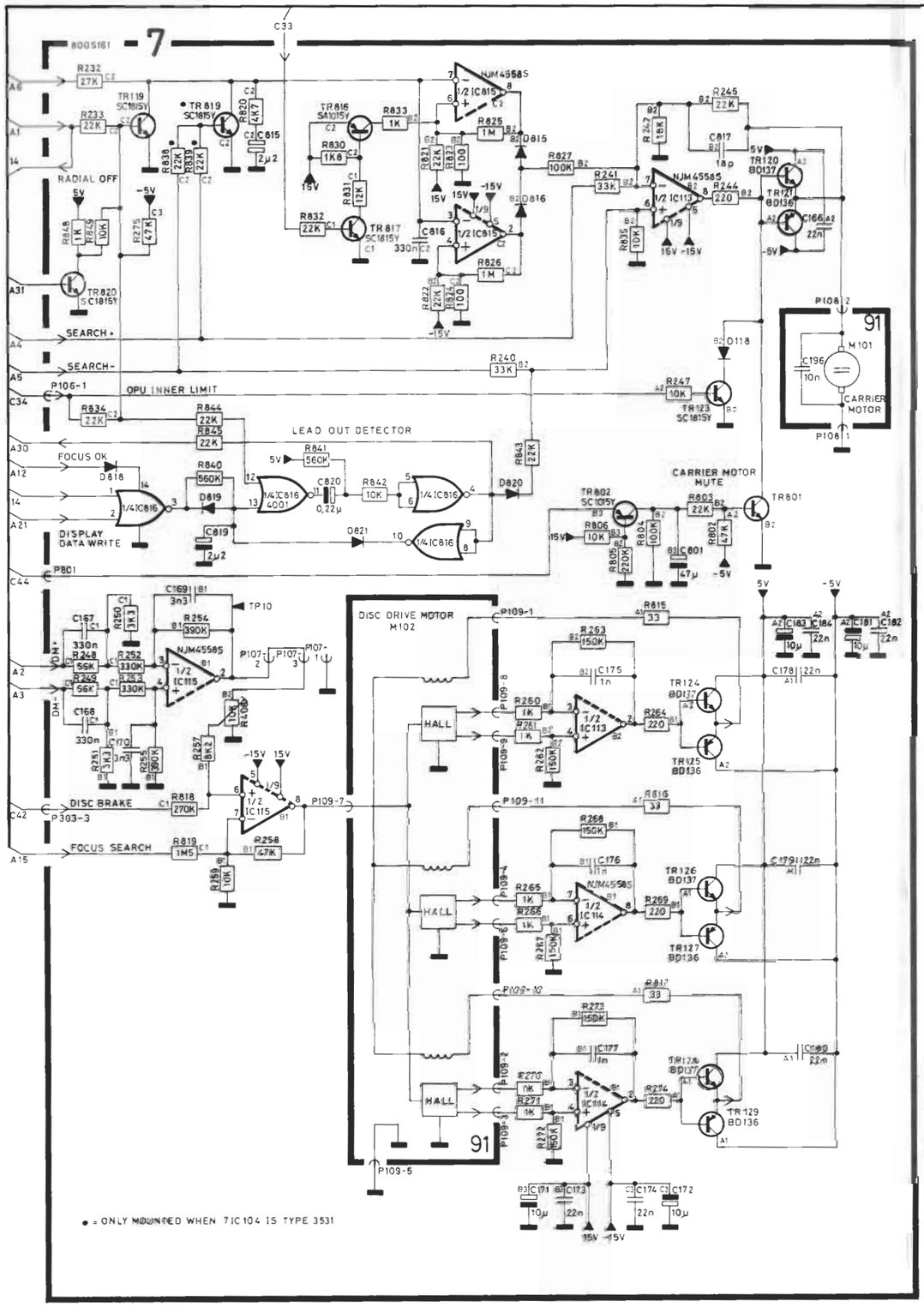
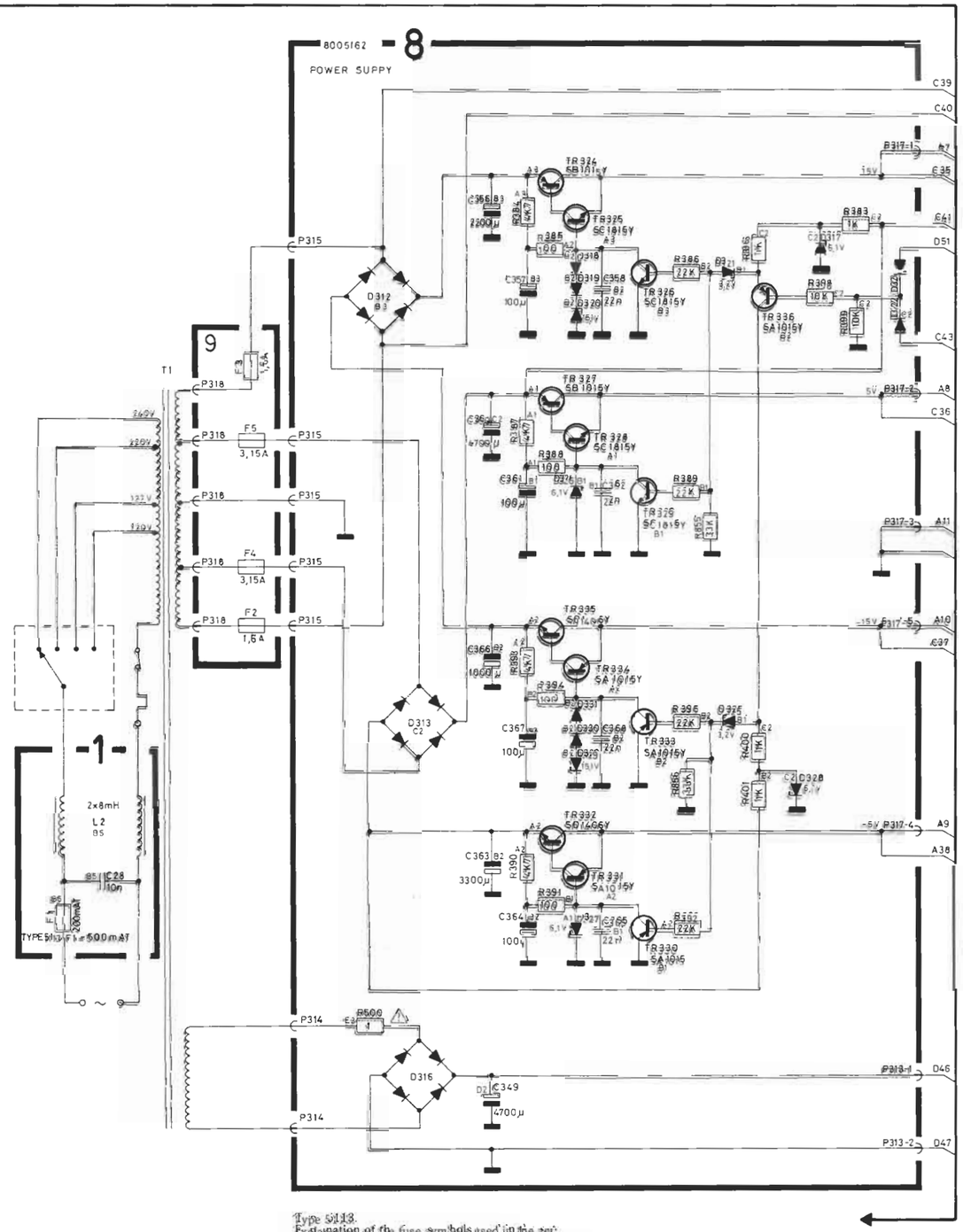


DIAGRAM B Carrier, Motor, Disc Motor Drive, Power Supply





Type 5113.
Explanation of the fuse symbols used in the set:
Explanation de symboles du fusible utilisés dans l'appareil:

T 1.6A 250V — Replace with same type 1,6 ampere 250 volts slow acting fuse.
Remplacer par un fusible de meme type retarde et de 1,6 ampere 250 volts.

T 3.15A 250V — Replace with same type 3,15 ampere 250 volts slow acting fuse.
Remplacer par un fusible de meme type retarde et de 3,15 ampere 250 volts.

T 500mA 250V — Replace with same type 500 milliampere 250 volts slow acting fuse.
Remplacer par un fusible de meme type retarde et de 500 milliampères 250 volts.

DIAGRAM C Decoder, System Control

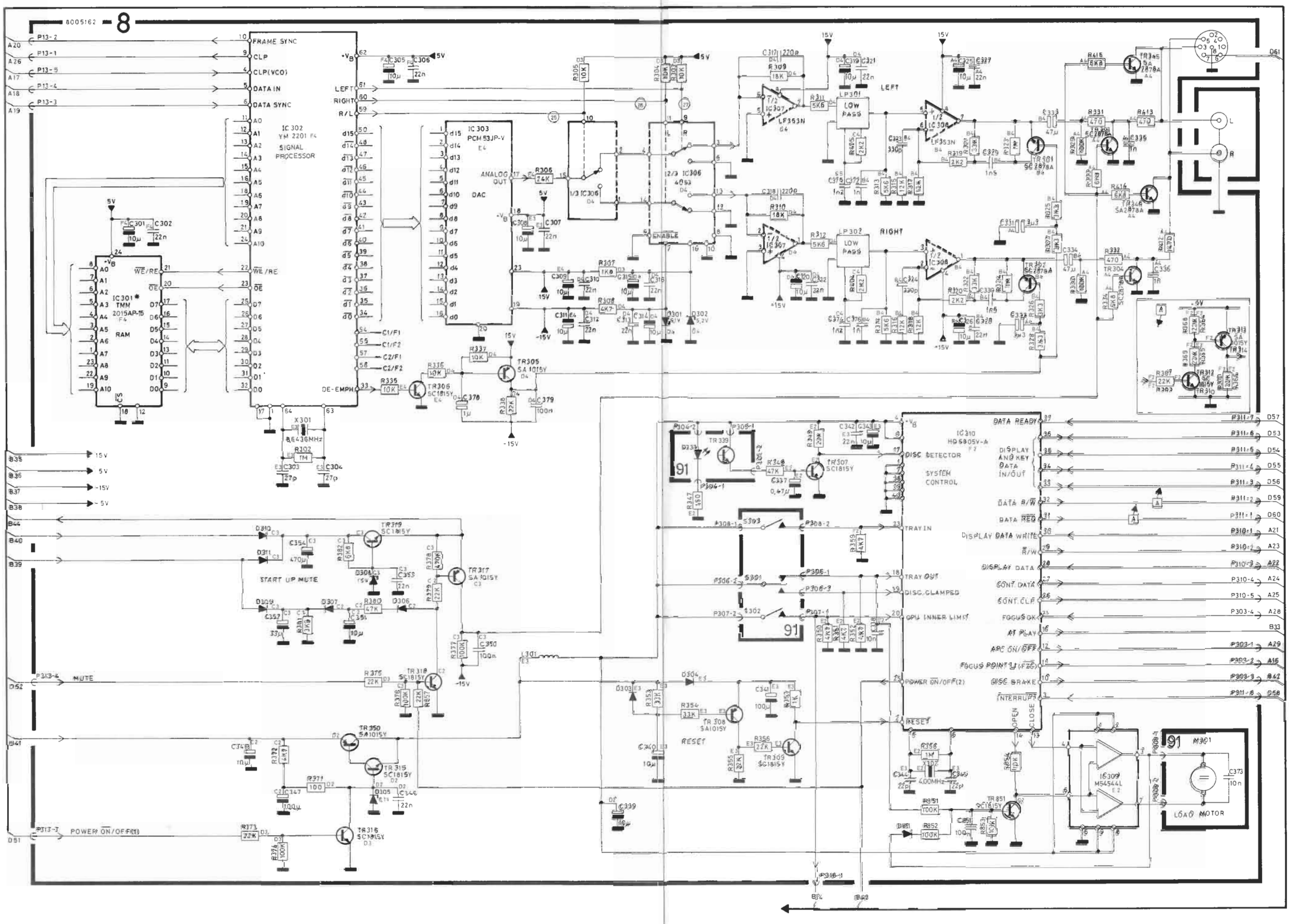
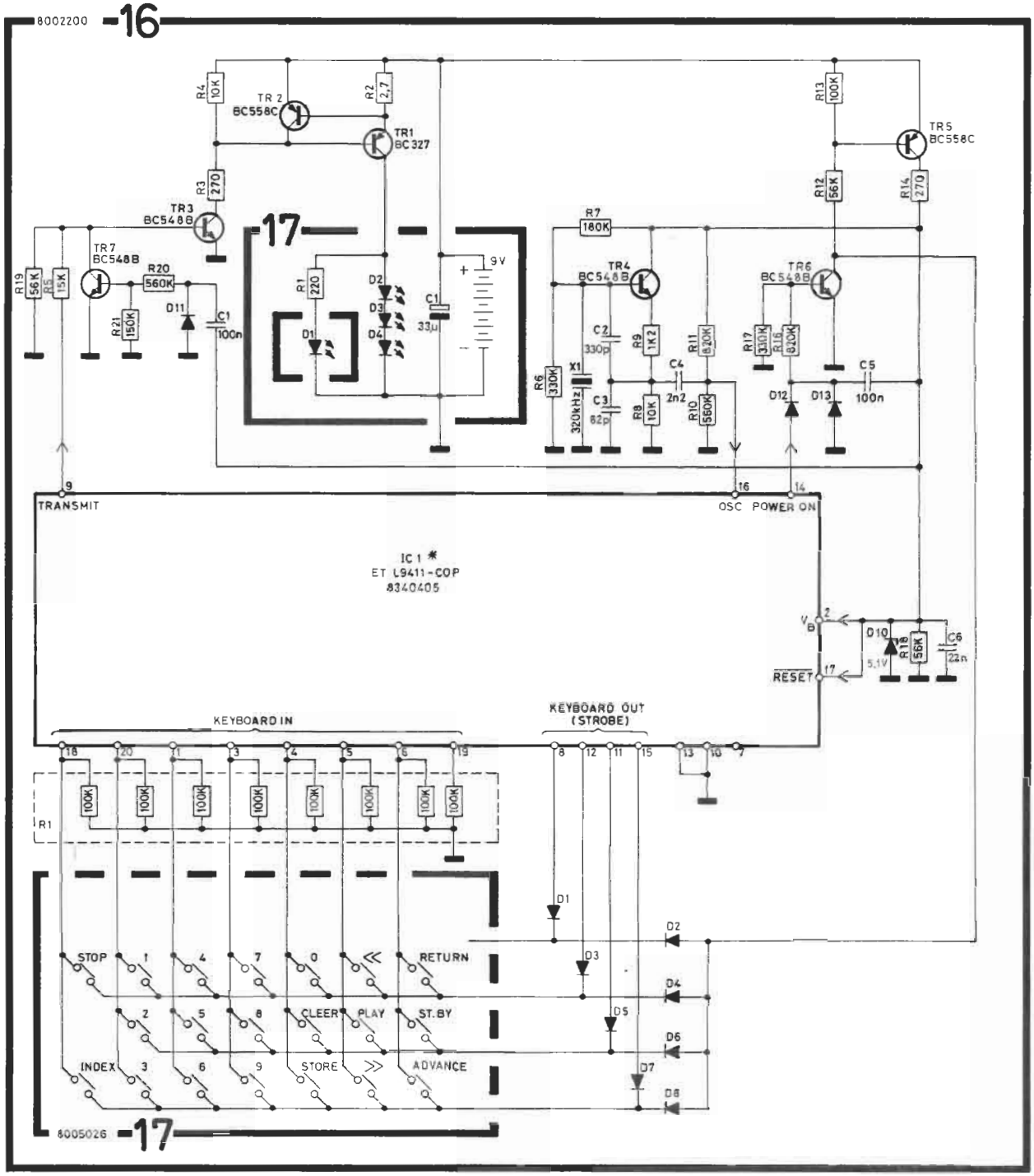
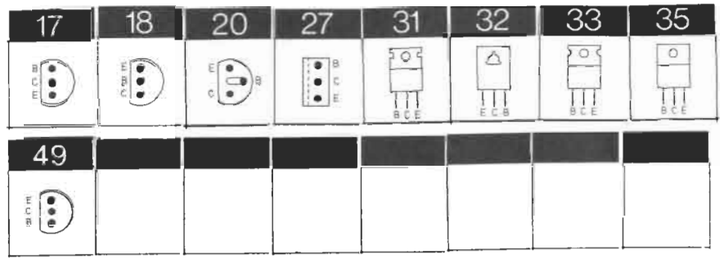


DIAGRAM E Remote transmitter, keyboard



SEMI CONDUCTORS

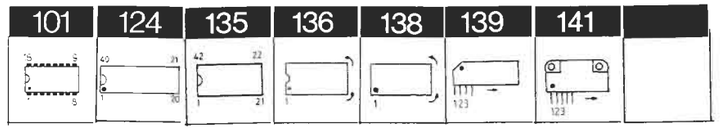


Transistors

1TR1	8320377	20	BC 182C/C
		17	BC 182CL
		20	BC 547C
1TR2*	8320369	31	BD 534
		33	BD 540A
1TR3	8320097	20	BC 182B/BK
		17	BC 182BL
		20	BC 237B
		20	BC 547B
1TR4	8320377	20	BC 182C/C
		17	BC 182CL
		20	BC 547C
1TR5	8320152	20	BC 212B/BK
		17	BC 212BL
		20	BC 251B
		18	BC 307B
		20	BC 557B
		27	2SA 844
1TR6	8320097	20	BC 182B/BK
		17	BC 182BL
		20	BC 237B
		20	BC 547B
1TR8	8320097	20	BC 182B/BK
1TR9		17	BC 182BL
1TR11		20	BC 237B
		20	BC 547B
6TR1	8320104	20	BC 213B/BK
		17	BC 213BL
		20	BC 252B
		18	BC 308B
		20	BC 558B
6TR2	8320108	20	BC 172B
		20	BC 183B/BK
		17	BC 183BL
		20	BC 238B
		20	BC 548B
6TR3	8320104	20	BC 213B/BK
		17	BC 213BL
		20	BC 252B
		18	BC 308B
		20	BC 558B
6TR4-6TR6	8320108	20	BC 172B
		20	BC 183B/BK
		17	BC 183BL
		20	BC 238B
		20	BC 548B
7TR101	8320663	49	2SA 1015Y
7TR102-7TR107	8320664	49	2SC 1815Y
7TR108	8320663	49	2SA 1015Y
7TR109-7TR111	8320664	49	2SC 1815Y
7TR112	8320292	32	BD 137
7TR113*	8320240	32	BD 136
7TR114-7TR115	8320664	49	2SC 1815Y
7TR117	8320292	32	BD 137
7TR118*	8320240	32	BD 136
7TR119	8320664	49	2SC 1815Y
7TR120	8320292	32	BD 137
7TR121*	8320240	32	BD 136
7TR123	8320664	49	2SC 1815Y
7TR124	8320292	32	BD 137
7TR125*	8320240	32	BD 136
7TR126	8320292	32	BD 137
7TR127*	8320240	32	BD 136

7TR128	8320292	32	BD 137
7TR129*	8320240	32	BD 136
7TR801	8320660	49	2SC 2878A
7TR802	8320663	49	2SC 1015Y
7TR803	8320664	49	2SC 1815Y
7TR816	8320663	49	2SA 1015Y
7TR817	8320664	49	2SC 1815Y
7TR820	8320097	20	BC 182 B/BK
		17	BC 182 BL
		20	BC 237B
		20	BC 547B
8TR301-8TR303	8320660	49	2SC 2878A
8TR305	8320663	49	2SA 1015Y
8TR306	8320664	49	2SC 1815Y
8TR307			
8TR308	8320663	49	2SA 1015Y
8TR309-8TR312	8320664	49	2SC 1815Y
8TR313	8320663	49	2SA 1015Y
8TR314			
8TR315	8320664	49	2SC 1815Y
8TR316			
8TR317	8320663	49	2SA 1015Y
8TR318	8320664	49	2SC 1815Y
8TR319			
8TR324	8320661	49	2SB 1015Y
8TR325	8320664	49	2SC 1815Y
8TR326			
8TR327	8320661	49	2SB 1015Y
8TR328	8320664	49	2SC 1815Y
8TR329			
8TR330	8320663	49	2SA 1015Y
8TR331			
8TR332	8320662	35	2SD 1406Y
8TR333	8320663	49	2SA 1015Y
8TR334			
8TR335	8320662	35	2SD 1406Y
8TR336	8320663	49	2SA 1015Y
8TR345	8320660	49	2SA 2878A
8TR346			
8TR851	8320664	49	2SC 1815Y
16TR1	8320316	20	BC 327-25/18
16TR2	8320398	20	BC 558C
16TR3-16TR4	8320108	20	BC 548B
16TR5	8320398	20	BC 558C
16TR6-16TR7	8320108	20	BC 548B
91TR339	8320665		Photo Transistor

IC's

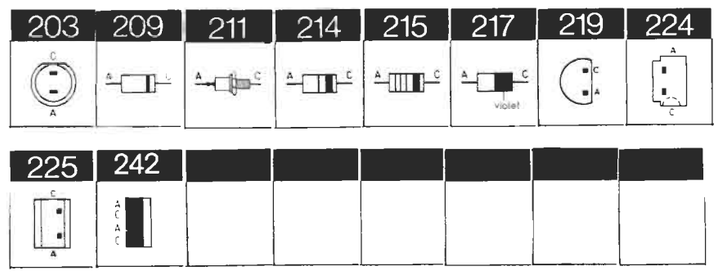


1IC1 △	8340691	**135**	8050	
1IC2 △	8340167	**136**	HEF 4001 BP	
2IC1 △	8340467	**124**	MM 5450N	
7IC101 △	8340846	**138**	CX-20109	
7IC102 △	8340839	**136**	TC40 H 368 P	
7IC103 △	8340849	**138**	IR 3 C01	
7IC104 △	8340850	**138**	YM3511	
7IC105	8340840	**138**	NJM 4558D	
7IC106-△	8340704	**139**	NJM 4558S	
7IC110				
7IC111 △	8340373	**136**	TC 4001BP	
7IC113-	8340704	**139**	NJM 4558S	
7IC115				
7IC801 △	8340491	**101**	HEF 4520BP	

7IC815	8340704	**139**	NJM 4558S	
7IC816	8340373	**136**	TC 4001 BP	
8IC301 △	8340851	**136**	TMM 2015AP-15	
8IC302 △	8340852	**136**	YM 2201	
8IC303 △	8340853	**136**	PCM 53JP-V	
8IC306 △	8340340	**101**	CD 4053 BCN	
		101	HEF 4053 BP	
		101	MC 4053BP	
8IC307 △	8340195	**103**	LF 353 N	
8IC308		**103**	TDB 0353 DP	
		103	TL 072 CP	
		103	UAF 772 TC	
8IC309 △	8340842	**141**	M-54544L	
8IC310 △	8340854	**136**	HD 6805V-A	
16IC1	8340405	**135**	ETL 9411	

* Specially selected or adapted sample

△ Indicates static electricity may destroy the component



Diodes

1D1	8300296	**209**	BZX79B 5V6	
		209	BZX83B 5V6	
		209	ZPD 5V6	
1D2	8300058	**217**	SFD 184	
1D3		**209**	1N 4148	
		215	1N 4148	
1D4	8300023	**209**	1N 4002	
1D5	8300058	**217**	SFD 184	
1D6		**209**	1N 4148	
1D8		**215**	1N 4148	

1D9	8300040	**211**	ZX12	
2D1	8300023	**209**	1N 4002	
2D3-	8330137		LED green	
2D17				
6D1	8330004	**224**	BPW 41	
		224	BPW 41D	
		219	SFH 205	
		225	TIL 100	

6D2-	8300058	**217**	SFD 184	
6D4		**209**	1N 4148	
		215	1N 4148	
7D101	8300516	**209**	HZ 12B2L	
7D102	8300486	**214**	BAX 14	
7D103	8300520	**242**	KV 1226X	
7D104				
7D105	8300515	**209**	HZ 6 BIL	
7D106				
7D107-	8300486	**214**	BAX 14	
7D118				
7D815	8300486	**214**	BAX 14	
7D816				
7D830	8300024	**209**	AA 119	
8D301	8300514	**209**	HZ 5C2	
8D302				
8D303	8300486	**214**	BAX 14	
8D304				
8D305	8300515	**209**	HZ 6 BIL	
8D306	8300486	**214**	BAX 14	
8D307				
8D308	8300517	**209**	HZ 15-IL	
8D309-	8300486	**214**	BAX 14	
8D311				
8D312-	8300519	**241**	1B4B41	
8D313				
8D316				

8D317	8300515	**209**	HZ 6 BIL	
8D318	8300486	**214**	BAX 14	
8D319				
8D320	8300517	**209**	HZ 15-IL	
8D321	8300521	**209**	HZ 3C2	
8D322	8300486	**214**	BAX 14	
8D323				
8D325	8300521	**209**	HZ 3C2	
8D326-	8300515	**209**	HZ 6 BIL	
8D328				
8D329	8300517	**209**	HZ 15-IL	
8D330	8300486	214	BAX 14	
8D331				
8D851	8300486	214	BAX 14	
16D1-8	8300058	**209**	1N4148	
		215	1N4148	
16D10	8300169	**209**	BZX 79 5.1V	
		209	ZPD 5.1V	
		209	BZX 83.5V	
16D11-	8300058	**209**	1N4148	
16D13		**215**	1N4148	
17D2-	8330022	**203**	LD 271	
17D4		**203**	V-290-P	
91D333	8330166		LED	

LIST OF ELECTRICAL PARTS

Resistors not mentioned are standard 5% 1/4 W carbon film

PCB 1 - 8005138
Display and Key Control
*5114 only**

R2	5020588	0.15 Ω 0.5W	R24	5020110	10 kΩ 1% 1/4W
R22	5020093	4.64 kΩ 1% 1/4W	R33	5020501	4.7 Ω 5% 1W
R22*	5020202	2.55 kΩ			

C1	4200403	100 µF 25V	C17	4010035	1 nF 10% 63V
C2	4010076	22 nF -20+100% 40V	C18	4010035	1 nF 10% 63V
C3	4130179	100 nF 20% 63V	C19	4200423	2.2 µF 50V
C4	4200431	10 µF 16V	C20	4010027	1 nF 10% 63V
C5	4010035	1 nF 10% 63V	C21	4010035	1 nF 10% 63V
C6	4010035	1 nF 10% 63V	C22	4000016	5.6 pF ± 0.25 pF 63V
C7	4010035	1 nF 10% 63V	C23	4000081	18 pF 5% 63V
C8	4010035	1 nF 10% 63V	C24	4010035	1 nF 10% 63V
C9	4010035	1 nF 10% 63V	C25	4010035	1 nF 10% 63V
C10	4010035	1 nF 10% 63V	C26	4010035	1 nF 10% 63V
C11	4010035	1 nF 10% 63V	C27	4010035	1 nF 10% 63V
C12	4010035	1 nF 10% 63V	C28	4130351	10 nF 20% 250V
C13	4010035	1 nF 10% 63V	C29	4010027	1 nF 10% 63V
C14	4010035	1 nF 10% 63V	C31	4130226	220 nF 10% 63V
C15	4010035	1 nF 10% 63V	C32	4010033	820 nF 10% 63V
C16	4010035	1 nF 10% 63V	C35	4200330	100 µF -10+50 10V

X1	8090009	6.000 MHz ± 50 ppM	3358206	Heatsink
			3304103	Screen
F1	6600037	200 MAT 250V IEC 127		
	6600033	500 MAT 250V UL		
L1	8020342	Coil 10 uH		
L2	8022000	Coil 2 x 0.8 MHz		

PCB 2 - 8005136 Display Dots

R1	5020501	4.7 Ω 5% 1W	C1	4130179	100 nF 20% 63V
			C2	4200220	33 µF 63V
			C3	4010027	1 nF 10% 63V

PCB 3 - 8330091 Display Digits

C1	4010041	10 nF -20+80% 40V	C2	4010041	10 nF -20+80% 40V

PCB 6 - 8005133 Remote Control Reciver

C1	4000018	220 pF 5% 63V	C7	4010027	1 nF 10% 63V
C2	4010106	10 nF -20+80% 40V	C8	4010027	1 nF 10% 63V
C3	4010027	1 nF 10% 63V	C9	4010061	2.2 nF 10% 63V
C4	4200364	10 µF 63V	C10	4010027	1 nF 10% 63V
C5	4130223	47 nF 10% 63V	C11	4130319	680 nF 20% 100V
C6	4200364	47 µF -10+50% 10V			

L1	8022128	56 mH	3170230	Insulation piece
			3302400	Screen, upper
			3302392	Screen, lower

PCB 7 - 8005161 Servo

R401	5370318	22 kΩ 20%	R405	5370317	1 kΩ 20%
R402	5370318	22 kΩ 20%	R406	5370316	10 kΩ 20%
R403	5370319	220 kΩ 20%	R407	5370317	1 kΩ 20%
R404	5370317	1 kΩ 20%	R408	5370316	10 kΩ 20%

C101	4200431	10 µF 16V	C118	4130220	10 nF 5% 63V
C102	4200486	4.7 µF 50V	C119	4200220	33 µF 16V
C103	4130220	10 nF 5% 63V	C120	4010113	22 nF 30% 25V
C104	4200431	10 µF 16V	C121	4010024	470 pF 10% 63V
C105	4200544	22 µF 16V	C122	4130261	100 nF 5% 63V
C106	4200544	22 µF 16V	C123	4200431	10 µF 16V
C107	4200431	10 nF 5% 63V	C124	4200431	10 µF 16V
C108	4000025	15 pF 5% 63V	C125	4010113	22 nF 30% 25V
C109	4000025	15 pF 5% 63V	C126	4010113	22 nF 30% 25V
C110	4200220	33 µF 16V	C127	4130336	2.2 nF 5%
C111	4010113	22 nF 30% 25V	C128	4130336	2.2 nF 5%
C112	4000077	47 pF 2% 63V	C129	4000214	22 pF 5% 63V
C113	4130370	4.7 nF 5%	C130	4010066	220 pF 5% 63V
C114	4130370	4.7 nF 5%	C131	4000214	22 pF 5% 63V
C115	4000077	47 pF 2% 63V	C132	4200431	10 µF 16V
C116	4130328	33 nF 5% 63V	C133	4010113	22 nF 30% 25V
C117	4200476	0.47 µF 50V	C134	4000194	56 pF 5% 63V

PCB 8 - 8005162 Decoder

C135	4000194	56 pF 5% 63V	C172	4200431	10 µF 16V
C136	4010062	330 pF 10% 63V	C173	4010060	22 nF -20+80% 40V
C137	4010062	330 pF 10% 63V	C174	4010060	22 nF -20+80% 40V
C138	4200431	10 µF 16V	C175	4130337	1 nF 5%
C139	4130219	47 nF 5% 63V	C176	4130337	1 nF 5%
C140	4000176	100 pF 5% 63V	C177	4130337	1 nF 5%
C141	4130371	8.2 nF 5%	C178	4010060	22 nF -20+80% 40V
C142	4000077	47 pF 2% 63V	C179	4010060	22 nF -20+80% 40V
C143	4010060	22 nF -20+80% 40V	C180	4010060	22 nF -20+80% 40V
C144	4000025	15 pF 5% 63V	C181	4200431	10 µF 16V
C145	4000025	15 pF 5% 63V	C182	4010113	22 nF 30% 25V
C146	4130343	1 µF 5%	C183	4200431	10 µF 16V
C147	4130340	39 nF 5% 63V	C184	4010113	22 nF 30% 25V
C148	4000214	22 pF 5% 63V	C185	4200431	10 µF 16V
C149	4200431	10 µF 16V	C186	4010060	22 nF -20+80% 40V
C150	4200431	10 µF 16V	C187	4200431	10 µF 16V
C151	4130339	3.3 nF 5%	C188	4010060	22 nF -10+80% 40V
C152	4200431	10 µF 16V	C189	4200431	10 µF 16V
C153	4200431	10 µF 16V	C190	4210060	22 nF -10+80% 40V
C154	4010060	22 nF -20+80% 40V	C191	4200431	10 µF 16V
C155	4010060	22 nF -20+80% 40V	C192	4210060	22 nF -20+80% 40V
C156	4000077	47 pF 2% 63V	C193	4130340	220 nF 5%
C157	4010060	22 nF -20+80 40V	C194	4130337	1 nF 5%
C158	4130339	3.3 nF 5%	C195	4130337	1 nF 5%
C159	4130339	3.3 nF 5%	C196	4130220	10 nF 5% 63V
C160	4130336	2.2 nF 5%	C801	4200483	47 µF 16V
C161	4130220	10 nF 5% 63V	C815	4200353	22 µF 50V
C162	4130220	10 nF 5% 63V	C816	4130342	330 nF 5%
C166	4010060	22 nF -20+80% 40V	C817	4000081	18 pF 5% 63V
C167	4130328	33 nF 5% 63V	C818	4200431	10 µF 16V
C168	4130328	33 nF 5% 63V	C819	4200423	2.2 µF 50V
C169	4130339	3.3 nF 5%	C820	4200475	0.22 µF 50V
C170	4130339	3.3 nF 5%	C824	4200426	1 µF 50V
C171	4200431	10 µF 16V			

L101	8020580	Coil 2.2 uH	L103	8020580	Coil 2.2 uH
L102	8020580	Coil 2.2 uH			

R500	5020802	1 Ω 1/2W

C301	4200431	10 µF 16V	C336	4010027	1 nF 10% 63V
C302	4010113	22 nF 30% 25V	C337	4200476	0.47 µF 50V
C303	4000102	27 pF 5% 63V	C338	4130220	10 nF 50% 63V
C304	4000102	27 pF 5% 63V	C339	4200431	10 µF 16V
C305	4200431	10 µF 16V	C340	4200431	10 µF 16V
C306	4010113	22 nF 30% 25V	C341	4200478	100 µF 10V
C307	4010113	22 nF 30% 25V	C342	4010113	22 nF 30% 25V
C308	4200431	10 µF 16V	C343	4200478	100 µF 10V
C309	4200431	10 µF 16V	C344	4000183	22 pF 5% 63V
C310	4010113	22 nF 30% 25V	C345	4000183	22 pF 5% 63V
C311	4200431	10 µF 16V	C346	4010060	22 nF -20+80% 40V
C312	4010113	22 nF 30% 25V	C347	4200403	100 µF 25V
C313	4010113	22 nF 30% 25V	C348	4200431	10 µF 16V
C314	4200431	10 µF 16V	C349	4200668	4700 µF 25V
C315	4200431	10 µF 16V	C350	4130261	100 nF 5% 63V
C316	4010113	22 nF 30% 25V	C351	4200431	10 µF 16V
C317	4010021	220 pF 10% 63V	C352	4200489	33 µF 25V
C318	4010021	220 pF 10% 36V	C353	4010060	22 nF -20+80% 40V
C319	4200431	10 µF 16V	C354	4200611	470 µF 25V
C320	4200431	10 µF 16V	C356	4200669	2200 µF 50V
C321	4010113	22 nF 30% 25V	C357	4200403	100 µF 25V
C322	4010113	22 nF 30% 25V	C358	4010060	22 nF -20+80% 40V
C323	4100040	330 pF 2.5% 630V	C360	4200668	4700 µF 25V
C324	4100040	330 pF 2.5% 630V	C361	4200403	100 µF 25V
C325	4200431	10 µF 16V	C362	4010060	22 nF -20+80% 40V
C326	4200431	10 µF 16V	C363	4200670	3300 µF 16V
C327	4010113	22 nF 30% 25V	C364	4200403	100 µF 25V
C328	4010113	22 nF 30% 25V	C365	4010060	22 nF -20+80% 40V
C329	4000317	1.5 nF 2%	C366	4200671	1000 µF 35V
C330	4000317	1.5 nF 2%	C367	4200403	100 µF 25V
C331	4200485	3.3 µF 50V	C368	4010060	22 nF -20+80% 40V
C332	4200485	3.3 µF 50V	C373	4130220	10 nF 5% 63V
C333	4200483	47 µF 16V	C374	4000328	1.2 nF 2%
C334	4200483	47 µF 16V	C375	4000328	1.2 nF 2%
C335	4010027	1 nF 10% 63V	C376	4000329	1 nF 2%
C377	4000329	1 nF 2%	C379	4230261	100 nF 5% 63V
C378	4200426	1 µF 50V	C851	4130261	100 nF 5% 63V

X301	8030095	9.6436 MHz	LP301	8020604	Low Pass Filter
X302	8030000	Ceramic resonator 4 MHz	LP302	8020604	Low Pass Filter
L301	8020581	2.2 µH			

PCB 9 - 8005181 Fuse

F2	6600022	1.6A
F3	6600022	1.6A
F4	6600021	3.15A
F5	6600021	3.15A

PCB 16 - 8005179 Remote Keyboard

R1	5030017	8 x 100 kΩ 5% 1/8W	R2	5020625	2.7 Ω 5% 1/3W

C1	4130224	0.1 µF 63V	C4	4010061	22 nF 10% 63V
C2	4010062	330 pF 10% 63V	C5	4130224	0.1 µF 10% 63V
C3	4000200	82 pF 5% 63V	C6	4130193	22 nF 20% 63V

X1	8030039	320 kHz ± 1 kHz

PCB 17 -8005026 Keyboard

C1	4200414	33 µF -10+50% 16V
91C196	4010041	10 nF -10+80% 40V
92T1	8013355	Transformer
92S1	7402032	Switch

91S301	7400322	Switch	91M101	2755027	Carrier Motor
91S302	7400331	Switch	91M102	8400147	Disc. Driver Motor
91S303	7400322	Switch	91M301	8400146	Load Motor

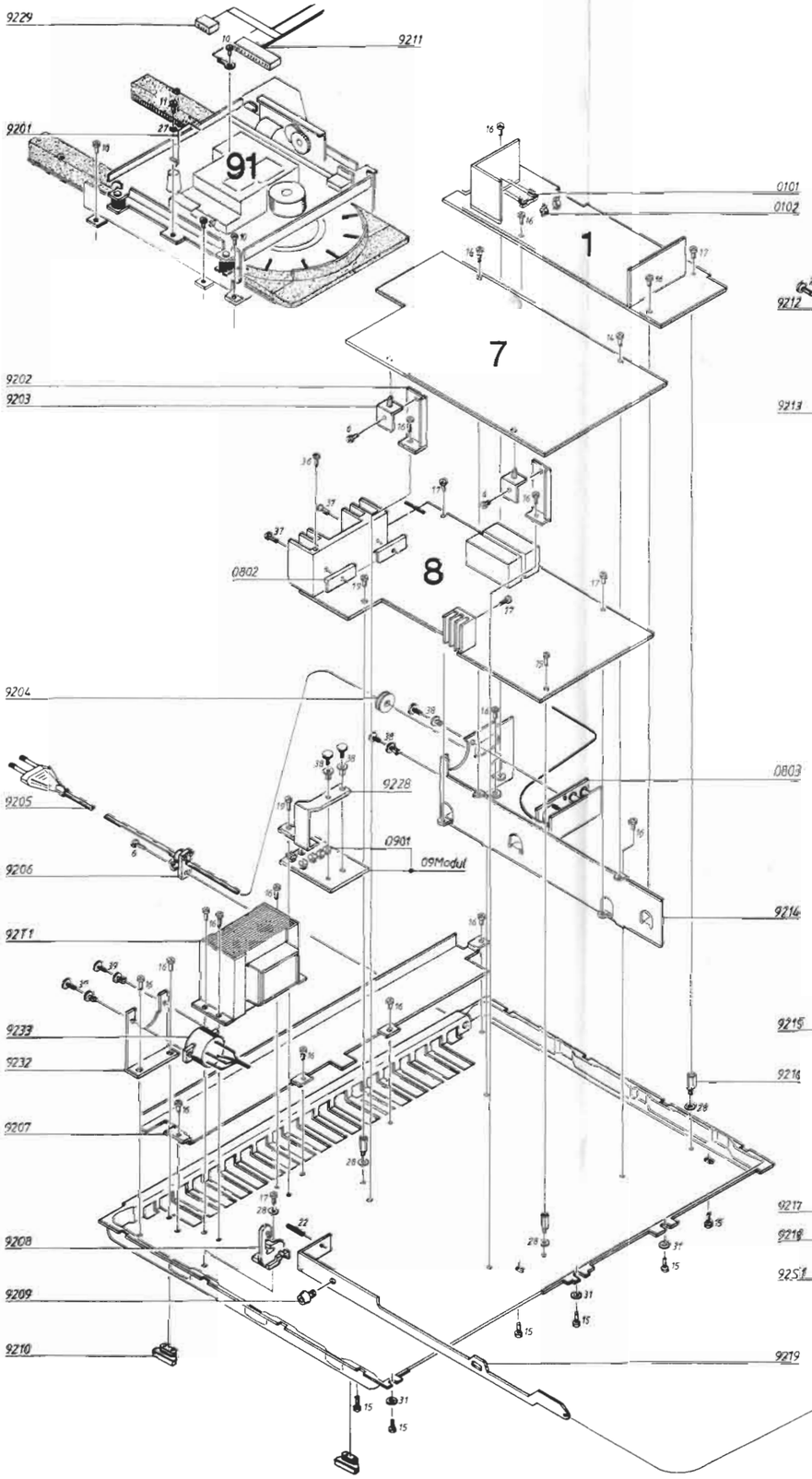
	x1	x10	x100	x1k	x10k	x100k	x1M
1.0			5011052	5010816	5011160	5011169	5011174
1.2			5011084	5011153	5011161	5011341	5011175
1.5			5011085	5011154	5011162	5011170	5011176
1.8			5011086		5011344		
2.2	5011032	5011035	5010886	5011155	5011163	5011171	5011342
2.4					5020422		
2.7				5020412	5020423	5020433	
3.3		5011346	5011087	5011156	5011164	5011172	5011177
3.9				5011157		5011173	
4.7	5011038		5011112	5011158	5011165	5011349	
5.6			5011127	5010885	5011166	5011340	
6.8			5011145	5010839	5011167		
8.2			5011152	5011159	5011168		

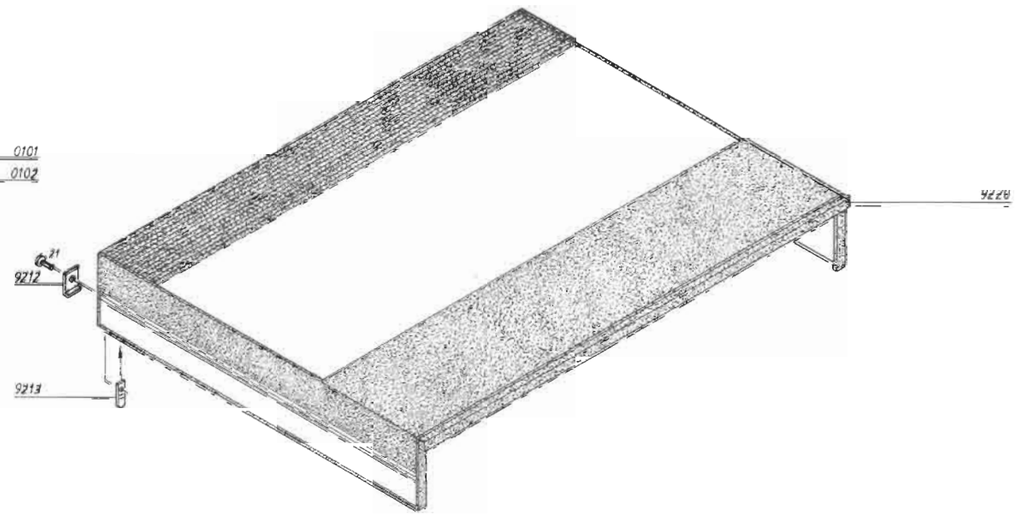
Standard resistors 5% 1/8W

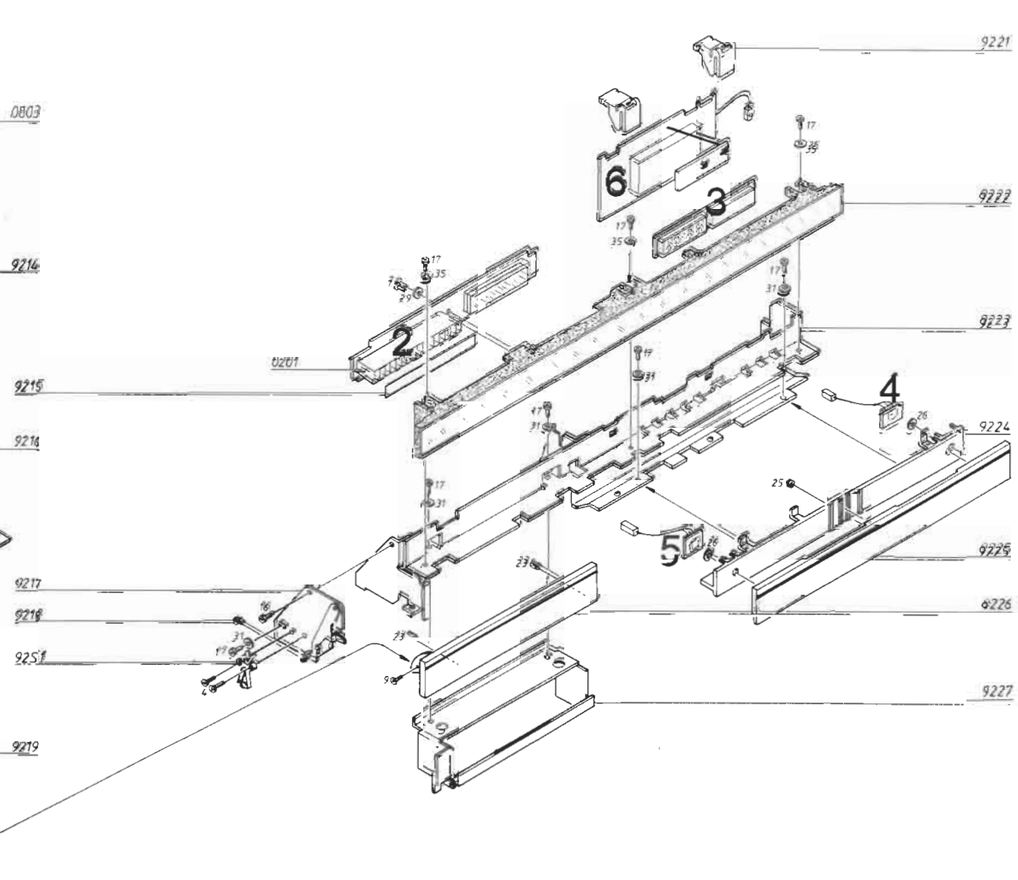
4-1

4-1

LIST OF MECHANICAL PART







Screws, Washers, etc.

1	2011032	Screw 2.5x6
2	2011310	Screw 2.2x4.5 DIN 7981
3	2622363	Fibre washer 2.2x6.3x0.5
4	2013080	Screw 2.9x9.5
5	2013091	Screw 2.9x6.5 DIN 7981
6	2013094	Screw 2.9x6.5
7	2013107	Screw 2.9x9.5 DIN 7981
8	2034054	Screw AM2x4 DIN 7985
9	2034066	Screw AM2x5 DIN 7985
10	2036035	Screw AM2.6x4 DIN 7985
11	2036036	Screw AM2.5x4 DIN 7985
12	2036052	Screw AM2.6x8 DIN 7985
13	2036053	Screw AM2.6x10 DIN 7985
14	2036054	Screw M2.6x6 w/washer
15	2038070	Screw AM3x6 DIN 912
16	2039026	Screw AM3x4 DIN 7985
17	2039027	Screw AM3x6 DIN 7985
18	2039055	Screw AM3x8 DIN 965
19	2039903	Screw AM3x5 DIN 7985
20	2039906	Screw AM3x10 DIN 965
21	2043016	Screw AM4x10 DIN 7985
22	2072023	Threaded pin M3x10 DIN 551
23	2072104	Threaded pin M3x3 DIN 916
24	2072106	Threaded pin M2.6x4 DIN 916
25	2380011	Nut M3 DIN 934
26	2390001	E-ring 2.3 DIN 6799
27	2622015	Washer 3.2x8x0.5
28	2622041	Washer 3.2 DIN 125
29	2622052	Fibre washer 3.2x8x1
30	2622117	Washer 3.2 DIN 433
31	2622392	Washer 3.2x8x1
32	2622321	Washer 3.2 DIN 9021
33	2622348	Washer 2.3 DIN 125
34	2622395	Fibre washer 3.2x8x0.5
35	2625002	Tooth-lock washer 3.2 DIN 6798
36	2013106	Screw 2.9x16 DIN 7981
37	2039034	Screw AM3x12 DIN 7985
38	2364045	Plastic rivet 4.5
39	2364046	Plastic rivet 6.5
41	2036016	Screw AM2.6x6 DIN 7985

01Modul	8005138	Display and Key control
0101	2816195	Bronze spring
0102	7500214	Holder f/ fuse
02Modul	8005136	PCB - Display, dots
0201	3131250	Housing f/ LED's
03Modul	8330091	PCB - Display, digits
04Modul	8005134	PCB - PLAY
05Modul	8005134	PCB - DISPLAY
06Modul	8005133	PCB - Remote control receiver
07Modul	8005161	PCB - Servo circuit
08Modul	8005162	PCB - Decoder & power supply
0802	2530508	Bracket
0803	8005182	PCB - Socket panel
09Modul	8005181	PCB - Fuse board
0901	7500214	Holder f/ fuse
92T1	8013355	Mains transformer
92S1	7402032	Micro switch

9201	2819210	Grounding spring	9216	2389080	Threaded pin
9202	2542694	Bracket	9217	3124097	Eject mechanism
9203	3030096	Hinge	9218	3341020	Plastic pin
9204	2938188	Rubber bushing	9219	2851181	Arm
9205	6271102	Mains cord (EU)	9220	3414210	Cabinet
	6271119	Mains cord (J)	9221	3152341	Holder
	6271091	Mains cord (AUS)	9222	3131237	Display window/ with repeat
	6270251	Mains cord (US/CDN)			
9206	3152472	Holder		3131275	Display window/ with SCAN PLAY
	2938204	Holder (AUS)			
9207	3444180	Grid	9223	3454334	Bracket
9208	3014073	Holder	9224	3168490	Moulding
9209	3035118	Stop	9225	2568715	Panel, PLAY-DISPLAY
9210	3035119	Rubber foot	9226	3162189	Panel, OPEN
9211	6275651	Wire bundle 10 pol.	9227	2542637	Bracket
9212	3034073	Bracket	9228	2542673	Bracket
9213	2391059	Bracket	9229	6275652	Wire bundle 5 pol.
9214	3124104	Bracket	9232	2542672	Bracket
9215	3320065	Screen	9233	7400332	Voltage Selector

9101	3152504	Binder	9130	2851201	Lift arm
9102	3151239	Bracket	9131	2938241	Rubber ring
9103	2917002	Ball	9132	2726152	Disc holder, lower
9104	8055032	Laser block	9133	2810204	Spring
9105	2917002	Ball	9134	2810204	Spring
9106	3907052	Cushion	9135	3034071	Lock
9107	2560187	Slide panel	9136	2548222	Bracket
9108	3114256	Base	9137	2810205	Spring
9109	2700046	Tooth section	9138	2622396	Washer
9110	3300109	Cover	9139	3017026	Cam-wheel
9111	3151239	Bracket	9140	2930096	Cam-wheel
9112	2917002	Ball	9142	2816219	Leaf spring
9113	2830123	Shaft	9143	2542671	Bracket
9115	3946061	Cover	9144	3015149	Guide, righthand-back
9116	3907052	Cushion	9145	3907053	Rubber suspension
9117	2726137	Disc holder, upper	9146	3015148	Guide, righthand-front
9118	3112311	Chassis	9147	3015147	Guide, lefthand - front
9119	2816218	Leaf spring	9148	3010025	Holder, front
9120	2542670	Bracket	9149	3450670	Tray
9121	2938240	Rubber bushing	9150	2548221	Bracket
9122	2810203	Spring	9151	3010023	Holder, back
9123	3151240	Holder	9152	2938242	Cover, disc sensor
9124	2812110	Spring	9153	3015150	Guide, lefthand - back
9126	2732079	Rubber belt	9155	3151241	Holder, disc sensor
9127	2700047	Gear-wheel	9156	3112212	Sub-chassis
9128	2722046	Pulley	9157	2036055	Screw, special
9129	2700048	Gear-wheel			

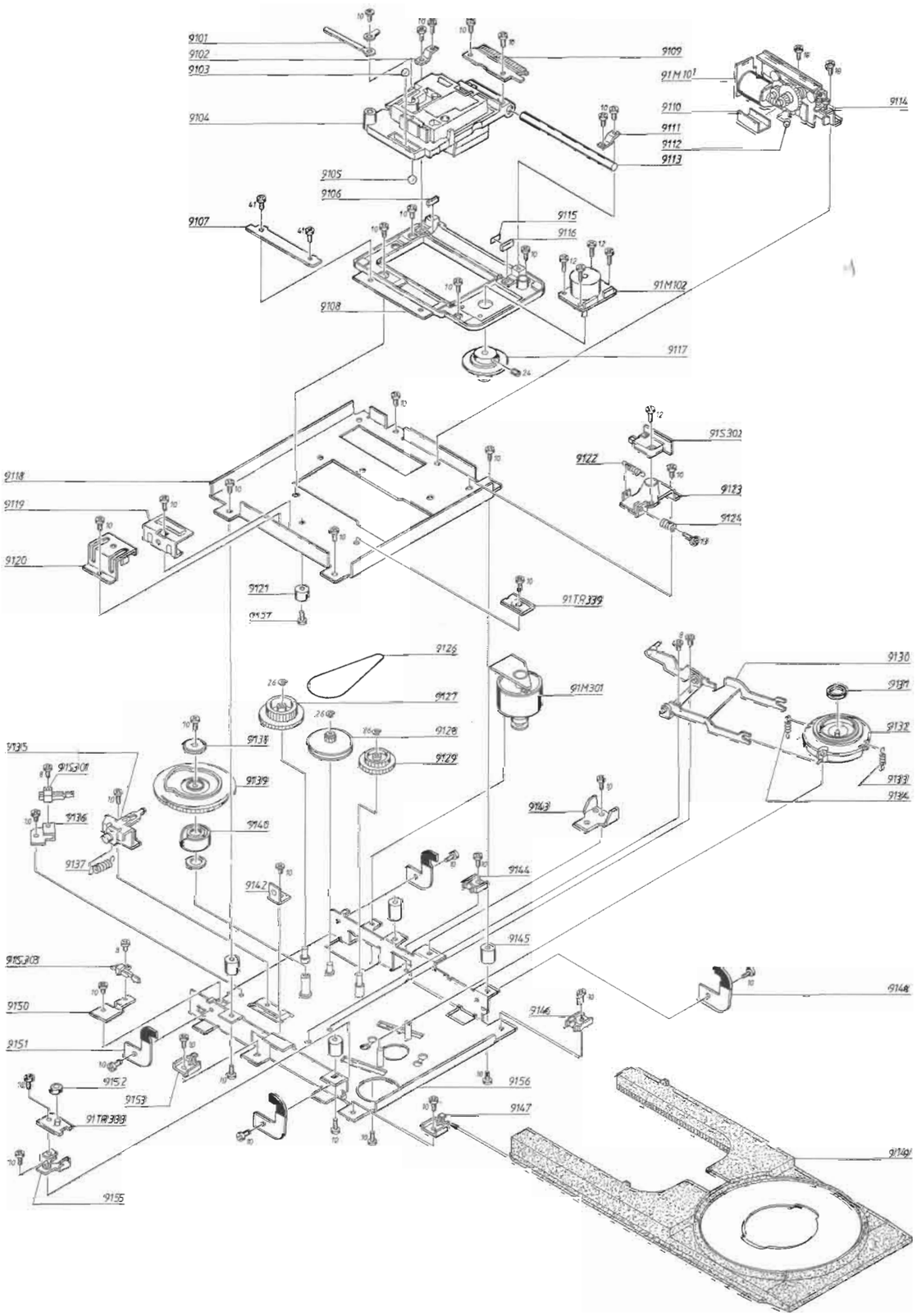
91M101	2755027	Bracket w/carrier motor
91M102	8400147	Disc motor
91M301	8400151	Load motor w/pulley

91S301	7400322	Switch
91S302	7400331	Slide switch
91S303	7400322	Switch

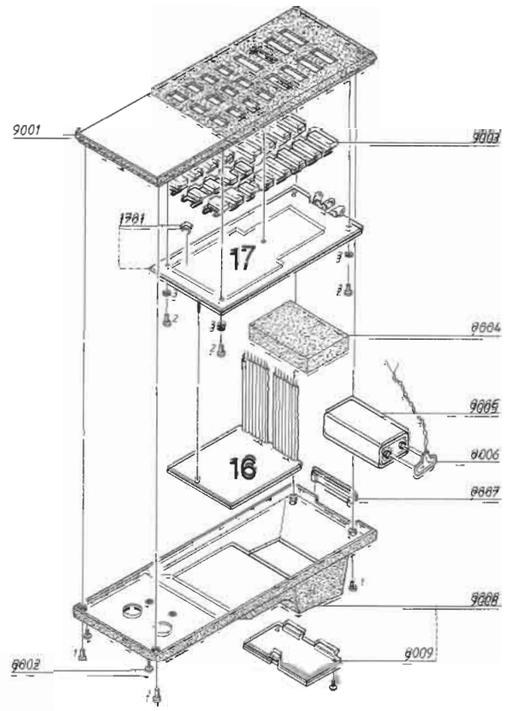
91TR339	8320665	Disc sensor, photo transistor
91D333	8330166	Disc sensor, LED

Parts Not Shown

3391630	Packing f/CD-Terminal
6270213	Connector cable
8950050	Remote control kit



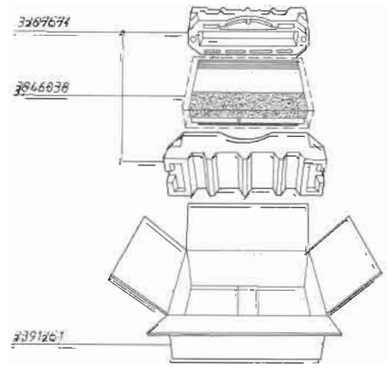
CD terminal, 8850050



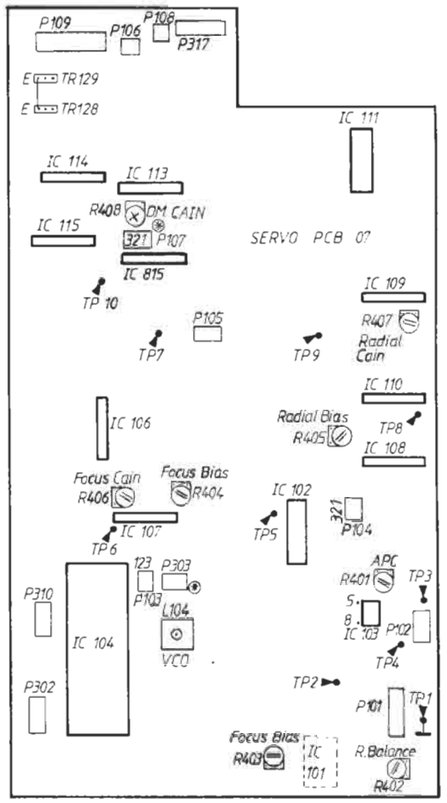
16Modul	8005175	PCB - Remote transmitter
17Modul	8005026	PCB - Remote Keyboard
1701	7500148	Key switch

9001	3168677	Panel	9006	7228020	Battery connector
9002	3010007	Plastic foot	9007	3322058	Window
9003	2776052	Set of buttons	9008	3454347	Bottom
9004	3917036	Foam block	9009	3160032	Cover
9005	8700006	Battery 9 V alkaline			

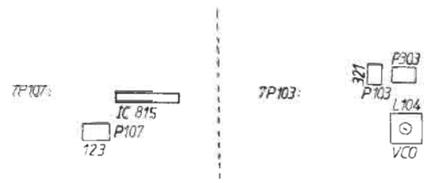
Packing procedure

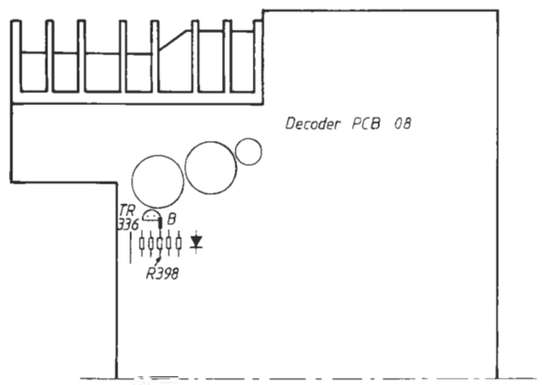


5-1



* In the first units produced the PCB lay-out is slightly different from the drawing here. The main differences are:





ADJUSTMENTS

NB! When using Test Disc 3634031 (Disc without defects from Philips):

The first Test Discs from Philips do not contain any time indication for the outer tracks of the disc, which means that CD50 may block when searching on the outer tracks, e.g. 23-24.

The adjustments must be made in the said order.

Automatic Power Control (APC)

This adjustment is to be made upon replacement of the optical pick-up unit.
Put the unit in STAND-BY mode.
Turn 7R401 counterclockwise to stop (as seen from the side of the component).
Dismount 7P303, and short-circuit pins 5 and 8 of 7IC103. Base of 8TR336 (8R398) short-circuited with chassis.
Connect voltmeter over 7TP3 and 7TP4. Current in laser diode is adjusted by means of 7R401 and metered as voltage drop over 7R102.
The value to which the current is to be adjusted can be read on a label on the pick-up unit, see the below example:

I op	Im	I op = I Optical pick-up
55.3 mA	0.515 mA	Im = I Monitor

100 x Im = 100 x 0.515 = 51.5 mV tolerance -1/-3 mV = 49.5 ±1 mV

Radial Bias

Put the unit is STAND-BY mode, without disc. inserted.
Remove 7P303, and short-circuit pins 5 and 8 of 7IC103.
Base of 8TR336 (8R398) must be short-circuited with chassis.
Connect oscilloscope to 7TP8.
Adjust 7R405 to 0 V ±100 mV DC.

Focus Bias

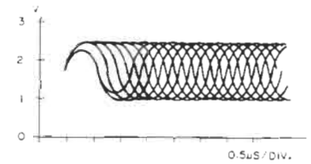
Put the unit in STAND-BY mode, without disc. inserted.
Remove 7P303, and short-circuit pins 5 and 8 of 7IC103.
Base of 8TR336 (8R398) must be short-circuited with chassis.
Connect oscilloscope to 7TP6.
Adjust 7R403 to 0 V ±100 mV DC.
Mount 7P303, and remove the jumper from 5 to pin 8 on 7IC103.

8.673 MHz VCO osc.

Put the unit in STAND-BY mode.
Base of 8TR336 (8R398) must be short-circuited with chassis.
Connect frequency counter to 7TP5.
Adjust 7L104 to 8.673 MHz ±5 kHz.
Remove jumper on base of 8TR336.

Focus Bias 2

Play test disc 3634031 (disc without defects) track 1 or Sony disc YEDS 5 track 1.
Connect oscilloscope to 7TP6.
Adjust 7R404 to 0 V ±100 mV DC.
Eye Pattern shall be stable.



If Eye Pattern is not stable, the DC voltage in 7TP6 can be adjusted between 0 and -1 V by means of 7R404.

Radial Balance

Play test disc 3634031 (disc without defects) or Sony disc YEDS 5. Both discs must be played approx. 30 min. from start of disc.

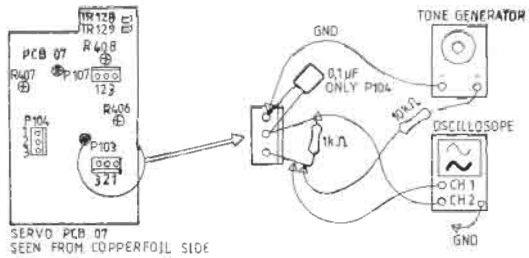
Turn 7R407 (Radial gain) counterclockwise to stop (seen from component side).

Connect DC voltmeter to 7TP8.

Adjust 7R402 as closely to 0 V as possible (it should be noted that the adjustment can seem unstable).

Put 7R407 in mechanical middle position.

AMPLIFICATION



* In the first units produced, 7P103 and 7P107 are in different positions from those indicated above:

Focus

Dismount the jumper plug in 7P103 and mount a 1 kohm resistor between pins 2 and 3 of 7P103.

Connect the two cables of an oscilloscope over 10 kohm.

Test disc 3634031 (disc without defects) track 1 or Sony disc YEDS 5 track 1.

Connect the tone generator to 7P103 pin 3 (the tone generator must have a high output impedance, maybe 10 kohm in series).

Adjust the tone generator to 1.2 kHz, approx. 1 Vpp on the oscilloscope..

Adjust 7R406 until the two channels have the same amplitude.

Radial

This adjustment is made like the focus adjustment except that in this case it is 7P104 and 7R407. A 100 n capacitor might be mounted on 7P104 from pin 2 to pin 1.

Disc Drive Motor

Dismount the jumper plug in 7P107 and mount a 470 ohm resistor between pins 2 and 3 of 7P107.

Connect tone generator to 7P107 pin 3 (the tone generator must have a high output impedance, maybe 10 kohm in series).

Adjust tone generator to 20 Hz.

Actuate play.

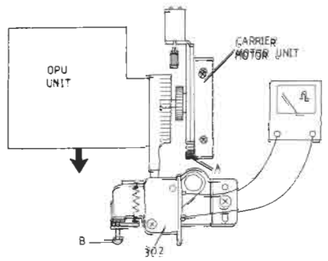
Connect oscilloscope to one of the driver outputs for the disc drive motor, e.g. the emitter of 7TR128/129.

Turn up tone generator output until clipping occurs on the oscilloscope, and then turn it down until the signal just stops clipping.

Connect the two oscilloscope channels over 470 ohm.

Adjust 7R408 until the two channels have the same amplitude.

Switch 302 (OPU Inner Limit)



Connect ohmmeter to switch 302.

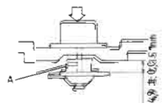
Turn screw A upwards, the carrier motor unit is lifted by screw A, and the OPU unit is drawn forward in the direction of the arrow to mechanical stop. If switch 302 goes ON, turn screw B outwards until the switch goes OFF. Then turn the screw B inwards until the switch just goes ON, and then turn the screw exactly two turns further inwards. (Do not apply pressure on screw B while adjusting as that might affect the adjustment).

Lock screw B with locking paint.

Carefully turn screw A downwards to mechanical stop, and then two turns upwards.

Lock screw A with locking paint.

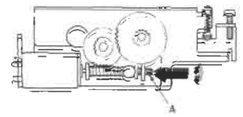
Turntable Height



Press the motor down in the direction of the arrow.

Adjust with screw A to the indicated spacing by means of the supplied Allen key.

Carrier Motor



The carrier motor unit must be dismounted, and there must be no load by the ball on the worm.

Connect motor to a 4.5 V DC external power-supply.

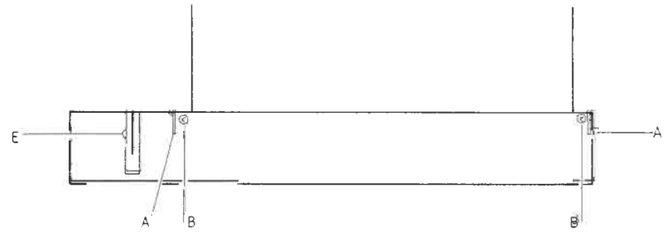
Read out and note the power consumption. The consumption is typical 60-75 mA.

Tighten the ball against the worm.

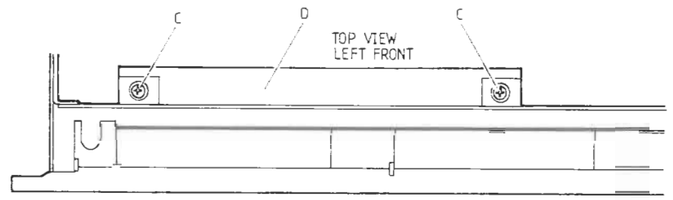
Supply the motor from the same power-supply source as mentioned above, and adjust screw A until the power consumption has increased to 5 mA ±2 mA compared to the recorded value.

Lock screw A with locking paint.

Tilting panel for disc load mechanism (OPEN panel)



Mounting of tilting panel



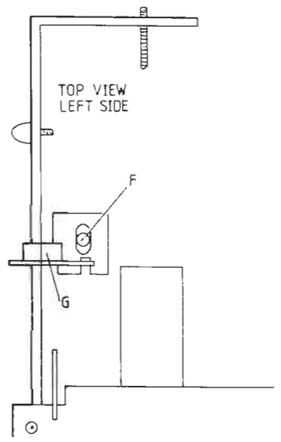
(NOTE! the disc drawer can be driven out manually by turning the big cam-lifting wheel behind the mechanical drive unit.

When mounting the tilting panel, place the mounting brackets A in the middle of the tilting panel grooves, and tighten screws B slightly.

Tilt the tilting panel up and manipulate it on the mounting brackets until the upper edge of the tilting panel is level with the upper edge of the front panel and parallel to the display panel.

Loosen screws C, and with the tilting panel tilted up, adjust the bracket D until the outer edge of the tilting panel is level with the outer edge of the front panel and the display panel.

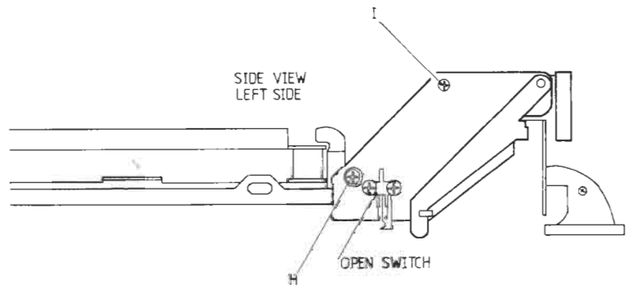
Screw the tilting panel together with the long bracket in the left-hand side of the unit with screw E. The tilting panel and the long bracket must not be *clamped* together, they must be able to move without friction.



Drive disc drawer out to stop.

Loosen screw F, and move the stop bracket G in one of the directions indicated by the arrow until the tilting panel is parallel to the base of the unit.

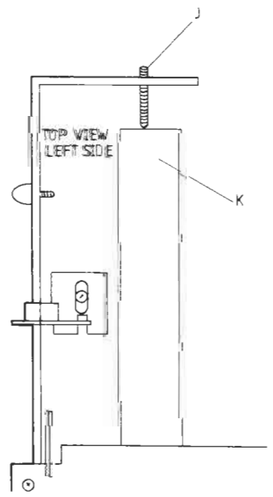
OPEN Switch



Loosen screws H and I.

Drive disc drawer in to mechanical stop.

Tighten screw H, and then tighten screw I.



Adjust screw J until tilting panel is vertically level with the front panel.

Check: When actuating OPEN on the tilting panel, there must be space between screw J and bar K.

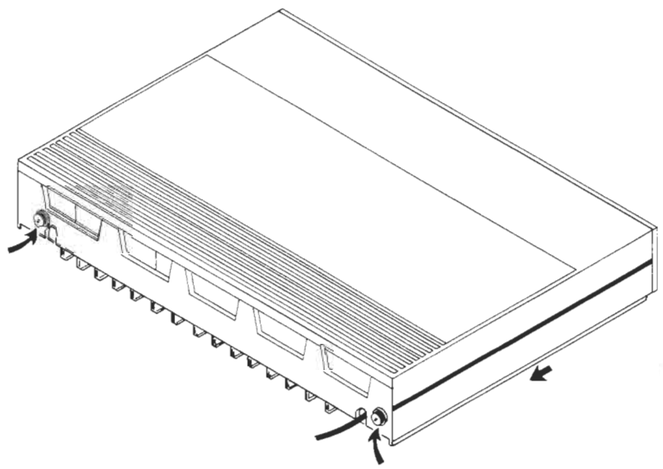
TECHNICAL SPECIFICATIONS

Frequency range	4-20,000 Hz ±0.3 dB
Signal-to-noise-ratio	≥95 dB
Dynamic range	≥95 dB
Harmonic distortion	0.003% at 0 dB
Channel separation	≥94 dB
Channel difference	≤0.5 dB
Converter system	16 bit, oversampling 88.2 kHz
Low pass filter	Digital + analogue
Damping ≥20,000 Hz	≥60 dB
Output	2 V RMS at 0 dB
Power supply	Type No. 5111: 220 V
	Type No. 5112: 240 V
	Type No. 5113: 120 V
	Type No. 5114: 100 V (120 V selector)
	Type No. 5115: 240 V
Power frequency	50-50 Hz
Power consumption	28 watts
Dimensions W x H x D	42 x 7.5 x 32.5 cm
	(16½" x 3" x 12¾")
Weight	8 kg (17.6 lbs)

Subject to change without notice

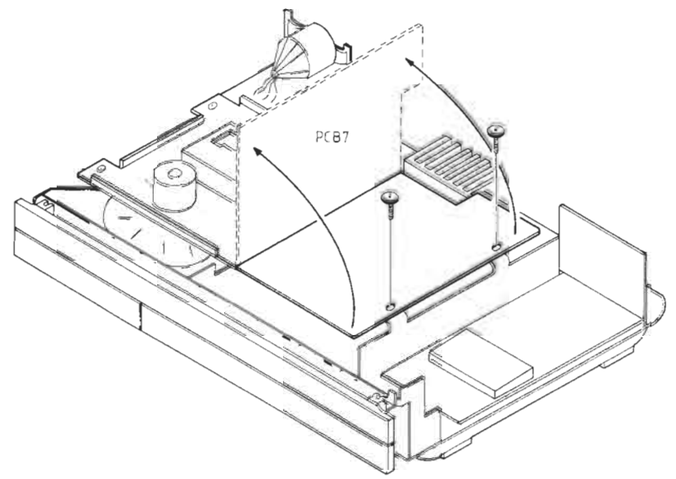
DISMANTLING

Cabinet



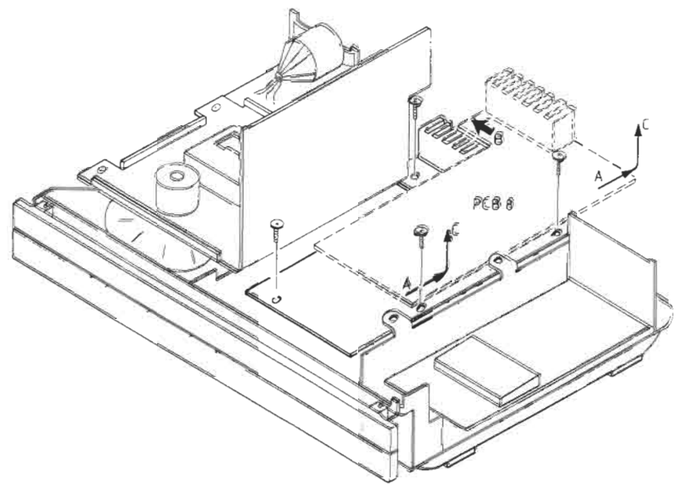
Loosen the two screws at the rear edge and lift.
Push cabinet approx. 1 cm backwards; it can now be lifted off.

PCB7



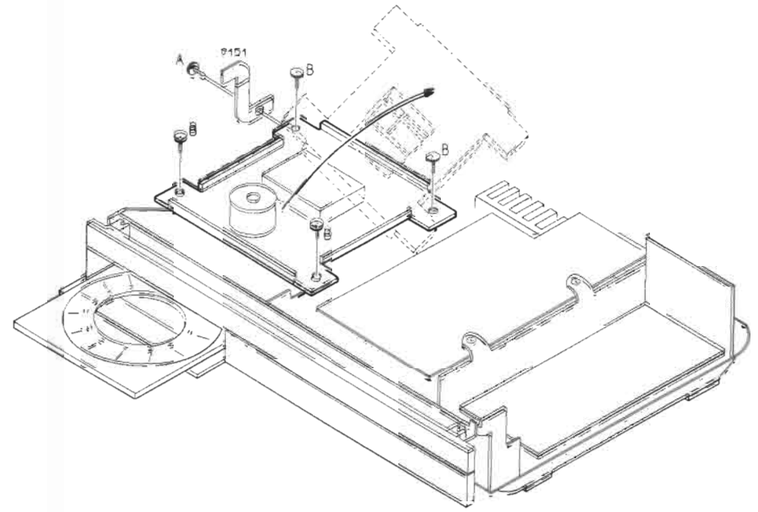
Remove the two screws.
PCB7 can now be placed in service position.

PCB8



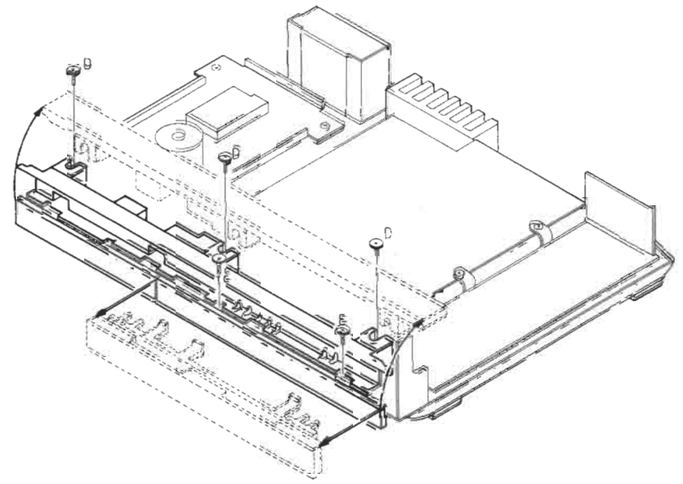
Remove the four screws.
PCB8 can now be pushed backwards approx. 5 cm (in the direction of the arrow A). Now push PCB8 towards the left (in the direction of the arrow B), at the same time lifting past the 2 metal holders. First lift PCB8 past the front metal holder, then past the rear metal holder. Now carefully turn around PCB8 and place on its edge.

Mechanics



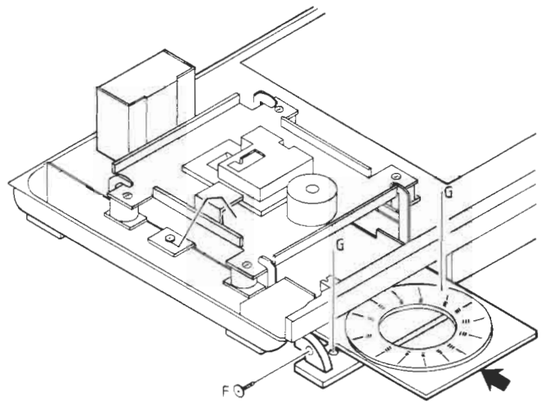
The disc drawer must be open (see service tips page 8-2). Remove the screws A as well as the holder pos. 9151. Remove the four screws B. The top part can now be lifted up, and it is possible to service the mechanical part.

Display Panel



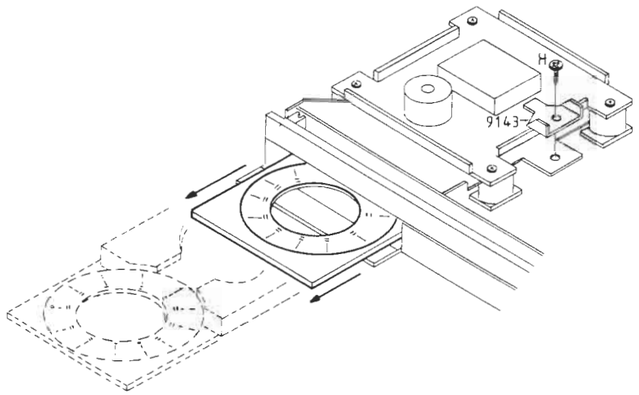
Remove the tree screws (D). The front panel can now be tilted upwards.
Remove the two screws (E); the display panel can now be pulled out.

Tilting Panel



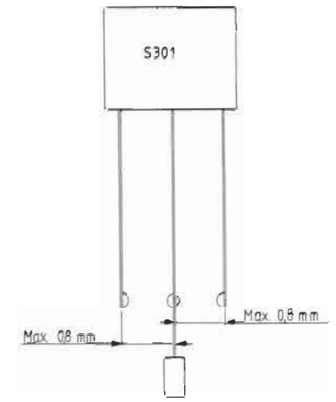
The disc drawer must be open.
Remove the screw (F).
Move the disc drawer back in, and loosen the two Allen screws (G). The Tilting Panel can now be removed.
(When fitting the Tilting Panel, see Adjustments page 5-4).

Disc Drawer



The disc drawer must be open.
Remove the screw (H) and the bracket (pos. 9143).
The disc drawer can now be pulled out.

SERVICE TIPS
When actuating,
the set remains in Standby



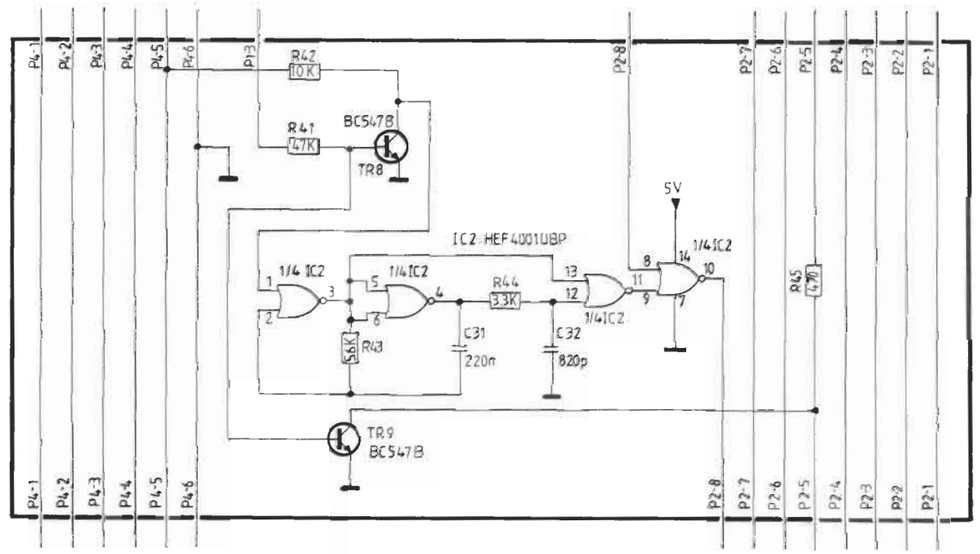
Reason: Switch pos. 91S301 looses contact after clamping.

Check/adjust the two stationary contact arms to have the measurements indicated.

Lubrication

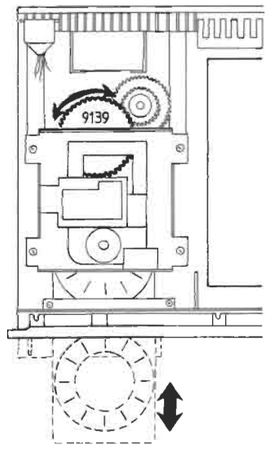
Point of lubrication	Lubricant
Arm for OPEN pos. 9219: Apply thin stripe around the arm with sliding surfaces towards adjustment bracket pos. 9208. Camwheel pos. 9138: Apply to the rail for bracket pos. 9135 as well as to the moving parts on the bracket pos. 9135.	3984030 Barrierta L5512 (25 gr.)

Data mute, ST. BY



In the first products manufactured this circuit is mounted instead of 1TR3, 1R8 and 1R9. The circuit mutes data transmission in ST.BY. The circuit is mounted at its edge in P2 and P4 on PCB1.

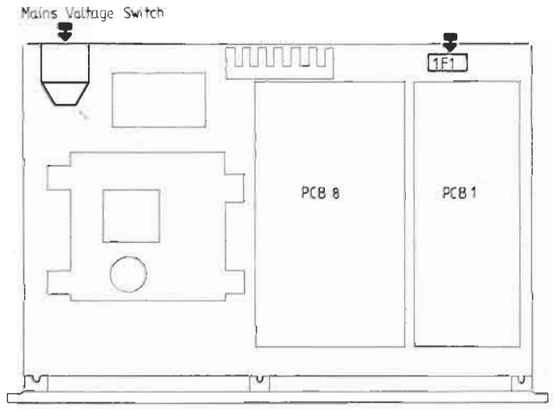
Manual moving in and out of disc drawer



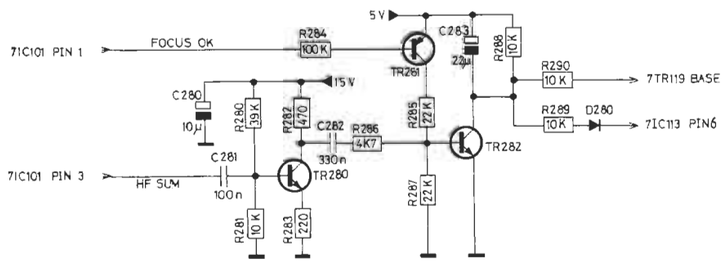
When turning the large camwheel pos. 9139 counterclockwise, the disc drawer will move out.

When turning the camwheel pos. 9139 clockwise, the disc drawer will move back in, and the disc clamper will lift the compact disc.

Mains Voltage Switch



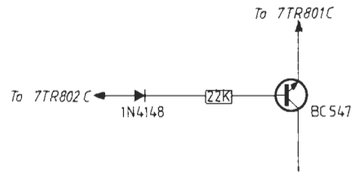
	Fuse	No
240 V	200 m AT	6600037
220 V	200 m AT	6600037
127 V	400 m AT IEC	6600015
120 V	500 m AT UL	6600033



In the first products manufactured this circuit is mounted instead of Lead out detector 7IC816.

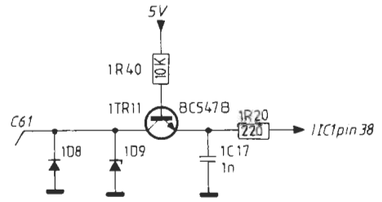
Carrier motor mute

In the first products manufactured 7TR801 is type SC 18154. This type of transistor does not secure efficient mute of the negative period. To secure muting, there is mounted an extra transistor (BC 547B) parallel with 7TR801.



When replacing 7TR801 always use a 2SC2878A part no. 8320660. This transistors secures mute of the negative and the positive period.

Data Link



In order to avoid load of the data link in other sets, when the CD50 is not connected to the mains, the above circuit will be introduced in the production. The circuit is introduced instead of 1D2, 1D3, 1R36 and 1C29.

CD-TERMINAL

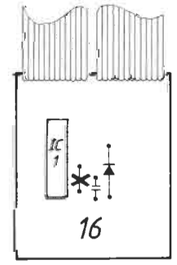
Possible functions in other Bang & Olufsen products

If required the CD-Terminal may be used with a few other Bang & Olufsen products. Together with CD50.
The possible functions and the products which are operable appear from the following plan.

Product	Tape 2	Stand By
Beomaster 8000	yes	yes
Beomaster 6000	no	yes
Beomaster 3000	no	yes
Beocenter 7700	yes	yes
Beocenter 7007	yes	yes
Beocenter 7000/7002	no	yes

Data link only functions with Beosystem 5000.

Applies only for:
Beomaster 8000
Beomaster 6000
Beomaster 3000



OBS!
In case the CD-Terminal is used with the following products PCB16 *must* be modified as illustrated (jumper is removed).

INSULATION TEST

Each set *must* be insulation tested after dismantling. The test is to be performed when the set has been re-assembled and is ready for delivery to the customer.

Insulation test for Beogram CD50

Make the insulation test as follows:
Short-circuit the two plug pins of the mains plug and connect one of the terminals of the insulation tester. Connect the other terminal of the insulation tester to the chassis pin of one of the phono bushings.

NB!
To avoid ruining the set, it is essential that both insulator test terminals are in really good mechanical contact.

Now slowly turn the voltage control of the insulation tester until a voltage of 1.5 kV is obtained. Hold it there for 1 second, and slowly turn down the voltage again.

Now move the terminal from the chassis pin to a screw in the bottom of the set.

Then again slowly turn the voltage control of the insulation tester until a voltage of 1.5 kV is obtained. Hold it there for 1 second, and slowly turn down the voltage again.

At no point during the testing procedure any flash-overs are permissible.