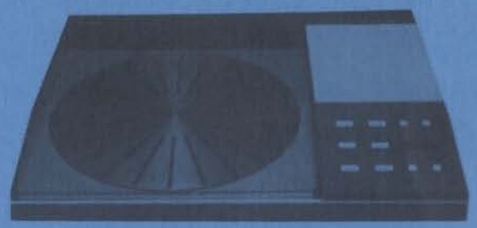
Bang&Olufsen



BEOGRAM 8000

Type 5611 - 5612 - 5613
5614 - 5615 - 5616 - 5617

SERVICE MANUAL

BANG & OLUFSEN
DK – 7600 STRUER
DENMARK

TELEPHONE 07 – 85 11 22* – TELEX 66529
CABLE ADDRESS BANGOLUF

3538483 02-81

PRINTED IN DENMARK BY BOGTRYKKERIERNES STRUER 02 81

CONTENTS

KOORDINATNUMRE

De største PC plader er forsynet med et koordinatsystem. Komponenterne på disse PC plader er forsynet med et koordinatnummer på diagrammet (mindre skrifttype end positions nr.), som fortæller hvilket koordinat, på PC pladen, de er placeret i.

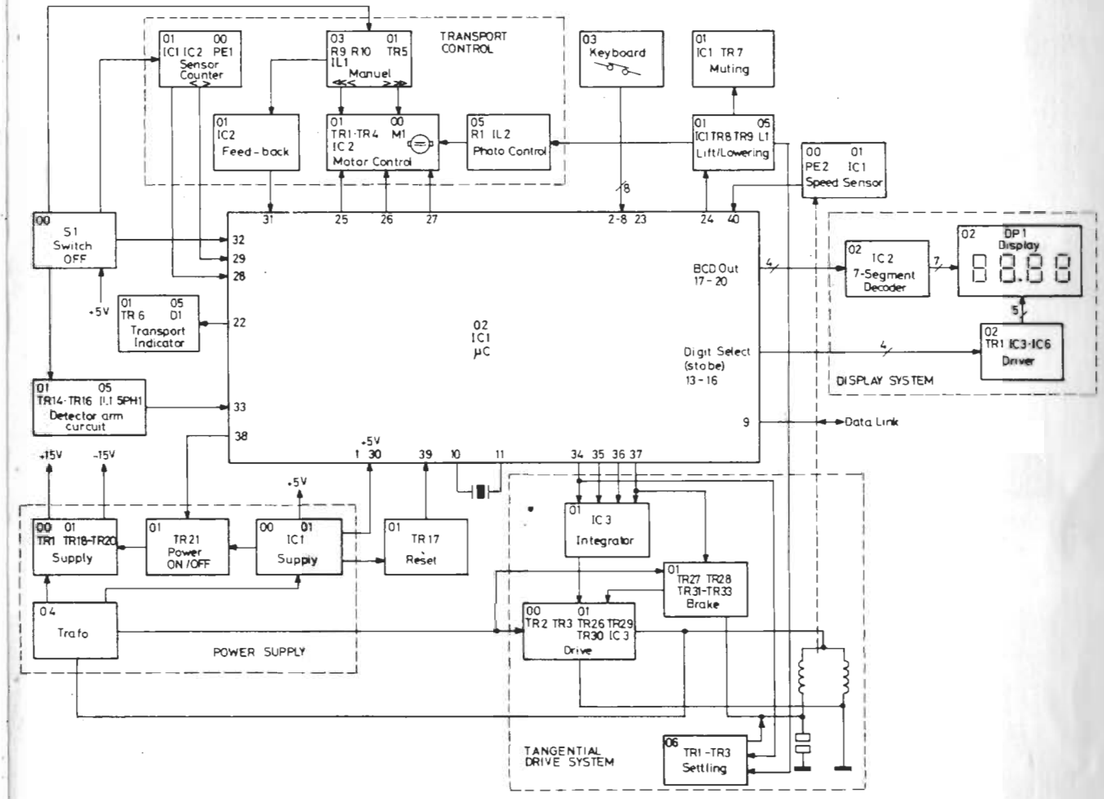
CO-ORDINATE NUMBERS

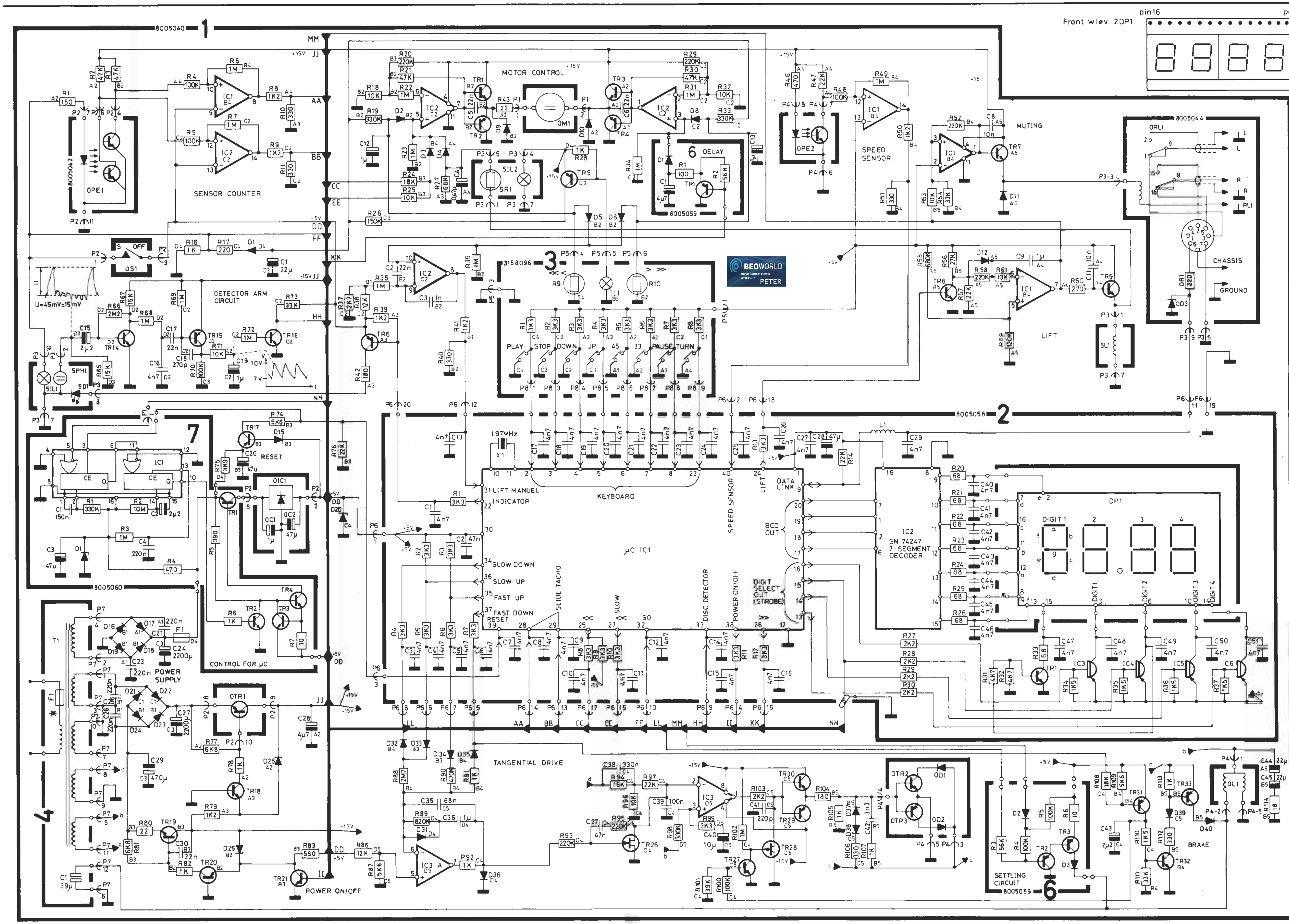
The biggest PC board are provided with co-ordinate systems. The components on these PC boards are provided with a co-ordinate number on the diagram (smaller printing type than the position numbers) indicating in which co-ordinate they are placed on the PC board.

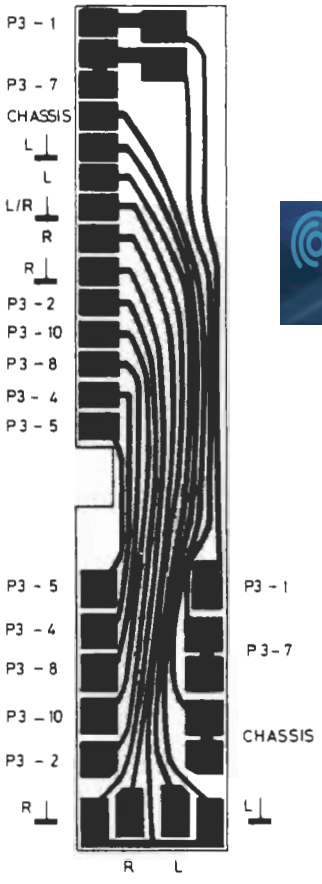
KOORDINATENNUMMERN

Die grössten Printplatten sind mit einem Koordinatensystem versehen. Die Komponenten auf diesen Printplatten sind im Schaltbild einer Koordinatennummer (kleineren Schrifttyp als der Positionsnummer) versehen, die angibt, in welcher Koordinate auf der Printplatte sie angebracht sind.

BLOCK DIAGRAM







FUNCTION TABLE 2IC2 (SN74247)											
DECIMAL ON DISPLAY	INPUTS				OUTPUTS						
	D	C	B	A	a	b	c	d	e	f	g
0	0	0	0	0	0	0	0	0	0	0	1
1	0	0	0	1	1	0	0	1	1	1	1
2	0	0	1	0	0	0	1	0	0	1	0
3	0	0	1	1	0	0	0	0	1	1	0
4	0	1	0	0	1	0	0	1	1	0	0
5	0	1	0	1	0	1	0	0	1	0	0
6	0	1	1	0	0	1	0	0	0	0	0
7	0	1	1	1	0	0	0	1	1	1	1
8	1	0	0	0	0	0	0	0	0	0	0
9	1	0	0	1	0	0	0	0	1	0	0
	1	1	1	1	1	1	1	1	1	1	1

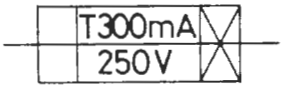
FUNCTION TABLE FOR MICROCOMPUTER 2IC1													
	INPUT CONDITIONS				OUTPUT CONDITIONS		FUNCTION	RESULTS					
PINS		31	32	33	24	38		22	24	25	26	27	28
2	0	0	0	X	0	X	PLAY	1	0	1	0	1	0
X	X	0	1	1	0	0	PLAYING	1	1	0	0	0	0
2	0	0	1	1	1	0	PLAY	⎍	1	0	0	0	0
23	0	0	0	X	0	X	TURN	1	0	0	0	0	0
8	0	0	1	1	1	0	PAUSE	1	0	0	0	0	0
X	X	⎍	1	X	X	0	≪ ≫	⎍	0	0	0	0	0
3	0	0	1	X	X	0	STOP	1	0	0	1	0	0
X	X	0	0	X	0	0	STOPPING	1	0	0	0	0	1

4C1	4F1★	Type	
39 µF	300 mAT	5611	100V 50 Hz
27 µF	300 mAT	5612	100V 60 Hz
27 µF	300 mAT	5613	120V 60 Hz
39 µF	315 mAT	5614	127V 50 Hz
39 µF	160 mAT	5615	220V 50 Hz
39 µF	160 mAT	5616	240V 50 Hz
39 µF	160 mAT	5617	240V 50 Hz (Australia)

	2IC 1 PIN			
TURNTABLE REGULATION	34	35	36	37
FAST SPEED UP	1	1	0	1
FAST SPEED DOWN	1	0	0	0
SLOW SPEED UP	1	0	⎍	1
SLOW SPEED DOWN	⎍	0	0	1

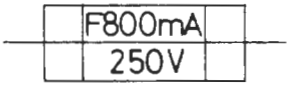
Explanation of the fuse symbols used in the set:

Explanation des symboles du fusible utilisés dans l'appareil:



Replace with same type 300 milliamperes 250 volts slow acting fuse.

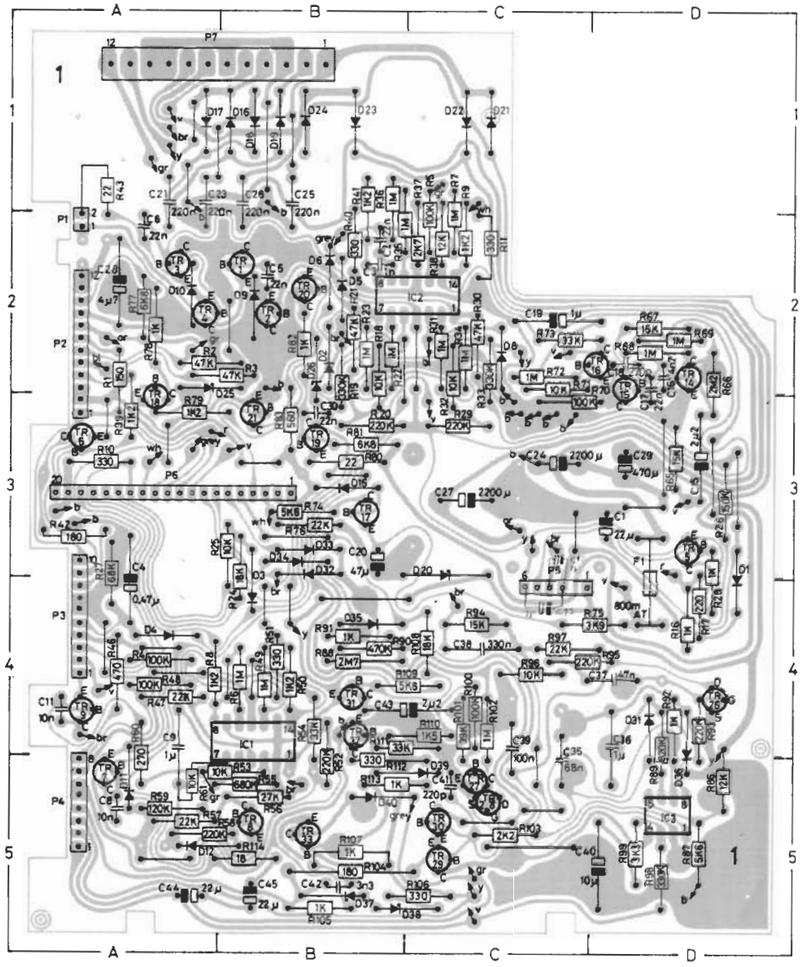
Remplacer par un fusible de meme type retardé et de 300 milliamperes 250 volts.



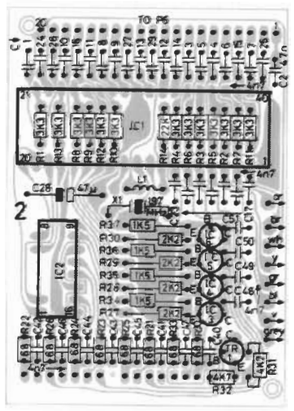
Replace with same type 800 milliamperes 250 volts quick acting fuse.

Remplacer par un fusible de meme type rapide et de 800 milliamperes 250 volts.

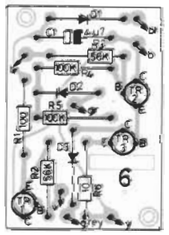
PC drawings are seen from copperfoil side
Control Circuits, 8005040, PC1



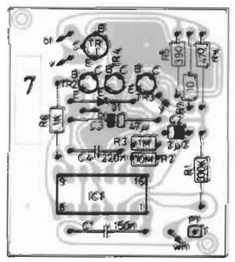
Microcomputer,
8005058, PC2



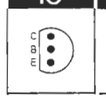
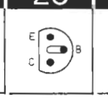
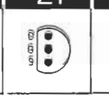
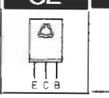
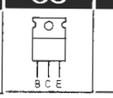
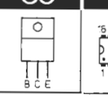
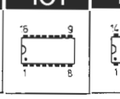
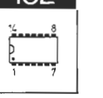
Settling,
8005059, PC6

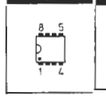
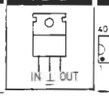
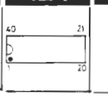


Control for µC
8005060, PC7



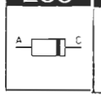
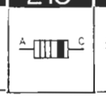
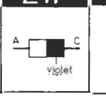
LIST OF TRANSISTORS
AND IC's

19	20	21	32	33	35	101	102
							

103	105	124					
							

0TR1	8320257	**33**	TIP32
0TR2	8320442	**32**	BD 441
0TR3	8320443	**32**	BD 442
0IC1	8340065	**105**	LM 7805 CT
		105	UA 7805 UC
		105	MC 7805 CT
		105	UA 7805 CKC
1TR1	8320422	**19**	PU 01
1TR2	8320423	**19**	PU 51
1TR3	8320422	**19**	PU 01
1TR4	8320423	**19**	PU 51
1TR5	8320152	**20**	BC 557 B
1TR6			
1TR7	8320097	**20**	BC 547 B
1TR8			
1TR9	8320422	**19**	PU 01
1TR14	8320097	**20**	BC 547 B
1TR15	8320152	**20**	BC 557 B
1TR16	8320097	**20**	BC 547 B
1TR17	8320152	**20**	BC 557 B
1TR18	8320097	**20**	BC 547 B
1TR19	8320422	**19**	PU 01
1TR20	8320152	**20**	BC 557 B
1TR21	8320097	**20**	BC 547 B
1TR26	8320449	**21**	BF 244 C
1TR27	8320097	**20**	BC 547 B
1TR28	8320466	**21**	J 175
1TR29	8320152	**20**	BC 557 B
1TR30	8320097	**20**	BC 547 B
1TR31	8320152	**20**	BC 557 B
1TR32	8320097	**20**	BC 547 B
1TR33	8320447	**35**	BD 240 C
1IC1	8340347	**102**	MLM 324 P
1IC2	8340157	**102**	LM 324 N
		102	TDB 0124 D9
1IC3	8340195	**103**	LF 353 N
		103	TL 072 CP
		103	UAF 772 TC
2TR1	8320097	**20**	BC 547 B
2IC1	8340155	**124**	8015
2IC2	8340156	**101**	SN 74247 N
2IC3-2IC6	8340025	**19**	MPSA 65
		19	SPS 5431
6TR1	8320152	**20**	BC 557 B
6TR2	8320398	**20**	BC 558 B
6TR3	8320443	**32**	BD 442
7TR1	8320490	**32**	BD 438
7TR2	8320377	**20**	BC 547C
7TR3			
7TR4	8320422	**19**	PU 01
7IC1	8340344	**101**	CD 4528
		101	CD 4098

LIST OF DIODES

209	215	217					
		 violet					

0D1	8300102	**209**	1N4004
0D2			
0D3	8300128	**209**	ZPD 5.6V5%
		209	BZX 79
			C5V6
		209	BZX 83
			C5V6
0PE1	8005042		
0PE2	8330007		CLI 8805
1D1-1D12	8300058	**217**	SFD 184
		215	1N 4148
		209	1N 4148
1D16-1D19	8300102	**209**	1N 4004
1D20	8300201	**209**	ZPD 6V2
1D21-1D24	8300102	**209**	1N 4004
1D25	8300313	**217**	ZPD 15V
			±2%
		215	BZX 79 B
			15V0 ±2%
		209	BZX 83 B
			15V0 ±2%

1D26	8300053	**217**	ZP 15
		215	BZX
			79C15V0
		209	BZX
			83C15V0
1D31-1D40	8300058	**217**	SFD 184
		215	1N 4148
		209	1N 4148
2DP1	8330006		NSB 3882
6D1	8300058	**217**	SFD 184
6D2		**215**	1N 4148
		209	1N 4148
6D3	8300023	**209**	1N 4002
7D1	8300036	**209**	ZPD 4.7V
		209	BZX 79
			C4V7
		209	BZX 83
			C4V7

LIST OF ELECTRICAL PARTS

Control Circuits, 8005040, PC 1

0R1	5010092	220 ohms 5% 1/8W			
0C1	4200426	1 µF 20% 50V	0C2	4200364	47 µF -10 +50% 10V
0RL1	7600044	Relay 12V			

R1	5010057	150 ohms 5% 1/8W	R59	5010047	120 kohms 5% 1/8W
R2	5010045	47 kohms 5% 1/8W	R60	5010000	270 ohms 5% 1/8W
R3	5010045	47 kohms 5% 1/8W	R61	5010059	10 kohms 5% 1/8W
R4	5010049	100 kohms 5% 1/8W	R65	5010053	15 kohms 5% 1/8W
R5	5010049	100 kohms 5% 1/8W	R66	5010245	2.2 Mohms 10% 1/8W
R6	5010054	1 Mohms 5% 1/8W	R67	5010053	15 kohms 5% 1/8W
R7	5010054	1 Mohms 5% 1/8W	R68	5010054	1 Mohms 5% 1/8W
R8	5010153	1.2 kohms 5% 1/8W	R69	5010054	1 Mohms 5% 1/8W
R9	5010153	1.2 kohms 5% 1/8W	R70	5010049	100 kohms 5% 1/8W
R10	5010044	330 ohms 5% 1/8W	R71	5010059	10 kohms 5% 1/8W
R11	5010044	330 ohms 5% 1/8W	R72	5010054	1 Mohms 5% 1/8W
R16	5010040	1 kohms 5% 1/8W	R73	5010075	33 kohms 5% 1/8W
R17	5010092	220 ohms 5% 1/8W	R74	5010041	5.6 kohms 5% 1/8W
R18	5010059	10 kohms 5% 1/8W	R75	5010069	3.9 kohms 5% 1/8W
R19	5010117	330 kohms 5% 1/8W	R76	5010079	22 kohms 5% 1/8W
R20	5010120	220 kohms 5% 1/8W	R77	5010052	6.8 kohms 5% 1/8W
R21	5010045	47 kohms 5% 1/8W	R78	5010040	1 kohms 5% 1/8W
R22	5010054	1 Mohms 5% 1/8W	R79	5001030	1.2 kohms 10% 1/2W
R23	5010054	1 Mohms 5% 1/8W	R80	5001004	22 ohms 10% 1/2W
R24	5010135	18 kohms 5% 1/8W	R81	5010052	6.8 kohms 5% 1/8W
R25	5010059	10 kohms 5% 1/8W	R82	5010040	1 kohms 5% 1/8W
R26	5010063	150 kohms 5% 1/8W	R83	5010067	560 ohms 5% 1/8W
R27	5010062	68 kohms 5% 1/8W	R86	5010046	12 kohms 5% 1/8W
R28	5010040	1 kohms 5% 1/8W	R87	5010041	5.6 kohms 5% 1/8W
R29	5010120	220 kohms 5% 1/8W	R88	5010431	2.7 Mohms 10% 1/8W
R30	5010045	47 kohms 5% 1/8W	R89	5010505	820 kohms 5% 1/8W
R31	5010054	1 Mohms 5% 1/8W	R90	5010077	470 kohms 5% 1/8W
R32	5010059	10 kohms 5% 1/8W	R91	5010040	1 kohms 5% 1/8W
R33	5010117	330 kohms 5% 1/8W	R92	5010040	1 kohms 5% 1/8W
R34	5010054	1 Mohms 5% 1/8W	R93	5010120	220 kohms 5% 1/8W
R35	5010054	1 Mohms 5% 1/8W	R94	5010053	15 kohms 5% 1/8W
R36	5010054	1 Mohms 5% 1/8W	R95	5010120	220 kohms 5% 1/8W
R37	5010298	2.7 kohms 5% 1/8W	R96	5010059	10 kohms 5% 1/8W
R38	5010046	12 kohms 5% 1/8W	R97	5010079	22 kohms 5% 1/8W
R39	5010153	1.2 kohms 5% 1/8W	R98	5010117	330 kohms 5% 1/8W
R40	5010044	330 ohms 5% 1/8W	R99	5010076	3.3 kohms 5% 1/8W
R41	5010153	1.2 kohms 5% 1/8W	R100	5010049	100 kohms 5% 1/8W
R42	5010362	180 ohms 5% 1/8W	R101	5010060	39 kohms 5% 1/8W
R43	5001004	22 ohms 10% 1/2W	R102	5010054	1 Mohms 5% 1/8W
R46	5001024	470 ohms 10% 1/2W	R103	5010064	2.2 kohms 5% 1/8W
R47	5010079	22 kohms 5% 1/8W	R104	5002016	180 ohms 10% 1W
R48	5010049	100 kohms 5% 1/8W	R105	5010040	1 kohms 5% 1/8W
R49	5010054	1 Mohms 5% 1/8W	R106	5010044	330 ohms 5% 1/8W
R50	5010153	1.2 kohms 5% 1/8W	R107	5001029	1 kohms 10% 1/2W
R51	5010044	330 ohms 5% 1/8W	R108	5010135	18 kohms 5% 1/8W
R52	5010120	220 kohms 5% 1/8W	R109	5010041	5.6 kohms 5% 1/8W
R53	5010059	10 kohms 5% 1/8W	R110	5010247	1.5 kohms 5% 1/8W
R54	5010075	33 kohms 5% 1/8W	R111	5010075	33 kohms 5% 1/8W
R55	5010074	680 kohms 5% 1/8W	R112	5001021	330 ohms 10% 1/2W
R56	5010141	27 kohms 5% 1/8W	R113	5010040	1 kohms 5% 1/8W
R57	5010079	22 kohms 5% 1/8W	R114	5010822	18 ohms 5% 1/8W
R58	5010120	220 kohms 5% 1/8W			

C1	4200100	22 µF 40V	C23	4130104	220 nF 20% 100V
C2	4010060	22 nF -20 +80% 40V	C24	4200392	2200 µF 16V
C3	4010027	1 nF 10% 100V	C25	4130104	220 nF 20% 100V
C4	4200285	0.47 µF -10 +50% 63V	C26	4130104	220 nF 20% 100V
C5	4010060	22 nF -20 +80% 40V	C27	4200393	2200 µF 40V
C6	4010060	22 nF -20 +80% 40V	C28	4200322	4.7 µF -10 +50% 63V
C7	4010060	22 nF -20 +80% 40V	C29	4200275	470 µF 40V
C8	4010041	10 nF -20 +80% 40V	C30	4010060	22 nF -20 +80% 40V
C9	4130155	1 µF 10% 100V	C35	4130100	68 nF 10% 250V
C10	4010060	22 nF -20 +80% 40V	C36	4130155	1 µF 10% 100V
C11	4010041	10 nF -20 +80% 40V	C37	4130087	47 nF 10% 250V
C12	4200426	1 µF 20% 50V	C38	4130106	330 nF 20% 100V
C13	4200426	1 µF 20% 50V	C39	4130103	100 nF 20% 250V
C15	4201035	2.2 µF -10 +50% 63V	C40	4200342	10 µF -10 +50% 63V
C16	4010063	4.7 nF 10% 63V	C41	4010021	220 pF 10% 100V
C17	4010060	22 nF -20 +80% 40V	C42	4011025	3.3 nF 10% 100V
C18	4000071	270 pF 5% 63V	C43	4201035	2.2 µF -10 +50% 63V
C19	4200333	1 µF 63V	C44	4201066	22 µF 63V
C20	4200092	47 µF 16V	C45	4201066	22 µF 63V
C21	4130104	220 nF 20% 100V			

F1	6604004	Fuse 800 mA slow 250V			
	7500002	Fuse holder			
P1	7220176	Plug 2/2 pol.	P5	7210234	Socket for wires 6/5 pol.
P2	7220199	Plug 12/12 pol.	P6	7210287	Socket for wires 20/20 pol.
P3	7220169	Plug 10/10 pol.	P7	7220187	Plug 12/12 pol.
P4	7220168	Plug 8/8 pol.		6273871	Wire bundle

Microcomputer, 8005058, PC 2

R1	5010827	3.3 kohms 5% 1/16W	R22	5010039	68 ohms 5% 1/8W
R2	5010827	3.3 kohms 5% 1/16W	R23	5010039	68 ohms 5% 1/8W
R3	5010827	3.3 kohms 5% 1/16W	R24	5010039	68 ohms 5% 1/8W
R4	5010827	3.3 kohms 5% 1/16W	R25	5010039	68 ohms 5% 1/8W
R5	5010827	3.3 kohms 5% 1/16W	R26	5010039	68 ohms 5% 1/8W
R6	5010827	3.3 kohms 5% 1/16W	R27	5010064	2.2 kohms 5% 1/8W
R7	5010827	3.3 kohms 5% 1/16W	R28	5010064	2.2 kohms 5% 1/8W
R8	5010827	3.3 kohms 5% 1/16W	R29	5010064	2.2 kohms 5% 1/8W
R9	5010827	3.3 kohms 5% 1/16W	R30	5010064	2.2 kohms 5% 1/8W
R10	5010827	3.3 kohms 5% 1/16W	R31	5010048	4.7 kohms 5% 1/8W
R11	5010827	3.3 kohms 5% 1/16W	R32	5010048	4.7 kohms 5% 1/8W
R12	5010827	3.3 kohms 5% 1/16W	R33	5010039	68 ohms 5% 1/8W
R13	5010827	3.3 kohms 5% 1/16W	R34	5010247	1.5 kohms 5% 1/8W
R14	5010833	22 kohms 5% 1/16W	R35	5010247	1.5 kohms 5% 1/8W
R20	5010039	68 ohms 5% 1/8W	R36	5010247	1.5 kohms 5% 1/8W
R21	5010039	68 ohms 5% 1/8W	R37	5010247	1.5 kohms 5% 1/8W
C1	4010063	4.7 nF 10% 63V	C22	4010063	4.7 nF 10% 63V
C2	4030015	47 nF -20 +80% 16V	C23	4010063	4.7 nF 10% 63V
C3	4010063	4.7 nF 10% 63V	C24	4010063	4.7 nF 10% 63V
C4	4010063	4.7 nF 10% 63V	C25	4010063	4.7 nF 10% 63V
C5	4010063	4.7 nF 10% 63V	C26	4010063	4.7 nF 10% 63V
C6	4010063	4.7 nF 10% 63V	C27	4010063	4.7 nF 10% 63V
C7	4010063	4.7 nF 10% 63V	C28	4200364	47 µF -10 +50% 10V
C8	4010063	4.7 nF 10% 63V	C29	4010063	4.7 nF 10% 63V
C9	4010063	4.7 nF 10% 63V	C40	4011022	4.7 nF -20 +80% 40V
C10	4010063	4.7 nF 10% 63V	C41	4011022	4.7 nF -20 +80% 40V
C11	4010063	4.7 nF 10% 63V	C42	4011022	4.7 nF -20 +80% 40V
C12	4010063	4.7 nF 10% 63V	C43	4011022	4.7 nF -20 +80% 40V
C13	4010063	4.7 nF 10% 63V	C44	4011022	4.7 nF -20 +80% 40V
C14	4010063	4.7 nF 10% 63V	C45	4011022	4.7 nF -20 +80% 40V
C15	4010063	4.7 nF 10% 63V	C46	4011022	4.7 nF -20 +80% 40V
C16	4010063	4.7 nF 10% 63V	C47	4011022	4.7 nF -20 +80% 40V
C17	4010063	4.7 nF 10% 63V	C48	4010063	4.7 nF 10% 63V
C18	4010063	4.7 nF 10% 63V	C49	4010063	4.7 nF 10% 63V
C19	4010063	4.7 nF 10% 63V	C50	4010063	4.7 nF 10% 63V
C20	4010063	4.7 nF 10% 63V	C51	4010063	4.7 nF 10% 63V
C21	4010063	4.7 nF 10% 63V			
L1	8020342	10 mH			
X1	8090007	1.97 MHz			
	6200029	Flat cable 10 pol.			
	6273911	Set of wire w/socket			
	6200015	Flat cable 7 pol.			
	7200055	Socket for µC			

Operation Panel, 3168096, PC 3

R1	5010076	3.3 kohms 5% 1/8W	R6	5010076	3.3 kohms 5% 1/8W
R2	5010076	3.3 kohms 5% 1/8W	R7	5010076	3.3 kohms 5% 1/8W
R3	5010076	3.3 kohms 5% 1/8W	R8	5010076	3.3 kohms 5% 1/8W
R4	5010076	3.3 kohms 5% 1/8W	R9	5210009	Photo resistor
R5	5010076	3.3 kohms 5% 1/8W	R10	5210009	Photo resistor
IL1	8230068	18V 30 mA			
P8	7220144	Plug 9/8 pol.			

Transformer, Module 4

C1	4200391	39 µF 5% 55V Type 5611	C1	4200391	39 µF 5% 55V Type 5615
C1	4200448	27 µF 5% 55V Type 5612	C1	4200391	39 µF 5% 55V Type 5616
C1	4200448	27 µF 5% 55V Type 5613	C1	4200391	39 µF 5% 55V Type 5617
C1	4200391	39 µF 5% 55V Type 5614			

F1	6600040	300 mA slow Type 5611	F1	6600039	160 mA slow Type 5615
F1	6600040	300 mA slow Type 5612	F1	6600039	160 mA slow Type 5616
F1	6600040	300 mA slow Type 5613	F1	6600039	170 mA slow Type 5617
F1	6600028	315 mA slow Type 5614			

Chassis, Slide Module 5

R1	5210009	Photo resistor			
IL1	8230069	5V 60 mA	IL2	8230068	18V 30 mA

Settling Circuit, 8005059, PC 6

R1	5010065	100 ohms 5% 1/8W	R4	5010049	100 kohms 5% 1/8W
R2	5010061	56 kohms 5% 1/8W	R5	5010049	100 kohms 5% 1/8W
R3	5010061	56 kohms 5% 1/8W	R6	5001001	10 ohms 10% 1/2W
C1	4200362	4.7 µF 16V			

Control of µC, 8005060, PC 7

R1	5010117	330 kohms 5% 1/8W	R5	5010070	390 ohms 5% 1/8W
R2	5010638	10 Mohms 10% 1/8W	R6	5010040	1 kohms 5% 1/8W
R3	5010054	1 Mohms 5% 1/8W	R7	5010506	10 ohms 5% 1/8W
R4	5010058	470 ohms 5% 1/8W			
C1	4130111	150 nF 20% 250V	C3	4200364	47 µF -10 +50% 10V
C2	4200423	2.2 µF 20% 50V	C4	4130104	220 nF 20% 100V

MECHANICAL PARTS LIST

001	3164425	Lid
002	3164426	Dust cover
003	3030039	Back part
004	2542527	Hinge for lid spring
005	2831032	Shaft for lid
006	2726118	Turntable
007	3162131	Cover plate for lid spring
008	3030048	Bracket for lid spring
009	2072102	Threaded pin
0010	2816168	Spring
0011	3412901	Cabinet, teak
	3412903	Cabinet, rosewood
	3412904	Cabinet, oak
0012	2871009	Rotor for turntable
0013	3152293	Holder
0014	8005042	PC for motor sensor
0015	2732045	Belt for servo motor
0016	2726123	Turntable hub with tacho washer
0017	2830092	Shaft
0018	2993034	Spindel and pulley
0019	2389057	Bushing
0020	2039027	Screw AM 3 x 6 DIN 7985
0021	8005064	PC for muting
0022	2039027	Screw AM 3 x 6 DIN 7985
0023	3114133	Floating chassis
0024	3454236	Bottom
0025	2830093	Shaft
0026	2816160	Spring
0027	6140698	PC for motor
0028	3170169	Mica sheet
0029	3011012	Friction piece
0030	3627007	Brush
0031	2775659	Knob
0032	2810096	Spring
0033	3458252	Small top plate, black
0034	3010007	Stop
0035	2640040	Locking plate
0036	2938095	Rubber bushing
0037	2013038	Screw 2.9 x 16 mm DIN 7982
0038	2816184	Spring
0039	2042216	Screw AM 4 x 16 DIN 84
0040	2013207	Screw 2.9 x 9.5 mm DIN 7981
0041	2641097	Clamp
0042	2015903	Screw 3.5 x 9.5 mm
0043	2043015	Screw M 4 x 6
0044	2624038	Washer
0045	2390081	Locking ring
0046	3151177	Bracket
0047	2390081	Locking ring
0048	7530091	Solder tag
0049	3151178	Holder for sensor
0050	8330007	Sensor
0051	2938186	Center bearing
0052	2514028	Hook
0053	2013906	Screw 2.9 x 6.5 mm DIN 7981
0054	2894045	Spring
0055	2852041	Adjusting arm
0056	2816163	Spring
0057	6140697	PC for power supply
0058	3170169	Mica sheet
0059	2043002	Screw AM 4 x 16 DIN 7985
0060	2622275	Washer
0061	2930079	Bushing
0062	2938149	Bushing
0063	8954670	Pickup MMC 20CL (replacement)
0064	3151173	Spring
0065	2830084	Shaft
0066	3152101	Wire holder
0067	3103067	Plastic foot
0M1	8400100	Servo motor
0S1	7400242	Holder with micro switch
0L1	3351012	Stator for turntable

01Modul	8005040	PC1, Control
0101	2380011	Nut M3
0102	2624032	Washer
0103	2576124	Spacer
0104	2622052	Fibre washer
0105	2039028	Screw AM 3 x 16 DIN 7985
	3152214	Cable binder

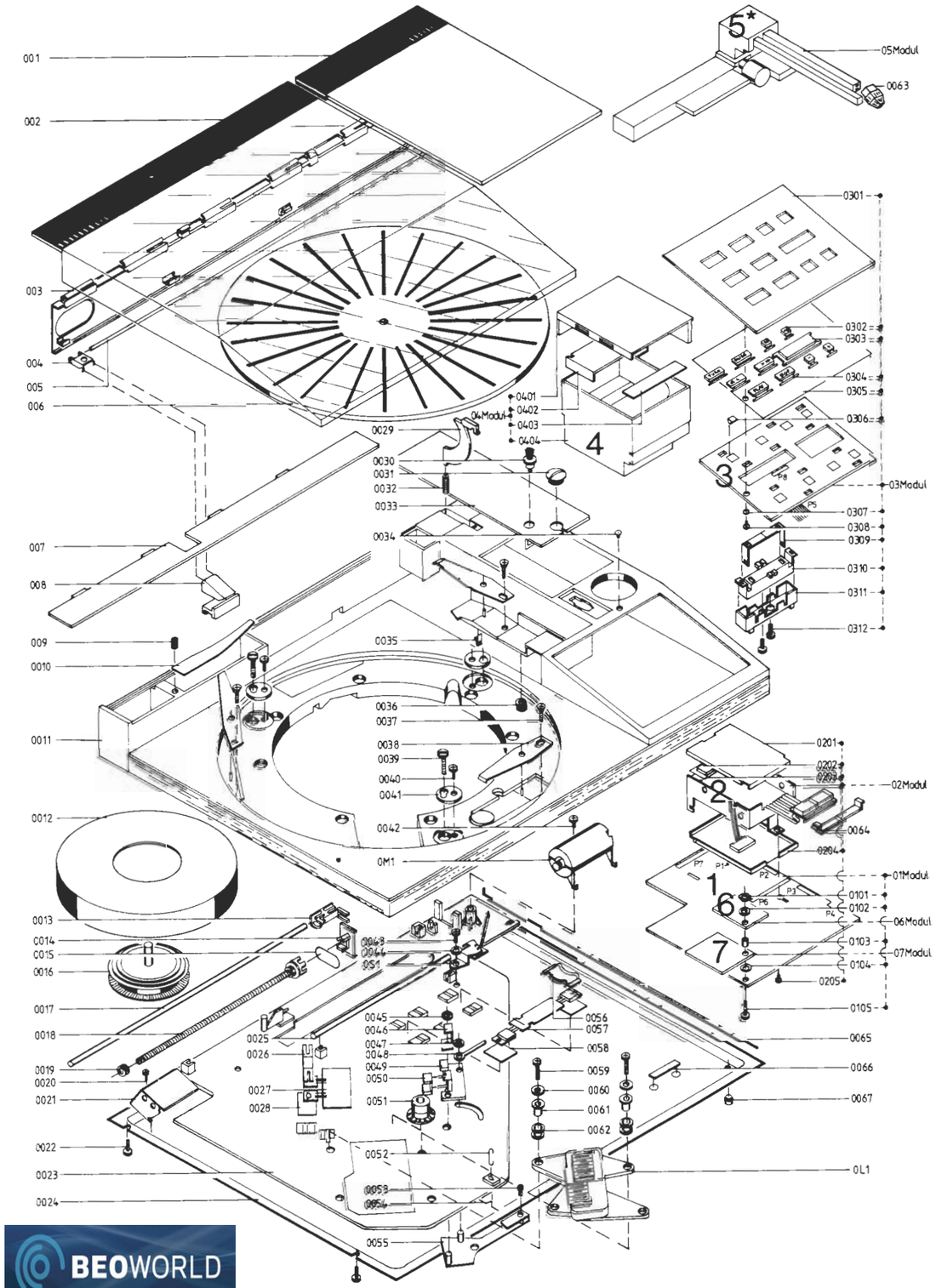
02Modul	8005058	PC2, microcomputer
0201	3162136	Cover
0202	3947092	Double tape
0203	3358168	Heat sink
0204	3162136	Cover
0205	2013062	Screw 2.8 x 6.4 mm
	2938001	Bushing
	3947093	Tape

03Modul	3168096	Operating panel, complete
0301	3168168	Operating panel
0302	2775706	Set of knobs, small
0303	3370123	Window
0304	2775705	Set of knobs, large
0305	3947075	Tape
0306	7500148	Contact spring
0307	2622005	Fibre washer
0308	2011305	Screw 2.2 x 3.2 mm
0309	2816158	Spring
0310	3131157	Holder
0311	3164324	Lid
0312	2044017	Screw M 5 x 10

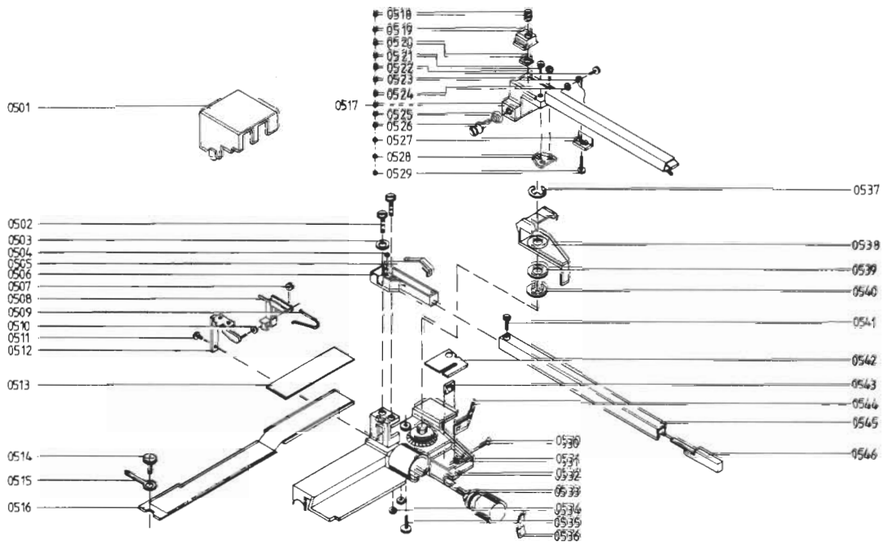
04Modul	8013240	Mains transformer 100V 50 Hz type 5611
	8013241	Mains transformer 100V 60 Hz type 5612
	8013242	Mains transformer 120V 60 Hz type 5613
	8013243	Mains transformer 127V 50 Hz type 5614
	8013205	Mains transformer 220V 50 Hz type 5615
	8013244	Mains transformer 240V 50 Hz type 5616
	8013245	Mains transformer 240V 50 Hz type 5617 (Australia)
0401	3164321	Lid
0402	7200052	Fuse holder
0403	2645034	Insert
0404	3131159	Housing

06Modul	8005059	PC for delay (settling)

07Modul	8005060	PC, Control for µC



Slide Chassis



0501	3164388	Cover	0524	2625010	Tooth-lock washer
0502	2038247	Screw AM 3 x 6 DIN 84	0525	2812089	Spring
0503	2622041	Washer 3.2 DIN 125	0526	2038077	Screw
0504	6430067	Silicone insulation	0527	3190079	Dial
0505	2816159	Spring	0528	2641090	Bracket
0506	3152249	Holder	0529	2034046	Screw AM 2 x 3 DIN 7985
0507	2938172	Fibre washer	0530	2034014	Screw AM 2 x 8 DIN 963
0508	2530383	Bracket	0531	2380068	Nut M2 DIN 562
0509	2818063	Spring	0532	3114172	Slide
0510	2622323	Fibre washer	0533	6810008	Coil
0511	2034236	Screw AM 2 x 3 DIN 84	0534	6430067	Silicone insulation
0512	2851106	Bracket	0535	2038212	Screw AM 3 x 8 DIN 84
0513	3302319	Cover	0536	2816165	Spring
0514	2043015	Screw M 4 x 6	0537	2390033	E-ring 5 DIN 6799
0515	7530091	Solder tag	0538	3150050	Bearing holder
0516	8005043	PC, movable with bracket	0539	2390079	Lock disc
0517	3152295	Pickup arm	0540	2390033	E-ring 5 DIN 6799
0518	2072703	Threaded pin M 3 x 6 DIN 438	0541	2034014	Screw AM 2 x 8 DIN 963
0519	3342039	Counter weight	0542	3164319	Cover
0520	2380054	Nut M3	0543	3375032	Lens
0521	2034045	Screw AM 2 x 6 DIN 7985	0544	2816164	Spring
0522	2034044	Screw AM 2 x 3 DIN 7985	0545	3937032	Detector arm
0523	7530092	Solder tag	0546	3375039	Housing with optics

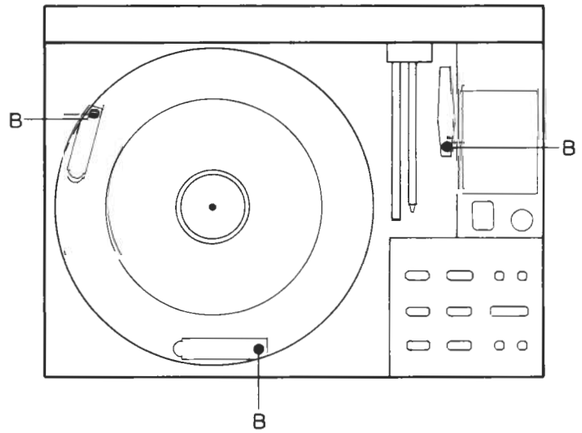
Parts not shown

3015085	Record adaptor
6270213	Signal lead 7 pol.
6270204	Signal lead 5 pol.
6273846	Wire bundle with socket, 12-pol. for P2
6273845	Wire bundle with socket, 10-pol. for P3
6273847	Wire bundle with socket, 8-pol. for P4
3535072	Instruction diagram
3391538	Outer carton
3397428	Foam packing (complete)
3397328	Foam packing (lid indsert)
3390114	Plastic bag for dust cover
3917041	Foam
3917045	Foam insert
6271119	Mains lead type 5611, 5612
6100012	Mains lead type 5613
6271102	Mains lead type 5614, 5615, 5616

ADJUSTMENTS

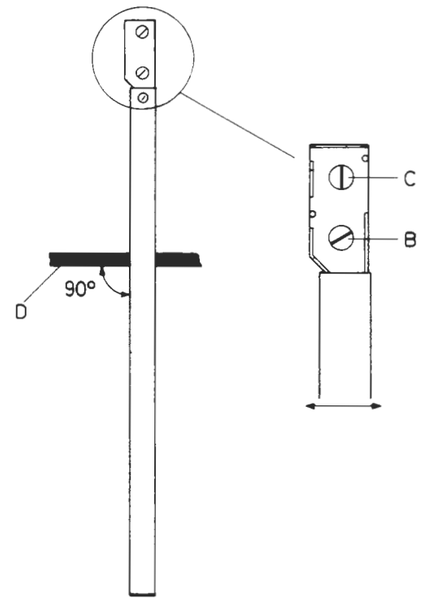
For some adjustments it is necessary to be able to operate the record player functions with a stationary turntable. The stationary state is obtained by **disconnecting the mains voltage**, removing P4 and reconnecting the mains voltage.

Drive Unit Height

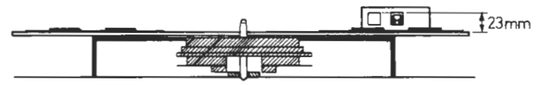


Adjust the screws B – while putting the turntable on a taking it off again – until the latter is flush with the cover plate.

Tightening of the Detector Arm

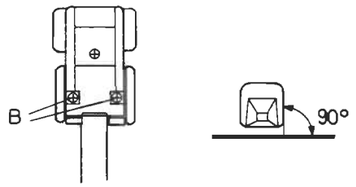


Loosen the screws B and C.
Tighten the screw B very gently.
Turn the detector arm until it is at right angles to the rod D. Tighten the screws B and C.



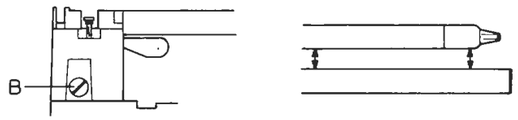
After tightening, check that the clearance between the upperside of the detector arm down to the turntable is 23 mm.

Pick-up Parallelism



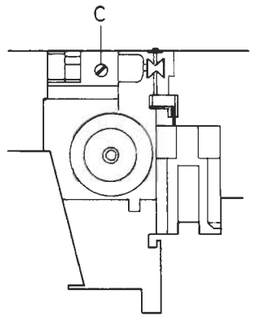
Adjust the screws B – by loosening and tightening respectively – until the side of the pick-up is at right angels to the turntable.

Vertical Parallelism of the Pick-up Arm



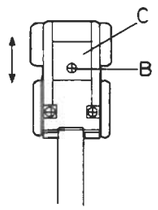
Adjust the screw B gently until the pick-up arm vertically parallels the detector arm.

Horizontal Parallelism of the Pick-up Arm



Adjust the screw C (to be found under the bottom of the carrier unit) until the pick-up arm horizontally parallels the detector arm.

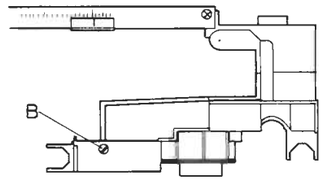
Pick-up Arm Balancing



Loosen screw B.
Set stylus pressure at 0.
With the pick-up arm lowered, move the counterbalancing weight C in either of the arrow directions until the pick-up arm is balanced.

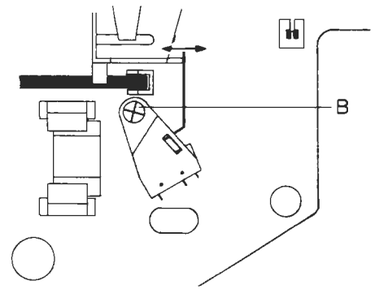
Tighten the screw B and set the stylus pressure at 1.2 g.

Shutter for Photo Control



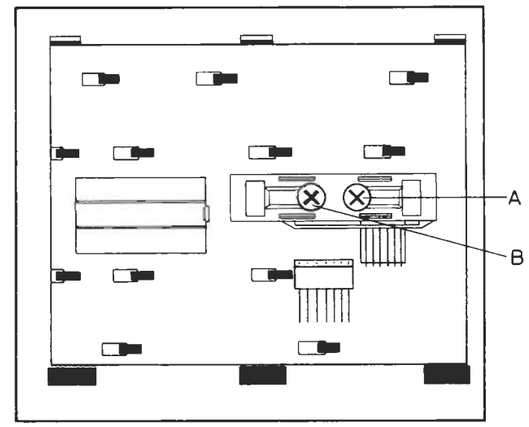
Adjust the shutter with testing record 3621001 in cutting 5.
Take the pick-up arm across to cutting 5 (stationary turntable) and lower it.
Make sure that the shutter housing is not exposed to any stray light such as a bench lamp.
Make the adjustment with the screw B in such a way that the first servo mechanism regulation after set-down will take place after 2 ± 1 rotations of the turntable and then after each rotation.
To test the shutter regulation only, check that it regulates within 1/2 to 6 revolutions.
It is **possible** to adjust without disassembly, by only removing the black cover which houses the pick-up brush. This adjustment is to be made as above, the only difference being that the turntable must be braked to stop with the hand.

SO Switch



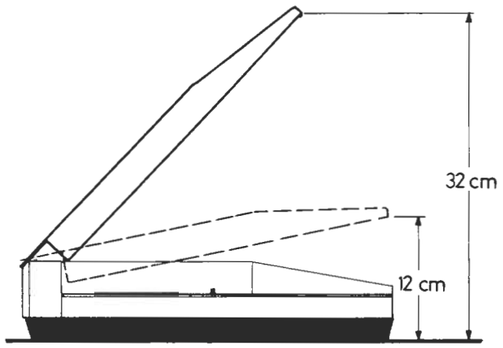
Activate Play with a stationary turntable and with a record with correct 30 cm set-down (146.3 mm to 148.25 mm from the record centre).
Notice the 30 cm set-down position of the pick-up.
Loosen the screw B and move the SO switch in either of the arrow directions so as to compensate for any misplaced set-down.
Tighten the screw B.

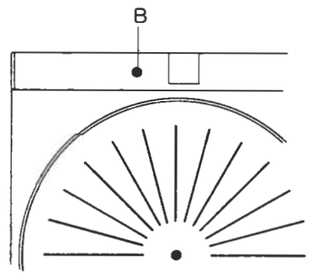
Manual ≪< and >≫



Adjust the screws A and B after approx. 5 minutes operation until 650 mV is measured on pin 4 of P5 and on pin 6 of P5.

Dust Cover Lid Spring





Adjust the dust cover lid with the screw B.

1. Lifting adjustment:
   Lift the dust cover lid gently and release it when the lower front edge of the lid has been raised approx. 32 cm above the record player base. The lid will then automatically seek its top position.
2. Lowering adjustment:
   Lower the dust cover lid gently and release it when the lower front end of the lid is approx. 12 cm from the base. The lid will then automatically seek its closed position.

Lubrication chart

The need for relubrication is negligible.
In the case of overhauls and when replacing mechanical parts the directions below should be followed.

Point of lubrication	Lubricant	Remarks
Turntable bearing	3984008, M4 oil	Apply to shaft point + streak throughout length of shaft
Spindle pos. No. 0018	3984216, Rocol MTS 1000. Dilute to oily consistency (1:1) with 3984221, ESSO NUTO H44/HP32	Apply to spindle at least in 5 points
Spindle bearing	3984218, Molykote DX paste (white)	
Lift-lower	Castrol oilit 3984211	Apply to needle on pos. No. 0508 and 0512
Damping of alu. lid	Kilopoise 3984005	Apply in one streak at each side

TECHNICAL SPECIFICATIONS

Wow and flutter, DIN	<±0.04%
Wow and flutter, WRMS	<±0.02%
Rumble DIN weighted	>70 dB
Rumble DIN unweighted	>50 dB
Speeds	33-45 rpm.
Speed deviation	<0.02%
Speed control range	±3%
Tangential tracking	<0.04°
Power consumption	15 watts
Dimensions W x H x D	49 x 9 x 37.5 cm
Weight	9 kg

MMC 20 CL cartridge	
Recommended tracking force	10 mN/1 gram
Frequency range	20-20,000 Hz ±1 dB
Channel separation 1000 Hz	>30 dB
Channel separation 500-10,000 Hz	>20 dB
Channel difference	<1 dB
Stylus	Contact line naked diamond
Effective tip mass	0.3 mg
Compliance vertical	30 µm/mN
Compliance horizontal	40 µm/mN
Vertical tracking angle	20°
Sensitivity mV/cm/s RMS	>0.6 mV
Output 5 cm lateral	>2.12 mV
Output 10 cm/s 1000 Hz	>8.5 mV
Load impedance	47 Kohms
Load capacity	220 pF

Power Supply and Frequency		
Type 5611	100 volts	50 Hz
Type 5612	100 volts	60 Hz
Type 5613	120 volts	60 Hz
Type 5614	127 volts	50 Hz
Type 5615	220 volts	50 Hz
Type 5616	240 volts	50 Hz
Type 5617	240 volts	50 Hz

Subject to change without notice

DISMANTLING
Servicing position

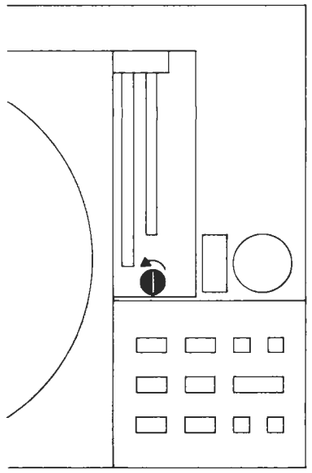


Fig. 1

Loosen the black cover plate below the pickup arm assembly by turning the black screw 1/4 turn in the direction of the arrow.
Remove the black cover plate.
Remove the turntable.

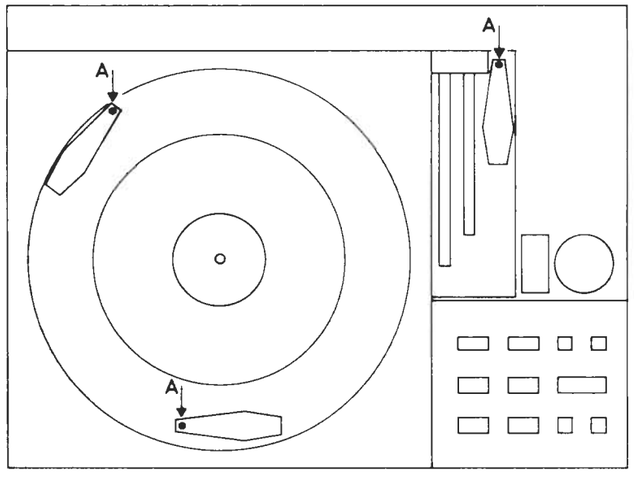


Fig. 2

Lift the hooks for the suspension of the train drive/chassis off the suspension springs in the points A.

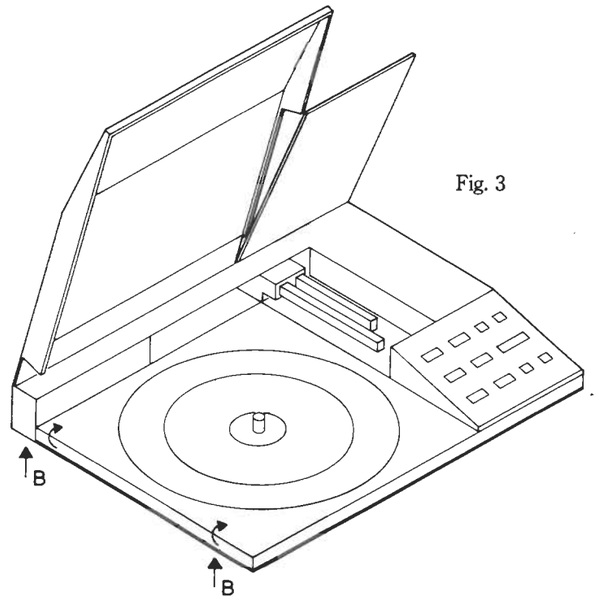


Fig. 3

Remove the screws B.
Push, with due care, the train drive chassis to the right.
By lifting carefully at the left side of the top part it can now be tilted into the servicing position (Fig. 4).

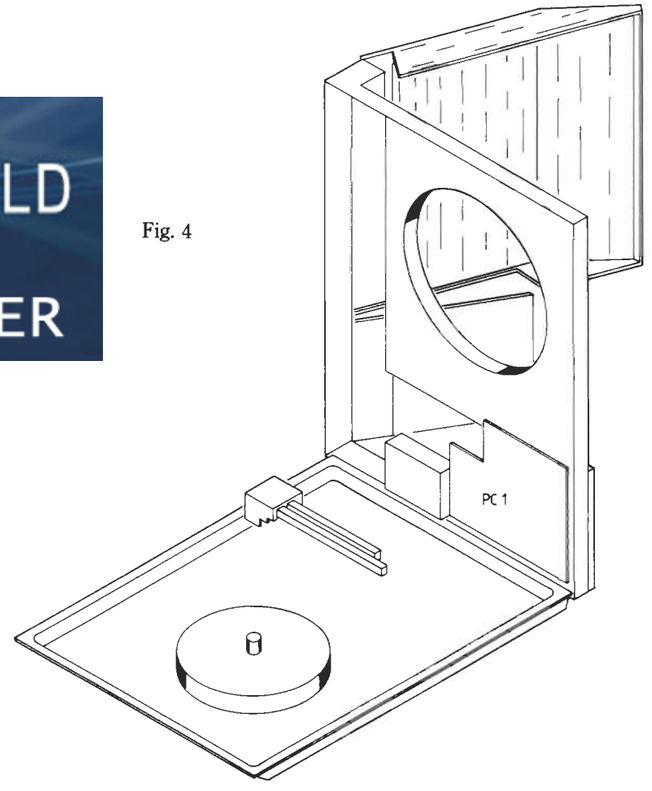


Fig. 4

Control panel

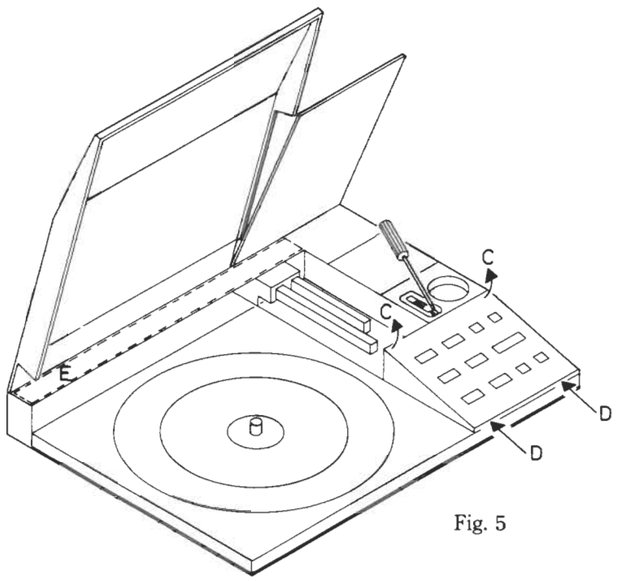


Fig. 5

Insert carefully a screwdriver into the hole as shown in the diagram.
After the retainer pin at the top edge of the control panel/cover has been loosened, pull the control panel cover in the direction of the arrows C, and then push in the direction of the arrows D.

Dust cover spring

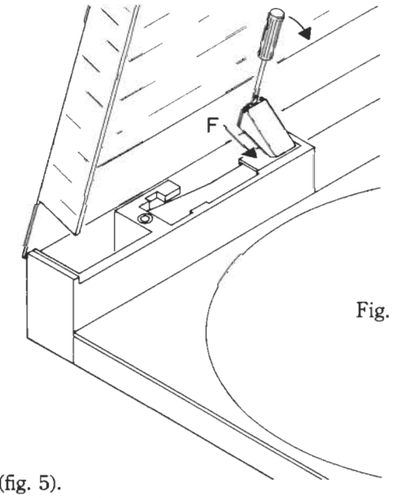


Fig. 6

Remove cover E (fig. 5).
Press the dust cover spring down at the point F while the dust cover remains in its open position.
Insert a screwdriver between the dust cover and the cover hinge.
Lever the screwdriver with care in the direction of the arrow until the cover hinge is released.

Dust cover

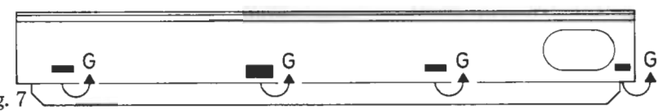


Fig. 7

Pull carefully at the rear part in the direction of the arrows G until the rear part and the cover are released.

SERVICETIPS AND MODIFICATIONS

Raise/lower circuit

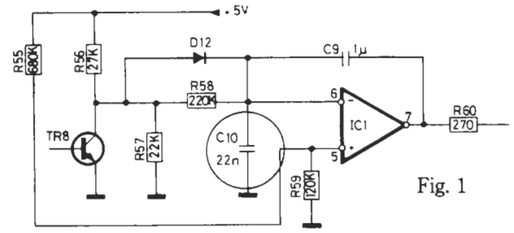


Fig. 1

In the first series the raise/lower circuit has a design as shown in Fig. 1. To replace IC1 (8340347) in these recordplayers it is necessary to remove C10 (22 nF). Disconnect the printed circuit path from pin 6 of IC1 and C10 and install R61 (10 kohm 5010059) in series with pin 6 of IC1, see fig. 2. (C7, 22 nF, from pin 3 to pin 1 of IC1 also has to be removed).

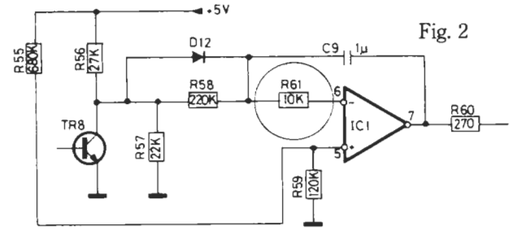
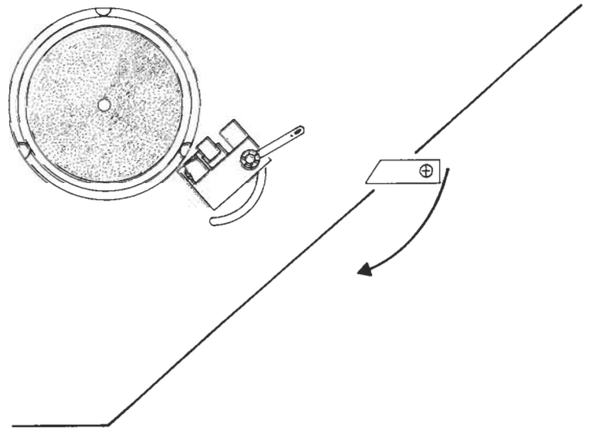


Fig. 2

Turntable hub

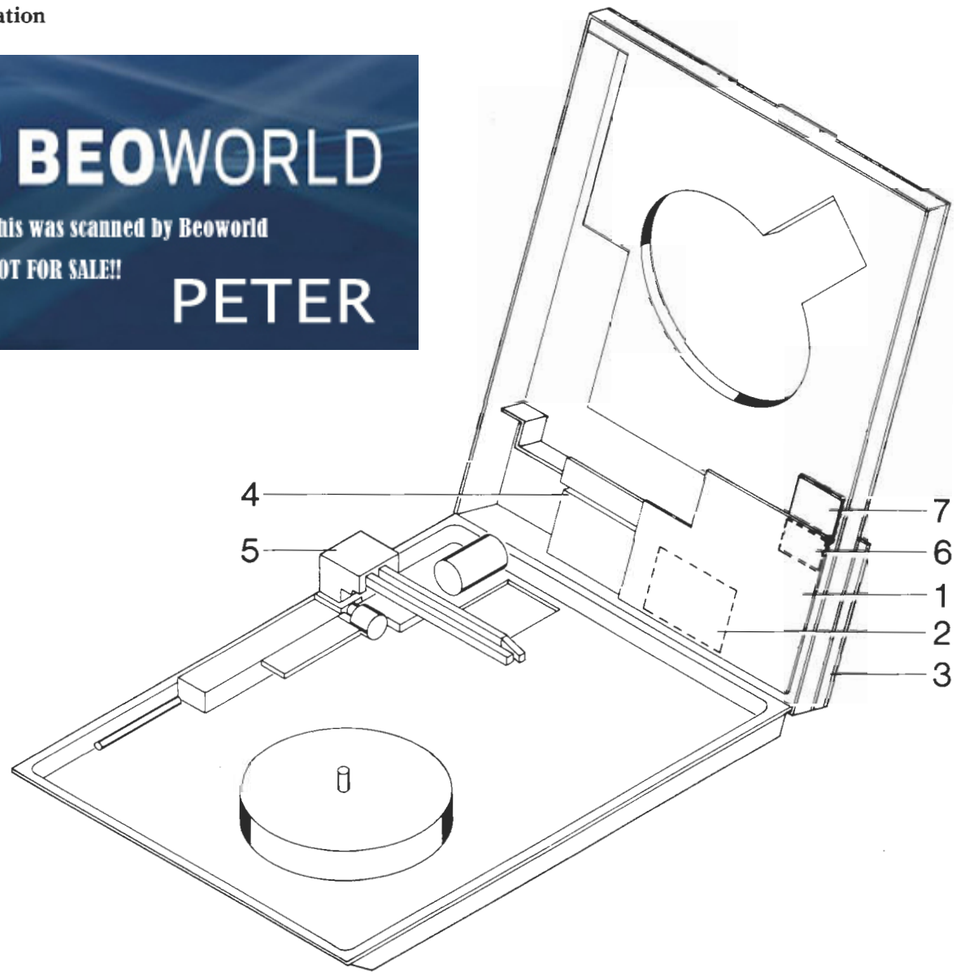


In order to avoid damage when demounting the turntable hub with the tacho disc, make sure that the opto yoke has been pulled all the way in the direction of the arrow.
Prior to re-mounting the turntable with the tacho disc, make sure that the tacho disc has been cleaned for any dust and dirt, which in certain cases can result in wow.

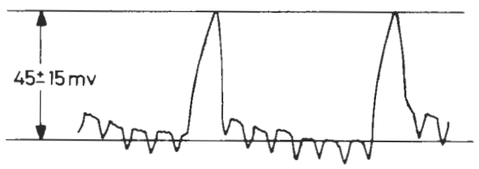
Control for µC, PC7

Due to the fact that it is possible for certain conditions to arise in the circuits which the RESET circuit (1TR17) cannot sense, PC7 (control for µC) has been temporarily introduced in the production. These conditions may result in erroneous information from the micro computer with the result that the turntable speed is speeded up very much.

Module location

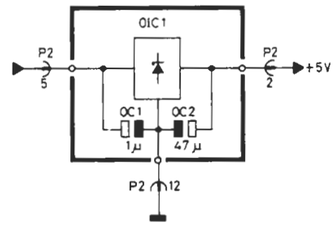


Optics of detector arm



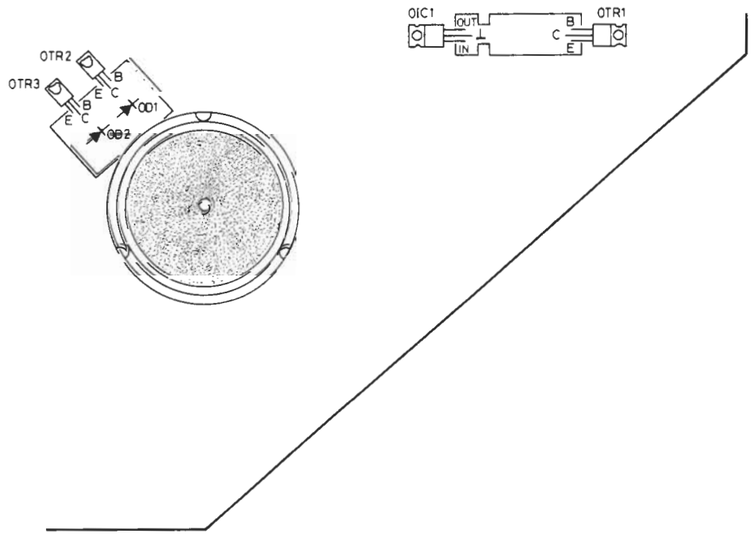
After replacing the optics of the detector arm or turntable, make sure that the detector arm circuit receives correct voltage supply.
Connect an oscilloscope across 1R65 (15 kohm).
Take the detector arm across the ribs of the turntable.
The signal across 1R65 (-ripple) must then be 45 ±15 mV. Any adjustments necessary must be made by very cautiously to vary machanically the detector arm light (5IL1).

0C1 and 0IC 1
(+5V power supply)

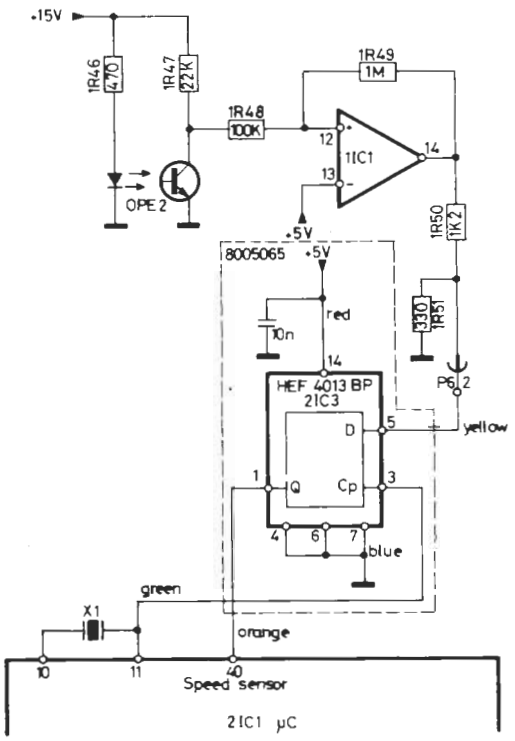


In the current production 0C1 has been changed from 220 nF to 1 µF (No. 4200426). When replacing 0IC1 in record players where 0C1 is 220 nF, 0C1 must be changed to 1 µF.

Layout of active components of the train drive chassis

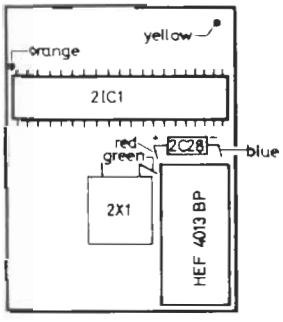


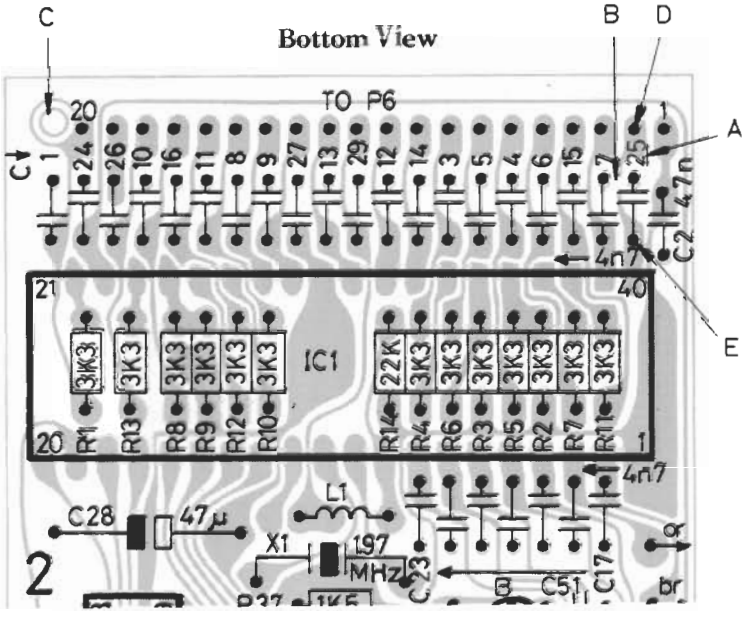
Periodical Variation of Turntable Speed



In current production it has turned out that tolerances in the relation between 1IC1 and 2IC1 may cause periodical variation of speed.
To avoid this, 2IC3 has been introduced in production, as shown in the diagram.
In case of failures of the above-mentioned nature or in case of replacement of 1IC1 or 2IC1, 2IC3 is to be mounted according to the below instructions.
2IC3 (8340261) mounted on PC-board is available under order No. 8005065.

Installation Instructions (Module 2)





A. Dismantle the capacitor 2C25.
B. Break the copperfoil from the wire bundle (P6) to pin 40 of 2IC1.
C. Desolder any tin from the hole C.
Lead the yellow wire (pin 5 of HEF 4013 BP) from the component side though the hole C and solder it on to point D.
E. Solder the orange wire (pin 1 of HEF 4013 BP) on to point E (the empty solder point from 2C25).
Solder the positive wire (red) and ground (blue) across 2C28.
Solder the green wire (pin 3 of HEF CD4013 BP) on to one side of the crystal 2X1, the side that corresponds to pin 11 of 2IC1.
The PC-board 8005065 is mechanically placed beside the crystal (solder side up).

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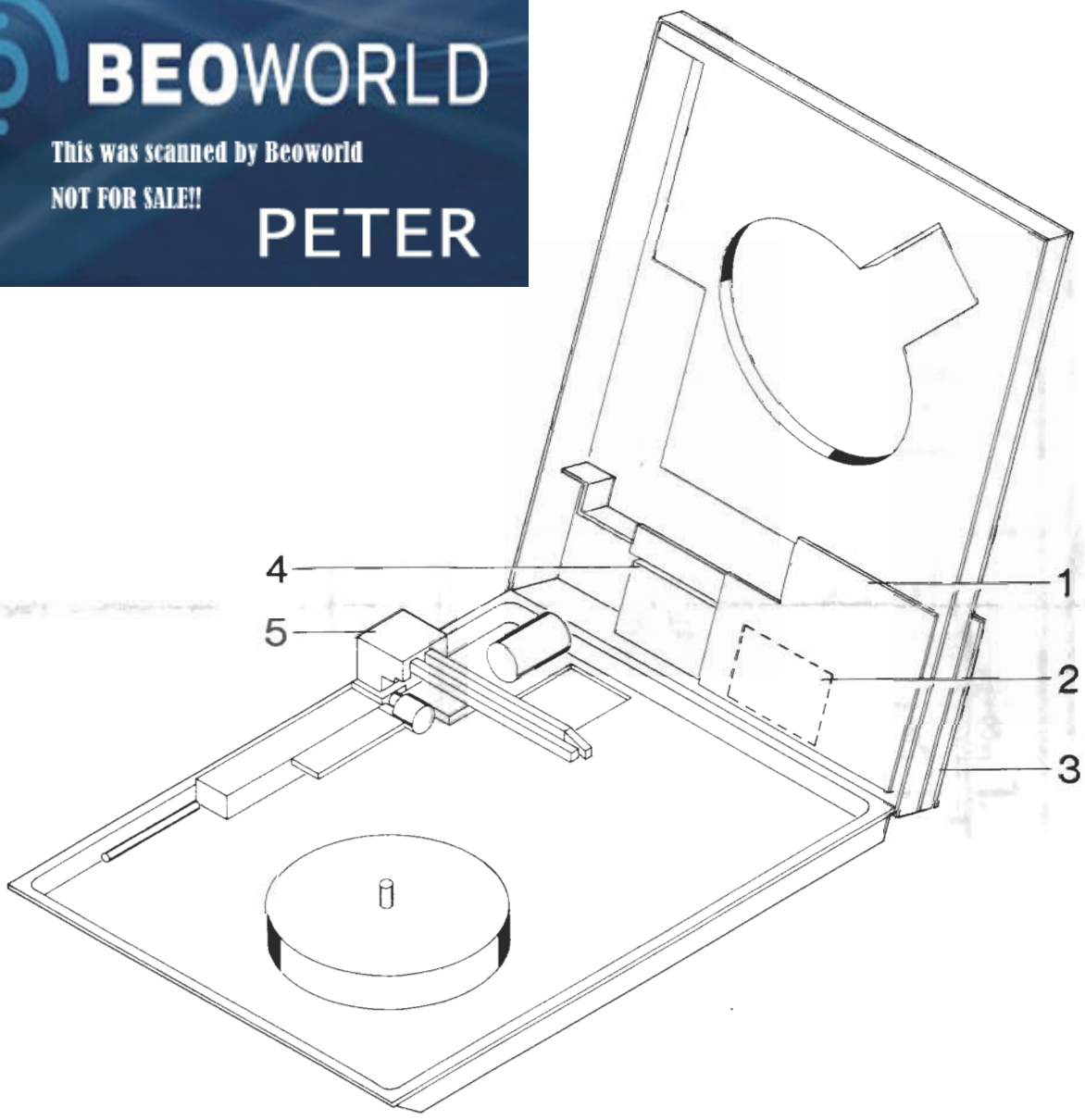
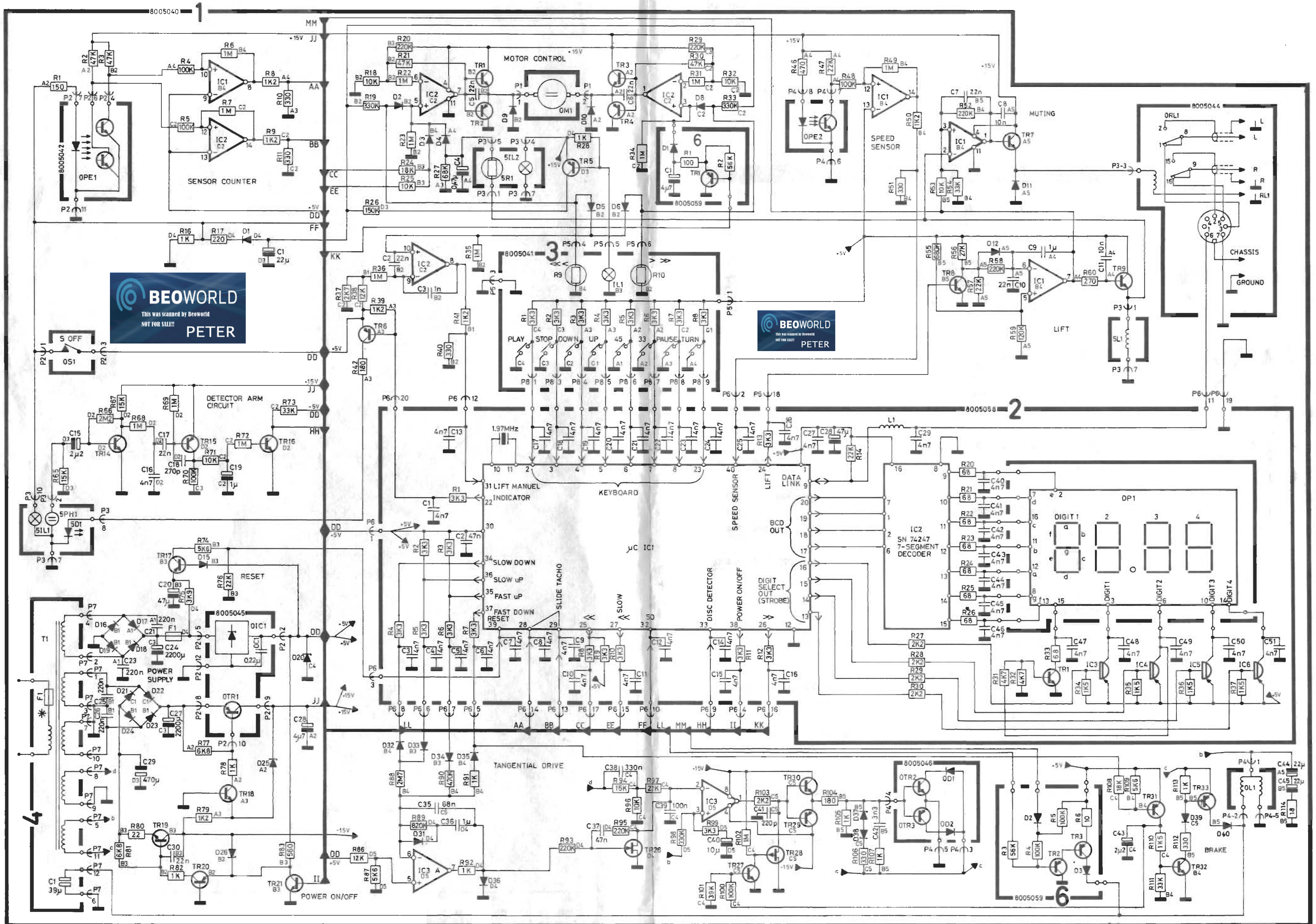


BEOGRAM 8000 Type 5611, 5612, 5613, 5614, 5615, 5616, 5617

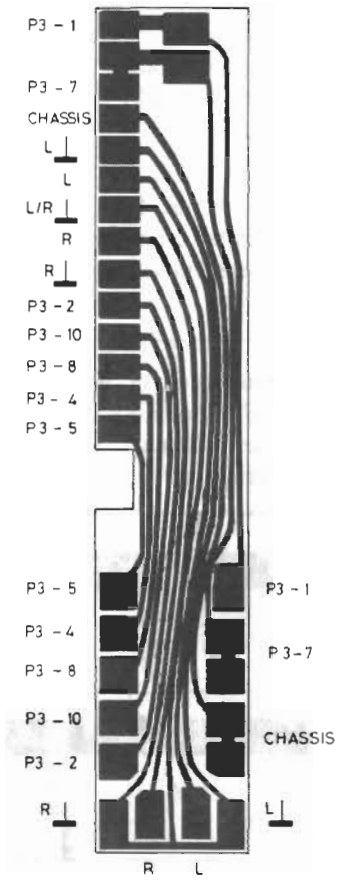
08-80 3515072

3IL1 → 18V 30mA
8230068

Bang&Olufsen



Bang&Olufsen



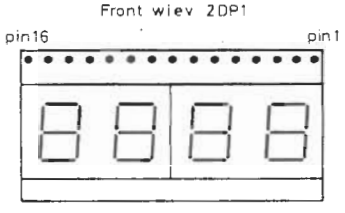
FUNCTION TABLE 2IC2 (SN74247)

DECIMAL ON DISPLAY	INPUTS D	C	B	A	OUTPUTS a	b	c	d	e	f	g
0	0	0	0	0	0	0	0	0	0	0	1
1	0	0	0	1	1	0	0	1	1	1	1
2	0	0	1	0	0	0	1	0	0	1	0
3	0	0	1	1	0	0	0	0	1	1	0
4	0	1	0	0	1	0	0	1	1	0	0
5	0	1	0	1	0	1	0	0	1	0	0
6	0	1	1	0	0	1	0	0	0	0	0
7	0	1	1	1	0	0	0	1	1	1	1
8	1	0	0	0	0	0	0	0	0	0	0
9	1	0	0	1	0	0	0	0	1	0	0
	1	1	1	1	1	1	1	1	1	1	1

FUNCTION TABLE FOR MICROCOMPUTER 2IC1

PINS	INPUT CONDITIONS 31	32	33	OUTPUT CONDITIONS 24	38	FUNCTION	RESULTS 22	24	25	26	27	28
2	0	0	0	X	0	X	PLAY	1	0	1	0	1	0
X	X	0	1	1	0	0	PLAYING	1	1	0	0	0	0
2	0	0	1	1	1	0	PLAY	⊓	1	0	0	0	0
23	0	0	0	X	0	X	TURN	1	0	0	0	0	0
8	0	0	1	1	1	0	PAUSE	1	0	0	0	0	0
X	X		1	X	X	0	≪ ≫	⊓	0	0	0	0	0
3	0	0	1	X	X	0	STOP	1	0	0	1	0	0
X	X	0	0	X	0	0	STOPPING	1	0	0	0	0	1

4F1★	Type	
300 mAT	5611	100V 50 Hz
300 mAT	5612	100V 60 Hz
300 mAT	5613	120V 60 Hz
315 mAT	5614	127V 50 Hz
160 mAT	5615	220V 50 Hz
160 mAT	5616	240V 50 Hz
160 mAT	5617	240V 50 Hz (Australia)



KOORDINATNUMRE

De største PC plader er forsynet med et koordinatsystem. Komponenterne på disse PC plader er forsynet med et koordinatnummer på diagrammet (mindre skrifttype end positions nr.), som fortæller hvilket koordinat, på PC pladen, de er placeret i.

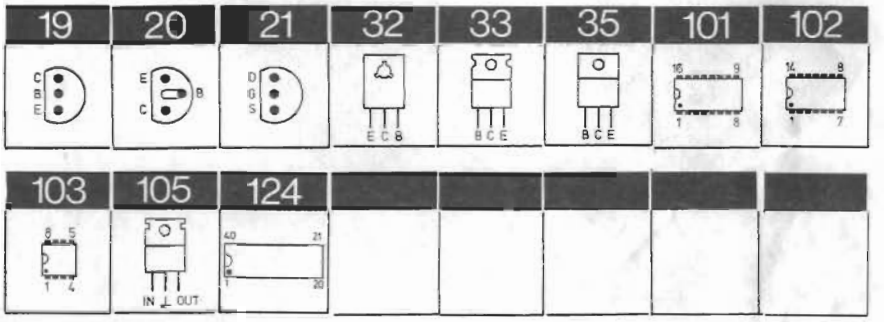
CO-ORDINATE NUMBERS

The biggest PC board are provided with co-ordinate systems. The components on these PC boards are provided with a co-ordinate number on the diagram (smaller printing type than the position numbers) indicating in which co-ordinate they are placed on the PC board.

KOORDINATENNUMMERN

Die grössten Printplatten sind mit einem Koordinatensystem versehen. Die Komponenten auf diesen Printplatten sind im Schaltbild einer Koordinatennummer (kleineren Schrifttyp als der Positionsnummer) versehen, die angibt, in welcher Koordinate auf der Printplatte sie angebracht sind.

LIST OF TRANSISTORS AND IC's



0TR1	8320257	33	TIP32
0TR2	8320442	32	BD 441
0TR3	8320443	32	BD 442
0IC1	8340065	105	LM 7805 CT
		105	UA 7805 UC
		105	MC 7805 CT
		105	UA 7805 CKC
1TR1	8320422	19	PU 01
1TR2	8320423	19	PU 51
1TR3	8320422	19	PU 01
1TR4	8320423	19	PU 51
1TR5	8320152	20	BC 557 B
1TR6			
1TR7	8320097	20	BC 547 B
1TR8			
1TR9	8320422	19	PU 01
1TR14	8320097	20	BC 547 B
1TR15	8320152	20	BC 557 B
1TR16	8320097	20	BC 547 B
1TR17	8320152	20	BC 557 B
1TR18	8320097	20	BC 547 B
1TR19	8320422	19	PU 01
1TR20	8320152	20	BC 557 B
1TR21	8320097	20	BC 547 B
1TR26	8320449	21	BF 244 C
1TR27	8320097	20	BC 547 B
1TR28	8320466	21	J 175
1TR29	8320152	20	BC 557 B
1TR30	8320097	20	BC 547 B
1TR31	8320152	20	BC 557 B
1TR32	8320097	20	BC 547 B
1TR33	8320447	35	BD 240 C
1IC1	8340157	102	LM 324 N
1IC2		102	TDB 0124 DP

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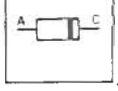
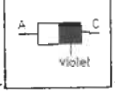
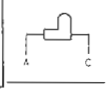
1IC3	8340195	**103**	LF 353 N
		103	TL 072 CP
		103	UAF 772 TC
2TR1	8320097	**20**	BC 547 B
2IC1	8340155	**124**	8015
2IC2	8340156	**101**	SN 74247 N

2IC3-2IC6	8340025	**19**	MPSA 65
		19	SPS 5431
6TR1	8320152	**20**	BC 557 B
6TR2	8320398	**20**	BC 558 B
6TR3	8320443	**32**	BD 442

LIST OF DIODES

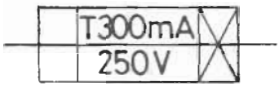
209	215	217	220				
							

0D1	8300102	**209**	1N4004
0D2			
0PE1	8005042		
0PE2	8330007		CLI 8805
1D1-1D12	8300058	**217**	SFD 184
		215	1N 4148
		209	1N 4148
1D16-1D19	8300102	**209**	1N 4004
1D20	8300201	**209**	ZPD 6V2
1D21-1D24	8300102	**209**	1N 4004

1D25	8300053	**217**	ZP 15
1D26		**215**	BZX 79C15V0
		209	BZX 83C15V0
1D31-1D40	8300058	**217**	SFD 184
		215	1N 4148
		209	1N 4148
2DP1	8330006		NSB 3882
5D1	8330009	**220**	CQY 41N/N
6D1	8300058	**217**	SFD 184
6D2		**215**	1N 4148
		209	1N 4148
6D3	8300023	**209**	1N 4002

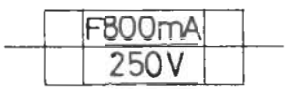
Explanation of the fuse symbols used in the set:

Explanation des symboles du fusible utilisés dans l'appareil:



Replace with same type 300 milliamperes 250 volts slow acting fuse.

Remplacer par un fusible de meme type retardé et de 300 milliamperes 250 volts.



Replace with same type 800 milliamperes 250 volts quick acting fuse.

Remplacer par un fusible de meme type rapide et de 800 milliamperes 250 volts.