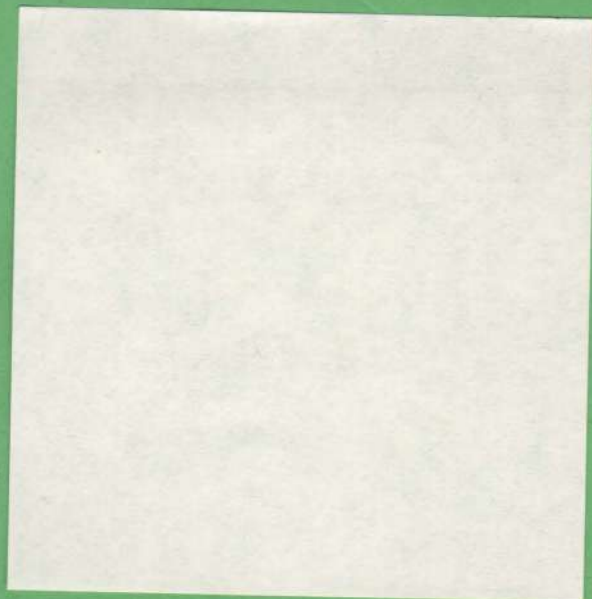
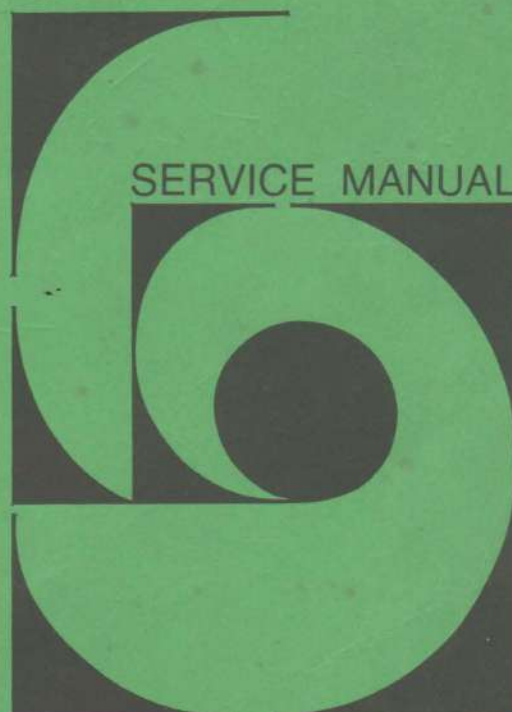


BEOCENTER 2000 Type 2101



SERVICE MANUAL

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Circuit diagrams and PC boards	1
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MEASURING CONDITIONS

Symbol for safety resistors



EXPLANATION TO DIAGRAM

All DC voltages are measured without signal relative to ground with voltmeter (inner resistance 10 Mohms).
 DC voltages are stated in volts (V), ex.: 0.7 V.
 AC voltages are measured relative to ground with oscilloscope or voltmeter with an input resistance of 1 Mohm.
 AC voltages are stated in millivolt (mV), ex.: 725 mV.
 Signal paths are shown for AM (position MW), FM, and for AF right channel.
 The tape recorder signal path in recording position is shown in right channel, and replay position is shown in left channel.
 Mechanical switches are shown in neutral position.

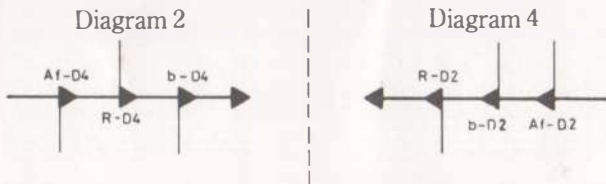
When replacing components with this symbol use the same type and the same value for ohms and watts. The new components is to be mounted in the same way as the replaced.

Because of the large number of internal connections in the set the wire connections have been gathered into »bundles« in the diagram. The individual wire is provided with codes indicating where they lead to

INTERNAL CONNECTION ON A DIAGRAM PAGE



CONNECTION TO ANOTHER DIAGRAM PAGE



indicated by a letter (capital or small) and a diagram (D) number or by a small and a capital letter together with a diagram (D) number.

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.

DIAGRAM 1

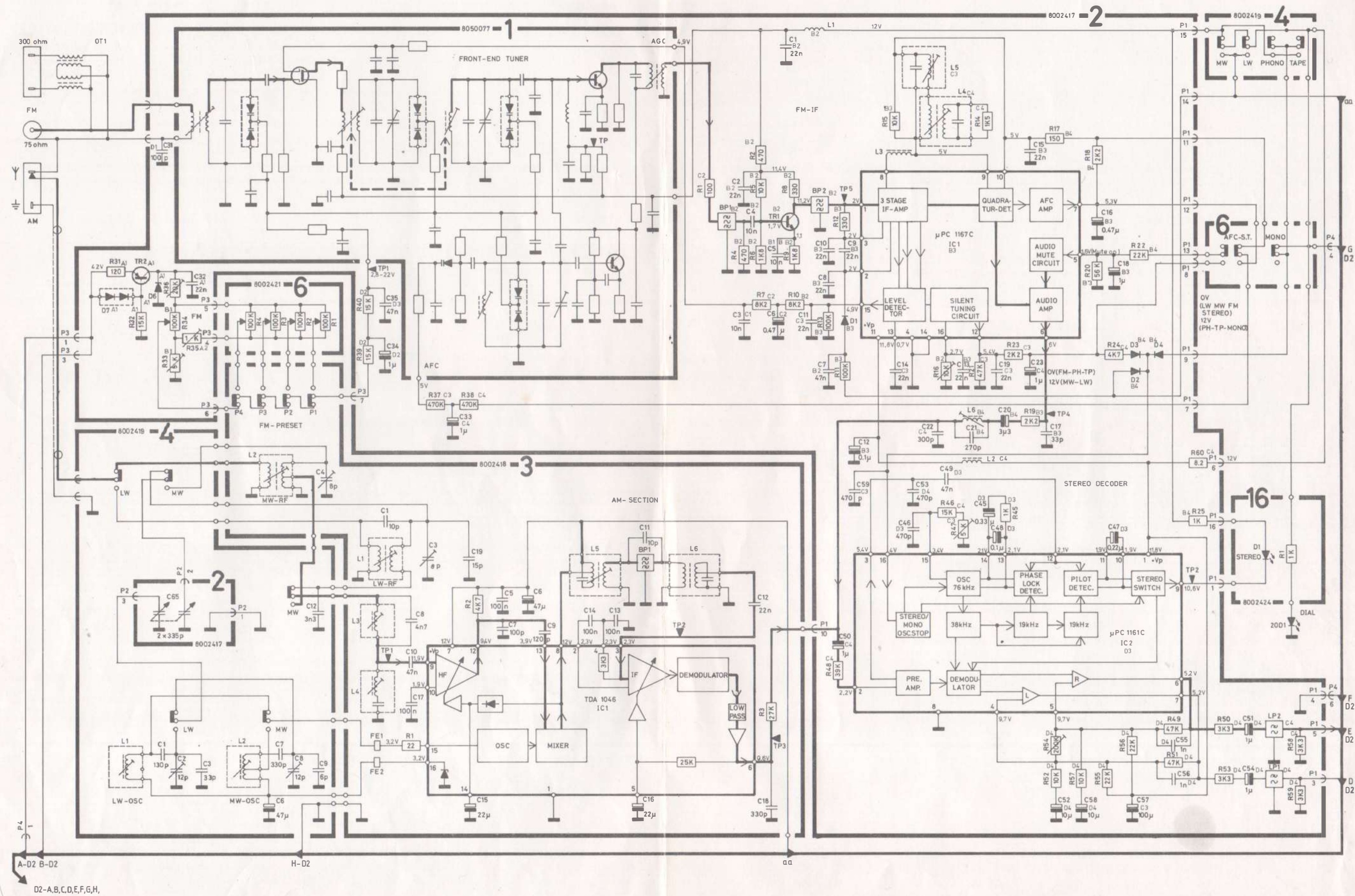
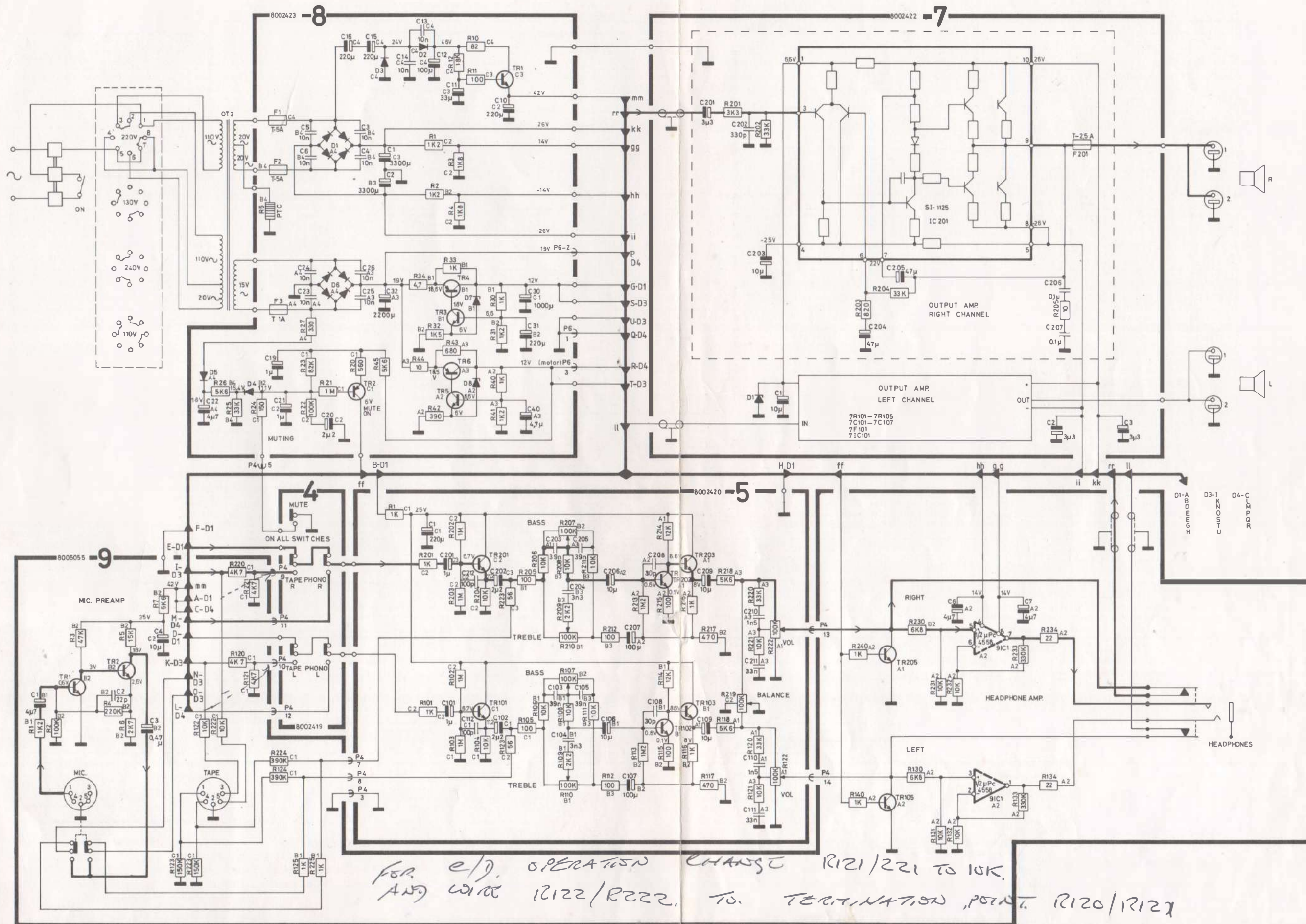
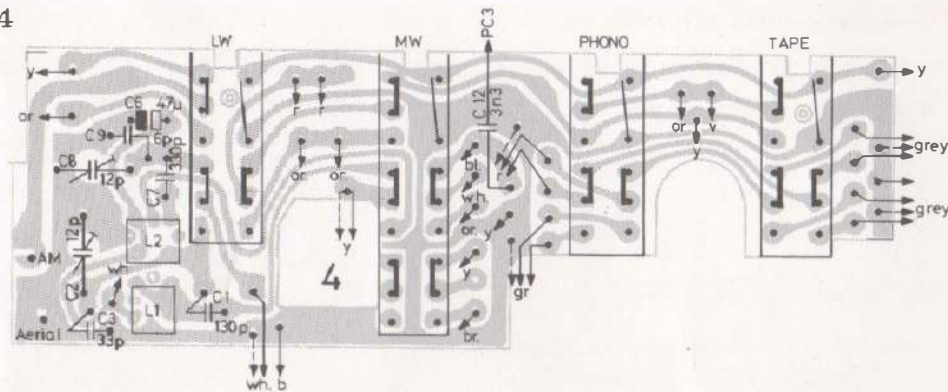


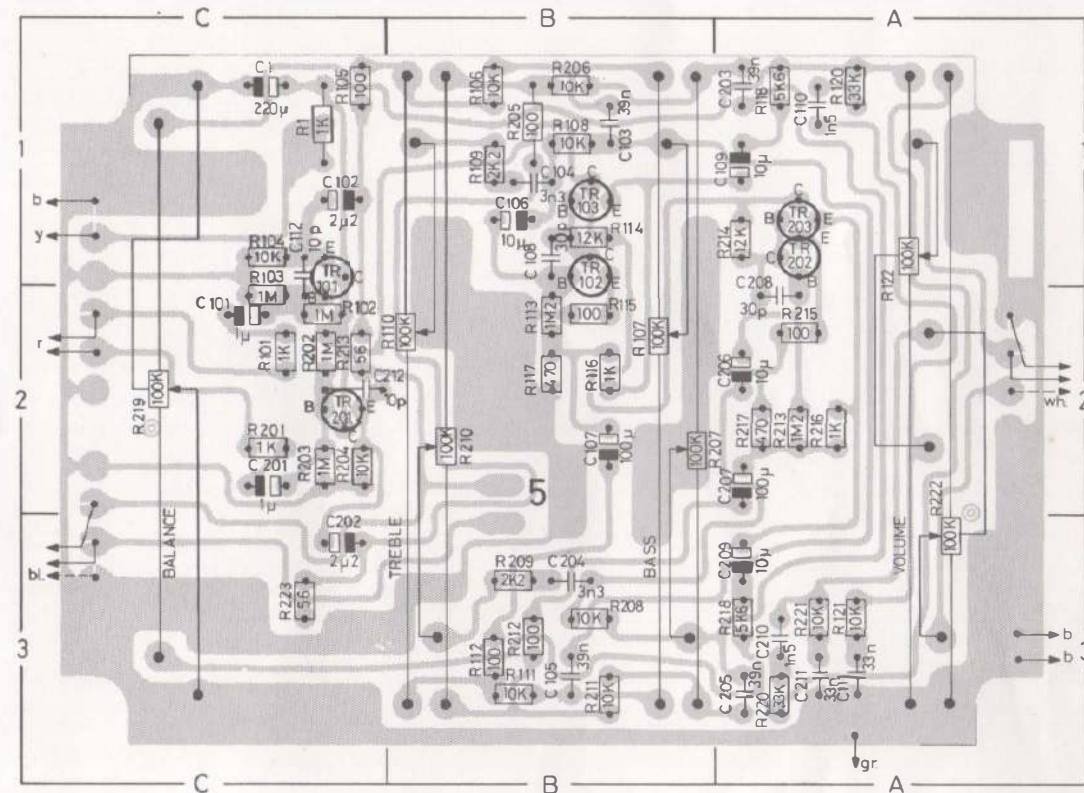
DIAGRAM 2



AM RF Section, 8002419, PC4



Volume and tone control, 8002420, PC5



FM Preset, 8002421, PC6

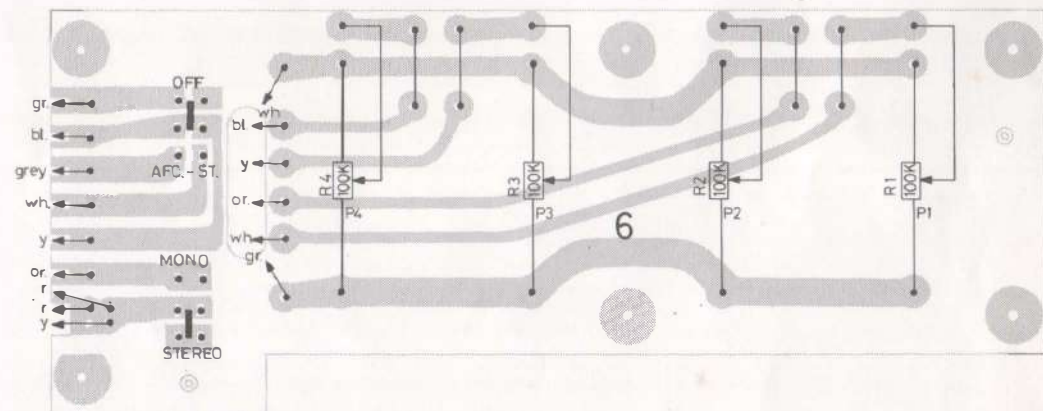
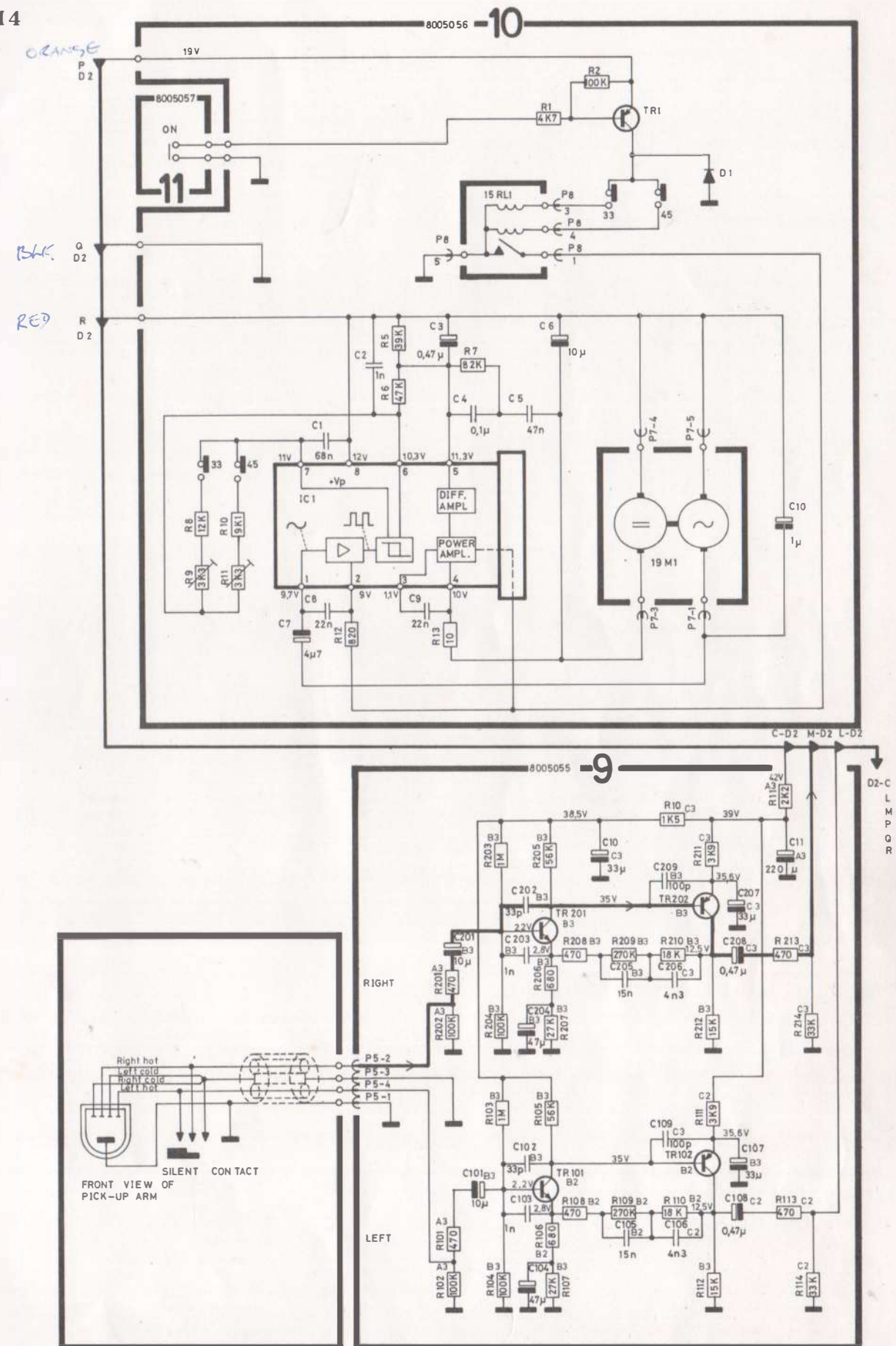


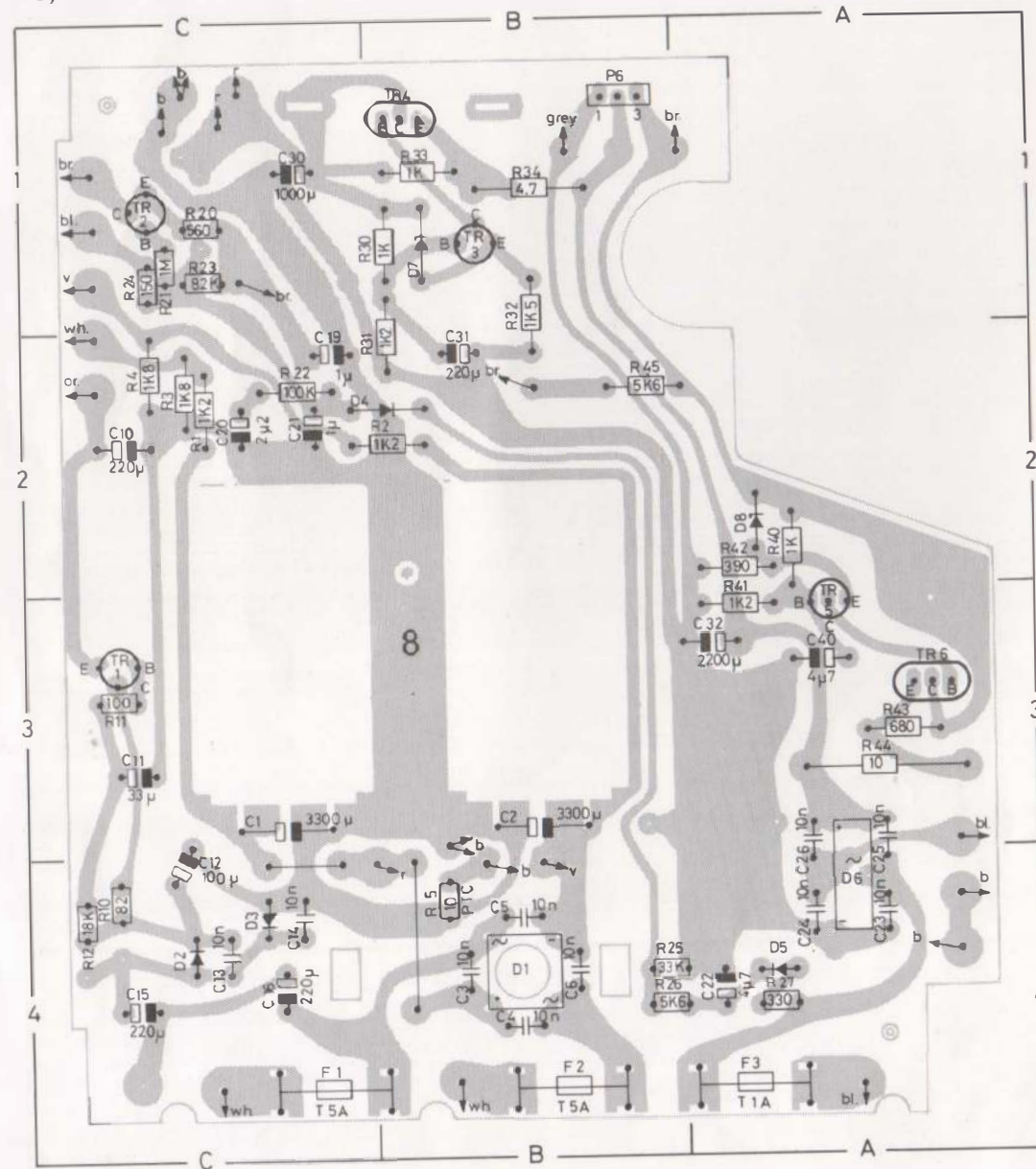
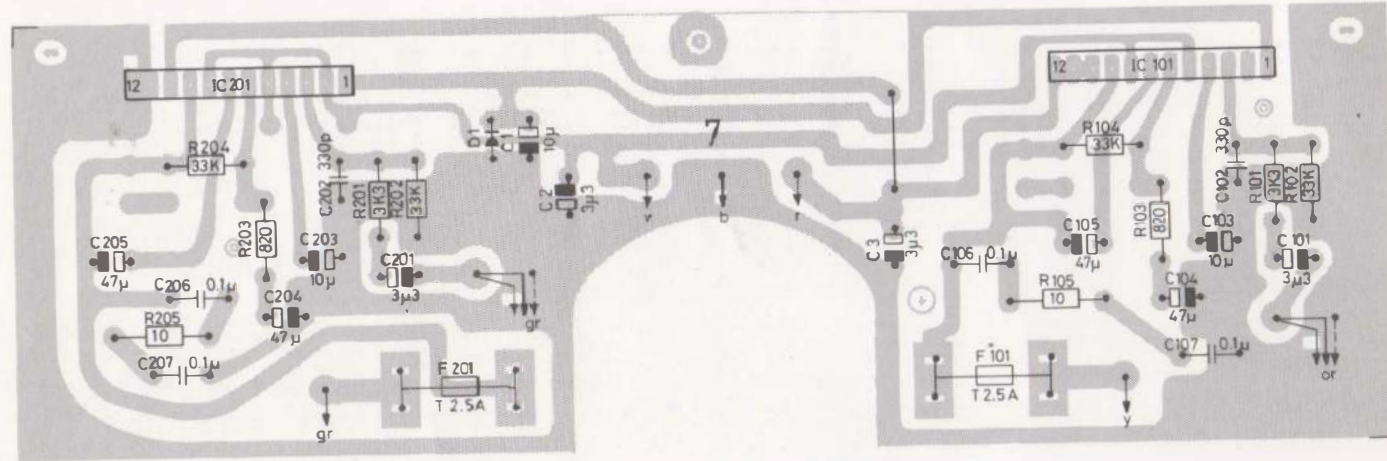
DIAGRAM 4



1-6

Bang & Olufsen

PC drawings are seen from copperfoil side

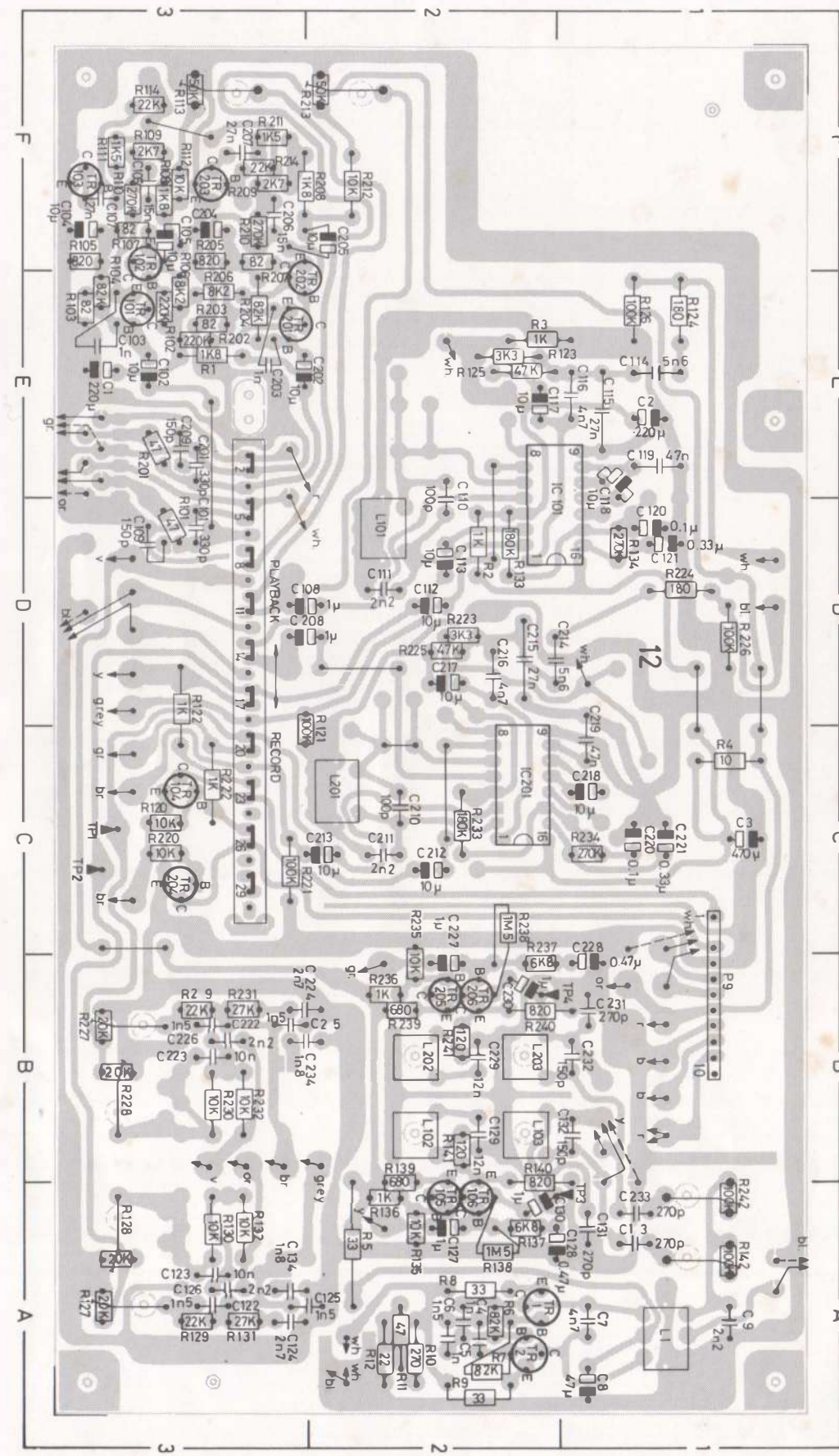


LIST OF TRANSISTORS AND IC's

17	20	27	32	103	109	119	126
							
127	128	129					
							

2TR1	8320459	27	2SC 460	9TR102/202	8320385	27	2SA836
						20	BC 560B
2TR2	8320152	27	2SA844				
		20	BC 557B	9TR105/205	8320108	27	2SC458
						20	BC 548B
2IC1	8340253	119	μPC 1167C				
2IC2	8340254	119	μPC 1161C	9IC1	8340255	103	μPC 4558
3IC1	8340196	119	TDA 1046	10TR1	8320316	17	2SB561
						20	BC 327-25
5TR101/201	8320458	27	2SC 1345				
5TR102/202		20	BC 550C	10IC1	8340108	109	1003C2
5TR103/203						109	MHN-3P2-RDS
7IC101/201	8340256	129	SI 1125H4	12TR1	8320295	17	2SD467
				12TR2		20	BC 337-25
8TR1	8320295	17	2SD467				
		20	BC 337-25	12TR101/201	8320458	27	2SC1344
						20	BC 550C
8TR2	8320069	27	2SA836				
		20	BC 559B	12TR102/202	8320221	27	2SC1335
						20	BC 549C
8TR3	8320108	27	2SC 458				
		20	BC 548B	12TR103/203	8320108	27	2SC458
				12TR104/204		20	BC 548B
8TR4	8320428	32	2SA738				
		32	BD 438	12TR105/205	8320385	27	2SA836
						20	BC 560B
8TR5	8320108	27	2SC 458				
		20	BC 548B	12TR106/206	8320108	27	2SC458
						20	BC 548B
8TR6	8320428	32	2SA738				
		32	BD438	12IC101/201	8340136	119	NE 646B
						119	NE 645B
9TR1	8320458	27	2SC1344				
		20	BC 550C	13IC1	8340258	126	LB1416
				13IC2			
9TR2	8320221	27	2SC1335				
		20	BC 549C	17TR1	8320295	17	2SC 1317
						20	BC 337-25
9TR101/201	8320458	27	2SC1344				
		20	BC 550C	17IC1	8340259	127	AN 6250
				17PE1	8340260	128	ON 1102

Tape Amplifier, 8004221, PC12



AM RF Section, 8002419, PC4

Volume and tone control, 8002420, PC5

FM Preset, 8002421, PC6

Power Amplifier, 8002422, PC7

Power Supply, 8002423, PC8

C18	4010062	330 pF ±10%	C19	4000049	15 pF ±2.5%
L1	8020346	RF LW	L4	8020350	468 kHz Parallel trap
L2	8020345	RF MW	L5	8020347	468 kHz IF
L3	8020349	468 kHz Series trap	L6	8020348	468 kHz IF
FE1	610001	Ferrit tube	BP1	8030015	468 kHz filter
FE2	6710001	Ferrit tube			
C1	4100123	130 pF ±2.5%	C7	4100128	330 pF ±5% 63V
C2	4340011	12 pF	C8	4340011	12 pF
C3	4003125	33 pF ±2% 63V	C9	4000061	5.6 pF ±0.25 pF 63V
C6	4200436	47µF 10V	C12	4011025	3.3 nF ±10%
L1	8020344	LW osc	L2	8020343	MW osc
R1	5010040	1 kohms ±5% 1/8W	R212	5010065	100 ohms ±5% 1/8W
R201	5010040	1 kohms ±5% 1/8W	R213	5010665	1.2 Mohms ±5% 1/8W
R202	5010054	1 Mohms ±5% 1/8W	R214	5010046	12 kohms ±5% 1/8W
R203	5010054	1 Mohms ±5% 1/8W	R215	5010065	100 ohms ±5% 1/8W
R204	5010059	10 kohms ±5% 1/8W	R216	5010040	1 kohms ±5% 1/8W
R205	5010065	100 ohms ±5% 1/8W	R217	5010058	470 ohms ±5% 1/8W
R206	5010059	10 kohms ±5% 1/8W	R218	5010041	5.6 kohms ±5% 1/8W
R207	5310097	100 kohms BASS	R219	5310100	100 kohms BALANCE
R208	5010059	10 kohms ±5% 1/8W	R220	5010075	33 kohms ±5% 1/8W
R209	5010064	2.2 kohms ±5% 1/8W	R221	5010059	10 kohms ±5% 1/8W
R210	5310097	100 kohms TREBLE	R222	5310098	100 kohms VOLUME
R211	5010059	10 kohms ±5% 1/8W	R223	5010151	56 ohms ±5% 1/8W
C1	4200441	220µF 25V	C207	4200438	100µF 16V
C201	4200425	1µF 50V	C208	4003125	30 pF ±2% 63V
C202	4200428	2.2µF 50V	C209	4200432	10µF 35V
C203	4130177	39 nF ±10% 63V	C210	4010067	1.5 nF ±10% 63V
C204	4011025	3.3 nF ±10% 100V	C211	4130176	33 nF ±10% 63V
C205	4130177	39 nF ±10% 63V	C212	4000016	10 pF ±2% 63V
C206	4200432	10µF 35V			
R1	5300109	100 kohms	R3	5300109	100 kohms
R2	5300109	100 kohms	R4	5300109	100 kohms
S1	7400221	AFC	S2	7400221	STEREO/MONO
R201	5010076	3.3 kohms ±5% 1/8W	R204	5010075	33 kohms ±5% 1/8W
R202	5010075	33 kohms ±5% 1/8W	R205	5010506	10 ohms ±5% 1/8W
R203	5010068	820 ohms ±5% 1/8W			
C1	4200431	10µF 16V	C203	4200432	10µF 35V
C2	4200429	3.3µF 50V	C204	4200436	47µF 10V
C3	4200429	3.3µF 50V	C205	4200437	47µF 35V
C201	4200429	3.3µF 50V	C206	4130179	0.1µF ±10% 63V
C202	4010062	330 pF ±10% 100V	C207	4130179	0.1µF ±10% 63V
F201	6600020	2.5A 250V slow			
R1	5010153	1.2 kohms ±5% 1/8W	R26	5010041	5.6 kohms ±5% 1/8W
R2	5010153	1.2 kohms ±5% 1/8W	R27	5010044	330 ohms ±5% 1/8W
R3	5010066	1.8 kohms ±5% 1/8W	R30	5010040	1 kohms ±5% 1/8W
R4	5010066	1.8 kohms ±5% 1/8W	R31	5010153	1.2 kohms ±5% 1/8W
R5	5230010	10 ohms PTC	R32	5010247	1.5 kohms ±5% 1/8W
R10	5001011	82 ohms ±10% 1/2W	R33	5010040	1 kohms ±5% 1/8W
R11	5010065	100 ohms ±5% 1/8W	R34	5000085	4.7 ohms ±10% 1/2W
R12	5010135	18 kohms ±5% 1/8W	R40	5010040	1 kohms ±5% 1/8W
R20	5010067	560 ohms ±5% 1/8W	R41	5010153	1.2 kohms ±5% 1/8W
R21	5010054	1 Mohms ±5% 1/8W	R42	5010070	390 ohms ±5% 1/8W
R22	5010049	100 kohms ±5% 1/8W	R43	5010144	680 ohms ±5% 1/8W
R23	5010091	82 kohms ±5% 1/8W	R44	5100023	10 ohms ±5% 1/8W
R24	5010057	150 ohms ±5% 1/8W	R45	5010041	5.6 kohms ±5% 1/8W
R25	5010075	33 kohms ±5% 1/8W			
C1	4200447	3300µF 50V	C3	4010091	10 nF -20+100% 100V
C2	4200447	3300µF 50V	C4	4010091	10 nF -20+100% 100V

LIST OF DIODES

203	208	209	215	217	219	223	
							
2D1	8300058	209	1S2076	8D7	8300201	209	RD 6.2E
2D2		215	IN4148	8D8		209	ZPD 6.2
2D3		217	SFD 184			209	BZX 79C6V2
2D4						209	BZX 83C6V2
2D6	8340252	219	μPC 574J	10D1	8300023	209	DS 135E
2D7	8300331	208	VD 1211			209	IN4002
7D1	8300201	209	RD 6.2 E	13D1	8330032	223	SLB26GGF
		209	ZPD 6.2	13D2			
		209	BZX 79C6V2	13D3			
		209	BZX 83C6V2	13D4			
				13D5			
8D1	8300330		S4VB-20	13D6	8330031	223	SLB26UR
8D2	8300023	209	1SR35-10	13D7			
8D3		209	IN4002	13D8			
8D4	8300058	209	1S 2076	13D9			
8D5		215	IN4148	16D1			
		217	SFD 184	17D1	8300023	209	ISR34-10
						209	IN4002
8D6	8300277		SIRBA 10	20D1	8330033	203	BR5504S
			VS 048				
			KBPC 1005				
			VH 048				

C5	4010091	10 nF -20+100% 100V	C21	4200425	1µF 50V
C6	4010091	10 nF -20+100% 100V	C22	4200430	4.7µF 50V
C10	4200443	220µF 50V	C23	4010091	10 nF -20+100% 100V
C11	4200435	33µF 50V	C24	4010091	10 nF -20+100% 100V
C12	4200439	100µF 50V	C25	4010091	10 nF -20+100% 100V
C13	4010091	10 nF -20+100% 100V	C26	4010091	10 nF -20+100% 100V
C14	4010091	10 nF -20+100% 100V	C30	4200445	1000µF 16V
C15	4200442	220µF 35V	C31	4200440	220µF 10V
C16	4200442	220µF 35V	C32	4200446	2200µF 25V
C19	4200425	1µF 50V	C40	4200430	4.7µF 50V
C20	4200428	2.2µF 50V			
F1	6600038	5A 250V slow	F3	6600006	1A 250V slow
F2	6600038	5A 250V slow			
P6	7220243	Plug 3 pins			
R1	5010153	1.2 kohms ±5% 1/8W	R210	5010135	18 kohms ±5% 1/8W
R2	5010049	100 kohms ±5% 1/8W	R211	5010069	3.9 kohms ±5% 1/8W
R3	5010045	47 kohms ±5% 1/8W	R212	5010053	15 kohms ±5% 1/8W
R4	5010120	220 kohms ±5% 1/8W	R213	5010058	470 ohms ±5% 1/8W
R5	5010053	15 kohms ±5% 1/8W	R214	5010075	33 kohms ±5% 1/8W
R6	5010298	2.7 kohms ±5% 1/8W	R220	5010048	4.7 kohms ±5% 1/8W
R7	5010041	5.6 kohms ±5% 1/8W	R221	5010048	4.7 kohms ±5% 1/8W
R10	5010247	1.5 kohms ±5% 1/8W	R222	5010059	10 kohms ±5% 1/8W
R11	5010064	2.2 kohms ±5% 1/8W	R223	5010063	150 kohms ±5% 1/8W
R201	5010058	470 ohms ±5% 1/8W	R224	5010073	390 kohms ±5% 1/8W
R202	5010049	100 kohms ±5% 1/8W	R225	5010040	1 kohms ±5% 1/8W
R203	5010054	1 Mohms ±5% 1/8W	R230	5010052	6.8 kohms ±5% 1/8W
R204	5010049	100 kohms ±5% 1/8W	R231	5010059	10 kohms ±5% 1/8W
R205	5010061	56 kohms ±5% 1/8W	R232	5010059	10 kohms ±5% 1/8W
R206	5010144	680 kohms ±5% 1/8W	R233	5010117	330 kohms ±5% 1/8W
R207	5010141	27 kohms ±5% 1/8W	R234	5010448	22 ohms ±5% 1/8W
R208	5010058	470 ohms ±5% 1/8W	R240	5010040	1 kohms ±5% 1/8W
R209	5010083	270 kohms ±5% 1/8W			
C1	4200430	4.7µF 25V	C202	4003125	33 pF ±2% 63V
C2	4000026	22 pF ±2% 63V	C203	4010027	1 nF ±10% 100V
C3	4200424	0.47µF 50V	C204	4200436	47µF 10V
C4	4200433	10µF 50V	C205	4130173	15 nF ±10% 63V
C6	4200430	4.7µF 25V	C206	4100158	4.3 nF ±2.5% 63V
C7	4200430	4.7µF 25V	C207	4200435	33µF 50V
C10	4200435	33µF 50V	C208	4200424	0.47µF 50V
C11	4200443	220µF 50V	C209	4003136	100 pF ±5%
C201	4200431	10µF 16V			
	7210275	Socket DIN		7210277	Jake - socket
	7210276	Socket W/switch	P5	7220244	Plug 4 pol.
R1	5010048	4.7 kohms ±5% 1/8W	R9	5370237	3.3 kohms ±20%
R2	5010049	100 kohms ±5% 1/8W	R10	5020152	9.1 kohms ±1% 1/8W
R5	5010060	39 kohms ±5% 1/8W	R11	5370237	3.3 kohms ±20%
R6	5010045	47 kohms ±5% 1/8W	R12	5010068	820 ohms ±5% 1/8W
R7	5010091	82 kohms ±5% 1/8W	R13	5001001	10 ohms ±50% 1/2W
R8	5020139	12 kohms ±1% 1/8W			
C1	4100098	68 nF ±2.5%	C6	4200431	10µF 16V
C2	4010027	1 nF ±10% 100V	C7	4200430	4.7µF 25V
C3	4201058	0.47µF 16V	C8	4010060	22 nF -20+80% 40V
C4	4130179	0.1µF ±10% 63V	C9	4010060	22 nF -20+80% 40V
C5	4130178	47 nF ±10% 63V	C10	4200425	1µF 50V
P7	7220245	Plug 5/4 pins	P8	7220245	Plug 5/4 pins
11Modul	8005057	Phono ON		7400217	Switch 33/45
R1	5010066	1.8 kohms ±5% 1/8W	R9	5010253	33 ohms ±5% 1/8W
R2	5010040	1 kohms ±5% 1/8W	R10	5010000	270 ohms ±5% 1/8W
R3	5010040	1 kohms ±5% 1/8W	R11	5010411	47 ohms ±5% 1/8W
R4	5010506	10 ohms ±5% 1/8W	R12	5010448	22 ohms ±5% 1/8W
R5	5002006	33 ohms ±5% 1/8W	R201	5010411	470 ohms ±5% 1/8W
R6	5010091	82 kohms ±5% 1/8W	R202	5010120	220 kohms ±5% 1/8W
R7	5010091	82 kohms ±5% 1/8W	R203	5010056	82 ohms ±5% 1/8W
R8	5010253	33 ohms ±5% 1/8W	R204	5010091	82 kohms ±5% 1/8W

Phono and Microphone Amplifier, 8005055, PC9

Phono Motor Control, 8005056, PC10

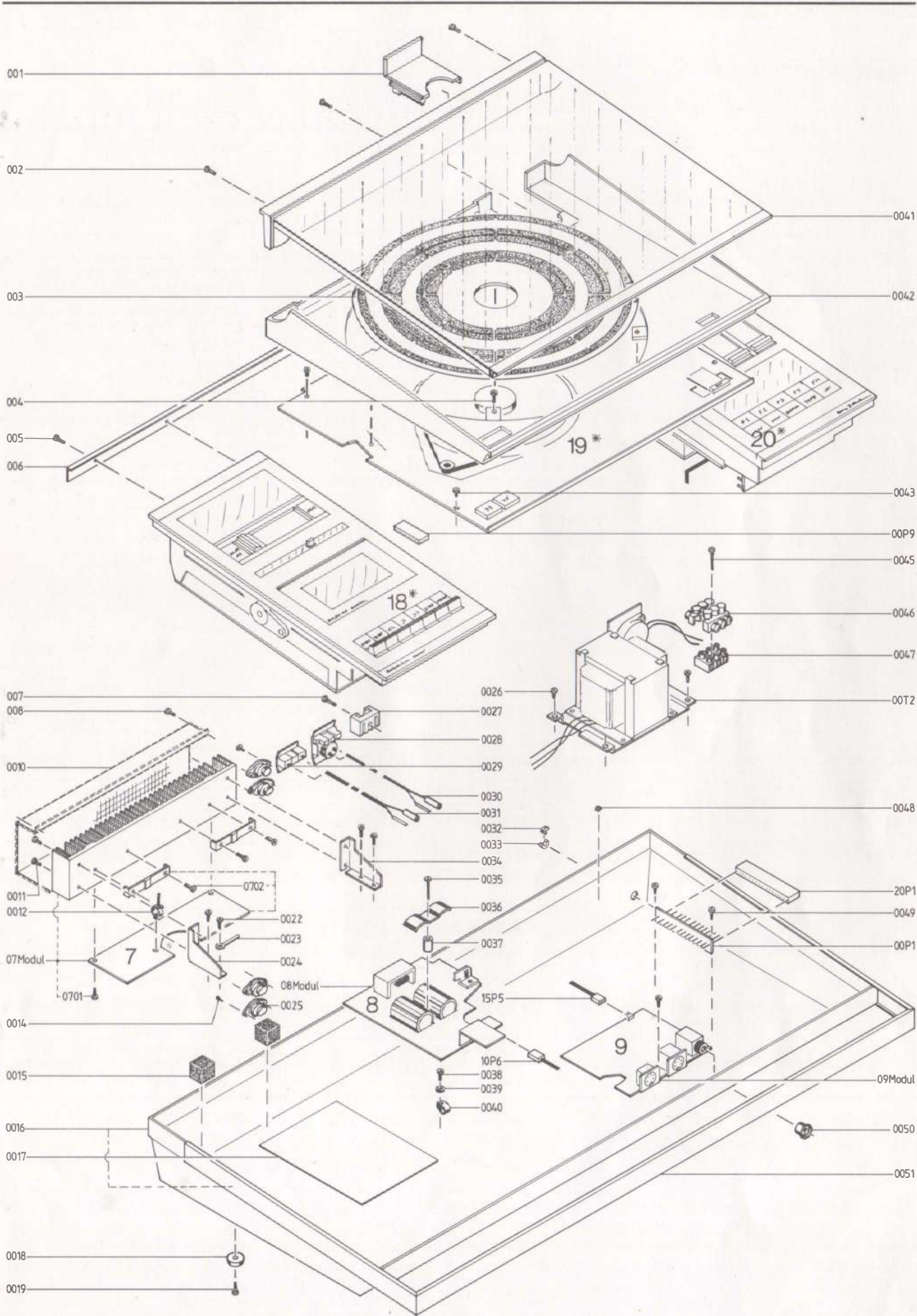
Tape Amplifier, 8004221, PC12

LIST OF ELECTRICAL PARTS

FM Section, 8002417, PC2

R1	5010065	100 ohms ±5% 1/8W	R32	5010053	15 kohms ±5% 1/8W
R2	5010058	470 ohms ±5% 1/8W	R33	5370227	5 kohms ±20%
R4	5010058	470 ohms ±5% 1/8W	R34	4310016	100 kohms FM tuning
R5	5010059	10 kohms ±5% 1/8W	R35	5370226	1 kohms ±20%
R6	5010066	1.8 kohms ±5% 1/8W	R36	5370229	20 kohms ±20%
R7	5010154	8.2 kohms ±5% 1/8W	R37	5010077	470 kohms ±5% 1/8W
R8	5010044	330 ohms ±5% 1/8W	R38	5010077	470 kohms ±5% 1/8W
R9	5010066	1.8 kohms ±5% 1/8W	R39	5010053	15 kohms ±5% 1/8W
R10	5010154	8.2 kohms ±5% 1/8W	R40	5010053	15 kohms ±5% 1/8W
R11	5010049	100 kohms ±5% 1/8W	R45	5010040	1 kohms ±5% 1/8W
R12	5010044	330 ohms ±5% 1/8W	R46	5010053	15 kohms ±5% 1/8W
R13	5010049	100 kohms ±5% 1/8W	R47	5370227	5 kohms ±20%
R14	5010247	1.5 kohms ±5% 1/8W	R48	5010060	39 kohms ±5% 1/8W
R15	5010059	10 kohms ±5% 1/8W	R49	5010045	47 kohms ±5% 1/8W
R16	5370228	10 kohms ±20%	R50	5010076	3.3 kohms ±5% 1/8W
R17	5010611	150 ohms ±5% 1/8W	R51	5010045	47 kohms ±5% 1/8W
R18	5010064	2.2 kohms ±5% 1/8W	R52	5010059	10 kohms ±5% 1/8W
R19	5010064	2.2 kohms ±5% 1/8W	R53	5010076	3.3 kohms ±5% 1/8W
R20	5010061	56 kohms ±5% 1/8W	R54	5370230	220 kohms ±20%
R21	5010045	47 kohms ±5% 1/8W	R55	5010079	22 kohms ±5% 1/8W
R22	5010079	22 kohms ±5% 1/8W	R56	5010079	22 kohms ±5% 1/8W
R23	5010064	2.2 kohms ±5% 1/8W	R57	5010059	10 kohms ±5% 1/8W
R24	5010048	4.7 kohms ±5% 1/8W	R58	5010076	3.3 kohms ±5% 1/8W
R25	5010040	1 kohms ±5% 1/8W	R59	5010076	3.3 kohms ±5% 1/8W
R31	5010128	120 ohms ±5% 1/8W	R60	5000192	8.2 ohms ±10% 1/2W
C1	4010060	22 nF -20+80% 40V	C23	4200425	1µF 50V
C2	4010060	22 nF -20+80% 40V	C31	4003136	100 pF ±2% 63V
C3	4010041	10 nF -20+80% 40V	C32	4010060	22 nF -20+80% 40V
C4	4010041	10 nF -20+80% 40V	C33	4200426	1µF 50V
C5	4010041	10 nF -20+80% 40V	C34	4200426	1µF 50V
C6	4200424	0.47µF 50V	C35	4130178	47 nF ±10% 63V
C7	4030015	47 nF -20+80% 16V	C45	4200464	0.33µF 35V
C8	4010060	22 nF -20+80% 40V	C46	4100073	470 pF ±5% 63V
C9	4010060	22 nF -20+80% 40V	C47	4130186	0.22µF ±10% 63V
C10	4010060	22 nF -20+80% 40V	C48	4130179	0.1µF ±10% 63V
C11	4010060	22 nF -20+80% 40V	C49	4130178	47 nF ±10% 63V
C12	4200169	0.1µF ±20% 35V	C50	4200425	1µF 50V
C13	4010060	22 nF -20+80% 40V	C51	4200425	1µF 50V
C14	4010060	22 nF -20+80% 40V	C52	4200431	10µF 16V
C15	4010060	22 nF -20+80% 40V	C53	4010024	470 pF ±10% 100V
C16	4200424	0.47µF 50V	C54	4200425	1µF 50V
C17	4003125	33 pF ±2% 63V	C55	4010027	1 nF ±10% 100V
C18	4200425	1µF 50V	C56	4010027	1 nF ±10% 100V
C19	4010060	22 nF -20+80% 40V	C57	4200438	100µF 16V
C20	4200429	3.3µF 25V	C58	4200431	10µF 16V
C21	4100052	270 pF ±2.5%	C59	4010024	470 pF ±10% 100V
C22	4100144	300 pF 63V	C65	4310016	2x335 pF
L1	8020351	RF choke	L4	8020362	Det. sec.
L2	8020353	RF choke 3.3µH	L5	8020356	Det. prim.
L3	8020355	RF choke 18 pH	L6	8020352	114 kHz trap
BP1	8030016	10.7 MHz cer. filter	LP1	8030018	19/38 kHz filter
BP2	8030016	10.7 MHz cer. filter	LP2	8030018	19/38 kHz filter
P1	7220140	Plug 15/16 pins	P3	7220115	Plug 6/7 pins
P2	7220242	Plug 3 pins			
R1	5010448	22 ohms ±5% 1/8W	R3	5010141	27 kohms ±5% 1/8W
R2	5010048	4.7 kohms ±5% 1/8W			
C1	4000016	10 pF ±2.5%	C10	4130178	47 nF ±10% 63V
C3	4340010	8 pF	C11	4000016	10 pF ±2.5% 63V
C4	4340010	8 pF	C12	4010060	22 nF -20+80% 40V
C5	4130179	100 nF ±10%	C13	4130179	100 nF ±10% 63V
C6	4200436	47µF 16V	C14	4130179	100 nF ±10% 63V
C7	4003136	100 pF ±2.5% 63V	C15	4200434	22µF 10V
C8	4101026	4.7 nF ±5% 63V	C16	4200434	22µF 10V
C9	4000079	120 pF ±5% 63V	C17	4130179	100 nF ±10% 63V

AM IF and Switch section, 8002418, PC3



REC-Level Indicator,
8004222, PC13

Autostop, 8004223, PC17

R205	5010068	820 ohms ±5% 1/8W	R227	5370153	20 kohms 20%
R206	5010154	8.2 kohms ±5% 1/8W	R228	5370153	20 kohms 20%
R207	5010056	82 ohms ±5% 1/8W	R229	5010079	22 kohms ±5% 1/8W
R208	5010066	1.8 kohms ±5% 1/8W	R230	5010059	10 kohms ±5% 1/8W
R209	5010298	2.7 kohms ±5% 1/8W	R231	5010141	27 kohms ±5% 1/8W
R210	5010083	270 kohms ±5% 1/8W	R232	5010059	10 kohms ±5% 1/8W
R211	5010247	1.5 kohms ±5% 1/8W	R233	5010072	180 kohms ±5% 1/8W
R212	5010059	10 kohms ±5% 1/8W	R234	5010083	270 kohms ±5% 1/8W
R213	5370061	50 kohms 20%	R235	5010059	10 kohms ±5% 1/8W
R214	5010079	22 kohms ±5% 1/8W	R236	5010040	1 kohms ±5% 1/8W
R220	5010059	10 kohms ±5% 1/8W	R237	5010052	6.8 kohms ±5% 1/8W
R221	5010049	100 kohms ±5% 1/8W	R238	5010093	1.5 Mohms ±5% 1/8W
R222	5010040	1 kohms ±5% 1/8W	R239	5010144	680 ohms ±5% 1/8W
R223	5010265	3.3 kohms ±2% 1/8W	R240	5010068	820 ohms ±5% 1/8W
R224	5010362	180 ohms ±5% 1/8W	R241	5010128	120 kohms ±5% 1/8W
R225	5010048	4.7 kohms ±5% 1/8W	R242	5370128	100 kohms ±20%
R226	5010049	100 kohms ±5% 1/8W			

C1	4200440	220µF 16V	C214	4100049	5.6 nF ±1%
C2	4200440	220µF 16V	C215	4130180	27 nF ±1% 63V
C3	4200444	470µF 16V	C216	4100059	4.7 nF ±1%
C4	4010027	1 nF ±10% 100V	C217	4200431	10µF 16V
C5	4010027	1 nF ±10% 100V	C218	4200431	10µF 16V
C6	4010067	1.5 nF ±10% 63V	C219	4130178	47 nF ±10% 63V
C7	4102091	4.7 nF ±5% 160V	C220	4130179	1µF ±10% 63V
C8	4200436	47µF 16V	C221	4200464	0.33µF 16V
C9	4100145	2.2 nF ±5% 160V	C222	4010067	1.5 nF ±10% 63V
C201	4010062	330 pF ±10% 100V	C223	4130172	10 nF ±20% 63V
C202	4200431	10µF 16V	C224	4010065	2.7 nF ±10% 63V
C203	4010027	1 nF ±10% 100V	C225	4010067	1.5 nF ±10% 63V
C204	4200431	10µF 16V	C226	4010061	2.2 nF ±10% 63V
C205	4200431	10µF 16V	C227	4200425	1µF 50V
C206	4130173	15 nF ±20% 63V	C228	4201058	0.47µF 16V
C207	4130175	27 nF ±20% 63V	C229	4130174	12 nF ±10% 63V
C208	4200425	1µF 50V	C230	4200426	1µF 50V
C209	4000094	150 pF ±5% 63V	C231	4010081	270 pF ±10% 100V
C210	4003128	100 pF ±5% 63V	C232	4101034	150 pF ±2.5% 63V
C211	4100029	2.2 nF ±5% 63V	C233	4010081	270 pF ±10% 100V
C212	4200431	10µF 16V	C234	4010067	1.8 nF ±10%
C213	4200431	10µF 16V			

L1	8020360	Bias osc.	L202	8020359	Trap 6 mH
L201	8020357	Trap 23 mH	L203	8020358	Trap 15 mH

P9	7220182	Plug 10/9 pins	7400222	REC switch
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R1	5010045	47 kohms ±5% 1/8W	R10	5010506	10 ohms ±5% 1/8W
R2	5010045	47 kohms ±5% 1/8W	R11	5010506	10 ohms ±5% 1/8W
R3	5010059	10 kohms ±5% 1/8W	R12	5010039	68 ohms ±5% 1/8W
R4	5010059	10 kohms ±5% 1/8W	R13	5010039	68 ohms ±5% 1/8W
R5	5010049	100 kohms ±5% 1/8W	R14	5010039	68 ohms ±5% 1/8W
R6	5370153	20 kohms ±20%	R15	5010035	18 kohms ±5% 1/8W
R7	5010506	10 ohms ±5% 1/8W	R16	5010053	15 kohms ±5% 1/8W
R8	5010506	10 ohms ±5% 1/8W	R17	5010068	820 ohms ±5% 1/8W
R9	5010506	10 ohms ±5% 1/8W			

C1	4200430	47µF 25V	C3	4200430	47µF 25V
C2	4200430	47µF 25V	C4	4200431	10µF 16V

R1	5010067	560 ohms ±5% 1/8W	R3	5010077	470 kohms ±5% 1/8W
R2	5010059	10 kohms ±5% 1/8W			

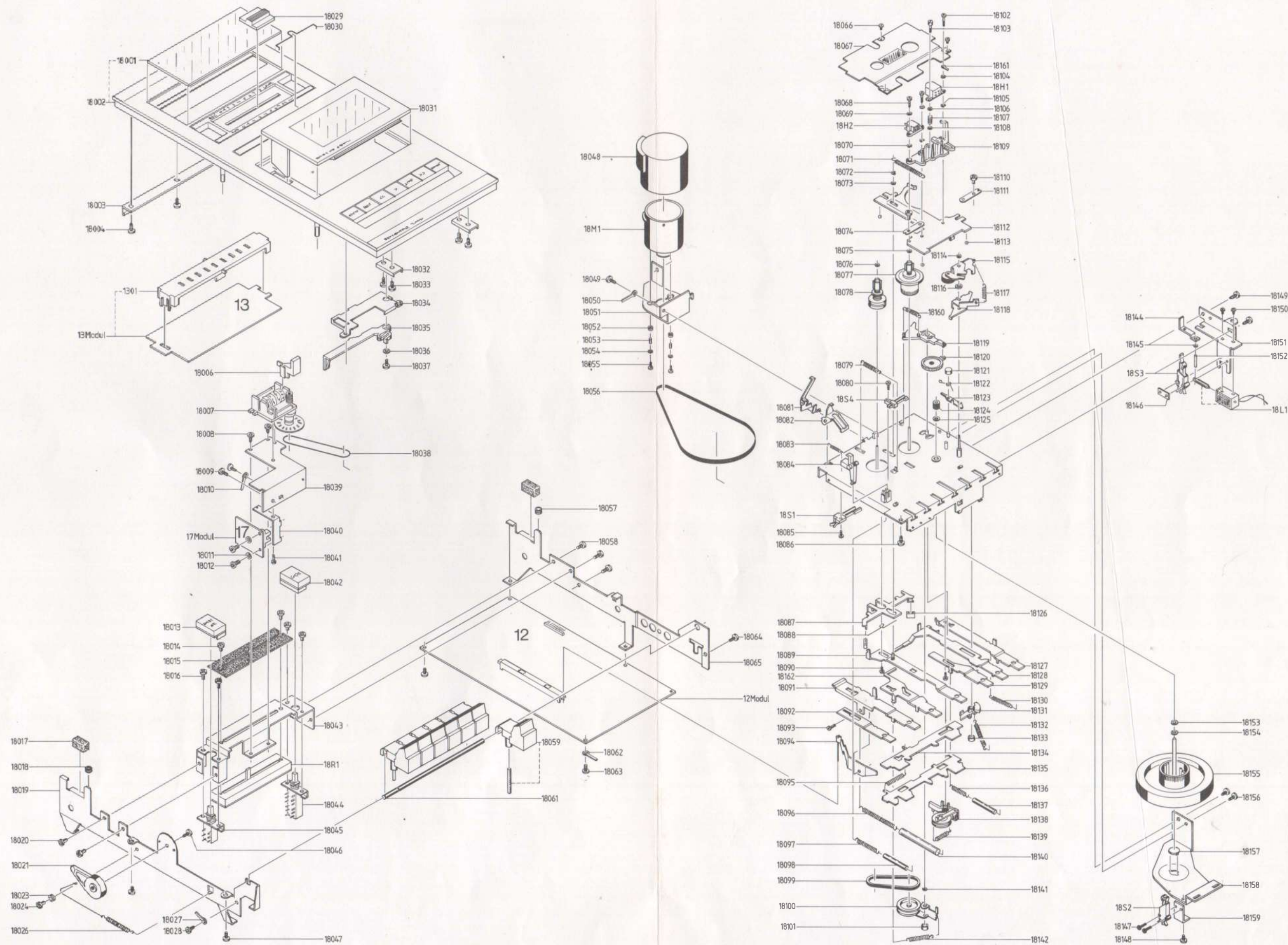
C1	4130188	0.22µF ±10% 63V			
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Module 18, Tape recorder

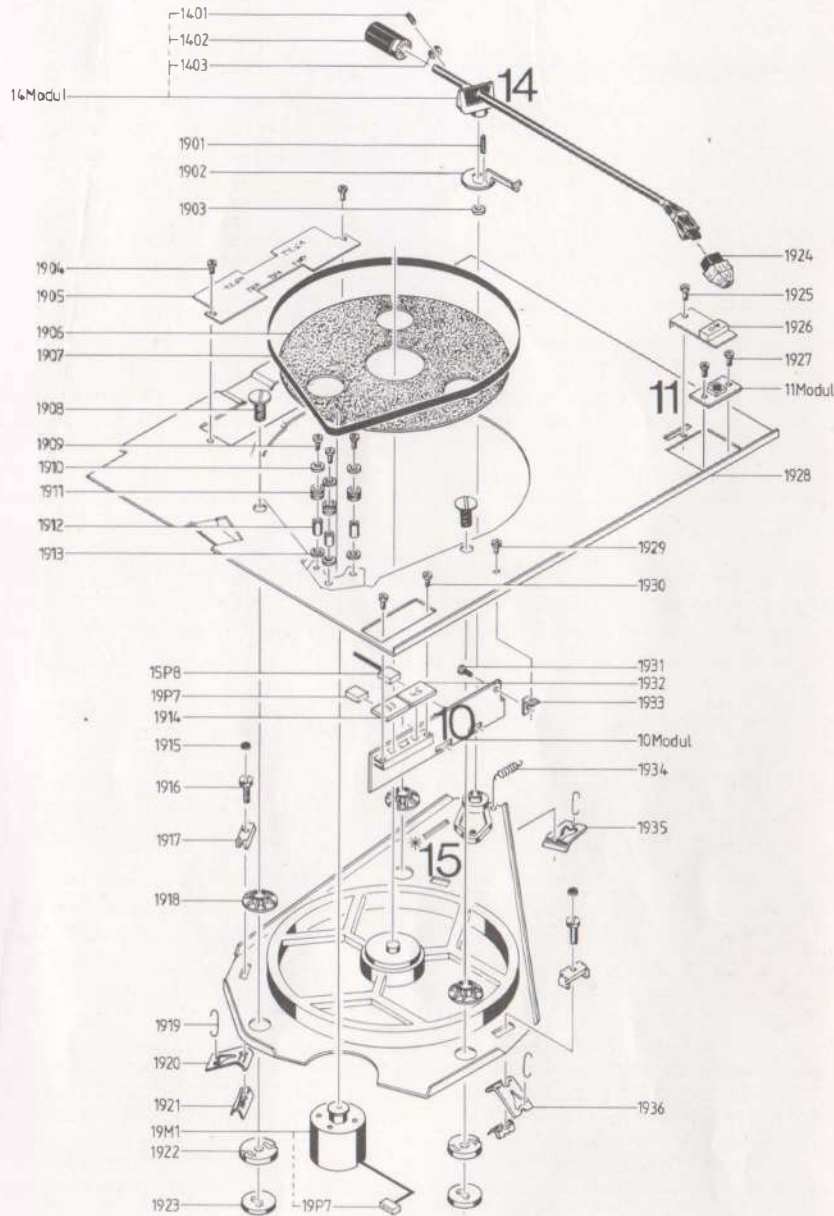
12Modul	8004221	PC, tape amplifier
13Modul	8004222	PC, recording level
1301	3131203	Housing
17Modul	8004223	PC, autostop
18001	3191134	Dial glass
18002	3430234	Operating panel
18003	2548187	Bracket
18004	2013208	Screw 2.9x9.5
18006	2775842	Counter button
18007	3370133	Counter
18008	2015095	Screw 2.9x6.5
18009	2015095	Screw 2.9x6.5
18010	7530097	Solder tag
18011	2622014	Fibre washer
18012	2039908	Screw M3x10
18013	2775777	Button DOLBY NR
18014	2039026	Screw M3x4 black
18015	3912043	Felt
18016	2039026	Screw M3x4 black
18017	3917048	Foam
18018	2932096	Rubber bushing
18019	2548189	Side plate
18020	2015095	Screw 2.9x6.5
18021	3130064	Damping system
18023	2724060	Cord washer
18024	2013201	Screw 2.9x6.5
18026	2810129	Spring with cord
18027	7530097	Solder tag
18028	2015095	Screw 2.9x6.5
18029	2775766	Button
18030	2819159	Spring
18031	3164386	Lid
18032	2641098	Clamp
18033	2013208	Screw 2.9x9.5
18034	2542565	Holder
18035	2854078	Arm
18036	2622218	Washer
18037	2013109	Screw 2.9x6.5
18038	2732053	Belt
18039	2542550	Bracket
18040	2542551	Bracket
18041	2013114	Screw 2.5x6.5
18042	2775778	Button CrO ₂
18043	2542566	Bracket
18044	7400220	Switch
18045	7400219	Switch
18046	2015095	Screw 2.9x6.5
18047	2039908	Screw M3x10
18048	2932094	Rubber sleeve
18049	2015095	Screw 2.9x6.5
18050	7530097	Solder tag
18051	2542548	Bracket
18052	2932096	Rubber bushing
18053	2624048	Brass bushing
18054	2624050	Washer
18055	2036031	Screw M2.6x8
18056	2732051	Belt
18057	2932096	Rubber bushing
18058	2015095	Screw 2.9x6.5
18059	2775843	Button
18061	2831042	Shaft
18062	7530097	Solder tag
18063	2039903	Screw M3x5
18064	2015095	Screw 2.9x6.5
18065	2548190	Side plate
18066	2034915	Screw M2x4 black
18067	3168129	Cover plate
18068	2034055	Screw
18069	2624051	Washer
18070	2624052	Adjusting screw 0.1 mm
	2624053	Adjusting screw 0.2 mm
	2624054	Adjustment screw 0.3 mm
18071	2810122	Spring
	18072	2390082 E-ring
	18073	2622318 Plastic screw
	18074	2816182 Bronze spring
	18075	2622312 Lock washer, plastic
	18076	2622312 Lock washer, plastic
	18077	2726128 Take-up reel
	18078	2726129 Take-up reel
	18079	2810121 Spring
	18080	2034059 Screw M2x6
	18081	2816183 Spring
	18082	2853076 Arm, recording lock
	18083	2810114 Spring
	18084	2853077 Arm
	18085	2034059 Screw M2x6
	18086	2015095 Screw 2.9x6.5
	18087	2853089 Brake arm
	18088	2810115 Spring
	18089	2053082 Arm >
	18090	2034057 Screw
	18091	2853080 Arm REC
	18092	2853086 Arm EJECT
	18093	2034058 Screw M2x4
	18094	3031062 Connecting arm REC
	18095	2810116 Spring
	18096	2810127 Spring
	18097	2810119 Spring
	18098	3951016 Plastic tube, 30 mm
	18099	2732052 Belt
	18100	2804044 Idle wheel
	18101	2932097 Bushing
	18102	2034055 Screw
	18103	2034056 Screw
	18104	2624046 Washer
	18105	2624052 Adjusting washer 0.1 mm
		2624053 Adjusting washer 0.2 mm
		2624054 Adjusting washer 0.3 mm
	18106	2624049 Washer
	18107	2810124 Spring
	18108	2624047 Washer
	18109	3152298 Holder
	18110	2013113 Screw 2.5x6.5
	18111	2816182 Bronze spring
	18112	2853078 Tapehead bridge
	18113	2917019 Ball
	18114	2622315 Lock washer, plastic
	18115	2804042 Pressure wheel arm
	18116	2622319 Plastic washer
	18117	2810123 Spring
	18118	2853074 Arm
	18119	2853075 Arm
	18120	2804043 Idle wheel
	18121	2932097 Plastic bushing
	18122	2810126 Spring
	18123	2853072 Arm
	18124	2794084 Rubber bushing
	18125	2622314 Plastic washer
	18126	2938170 Brake shoe
	18127	2853087 Arm PAUSE
	18128	2853079 Arm >>
	18129	2853083 Arm STOP
	18130	2810120 Spring
	18131	2853073 Arm
	18132	2810125 Spring
	18133	2932097 Bushing
	18134	2853084 Arm
	18135	2853085 Arm
	18136	2810120 Spring
	18137	3951016 Plastic tube 30 mm
	18138	2750024 Coupling
	18139	2810117 Spring

MECHANICAL PARTS LIST
Module 00

001	3430237	Cover	0032	2641062	Lock for mains lead
002	2039027	Screw M3x6 black	0033	2641061	Bushing for mains lead
003	2726126	Turntable	0034	2542464	Bracket
004	2013205	Screw 2.9x16	0035	2013022	Screw 3x25
005	2039028	Screw M3x3 black	0036	2515035	Clamp
006	2566048	Rail	0037	2938181	Bushing
007	2039030	Screw M3x10 black	0038	2013208	Screw 2.9x9.5
008	2039027	Screw M3x6 black	0039	2622218	Washer
0010	3444123	Grid	0040	2515036	Clamp for leads
0011	2039028	Screw M3x8 black	0041	3164398	Dust cover
0012	3152307	Wire holder	0042	3430236	Panel
0014	2036032	Screw M2.6x10 black	0043	2039028	Screw M3x8
0015	3917047	Foam	0045	2013205	Screw 2.9x16
0016	3430232	Bottom, teak	0046	3172087	Insulation
	3430233	Bottom, rosewood	0047	7505006	Joining sleeve
0017	3172086	Screen	0048	2380011	Nut M3
0018	3035030	Rubber foot	0049	2013208	Screw 2.9x9.5
0019	2016001	Screw 4x12	0050	2938182	Bushing
0022	2013109	Screw 2.9x7.9	0051	3413591	Cabinet, teak
0023	7530097	Solder tag		3413593	Cabinet, rosewood
0024	2542563	Bracket	00P1	7505013	Plug
0025	7210278	Socket for loudspeaker	00P9	7210119	Socket/housing 10/9 pol.
0026	2015903	Screw 3.5x9		7500114	Contact pin
0027	3152195	Holder for aerial			
0028	7210089	Socket FM	00T2	8013246	Mains transformer complete
0029	7210100	Socket AM		7400119	Voltage switch
0030	6273954	Lead with plug		3130063	Housing for voltage switch
0031	6273954	Lead with plug		3172088	Insulation
07Modul	8002422	PC, output amplifier	0702	2013204	Screw 2.9x13
0701	2013202	Screw 2.9x9.5			
08Modul	8002423	PC, power supply			
	6140756	PC board for el. capacitor			
09Modul	8005055	PC, phono amplifier			
10P6	6273955	Set of wires, with socket			
15P5	6270214	Set of wires with socket			
20P1	7210302	Socket/housing 14/13 pol.			



Module 19, gramophone



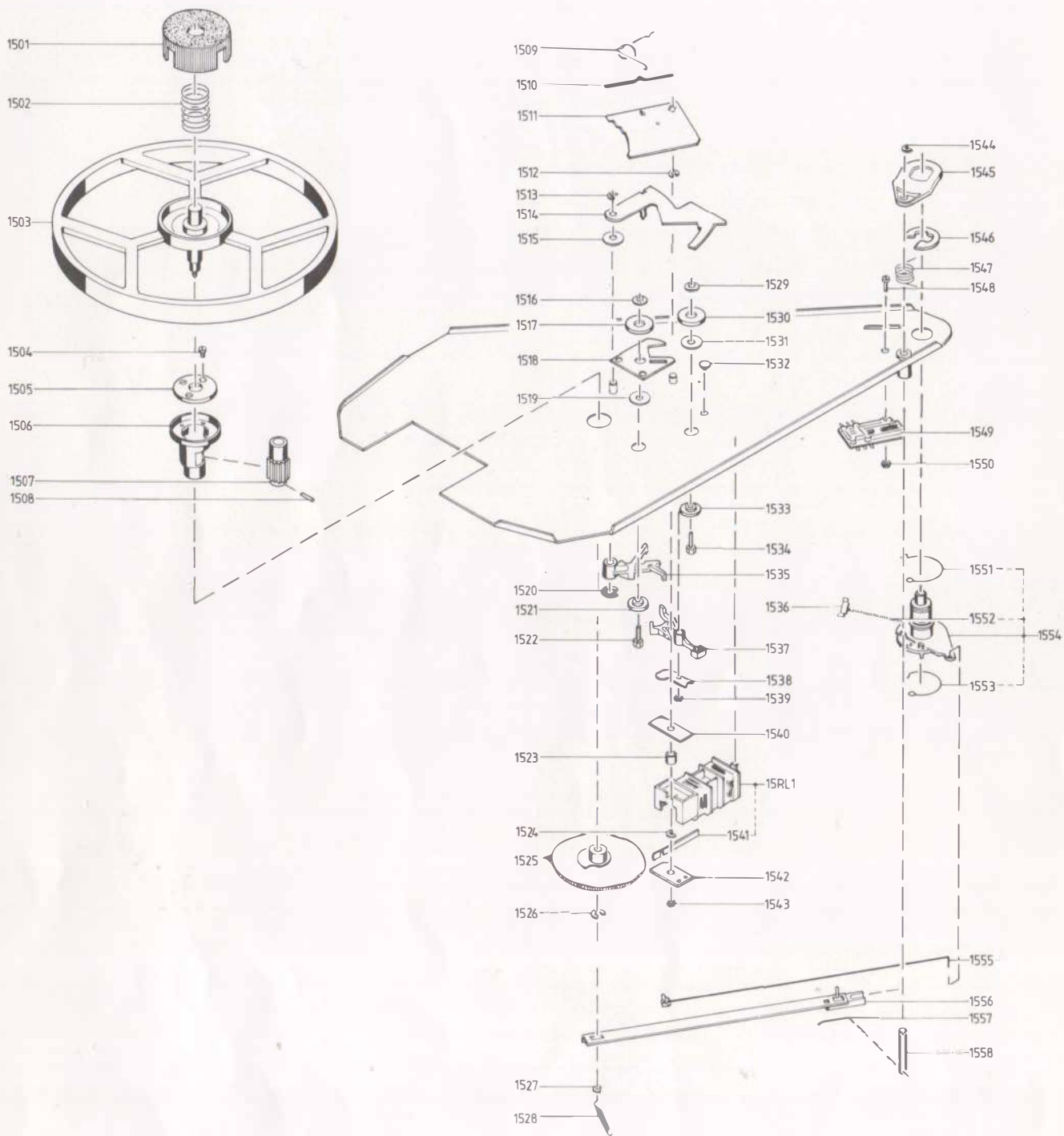
10Modul 8005056 PC, Motor Control

11Modul 8005057 PC, ON

14Modul 2850101	Pickup arm	1402	3342076	Counterweight	
1401	2070034	Threaded pin M3x5	1403	2576114	Adjusting bushing

15P8 6273872 Set of wires with socket

1901	2072101	Lifting screw	1914	2775779	Button 33	1926	2775781	Button ON
1902	2854076	Lifting arm	1915	3180767	Washer	1927	2039027	Screw M3x6 black
1903	2622190	Washer	1916	2042209	Screw M4x10	1928	3110028	Chassis
1904	2039008	Screw M3x6	1917	2640031	Clamp	1929	2039008	Screw M3x6
1905	3162146	Cover	1918	2938129	Bushing	1930	2039027	Screw M3x6 black
1906	2622264	Cover washer	1919	2514028	Hook	1931	2039008	Screw M3x6
1907	2732037	Belt	1920	2815012	Spring	1932	2775780	Button 45
1908	2046910	Screw	1921	2640032	Clamp	1933	2530405	Bracket
1909	2036031	Screw M2.6x8	1922	2938100	Bushing	1934	2810090	Spring
1910	2622271	Washer	1923	2622228	Washer	1935	2815007	Spring
1911	2938137	Rubber bushing	1924	8954640	Pickup MMC 20S (replacement)	1936	2815012	Spring
1912	2930074	Brass bushing	1925	2039008	Screw M3x6	19M1	8400098	Motor with pulley and socket
1913	2622271	Washer				19P7	7210115	Socket/housing 5/4 pol. Contact pin
							7500114	



Module 20, radio section

01	Modul 8050077	Tuner			
02	Modul 8002417	PC, FM	0202	6140830	PC board, side
02C65	4310016	Variable capacitor	0203	6140830	PC board, side
0201	6140831	PC board, front	0204	3152308	Wire holder
03	Modul 8002418	PC 3 and 4 complete push-buttons	03P2	6273956	Set of wires with socket
03P1	7210174	Socket/housing 15/16 pol.	03P3	7210116	Socket/housing 7/6 pol.
			03S1	7450055	Mains switch with wires
05	Modul 8002420	PC, tone control			
06	Modul 8002421	PC, preset FM	0601	3190081	Pointer for potentiometer
16	Modul 8002424	PC, stereo indicator			
2001	3191133	Dial	2023	3164397	Lid
2002	3430235	Operating panel	2024	3191136	Dial
2003	2530406	Bracket	2025	2641098	Clamp
2004	7530097	Solder tag	2026	2013208	Screw 2.9x9.5
2005	2548187	Bracket	2027	2724063	Cord pulley
2006	2013208	Screw 2.9x9.5	2028	2042030	Screw
2007	3112268	Chassis	2029	2039008	Screw M3x6
2008	2013109	Screw 2.9x7.9	2030	2775767	Button ON
2009	3190080	Dial pointer		2775768	Button TAPE
2010	2724061	Cord pulley		2775769	Button PHONO
2011	2042030	Screw		2775770	Button MW
2012	2013109	Screw 2.9x7.9		2775771	Button LW
2013	3912044	Felt plate		2775773	Button P1
2014	3112269	Chassis		2775774	Button P2
2015	2013109	Screw 2.9x7.9		2775775	Button P3
2016	2530407	Bracket		2775776	Button P4
2017	2039008	Screw M3x6		2775772	Button FM
2018	2530407	Bracket	2032	2013109	Screw 2.9x7.9
2019	2810130	Spring with dial cord	2033	2039020	Screw M3x5 black
2020	2036033	Screw M2.6x6	2034	3912045	Felt
2021	2724062	Cord wheel	2035	2039008	Screw M3x6
2022	2775765	Button	2036	2039008	Screw M3x6
3532146	Diagram		3397366	Foam packing, left	
3917040	Foam for pickup arm		3397367	Foam packing, right	
3917043	Foam for pickup arm		6271101	Mains lead 2,5 m with Euro plug	
3391596	Insertion, top		8010020	Aerial transformer	
3391597	Insertion, bottom				

Parts not shown

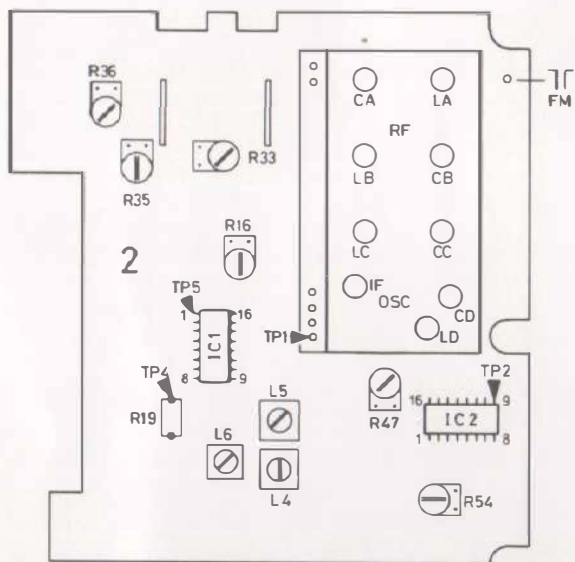
Module 15 gramophone deck

18140	3951017	Plastic tube 50 mm	18159	2530404	Bracket
18141	2622316	Plastic washer	18160	2810118	Spring
18142	2810123	Spring	18161	7530098	Solder tag
18144	2853088	Arm	18162	2853081	Arm <<
18145	2622311	Plastic washer	18163	2624051	Washer
18146	2641099	Clamp			
18147	2034060	Screw M2x8	18H1	8600056	Tape head
18148	2015095	Screw 2.9x6.5	18H2	8600057	Erase head
18149	2015095	Screw 2.9x6.5			
18150	2034061	Screw M2x3	18L1	6840256	Solenoid
18151	2542549	Bracket	18M1	8400102	Motor
18152	2361056	Pin	18R1	5310099	Potentiometer
18153	2622317	Plastic tube			
18154	2622313	Plastic washer	18S1	7410022	Switch-motor
18155	2794085	Flywheel	18S2	7410021	Switch-play
18156	2015095	Screw 2.9x6.5	18S3	7410023	Switch-pause
18157	2905087	Bottom bearing	18S4	7410024	Switch-muting
18158	2542552	Bracket			
1501	3014036	Adaptor	1531	2622198	Washer
1502	2818059	Spring	1532	3035020	Plastic foot
1503	2794072	Flywheel	1533	2803005	Washer
1504	2038220	Screw AM3x12	1534	2992048	Tap
1505	2905075	Bearing ring	1535	2853058	Arm
1506	3150037	Bearing housing complete	1536	2816162	Slider
1507	2700024	Gear wheel	1537	2853059	Arm
1508	2361048	Locking pin	1538	3164387	Cover
1509	2819145	Spring	1539	2380011	Nut M3
1510	2819155	Spring	1540	3170185	Insulation
1511	3014041	Friction plate	1541	7530084	Contact
1512	2390002	E-ring 3.2	1542	3162127	Cover
1513	2390002	E-ring 3.2	1543	2380011	Nut M3
1514	3014031	Arm	1544	2390002	E-ring 3.2
1515	2622285	Washer	1545	2623034	Lifting plate
1516	2395030	Lock disc	1546	2938141	Lock
1517	2938084	Washer	1547	2812082	Spring
1518	3014033	Stop	1548	2038218	Screw M3x12
1519	2622198	Washer	1549	7459018	Silent contact
1520	2390015	Locking ring 5.5	1550	2380011	Nut M3
1521	2803005	Washer	1551	2819106	Spring
1522	2992048	Tap	1552	2810095	Spring
1524	2390002	E-ring 3.2	1553	2810107	Spring
1525	3017013	Camwheel	1554	2938153	Bearing complete
1526	2390002	E-ring 3.2	1555	2850097	Arm
1527	2390002	E-ring 3.2	1556	2852040	Arm
1528	2810082	Spring	1557	2530326	Arm
1529	2395030	Lock disc	1558	2850093	Bar
1530	2938084	Washer			
15RL1	8024061	Coil complete			
	7500135	Contact			

ADJUSTMENTS
RADIO SECTION

Tuning voltage

Activate FM.
Set the dial at 108.5 MHz.
Connect DC voltmeter to 2TP1.
Adjust to 22.2 V with 2R36.
Set the dial to 87.4 MHz.
Adjust to 2.8 with 2R33.
Activate P1 and turn its dial to minimum.
Adjust to 2.8 V with 2R35.



Tuner

Set the dial at 88 MHz.
Connect the sweep generator to the aerial input and adjust it to 88 MHz.
Connect an oscilloscope via a diode probe to 2TP5.
Adjust with LA, LB, LC, LD and IF to max. and a symmetrical IF curve in 2TP3.
Set the dial and the sweep generator at 108 MHz.
Adjust with CA, CB, CC and CD to max. and a symmetrical IF curve in 2TP5.

IF and detector

Set the dial and the sweep generator at 97 MHz.
Connect the oscilloscope via an RC probe to 2TP4.
Adjust 2L4 and 2L5 to max. and a symmetrical S curve in 2TP4.

Muting

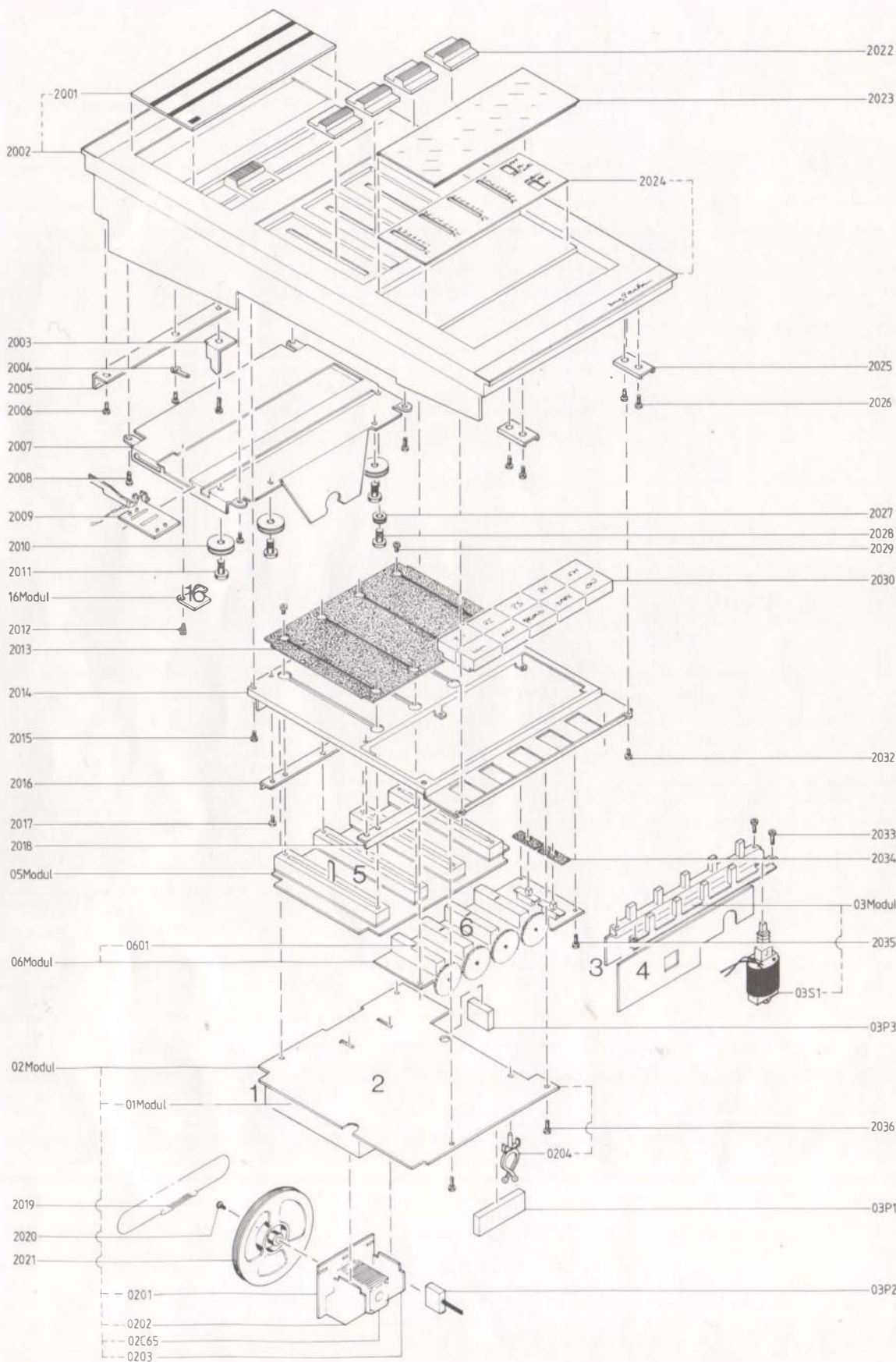
Connect a signal generator to the aerial input and adjust to 97 MHz.
Set the dial at 97 MHz.
Adjust with 2R16 until muting sets in at approx. 2 μ V.

Stereo decoder

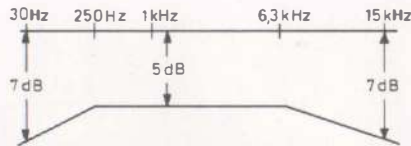
Tune in to a mono station.
Disconnect 2IC2 and 16D1.
Connect a frequency counter to 2TP2.
Adjust 2R47 to 19 kHz in 2TP2.
It is also possible to adjust 2R47 by connecting 19 kHz from 2TP2 to the Y-input of an oscilloscope and 19 kHz from a stereo decoder to the X-input of the oscilloscope.
Adjust 2R47 until the Lissajous figures become stationary.

114 kHz filter

Set the tone generator at 114 kHz and connect it to 2TP4.
Connect an IF voltmeter to 2R48.
Adjust 2L6 to minimum IF voltmeter deflection.

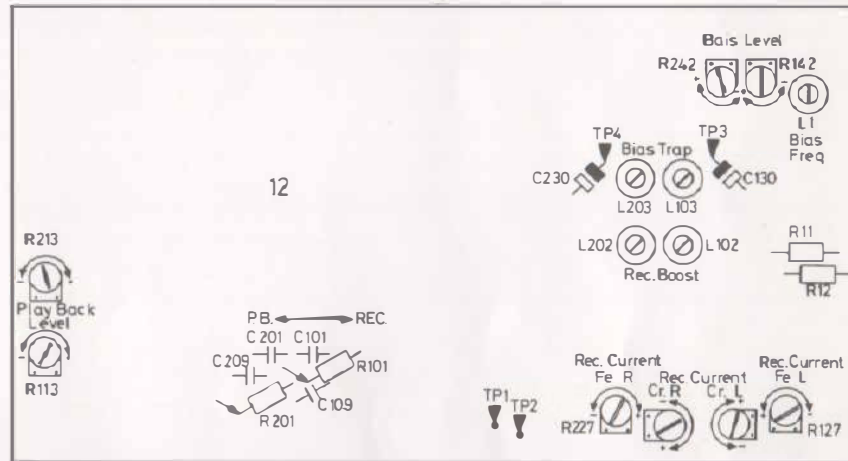


Playback frequency path



Activate CrO₂ button.
Test playback frequency path with test tape 6780056 to be within above framework.
Treble level is adjustable by means of 12C209 (12C109). With 12C209 (12C109) fitted there will be treble lift, without 12C209 (12C109) there will be treble cut.

Bias oscillator



Connect frequency counter or oscilloscope to 12R201.
Activate Rec. Pause.
Check that the bias frequency is approx. 105 kHz (approx. 9 µsecs.).
Make adjustments, if any, with 12L1.

Bias filter

Activate Rec. Pause.
Adjust 12L203 (12L103) to minimum deflection as measured with an AF voltmeter in 12TP4 (12TP3).

Record lift

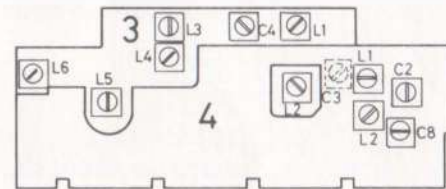
Stop the bias oscillator by disconnecting 12R5.
Activate Rec. Pause.
Connect a tone generator to the tape input and set it to deliver 333 Hz in the 1 V range.
Adjust the record potentiometer until 3 mV is measured with an AF voltmeter across 12R201 (12R101).
Set the tone generator at 10 kHz.
Adjust 12L202 (12L102) until 7 mV is measured across 12R201 (12R101).
Start the bias oscillator.

Channel separation

Connect the stereo decoder to the aerial input.
Connect a wattmeter or an AC voltmeter to the AF output.
Adjust with 2R54 to max. channel separation (better than 30 dB).

AM-IF

Set the receiver at, e.g., 1,600 kHz.
Adjust the sweep generator to 468 kHz and connect it to 3TP1.
Connect an oscilloscope to 3TP2.
Adjust 3L5 and 3L6 to max. and symmetrical IF curve.



Parallel-series trap

Connect a signal generator to the aerial input via a dummy aerial and adjust the generator to 468 kHz, mod. 30% 400 Hz.
Set the receiver at 575 kHz.
Connect a wattmeter or an AC voltmeter to the AF output.
Adjust 3L3 and 3L4 to minimum.

MW oscillator and aerial circuits

Connect a signal generator to the aerial input via a dummy aerial and adjust the generator to 575 kHz, mod. 30% 400 Hz.
Set the receiver at 575 kHz.
Connect a wattmeter or an AC voltmeter to the AF output.
Adjust the oscillator with 4L2 until it is centered on the transmitting frequency.
Adjust the serial circuit with 3L2 to max. output.
Adjust the receiver and the signal generator to 1495 kHz.
Adjust the oscillator with 4C8 until it is centered on the transmitting frequency.
Adjust the aerial circuit with 3C4 to max. output

LW oscillator and aerial circuits

Adjust the receiver and the signal generator to 155 kHz.
Adjust the oscillator with 4L1 until it is centered on the transmitting frequency.
Adjust the aerial circuit with 3L1 to max. output.
Adjust the receiver and the oscillator to 320 kHz.
Adjust the aerial circuit with 3C3 to max. output.

Bias and recording current

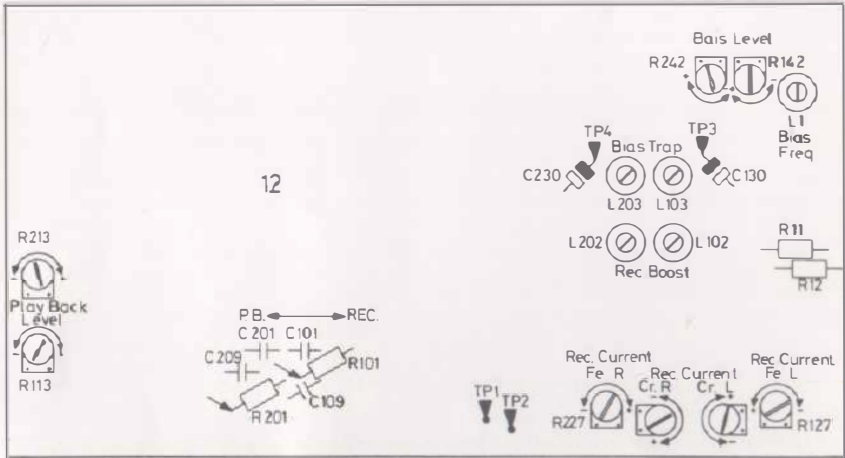
Activate CrO₂ and Rec. Pause.
Adjust 12R242 (12R142) until 32 mV is measured across 12R201 (12R101) with an AF voltmeter.

Fe recording current

Load the Fe tape for which the bias adjustment is wanted and activate Fe.
Connect a tone generator to the tape input and set it to deliver 333 Hz in the 1 V range.
Adjust the record potentiometer until 580 mV is measured with an AF voltmeter in 12TP1 (12TP2).
While recording and replaying 333 Hz, adjust 12R227 (12R127) until 580 mV is measured in 12TP1 (12TP2) during recording and replaying respectively.

CrO₂ recording current

Load the CrO₂ tape for which the bias adjustment is wanted and activate CrO₂.
Follow the instructions for Fe recording current, only make the adjustment with 12R228 (12R128).



CrO₂ bias

Set a tone generator to deliver 333 Hz 100 mV.
Adjust the record potentiometer until 25 mV is measured in 12TP1 (12TP2).
While recording and replaying 333 Hz and 15 kHz, adjust 12R242 (12R142) to the same level at 333 Hz and 15 kHz measured in 12TP1 (12TP2).
(Less bias will result in treble lift, more bias in treble cut).

Fe bias

CrO₂ bias must already have been adjusted.
By short-circuiting 12R11 or 12R12 or both and switching from CrO₂ to Fe it is ensured that the level across 12R201 (12R101), measured with an AF voltmeter, is between 5.5 and 6.5 dB lower at Fe than at CrO₂. (Less resistance will give more bias, more resistance will give less).
Check CrO₂ and Fe recording current.

ELECTRICAL ADJUSTMENTS
TAPE RECORDER SECTION

The references apply to the RH channel (the bracketed references apply to the LH channel).
Make adjustments in position Fe and without Dolby NR, if not otherwise instructed.

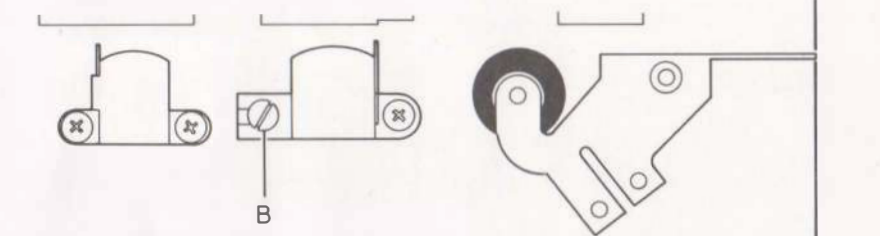
NOTE! If pw 12 has been removed during the adjustments, switching between Playback and Record must be made manually with the switch on pw 12.
It is of special importance to switch from Record to Playback if erasing is to be prevented.

Height

If tape and erase heads are to be replaced the head heights must be checked with adjustment tool 1 and 2 from tool kit 3624020.
Head misalignment can be corrected with the washer subjacent to the head fixtures. The following washers can be used:
2624052 0.1 mms
2624053 0.2 mms
2624054 0.3 mms

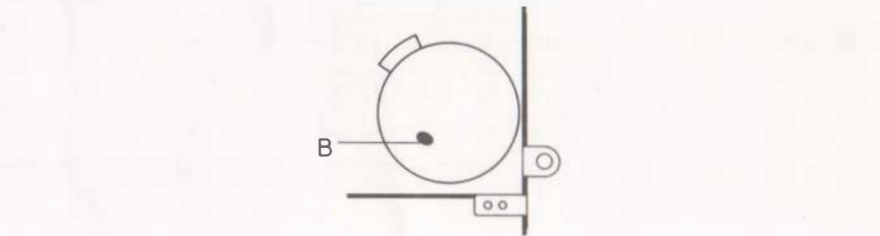
Azimuth

Degauss tape and erase heads. Connect an AF voltmeter to 12TP1 (12TP2).
Load azimuth tape 6780036.



Activate Play.
Adjust the screw B till max. and equal output for RH and LH channels (mean value 12TP1 (12TP2)).

Speed



Load wow tape 6780037.
Adjust to correct speed with the motor potentiometer B as read on the drift meter of a wow meter in 12TP1.
Make the adjustment in a mid-tape position.

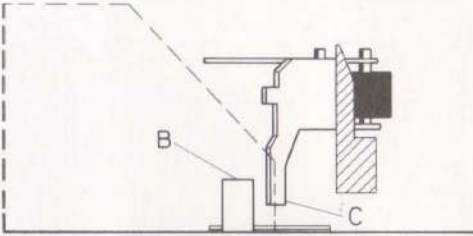
Playback level

Load level tape 6780035.
Connect an AF voltmeter to 12TP1 (12TP2).
Activate Play.
Adjust 12R213 (12R113) until 725 mV is measured in 12TP1 (12TP2).

VU meter

Connect tone generator to the tape input and adjust it to deliver 200 mV.
Activate Rec. Pause and adjust Rec potentiometer to read 580 mV in 12TP1 (12TP2).
Adjust 13R6 so that the LED just glows for 0 dB.

Pause



Bending of the flap C on the pressure roll assembly ensures clearance between C and B when activating the > button. It likewise ensures that the pressure roll assembly (and thus the ressure roll prober) is lifted off the capstan shaft when the buttons > and Pause are activated.

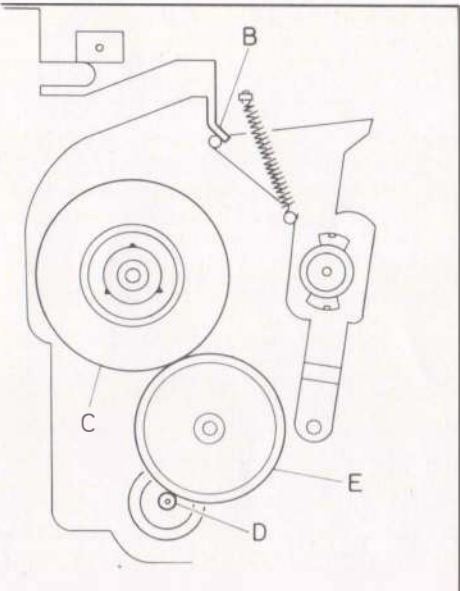
Lubrication

The need for relubrication is negligible, but the following directions should be followed for overhauls and when replacing major components.

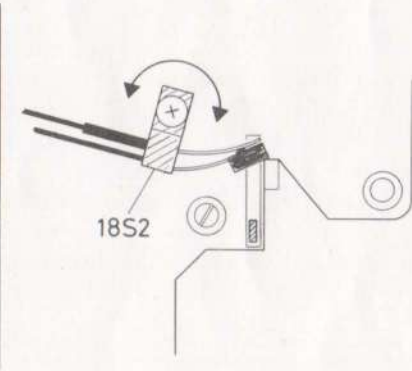
Arm 18127		3984022
Arm 18128		Floil GB-TS-1
Arm 18129		
Arm 18089		
Arm 18162	All slide faces	
Arm 18091		
Arm 18092		
Arm 18134		
Arm 18135		
Tapehead bridge 18112		
Arm 18082	Point of rotation an chassis	
Arm 18084		
Shaft for arm 18131		
Shaft for trust roller arm		
Shafts for takeup reels 18077-18078		3984007 Shell Tellus Shell Vitrea

MECHANICAL ADJUSTMENTS

Normal forward drive



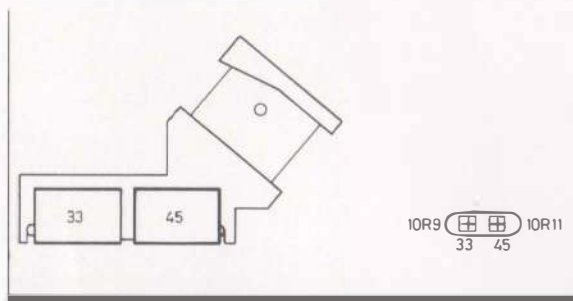
By bending the flap B, it is ensured that the idler wheel E engages both the take-up spool C and the capstan shaft D when the > button is activated. Check that the idler wheel E clears both C and D in all other positions than >.



By turning 18S2 in either of the arrow directions is ensured that 18S2 is activated when the > button is activated.

ADJUSTMENTS
RECORD PLAYER

Speed

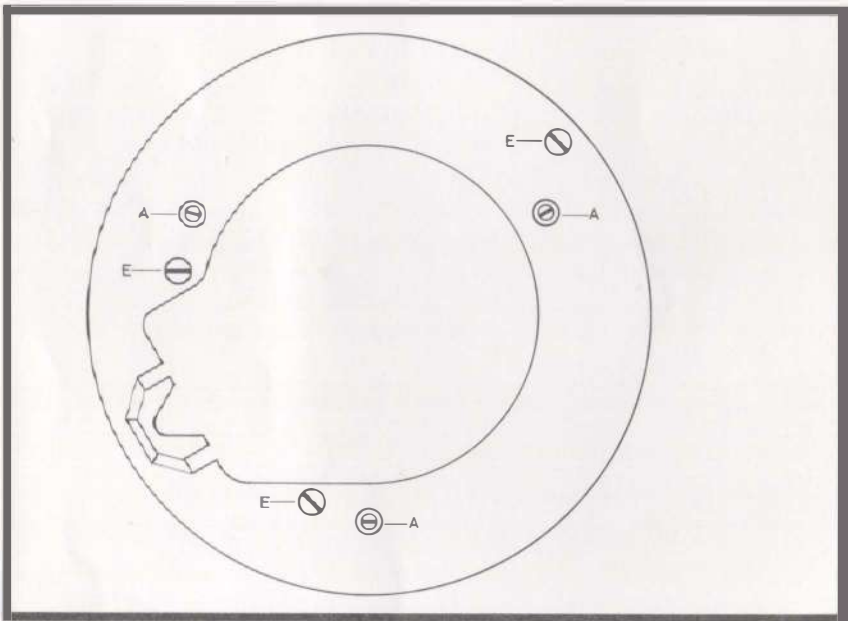


The adjustment for 33 r.p.m. is made with 10R9.
The adjustment for 45 r.p.m. is made with 10R11.

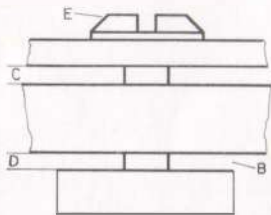
The speed may be checked in several ways, e.g.:

1. With a stroboscope disc and a lamp to the mains. This method has an inaccuracy of approx. 2% since the mains frequency of 50 Hz may fluctuate approx. ± 1 Hz.
2. With a stroboscope and a stroboscope lamp. This method has an accuracy which corresponds to the tolerance of the lamp which is normally better than that of the mains frequency.

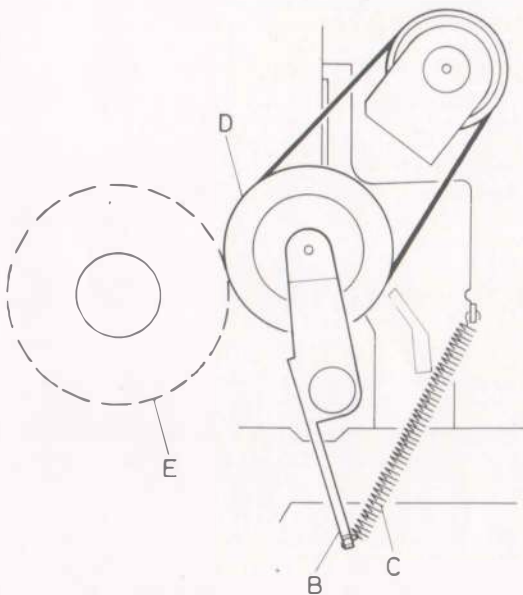
Turntable height



Remove caps of screws A.
Lay the turntable plus two LP records of standard weights on the turntable motor.
The motor must then clear all three transport screws E (see points B).
The turntable must also be parallel with the chassis deck, and when the two LP records are removed from the turntable, the distances C and D should be approx. equal.
Adjust with the screws A.

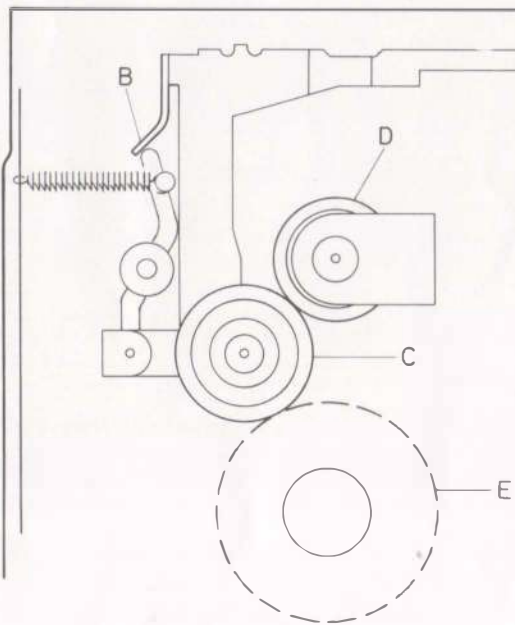


Rewinding



By bending the flap B or changing the pull power of the spring C, it is ensured that the idler wheel D engages the flywheel E when the $\ll$ button is engaged. Check that the idler wheel D clears E in all other positions than $\ll$.

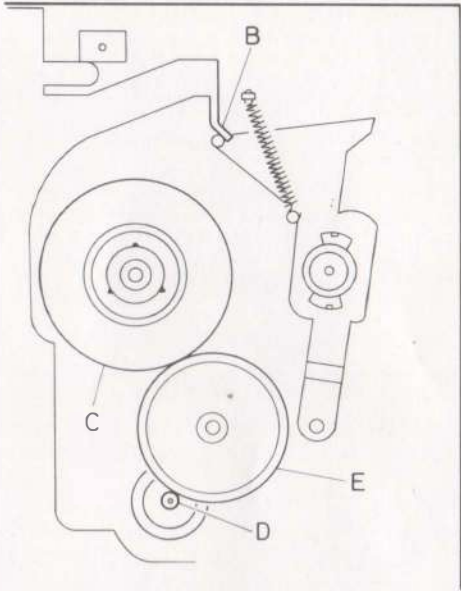
Fast forward



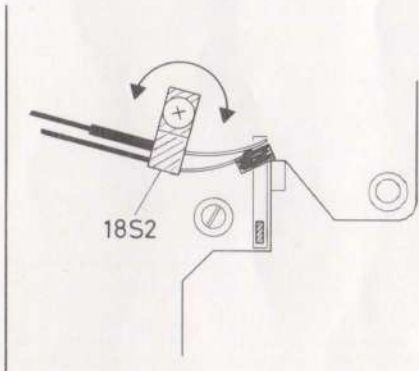
Bend the flap B so that the idler wheel C engages the take-up spool D and the flywheel E when the $\gg$ button is activated. Check that the idler wheel C clears both D and E in all other positions than $\gg$.

MECHANICAL ADJUSTMENTS

Normal forward drive

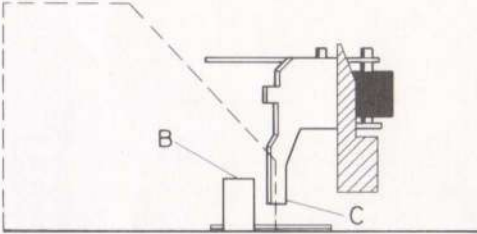


By bending the flap B, it is ensured that the idler wheel E engages both the take-up spool C and the capstan shaft D when the > button is activated. Check that the idler wheel E clears both C and D in all other positions than >.



By turning 18S2 in either of the arrow directions is ensured that 18S2 is activated when the > button is activated.

Pause



Bending of the flap C on the pressure roll assembly ensures clearance between C and B when activating the > button. It likewise ensures that the pressure roll assembly (and thus the ressure roll prober) is lifted off the capstan shaft when the buttons > and Pause are activated.

Lubrication

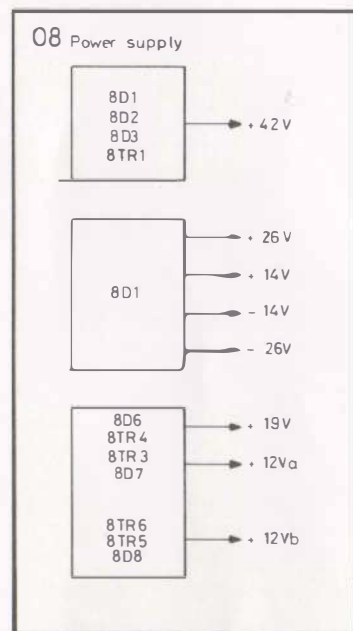
The need for relubrication is negligible, but the following directions should be followed for overhauls and when replacing major components.

Arm 18127		3984022
Arm 18128		Floil GB-TS-1
Arm 18129		
Arm 18089		
Arm 18162	All slide faces	
Arm 18091		
Arm 18092		
Arm 18134		
Arm 18135		
Tapehead bridge 18112		
Arm 18082	Point of rotation an chassis	
Arm 18084		
Shaft for arm 18131		
Shaft for trust roller arm		
Shafts for takeup reels	18077-18078	3984007
		Shell Tellus
		Shell Vitrea

DESCRIPTION

Power supply

Due to the fact that the circuits of the Beocenter 2000 are rather conventional, they will be described by means of block diagrams.

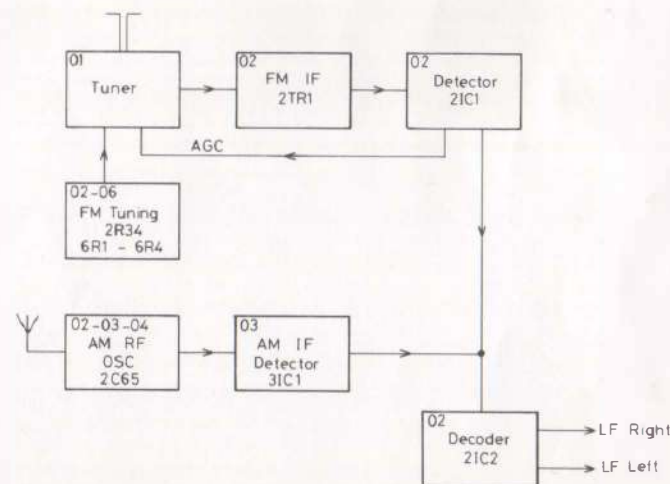


The power supply of the Beocenter 2000 has 8 output voltages as shown in above block diagram.

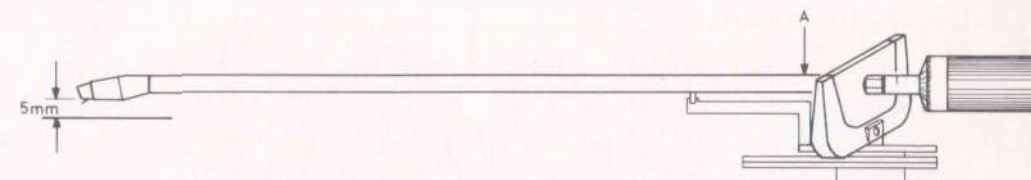
These 8 voltages are used in the following circuits:

- | | |
|--------|-----------------------------|
| +42 V | Microphone amplifier |
| | FM tuning |
| | Tone control |
| | RIAA amplifier |
| +26 V | Output amplifier |
| +14 V | Headphone amplifier |
| -14 V | Headphone amplifier |
| -26 V | Output amplifier |
| +19 V | Record player ON/OFF |
| +12 Va | RF circuit |
| | Stereo decoder |
| | Tape recorder AF circuit |
| +12 Vb | Tape recorder motor control |
| | Record player motor control |
| | Muting circuit |
| | Rec. indicator |

FM-AM

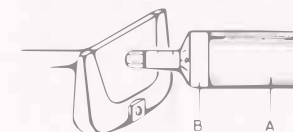


Pick-up height



Put a record on the turntable.
Position the pick-up arm above a run-off groove.
Adjust screw A until the distance from the stylus to the record is 5 mms.
This adjustment must be made with a counterbalance weight mounted.

Pick-up arm balance



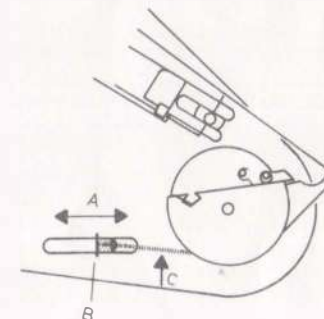
Turn the counter-balance weight until pick-up arm is in balance.
Hold the counter-balance weight in this position and zero the dial B.
The counter-balance weight A is turned clockwise until the dial B shows the stylus pressure required (for MMC 20" it is 1.5 grams).

Pick-up arm parallelism



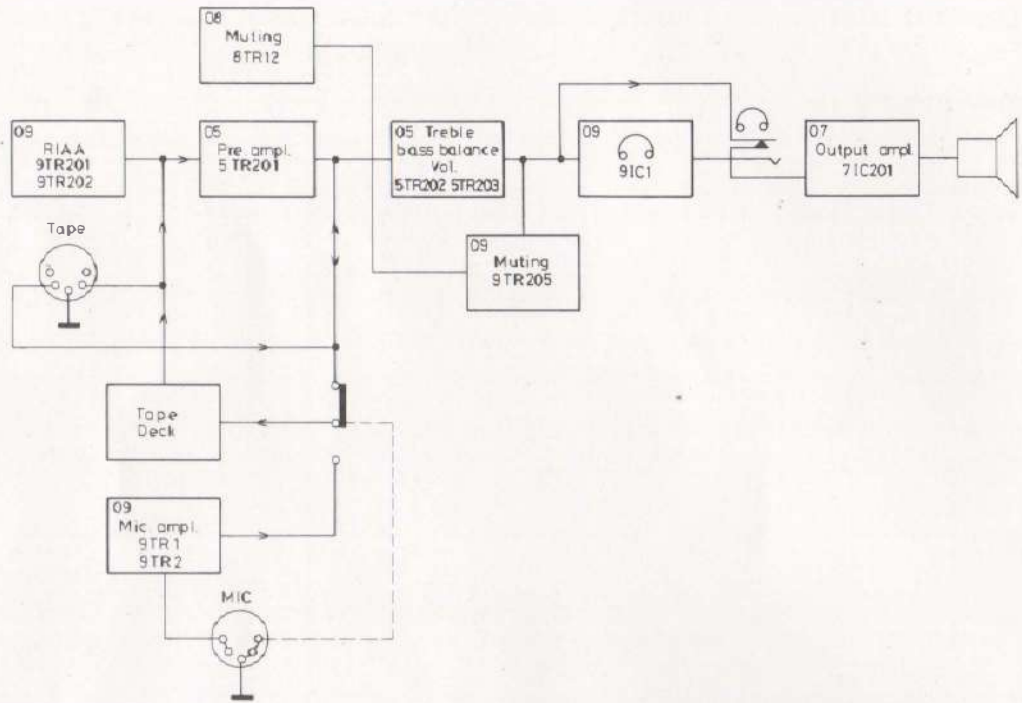
Loosen the screw B and turn the pick-up arm until the A and B clearances are equal and the straight section of the pick-up is parallel to the topside of the record.

Antiskating

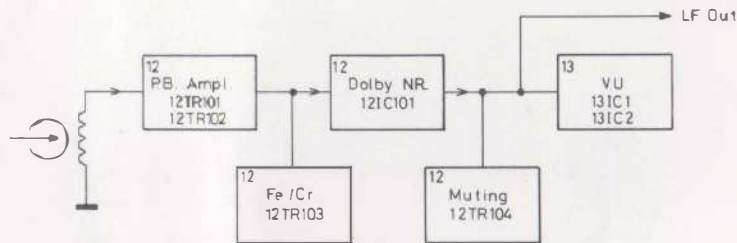


Put the test record 3621045 on the turntable.
Set stylus pressure to 1.5 grams with MMC 20S.
Play cut 1.
Connect an oscilloscope to the RH and LH channels.
Push stud B in either direction of the arrow A until there is an equal distortion in both channels (for LH channel distortion, slacken spring C, tighten for RH channel distortion).

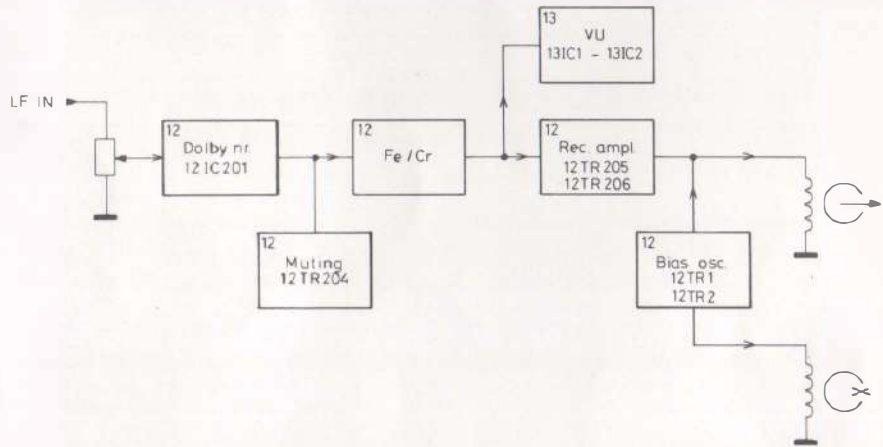
AF



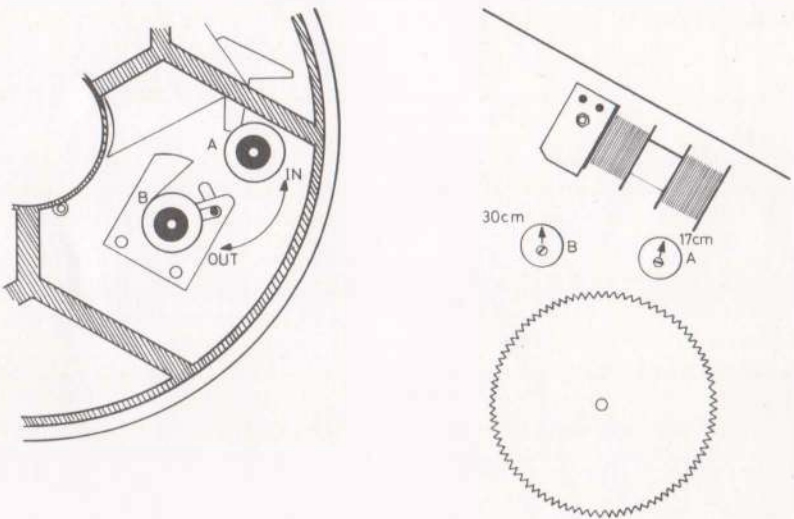
Taperecorder, playback left channel



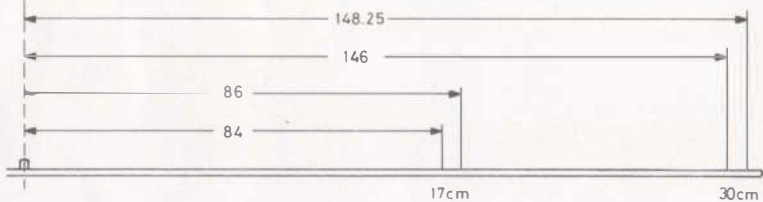
Taperecorder record right channel



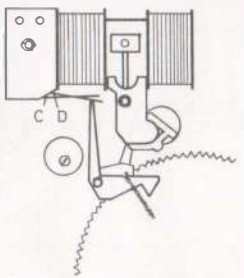
Pick-up arm set-down point



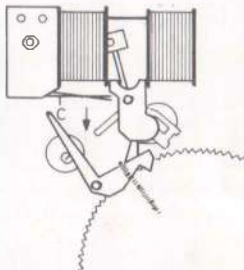
The pick-up arm set-down points are adjustable from top and from below. With »45« activated, adjust eccentric A in such a way that the pick-up at automatic set-down will set-down inside the section indicated 17 cm on below diagram. Adjust eccentric B in such a way that the pick-up will set-down within the section indicated 30 cm when »33« is activated.



Motor switch (15RL1)

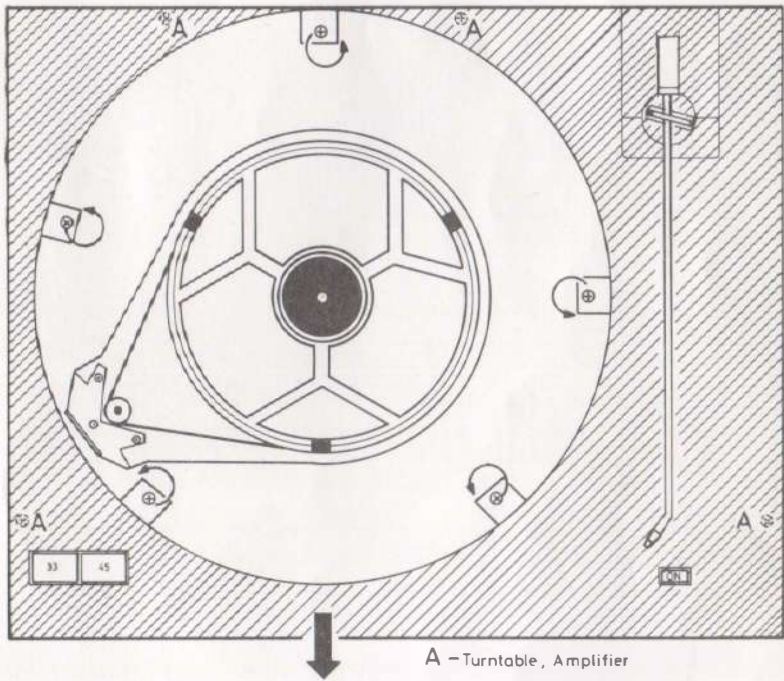
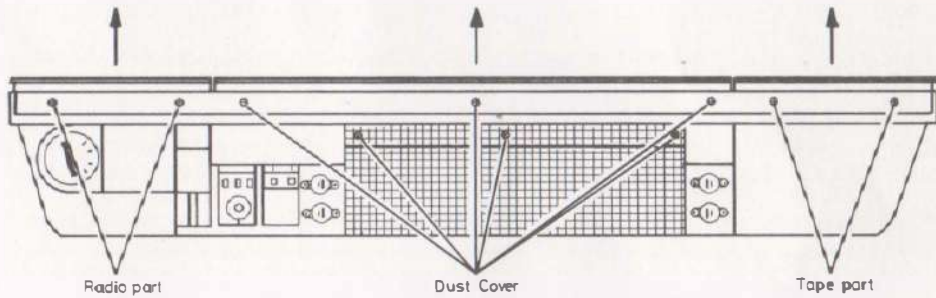


When the motor switch is OFF, (the armature of the mechanical relay in its mid-position) the clearance between the C and D sections of the switch should be 0.5-1 mm. This adjustment is made by bending the D-section of the switch.



When the motor switch is ON, the C-section of the switch must have a pressure of approx. 15 p in the direction of the arrow. This adjustment is made by bending the C-section of the switch.

ADSKILLELSE
DISASSEMBLY



TECHNICAL SPECIFICATIONS
Amplifier

FM

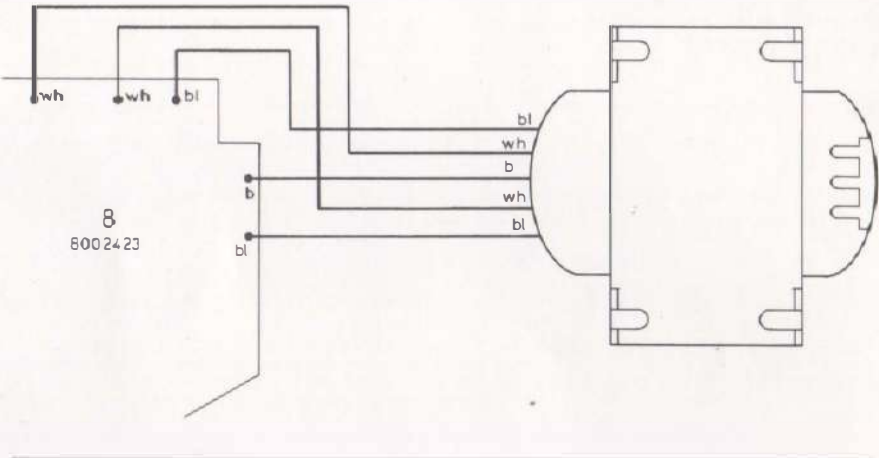
AM

Record Player

Tape Recorder

Power output RMS DIN	2 x 25 watts/4 ohms
	2 x 20 watts/8 ohms
Harmonic distortion -26 dB	<0.15%
Harmonic distortion	<0.2%
Intermodulation	<0.4%
Frequency range ± 1.5 dB	20-25,000 Hz
Damping factor	>30
Input tape copy	600 mV/15 kohms
Signal-to-noise ratio phono	>78 dB
Output external tape	30 mV/100 kohms
Output headphone	Max. 2.8 V/22 ohms
Channel separation 1000 Hz	>50 dB
Bass control at 40 Hz	± 14 dB
Treble control at 12,500 Hz	± 14 dB
FM range	87.5-108 MHz
FM aerial impedance	75/240 ohms
FM snsitivity stereo 46 dB	<35 μ V/75 ohms
Frequency range ± 1.5 dB	20-15,000 Hz
Harmonic distortion	<0.5%
Stereo channel separation	>24 dB
AM range LW	147-350 kHz
AM range MW	520-1610 kHz
Sensitivity LW 20 dB	110 μ V
Sensitivity MW 20 dB	90 μ V
Pickup	MMC 20S
Stylus	Spherical diamond
Radius of curvature	15 μ m
Recommended tracking force	15 mN/1.5 gram
Frequency range	20-20,000 Hz ± 3 dB
Channel separation 1000 Hz	>20 dB
400-10,000 Hz	>15 dB
Channel difference	<2 dB
Effective tip mass	0.5 mg
Compliance	20 μ m/mN
Sensitivity mV/cm/sec.	>0.6 mV/47 kohms
Output 5 cm lateral	>2.12 mV/47 kohms
Speeds	33-45 rev./min.
Wow and flutter, DIN	< $\pm 0.09\%$
Wow and flutter, WRMS	< $\pm 0.045\%$
Rumble weighted	>62 dB
Rumble unweighted	>42 dB
Compact cassette	C60-C90
Tapehead	Super permalloy
Noise reduction	Dolby NR
Tape switch	Manual ferro-chrom
Wow and flutter	< $\pm 0.2\%$
Speed deviation	< $\pm 1.5\%$
Fast forward and rewind C60	75 sec.
Frequency range ferro-chrom	30-14,000 Hz
Signal-to-noise ratio chrom Dolby NR	>63 dB
Chrom	>56 dB
Microphone input	80 μ V/2 kohms

SERVICETIPS
Wiring of transformer



Wow frequencies

Frequencies	Source of Failure	Pos. No.
6.08 Hz	Flywheel	18155
4.25 Hz	Belt	18056
1.77 Hz	Idler Wheel	18120
1.43 Hz	Take up wheel	18077
1.13 Hz	Thrust roller	18115

Other Data

Power supply	110-130-220-240 volts
Power frequency	50 Hz
Power consumption	18-135 watts
Dimensions W x H x D	73.5 x 12.5 x 38 cm
Weight	11.2 kg

Subject to change without notice
