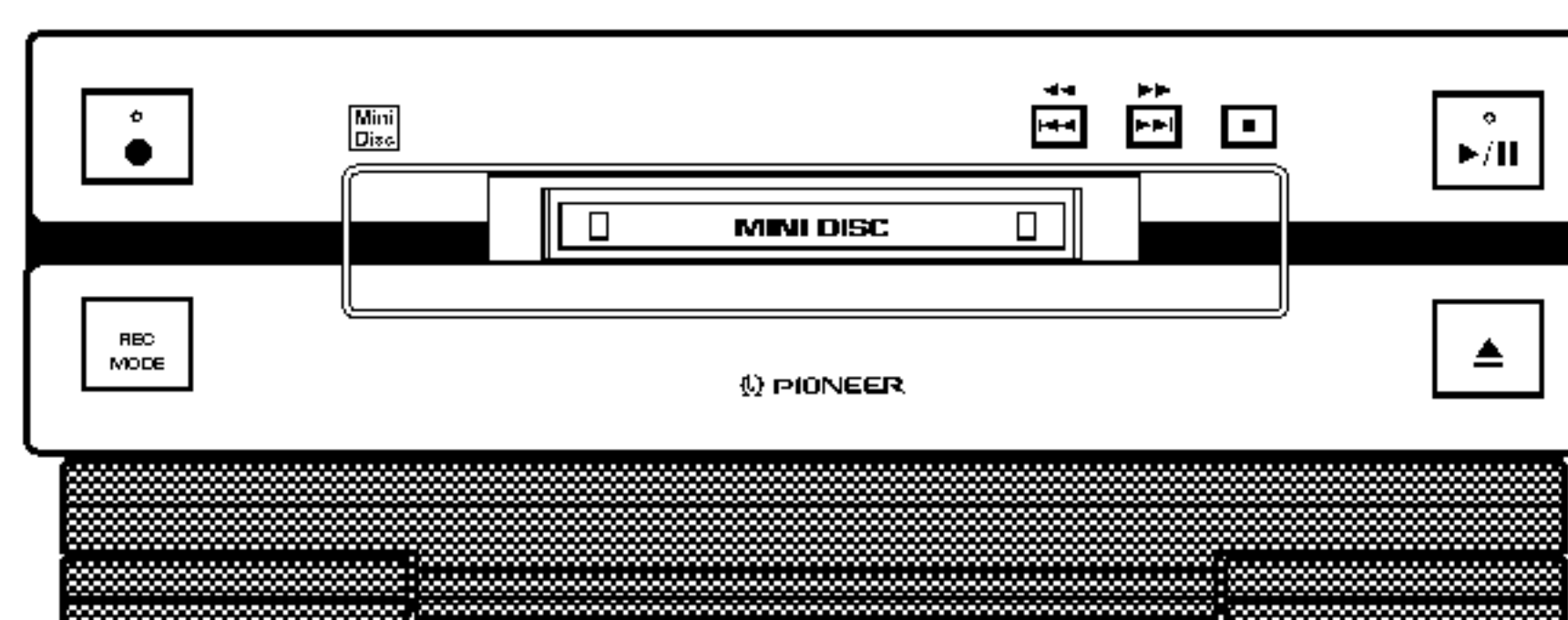


Service Manual



ORDER NO.
RRV1848

MINIDISC RECORDER MJ-L7

THIS MANUAL IS APPLICABLE TO THE FOLLOWING MODEL(S) AND TYPE(S).

Type	Model	Power Requirement	Remarks
	MJ-L7		
MYXK	○	AC220-230V	
NVXK	○	AC230V	

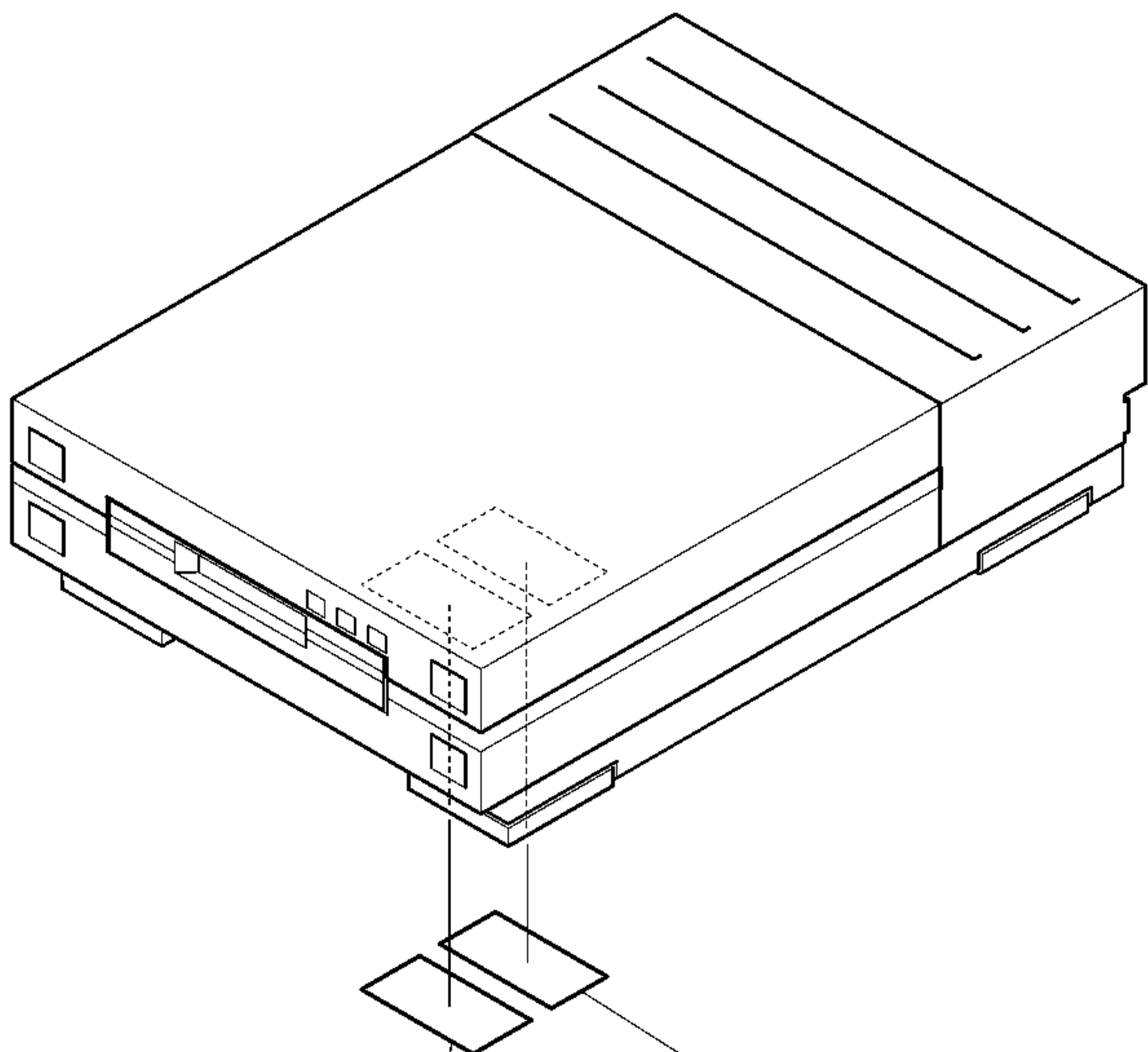
- These products are component of systems. This product does not operate normally by itself. Please connect it to the STEREO CD RECEIVER XC-L7 and the DISPLAY UNIT DU-L7, an accessory of the XC-L7, for adjustment and operation inspection.

CONTENTS

1. SAFETY INFORMATION	2	7. GENERAL INFORMATION	47
2. EXPLODED VIEWS AND PARTS LIST	3	7.1 IC	47
3. SCHEMATIC DIAGRAM	8	7.2 DIAGNOSIS	50
4. PCB CONNECTION DIAGRAM	25	7.2.1 DISASSEMBLY	50
5. PCB PARTS LIST	32	7.2.2 TROUBLESHOOTING	53
6. ADJUSTMENT	35	7.3 BLOCK DIAGRAM	58
		8. PANEL FACILITIES AND SPECIFICATIONS	60

1. SAFETY INFORMATION

LABEL CHECK



Additional Laser Caution

- 1. Laser Interlock Mechanism
The position of the switch (SW1956) for detecting loading state is detected by the MD mechanism microprocessor (IC1401), and the design prevents laser diode oscillation when the switch (SW1956) is OFF (Pin 6 of IC1401 is high level.). Thus, the interlock will no longer function if the switch (SW1956) is deliberately set to ON. (Pin 6 of IC1401 is low level.)
The interlock also does not function in the test mode*.
Laser diode oscillation will continue, if pin 20 of IR3R50 (IC1101) is connected to GND, or else the terminals (between emitter and collector) of Q1101 are shorted to each other.
- 2. When the cover is opened with the shielding case of MD mechanism assy (AYM7003) is further opened, close viewing of the objective lens with the naked eye will cause exposure to a Class 1 laser beam.

* Refer to page 35 .



ADVARSEL USYNLIG LASERSTRÅLING VED ÅBNING NÅR SIKKERHED SAF-BRYDERE ER UDE AF FUNKTION. UNDGÅ UDSÆTTELSE FOR STRÅLING. VARO ! Avattaessa ja suojalukitus ohitettaessa olet alttiina näkymättömälle lasersäteilylle. Älä katso säteeseen.	VORSICHT ! UNSICHTBARE LASER-STRAHLUNG TRITT AUS, WENN DECKEL(ODER KLAPPE)GEÖFFNET IST! NICHT DEM STRAHL AUSSETZEN! VARNING ! Osynlig laserstrålning när denna del är öppnad och spärren är urkopplad. Betrakta ej strålen. ARW1047
--	--

MYXK type

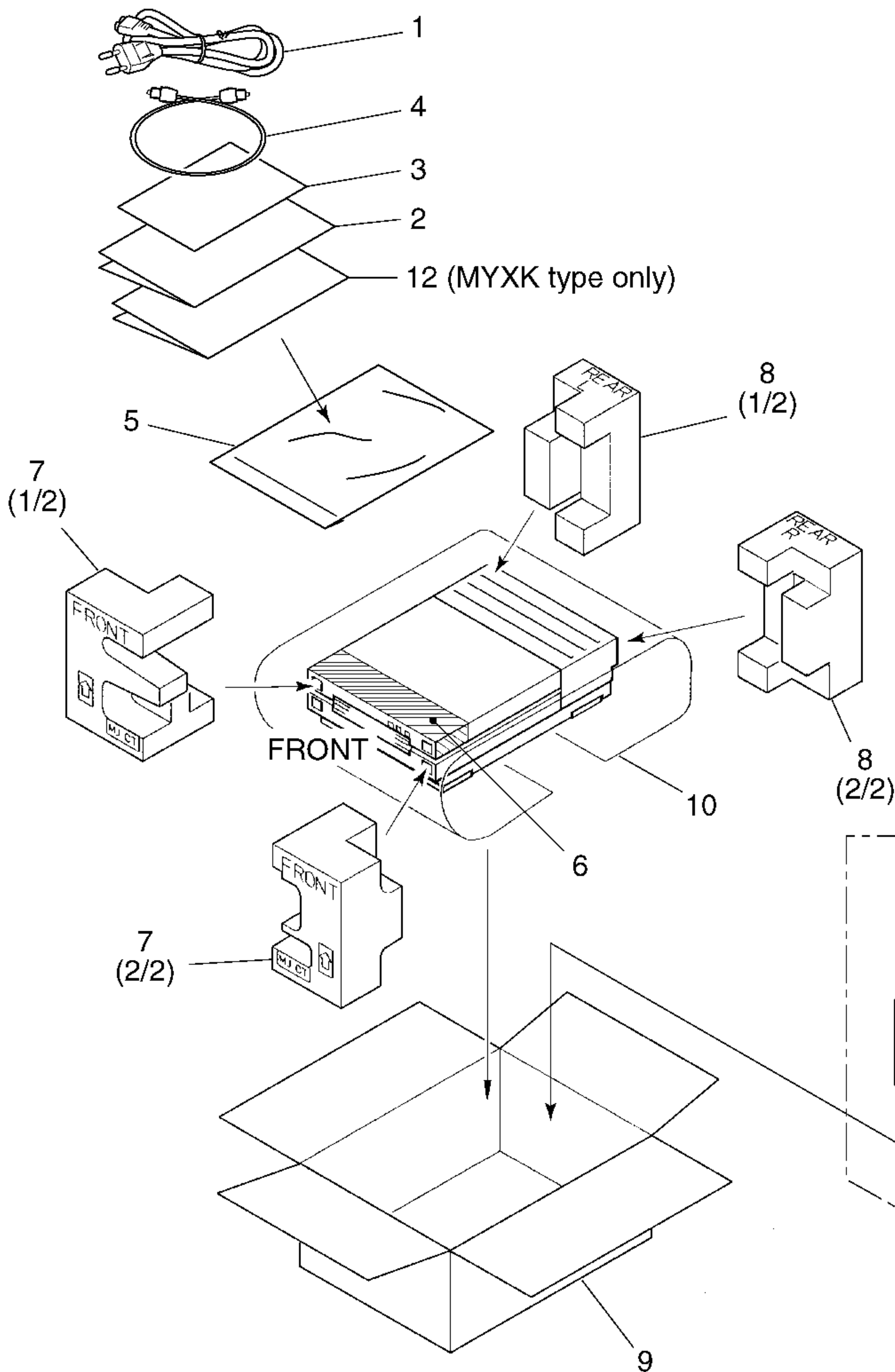


NVXK type

2. EXPLODED VIEWS AND PARTS LIST

NOTES : ● Parts marked by “NSP” are generally unavailable because they are not in our Master Spare Parts List.
● The ⚠ mark found on some component parts indicates the importance of the safety factor of the part.
Therefore, when replacing, be sure to use parts of identical designation.
● Screw adjacent to ▼ mark on the product are used for disassembly.

2.1 PACKING



(1) PACKING PARTS LIST

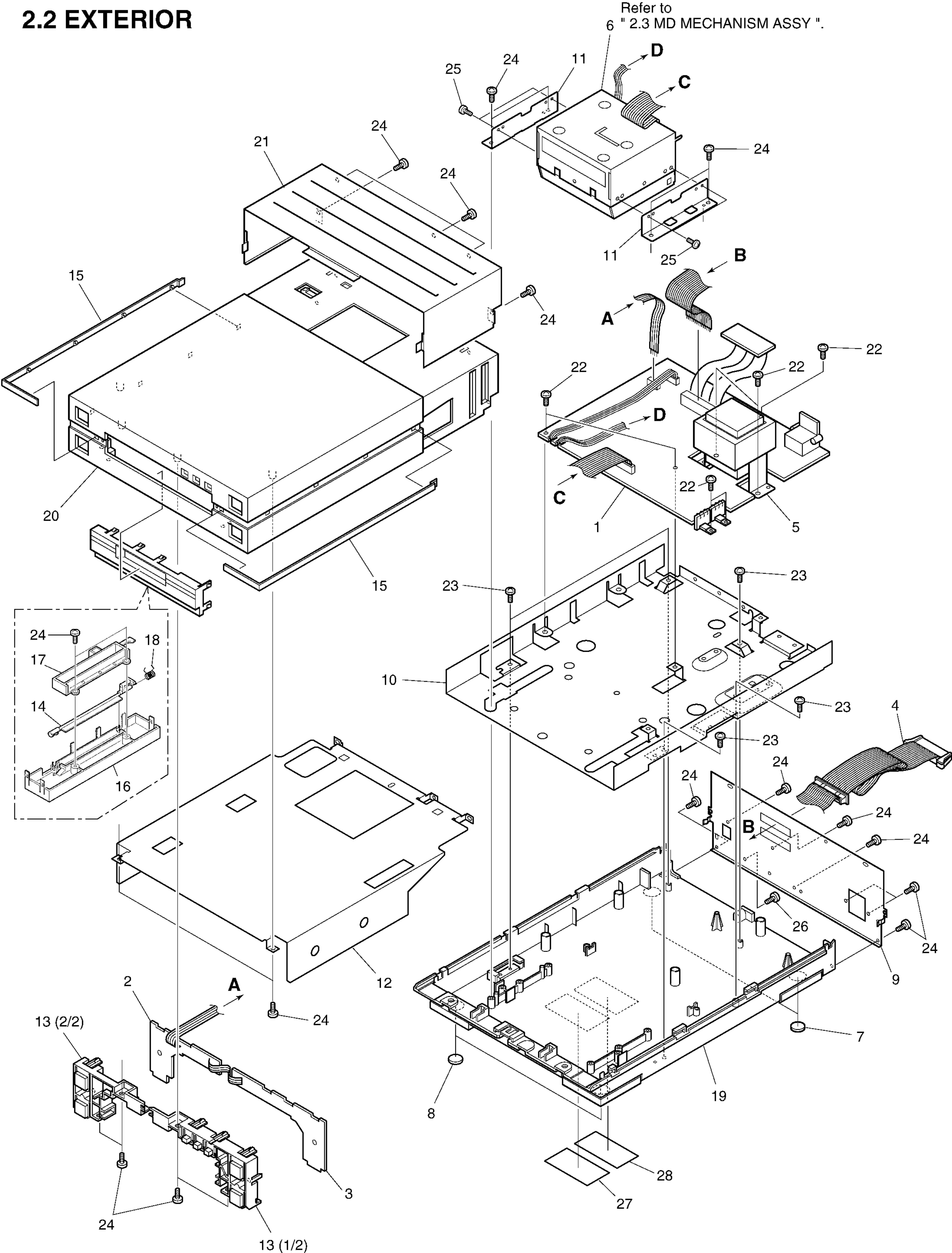
Mark	No.	Description	Parts No.
⚠	1	AC Power Cord	See Contrast table (2)
	2	Operating Instructions	See Contrast table (2)
NSP	3	Warranty Card	ARY7010
	4	Optical Fiber Cable (L= 0.5 m)	RKX1031
	5	Polyethylene Bag (0.03 × 230 × 340)	Z21-038
NSP	6	Protect Sheet	AEH7004
	7	Pad MT	AHA7176
	8	Pad MTR	AHA7195
	9	Packing Case	See Contrast table (2)
	10	Packing Sheet (750 × 600 × 0.5)	Z23-007
	11	Sub Packing	See Contrast table (2)
	12	Operating Instructions	See Contrast table (2)
⚠	13	Fuse (T5A)	See Contrast table (2)

(2) CONTRAST TABLE

MYXK and NVXK types are constructed the same except for the following:

Mark	No.	Symbol and Description	Part No.		Remarks
			MYXK type	NVXK type	
⚠	1	AC Power Cord	ADG7010	ADG7009	
	2	Operating Instructions (English /French /German /Italian)	ARE7135	Not used	
	2	Operating Instructions (English)	Not used	ARB7127	
	9	Packing Case	AHD7487	AHD7509	
	11	Sub Packing	Not used	AHD7507	
	12	Operating Instructions (Dutch /Swedish /Spanish /Portuguese)	ARE7136	Not used	
⚠	13	Fuse (T5A)	Not used	AEK7001	

2.2 EXTERIOR



(1) EXTERIOR PARTS LIST

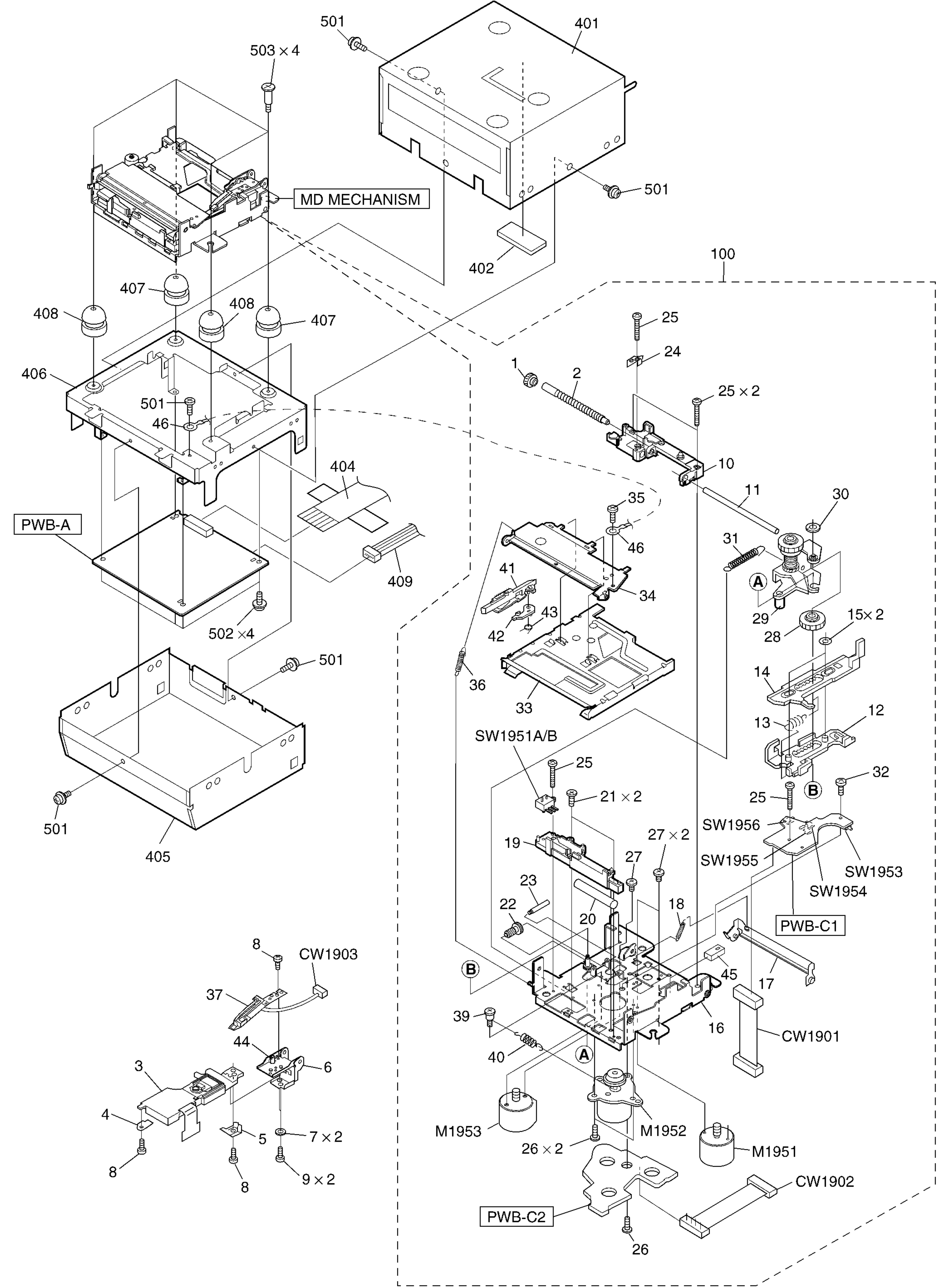
Mark	No.	Description	Parts No.	Mark	No.	Description	Parts No.
	1	MD MAIN Assy	AWZ8995		21	Bonnnet	ANE7168
	2	MD KEYB1 Assy	AWZ8996		22	Screw	BBZ30P080FMC
	3	MD KEYB2 Assy	AWZ8997		23	Screw	BPZ30P060FZK
	4	Connection Cable	ADE7015		24	Screw	BPZ30P080FZK
⚠	5	Power Transformer (AC220-230V)	ATT7024		25	Screw	PMH20P080FMC
	6	MD Mechanism Assy	AYM7003		26	Screw	VBZ30P080FZK
	7	Leg	AEB7090	NSP	27	Caution Label (F)	ARW1046
	8	Leg (Front)	AEB7102	NSP	28	Caution Label	See Contrast table (2)
	9	Rear Panel	See Contrast table (2)				
NSP	10	Bottom Plate MT	ANF7008				
	11	MD Bucket	ANG7152				
NSP	12	Top Plate	ANK7034				
	13	Button Assy	AWL7026				
	14	MD Flap	AAN7172				
	15	Black Line	AAP7033				
	16	Sub Panel	AAP7034				
	17	Flap Plate	AAT7002				
	18	MD Spring	ABH7154				
	19	Bottom Base MT	AMA7004				
NSP	20	Top Panel	AMB7457				

(2) CONTRAST TABLE

MYXK and NVXK types are constructed the same except for the following:

Mark	No.	Symbol and Description	Part No.		Remarks
			MYXK type	NVXK type	
NSP	9 28	Rear Panel Caution Label	ANC7591 ARW1047	ANC7593 ARW1050	

2.3 MD MECHANISM ASSY



(1) MD MECHANISM ASSY PARTS LIST

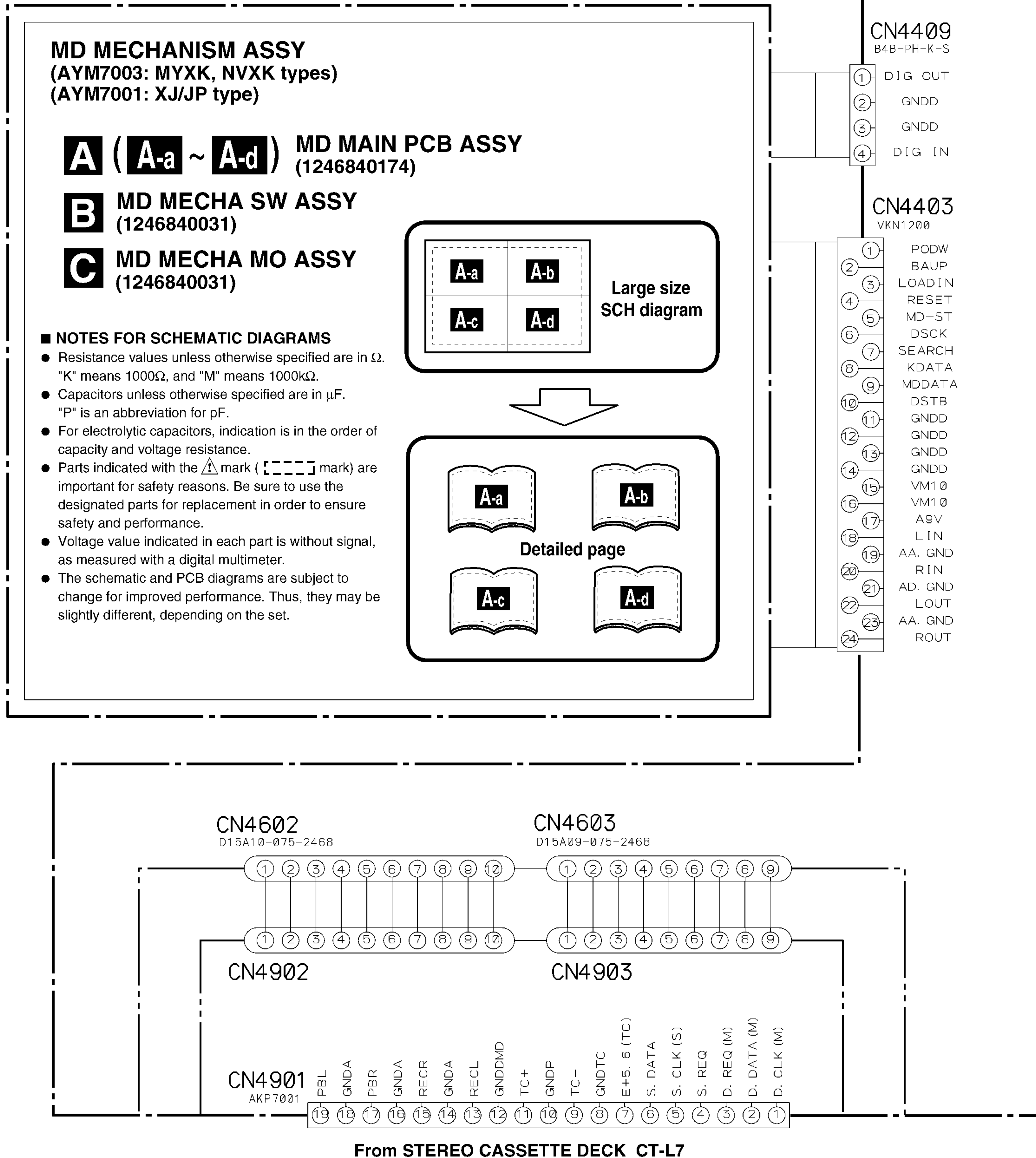
Mark	No.	Description	Parts No.
	1	DRIVE GEAR	AZN7388
	2	DRIVE SCREW	AZB7071
	3	LIGHT PICKUP ASSY	1246170009
	4	SHAFT SPRING	AZB7072
	5	DRIVE GRIP SPRING	AZB7073
	6	HEAD PLATE ASSY	AZN7389
	7	WASHER	AZB7104
	8	SCREW	AZB7083
	9	SCREW	AZB7084
	10	MD PICKUP GUIDE(A)	AZN7390
	11	PICKUP GUIDE SHAFT(A)	AZN7391
	12	CAM PLATE ASSY	RZN1032
	13	RACK SPRING	AZB7074
	14	RACK GEAR	AZN7393
	15	WASHER	AZB7105
	16	DRIVE PLATE ASSY	AZN7394
	17	H/A SHIFT ARM	AZN7395
	18	SHIFT/A SPRING	AZB7113
	19	MD GUIDE(B)	AZN7396
	20	PICK GUIDE SHAFT	AZN7397
	21	SCREW	AZB7085
	22	LOADING GEAR (A)	AZN7398
	23	LOADING GEAR SHAFT	AZN7399
	24	DRIVE SHAFT SPRING	AZB7114
	25	SCREW	AZB7086
	26	SCREW	AZB7087
	27	SCREW	AZB7088
	28	LOADING GEAR(B)	AZN7400
	29	ROLLER ARM ASSY	1242480073
	30	WASHER	AZB7106
	31	ROLLER SPRING	AZB7115
	32	SCREW	AZB7089
	33	CARTRIDGE HOLDER ASSY	RZN1033
	34	HOLDER ARM	AZN7403
	35	SCREW	1249700107
	36	HOLDER ARM SPRING	AZB7116
	37	MAGNET HAED	AZP7010
	38		
	39	SCREW	RZB1003
	40	DISK MOTOR SPRING	AZB7117
	41	CLAMP	RZN1044
	42	CATCH	RZN1045
	43	CATCH SPRING	RZN1046
	44	HEAD WIRE COVER	RZN1047
	45	CUSHION	1243260047
	46	EARTH TERMINAL	1245120126
	100	MECHANICAL ASSY	RZN1041

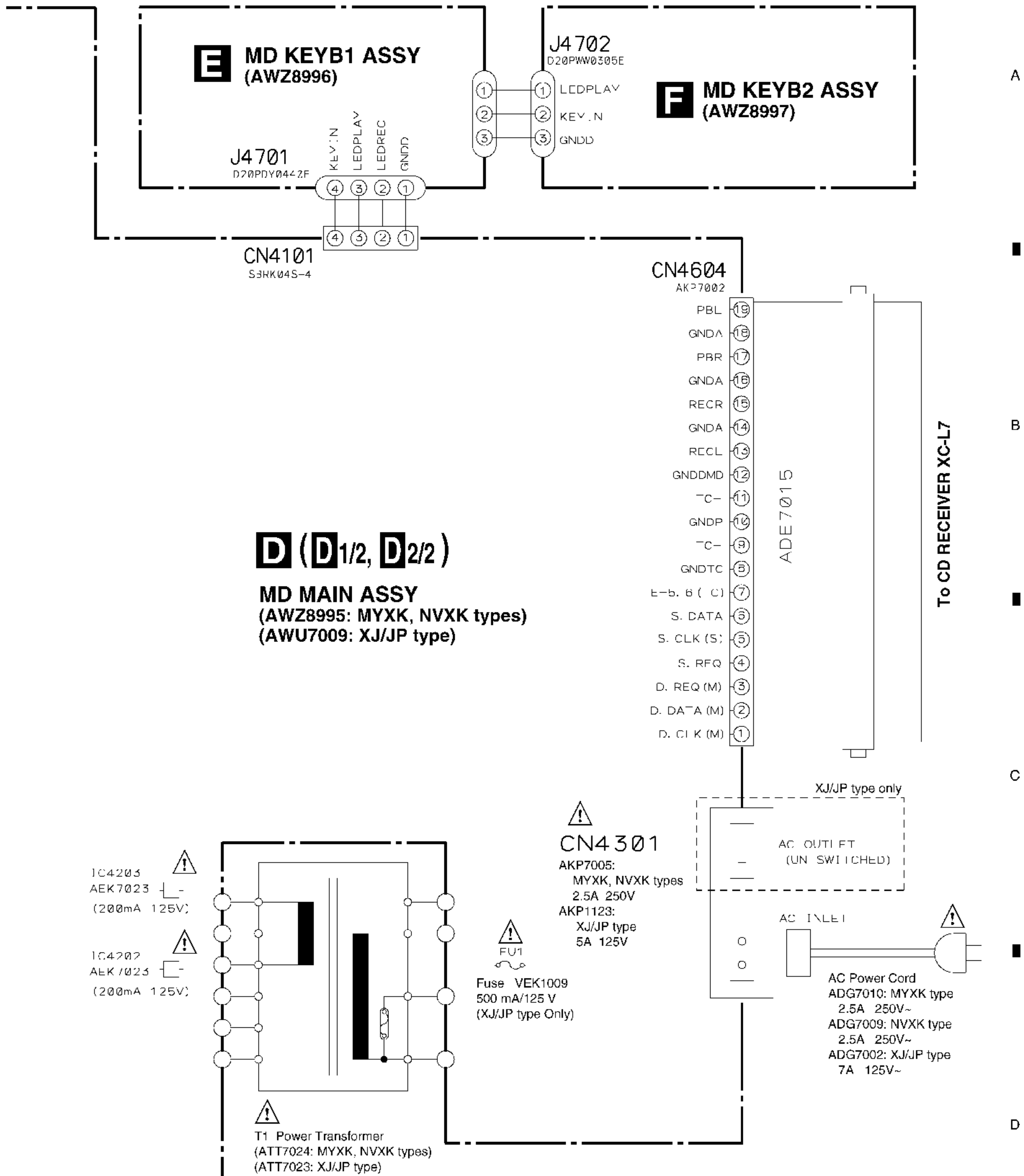
Mark	No.	Description	Parts No.
	401	SHIELD CASE (TOP)	AZN7404
	402	HAED CUSHION	AZN7405
	403		
	404	24P F.F.C	1245120149
	405	SHIELD CASE (BOTTOM)	AZN7406
	406	FRAME	AZN7407
	407	RUBBER (A)	AZN7408
	408	RUBBER (B)	AZN7409
	409	4P SHEILD CABLE	1245120155
	501	SCREW	AZB7094
	502	SCREW	AZB7095
	503	SCREW	AZB7122
	M1951	MD SLIDE MOTOR ASSY	AZX7028
	M1952	MD DISC MOTOR ASSY	AZX7032
	M1953	MD LOADING/HEAD MOTOR	AZX7029
	SW1951/SW1952	PUSH SWITCH	AZS7029
	SW1953	SLIDE SWITCH	AZS7020
	SW1954	PUSH SWITCH	1245300021
	SW1955	PUSH SWITCH	1245300021
	SW1956	LEAF SWITCH	1245300020
	PWB-A	MD MAIN PCB ASSY	1246840174
	PWB-C1,C2	MD MECHA SW/MO ASSY	1246840031
	CW1901	5P CONNECTOR ASSY	RZK1026
	CW1902	5P CONNECTOR ASSY	RZK1027
	CW1903	2P CONNECTOR ASSY	RZK1028

3. SCHEMATIC DIAGRAM

Note: When ordering service parts, be sure to refer to "EXPLODED VIEWS AND PARTS LIST" or "PCB PARTS LIST".

3.1 OVERALL SCHEMATIC DIAGRAM



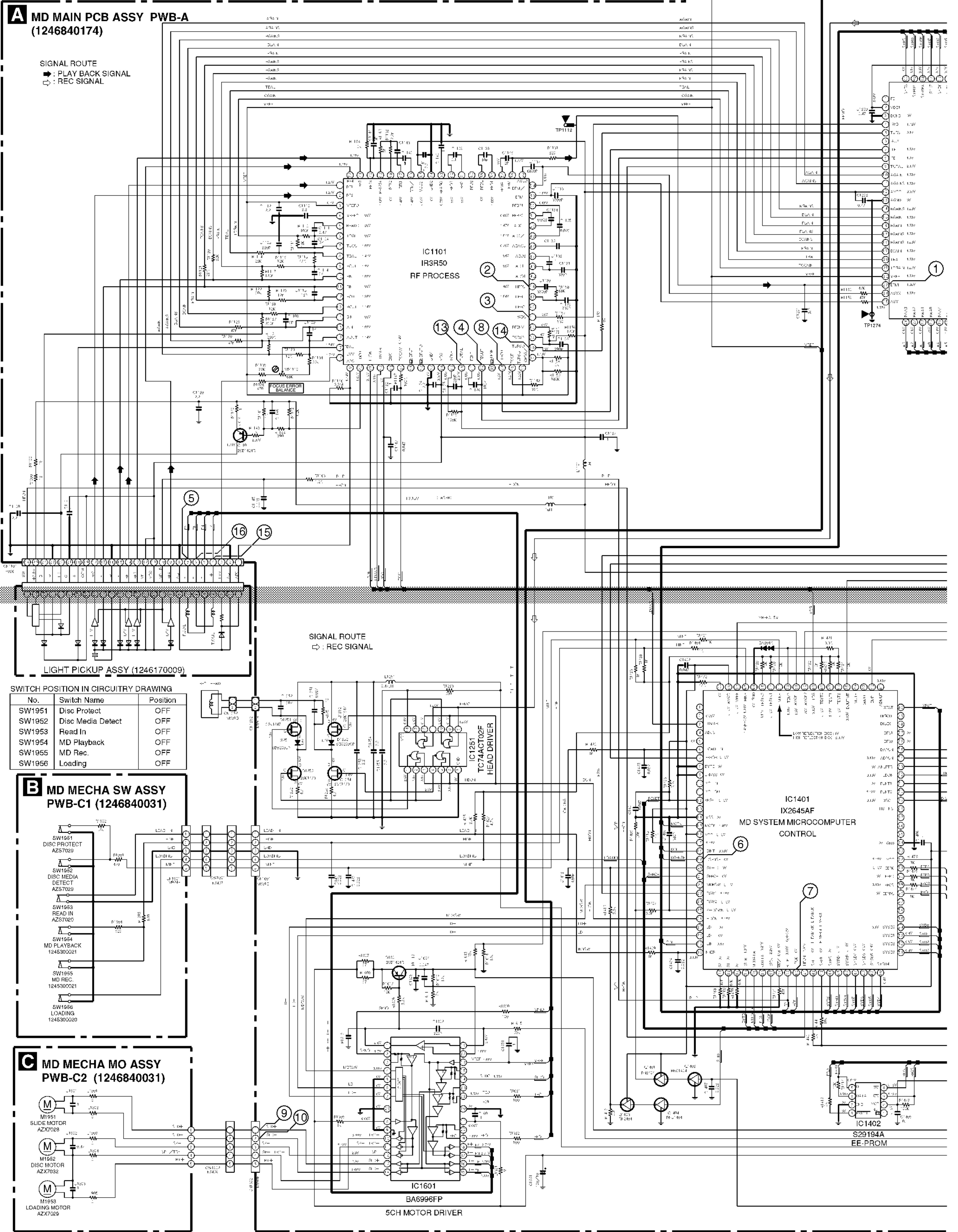


3.2 MD MAIN PCB ASSY

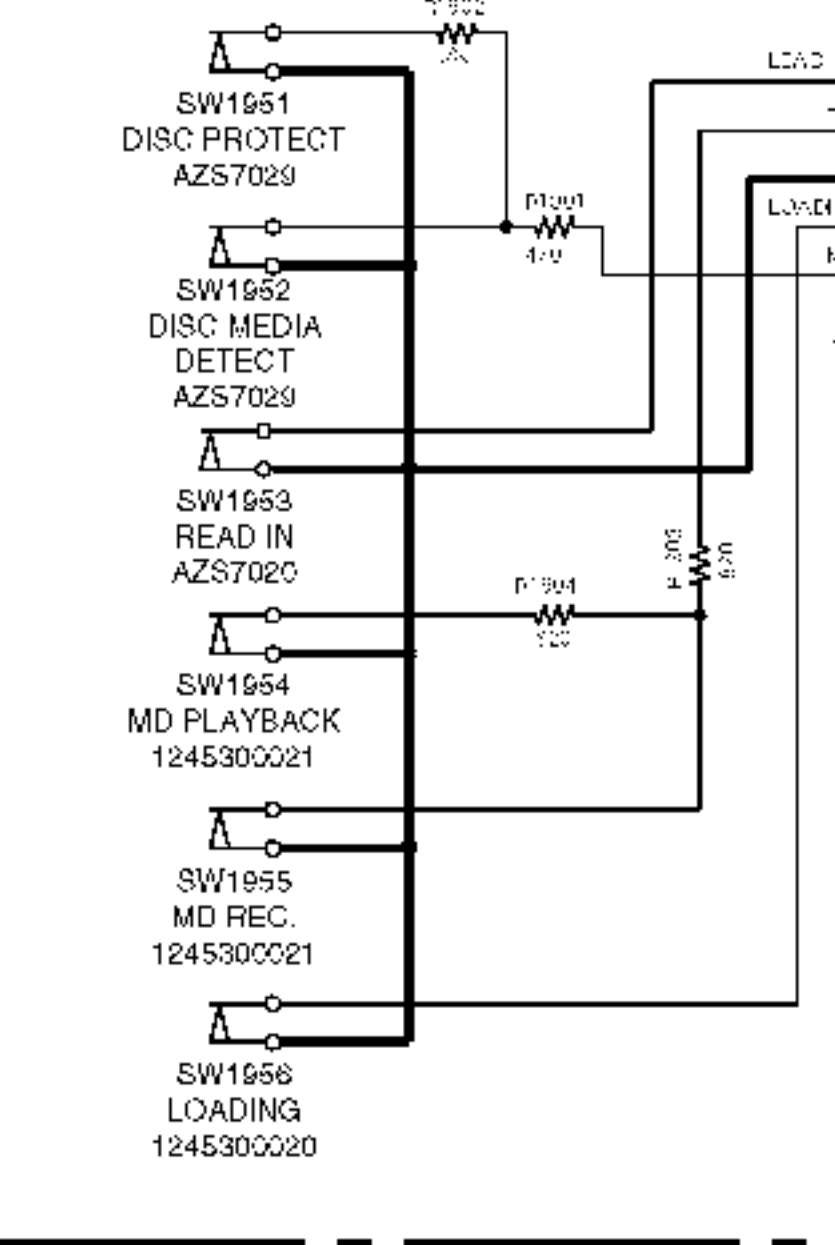
A-a

A MD MAIN PCB ASSY PWB-A (1246840174)

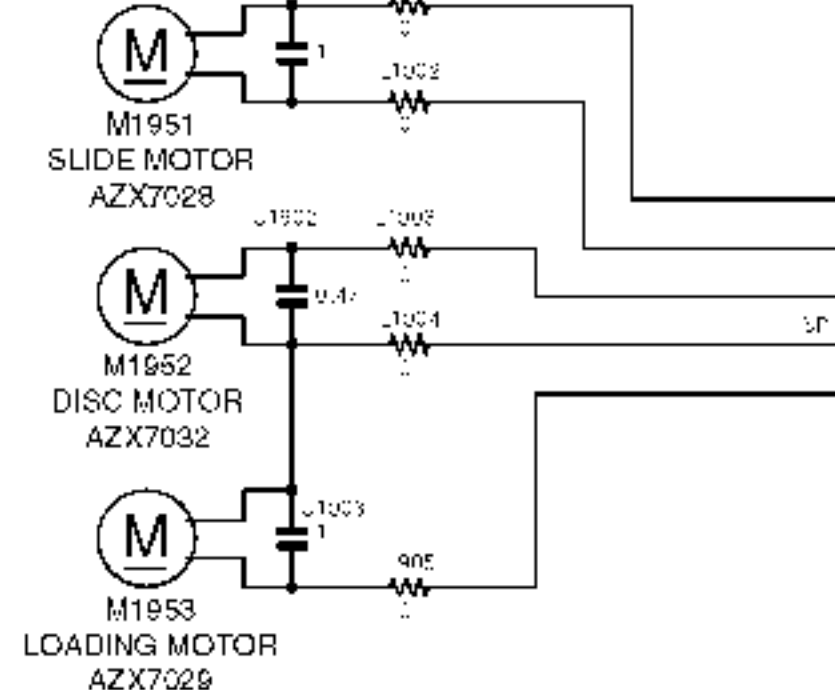
SIGNAL ROUTE
▶ : PLAY BACK SIGNAL
◁ : REC SIGNAL



B MD MECHA SW ASSY PWB-C1 (1246840031)



C MD MECHA MO ASSY PWB-C2 (1246840031)

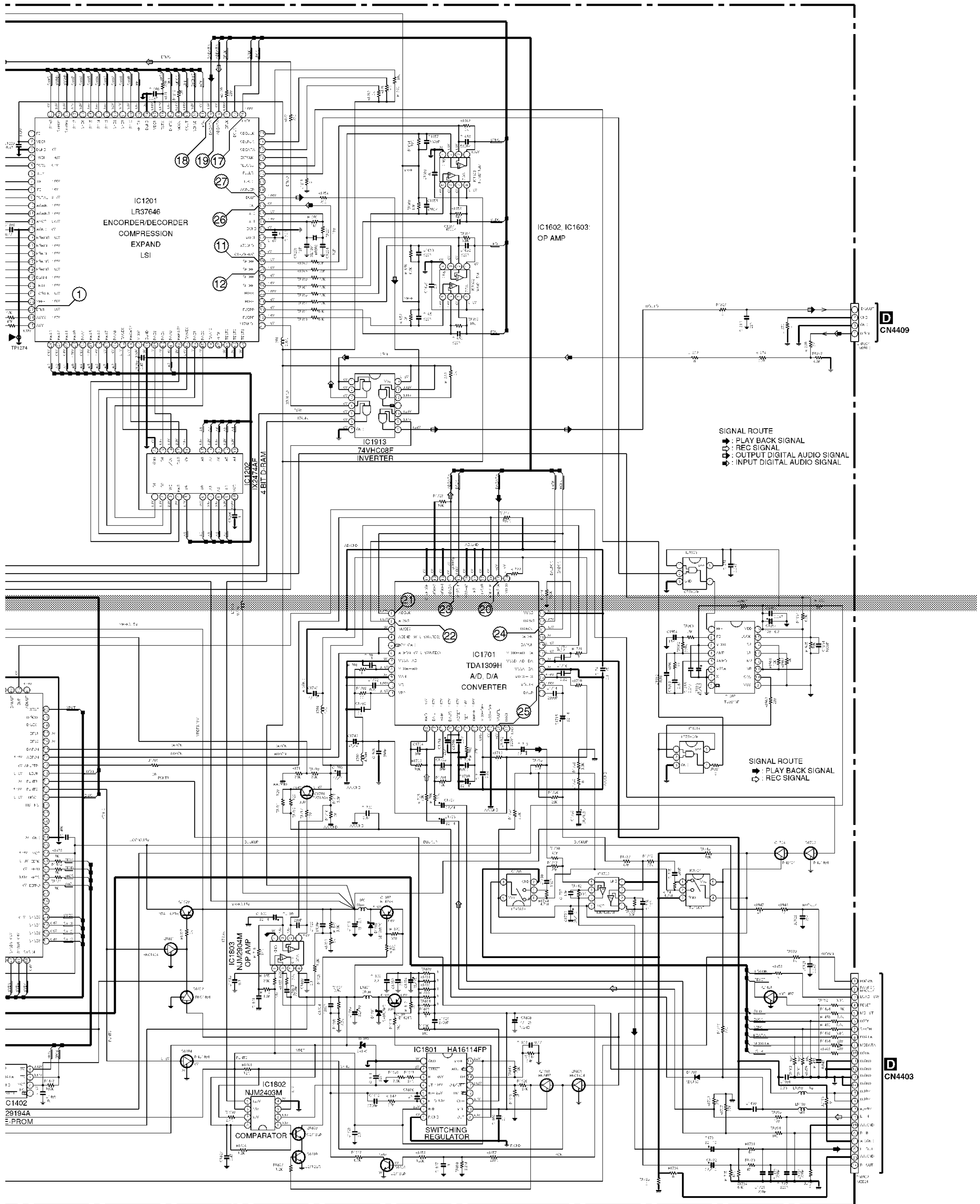


A-c

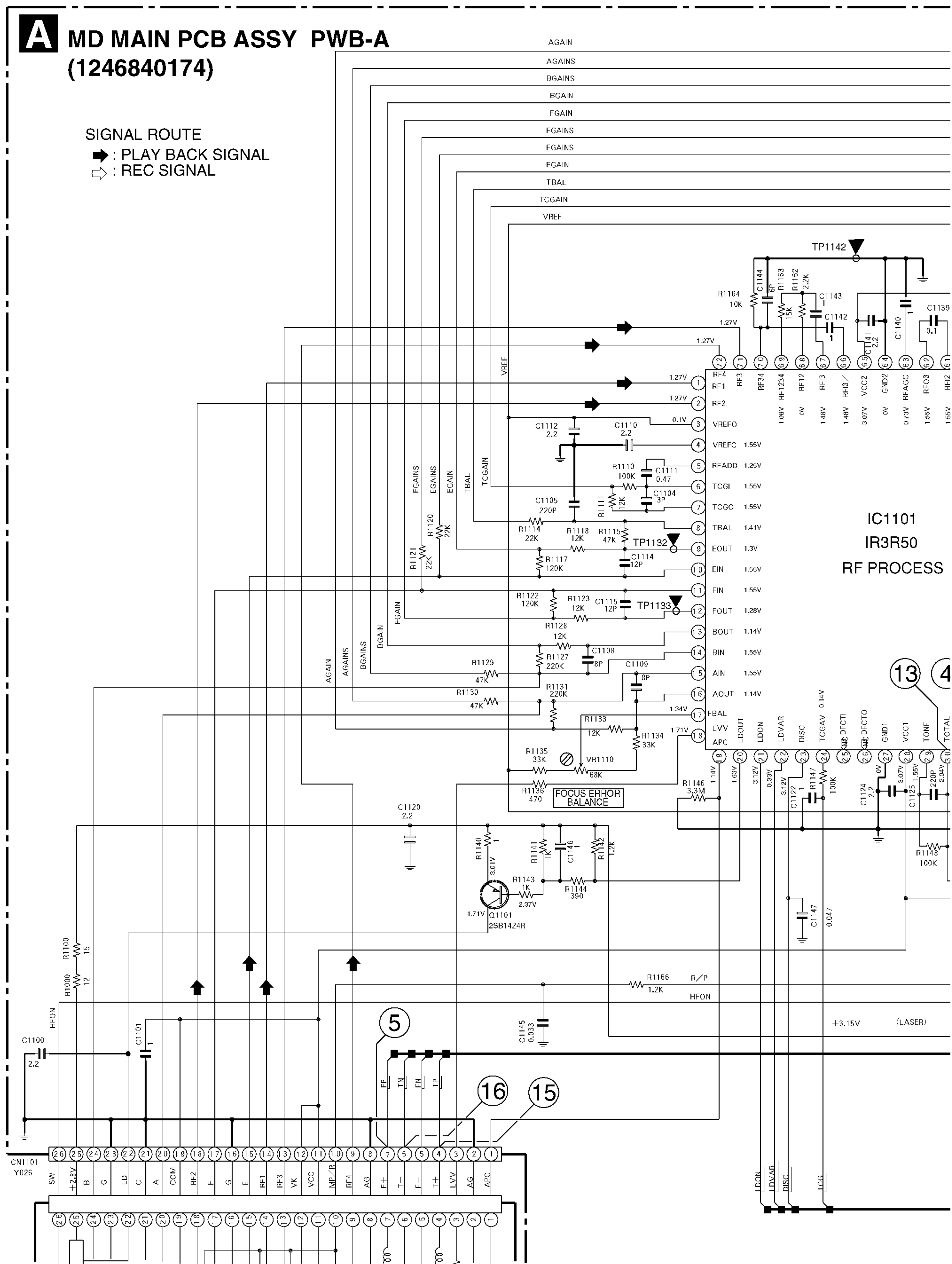
B

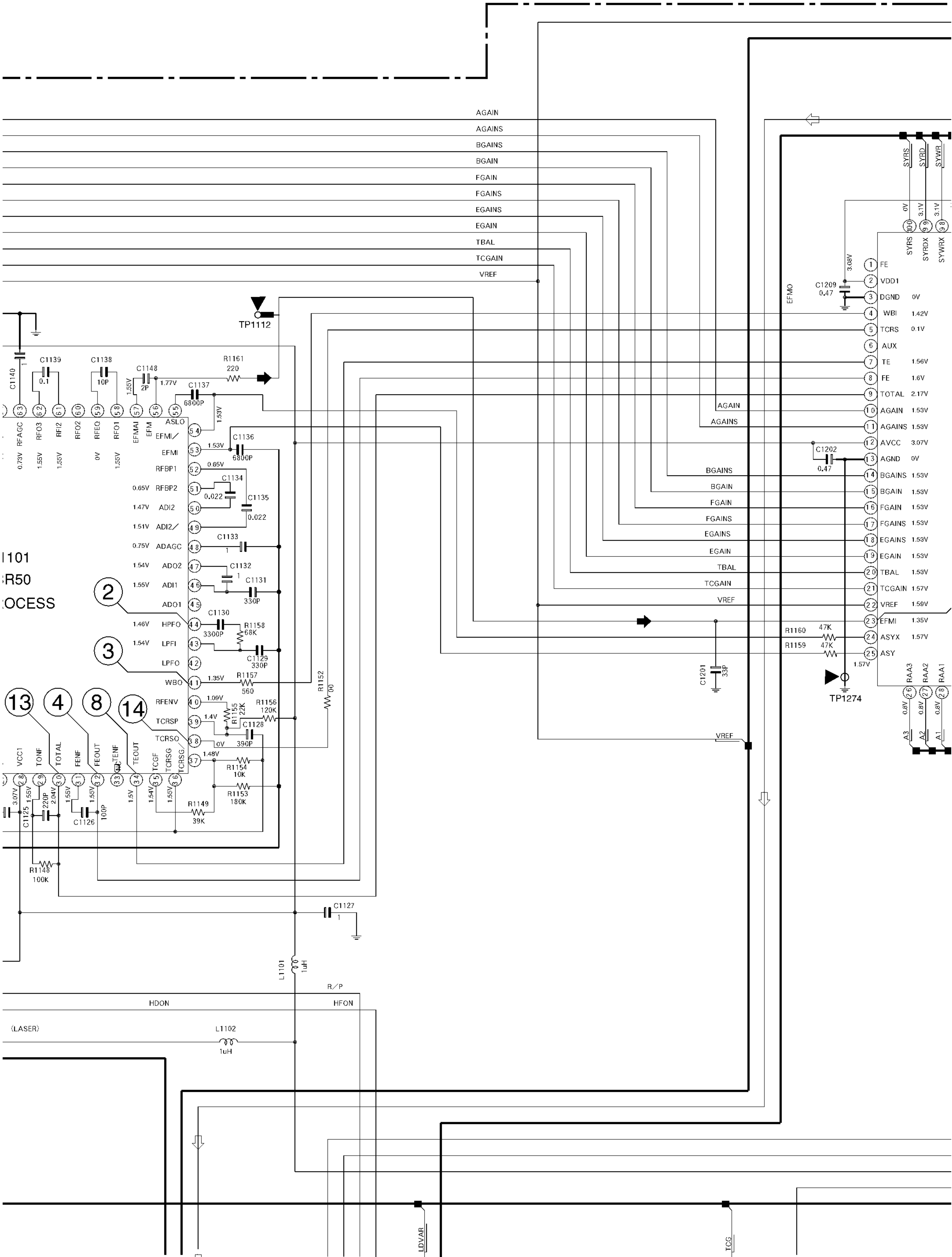
C

A-b



A-d

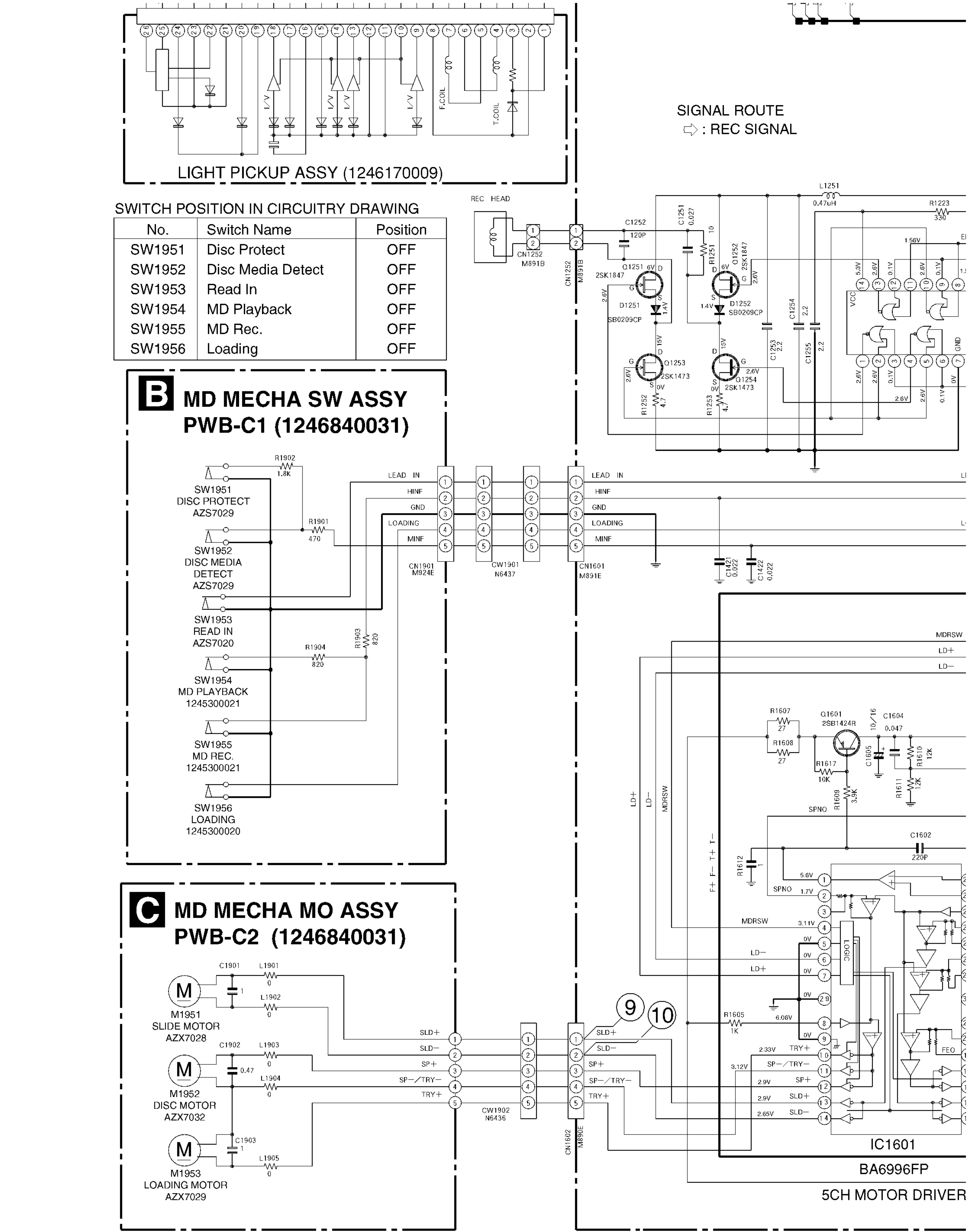




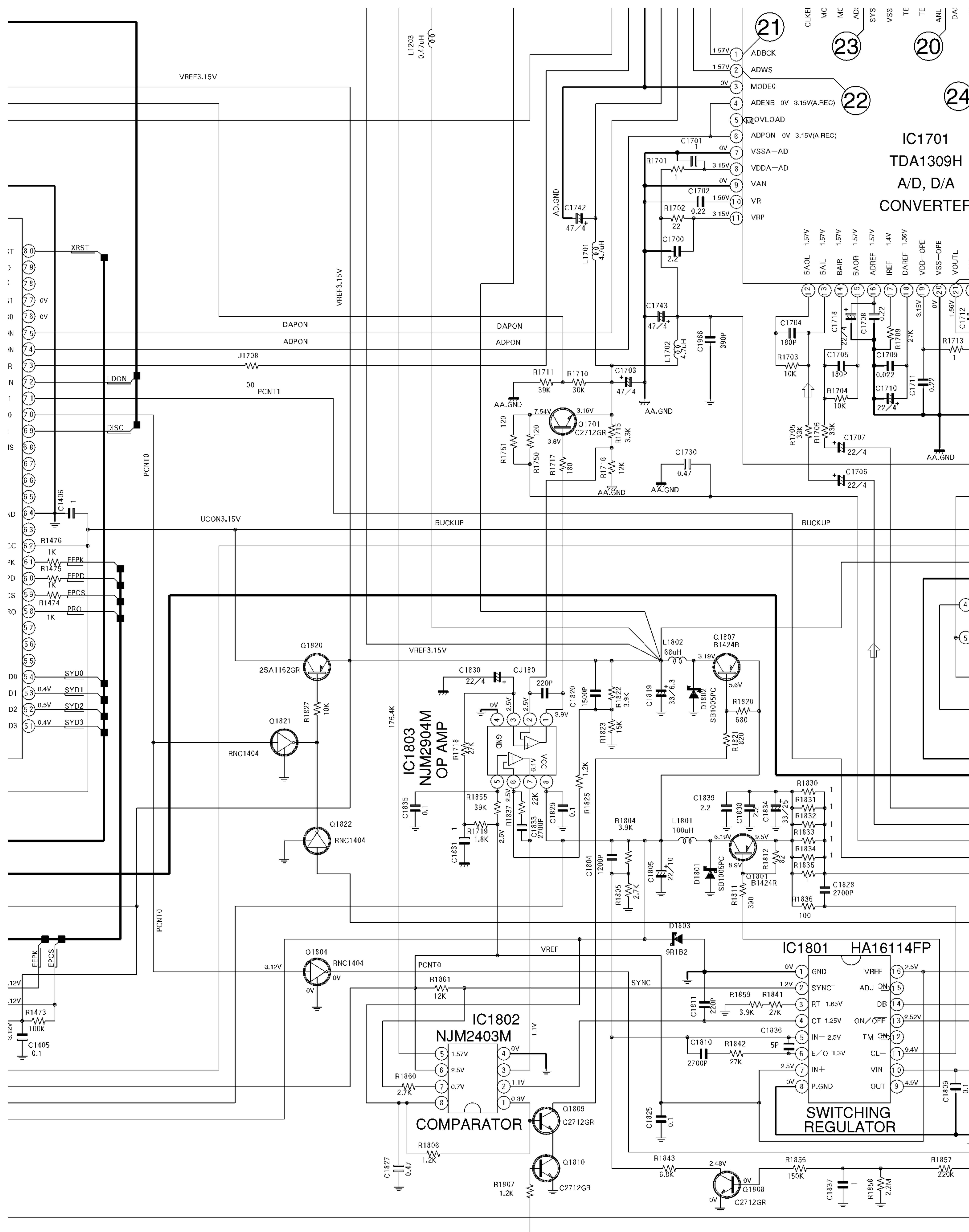
A-a	A-b
A-c	A-d







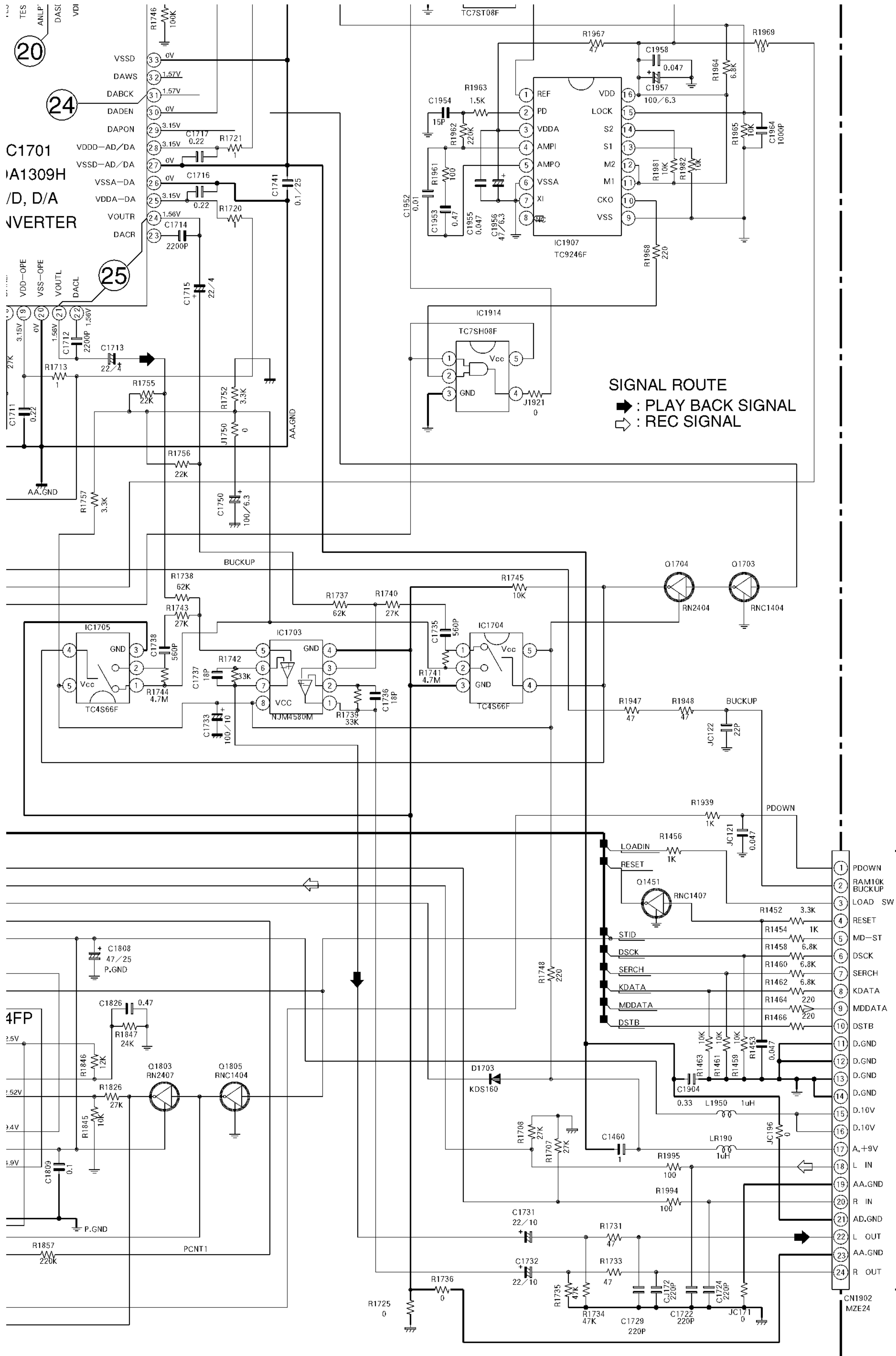
■ MD MAIN PCB ASSY (4/4)



SCHEMATIC DIAGRAM POSITION:

A-a A-b
A-c A-d

MJ-L7

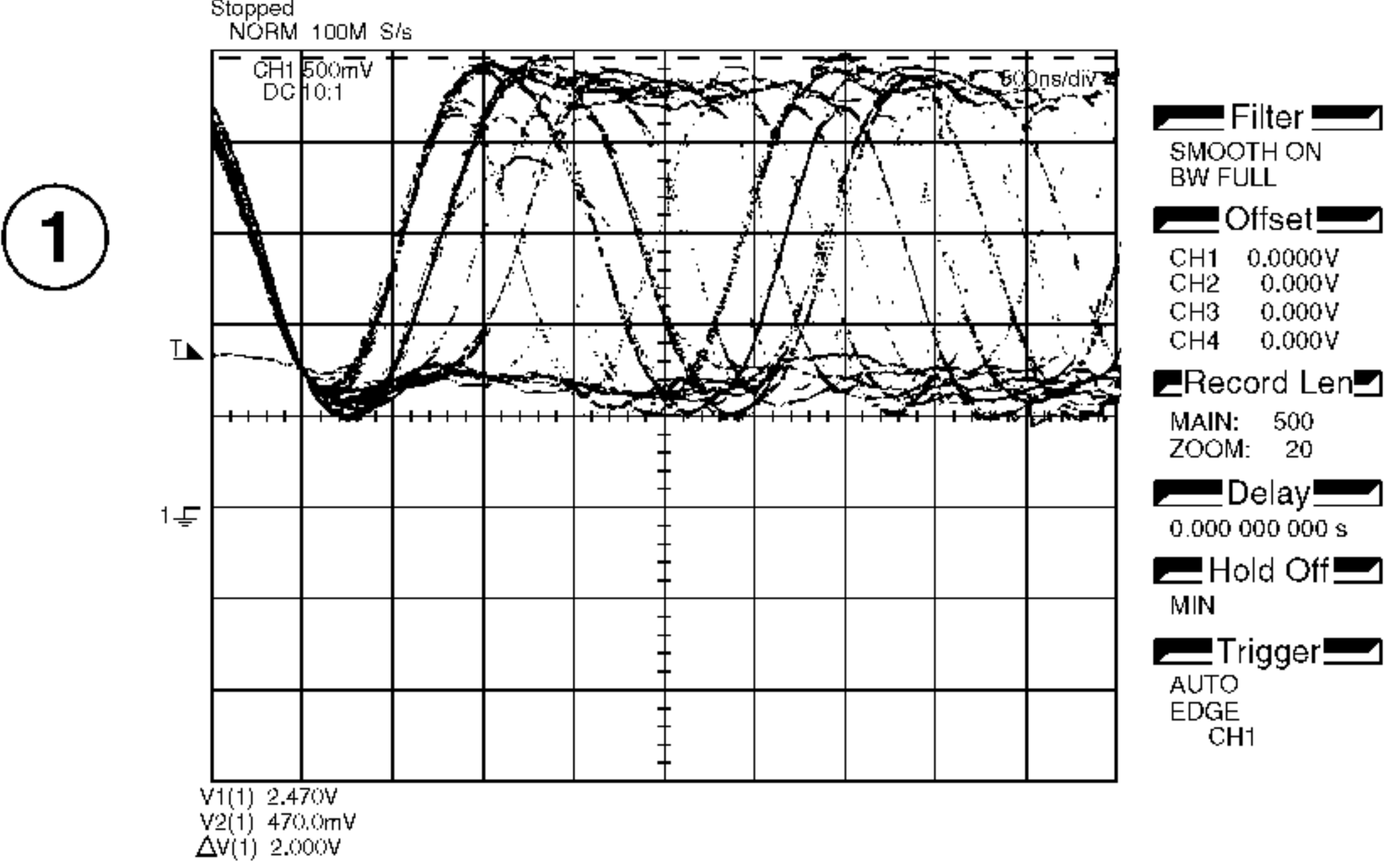


D
CN4403

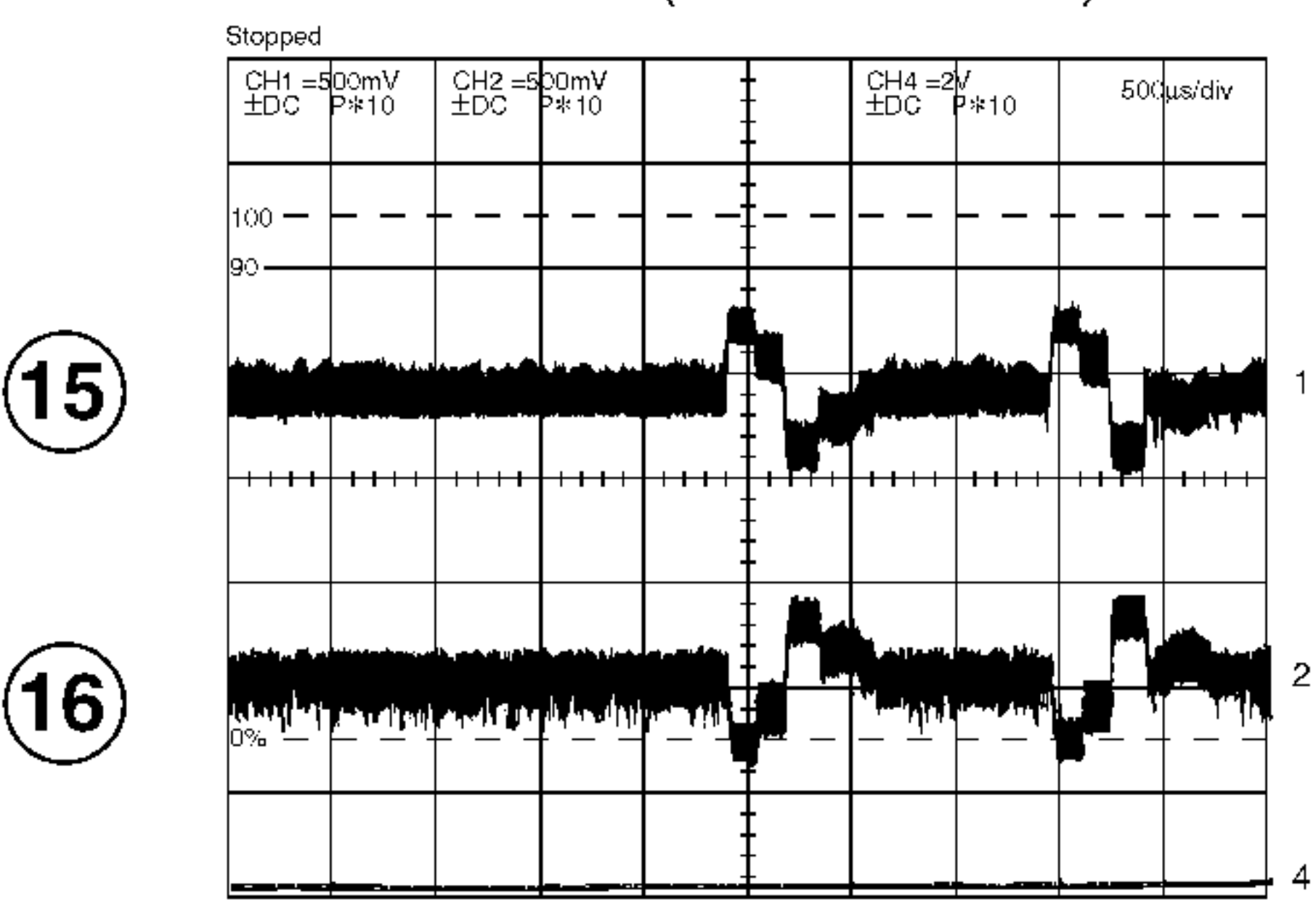
A-d 19

MD WAVEFORMS

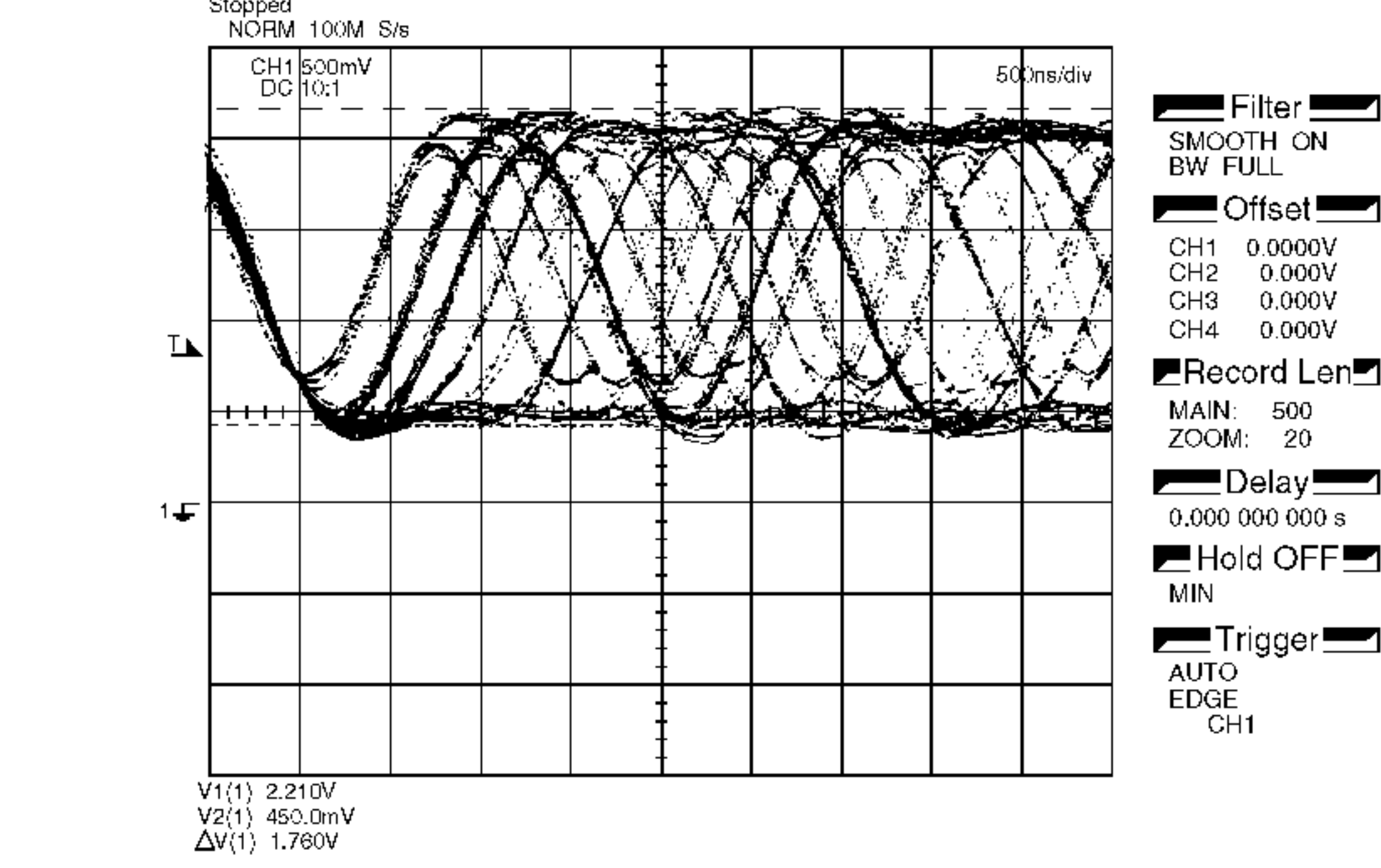
EFM (PLAYBACK DISC) PLAY



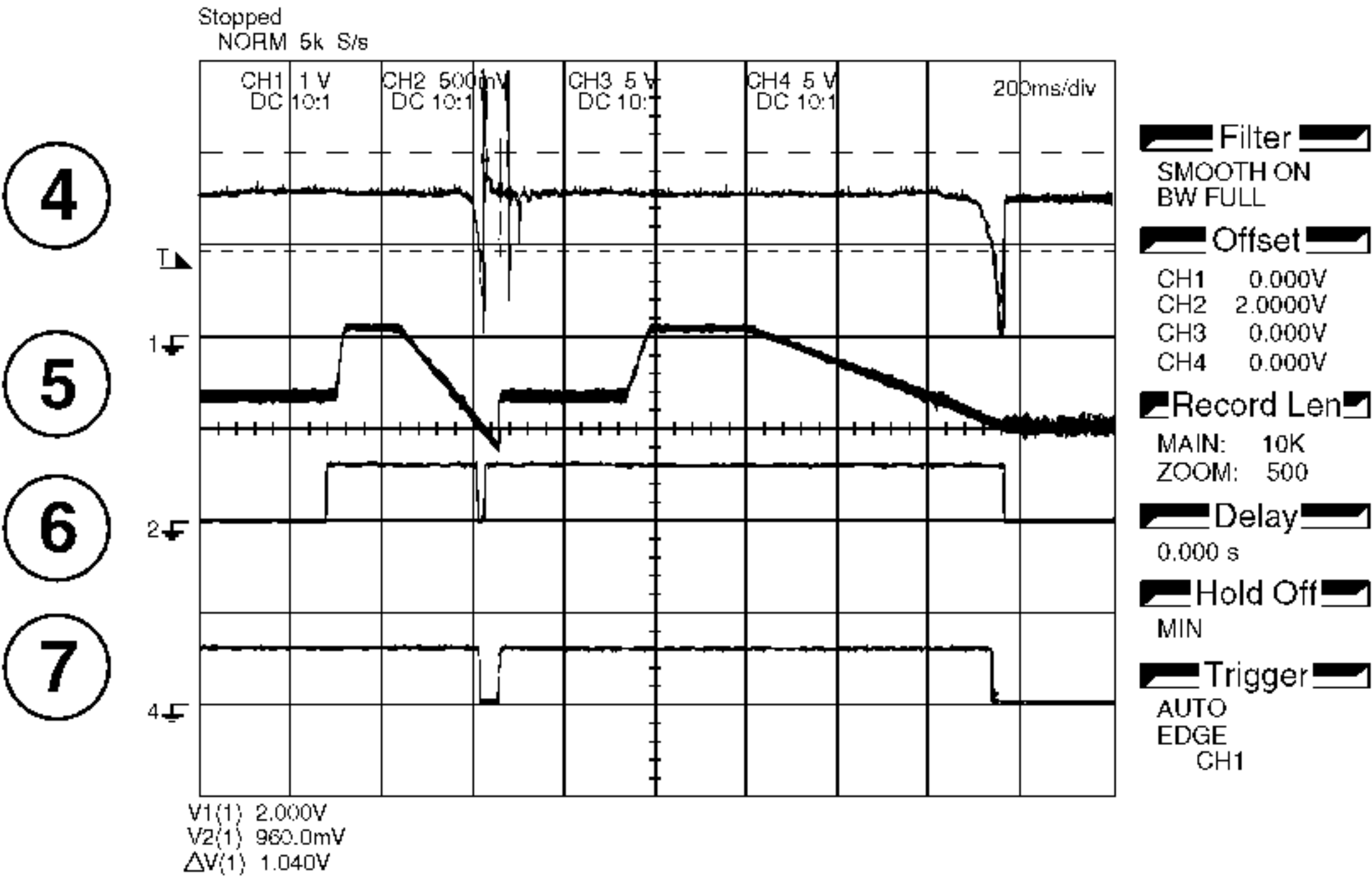
MODISC (NORMAL PLAY)



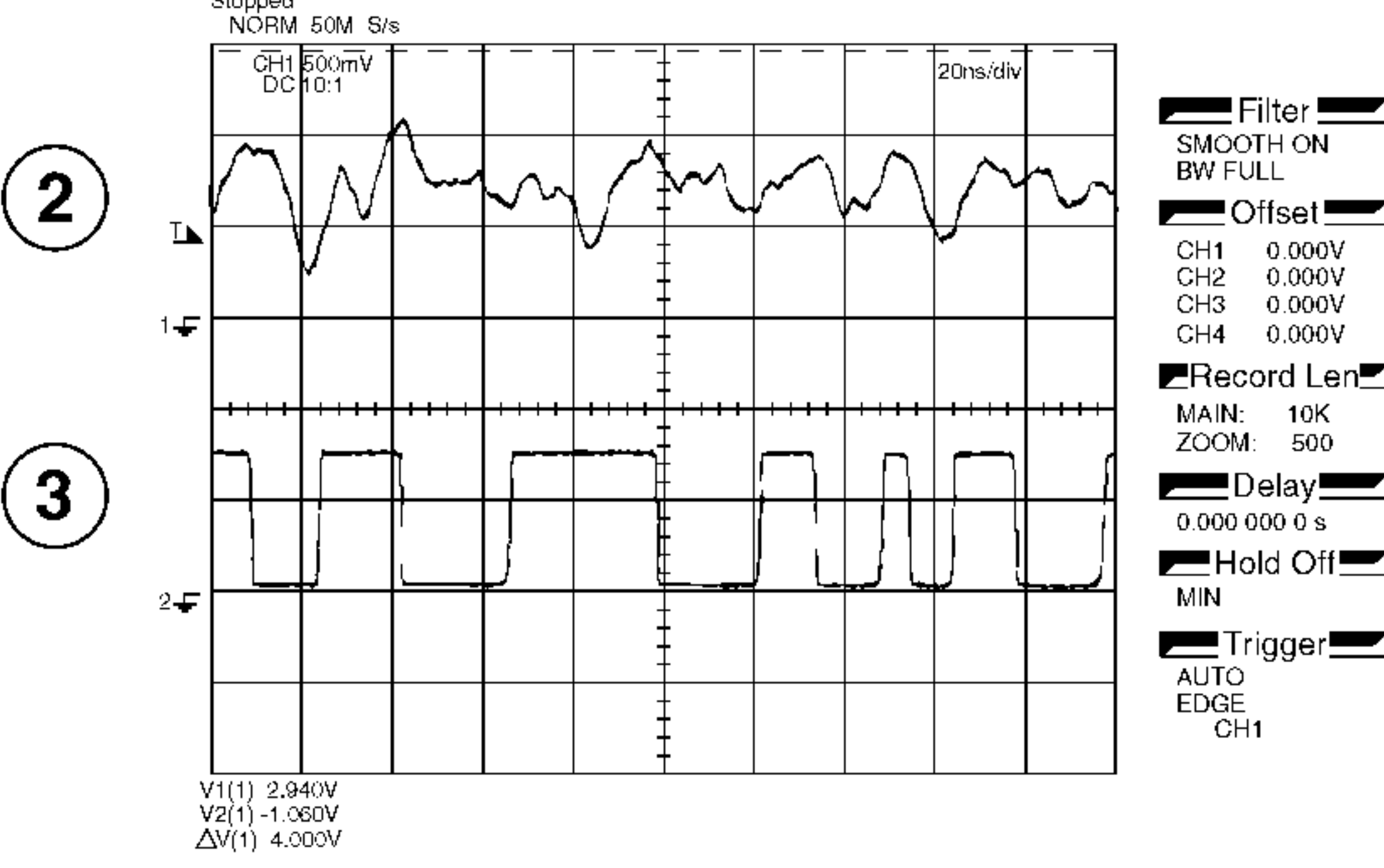
EFM (MO DISC) PLAY



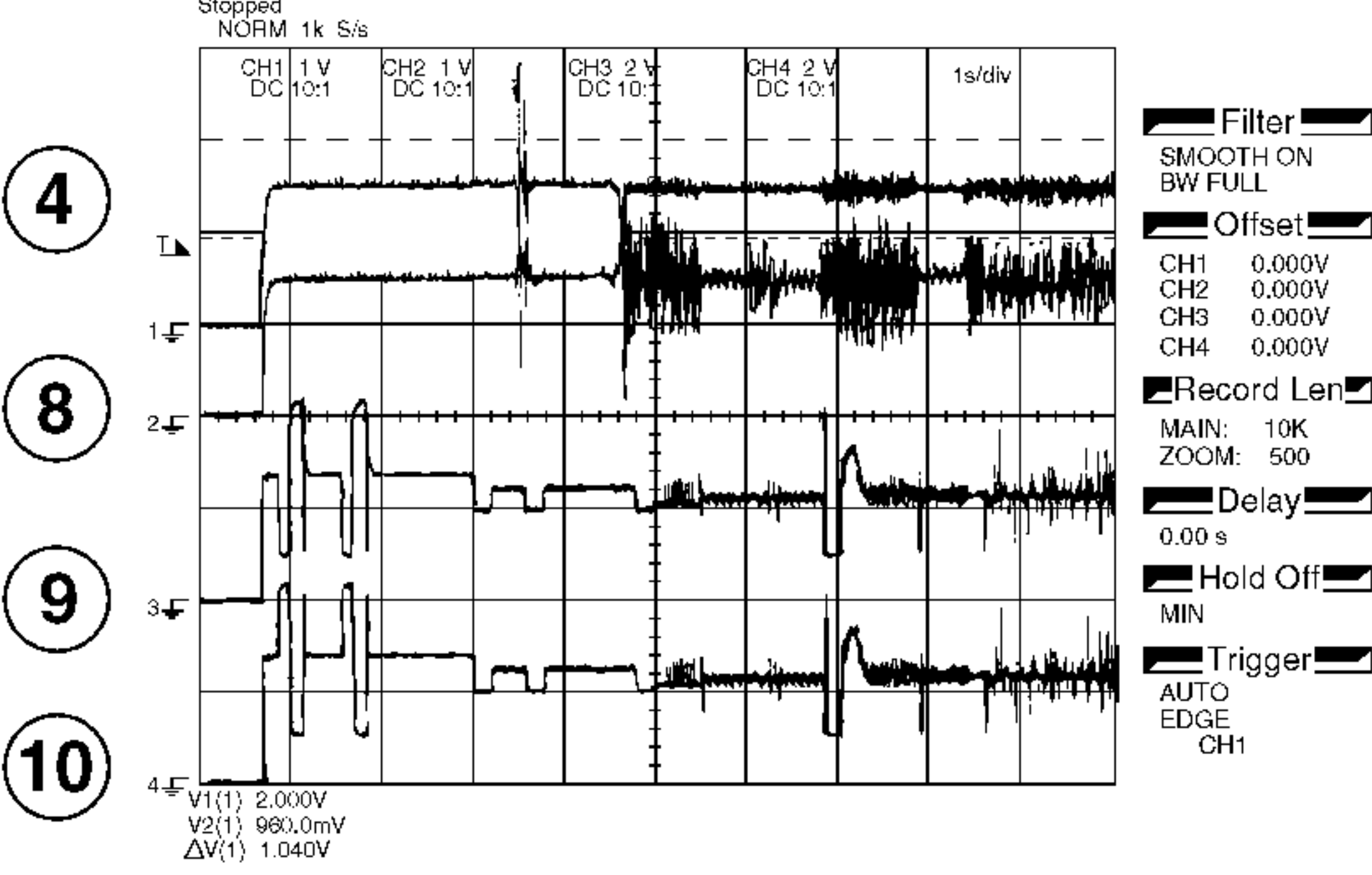
RESET (Standby→PLAY→Standby)



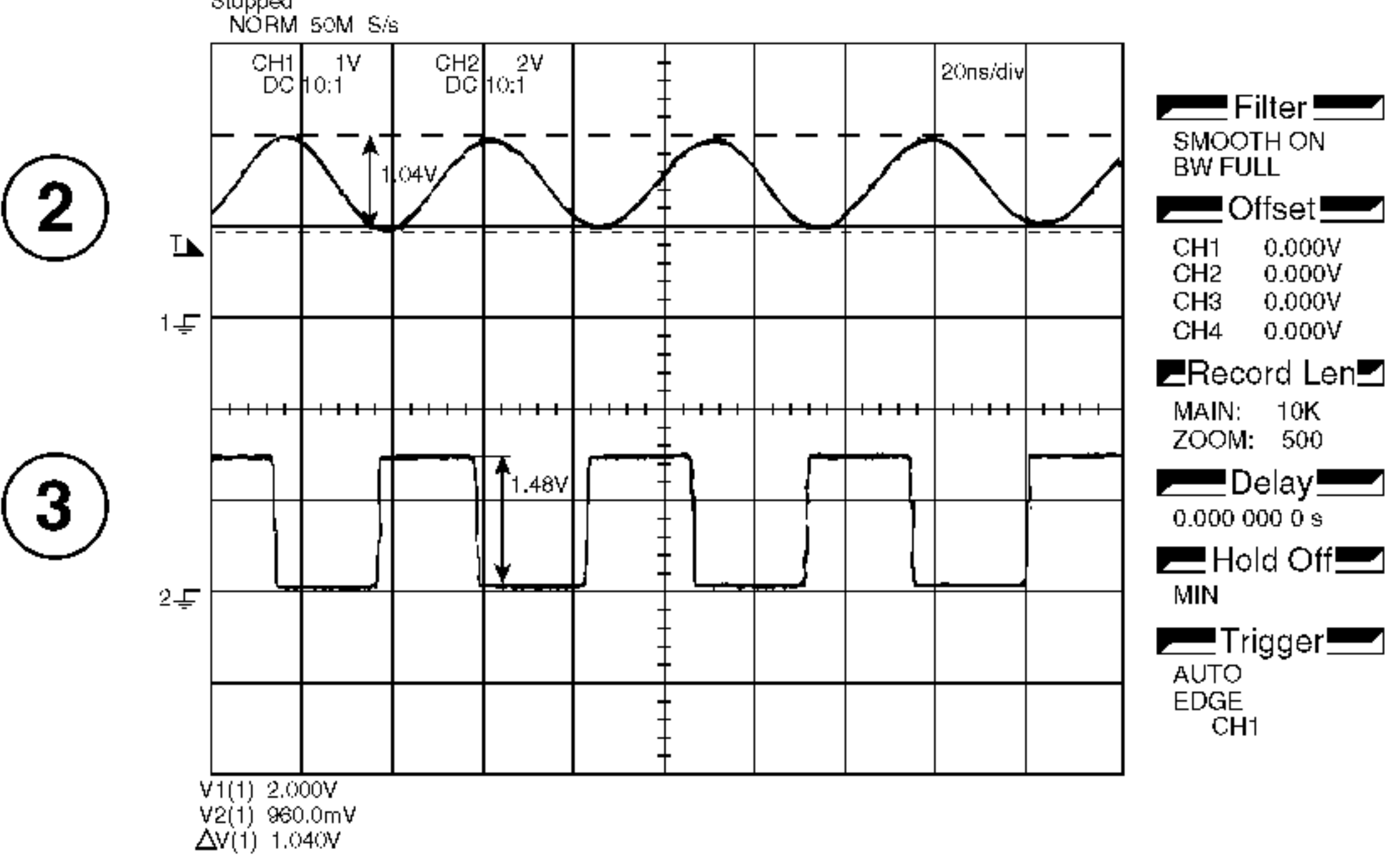
PLAYBACK MD – PLAY



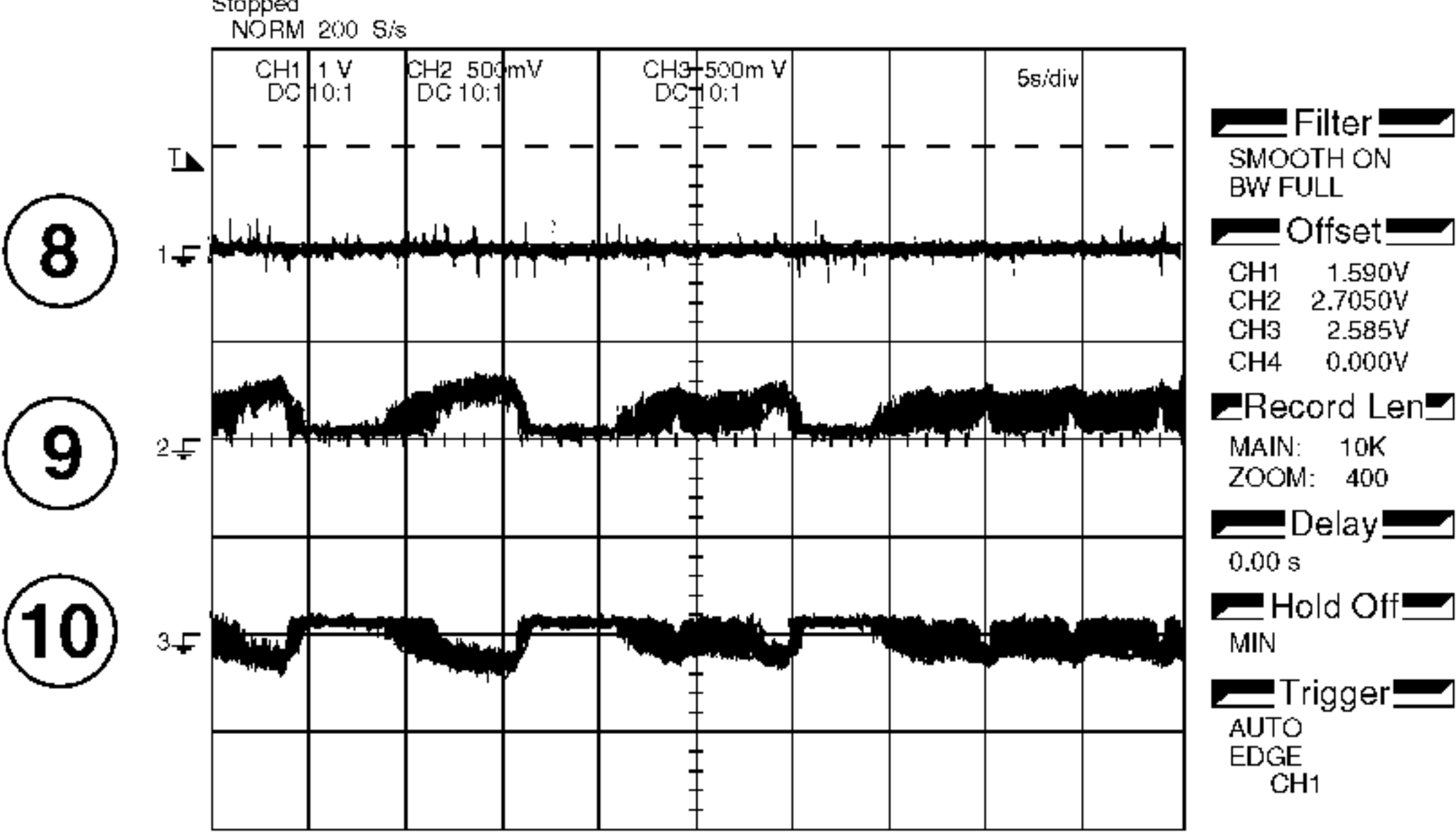
POWER SUPPLY OFF → Standby



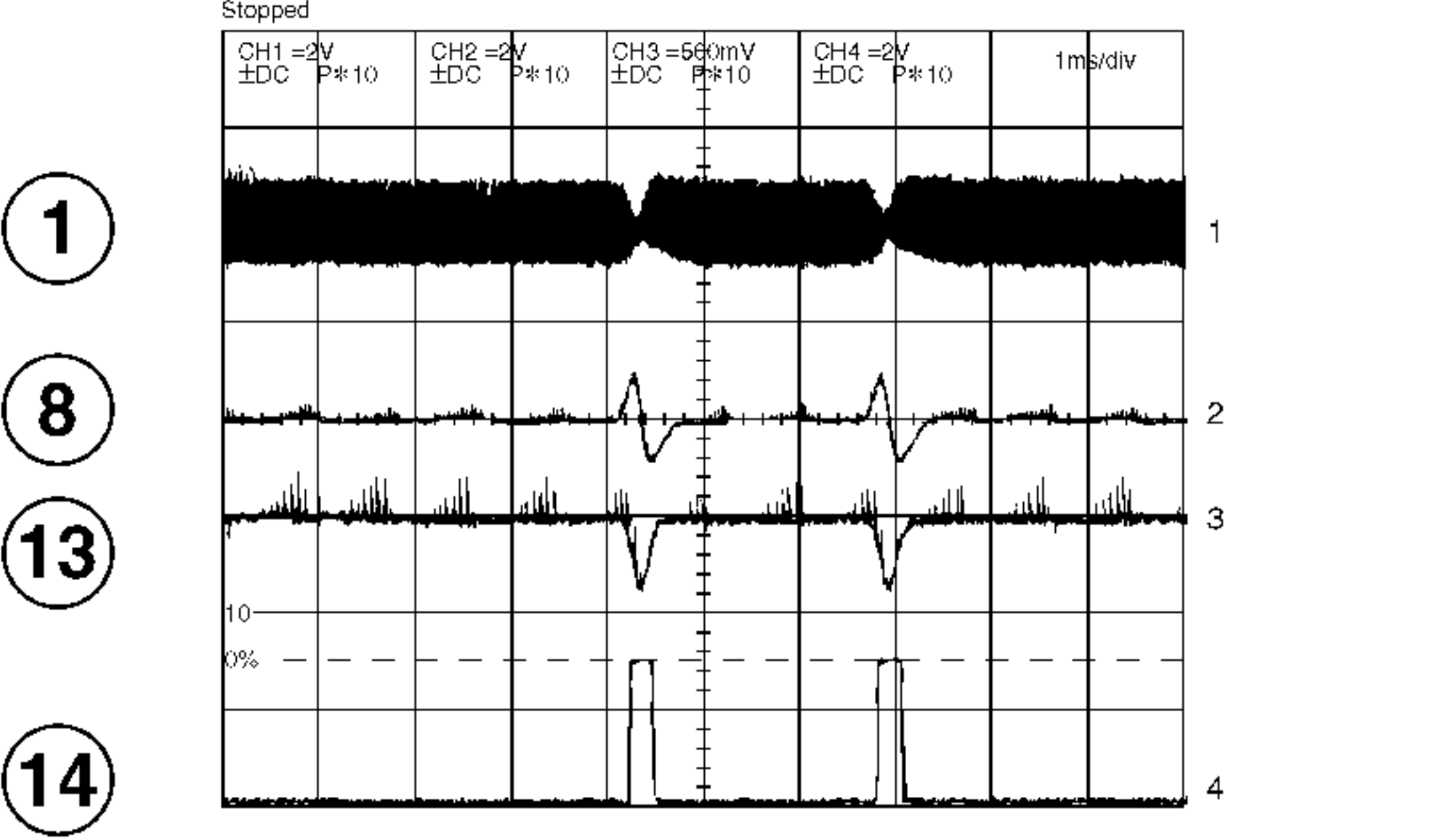
PLAY (MO DISC)



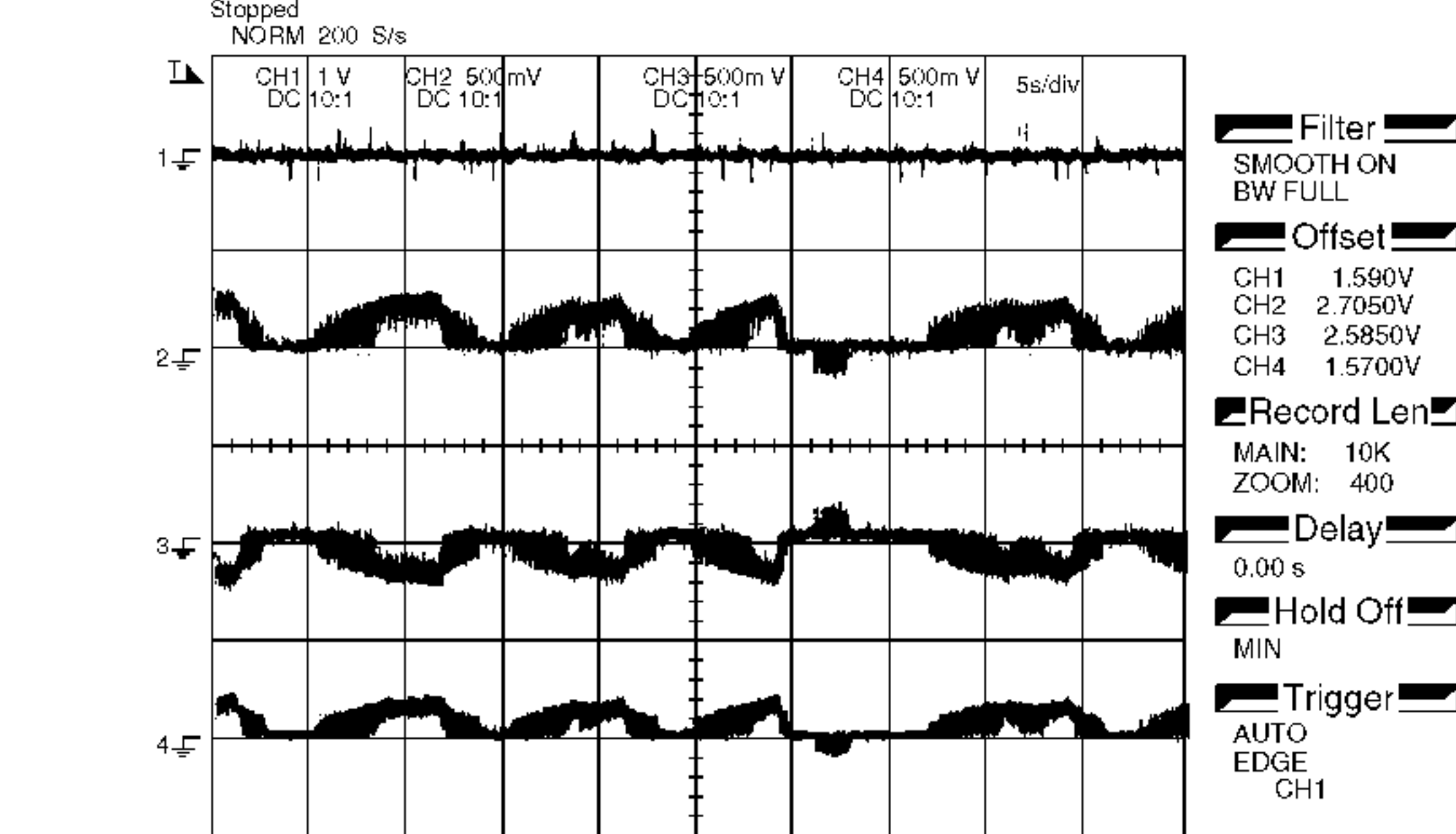
PLAY (MO DISC)

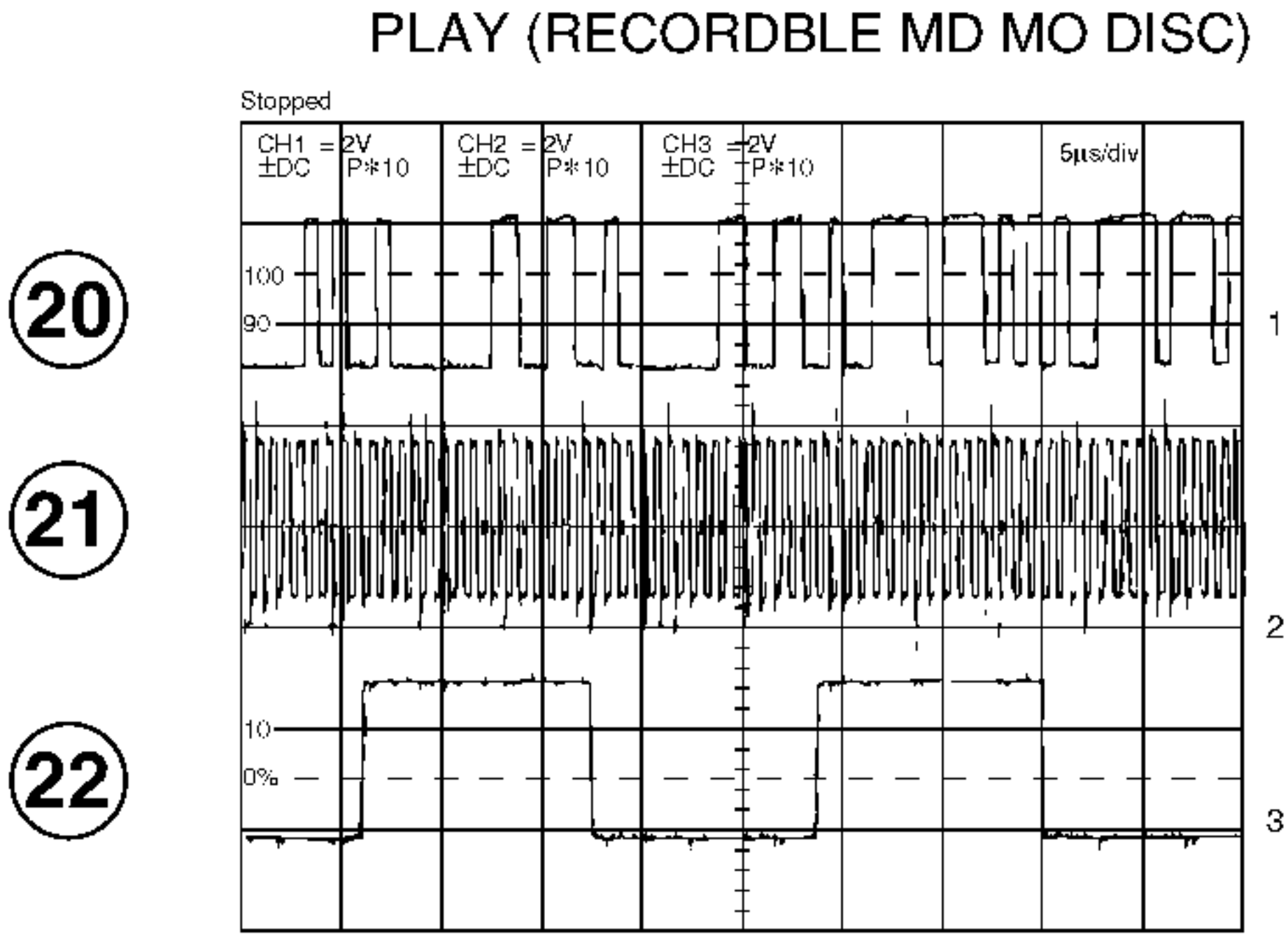
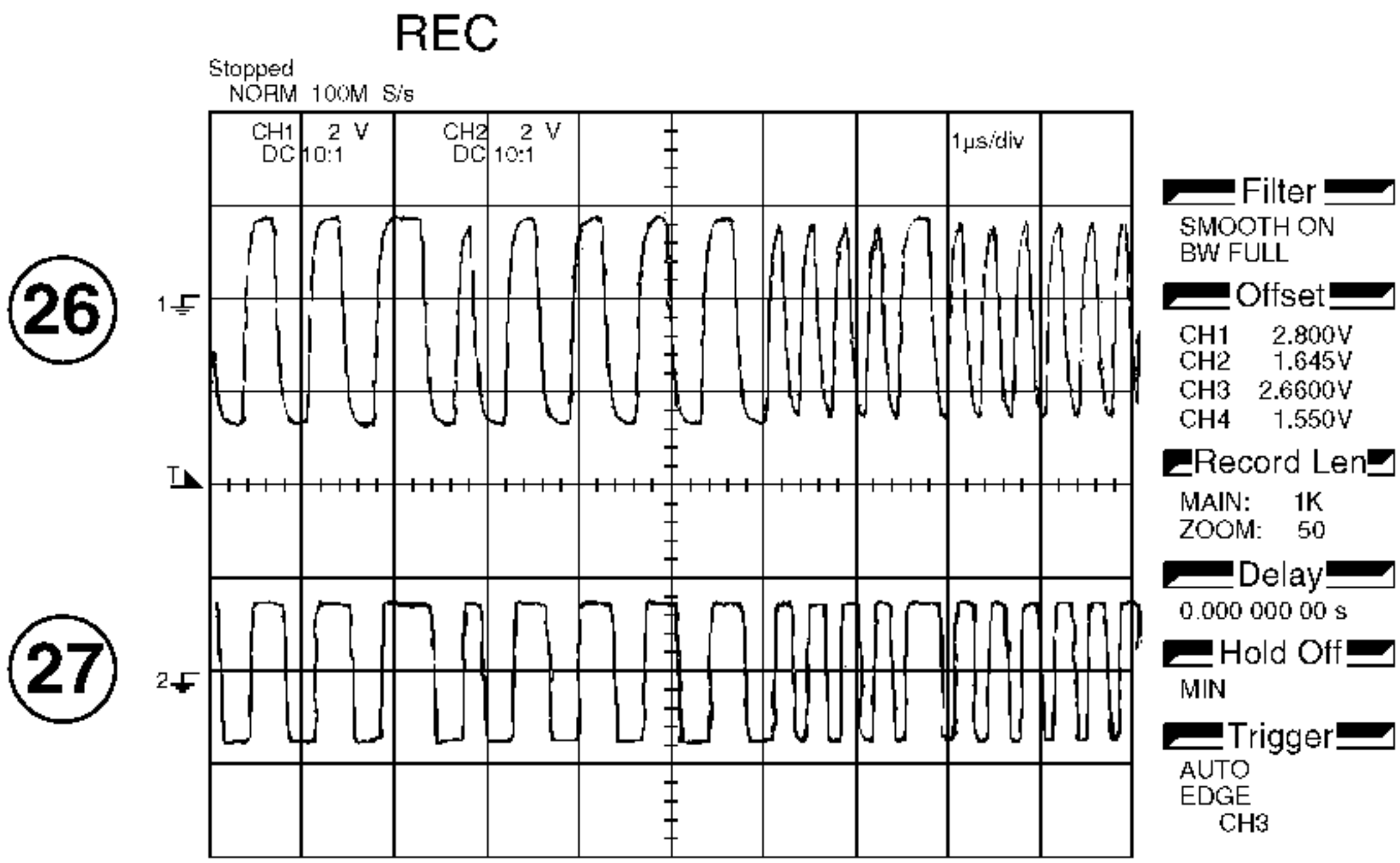
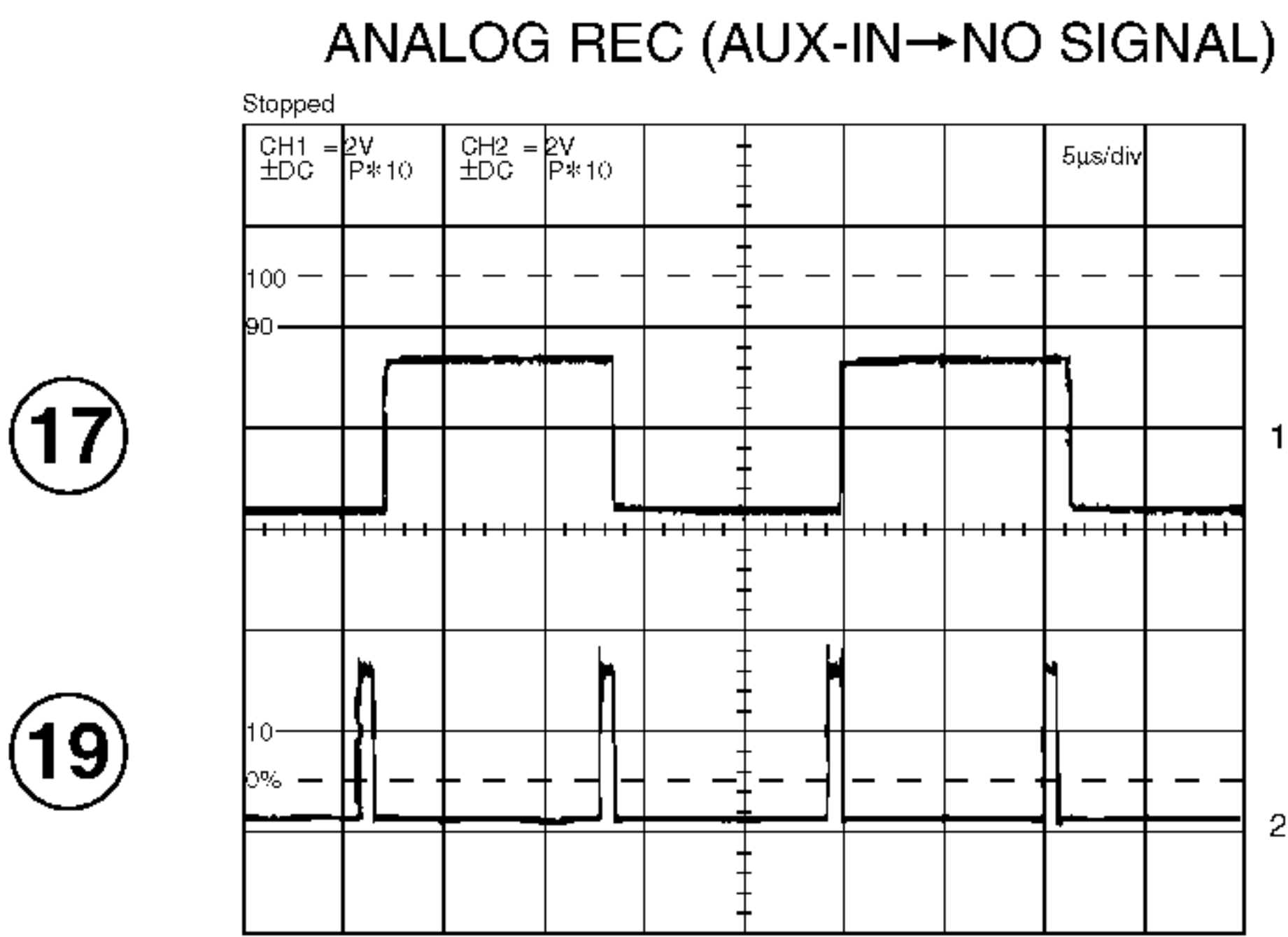
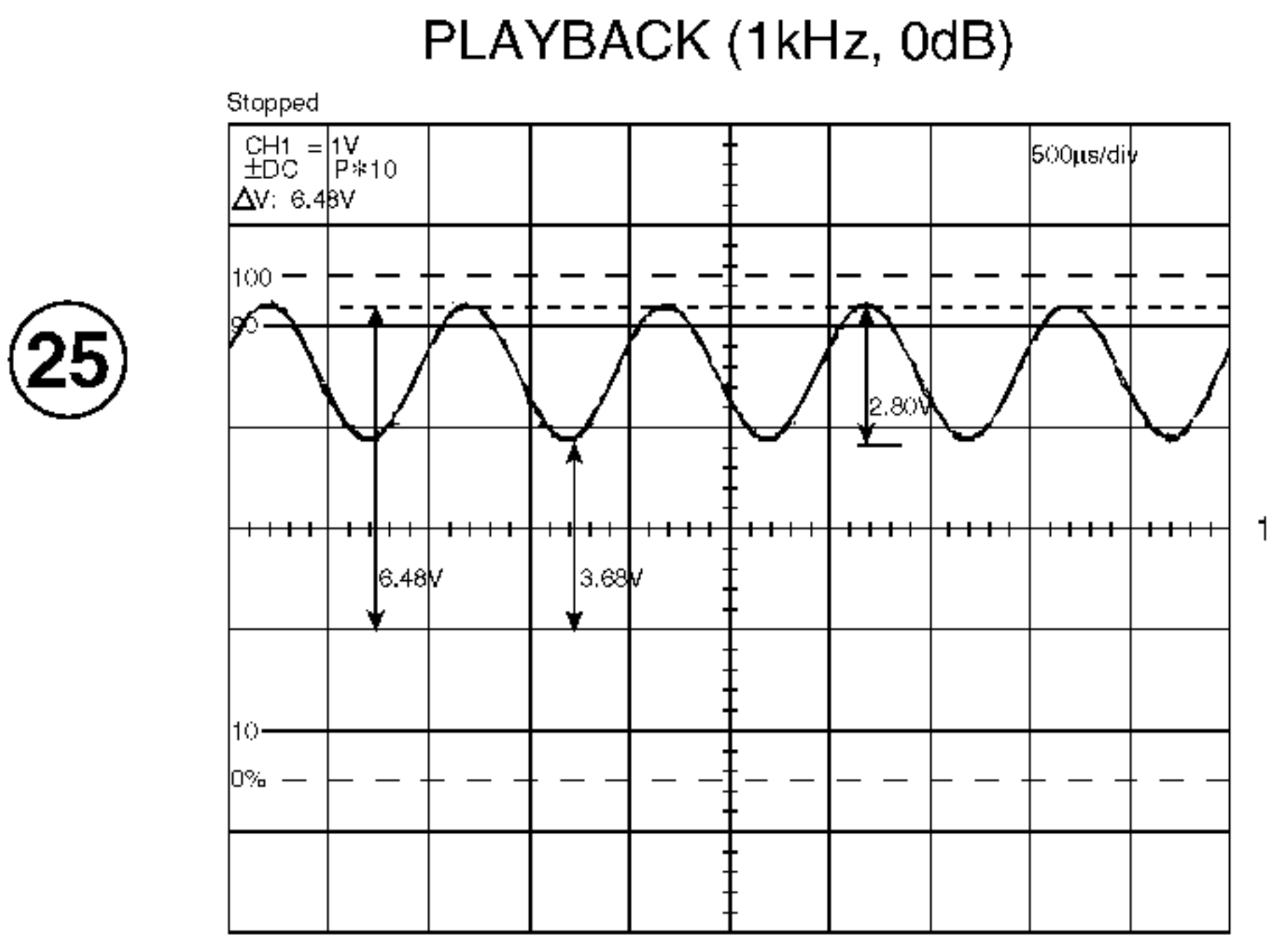
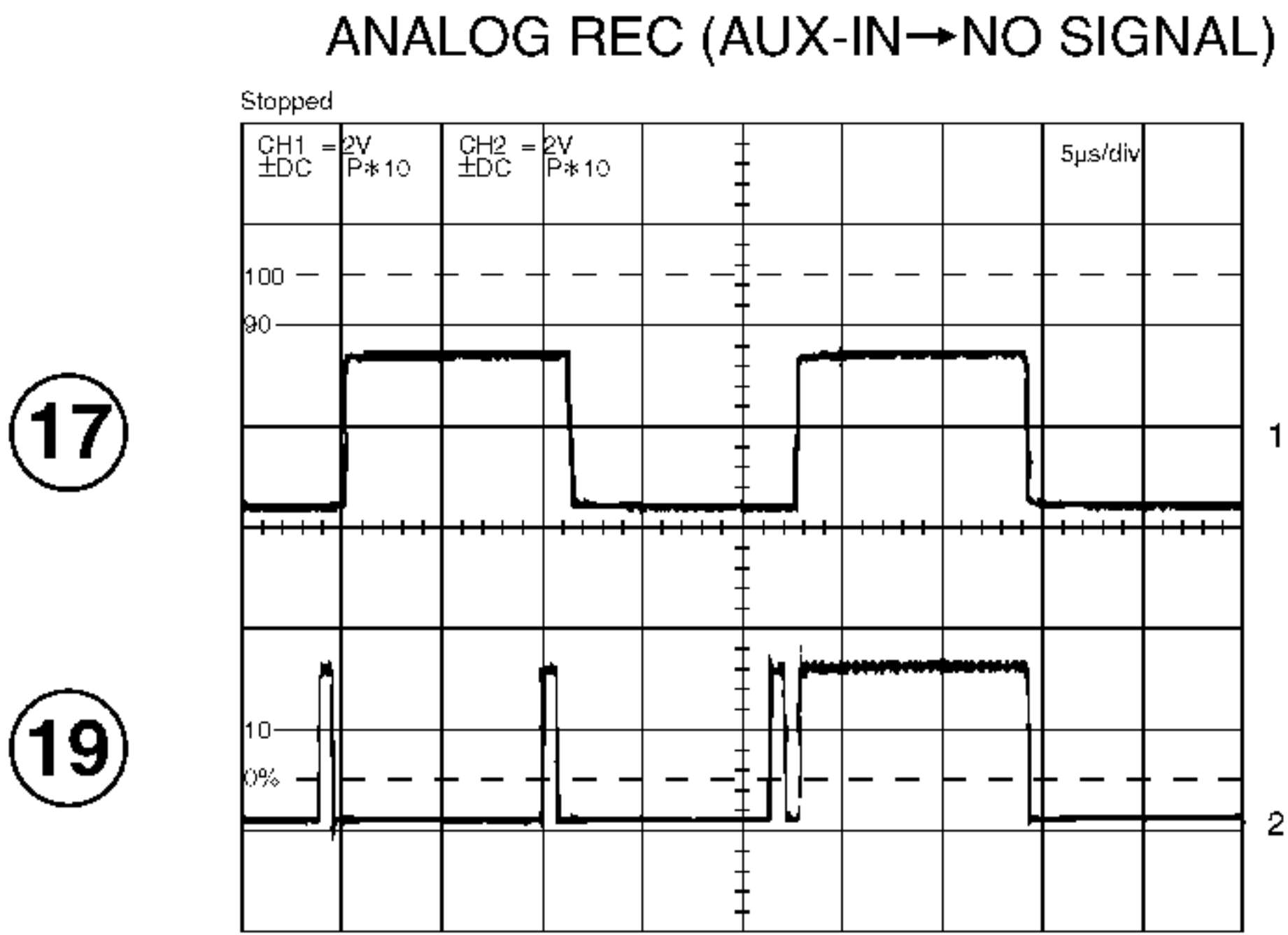
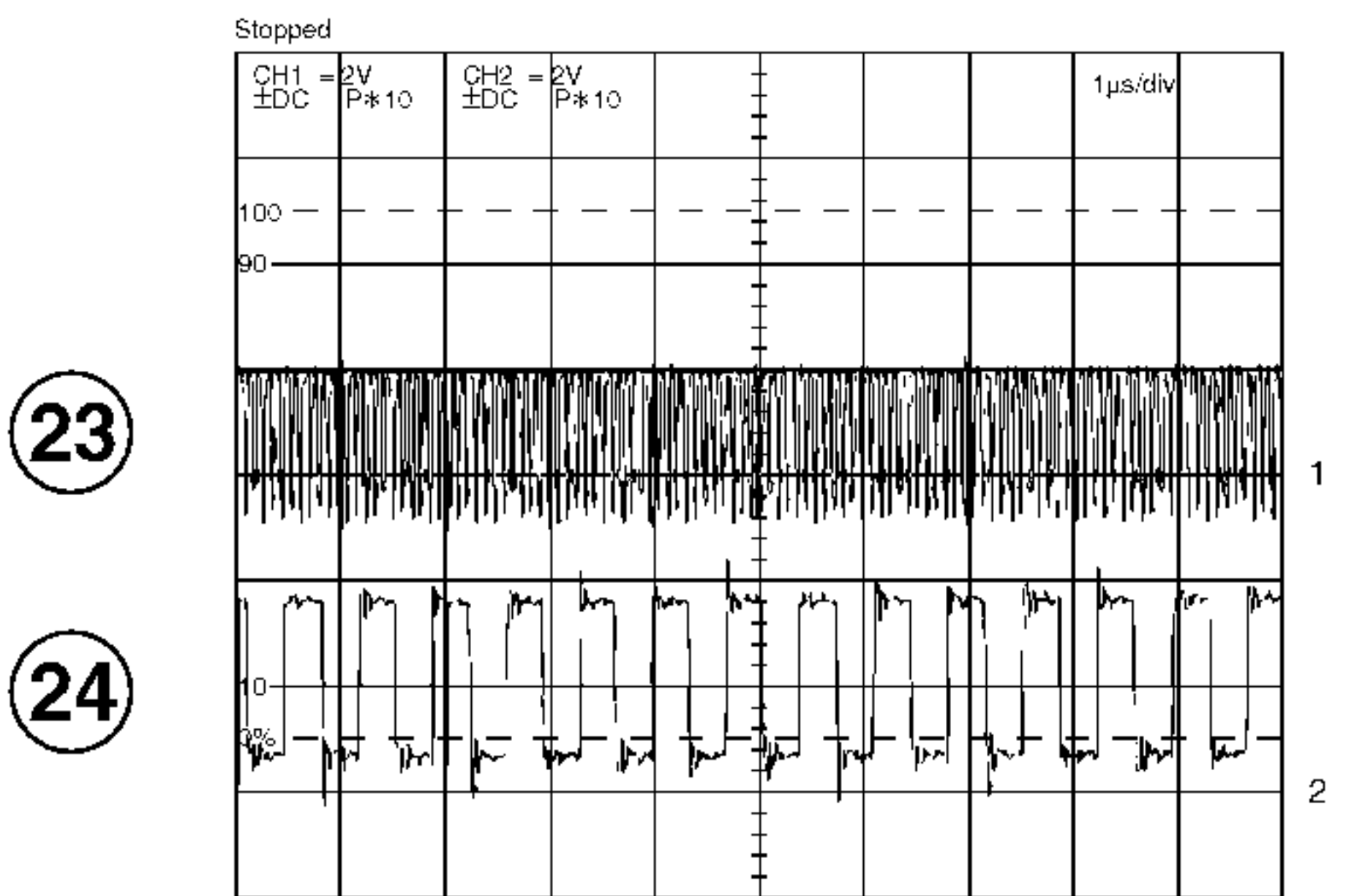
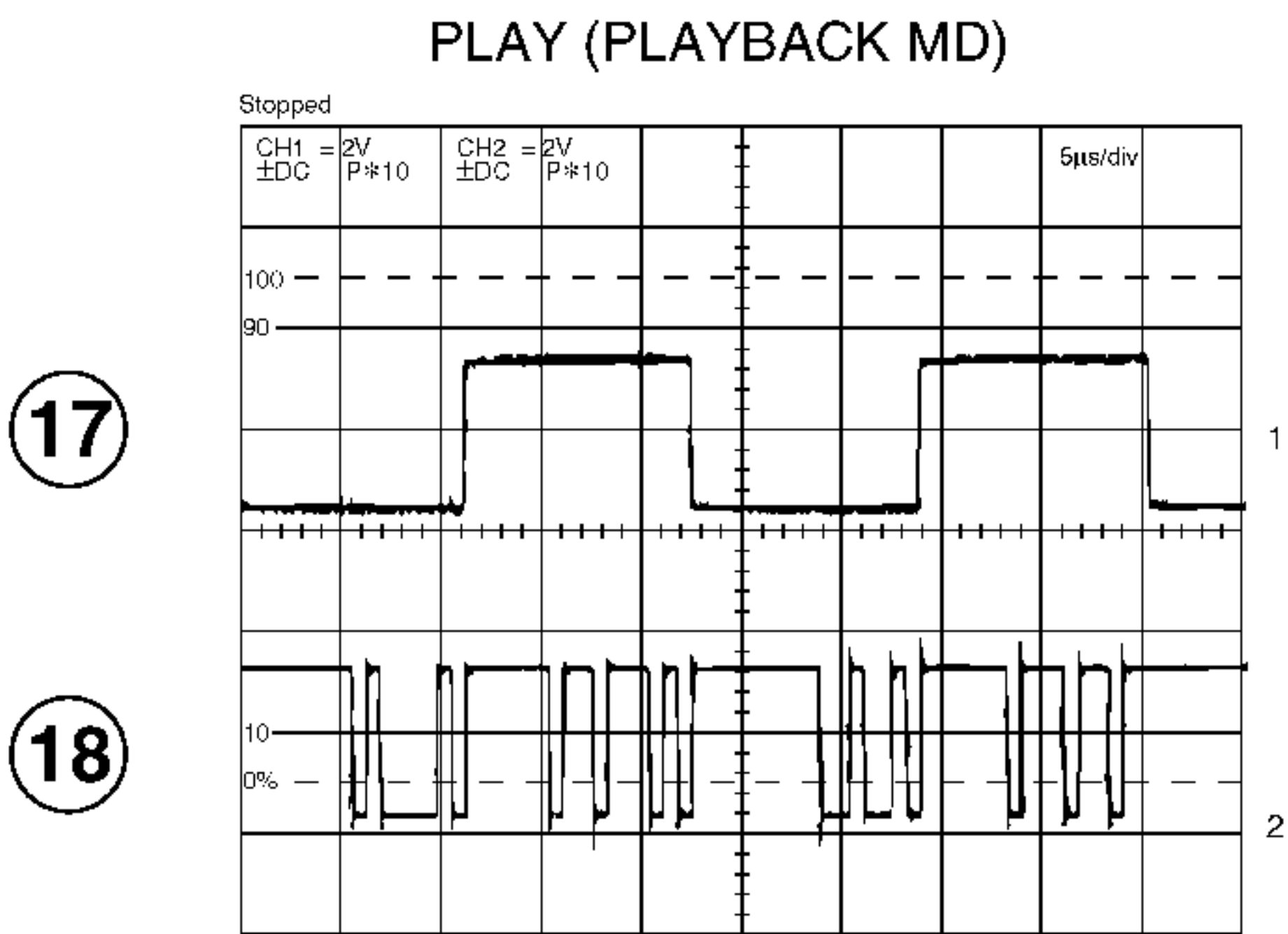
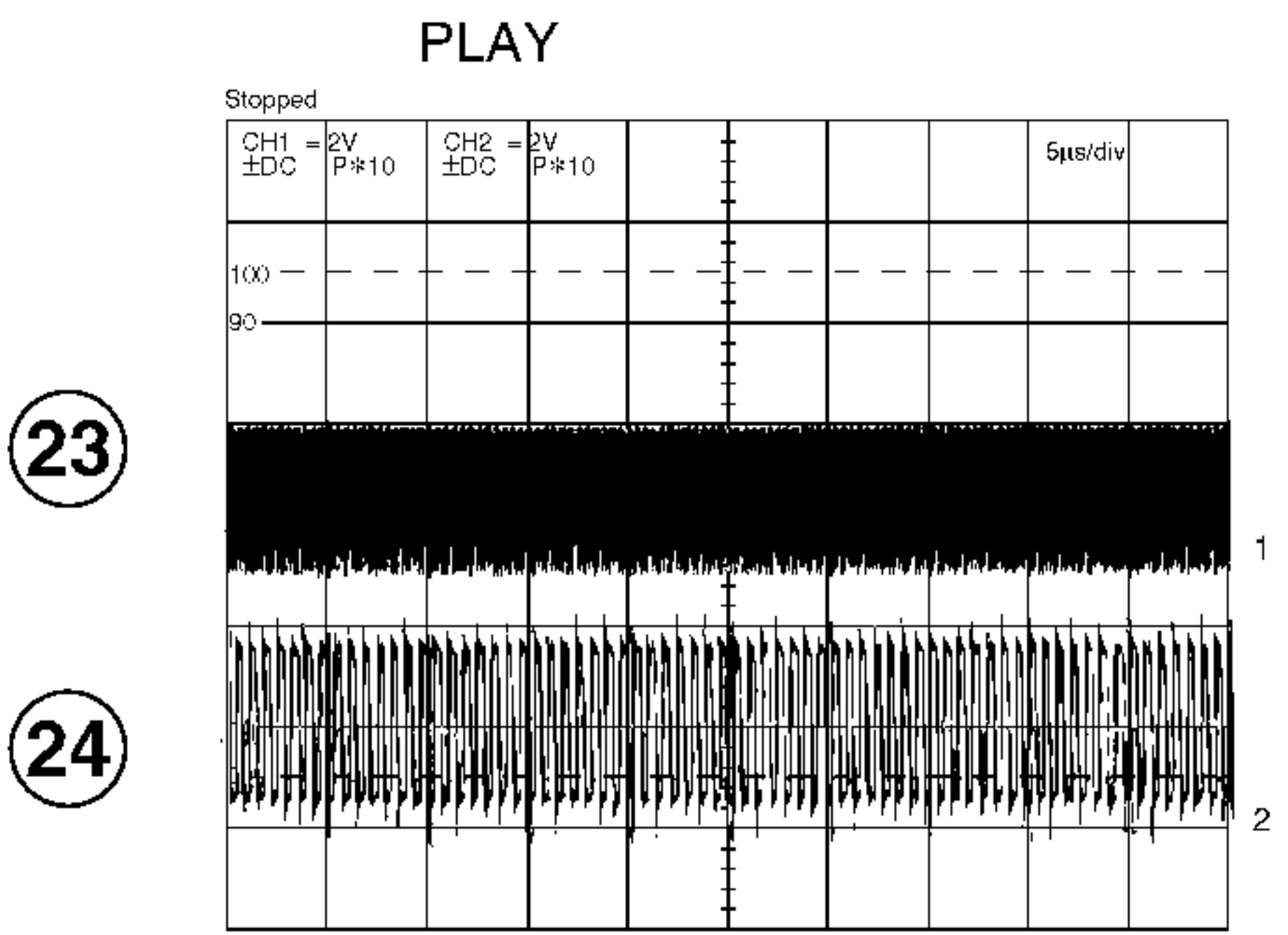
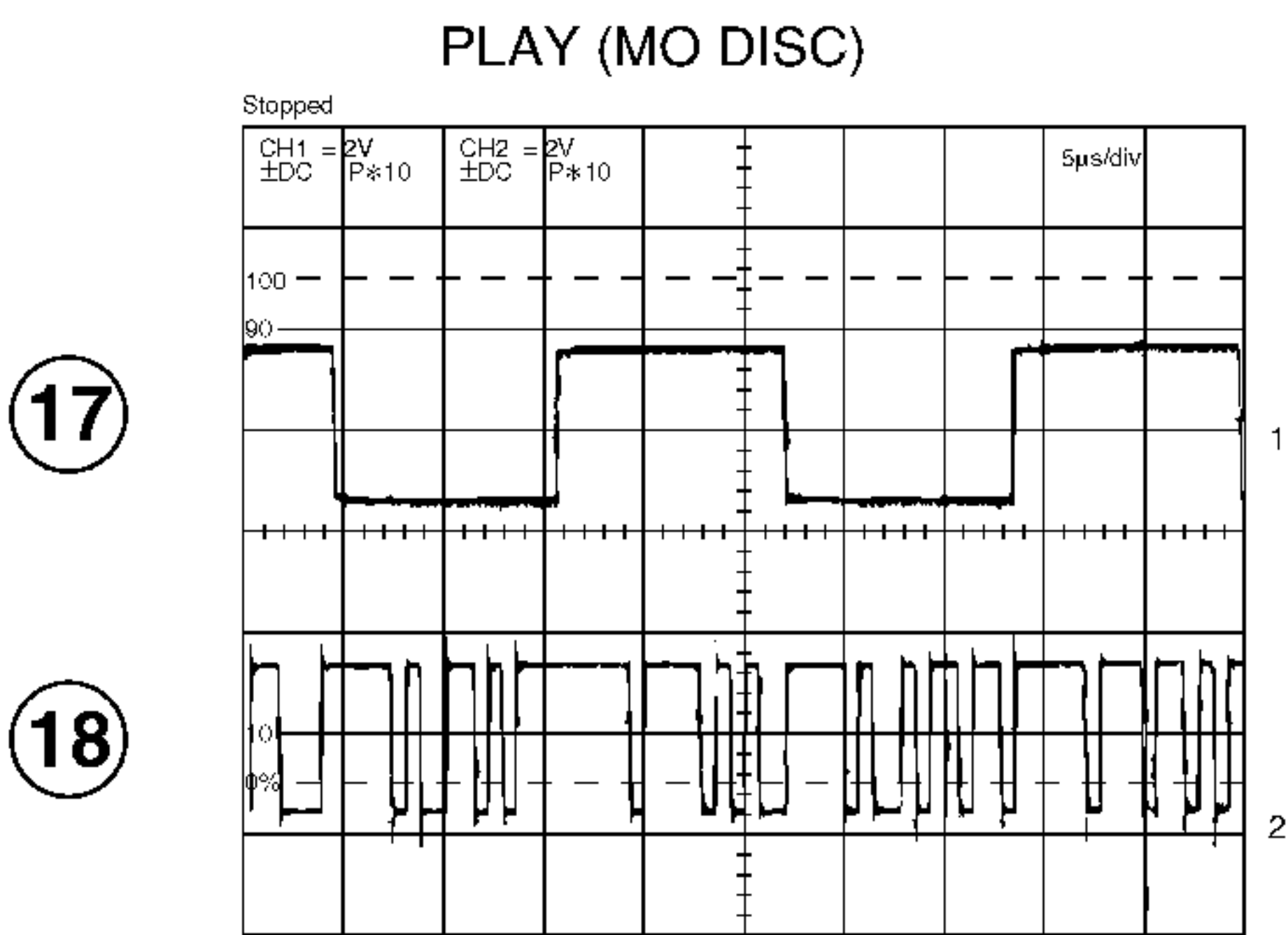


PLAY (RECORDBLE MD MO DISC)



PLAY (MO DISC)





3.3 MD MAIN ASSY (1/2)

D1/2 MD MAIN ASSY (1/2)
(AWZ8995: MYXK, NVXK types)
(AWU7009: XJ/JP type)

A-b
CN1904

A-d
CN1902

SIGNAL ROUTE

- DIGITAL AUDIO SIGNAL
- PLAYBACK SIGNAL
- RECORDING SIGNAL

NOTES

ALL CAPACITORS ARE IN μ F
UNLESS OTHERWISE SPECIFIED
TL : CFTLA
TM : CQMA
CH : CCSQCH
YB : CKSQYB
SL : CCSQSL
(OTHER : CKSQYF)
AL : CEAL
ZA : CEZA
EA : CEEA
(OTHER : CEAS**M##orCEAT**M##)
ALL RESISTORS ARE IN Ω
1/10W (CHIP)
1/4WPU
(F) RFA1/4PS
ALL INDUCTORS ARE IN μ H
LAU



	MYXK, NVXK	XJ/JP
FU1	Not used	VEK1009
H4301, H4302	Not used	AKR1003
W4301, W4302	○	Not used
W4303–W4306	○	Not used
L4301	Not used	○


 CN4301
 AKP7005:
 MYXK, NVXK types
 2.5A 250V
 AKP1123:
 XJ/JP type
 5A 125V

AC Power Cord
ADG7010: MYXK type
2.5A 250V~
ADG7009: NVXK type
2.5A 250V~
ADG7002: XJ/JP type
7A 125V~

LOWW
 MDRE
 STID
 DSCK
 SEAR
 KDAT
 MDDA
 DSTB
 OUTSEL
 ACDET
 XRECMUTE
 PCOW
 XPBMUTE
 D. DATA (M)
 D. CLK (M)
 S. DATA
 S. CLK (S)
 D. REQ
 S. REQ
 BAUP



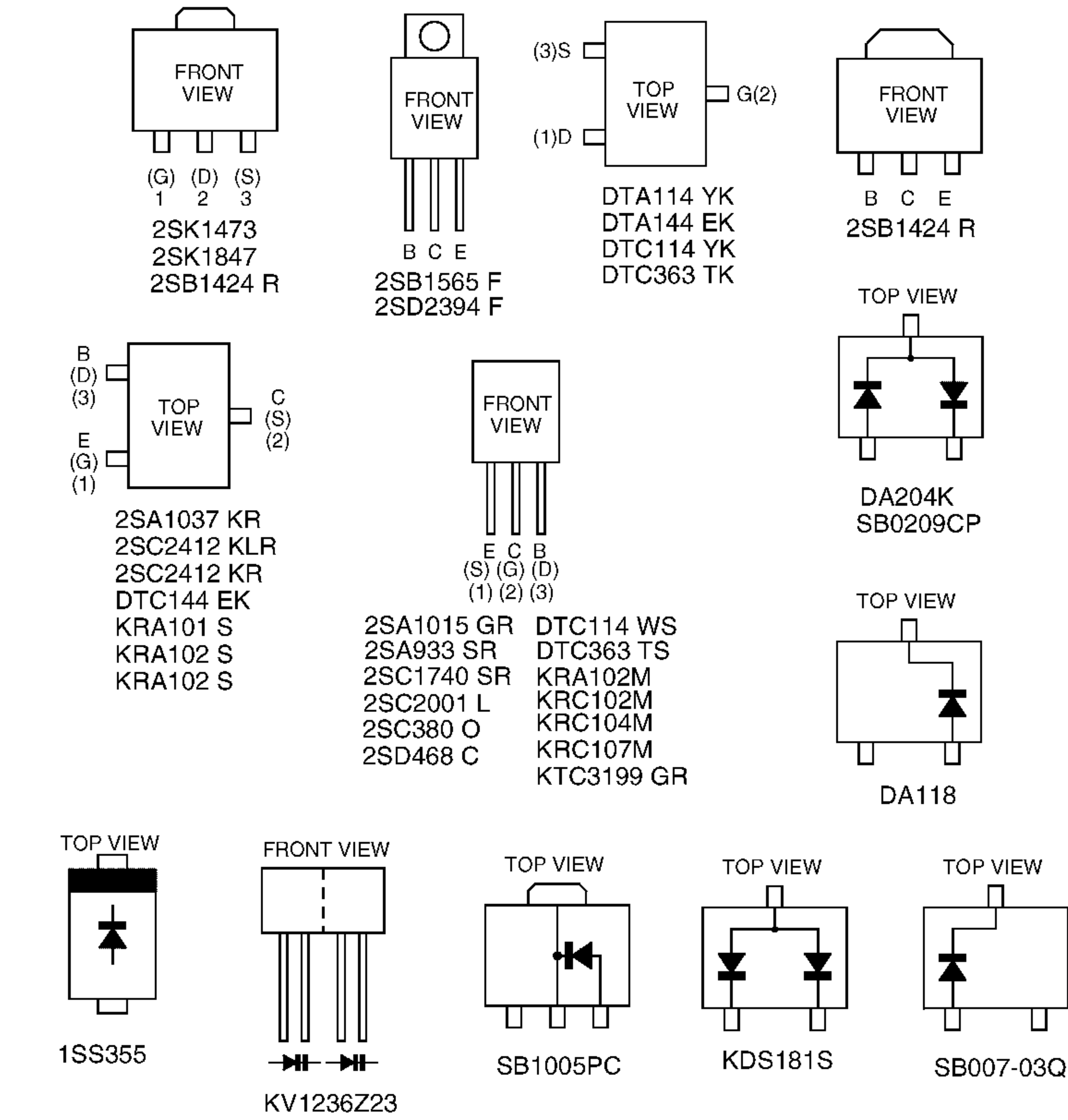
NOTES	ALL CAPACITORS ARE IN μF	UNLESS OTHERWISE SPECIFIED	ALL RESISTORS ARE IN Ω
	TL : CFTLA		100 1/10W (CHIP)
	T M : CQMA		1W 1/4WPU
	CH : CQSQCH		ALL INDUCTORS ARE IN μH
	YL : CKSQYB		ALL LAU
	SL : CQSQSL	(OTHER : CKSQYF)	
	AL : CEAL		
	ZA : CEZA		
	EA : CEEA	(OTHER : CEAS**W##*or CEAT***W##)	

4. PCB CONNECTION DIAGRAM

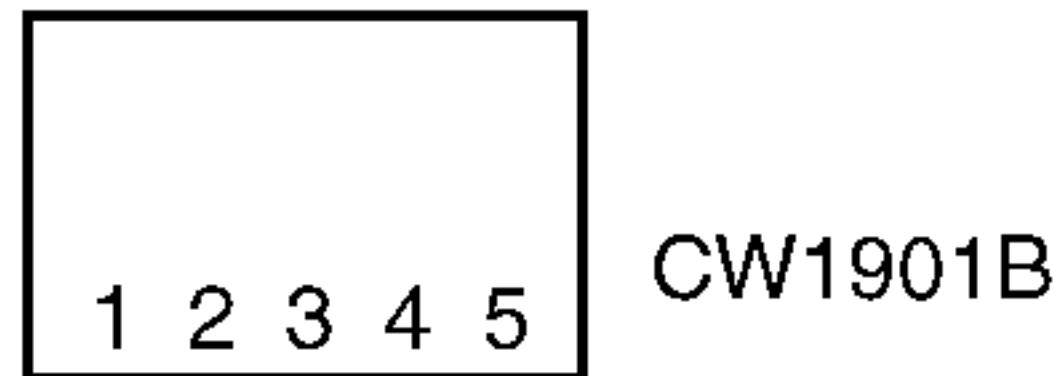
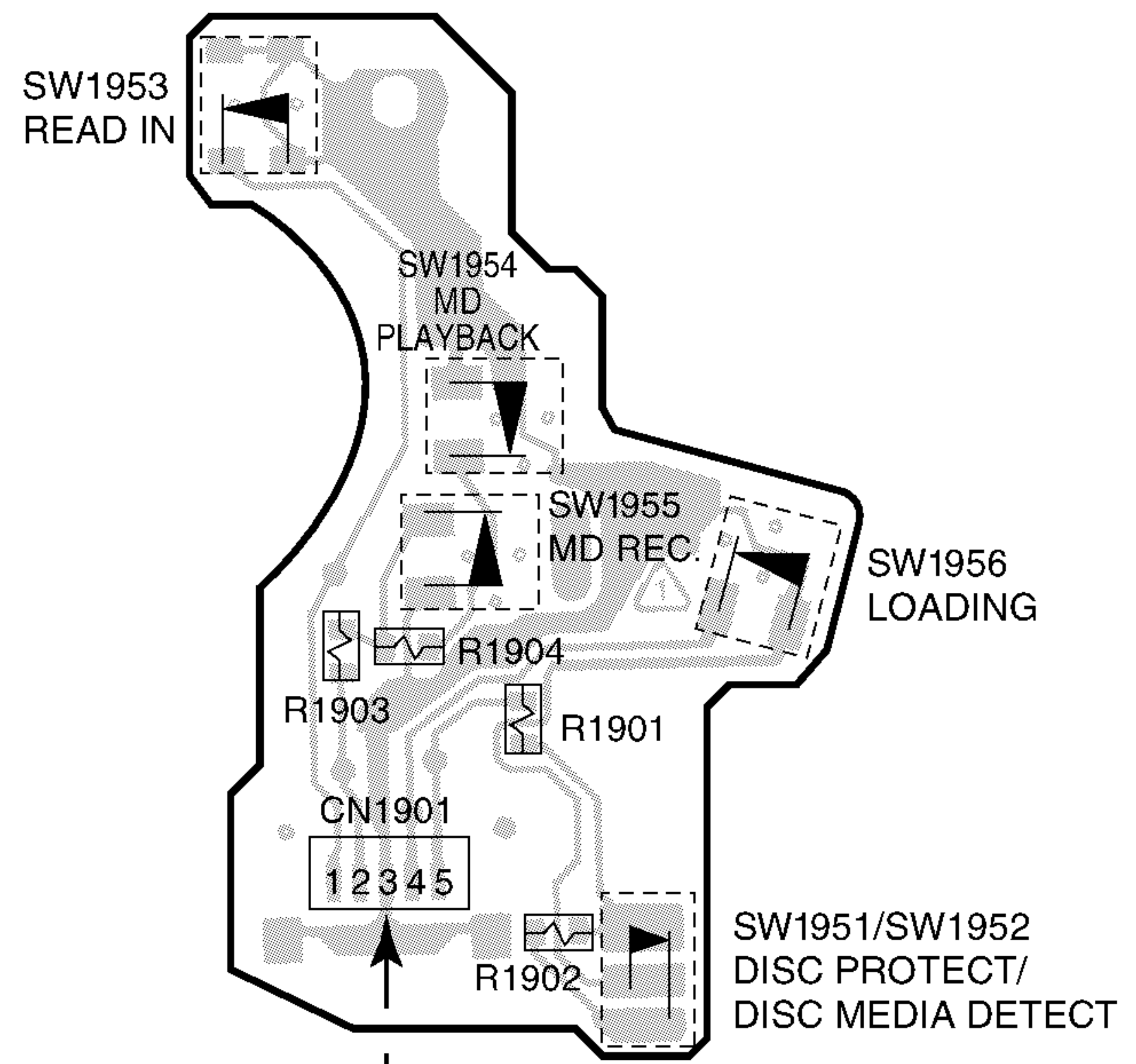
4.1 MD MECHA SW ASSY AND MD MECHA MO ASSY

SIDE A

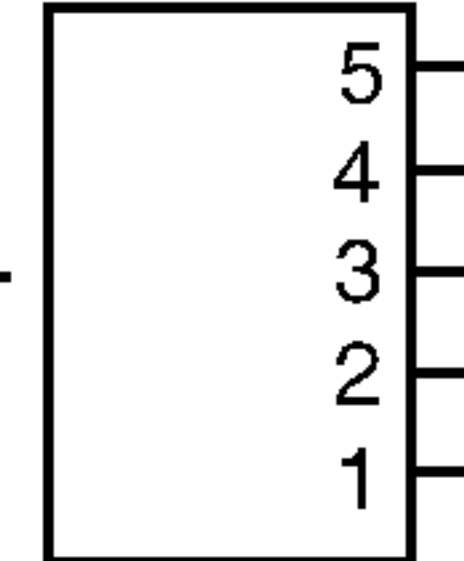
Forms of Transistor and Diodes



B MD MECHA SW ASSY PWB-C1



CW1901A

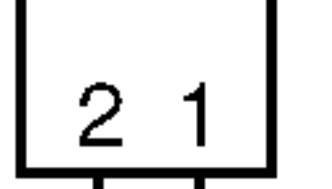


A CN1601
P26 2-A

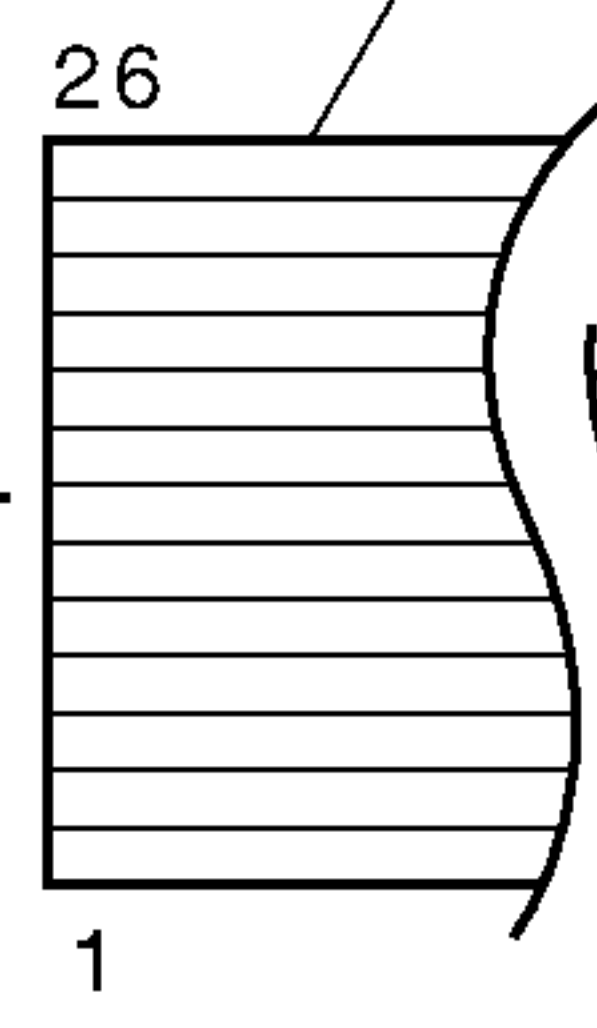
A CN1602
P27 7-A

A CN1252
P26 4-D

CW1903



FLEXIBLE PCB



A CN1101
P26 1-D

MAGNETIC HEAD(3)

MD LIGHT PICKUP

C MD MECHA MO ASSY PWB-C2

4.2 MD MAIN PCB ASSY

SIDE A

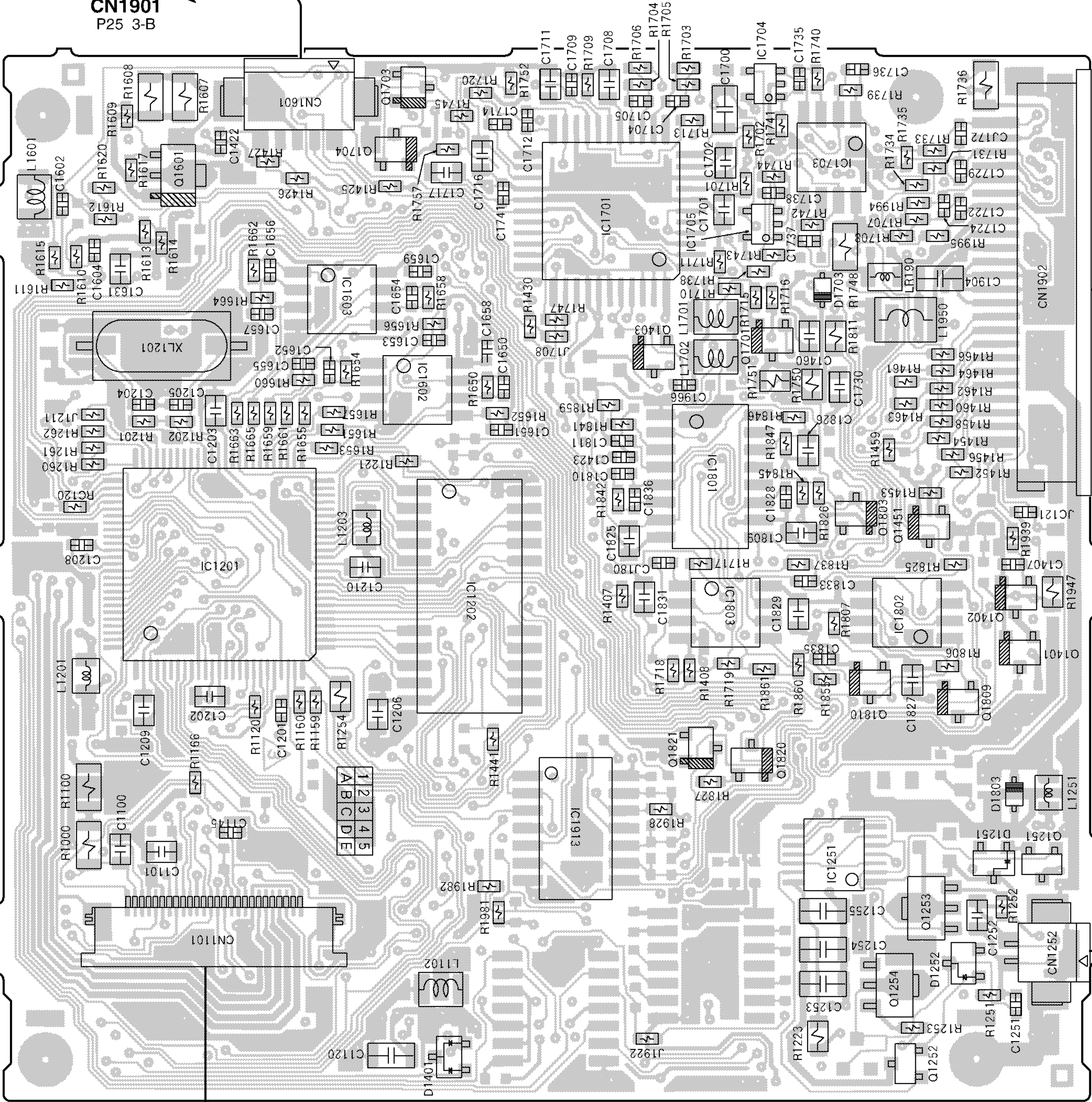
MD MAIN PCB ASSY PWB-A

CN4403

CN1901
P25 3-B

To MD LIGHT PICKUP
FLEXIBLE PCB P25 3-C

To MD LIGHT PICKUP
CW1903 P25 4-C



- | | | | |
|--------|---------------|--------------------|--------------------------|
| Q1601 | Q1703 Q1704 | IC1701 | IC1703-IC1705 |
| IC1201 | IC1603 IC1602 | Q1403 IC1801 Q1701 | Q1803 Q1451 IC1802 Q1402 |
| IC1202 | | IC1803 | Q1810 Q1809 Q1401 |
| | | Q1913 | Q1821 Q1820 IC1251 |
| | | | Q1252-Q1254 |

SIDE B

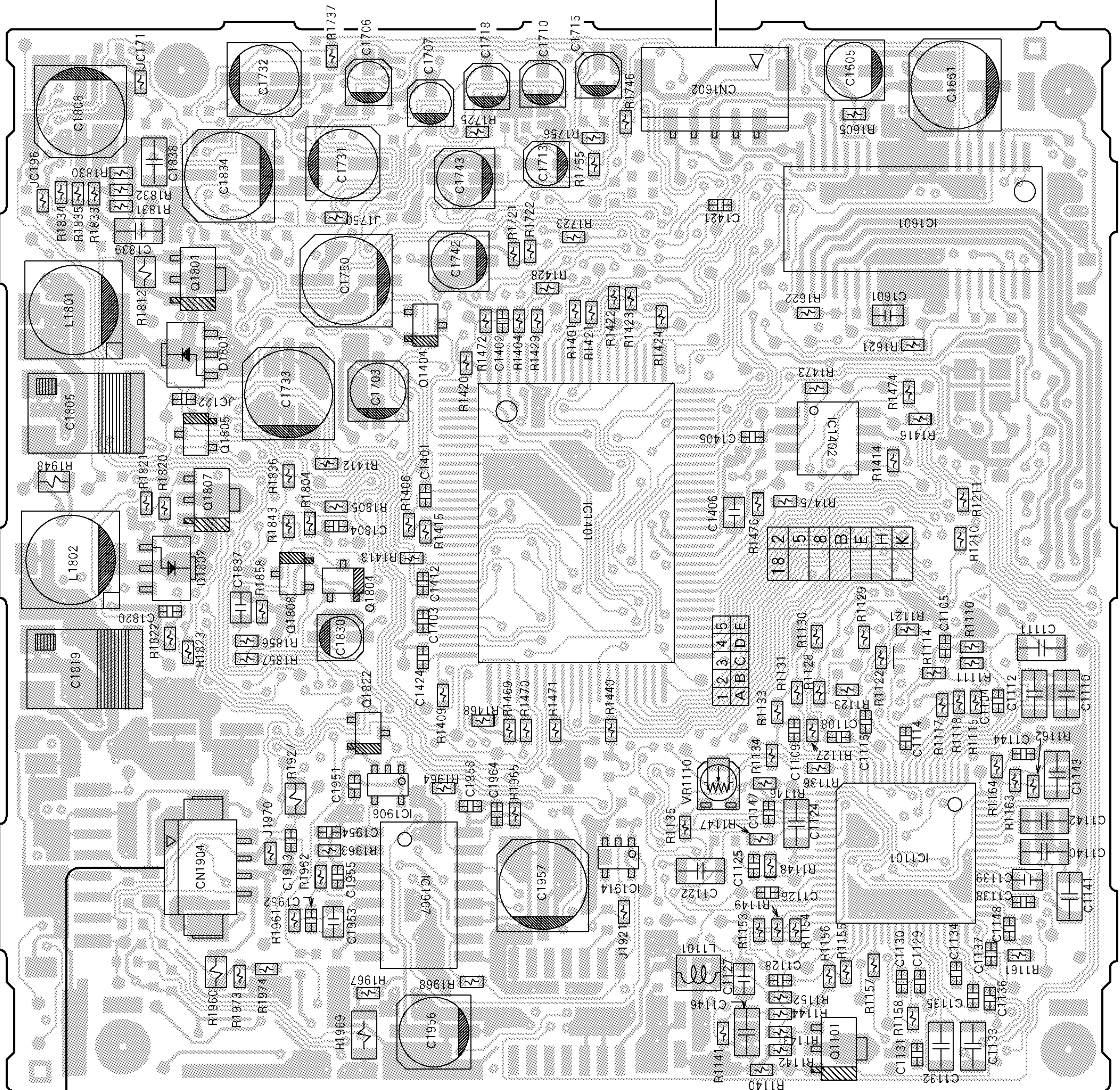
A

MD MAIN PCB ASSY PWB-A

C BI1902

CW1902

P25 1-D

**D**

CN4409

Q1801 Q1805 Q1404
 Q1807 Q1808 Q1804
 Q1822 IC1906
 IC1907

IC1401
 IC1914

IC1402
 IC1601
 Q1101 IC1101

A

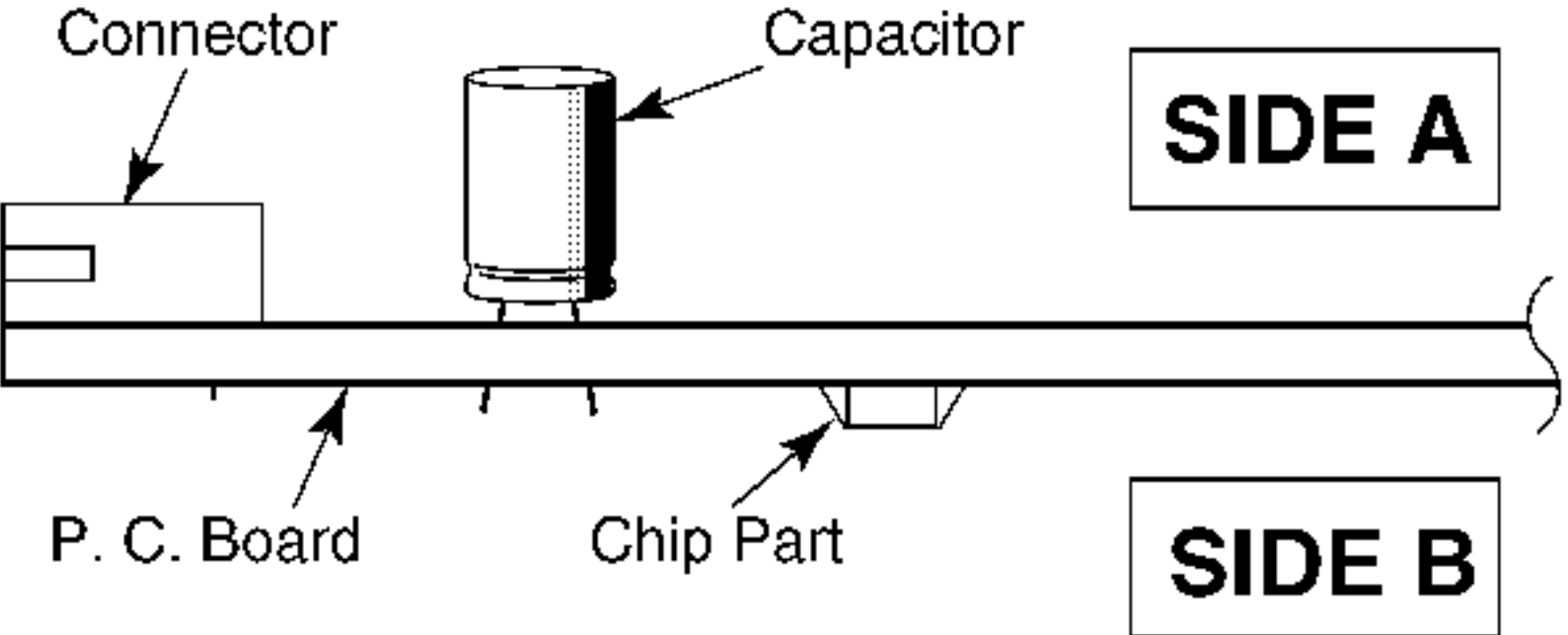
2 3 4 4.3 MD MAIN ASSY, MD KEYB1 ASSY AND MD KEYB2 ASSY

NOTE FOR PCB DIAGRAMS:
1. Part numbers in PCB diagrams match those in the schematic diagrams.
2. A comparison between the main parts of PCB and schematic diagrams is shown below.

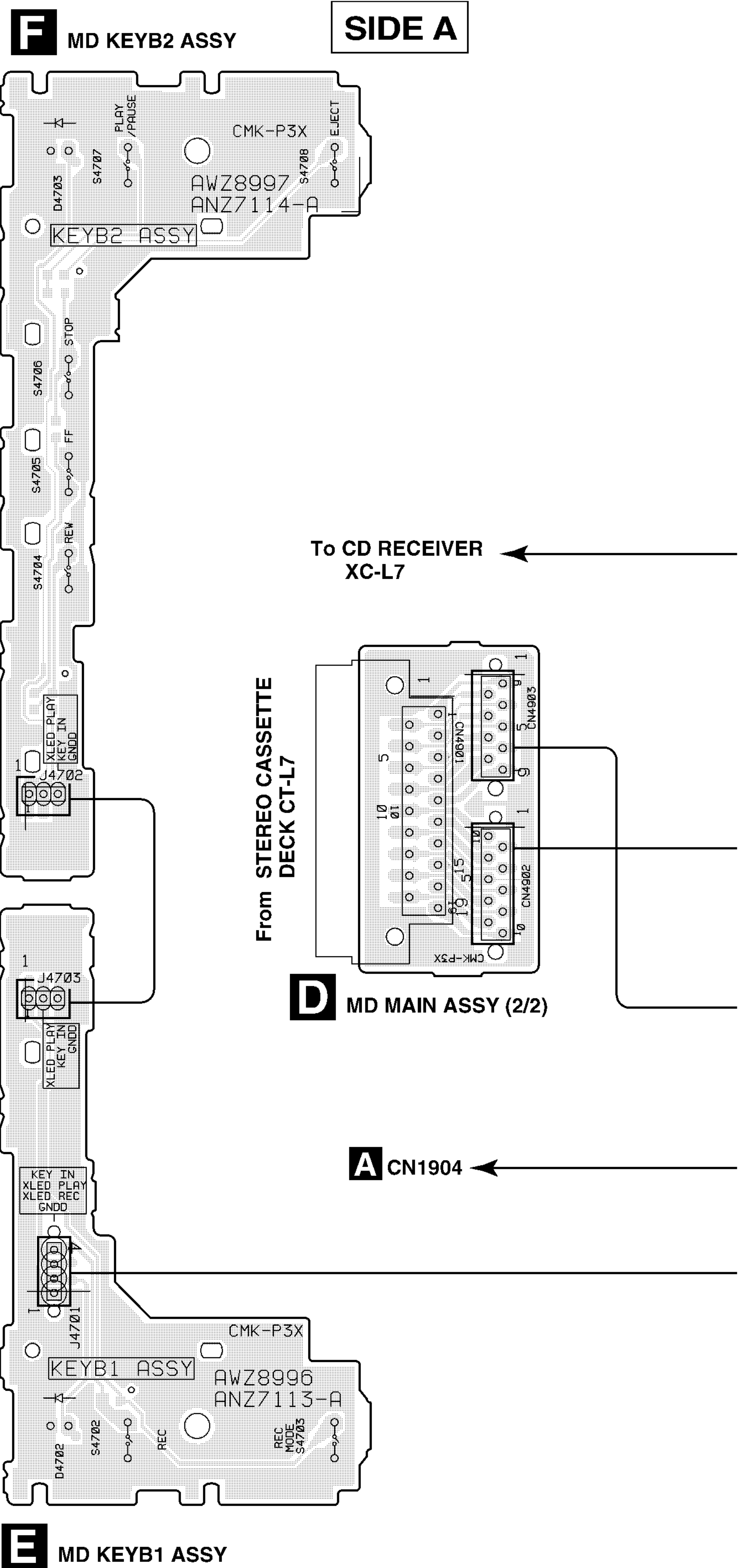
Symbol in PCB Diagrams	Symbol in Schematic Diagrams	Part Name
		Transistor
		Transistor with resistor
		Field effect transistor
		Resistor array
		3-terminal regulator

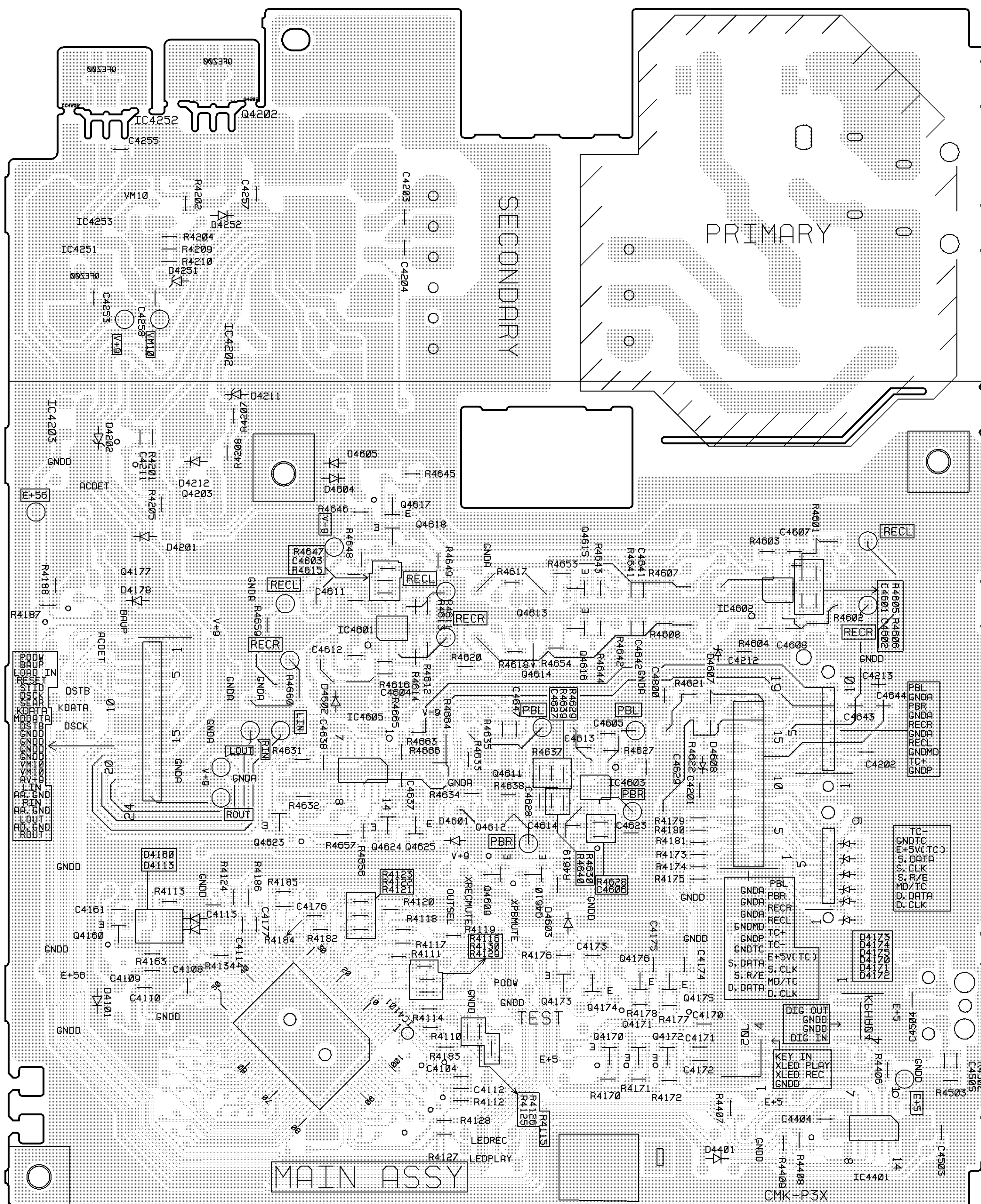
3. The parts mounted on this PCB include all necessary parts for several destination.
For further information for respective destinations, be sure to check with the schematic diagram.

4. Viewpoint of PCB diagrams



ANP7211-A





Q4160

Q4623-Q4625
IC4101

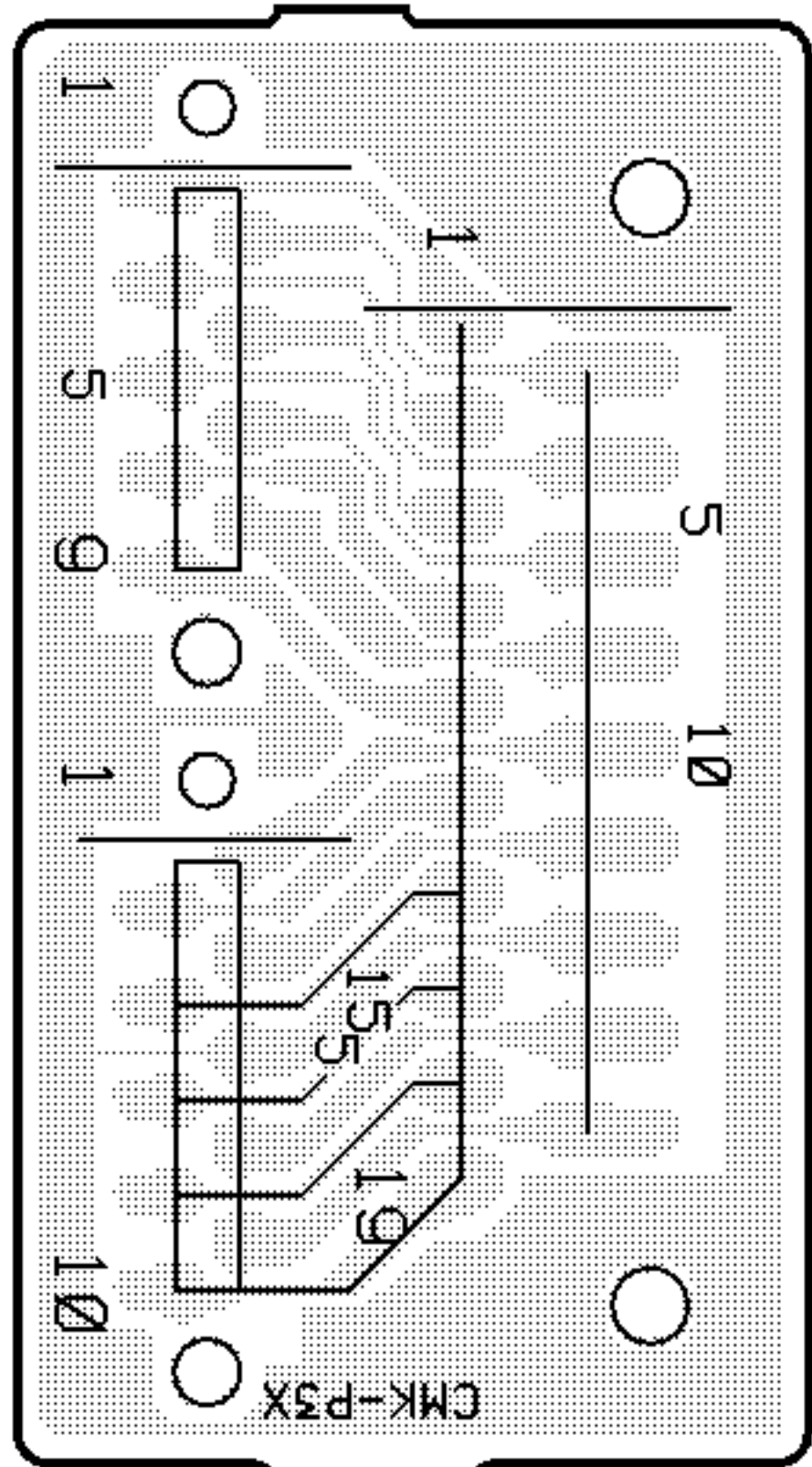
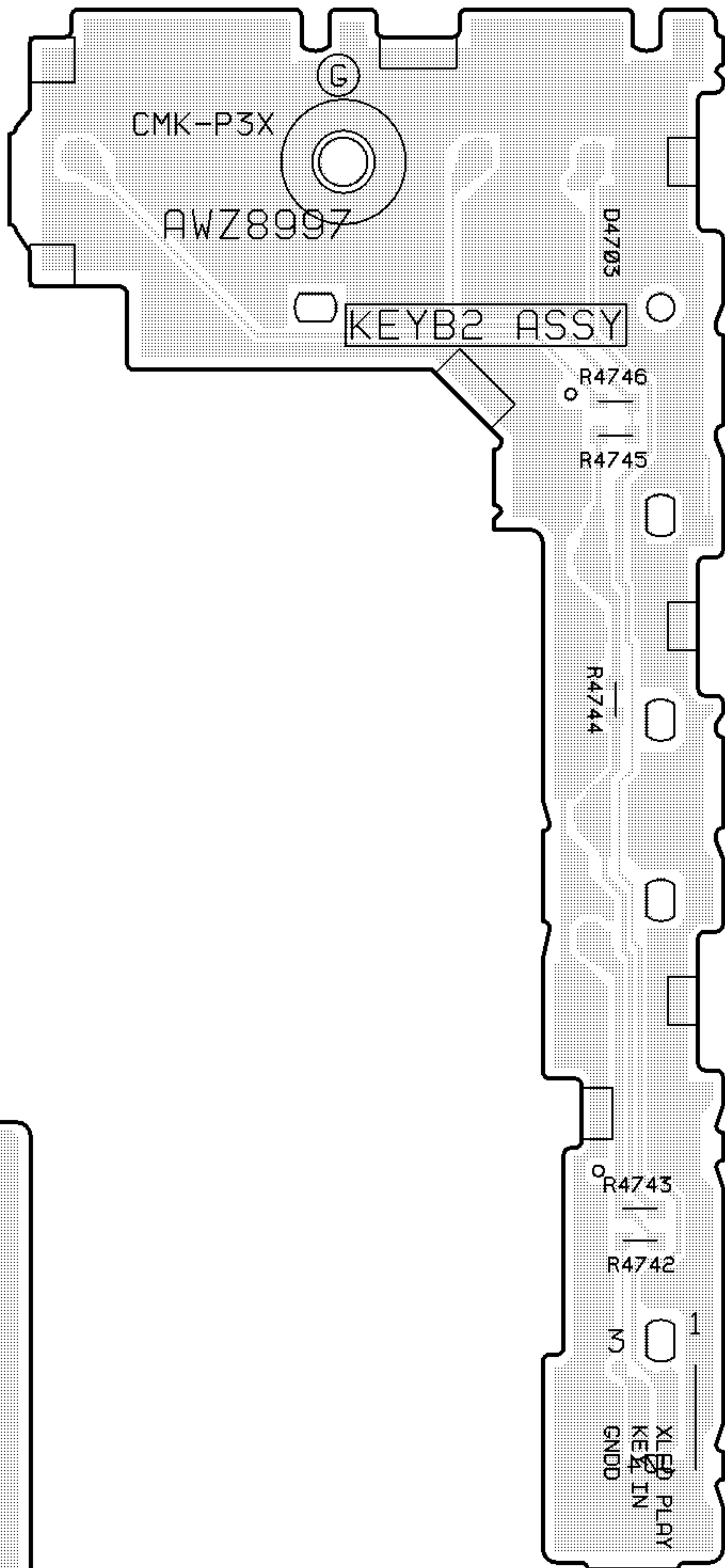
Q4609 Q4610

Q4170-Q4176

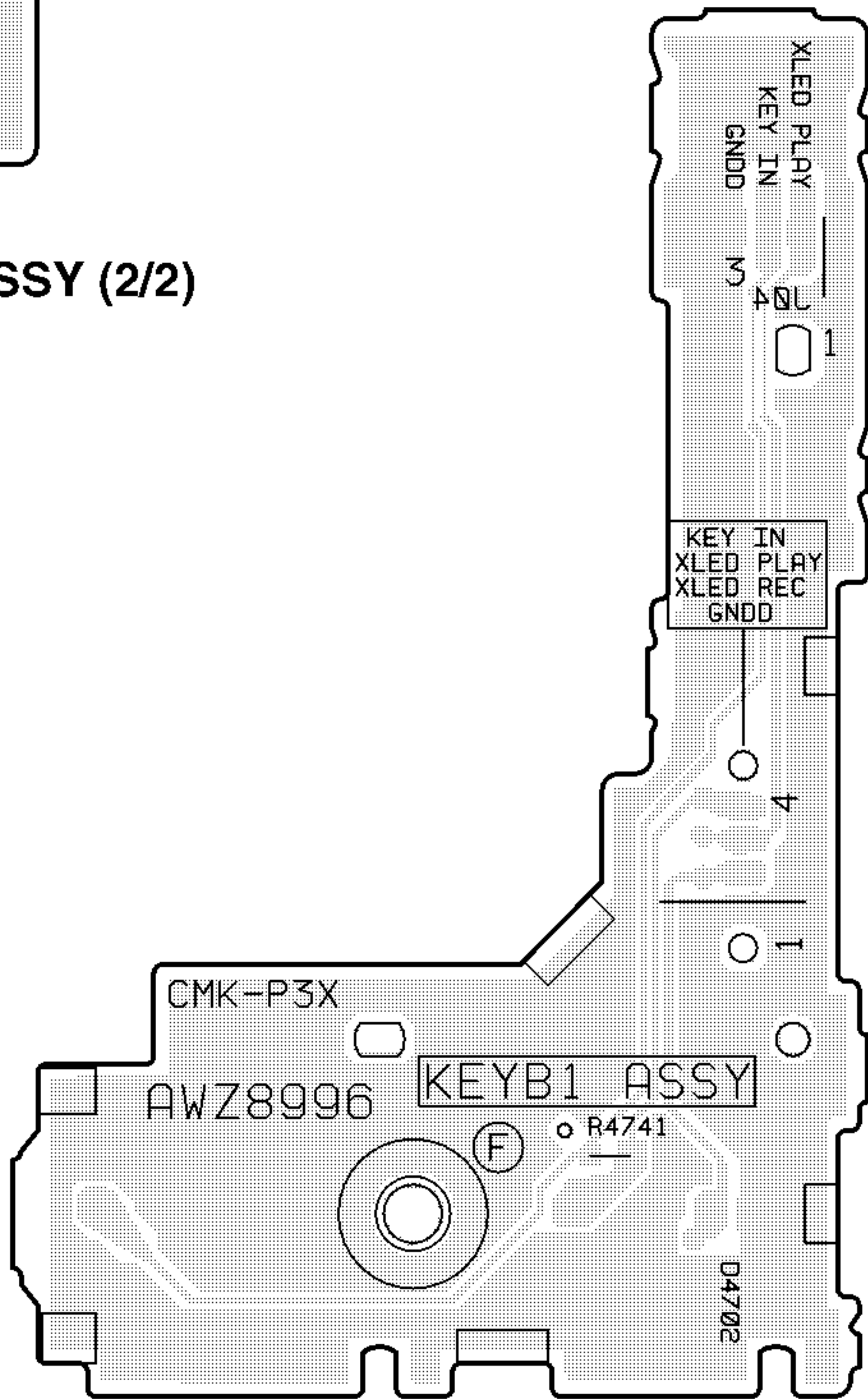
IC4401

SIDE B

F MD KEYB2 ASSY



D MD MAIN ASSY (2/2)



E MD KEYB1 ASSY

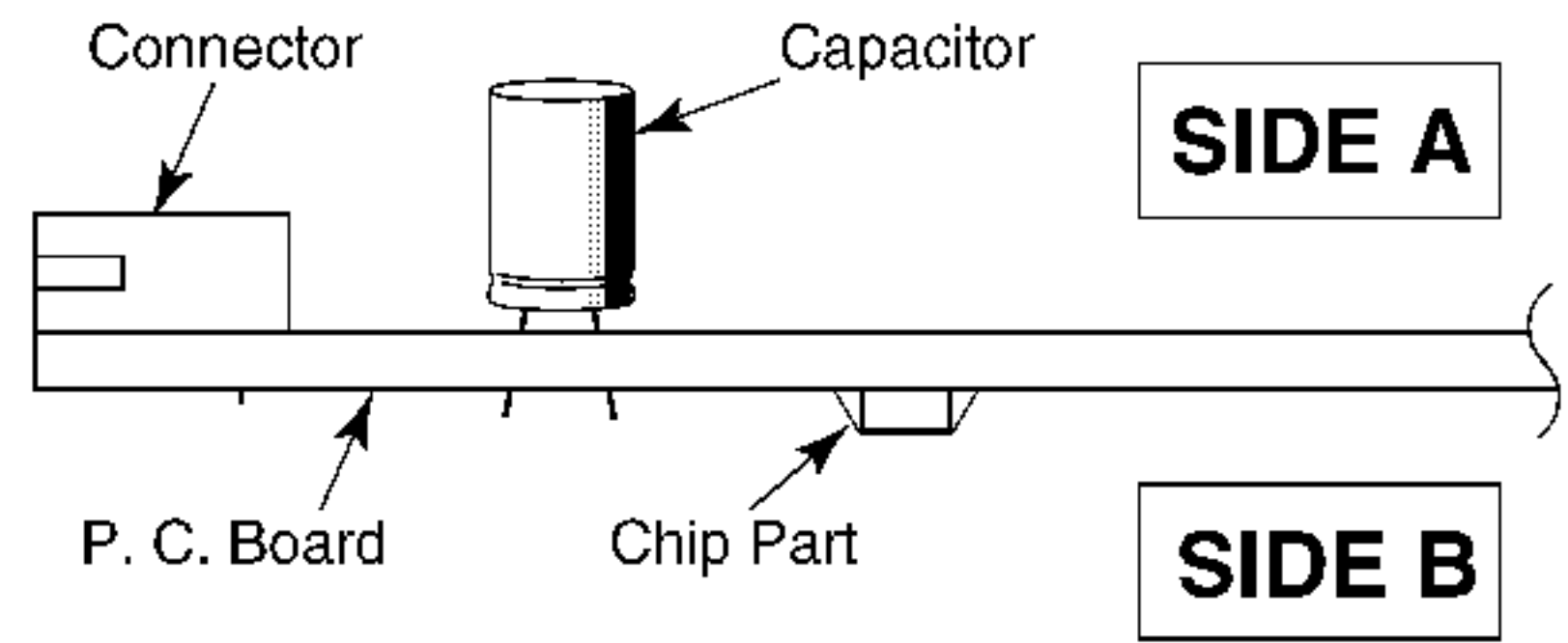
NOTE FOR PCB DIAGRAMS:

- 1. Part numbers in PCB diagrams match those in the schematic diagrams.
- 2. A comparison between the main parts of PCB and schematic diagrams is shown below.

Symbol in PCB Diagrams	Symbol in Schematic Diagrams	Part Name
		Transistor
		Transistor with resistor
		Field effect transistor
		Resistor array
		3-terminal regulator

- 3. The parts mounted on this PCB include all necessary parts for several destination. For further information for respective destinations, be sure to check with the schematic diagram.

4. Viewpoint of PCB diagrams



ANP7211-A

5. PCB PARTS LIST

NOTES : ● Parts marked by “ NSP ” are generally unavailable because they are not in our Master Spare Parts List.

● The $\triangle$ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.

● When ordering resistors, first convert resistance values into code form as shown in the following examples.

Ex. 1 When there are 2 effective digits (any digit apart from 0), such as 560 ohm and 47k ohm (tolerance is shown by J = 5%, and K = 10%).

560Ω → 56 × 10¹ → 561 RD1/4PU 5 6 1 J

47kΩ → 47 × 10³ → 473 RD1/4PU 4 7 3 J

0.5Ω → R50 RN2H R 5 0 K

1 Ω → 1R0 RS1P 1 R 0 K

Ex. 2 When there are 3 effective digits (such as in high precision metal film resistors).

5.62kΩ → 562 × 10¹ → 5621 RN1/4PC 5 6 2 1 F

Mark	No.	Description	Parts No.	Mark	No.	Description	Parts No.
LIST OF ASSEMBLIES				D1803			1245710006
		MD MAIN PCB ASSY	1246840174	D1251,D1252			AZQ7103
		MD MECHA SW/MO ASSY	1246840031	D1801,D1802			AZQ7105

NSP	MD ASSY	AWM7325
	└ MD MAIN ASSY	AWZ8995
	└ MD KEYB1 ASSY	AWZ8996
	└ MD KEYB2 ASSY	AWZ8997

A MD MAIN PCB ASSY

SEMICONDUCTORS

IC1402	1245730188
IC1202	1245730207
IC1913	1245730221
IC1201	1245730297
IC1401	1245730331
IC1101	AZQ7054
IC1251	AZQ7057
IC1601	AZQ7063
IC1602,IC1603	AZQ7064
IC1801	AZQ7067
IC1802	AZQ7091
IC1701	AZQ7131
IC1803	NJM2904M
IC1703	NJM4580M
IC1704,IC1705	TC4S66F
IC1914	TC7SH08FU
IC1906	TC7ST08F
IC1907	TC9246F
Q1801,Q1807	1185760027
Q1451	1245760031
Q1820	2SA1162
Q1701,Q1808-Q1810	2SC2712
Q1101,Q1601	AZQ7080
Q1251,Q1252	AZQ7081
Q1253,Q1254	AZQ7082
Q1803	AZQ7095
Q1401,Q1403,Q1704	DTA144EK
Q1402,Q1404,Q1703,Q1804,Q1805	DTC144EK
Q1821,Q1822	DTC144EK
D1703	1245700019

COILS AND FILTERS

L1101,L1102	(1μH)	1245850010
L1801	(100μH)	1246120009
L1201,L1203,L1251	(0.47μH)	AZT7066
L1701,L1702	(4.7μH)	AZT7067
L1802	(68μH)	AZT7069
L1950	(1μH)	AZT7071
LR190	(1μH)	AZT7072

CAPACITORS

C1612	(1μF)	1245900005
C1819	(33μF/6.3V)	1245900017
C1834	(33μF/25V)	1245900018
C1808	(47μF/25V)	1245900019
C1838	(2.2μF)	1245950024
C1954	(15pF)	1305930557
C1735,C1738	(560pF)	1305930603
C1825,C1829	(0.1μF/25V)	1305950273
C1966	(390pF/50V)	1305950359
C1251	(0.027μF/16V)	1305950360
C1731,C1732	(22μF/10V)	1425940045
C1804	(1200pF/50V)	1425950056
C1904	(0.33μF/16V)	1425950126
C1104	(3pF/50V)	AZC7152
C1105,C1125,C1602	(220pF/50V)	AZC7153
C172,C1722	(220pF/50V)	AZC7153
C1724,C1729,C180	(220pF/50V)	AZC7153
C1108,C1109	(8pF/50V)	AZC7154
C1114,C1115,C1204,C1205	(12pF/50V)	AZC7155
C1122,C1132,C1133,C1140	(1μF/16V)	AZC7156
C1142,C1143,C1146	(1μF/16V)	AZC7156
C1134,C1135,C1407	(0.022μF/16V)	AZC7157
C1709,C1421-C1424	(0.022μF/16V)	AZC7157
C1126	(100pF/50V)	AZC7158
C1128	(390pF/50V)	AZC7159
C1129,C1131	(330pF/50V)	AZC7160
C1130	(0.0033μF/50V)	AZC7161
C1136,C1137	(0.0068μF/50V)	AZC7162
C1138	(10pF/50V)	AZC7163
C1144	(6pF/50V)	AZC7164

Mark	No.	Description	Parts No.
	C1145	(0.033μF/16V)	AZC7165
	C1147,C1208,C121	(0.047μF/16V)	AZC7166
	C1401,C1402	(0.047μF/16V)	AZC7166
	C1453,C1604,C1951	(0.047μF/16V)	AZC7166
	C1955,C1958	(0.047μF/16V)	AZC7166
	C1148	(2pF/50V)	AZC7167
	C1201	(33pF/50V)	AZC7168
	C1202,C1209,C1210	(0.47μF/16V)	AZC7169
	C1826	(0.47μF/16V)	AZC7169
	C1405,C1658,C1659	(0.1μF/25V)	AZC7171
	C1741,C1835	(0.1μF/25V)	AZC7171
	C1661,C1733	(100μF/10V)	AZC7173
	C1703,C1742,C1743	(47μF/4V)	AZC7174
	C1704,C1705	(180pF/50V)	AZC7175
	C1706,C1707,C1710	(22μF/4V)	AZC7176
	C1713,C1715	(22μF/4V)	AZC7176
	C1718,C1830	(22μF/4V)	AZC7176
	C1712,C1714	(0.0022μF/50V)	AZC7177
	C1650-C1653	(820pF/50V)	AZC7178
	C1736,C1737	(18pF/50V)	AZC7179
	C1964	(1000pF/50V)	AZC7180
	C1805	(22μF/10V)	AZC7181
	C1811	(220pF/50V)	AZC7183
	C1820	(0.0015μF/50V)	AZC7185
	C1810,C1828,C1833	(0.0027μF/50V)	AZC7186
	C122,C1913	(22pF/50V)	AZC7190
	C1952	(0.01μF/16V)	AZC7191
	C1252		CCSQCH121J50
	C1605		CEV100M16
	C1750,C1957		CEV101M6R3
	C1956		CEV470M6R3
	C1139		CKSQYB104K25
	C1953		CKSQYB474K16
	C1101,C1127,C1206,C1406,C1460		CKSQYF105Z16
	C1601,C1631,C1809,C1837		CKSQYF105Z16
	C1702,C1708,C1711,C1716,C1717		CKSQYF224Z25
	C1730		CKSQYF474Z16
	C1111		CKSYB474K16
	C1110,C1120,C1124,C1141		CKSYF225Z16
	C1253-C1255,C1700,C1701		CKSYF225Z16
	C1654,C1655	(0.0047μF/16V)	RZC1020
	C1656,C1657	(0.0056μF/16V)	RZC1021
	C1836	(5pF/50V)	RZC1029
	C1403,C1412	(680pF/50V)	RZC1034
	C1100	(2.2μF/16V)	RZC1053

RESISTORS

R1614	(18kΩ)	1245810025
R1613	(33kΩ)	1245810063
R1823	(15kΩ)	1245810069
R1610,R1611	(12kΩ)	1245810079
R1716		RN1/16SE1202D
R1120,R1121		RN1/16SE2202D
R1805		RN1/16SE2701D
R1715		RN1/16SE3301D
R1804,R1822		RN1/16SE3901D
R1117,R1122		RN1/16SK1203D

Mark	No.	Description	Parts No.
	R1127,R1131		RN1/16SK2203D
	R1129,R1130		RN1/16SK4702D
	R1927		RS1/10S0R0J
	R1750,R1751		RS1/10S121J
	R1960		RS1/10S220J
	R1254		RS1/10S221J
	R1811		RS1/10S391J
	R1947,R1948		RS1/10S470J
	R1812		RS1/10S820J
	R1736		RS1/8S0R0J
	R1969		RS1/8S100J
	R1000		RS1/8S120J
	R1100		RS1/8S150J
	R1748		RS1/8S221J
	R1607,R1608		RS1/8S270J
	R1741,R1744	(4.7MΩ)	RZC1018
	VR1110	(68kΩ-B)	AZC7127
	Other Resistors		RS1/16S□□□J

OTHERS

XL1201	LC OSC (33.8688MHz)	AZC7125
CN1904	PLUG (4-PIN)	1425100223
CN1252	PLUG (2-PIN)	AZK7200
CN1601	PLUG (5-PIN)	AZK7201
CN1602	PLUG (5-PIN)	AZK7202
CN1101	SOCKET (26- PIN)	AZK7217
CN1902	SOCKET (24-PIN)	AZK7219
CW1901	CONNECTOR ASSY 5P	RZK1026
CW1902	CONNECTOR ASSY 5P	RZK1027
CW1903	CONNECTOR ASSY 2P	RZK1028

B MD MECHA SW ASSY
SWITCHES AND RELAYS

SW1956	1245300020
SW1954,SW1955	1245300021
SW1953	AZS7020
SW1951	AZS7029

RESISTORS

All Resistors	RS1/16S□□□J
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OTHERS

CN1901	PLUG (5-PIN)	RZK1025
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C MD MECHA MO ASSY
CAPACITORS

C1901	CKSQYF105Z16
C1902	CKSQYF474Z16
C1903	CKSQYF105Z16

OTHERS

M1951	SLIDE MOTOR ASSY	AZX7028
M1953	DISC MOTOR ASSY	AZX7029
M1952	LOADING MOTER ASSY	AZX7032

Mark	No.	Description	Parts No.
D MD MAIN ASSY			
SEMICONDUCTORS			
⚠	IC4202,IC4203	(200mA/125V)	AEK7023
	IC4605		BU4066BCF
	IC4601-IC4603		NJM4558MD
⚠	IC4253		NJM78L05A
⚠	IC4251		NJM78M09FA
⚠	IC4252		NJM78M56FA
	IC4101		PDG202A
	IC4401		TC74HCT08AF
⚠	Q4203		2SB1238X
⚠	Q4202		2SB1566
	Q4161		2SC2458
	Q4615-Q4618		2SC2712
	Q4611-Q4614		2SD2144S
	Q4609,Q4610,Q4624		DTA124EK
	Q4174		DTC114EK
	Q4170-Q4173,Q4175,Q4176		DTC114TK
	Q4623,Q4625		DTC124EK
	Q4160		DTC143EK
	D4101,D4160,D4178,D4201,D4252		1SS254
	D4401,D4601-D4605		1SS254
⚠	D4205		D2SBA20(B)
⚠	D4211		MTZJ10B
⚠	D4202		MTZJ4.7B
⚠	D4251		MTZJ6.8B
	D4170-D4175		MTZJ8.2B
	D4607,D4608		UDZ16B
COILS AND FILTERS			
	L4501		LAU100J
	L4101		LAU220J
CAPACITORS			
	C4178	(0.047F/5.5V)	ACH7013
	C4601,C4602		CCSQCH101J50
	C4607,C4608		CCSQCH220J50
	C4170-C4173		CCSQCH221J50
	C4641,C4642		CCSQCH470J50
	C4209,C4210,C4252,C4256		CEAS330M16
	C4609,C4610,C4617,C4624,C4630		CEAS330M16
	C4635,C4636		CEAS330M16
	C4254,C4403,C4506		CEAS470M10
	C4160,C4615,C4616,C4618,C4619		CEAT100M50
	C4621,C4622,C4625,C4631-C4634		CEAT100M50
	C4645,C4646,C4656		CEAT100M50
	C4107		CEAT101M10
	C4208		CEAT221M25
	C4207		CEAT682M25
	C4627,C4628,C4643,C4644		CKSQYB102K50
	C4174-C4176		CKSQYB222K50
	C4505		CKSQYB332K50
	C4108,C4109,C4114,C4203,C4204		CKSQYF103Z50
	C4404,C4503,C4504,C4647		CKSQYF103Z50
	C4201,C4202,C4212,C4213		CKSQYF473Z50
	C4611,C4612,C4623,C4629		CKSQYF473Z50
	C4637,C4638		CKSQYF473Z50

Mark	No.	Description	Parts No.
RESISTORS			
⚠	R4203		RFA1/4PS100J
	Other Resistors		RS1/10S□□□J
OTHERS			
	4603,4903	CABLE HOLDER(9P)	51063-0905
	4602,4902	CABLE HOLDER(10P)	51063-1005
	4901	SOCKET(19P)	AKP7001
	CN4604	CONNECTOR(19P)	AKP7002
⚠	CN4301	AC INLET(1P)	AKP7005
	CN4409	KR CONNECTOR(4P)	B4B-PH-K-S
	CN4603	JUMPER WIRE	D15A09-075-2468
	JA4502	OPTICAL RECEIV MOD.	GP1F32R
	CN4403	24P CONNECTOR	VKN1200
	KN4201,KN4202	EARTH METAL	VNF1084
	X4102	CERAMIC RESONATOR (8.389MHz)	RSS1042

E MD KEYB1 ASSY			
SEMICONDUCTORS			
	D4702	(RED)	SLP9118C51H
SWITCHES AND RELAYS			
	S4702,S4703		RSG1034
RESISTORS			
	All Resistors		RS1/10S□□□J
OTHERS			
	4701	CABLE HOLDER(4P)	51048-0400
	J4701	4P JUMPER WIRE	D20PDY0440E

F MD KEYB2 ASSY			
SEMICONDUCTORS			
	D4703	(GREEN)	SLP3118C51H
SWITCHES AND RELAYS			
	S4704-S4708		RSG1034
RESISTORS			
	All Resistors		RS1/10S□□□J
OTHERS			
	J4702	3P JUMPER WIRE	D20PWW0305E

6. ADJUSTMENT

For adjustment, use the CD RECEIVER (XC-L7) in combination with the DISPLAY UNIT (XC-L7's accessory: DU-L7).

6.1 ADJUSTING PREPARATIONS

Prepare the following test discs and extension cables and connect according to Fig. 6-1.

● Test Disc

1. High reflective disc (SONY) (For playback) TGYS1
2. Low reflective disc Recording mini disc GGF1277
3. Transparent disc for adjusting head GGF1276

● Extension Cable

1. Extension board for servicing GGF1275
2. 2-pin extension connector for servicing GGD1108
3. 26-pin flat cable for servicing GGD1107
4. 5-pin extension connector for servicing GGD1112
5. 5-pin flat cable for servicing GGD1110
6. 24-pin flat cable for servicing GGD1111

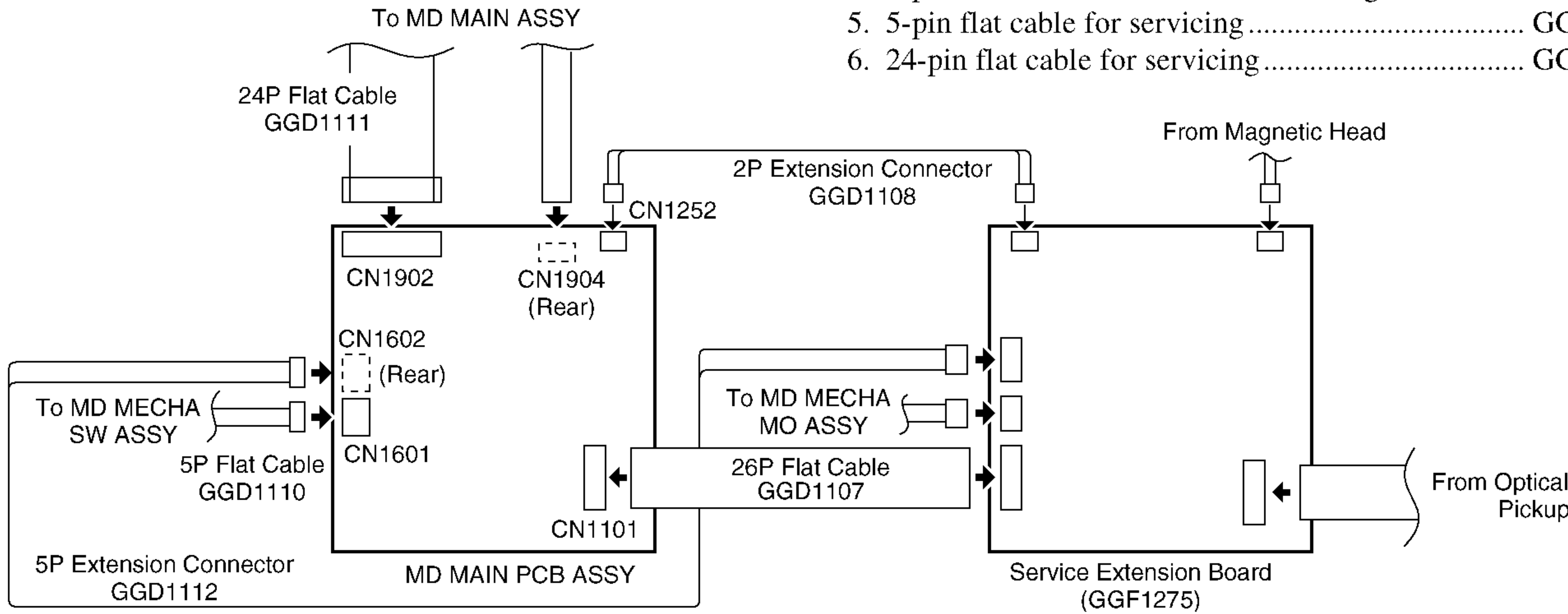


Fig. 6-1

6.2 TEST MODE

■ Entering the Mechanism Module Test Mode

- 1) Connect MJ-L7 to the CD RECEIVER (XC-L7) and DISPLAY UNIT (XC-L7's accessory: DU-L7), and insert the AC cord of XC-L7 into the outlet.
- 2) While short-circuiting the W112 and W114 jumper wires of the MD MAIN ASSY, insert the AC cord of MJ-L7 into the outlet. (Refer to Fig. 6-2)
- 3) When first the STOP button of the Unit (MJ-L7) and then the power button of the CD RECEIVER (XC-L7) is pressed, "TEST4" will be displayed on the DISPLAY unit.
- 4) Press the ►► button of the unit. The display will change as follows.

Ⓐ Test mode STOP state

AUTO

When the STOP button of the Unit is pressed in this state, the unit shifts to state Ⓑ. To return to this state again, press the MENU button of DISPLAY unit.

Ⓑ Test mode STOP state

tsm■■▲▲e♣♣

Mechanism module microprocessor Ver. is displayed (For approx. 1 second).

- : Model code (Numerals)
- ▲▲ : Microprocessor ROM version (From 01)
- ♣♣ : EEPROMprotect data (From 01)

Ⓒ EJECT display state (When NO DISC)

EJECT

Shifts to state Ⓐ when the disc is inserted.
If a disc is already inserted, automatically shifts to state Ⓐ.

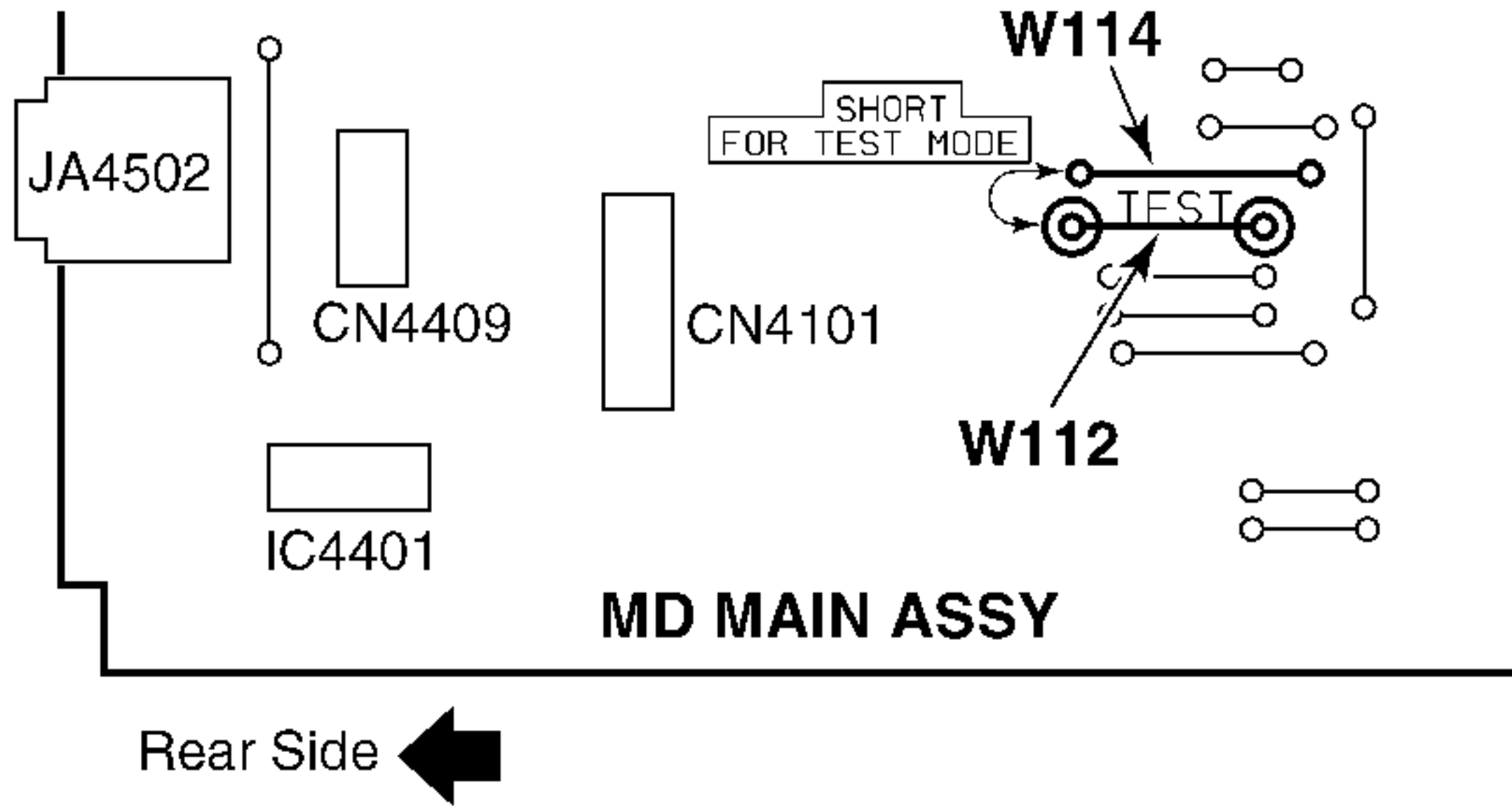


Fig. 6-2

■ Entering the Each mode

Each time the MENU button of DISPLAY unit is pressed when the DISPLAY is in the AUTO state, the mode will change as follows.

→ AUTO → RESULT → MANUAL → EEPROM SET

■ Exiting the Mechanism Module Test Mode

- 1) The test mode can be exited by disconnecting the AC code from the outlet. (The setting will not be recorded.)
- 2) In the test mode state, Press the POWER button of CD receiver. The settings are written in the EEPROM, and the mechanism module will reset and start according to the setting recorded by the LSI. And the test mode can be exited.

Note: When the EEPROM settings are changed, the results are written. This operation should be carried out carefully.

■ Test Modes

1. AUTO mode	● Performs automatic adjustment. ● Displays settings. ● Performs continuous playback.
2. RESULT mode	● Displays settings. ● For changing settings manually.
3. MANUAL mode	● Displays the temperature. ● For manual adjustment of the measurements/settings displayed. ● Performs continuous playback.
4. EEPROM mode	● For manual adjustment of digital servo coefficients.
5. TEST PLAY mode	● Performs continuous playback from the specified address.
6. TEST REC mode	● Performs continuous recording from the specified address.
7. INNER mode	● Measures the position where the INNER switch turns ON.
8. EJECT mode	● Shifts to TEMP setting (EEPROM setting) ● Shifts to CONTROL setting (EEPROM setting) ● Measures the laser power (Recording/playback power)

6.2.1 AUTO Mode

Step No.	Setting Method	Remarks	Display
Step 1	Test mode STOP state		[tsm■■■▲▲e♣♣]
Step 2	Press the MENU button or perform LOADING.	AUTO mode menu display	[AUTO]
Step 3	Press the PLAY/PAUSE button.	Performs automatic adjustment after moving to innermost circumference of the slide. ● Changes as follows for high reflective disc TEO → FEO → Hfg → HTG → HTB → HFG ● Changes as follows for low reflective disc TEO → FEO → Lfg → LTG → GTL → GTG → GTB → LFG	[*** : ○○●●]
Step 4	Perform Step 5 if adjustment is OK Perform step 9 if adjustment is NG.		
Step 5	End of adjustment.		[COMPLETE]
Step 6	Press the PLAY/PAUSE button. Press the STOP button of the Unit.	To step 7 To step 8	
Step 7	When the PLAY/PAUSE button is pressed at step 6. Continuous playback (Pit part) Continuous playback (Groove part)	High reflective disc Low reflective disc	[s□□□□c△△△△] [s□□□□c△△△△]
Step 8	When the STOP button of the Unit is pressed at Step 6.	AUTO menu display state	[AUTO]
Step 9	When adjustment is NG at step 4.	● Adjustment NG: When TEO, FEO measurements are outside the specified range, or when focus does not turn ON.	[Can't ADJ]
Step 10	Press the STOP button of the Unit.	AUTO menu display state.	

- ***: Adjustment name, ○○: Measurement, ●●: Setting, □□□□: Address (Cluster), △△△△: C1 error
■■■: Model code, ▲▲: Microprocessor ROM version (From 01), ♣♣: EEPROM protect data version (From 01)
- When the STOP button of the Unit is pressed during the AUTO menu display state, sets to the test mode STOP state.
- When the STOP button of the Unit is pressed during automatic adjustment, sets to the AUTO menu display state.
No adjustment values are output here.
- TEO: Tracking Error Offset, FEO: Focus Error Offset

6.2.2 RESULTS Mode

Step No.	Setting Method	Remarks	Display
Step 1	Test mode STOP state		[tsm■■▲▲e♣♣]
Step 2	Press the MENU button twice	RESULTS mode menu display	[RESULT]
Step 3	Press the PLAY/PAUSE button	Display of measurement: Tracking error offset	[TEO:○○]
Step 4	Press the MENU button	Display of measurement: Focus error offset	[FEO:○○]
Step 5	Press the MENU button	Display of setting: High reflective focus gain	[HFG: ●●]
Step 6	Press the MENU button	Display of setting: High reflective pit tracking gain	[HTG: ●●]
Step 7	Press the MENU button	Display of setting: High reflective pit tracking error balance	[HTB: ●●]
Step 8	Press the MENU button	Display of setting: Low reflective focus gain	[LFG: ●●]
Step 9	Press the MENU button	Display of setting: Low reflective pit tracking gain	[LTG: ●●]
Step 10	Press the MENU button	Display of setting: Low reflective pit tracking error balance	[LTB: ●●]
Step 11	Press the MENU button	Display of setting: Low reflective total signal level	[GTL: ●●]
Step 12	Press the MENU button	Display of setting: Low reflective groove tracking gain	[GTG: ●●]
Step 13	Press the MENU button	Display of setting: Low reflective groove tracking error balance	[GTB: ●●]
Step 14	Press the STOP button of the Unit	RESULTS menu display state	[RESULT]

- ○○: Measurement, ●●: Setting, ■■: Model code, ▲▲: Microprocessor ROM version (From 01), ♣♣: EEPROM protect data version (From 01)
- When the CANCEL button of DISPLAY unit is pressed in each step, the unit will shift to the opposite step.
- When the + button of DISPLAY unit is pressed when the setting is displayed, the setting will increase and the new setting will be stored in the RAM.
When the – button of DISPLAY unit is pressed when the setting is displayed, the setting will decrease and the new setting will be stored in the RAM.
- When the STOP button of the Unit is pressed when the RESULTS menu is displayed, the test mode STOP state will be set.
- When the STOP button of the Unit is pressed when the measurement or setting is displayed, the RESULTS menu display will be set.

6.2.3 MANUAL Mode

Step No.	Setting Method	Remarks	Display
Step 1	Test mode STOP state		[tsm■■▲▲e♣♣]
Step 2	Press the MENU button three times	MANUAL mode menu display	[MANUAL]
Step 3	Press the PLAY/PAUSE button	Setting: Temperature	[TMP:♦♦]
Step 4	Press the MENU button	Setting display: Tracking error offset	[TEO:○○]
Step 5	Press the MENU button	Setting display: Focus error offset	[FEO:○○]
Step 6	Press the MENU button	Laser lighting	[LON:]
Step 7	Press the MENU button	Shift to the slide innermost circumference Focus gain rough adjustment (High reflective disc) Focus gain rough adjustment (Low reflective disc)	[Hfg:○○●●] [Lfg:○○●●]
Step 8	Press the MENU button	Pit: Tracking gain adjustment (High reflective disc) Pit: Tracking gain adjustment (Low reflective disc)	[HTG:○○●●] [LTG:○○●●]
Step 9	Press the MENU button	Pit: Tracking error balance adjustment (High reflective disc) Pit: Tracking error balance adjustment (Low reflective disc)	[HTB:○○●●] [LTB:○○●●]
Step 10	Press the MENU button	Focus gain fine adjustment (High reflective disc) Focus gain fine adjustment (Low reflective disc)	[HFG:○○●●] [LFG:○○●●]
Step 11	Press the MENU button Press the PLAY/PAUSE button	Moves to step 14 only for the low reflective disc Moves to step 12	
Step 12	When the PLAY/PAUSE button is pressed at step 11.	Pit continuous playback	[s□□□□c△△△△]
Step 13	Press the CANCEL button	Moves to step 10	
Step 14	When the MENU button is pressed at step 11.	TOTAL signal level adjustment	[GTL:○○●●]

Step No.	Setting Method	Remarks	Display
Step 15	Press the MENU button	Groove: Tracking gain adjustment	[GTG:○○●●]
Step 16	Press the MENU button	Groove: Tracking error balance adjustment	[GTB:○○●●]
Step 17	Press the MENU button	Focus gain fine adjustment	[LFG:○○●●]
Step 18	Press the PLAY/PAUSE button	Groove continuous playback	[a□□□□c△△△△]
Step 19	Press the CANCEL button	Moves to step 17	

- ○○: Measurement, ●●: Setting, □□□□: Address (Cluster), △△△△: C1 error, ◆◆: Temperature code, ■■: Model code, ▲▲: Microprocessor ROM version (From 01), ♣♣: EEPROM protect data version (From 01)
- When the CANCEL button of DISPLAY unit is pressed in each step, the unit will shift to the opposite step.
- When the + button of DISPLAY unit is pressed when the setting is displayed, the setting will increase and the new setting will be stored in the RAM.
- When the – button of DISPLAY unit is pressed when the setting is displayed, the setting will decrease and the new setting will be stored in the RAM.
- When the STOP button of the Unit is pressed when the MANUAL menu is displayed, the test mode STOP state will be set.
- When the STOP button of the Unit is pressed when the measurement or setting is displayed, the MANUAL menu display will be set.

Note: Some items have * in front of the setting in the MANUAL mode.

6.2.4 EEPROM Setting Mode

(1) Focus Setting

Step No.	Setting Method	Remarks	Display
Step 1	Test mode STOP state		[tsm■■▲▲e♣♣]
Step 2	Press the MENU button four times	Reads each setting from the EEPROM. EEPROM menu display mode	[EEPROM SET]
Step 3	Press the PLAY/PAUSE button	Focus setting menu	[Focus]
Step 4	Press the PLAY/PAUSE button	Focus system loop filter gain constant setting	[FG ◆◆]
Step 5	Press the MENU button	Focus system loop filter frequency characteristics 1 setting	[FF1 ◆◆]
Step 6	Press the MENU button	Focus system loop filter frequency characteristics 2 setting	[FF2 ◆◆]
Step 7	Press the MENU button	Focus system loop filter frequency characteristics 3 setting	[FF3 ◆◆]
Step 8	Press the MENU button	Focus system loop filter frequency characteristics 4 setting	[FF4 ◆◆]
Step 9	Press the MENU button	FZC detection hysteresis level setting	[FZHLEV ◆◆]
Step 10	Press the MENU button	FOK generation comparison level setting (Normal)	[FOKLEVn ◆◆]
Step 11	Press the MENU button	FOK generation comparison level setting (When focus is ON)	[FOKLEVf ◆◆]
Step 12	Press the MENU button	FOK generation LPF coefficient setting (Normal)	[FOKLPFn ◆◆]
Step 13	Press the MENU button	FOK generation LPF coefficient setting (When focus is ON)	[FOKLPFf ◆◆]
Step 14	Press the MENU button	Waiting time for Auto focus completion setting	[WAITf ◆◆]

- ◆◆: Setting
- When the CANCEL button of DISPLAY unit is pressed in each step, the unit will shift to the opposite step.
- When the + button of DISPLAY unit is pressed when the setting is displayed, the setting will increase and the new setting will be stored in the RAM.
- When the – button of DISPLAY unit is pressed when the setting is displayed, the setting will decrease and the new setting will be stored in the RAM.
- When the STOP button of the Unit is pressed when the EEPROM setting menu is displayed, the test mode STOP state will be set.
- When the STOP button of the Unit is pressed in the focus setting menu state, the EEPROM setting menu state will be set.
- When the STOP button of the Unit is pressed at each setting item display state, the focus setting menu state will be set.

(2) Spin Setting

Step No.	Setting Method	Remarks	Display
Step 1	Test mode STOP state		[tsm■■▲▲e♣♣]
Step 2	Press the MENU button four times	Reads each setting from the EEPROM. EEPROM menu display mode	[EEPROM SET]
Step 3	Press the PLAY/PAUSE button	Focus setting menu	[Focus]
Step 4	Press the MENU button	Spin setting menu	[Spindle]
Step 5	Press the PLAY/PAUSE button	Spin system loop filter gain constant setting (Until servo turns ON)	[SPG ♦♦]
Step 6	Press the MENU button	Spin system loop filter gain constant setting (After servo turns ON, inner circumference)	[SPG in ♦♦]
Step 7	Press the MENU button	Spin system loop filter gain constant setting (After servo turns ON, center)	[SPG mid ♦♦]
Step 8	Press the MENU button	Spin system loop filter gain constant setting (After servo turns ON, outer circumference)	[SPG out ♦♦]
Step 9	Press the MENU button	Spin system loop filter f characteristics setting 1	[SP1 ♦♦]
Step 10	Press the MENU button	Spin system loop filter f characteristics setting 2	[SP2 ♦♦]
Step 11	Press the MENU button	Spin system loop filter f characteristics setting 3	[SP3 ♦♦]
Step 12	Press the MENU button	Spin system loop filter f characteristics setting 4	[SP4 ♦♦]
Step 13	Press the MENU button	Spin system loop filter f characteristics setting 5	[SP5 ♦♦]

- ♦♦: Setting
- When the CANCEL button of DISPLAY unit is pressed at a step, the unit will shift to the opposite step.
- When the + button of DISPLAY unit is pressed when the setting is displayed, the setting will increase and the new setting will be stored in the RAM.
- When the – button of DISPLAY unit is pressed when the setting is displayed, the setting will decrease and the new setting will be stored in the RAM.
- When the STOP button of the Unit is pressed when the EEPROM setting menu is displayed, the test mode STOP state will be set.
- When the STOP button of the Unit is pressed in the spin setting menu state, the EEPROM setting menu state will be set.
- When the STOP button of the Unit is pressed at each setting item display state, the spin setting menu state will be set.

(3) Tracking Setting

Step No.	Setting Method	Remarks	Display
Step 1	Test mode STOP state		[tsm■■▲▲e♣♣]
Step 2	Press the MENU button four times	Reads each setting from the EEPROM. EEPROM menu display mode	[EEPROM SET]
Step 3	Press the PLAY/PAUSE button	Focus setting menu	[Focus]
Step 4	Press the MENU button two times	Tracking setting menu	[Tracking]
Step 5	Press the PLAY/PAUSE button	Tracking system loop filter gain constant setting	[TG ♦♦]
Step 6	Press the MENU button	Tracking system loop filter f characteristics setting 1	[TF1 ♦♦]
Step 7	Press the MENU button	Tracking system loop filter f characteristics setting 2	[TF2 ♦♦]
Step 8	Press the MENU button	Tracking deceleration pulse level setting (For one jump)	[TRBLVo ♦♦]
Step 9	Press the MENU button	Tracking deceleration pulse level setting (For ten jumps)	[TRBLVt ♦♦]
Step 10	Press the MENU button	Tracking pulse level setting (For one jump)	[TRKLVo ♦♦]
Step 11	Press the MENU button	Tracking pulse level setting (For ten jumps)	[TRKLVt ♦♦]
Step 12	Press the MENU button	Tracking drive pulse width setting (For one jump)	[TDPWo ♦♦]
Step 13	Press the MENU button	Tracking drive pulse width setting (For ten jumps)	[TDPWt ♦♦]
Step 14	Press the MENU button	Tracking slide stop time setting (For one jump)	[SLCTo ♦♦]
Step 15	Press the MENU button	Tracking slide stop time setting (For ten jumps)	[SLCTt ♦♦]
Step 16	Press the MENU button	Tracking slide stop time setting (During moving)	[SLCTm ♦♦]

Step No.	Setting Method	Remarks	Display
Step 17	Press the MENU button	H comparison level setting during CONT generation (During playback)	[COTLVHp ♦♦]
Step 18	Press the MENU button	L comparison level setting during CONT generation (During playback)	[COTLVLP ♦♦]
Step 19	Press the MENU button	H comparison level setting during CONT generation (During recording)	[COTLVHr ♦♦]
Step 20	Press the MENU button	L comparison level setting during CONT generation (During recording)	[COTLVlr ♦♦]
Step 21	Press the MENU button	Waiting time setting during automatic moving	[WAITm ♦♦]

- ♦♦: Setting
- When the CANCEL button of DISPLAY unit is pressed at a step, the unit will shift to the opposite step.
- When the + button of DISPLAY unit is pressed when the setting is displayed, the setting will increase and the new setting will be stored in the RAM.
- When the – button of DISPLAY unit is pressed when the setting is displayed, the setting will decrease and the new setting will be stored in the RAM.
- When the STOP button of the Unit is pressed when the EEPROM setting menu is displayed, the test mode STOP state will be set.
- When the STOP button of the Unit is pressed in the tracking setting menu state, the EEPROM setting menu state will be set.
- When the STOP button of the Unit is pressed at each setting item display state, the tracking setting menu state will be set.
- When the PLAY/PAUSE button is pressed at each setting display state, only the tracking servo is turned ON/OFF forcibly.

(4) Slide Setting

Step No.	Setting Method	Remarks	Display
Step 1	Test mode STOP state		[tsm■▲e♣♣]
Step 2	Press the MENU button four times	Reads each setting from the EEPROM. EEPROM menu display mode	[EEPROM SET]
Step 3	Press the PLAY/PAUSE button	Focus setting menu	[Focus]
Step 4	Press the MENU button three times	Slide setting menu	[Sled]
Step 5	Press the PLAY/PAUSE button	Slide system loop filter gain constant setting	[SLG ♦♦]
Step 6	Press the MENU button	Slide system loop filter f characteristics setting 2	[SL2 ♦♦]
Step 7	Press the MENU button	Slide system servo output dead zone level setting	[SLDLEV ♦♦]
Step 8	Press the MENU button	Slide kick pulse level setting (When moving forcibly)	[SLKLVk ♦♦]
Step 9	Press the MENU button	Slide kick pulse level setting (Auxiliary for ten jumps)	[SLKLVt ♦♦]
Step 10	Press the MENU button	Slide kick pulse level setting (When moving)	[SLKLVm ♦♦]

- ♦♦: Setting
- When the CANCEL button of DISPLAY unit is pressed at a step, the unit will shift to the opposite step.
- When the + button of DISPLAY unit is pressed when the setting is displayed, the setting will increase and the new setting will be stored in the RAM.
- When the – button of DISPLAY unit is pressed when the setting is displayed, the setting will decrease and the new setting will be stored in the RAM.
- When the STOP button of the Unit is pressed when the EEPROM setting menu is displayed, the test mode STOP state will be set.
- When the STOP button of the Unit is pressed in the slide setting menu state, the EEPROM setting menu state will be set.
- When the STOP button of the Unit is pressed at each setting item display state, the slide setting menu state will be set.

(5) Temp Setting

Step No.	Setting Method	Remarks	Display
Step 1	Test mode STOP state		[tsm■▲e♣♣]
Step 2	Press the MENU button four times	Reads each setting from the EEPROM. EEPROM menu display mode	[EEPROM SET]
Step 3	Press the PLAY/PAUSE button	Focus setting menu	[Focus]
Step 4	Press the MENU button four times	TEMP setting menu	[Temp]
Step 5	Press the PLAY/PAUSE button	TEMP setting	[TEMP ○○♦♦]

- ○○: Measurement, ♦♦: Setting
- When the + button of DISPLAY unit is pressed when the setting is displayed, the setting will increase and the new setting will be stored in the RAM.
- When the – button of DISPLAY unit is pressed when the setting is displayed, the setting will decrease and the new setting will be stored in the RAM.
- When the STOP button of the Unit is pressed when the EEPROM setting menu is displayed, the test mode STOP state will be set.
- When the STOP button of the Unit is pressed in the TEMP setting menu state, the EEPROM setting menu state will be set.
- When the STOP button of the Unit is pressed at each setting item display, the TEMP setting menu state will be set.
- When the CHARACTER button of DISPLAY unit is pressed in the EJECT state, the unit will move to step 5. (Refer to 6.2.8 EJECT State)

(6) Control Setting

Step No.	Setting Method	Remarks	Display
Step 1	Test mode STOP state		[tsm■■▲▲e♣♣]
Step 2	Press the MENU button four times	Reads each setting from the EEPROM. EEPROM menu display mode	[EEPROM SET]
Step 3	Press the PLAY/PAUSE button	Focus setting menu	[Focus]
Step 4	Press the MENU button five times	CONTROL setting menu	[Control]
Step 5	Press the PLAY/PAUSE button	CONTROL 1 setting	[CONTRL1 ♦♦]
Step 6	Press the MENU button	CONTROL 2 setting	[CONTRL2 ♦♦]

- ♦♦: Setting
- When the CANCEL button of DISPLAY unit is pressed at a step, the unit will shift to the opposite step.
- When the + button of DISPLAY unit is pressed when the setting is displayed, the setting will increase and the new setting will be stored in the RAM.
- When the – button of DISPLAY unit is pressed when the setting is displayed, the setting will decrease and the new setting will be stored in the RAM.
- When the STOP button of the Unit is pressed when the EEPROM setting menu is displayed, the test mode STOP state will be set.
- When the STOP button of the Unit is pressed in the CONTROL setting menu state, the EEPROM setting menu state will be set.
- When the STOP button of the Unit is pressed at each setting item display, the CONTROL setting menu state will be set.
- CONTROL 1 contents:
 - bit 7 : High frequency superimpose ON/OFF (0 = OFF, 1 = ON) during recording
 - bit 6 to 4 : Play start SD numbers (30 to 100 sectors, 10 sector-step) Equation $(n + 3) \times 10$ $n = 0$ to 7
 - bit 2 to 0 : High speed jump overrun amount (384 to 830 lines, 64 line-step) Equation $(n + 6) \times 64$ $n = 0$ to 7
- CONTROL 2 contents:
 - bits 4 to 0 : EEPROM version (From a) Equation $n + 1$, $n = 0$ to 31, ASCII character conversion
- When the REC button is pressed in the EJECT state, the unit will move to step 5. (Refer to 6.2.8 EJECT State)

6.2.5 TEST PLAY Mode

Step No.	Setting Method	Remarks	Display
Step 1	Test mode STOP state		[tsm■■▲▲e♣♣]
Step 2	Press the CHARACTER button of DISPLAY unit	TEST PLAY menu	[TEST PLAY]
Step 3	Press the REC MODE button	Playback start address setting (Cluster)	[ADRES 0032]
Step 4	Press the PLAY/PAUSE button	Continuous playback (Pit part) Continuous playback (Groove part)	[s□□□c△△△△] [a□□□c△△△△]
Step 5	Press the STOP button of the Unit	TEST PLAY menu	[TEST PLAY]

- □□□□: Address (Cluster), △△△△: C1 error
- When the STOP button of the Unit is pressed during the TEST PLAY menu, the test mode STOP state will be set.
- Press the ◀◀, ▶▶ buttons of the Unit to change the settings at step 3.
 - * ▶▶ button: Set the address to +01H.
 - * ◀◀ button: Set the address to -01H.

6.2.6 TEST REC Mode

Step No.	Setting Method	Remarks	Display
Step 1	Test mode STOP state		[tsm■■▲▲e♣♣]
Step 2	Press the CHARACTOR button of DISPLAY unit twice	TEST REC menu	[TEST REC]
Step 3	Press the REC MODE button	Recording start address setting (cluster)	[a0032PW▽▽]
Step 4	Press the PLAY/PAUSE button	Continuous recording (Groove part)	[a□□□PW▽▽]
Step 5	Press the STOP button of the Unit	TEST REC menu	[TEST REC]

- □□□□: Address (Cluster), ▽▽: Laser recording power
- When the STOP button of the Unit is pressed during the TEST REC menu, the test mode STOP state will be set.
- Press the ◀◀, ▶▶ buttons of the Unit to change the settings at step 3.
 - * ▶▶ button: Set the address to +01H.
 - * ◀◀ button: Set the address to -01H.
- When the +, - buttons of DISPLAY unit is pressed in the address setting state or continuous recording state, the laser recording power will change.

6.2.7 INNER Mode (Read In SW Detection)

Step No.	Setting Method	Remarks	Display
Step 1	Test mode STOP state		[tsm■■▲▲e♣♣]
Step 2	Press the REC button	INNER mode menu display	[INNER]
Step 3	Press the PLAY/PAUSE button	INNER switch position address display	[s□□□c△△△△]
Step 4	Press the STOP button of the Unit	INNER mode menu display	[INNER]

- □□□□: Address (Cluster), △△△△: C1 error
- When the STOP button of the Unit is pressed during the INNER menu, the test mode STOP state will be set.
- Perform when replacing the MD MECHA SW ASSY.
- Perform using the high reflective disc. The unit will not operate on the low reflective disc.

6.2.8 EJECT State

Step No.	Setting Method	Remarks	Display
Step 1	Eject the disc	EJECT mode menu display	[EJECT]
Step 2	Press the REC MODE button Press the REC button Press the CHARACTOR button of DISPLAY unit	Laser power switching EEPROM setting mode (CONTROL setting) EEPROM setting mode (TEMP setting)	[rPw] [pPw]

- Refer to “6.2.4 EEPROM Setting Mode” for details on the EEPROM setting mode.

6.3 READ-IN SWITCH POSITION MEASUREMENT MODE

(Using Test Disk 1)

Measuring with a high reflective disc (Check when replacing the MD MECHA SW ASSY.)

Step No.	Setting Method	Remarks	Display
Step 1	Test mode STOP state		[tsm■■▲▲e♣♣]
Step 2	Press the REC button	INNER mode menu display	[INNER]
Step 3	Press the PLAY/PAUSE button (Refer to NOTE)	INNER switch position address display	[s□□□□c△△△△]
Step 4	Press the STOP button of the Unit	INNER mode menu display	[INNER]

NOTE) Adjust the read-in switch position to SUBQ FF85 to FFD2.

- 1. Loosen the three screws (A) securing the MD MECHA SW ASSY.
- 2. While pressing the MD MECHA SW ASSY in the ← direction, tighten the screws, and measure the read in switch position again.

After adjusting the position, secure the three screws (A).
(See Fig. 6-3)

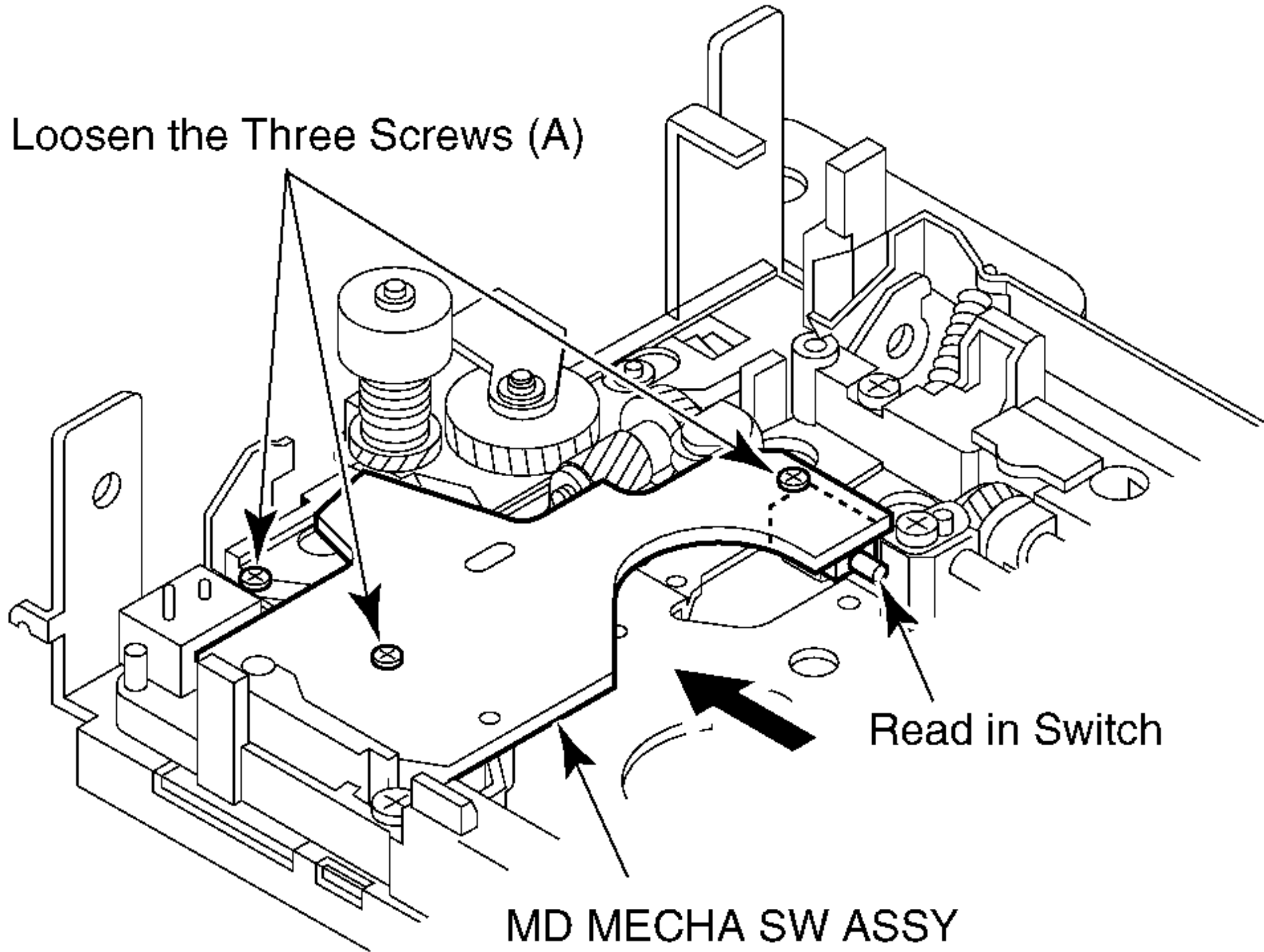


Fig. 6-3

6.4 MAGNETIC HEAD ATTACHING POSITION ADJUSTMENT

- Be sure to adjust the attaching position of the magnetic head when the magnetic head and optical pickup have been replaced.
 - To make the adjustment easy, move the optical pickup to the center position.
- (1) Set transparent disc 3 for adjustment.
 - (2) Lower the magnetic head up shift arm with your hand, and raise the magnetic head.
 - (3) Looking at the unit from the top, adjust the magnetic head to the top of the optical pickup objective lens.
 - In the radial direction: Slightly loosen the head fixing screw (A), and move the magnetic head fixture so that the head fits the top of the pickup objective lens.
 - In the circumference direction: Rotate the magnetic head circumference direction adjusting screw (B), and adjust so that the head is at the top of the objective lens.
 - (4) Check that there is space as shown in Fig. 6-4, and check that the magnetic head moves up and down smoothly.
 - (5) After adjusting, apply screw-locking compound to the head fixing screw (A) and the adjusted screw (B).

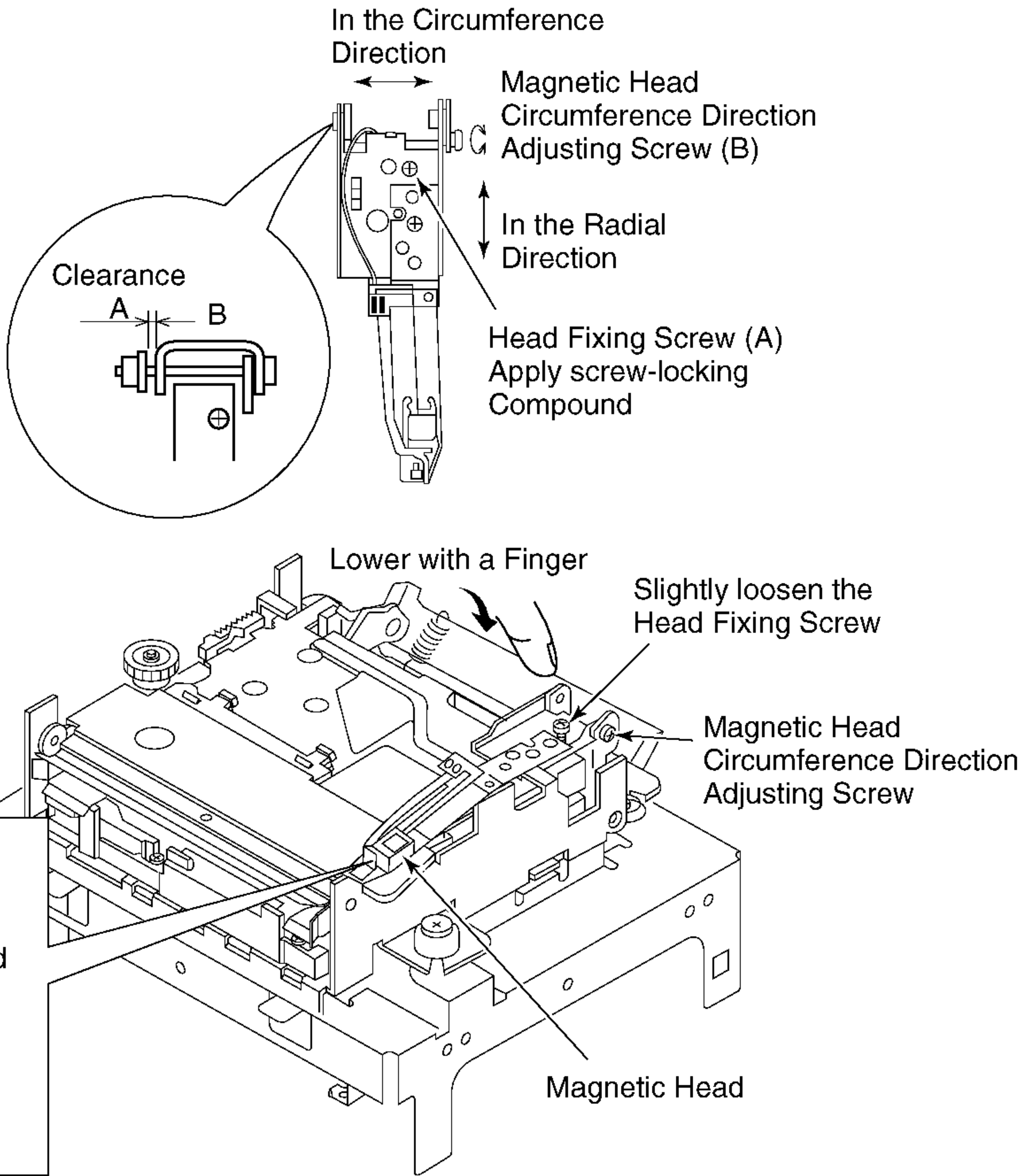


Fig. 6-4

6.5 MECHANISM ADJUSTMENT

6.5.1 Detecting the Optical Pickup Grating

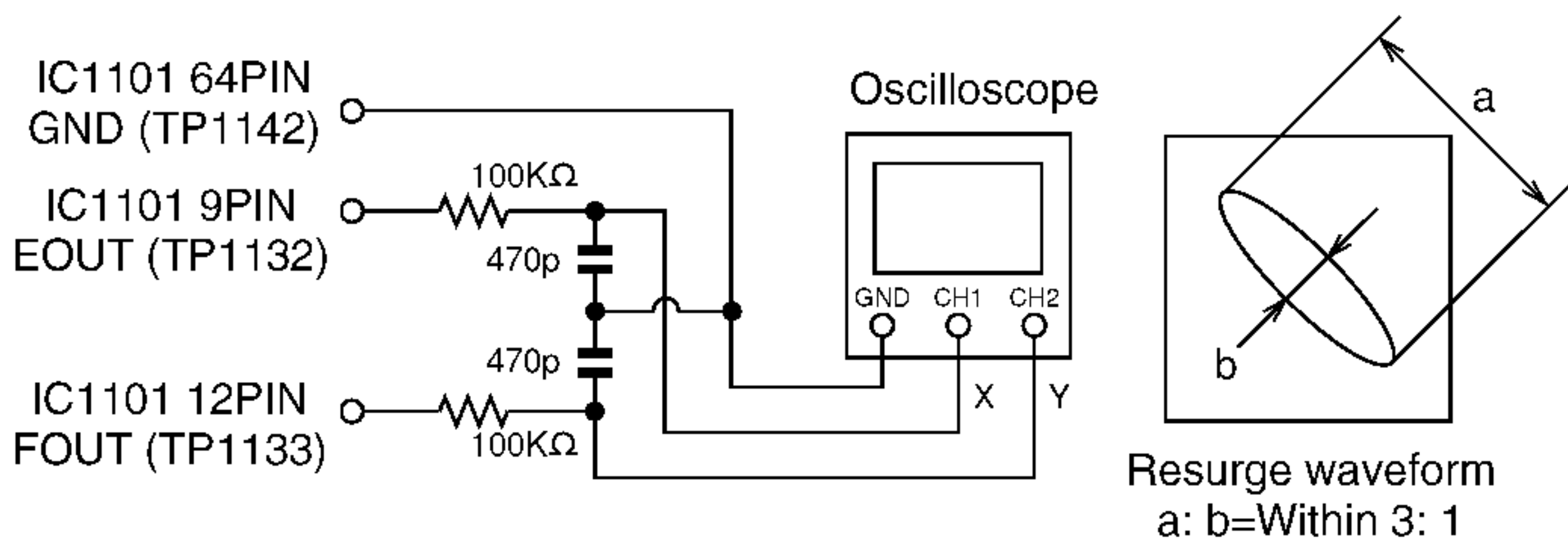


Fig. 6-5 Measuring the Optical Pickup Grating Deviation

Using a high reflective MD disc, perform automatic adjustment in the AUTO test mode (COMPLETE is displayed), and adjust the EOUT: FOUT resurge waveform (x-y).

- (1) Desolder the two points of the disc motor board, solder the lead wire to the motor terminal and board temporarily as shown in the figure, loosen the three screws of the motor slightly, and while looking at the resurge waveform, adjust it.
- (2) After adjusting, tighten the screws in the order of ①, ②, and ③.

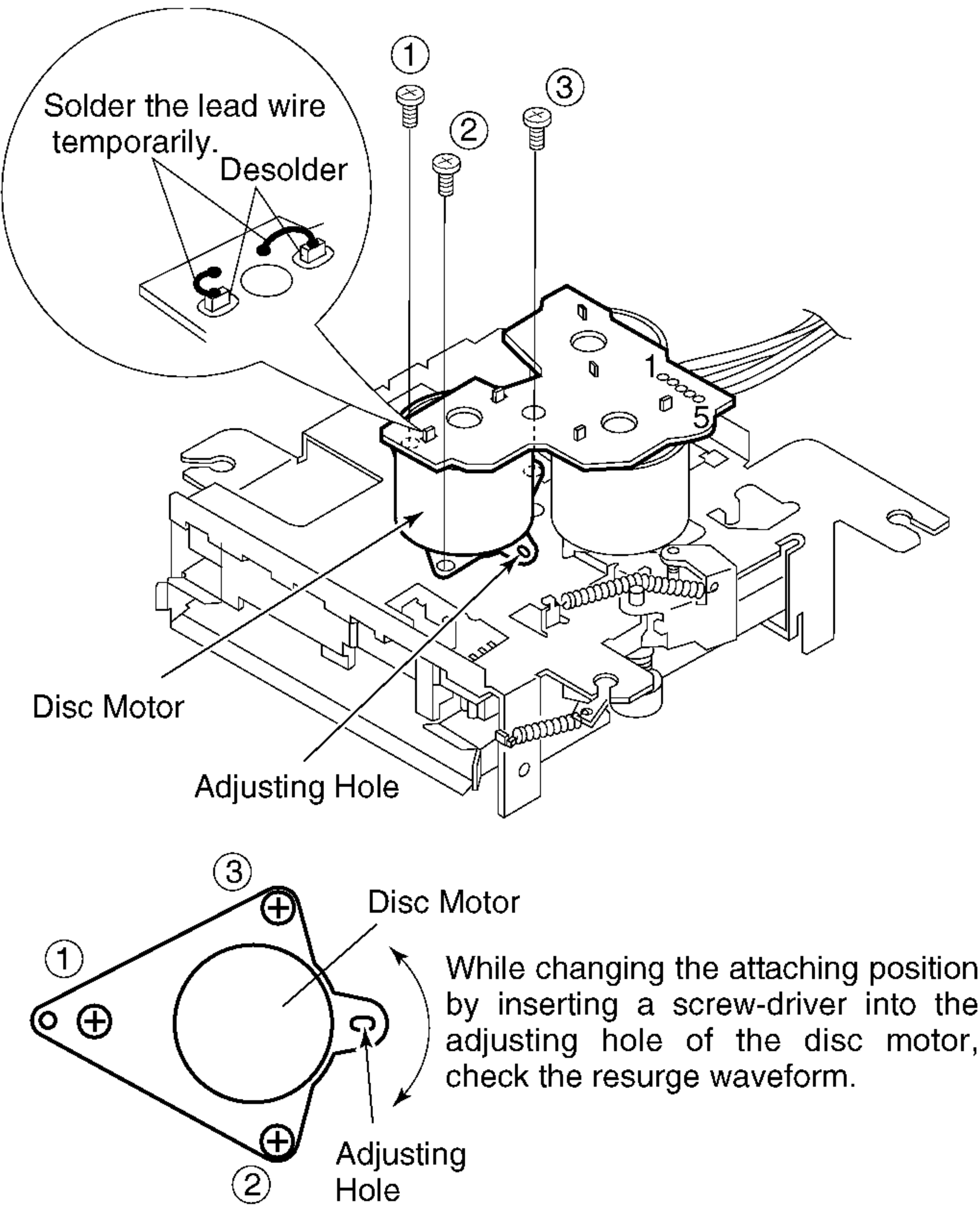


Fig. 6-6

6.5.2 Adjusting and Checking Jitter

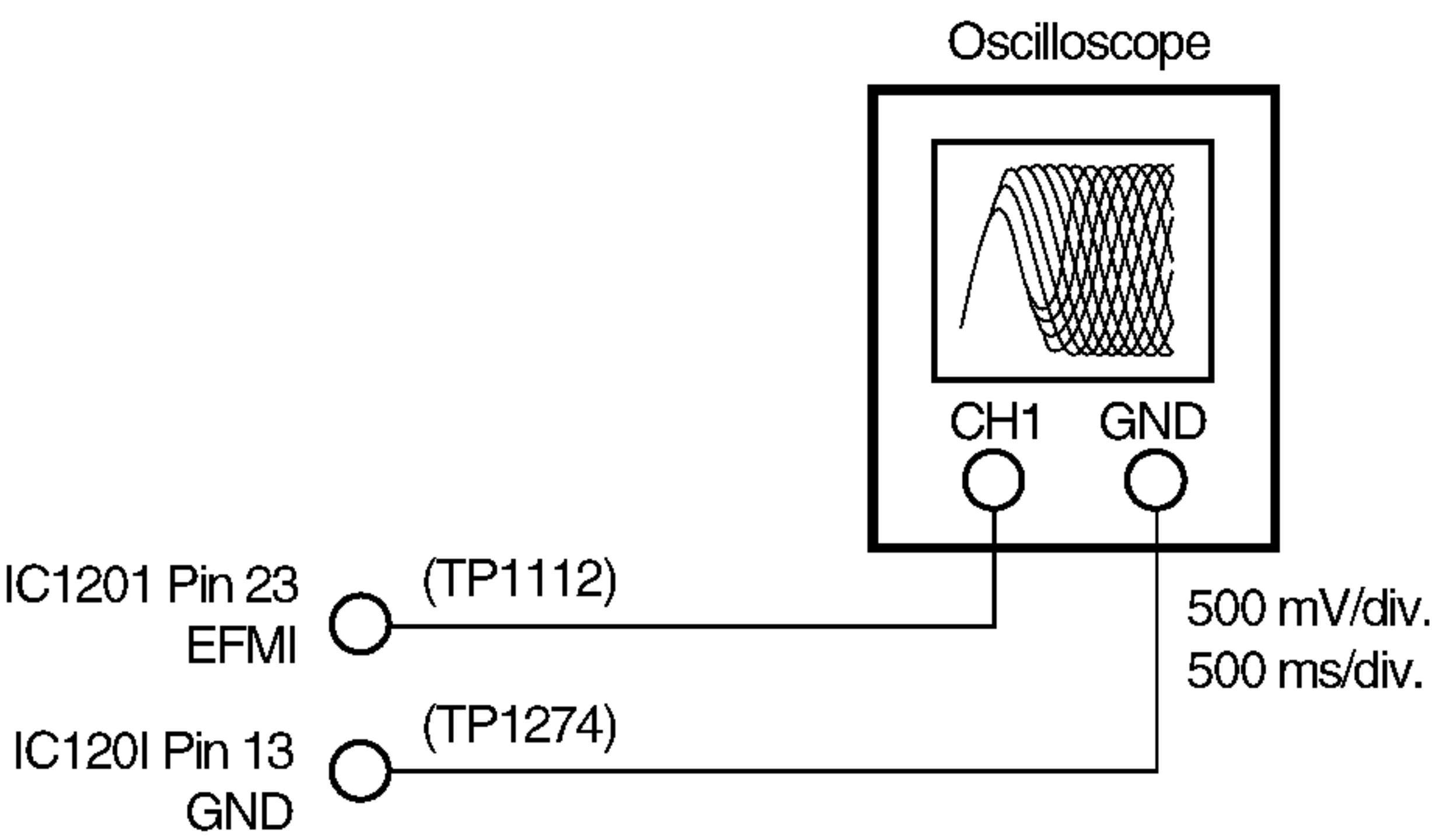
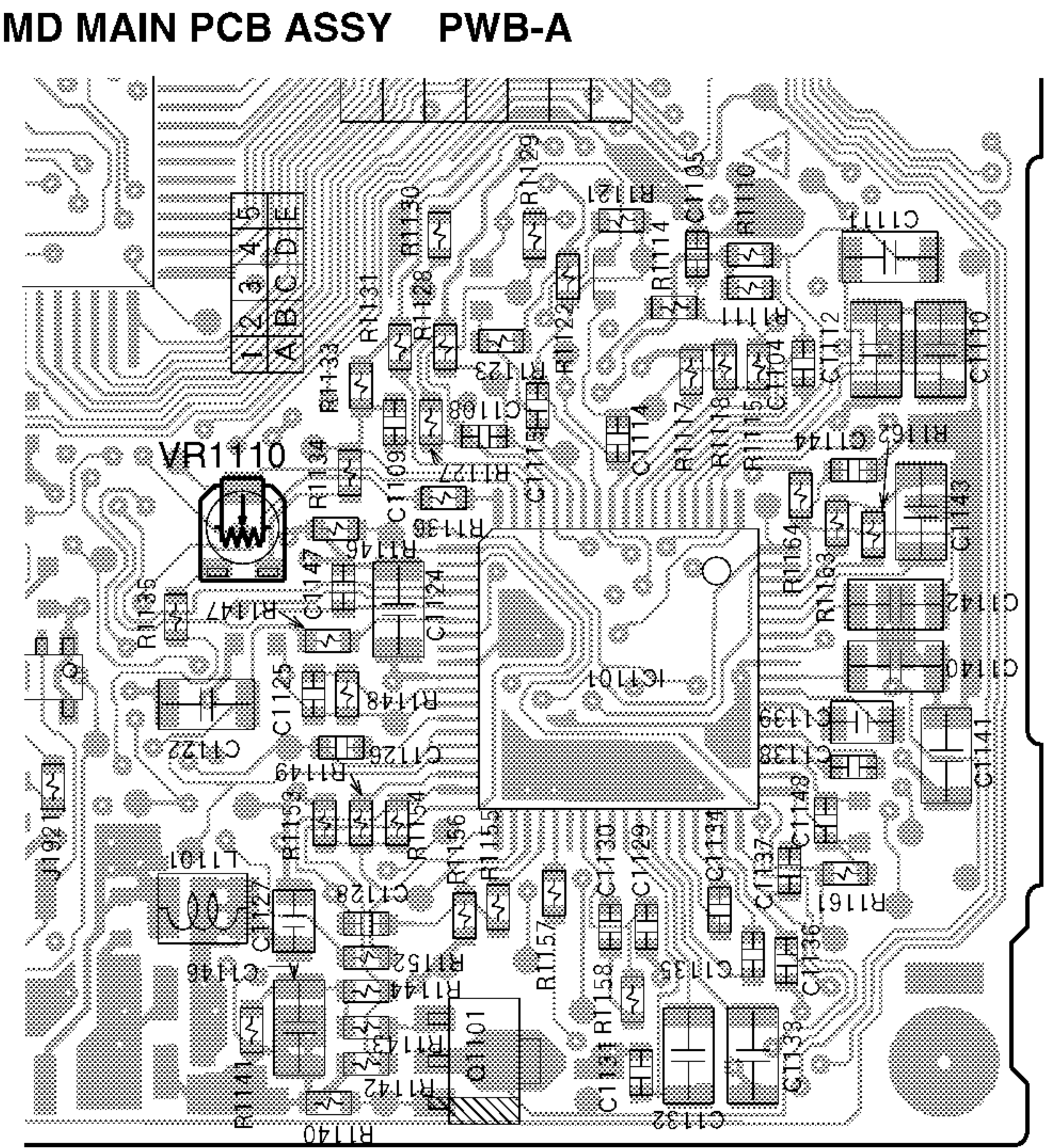


Fig. 6-7 Jitter Connection Diagram

Using the low reflective MD disc, perform automatic adjustment in the AUTO test mode, change the FB (focus balance) VR1110 on the main board, so that the EFM waveform (eye pattern) becomes most clear.

As VR1110 has no rotating stopper, if the optimum and worst points of the waveform are next to each other during the adjustment, move slightly away from the worst point.



Adjustment Point

6.6 DETAILS OF ERROR DISPLAY

Error Display	Details of Error	Measure
Can't REC	● DEFECT occurred 10 times continuously during REC-PLAY. ● Recordable cluster became 0 since DEFECT occurred during REC-PLAY. ● Address is unreadable. REC state can not be set for 20 seconds even after try again.	● Check if there are scratches, dusts, fingerprints, or black spots on disc. Check if disc fluctuates eccentrically or moves up and down largely.
Can't COPY	● Determined as follows according to the channel status of the signals input from D-IN during REC-PAUSE or REC-PLAY. 1. Other than audio 2. Other than consumer use 3. Copy NG due to inversion of COPY bit of CD	● Check if CD is copy-proof. (Example: CD-R, etc.) ● Playback digital signal output equipment to check if digital signal data is normal.
Din UNLOCK	● The following occurred for digital signal input from D-IN during REC-PAUSE, REC-PLAY, or CD FUNC playback Digital IN PLL unlocked.	● Check if D-IN signal line is normal. ● Check if 8.4 MHz clock from MD to CD is normal.
TOC FULL	● No area for registering music number and character information during REC-PLAY (music name, disc number, etc.)	● Replace with recording/playback disc with space for registering UTOC.
UTOC R ERR	● FTNO > LTNO. ● FTNO ≠ 0 or 1. ● UTOC recorded on DISC could not be read.	● Replace with other discs to check if UTOC data is normal.
UTOC ERR A	● Start address > End address.	● Replace with other discs to check if UTOC data is normal.
UTOC ERR L	● Any one data of UTOC 0 to 4 has looped.	● Replace with other discs to check if UTOC data is normal.
NOT AUDIO	● Data not for audio is recorded for TNO track mode currently selected.	● Select other TNO or replace with other discs.
?DISC	● Data called MINI of system ID written in ASCII codes in TOC is incorrect. ● Disc type written in TOC is not pre-mastered MD, recording MD, or hybrid MD.	● Disc is outside specifications. Replace with different disc and check.
DISC FULL	● No recordable space when attempted to set REC-PAUSE.	● Replace with different disc with recording space.
Play back MD	● Disc only for playback was loaded when attempted to set REC-PAUSE or edit.	● Disc is for playback only. Replace with disc for recording.
PROTECTED or TR PROTECT	● Attempted to record or edit even through REC-proof knob of disc for recording was in the REC-proof state. ● Attempted to edit track with write-protect according to information on UTOC.	● Track attempted to be edited is write-protected. Try again with different track. ● Restore the REC-proof knob and try again.
TOC FULL	● Area for writing UTOC was full when attempted to set REC-PAUSE or DIVIDE.	● Replace with other recording/playback discs with space remaining for writing UTOC.
Can' t EDIT	● Editing conditions were not satisfied for each editing function.	● Operating method is wrong. Try again using correct method.
TEMP OVER	● Temperature inside unit (MD unit) was too high due to fault.	● Check according to TROUBLESHOOTING. ● Is temperature of place where unit is used high?

DETAILS OF ERROR DISPLAY

Error Display	Details of Error	Measure
HEAD U ERR	● Did not reach LOAD completed position when HEAD UP operations were performed.	● Turn OFF power and try again. ● Check signal line to mechanism controller or loading motor.
HEAD D ERR	● Did not reach HEAD DOWN position when HEAD DOWN operations were performed.	
DISC ERR	● Data read was incorrect or could not be read properly. ● Error occurred during music data recording and recording could not be performed correctly.	● Faulty TOC or UTOC data or scratch on disc. Replaced with other discs.
UTOC W ERR	● Fault occurred during rewriting of UTOC rewriting, and rewriting could not be performed correctly.	● Scratch on disc. Replaced with other discs.
BLANK DISC	● After reading UTOC, total number of TNO and NAME characters was 0.	● Record and check if disc is recordable.
DEFECT	● Focus execution error, etc. occurred due to shock during REC-PLAY.	● Check if there are scratches, dusts, fingerprints, or black spots on disc. Check if disc fluctuates eccentrically or moves up and down largely.
MEM. FULL	● Shock proof memory became full during recording.	● Check if there are scratches, dusts, fingerprints, or black spots on disc. Check if disc fluctuates eccentrically or moves up and down largely.
MECHA ERR	● Communication was enabled between system and mechanism controllers.	● If this error display does not go off even when STOP button of the Unit is pressed, check microprocessor communication line.
NAME FULL	● Total number of characters input for disc exceeded 1700.	● Shorten disc or music name.

7. GENERAL INFORMATION

7.1 IC

■ 1245730331 (IX2645AF): (IC1401: MD MAIN PCB ASSY)

● MD System Micro-computer

● Pin Function

No.	Port Name	I/O	Function
1	P96/ANEX1	O	NC
2	P95/ANEX0	O	NC
3	P94/DA1	O	LDVAR (LASER POWER ADJUST OUTPUT)
4	P93/DA0	O	ADJS (AUTO ADJUST STEP CHECK)
5	P92/TB2IN	O	NC
6	P91/TB1IN	I	LDSWCK INPUT (INTERRUPT WHEN USING THE MJ-F21 ALONE)
7	P90/TB0IN	I	ERR INPUT
8	BYTE	I	BYTE
9	CNVSS	I	CNVSS
10	P87/XCIN	O	NC
11	P86/XCOUT	O	NC
12	RESET	I	RESET INPUT
13	XOUT	–	NC
14	VSS	–	GND
15	XIN	I	XTAL (8.4672MHz INPUT)
16	VCC	–	+3.15V
17	P85/NMI	I	
18	P84/INT2	I	DINT (INTERRUPT INPUT FROM MD REC/PLAY LSI)
19	P83/INT4	I	DSENSE (MD REC/PLAY LSI SERVO SENS INPUT)
20	P82/INT0	I	ST-ID/MD-ON
21	P81/TA4IN	I	CD SEARCH INPUT (SYNCHRONOUS REC STOP INPUT)
22	P80/TA4OUT	O	MDRSW OUTPUT
23	P77/TA3IN	O	FSW1 (SW POWER SUPPLY FREQUENCY SWITCH)
24	P76/TA3OUT	O	FSW2 (H/L SWITCH FOR SW POWER SUPPLY f)
25	P75/TA2IN	I	P-DOWN (DETECTION OF POWER FAILURE)
26	P74/TA2OUT	O	HDON (MAGNETIC HEAD CURRENT ON/OFF OUTPUT)
27	P73/TA1IN	O	LD+ (LOADING MOTOR + CONTROL OUTPUT)

● The information shown in the list is basic information and may not correspond exactly to that shown in the schematic diagrams.

No.	Port Name	I/O	Function
28	P72/TA1OUT	O	LD– (LOADING MOTOR – CONTROL OUTPUT)
29	P71/TA0IN	I	CIN (TRACK COUNT SIGNAL INPUT)
30	P70/TA0OUT	I	INN SW (INNER SW DETECT INPUT)
31	P67/TXD1	I	
32	P66/RXD1	I	
33	P65/CLK1	I	
34	P64/CT1/RTS1/CTS0/CLKS	O	DSTB (SYSTEM CONTROL COMMUNICATIONS ENABLED AND COMMUNICATIONS BEING MADE)
35	P63/TXD0	O	MD DATA (MD DATA OUTPUT)
36	P62/RXD0	I	K DATA (SYSTEM CONTROL DATA INPUT)
37	P61/CLK0	I	DSCK (SYSTEM CONTROL COMMUNICATION INPUT)
38	P60/CTS0/RTS0	I	
39	P57	O	R/P (REC/PLAY SWITCH)
40	P56	I	FOK (FOCUS SERVO OPERATION MONITOR INPUT)
41	P55	O	HF ON (HIGH FREQUENCY SUPERIMPOSE ON/OFF OUTPUT)
42	P54	I	SEL1
43	P53	I	SEL0
44	P52	O	SYRS (MD REC/PLAY LSI REGISTER SELECT SIGNAL OUTPUT)
45	P51	O	SYRD (MD REC/PLAY READ SIGNAL OUTPUT)
46	P50	O	SYWR (MD REC/PLAY WRITE SIGNAL OUTPUT)
47	P47	I/O	SYSD7 (ENDEC/ATRRTAC DATA BUS 7)
48	P46	I/O	SYSD6 (ENDEC/ATRRTAC DATA BUS 6)
49	P45	I/O	SYSD5 (ENDEC/ATRRTAC DATA BUS 5)
50	P44	I/O	SYSD4 (ENDEC/ATRRTAC DATA BUS 4)
51	P43	I/O	SYSD3 (ENDEC/ATRRTAC DATA BUS 3)
52	P42	I/O	SYSD2 (ENDEC/ATRRTAC DATA BUS 2)
53	P41	I/O	SYSD1 (ENDEC/ATRRTAC DATA BUS 1)
54	P40	I/O	SYSD0 (ENDEC/ATRRTAC DATA BUS 0)

No.	Port Name	I/O	Function
55	P37	O	NC
56	P36	O	NC
57	P35	O	NC
58	P34	O	EEPRO (CANCELLATION OF E ² PROM PROTECTION)
59	P33	O	EPCS (E ² PROM CHIP SELECTOR OUTPUT)
60	P32	I/O	EEPD (E ² PROM SERIAL DATA OUTPUT)
61	P31	O	EEPK (E ² PROM SERIAL CLOCK OUTPUT)
62	VCC	I	+3.15V
63	P30	O	NC
64	VSS		GND
65	P27	O	NC
66	P26	O	NC
67	P25	O	NC
68	P24	O	HS/NS (DOUBLE/LOW SPEED)
69	P23	O	DISC (H : PIT)
70	P22	O	PCNT0
71	P21	O	PCNT1
72	P20	O	LD ON (H:ON)
73	P17	O	ANLPTR OUTPUT
74	P16	O	ADPON OUTPUT
75	P15	O	DAPON OUTPUT
76	P14	O	DFS0 OUTPUT
77	P13	O	DFS1 OUTPUT
78	P12	O	DIG EX OUTPUT
79	P11	O	DIG CD OUTPUT
80	P10	O	XRST (SYSTEM RESET OUTPUT)
81	P07	O	AD MUTE OUTPUT
82	P06	O	EMPHA OUTPUT
83	P05	O	DA MUTE (AUDIO MUTE ON/OFF OUTPUT)
84	P04	O	MUTE
85	P03	O	DOUTMT
86	P02	I	TEST2 (SPECIAL MODE SELECTION 2)
87	P01	I	TEST1 (SPECIAL MODE SELECTION 1)
88	P00	I	TEST0 (SPECIAL MODE SELECTION 0)

No.	Port Name	I/O	Function
89	P107/AN7/KI3	I	TCG (TOTAL SIGNAL DETECT INPUT)
90	P106/AN6/KI2	I	AVCK2 (AD/DA SECTION 3.1V MONITOR INPUT)
91	P105/AN5/KI1	I	AVCK1 (AD/DA SECTION 5V MONITOR INPUT)
92	P104/AN4/KI0	I	TEMP (THERMO SENSOR DETECT INPUT)
93	P103/AN3	I	MINF (WINDOW FOR DISC TYPE OR REC)
94	P102/AN2	I	TESTK1 (TEST KEY INPUT1)
95	P101/AN1	I	TESTK2 (TEST KEY INPUT2)
96	AVSS		GND
97	P100/AN0	I	HINF (MECHANISM POSITION/HEAD POSITION)
98	VREF		VREF (+3.15V)
99	AVCC		+3.15V
100	P97/ADTAG	I	

■ PDG202A: (IC4101: MD MAIN ASSY)

● System Micro-computer

● Pin Function

No.	Port Name	Name	I/O	Description
1	G1/A1	—	O	Not used (Open)
2	G0/A0	—	O	
3	NC	—	—	Connected to +5V
4	PE0/EC0/INT0	S. CLK	I	System bus CLOCK input
5	PE1/EC1/INT1	D. REQ	I	MD display communication request input
6	PE2/INT2	ACDET	I	System control power off detection input
7	PE3/INT3/NMI	J/XEX	I	Doemstic/Overseas discrimination input
8	PE4/RMC	—	I	Not used (connected to +5V)
9	PE5	TEST	I	Test mode input
10	PE6/PWM	—	O	Not used (Open)
11	PE7/T0/ADJ	—	O	
12	PC0/KR0	OUTSEL	O	PB Select output (L: MD/H: External)
13	PC1/KR1	XRECMUTE	O	MD Rec mute output
14	PC2/KR2	—	O	Not used (Open)
15	PC3/KR3	—	O	
16	PC4/KR4	MDRE	O	MD mechanism control Reset output
17	PC5/KR5	LOSW	I	MD loading switch detection input
18	PC6/KR6	PODW	O	MD mechanism control power off output
19	PC7/KR7	STID	O	MD ST-ID control output
20	PB0/CINT	DSTB	I	MD mechanism control communication request detection input
21	PB1/CS0	SEAR	O	MD CD search signal output
22	PB2/SCK0	DSCK	O	MD mechanism control communication clock output
23	PB3/SI0	MDDA	I	MD mechanism control communication data input
24	PB4/SO0	KDAT	O	MD mechanism control communication data output
25	PB5/SCK1	D. SCK	O	MD display communication clock output
26	PB6/SC1	—	O	Not used (Open)
27	PB7/SO1	D. DATA	O	MD display communication data output
28	AVref	AVref	I	A/D reference voltage (connected to +5V)
29	PA0/AN0	—	O	Not used (Open)
30	PA1/AN1	XPBMUTE	O	MD PB mute output
31	PA2/AN2	SI. DATA	I	System bus data input

No.	Port Name	Name	I/O	Description
32	PA3/AN3	SO. DATA	O	System bus data output
33	PA4/AN4	S. REQ	I/O	System bus request input/output
34	PA5/AN5	—	O	Not used (Open)
35	PA6/AN6	KEYIN	I	Key detection input (A/D input)
36	PA7/AN7	—	O	Not used (Open)
37	AVss	VSS	—	Connected to GND
38	RST	XRESET	I	Reset input
39	EXTAL	EXTAL	I	Connected to Ceramic oscillator (8.38 MHz)
40	XTAL	XTAL	O	
41	Vss	VSS	—	Connected to GND
42	TX	—	O	Not used (Open)
43	TEX	—	I	Not used (connected to GND)
44	Vdd	VDD	—	Connected to +5V
45	Vfdp	VFDP	—	Connected to GND
46 53	PD0/A55 PD7/A48	—	O	Not used (Open)
54 61	PF0/A47 PF7/A40			
62 69	PG0/A39 PG7/A32			
70 77	PH0/A31 PH7/A24			
78 81	A23 A20			
82	A19	LED PLAY	O	PLAY LED Output
83	A18	LED REC	O	REC LED Output
84 85	A17 A16	—	O	Not used (Open)
86 88	G15/A15 G13/A13			
89	Vdd	VDD	—	Connected to +5V
90 92	G12/A12 G10/A10	—	O	Not used (Open)
93 100	G9/A9 G2/A2			

7.2 DIAGNOSIS

7.2.1 Disassembly

■ Disassembly

PRECAUTIONS BEFORE DISASSEMBLY

- Heed the points mentioned below to ensure safety and performance during disassembly of the MJ-L7 and reassembly after repair.
- 1. Remove any mini disc from the MJ-L7.
 - 2. Be sure to disconnect the power plug from the AC outlet before disassembling the MJ-L7.
 - 3. Before disassembling a particular part, remove the nylon band or wire holder as required.
When reassembling after repair, be sure to wire as before.
Be careful to install correct screws (installation screw for the parts to be installed in the MD mechanical chassis) to the MD mechanism. If a screw with incorrect length is installed, the screw will hit the Light Pickup. As a result, the system may not operate.
 - 4. Be careful of static electricity in the integrated circuit, etc. when performing repair.

■ MD MAIN PCB Assy

- 1. Screw (N1) × 4
- 2. Socket (N2) × 4

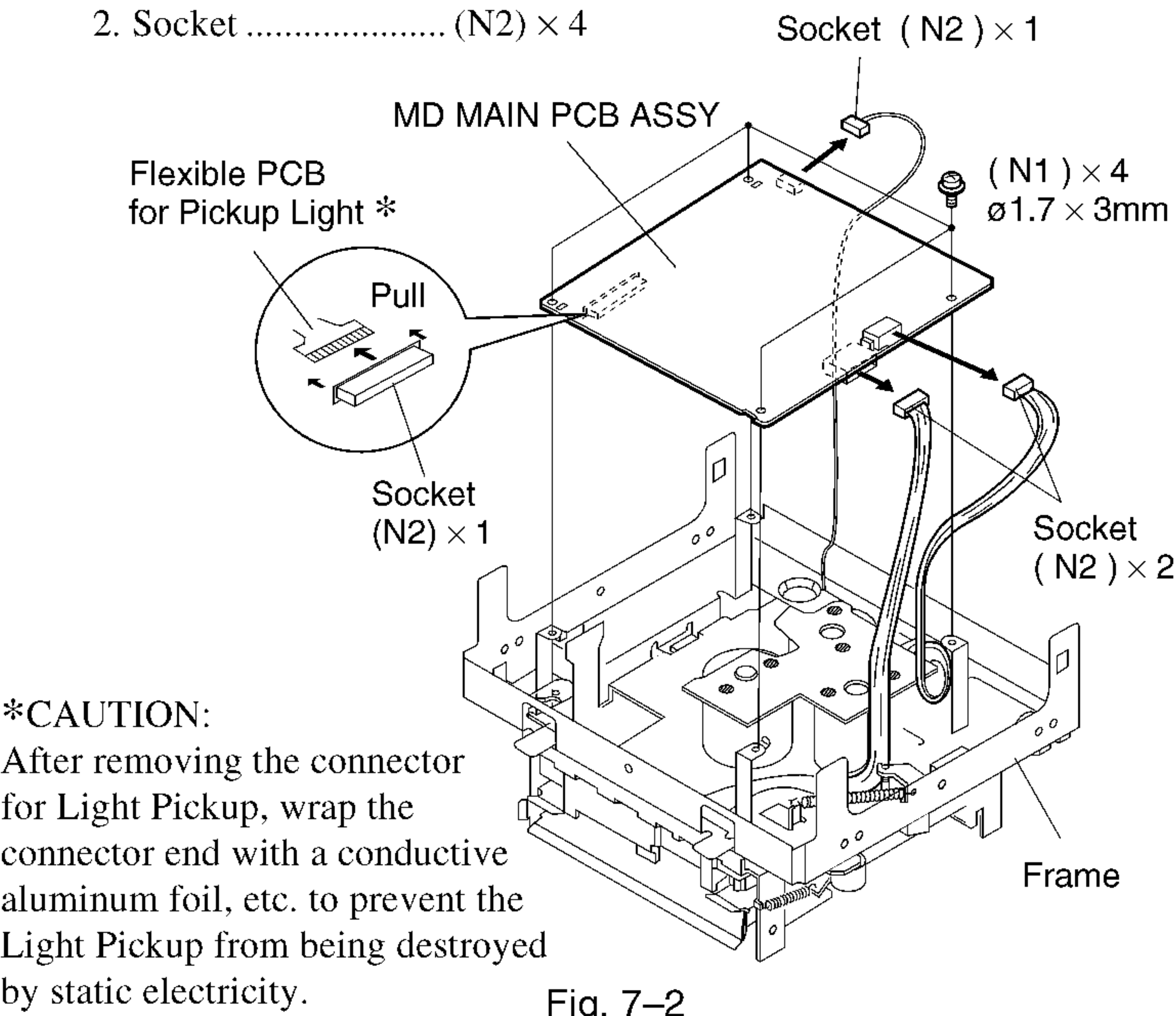


Fig. 7-2

■ MD Mechanism Assy

- 1. Screw (M1) × 4

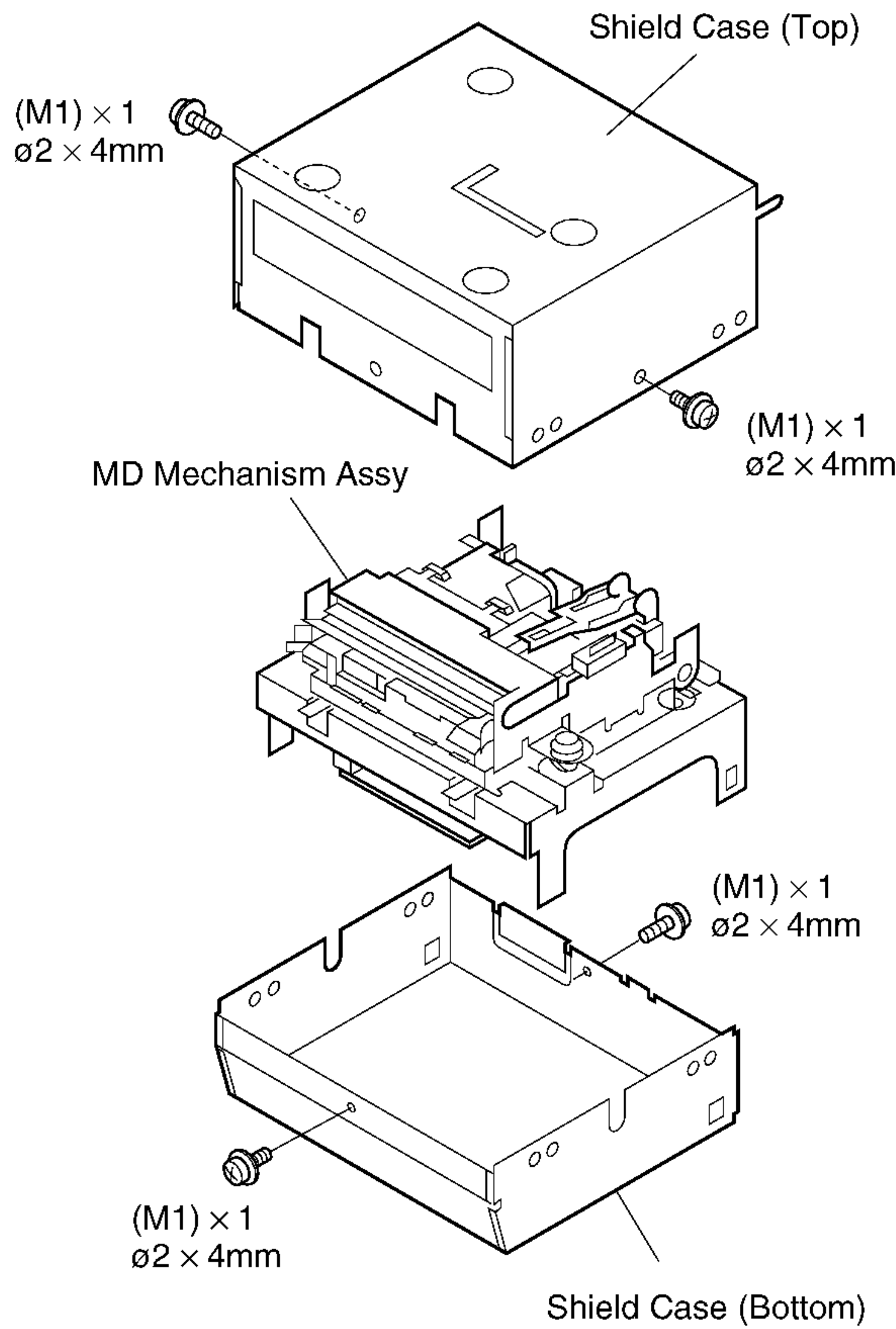


Fig. 7-1

■ MD Mechanism

- 1. Screw (P1) × 6
- 2. Spring (P2) × 1
- 3. Cartridge Holder (P3) × 1

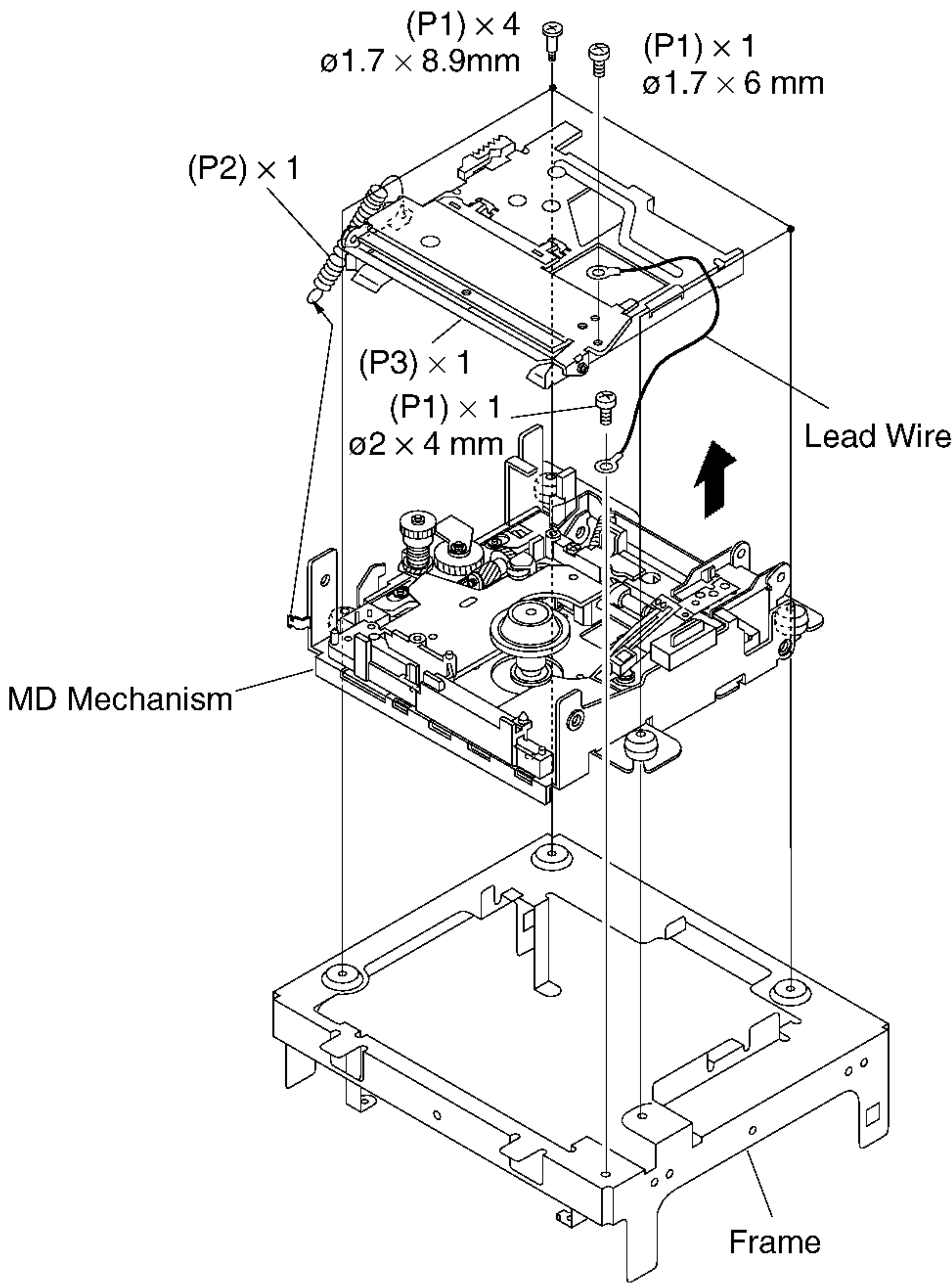


Fig. 7-3

■ REPLACING MAIN PARTS

■ MD Mechanism Section

Follow in "DISASSEMBLY" to remove the MD Mechanism.

● Removing the MD MECHA MO Assy

Remove soldering (A1) at six points to remove the MD MECHA MO Assy.

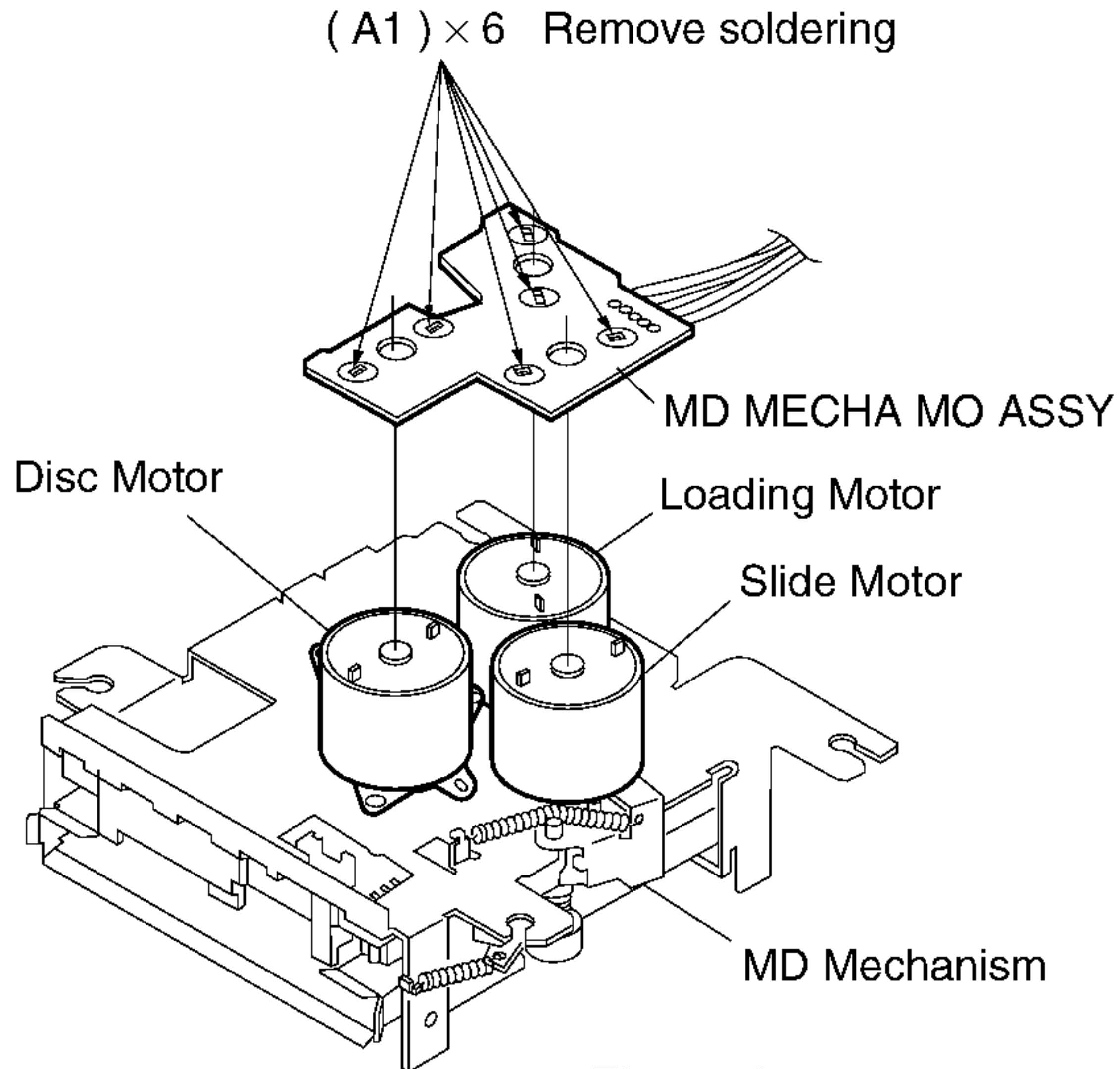


Fig. 7-4

● Removing the Disc Motor

- (1) Remove the shoulder Screws tightening the Loading Motor. Remove the Disc Motor side of the Spring (B1) engaged in the sleeve slit of the Disc Motor.
- (2) Remove the three Screws (B2) to remove the Disc Motor.

CAUTION : Be careful not to damage the Gears. (Damaged Gears may cause abnormal noise during searching.)

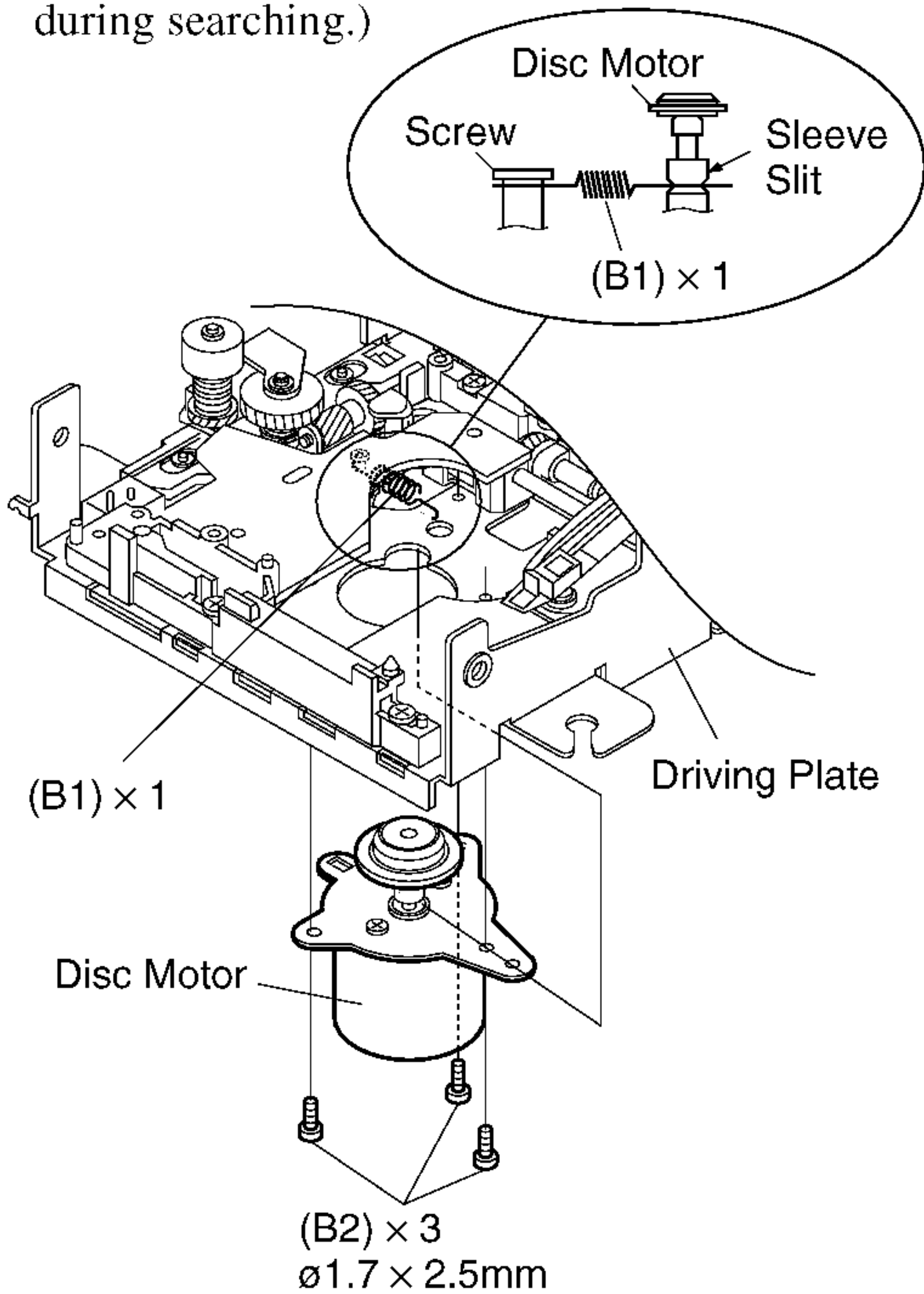


Fig. 7-5

● Removing the Slide and Loading Motors

- (1) Remove the four Screws (C1) to remove the Slide and Loading Motors.

CAUTION: Be careful not to damage the Gears. (Damaged Gears may cause abnormal noise during searching.)

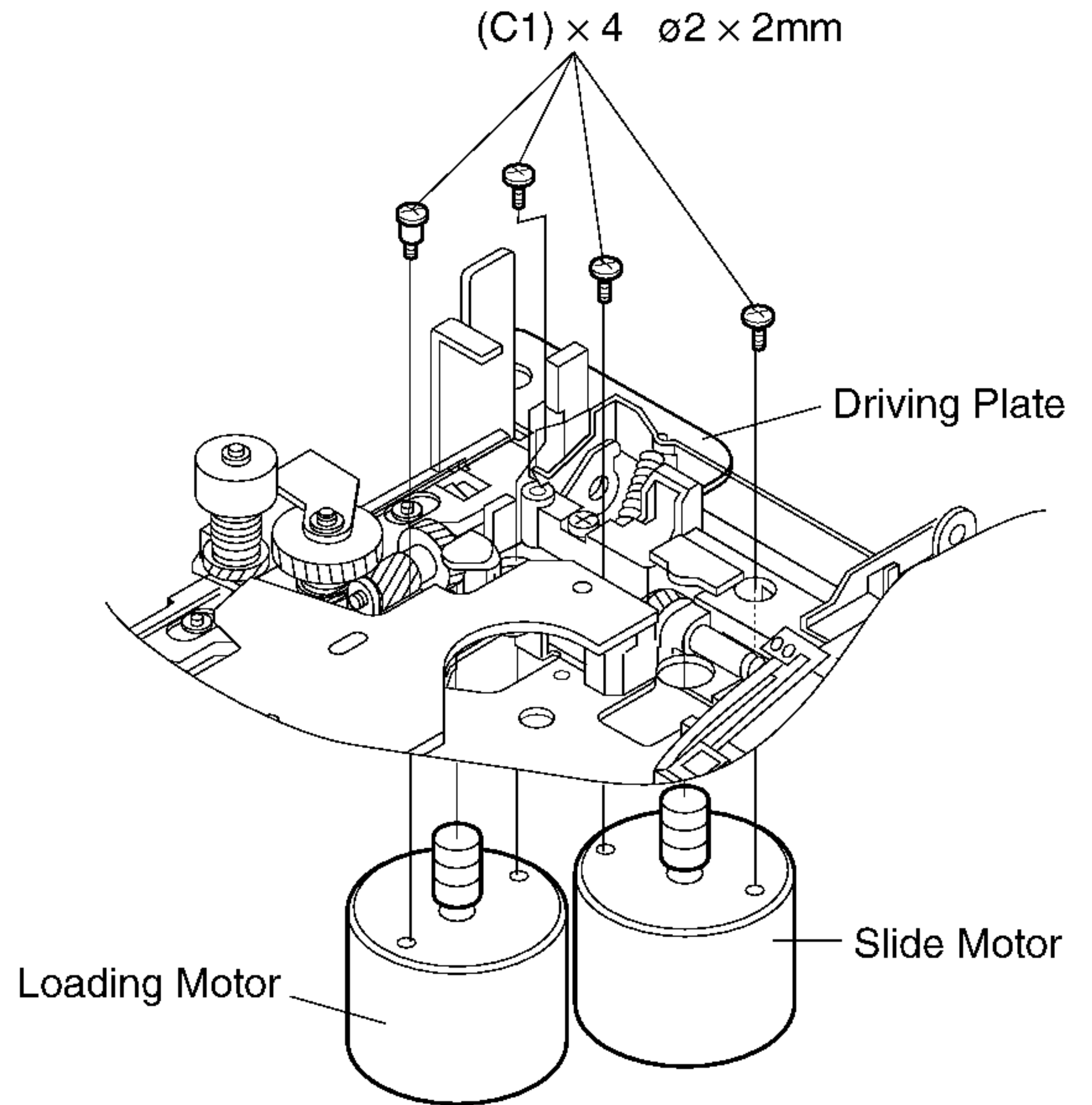


Fig. 7-6

● Removing the MD MECHA SW Assy

- (1) Remove the Screw (D1) and two Screws (D2), then further two Screws (D3). Remove the MD MECHA SW Assy.

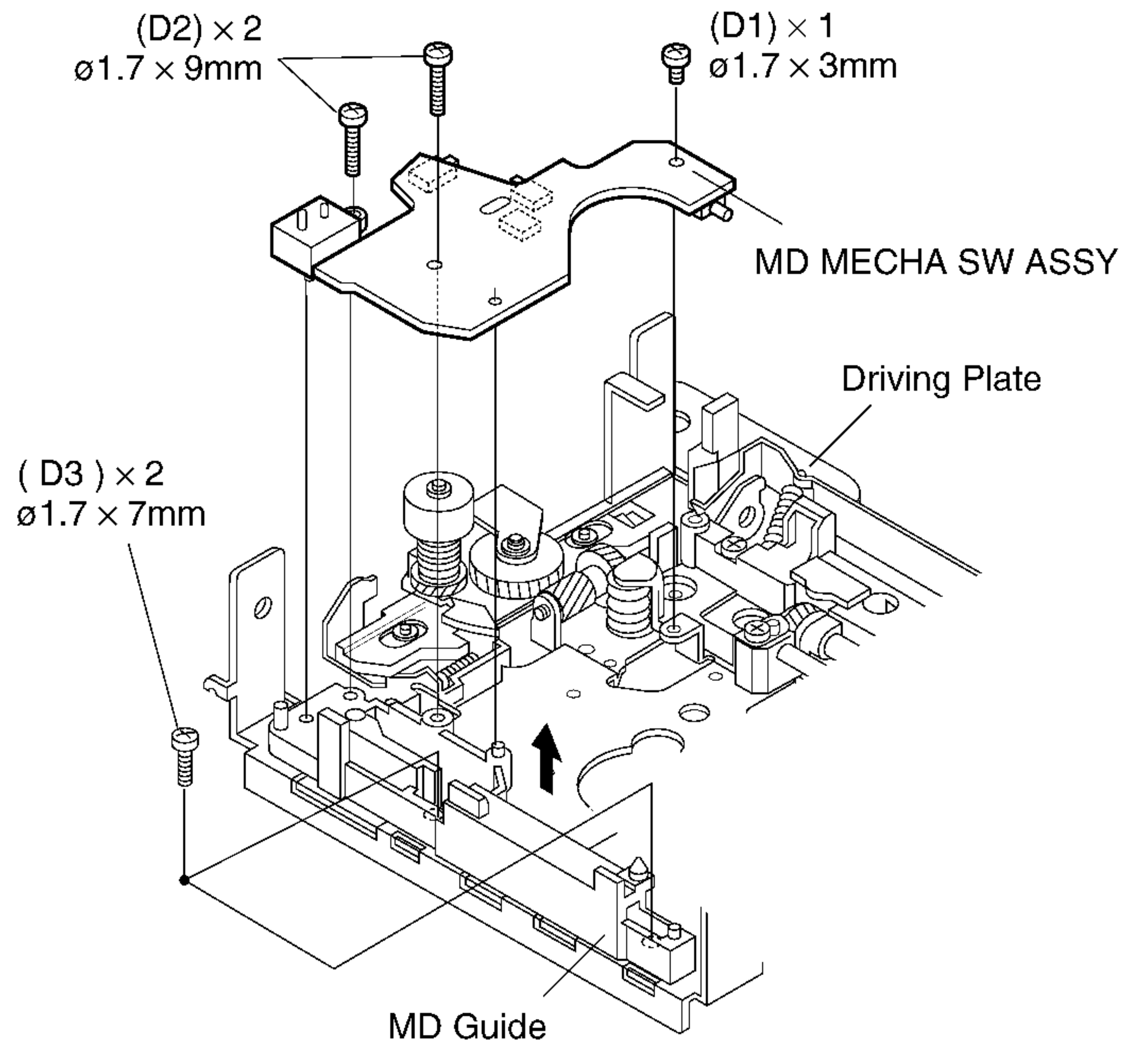


Fig. 7-7

● Removing the Light Pickup

- (1) Remove the three Screws (E1).

CAUTION: Take adequate caution not to damage the Magnetic Head.

- (2) Slightly pull out the MD Pickup Guide (E2) and its Shaft (E3). Carefully lift the Light Pickup.

CAUTION: Be careful not to damage the Gears. (Damaged Gears may cause abnormal noise during searching.) Be careful not to deform the Leaf Spring that is inserted in the Shaft on the opposite side.

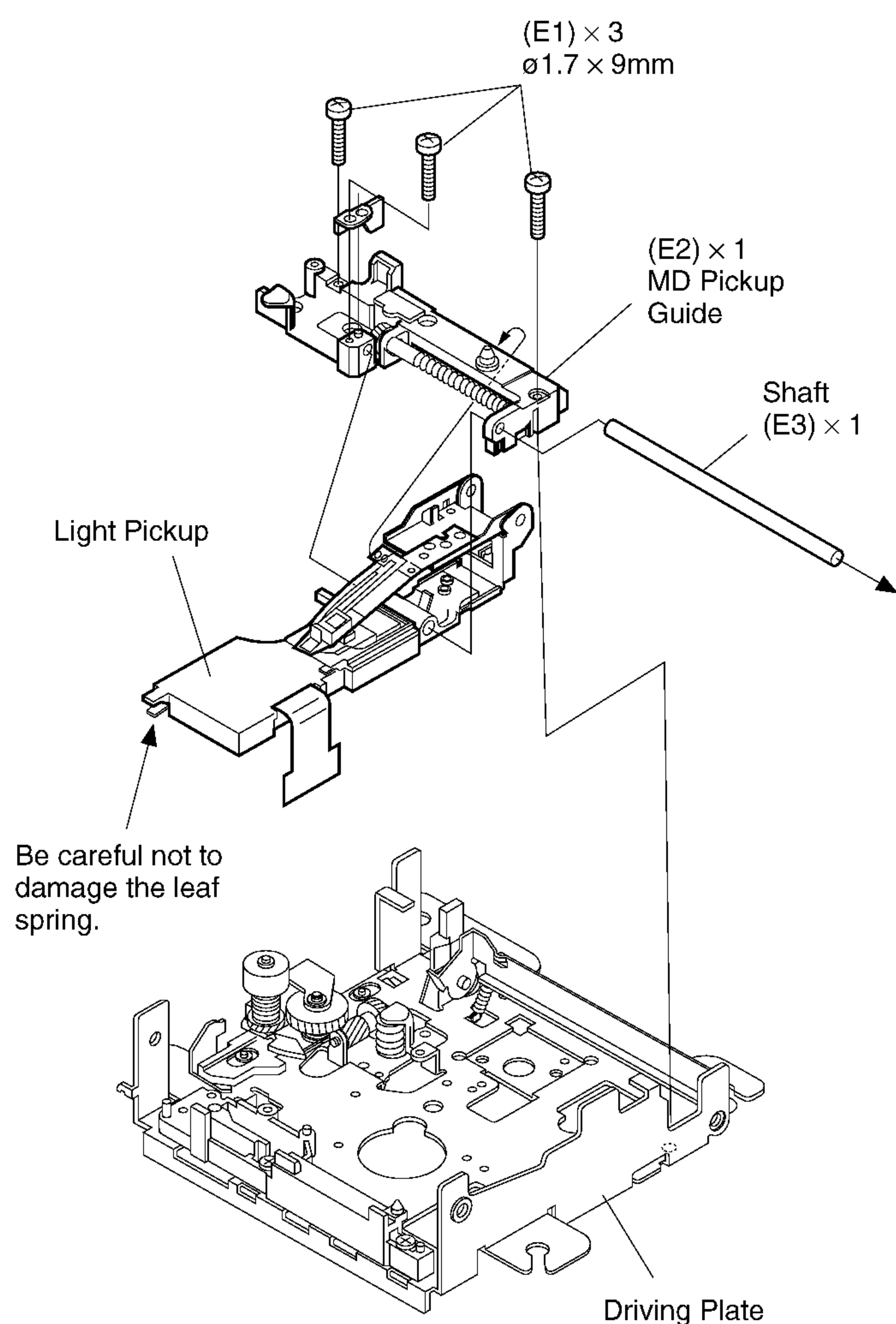


Fig. 7-8

● Removing the Magnetic Head

- (1) Remove the Screw (F1).

- (2) Remove soldering (F2) at two points connecting the Magnetic Head and the Head Relay Flexible.

CAUTION: Take adequate caution not to damage the Magnetic Head during reinstallation.

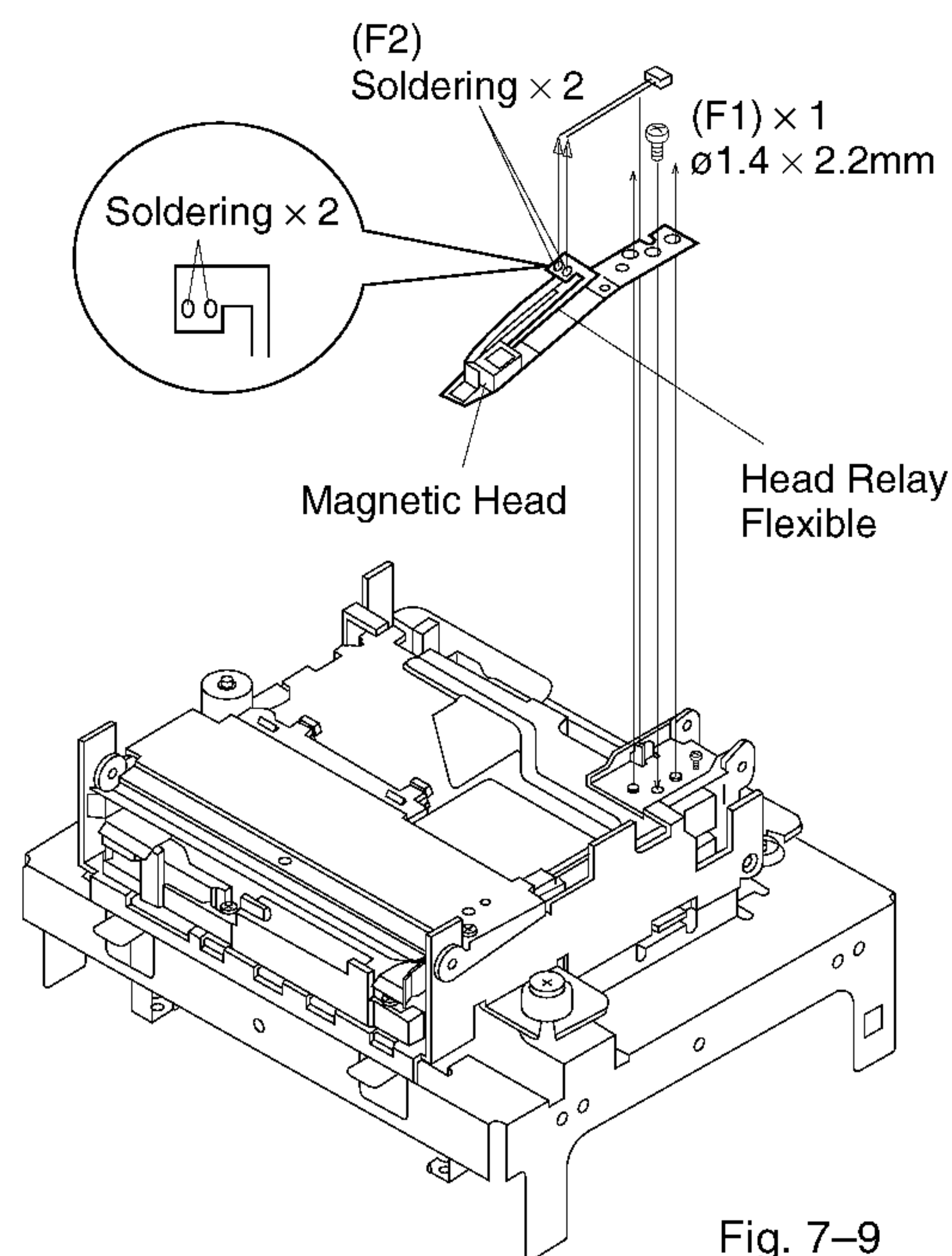


Fig. 7-9

● Replacing the Pinch Roller Loading

- (1) Remove the Washer (G1) with a small, precise screwdriver. Remove the Pinch Roller for loading upward.

CAUTION: If the Washer is deformed or damaged, replace it with a new Washer.

● Cleaning the Pinch Roller for Loading

- (1) Apply several drops of alcohol to a swab and clean the Pinch Roller for loading.
- (2) Wait until the cleaned portion has dried completely.

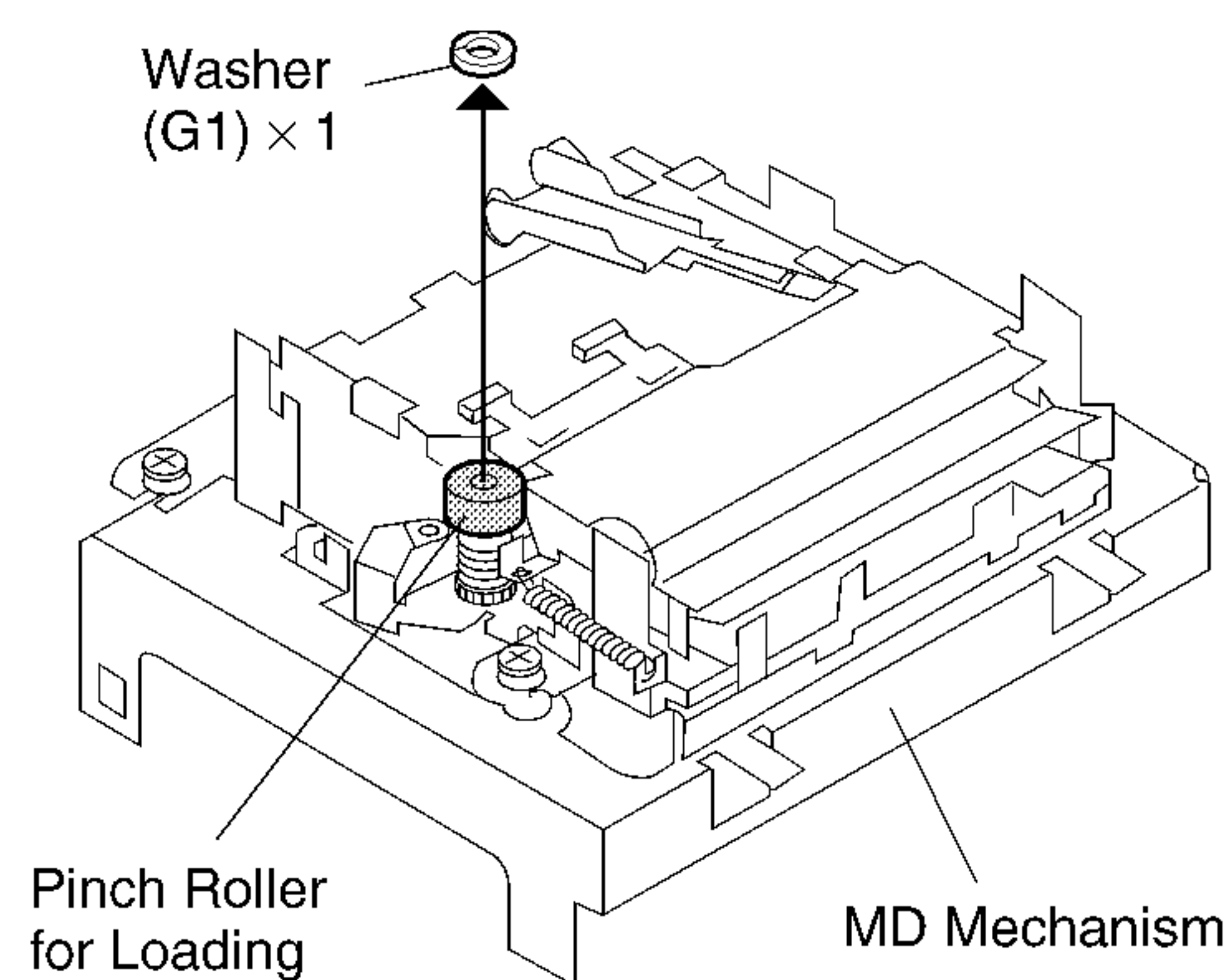
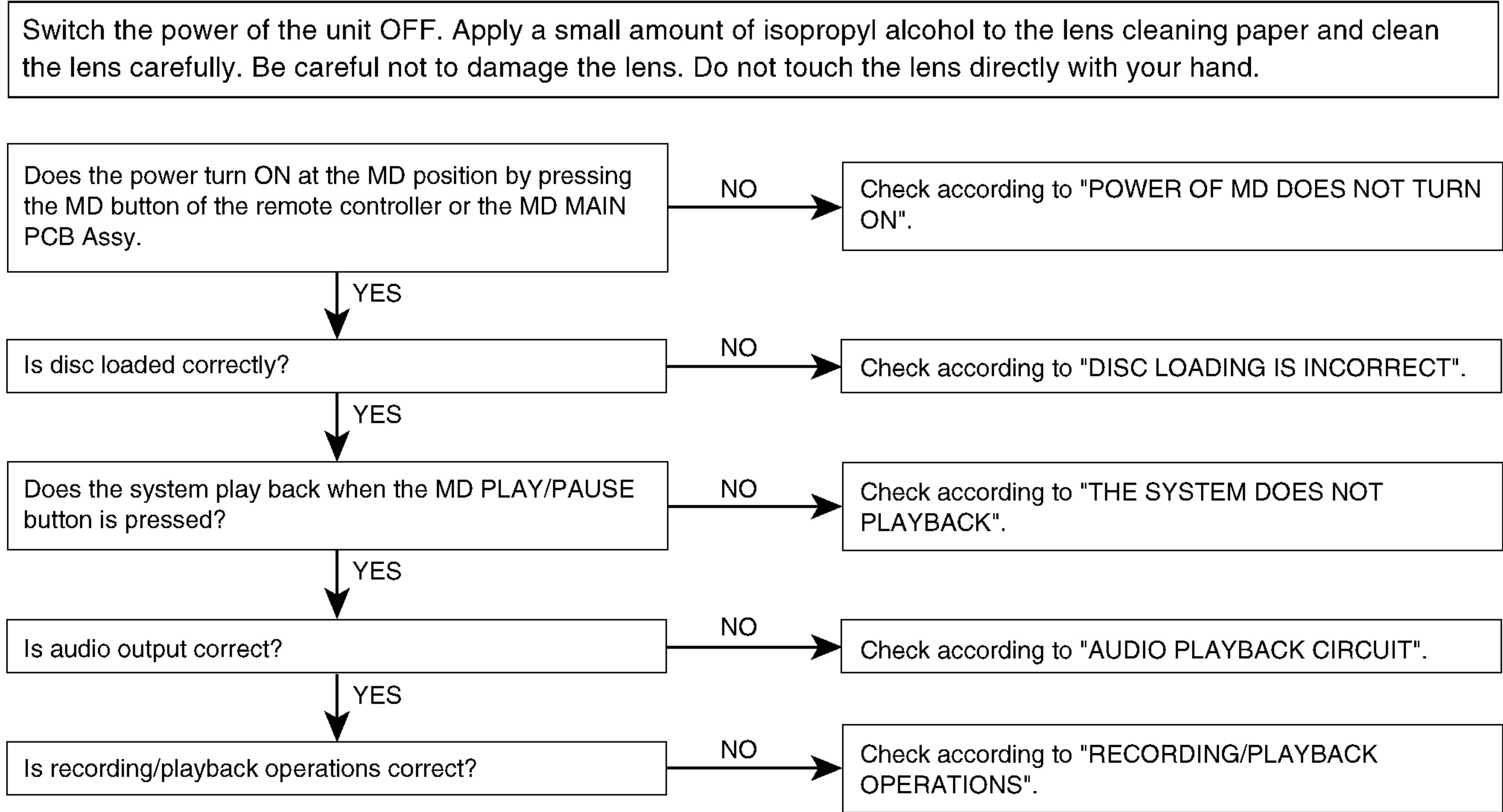


Fig. 7-10

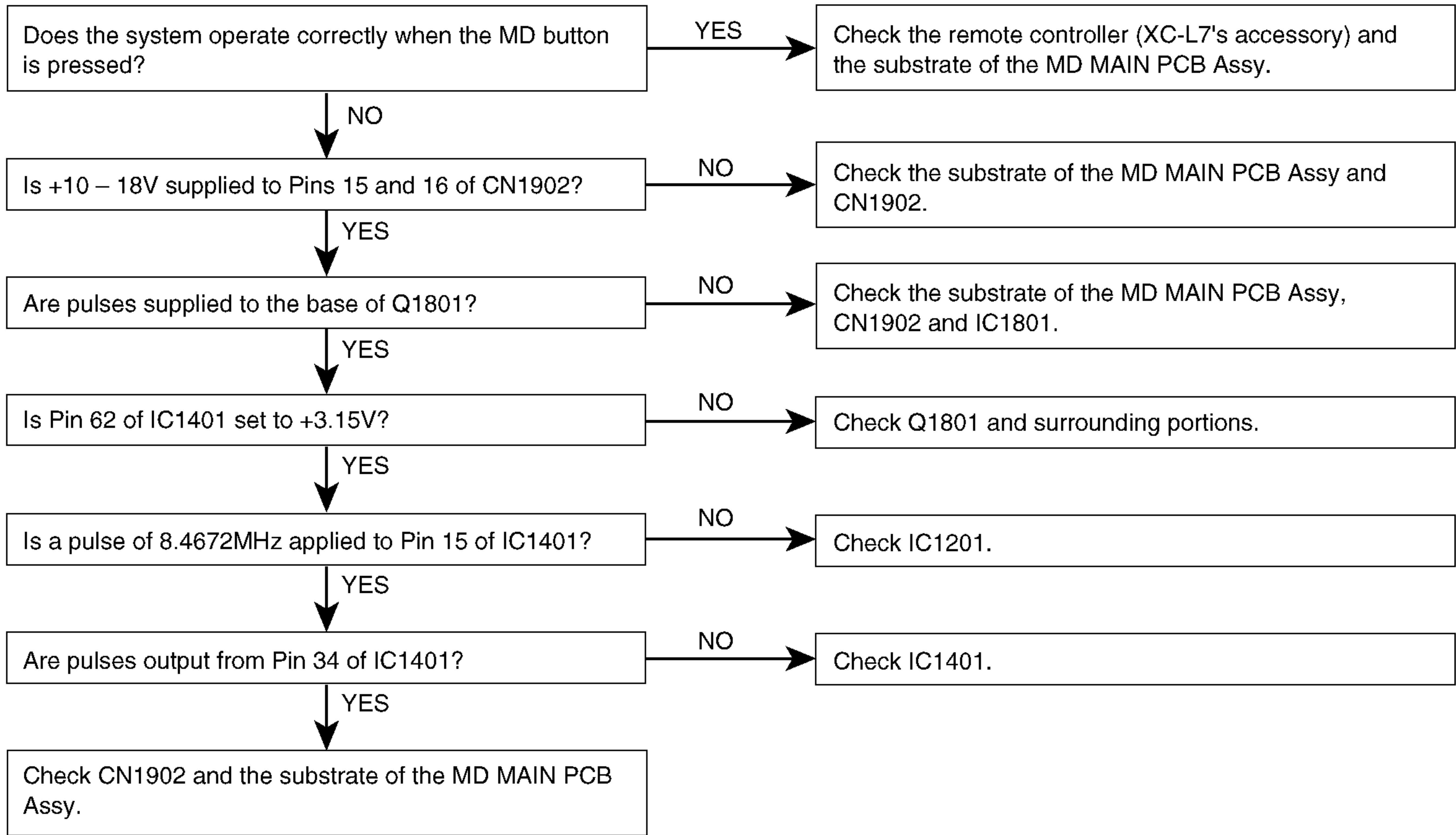
7.2.2 Troubleshooting

● MD does not Operate

MD may not operate if the objective lens of the Light Pickup is soiled. Clean the objective lens, then check playback operation. If the symptom still persists, check the points according to the flowchart below.
If dust or foreign matter has deposited on the Pickup Lens, the system may skip tracks or may not display TOC (content of song titles). Confirm that the lens is clean before making adjustment. If the lens is soiled, perform as follows:

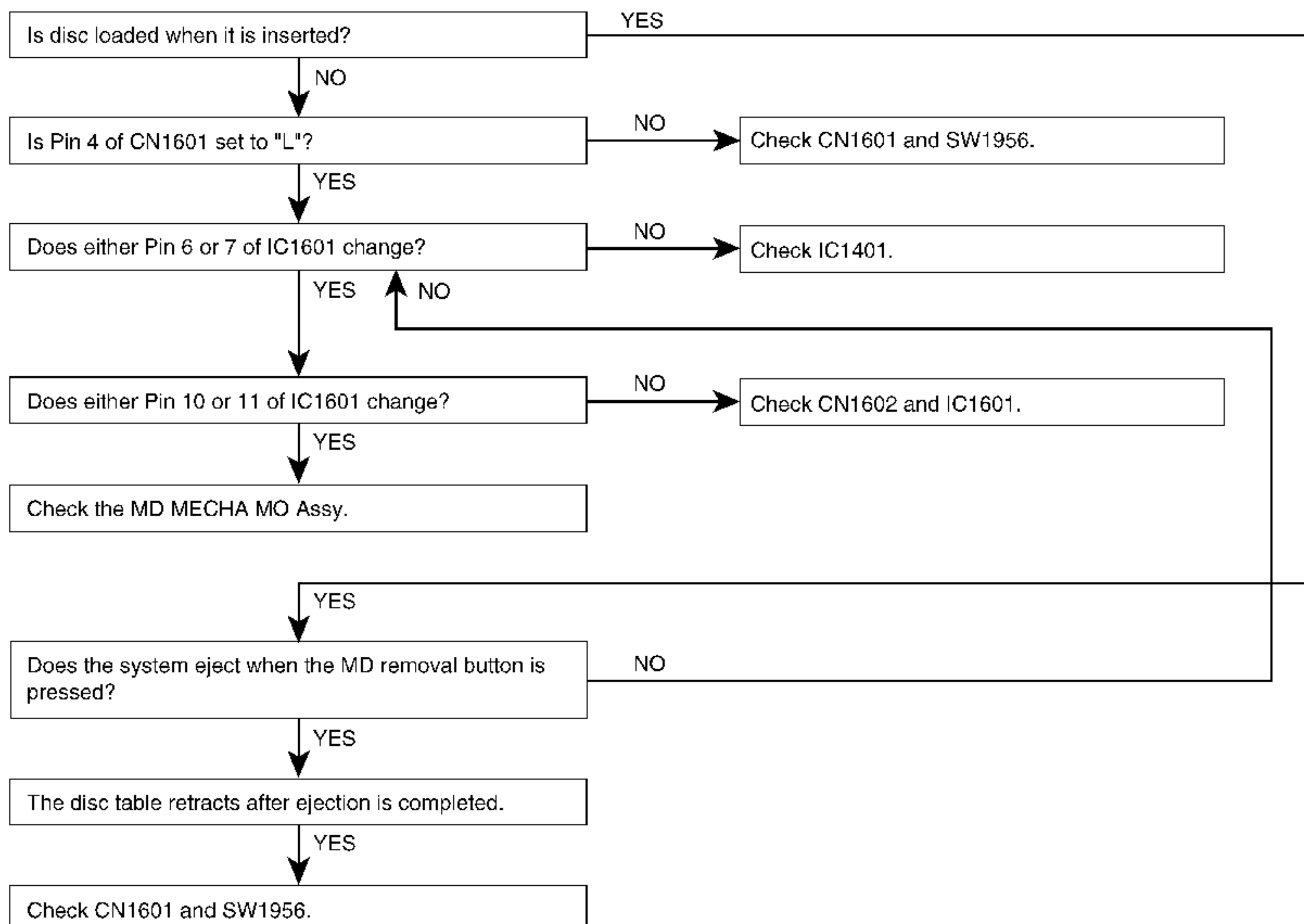


● Power of MD does not turn on

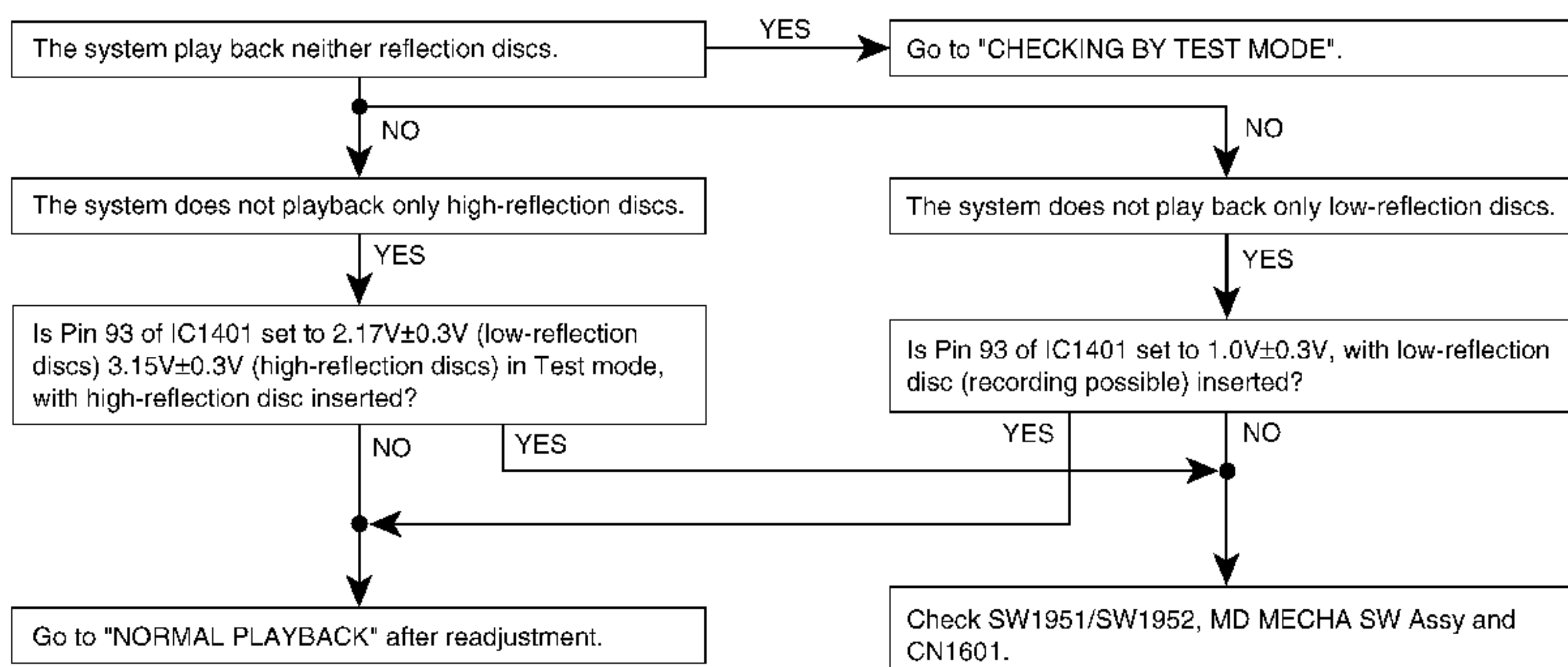


MJ-L7

● Disc loading is incorrect

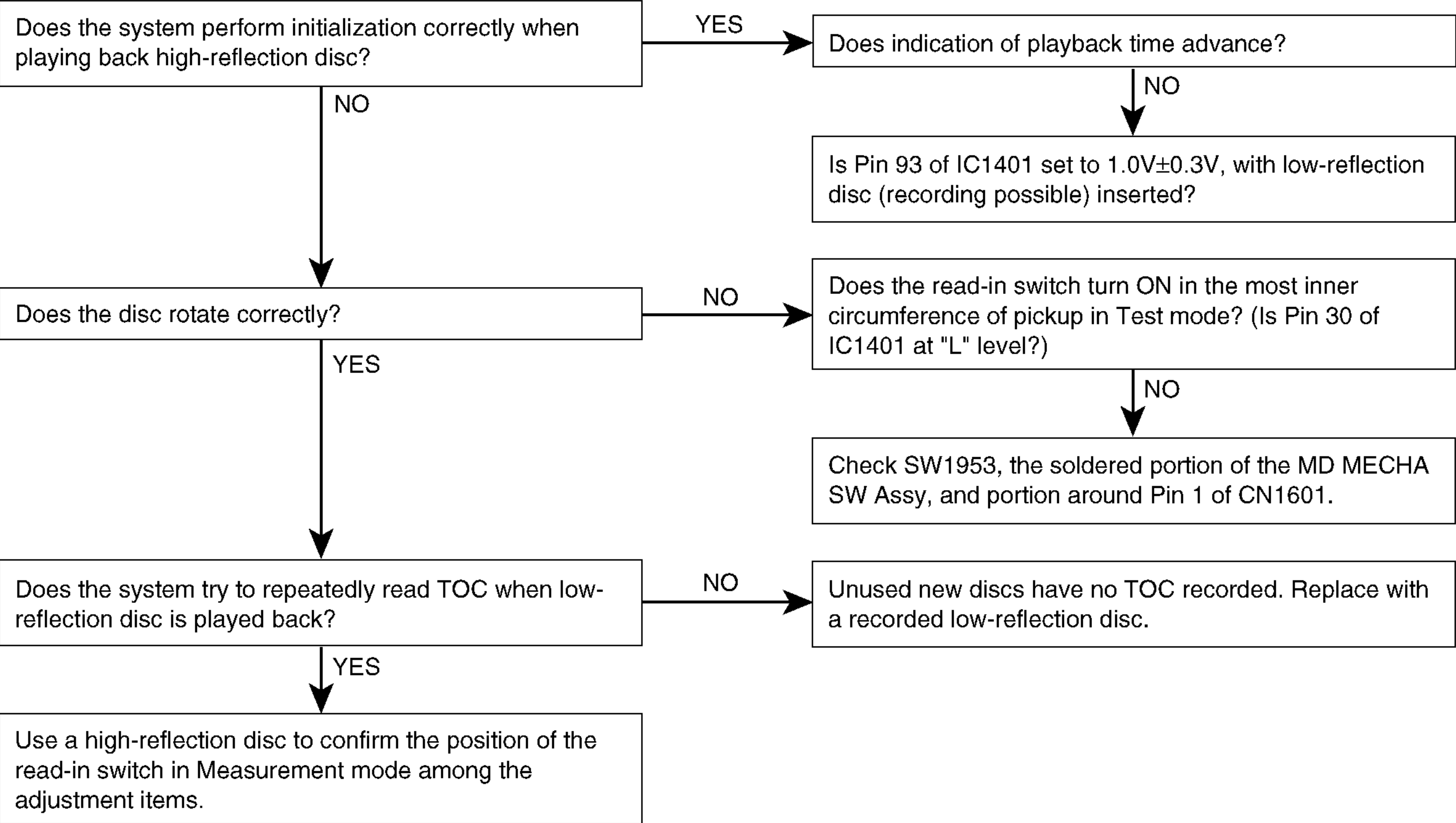


● The system does not playback



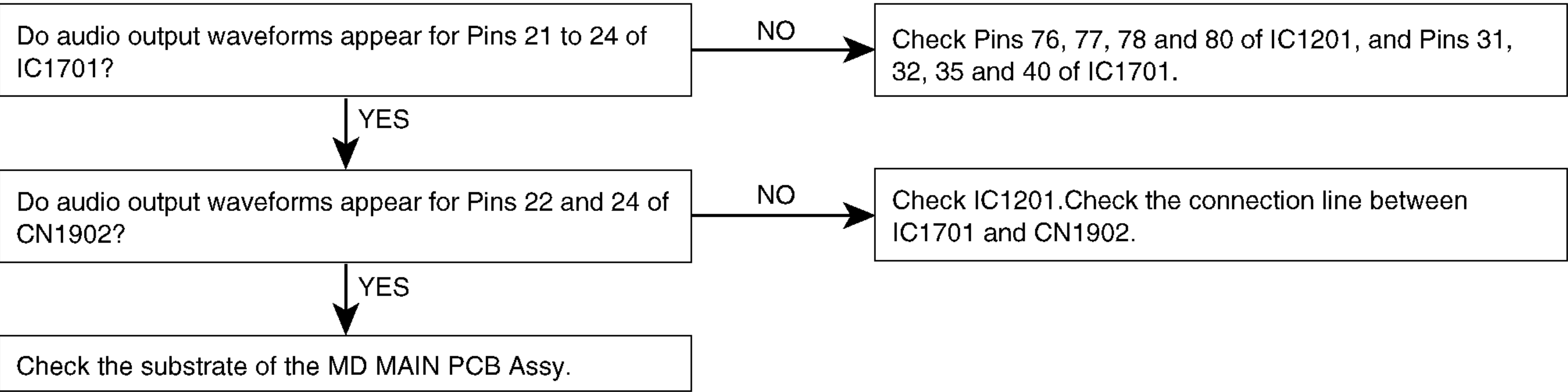
● Normal playback

It is confirmed that E²-PROM value is correct in Test mode:



● Audio playback circuit

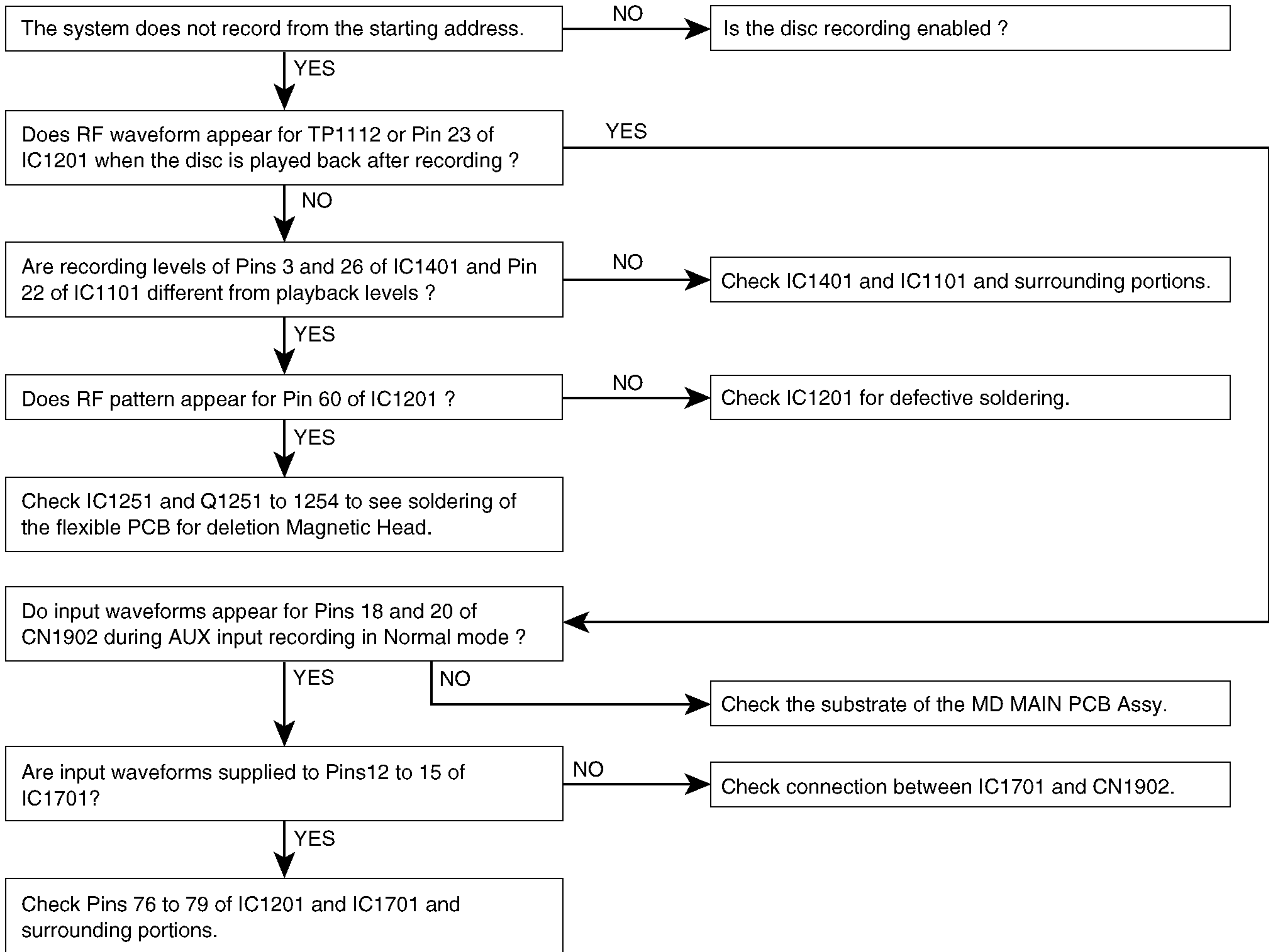
No sound is output even though indication of playback time advances during playback in Normal mode:



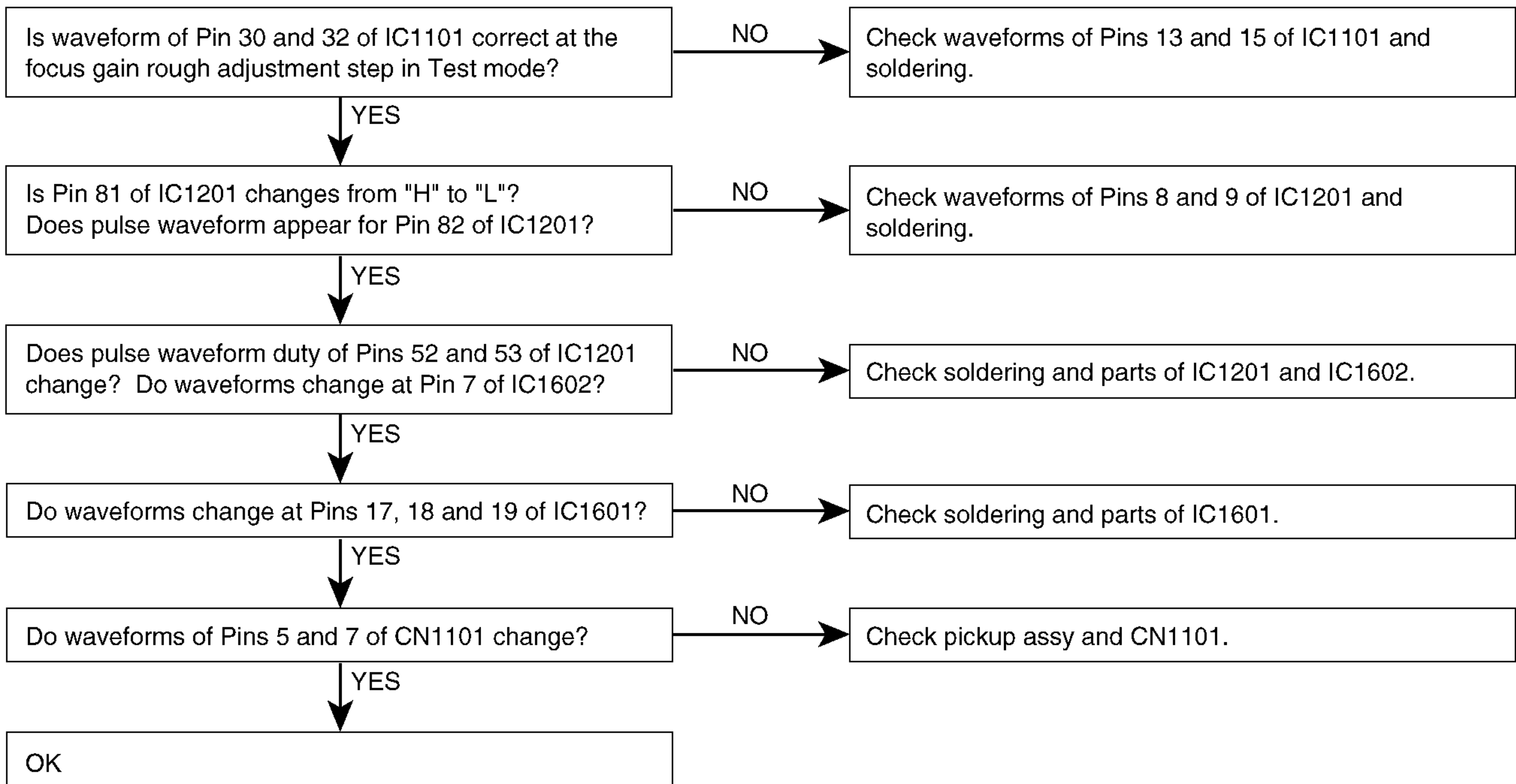
MJ-L7

● Recording/playback operations

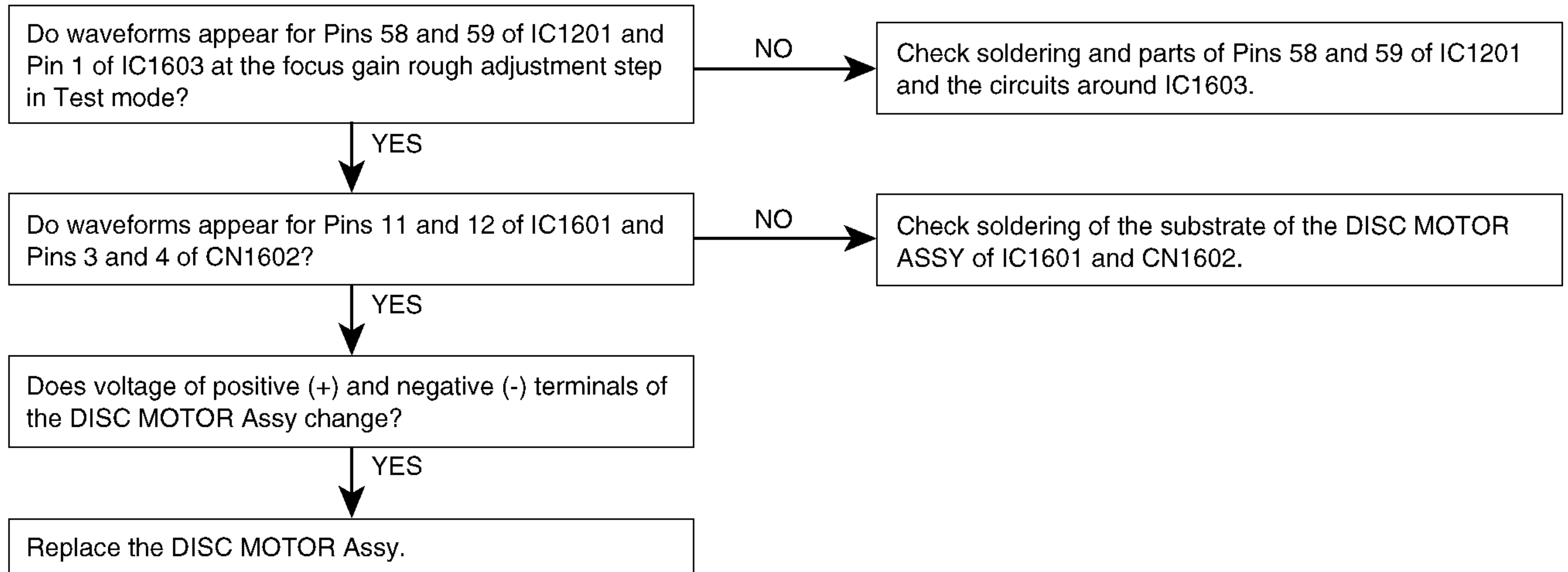
Insert a low-reflection disc to confirm audio output during playback in Normal mode, then set the system to Recording/Playback Test mode.



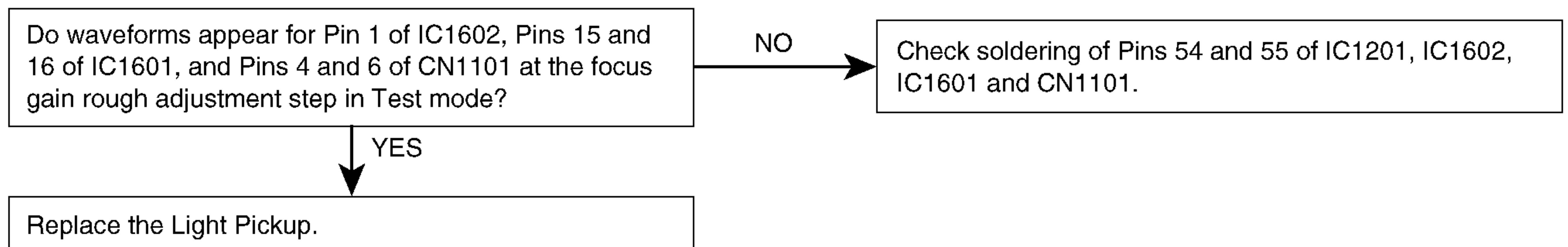
● The focus servo does not function



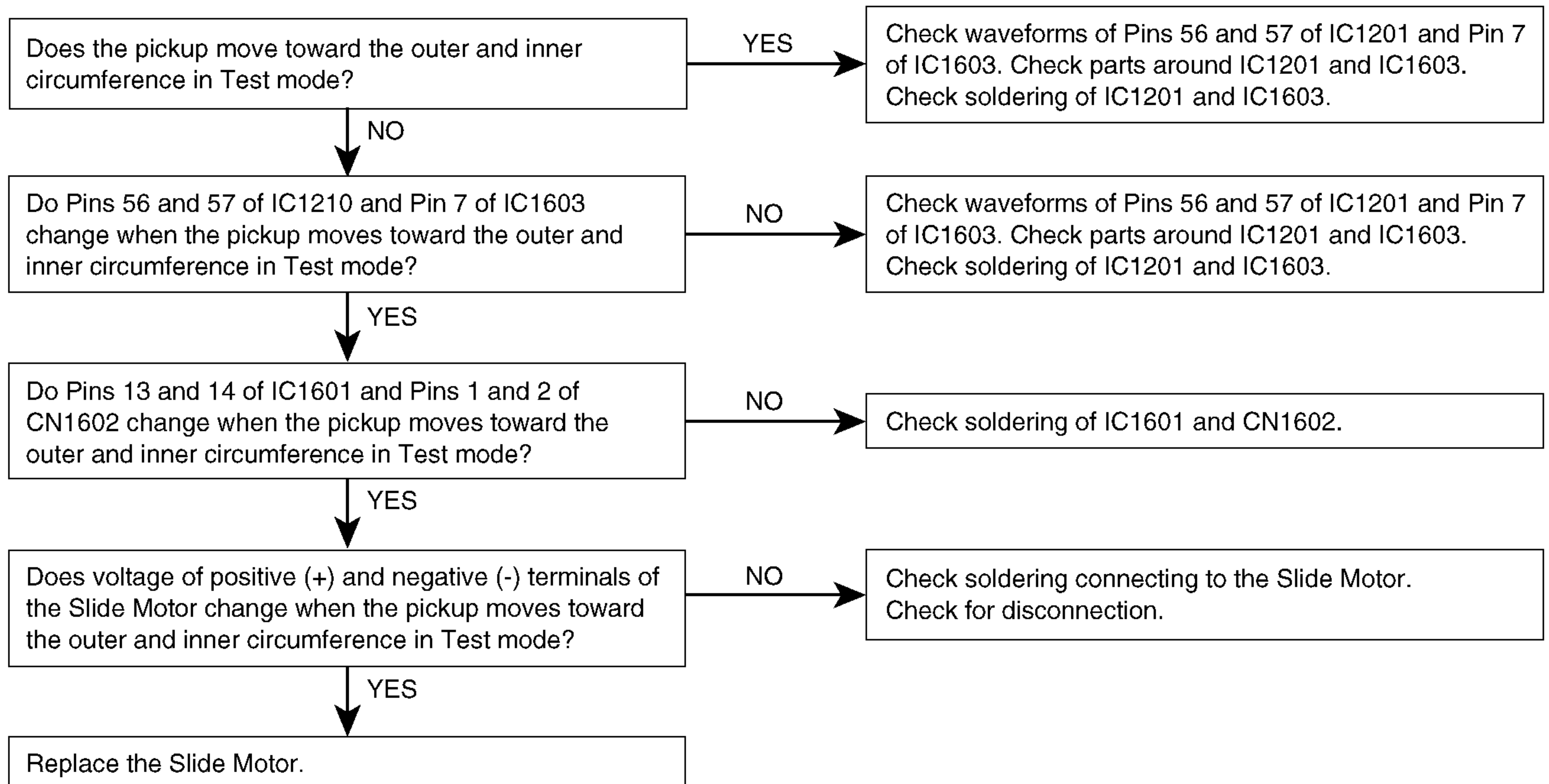
● The disc motor does not rotate



● The tracking servo does not function

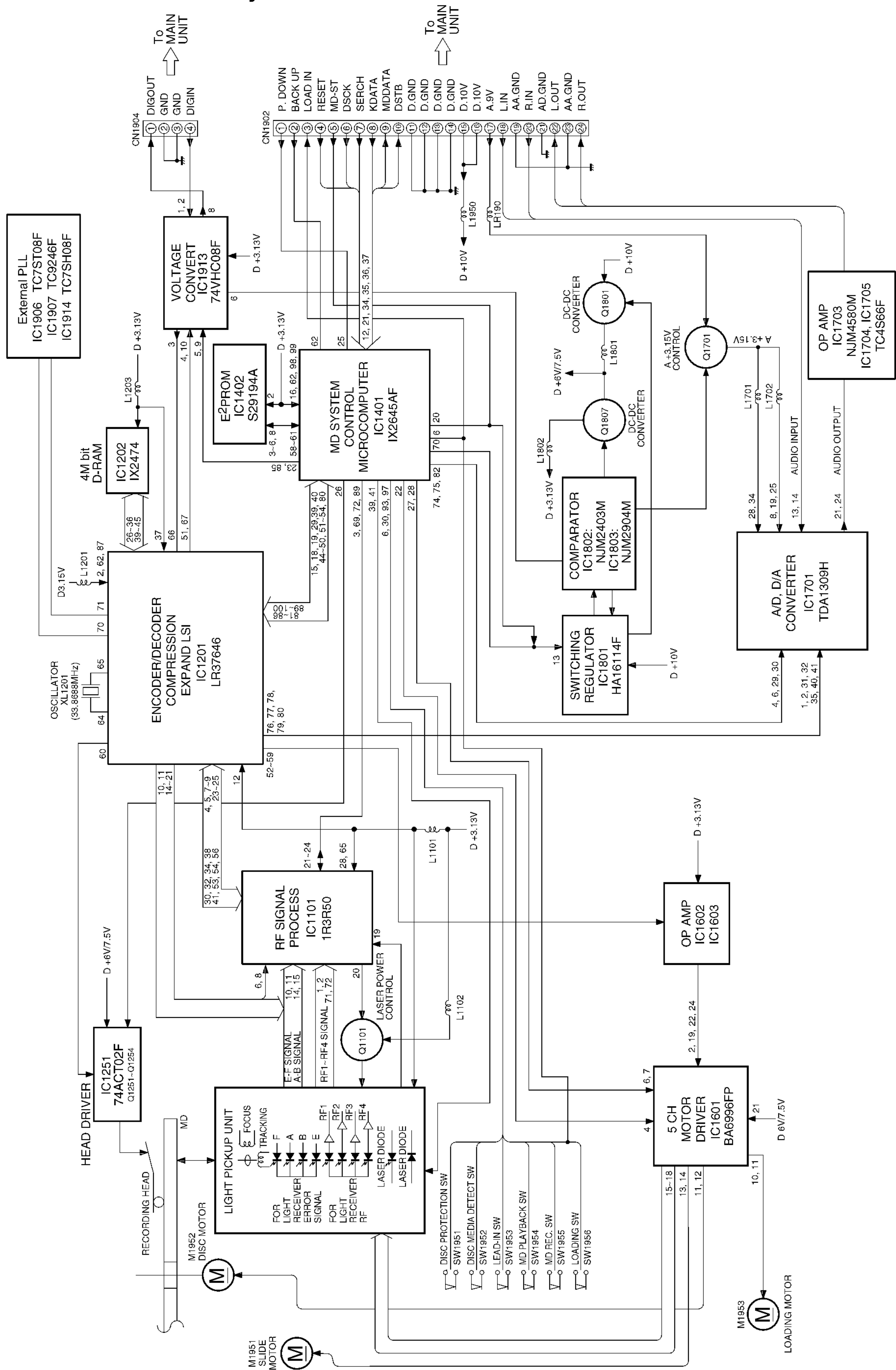


● The slide servo does not function

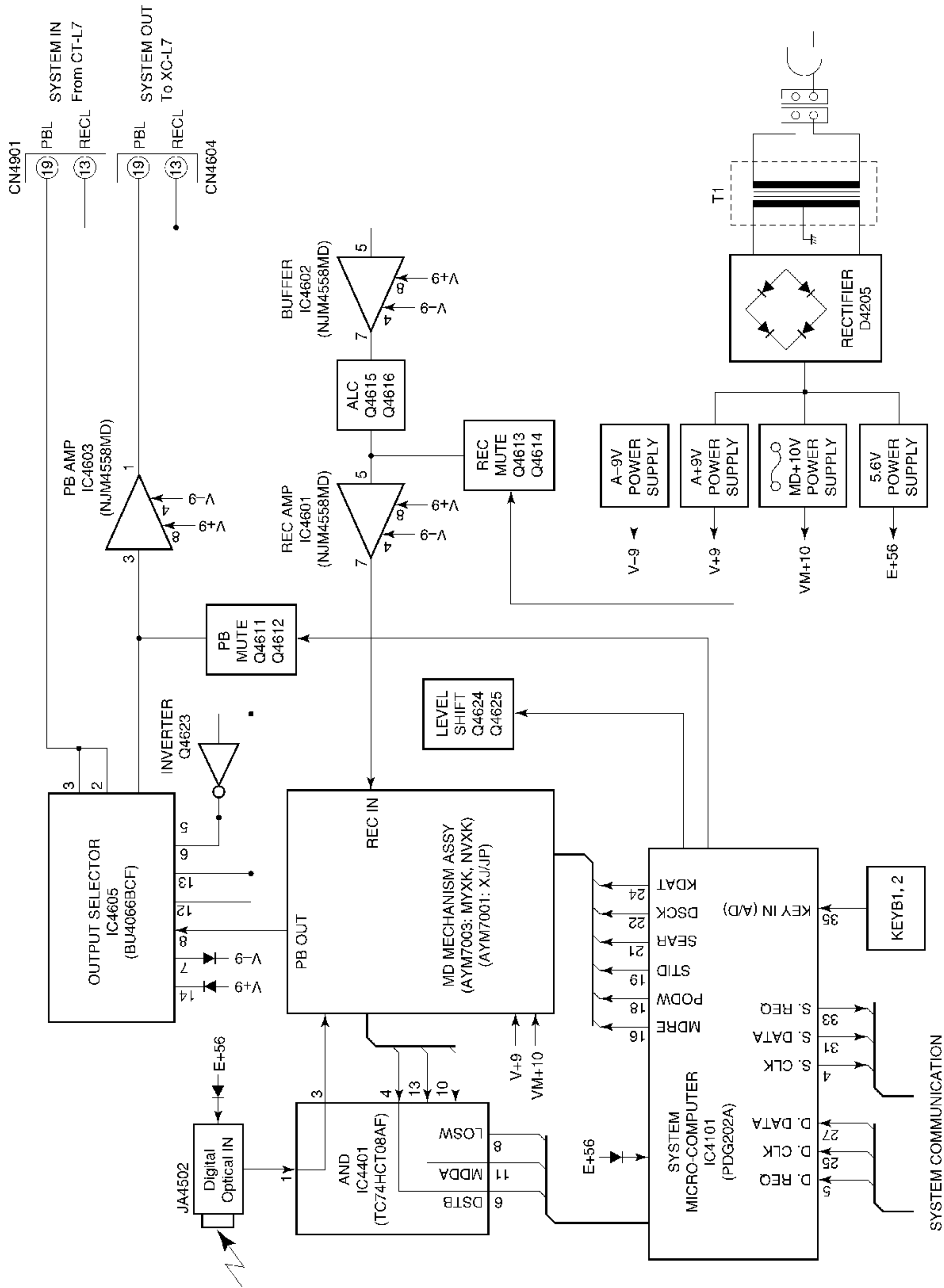


7.3 BLOCK DIAGRAM

7.3.1 MD Mechanism Assy

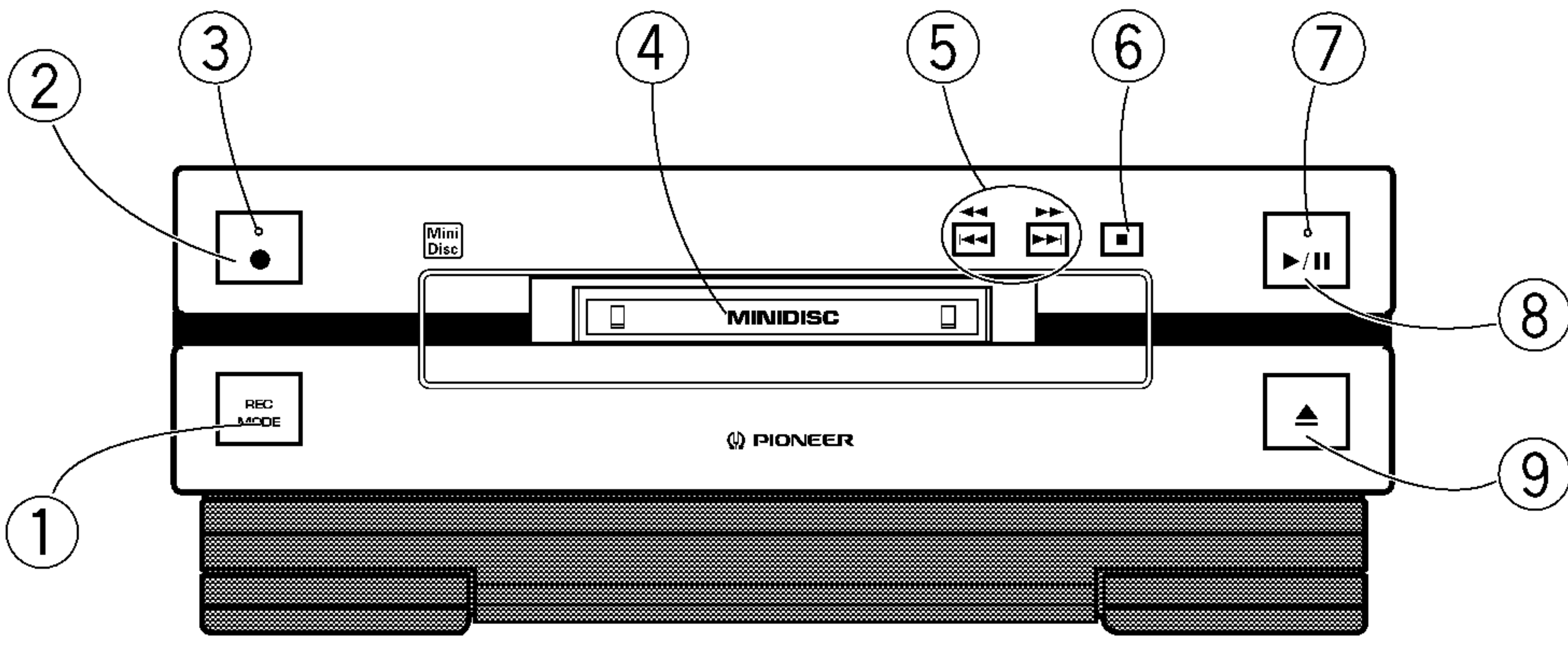


7.3.2 Main Unit



8. PANEL FACILITIES AND SPECIFICATIONS

■ PANEL FACILITIES



1 REC MODE button

2 Recording button (●)

3 Recording Indicator (lights when MD is Recording)

4 MINIDISC slot

5 Manual/track search buttons (◀◀/▶▶, ▶▶/▶▶)

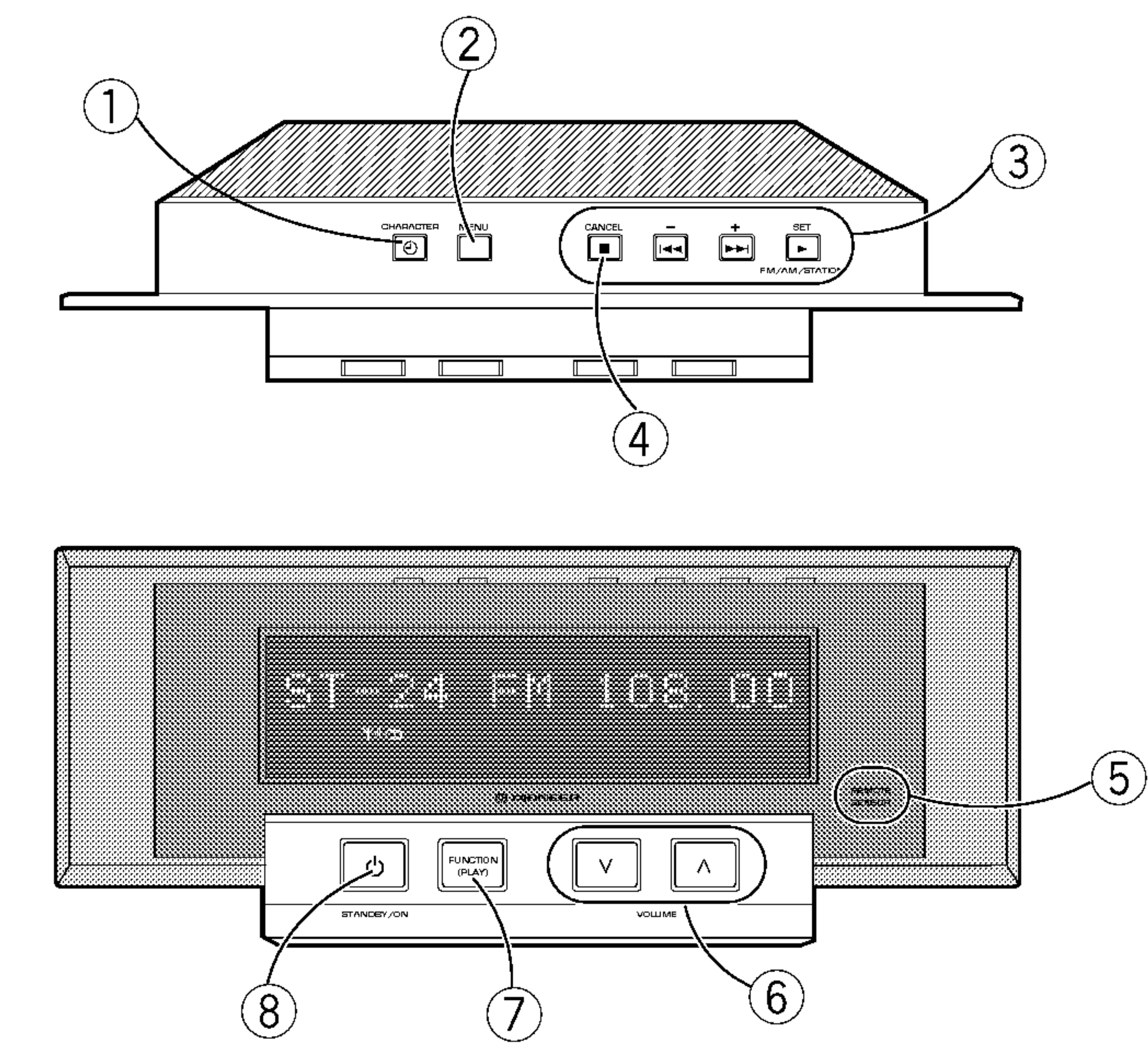
6 Stop button (■)

7 Play indicator

8 Play/Pause button (▶/||)

9 Disc Eject button (▲)

DISPLAY UNIT DU-L7



1 CHARACTER/Timer button

2 MENU button

3 - + SET buttons

4 CANCEL/Stop button

5 REMOTE SENSOR

3 - + SET buttons

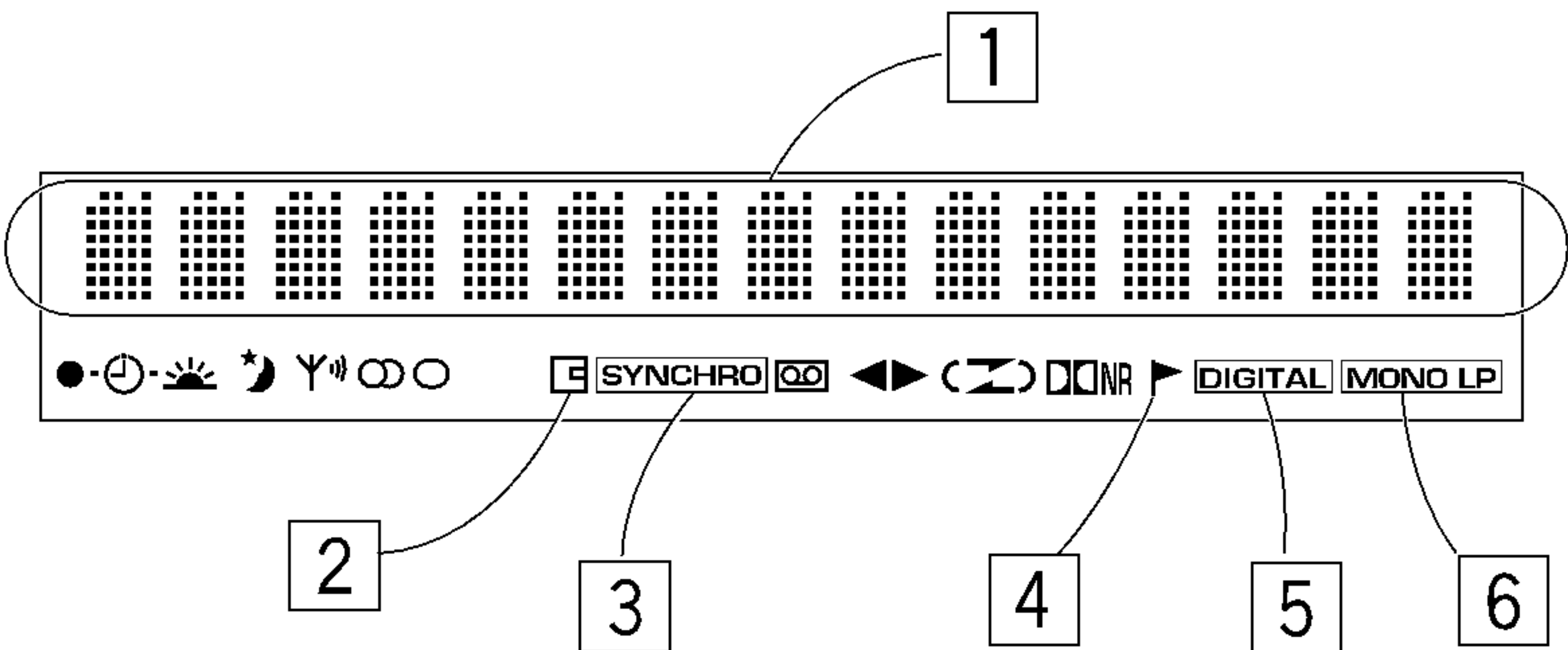
AM/STAT

- : Reverse track search button.

+ : Forward track search button.

SET : Play/Pause button.

/AM/STAT



1 Displays operating status and names of tracks and discs.

2 Lights during recording (flashes during recording pause).

3 Lights during Synchro-Recording mode and during Synchro-Recording standby.

4 Lights to indicate Auto Mark function ON.

5 Lights to indicate digital input to MiniDisc.

6 Lights to indicate monaural long-play mode.

This unit is not provided with its own display section; the following descriptions refer to the display shown on the optional CD stereo receiver XC-L7 when it is combined with the MiniDisc Recorder MJ-L7.

- 1 Displays operating status and names of tracks and discs.
- 2 Lights during recording (flashes during recording pause).
- 3 Lights during Synchro-Recording mode and during Synchro-Recording standby.
- 4 Lights to indicate Auto Mark function ON.
- 5 Lights to indicate digital input to MiniDisc.
- 6 Lights to indicate monaural long-play mode.

SPECIFICATIONS

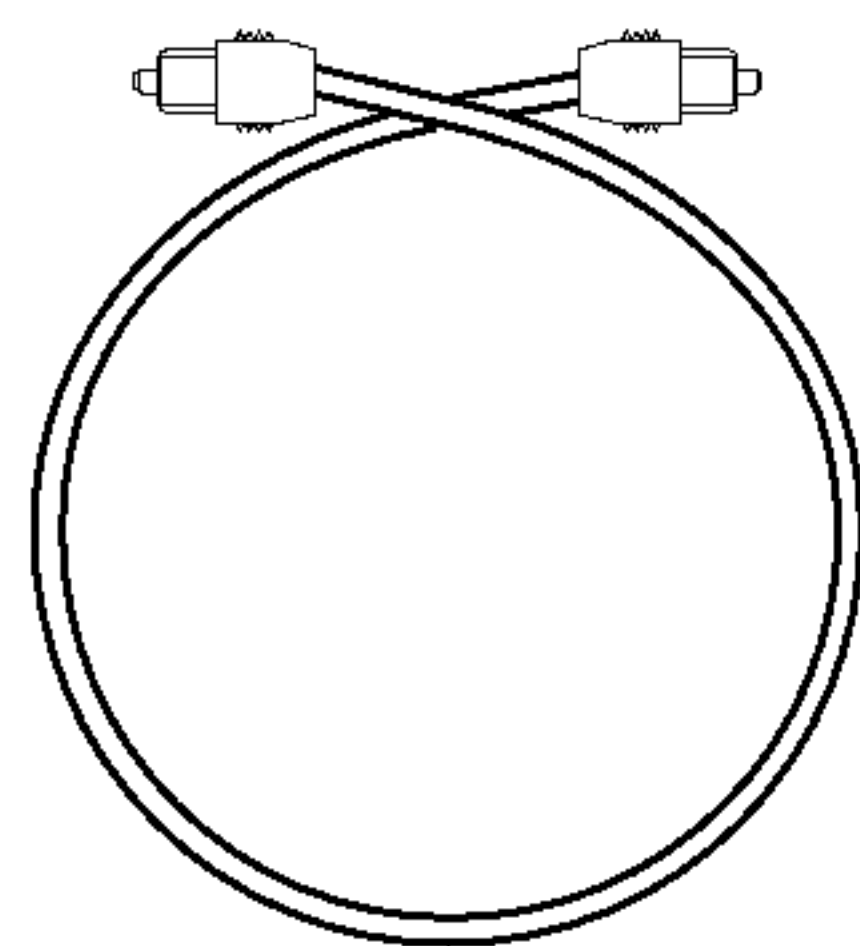
Recording Method	Magnetic field modulation overwriting type
Playback Method	Non-contact optical type
Sampling Frequency	44.1 kHz, 32 kHz, 48 kHz
Frequency Response	20 Hz - 20 kHz
Signal-to-Noise Ratio	98 dB (EIAJ)
Wow and Flutter	Limit of measurement (±0.001% W.PEAK) or less (EIAJ)
Power Requirements	AC 230V, 50/60 Hz (NVXK type) AC 220-230V, 50/60 Hz (MYXK type)
Power Consumption	14 W
Dimensions	220 (W) x 85 (H) x 310 (D) mm
Weight	2.7 kg

Accessories

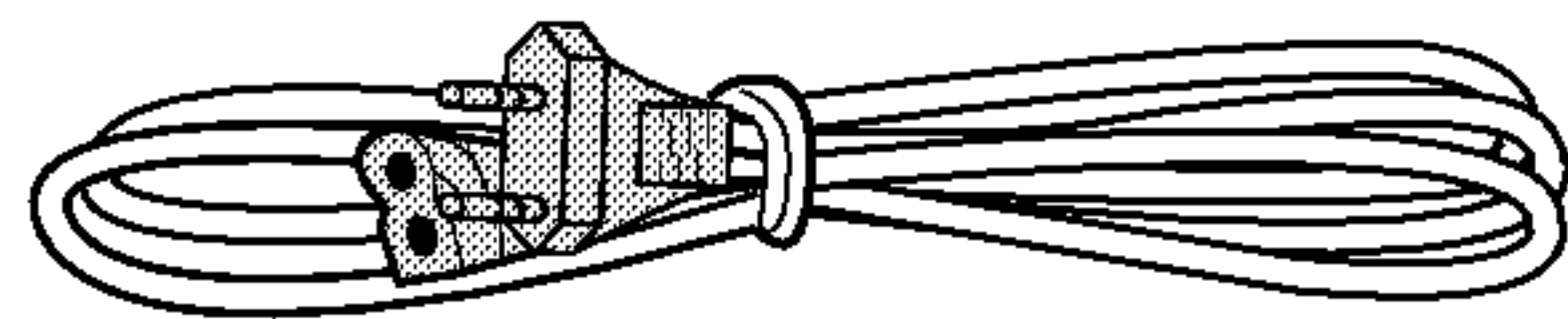
Operating Instructions	1
Optical fiber cable	1
Power cord	1
Warranty card	1

NOTE:
Specifications and design subject to possible modification without notice, due to improvement.

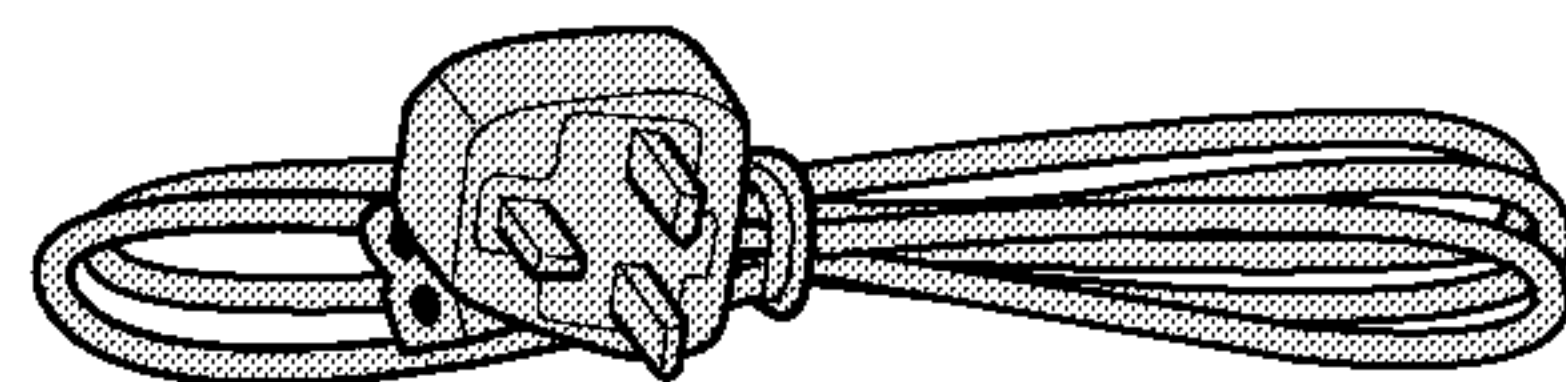
Accessories



Optical fiber cable
(RKX1031)
(L = 0.5 m)



Power cord
(ADG7010: MYXK type)



Power cord
(ADG7009: NVXK type)

Operating Instructions
Warranty card

Precaution for handling the optical fiber cable

Do not bend the optical fiber cable at a sharp angle since this may damage the cable. Take particular care to avoid bending when installing in a rack, etc. When forming the cable into a loop for storage purposes, make sure that the diameter of the loop is at least 15 cm. When connecting the cable, ensure that the connectors are inserted as far as they will go to safeguard against incomplete connection.

