Service Manual

ORDER NO.
RRV2472

MINIDISC RECORDER

MJ-L11

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

Type	Model	Power Requirement	Remarks
	MJ-L11		
MYXJ	◯	AC220-230V	
NVXJ	◯	AC230V	

- **This product is a system(s) component.**
  This product does not function properly independently ; to avoid malfunctions, be sure to connect it to the prescribed system component(s), otherwise damage may result.
- **Please connect it to the POWERED SUBWOOFER S-DV88SW or S-DV77SW, for adjustment and operation inspection.**
- **Please connect it to the STEREO CD TUNER XC-L11 and the POWER STEREO AMPLIFIER M-L11, for adjustment and operation inspection.**

Component	Model		Service manual	Remarks
DVD/CD TUNER	XV-DV88	XV-DV77	RRV2480	
SPEAKER SYSTEM	——	S-DV77	RRV2473	
SATELLITE SPEAKER	S-DV88ST	S-DV77ST	RRV2486, RRV2473	
POWERED SUBWOOFER	S-DV88SW	S-DV77SW	RRV2474, RRV2473	
STEREO CD TUNER	XC-L11		RRV2470	
STEREO POWER AMPLIFIER	M-L11		RRV2479	
MINIDISC RECORDER	MJ-L11		RRV2472	This manual.
STEREO CASSETTE DECK	CT-L11		RRV2471	System option

CONTENTS

PIONEER CORPORATION 4-1, Meguro 1-chome, Meguro-ku, Tokyo 153-8654, Japan
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PIONEER ELECTRONIC NV Haven 1087, Keetberglaan 1, 9120 Melsele, Belgium
PIONEER ELECTRONICS ASIACENTRE PTE. LTD. 253 Alexandra Road, #04-01, Singapore 159936

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1. SAFETY INFORMATION

This service manual is intended for qualified service technicians; it is not meant for the casual do-it-yourselfer. Qualified technicians have the necessary test equipment and tools, and have been trained to properly and safely repair complex products such as those covered by this manual.
Improperly performed repairs can adversely affect the safety and reliability of the product and may void the warranty. If you are not qualified to perform the repair of this product properly and safely, you should not risk trying to do so and refer the repair to a qualified service technician.

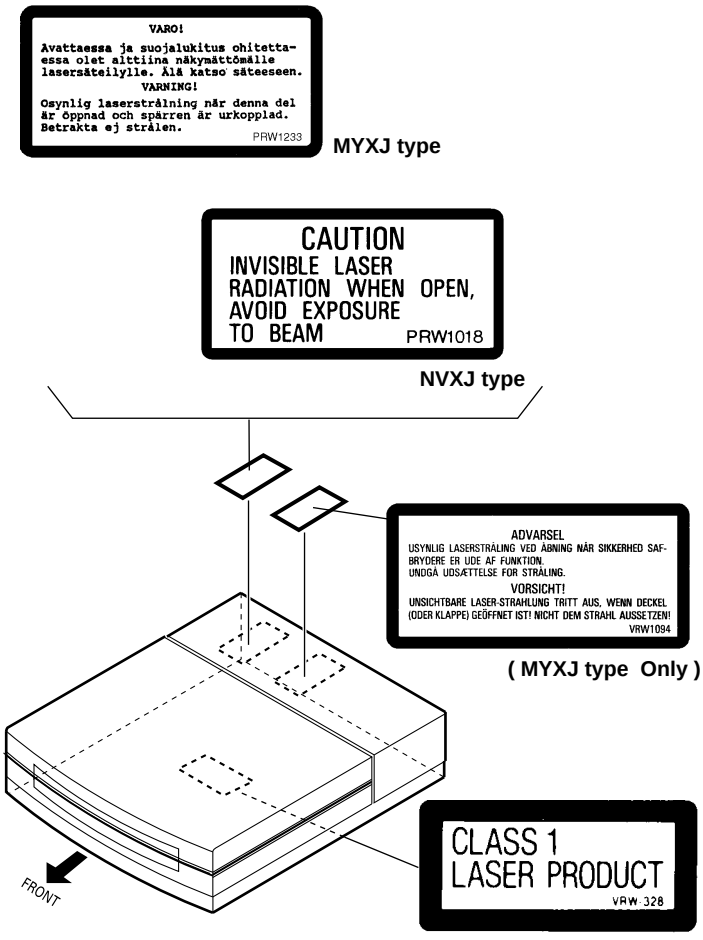
IMPORTANT

THIS PIONEER APPARATUS CONTAINS LASER OF CLASS 1.
SERVICING OPERATION OF THE APPARATUS SHOULD BE DONE BY A SPECIALLY INSTRUTED PERSON.

LASER DIODE CHARACTERISTICS

MAXIMUM OUTPUT POWER: 32 mW
WAVELENGTH: 785 nm

LABEL CHECK



Additional Laser Caution

Control method of the current through a laser diode.
The resistor R105 on the CORE MAIN UNIT ASSY (For MD mechanism assy) are for the limiting of current through a laser diode.

Control method of the laser output power
The laser pickup assy provide the photo-diodes and APC (Auto Power Control) circuit.
The photo-diode detect output of the laser diode then IC104 control the APC circuit according to the signal voltage of the photo-diode via IC101.
The Variable resistancer on the FPC in the Laser pickup assy can be adjusted the output level of Laser diode to fix the rated output level.

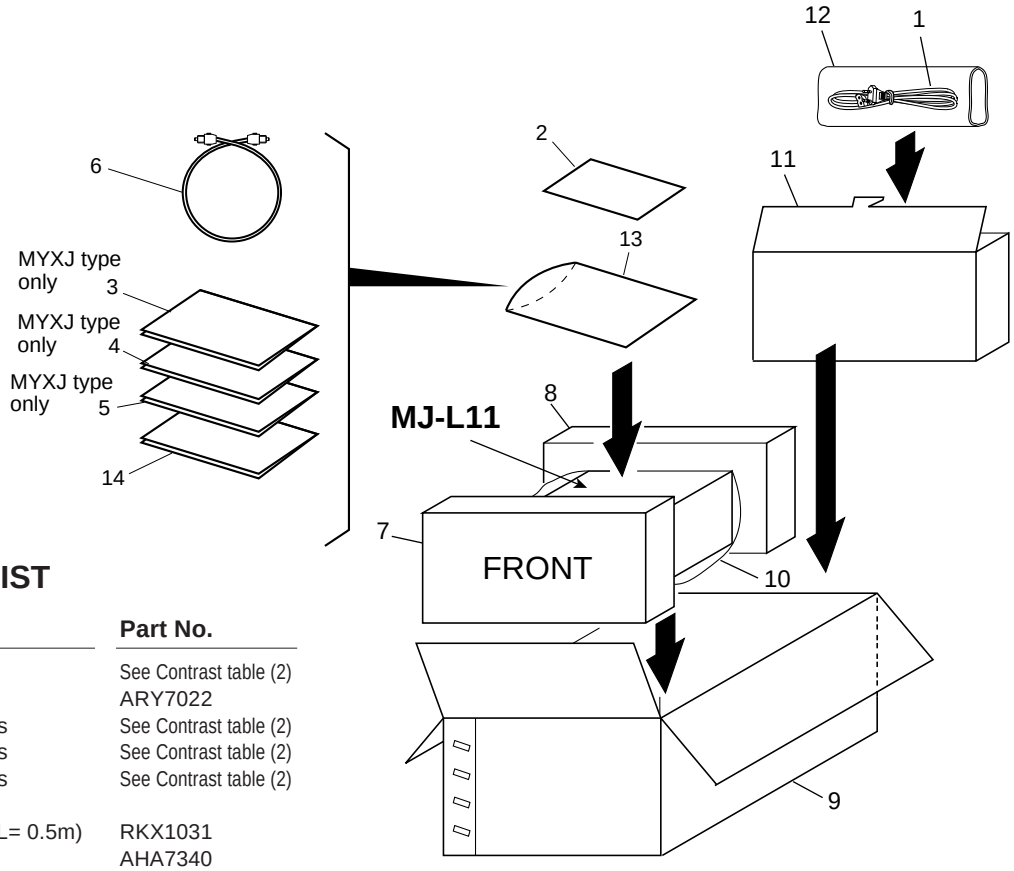
Laser Interlock Switch
The loading position detect switch S101 is set to " LOAD ON " (ON: low level, OFF: high level) position, IC104 get the " LOAD " signal, and hand the laser " LDON " signal to No. 9 terminal (LDON) of the Laser pickup assy.
Then a laser diode can be lighted exept when the level of signal "LOAD " is low.

∗ Refer to page 31.

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

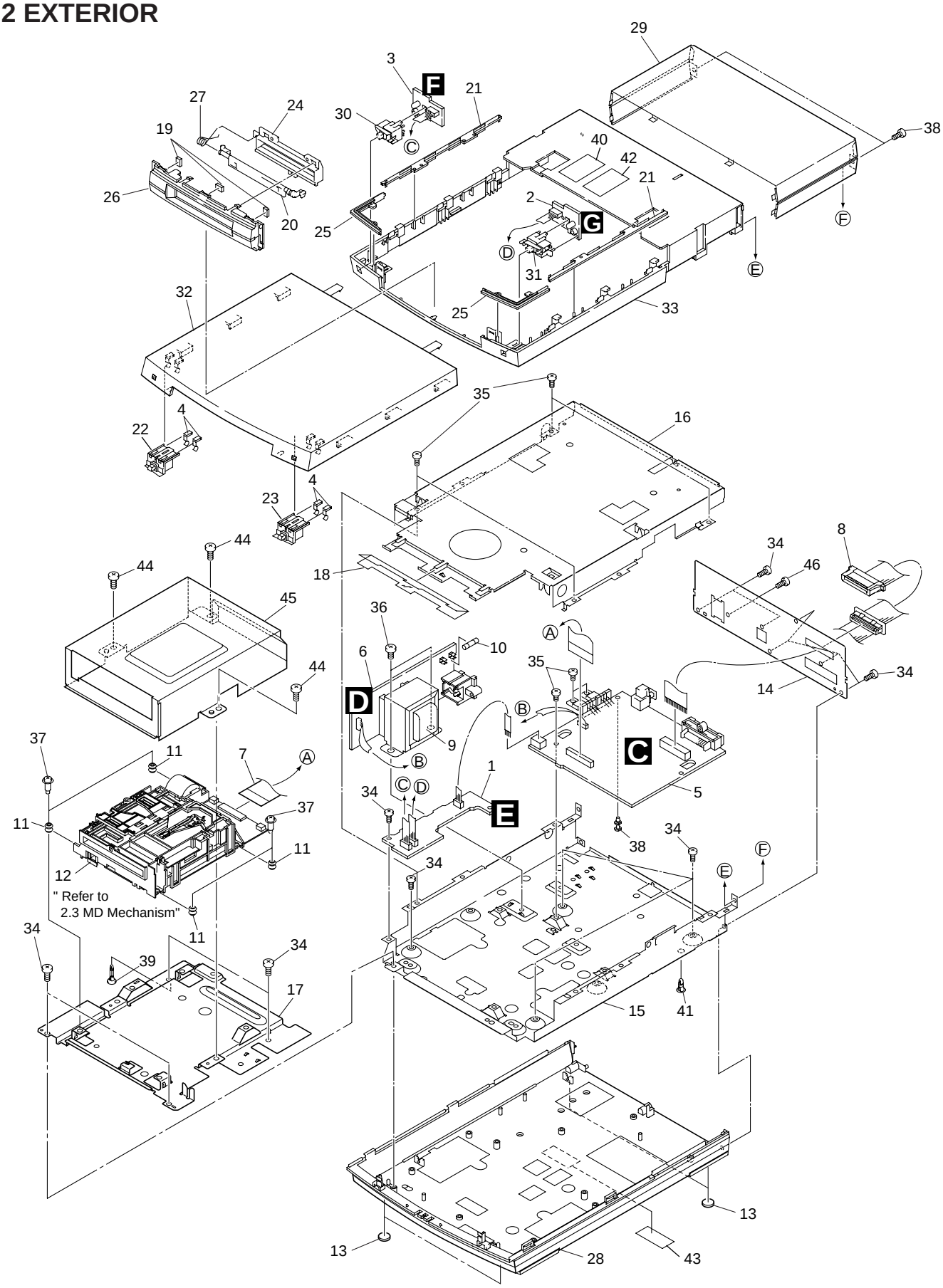
Mark	No.	Description	Part No.
⚠	1	Power Cord	See Contrast table (2)
NSP	2	Warranty Card	ARY7022
	3	Operating Instructions	See Contrast table (2)
	4	Operating Instructions	See Contrast table (2)
	5	Operating Instructions	See Contrast table (2)
	6	Optical Digital Cord (L= 0.5m)	RKX1031
	7	Pad Front	AHA7340
	8	Pad Rear	AHA7341
	9	Packing Case	See Contrast table (2)
	10	Sheet (750 × 600 × 0.5)	Z23–007
	11	Spacer NS2001	AHB7056
	12	Polyethylene Bag(115x270x0.05)	Z21-013
NSP	13	Polyethylene Bag (0.03 × 230 × 340)	Z21–038
	14	Operating Instructions (English/French)	ARE7278

(2) CONTRAST TABLE

MJ-L11/MYXJ and NVXJ are constructed the same except for the following:

Mark	No.	Symbol and Description	Part No.		Remarks
			MYXJ type	NVXJ type	
⚠	1	Power Cord	ADG1154	ADG1156	
	3	Operating Instructions (German/Italian)	ARC7338	Not used	
	4	Operating Instructions (Spanish/Dutch)	ARC7372	Not used	
	5	Operating Instructions (Swedish/Portuguese)	ARC7373	Not used	
	9	Packing Case	AHD7998	AHD7997	

2.2 EXTERIOR



(1) EXTERIOR PARTS LIST

Mark	No.	Description	Part No.
	1	TRADE ASSY	AWU7843
	2	KEYR ASSY	AWU7845
	3	KEYL ASSY	AWU7844
	4	Sensor Plate	ANG7360
	5	MAIN ASSY	AWU7841
	6	PRI ASSY	AWU7843
	7	30P FFC/30V	ADD7328
	8	Cord with Plug	ADE7081
⚠	9	Power Transformer	ATT7054
⚠	10	Fuse (T250mA)	REK1016
	11	Float Rubber	REB1328
NSP	12	MD Mechanism Assy	AXA7097
	13	Leg	AEB7090
	14	Rear Panel	See Contrast table (2)
NSP	15	Bottom Plate	ANF7027
NSP	16	Top Plate	ANF7028
	17	Sub Chassis	AND7039
	18	LEAD Barrier	AEC7361
	19	Cussion	AEB7230
	20	MD Flap	AAN7190
	21	Side Line	AAP7088
	22	Sensor Button L	AAD7622
	23	Sensor Button R	AAD7623
	24	Flap Plate	AAP7062
	25	Illuminate Lens	AAK7896

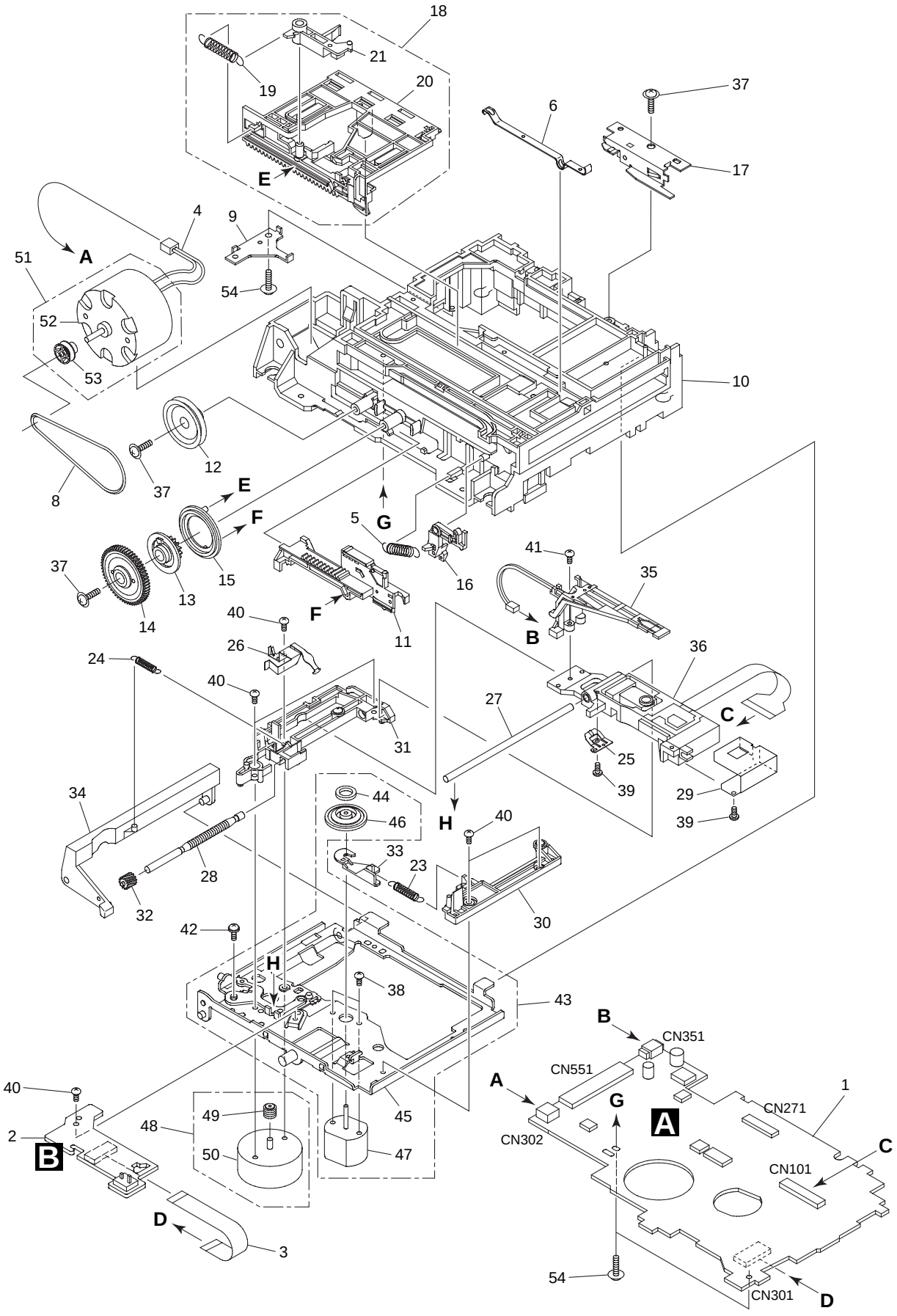
Mark	No.	Description	Part No.
	26	Sub Panel MD Assy	AXG7108
	27	MD Spring	ABH7154
	28	Bottom Base	AMA7026
	29	Bonnet	ANE7270
	30	Button L Assy	AXG7110
	31	Button R Assy	AXG7111
	32	Top Panel 1	AMB7780
	33	Top Panel 2	AMB7782
	34	Screw	BPZ30P080FZK
	35	Screw	BBZ30P060FMC
	36	Screw	PBZ40P060FMC
	37	Float Screw	RBA1133
	38	PCB Spacer	AEC7156
	39	PCB Spacer	AEC1065
NSP	40	Caution Label	See Contrast table (2)
	41	PCB Holder	PNW1706
	42	Label	See Contrast table (2)
NSP	43	Caution Label	VRW-328
	44	Screw	BBZ30P080FMC
	45	Shield Case (FE)	ANK7077
	46	Screw	VBZ30P080FZK

(2) CONTRAST TABLE

MJ-L11/MYXJ and NVXJ are constructed the same except for the following:

Mark	No.	Symbol and Description	Part No.		Remarks
			MYXJ type	NVXJ type	
NSP	14	Rear Panel	ANC8002	ANC8022	
	40	Caution Label	VRW1094	PRW1018	
	42	Label	PRW1233	Not used	

2.3 MD MECHANISM ASSY

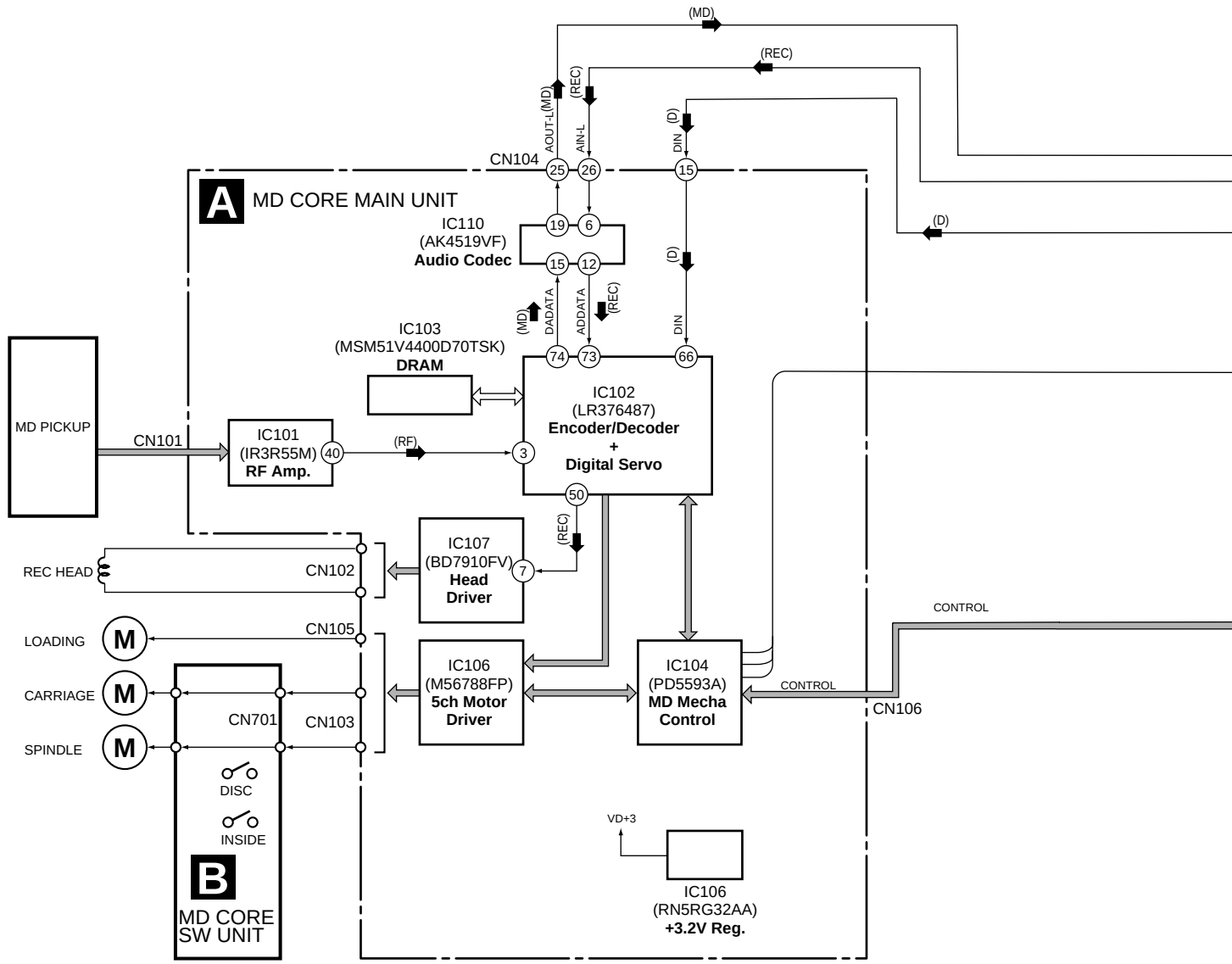


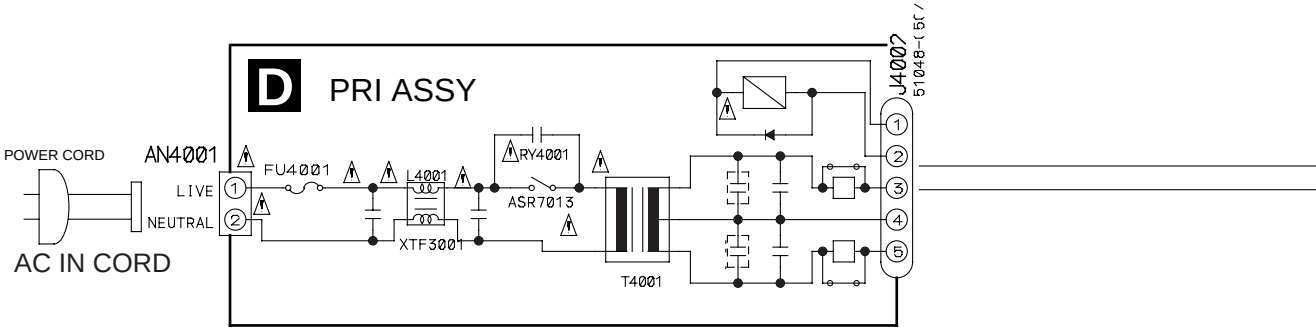
■ MD MECHANISM ASSY PARTS LIST

Mark	No.	Description	Part No.
	1	CORE MAIN UNIT ASSY	AWU7685
NSP	2	CORE SW UNIT ASSY	AWU7686
	3	Lead Card 7P	RDD1403
	4	Lead Wire	RKP1814
	5	Lever Spring	RBH1463
	6	Clamp Spring 1	RBK1074
	7	• • • • • • • •	
	8	Loading Belt	REB1329
	9	Lock Plate	RNE1949
	10	Loading Base	RNK2323
	11	Under Slider	RNK2314
	12	Gear Pulley	RNK2316
	13	Drive Gear	RNK2317
	14	Clutch Gear	RNK2318
	15	Flip Disk	RNK2319
	16	SW Lever	RNK2320
	17	Shutter Assy	RXA1774
NSP	18	Upper Slider Assy	RXA1782
	19	Eject Spring	RBH1461
	20	Upper Slider	RNK2324
	21	Carrier	RNK2315
	22	• • • • • • • •	
	23	Spindle Spring	RBH1460
	24	Lifter Spring	RBH1462
	25	Screw Guide	RBK1072
	26	S. H. Spring	RBK1073
	27	Guide Shaft	RLA1312
	28	Lead Screw	RLA1311
	29	Shield Case	RNE1950
	30	Reference Plate	RNK2306
	31	S. Holder	RNK2307
	32	Worm Wheel	RNK2309
	33	Hook	RNK2310
	34	Head Lifter	RNK2311
	35	MD Head	RPB1063
	36	MD Pick-up	AWY7005
	37	Screw	Z39-019
	38	Screw	JFZ17P020FZK
	39	Screw	JGZ14P020FMC
	40	Screw	JGZ17P028FMC
	41	Screw	JGZ17P040FMC
	42	Screw	PMB20P040FMC
	43	Servo Base Assy	REA1283
NSP	44	Clamp Magnet	RMF1002
NSP	45	Servo Base	RNE1951
NSP	46	Disc Table	RNK2305
NSP	47	Spindle Motor	RXM1091
	48	Carriage Motor Assy	REA1284
	49	Worm	RNK2308
NSP	50	Carriage Motor	RXM1090
	51	Loading Motor Assy	REA1290
	52	DC Motor /0.75W	PXM1010
	53	CA Pulley	RNK2322
	54	Screw	BPZ20P080FMC

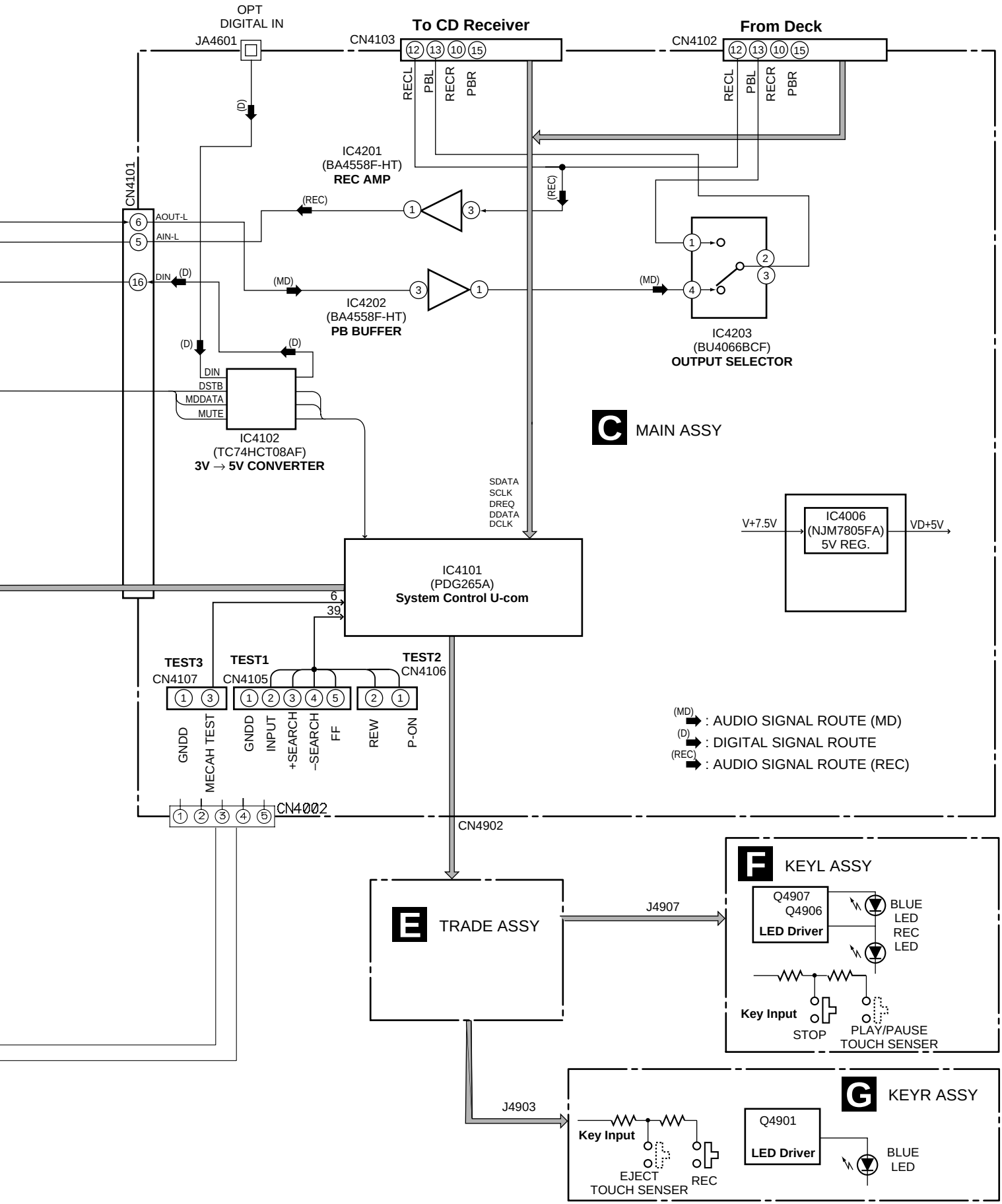
3. BLOCK DIAGRAM AND SCHEMATIC DIAGRAM

3.1 BLOCK DIAGRAM

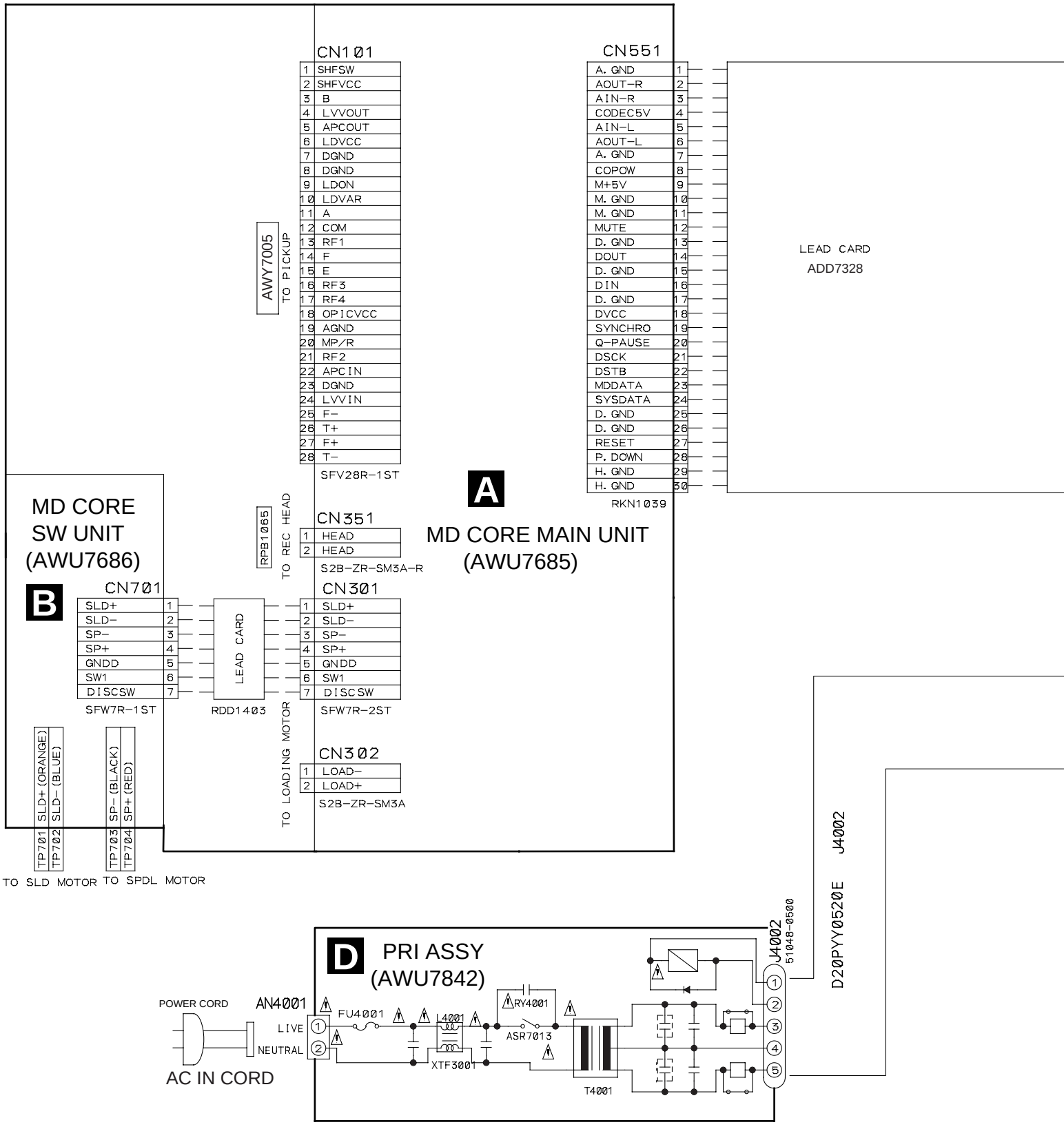


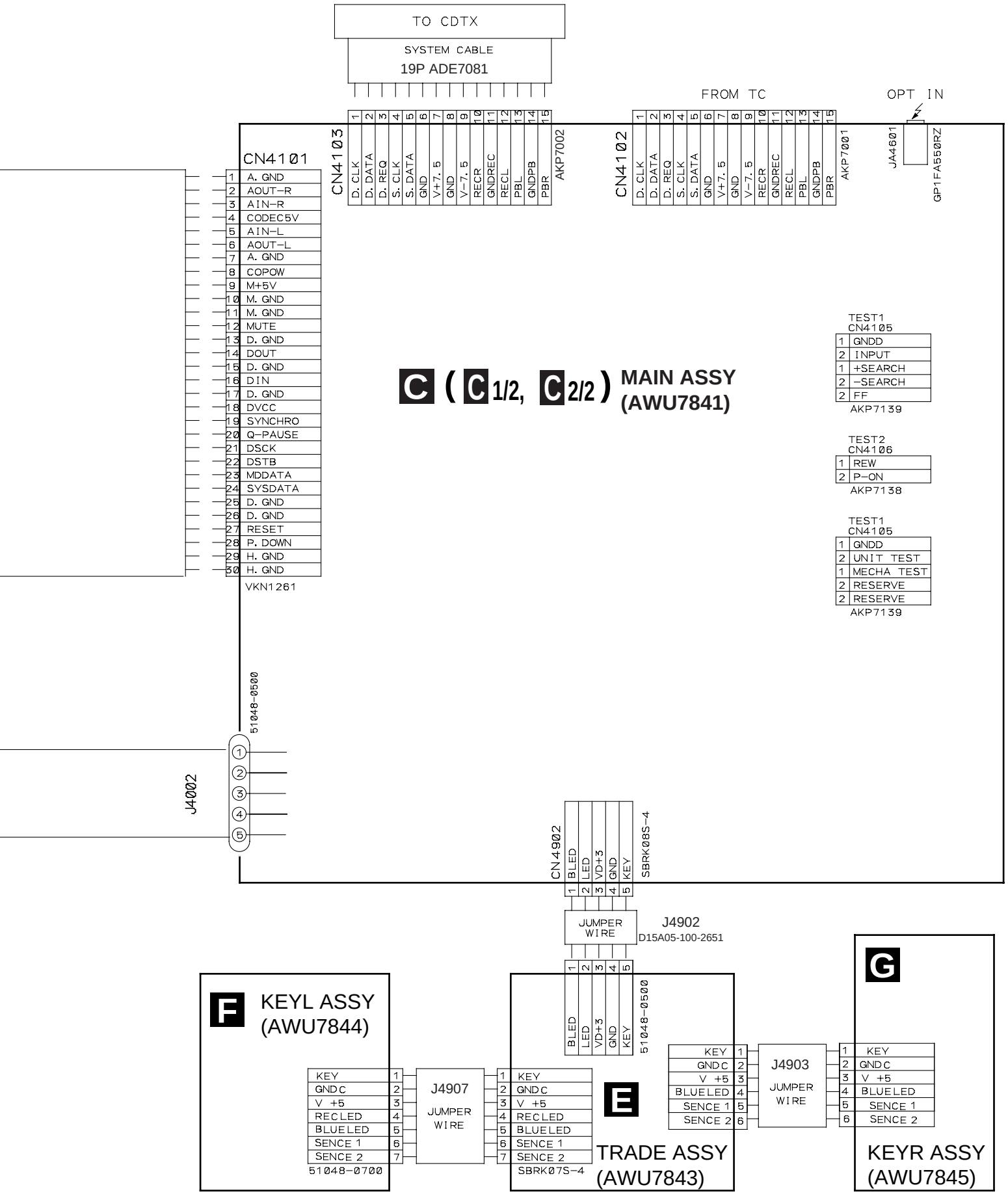


Note : When ordering service parts, be sure to refer to "EXPLODED VIEWS and PARTS LIST" or "PCB PARTS LIST".

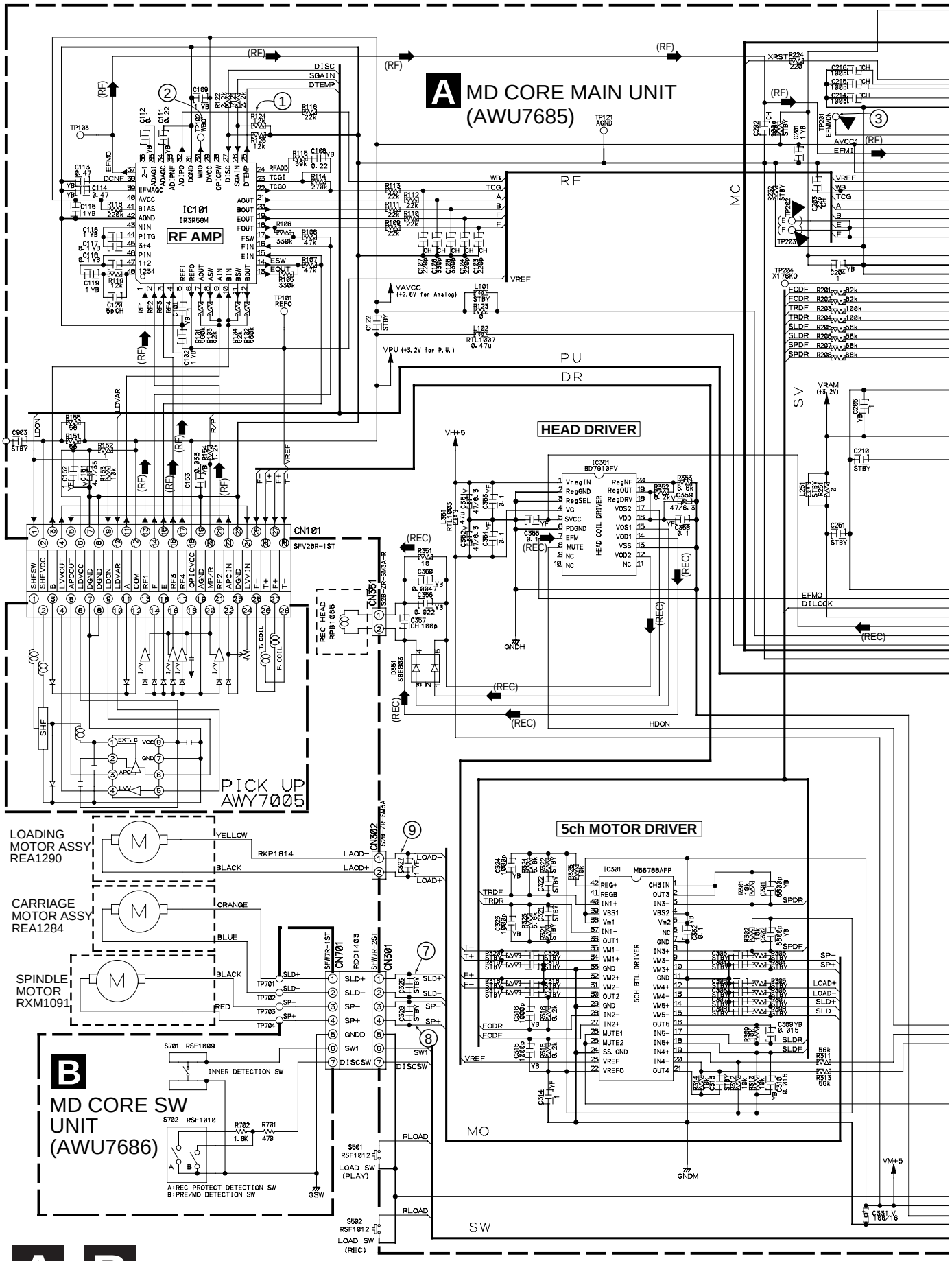


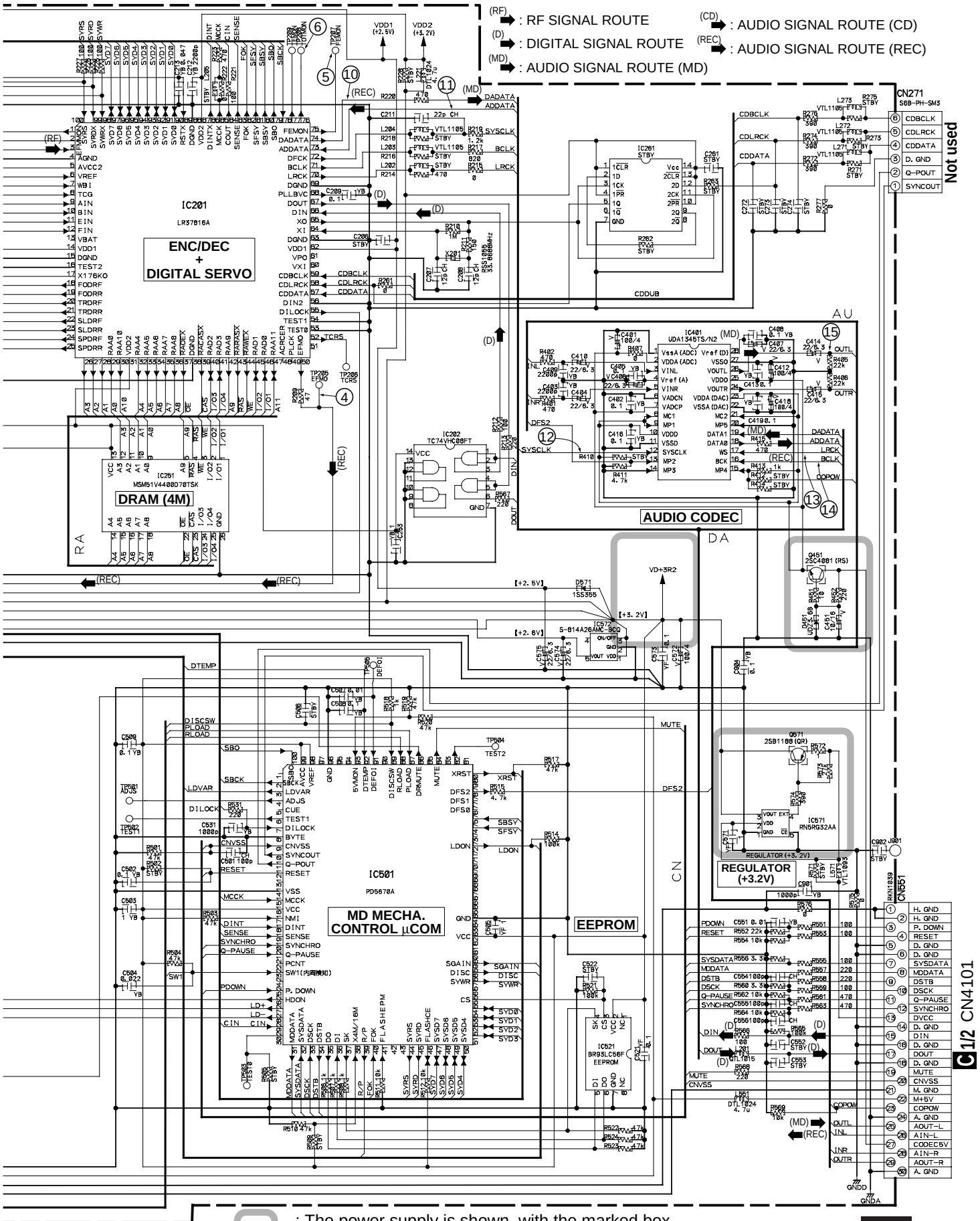
3.2 OVERALL CONNECTION DIAGRAM




TO CDTX
SYSTEM CABLE
19P ADE7081
FROM TC
OPT IN
CN4103
D. CLK
D. DATA
D. REQ
S. CLK
S. DATA
GND
V+7.5
GND
V−7.5
RECR
GNDREC
RECL
PBL
GNDPB
PBR
AKP7002
CN4102
AKP7001
JA4601
GP1FA550RZ
CN4101
1 A. GND
2 AOUT−R
3 AIN−R
4 CODEC5V
5 AIN−L
6 AOUT−L
7 A. GND
8 COPOW
9 M+5V
10 M. GND
11 M. GND
12 MUTE
13 D. GND
14 DOUT
15 D. GND
16 DIN
17 D. GND
18 DVCC
19 SYNCHRO
20 Q−PAUSE
21 DSCK
22 DSTB
23 MDDATA
24 SYSDATA
25 D. GND
26 D. GND
27 RESET
28 P. DOWN
29 H. GND
30 H. GND
VKN1261
C (C1/2, C2/2) MAIN ASSY
(AWU7841)
TEST1
CN4105
1 GNDD
2 INPUT
1 +SEARCH
2 −SEARCH
2 FF
AKP7139
TEST2
CN4106
1 REW
2 P−ON
AKP7138
TEST1
CN4105
1 GNDD
2 UNIT TEST
1 MECHA TEST
2 RESERVE
2 RESERVE
AKP7139
51048−0500
J4002
CN4902
BLED
LED
VD+3
GND
KEY
SBRK08S−4
JUMPER
WIRE
J4902
D15A05-100-2651
51048−0500
F KEYL ASSY
(AWU7844)
KEY
GNDC
V +5
RECLED
BLUELED
SENCE 1
SENCE 2
51048−0700
J4907
JUMPER
WIRE
SBRK07S−4
E
TRADE ASSY
(AWU7843)
J4903
JUMPER
WIRE
G
KEYR ASSY
(AWU7845)

3.3 MD CORE MAIN UNIT and MD CORE SW UNIT




(RF) : RF SIGNAL ROUTE
(D) : DIGITAL SIGNAL ROUTE
(MD) : AUDIO SIGNAL ROUTE (MD)
(CD) : AUDIO SIGNAL ROUTE (CD)
(REC) : AUDIO SIGNAL ROUTE (REC)
IC201
LR37816A
ENC/DEC + DIGITAL SERVO
IC261
IC401
UDA1345TS/N2
AUDIO CODEC
IC202
TC74VHC08FT
IC251
MSM51V4400D70TSK
DRAM (4M)
IC501
PD5670A
MD MECHA. CONTROL µCOM
IC621
BR93LC56F
EEPROM
REGULATOR (+3.2V)
CN271
S6B-PH-SM3
Not used
CN4101
CN551
AU
DA
RA
CN
Q451 2SC4081 (RS)
Q671 2SB1188 (QR)
D571 1SS355
S-814A26AMC-BCQ
IC571 RN5RG32AA
CDBCLK
CDLRCK
CDDATA
DADATA
ADDATA
SYSCLK
BCLK
LRCK
DFS2
DIN
DOUT
COPOW
MUTE
CNVSS
TCRS
EFMO
DTEMP
DISCSW
PLOAD
RLOAD
SBO
SBCK
LDVAR
DILOCK
RESET
MCCK
DINT
SENSE
SYNCHRO
Q-PAUSE
PDOWN
SYSDATA
MDDATA
DSTB
DSCK
SYNCHRO
H. GND
P. DOWN
D. GND
M+5V
A. GND
AOUT-L
AIN-L
CODEC5V
AIN-R
AOUT-R
: The power supply is shown with the marked box.

C 1/2 CN4101

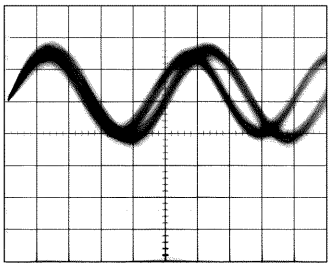
Waveforms

Note: The encircled numbers denote measuring point in the schematic diagram and the PCB connection diagram.

A MD CORE MAIN UNIT

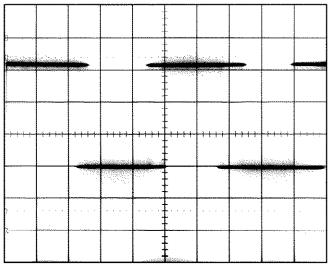
1 **IC101 - pin 32 (ADIPO)**
MODE: PLAY
DISC : GGF1328 (MMD–212)

V : DC500mV/div. H : 10µsec/div.



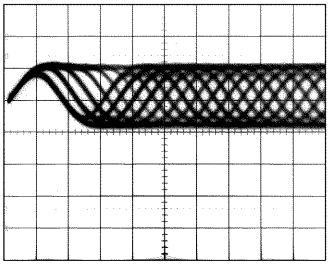
2 **IC101 - pin 30 (WBO)**
MODE: PLAY
DISC : GGF1328 (MMD–212)

V : DC1V/div. H : 10µsec/div.



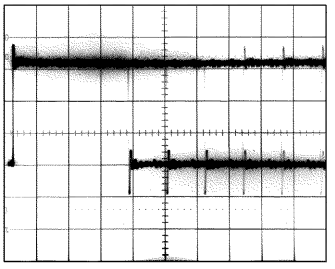
3 **IC201 - pin 1 (EFM MON)**
MODE: PLAY
DISC : TGYS1 or MMD-110

V : DC500mV/div. H : 0.5msec/div.



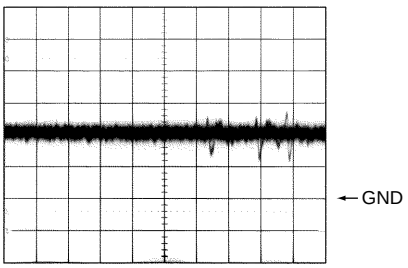
4 **IC201 - pin 50 (EFMO)**
MODE: REC
DISC : GGF1277 or MMD-317

V : DC1V/div. H : 0.2µsec/div.

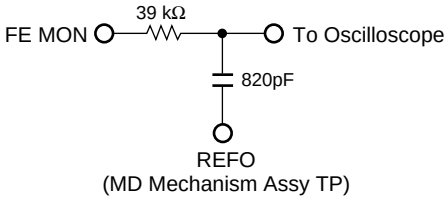


5 **IC201 - pin 75 (FE MON)**
MODE: PLAY
DISC : TGYS1 or MMD-110

V : DC100mV/div. H : 2msec/div.

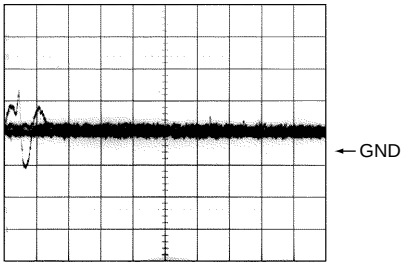


Measurement Method

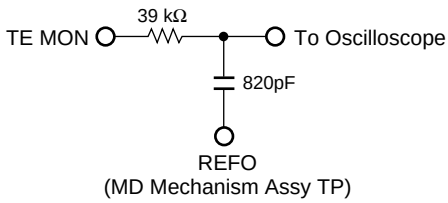


6 **IC201 - pin 77 (TE MON)**
MODE: PLAY
DISC : TGYS1 or MMD-110

V : DC500mV/div. H : 2msec/div.

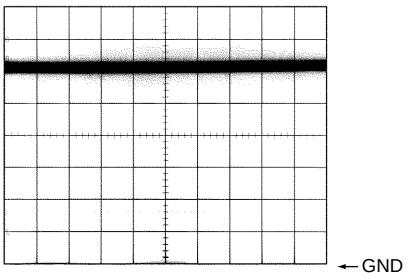


Measurement Method



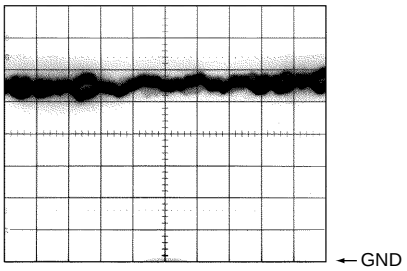
7 **CN301 - pin 1 (SLD +)**
MODE: PLAY

V : DC500mV/div. H : 2msec/div.



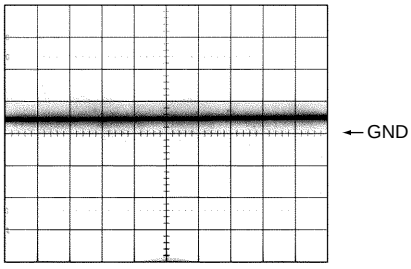
8 **CN301 - pin 4 (SP +)**
MODE: PLAY

V : DC500mV/div. H : 5msec/div.



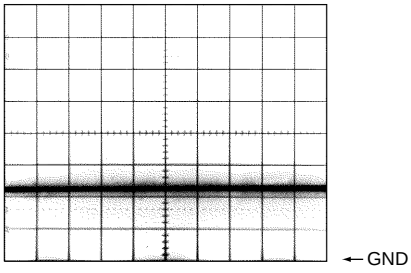
9 **CN302 - pin 1 (LOAD –)**
MODE: STOP

V : DC1V/div. H : 1msec/div.



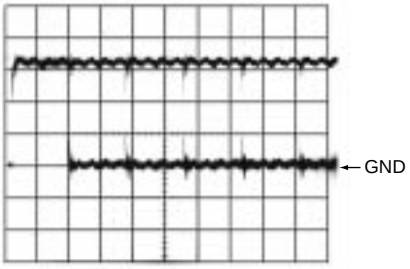
MODE: EJECT

V : DC1V/div. H : 1msec/div.



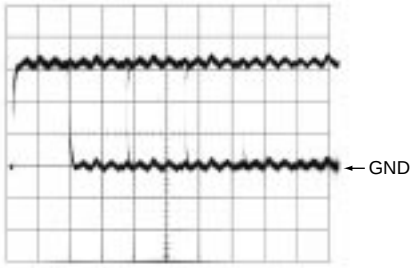
10 **IC201 - pin 74 (DADATA)**
MODE: PLAY (1kHz 0dB)
DISC : TGYS1 or MMD-110

V : DC1V/div. H : 0.2µsec/div.



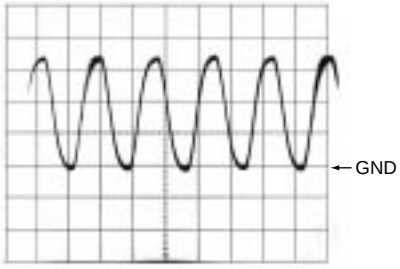
11 **IC201 - pin 73 (ADDATA)**
MODE: REC (ANALOG)
DISC : GGF1277 or MMD-317

V : DC1V/div. H : 0.2µsec/div.



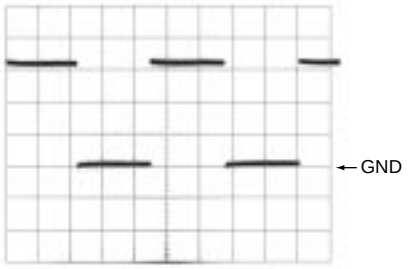
12 **IC401 - pin 12 (SYSCLK)**
MODE: PLAY (1kHz 0dB)
DISC : TGYS1 or MMD-110

V : DC1V/div. H : 50nsec/div.



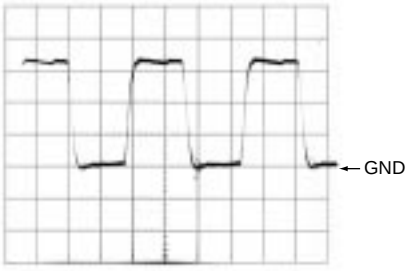
13 **IC401 - pin 17 (LRCK)**
MODE: PLAY (1kHz 0dB)
DISC : TGYS1 or MMD-110

V : DC1V/div. H : 5µsec/div.



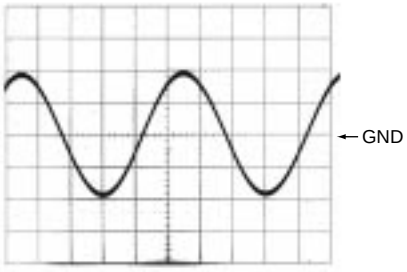
14 **IC401 - pin 16 (BCLK)**
MODE: PLAY (1kHz 0dB)
DISC : TGYS1 or MMD-110

V : DC1V/div. H : 0.1µsec/div.



15 **IC401 - pin 26 (OUTL)**
MODE: PLAY (1kHz 0dB)
DISC : TGYS1 or MMD-110

V : DC500mV/div. H : 0.2msec/div.



Voltages of MD CORE MAIN UNIT

A MD CORE MAIN UNIT (1kHz 0dB PLAY)

IC101(RF AMP)

Pin No.	Voltage (V)	Pin No.	Voltage (V)
1	0.77	25	1.5
2	0.77	26	0
3	0.77	27	2.66
4	0.78	28	2.63
5	1.32	29	2.6
6	1.32	30	1.29
7	1.19	31	0
8	1.19	32	1.32
9	1.33	33	1.33
10	1.33	34	0.6
11	1.19	35	1.3
12	1.19	36	1.32
13	1.52	37	1.36
14	1.51	38	1.32
15	1.33	39	0.8
16	1.33	40	2.6
17	1.51	41	1.52
18	1.52	42	0
19	1.52	43	1.32
20	1.19	44	0
21	1.19	45	0.33
22	1.33	46	1.33
23	1.33	47	0.36
24	0.77	48	0.77

IC201(ENC/DEC)

Pin No.	Voltage (V)	Pin No.	Voltage (V)
1	1.22	51	0
2	2.6	52	0
3	1.36	53	0
4	0	54	0
5	2.6	55	0
6	1.32	56	0
7	1.31	57	0
8	1.32	58	0
9	1.19	59	0
10	1.19	60	1.35
11	1.50	61	1.35
12	1.50	62	2.41
13	1.25	63	0
14	2.41	64	1.09
15	0	65	1.08
16	0	66	1.53
17	1.60	67	1.57
18	1.53	68	0
19	1.69	69	0
20	1.71	70	1.59
21	1.52	71	1.54
22	1.60	72	1.54
23	1.60	73	0.95
24	1.87	74	0.99
25	1.36	75	1.57
26	1.23	76	1.91
27	2.43	77	1.58
28	0.83	78	0
29	1.80	79	0
30	1.42	80	3.18
31	3.2	81	3.18
32	1.24	82	0
33	2.52	83	0
34	1.33	84	1.7
35	1.71	85	1.58
36	1.33	86	3.16
37	2.24	87	3.19
38	0	88	0
39	2.41	89	3.20
40	1.22	90	0.80
41	1.20	91	0.90
42	1.49	92	0.90
43	2.13	93	0.80
44	3.01	94	0.80
45	1.2	95	0.8
46	1.2	96	0.7
47	1.4	97	0.53
48	3.05	98	3.17
49	2.37	99	3.16
50	0	100	0

IC251 (D-RAM)

Pin No.	Voltage (V)
1	1.2
2	1.2
3	3.01
4	2.13
5	1.50
6	-
7	-
8	-
9	1.79
10	0.8
11	2.40
12	1.20
13	3.2
14	1.23
15	2.49
16	1.30
17	1.70
18	1.34
19	-
20	-
21	-
22	2.23
23	2.42
24	1.1
25	1.15
26	0

IC501(CONTROL µCOM)

Pin No.	Voltage (V)	Pin No.	Voltage (V)
1	0	51	1.4
2	0	52	1.5
3	0.21	53	1.4
4	3.17	54	0.8
5	0	55	0
6	0	56	0
7	0	57	3.18
8	0	58	3.17
9	0	59	0
10	0	60	0
11	0	61	0
12	2.79	62	3.2
13	1.46	63	0
14	0	64	0
15	1.6	65	0
16	3.2	66	0
17	3.17	67	0
18	3.16	68	0
19	0	69	0
20	0	70	0
21	0	71	0
22	3.18	72	3.13
23	3.17	73	0
24	0	74	3.18
25	2.94	75	3.18
26	3.18	76	3.18
27	0	77	0
28	0	78	0
29	1.7	79	0
30	0	80	3.18
31	2.3	81	0
32	2.4	82	0
33	2.3	83	0
34	0.6	84	3.18
35	0	85	0
36	0	86	3.17
37	0	87	0
38	0	88	3.17
39	3.17	89	1.02
40	0	90	0
41	0	91	0
42	0	92	1.49
43	0	93	2.48
44	0	94	0
45	3.16	95	0
46	3.18	96	0
47	1.13	97	0
48	1.2	98	3.2
49	1.4	99	3.2
50	1.4	100	0

IC521 (EEPROM)

Pin No.	Voltage (V)
1	0.96
2	3.2
3	0
4	0
5	0
6	0
7	0
8	0

IC571 (3.2VREG)

Pin No.	Voltage (V)
1	0
2	4.2
3	3.20
4	3.31
5	0

IC202(VHC08)

Pin No.	Voltage (V)
1	1.4
2	1.4
3	1.53
4	1.58
5	1.57
6	1.58
7	0
8	0
9	0
10	0
11	0
12	0
13	0
14	3.2

IC301(5ch DRIVER)

Pin No.	Voltage (V)	Pin No.	Voltage (V)
1	1.41	22	1.33
2	1.41	23	1.33
3	1.40	24	0
4	4.93	25	3.17
5	4.93	26	3.17
6	1.27	27	1.34
7	0	28	1.35
8	1.40	29	0
9	2.18	30	1.31
10	2.79	31	2.52
11	0	32	2.42
12	2.45	33	0
13	2.51	34	2.50
14	2.49	35	2.45
15	2.48	36	1.34
16	1.34	37	1.35
17	1.37	38	4.93
18	1.37	39	4.93
19	1.13	40	1.35
20	1.13	41	4.85
21	1.32	42	1.33

IC351(HEAD DRIVER)

Pin No.	Voltage (V)
1	4.94
2	0
3	0
4	4.94
5	3.19
6	0
7	0
8	3.18
9	0
10	0
11	0.65
12	0.85
13	0
14	0.88
15	0.85
16	2.97
17	0.85
18	4.85
19	2.97
20	1.34

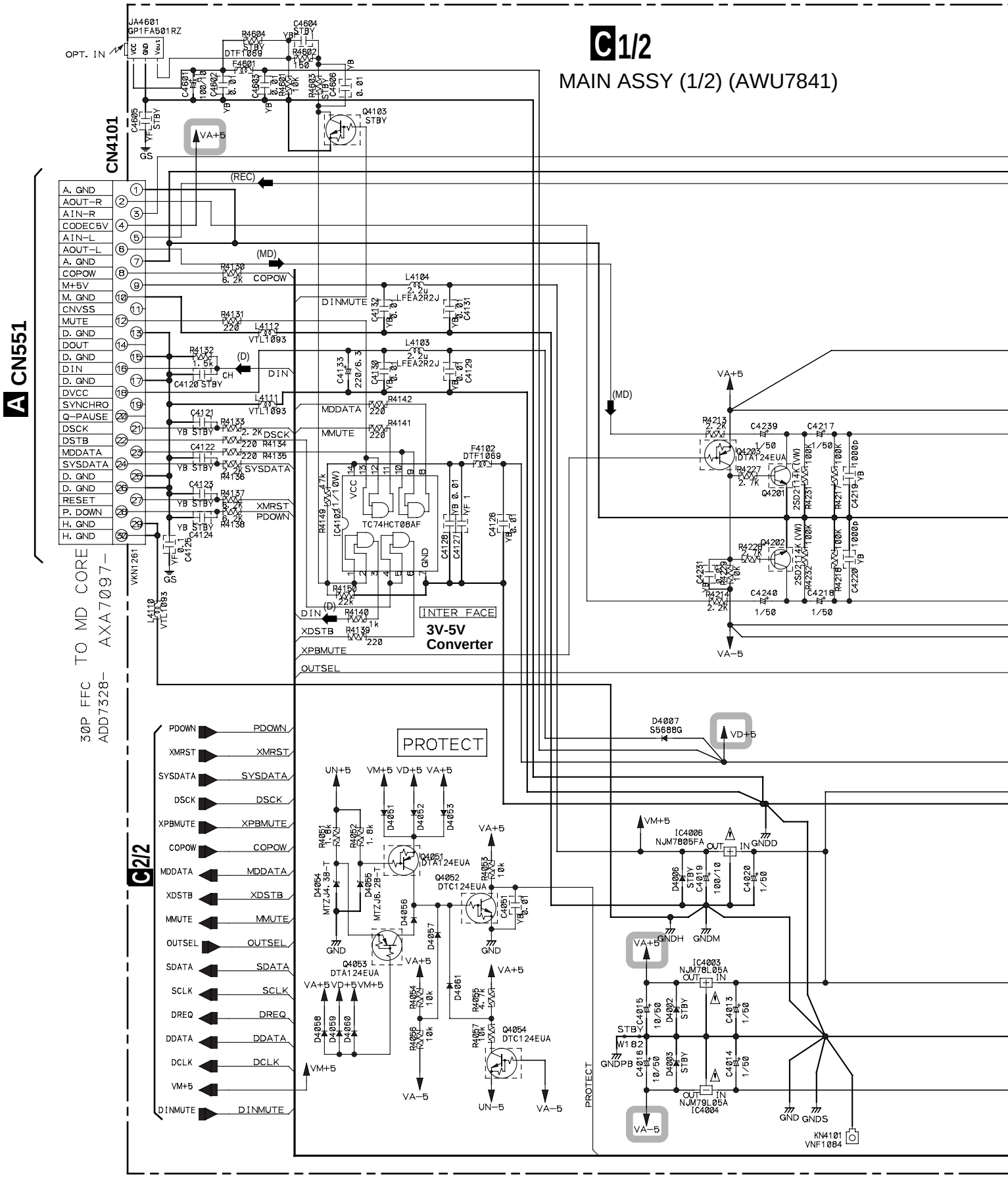
IC401(CODEC)

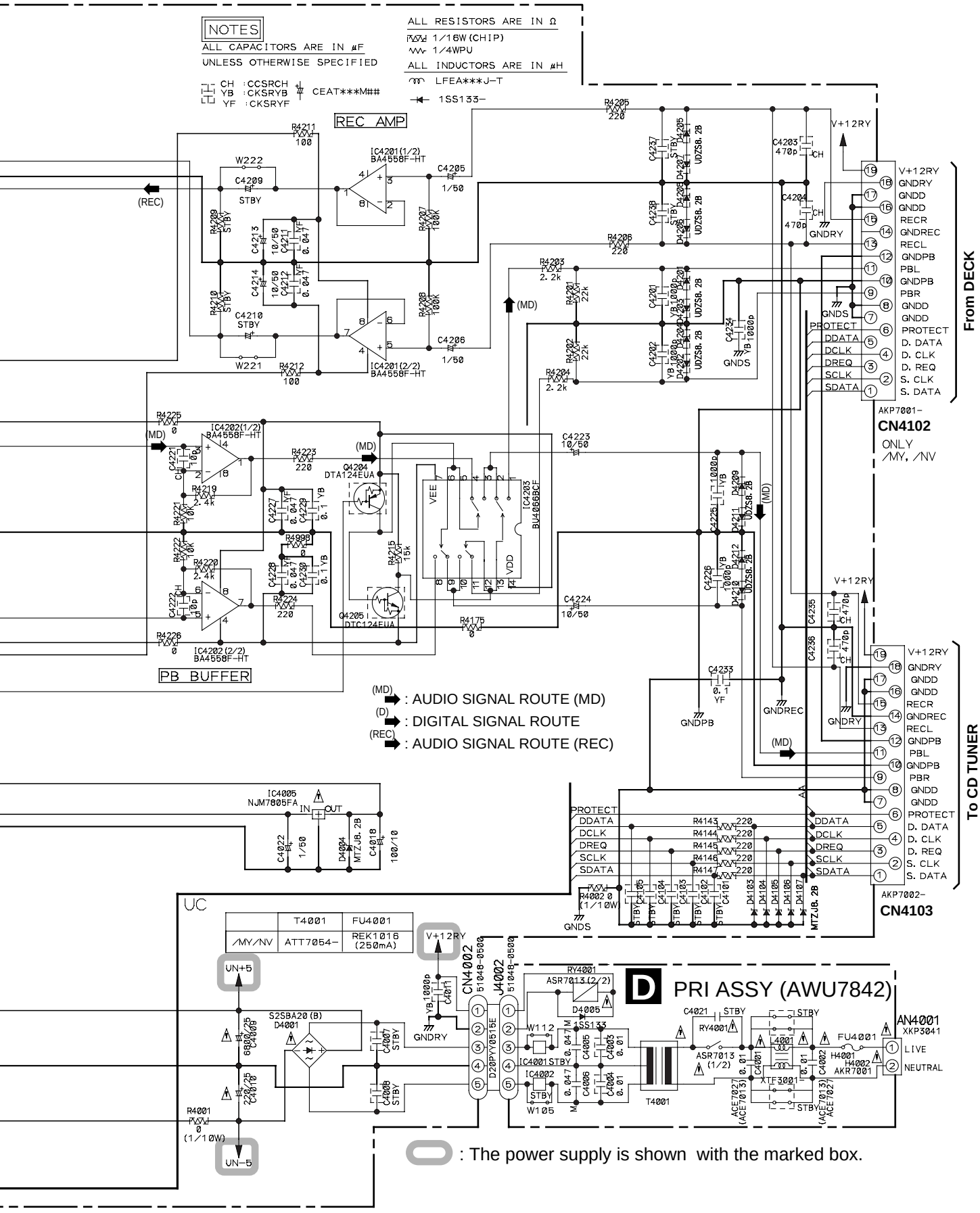
Pin No.	Voltage (V)
1	0
2	3
3	1.48
4	1.49
5	1.49
6	0
7	3
8	3
9	3
10	3
11	0
12	1.59
13	0.08
14	0
15	2.98
16	1.58
17	1.58
18	0.94
19	0.99
20	0
21	3
22	0
23	3
24	1.49
25	3
26	1.49
27	0
28	1.5

3.4 MAIN(1/2) and PRI ASSYS

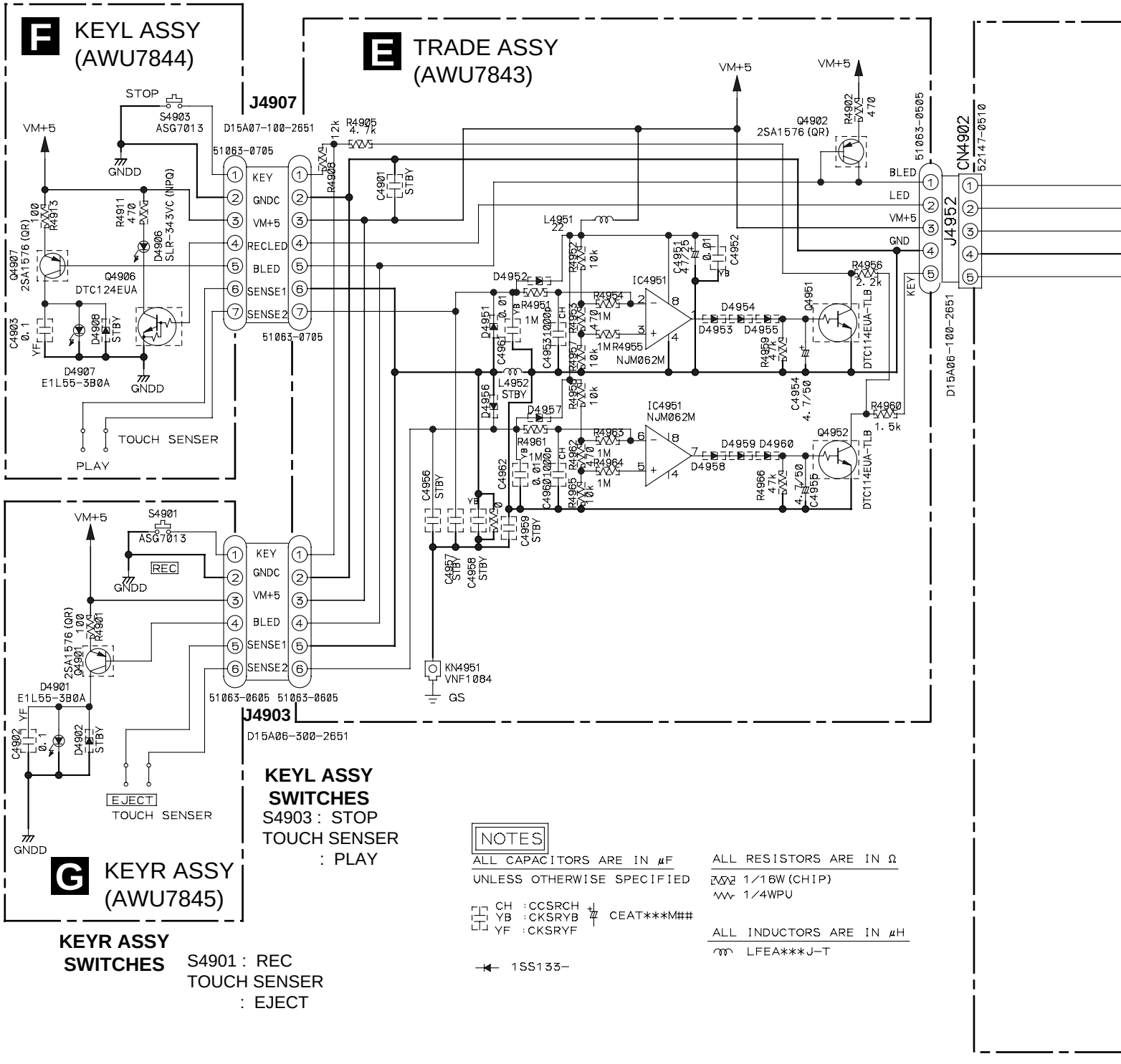
C1/2

MAIN ASSY (1/2) (AWU7841)

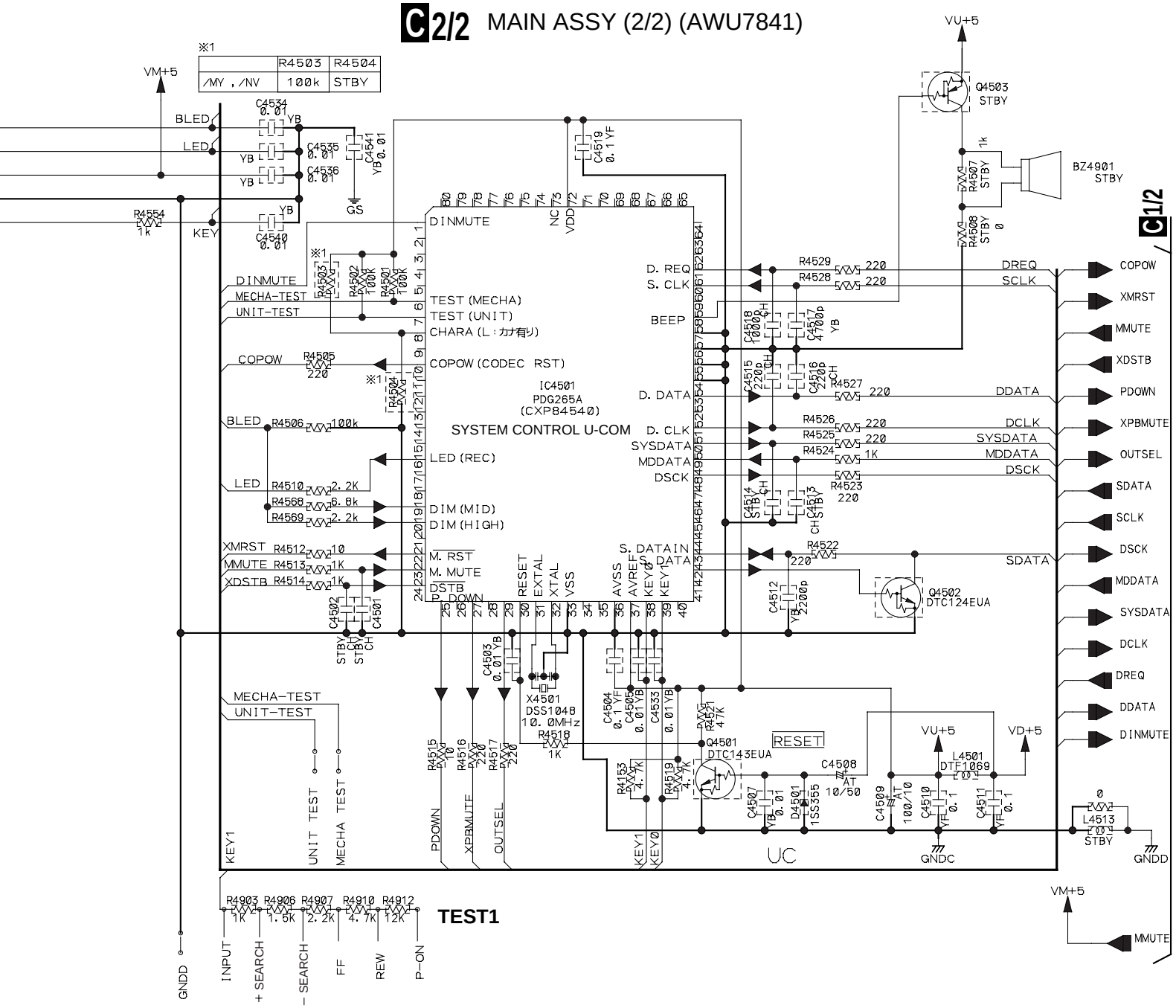



NOTES
ALL CAPACITORS ARE IN µF
UNLESS OTHERWISE SPECIFIED
CH :CCSRCH
YB :CKSRYB
YF :CKSRYF
CEAT***M###
ALL RESISTORS ARE IN Ω
1/16W(CHIP)
1/4WPU
ALL INDUCTORS ARE IN µH
LFEA***J-T
1SS133-
REC AMP
PB BUFFER
(REC)
(MD)
(D)
: AUDIO SIGNAL ROUTE (MD)
: DIGITAL SIGNAL ROUTE
: AUDIO SIGNAL ROUTE (REC)
From DECK
AKP7001-
CN4102
ONLY
/MY, /NV
To CD TUNER
AKP7002-
CN4103
V+12RY
GNDRY
GNDD
RECR
GNDREC
RECL
GNDPB
PBL
PBR
PROTECT
D. DATA
D. CLK
D. REQ
S. CLK
S. DATA
DDATA
DCLK
DREQ
SCLK
SDATA
GNDS
IC4005
NJM7805FA
IC4201(1/2)
BA4558F-HT
IC4201(2/2)
BA4558F-HT
IC4202(1/2)
BA4558F-HT
IC4202(2/2)
BA4558F-HT
IC4203
BU4066BCF
Q4204
DTA124EUA
Q4205
DTC124EUA
UC
T4001
FU4001
/MY/NV
ATT7054-
REK1016
(250mA)
UN+5
UN-5
CN4002
J4002
RY4001
ASR7013(2/2)
D4005
1SS133
W112
W105
IC4001
IC4002
T4001
XTF3001
FU4001
H4001
H4002
AKR7001
AN4001
XKP3041
LIVE
NEUTRAL
D
PRI ASSY (AWU7842)
: The power supply is shown with the marked box.

3.5 MAIN(2/2), KEYR , KEYL and TRADE ASSYS



C 2/2 MAIN ASSY (2/2) (AWU7841)



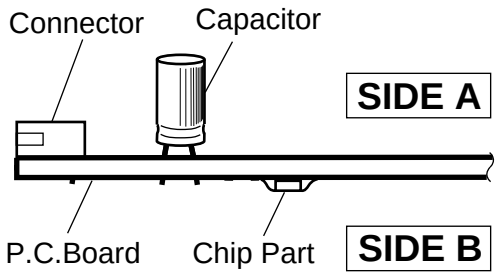
4. PCB CONNECTION DIAGRAM

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.

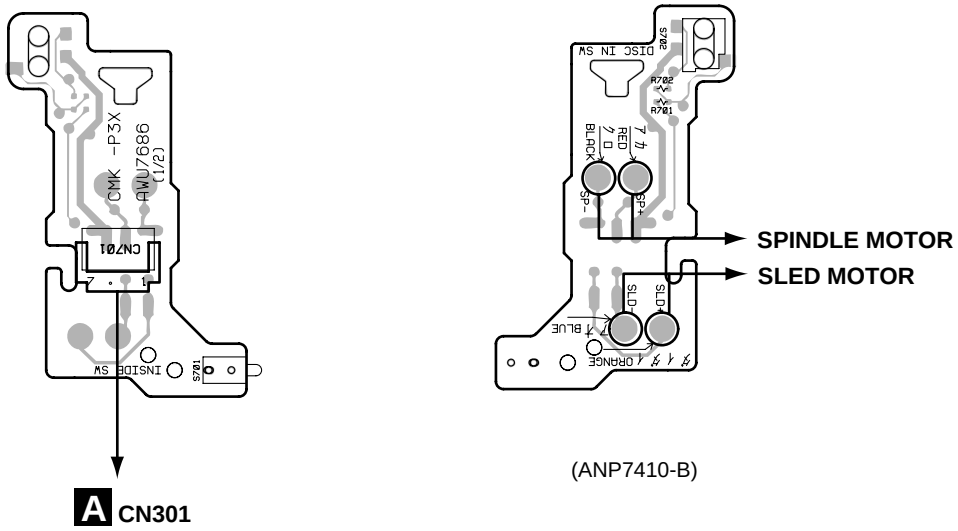
Symbol In PCB Diagrams	Symbol In Schematic Diagrams	Part Name
B C E	B C E B C E	Transistor
B C E	B C E B C E	Transistor with resistor
D G S	D G S D G S	Field effect transistor
		Resistor array
		3-terminal regulator

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



4.1 MD CORE SW UNIT

B **MD CORE SW UNIT**



A **CN301**

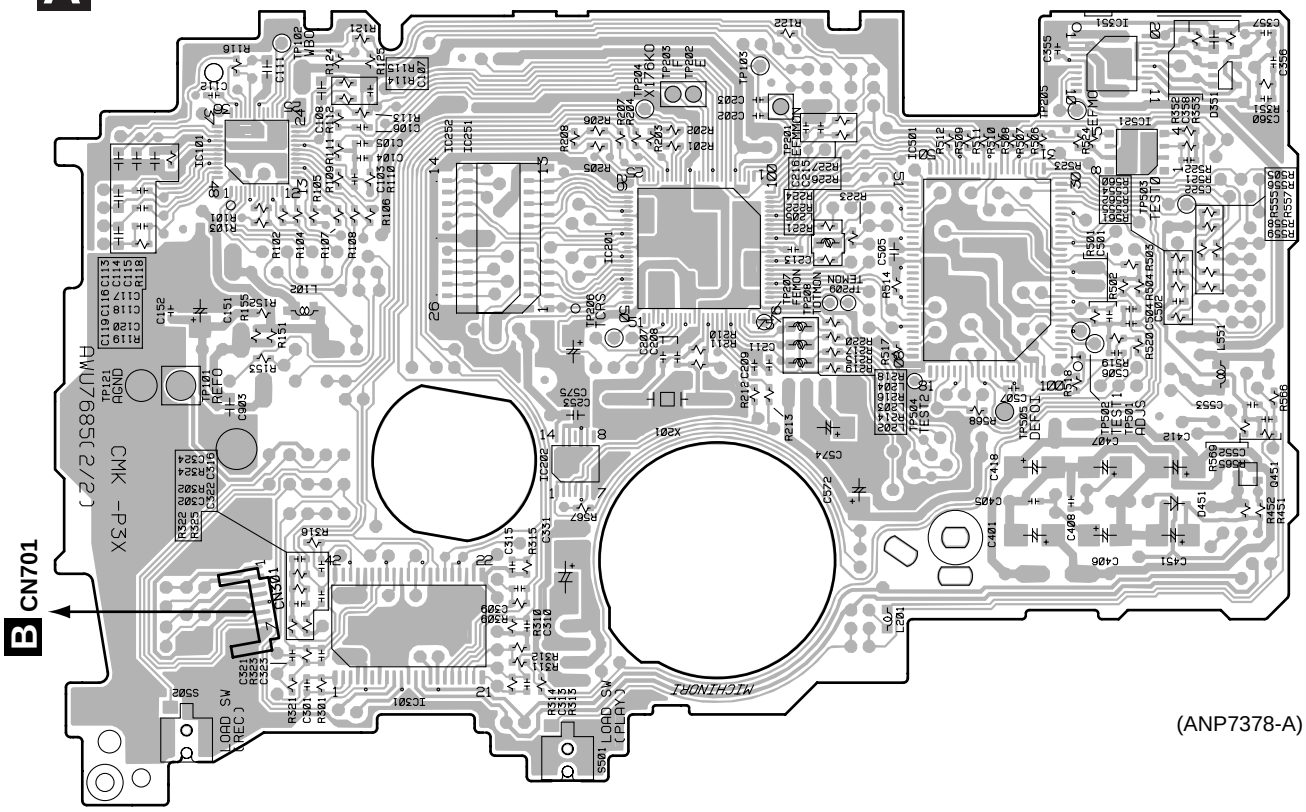
(ANP7410-B)

SIDE A **SIDE B**

4.2 MD CORE MAIN UNIT

A MD CORE MAIN UNIT

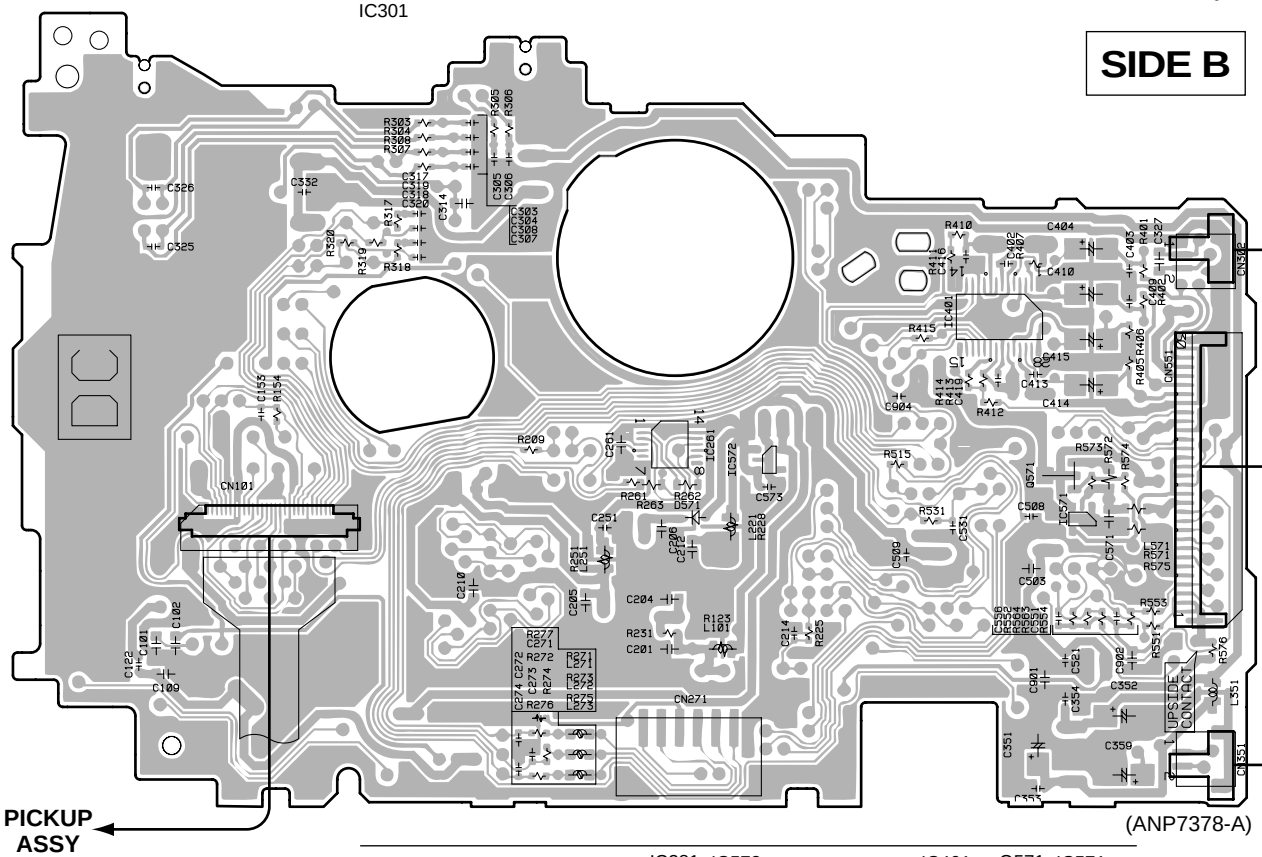
SIDE A



(ANP7378-A)

IC101 IC252 IC251 IC202 IC201 IC301 IC501 IC351 IC521 Q451

SIDE B



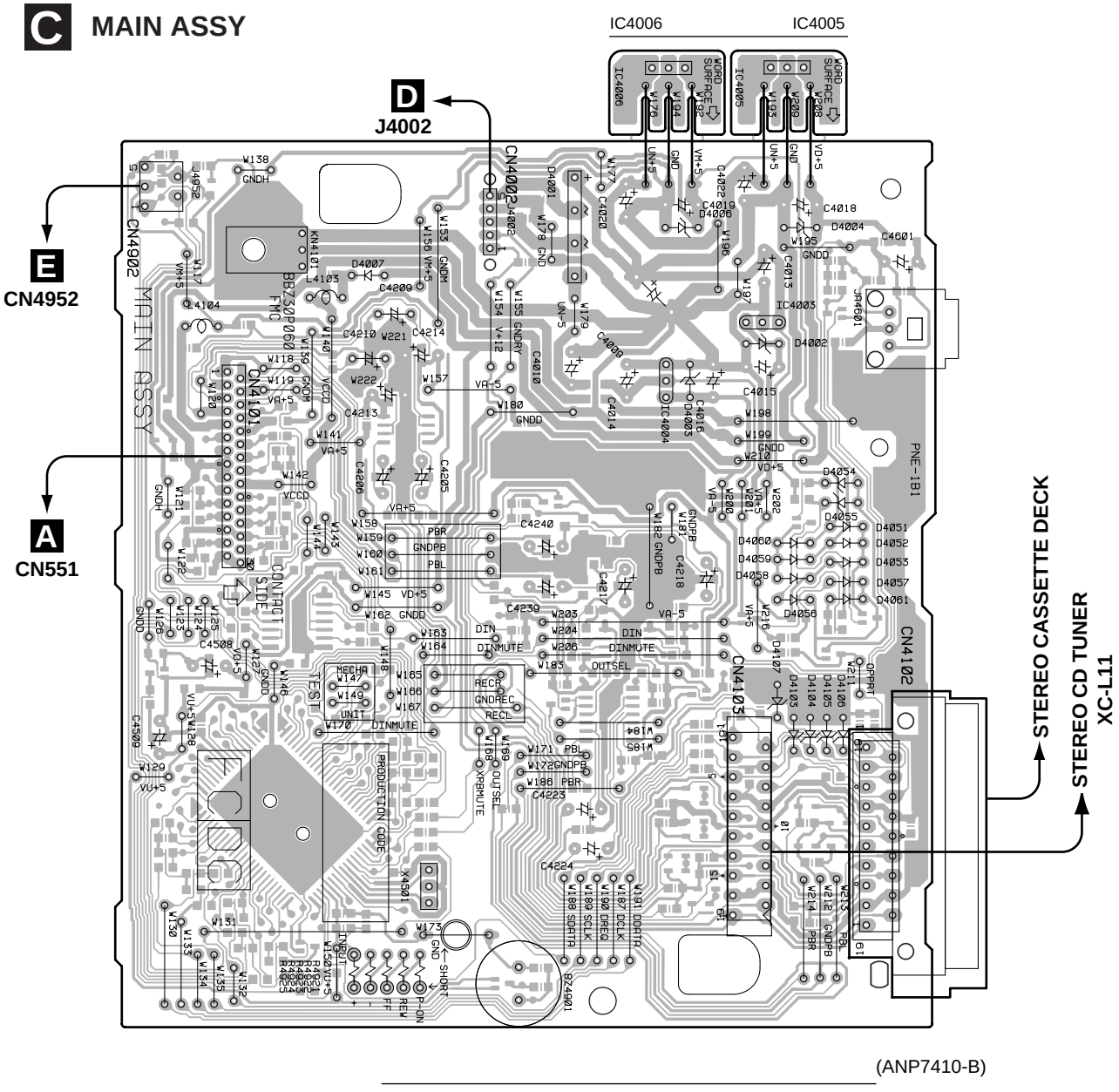
(ANP7378-A)

IC281 IC572 IC401 Q571 IC571

4.3 MAIN ASSY

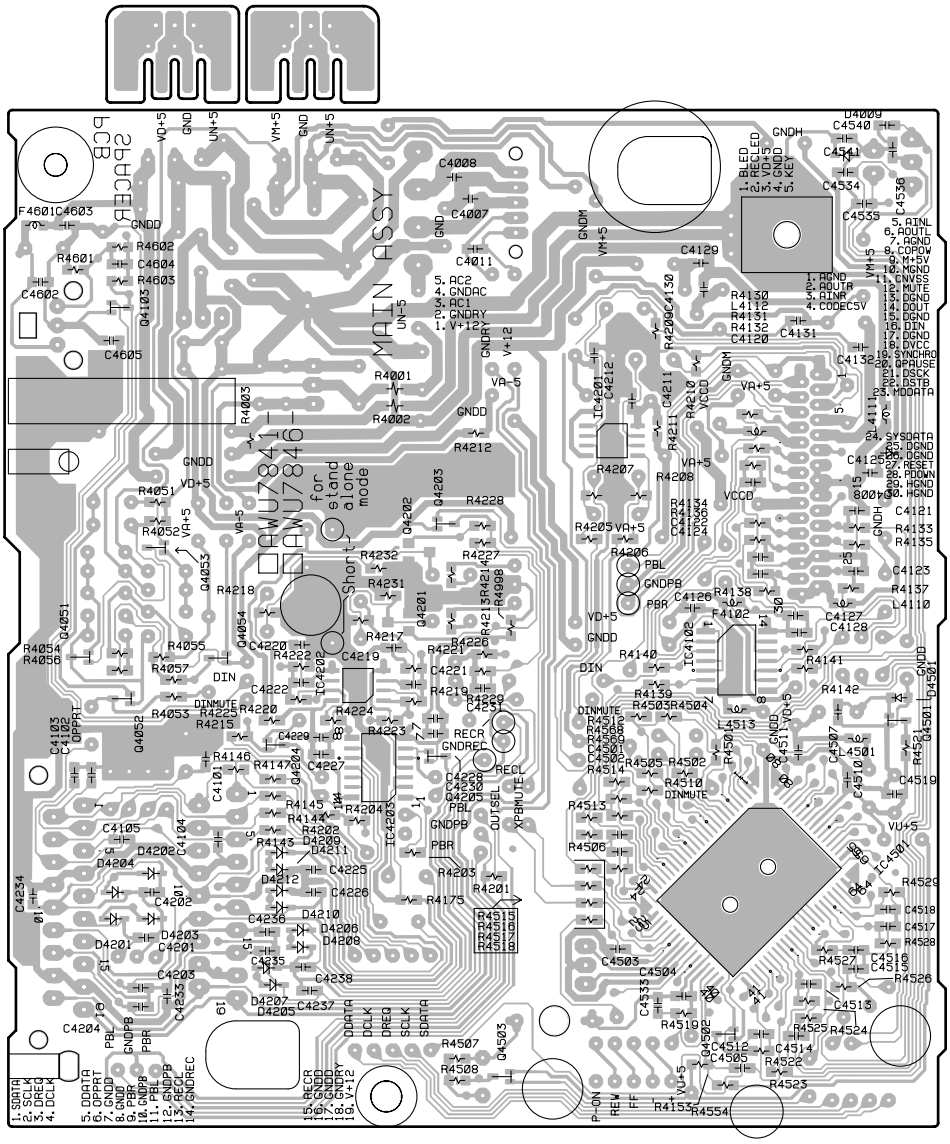
SIDE A

C **MAIN ASSY**



SIDE B

C MAIN ASSY



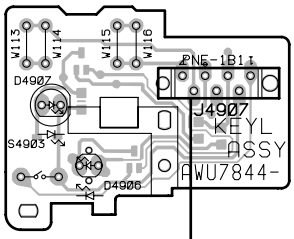
(ANP7410-B)

Q4051	Q4103 Q4052	Q4053	Q4054	IC4202 Q4204	IC4203	Q4203 Q4202 Q4201	Q4205 Q4503	IC4201	IC4102 Q4502	Q4501 IC4501

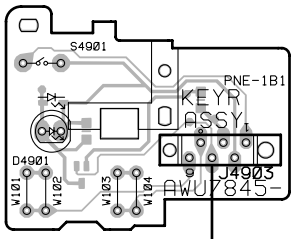
4.4 PRI, TRADE, KEYL and KEYR ASSYS

SIDE A

F KEYL ASSY

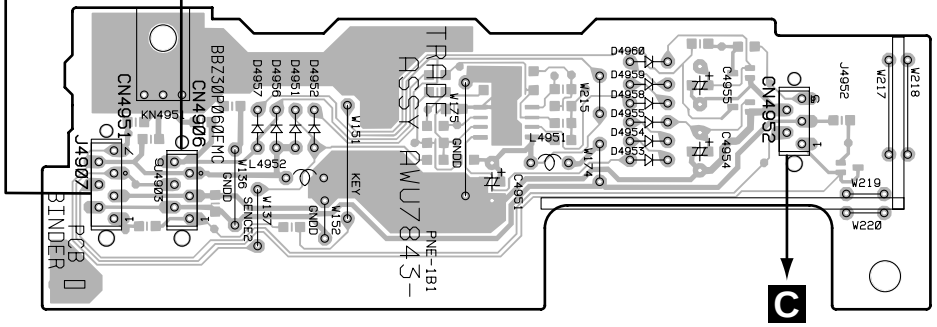


G KEYR ASSY



(ANP7410-B)

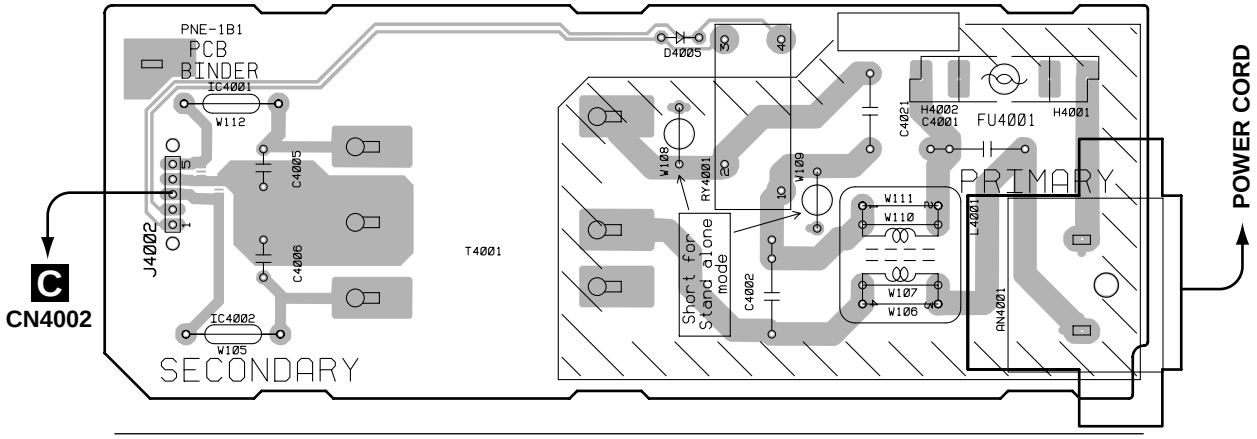
E TRADE ASSY



C
CN4902

(ANP7410-B)

D PRI ASSY



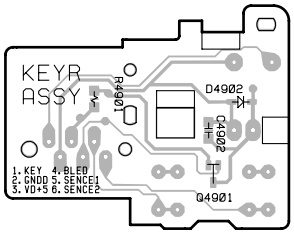
C
CN4002

IC4001
IC4002

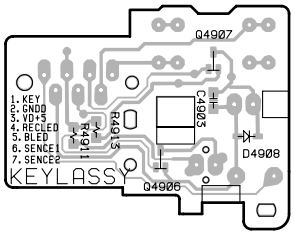
(ANP7410-B)

SIDE B

G KEYR ASSY

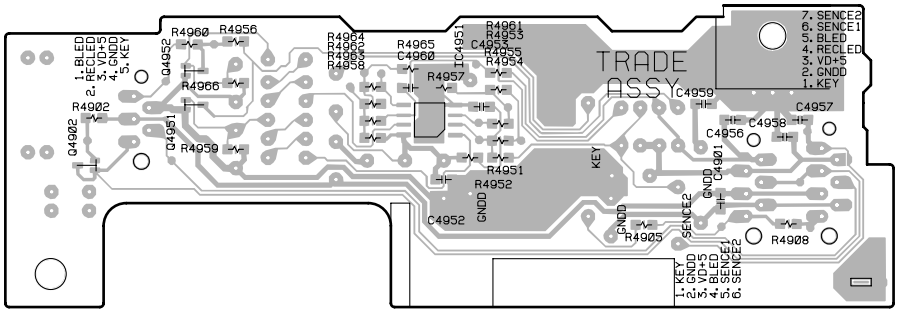


F KEYL ASSY



(ANP7410-B)

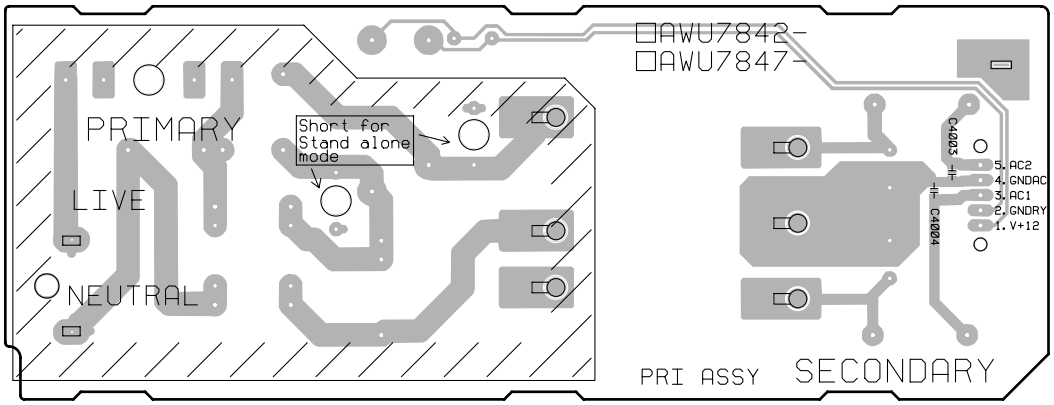
E TRADE ASSY



Q4202 Q4952 Q4951 IC4951

(ANP7410-B)

D PRI ASSY



(ANP7410-B)

5. PCB 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.*
●*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%).

560 Ω	→	*56×10^1*	→	*561* ..... *RD1/4PU 5 6 1 J*
47k Ω	→	*47×10^3*	→	*473* ..... *RD1/4PU 4 7 3 J*
0.5 Ω	→	*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).

5.62k Ω	→	*562×10^1*	→	*5621* ..... *RN1/4PC 5 6 2 1 F*

Mark	No.	Description	Part No.
LIST OF ASSEMBLIES			
NSP		MD COMP	AWM7630
		├MAIN ASSY	AWU7841
		├PRI ASSY	AWU7842
		├TRADE ASSY	AWU7843
NSP		├KEYL ASSY	AWU7844
NSP		└KEYR ASSY	AWU7845
		MD CORE UNIT	AWM7551
		├MD CORE MAIN UNIT	AWU7685
NSP		└MD CORE SW UNIT	AWU7686
A MD CORE MAIN UNIT			
SEMICONDUCTORS			
	IC351		BD7910FV
	IC521		BR93LC56F
	IC101		IR3R58M
	IC201		LR37816A
	IC301		M56788AFP
	IC251		MSM51V4400D70TSK
	IC501		PD5670A
	IC571		RN5RG32AA
	IC572		S–814A26AMC–BCQ
	IC202		TC74VHC08FT
	IC401		UDA1345TS/N2
	Q571		2SB1188
	Q451		2SC4081
	D571		1SS355
	D351		SBE803
	D451		UDZ3.6B
COILS AND FILTERS			
	L221, L551		DTL1024
	L201		QTL1015
	L351		RTL1003
	L102		RTL1007
	L571		VTL1093
	L203, L204, L271–L273		VTL1105
CAPACITORS			
	C202, C214–C216, C357, C501		CCSRCH101J50
	C554–C556		CCSRCH101J50
	C207, C208		CCSRCH120J50
	C203, C211		CCSRCH220J50
	C103, C104, C107		CCSRCH221J50
	C105, C106		CCSRCH331J50
	C120		CCSRCH5R0C50
	C451		CEV100M16
	C331		CEV101M16
	C401, C412, C418, C572		CEV101M4
	C404, C406, C407, C410		CEV220M6R3
	C414, C415, C574, C575		CEV220M6R3
	C351, C352, C359		CEV470M6R3
	C151		CEV4R7M35
	C901		CKSQYB102K50
	C101, C102, C109, C115, C116		CKSQYB105K10
	C119, C201, C204, C205, C253		CKSQYB105K10
	C503		CKSQYB105K10
	C212		CKSQYB222K50
	C108, C111		CKSQYB224K16
	C113, C114		CKSQYB474K16
	C358		CKSQYF104Z25
	C314, C327, C505, C571		CKSQYF105Z16
	C315, C316, C323, C324, C531		CKSRYB102K50
	C507, C551		CKSRYB103K50
	C112, C117, C118, C209, C332		CKSRYB104K16
	C402, C405, C408, C413, C416		CKSRYB104K16
	C419, C502, C508, C509, C904		CKSRYB104K16
	C309, C310		CKSRYB153K50
	C403, C409		CKSRYB222K50
	C356, C504		CKSRYB223K50
	C153		CKSRYB333K16
	C360		CKSRYB472K50
	C213		CKSRYB473K16
	C301, C302		CKSRYB682K50
	C353–C355, C521, C573		CKSRYF104Z25
	C152		CKSRYF105Z10
RESISTORS			
	R123, R222, R251, R575		RS1/10S0R0J
	R572		RS1/10S1R0J
	R214		RS1/10S471J
	OtherResistors		RS1/16S□□□J
OTHERS			
	CN551	30P CONNECTOR	RKN1039
	S501, S502	Detection SW	RSF1012
	X201	(33.86MHz)	RSS1055
	CN351	2P CONNECTOR	S2B–ZR–SM3A–R–TFB
	CN302	ZR CONNECTOR	S2B–ZR–SM3A–TFB

Mark	No.	Description	Part No.
	CN271	PH 6P CONNECTOR	S6B–PH–SM3
	CN101	CONNECTOR	SFV28R–1ST–TFB
	CN301	CONNECTOR	SFW7R–2ST–TFB

B MD CORE SW UNIT

SWITCHES AND RELAYS

	S701	RSF1009
	S702	RSF1010

RESISTORS

	OtherResistors	RS1/16S□□□J

OTHERS

	CN701 CONNECTOR	SFW7R–1ST–TFB

C MAIN ASSY

SEMICONDUCTORS

	IC4201, IC4202	BA4558F–HT
	IC4203	BU4066BCF
⚠	IC4005, IC4006	NJM7805FA
⚠	IC4003	NJM78L05A
⚠	IC4004	NJM79L05A
	IC4501	PDG265A
	IC4102	TC74HCT08AF
	Q4201, Q4202	2SD2114K
	Q4051, Q4053, Q4203, Q4204	DTA124EUA
	Q4501	DTC143EUA
	Q4052, Q4054, Q4205, Q4502	UN5212
	D4051–D4053, D4056–D4061	1SS133
	D4501	1SS355
⚠	D4001	D2SBA20(B)
	D4054	MTZJ4.3B
	D4055	MTZJ6.2B
	D4004, D4103–D4107	MTZJ8.2B
	D4007	S5688G
	D4201–D4212	UDZS8.2B

COILS AND FILTERS

	F4102, F4501, F4601	DTF1069
	L4103, L4104	LFEA2R2J
	L4110–L4112	VTL1093

CAPACITORS

	C4221, C4222	CCSRCH100D50
	C4515, C4516	CCSRCH221J50
	C4203, C4204, C4235, C4236	CCSRCH471J50
	C4015, C4016, C4020, C4022	CEAT100M50
	C4213,C4214,C4223,C4224,C4508	CEAT100M50
	C4018, C4019, C4509, C4601	CEAT101M10
	C4013, C4014, C4205, C4206	CEAT1R0M50
	C4217, C4218, C4239, C4240	CEAT1R0M50
⚠	C4010	CEAT221M25
	C4133	CEAT221M6R3
⚠	C4009	CEAT682M25
	C4127	CKSQYF105Z16
	C4011,C4201,C4202,C4219,C4220	CKSRYB102K50
	C4225,C4226,C4234,C4512,C4518	CKSRYB102K50
	C4051,C4126,C4128–C4132,C4231	CKSRYB103K50
	C4503,C4505,C4507,C4533–C4536	CKSRYB103K50
	C4540,C4541,C4602,C4603,C4606	CKSRYB103K50
	C4517	CKSRYB472K50
	C4125,C4229,C4230,C4233,C4504	CKSRYF104Z25
	C4510, C4511, C4519	CKSRYF104Z25
	C4211, C4212, C4227, C4228	CKSRYF473Z25

RESISTORS

	R4925	RD1/4PU102J
	R4921	RD1/4PU123J
	R4924	RD1/4PU152J
	R4923	RD1/4PU222J
	R4922	RD1/4PU472J
	R4001, R4002	RS1/10S0R0J
	R4149	RS1/10S473J
	OtherResistors	RS1/16S□□□J

OTHERS

	4003 5P CABLE HOLDER	51048–0500
	4102 SOCKET(19P)	AKP7001
	CN4103 19P JUMPER CONNECTOR	AKP7002
	X4501 (10MHz)	DSS1048
	JA4601 OPTICAL RECEIV MOD.	GP1FA501RZ
	CN4902 5P JUMPER CONNECTOR	KPE5
	CN4101 30P CONNECTOR	VKN1261
	KN4101 EARTH METAL FITTING	VNF1084

D PRI ASSY

SEMICONDUCTORS

	D4005	1SS133

COILS AND FILTERS

⚠	L4001	XTF3001

SWITCHES AND RELAYS

⚠	RY4001	ASR7013

CAPACITORS

⚠	C4001, C4002	ACE7013
	C4003, C4004	CKSRYF103Z50
	C4005, C4006	CQMBA473J50

OTHERS

	4002 5P CABLE HOLDER	51048–0500
	H4001, H4002 HOLDER	AKR7001
	J4002 JUMPER WIRE	D20PYY0520E
	4001 PCB Binder	VEF1040
⚠	AN4001 AC INLET	XKP3041

E TRADE ASSY

SEMICONDUCTORS

	IC4951	NJM062M
	Q4902	2SA1576A
	Q4951, Q4952	DTC114TUA
	D4951–D4960	1SS133

COILS AND FILTERS

	L4951	LFEA220J

Mark	No.	Description	Part No.

CAPACITORS

	C4951		CEAT470M25
	C4954, C4955		CEAT4R7M50
	C4953, C4960		CKSRYB102K50
	C4961, C4962		CKSRYB103K50
	C4952		CKSRYB104K25

RESISTORS

	OtherResistors		RS1/16S□□□J

OTHERS

	4952	5P CABLE HOLDER	51063–0505
	4906	6P CABLE HOLDER	51063–0605
	4951	7P CABLE HOLDER	51063–0705
	J4952	5P JUMPER WIRE	D15A05–100–2651
	4953	PCB BINDER	VEF1040
	KN4951	EARTH METAL FITTING	VNF1084

F KEYL ASSY

SEMICONDUCTORS

	Q4907		2SA1576A
	Q4906		UN5212
	D4907		E1L55–3B0A
	D4906		SLR–343VC(NPQ)

SWITCHES AND RELAYS

	S4903		ASG7013

CAPACITORS

	C4903		CKSRYF104Z25

RESISTORS

	OtherResistors		RS1/16S□□□J

OTHERS

	4907	7P CABLE HOLDER	51063–0705
	J4907	7P JUMPER WIRE	D15A07–100–2651

G KEYR ASSY

SEMICONDUCTORS

	Q4901		2SA1576A
	D4901		E1L55–3B0A

SWITCHES AND RELAYS

	S4901		ASG7013

CAPACITORS

	C4902		CKSRYF104Z25

RESISTORS

	OtherResistors		RS1/16S□□□J

OTHERS

	4903	6P CABLE HOLDER	51063–0605
	J4903	6P JUMPER WIRE	D15A06–300–2651

6. ADJUSTMENT

6.1 MD SECTION ADJUSTMENT

■ Jigs and Measuring Instructions

- Thermometer
- Oscilloscope
- Optical Power Meter
- Jitter Meter
- Test Disc

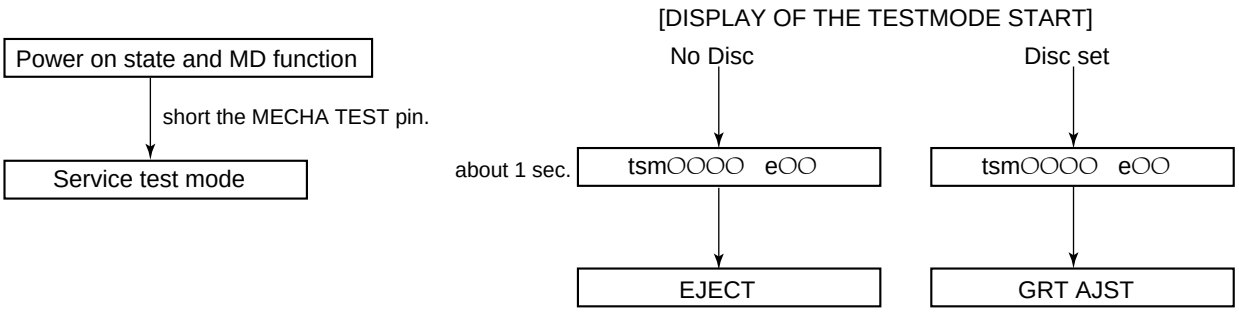
  For servo system adjustment : GGF1328 (MMD-212)
  For recording/playback inspection : GGF1328 (MMD-212), GGF1277 (or MMD-317)
  TGYS1 (or MMD-110), Commercial discs
- STEREO DVD TUNER XV-D77(CD TUNER XC-L11), STEREO POWER AMPLIFIER M-L11
- Remote control supplied with AXD7306 and (CLD service remote control GGF1067)

6.1.1 Necessary Adjustment Points

When	Adjustment points
Exchange PICKUP	③ – ⑨ → Page 33–38
Exchange Servo Base Assy (SPINDLE MOTOR)	④ – ⑨ → Page 34–38
Exchange MD CORE MAIN UNIT	① ②, ⑤ – ⑨ → Page 32, 35–38
Exchange MD HEAD	⑨ → Page 38
Exchange Loading Mechanism Assy	———
Exchange Servo Mechanism Assy	③ – ⑨ → Page 33–38
Exchange MD Mechanism Assy (Loading Mechanism Assy + Servo Mechanism Assy)	③ – ⑨ → Page 33–38

6.1.2 Test Mode

- Use the Remote Control Unit of Accessory or Service Remote Control Unit (GGF1067) at the Test Mode.
  Note1 : It is impossible to enter the Test Mode in the Single Operation Mode.
  Note2 : Unit Test Mode (U-TEST) is for inspection by the function checker of the production line.

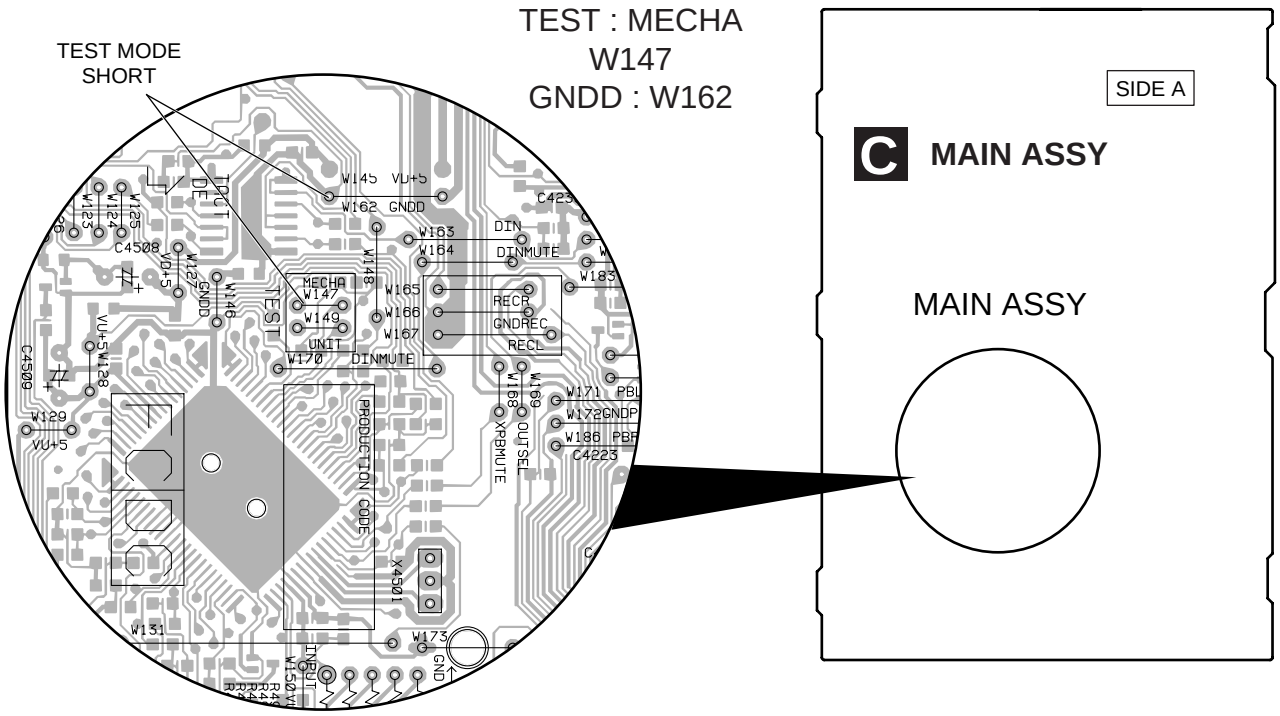


■ Correspondence key of the Test mode

(GGF1067)

Command Name	Remote Control Unit DVD Model+(Main Unit Key)	Remote Control Unit CD Model+(Main Unit Key)	CLD Service Remote Control Unit	SR Code
TEST MODE IN	Short-circuit the MECHA TEST pin	←	ESC	(A85F)
EJECT	▲ (MD EJECT) of the main unit key	←	▮▮► (STILL STEP)	(A854)
MENU next 1 MENU next 2 MENU next 3 MENU previous	SYSTEM MENU ● (REC) of the main unit key CLR SYSTEM DISP	MENU ● (REC) of the main unit key CANCEL DISPLAY	FRM / TIM CHAP CHP / TIM CLEAR	(A841) (A840) (A813) (A845)
SET (Decision, Execution) STOP	▷/▯▯ key ■ (STOP) key	MD key ■ (STOP) key	PLAY ■ / EJECT	(A817) (A816)
CHANGE (switch)	ENTER	SET	SEARCH	(A842)
Comp.EJECT, Set UP	►► (SCAN)	←	►► (SCAN)	(A810)
Comp.LOADING, Set DOWN	◄◄ (SCAN)	←	◄◄ (SCAN)	(A811)
FORWARD, Set DOWN	+ . ▷▷I	←	►►I (SKIP)	(A852)
REVERSE, Set DOWN	− . I◁◁	←	I◄◄ (SKIP)	(A853)

■ Test Point



6.1.3 MD Mechanism Assy Adjustment and Check

① Temperature Adjustment

Note : DVD Model operation key (or CD Model operation key) .

Note: When IC101 (RF-AMP) or IC501 (mechanical controller) has been exchanged or when a correction changing VD+3 has been made, be sure to correctly perform all steps up to step 2.

Step No.	Operation Keys and Operation Method	Display	Status	Remarks
1	In the Power ON state, selecting MD function,short-circuit the "MECHA and GNG pin".	EJECT	MD Test mode	
2	SYSTEM DISP(or DISP) key.	TEMP □□	Temperature input menu	
3	Circumference temperature is measured with a thermometer.			
4	Circumference temperature is inputted by Centigrade (C) by the ►► ◄◄ key.	TEMP○○		
5	Press the ►/II(or MD) key.	COMPLETE EJECT	Temperature setting value is automatically inputted inside.	
6	Turn off the power of the DVD tuner(or CD tuner).	EEPROM W	Data writes to the EEPROM and turns the system power to off. Test mode returns to the normal mode.	

② Temperature Check (Please perform this check soon after the power has been switched on.)

Step No.	Operation Keys and Operation Method	Display	Status	Remarks
1	In the Power ON state, selecting MD function,short-circuit the "MECHA and GNG pin".	EJECT	Test mode	
2	Press the ● (REC) key.	TEMP○○□□	The microcomputer starts measuring	○○: Measuring value □□: Set value
3	When □□ is 80 or more at this time, the adjustment is OK (step 4 and following can be omitted.)		End	
When □□ is 80 (not passed)		TEMP○○80	80 is the default value (unadjusted).	
4	Measure the ambient temperature T (°C) and check that the measuring value (○○) is within the standard in regard to the microcomputer set value (□□). Note: When the indication of the measuring value (○○) is not stable, and the ambient temperature T (°C) is 25 °C or less, set to the lower value. When the ambient temperature is over 25 °C, set to the higher value.	TEMP ○○ □□ μ-com Measuring value ↑ ↑ μ-com Set value		
5	Change □□ with the + key and – key.	TEMP 7B 7B		
6	Turn off the power of the DVD tuner(or CD tuner).	EEPROM W	Data writes to the EEPROM and turns the system power to off. Test mode returns to the normal mode.	

Room Temperature [T (°C)]	hex= (○○ – □□)
11.6 to 16.9	Measuring value (○○) +2
17.0 to 22.3	Measuring value (○○) +1
22.4 to 27.6	Measuring value (○○)
27.7 to 33.0	Measuring value (○○) –1
33.1 to 38.4	Measuring value (○○) –2

When the microcomputer value is: 79, 7A, 7B, 7C, 7D (– ↑ to + ↓)

③ Laser Power Check

Step No.	Operation Keys and Operation Method	Display	Status	Remarks
1	In the Power ON state, selecting MD function,short-circuit the "MECHA and GNG pin".	EJECT	Test mode	Laser wavelength: 780 nm
2	Press the ENTER(or SET)key (Remote control unit).	ppw	PLAY power output status	
3	Measure the laser power with an optical power meter.	ppw		
4	At this time, check that the measuring value (PLAY power) meets the standard value of the table on the right. Note: When the standard value on the right is applied, the numerical value immediately after entry into test mode 2 shall be taken as the standard.	ppw	TEMP ○○ □□ μ-com Measuring value ↑ ↑ μ-com Set value	May be omitted.
5	Press the ENTER(or SET) key.	rpw	REC power output status	
6	At this time, check that the measuring value (REC power) meets the standard value of the table on the right.	rpw		
7	Press the ■ (STOP) key.		The LD goes out.	

hex=(○○ – □□)	Standard value (mW)
+02 to +04	0.70 ± 0.12
–01 to +01	0.67 ± 0.1
–02 to –04	0.62 ± 0.1

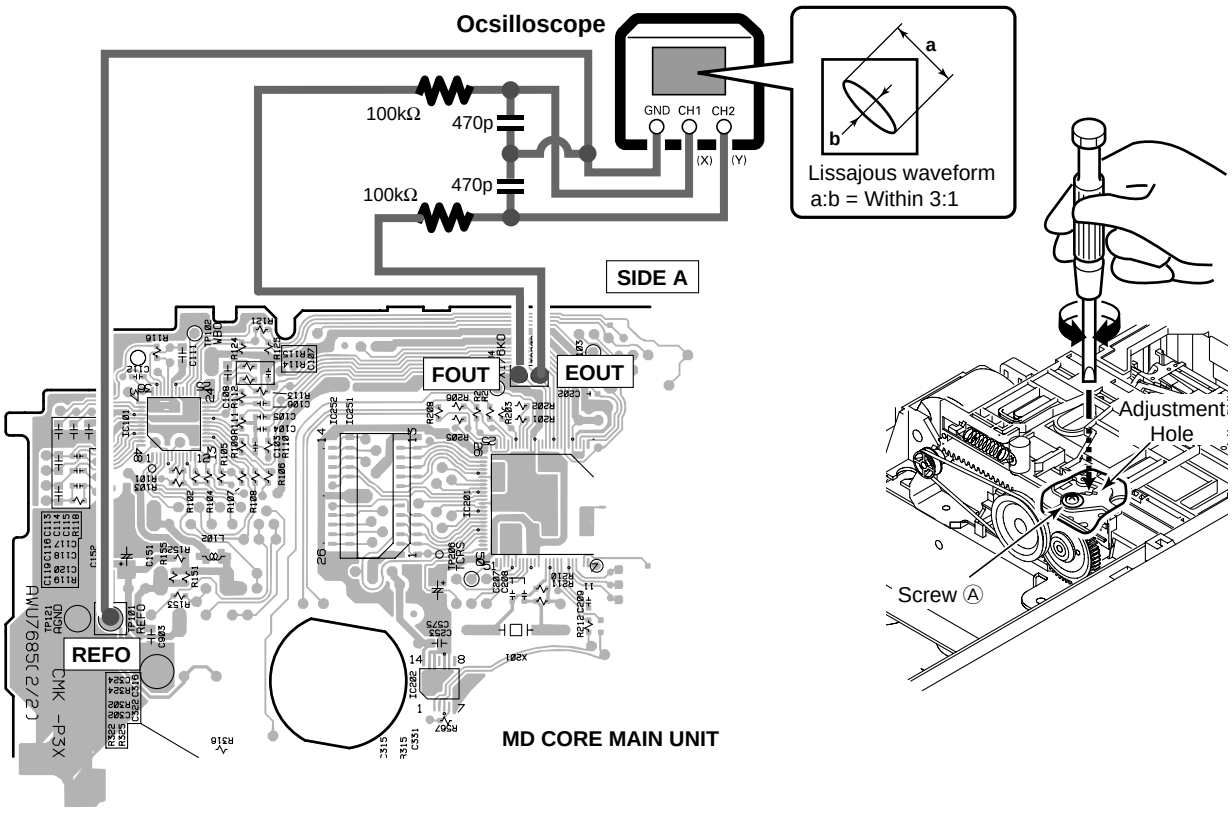
hex=(○○ – □□)	Standard value (mW)
+02 to +04	5.8 ± 0.93
–01 to +01	5.4 ± 0.87
–02 to –04	5.1 ± 0.82

④ Grating Adjustment

Press the ▲ (MD EJECT) key to take out the cartridge of Optical power meter in the state of step 7 of ② , and then it is possible from steps 2 of this item.

Step No.	Operation Keys and Operation Method	Display	Status	Remarks
1	In the Power ON state, selecting MD function,short-circuit the "MECHA and GNG pin".	EJECT	Test mode	
2	Insert the test disc GGF1328 (MMD-212).	LOADING GRT AJST	Grating adjustment state	
3	Press the ►/II(or MD)key.	LON : LAg : GEG :	Playback is started in tracking open state. (The servo is closed only for focus and spindle.)	
4	Connect an oscilloscope according to the following connection diagram and loosen the screw Ⓐ at the side of the adjustment hole. Turn the hole with a screwdriver until the Lissajous waveform becomes as shown in the figure, and then tighten the screw Ⓐ.	GRT AJST	Lissajous waveform a:b = Within 3:1	
5	Press the ■ (STOP) key.		Adjustment end	

Connection Diagram



⑤ Preliminary Adjustment

It is possible from steps 3 of this item in the state of step 5 of ④ .

Step No.	Operation Keys and Operation Method	Display	Status	Remarks
1	In the Power ON state, selecting MD function,short-circuit the "MECHA and GNG pin".	EJECT	Test mode	
2	Insert the test disc GGF1328 (MMD-212).	LOADING GRT AJST		
3	Press the ■ (STOP) key.	tsmOOOOeOO	Return to menu display.	
4	Press the SYSTEM MENU(or MENU) key.(until "deFO AJST" is displayed.)	AUT YOBI	Preliminary adjustment mode	
5	Preliminary adjustment starts when the ►/II(or MD) key is pressed.	HAo : HBo : HEo : | Can't ADJ. COMPLETE	Defective adjustment (problem with the servo system) Adjutment end	
6	Press the ■ (STOP) key.	AUT YOBI	Return to menu display.	
7	Turn off the power of the DVD tuner(or CD tuner).		Data writes to the EEPROM and turns the system power to off. Test mode returns to the normal mode.	

Note: When this adjustment is performed after defocus adjustment has been performed, defocus is returned to the initial state, and defocus adjustment must be performed.

⑥ Normal Adjustment

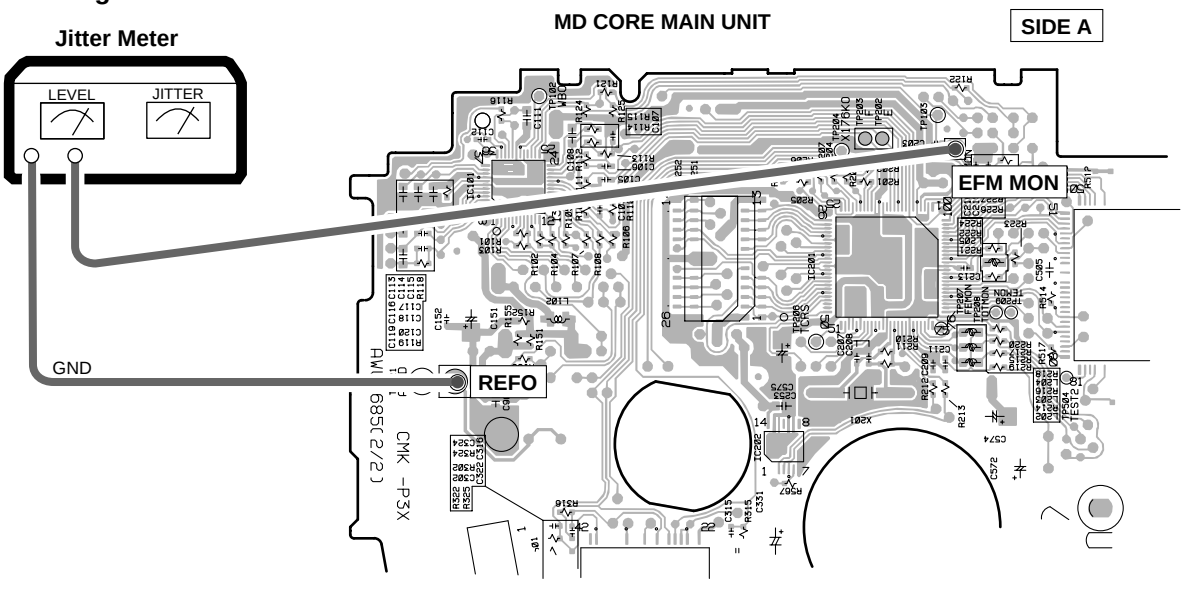
Step No.	Operation Keys and Operation Method	Display	Status	Remarks
1	In the Power ON state, selecting MD function,short-circuit the "MECHA and GNG pin".	EJECT	Test mode	
2	Insert the test disc GGF1328 (MMD-212).	LOADING GRT AJST		
3	Press the SYSTEM MENU(or MENU) key.(until "AUTO AJST" is displayed.)	AUTO AJST	Normal adjustment mode	
4	Normal adjustment starts when the ►/II(or MD) key is pressed.	PEG : LAg : | Can't ADJ. COMPLETE	Defective adjustment (problem with the servo system) Adjutment end	
5	Press the ■ (STOP) key.	AUTO AJST	Return to menu display.	

⑦ Defocus Adjustment

It is possible from steps 3 of this item in the state of step 5 of ⑥ .

Step No.	Operation Keys and Operation Method	Display	Status	Remarks
1	In the Power ON state, selecting MD function,short-circuit the "MECHA and GNG pin".	EJECT	Test mode	
2	Insert the test disc GGF1328 (MMD-212).	LOADING GRT AJST		
3	Press the SYSTEM MENU(or MENU) key.(until "deFO AJST" is displayed.)	deFO AJST		
4	Press the ►/II(or MD)key. of ○○○○ j □□□□ Defocus Value	PEG : FESpp : of000j0150	Defocus mode is entered, and after automatic execution of normal adjustment.	
5	Check the jitter value and end the adjustment when the intermediate jitter value is 29 nsec or less.			
6	Press the ● (REC)of main unit key.	of+04 j0130	The C1 error with application of a focus offset of about 0.4µm on the + side is displayed. The jitter value (J+) at this time is recorded.	
7	Press the ● (REC)of main unit key.	of-04 j0120	The C1 error with application of a focus offset of about 0.4µm on the – side is displayed. The jitter value (J–) at this time is recorded.	
8	When J+ is larger than J-, press the ● (REC) of the main unit key when the focus offset is applied up to +0.4µm. (Do nothig when J- is larger than J+.)	of+04 j0130		
9	Change the value with ◄◄ and ►► keys until the value becomes the same.	of+04 j0132 of+03 j0125 of+02 j0120	When the smaller offset of the jitter value has been corrected mistakenly, press the ENTER(or SET) key and return to step 4.	
10	Press the ►/II(or MD)key.	COMPLETE	The mean value of the changed set value and the offset of the other setting limit is written into the EEPROM as the compensation offset.	
11	Turn off the power of the DVD tuner(or CD tuner).	Good Bye	Release from the test mode.	

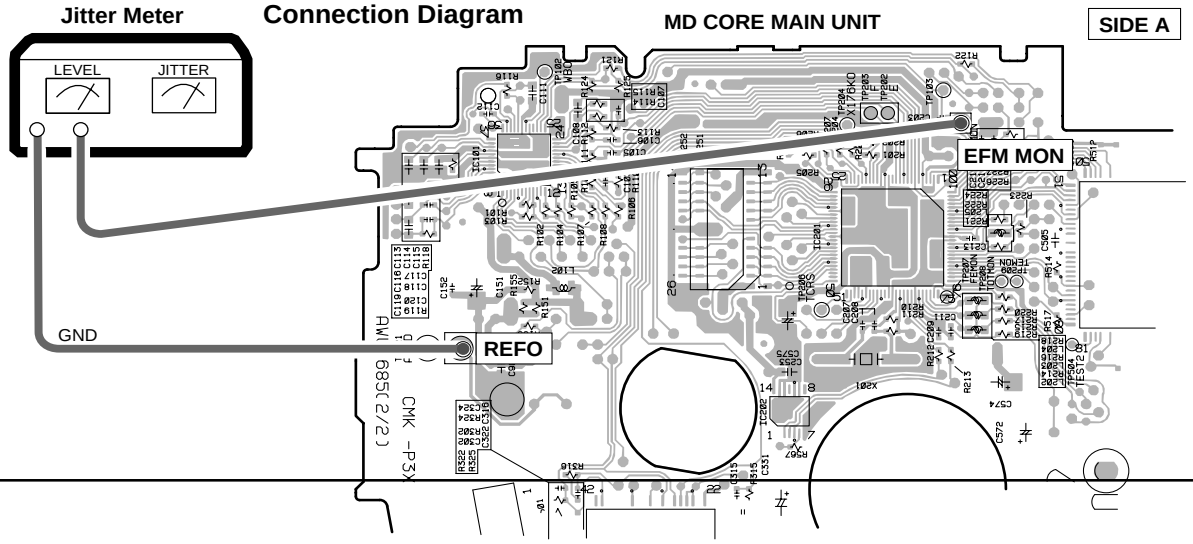
Connection Diagram



⑧ Jitter/C1 Error Check at the time of Playback

Step No.	Operation Keys and Operation Method	Display	Status	Remarks
1	In the Power ON state, selecting MD function,short-circuit the "MECHA and GNG pin".	EJECT	Test mode	
2	Insert the test disc GGF1328 (MMD-212).	LOADING GRT AJST		
3	Perform "⑥ Normal Adjustment" (steps 3 to 5).	AUTO AJST		
4	Press the ● (REC)of the main unit key.	TEST PLAY	TEST PLAY mode	
5	Press the ENTER(or SET) key and display the inner "0050" circumference address.	ADRES 0050		
6	Press the ►/II(or MD)key and display the C1 error for the inner circumference.	a0050 c0015	Check that the jitter value meets the standard value of the following table. **GGF1328 (MMD-212) jitter value** Inner circumference: 31 nsec or less Intermediate circumference: 29 nsec or less Outer circumference: 29 nsec or less	
7	Press the SYSTEM DISP(or DISP)key.	A0062 c0013 AVE. c0012	Seven data are acquired, the largest and the smallest value are discarded, and fixed display is made for the mean value of the remaining five data. Check that this value is **200** or less.	
8	Press the SYSTEM DISP(or DISP) key.	a006F c0017	The fixed display of the C1 error is enabled.	
9	Press the ■ (STOP) key.	TEST PLAY		
10	Press the ENTER(or SET)key and display the inner circumference address.	ADRES 0050		Intermediate and outer circumference may be omitted.
11	Press the ● (REC)of the main unit key and display the intermediate circumference address. Perform steps 6 to 9 in this condition.	ADRES 03C0 a03C0 c0009 TEST PLAY		
12	Press the ENTER(or SET)key and display the inner circumference address.	ADRES 0050		
13	Press the ● (REC)of the main unit key twice to display the outer circumference address. Perform steps 6 to 9 in this condition.	ADRES 0700 a0700 c0008 TEST PLAY		
14	Press the ▲ (MD EJECT) key, eject the test disc GGF1328 (MMD-212), and insert TGYS1 (or MMD-110).	EJECT LOADING GRT AJST		
15	Perform steps 3 to 13 and check the jitter/C1 error with the test disc TGYS1 (or MMD-110).	a0062 c0009 a03d2 c0007 a0712 c0006	Check that the jitter value meets the standard value of the following table. **TGYS1 (or MMD-110) jitter value** Inner circumference: 29 nsec or less Intermediate circumference: 27 nsec or less Outer circumference: 27 nsec or less	
16	Press the ▲ (MD EJECT) key.	EJECT	The test disc TGYS1 (or MMD-110) is ejected.	
17	Turn off the power of the DVD tuner(or CD tuner).	Good Bye	Release from the test mode.	

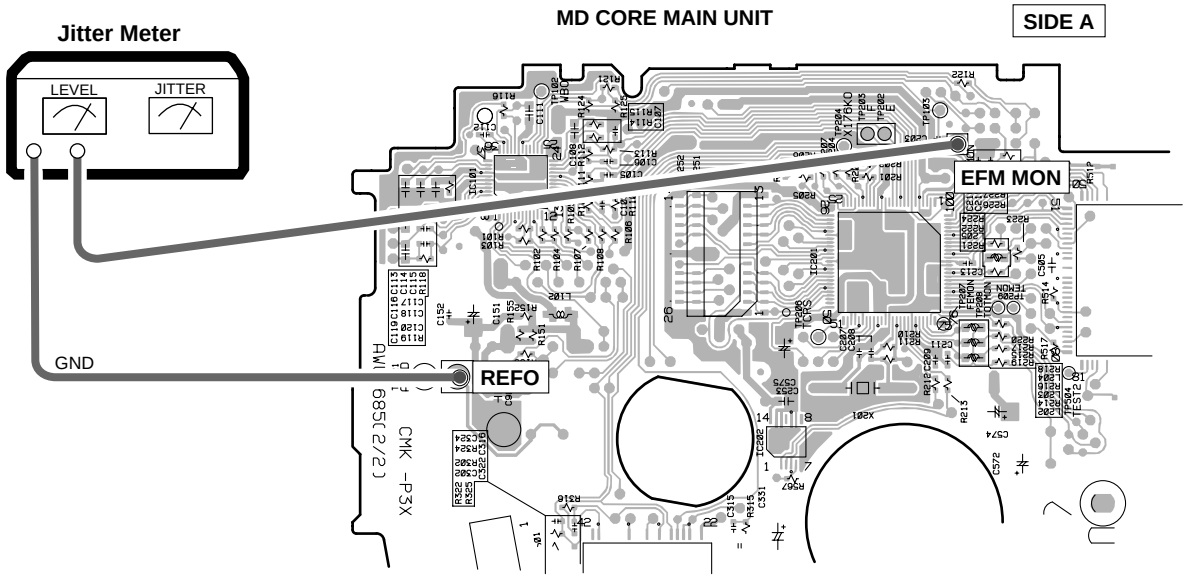
Connection Diagram



⑨ Jitter/C1 Error Check at the time of Recording/Playback

Step No.	Operation Keys and Operation Method	Display	Status	Remarks
1	In the Power ON state, selecting MD function,short-circuit the "MECHA and GNG pin".	EJECT	Test mode	
2	Insert the test disc GGF1277 (or MMD-317).	LOADING GRT AJST		
3	Perform "⑤ Normal Adjustment" (steps 3 to 5).	AUTO AJST		
4	Press the ● (REC)of the main unit key twice.	TEST REC	TEST REC mode	
5	Press the ENTER(or SET) key and display the inner "0050" circumference address.	a0050 pw0D		
6	When the key is pressed, TEST REC starts, and when 25 addresses or more have been sent, stop by pressing the ►/II(or MD) key.	a0069 pw0D TEST REC	**Note:** When the initial address (0050) part of the inner circumference (or intermediate/outer circumference) has been used 1000 times or more, press the ►► key and shift the address by 10 hex. (The address is shifted (up to 10 times) according to the use frequency of the disc.)	Intermediate and outer circumference may be omitted.
7	Press the SET key and display the inner circumference address.	a0050 pw0D		
8	Press the ● (REC)of the main unit key and display the intermediate circumference.	a03C0 pw0D		
9	Perform step 6.	a03D9 pw0D TEST REC		
10	Press the ENTER(or SET) key and display the inner circumference address.	a0050 pw0D		
11	Press the ● (REC)of the main unit key twice and display the outer circumference address.	a0700 pw0D		
12	Perform step 6.	a0719 pw0D TEST REC		
13	Press the ● (REC)of the main unit key.	TEST PLAY	TEST PLAY mode	
14	Perform steps 5 to 13 of " ⑧ Jitter/C1 Error Check at the time of Playback". At the time of self-recording, wait for seven addresses after TEST PLAY start, and then press the SYSTEM DISP(or DISP) key and enter into mean value mode. (Good recording may not be possible for several addresses at the beginning.)	a0069 c0009 a03D9 c0007 a0719 c0006	Check that the jitter/C1 error at the inner/intermediate/outer circumference of GGF1277, and check that the jitter value satisfies the standard value of the following table. **GGF1277 jitter value** Inner circumference: 33 nsec or less Intermediate circumference: 31 nsec or less Outer circumference: 31 nsec or less	
15	Press the ▲ (MD EJECT) key.	EJECT	The test disc (GGF1277) is ejected.	
16	Turn off the power of the DVD tuner(or CD tuner).	Good Bye	Release from the test mode.	

Connection Diagram



7. GENERAL INFORMATION

7.1 DIAGNOSIS

7.1.1 SINGLE OPERATION MODE

■ How to enter the single operation mode

1. Connect part Ⓐ of the PRI ASSY [W108 and W109], short-circuit . (Refer to Fig. 6-1)
2. AC power cord to connect.
3. Short-circuit the "P-ON" pin and "GND" pin.

■ Key operation in the single operation mode

[REC]	: To record	MD key
[PLAY]	: To playback	
[STOP]	: To stop the recording and playing	
[EJECT]	: To eject	
[INPUT]	: To switch the input in the recording mode (Digital/Analog)	
[+]	: To search track forward	
[–]	: To search track reverse	
[FF]	: To forward	
[REV]	: To reverse	

■ About the recording input switch

Recording input is able to switch with the "INPUT" key. Digital and analog are selected alternately whenever press the "INPUT" key. Initial value is the Digital input mode.

Note:

(1) Recording input can switch only during REC PAUSE.
(2) Blue LED of the MD flashes in the single operation mode.
(3) It cannot enter the adjustment mode of the mechanism unit in the single operation mode.
(4) REC LED Emitting Diode is as follows.
REC PAUSE : Blink lighting
REC PLAY : Lighting
D-in UNLOCK : Early lighting
except Putting out lights.

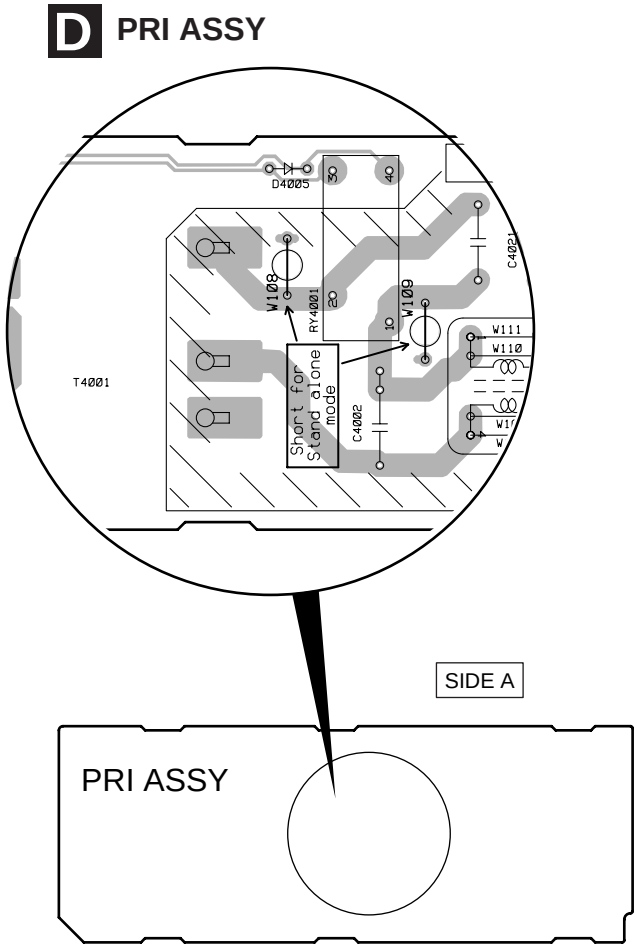
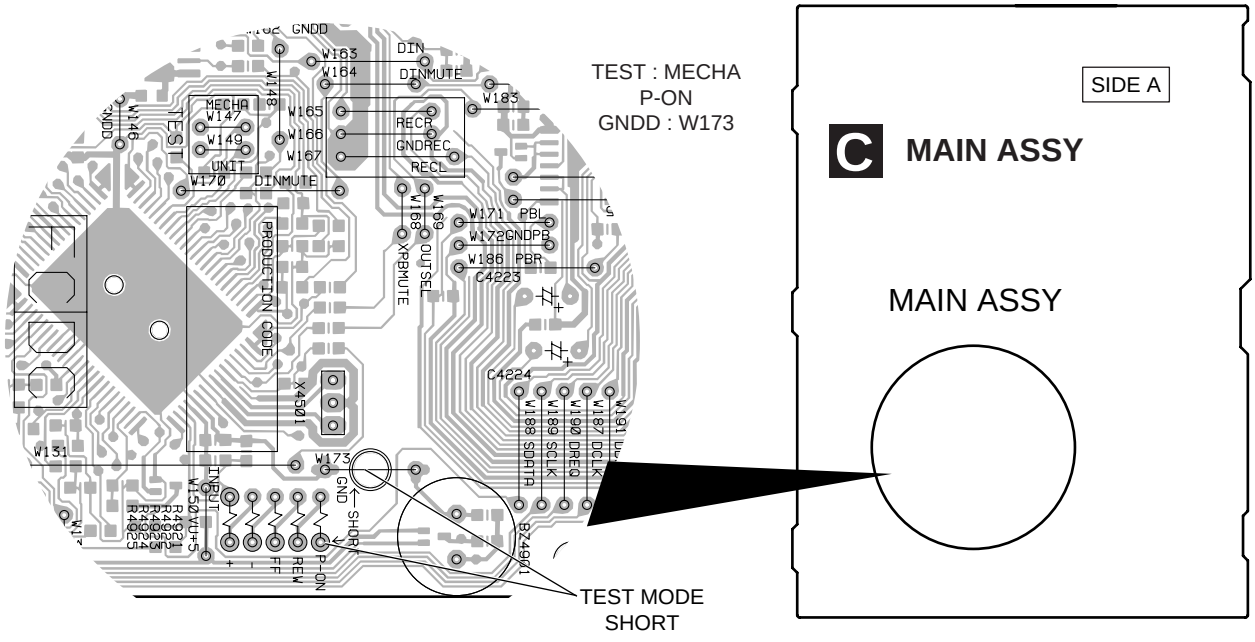


Fig. 6-1

■ Test Point

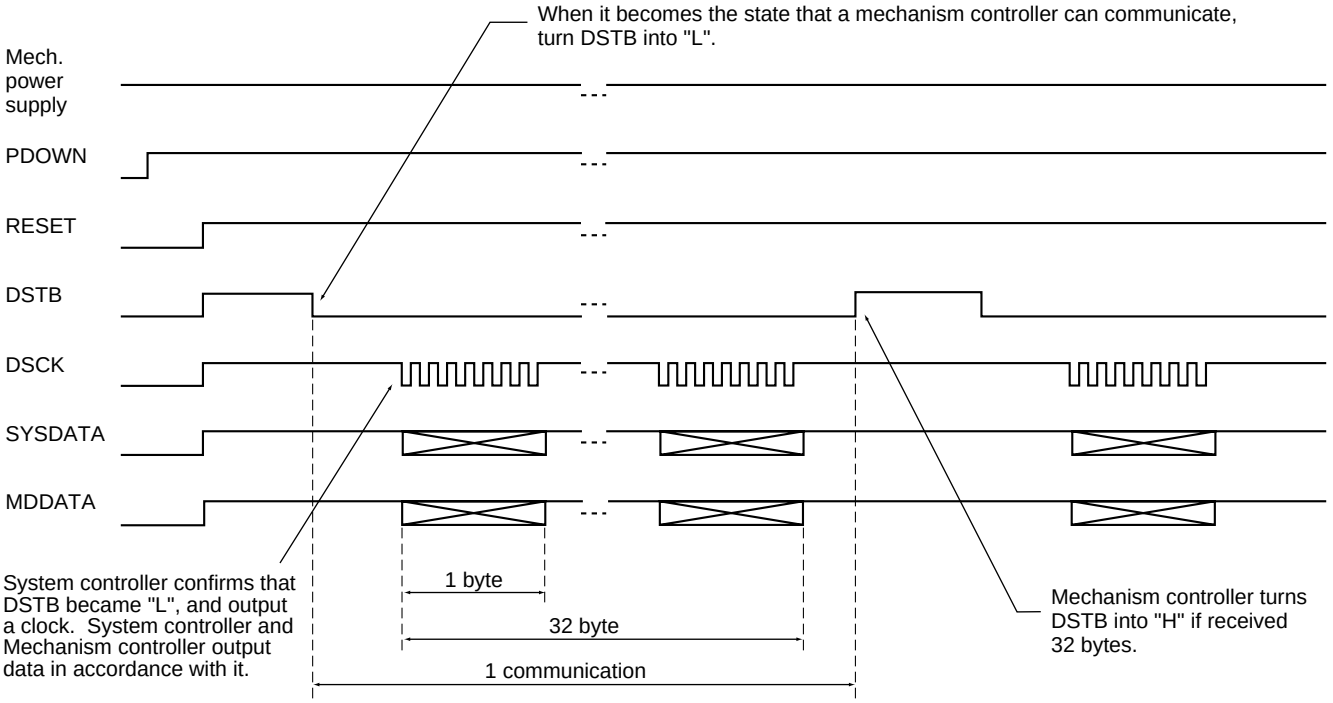


7.1.2 POWER ON SEQUENCE

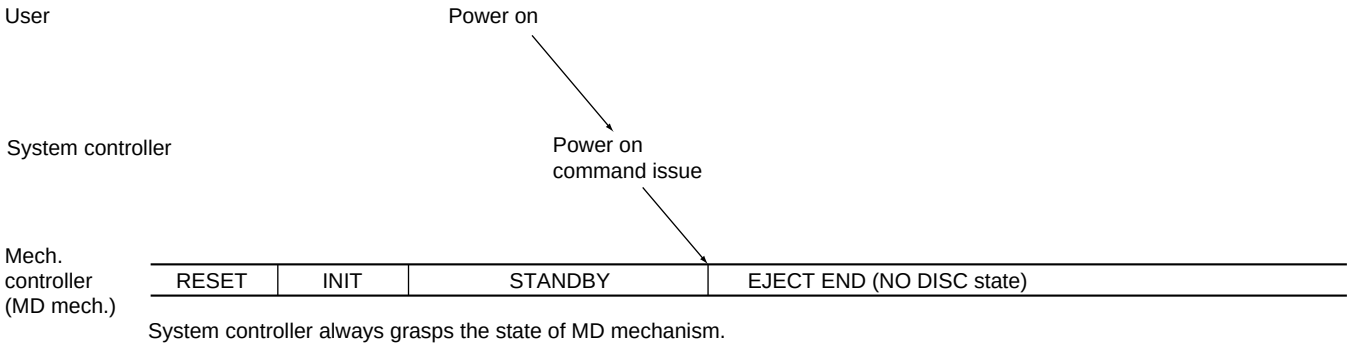
Outline

- When MD mechanism is normal, an operation of MD is decided whether communication is done normally.
  When MD mechanism does not perform a correct operation, first confirm waveform of communication. (Refere to step 1.)
- The command that System controller transfers please refer to 4 from step 2.

1. Reset and communication

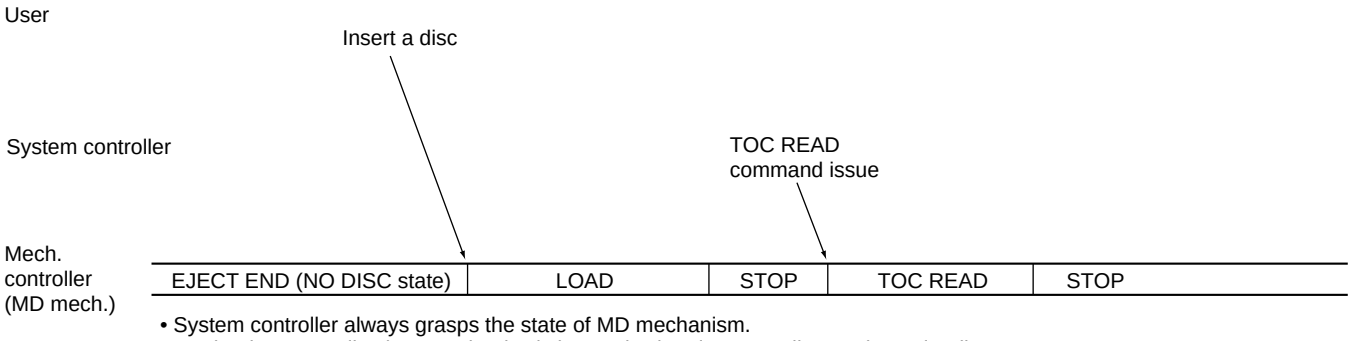


2. Power ON



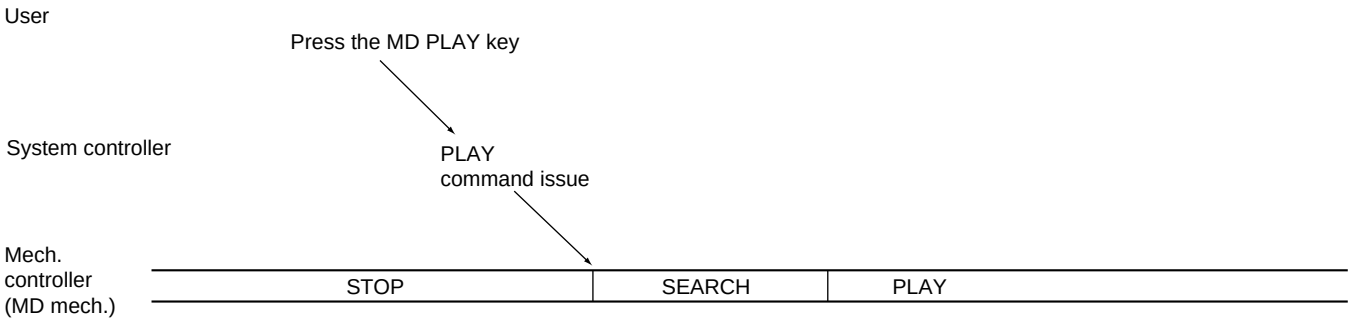
System controller always grasps the state of MD mechanism.

3. Disc insertion and TOC READ



- System controller always grasps the state of MD mechanism.
- Mechanism controller (MD mechanism) detects it when inserts a disc, and start loading.
- When do not perform a disc loading, it cannot conclude with defectiveness of MD Mechanism immediately. Because when communication between System controller and mecanism controller does not complete, do not perform a disc loading either.

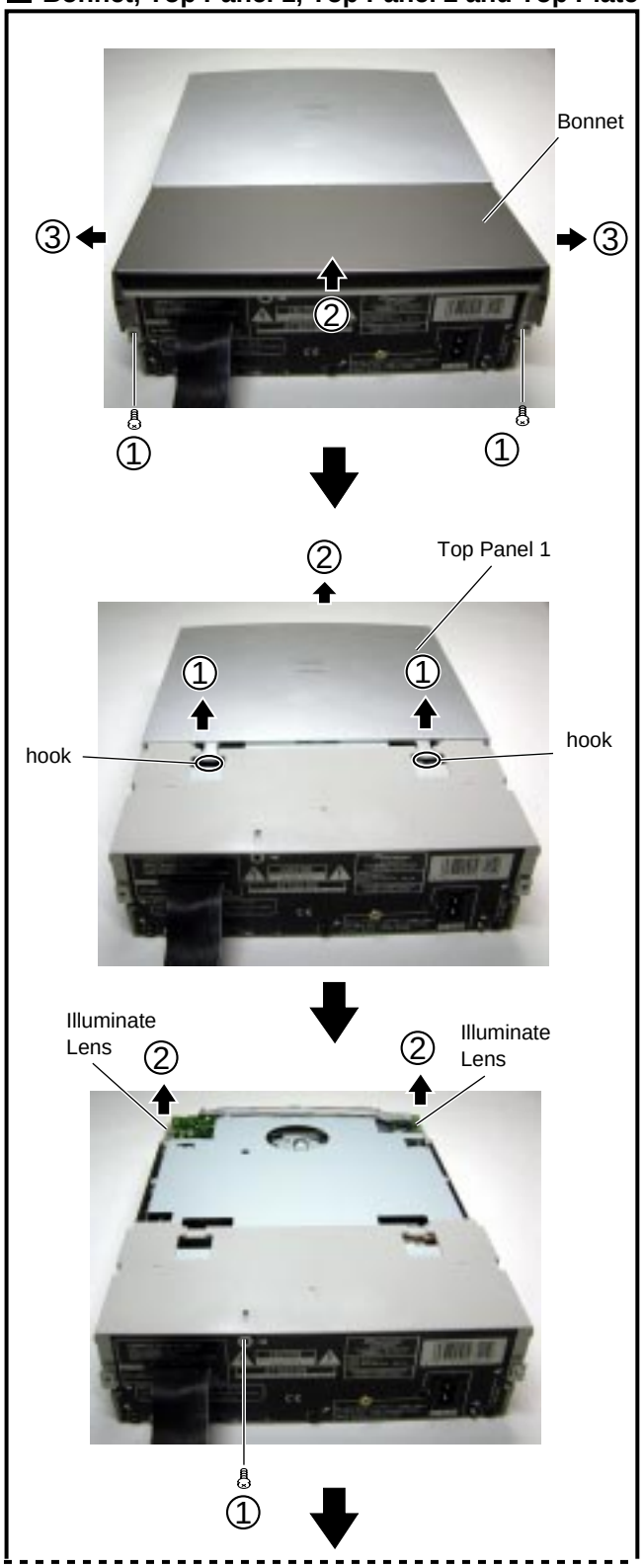
4. PLAY

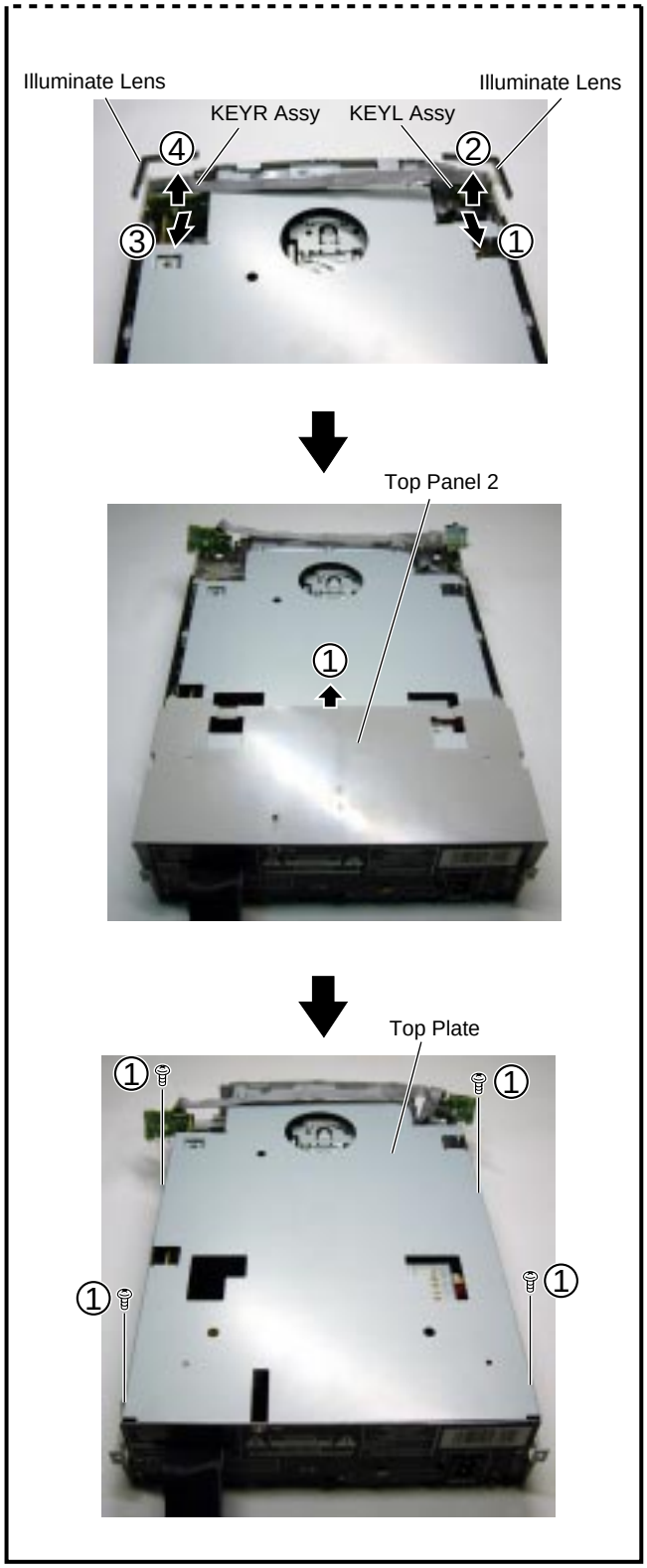


- System controller always grasps the state of MD mechanism.

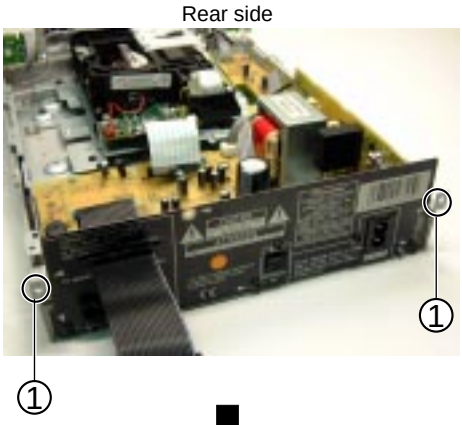
7.1.3 DISASSEMBLY

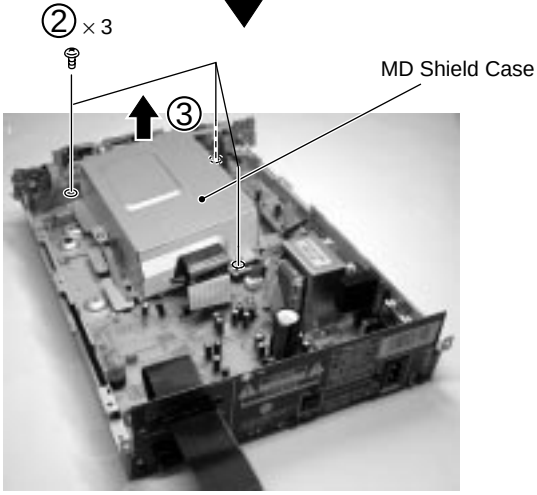
■ Bonnet, Top Panel 1, Top Panel 2 and Top Plate

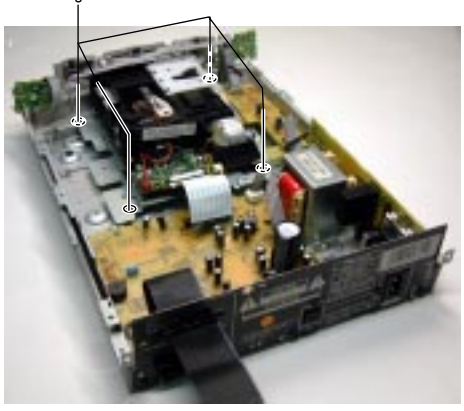


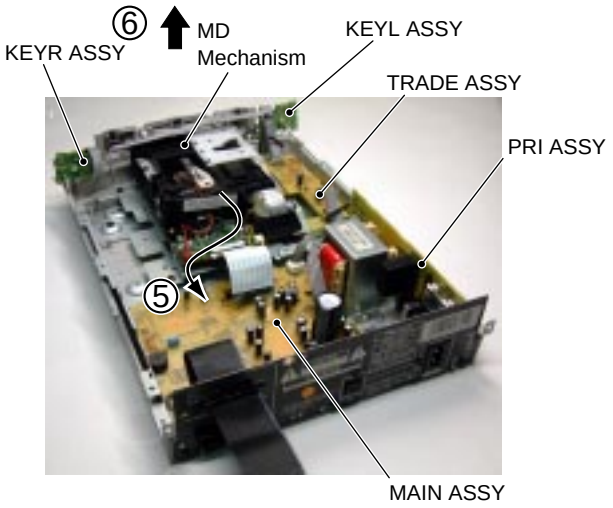


MD Shhield and MD Mechanism







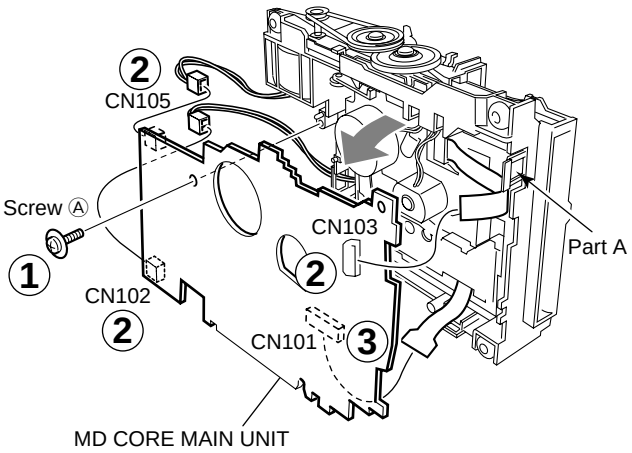


Go to MD Mechanism Assy

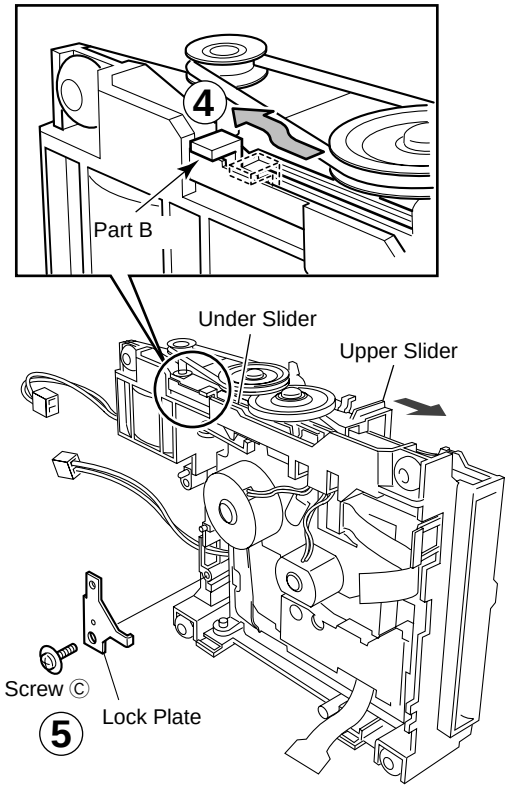
MD Mechanism Assy

• Removal of the MD Mechanism Assy

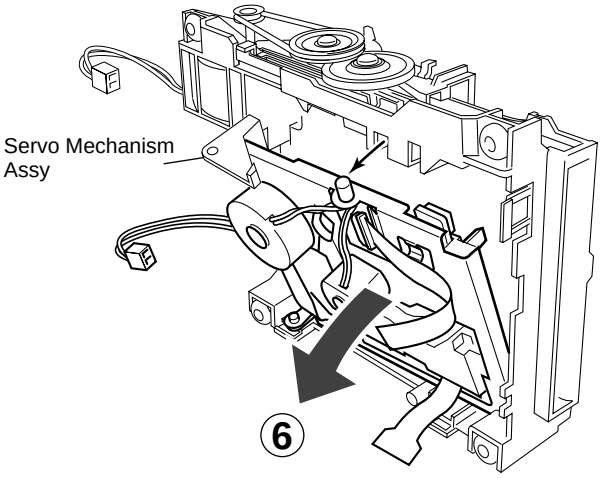
① Remove a screw Ⓐ.
② Disconnect the connectors (CN102, CN103 and CN105), open the hook of part A, and tilt the upper side of the MD CORE MAIN UNIT to the front.
③ Disconnect the connector (CN101) at the rear of the MD CORE MAIN UNIT and remove the MD CORE MAIN UNIT.



④ Shift part B to the position shown in the figure while raising the Under Slider. (At the same time, the Upper Slider moves to the front.)
⑤ Remove the Lock Plate. (One screw Ⓒ)



⑥ Remove the Servo Mechanism Assy.

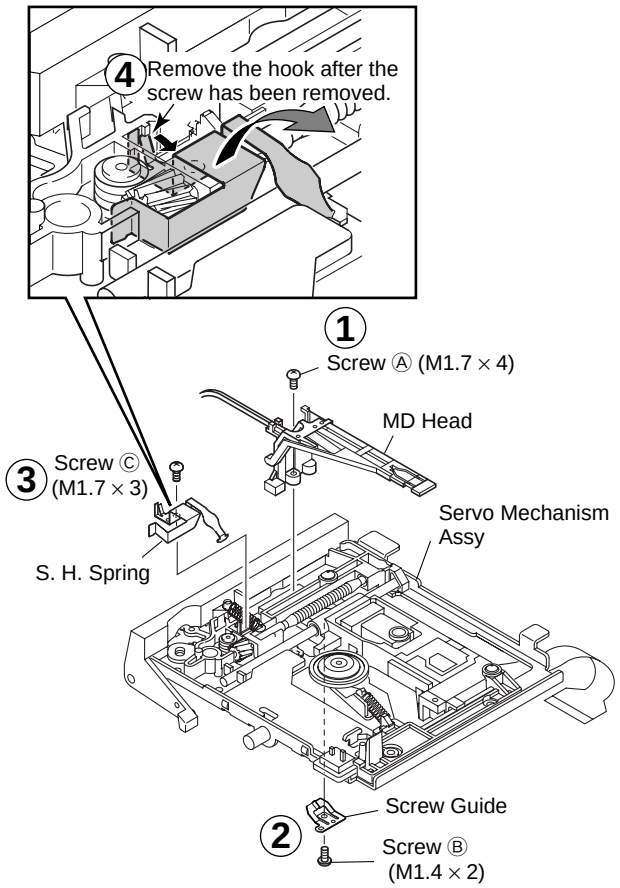


• Caution for the time of installation of the servo mechanism assy

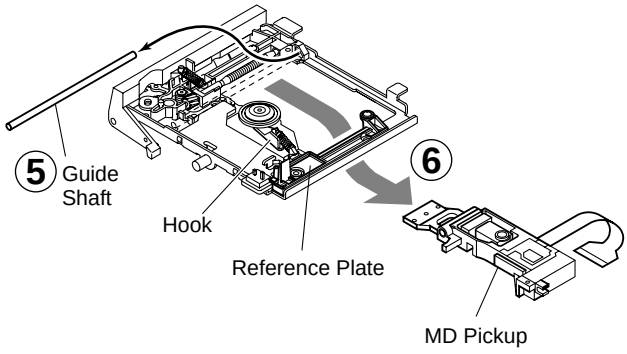
Move the MD Pickup to the innermost circumference.
The Servo Mechanism Assy is not installed other than the innermost circumference.

• Removal of the MD Pickup

① Remove the MD Head. (One screw Ⓐ)
② Remove the Screw Guide at the lower side of the MD Pickup. (One screw Ⓑ)
③ Remove the S. H. Spring. (One screw Ⓒ)
④ Remove the hook of the S. H. Spring as shown in the figure.



⑤ Raise the left side of the Guide Shaft and pull it out to the left.
⑥ Remove the MD Pickup. (With the front facing down, remove it to the front. At this time, the MD Pickup can be removed more easily when the Reference Plate is removed.)

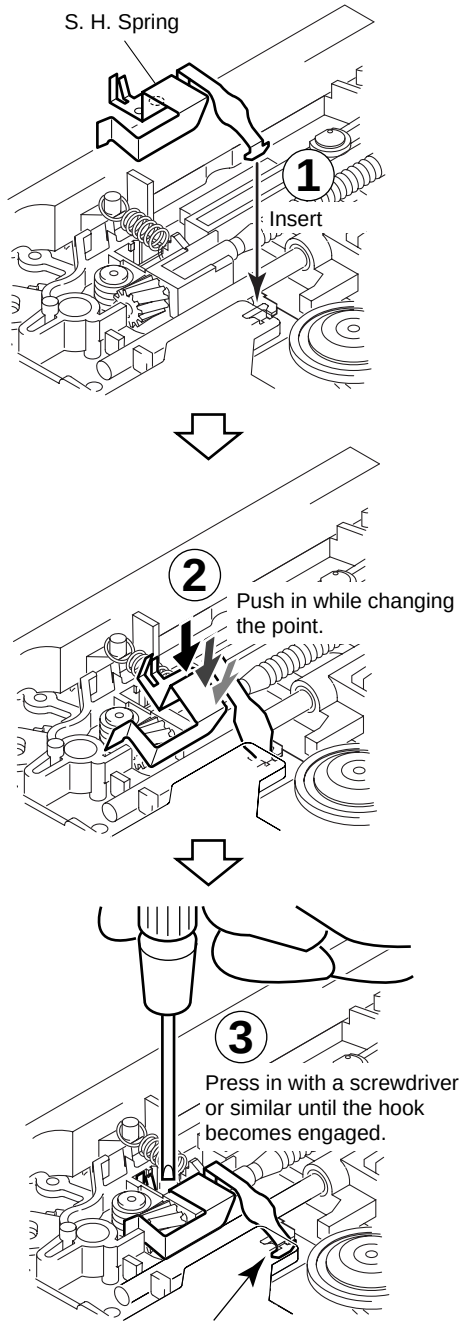


• MD Pickup Installation

Perform installation in reverse order of the removal. (Please use care as the MD Head mounting screw can be crushed easily.
MD Head mounting screw tightening torque: 1.1 kg • cm

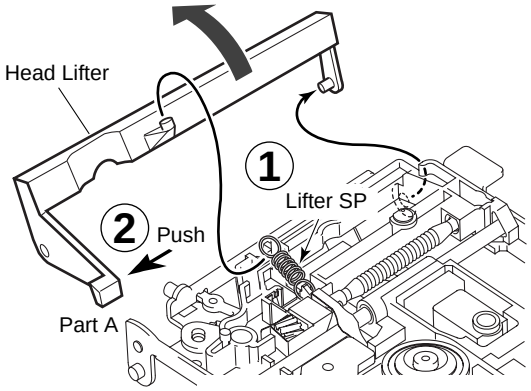
When the Reference Plate has been removed, confirm that the hook is engaged with the shaft of the spindle motor. (Take care that the mounting reference boss does not ride up.)

• S. H. Spring Installation



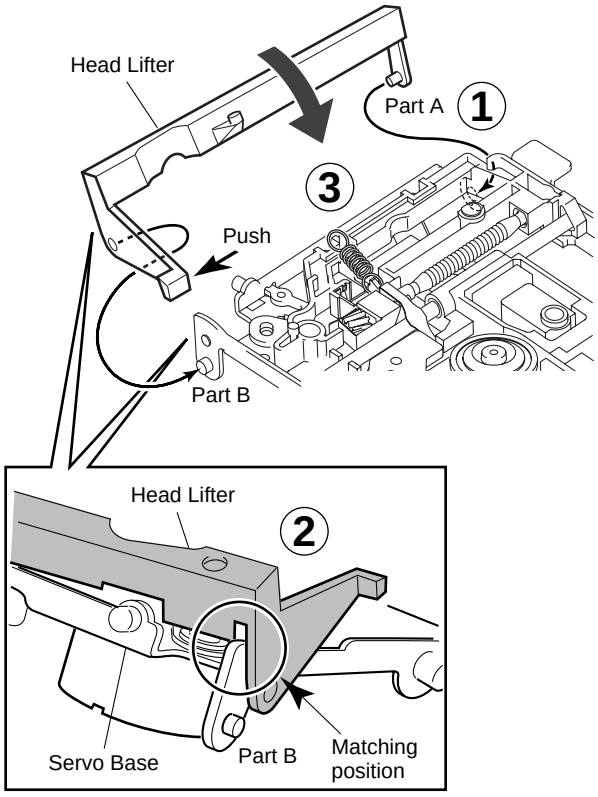
• Removal of the Head Lifter

① Remove the Lifter SP.
② Tilt the Head Lifter to the rear and push part A to disengage it.



• Head Lifter Installation

① Install part A in the Servo Base with the Head Lifter tilted to the back.
② Match the Head Lifter and the Servo Base as shown in the figure, and then engage part B.
③ While holding part B with your hand, tilt the Head Lifter to the front and install the Lifter SP.



7.2 IC

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

■ PDG265A [MAIN ASSY (2/2) : IC4501]

• System Control U-COM

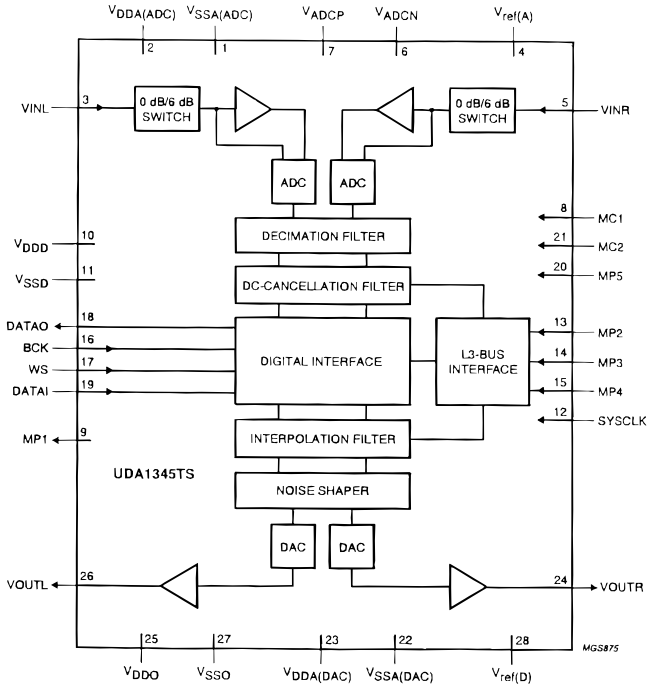
No.	FUCTION	PIN NAME	I/O	NOTE	ACTIVE
1	PF3	D.MUTE	O	DIN MUTE H: MUTE	H
2	PF4	(NC)	O		
3	PF5	(NC)	O		
4	PF6	(NC)	O		
5	PF7	(NC)	O		
6	PD0	TEST	I	MECHA TEST MODE Input	L
7	PD1	TESTU	I	UNIT TEST MODE Input	L
8	PD2	CHARA	I	CHARACTER Exist or Not (types) input L : Chara. exist	
9	PD3	(NC)	O		
10	PD4	COPOW	O	Codec Power control	H
11	PD5	(NC)	O		
12	PD6	(NC)	O		
13	PD7	(NC)	O		
14	PC0	(NC)	O	big current port (12mA)	
15	PC1	(NC)	O		H
16	PC2	LED2	O	REC big current port (12mA)	H
17	PC3	(NC)	O		H
18	PC4	(NC)	O		H
19	PC5	DIM(MID)	O	H : light L : dark	
20	PC6	DIM(HIGH)	O	H : H : L :	
21	PC7	(NC)	O	big current port (12mA)	
22	PH0	M.RST	O	MD MECHANISM control Rest Input	L
23	PH1	M.MUTE	I	MD MECHANISM control MUTE request Input	L
24	PH2	DSTB	I	MD MECHANISM control communication request Input	
25	PH3	P.DOWN	O	MD MECHANISM control power down detection output	L
26	PH4	(NC)	O		
27	PH5	XPBMUTE	O	MD PLAYBACK output	L
28	PH6	(NC)	O		
29	PH7	OUTSEL	O	PLAYBACK SELECT output L : MD H: other	
30	RST	RESET	I	RESET	
31	EXTAL	EXTAL	I	input terminal for ceramic oscillator device (10MHz)	-
32	XTAL	XTAL	O	output terminal for ceramic oscillator device	-
33	Vss	VSS	-		-
34	PE6	(NC)	O		-
35	PE7	(NC)	O		-
36	Avss	AVSS	O		-
37	Avref	AVREF	O		-
38	PA0/AN0	KEY0	I	key detection input 0	-
39	PA1/AN1	KEY1	I	key detection input 1	-
40	PA2/AN2	(NC)	O		-
41	PA3/AN3	(NC)	O		-
42	PA4/AN4	S.DATA	O	system bus data output	-
43	PA5/AN5	S.DATAIN	I	system bus data input	-
44	PA6/AN5	(NC)	O		-
45	PA7/AN7	(NC)	O		-
46	PB0/LAT0	(NC)	O		-
47	PB1/CS0	(NC)	O		
48	PB3/SCK0	DSCK	O	MD MECHANISM control communication clock output	
49	PB3/SI0	MD DATA	I	MD MECHANISM control communication data input	
50	PB4/SC0	SYS DATA	O	MD MECHANISM control communication data output	

No.	FUCTION	PIN NAME	I/O	NOTE	ACTIVE
51	PB5/SCK1PF4	D.CLK	I/O	MD display communication clock output	-
52	PB6/SI1	(NC)	I/O		
53	PB7/SO1	D.DATA	I	MD display communication data output	
54	PE0/EC0	(to GND)	I		
55	PE1/EC1	(to GND)	I		
56	PE2/CINT	(to GND)	I		
57	PE3/NM1	(to GND)	I		
58	PE4/PWM0	(NC)	O	Take care to use also device test terminal	
59	PES/TO/PWM1	(NC)	O	Take care to use also device test terminal	
60	PI0/INT0	S.CLK	I	system bus clock input	
61	PI1/INT1	D.REQ	I	MD display communication request input	
62	PI2/INT2	(NC)	-		
63	PI3/INT3	(NC)	O		
64	PI4	(NC)	-		
65	PI5	(NC)	O		
66	PI6	(NC)	O		
67	PI7	(NC)	O		
68	PG0	(NC)	O		
69	PG1	(NC)	O		
70	PG2	(NC)	O		
71	PG3	(NC)	O		
72	VDD	VDD	-		
73	NC	(NC)	O		
74	PG4	DSTB	O		
75	PG6	(NC)	O		
76	PG6	(NC)	O		
77	PG7	(NC)	O		
78	PF0	(NC)	O		
79	PF1	(NC)	O		
80	PF2	(NC)	O		

■ UDA1345TS/N2 [MD CORE MAIN UNIT : IC401]

• Audio Codec IC

● Block Diagram

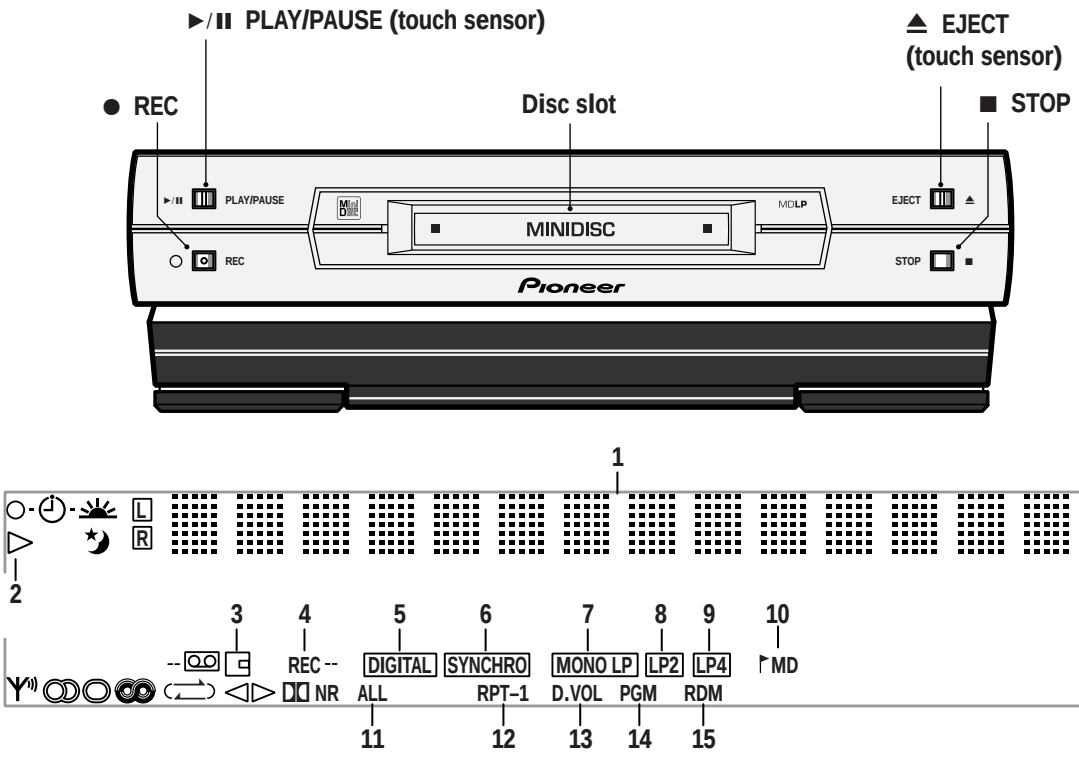


● Pin Function

SYMBOL	PIN	TYPE	DESCRIPTION
$V_{SSA(ADC)}$	1	analog ground pad	ADC analog ground
$V_{DDA(ADC)}$	2	analog supply pad	ADC analog supply voltage
VINL	3	analog input pad	ADC input left
$V_{ref(A)}$	4	analog pad	ADC reference voltage
VINR	5	analog input pad	ADC input right
V_{ADCN}	6	analog pad	ADC negative reference voltage
V_{ADCP}	7	analog pad	ADC positive reference voltage
MC1	8	5 V tolerant digital input pad with internal pull-down pad	mode control 1 (pull-down)
MP1	9	5 V tolerant slew rate controlled digital output pad	multi purpose pin 1
V_{DDD}	10	digital supply pad	digital supply voltage
V_{SSD}	11	digital ground pad	digital ground
SYSCLK	12	5 V tolerant digital Schmitt triggered input pad	system clock 256, 384 or 512f_s
MP2	13	3-level input pad	multi purpose pin 2
MP3	14	5 V tolerant digital Schmitt triggered input pad	multi purpose pin 3
MP4	15	3-level input pad	multi purpose pin 4
BCK	16	5 V tolerant digital Schmitt triggered input pad	bit clock input
WS	17	5 V tolerant digital Schmitt triggered input pad	word select input
DATAO	18	5 V tolerant slew rate controlled digital output pad	data output
DATAI	19	5 V tolerant digital Schmitt triggered input pad	data input
MP5	20	5 V tolerant digital Schmitt triggered input pad	multi purpose pin 5 (pull down)
MC2	21	5 V tolerant digital input pad with internal pull-down pad	mode control 2 (pull-down)
$V_{SSA(DAC)}$	22	analog ground pad	DAC analog ground
$V_{DDA(DAC)}$	23	analog supply pad	DAC analog supply voltage
VOUTR	24	analog output pad	DAC output right
V_{DDO}	25	analog supply pad	operational amplifier supply voltage
VOUTL	26	analog output pad	DAC output left
V_{SSO}	27	analog ground pad	operational amplifier ground
$V_{ref(D)}$	28	analog pad	DAC reference voltage

8. PANEL FACILITIES AND SPECIFICATIONS

Controls and Display(XC-L11)



1 Character display

2 ▷ Lights when an MD is playing, blinks when paused.

3 Lights when the the MD deck is recording, blinks during record-pause.

4 **REC** Lights when recording to an MD.

5 **DIGITAL** Lights when a digital source is selected.

6 **SYNCHRO** Synchro recording.

7 **MONO LP** Lights when recording, or during play-back of a track in MONO LP long-play recording.

8 **LP2** Lights when recording, or during playback of a track in LP2 long-play recording.

9 **LP4** Lights when recording, or during playback of a track in LP4 long-play recording.

10 **MD** Lights when auto mark recording is on .

11 **ALL** Lights when group indexing is switched off.

12 **RPT-1** Lights during one track repeat play .
RPT Lights during all track repeat play .

13 **D. VOL** Lights when the digital volume is at a level other than 0 dB.

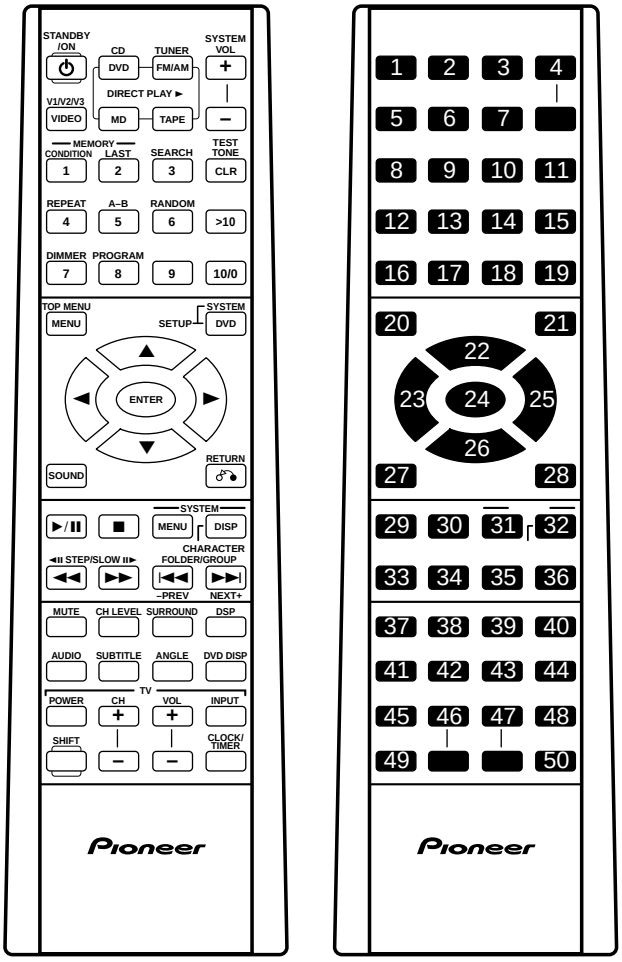
14 **PGM** Lights during program play .

15 **RDM** Lights during random play.

Basic playback controls

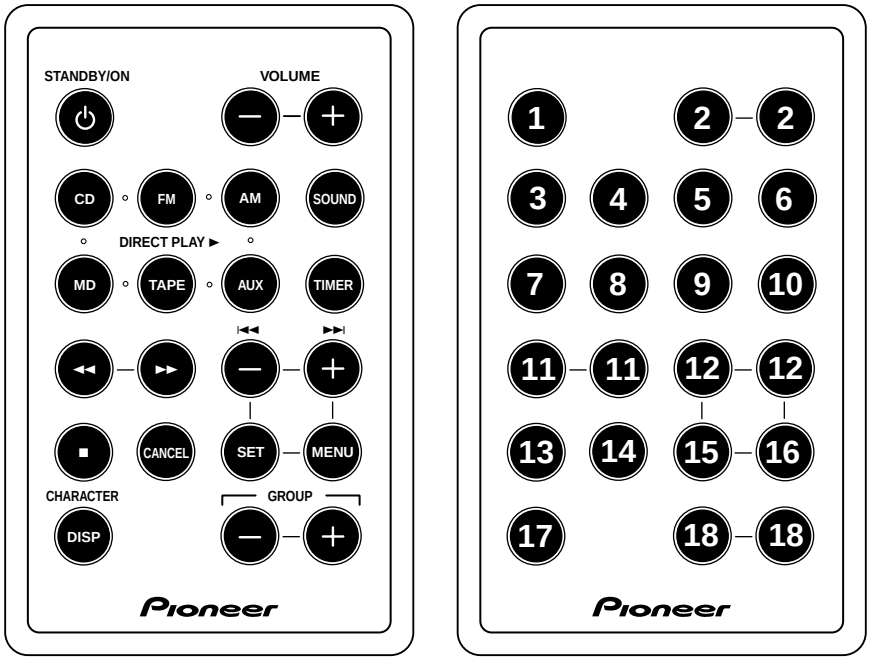
Button	What it does
MD (►/II)	Starts playback or pauses a disc that's playing.
■	Stops playback.
◄◄	Press & hold for fast reverse scanning.
►►	Press & hold for fast forward scanning.
⏮	Skips to the start of the current track, then to previous tracks.
⏭	Skips to the next track.
⏏	Ejects the disc.

Remote Control for DVD Model



1 STANDBY/ON ⏻
2 DVD/CD (DIRECT PLAY ►)
3 TUNER FM/AM (DIRECT PLAY ►)
4 SYSTEM VOL +/–
5 VIDEO V1/V2/V3
6 MD (DIRECT PLAY ►)
7 TAPE (DIRECT PLAY ►)
8 1 | CONDITION
9 2 | LAST
10 3 | SEARCH
11 CLR | TEST TONE
12 4 | REPEAT
13 5 | A–B
14 6 | RANDOM
15 >10 Use to select numbers over 10
16 7 | DIMMER
17 8 | PROGRAM
18 9
19 10/0 Use as 10 or 0
20 MENU | TOP MENU
21 DVD SETUP | SYSTEM SETUP
22 ▲ Cursor up
23 ◄ Cursor left
24 ENTER
25 ► Cursor right
26 ▼ Cursor down
27 SOUND
28 RETURN
29 ►/II
30 ■
31 SYSTEM MENU
32 SYSTEM DISP | CHARACTER
33 ◄◄ | ◄II STEP/SLOW
34 ►► | II► STEP/SLOW
35 I◄◄ | –PREV | FOLDER/GROUP
36 ►►I | +PREV | FOLDER/GROUP
37 MUTE Press to mute/restore the sound
38 CH LEVEL
39 SURROUND
40 DSP
41 AUDIO
42 SUBTITLE
43 ANGLE
44 DVD DISP
45 POWER
46 CH+/–
47 VOL+/–
48 INPUT
49 SHIFT Press to access alternative button functions
50 CLOCK/TIMER

Remote Control for CD Model



The MD menu functions

Playback features accessed via the MD menu are:

PROGRAM - Specify the track order of a disc.

RANDOM PLAY - The recorder plays the tracks in a random order.

REPEAT MODE - Set the current track or disc to repeat play.

PLAY MODE - Limit playback to one group only .

Recording features accessed via the MD menu are:

AUTO MARK - Specify when a new track should be started.

INPUT SELECT - Select either analog - or digital-input recording.

REC MODE - Specify regular stereo, LP2, LP4 or long-play mono recording.

DIGITAL VOLUME - Set the digital recording level .

Editing features accessed via the MD menu are:

ALL ERASE - Delete all tracks on a disc.

COMBINE - Join two tracks together into one new track.

DISC NAME - Give a disc a name that will show up when you load the disc .

DIVIDE - Split a single track into two separate tracks.

GROUP CANCEL - Cancel either one or all of the groups.

GROUP EDIT - Change previously set groups .

GROUP NAME - Name a group .

MOVE - Give a track on the disc a new track number .

NEW GROUP - Make a track grouping .

TRACK ERASE - Delete a track from the disc .

TRACK NAME - Give a track a name that will show up when the track is played .

UNDO - Undo the last edit operation .

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
Wow and flutter ..... Limit of measurement (±0.001% W.PEAK) or less (EIAJ)
Power requirements ..... AC 220- 230V, 50/60 Hz (MYXJ type)
AC 230V, 50/60 Hz (NVXJ type)
Power consumption ..... 11 W
..... (0.9W in standby)
Dimensions ..... 220 (W) x 65 (H) x 313 (D) mm
Weight ..... 2.5 kg

Operating conditions

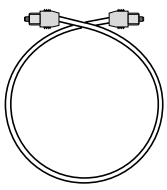
Tempera ture ..... +5C° – +35C°
Humidity ..... 5%–85%(without condensation)

Accessories

Operating instructions 1
Optical digital cord 1
Power cord 1
Warranty card 1

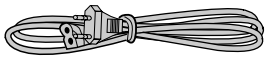
Note: *Specifications and design subject to possible modification without notice, due to improvement.*

Accessories



● Optical digital cord
(RKX1031) (L = 0.5m)

● Power cord
(ADG1154)
(For MYXJ type)



● Power cord
(ADG1156)
(For NVXJ type)