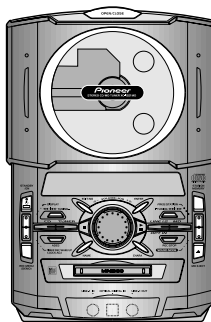


Service Manual

Pioneer



ORDER NO.
RRV2149

CD MD TUNER XC-IS21MD

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

Type	Model	Power Requirement	Remarks
	XC-IS21MD		
ZUCXJ	O	DC power supply from other system	

● This product is a system(s) component.

This product does not function properly when independent; to avoid malfunctions, be sure to connect it to the prescribed system component(s), otherwise damage may result.

Component	System	Service Manual	Remarks
	IS-21MD		
CD MD TUNER	XC-IS21MD	RRV2149	This service manual
STEREO POWER AMPLIFIER	M-IS21	RRV2143	
SPEAKER SYSTEM	S-IS21	RRV2141	

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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.

WARNING

This product contains lead in solder and certain electrical parts contain chemicals which are known to the state of California to cause cancer, birth defects or other reproductive harm.

Health & Safety Code Section 25249.6 – Proposition 65

— 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: 5 mw
WAVELENGTH: 780-785 nm

2. EXPLODED VIEWS AND PARTS LIST

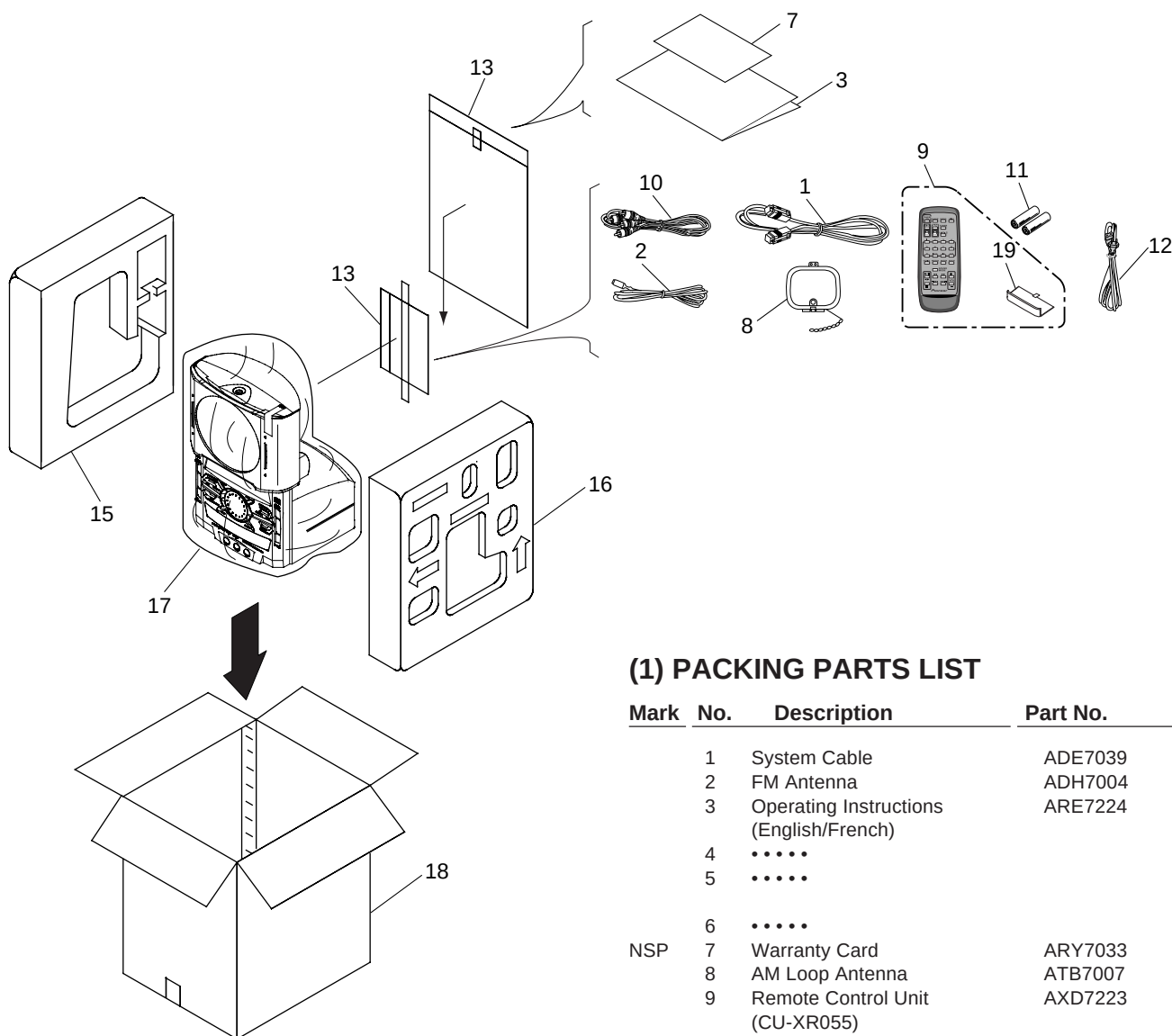
NOTES: ● Parts marked by "NSP" are generally unavailable because they are not in our Master Spare Parts List.

● The Δ 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.

● Screws adjacent to ▼ mark on the product are used for disassembly.

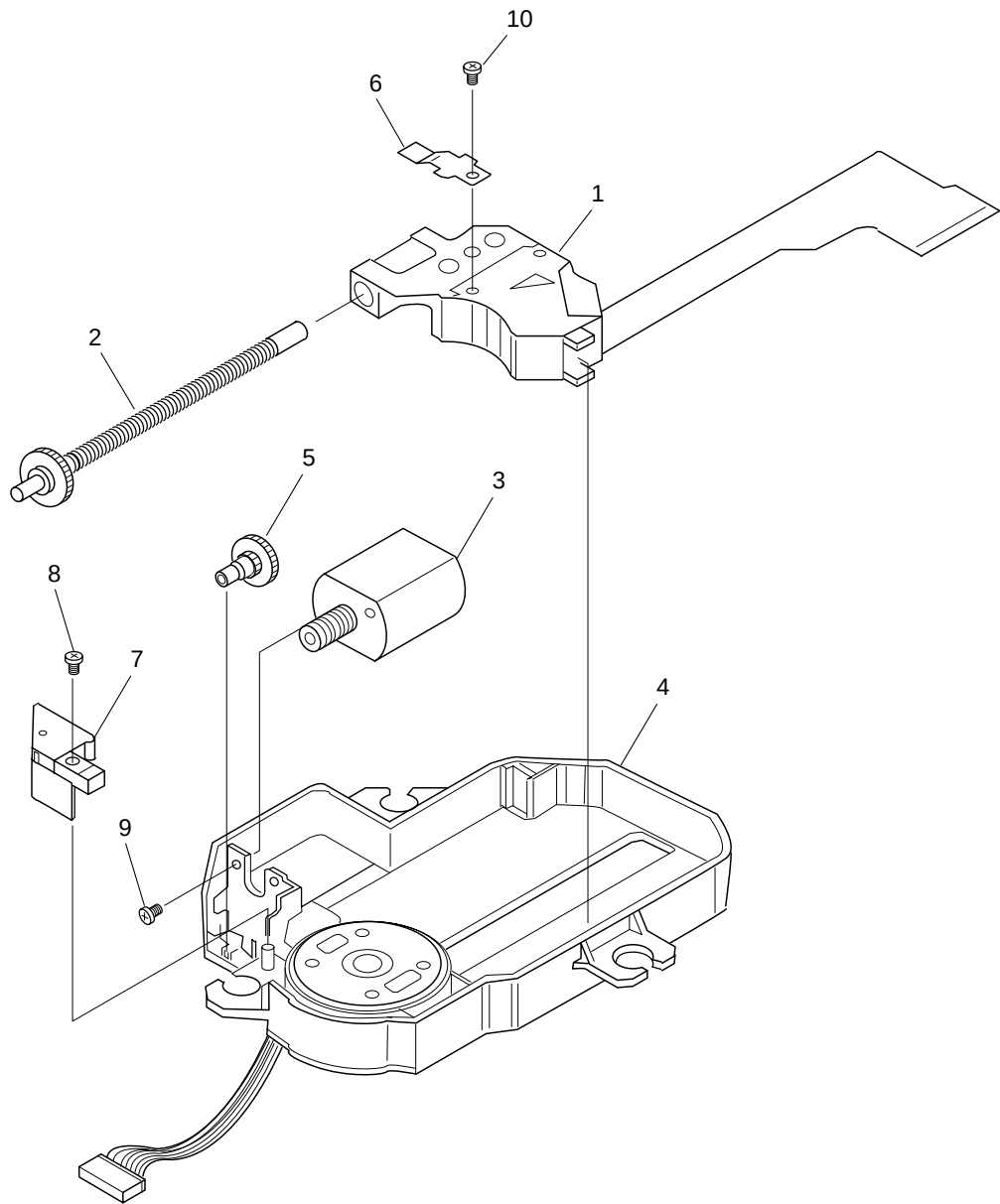
2.1 PACKING



(1) PACKING PARTS LIST

Mark	No.	Description	Part No.
	1	System Cable	ADE7039
	2	FM Antenna	ADH7004
	3	Operating Instructions (English/French)	ARE7224
	4	.....	
	5	.....	
	6	.....	
NSP	7	Warranty Card	ARY7033
	8	AM Loop Antenna	ATB7007
	9	Remote Control Unit (CU-XR055)	AXD7223
	10	RCA Pin- plug Stereo Cable (L= 1.5m)	VDE1052
NSP	11	Dry Cell Batteries(AA/R6)	VEM-013
Δ	12	Power Cord	XDG3007
	13	Polyethylene Bag (0.03 x 230 x 340)	Z21-038
	14	.....	
	15	Side Pad ML	AHA7240
	16	Side Pad MR	AHA7241
	17	Packing Sheet	AHG7053
	18	Packing Case	AHD7755
	19	Battery Cover	AZA7331

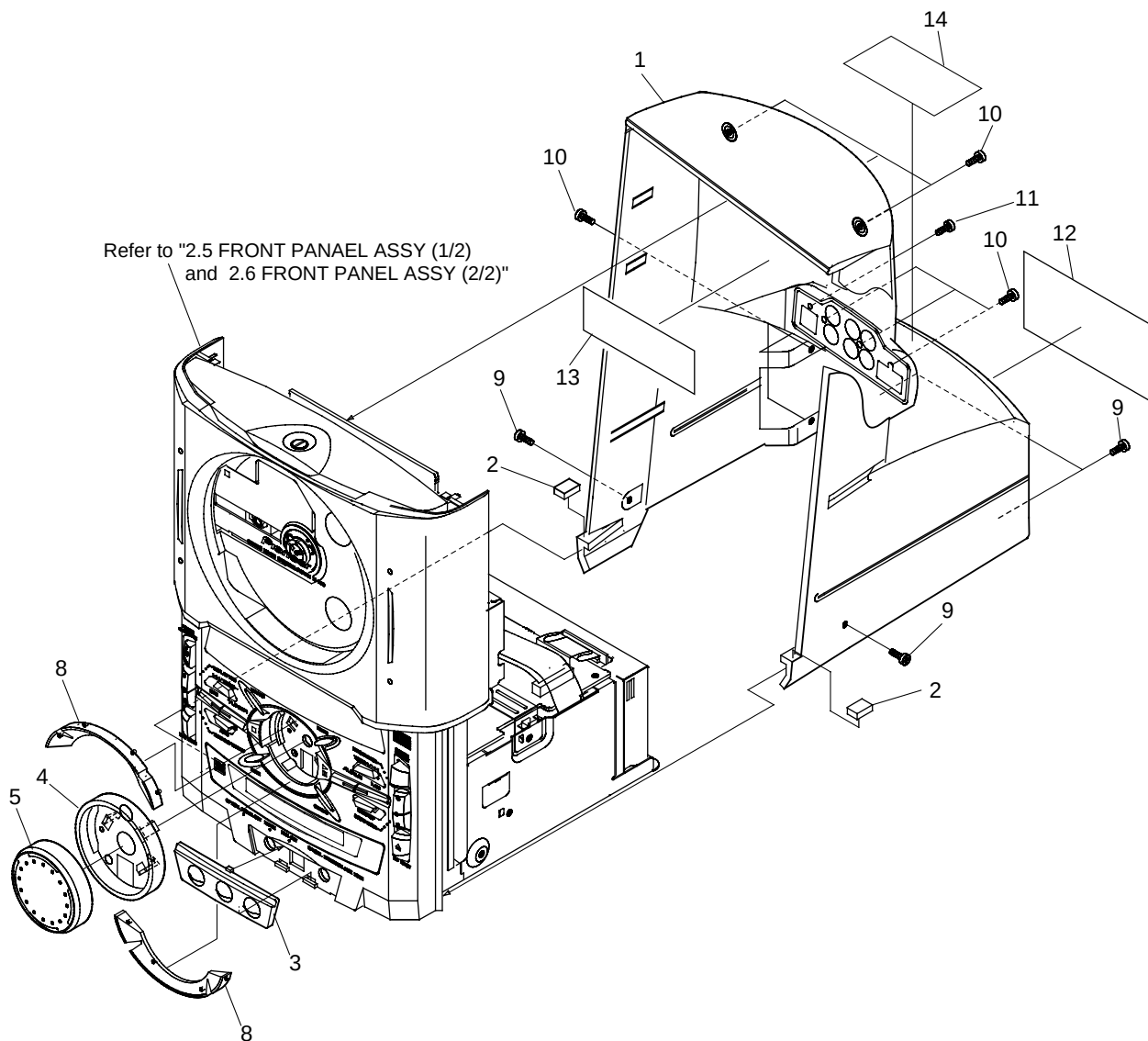
2.2 CD MECHANISM ASSY



● CD MECHANISM ASSY PARTS LIST

Mark	No.	Description	Parts No.
	1	KSS-620A(RP)	8-820-063-(03)
	2	Sled Screw Assy	X-2646-389-(1)
	3	Sled Motor Assy	A-4912-199-(A)
	4	MD Assy	X-2646-482-(1)
	5	Geer BN	2-627-751-(02)
	6	Rack Spring	2-646-912-(01)
	7	Holder	2-646-913-(01)
	8	Tapping Screw	2-646-352-01
	9	Precision Screw	2-627-668-01
	10	Tapping Screw	2-646-358-11

2.3 EXTERIOR (1/2)



(1) EXTERIOR (1/2) PARTS LIST

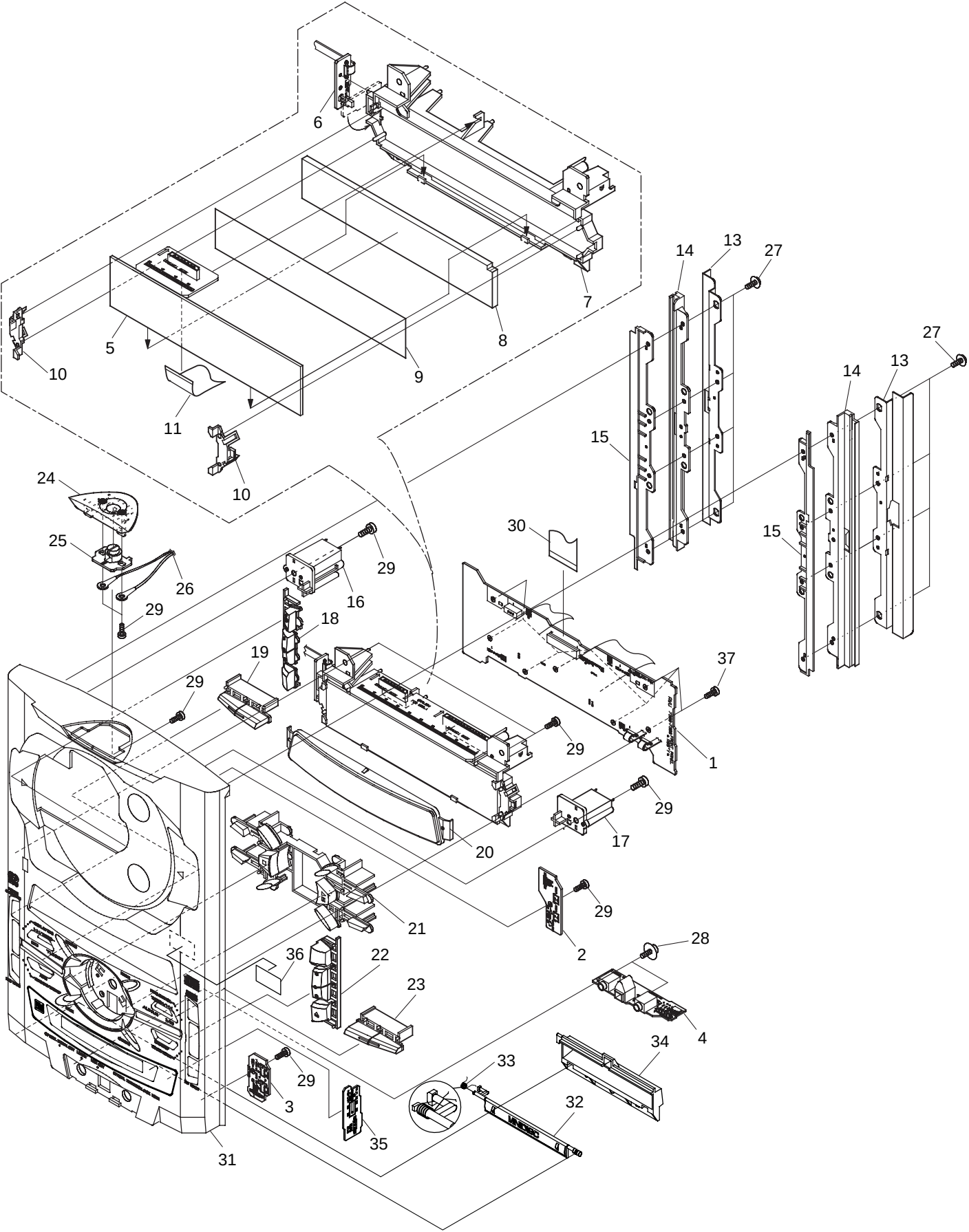
Mark	No.	Description	Parts No.	Mark	No.	Description	Parts No.
	1	Rear Cover	AMC7029		11	Screw	BMZ30P060FZK
	2	Cussion Rubber	AEB7154	NSP	12	Name Label M	AAL7238
	3	Jack Door	AAN7188		13	65 Label	ARW7050
	4	Jog Lens	AAK7651		14	Label M	ARW7065
	5	Jog Knob	AAA7005				
	6	.....					
	7	.....					
	8	Jog Escutcheon	AAK7620				
	9	Screw	BBZ30P080FMC				
	10	Screw	VPZ30P100FMC				



● EXTERIOR (2/2) PARTS LIST

Mark	No.	Description	Parts No.
	1	U- COM ASSY	AWU7331
	2	MD ASSY	AWU7336
	3	AF ASSY	AWU7302
NSP	4	R- TERMINAL ASSY	AWU7317
	5	FM/AM TUNER MODULE	AXQ7065
	6	.....	
	7	.....	
NSP	8	Chassis M	ANA7087
	9	Rear Panel	ANC7735
NSP	10	Shield Plate	ANK7059
	11	Shield Case T	ANK7050
	12	Shield Case B	ANK7051
	13	.....	
	14	.....	
	15	PC Support	DEC1932
NSP	16	Spacer	AEB7092
	17	Rubber Sheet	AEB1111
	18	Leg Assy IS	AEC7202
	19	Locking Card Spacer	VEC1596
NSP	20	PCB Spacer (3 x 6)	AEC7156
	21	Screw	BBZ30P080FMC
	22	Screw	VPZ30P080FZK
	23	Connector Assy 3p	ADX7252
	24	23P F.F.C /30V	ADD7150
NSP	25	TX CONNECT ASSY	AWU7323
	26	30P F.F.C /30V	ADD7135
	27	Float Rubber	REB1328
NSP	28	Sub Chassis MD	ANA7088
	29	Shield Cover MD	ANK7053
NSP	30	MD Mechanism assy	RXA1777
	31	Float Screw	RBA1133
	32	Supporting Mold	AZN7799
	33	Screw	BBZ30P180FMC

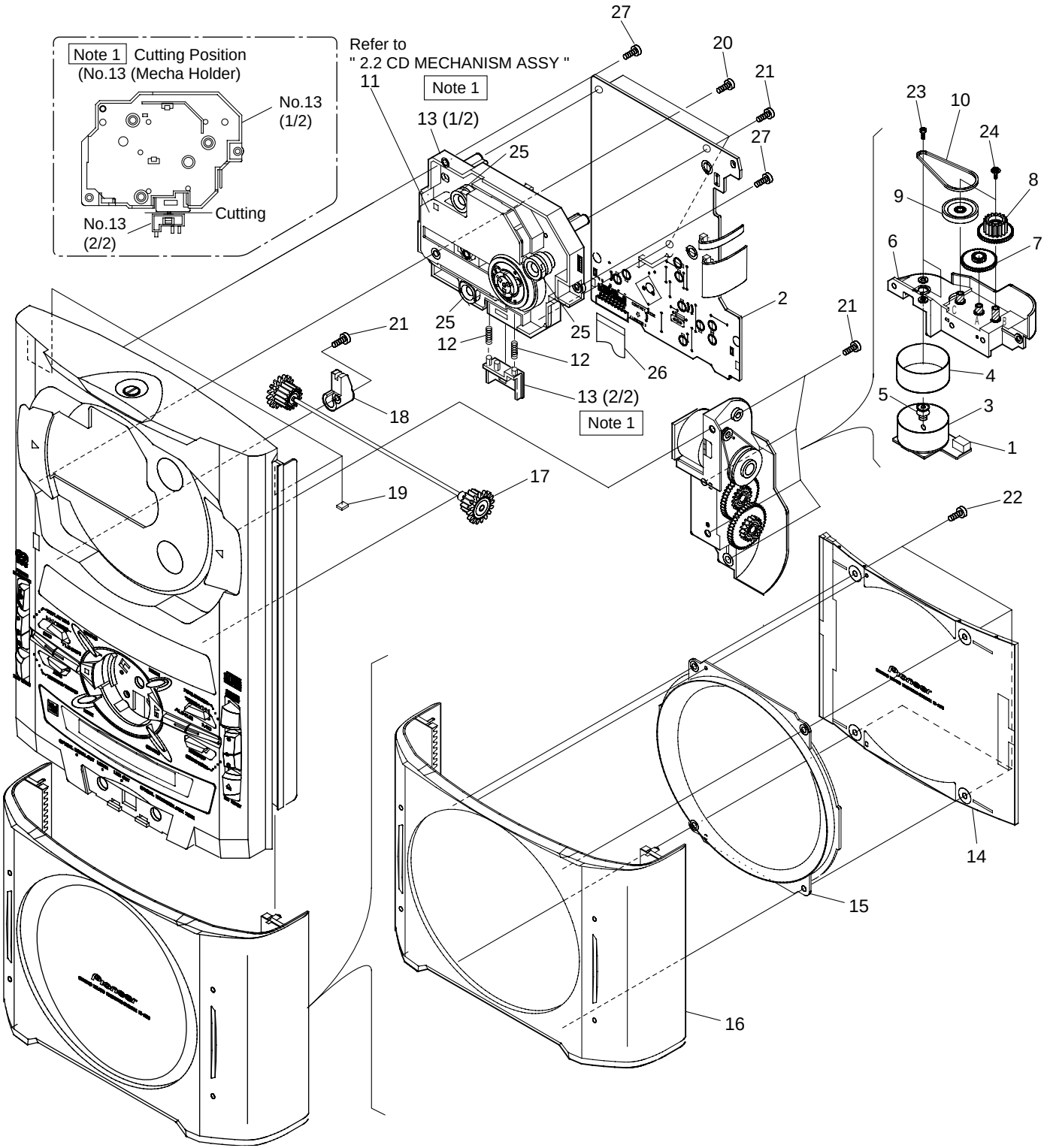
2.5 FRONT PANEL ASSY (1/2)



● FRONT PANEL ASSY (1/2) PARTS LIST

Mark	No.	Description	Parts No.
	1	FRONT PANEL ASSY	AWU7309
NSP	2	CD CLOSE SW ASSY	AWU7320
NSP	3	CD OPEN SW ASSY	AWU7319
NSP	4	F- TERMINAL ASSY	AWU7313
NSP	5	LCD ASSY (MD)	AWU7355
NSP	6	LIGHT- L ASSY	AWU7321
	7	Lens Holder M	AMR7247
	8	Lens M	AAK7615
	9	Diffusion Sheet	AAK7666
	10	Reflector	AMR7248
	11	13P F.F.C/ 30V	ADD7149
	12	• • • • •	
	13	Frame	ANG7235
	14	Rail	AMR7239
	15	Blind	AMR7261
	16	PCB Holder L	AMR7262
	17	PCB Holder R	AMR7263
	18	Plating Button Assy	AXG7089
	19	Fuction Button B	AAD7511
	20	Window	AAK7621
	21	Complex Button	AAD7532
	22	Plating Button A	AAD7567
	23	Function Button A	AAD7510
	24	O/C Button	AAD7506
	25	Key O/C	AAD7526
	26	Connector 3p	ADX7252
	27	Screw	IPZ30P100FMC
	28	Screw	ABA1005
	29	Screw	VPZ30P080FZK
	30	17P F.F.C/ 30V	ADD7145
	31	Front Panel Assy	AXG7075
	32	MD Flap	AAN7190
	33	MD Spring	ABH7154
	34	MD Flap Holder	AMR7236
NSP	35	MD FLAP SW ASSY	AWU7324
	36	PU Caution Label	ARW7059
	37	Screw	VPZ30P100FMC

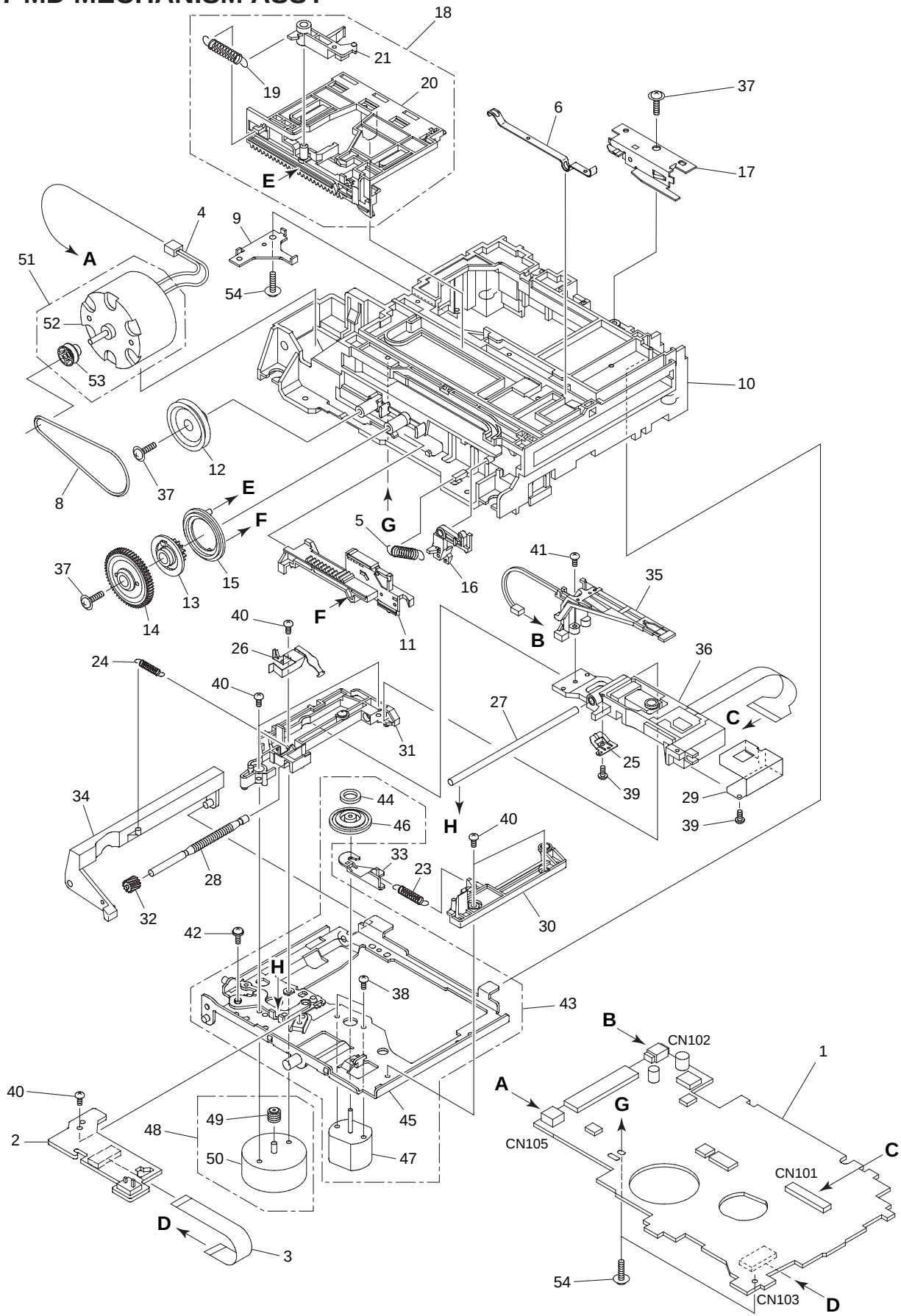
2.6 FRONT PANEL ASSY (2/2)



● FRONT PANEL ASSY (2/2) PARTS LIST

Mark	No.	Description	Parts No.
NSP	1	CD MOTOR ASSY	AWU7318
	2	CD ASSY	AWU7307
	3	Slider Motor	VXM1033
	4	Motor Shield	ANK7067
	5	Motor Pulley	PNW1634
	6	Gear Holder	AMR7240
	7	Gear A	ANW7063
	8	Gear B	AMR7260
	9	Gear Pulley A	ANW7066
	10	Belt	AEB7171
	11	CD MECHANISM ASSY	KSM-620AAA
	12	Float Spring	ABH7170
	13	Mechanism Holder	AMR7242
	14	CD Door Window	AAK7673
	15	CD Door Escutcheon	AAK7619
	16	CD Door	AAN7189
	17	Shaft Assy	AXG7078
	18	Shaft Holder	AMR7237
	19	Cussion Rubber	AEB7154
	20	Screw	BBZ30P080FMC
	21	Screw	VPZ30P080FZK
	22	Screw	ABA7054
	23	Screw	PMZ26P040FMC
	24	Screw	IPZ20P080FMC
	25	Float Rubber	AEB7129
	26	17P F.F.C/ 30V	ADD7146
	27	Screw	VPZ30P100FMC

2.7 MD MECHANISM ASSY



● MD MECHANISM ASSY PARTS LIST

Mark	No.	Description	Part No.	Mark	No.	Description	Part No.
NSP	1	CORE MAIN UNIT ASSY	RWZ4334		31	S. Holder	RNK2307
	2	CORE SW UNIT ASSY	RWZ4335		32	Worm Wheel	RNK2309
	3	Lead Card 7P	RDD1403		33	Hook	RNK2310
	4	Lead Wire	RKP1814		34	Head Lifter	RNK2311
	5	Lever Spring	RBH1463		35	MD Head	RPB1063
	6	Clamp Spring 1	RBK1074		36	MD Pick-up	RWY1019
	7	• • • • •			37	Screw	Z39-019
	8	Loading Belt	REB1329		38	Screw	JFZ17P020FZK
	9	Lock Plate	RNE1949		39	Screw	JGZ14P020FMC
	10	Loading Base	RNK2323		40	Screw	JGZ17P028FMC
NSP	11	Under Slider	RNK2314		41	Screw	JGZ17P040FMC
	12	Gear Pulley	RNK2316		42	Screw	PMB20P040FMC
	13	Drive Gear	RNK2317		43	Servo Base Assy	REA1283
	14	Clutch Gear	RNK2318	NSP	44	Clamp Magnet	RMF1002
	15	Flip Disk	RNK2319	NSP	45	Servo Base	RNE1951
	16	SW Lever	RNK2320	NSP	46	Disc Table	RNK2305
	17	Shutter Assy	RXA1774	NSP	47	Spindle Motor	RXM1091
	18	Upper Slider Assy	RXA1782		48	Carriage Motor Assy	REA1284
	19	Eject Spring	RBH1461		49	Worm	RNK2308
	20	Upper Slider	RNK2324	NSP	50	Carriage Motor	RXM1090
NSP	21	Carrier	RNK2315		51	Loading Motor Assy	REA1290
	22	• • • • •			52	DC Motor /0.75W	PXM1010
	23	Spindle Spring	RBH1460		53	CA Pulley	RNK2322
	24	Lifter Spring	RBH1462		54	Screw	BPZ20P080FMC
	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				

3. BLOCK DIAGRAM AND SCHEMATIC DIAGRAM

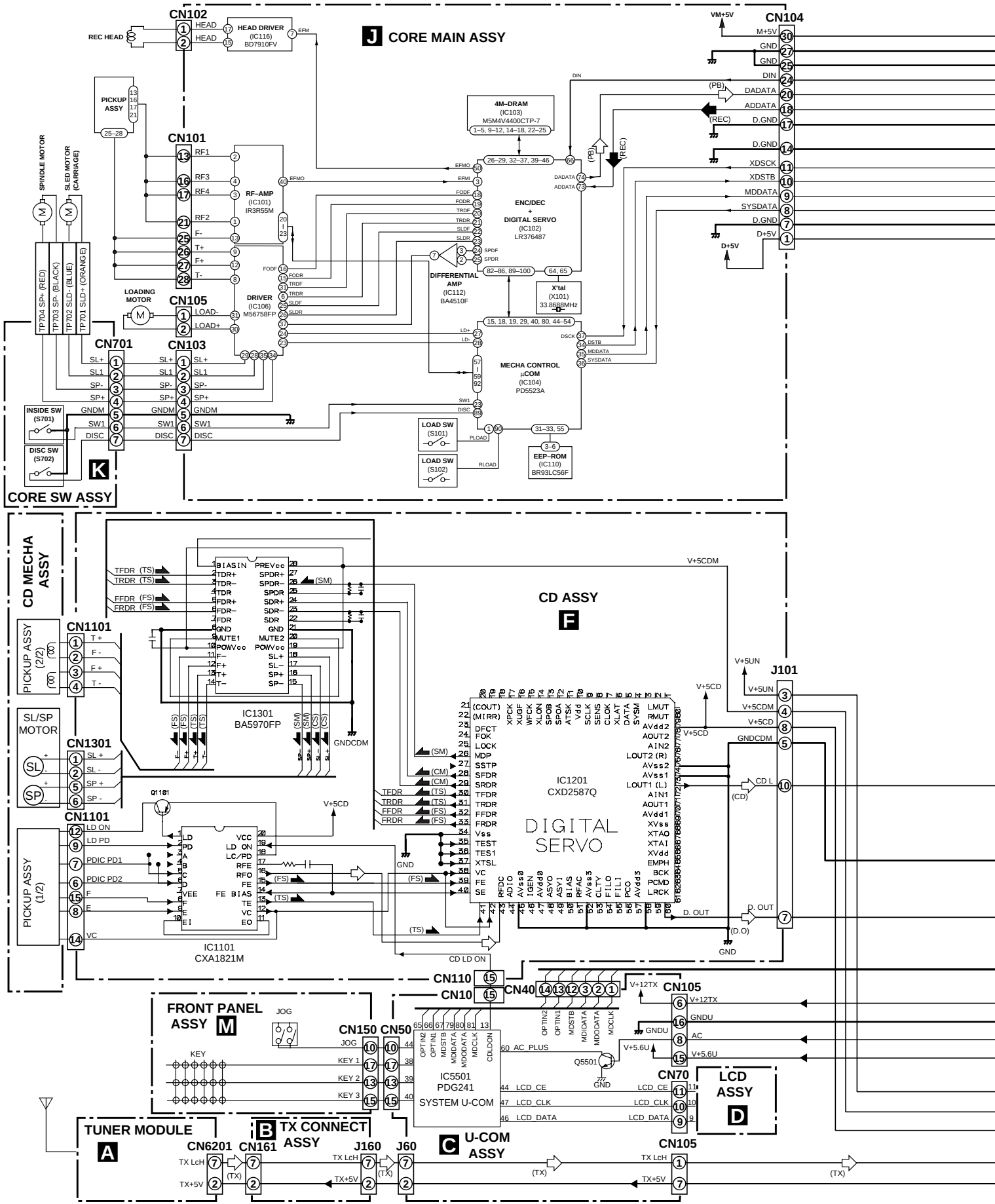
3.1 BLOCK DIAGRAM

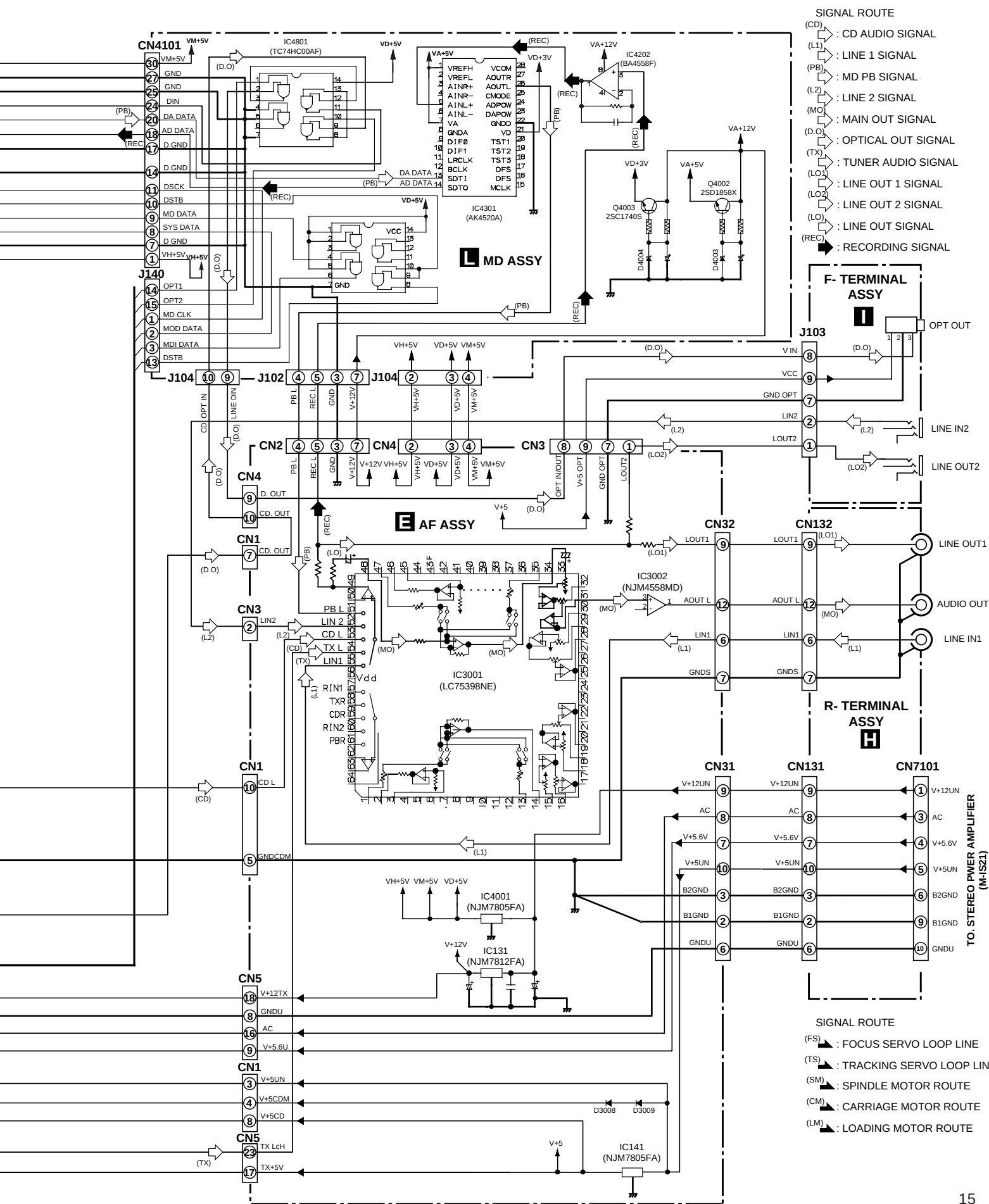
A

B

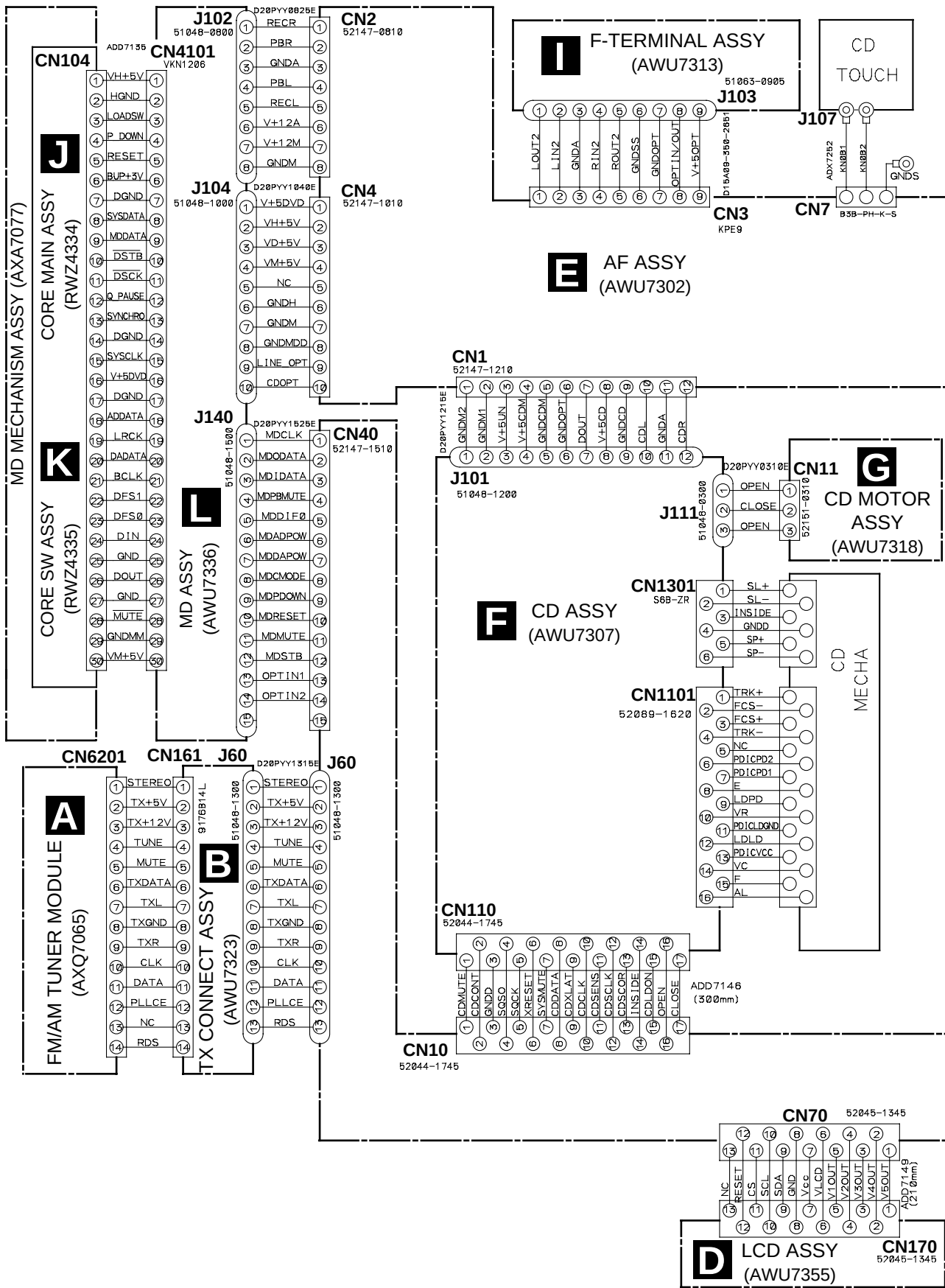
C

D

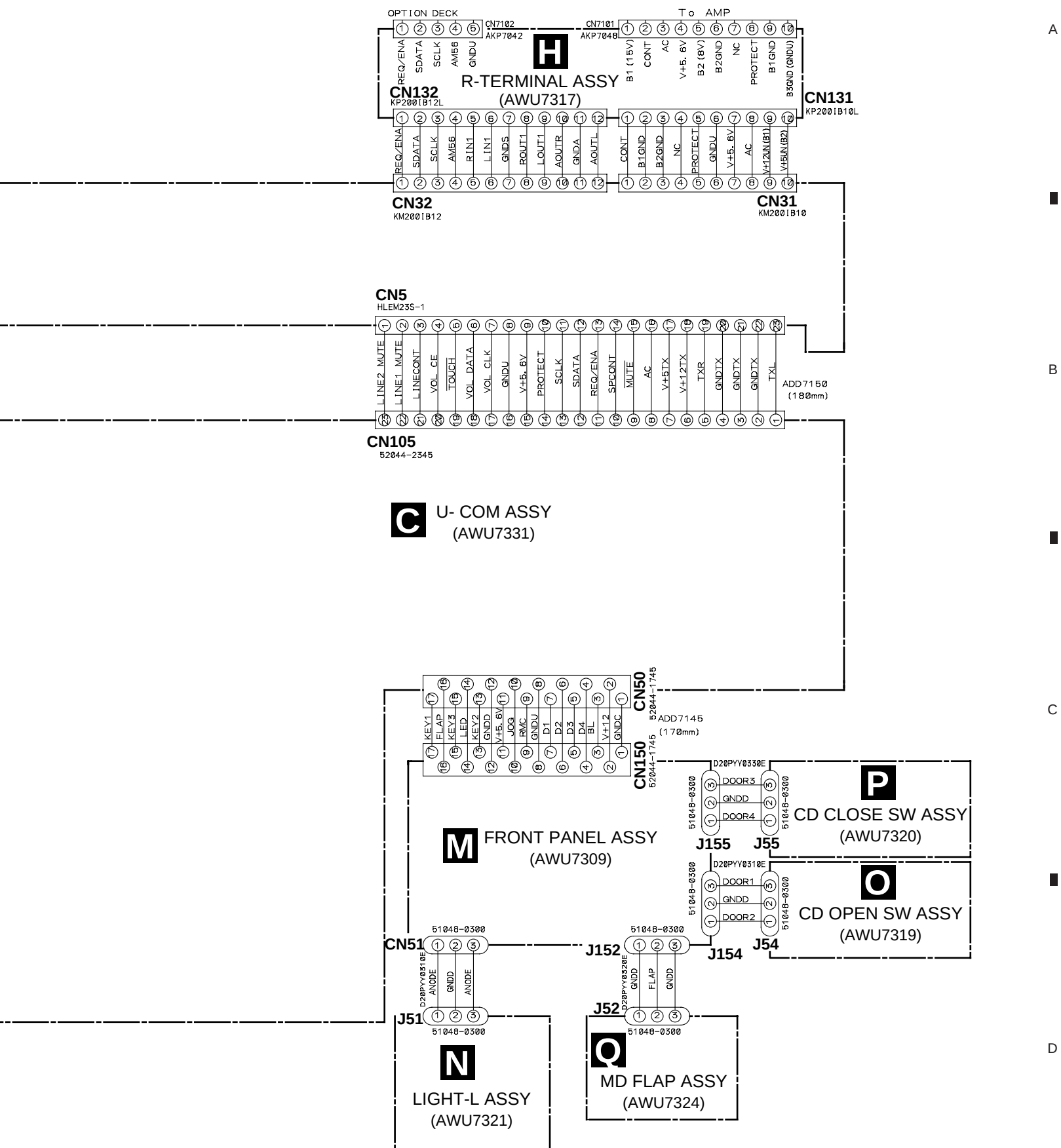




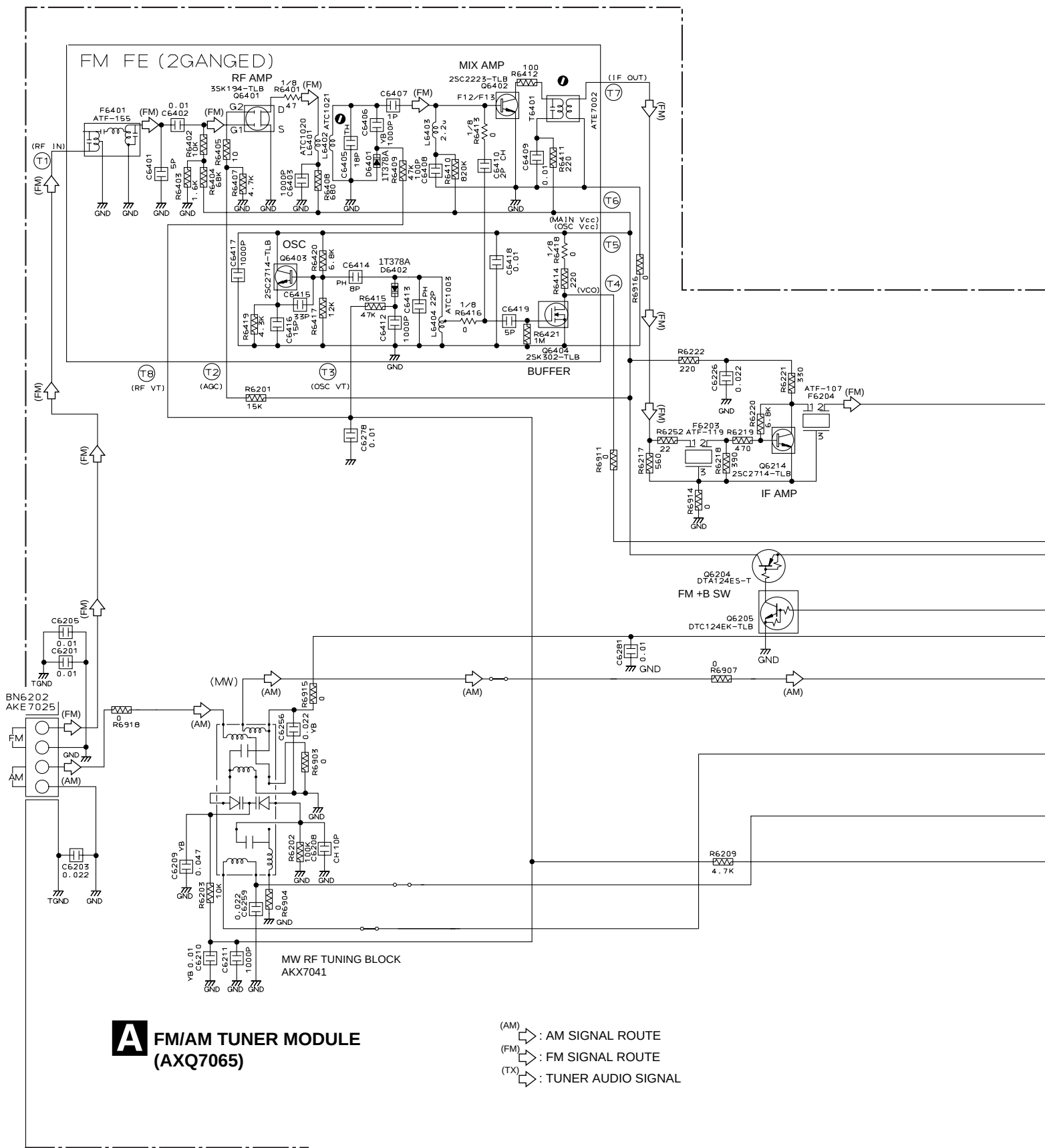
3.2 OVERALL CONNECTION DIAGRAM



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



3.3 FM/AM TUNER MODULE and TX CONNECT ASSY



Notes

1.RESISTORS

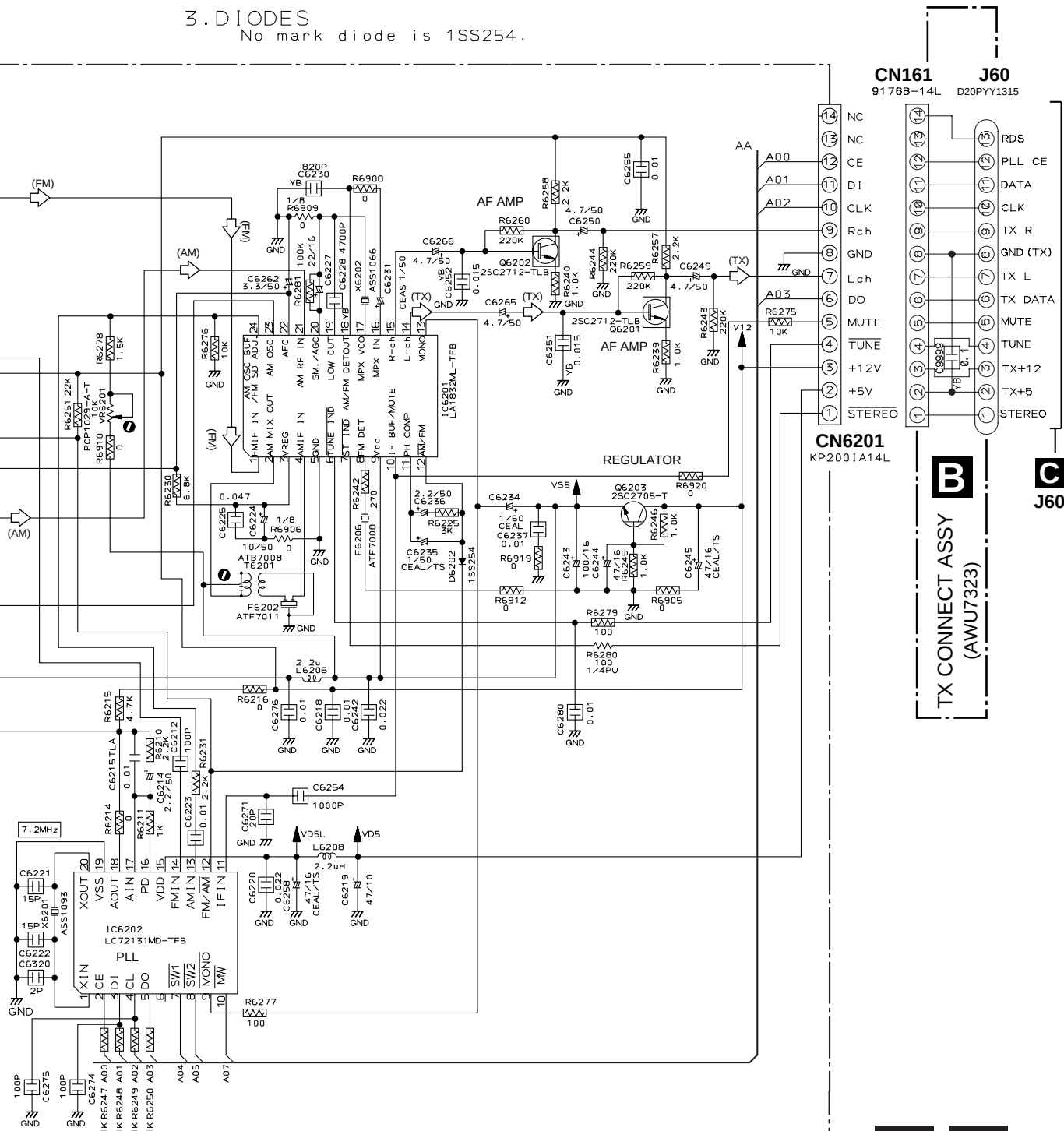
Indicated in Ω , $1/10W \pm 5\%$ Tolerance unless otherwise noted K:K Ω , M:M Ω .

2.CAPACITORS

Indicated in Capacity (μF)/VOLTAGE (V) unless otherwise noted P:PF.

3.DIODES

No mark diode is 1SS254.



3.4 U-COM ASSY

A

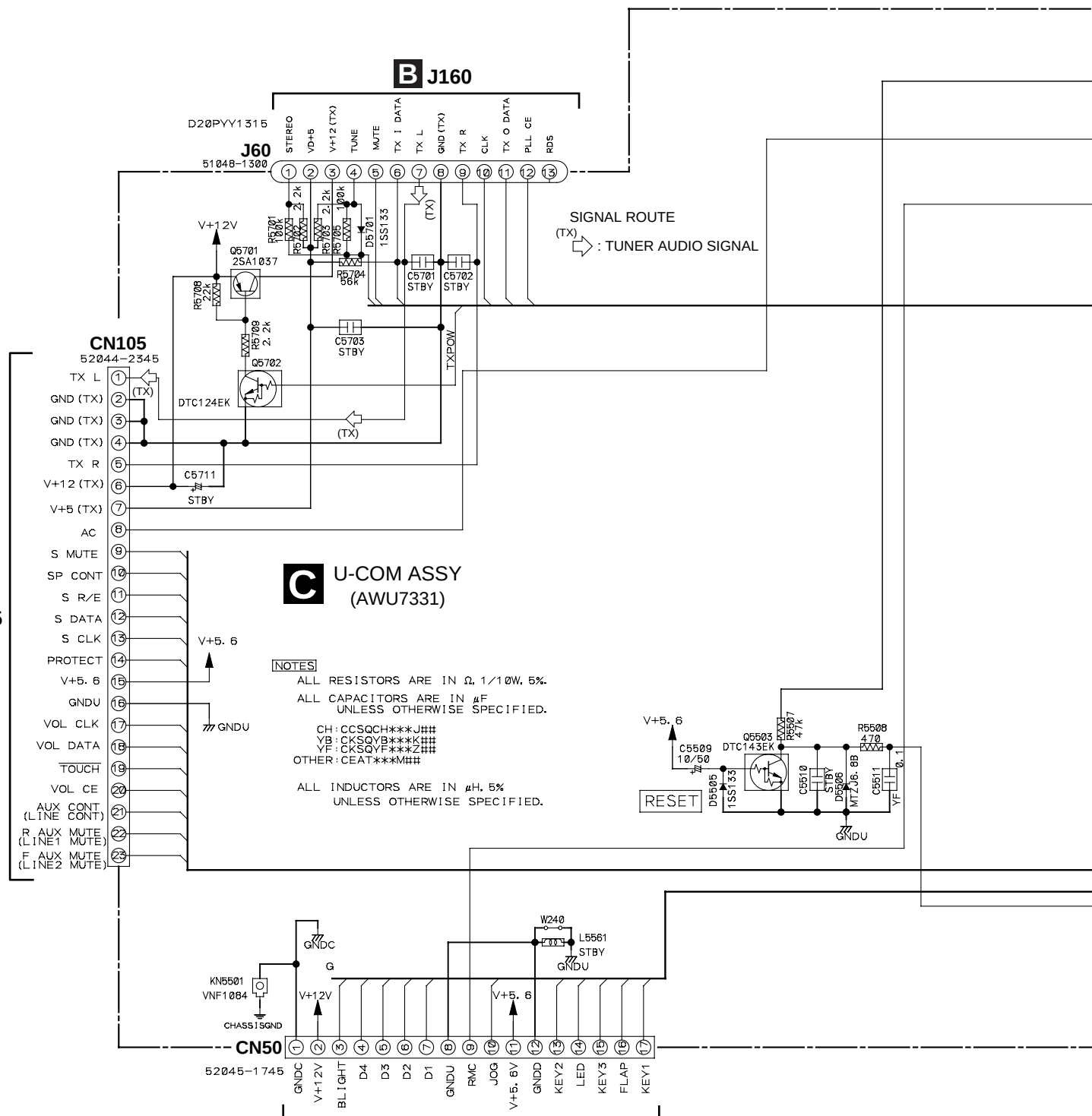
B

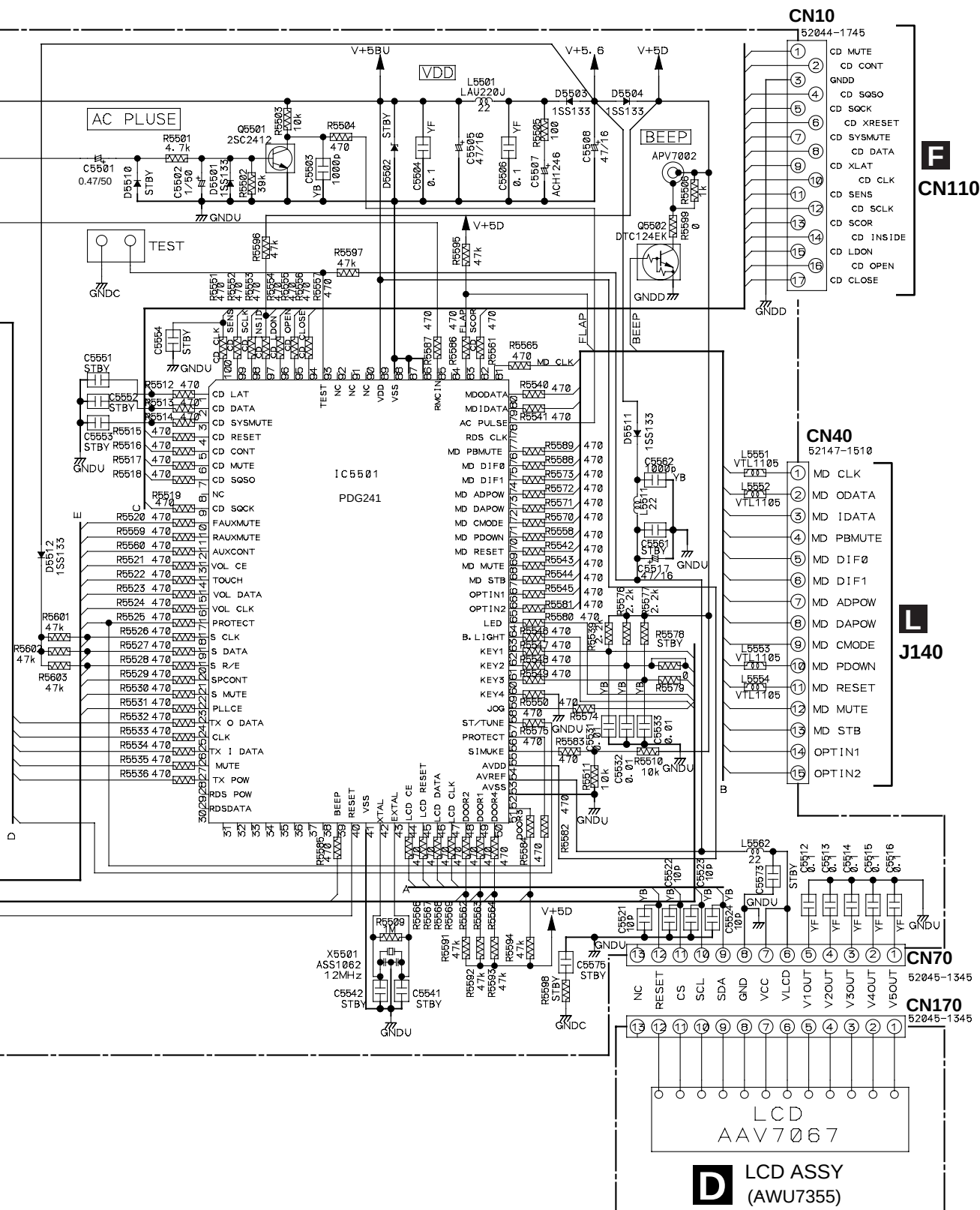
C

D

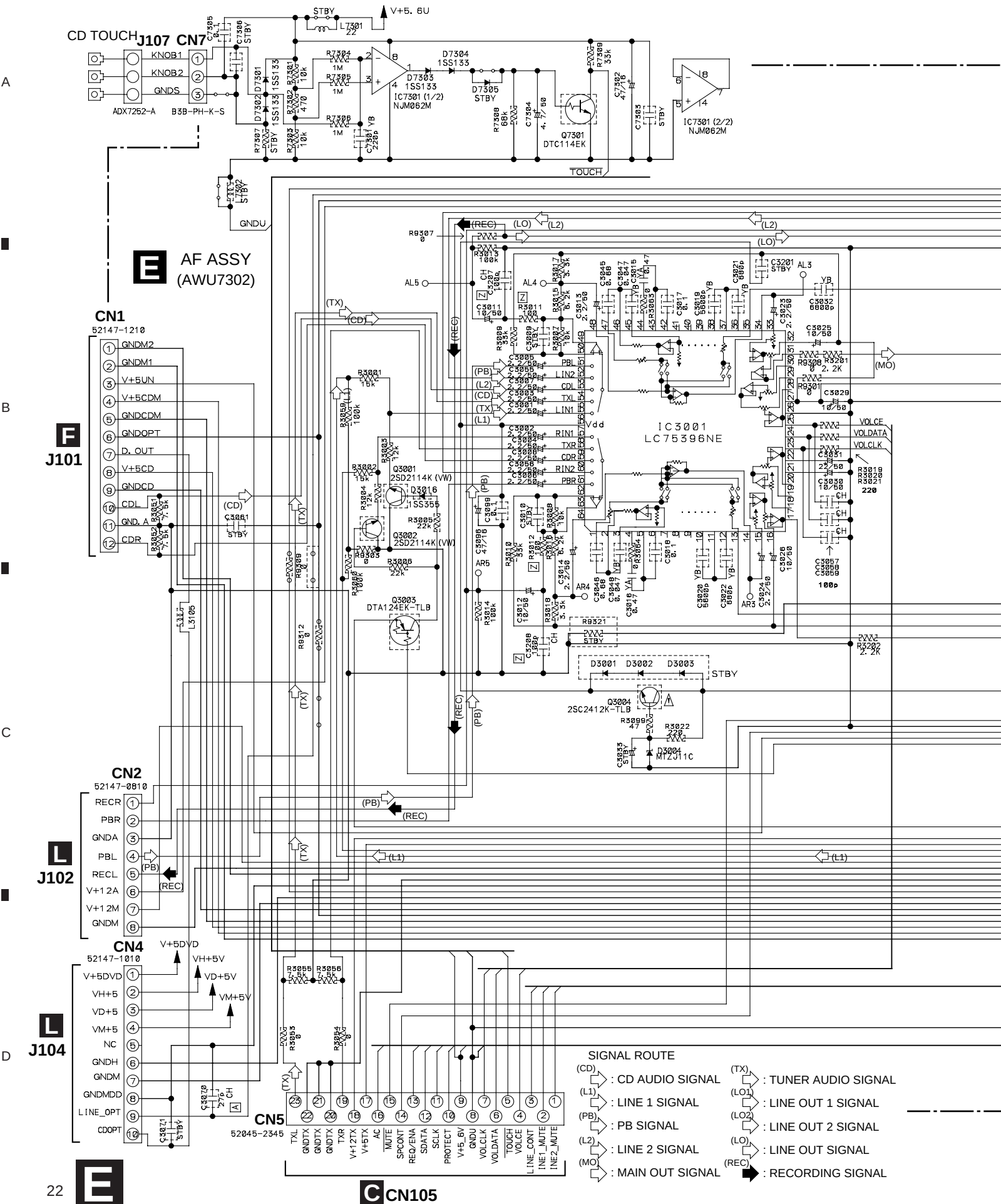
E
CN5

M
CN150

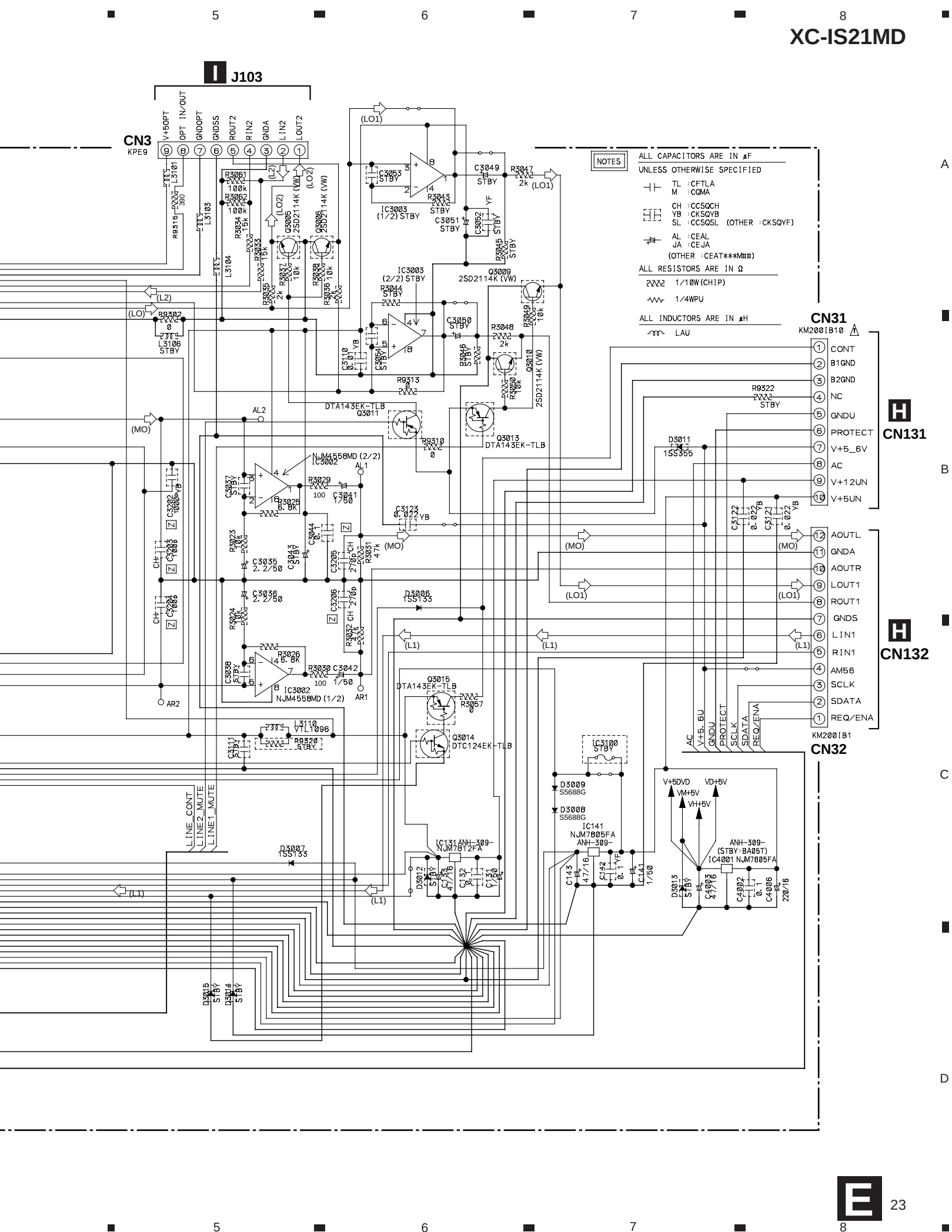




XC-IS21MD
3.5 AF ASSY



- SIGNAL ROUTE**
- (CD) : CD AUDIO SIGNAL
 - (L1) : LINE 1 SIGNAL
 - (PB) : PB SIGNAL
 - (L2) : LINE 2 SIGNAL
 - (MO) : MAIN OUT SIGNAL
 - (TX) : TUNER AUDIO SIGNAL
 - (LO1) : LINE OUT 1 SIGNAL
 - (LO2) : LINE OUT 2 SIGNAL
 - (LO) : LINE OUT SIGNAL
 - (REC) : RECORDING SIGNAL



3.6 CD and CD MOTOR ASSY

NOTES

ALL CAPACITORS ARE IN μ F
UNLESS OTHERWISE SPECIFIED

TL : CFTLA
M : CQMA
CH : CCSQCH
YB : CKSQYB
SL : CCSQSL
(OTHER : CKSQYF)

AL : CEAL
JA : CEJA
(OTHER : CEAT***M#H#)

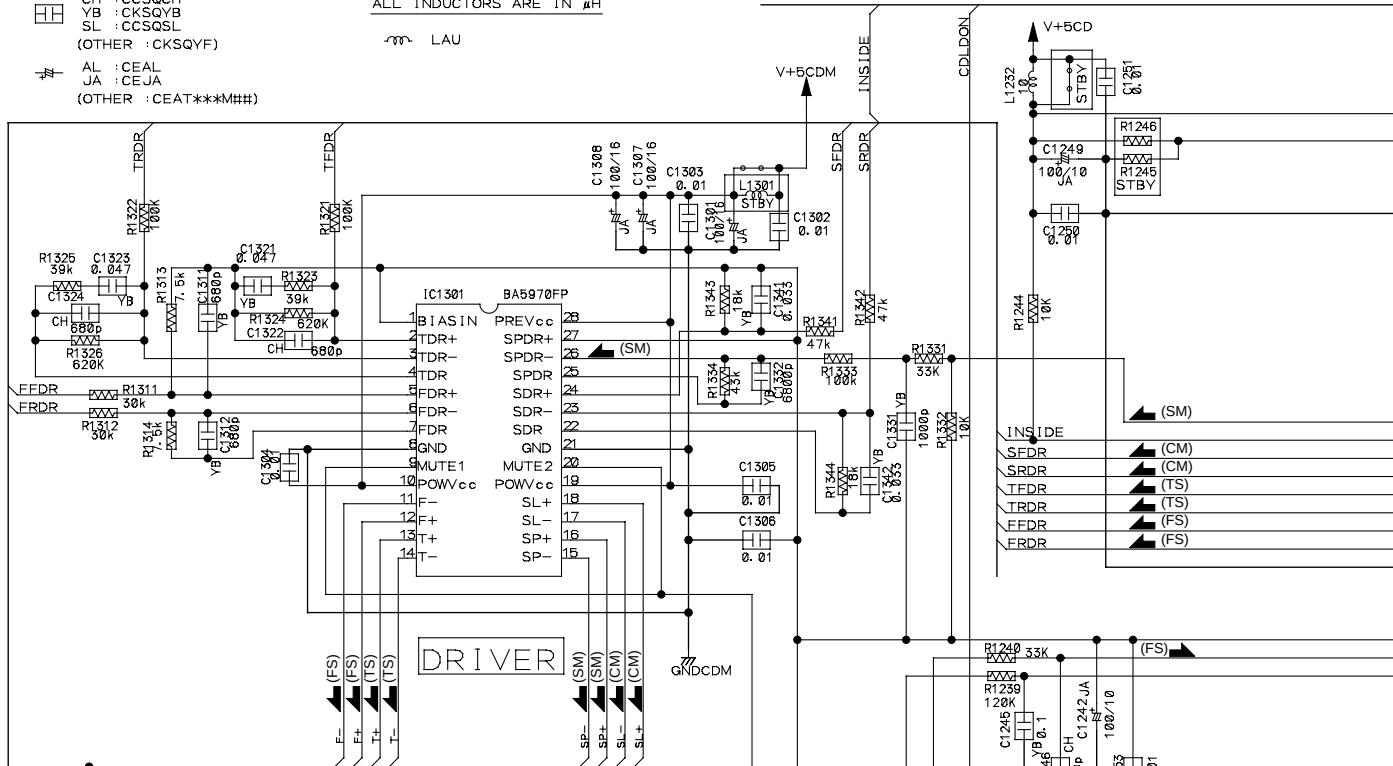
ALL RESISTORS ARE IN Ω

$\square/\square$ 1/10W (CHIP)
~W~ 1/4WPU

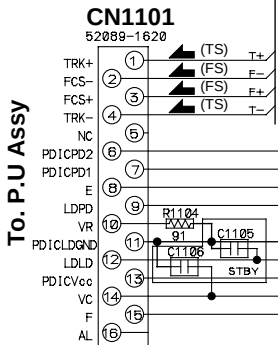
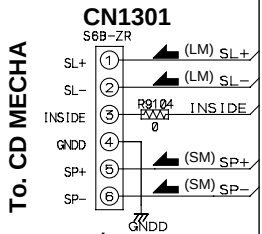
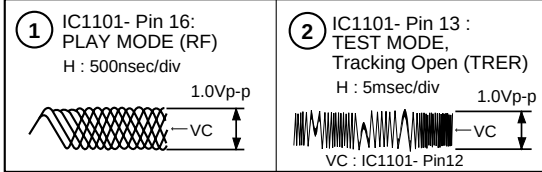
ALL INDUCTORS ARE IN μ H

LAU

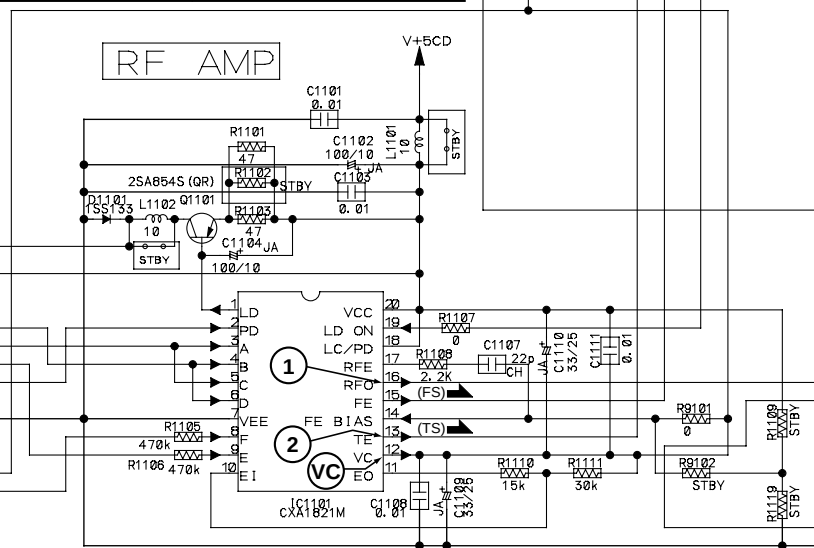
CD ASSY
(AWU7307)



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



RF AMP

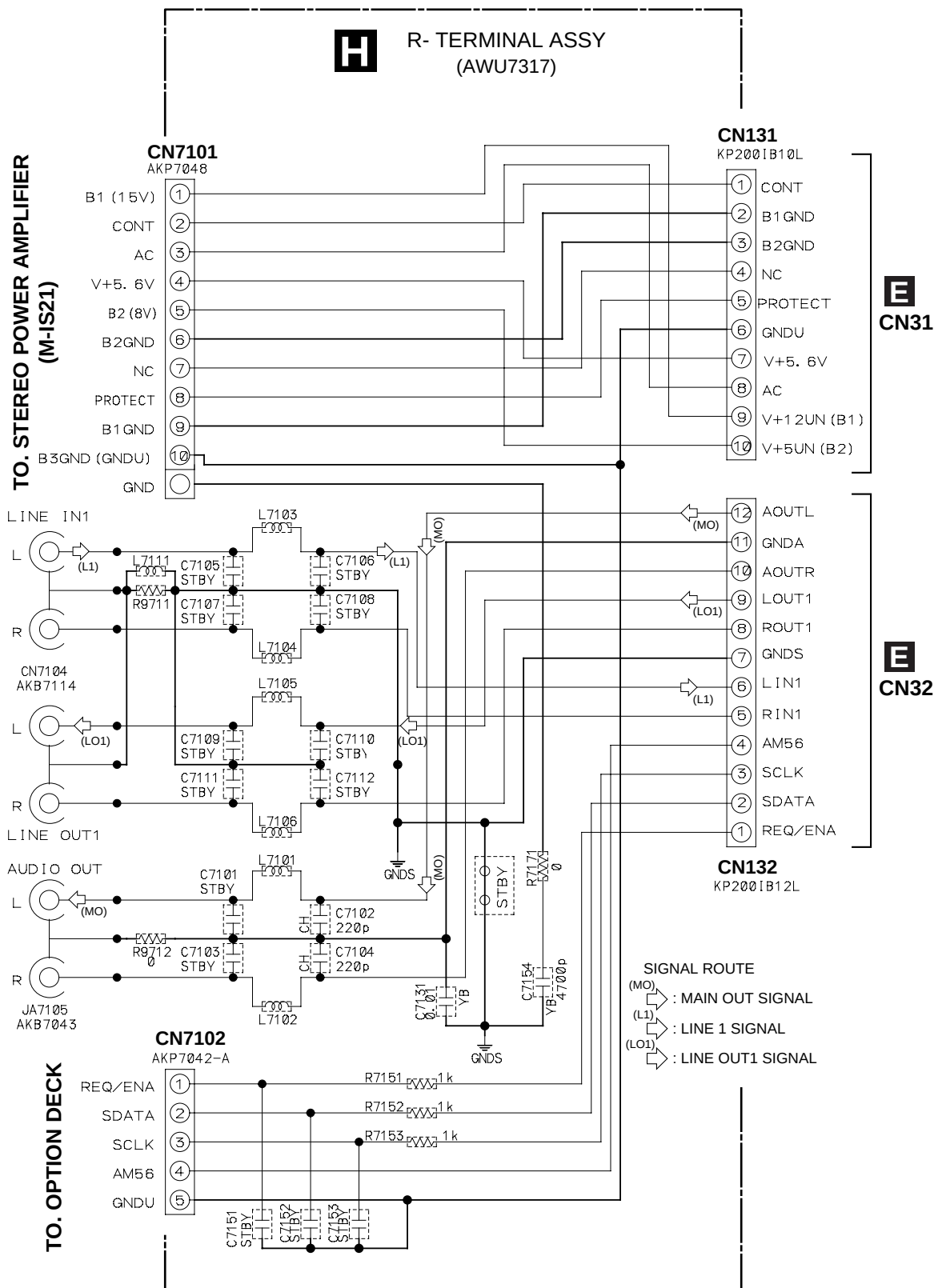


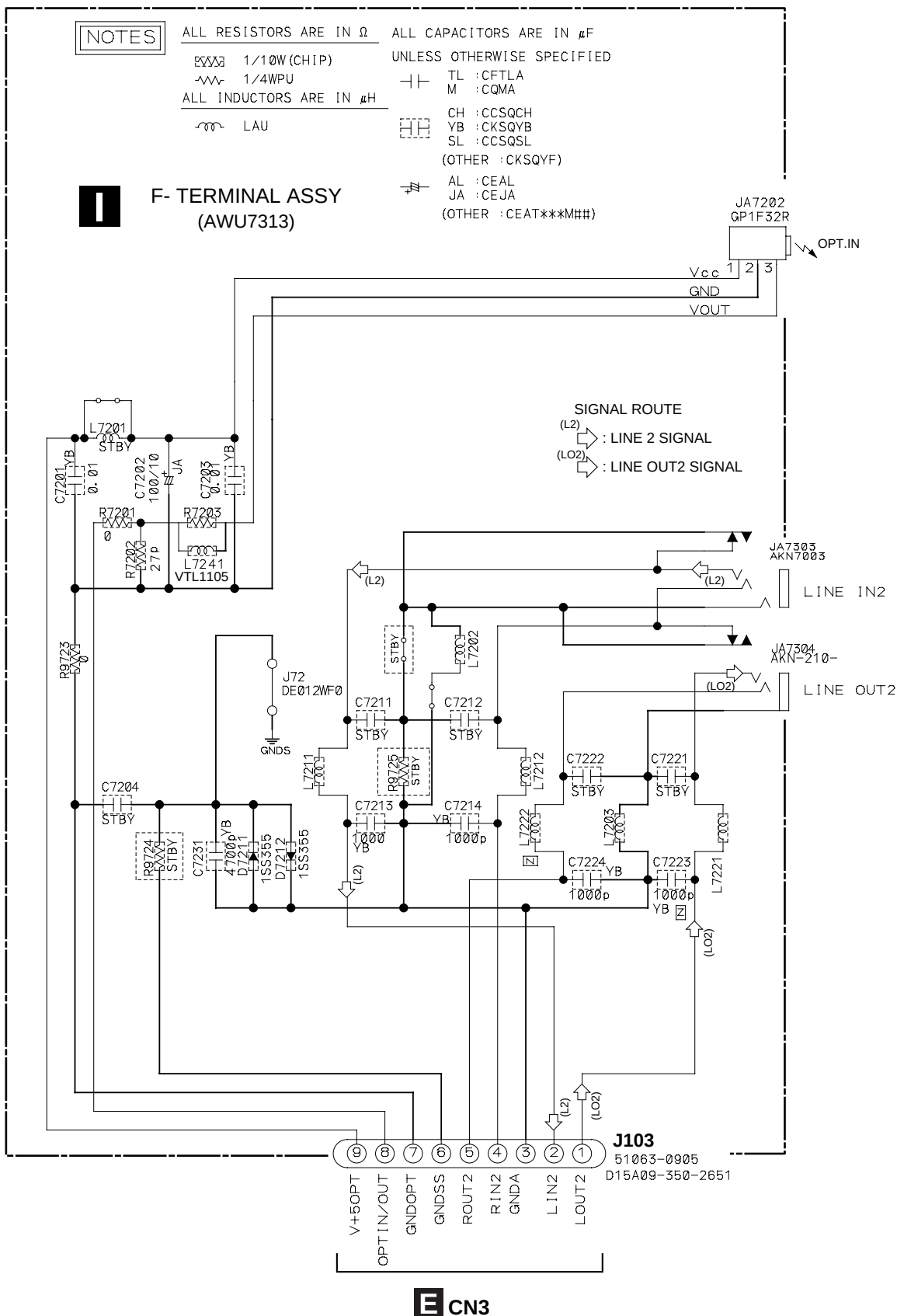
SIGNAL ROUTE

- CD AUDIO SIGNAL ROUTE (SM)
- SPINDLE MOTOR ROUTE (SM)
- FOCUS SERVO LOOP LINE (FS)
- CARRIAGE MOTOR ROUTE (CM)
- TRACKING SERVO LOOP LINE (TS)
- LOADING MOTOR ROUTE (LM)



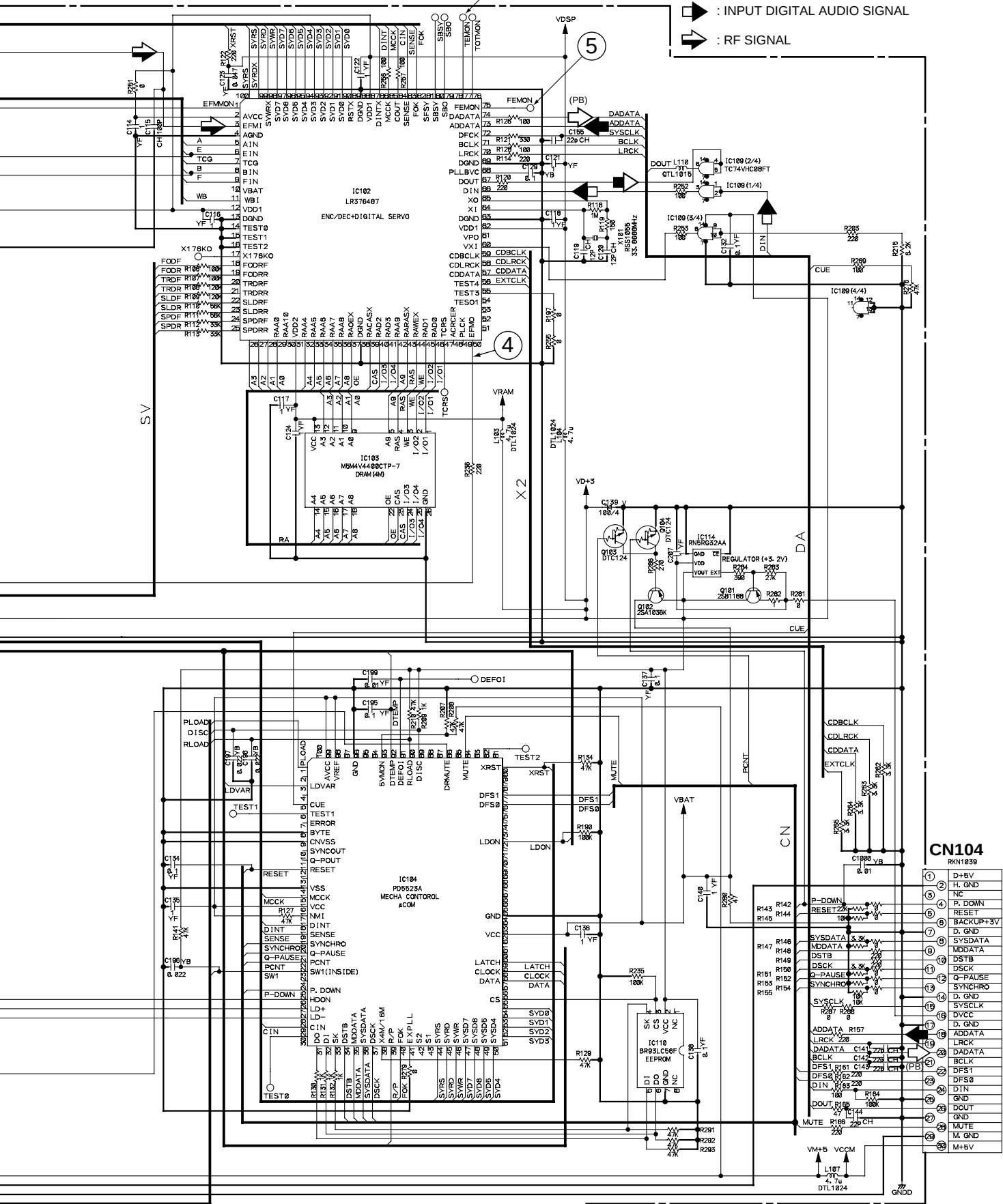
3.7 R-TERMINAL and F-TERMINAL ASSYS





SIGNAL ROUTE

- (PB) : MD PLAYBACK SIGNAL
- ➡ : REC SIGNAL
- ◼ : OUTPUT DIGITAL AUDIO SIGNAL
- ◻ : INPUT DIGITAL AUDIO SIGNAL
- ➡ : RF SIGNAL



A

B

C

D

CN4101

CN104

RKN1059

- ① D+5V
- ② H. GND
- ③ NC
- ④ P. DOWN
- ⑤ RESET
- ⑥ BACKUP+5V
- ⑦ D. GND
- ⑧ SYSCLK
- ⑨ MDDATA
- ⑩ MDDATA
- ⑪ DS7B
- ⑫ DSKR
- ⑬ Q-PAUSE
- ⑭ SYNCHRO
- ⑮ D. GND
- ⑯ SYSCLK
- ⑰ D+5V
- ⑱ ADDATA
- ⑲ LCKR
- ⑳ DADATA
- ㉑ BCLK
- ㉒ DFS1
- ㉓ DFS0
- ㉔ D. GND
- ㉕ DOUT
- ㉖ D. GND
- ㉗ MUTE
- ㉘ M. GND
- ㉙ M+5V

■ Voltages

J MD CORE MAIN ASSY

IC101	
PIN NO.	VOLTAGE
1	0.78V
2	0.73V
3	0.77V
4	0.75V
5	1.61V
6	1.61V
7	0.75V
8	1.61V
9	1.61V
10	1.61V
11	1.61V
12	1.61V
13	3.19V
14	3.19V
15	0V
16	0V
17	3.19V
18	0V
19	0V
20	1.5V
21	3.2V
22	0V
23	0V
24	3.19V
25	2.0V
26	0V
27	1.40V
28	1.42V
29	1.40V
30	1.63V
31	1.61V
32	1.61V
33	0V
34	0V
35	0V
36	1.62V
37	0.59V
38	1.61V
39	1.61V
40	1.61V
41	1.61V
42	3.19V
43	0V
44	1.08V
45	1.61V
46	1.61V
47	0V
48	0.74V

IC102			
PIN NO.	VOLTAGE	PIN NO.	VOLTAGE
1	1.53V	51	1.59V
2	3.18V	52	0V
3	1.65V	53	0V
4	0V	54	1.59V
5	1.42V	55	1.8V
6	0V	56	0V
7	1.59V	57	0V
8	1.41V	58	0V
9	1.97V	59	0V
10	1.39V	60	0V
11	1.64V	61	0.56V
12	3.18V	62	3.18V
13	0V	63	0V
14	0V	64	1.5V
15	0V	65	1.5V
16	0V	66	3.2V
17	1.69V	67	1.6V
18	1.52V	68	3.2V
19	1.70V	69	0V
20	1.47V	70	1.6V
21	1.47V	71	1.6V
22	1.65V	72	1.48V
23	1.54V	73	0V
24	1.69V	74	0V
25	1.51V	75	1.68V
26	0.82V	76	1.82V
27	2.0V	77	1.59V
28	2.0V	78	0.35V
29	1.81V	79	0.02V
30	1.4V	80	3.2V
31	0.82V	81	3.2V
32	1.67V	82	0.02V
33	1.67V	83	0.03V
34	1.67V	84	1.9V
35	2.86V	85	1.56V
36	1.32V	86	3.1V
37	2.23V	87	3.2V
38	0V	88	0V
39	2.4V	89	3.19V
40	1.2V	90	0.5V
41	1.5V	91	0.5V
42	0V	92	0.5V
43	2.0V	93	0.5V
44	3.0V	94	0.9V
45	1.2V	95	0.5V
46	1.2V	96	0.5V
47	0.02V	97	0.5V
48	3.04V	98	0.8V
49	1.57V	99	3.18V
50	0.05V	100	0.06V

IC103	
PIN NO.	VOLTAGE
1	1.2V
2	1.2V
3	3.0V
4	2.0V
5	0V
9	2.23V
10	1.32V
11	2.86V
12	1.67V
13	3.18V
14	1.67V
15	1.67V
16	1.67V
17	2.86V
18	1.32V
22	2.23V
23	2.4V
24	1.2V
25	1.5V
26	0V

IC104			
PIN NO.	VOLTAGE	PIN NO.	VOLTAGE
1	0V	51	0.54V
2	0V	52	0.6V
3	0.22V	53	0.6V
4	0.03V	54	0.6V
5	1.29V	55	0V
6	2.21V	56	0V
7	3.13V	57	0V
8	0V	58	0V
9	0V	59	3.2V
10	0V	60	0V
11	0V	61	0V
12	3.03V	62	3.2V
13	1.43V	63	0V
14	0V	64	0V
15	1.57V	65	3.2V
16	3.2V	66	0V
17	3.19V	67	0V
18	3.1V	68	0V
19	0.03V	69	0V
20	0V	70	0V
21	0V	71	0V
22	3.18V	72	3.1V
23	3.2V	73	3.2V
24	0V	74	0V
25	2.67V	75	0V
26	3.19V	76	3.2V
27	0V	77	0V
28	0V	78	0V
29	2.4V	79	0V
30	0.24V	80	3.2V
31	0V	81	0V
32	0.3V	82	3.19V
33	3.2V	83	0V
34	1.56V	84	3.19V
35	1.0V	85	0V
36	0V	86	3.18V
37	2.77V	87	3.2V
38	0V	88	0V
39	3.18V	89	1.03V
40	0.02V	90	1.6V
41	3.19V	91	0.56V
42	3.2V	92	1.49V
43	0V	93	1.49V
44	0.05V	94	0.68V
45	3.18V	95	0.61V
46	3.19V	96	0V
47	0.51V	97	0.53V
48	0.4V	98	3.2V
49	0.3V	99	3.2V
50	0.55V	100	0V

IC106	
PIN NO.	VOLTAGE
1	1.6V
2	0.49V
3	1.61V
4	4.99V
5	4.99V
6	1.61V
7	1.62V
8	2.46V
9	2.51V
10	0V
11	0V
12	2.54V
13	2.45V
14	1.62V
15	1.62V
16	1.61V
17	3.17V
18	0V
19	1.61V
20	1.61V
21	1.61V
22	1.61V
23	1.36V
24	1.36V
25	1.61V
26	1.61V
27	1.63V
28	2.41V
29	2.55V
30	2.47V
31	2.48V
32	0V
33	0V
34	2.79V
35	2.18V
36	0V
37	1.69V
38	5.0V
39	4.99V
40	1.67V
41	1.69V
42	1.69V

IC108	
PIN NO.	VOLTAGE
1	2.47V
2	2.63V
3	4.87V
4	2.63V
5	1.59V
6	0V
7	0V
8	4.87V
9	0V
10	2.25V
11	4.94V
12	4.94V
13	4.94V
14	4.94V
15	3.12V
16	4.94V

IC114	
PIN NO.	VOLTAGE
1	0V
2	4.19V
3	3.21V
4	2.81V
5	0V

IC109	
PIN NO.	VOLTAGE
1	2.77V
2	2.77V
3	3.2V
4	1.58V
5	1.58V
6	1.56V
7	0V
8	0V
9	0V
10	0V
11	0V
12	0V
13	0V
14	3.2V

IC116	
PIN NO.	VOLTAGE
1	4.98V
2	0V
3	0V
4	4.99V
5	3.2V
6	0V
7	0.03V
8	3.18V
9	0V
10	0V
11	0V
12	0.22V
13	0V
14	0.25V
15	0.25V
16	2.82V
17	0.16V
18	4.94V
19	2.82V
20	1.33V

IC110	
PIN NO.	VOLTAGE
1	0V
2	3.2V
3	0V
4	3.2V
5	0V
6	0.11V
7	0V
8	0V

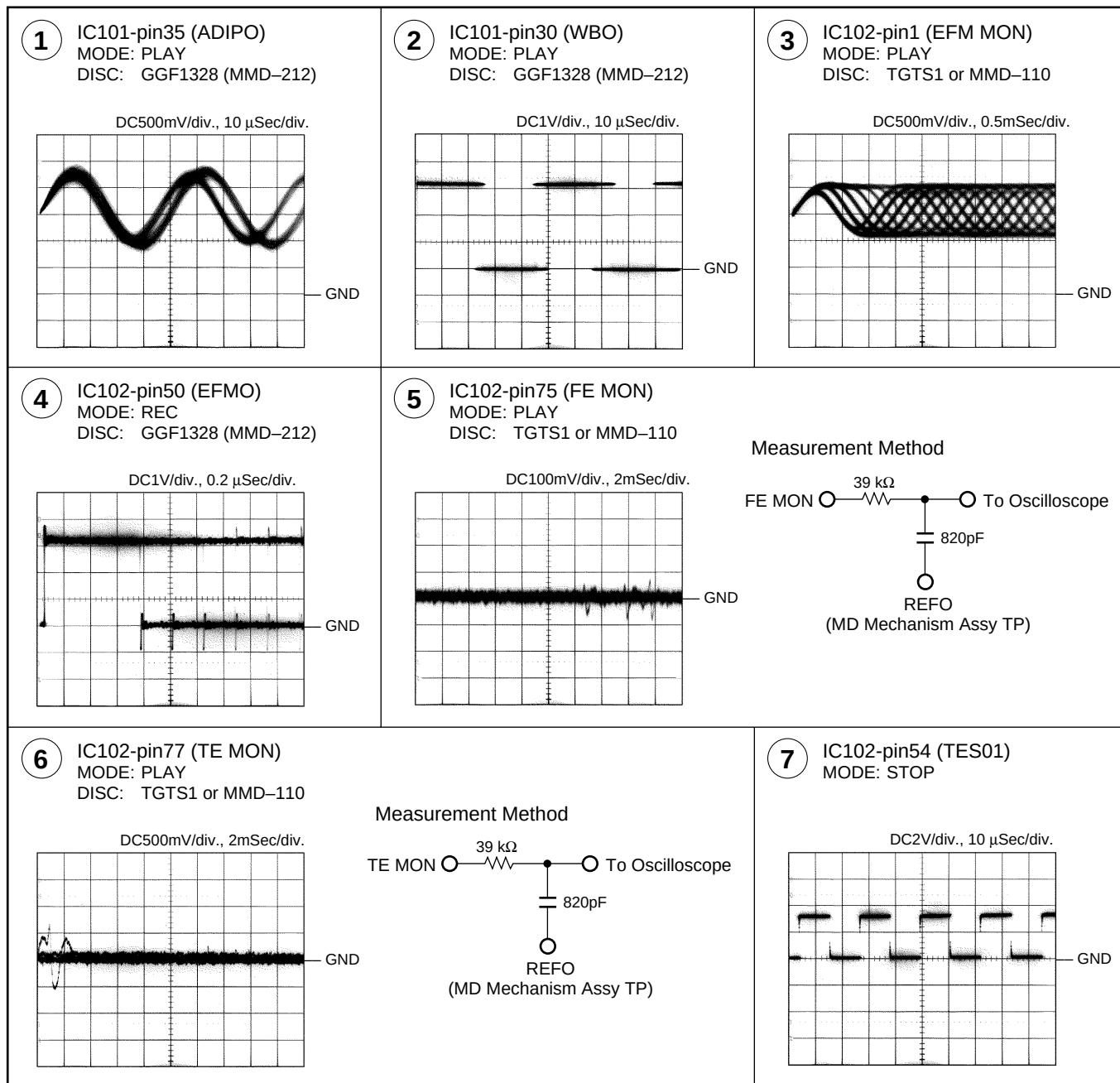
IC112	
PIN NO.	VOLTAGE
1	1.66V
2	1.62V
3	1.62V
4	0V
5	1.67V
6	1.67V
7	1.67V
8	3.19V

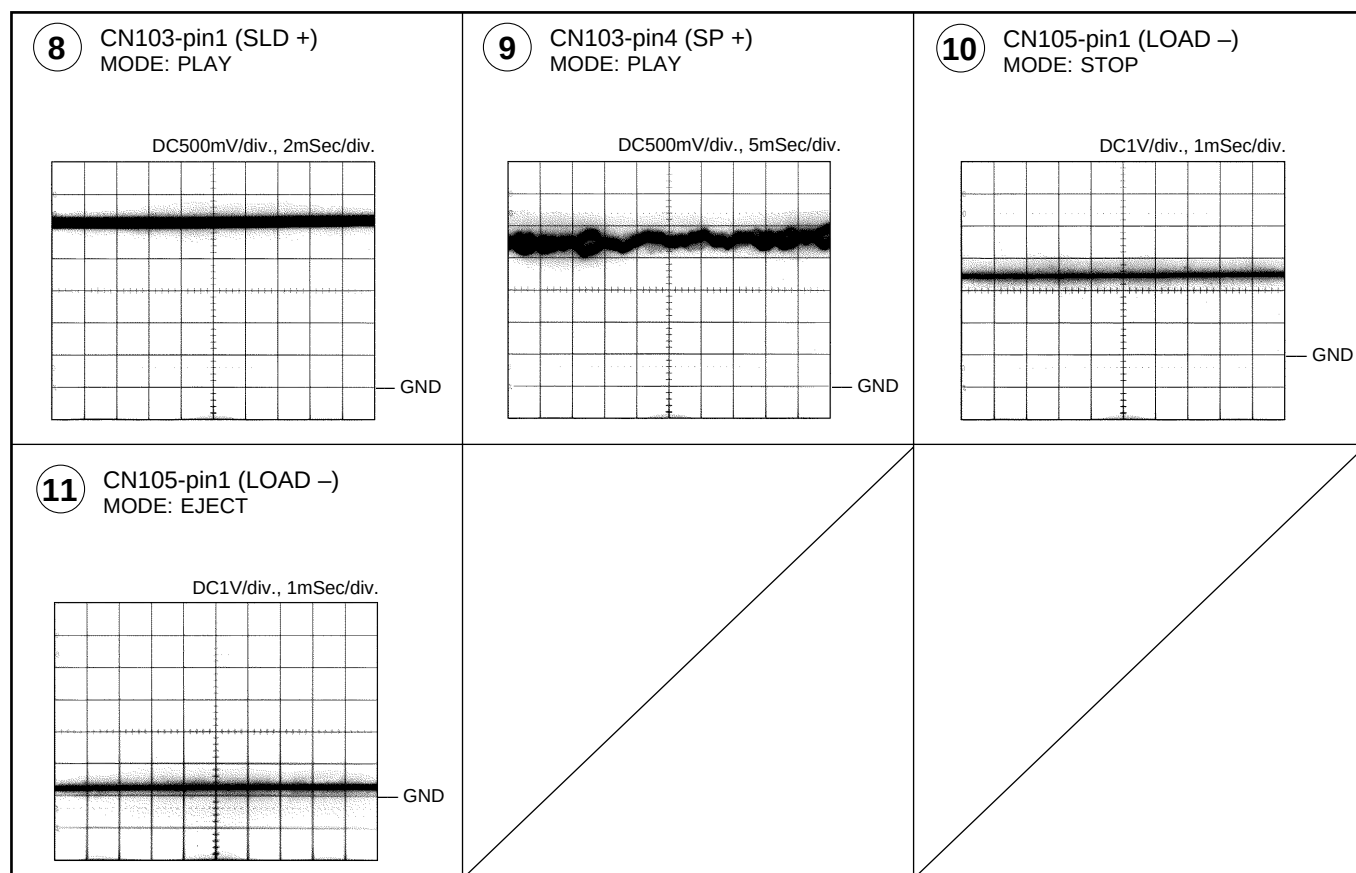
IC113	
PIN NO.	VOLTAGE
1	4.95V
2	3.96V
3	0V
4	0V
5	0V
6	0V
7	0V
8	0V
9	4.94V
10	4.12V
11	3.19V
12	0V
13	0V
14	4.94V

Waveforms

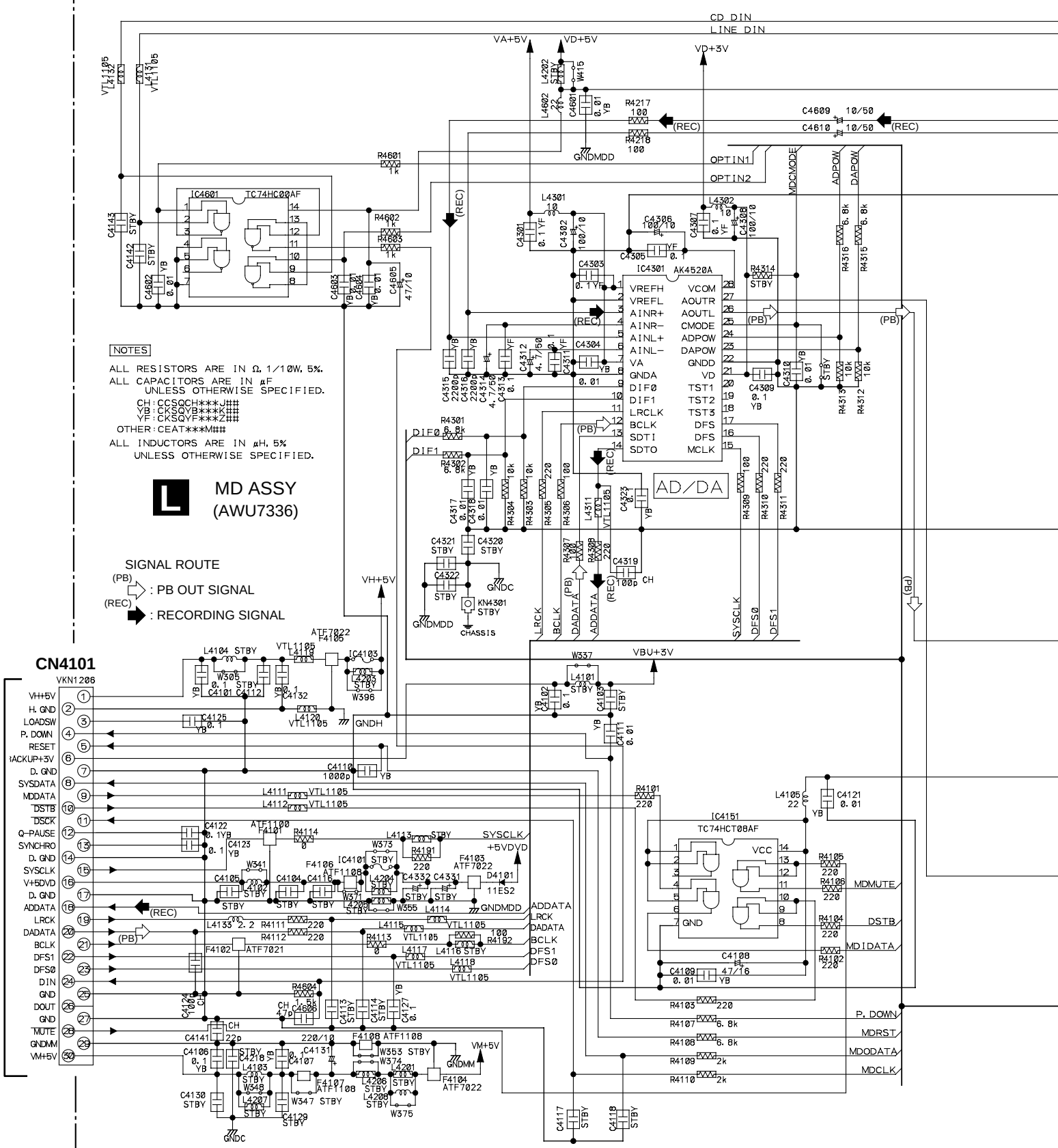
Note: The encircled numbers denote measuring point in the schematic diagram and the PCB connection diagram.

J CORE MAIN ASSY





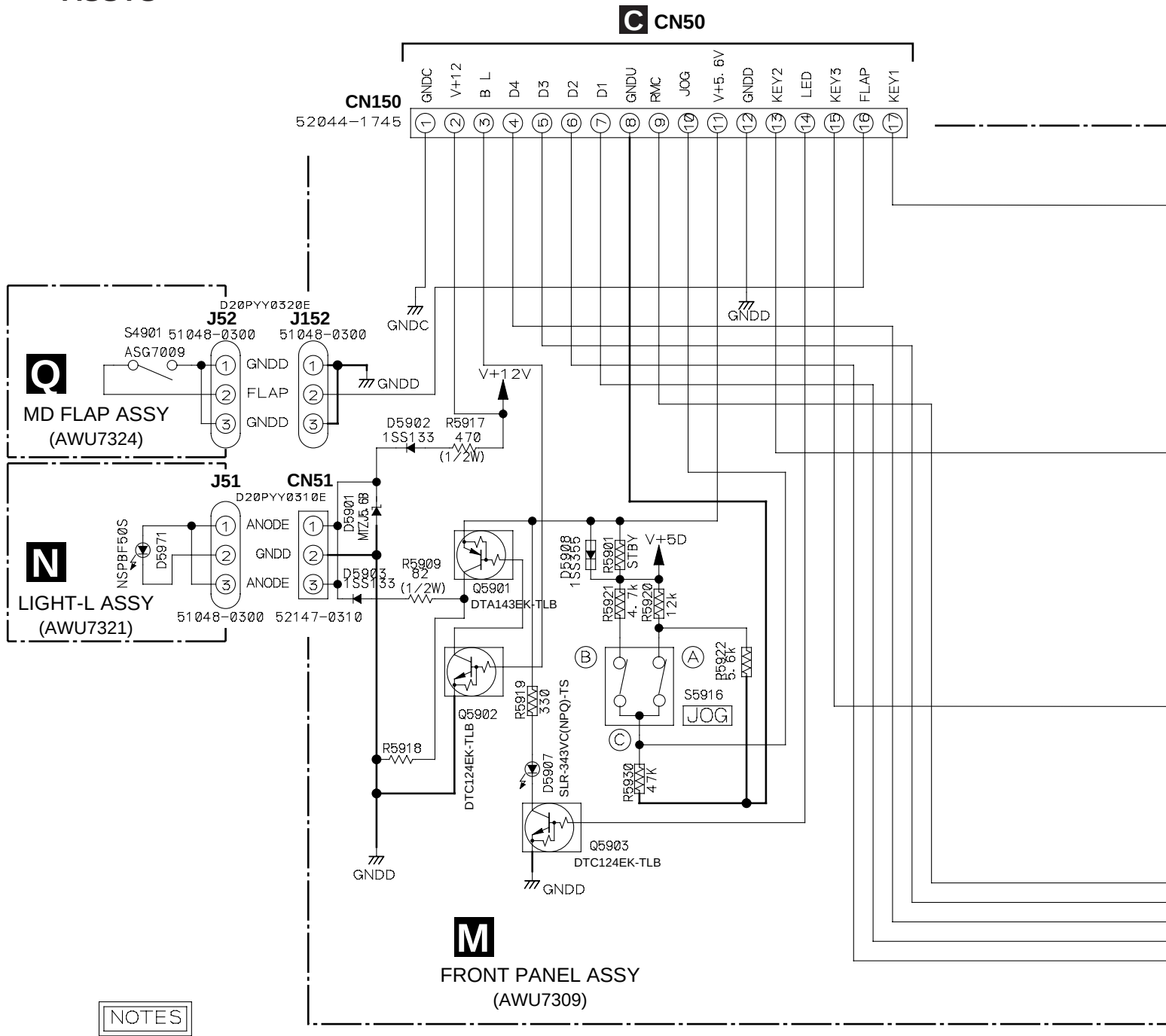
3.9 MD ASSY





J140
D20PYY1525E
51048-1500

3.10 FRONT PANEL, LIGHT-L, CD OPEN SW, CD CLOSE SW and MD FLAP SW ASSYS



NOTES

ALL CAPACITORS ARE IN μ F
UNLESS OTHERWISE SPECIFIED

TL : CFTLA
M : CQMA
CH : CCSQCH
YB : CKSQYB
SL : CCSQSL
(OTHER : CKSQYF)
AL : CEAL
JA : CEJA
(OTHER : CEAT***M##)

ALL RESISTORS ARE IN Ω

1/10W (CHIP)
1/4WPU

ALL INDUCTORS ARE IN μ H

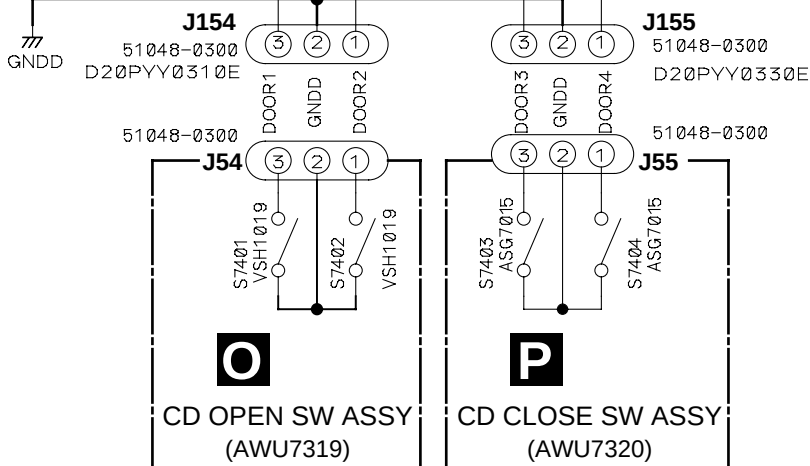
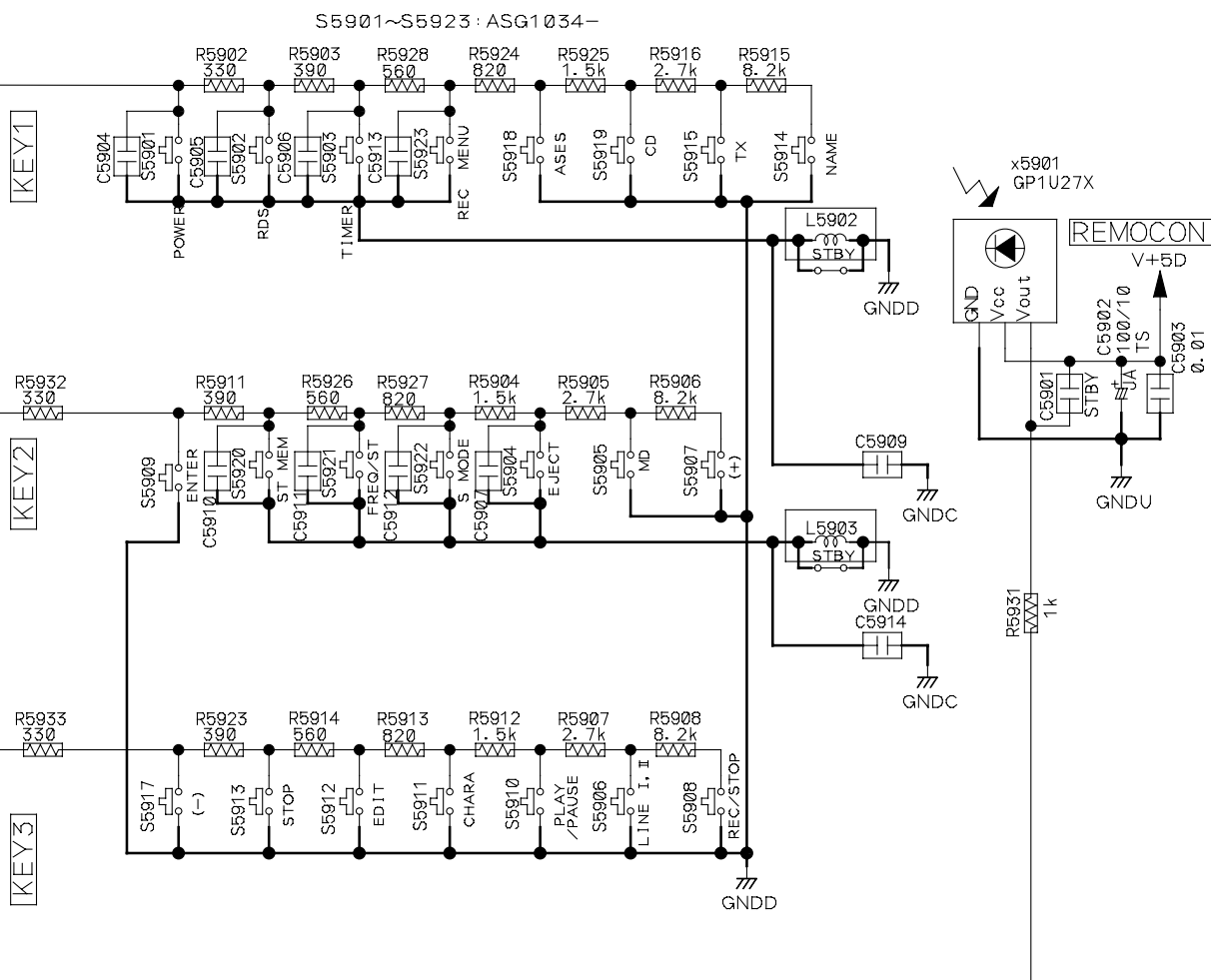
LAU

FRONT PANEL ASSY (SW name)

S5901: POWER (STANDBY/ON)
 S5902: DISPLAY/RDS
 S5903: TIMER REC/WAKE UP
 S5904: MD EJECT
 S5905: MD
 S5906: LINE1, 2
 S5907: ◀◀◀/TUNING+
 S5908: REC/STOP

S5909: TREBLE
 S5910: PLAY/PAUSE
 S5911: ST.WIDE
 S5912: BASS
 S5913: STOP
 S5914: BALANCE
 S5915: TUNER
 S5916: VOLUME/JOG

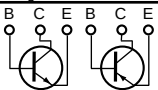
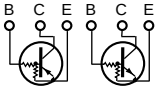
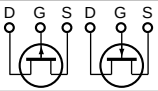
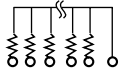
S5917: ▶▶▶/TUNING-
 S5918: BALANCE
 S5919: CD
 S5920: STATION MEMORY
 S5921: FREQ/STATION
 S5922: REVERSE
 S5923: DOLBY NR ON/OFF



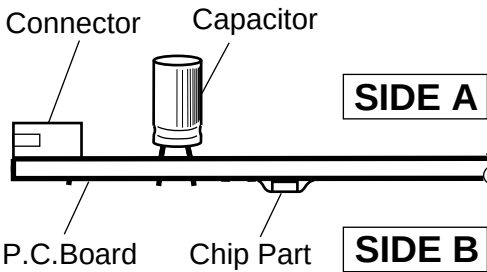
4. PCB CONNECTION DIAGRAM

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
		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 destinations.
For further information for respective destinations, be sure to check with the schematic diagram.
- 4. View point of PCB diagrams.

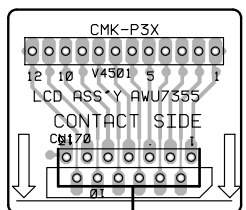


4.2 U-COM and LCD ASSYS

A

SIDE A

D LCD ASSY

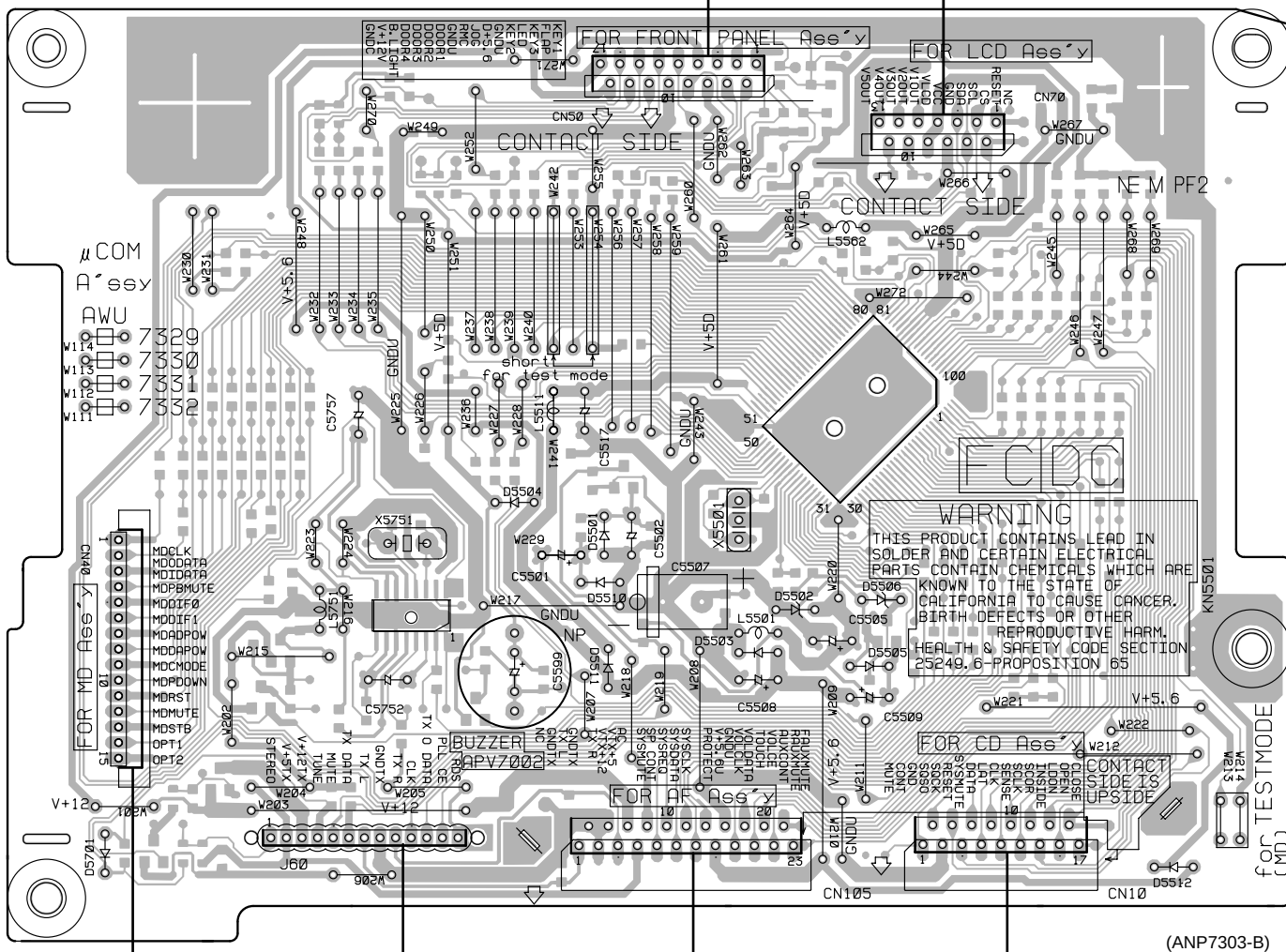


(ANP7301-B)

M CN150

C U-COM ASSY

B



(ANP7303-B)

D

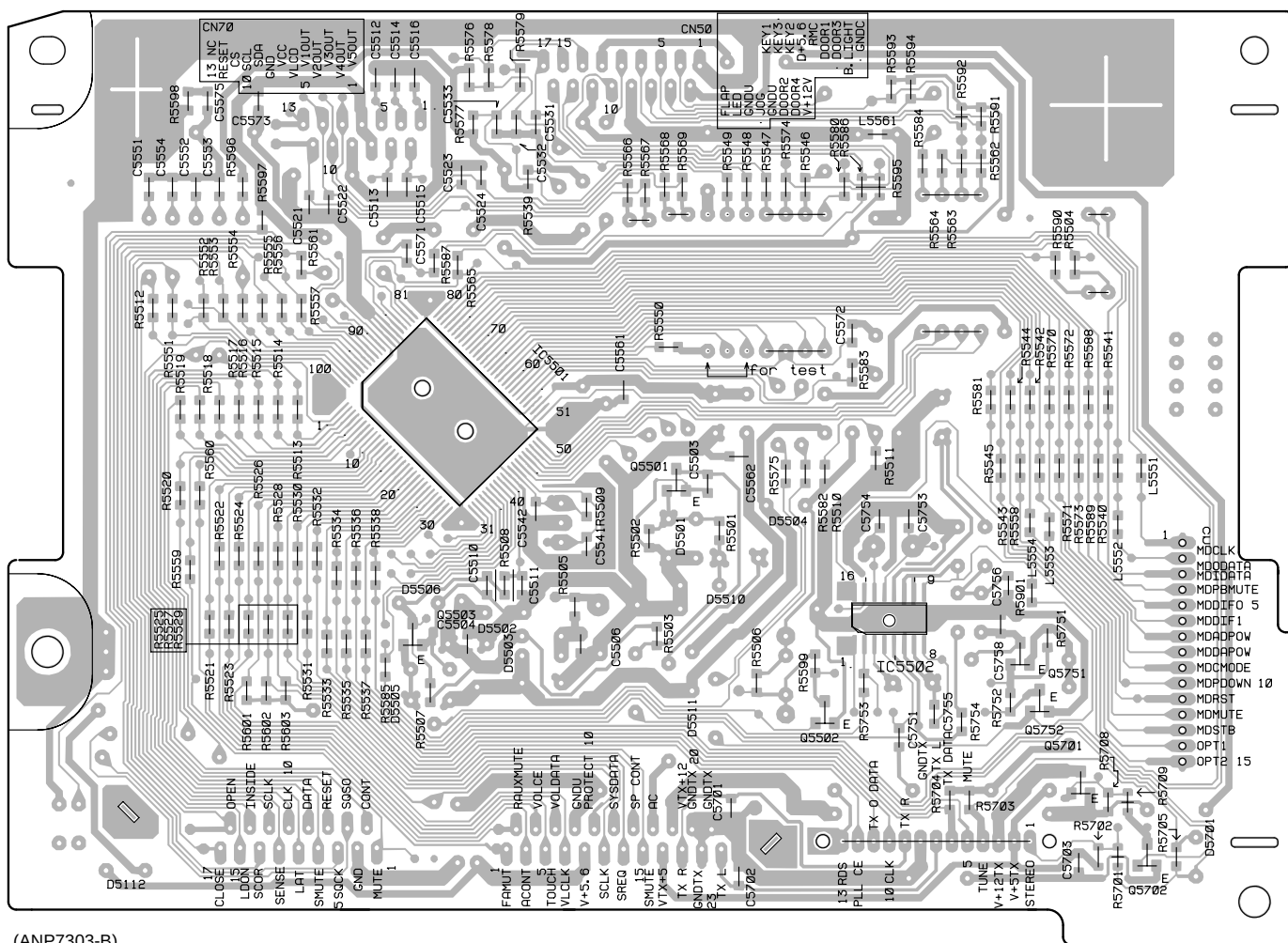
L J140

B J60

E CN5

F CN110

SIDE B



(ANP7303-B)

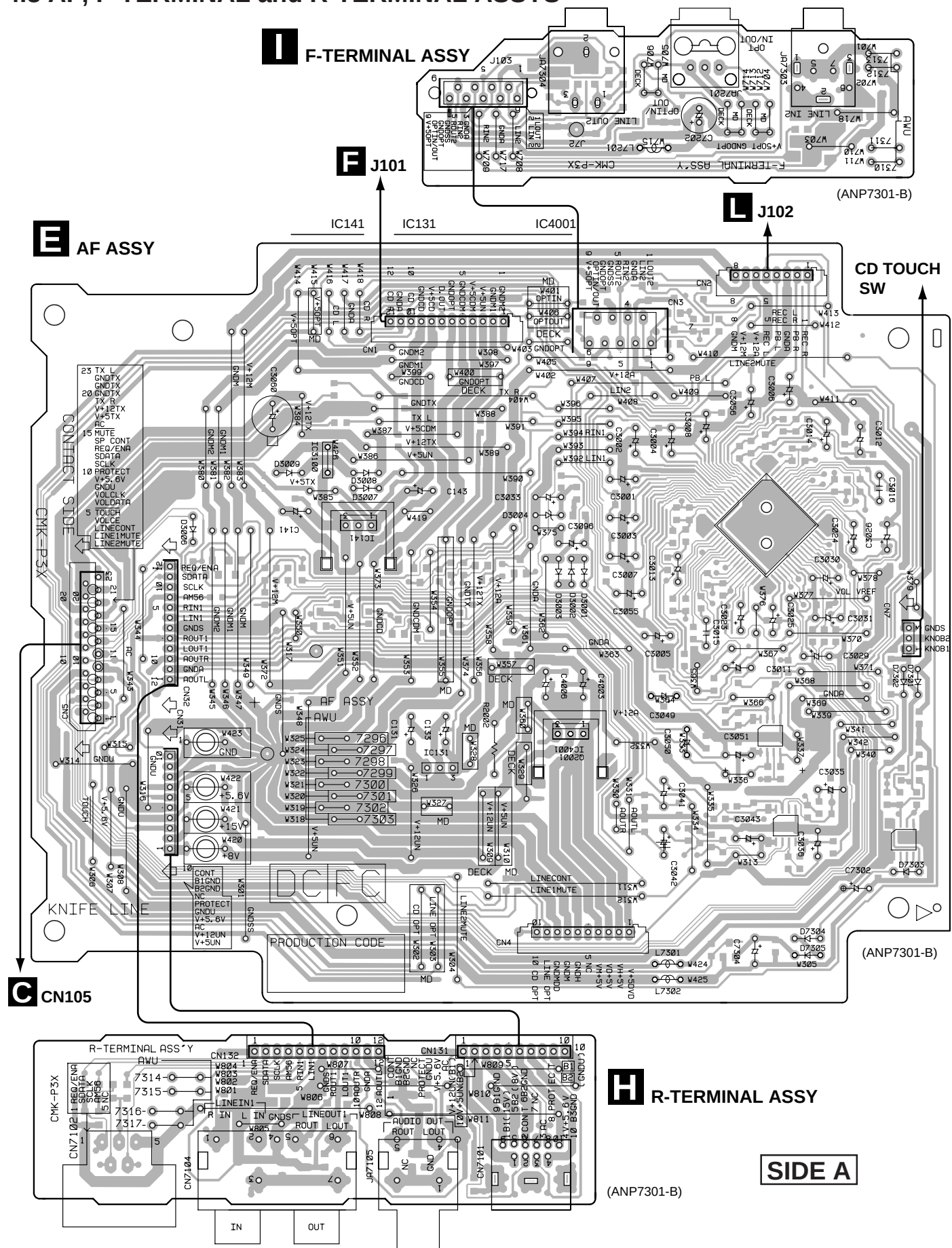
IC5501
Q5506

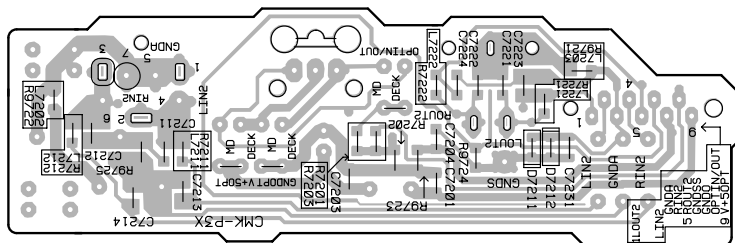
IC5502
Q5501

Q5502

IC5502
Q5751
Q5752 Q5701 Q5502

4.3 AF, F-TERMINAL and R-TERMINAL ASSYS

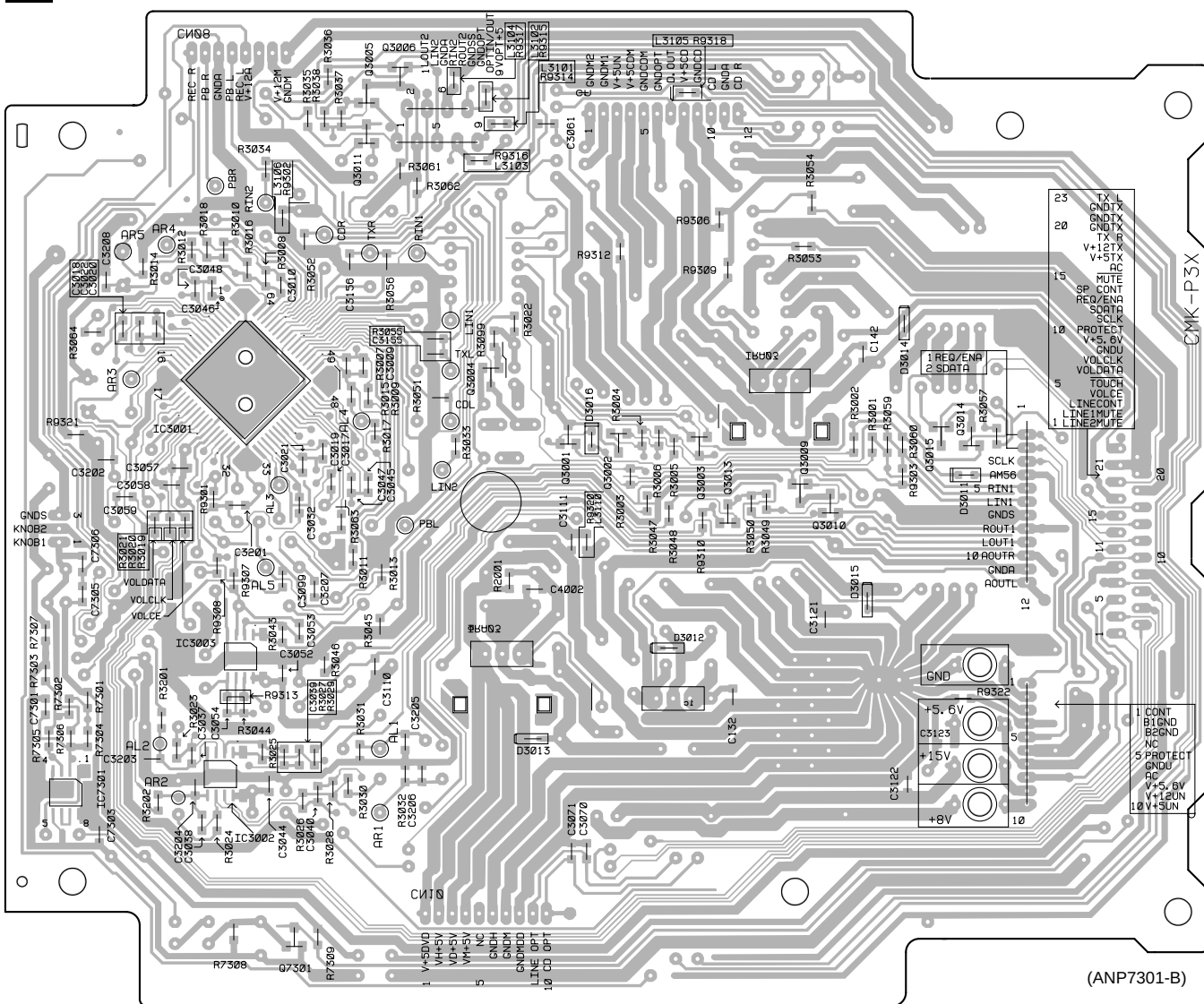




F-TERMINAL ASSY

(ANP7301-B)

AF ASSY



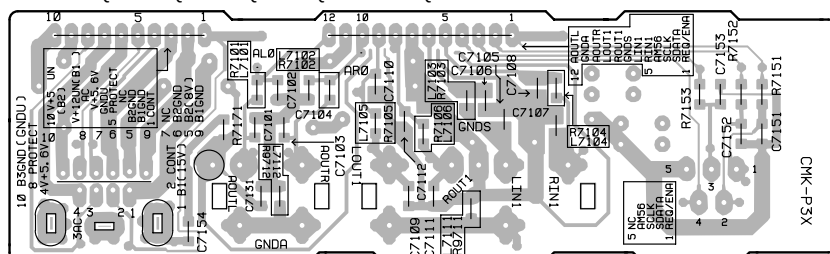
(ANP7301-B)

IC7301 IC3002 Q3005 Q3006 Q3004 Q3009 Q3015 Q3014 Q3011 Q3001 Q3002 Q3003 Q3013 Q3010

R-TERMINAL ASSY

SIDE B

(ANP7301-B)



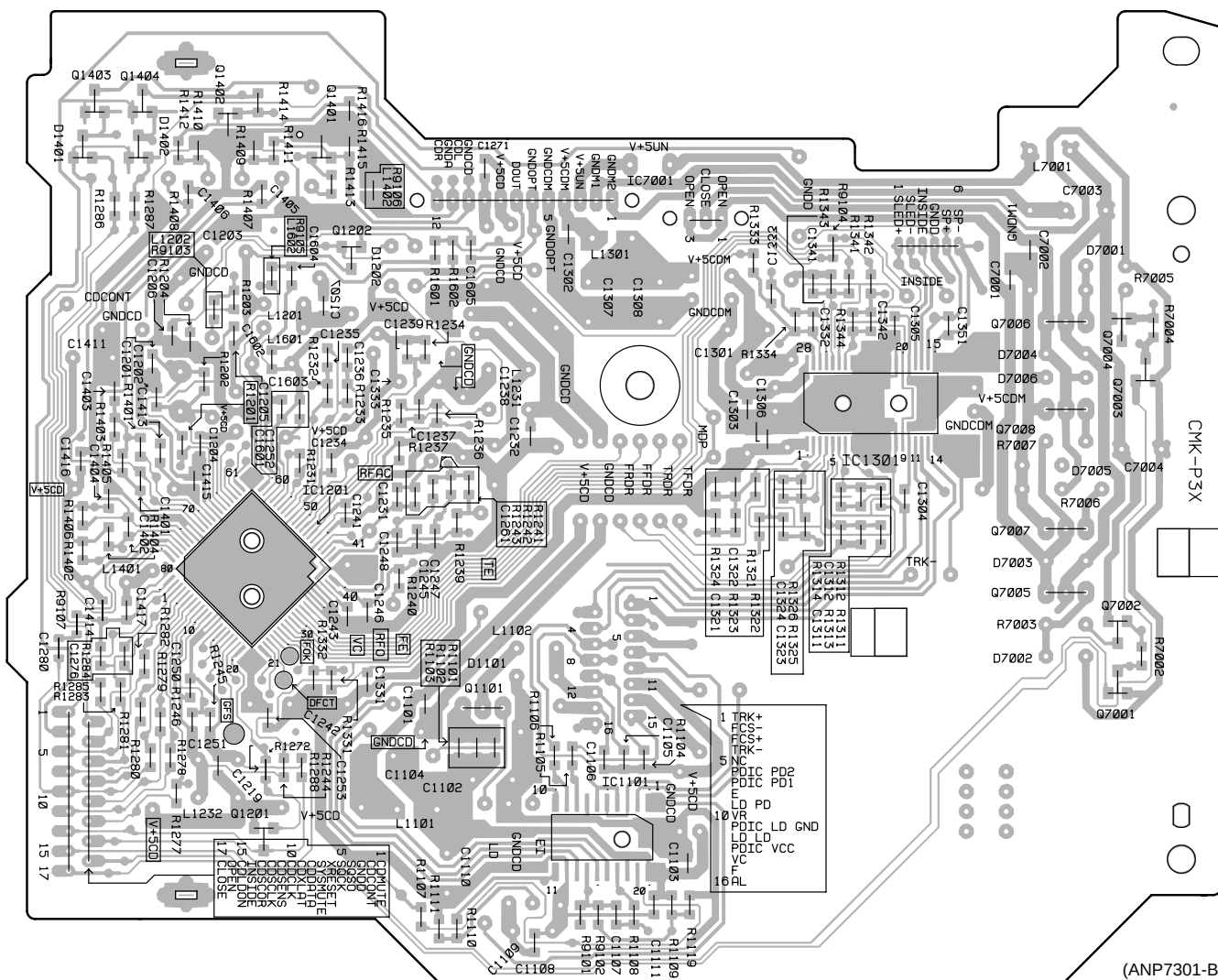
SIDE B

F CD ASSY

Q1403 Q1404 Q1402 Q1401
IC1201 Q1202

IC1301

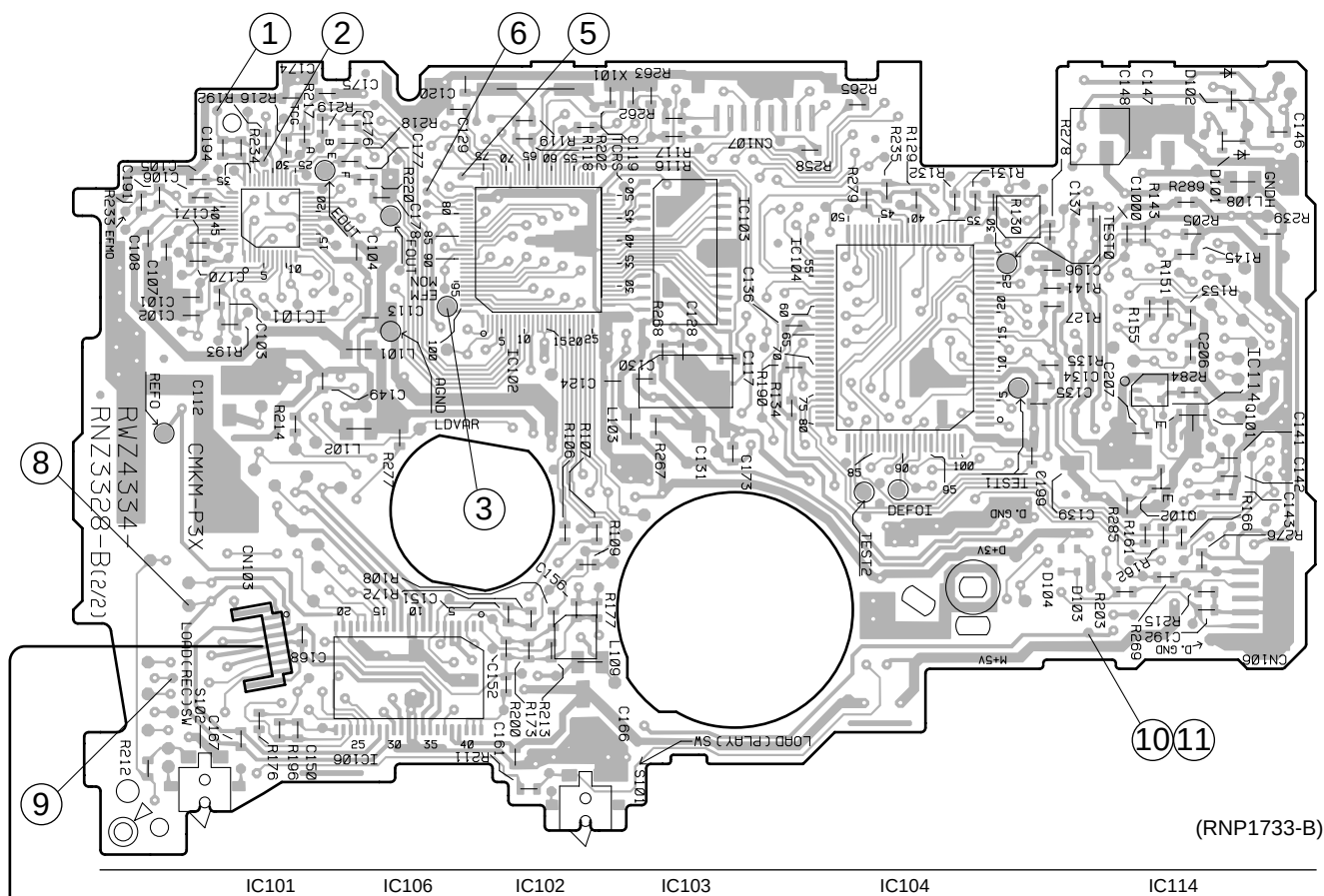
Q7004
Q7002 Q7003
Q7001



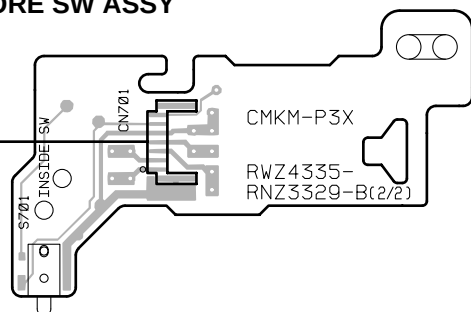
(ANP7301-B)

4.5 CORE MAIN and CORE SW ASSYS

J CORE MAIN ASSY

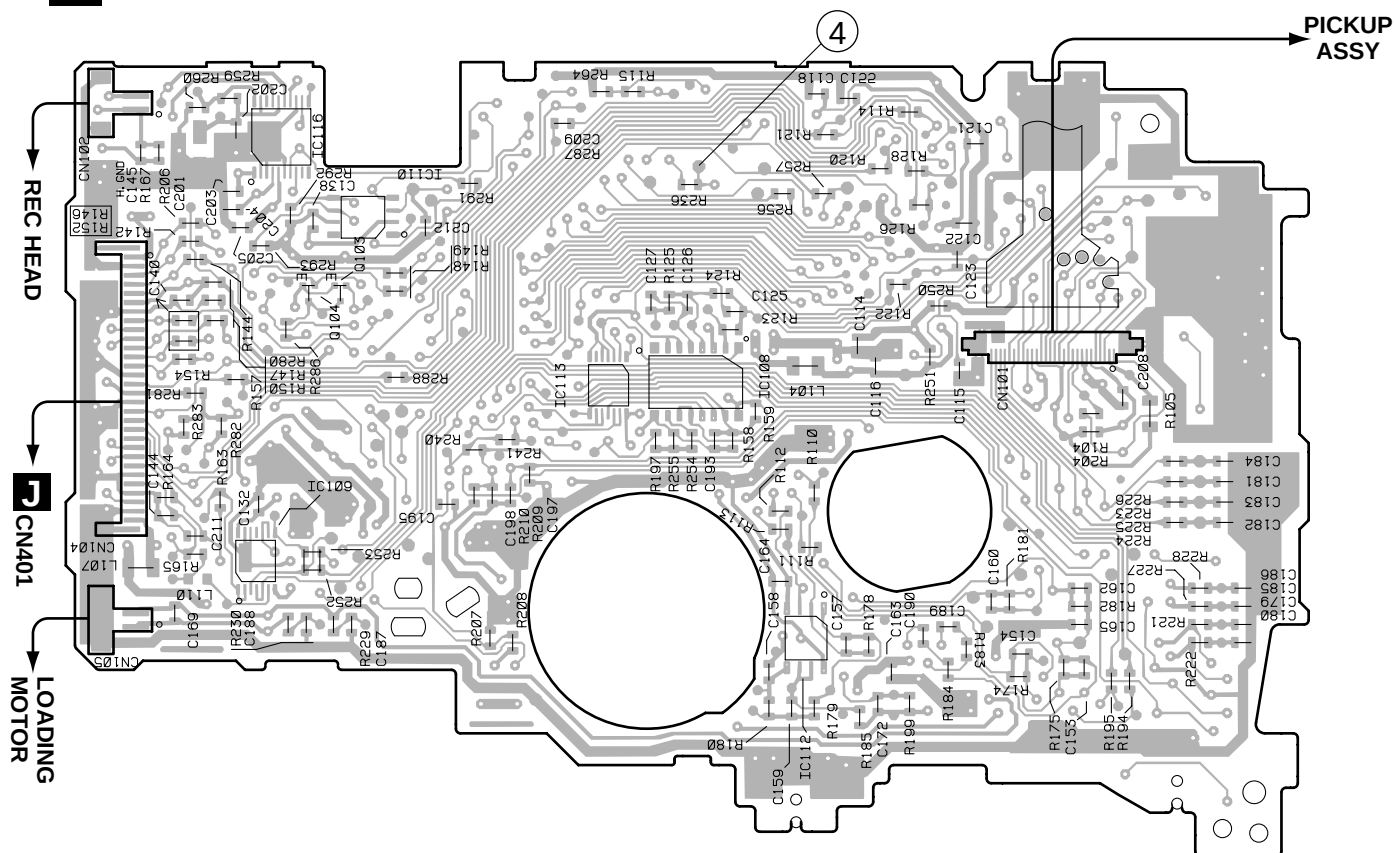


K CORE SW ASSY



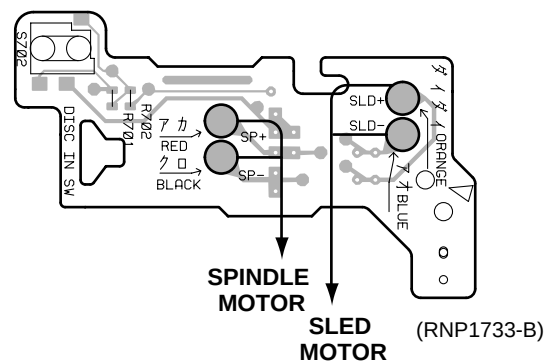
SIDE A

J CORE MAIN ASSY



SIDE B

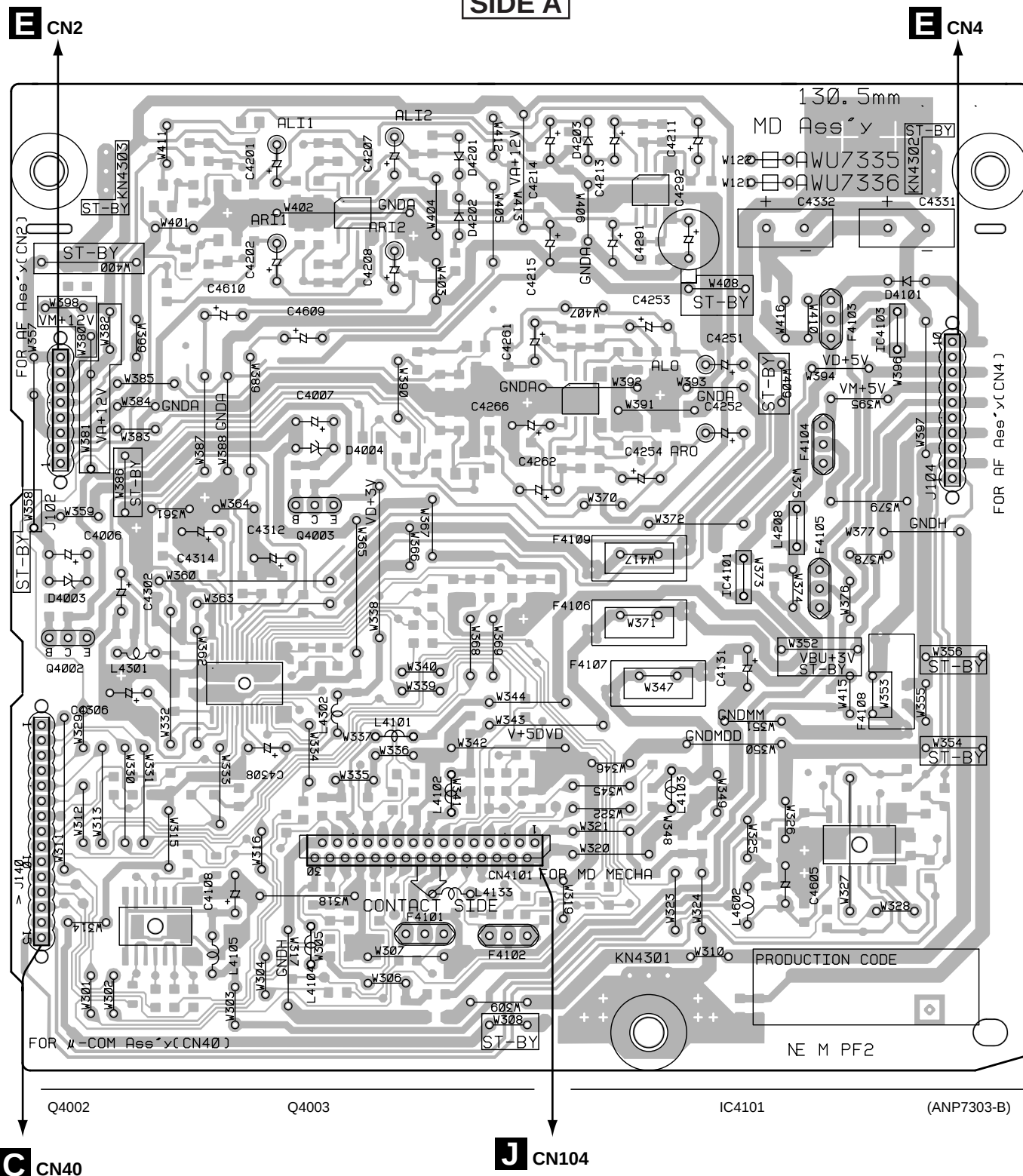
K CORE SW ASSY



4.6 MD ASSY

L MD ASSY

SIDE A



4.7 FRONT PANEL, LIGHT-L, CD CLOSE SW, CD OPEN SW and MD FLAP SW ASSYS

M FRONTPANEL ASSY

O
CD OPEN SW ASSY

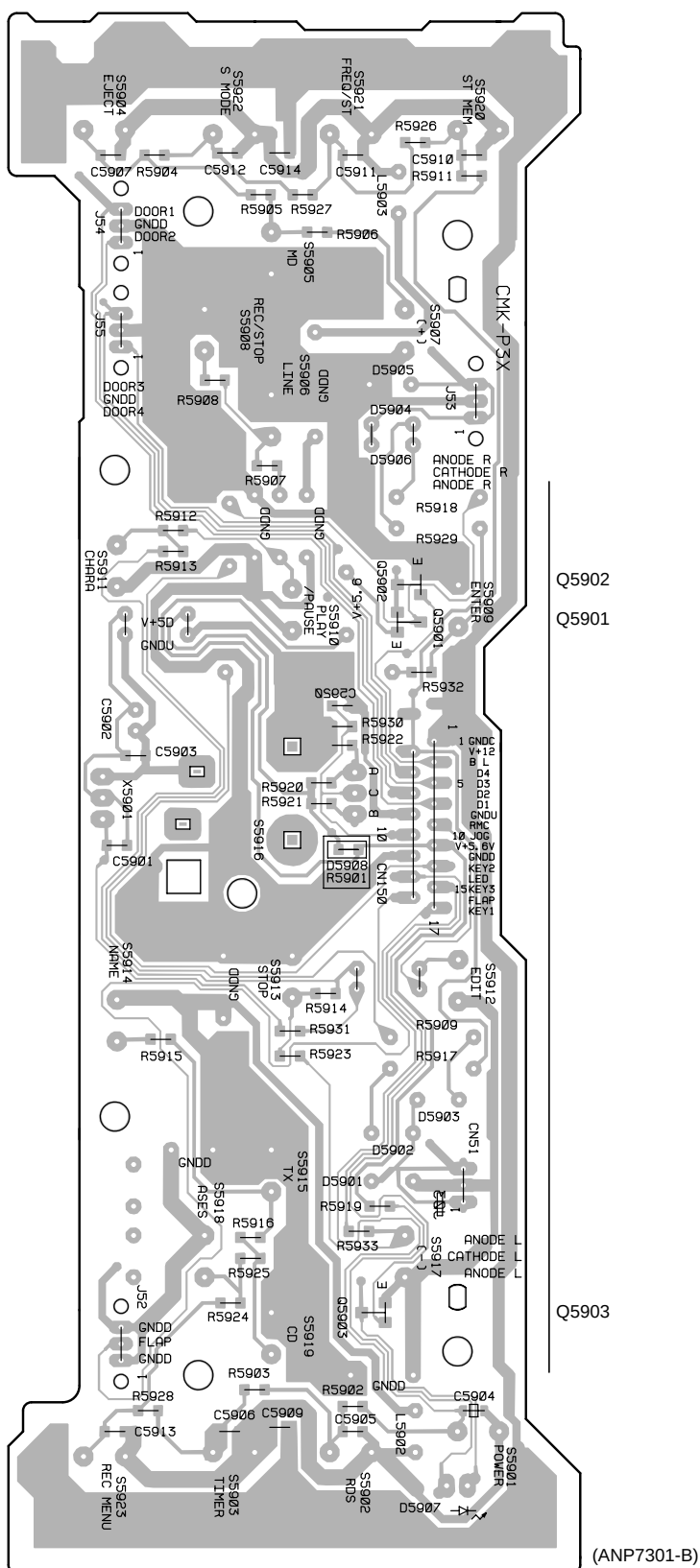
P
CD CLOSE SW ASSY

N LIGHT-L ASSY

Q
MD FLAP SW ASSY

SIDE A

M FRONT PANEL ASSY



SIDE B

5. PCB PARTS LIST

NOTES: ●Parts marked by "NSP" are generally unavailable because they are not in our Master Spare Parts List.
●The Δ 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 × 10¹ → 561 RD1/4PU 5 6 1 J
47k Ω → 47 × 10³ → 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 × 10¹ → 5621 RN1/4PC 5 6 2 1 F

Mark	No.	Description	Part No.
LIST OF ASSEMBLIES			
		FM/AM TUNER MODULE	AXQ7065
NSP		COMPLEX ASSY	AWM7437
		└ AF ASSY	AWU7302
		└ CD ASSY	AWU7307
		└ FRONT PANEL ASSY	AWU7309
NSP		└ F-TERMINAL ASSY	AWU7313
NSP		└ R-TERMINAL ASSY	AWU7317
		└ CD MOTOR ASSY	AWU7318
NSP		└ CD OPEN SW ASSY	AWU7319
NSP		└ CD CLOSE SW ASSY	AWU7320
NSP		└ LIGHT-L ASSY	AWU7321
NSP		└ MD FLAP ASSY	AWU7324
NSP		└ LCD ASSY	AWU7355
NSP		MD-COMP ASSY	AWM7445
NSP		└ TX CONNECT ASSY	AWU7323
		└ U-COM ASSY	AWU7331
		└ MD ASSY	AWU7336
		MD CORE ASSY	RWM2058
		└ CORE MAIN ASSY	RWZ4334
NSP		└ CORE ASSY	RWZ4335

A FM/AM TUNER MODULE
SEMICONDUCTORS

IC6201	LA1832ML
IC6202	LC72131MD
Q6402	2SC2223
Q6203	2SC2705
Q6201, Q6202	2SC2712
Q6214, Q6403	2SC2714
Q6404	2SK302
Q6401	3SK194
Q6204	DTA124ES
Q6205	DTC124EK
D6202	1SS254
D6401, D6402	1T378A

COILS AND FILTERS

L6404	ATC1003
L6401	ATC1020
L6402	ATC1021
F6204	ATF-107
F6203	ATF-119

Mark	No.	Description	Part No.
	F6401		ATF-155
	F6206		ATF7008
	F6202		ATF7011
	L6206, L6208, L6403		LAU2R2J
TRANSFORMERS			
	T6201		ATB7008
	T6401		ATE7002
CAPACITORS			
	C6208		CCSQCH100D50
	C6212, C6274, C6275, C6408		CCSQCH101J50
	C6412		CCSQCH102J50
	C6221, C6222, C6416		CCSQCH150J50
	C6271		CCSQCH200J50
	C6415		CCSQCH330J50
	C6406		CCSQCH331J50
	C6401, C6419		CCSQCH5R0C50
	C6407		CCSQCK1R0C50
	C6410		CCSQCK2R0C50
	C6413		CCSQRH180J50
	C6414		CCSQRH8R0D50
	C6405		CCSQTH150J50
	C6234, C6235		CEAL1R0M50
	C6245		CEAL470M16
	C6224		CEAT100M50
	C6243		CEAT101M16
	C6231		CEAT1R0M50
	C6227		CEAT220M25
	C6214, C6236		CEAT2R2M50
	C6262		CEAT3R3M50
	C6219		CEAT470M10
	C6244		CEAT470M16
	C6249, C6250, C6265, C6266		CEAT4R7M50
	C6258		CEJA470M16
	C6215		CFTLA103J50
	C6211, C6254, C6403, C6417		CKSQYB102K50
	C6201, C6205, C6210, C6237, C6276		CKSQYB103K50
	C6278, C6280, C6281, C6402, C6409		CKSQYB103K50
	C6418		CKSQYB103K50
	C6251, C6252		CKSQYB153K50
	C6203, C6259		CKSQYB223K50
	C6228		CKSQYB472K50
	C6209		CKSQYB473K50
	C6230		CKSQYB821K50

Mark	No.	Description	Part No.
	C6218, C6223, C6255		CKSQYF103Z50
	C6220, C6226, C6242, C6256		CKSQYF223Z50
	C6225		CKSQYF473Z50

RESISTORS

R6280	RD1/4PU101J
R6413, R6416, R6418, R6906, R6909	RS1/8S0R0J
R6401	RS1/8S470J
VR6201 (10kΩ)	PCP1029
Other Resistors	RS1/10S□□□ J

OTHERS

BN6202 (4P ANTENA TERMINAL)	AKE7051
X6202 (456 kHz)	ASS1066
X6201 (7.2000 MHz)	ASS1093
CN6201 (14P SOCKET)	KP200IA14L

EF AF ASSY

SEMICONDUCTORS

IC3001	LC75396NE
IC7301	NJM062M
IC3002	NJM4558MD
IC141, IC4001	NJM7805FA
IC131	NJM7812FA

Q3004	2SC2412K
Q3001, Q3002, Q3005, Q3006	2SD2114K
Q3009, Q3010	2SD2114K
Q3003	DTA124EK
Q3011, Q3013, Q3015	DTA143EK

Q7301	DTC114EK
Q3014	DTC124EK
D3006, D3007, D7301–D7304	1SS133
D3011, D3016	1SS355
D3004	MTZJ11C

D3008, D3009	S5688G
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COILS AND FILTERS

L7301	LAU220J
L3110	VTL1096
L3101–L3105	VTL1105

CAPACITORS

C3057–C3059, C3203, C3204	CCSQCH101J50
C3207, C3208	CCSQCH101J50
C3070	CCSQCH270J50
C3205, C3206	CCSQCH271J50
C3011, C3012, C3025, C3026	CEAT100M50

C3029, C3030	CEAT100M50
C131, C141, C3041, C3042	CEAT1R0M50
C3031	CEAT220M50
C4006	CEAT221M16
C3001–C3008, C3013, C3014	CEAT2R2M50

C3023, C3024, C3035, C3036	CEAT2R2M50
C3055, C3056	CEAT2R2M50
C133, C143, C3096, C4003, C7302	CEAT470M16
C7304	CEJA4R7M50
C3015, C3016	CFTYA474J50

Mark	No.	Description	Part No.
	C3202		CKSQYB102K50
	C3110		CKSQYB103K50
	C7301		CKSQYB221K50
	C3121–C3123		CKSQYB223K50
	C3047, C3048		CKSQYB473K50

C3019, C3020	CKSQYB562K50
C3021, C3022	CKSQYB681K50
C3032	CKSQYB682K50
C132, C142, C3017, C3018, C3044	CKSQYF104Z50
C3099, C4002, C7305	CKSQYF104Z50

C3045, C3046	CKSQYF684Z16
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RESISTORS

All Resistors	RS1/10S□□□J
---------------	-------------

OTHERS

CN5 (23P FFC CONNECTOR)	52045-2345
CN2 (8P JUMPER CONNECTOR)	52147-0810
CN4 (10P JUMPER CONNECTOR)	52147-1010
CN1 (12P JUMPER CONNECTOR)	52147-1210
CN7 (3P CONNECTOR)	B3B-PH-K-S

CN31 (10P PLUG)	KM200IB10
CN32 (12P PLUG)	KM200IB12
CN3 (9P JUMPER CONNECTOR)	KPE9

EF CD ASSY

SEMICONDUCTORS

IC1301	BA5970FP
IC1101	CXA1821M
IC1201	CXD2587Q
Q7002, Q7004	2SA1037K
Q1101	2SA854S

Q7005–Q7008	2SD1858X
Q1401, Q1402	2SD2114K
Q1201, Q1403, Q1404	DTA124EK
Q1202	DTC114TK
Q7001, Q7003	DTC124EK

D1101, D1202, D7003–D7006	1SS133
D1201	1SS85
D1401, D1402	DAN202K
D7002	MTZJ3.6B
D7001	MTZJ6.2C

COILS AND FILTERS

L1101, L1102, L1201, L1231, L1232	LAU100J
L1401, L1601	LAU100J
L7001	LFA100J
L1402, L1602	VTL1105

CAPACITORS

C1201, C1202	CCSQCH150J50
C1401, C1402	CCSQCH151J50
C1107	CCSQCH220J50
C1239, C1246, C1247	CCSQCH221J50
C1604	CCSQCH270J50

C1280	CCSQCH331J50
C1322, C1324	CCSQCH681J50
C1403, C1404	CCSQSL681J50
C1102, C1104, C1203, C1233, C1240	CEJA101M10
C1242, C1249, C1411, C1602	CEJA101M10

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Mark	No.	Description	Part No.
	C1301, C1307, C1308, C7003 C1405, C1406 C1109, C1110 C1238 C1331		CEJA101M16 CEJA2R2M50 CEJA330M25 CEJAR47M50 CKSQYB102K50
	C1204—C1206, C1237, C1253, C1271 C1416, C1605 C1245 C1236 C1231		CKSQYB103K50 CKSQYB103K50 CKSQYB104K25 CKSQYB152K50 CKSQYB332K50
	C1341, C1342 C1235, C1321, C1323 C1311, C1312 C1332 C1101, C1103, C1108, C1111, C1232		CKSQYB333K50 CKSQYB473K50 CKSQYB681K50 CKSQYB682K50 CKSQYF103Z50
	C1234, C1241, C1250, C1251, C1276 C1302—C1306, C1413, C1414, C1417 C1601, C1603 C7001, C7002		CKSQYF103Z50 CKSQYF103Z50 CKSQYF103Z50 CKSQYF104Z50

RESISTORS

R7003	RD1/4PU181J
R7007	RD1/4PU221J
R7006	RD1/4PU331J
R7005	RD1/4PU470J
Other Resistors	RS1/10S□□□J

OTHERS

111	(3P CABLE HOLDER)	51048-0300
101	(12P CABLE HOLDER)	51048-1200
CN110	(17P FFC CONNECTOR)	52044-1745
CN1101	(16P FFC CONNECTOR)	52089-1620
J111	(3P FLAT CABLE)	D20PYY0310E
J101	(12P FLAT CABLE)	D20PYY1215E
X1201	(16.9344MHz)	PSS1008
CN1301	(6P CONNECTOR)	S6B-ZR
1001, 1002	(PCB BINDER)	VEF1040

M FRONT PANEL ASSY SEMICONDUCTORS

Q5901	DTA143EK
Q5902, Q5903	DTC124EK
D5902, D5903	1SS133
D5908	1SS355
D5901	MTZJ5.6B

D5907	SLR- 343VC
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SWITCHES AND RELAYS

S5916	ASX7026
S5901–S5915, S5917–S5923	XSG3001

CAPACITORS

C5902	CEJA101M10
C5903	CKSQYF103Z50

RESISTORS

R5917	RD1/2PM471J
R5909	RD1/2PM820J
Other Resistors	RS1/10S□□□J

Mark	No.	Description	Part No.
OTHERS			
	152, 154, 155	(3P CABLE HOLDER)	51048-0300
	CN150	(17P FFC CONNECTOR)	52044-1745
	CN51	(3P JUMPER CONNECTOR)	52147-0310
	J54	(3P FLAT CABLE)	D20PYY0310E
	J52	(3P FLAT CABLE)	D20PYY0320E
	J55	(3P FLAT CABLE)	D20PYY0330E
	5901	(REMOTE RECIVE UNIT)	GP1U27X

I F-TERMINAL ASSY SEMICONDUCTORS

D7211, D7212	1SS355
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COILS AND FILTERS

L7202, L7203, L7211, L7212	VTL1096
L7221, L7222	VTL1096
L7241	VTL1105

CAPACITORS

C7202	CEJA101M10
C7213, C7214, C7223, C7224	CKSQYB102K50
C7201, C7203	CKSQYB103K50
C7231	CKSQYB472K50
C7202	CCSQCH270J50

RESISTORS

All Resistors	RS1/10S□□□J
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OTHERS

103	(9P CABLE HOLDER)	51063-0905
7304	(MINE JACK)	AKN-210
7303	(MINI JACK)	AKN7003
J103	(JUMPER WIRE)	D15A09-350-2651
JA7202	(OPTICAL LINK OUT)	GP1F32R

H R-TERMINAL ASSY COILS AND FILTERS

L7101–L7106	VTL1096
L7111	VTL1105

CAPACITORS

C7102, C7104	CCSQCH221J50
C7154	CKSQYB472K50
C7131	CKSQYB103K50

RESISTORS

All Resistors	RS1/10S□□□J
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OTHERS

JA7105	(2P PIN JACK)	AKB7043
CN7104	(4P PIN JACK)	AKB7114
CN7102	(5P SOCKET)	AKP7042
CN7101	(10P SOCKET)	AKP7048
CN131	(10P SOCKET)	KP200IB10L
CN132	(12P SOCKET)	KP200IB12L

G CD MOTOR ASSY

CAPACITORS

C7501	CKSQYF104Z50
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OTHERS

CN11	(3P JUMPER CONNECTOR)	52151-0310
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Mark	No.	Description	Part No.
O	CD OPEN SW ASSY		
	SWITCHES AND RELAYS		
	S7401, S7402	VSH1019	
OTHERS	54	(3P CABLE HOLDER)	51048-0300
P	CD CLOSE SW ASSY		
	SWITCHES AND RELAYS		
	S7403, S7404	ASG7015	
OTHERS	55	(3P CABLE HOLDER)	51048-0300
N	LIGHT-L ASSY		
	SEMICONDUCTORS		
	D5971	NSPBF50S-8451	
OTHERS	51	(3P CABLE HOLDER)	51048-0300
	J51	(3P CABLE HOLDER)	D20PYY0310E
Q	MD FLAP SW ASSY		
	SWITCHES AND RELAYS		
	S4901	ASG7009	
OTHERS	52	(3P CABLE HOLDER)	51048-0300
B	TX CONNECT ASSY		
	CAPACITORS		
	C9999	CKSQYB104K25	
OTHERS	160	(13P CABLE HOLDER)	51048-1300
	CN161	(14P CONNECTOR)	9176B-14L
C	U-COM ASSY		
	SEMICONDUCTORS		
	IC5501	PDG241B	
	Q5701	2SA1037K	
	Q5501	2SC2412K	
	Q5502, Q5702	DTC124EK	
	Q5503	DTC143EK	
	D5501, D5503–D5505, D5511, D5512	1SS133	
	D5701	1SS133	
	D5506	MTZJ6.8B	
COILS AND FILTERS	L5501, L5511, L5562	LAU220J	
	L5551–L5554	VTL1105	
CAPACITORS	C5507 (0.047F/5.5V)	ACH1246	
	C5521–C5524	CCSQCH100D50	
	C5509	CEAT100M50	
	C5502	CEAT1R0M50	
	C5505, C5508, C5517	CEAT470M16	

Mark	No.	Description	Part No.
	C5501	CEATR47M50	
	C5503, C5562	CKSQYB102K50	
	C5531–C5533	CKSQYB103K50	
	C5504, C5506, C5511–C5516	CKSQYF104Z50	
RESISTORS	Other Resistors	RS1/10S□□□J	
OTHERS	60	(13P CABLE HOLDER)	51048-1300
	CN10	(17P FFC CONNECTOR)	52044-1745
	CN105	(23P FFC CONNECTOR)	52044-2345
	CN70	(15P FFC CONNECTOR)	52045-1345
	CN50	(17P FFC CONNECTOR)	52045-1745
	CN40	(15P JUMPER CONNECTOR)	52147-1510
		(BUZZER)	APV7002
	J60	(13P FLAT CABLE)	D20PYY1315E
		(PCB BINDER)	VEF1040
	KN5501	(EARTH METAL FITTING)	VNF1084
D	LCD ASSY		
	OTHERS		
	CN190	(15P FFC CONNECTOR)	52045-1545
	CN180	(29P FFC CONNECTOR)	52045-2945
	V5501	(LCD DISPLY)	AAV7066
L	MD ASSY		
	SEMICONDUCTORS		
	IC4301	AK4520A	
	IC4201, IC4202	NJM4558MD	
	IC4601	TC74HC00AF	
	IC4151	TC74HCT08AF	
	Q4003	2SC1740S	
	Q4201–Q4203	2SC2412K	
	Q4002	2SD1858X	
	Q4251, Q4252	2SD2114K	
	Q4253	DTA124EK	
	D4201–D4203	1SS133	
	D4204, D4251	DAP202K	
	D4004	MTZJ3.6B	
	D4003	MTZJ5.6B	
	D4101	S5688G	
COILS AND FILTERS	F4106–F4109	ATF1108	
	F4101	ATF1110	
	F4102	ATF7021	
	F4103–F4105	ATF7022	
	L4301, L4302	LAU100J	
	L4105, L4602	LAU220J	
	L4133	LAU2R2J	
	L4111, L4112, L4114, L4115	VTL1105	
	L4117–L4120, L4131, L4132, L4311	VTL1105	
CAPACITORS	C4124, C4319	CCSQCH101J50	
	C4141, C4205, C4206, C4212	CCSQCH220J50	
	C4606	CCSQCH470J50	
	C4201, C4202, C4207, C4208, C4211	CEAT100M50	
	C4213, C4251, C4252, C4609, C4610	CEAT100M50	

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Mark	No.	Description	Part No.
	C4302, C4306, C4308		CEAT101M10
	C4215		CEAT101M16
	C4214		CEAT220M25
	C4131		CEAT221M10
	C4292		CEAT221M16
	C4605		CEAT470M10
	C4006, C4007, C4108		CEAT470M16
	C4312, C4314		CEAT4R7M50
	C4110		CKSQYB102K50
	C4109, C4111, C4121, C4216, C4304		CKSQYB103K50
	C4310, C4317, C4318, C4601–C4604		CKSQYB103K50
	C4101, C4102, C4106, C4107		CKSQYB104K25
	C4122, C4123, C4125, C4127, C4132		CKSQYB104K25
	C4309, C4323		CKSQYB104K25
	C4315, C4316		CKSQYB222K50
	C4301, C4303, C4305, C4307, C4311		CKSQYF104Z50
	C4313		CKSQYF104Z50

RESISTORS

All Resistors	RS1/10S□□□J
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OTHERS

102	(8P CABLE HOLDER)	51048-0800
104	(10P CABLE HOLDER)	51048-1000
J102	(8P FLAT CABLE)	D20PYY0825E
J104	(10P FLAT CABLE)	D20PYY1040E
J140	(15P FLAT CABLE)	D20PYY1525E
X5501	(12MHz)	ASS1062
X5751	(4.332MHz)	ASS7004
CN4101	(30P FFC CONNECTOR)	VKN1206

J MD CORE MAIN ASSY SEMICONDUCTORS

IC112	BA4510F
IC116	BD7910FV
IC110	BR93LC56F
IC101	IR3R55M
IC102	LR376487
IC106	M56758FP
IC103	M5M4V4400CTP-7
IC104	PD5523A
IC114	RN5RG32AA
IC109	TC74VHC08FT
Q102	2SA1036K
Q101	2SB1188
Q103, Q104	DTC124EU
D101, D102	SB02-09CP

COILS AND FILTERS

L101, L103, L104, L107 (4.7μH)	DTL1024
L110	QTL1015
L108 (47μH)	RTL1003
L102 (0.47μH)	RTL1007

SWITCHES AND RELAYS

S101, S102	RSF1012
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Mark	No.	Description	Part No.
CAPACITORS			
	C115, C146		CCSQCH101J50
	C119, C120		CCSQCH120J50
	C141–C144, C155		CCSQCH220J50
	C174–C178		CCSQCH271J50
	C194		CCSQCH331J50
	C139		CEV101M4
	C166		CEV101M6R3
	C147, C148, C201		CEV470M6R3
	C112		CEV4R7M35
	C1000, C199		CKSQYB103K50
	C129		CKSQYB122K50
	C153, C154		CKSQYB153K50
	C158		CKSQYB222K50
	C196–C198		CKSQYB223K50
	C103, C145		CKSQYB273K50

C171	CKSQYB332K50
C149, C170	CKSQYB333K50
C106, C159	CKSQYB472K50
C156, C157	CKSQYB562K50
C151, C152, C160, C162	CKSQYB821K50

C132, C134, C137, C138, C161	CKSQYF104Z25
C163, C164, C195, C202–C205	CKSQYF104Z25
C101, C102, C104, C108	CKSQYF105Z16
C113, C114, C116–C118	CKSQYF105Z16
C121, C122, C124, C135, C136	CKSQYF105Z16

C140, C165, C169, C207, C208	CKSQYF105Z16
C123	CKSQYF473Z25
C105, C107	CKSQYF474Z16

RESISTORS

R105	RS1/8S270J
Other Resistors	RS1/10S□□□J

OTHERS

CN104 (30P CONNECTOR)	RKN1039
X101 (33.8688MHz)	RSS1055
CN105 (3P CONNECTOR)	S2B-ZR-SM3A
CN102 (3P CONNECTOR)	S2B-ZR-SM3A-R
CN101 (28P CONNECTOR)	SFV28R-1ST
CN103 (7P CIONNECTOR)	SFW7R-2ST

K MD CORE SW ASSY SWITCHES AND RELAYS

S701	RSF1009
S702	RSF1010

RESISTORS

All Resistors	RS1/10S□□□J
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OTHERS

CN701 (7P CONNECTOR)	SFW7R-1ST
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6. ADJUSTMENT

6.1 MD SECTION

■ JIGS AND MEASURING INSTRUMENTS

- Thermometer
- Oscilloscope
- Optical Power Meter
- Jitter Meter
- Test Disc
 - For servo system adjustment GGF1328 (MMD-212)
 - For recording/playback inspection GGF1328 (MMD-212), GGF1277, TGYS1 (or MMD-110), Commercial discs

6.1.1 NECESSARY ADJUSTMENT POINTS

When		Adjustment points
Exchange PICKUP	➡	② - ⑧ → Pages 59 - 64
Exchange Servo Base Assy (SPINDLE MOTOR)	➡	③ - ⑧ → Pages 60 - 64
Exchange MD CORE MAIN UNIT	➡	①, ④ - ⑧ → Pages 59 - 64
Exchange MD HEAD	➡	⑧ → Pages 64
Exchange Loading Mechanism Assy	➡	_____
Exchange Servo Mechanism Assy	➡	③ - ⑧ → Pages 60 - 64
Exchange MD Mechanism Assy (Loading Mechanism Assy + Servo Mechanism Assy)	➡	③ - ⑧ → Pages 60 - 64

6.1.2 TEST MODE

For adjustment, use the stereo power amplifier (M-IS21T).

(1) How to Start / Cancel Test Mode (Mechanism Assy Adjustment Mode)

TEST MODE : ON

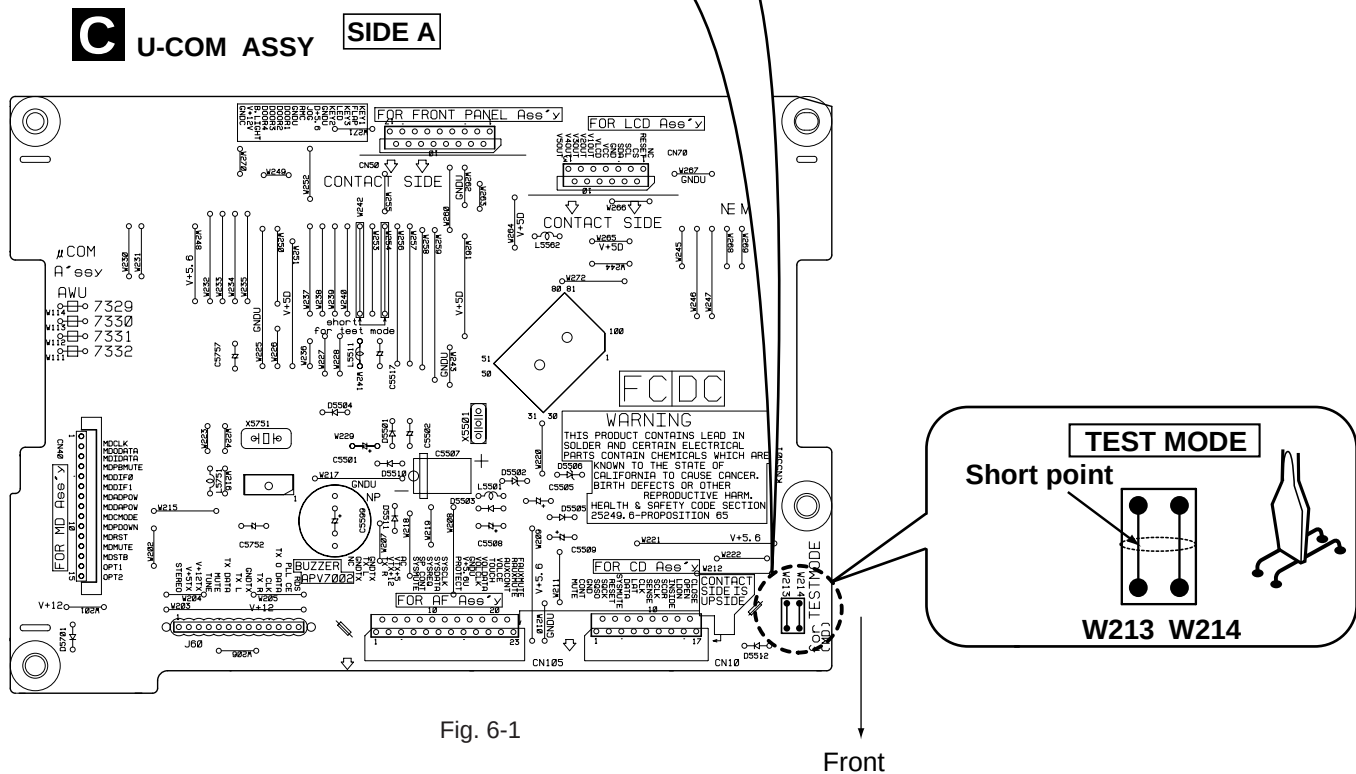
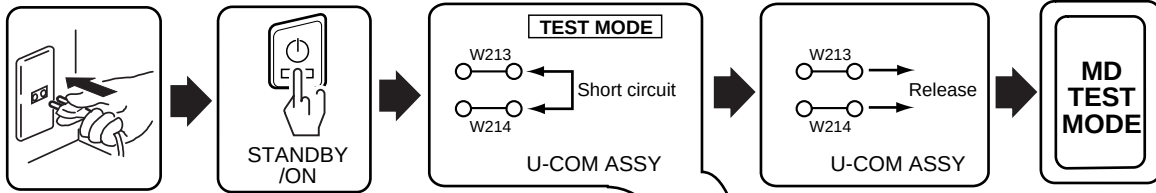
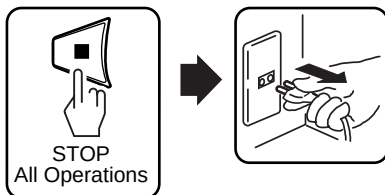


Fig. 6-1

TEST MODE : STOP → CANCEL



6.1.3 MD Mechanism Assy Adjustment and Check

① Temperature Check (Please perform this check soon after the power has been switched on.)

Note: When IC101 (RF-AMP) or IC104 (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 6.

Step No.	Operation Keys and Operation Method	FL Display	Status	Remarks												
1	Short circuit MECH TEST MODE during the power ON. (Fig.6-1)	EJECT	Test mode													
2	Press the REC key.	TEMP ○○□□	The microcomputer starts measuring.	○○: Measuring value												
3	When □□ is 80 or more at this time, the adjustment is OK (step 4 and following can be omitted).		End	□□: Set value												
When □□ is 80 (not passed)		TEMP ○○ 8 0	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 <table border="1" style="margin: auto;"><thead><tr><th>Room Temperature [T (°C)]</th><th>hex= (○○-□□)</th></tr></thead><tbody><tr><td>11.6 to 16.9</td><td>+1 to +3</td></tr><tr><td>17.0 to 22.3</td><td>0 to +2</td></tr><tr><td>22.4 to 27.6</td><td>-1 to +1</td></tr><tr><td>27.7 to 33.0</td><td>0 to -2</td></tr><tr><td>33.1 to 38.4</td><td>-1 to -3</td></tr></tbody></table> When the microcomputer value is 79 ↑ - 7A 7B 7C ↓ + 7D			Room Temperature [T (°C)]	hex= (○○-□□)	11.6 to 16.9	+1 to +3	17.0 to 22.3	0 to +2	22.4 to 27.6	-1 to +1	27.7 to 33.0	0 to -2	33.1 to 38.4	-1 to -3
Room Temperature [T (°C)]	hex= (○○-□□)															
11.6 to 16.9	+1 to +3															
17.0 to 22.3	0 to +2															
22.4 to 27.6	-1 to +1															
27.7 to 33.0	0 to -2															
33.1 to 38.4	-1 to -3															
5	Change □□ with the F. SKIP key (UP) and the R.SKIP key (DOWN).	TEMP 7B 7B														
6	Power OFF	EEPROMW	Writing to EEPROM is made and return is made automatically from test mode to normal mode.													

② Laser Power Check

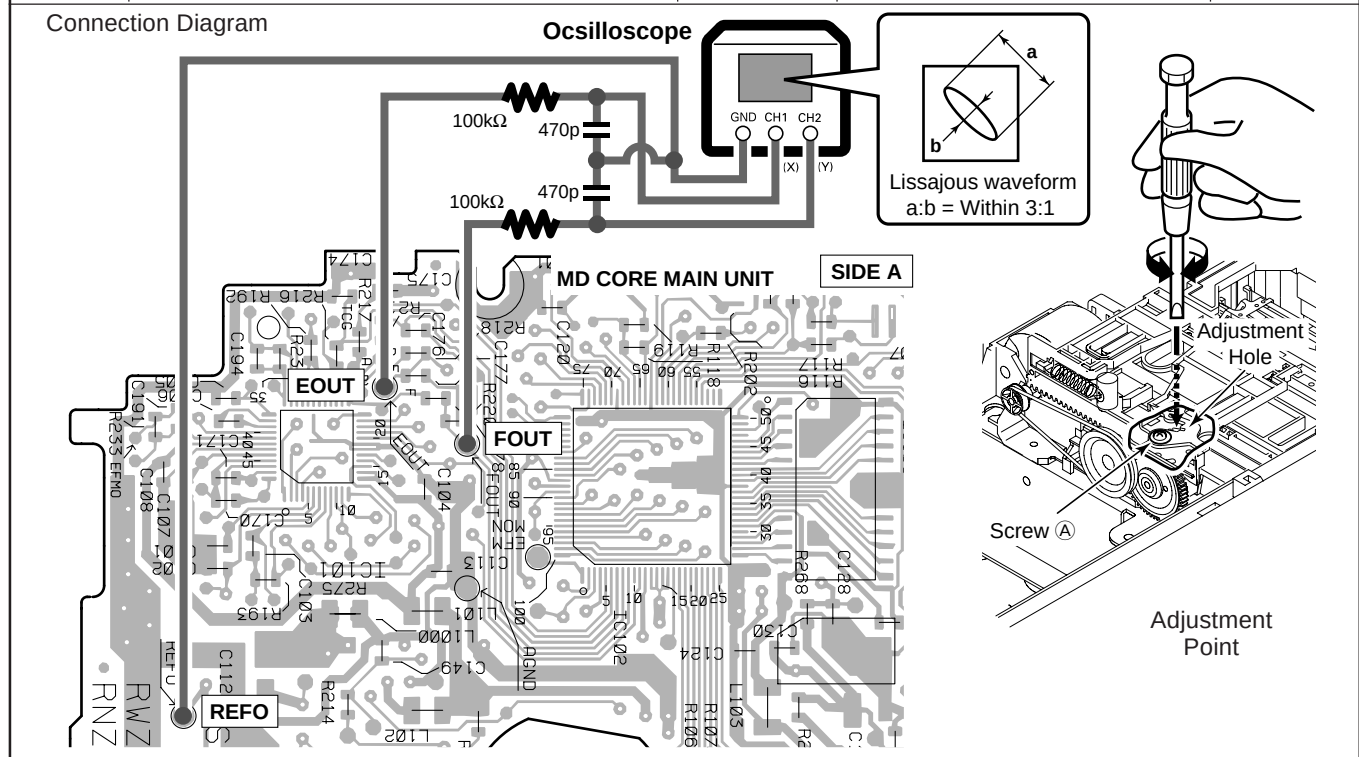
CAUTION

- Never look directly at the objective lens. Rec power (rpw) is than ten times greater than Playback power (ppw) is released.
- Never turn the pickup volume and be careful of touch it. Laser power of pickup has been adjusted in the factory shipping.

Step No.	Operation Keys and Operation Method	FL Display	Status	Remarks								
1	Short circuit MECH TEST MODE during the power ON. (Fig6-1)	EJECT	Test mode	Laser Wavelength: 780 nm								
2	Press the ENTER key	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 <table><tr><td>hex = (○○ – □□)</td><td>Standard Value (mW)</td></tr><tr><td>+02 to +04</td><td>0.69±0.12</td></tr><tr><td>–01 to +01</td><td>0.67±0.1</td></tr><tr><td>–02 to –04</td><td>0.63±0.1</td></tr></table>	hex = (○○ – □□)	Standard Value (mW)	+02 to +04	0.69±0.12	–01 to +01	0.67±0.1	–02 to –04	0.63±0.1	May be omitted.
hex = (○○ – □□)	Standard Value (mW)											
+02 to +04	0.69±0.12											
–01 to +01	0.67±0.1											
–02 to –04	0.63±0.1											
5	Press the ENTER 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	<table><tr><td>hex = (○○ – □□)</td><td>Standard Value (mW)</td></tr><tr><td>+02 to +04</td><td>6.18±0.93</td></tr><tr><td>–01 to +01</td><td>5.79±0.87</td></tr><tr><td>–02 to –04</td><td>5.47±0.82</td></tr></table>	hex = (○○ – □□)	Standard Value (mW)	+02 to +04	6.18±0.93	–01 to +01	5.79±0.87	–02 to –04	5.47±0.82	
hex = (○○ – □□)	Standard Value (mW)											
+02 to +04	6.18±0.93											
–01 to +01	5.79±0.87											
–02 to –04	5.47±0.82											
7	Press the EJECT key.		The LD goes out.									

③ Grating Adjustment

Step No.	Operation Keys and Operation Method	FL Display	Status	Remarks
1	Short circuit MECH TEST MODE during the power ON. (Fig.6-1)	EJECT	Test mode	
2	Insert the test disc GGF1328 (MMD-212).	LOADING GRT AJST	Grating adjustment status	
3	Press the PLAY key.	LON : LAG : GEG :	Playback is started in tracking open status. (The servo is closed only for focus and spindle.)	
4	Connect an oscilloscope according to the following connection diagram and loosen the screw (A) 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 (A).	GRT AJST	Lissajous waveform a:b = Within 3:1	
5	Press the STOP key.		Adjustment end	



④ Preliminary Adjustment

Step No.	Operation Keys and Operation Method	FL Display	Status	Remarks
1	Short circuit MECH TEST MODE during the power ON. (Fig.6-1)	EJECT	Test mode	
2	Insert the test disc GGF1328 (MMD-212).	LOADING GRT AJST		

④ Preliminary Adjustment

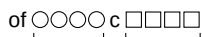
Step No.	Operation Keys and Operation Method	FL Display	Status	Remarks
3	Press the NAME key (until AUT YOBI is displayed).	AUT YOBI	Preliminary adjustment mode	
4	Preliminary adjustment starts when the PLAY key is pressed.	HAo : RFg : PTG : | Can't ADJ. COMPLETE	Defective adjustment (problem with the servo system) Adjustment end	
5	Press the STOP key.	AUT YOBI	Return to menu display	
6	Power OFF	EEPROM W GGF1328 (MMD-212)	Writing to the EEPROM	

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

⑤ Normal adjustment

Step No.	Operation Keys and Operation Method	FL Display	Status	Remarks
1	Short circuit MECH TEST MODE during the power ON. (Fig.6-1)	EJECT	Test mode	
2	Insert the test disc GGF1328 (MMD-212).	LOADING GRT AJST		
3	Press the NAME key (until AUTO AJST is displayed).	AUTO AJST	Normal adjustment mode	
4	Normal adjustment starts when the PLAY key is pressed.	PEG : HAG : | Can't ADJ. COMPLETE	Defective adjustment (problem with the servo system) Adjustment end	
5	Press the STOP key.	AUTO AJST	Return to menu display	

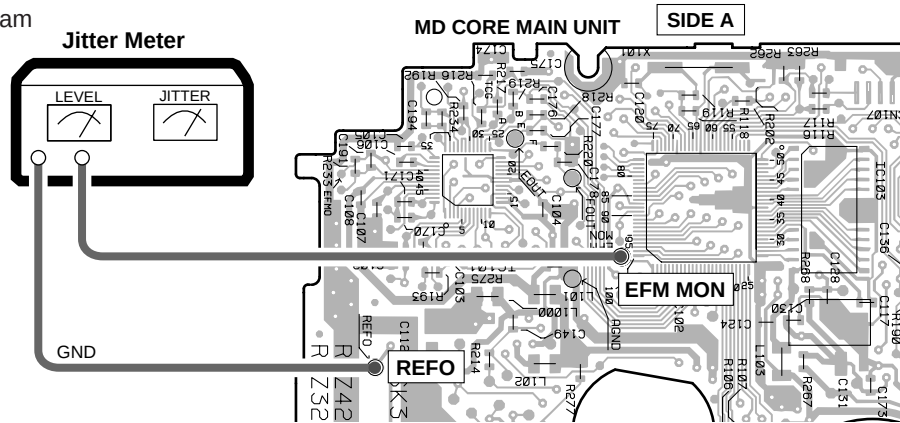
⑥ Defocus adjustment

Step No.	Operation Keys and Operation Method	FL Display	Status	Remarks
1	Short circuit MECH TEST MODE during the power ON. (Fig.6-1)	EJECT	Test mode	
2	Insert the test disc GGF1328 (MMD-212).	LOADING GRT AJST		
3	Press the NAME key (until deFO AJST is displayed).	deFO AJST		
4	Press the PLAY key. of  c  Defocus Value   C1 Error Value	PEG : FESpp : of000c0015	Defocus mode is entered, and after automatic execution of normal adjustment, the C1 error at the time of focus offset 0 is displayed.	
5	Check the jitter value and end the adjustment when the intermediate jitter value is 29 nsec or less.			
6	Press the REC key.	of+04 c0032	The C1 error with application of a focus offset of about 0.4 μm on the + side is displayed. The jitter value (J+) at this time is recorded.	

⑥ Defocus adjustment

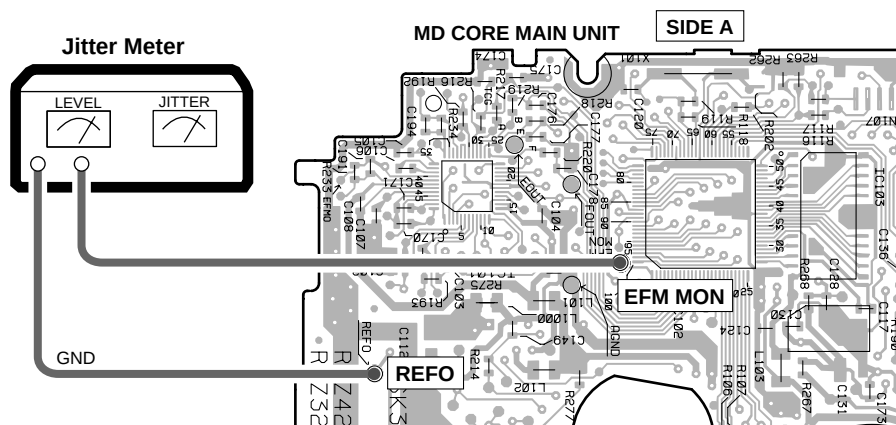
Step No.	Operation Keys and Operation Method	FL Display	Status	Remarks
7	Press the REC key.	of-04 c0020	The C1 error with application of a focus offset of about 0.4 μm on the – side is displayed. The jitter value (J–) at this time is recorded.	
8	When J+ is larger than J–, press the REC key and display the C1 error when the focus offset is applied up to +0.4 μm . (Do nothing when J– is larger than J+.)	of+04 c0032		
9	Change the value with the ASEs Key (Up) and the REC MENU key (Down) until the value becomes the same.	of+04 c0032 of+03 c0025 of+02 c0020	When the smaller offset of the jitter value has been corrected mistakenly, press the ENTER key and return to step 4.	
10	Press the PLAY 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	Power OFF		Test mode is ended.	

Connection diagram



⑦ Jitter/C1 Error Check at the time of Playback

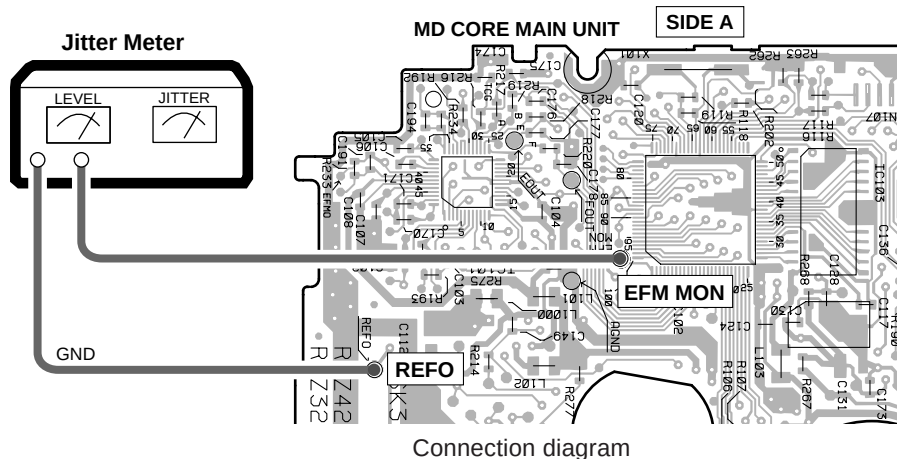
Step No.	Operation Keys and Operation Method	FL Display	Status	Remarks						
8	Press the CHARA key.	a006F c0017	The fixed display of the C1 error is ended.							
9	Press the STOP key.	TEST PLAY								
10	Press the ENTER key and display the inner circumference address.	ADRES 0050		Intermediate and outer circumference may be omitted.						
11	Press the REC 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 key and display the inner circumference address.	ADRES 0050								
13	Press the REC 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 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 <table><tr><td>Inner circumference</td><td>29 nsec or less</td></tr><tr><td>Intermediate circumference</td><td>27 nsec or less</td></tr><tr><td>Outer circumference</td><td>27 nsec or less</td></tr></table>	Inner circumference	29 nsec or less	Intermediate circumference	27 nsec or less	Outer circumference	27 nsec or less	
Inner circumference	29 nsec or less									
Intermediate circumference	27 nsec or less									
Outer circumference	27 nsec or less									
16	Press the EJECT key.	EJECT	The test disc TGYS1 (or MMD-110) is ejected.							
17	Power OFF		Test mode is ended.							



Connection diagram

⑧ Jitter/C1 Error Check at the time of Recording/Playback

Step No.	Operation Keys and Operation Method	FL Display	Status	Remarks						
1	Short circuit MECH TEST MODE during the power ON. (Fig.6-1)	EJECT	Test mode							
2	Insert the test disc (GGF1277).	LOADING GRT AJST								
3	Perform “ ■ Normal Adjustment ” (step 3, step 4).	AUTO AJST								
4	Press the REC key twice.	TEST REC	TEST REC mode							
5	Press the SET ENTER key and display the inner circumference address.	a0050 pw0D								
6	When the PLAY key is pressed, TEST REC starts, and when 25 addresses or more have been sent, stop by pressing the STOP 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 ASES key and shift the address by 10hex. (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 ENTER key and display the inner circumference address.	a0050 pw0D								
8	Press the REC key and display the intermediate circumference.	a03C0 pw0D								
9	Perform step 6.	a03D9 pw0D TEST REC								
10	Press the ENTER key and display the inner circumference address.	a0050 pw0D								
11	Press the REC key twice and display the outer circumference address.	a0700 pw0D								
12	Perform step 6.	a0719 pw0D TEST REC								
13	Press the REC key.	TEST PLAY	TEST PLAY mode							
14	Perform steps 5 to 13 of “ ■ 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 CHARA 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 the jitter/C2 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 <table><tr><td>Inner circumference</td><td>33 nsec or less</td></tr><tr><td>Intermediate circumference</td><td>31 nsec or less</td></tr><tr><td>Outer circumference</td><td>31 nsec or less</td></tr></table>	Inner circumference	33 nsec or less	Intermediate circumference	31 nsec or less	Outer circumference	31 nsec or less	
Inner circumference	33 nsec or less									
Intermediate circumference	31 nsec or less									
Outer circumference	31 nsec or less									
15	Press the EJECT key.	EJECT	The test disc (GGF1277) is ejected.							
16	Power OFF		Test mode is ended.							



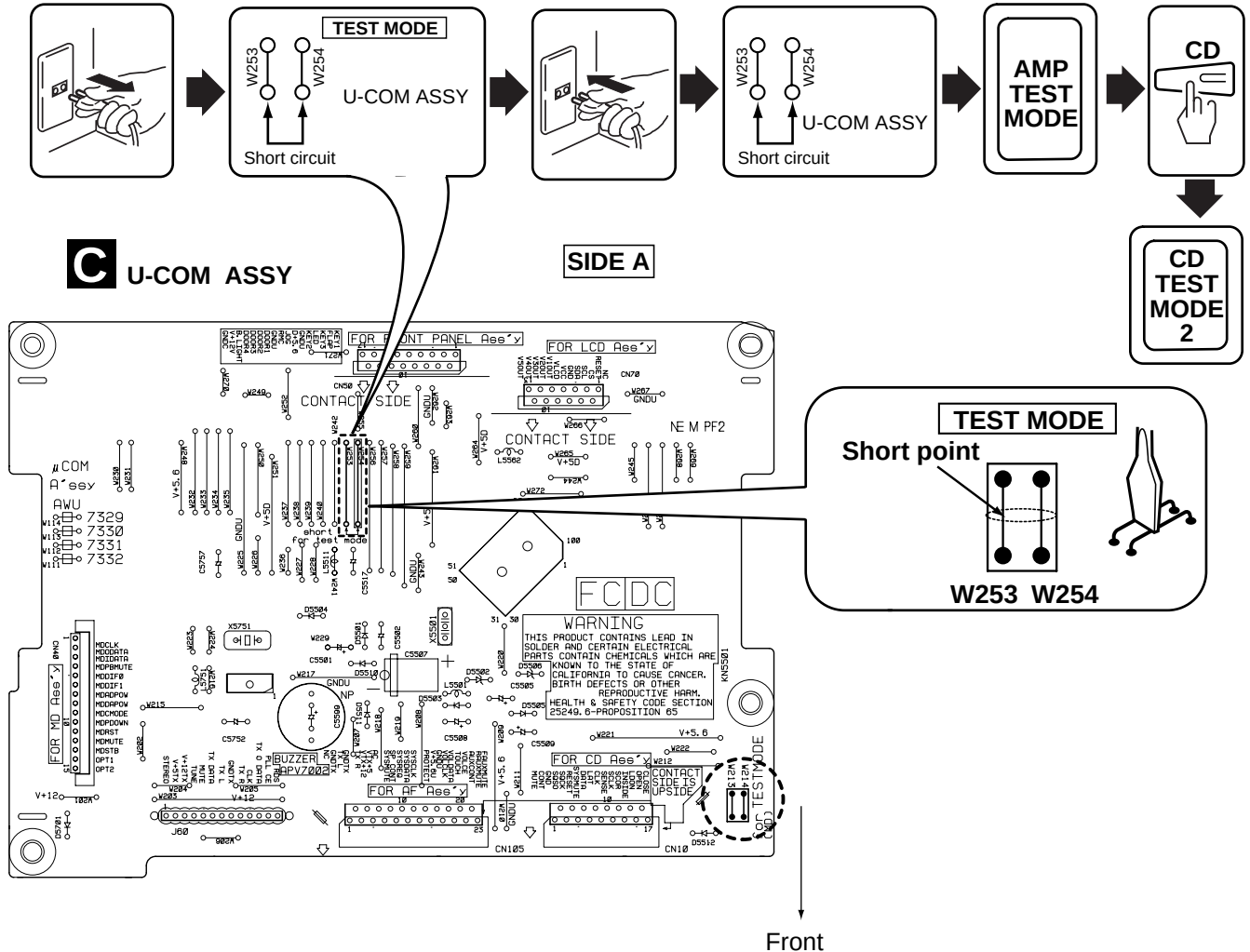
6.2 CD SECTION

For adjustment, use the stereo power amplifier (M-IS21T).

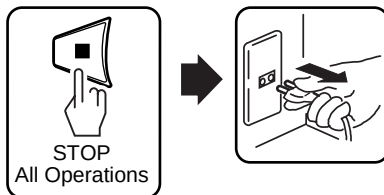
Note : There is no information to be shown in this CD adjustment.

6.2.1 HOW TO START / CANCEL TEST MODE

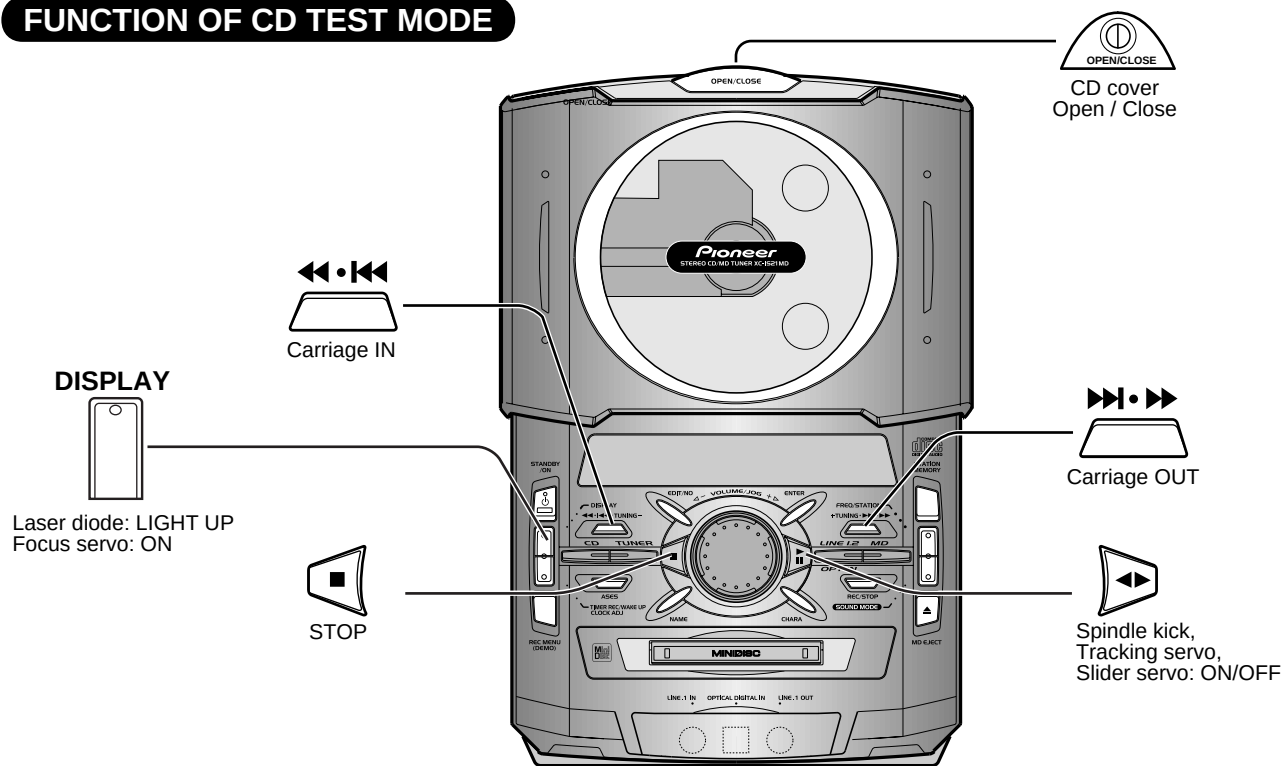
TEST MODE : ON



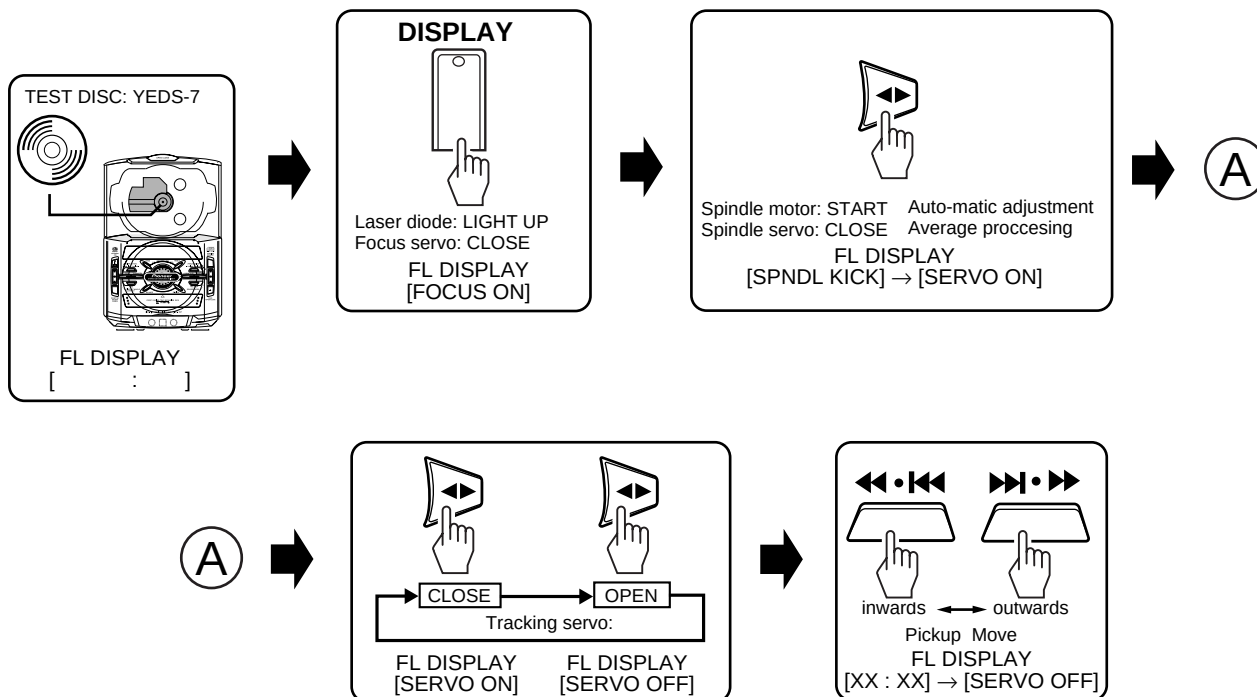
TEST MODE : STOP → CANCEL



FUNCTION OF CD TEST MODE



TEST MODE : PLAY



6.3 TUNER SECTION

6.3.1 FM TUNER SECTION

- Set the mode selector to FM BAND.
- Connect the wiring as shown in Fig. 6-2.

Step No.	Adjustment Title	FM SG (1kHz, ± 75 kHz dev.)		Reception Frequency Display	Adjustment Location	Specifications
		Frequency (MHz)	Level (dB μ V)			
1	Front End Sensitivity	98	0 – 30	98MHz	L6402 T6401	Adjust so that the DC voltage between the IC6201-Pin 20 and GND becomes at maximum level.
2	TUNED IND. Lighting Level	98	18 ± 2	98 MHz	VR6201	Adjust so that the indicator of TUNED IND. starts to light up.

Note: Before adjusting, make sure there is no gap between L6101 and L6102 . If there is a gap between them, bring them into contact with each other first, and then make adjustments.

6.3.2 AM TUNER SECTION

- Set the mode selector to AM BAND.
- Connect the wiring as shown in Fig. 6-2.

Step No.	Adjustment Title	AM SG (400Hz, 30% Mod.)		Reception Frequency Display	Adjustment Location	Specifications
		Frequency (kHz)	Level (dB μ V/m)			
1	Front End Sensitivity	999*1	35 – 45	999 kHz*1	T6201	Adjust so that the DC voltage between the IC6201-Pin 20 and GND becomes at maximum level.

*1: For the area using 10 kHz step, frequencies should be 1000 kHz.

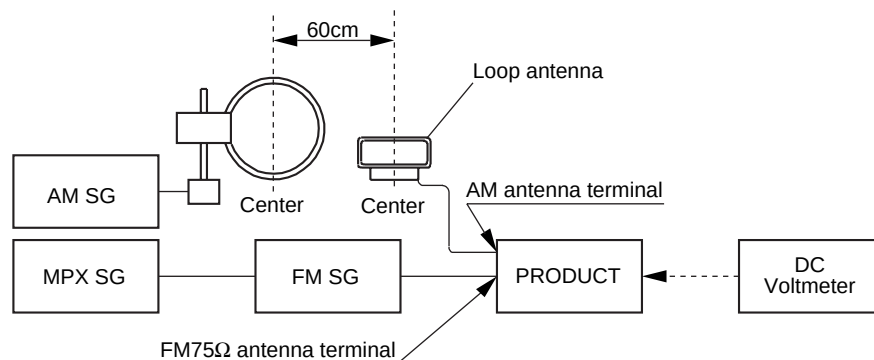


Fig. 6-2 AM and FM Adjustment Wiring Diagram

FM/AM TUNER MODULE

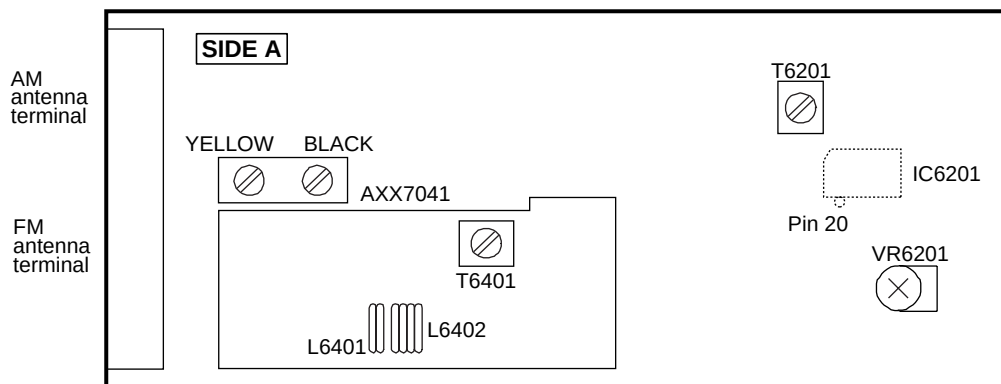


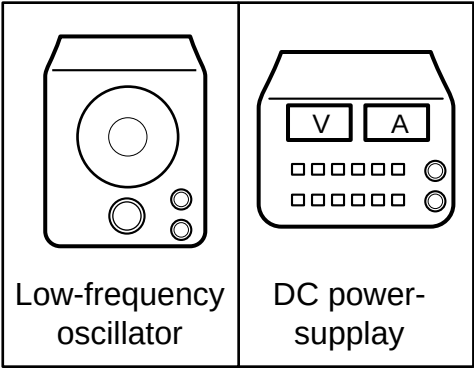
Fig. 6-3 Adjustment Point

7. GENERAL INFORMATION

7.1 DIAGNOSIS

7.1.1 SINGLE OPERATION METHOD

■ Jigs and Measuring instruments



■ Single operation method and frequency oscillator inputlevel.

1. Connect part ㉑ of the AF ASSY [W420(+8V),W421 (+15V), W422 (+5.6V), W423(GND) and DC power-supplay.
(Refer to Fig. 7-1.)

Connect point ㉑	DC power-supplay	
	Voltage (V)	Remarks
AF ASSY, W420 (+8v)	+8V	
AF ASSY, W421 (+15v)	+15V	
AF ASSY, W422 (+5.6v)	+5.6V	
AF ASSY, W423 (GND)	GND	

2. Connect part ㉒ of the U-COM ASSY [CN105 pin8 (AC), AF ASSY[W423 (GND)]] and frequency oscillator.
(Refer to Fig. 7-1 and 7-2.)

Connect point ㉒	Low-frequency oscillator			
	frequency	level	Gnd	Remarks
U-COM ASSY, CN105 pin8 (AC)	50 or 60 Hz	Approx.2.0 Vrms	————	Note.
AF ASSY, W423 (GND)	————	————	osc GND	

Note: Set up the low-frequency oscillator level with in the limits of product moves.



C U-COM ASSY

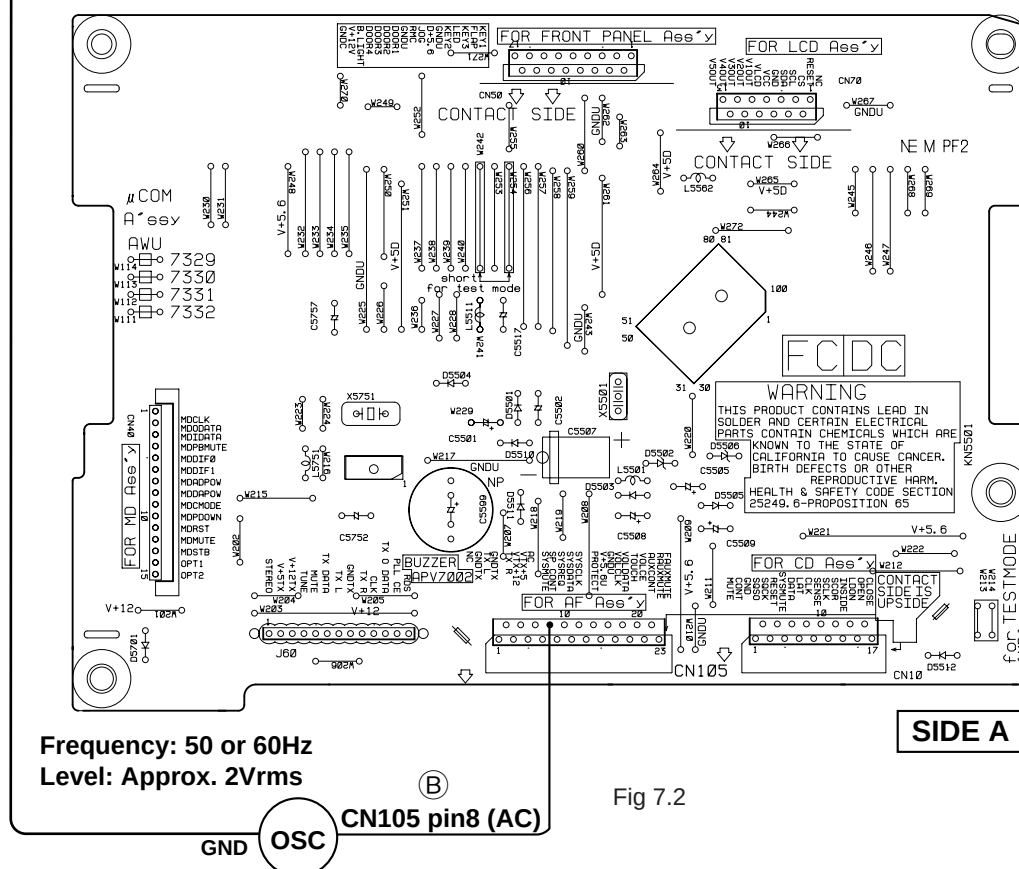


Fig 7.2

7.1.3 DETAILS OF ERROR DISPLAY

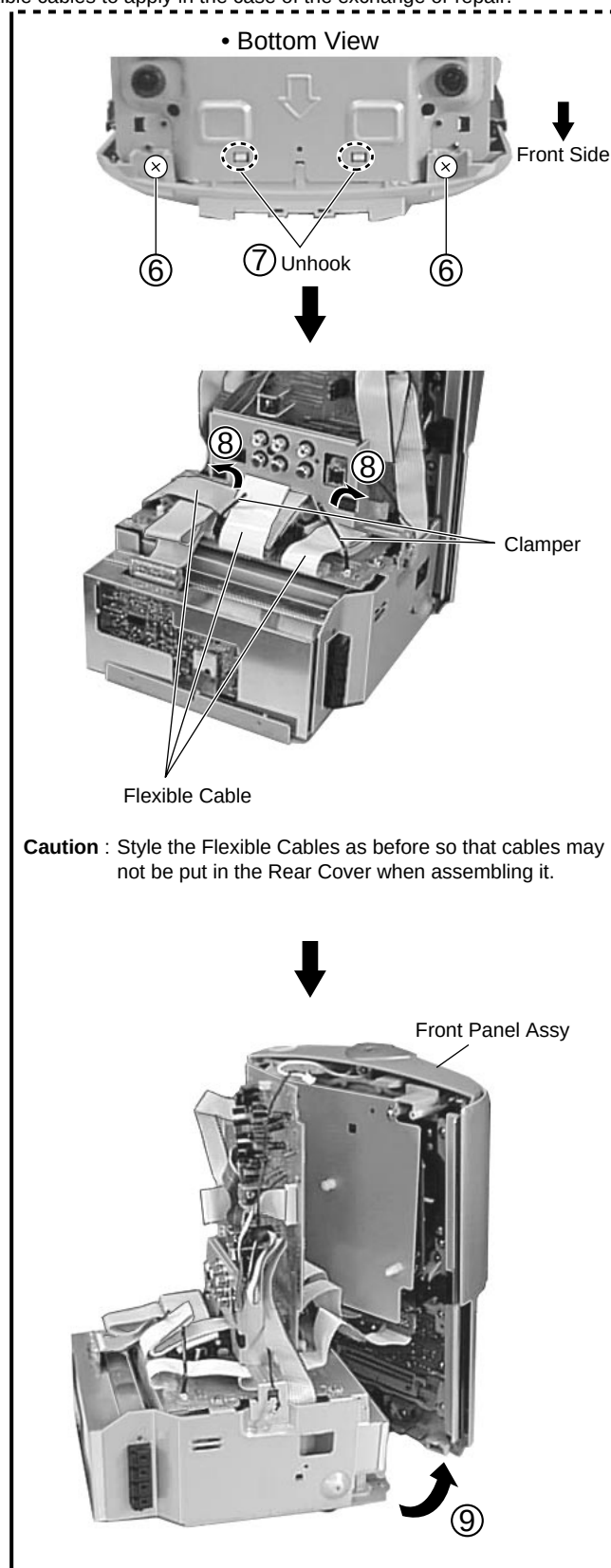
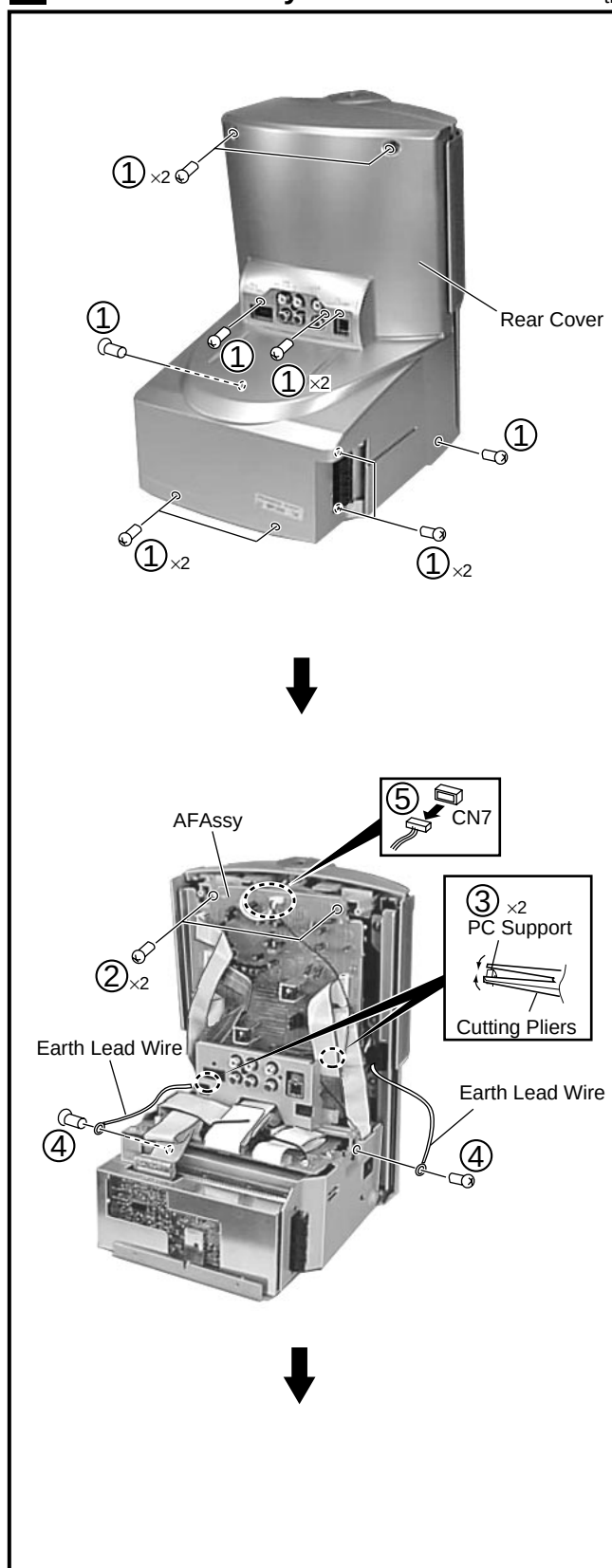
Error Display	Details of Error	Measure
Can't REC	● DEFECT occurred 10 times continuously during REC-PLAY. ● Recordable cluster became 0 since DEFECT occurred during REC-PLAY. ● Address is unreadable. REC state can not be set for 20 seconds even after try again.	● Check if there are scratches, dusts, 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.)
DIN UNLOCK	● The following occurred for digital signal input from D-IN during REC-PAUSE, REC-PLAY, or CD FUNC playback 1. Digital IN PLL unlocked. 2. Locked at other than FS = 32, 44.1 and 48 kHz.	● Check if D-IN signal line 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.
UTOCER T S R	● 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.
UTOCER A	● Start address > End address.	● Replace with other discs to check if UTOC data is normal.
UTOCER L 0 1 2 4	● 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.
Playback 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	● 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.
Can't EDIT	● Editing conditions were not satisfied for each editing function.	● Operating method is wrong. Try again using correct method.
DISC ER [DISC ER R DISC ER S DISC ER W]	● Data read was incorrect or could not be read properly. ● Error occurred during music data recording and recording could not be performed correctly. ● Music data READ search time exceeded ● REC PAUSE shift abnormality (search time exceeded) ● SD WRITE (search time exceeded)	● Faulty TOC or UTOC data or scratch on disc. Replaced with other discs.

Error Display	Details of Error	Measure
? DISC	● TOC read was incorrect or could not be read properly.	● The TOC data recorded on the disc do not comply with MD Standards, so try using another disc. ● The disc may be scratched or damaged, so try using another disc.
UTOCER W	● Fault occurred during rewriting of UTOC rewriting, and rewriting could not be performed correctly.	● Scratch on disc. Replaced with other discs.
FOCUS ERR	● Inserted a disc but could not bring in FOCUS.	● 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	● The DRAM has become filled with music data, but they can not be written (to the disc).	● Check if there are scratches, dusts, fingerprints, or black spots on disc. Check if disc fluctuates eccentrically or moves up and down largely.
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.
UTOCER W	● UTOC read was correct but could not be rewrite it.	● Check to see if the recording head contact is correct or if there are any disconnections between the board and the recording head.
EEPROM ER	● The EEPROM data are incorrect.	● Try doing a Preliminary Adjustment and a normal Adjustment. If the problem still persists, replace the EEPROM.
MECH ER 3E 3M 3L 3D 2E 2M 2L 2D 1E 1M 1L 1D	● Never completes EJECT. ● Never moves HEAD UP. ● Never moves HEAD DOWN. ● The set microcomputer and MD mechanism microcomputer are not communicating properly.	
SIO ERROR	● It can't communicate with system control IC and MD mechanism control IC.	● Check if communication line with the MD mechanism assy and connector is normal.

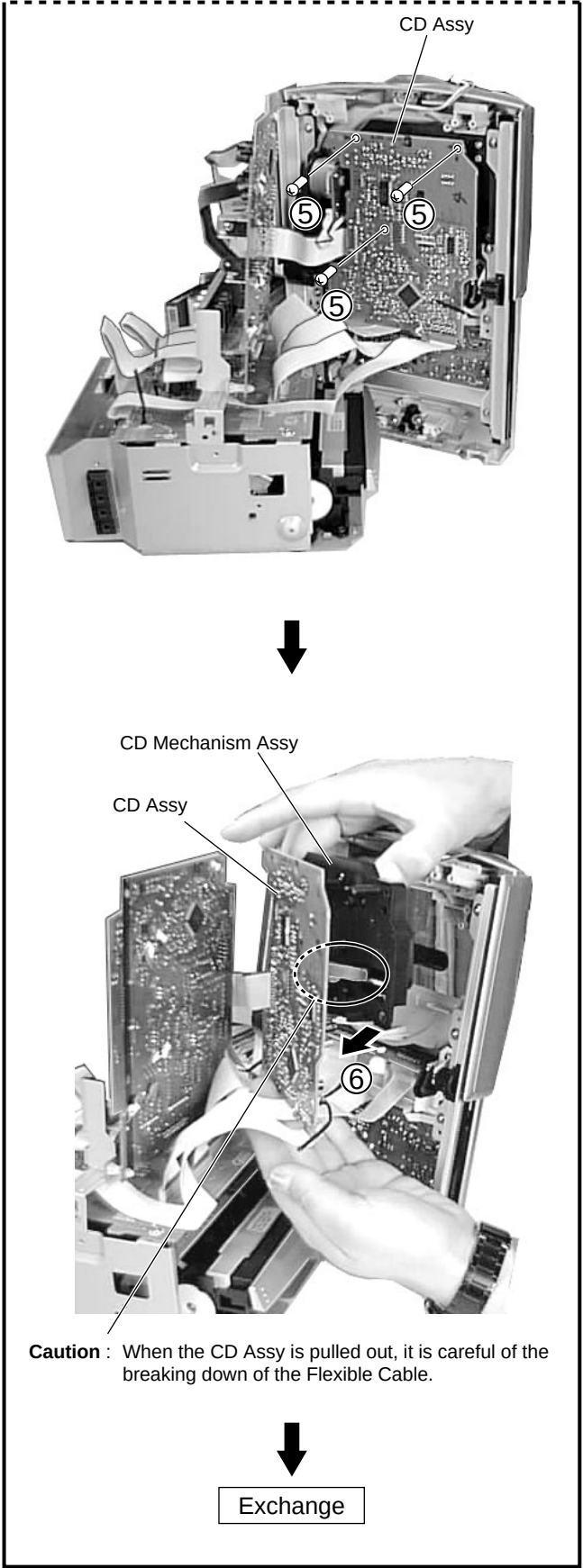
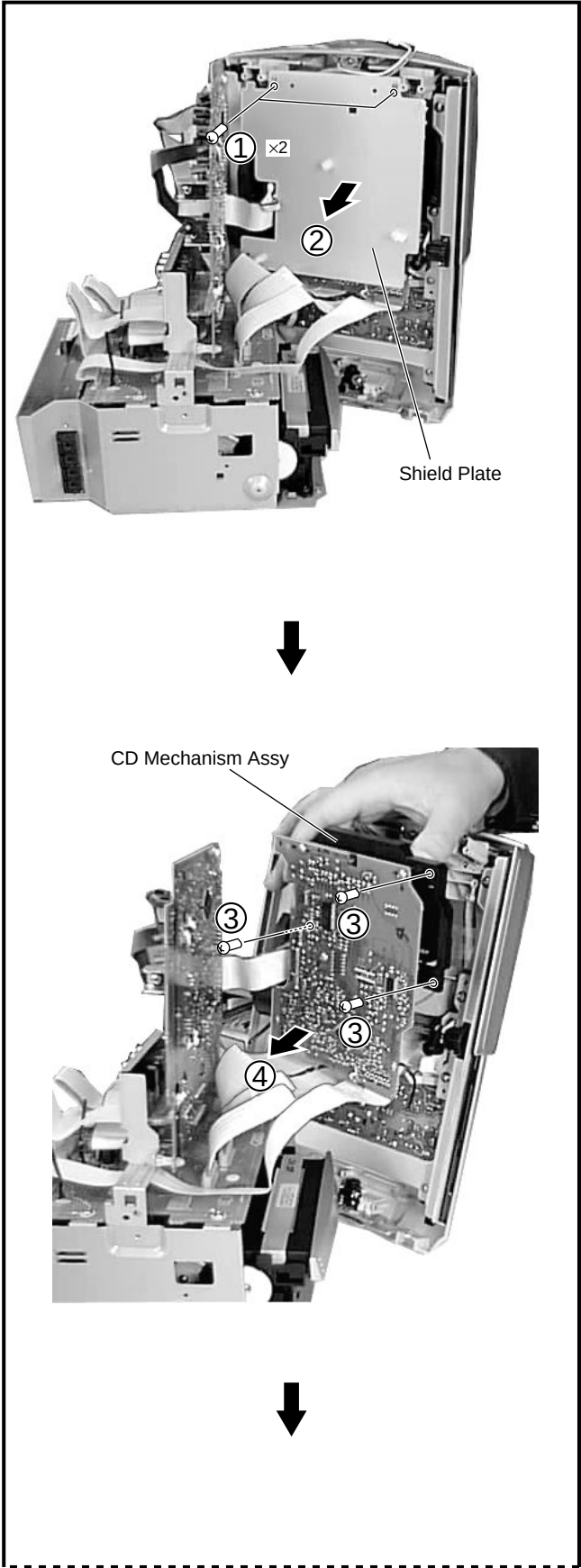
7.1.4 DISASSEMBLY

1 Front Panel Assy

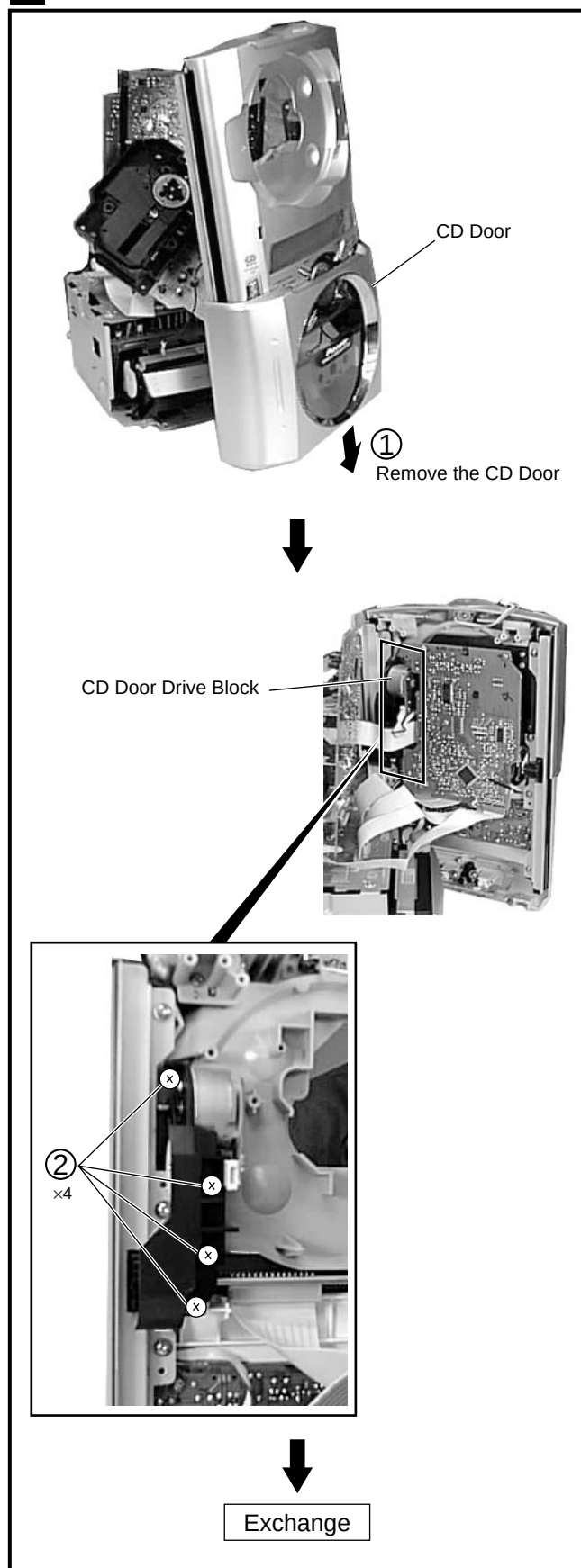
Note : Flexible cables are not removed in the case of the adjustment, but remove the Flexible cables to apply in the case of the exchange or repair.



2 CD Mechanism Assy



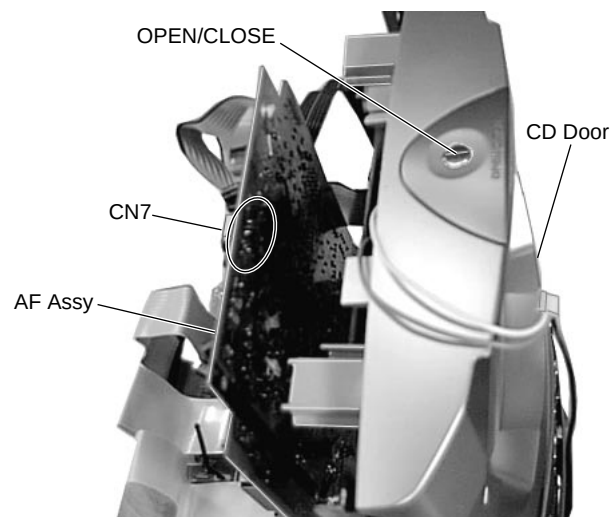
3 CD Door Drive Block



Note

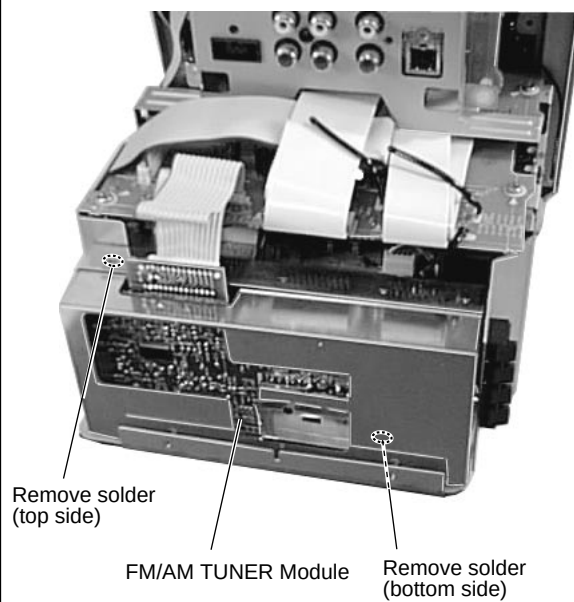
① CD Door OPEN/CLOSE

When a connector CN7 of AF Assy is removed for the touch sensor system, sensor does not work and CD Door can't open and close. CD Door can open when the land of CN7 at the foil side is short-circuited with the finger.

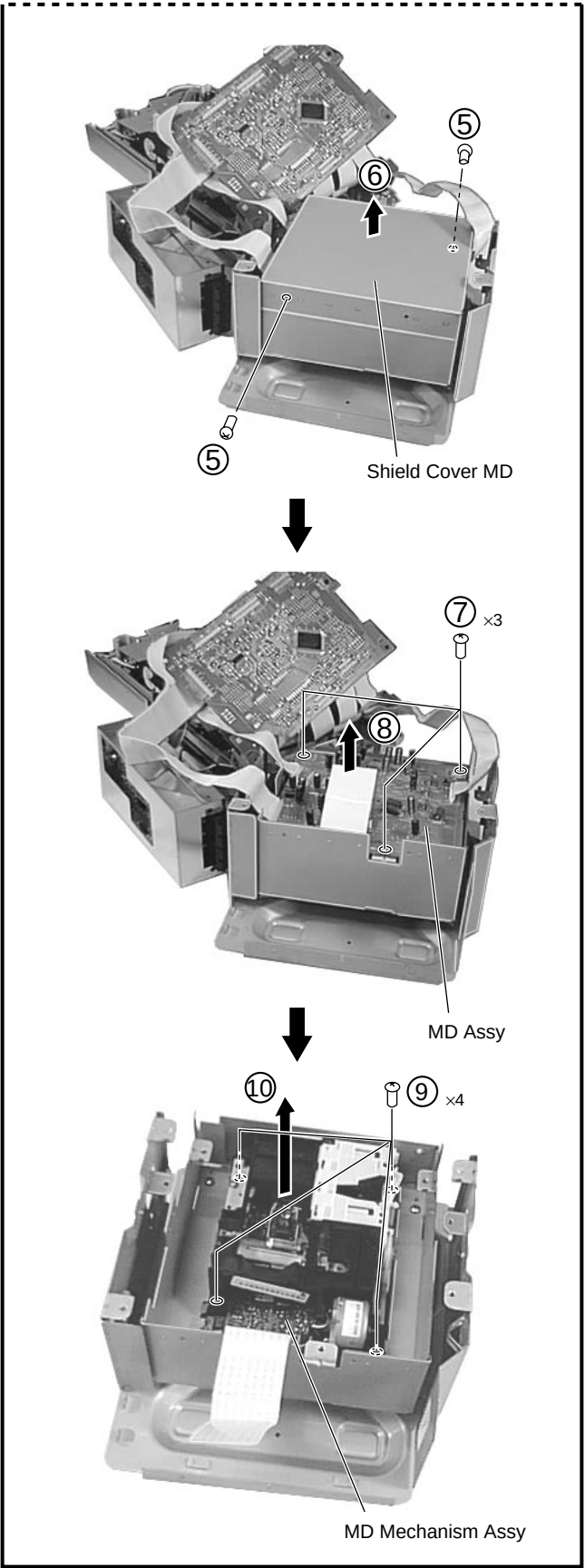
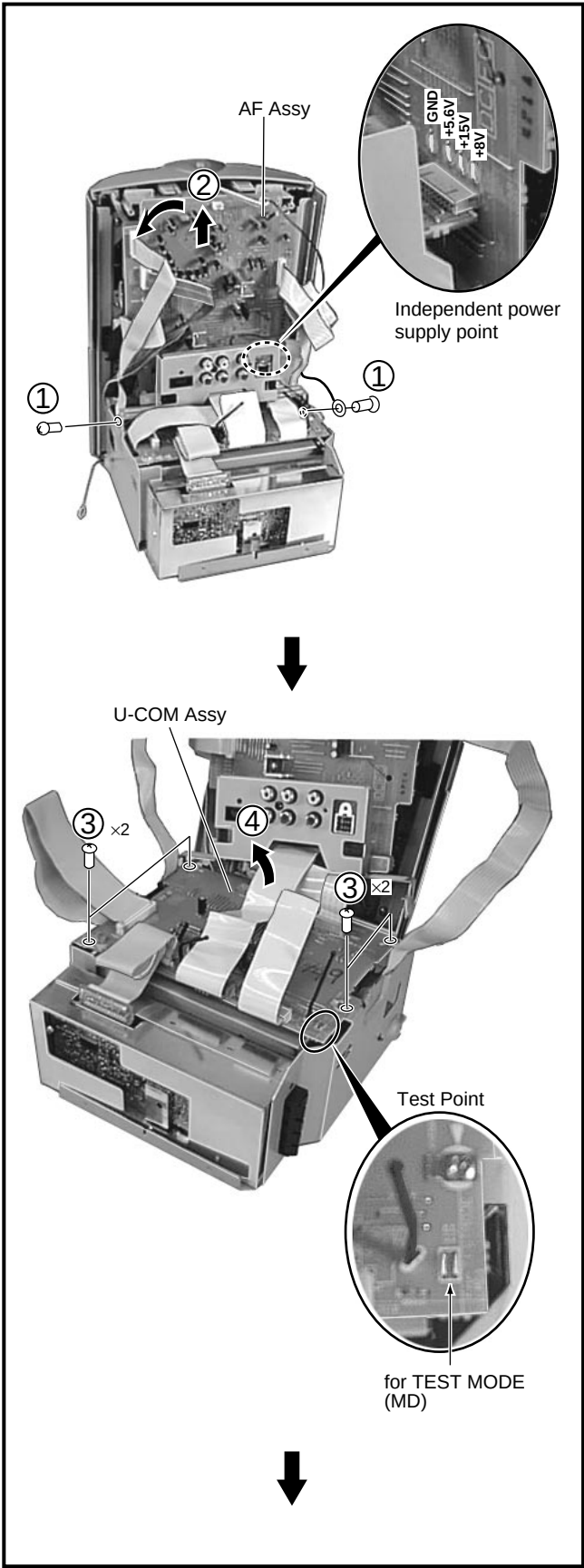


② FM/AM TUNER Module for European model

Shield Case is being soldered in the European model. Remove solder in the case such as exchange.

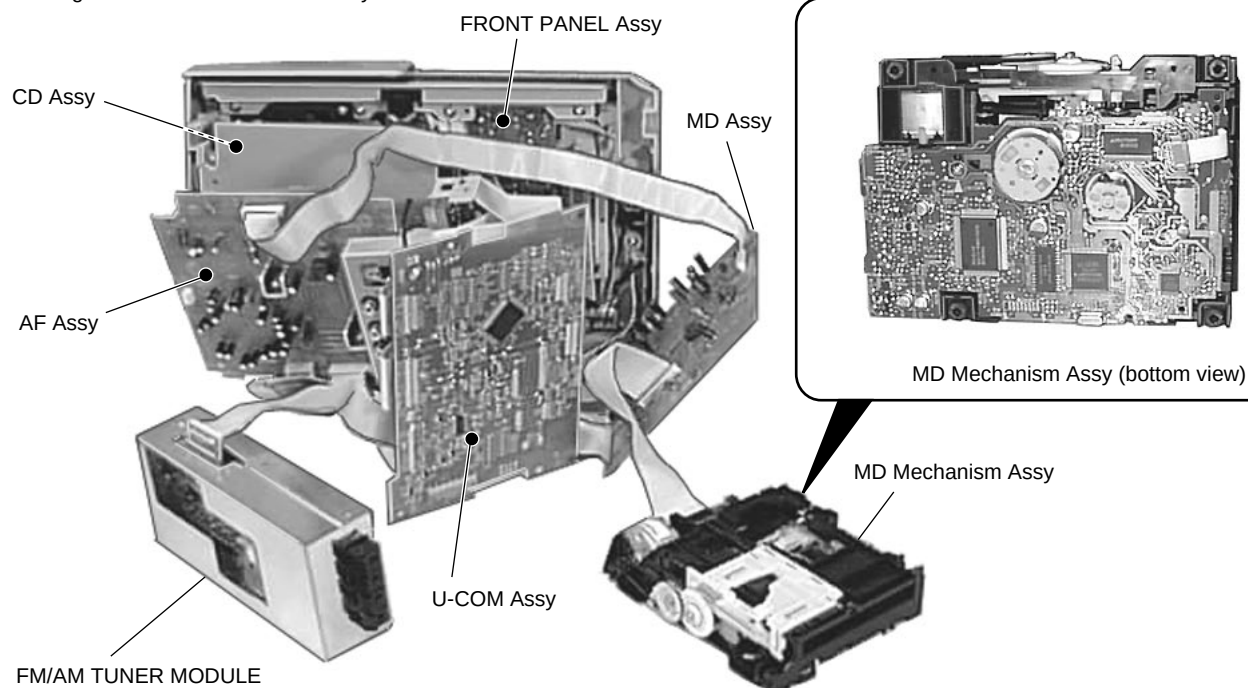


4 MD Mechanism Assy



■ How to Diagnose the MD Mechanism Assy

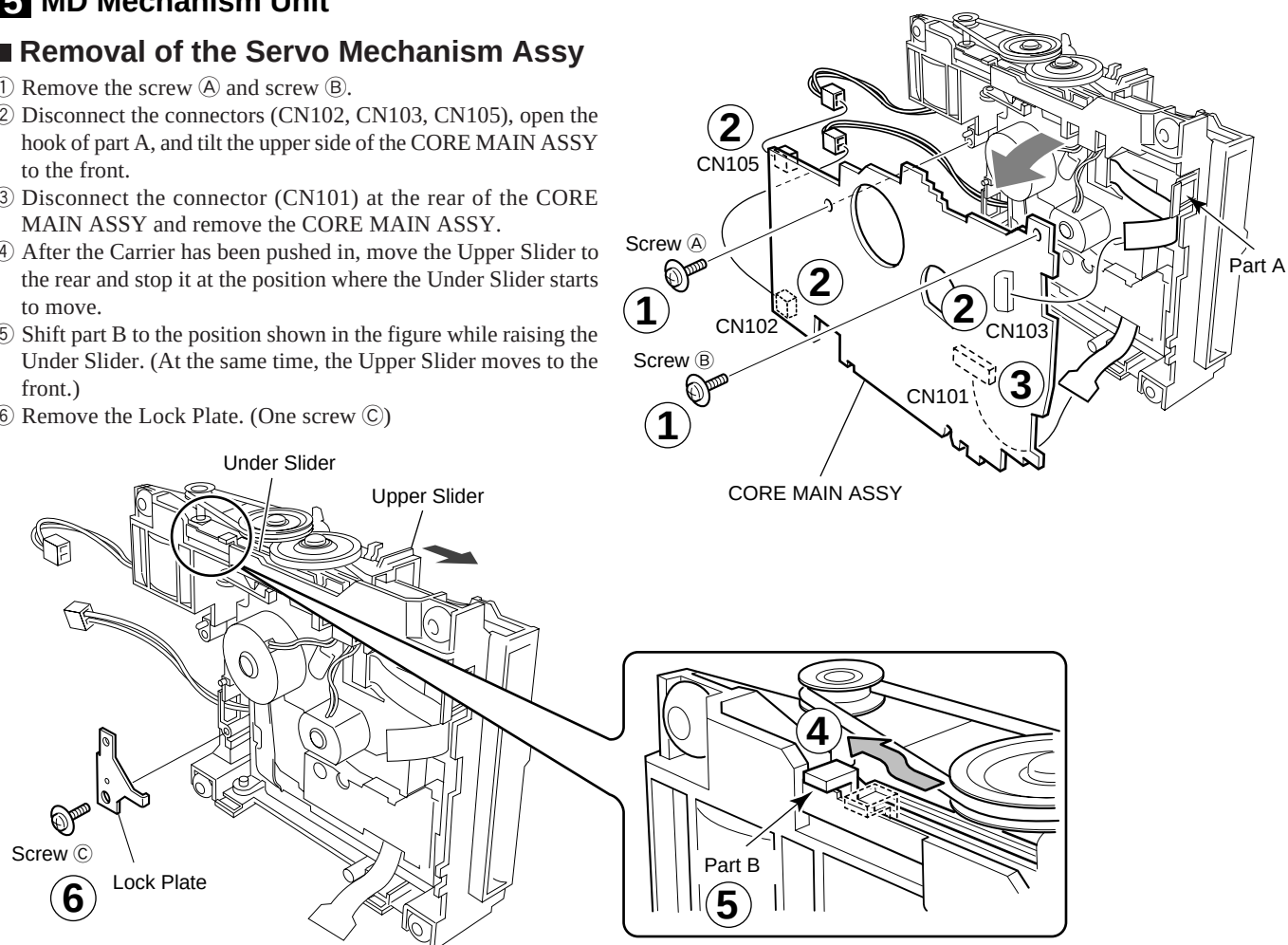
Diagnose the MD Mechanism Assy as shown below.



5 MD Mechanism Unit

■ Removal of the Servo Mechanism Assy

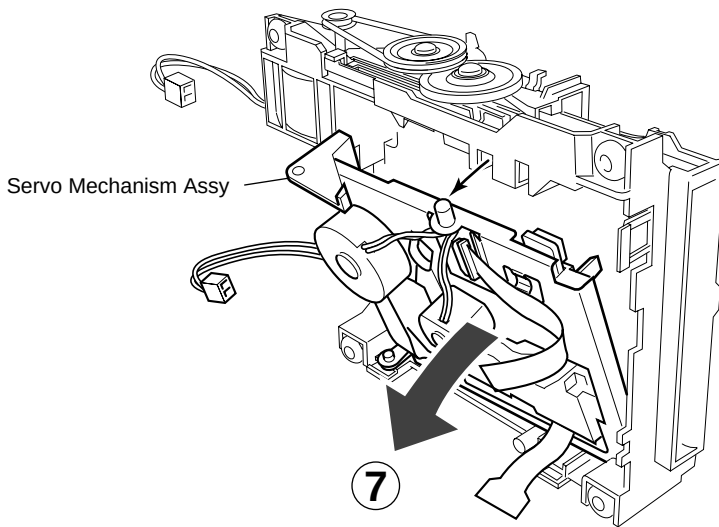
- ① Remove the screw (A) and screw (B).
- ② Disconnect the connectors (CN102, CN103, CN105), open the hook of part A, and tilt the upper side of the CORE MAIN ASSY to the front.
- ③ Disconnect the connector (CN101) at the rear of the CORE MAIN ASSY and remove the CORE MAIN ASSY.
- ④ After the Carrier has been pushed in, move the Upper Slider to the rear and stop it at the position where the Under Slider starts to move.
- ⑤ 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.)
- ⑥ Remove the Lock Plate. (One screw (C))



- ⑦ Remove the Servo Mechanism Assy.

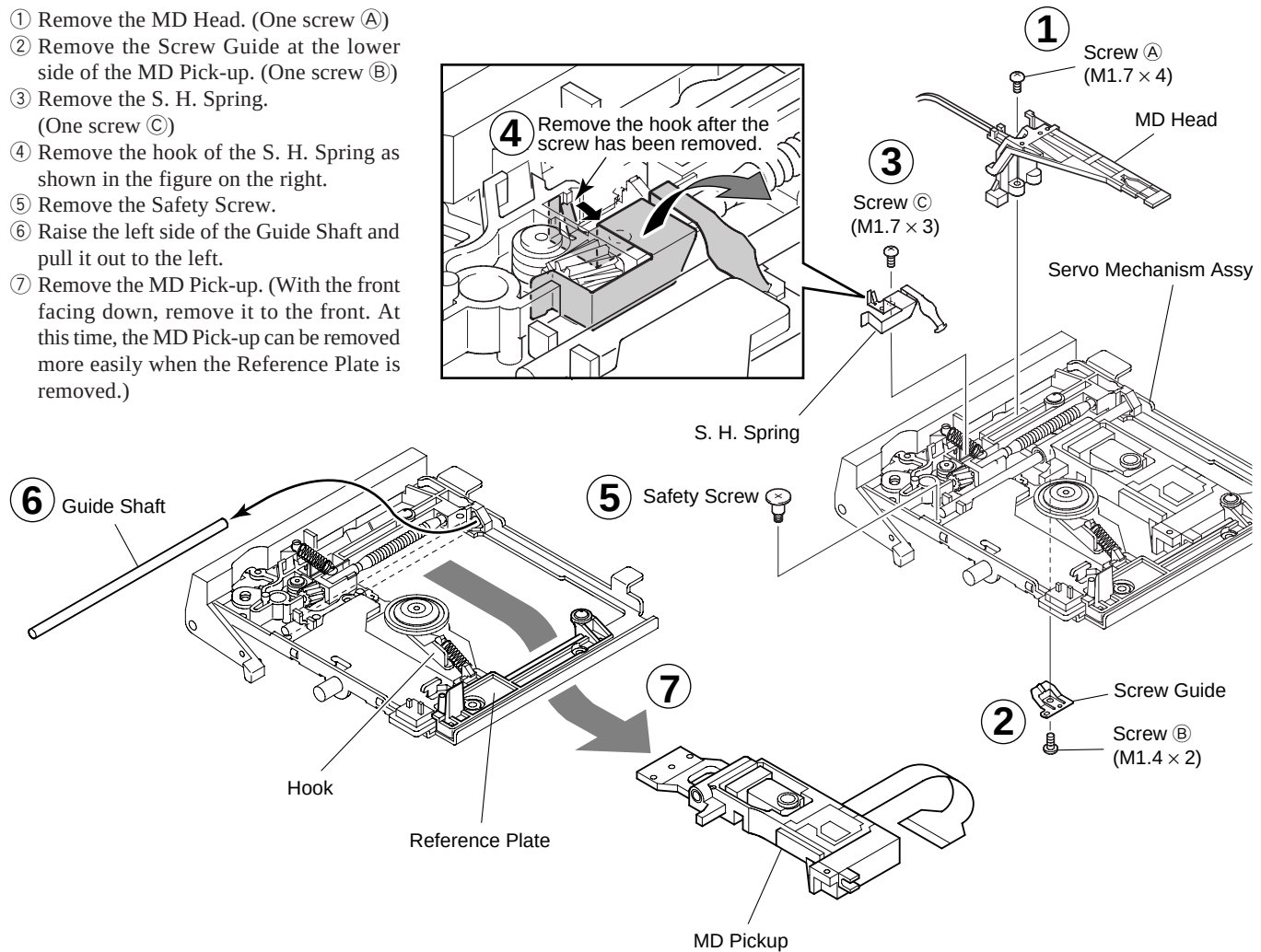
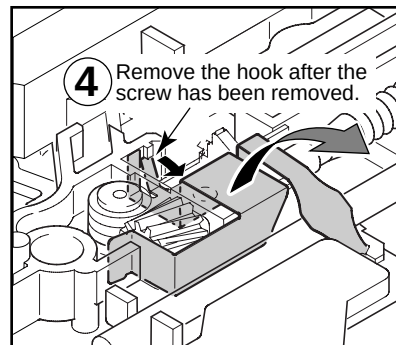
■ Caution for the time of installation of the servo mechanism assy

Move the MD Pick-up to the innermost circumference.
The servo mechanism assembly is not installed other than the innermost circumference.



■ Removal of the MD Pick-up

- ① Remove the MD Head. (One screw (A))
- ② Remove the Screw Guide at the lower side of the MD Pick-up. (One screw (B))
- ③ Remove the S. H. Spring. (One screw (C))
- ④ Remove the hook of the S. H. Spring as shown in the figure on the right.
- ⑤ Remove the Safety Screw.
- ⑥ Raise the left side of the Guide Shaft and pull it out to the left.
- ⑦ Remove the MD Pick-up. (With the front facing down, remove it to the front. At this time, the MD Pick-up can be removed more easily when the Reference Plate is removed.)



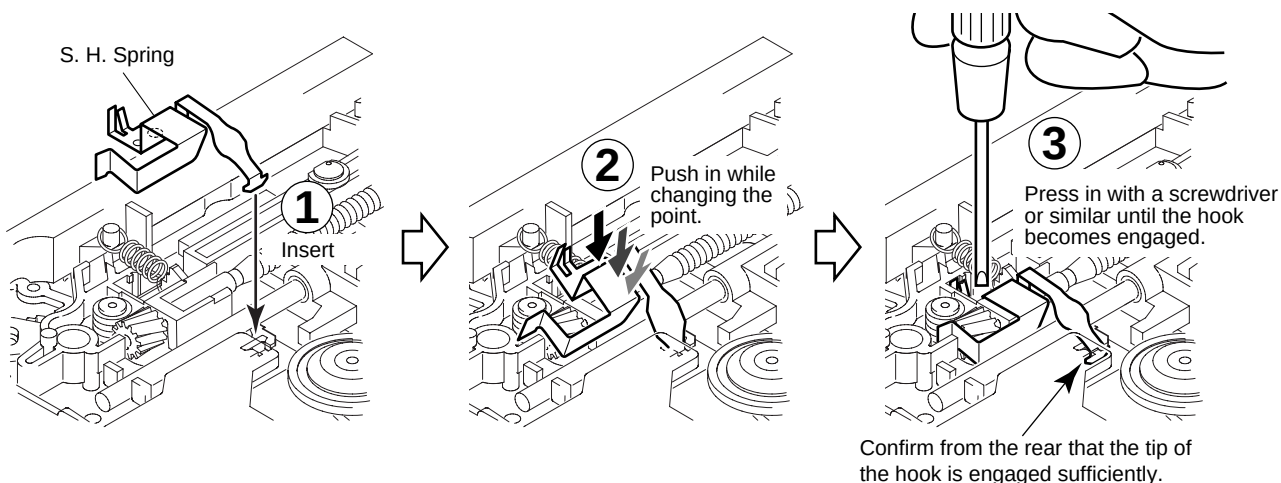
■ MD Pick-up Installation

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

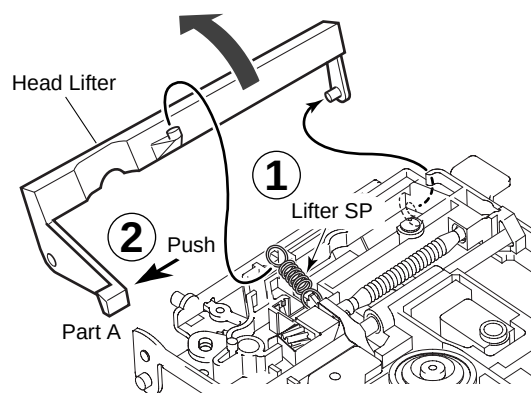
When the Reference Plate has been removed, confirm that the hook is engaged with the shaft of the spindle motor. (Take care that the mounting reference boss does not ride up.)

■ S. H. Spring Installation



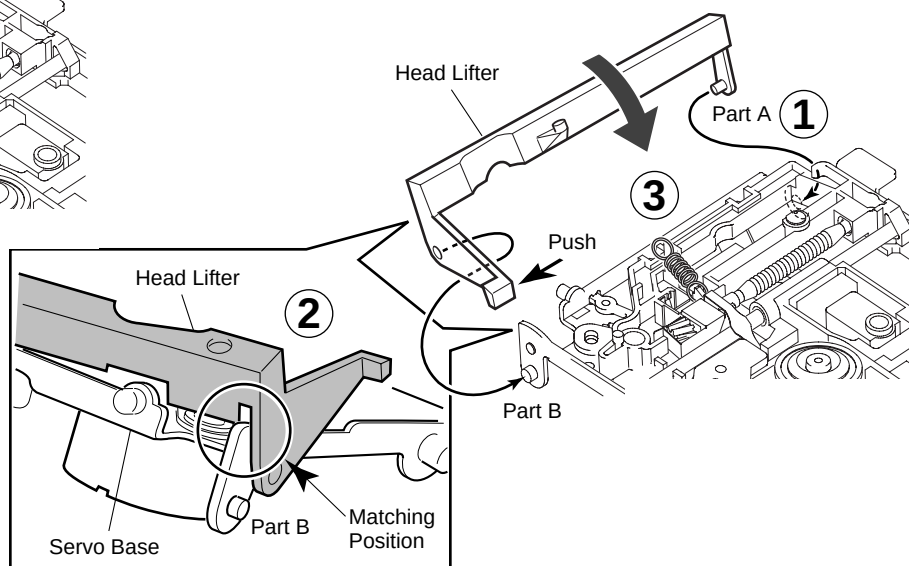
■ Removal of the Head Lifter

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

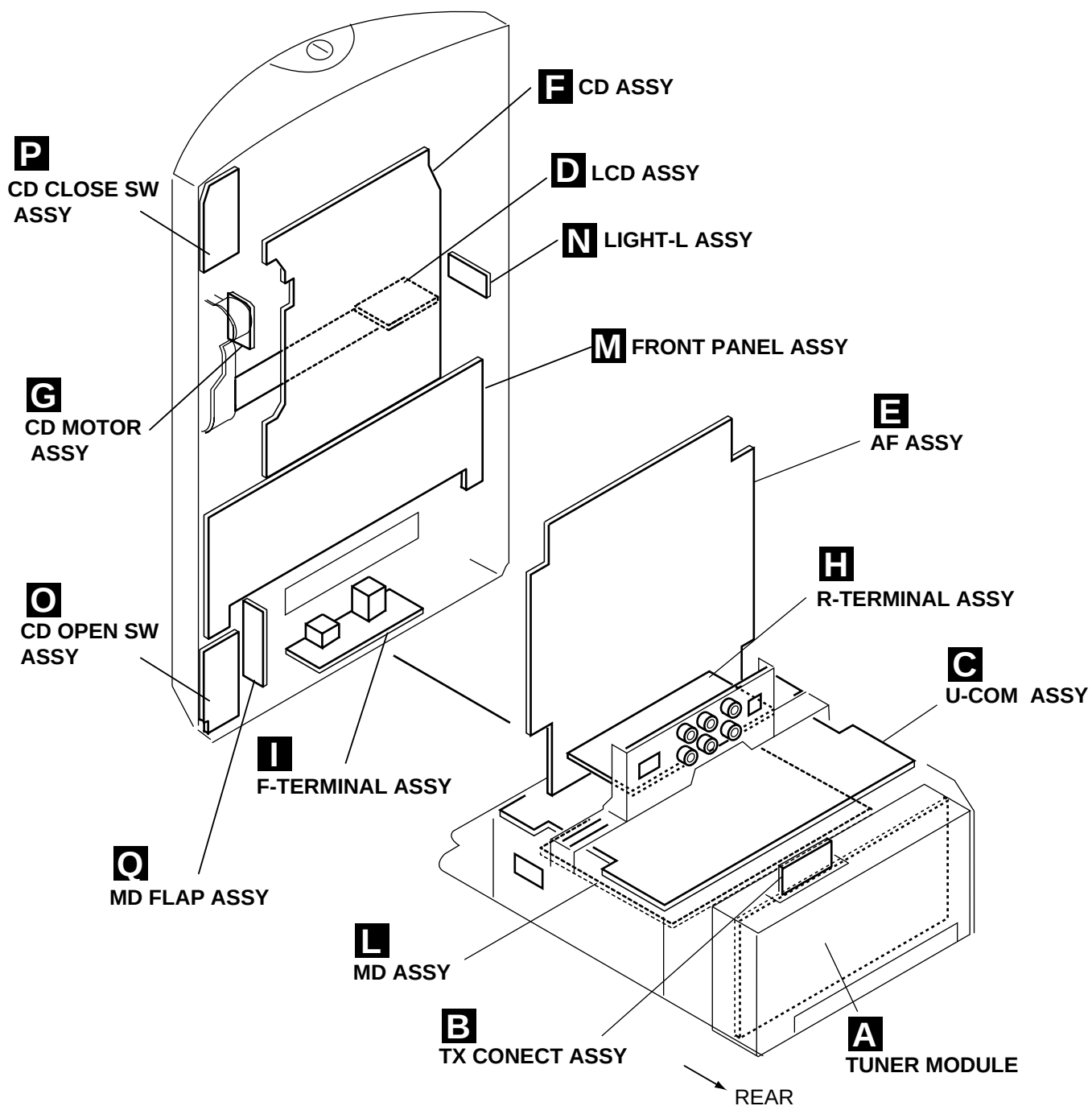


■ Head Lifter Installation

- 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.



7.1.5 PCB LOCATION



7.2 PARTS

7.2.1 IC

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

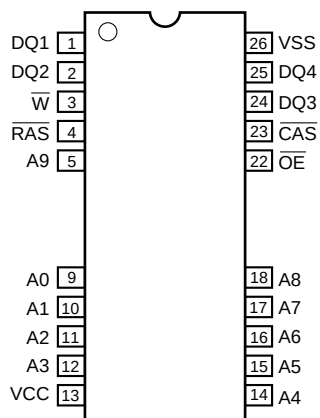
•List of IC

M5M4V4400CTP-7, M56758FP, PD5523A, LR376487, BD7910FV, BR93LC56F, IR3R55M, AK4520A, CXA1821M, CXD2587Q, PDG241.

■ M5M4V4400CTP-7 (CORE MAIN ASSY : IC103)

• DRAM

•Pin Assignment (Top View)

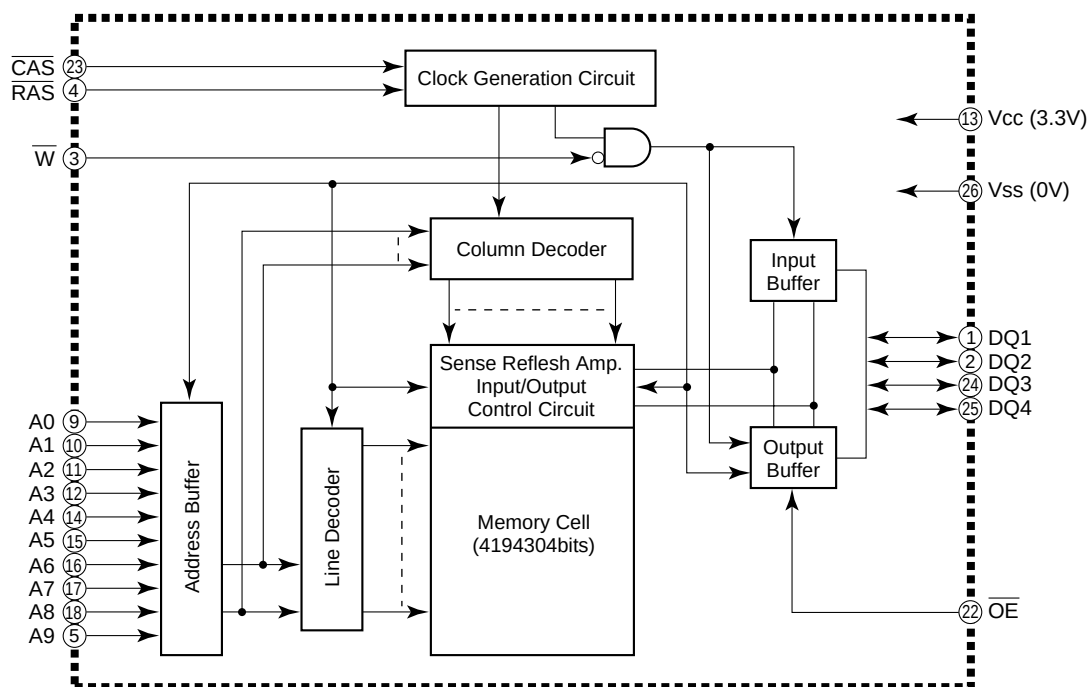


•Pin Function

No.	Name	Description
1	DQ1	Data Input/Output
2	DQ2	
3	$\overline{W}$	Write control input
4	$\overline{RAS}$	Line address strobe input
5	A9	Address input
6	|	
7		
8		
9	A0	Address input
12	A3	
13	Vcc	Power supply voltage (+3.3 V)

No.	Name	Description
14	A4	Address input
18	A8	
19	|	
20		
21		
22	$\overline{OE}$	Output-enable input
23	$\overline{CAS}$	Column address strobe input
24	DQ3	Data Input/Output
25	DQ4	
26	Vss	Ground (0 V)

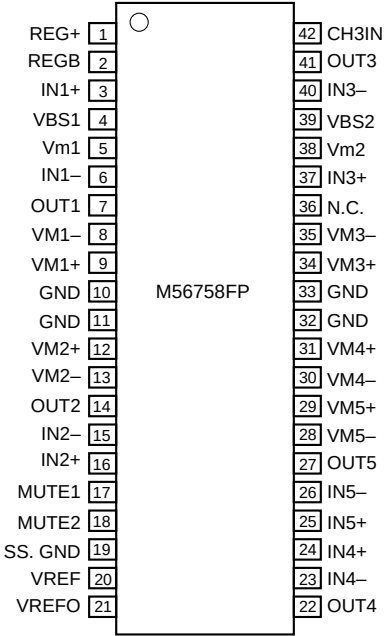
•Block Diagram



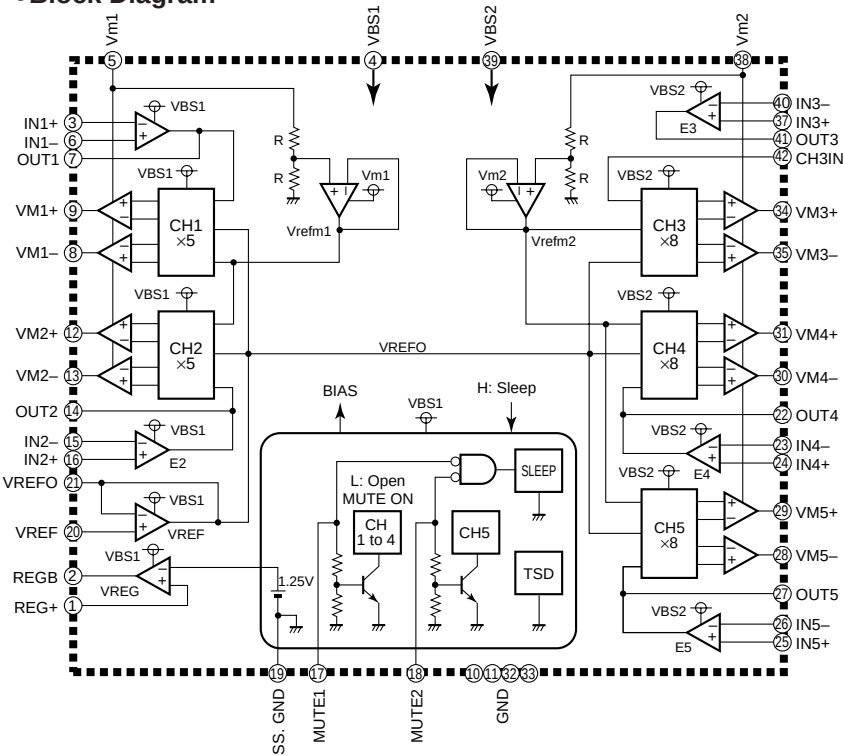
■ M56758FP (CORE MAIN ASSY : IC106)

• 5-channel Actuator Driver

●Pin Assignment (Top View)



●Block Diagram



●Pin Function

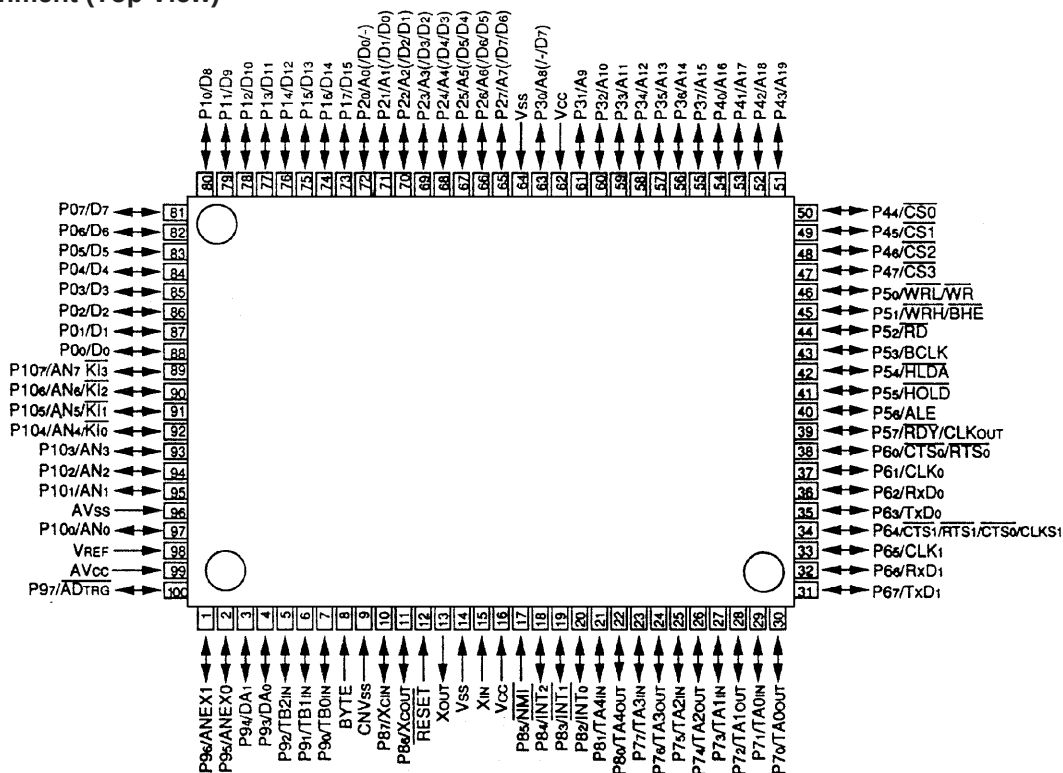
No.	Name	Description
1	REG+	Regulator voltage setting resistor connection terminal
2	REGB	Regulator PNP base connection terminal
3	IN1+	E1 amplifier nonreversed input terminal
4	VBS1	Bootstrap power supply terminal
5	Vm1	Motor power supply terminal
6	IN1-	E1 amplifier reversed input terminal
7	OUT1	E1 amplifier output terminal
8	VM1 (-)	CH1 reversed output terminal
9	VM1 (+)	CH1 nonreversed output terminal
10	GND	Motor GND
11		
12	VM2 (+)	CH2 nonreversed output terminal
13	VM2 (-)	CH2 reversed output terminal
14	OUT2	E2 amplifier output terminal
15	IN2-	E2 amplifier reversed input terminal
16	IN2+	E2 amplifier nonreversed input terminal
17	MUTE1	Mute terminal (CH1 to CH4)
18	MUTE2	Mute terminal (CH5)
19	SS. GND	Small-signal ground
20	VREF	Reference voltage input terminal
21	VREFO	Reference voltage output terminal

No.	Name	Description
22	OUT4	E4 amplifier output terminal
23	IN4-	E4 amplifier reversed input terminal
24	IN4+	E4 amplifier nonreversed input terminal
25	IN5+	E5 amplifier nonreversed input terminal
26	IN5-	E5 amplifier reversed input terminal
27	OUT5	E5 amplifier output terminal
28	VM5 (-)	CH5 reversed output terminal
29	VM5 (+)	CH5 nonreversed output terminal
30	VM4 (-)	CH4 reversed output terminal
31	VM4 (+)	CH4 nonreversed output terminal
32	GND	Motor GND
33		
34	VM3 (+)	CH3 nonreversed output terminal
35	VM3 (-)	CH3 reversed output terminal
36	N.C.	Not connected
37	IN3+	E3 amplifier nonreversed input terminal
38	Vm2	Motor power supply terminal
39	VBS2	Bootstrap power supply terminal
40	IN3-	E3 amplifier reversed input terminal
41	OUT3	E3 amplifier output terminal
42	CH3IN	E3 amplifier nonreversed input terminal

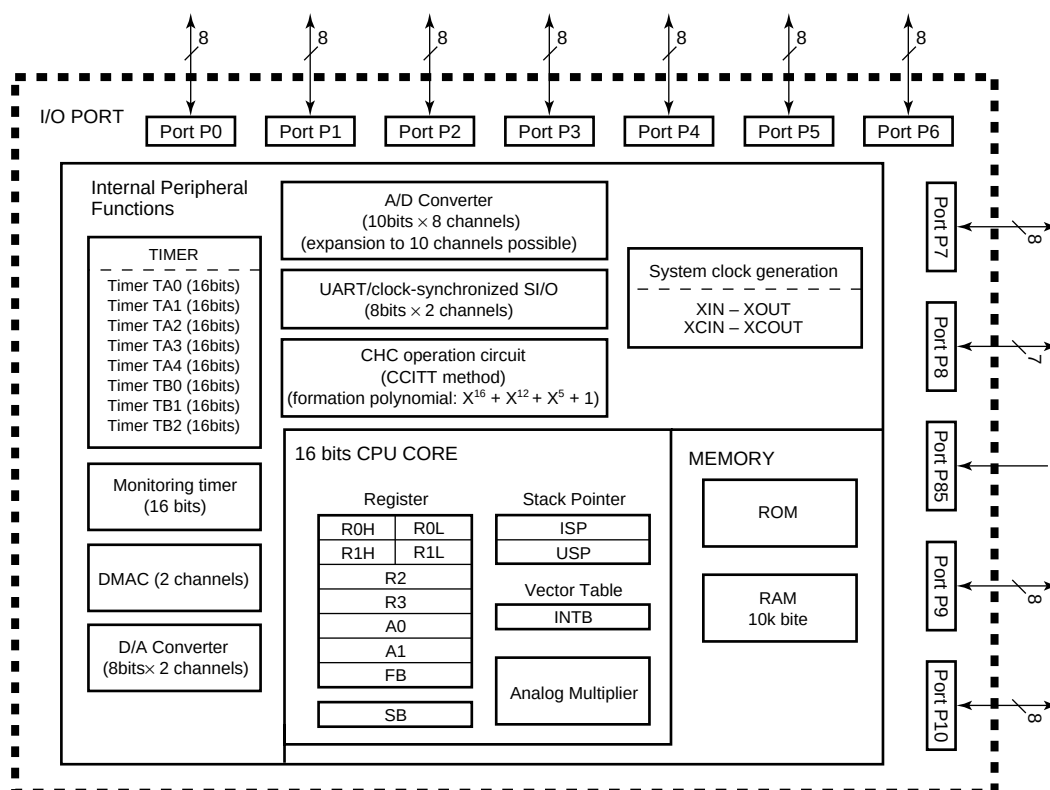
PD5523A (CORE MAIN ASSY : IC104)

• Mechanism Control microcomputer

• Pin Assignment (Top View)



• Block Diagram



●Pin Function

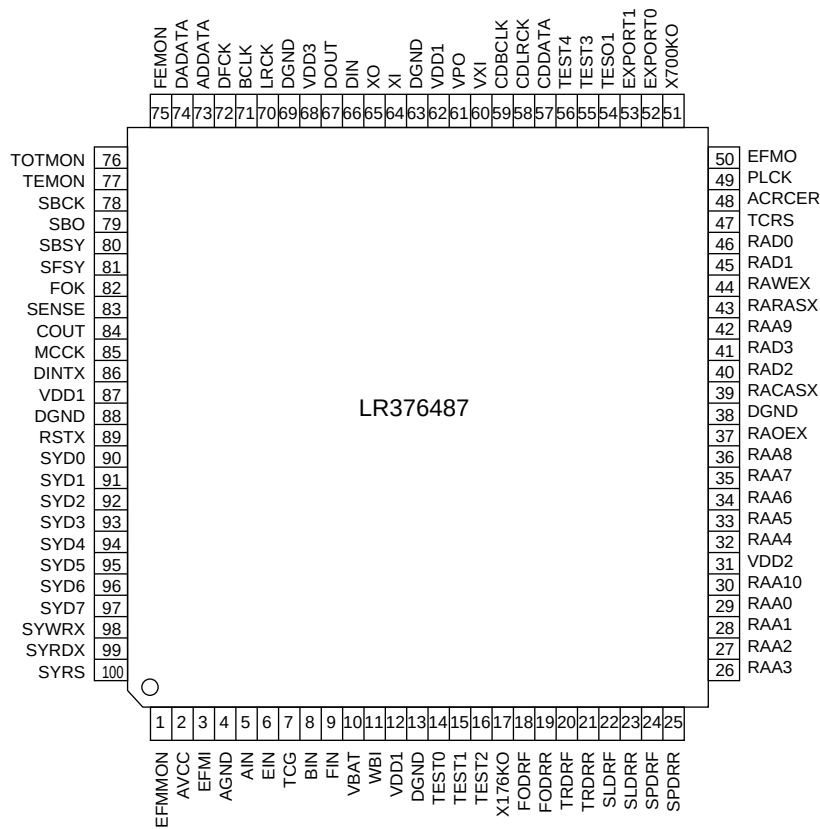
No.	Name	I/O	Description
1 to 7, 100	P96 to P90, P97	I/O	These are 8 bit I/O ports with the same functions as P0. By software selection, it functions as the input terminals for the timers B0 to B2, the output terminals for the D/A converter, the expansion input terminals of the A/D converter, or the A/D trigger input terminals.
8	BYTE	I	This is the terminal for switching the external data bus width. When the level of this terminal is "L", the width is 16 bits, and when it is "H", the width is 8 bits. Please fix it to one of these levels. At the time of single-chip mode, connect it to the Vss terminal.
9	CNVss	I	This is the terminal for processor mode switching. At the time of single-chip mode or at the time of memory expansion mode, connect it to the Vss terminal. At the time of microprocessor mode, connect it to the Vcc terminal.
10	P87	I/O	P80 to P84, P86, and P87 are I/O ports with the same functions as P0. By software selection, they function as the I/O terminals for the timer A4 or the input terminals for external interrupt. P86 and P87 function by software selection as the I/O terminals for the subclock oscillation circuit. In this case, connect a crystal oscillator between P86 (XCOUT terminal) and P87 (XCIN terminal). P85 is an input-only port serving also as $\overline{\text{NMI}}$. When the input of this terminal changes from "H" to "L", and $\overline{\text{NMI}}$ interrupt is generated. The $\overline{\text{NMI}}$ function can not be cancelled by software. A pullup resistance can not be set for this terminal.
11	P86	I/O	
17	P85	I	
18 to 22	P84 to P80	I/O	
12	$\overline{\text{RESET}}$	I	When the input to this terminal is "L", the microcomputer is reset.
13	XOUT	I	These are the I/O terminals of the main clock oscillation circuit. Connect a ceramic oscillator or a crystal oscillator between the terminals XIN and XOUT. In case of an externally generated clock, enter the clock from the XIN terminal and leave the XOUT terminal open.
15	XIN	O	
14	Vss	—	Impress 0 V.
16	Vcc	—	Impress 2.7 V to 5.5 V.
23 to 30	P77 to P70	I/O	These are 8 bit I/O ports with the same functions as P0. By software selection, they function as the I/O terminals for the timers A0 to A3.
31 to 38	P67 to P60	I/O	These are 8 bit I/O ports with the same functions as P0. By software selection, they function as the I/O terminals for the UART0 and UART1.
39 to 46	P57 to P50	I/O	These are 8 bit I/O ports with the same functions as P0. By software selection, they put out a clock with 1/8 or 1/32 of XIN or with the same cycle as XCIN from P57.
	$\overline{\text{WRL}}/\overline{\text{WRH}}$, $\overline{\text{WRH}}/\overline{\text{BHE}}$, $\overline{\text{RD}}$, $\overline{\text{BCLK}}$, $\overline{\text{HLDA}}$, $\overline{\text{HOLD}}$, $\overline{\text{ALE}}$, $\overline{\text{RDY}}$	O O O O O I O I	$\overline{\text{WRL}}$, $\overline{\text{WRH}}$, ($\overline{\text{WR}}$, $\overline{\text{BHE}}$), $\overline{\text{RD}}$, $\overline{\text{BCLK}}$, $\overline{\text{HLDA}}$, and $\overline{\text{ALE}}$ signals are put out. Switching between $\overline{\text{WRL}}$ and $\overline{\text{WRH}}$ and between $\overline{\text{BHE}}$ and $\overline{\text{WR}}$ is possible by software. ■ At the time of $\overline{\text{WRL}}$, $\overline{\text{WRH}}$, $\overline{\text{RD}}$ selection When the external data bus width is 16 bits and the $\overline{\text{WRL}}$ signal is at "L" level, writing is done to an even address, and the $\overline{\text{WRH}}$ signal is at "L" level, writing is done to an odd address. Reading is performed when the $\overline{\text{RD}}$ signal is at "L" level. ■ At the time of $\overline{\text{WR}}$, $\overline{\text{BHE}}$, $\overline{\text{RD}}$ selection Writing is done when the $\overline{\text{WR}}$ signal is at "L" level. Reading is done when the $\overline{\text{RD}}$ signal is at "L" level. An odd address is accessed when the $\overline{\text{BHE}}$ signal is at "L" level. Please use this mode when the external data bus width is 8 bits. The microcomputer is in hold status while the input level to the $\overline{\text{HOLD}}$ terminal is "L". During hold status, the output from $\overline{\text{HLDA}}$ is at "L" level. $\overline{\text{ALE}}$ is the signal for address latching. The microcomputer is in ready status while the input to $\overline{\text{RDY}}$ is at "L" level. A clock with the same frequency as the internal clock ϕ is put out from the $\overline{\text{BCLK}}$ terminal.
47 to 54	P47 to P40	I/O	These are 8 bit I/O ports with the same functions as P0.
	$\overline{\text{CS3}}$ to $\overline{\text{CS0}}$, A19 to A16	O O	The A16 to A19 and $\overline{\text{CS0}}$ to $\overline{\text{CS3}}$ signals are put out. A16 to A19 are the upper 4 bits of the address. $\overline{\text{CS0}}$ to $\overline{\text{CS3}}$ are the chip select signals, and they are used for specification of the access space.

No.	Name	I/O	Description
55 to 61, 63	P37 to P31, P30	I/O	These are 8 bit I/O ports with the same functions as P0.
	A15 to A9, A8	O	The middle 8 bits (A8 to A15) of the address are put out.
	A15 to A9 A8/D7	I/O O	With an external data bus width of 16 bits and multiplex bus setting, time sharing is performed for data (D7) I/O and address (A8) output. Address (A9 to A15) output also is performed.
62	Vcc	—	Impress 2.7 V to 5.5 V.
64	Vss	—	Impress 0 V.
65 to 72	P27 to P20	I/O	These are 8 bit I/O ports with the same functions as P0.
	A7 to A0	O	Output of the lower 8 bits (A0 to A7) of the address is performed.
	A7/D7 to A0/D0	I/O	With an external data bus width of 16 bits and multiplex bus setting, time sharing is performed for data (D0 to D7) I/O and address lower 8 bits (A0 to A7) output.
	A0 A7/D6 to A1/D0	O I/O	With an external data bus width of 16 bits and multiplex bus setting, time sharing is performed for data (D0 to D6) I/O and address (A1 to A7) output. Address (A0) output also is performed.
73 to 80	P17 to P10	I/O	These are 8 bit I/O ports with the same functions as P0.
	D15 to D8	I/O	Data (D8 to D15) I/O is performed at the time of separate bus setting.
81 to 88	P07 to P00	I/O	These are CMOS 8 bit I/O ports. They have direction registers for I/O selection, and input or output port setting is possible individually for each terminal. For an input port, the existence or absence of a pull-up resistance can be set by software in 4 bit units.
	D7 to D0	I/O	Data (D0 to D7) I/O is performed at the time of separate bus setting.
89 to 95, 97	P107 to P101, P100	I/O	This are 8 bit I/O ports with the same functions as P0. By software selection, they function as input terminals of the A/D converter. P104 to P107 also function as input terminals for the key input interrupt function.
96	AVss	—	This is the A/D converter power supply input terminal. Please connect it to the Vss terminal.
98	VREF	I	This is the A/D converter reference voltage input terminal.
99	AVcc	—	This is the A/D converter power supply input terminal. Please connect it to the Vcc terminal.

■ LR376487 (CORE MAIN ASSY : IC102)

• Encode/Decode/Atrac

●Pin Assignment (Top View)



●Pin Function

No.	Name	I/O	Description
1*	EFMMON	O	EFM monitor output
2	AVCC	–	Analog power supply
3	EFMI	I	EFM signal input from RF amp
4	AGND	–	Analog GND
5	AIN	I	Focus error signal A
6	EIN	I	Tracking error signal E
7	TCG	I	Track cross signal
8	BIN	I	Focus error signal B
9	FIN	I	Tracking error signal F
10*	VBAT	I	Power-supply voltage detection signal for constant-voltage servo
11	WBI	I	ADIP wobble signal
12	VDD1	–	Digital power supply
13	DGND	–	Digital GND
14	TEST0	I	Test-use input; normally connected to GND when used.
15	TEST1	I	
16	TEST2	I	Test-use input; Encoder/Servo Mode and ATRAC Mode changeover

No.	Name	I/O	Description
17	X176KO	O	Clock output; f = 176.4kHz (4fs)
18	FODRF	O	Focus servo forward output; PWM
19	FODRR	O	Focus servo reverse output; PWM
20	TRDRF	O	Tracking servo forward output; PWM
21	TRDRR	O	Tracking servo reverse output; PWM
22	SLDRF	O	Slide servo forward output; PWM
23	SLDRR	O	Slide servo reverse output; PWM
24	SPDRF	O	Spindle servo forward output or spindle servo output; PWM
25	SPDRR	O	Spindle servo reverse output or spindle rotation forward/reverse changeover
26	RAA3	O	Address output to external D-RAM; ADR3
27	RAA2	O	Address output to external D-RAM; ADR2
28	RAA1	O	Address output to external D-RAM; ADR1
29	RAA0	O	Address output to external D-RAM; ADR0 (LSB)
30*	RAA10	O	Address output to external D-RAM; ADR10 (MSB)
31	VDD2	–	Power supply for DRAM interface

No.	Name	I/O	Description
32 | 36	RAA4 | RAA8	O	Address output to external D-RAM; ADR4 | Address output to external D-RAM; ADR8
37	RAOEX	O	Data output enable signal output to external D-RAM
38	DGND	–	Digital GND
39	RACASX	O	Column address strobe signal output to external D-RAM
40	RAD2	I/O	External D-RAM and data input/output; D2
41	RAD3	I/O	External D-RAM and data input/output; D3 (MSB)
42	RAA9	O	Address output to external D-RAM; ADR9
43	RARASX	O	Low address strobe signal output to external D-RAM
44	RAWEX	O	Data write enable signal output to external D-RAM
45	RAD1	I/O	External D-RAM and data input/output; D1
46	RAD0	I/O	External D-RAM and data input/output; D0 (LSB)
47*	TCRS	O	Track cross signal
48*	ACRCER	O	ADIP CRC error flag monitor output
49*	PLCK	O	EFM PLL clock output during Play
50	EFM0	O	EFM signal output during Record; C1F (C1 error flag) monitor output during Play.
51*	X700KO	O	Clock output; f = 705.6kHz; clock is not output when RSTX = 0.
52*	EXPORT0	O	Microcomputer extension output port 0
53*	EXPORT1	O	Microcomputer extension output port 1
54	TESO1	O	Microcomputer extension output port 2 during PLLR changeover
55	TEST3	I/O	Microcomputer extension output port 3 during PLLOSC changeover
56	TEST4	I/O	Microcomputer extension output port 4 during EXTCLK changeover
57	CDDATA	I/O	CD data input for high-speed dubbing; microcomputer extension port 5 during changeover
58	CDLRCK	I/O	CD LR clock input for high-speed dubbing; microcomputer extension port 6 during changeover
59	CDBCLK	I/O	CD bit clock input for high-speed dubbing; microcomputer extension port 7 during changeover
60	VXI	I	PLL clock input for varying pitch
61*	VPO	O	PLL phase error input for varying pitch
62	VDD1	–	Digital power supply
63	DGND	–	Digital GND
64	XI	I	Oscillation circuit input; 33.8688MHz
65	XO	O	

No.	Name	I/O	Description
66	DIN	I	Digital input signal
67	DOUT	O	Digital output signal
68	VDD3	–	Power supply for internal PLL
69	DGND	–	Digital GND
70	LRCK	O	Music data Lch/Rch changeover output
71	BCLK	O	Music data shift lock
72	DFCK	O	Clock for AD/DA converter digital filter; 256fs
73	ADDATA	I	Audio data input
74	DADATA	O	Audio data output
75*	FEMON	O	Focus error signal monitor output
76*	TOTMON	O	Total signal monitor output
77*	TEMON	O	Tracking error signal monitor output
78*	SBCK	I	DIN sub code readout clock; EIAJ CP-309 format
79*	SBO	O	DIN sub code serial data; EIAJ CP-309 format
80*	SBSY	O	DIN sub code block synchronization signal; EIAJ CP-309 format
81*	SFSY	O	DIN sub code frame synchronization signal; EIAJ CP-309 format
82	FOK	O	Focus OK detection signal; "0": Focus OK
83	SENSE	O	Servo status detection signal; "1": Auto Move/ Auto Jump/ Auto Focus lead-in in progress
84	COUT	O	Track cross signal output
85	MCKK	O	Clock output for microcomputer; clock is output even when RSTX = 0.
86	DINTX	O	Interrupt Request output signal for system computer interface
87	VDD1	–	Digital power supply
88	DGND	–	Digital GND
89	RSTX	I	Tip reset input; reset with L (NOTE)
90	SYD0	I/O	System computer interface data bus terminal; (LSB)
91 | 96	SYD1 | SYD6	I/O	System computer interface data bus terminal
97	SYD7	I/O	System computer interface data bus terminal; (MSB)
98	SYWRX	I	System computer interface register write pulse input
99	SYRDX	I	System computer interface register read pulse input
100	SYRS	I	System computer interface register select input

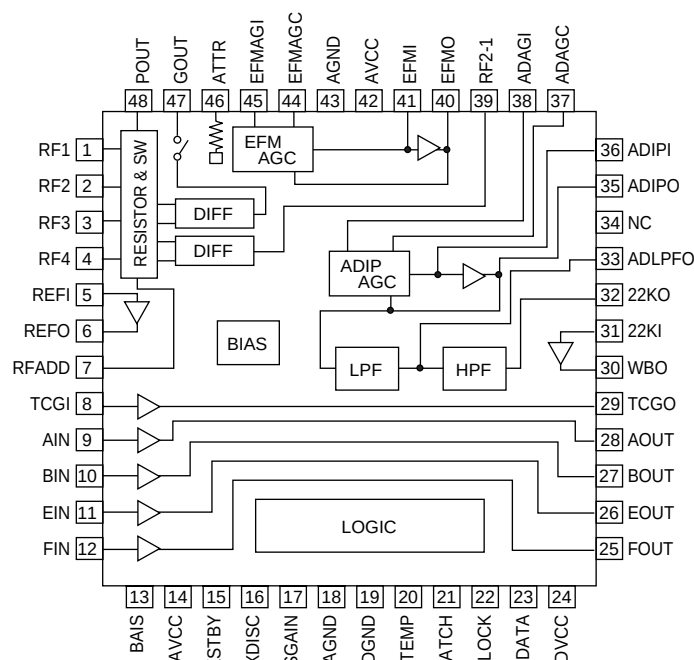
Terminals denoted with an asterisk (*) are (Open) terminals that are not externally connected.

(NOTE) Set RSTX to "L" when the power is being turned ON or after it has been turned ON.

IR3R55M (CORE MAIN ASSY : IC101)

• RF Signal Processor

●Block Diagram



●Pin Function

No.	Name	Description
1	RF1	Inputs RF signal input terminal 1 pickup RF signal output.
2	RF2	Inputs RF signal input terminal 2 pickup RF signal output.
3	RF3	Inputs RF signal input terminal 3 pickup RF signal output.
4	RF4	Inputs RF signal input terminal 4 pickup RF signal output.
5	REFI	Standard voltage amp input terminal
6	REFO	Standard voltage amp output terminal
7	RFADD	RF1 – 4 resistance addition output terminal
8	TCGI	Track cross detection signal amp input terminal during groove input
9	AIN	Servo-use signal amp (Focus servo system) inversion input terminal
10	BIN	Servo-use signal amp (Focus servo system) inversion input terminal
11	EIN	Servo-use signal amp (Tracking servo system) inversion input terminal
12	FIN	Servo-use signal amp (Tracking servo system) inversion input terminal
13	BIAS	Bias input terminal
14	AVCC	Analog power terminal
15*	VSTBY	Logic signal output terminal (outputs STBY signal inversion signal)

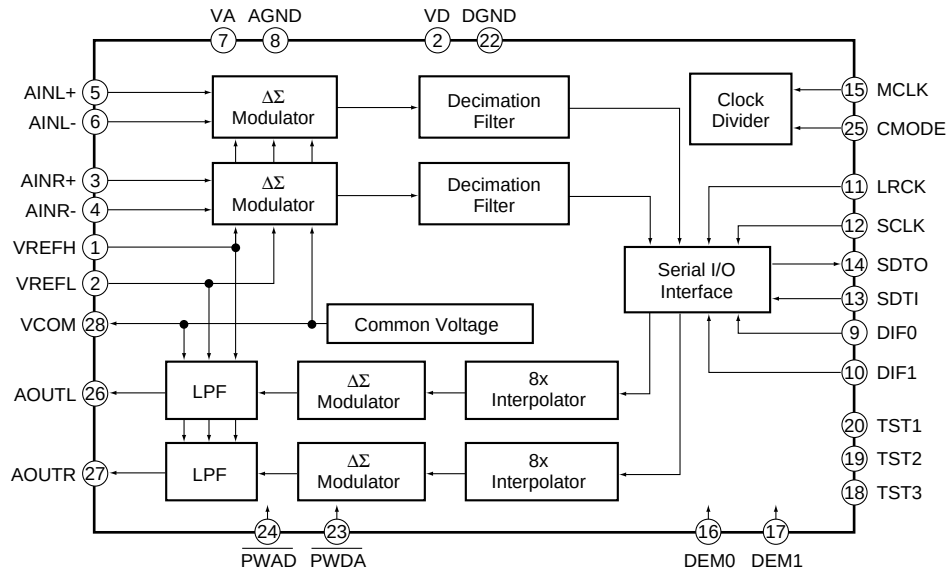
No.	Name	Description
16*	XDISC	Logic signal output terminal (outputs DISC signal inversion signal)
17*	XSGAIN	Logic signal output terminal (outputs SGAIN signal inversion signal)
18	AGND	Analog part GND terminal
19	DGND	Digital part GND terminal
20	DTEMP	Tip temperature detection terminal
21	LATCH	Latch signal input terminal
22	CLOCK	Clock signal input terminal
23	DATA	Serial data input terminal
24	DVCC	Digital part power terminal
25	FOUT	Servo-use signal amp (Tracking servo system) output terminal
26	EOUT	Servo-use signal amp (Tracking servo system) output terminal
27	BOUT	Servo-use signal amp (Focus servo system) output terminal
28	AOUT	Servo-use signal amp (Focus servo system) output terminal
29	TCGO	Track cross detection signal amp output terminal during groove output
30	WBO	Comparator output terminal for ADIP signal 2-value conversion
31	22KI	Comparator input terminal for ADIP signal 2-value conversion
32	22KO	ADIP signal HPF amp output terminal
33	ADLPFO	ADIP signal LPF amp output terminal
34*	NC	NC
35	ADIPO	ADIP signal preamp output terminal
36	ADIPI	ADIP signal AGC amp output terminal
37	ADAGC	Smoothing capacitor connection terminal for ADIP signal AGC
38	ADAGI	ADIP signal AGC amp input terminal
39	RF2-1	RF1, RF2 differential signal
40	EFMO	RF signal preamp output terminal
41*	EFMI	RF signal AGC amp output terminal
42	AVCC	Analog part power terminal
43	AGND	Analog part GND terminal
44	EFMAGC	Smoothing capacitor connection terminal for EFM signal AGC
45	EFMAGI	EFM signal AGC amp input terminal
46*	ATTR	Terminal for attenuating 47, 48 pin output signal
47	GOUT	Outputs RF1 + RF2 + RF3 – RF3 – RF4 signal during groove output
48	POUT	RF1 – 4 resistance addition output during pit output

Terminals denoted with an asterisk (*) are (Open) terminals that are not externally connected.

AK4520A (MD ASSY : IC4301)

• AD/DA Converter

•Block Diagram



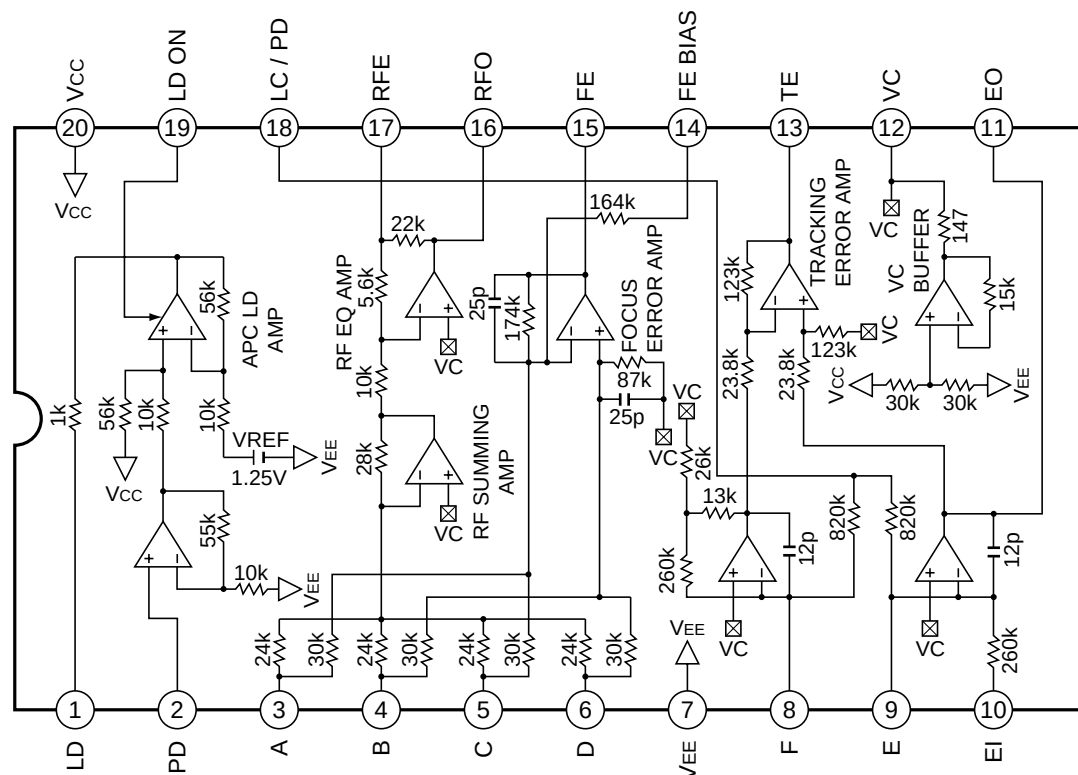
•Pin Function

No.	Pin Name	I/O	Function	No.	Pin Name	I/O	Function
1	VREFH	I	Positive voltage reference input pin, VA	15	MCLK	I	Master clock input pin
2	VREFL	I	Negative voltage reference input pin, AGND	16	DEM0	I	De-emphasis frequency select pin
3	AINR+	I	R ch analog positive input pin	17	DEM1	I	De-emphasis frequency select pin
4	AINR-	I	R ch analog negative input pin	18	TST3	I/O	Test pins (Pull down pins) Open or connect to DGND.
5	AINL+	I	L ch analog positive input pin	19	TST2	I/O	
6	AINL-	I	L ch analog negative input pin	20	TST1	I	
7	VA	-	Analog power supply pin	21	VD	-	Digital power supply pin
8	AGND	-	Analog ground pin	22	DGND	-	Digital ground pin
9	DIF0	I	Audio data interface format pin	23	PWDA	I	DAC power-down mode pin
10	DIF1	I	Audio data interface format pin	24	PWAD	I	ADC power-down mode pin
11	LRCK	I	Input/Output channel clock pin	25	CMODE	I	Master clock select pin "H" : 384fs, "L" : 256fs
12	SCLK	I	Audio serial data clock pin	26	AOUTL	O	L ch analog output pin
13	SDTI	I	Audio serial data input pin	27	AOUTR	O	R ch analog output pin
14	SDTO	O	Audio serial data output pin	28	VCOM	O	Common voltage output pin, VA/2

■ CXA1821M (CD ASSY : IC1101)

• RF AMP. IC

●Block Diagram



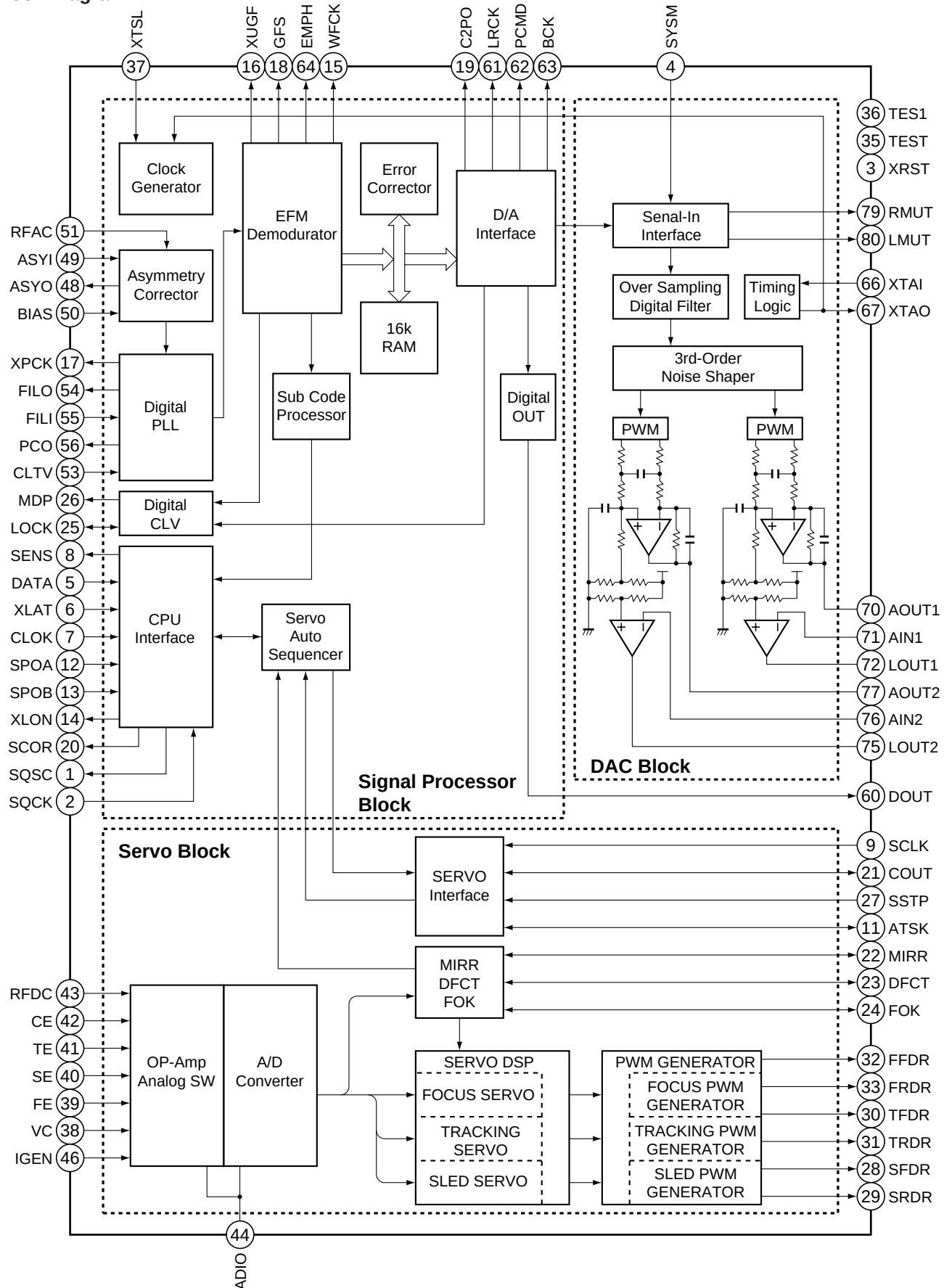
●Pin Function

No.	Pin Name	I/O	Function	No.	Pin Name	I/O	Function
1	LD	O	APC amplifier output	11	EO	-	Gain adjust the signal which was input from pin 9.
2	PD	I	APC amplifier input	12	VC	O	DC voltage output of (VCC+VEE)/2
3	A	I	RF amplifier and FE amplifier input	13	TE	O	Tracking error amplifier output F-E signal is output.
4	B			14	FE BIAS	I	Pin for focus bias adjustment
5	C			15	FE	O	Focus error amplifier output
6	D			16	RFO	O	RF amplifier output
7	VEE	-	Ground pin	17	RFE	-	Pin for RF amplifier equalization
8	F	I	Tracking error amplifier input.	18	LC/PD	I	Bias pin VCC : LC , OPEN : PDIC
9	E			19	LD ON	I	ON/OFF switching pin of APC amplifier VCC : ON, VEE : OFF
10	EI	-	Gain adjust the signal which was input from pin 9.	20	VCC	-	Power supply pin

■ CXD2587Q (CD ASSY : IC1201)

• SERVO IC

●Block Diagram



●Pin Function

iN- o.	Pin Name	I/O	Function	No.	Pin Name	I/O	Function
1	SQSO	O	SubQ 80-bit, PCM peak and level data output CD TEXT data output	41	TE	I	Tracking error input
2	SQCK	I	Clock input for SQSO readout	42	CE	I	Center servo analog input
3	XRST	I	System reset Reset when "L"	43	RFDC	I	RF signal input
4	SYSM	I	Mute input Mute when "H"	44	ADIO	O	OP amplifier output
5	DATA	I	Serial data input from CPU	45	AVss0	–	Analog GND
6	XLAT	I	Latch input from CPU Serial data is latched at the falling edge.	46	IGEN	I	Constant current input for OP amplifier
7	CLOK	I	Serial data transfer clock input from CPU	47	AVdd0	–	Analog power supply
8	SENS	O	SENS output to CPU	48	ASYO	O	EFM full-swing output ("L"=VSS, "H"=VDD)
9	SCLK	I	Clock input for SENS serial-data readout	49	ASYI	I	Asymmetry compare voltage input
10	Vdd	–	Digital power supply	50	BIAS	I	Constant current input of the asymmetry circuit
11	ATSK	I/O	Input and output for anti-shock	51	RFAC	I	EFM signal input
12	SPOA	I	Microcomputer extended interface (input A)	52	AVss3	–	Analog GND
13	SPOB	I	Microcomputer extended interface (input B)	53	CLTV	I	VCO control voltage input for master
14	XLON	O	Microcomputer extended interface (output)	54	FILO	O	Filter output for master PLL (Slave=digital PLL)
15	WFCK	O	WFCK output	55	FILI	I	Filter input for master PLL
16	XUGF	O	XUGF output MNT1 and RFCK output by switching the command.	56	PCO	O	Charge pump output for master PLL
17	XPLCK	O	XPLCK output MNT0 output by switching the command.	57	AVdd3	–	Analog power supply
18	GFS	O	GFS output MNT3 and XRAOF output by switching the command.	58	Vss	–	Digital GND
19	C2PO	O	C2PO output GTOP output by switching the command.	59	Vdd	–	Digital power supply
20	SCOR	O	Outputs "H" when either subcode sync. S0 or S1 is detected.	60	DOUT	O	DIGITAL OUT output
21	COUT	I/O	Input and output of track-number count signal	61	LRCK	O	D/A interface LR clock output f=Fs
22	MIRR	I/O	Mirror signal input and output	62	PCMD	O	D/A interface Serial data output (two's complement, MSB first)
23	DFCT	I/O	Defect signal input and output	63	BCK	O	D/A interface Bit clock output
24	FOK	I/O	Focus OK signal input and output	64	EMPH	O	Outputs "H" when the playback disc has emphasis, and "L" when there is no emphasis.
25	LOCK	I/O	GFS is sampled at 460Hz;when GFS is "H", this pin outputs "H". If GFS is "L" eight consecutive samples, this pin outputs "L". Input when LKIN="H".	65	XVdd	–	Power supply for master clock
26	MDP	O	Servo control output of spindle motor	66	XTAI	I	Crystal oscillation circuit input Input the external master clock via this pin.
27	SSTP	I	Detection signal input of disc innermost	67	XTAO	O	Crystal oscillation circuit output
28	SFDR	O	Sled drive output	68	XVss	–	GND for master clock
29	SRDR	O		69	AVdd1	–	Analog power supply
30	TFDR	O	Tracking drive output	70	AOUT1	O	L ch analog output
31	TRDR	O		71	AIN1	I	L ch OP amp. input
32	FFDR	O	Focus drive output	72	LOUT1	O	L ch LINE output
33	FRDR	O		73	AVss1	–	Analog GND
34	Vss	–	Digital GND	74	AVss2	–	Analog GND
35	TEST	I	TEST pin : normally GND	75	LOUT2	O	R ch LINE output
36	TEST	I		76	AIN2	I	R ch OP amp. input
37	XTSL	I	Crystal selector input "L":16.9344MHz , "H":33.8688MHz	77	AOUT2	O	R ch analog output
38	VC	I	Center voltage input	78	AVdd2	–	Analog power supply
39	FE	I	Focus error signal input	79	RMUT	O	R ch zero detection flag
40	SE	I	Sled error signal input	80	LMUT	O	L ch zero detection flag

Notes)

- PCMD is an MSB first. two's complement output.
- GTOP is used to monitor the frame sync protection status. (High:sync protection window released)
- XUGF is the negative pulse for the frame sync derived from the EFM signal. It is the signal before sync protection.
- XPLCK is the inverse of the EFM PLL clock. The PLL is designed so that the falling edge of XPLCK and the EFM signal transition point coincide.
- GFS goes high when the frame sync and the insertion protection timing match.
- RFCK is derived with the crystal accuracy. This signal has a cycle of 136μs.
- C2PO represents the data error status.
- XRAOF is generated when the 16K RAM exceeds the ±4F jitter margin.

■ PDG241 (U-COM ASSY : IC5501)

• System Control IC

●Pin Function

No.	Name	I/O	Description
1	CDLAT	O	CD LSI Latch
2	CD DATA	O	CD LSI Data
3	CDSYSMUTE	O	CD decoder mute control
4	CDRESET	O	CD LSI Reset
5	CDCONT	O	CD LSI power control
6	CDMUTE	O	CD mute control
7	CDSQSO	I	CD SUBQ data input
8	-	O	Open
9	CDSQCK	O	CD SUBQ clock
10	LINE 2 MUTE	O	Line 2 mute control
11	LINE 1 MUTE	O	Line 1 mute control
12	LINE CONT	O	Line ATT control
13	VOLCE	O	E-Volume LSI chip enabled
14	TOUCH	I	Touch sencer input
15	VOLDATA	O	E-Volume LSI data
16	VOLCLK	O	E-Volume LSI clock
17	SYSPOW	O	System power control
18	SCLK	O	System bus clock
19	SDATA	I/O	System bus data
20	SREQ	I/O	System bus request
21	SPCONT	O	Speaker relay control
22	SYSMUTE	O	System mute control
23	TXCE	O	TX LSI chip enabled
24	TXODATA	O	TX LSI data output
25	TXCLK	O	TX LSI clock
26	TXIDAT	I	TX LSI data input
27	TXMUTE	O	TX mute control
28	TXPOW	O	TX power control
29	PDSPOW	O	RDS power control
30	RDSDATA	I	RDS data input
31	-	O	Open
32	-	O	
33	-	O	
34	-	O	
35	-	O	
36	-	O	
37	-	O	
38	-	O	
39	BEEP	O	Beep control
40	RESET	I	System reset

No.	Name	I/O	Description
41	Vss	-	GND
42	XTAL	-	Oscillator pulses (12MHz)
43	EXTAL	I	
44	LCDCE	O	LCD driver chip enabled
45	LCDRESET	O	LCD driver reset
46	LCDDATA	O	LCD driver data
47	LCDCCLK	O	LCD driver clock
48	CDDOOR2	I	CD Door detection input 2
49	CDDOOR1	I	CD Door detection input 1
50	CDDOOR4	I	CD Door detection input 4
51	CDDOOR3	I	CD Door detection input 3
52	AVss	-	AD converter GND
53	AVref	I	AD converter reference voltage
54	AVdd	-	AD converter voltage
55	SIMUKE	I	Model type select input
56	PROTECT	I	Protect detection input
57	ST/TUNE	I	TX STEREO/TUNED input
58	JOGIN	I	JOG input
59	-	I	GND
60	KEY3	I	Key input
61	KEY2	I	Key input
62	KEY1	I	Key input
63	B.LIGHT	O	LCD back light control
64	STBYLED	O	Standby LED control
65	OPTINCD	O	Optical output control (CD input)
66	OPTINAUX	O	Optical output control (AUX input)
67	MDSTB	I	MD mecha control data
68	MDMUTE	I	MD mecha control mute
69	MDRESET	O	MD mecha control reset
70	MDPDOWN	O	Power-down detection output of MD mecha
71	MDCMODE	O	MD converter FS mode
72	MDDAPOW	O	MD DAC power control
73	MDADPOW	O	MD ADC power control
74	MDDIF1	O	MD audio format 0
75	MDDIFO	O	MD audio format 1
76	MDPBMUTE	O	MD PB mute control
77	RDSCLK	I	RDS clock input
78	ACPULS	I	AC pulse input
79	MDIDAT	I	MD mecha control data input
80	MDODAT	O	MD mecha control data output

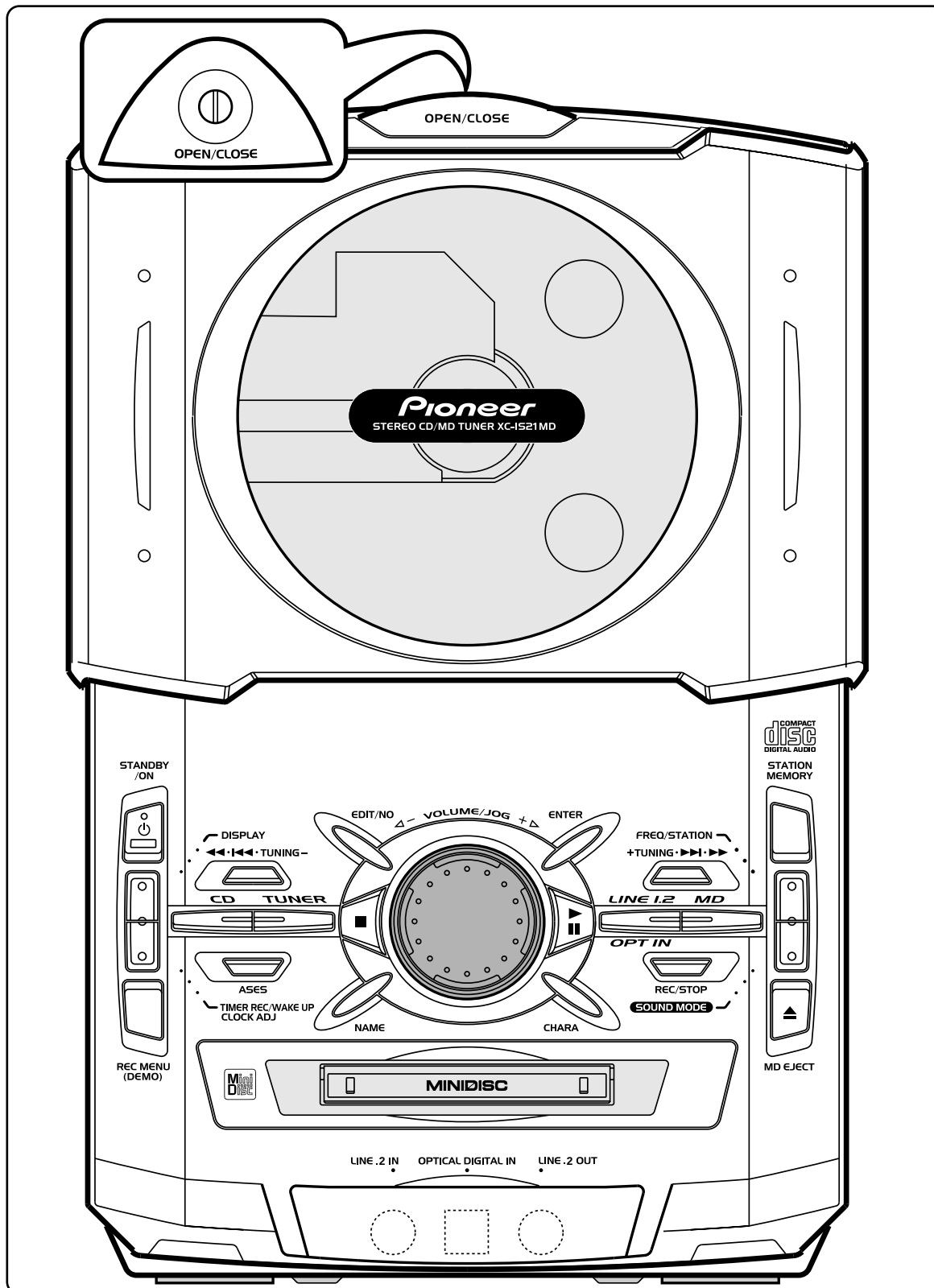
No.	Name	I/O	Description
81	MDCLK	O	MD mecha control clock output
82	CDSCOR	I	CD SUBQ level input
83	MDFLAP	I	MD disc detection input
84	-	O	Open
85	REMIN	I	Remote control input
86	-	i	Open
87	-	I	Open
88	GND	-	GND
89	Vdd	-	+5v
90	NC	-	Open

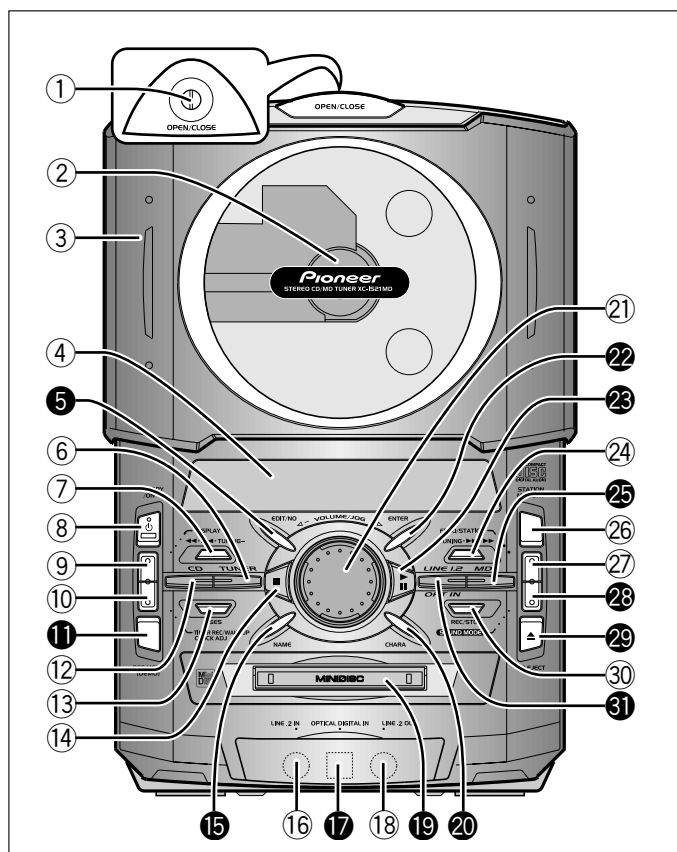
No.	Name	I/O	Description
91	-	O	Open
92	-	O	Open
93	MDTEST	I	MD Service mode
94	CDCLOSE	O	CD door CLOSE drive output
95	CDOPEN	O	CD door OPEN drive output
96	CDLDON	O	CD Laserdiode control output
97	CDINSID	I	CD Inside SW input
98	CDSCLK	O	CD automatic adjustment input clock
99	CDSSENS	I	CD LSI replay (GFS, FOK)
100	CDCLK	O	CD LSI clock

8. PANEL FACILITIES AND SPECIFICATIONS

8.1 PANEL FACILITIES

■ Front Panel





- ① CD cover OPEN/CLOSE touch sensor
- ② CD spindle
- ③ CD slide cover
- ④ Display window
- ⑤ EDIT/NO button
- ⑥ TUNER button
- ⑦ ◀◀ • ◀◀ • TUNING – button
- ⑧ STANDBY/ON button and standby indicator

This is the power switch.

ON : When set to the ON position, power is supplied and the unit becomes operational.

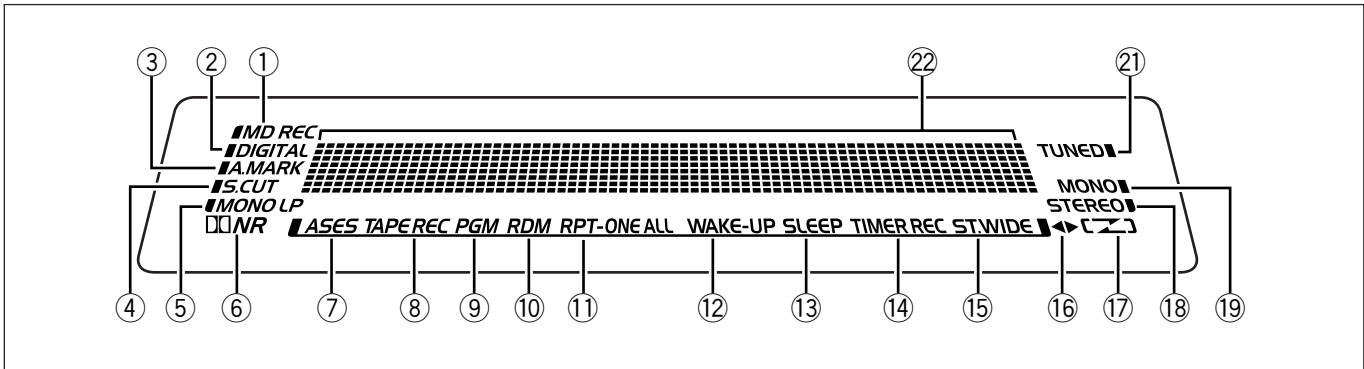
STANDBY : When set to the STANDBY position, the main power flow is cut and the unit is no longer fully operational. A minute flow of power feeds the unit to maintain operation readiness.

- ⑨ DISPLAY button
- ⑩ TIMER REC/WAKE UP/CLOCK ADJ button
- ⑪ REC MENU (DEMO) button
- ⑫ CD button
- ⑬ ASES button
- ⑭ Stop (■) button
- ⑮ NAME button
- ⑯ LINE 2 IN jack
- ⑰ OPT (Optical) IN jack
- ⑱ LINE 2 OUT jack
- ⑲ MD insert slot
- ⑳ CHARA (Character) button
- ㉑ VOLUME/JOG dial
- ㉒ ENTER button
- ㉓ Play/Pause (▶/⏸) button
- ㉔ TUNING + • ▶▶▶ • ▶▶▶ button
- ㉕ MD button (CD MD Tuner)
- ㉖ STATION MEMORY button
- ㉗ FREQ (Frequency)/STATION button
- ㉘ SOUND MODE button
- ㉙ MD EJECT (▲) button
- ㉚ REC/STOP button
- ㉛ LINE 1, 2, OPT IN button

[CD MD Tuner]

US and foreign patents licensed from Dolby Laboratories Licensing Corporation.

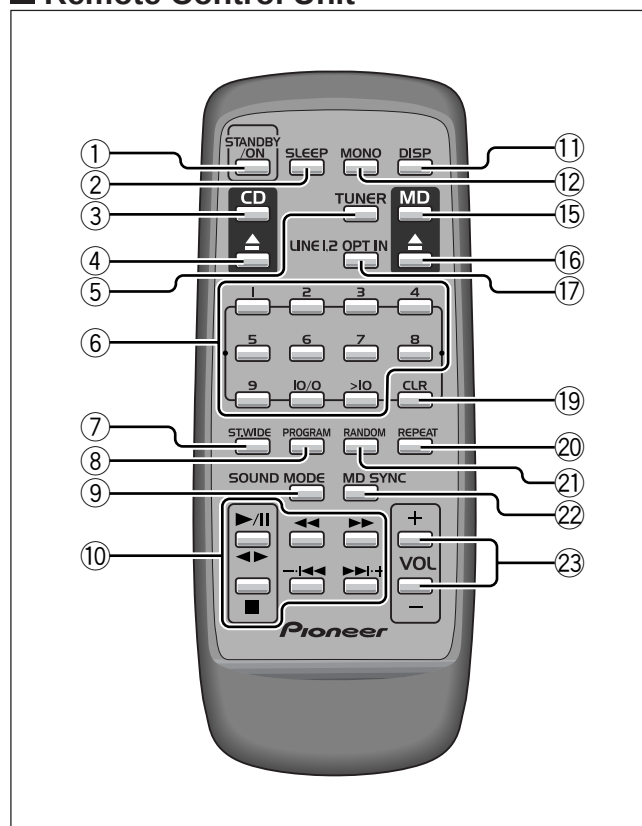
■ Display



Display window

- ① Lights during MD recording operation.
- ② Lights when MD recorder is in digital signal input mode.
- ③ Lights when MD auto marking function is ON.
- ④ Lights when MD space cut function is ON.
- ⑤ Lights when MD recorder is in monaural long play mode.
- ⑥ Lights when Dolby NR on optional cassette deck is ON.
- ⑦ Lights when using A.S.E.S. (Auto Synchro Editing System).
- ⑧ Lights when optional cassette deck is set to recording mode.
- ⑨ Lights during program mode.
- ⑩ Lights during random playback.
- ⑪ Lights during repeat playback.
- ⑫ Lights when setting wake-up timer.
- ⑬ Lights during sleep timer operation.
- ⑭ Lights when setting timer recording.
- ⑮ Lights during stereo wide sound mode.
- ⑯ Lights to indicate tape direction of optional cassette deck.
- ⑰ Lights to indicate reverse mode of optional cassette deck.
- ⑱ Lights during FM stereo reception.
- ⑲ Lights when FM monaural reception is ON.
- ⑳ Lights when setting Beat Cut function.
- ㉑ Lights during radio broadcast reception.
- ㉒ Indicates frequency and major operation status.

■ Remote Control Unit



- ① STANDBY/ON button
- ② SLEEP button
- ③ CD button
- ④ CD cover open/close (▲) button
- ⑤ TUNER button
- ⑥ Digit (1 – 9, 10/0, >10) buttons
- ⑦ ST. (stereo) WIDE button
- ⑧ PROGRAM button
- ⑨ SOUND MODE button
- ⑩ CD/MD/TUNER operation buttons
 - [CD/MD operation]
 - ▶/||: Play/pause button
 - : Stop button
 - ◀◀, ▶▶: Manual search buttons
 - |◀◀, ▶▶|: Track search buttons
 - [TUNER operation]
 - ◀◀, ▶▶: Frequency down, up buttons
 - , +: Memory station no. decrement, increment buttons
- ⑪ DISP (display) button
- ⑫ MONO button
- ⑮ MD button
- ⑯ MD eject (▲) button
- ⑰ LINE 1, 2 OPT button
- ⑲ CLR (clear) button
- ⑳ REPEAT button
- ㉑ RANDOM button
- ㉒ MD SYNC button (CD MD Tuner)
- ㉓ VOL (volume) +, – button

8.2 SPECIFICATIONS

7 Amplifier Section

Continuous average power output of 55 watts* per channel, min., at 6 ohms, from 60 Hz to 15,000 Hz with no more than 1.0 %** total harmonic distortion.

* Measured pursuant to the Federal Trade Commission’s Trade Regulation rule on Power Output Claims for Amplifiers.
** Measured by Audio Spectrum Analyzer.

■ FM Tuner Section

Frequency Range 87.5 - 108MHz
Antenna 75 Ω, unbalanced

■ AM Tuner Section

Frequency Range 531 kHz - 1,602 kHz (9 kHz step);
530 kHz - 1,700 kHz (10 kHz step)
Antenna Loop antenna

■ Compact Disc Player Section

Type Compact disc digital audio system
Usable discs Compact discs
Wow and Flutter Limit of measurement
(0.001%) or less (EIAJ)

■ MiniDisc Recorder Section

Recording Method Magnetic field modulation
overwriting type
Playback Method Non-contact optical type
Sampling Frequency 44.1 kHz
Wow and Flutter Limit of measurement
(±0.001% W.PEAK) or less (EIAJ)

■ Micellaneous (Stereo power amplifier: M-IS21)

Power Requirements AC120 V, 60 Hz
Power Consumption 120 W, 160 VA
Power Consumption in standby mode 1 W
Dimensions:
CD MD Tuner
..... 205 (W) x 300 (H) x 237 (D) mm
8-1/16 (W) x 11-13/16 (H) x 9-5/16 (D) in.
Power Amplifier 150 (W) x 300 (H) x 233 (D) mm
5-7/8 (W) x 11-13/16 (H) x 9-3/16 (D) in.
Weight:
CD MD Tuner 3.1 kg (6 lb 13 oz)
Power Amplifier 4.0 kg (8 lb 13 oz)

■ Accessories

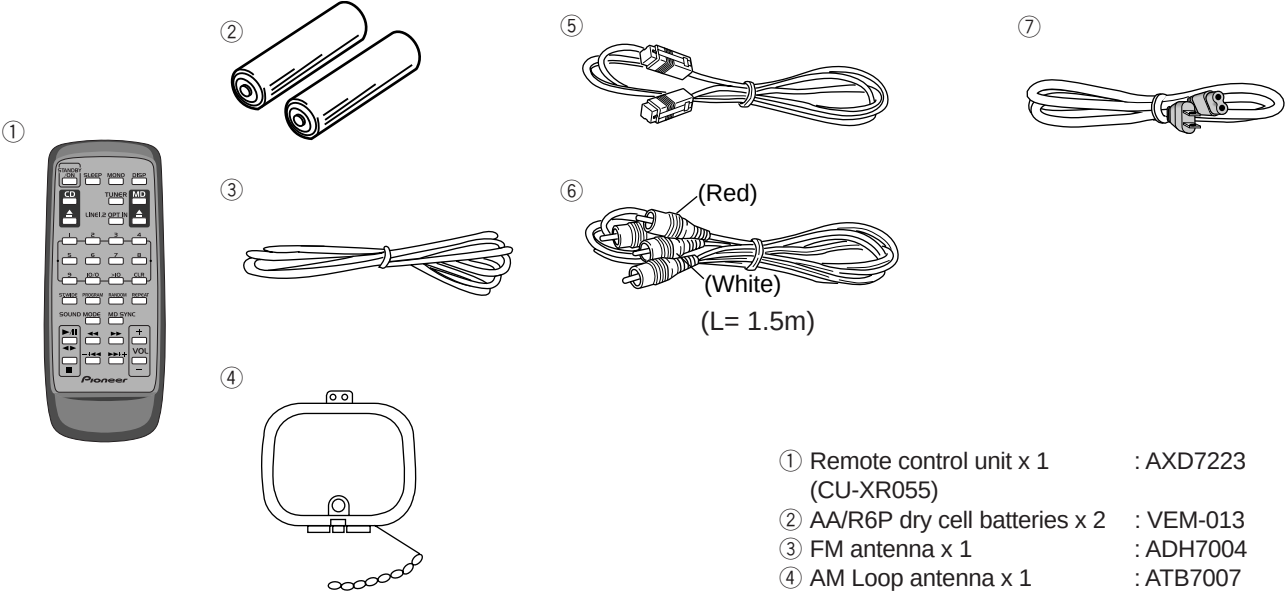
Operating Instructions 2
Warranty Card 1
FM antenna 1
AM loop antenna 1
Remote control unit 1
Dry cell batteries (AA/R6) 2
Power cord 1
RCA pin-plug stereo cable 1
System cable 1

■ Accessories

Speaker cords 2

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

■ Accessories



① Remote control unit x 1 : AXD7223 (CU-XR055)
② AA/R6P dry cell batteries x 2 : VEM-013
③ FM antenna x 1 : ADH7004
④ AM Loop antenna x 1 : ATB7007
⑤ System cable x 1 : ADE7039
⑥ RCA pin-plug stereo cable x 1 : VDE1052 (L =1.5m)
⑦ Power cord x 1 : XDG3007