



# PROFESSIONAL COMPACT DISC RECORDER **CDR-830**



# Service Manual

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

Type	Model	Power Requirement	Remarks
	<b>CDR-830</b>		
KUXJ/CA	○	AC120V	
WYXJ	○	AC220-240V	

### FOR U.S. MODELS

NECESSARY INFORMATION FOR DHHS RULES MARKED ON THE REAR BASE AND ON THE TOP OF CD MECHANISM AS BELOW.

DANGER – LASER RADIATION WHEN OPEN. AVOID DIRECT EXPOSURE TO BEAM.



# 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



**NOTICE**

(FOR CANADIAN MODEL ONLY)

Fuse symbols  (fast operating fuse) and/or  (slow operating fuse) on PCB indicate that replacement parts must be of identical designation.

**REMARQUE**

(POUR MODÈLE CANADIEN SEULEMENT)

Les symboles de fusible  (fusible de type rapide) et/ou  (fusible de type lent) sur CCI indiquent que les pièces de remplacement doivent avoir la même désignation.

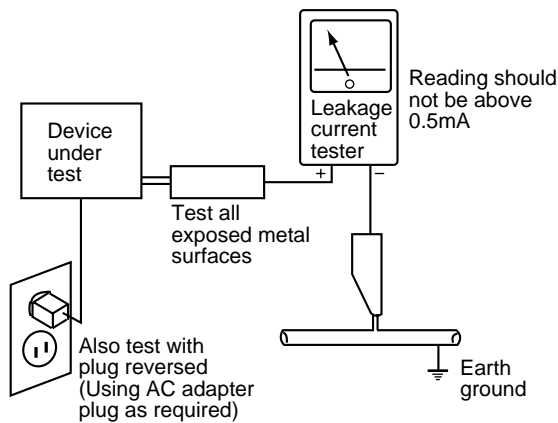
**(FOR USA MODEL ONLY)**

## 1. SAFETY PRECAUTIONS

The following check should be performed for the continued protection of the customer and service technician.

### LEAKAGE CURRENT CHECK

Measure leakage current to a known earth ground (water pipe, conduit, etc.) by connecting a leakage current tester such as Simpson Model 229-2 or equivalent between the earth ground and all exposed metal parts of the appliance (input/output terminals, screwheads, metal overlays, control shaft, etc.). Plug the AC line cord of the appliance directly into a 120V AC 60Hz outlet and turn the AC power switch on. Any current measured must not exceed 0.5mA.



AC Leakage Test

**ANY MEASUREMENTS NOT WITHIN THE LIMITS OUTLINED ABOVE ARE INDICATIVE OF A POTENTIAL SHOCK HAZARD AND MUST BE CORRECTED BEFORE RETURNING THE APPLIANCE TO THE CUSTOMER.**

## 2. PRODUCT SAFETY NOTICE

Many electrical and mechanical parts in the appliance have special safety related characteristics. These are often not evident from visual inspection nor the protection afforded by them necessarily can be obtained by using replacement components rated for voltage, wattage, etc. Replacement parts which have these special safety characteristics are identified in this Service Manual.

Electrical components having such features are identified by marking with a  $\Delta$  on the schematics and on the parts list in this Service Manual.

The use of a substitute replacement component which does not have the same safety characteristics as the HHB recommended replacement one, shown in the parts list in this Service Manual, may create shock, fire, or other hazards.

Product Safety is continuously under review and new instructions are issued from time to time. For the latest information, always consult the current HHB Service Manual. A subscription to, or additional copies of, HHB Service Manual may be obtained at a nominal charge from HHB.

# LABEL CHECK

## WYXJ type

ADVARSEL  
 USYNLIG LASERSTRÅLING VED ÅBNING NÅR SIKKERHED SAF-  
 BRYDERE ER UDE AF FUNKTION.  
 UNDGÅ UDSÆTTELSE FOR STRÅLING  
**VORSICHT!**  
 UNSICHTBARE LASER-STRÄHLUNG TRITTS AUS, WENN DECKEL  
 (ODER KLAPPE) GEÖFFNET IST! NICHT DEM STRAHL AUSSETZEN!  
 VRW1094

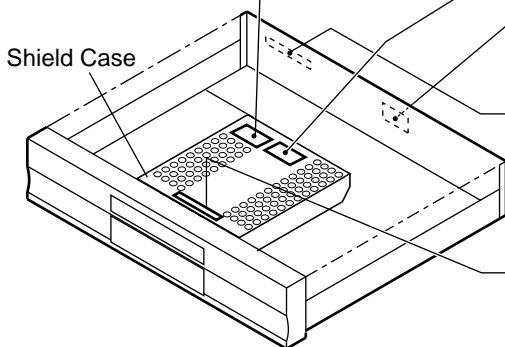
## WYXJ type

VARO!  
 Avattaessa ja suojalukitus ohitetta-  
 essa olet alttiina näkymättömälle  
 lasersäteilylle. Älä katso säteeseen.  
**WARNING!**  
 Osynlig laserstråling när denna del  
 är öppnad och spärren är urkopplad.  
 Betrakta ej strålen.  
 PRW1233

## WYXJ type

**CLASS 1  
 LASER PRODUCT**

Printed on Rear Panel



## KUXJ/CA type

**DANGER — LASER RADIATION WHEN OPEN.  
 AVOID DIRECT EXPOSURE TO BEAM.**

Printed on Rear Panel

**DANGER — LASER RADIATION WHEN OPEN.  
 AVOID DIRECT EXPOSURE TO BEAM.** PRW1516-A

### IMPORTANT

THIS HHB APPARATUS CONTAINS  
 LASER OF CLASS 3b.  
 SERVICING OPERATION OF THE APPARATUS  
 SHOULD BE DONE BY A SPECIALLY  
 INSTRUMENTED PERSON.

### LASER DIODE CHARACTERISTICS

MAXIMUM OUTPUT POWER: 23 mW  
 WAVELENGTH: 778 – 787 nm

### Additional Laser Caution

- 1. Laser Interlock Mechanism**  
 The position of the switch (S101) on the LOAB Assy for detecting loading state is detected by the system microprocessor, and the design prevents laser diode oscillation when the switch (S101) is not on TRAY terminal side (TRAY signal is OFF or high level.). Thus, the interlock will no longer function if the switch (S101) is deliberately set to TRAY terminal side (low level). The interlock also does not function in the test mode \*. Laser diode oscillation will continue, if pin 1 of CN101 on the CD-R CORE ASSY is connected to low level.
- 2. When the cover is opened with the servo mechanism block removed and turned over, close viewing of the objective lens with the naked eye will cause exposure to a Class 1 laser beam.**

\* Refer to page 50.

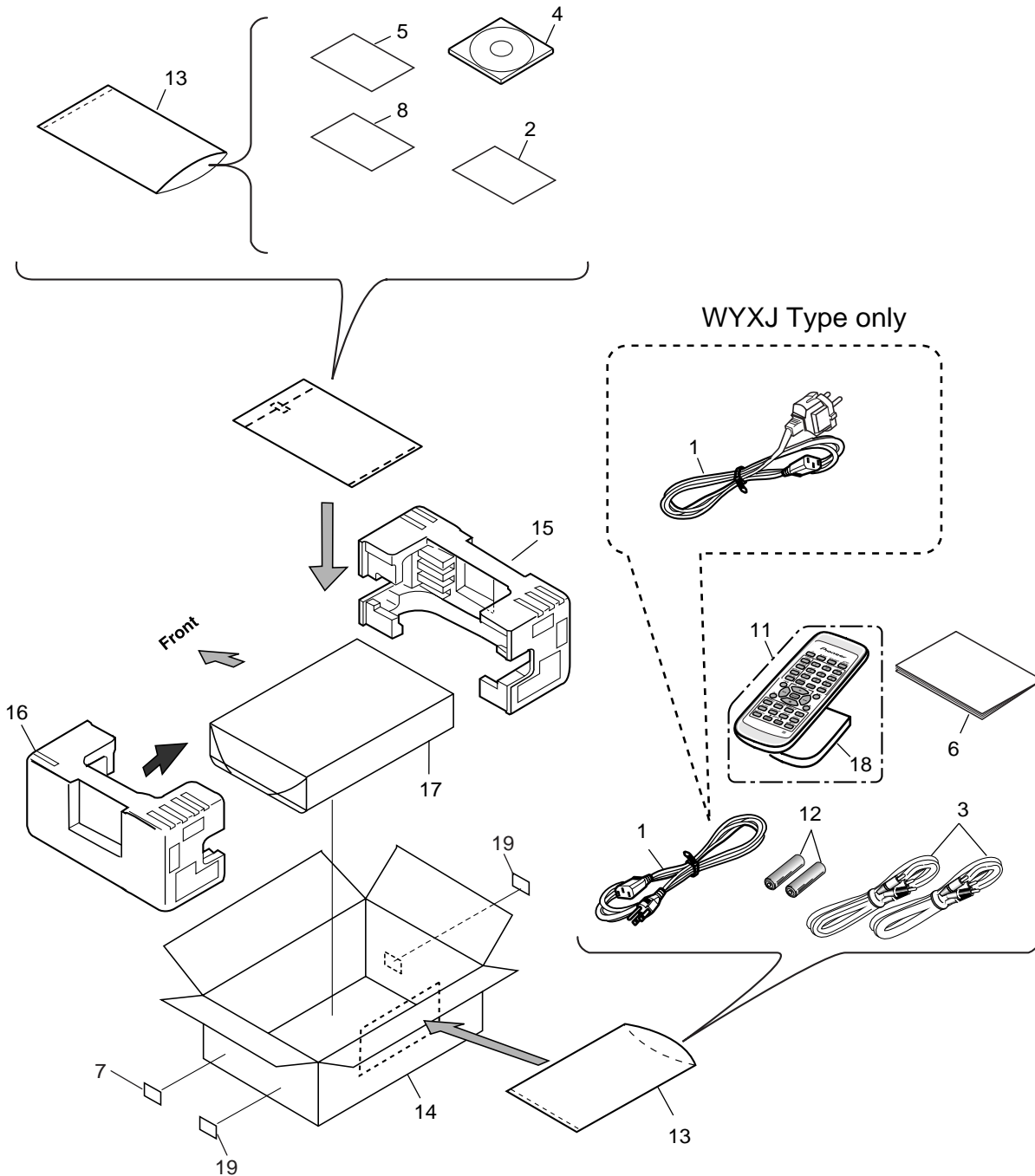
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## 2. EXPLODED VIEWS AND PARTS LIST

- NOTES:
- Parts marked by "NSP" are generally unavailable because they are not in our Master Spare Parts List.
  - The  $\triangle$  mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.
  - Screws adjacent to  $\blacktriangledown$  mark on the product are used for disassembly.

### 2.1 PACKING



**(1) PACKING PARTS LIST**

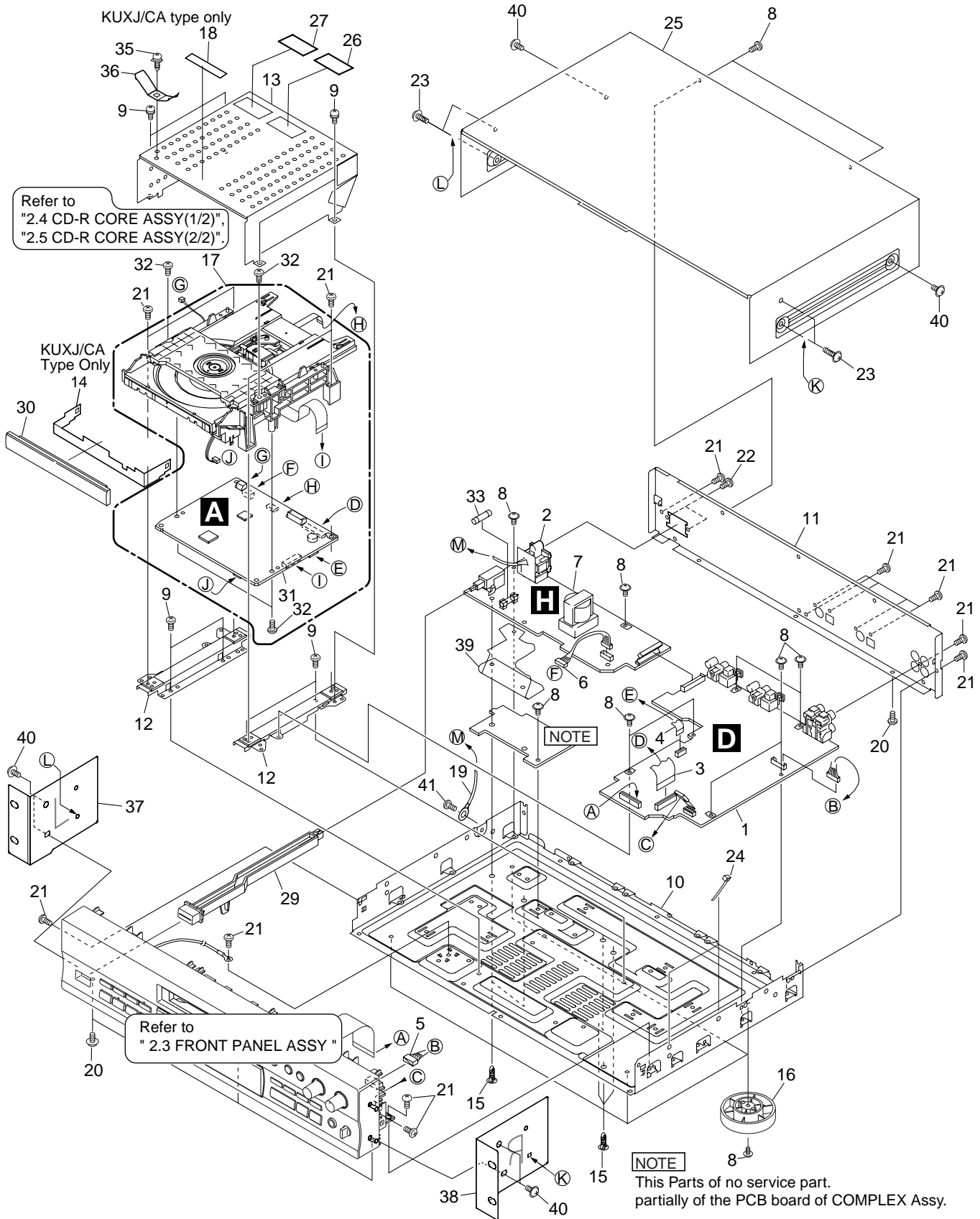
Mark	No.	Description	Part No.
△	1	AC Power Cord	See Contrast table (2)
NSP	2	Registration Card	See Contrast table (2)
	3	Audio Cable (L= 1m)	RDE1036
NSP	4	CD-R Disc	PEX1013
NSP	5	Burnlt Brochure	PEX1014
	6	Operating Instructions (English)	PRB1312
	7	Bar Code Label	See Contrast table (2)
NSP	8	Quick Start Guide	PEX1017
	9	•••••	
	10	•••••	
	11	Remote Control Unit	PWW1173
NSP	12	Dry Cell Battery (R6P, AA)	VEM-013
	13	Polyethylene Bag (0.03 × 230 × 340)	Z21-038
	14	Packing Case	PHG2431
	15	Protector (L)	PHA1349
	16	Protector (R)	PHA1350
	17	Packing Sheet	AHG7015
	18	Battery Cover	RZN1156
NSP	19	Label	VRW1629

**(2) CONTRAST TABLE**

CDR-830/KUXJ/CA and WYXJ type are constructed the same except for the following:

Mark	No.	Symbol and Description	Part No.		Remarks
			KUXJ/CA type	WYXJ type	
△ NSP	1 2 7 7	AC Power Cord Registration Card Bar Code Label 830KU Bar Code Label 830WY	DDG1071 PEX1015 PRW1587 Not used	DDG1072 PEX1016 Not used PRW1588	

## 2.2 EXTERIOR SECTION



**(1) EXTERIOR SECTION PARTS LIST**

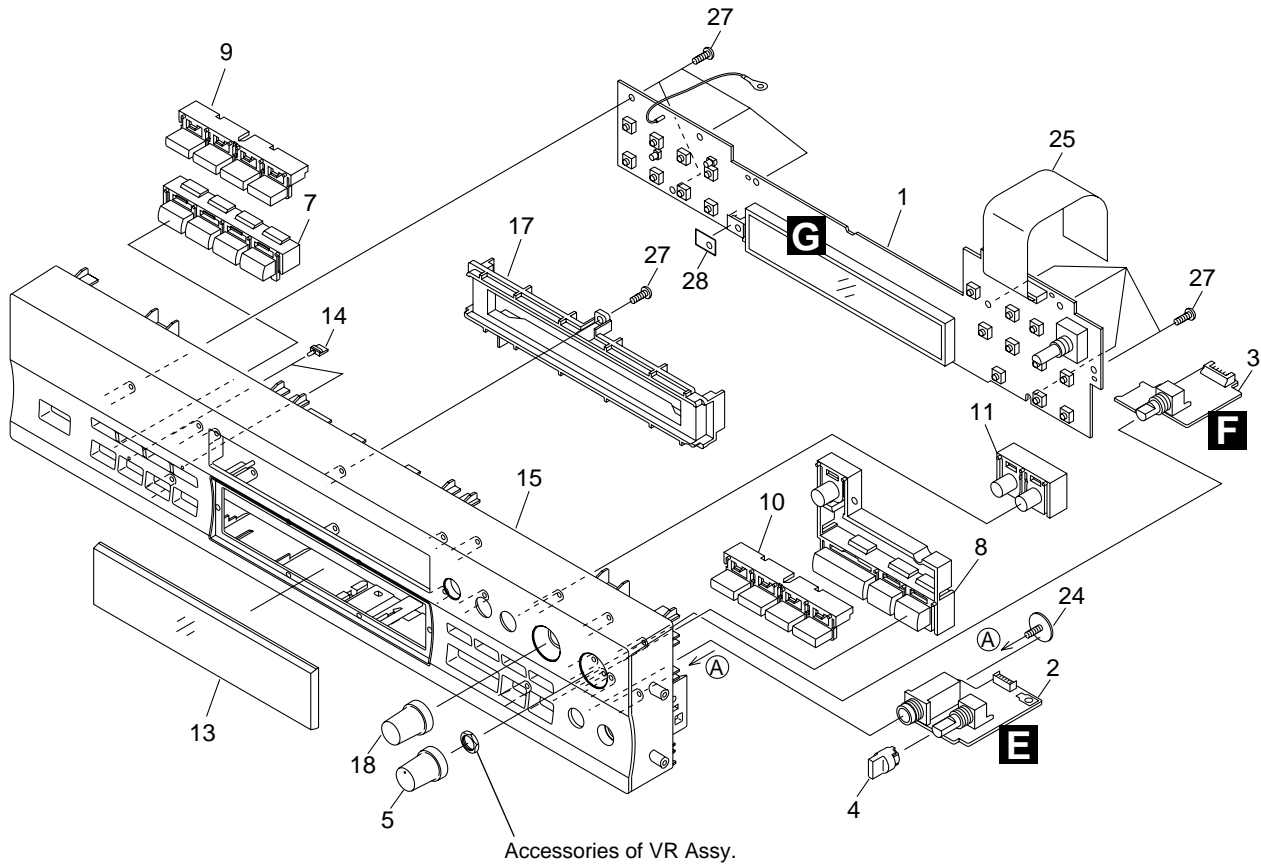
Mark	No.	Description	Part No.	Mark	No.	Description	Part No.
△	1	AUDIO ASSY	See Contrast table (2)		21	Screw	BBZ30P080FCC
	2	AC Inlet	PKP1012		22	Screw	BBZ40P080FCC
	3	25P Flexible Cable/30v	PDD1220		23	Screw	BBZ40P160FZK
	4	9P Flexible Cable/60v	PDD1221		24	Binder	ZCA-T18S
	5	Connector Ass'y (8p)	PDE1311		25	Bonnet (Fe)	PYY1288
△	6	Connector Ass'y (6p)	PDE1314		26	Caution Label HE	See Contrast table (2)
	7	Power Supply Unit	PWR1029		27	Caution Label	See Contrast table (2)
	8	Screw (Steel)	ABA1011		28	•••••	
NSP	9	Screw (3x6B.Steel)	ABA1207		29	Power Button B 830	PAC2027
	10	Under Base	PNA2567		30	Tray Panel 830	PNW2997
NSP	11	Rear Base 830 (Mtl)	See Contrast table (2)		31	CD-R CORE PCB ASSY	PWM2339
	12	Mecha Base (Mtl)	PNB1623		32	Screw	PPZ30P080FMC
NSP	13	Shield Case (Mtl)	PNB1630	△	33	Fuse (FU1: 2A)	215002
	14	Shield Plate (Mtl)	See Contrast table (2)		34	•••••	
NSP	15	PCB Holder	PNW2029		35	Lami-tight(3x6)	See Contrast table (2)
NSP	16	Insulator	AMR7198		36	Earth Plate	See Contrast table (2)
	17	CD-R CORE Ass'y	PXA1636		37	Rack Angle L	PNB1640
NSP	18	Caution Label	See Contrast table (2)		38	Rack Angle R	PNB1641
	19	Lead Wire Unit	PDF1198		39	Cover	PEC1043
	20	Screw	BBZ30P060FZK		40	Screw(ABZ40P080FZK)	RBA1117
					41	Screw(AMZ40P060FCU)	RBA1128

**(2) CONTRAST TABLE**

CDR-830/KUXJ/CA and WYXJ type are constructed the same except for the following:

Mark	No.	Symbol and Description	Part No.		Remarks
			KUXJ/CA type	WYXJ type	
NSP	1	AUDIO ASSY	PWZ4100	PWZ4102	
	11	Rear Base 830 (Mtl)	PNA2566	PNA2565	
	14	Shield Plate (Mtl)	PNB1631	Not used	
	18	Caution Label	PRW1516	Not used	
	26	Caution Label HE	Not used	PRW1233	
	27	Caution Label	Not used	VRW1094	
	35	Lami-tight (3x6)	PBA1116	Not used	
	36	Earth Plate (Mti)	PBK1154	Not used	

## 2.3 FRONT PANEL SECTION



### (1) FRONT PANEL SECTION PARTS LIST

Mark	No.	Description	Part No.	Mark	No.	Description	Part No.
	1	OPERATING ASSY	See Contrast table (2)		11	Rec Button 830	PAC2032
NSP	2	HEADPHONE ASSY	See Contrast table (2)		12	•••••	
NSP	3	VOLUME ASSY	See Contrast table (2)		13	Display Window 830	PAM1833
	4	HP.Knob 830	PAC2034		14	LED Lens(Abs)	PNW2745
	5	Vol Knob 830	PAC2033		15	Front Panel	PNW2996
	6	•••••			16	•••••	
	7	Mode Button 830	PAC2028		17	Sub Panel (Abs)	PNW2975
	8	Play Button 830	PAC2029		18	Jog Knob D5 08	PAC1939
	9	Manual Button 830 L	PAC2030		24	Screw With Washer	ABA1005
	10	Manual Button 830 R	PAC2031		25	19P Flexible Cable/60v	PDD1219
					26	•••••	
					27	Screw	PPZ30P080FMC
				NSP	28	Rimocon Sheet	PRW1578

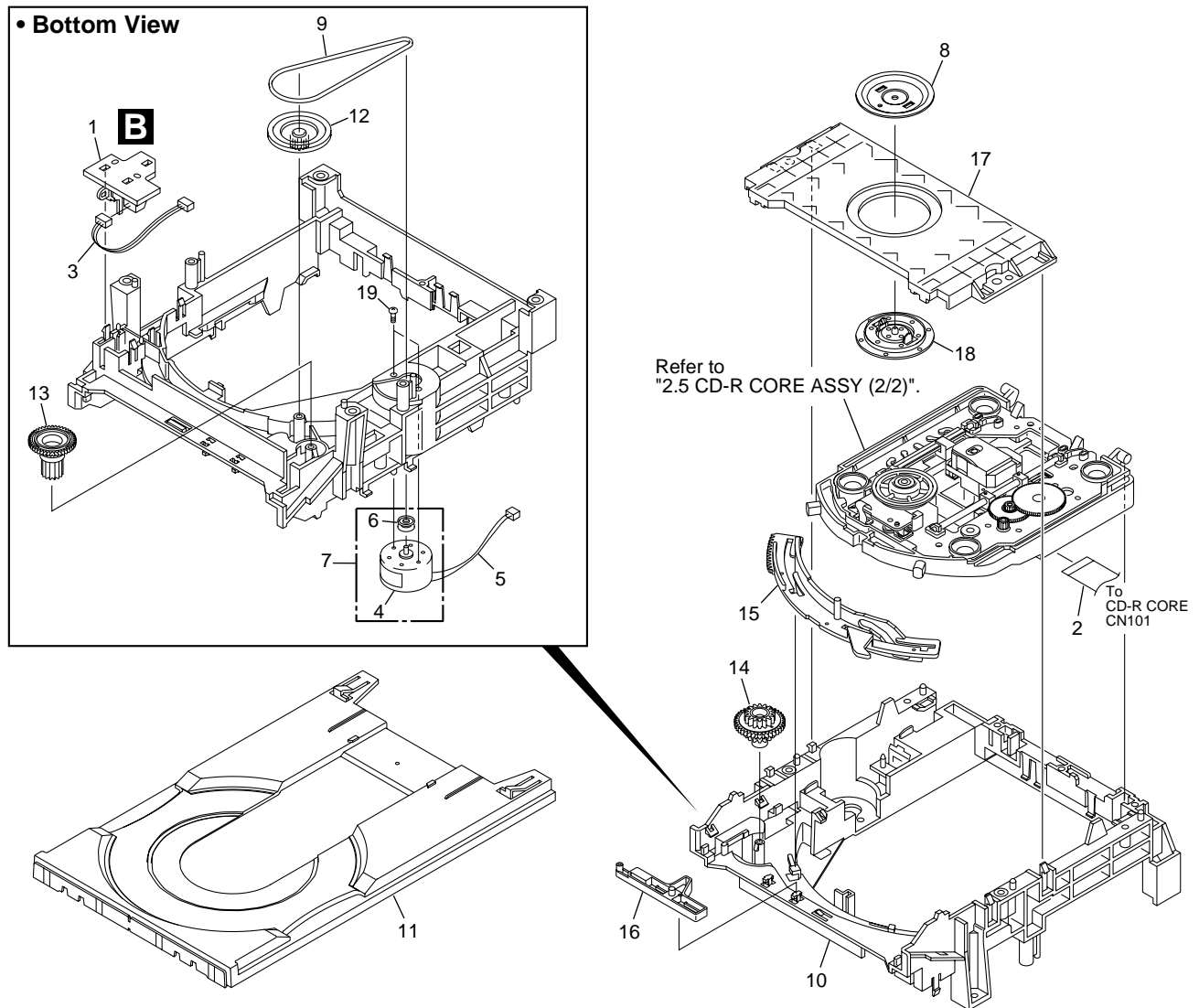
### (2) CONTRAST TABLE

CDR-830/KUXJ/CA and WYXJ type are constructed the same except for the following:

Mark	No.	Symbol and Description	Part No.		Remarks
			KUXJ/CA type	WYXJ type	
	1	OPERATING ASSY	PWZ4110	PWZ4112	
NSP	2	HEADPHONE ASSY	PWZ4120	PWZ4122	
NSP	3	VOLUME ASSY	PWZ4130	PWZ4132	



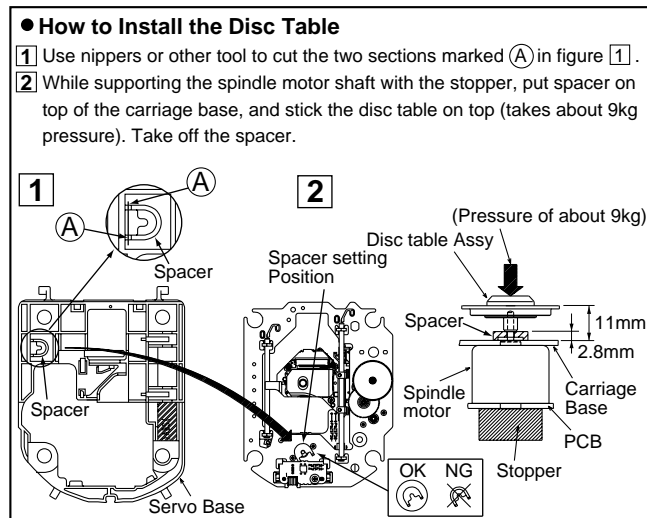
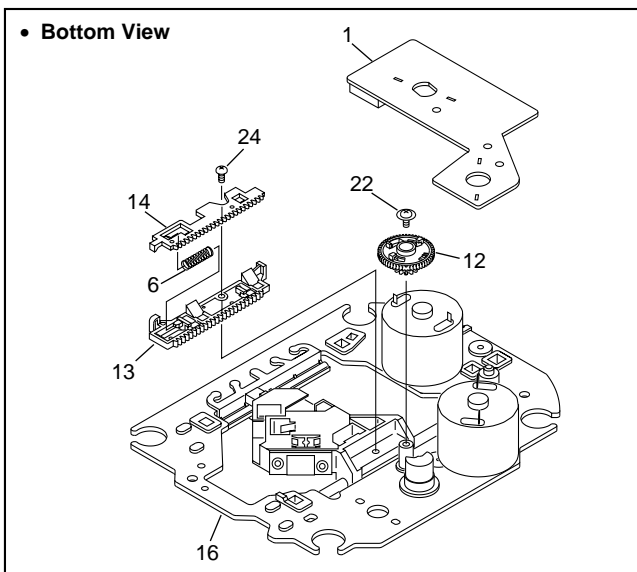
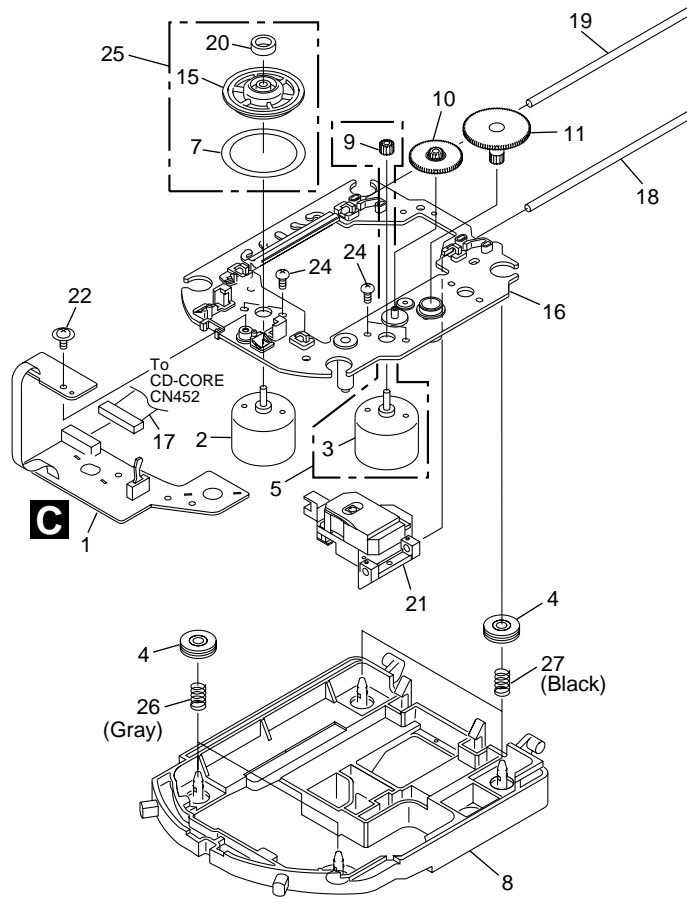
## 2.4 CD-R CORE ASSY (1/2)



### ● CD-R CORE ASSY(1/2) PARTS LIST

Mark	No.	Description	Part No.	Mark	No.	Description	Part No.
NSP	1	LOAB Assy	VWG2171		11	Tray	VNL1858
	2	32P Flexible Cable / 30V	PDD1222		12	Gear Pulley	VNL1866
	3	Connector Assy	PG03KK-E07		13	Loading Gear	VNL1860
	4	DC Motor (LOADING)	PXM1027		14	Drive Gear	VNL1861
	5	Connector Assy 2P	VKP2253		15	Drive Cam	VNL1862
	6	Motor Pulley	PNW1634		16	Lock Plate	VNL1820
	7	Loading Motor Assy	VXX2505		17	Bridge	VNL1859
	8	Clamper Plate	VNE2162		18	Clamper	VNL1738
	9	Rubber Belt	VEB1315		19	Screw	JGZ17P028FMC
	10	Loading Base S	PNW2968				

2.5 CD-R CORE ASSY (2/2)

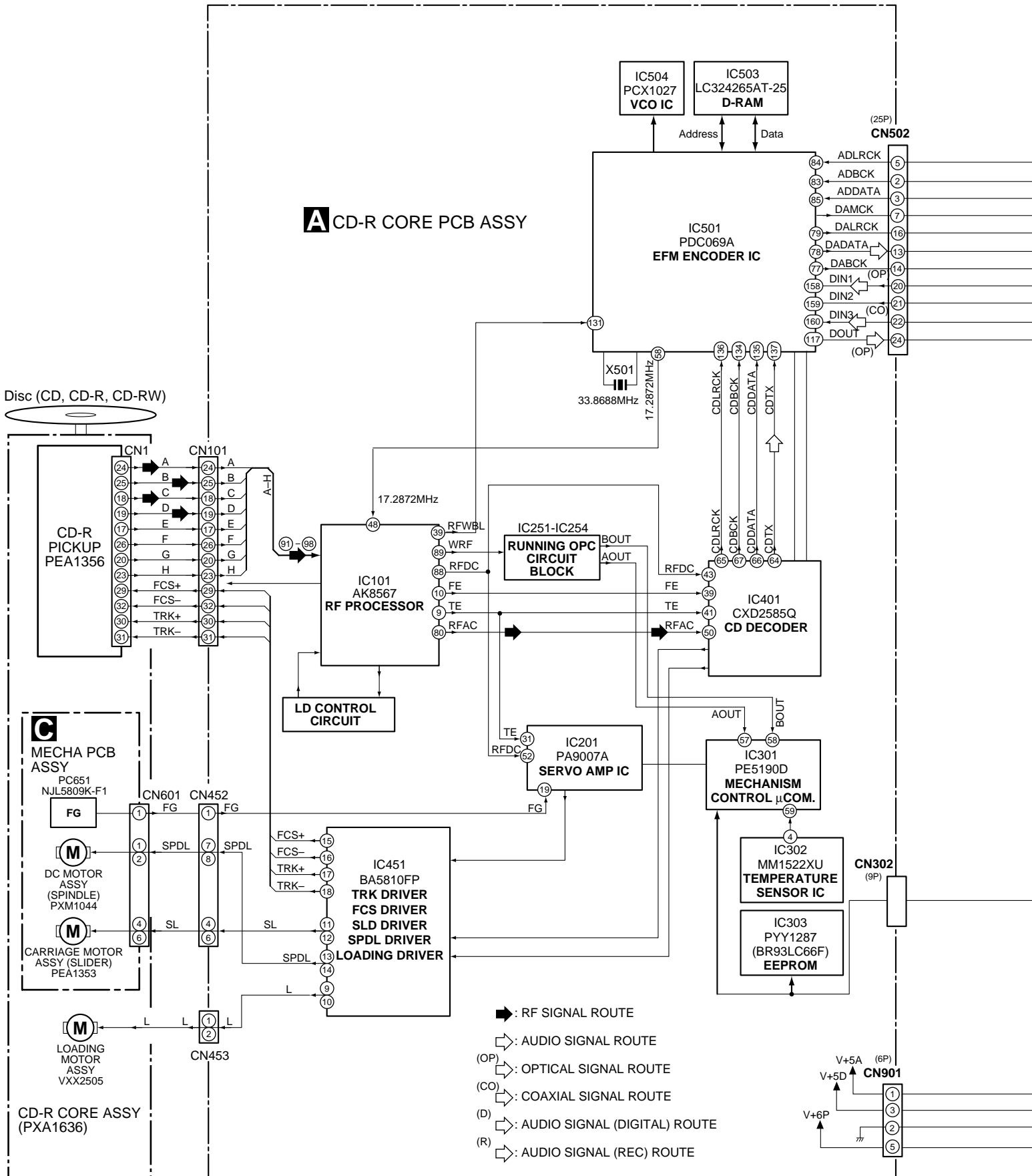


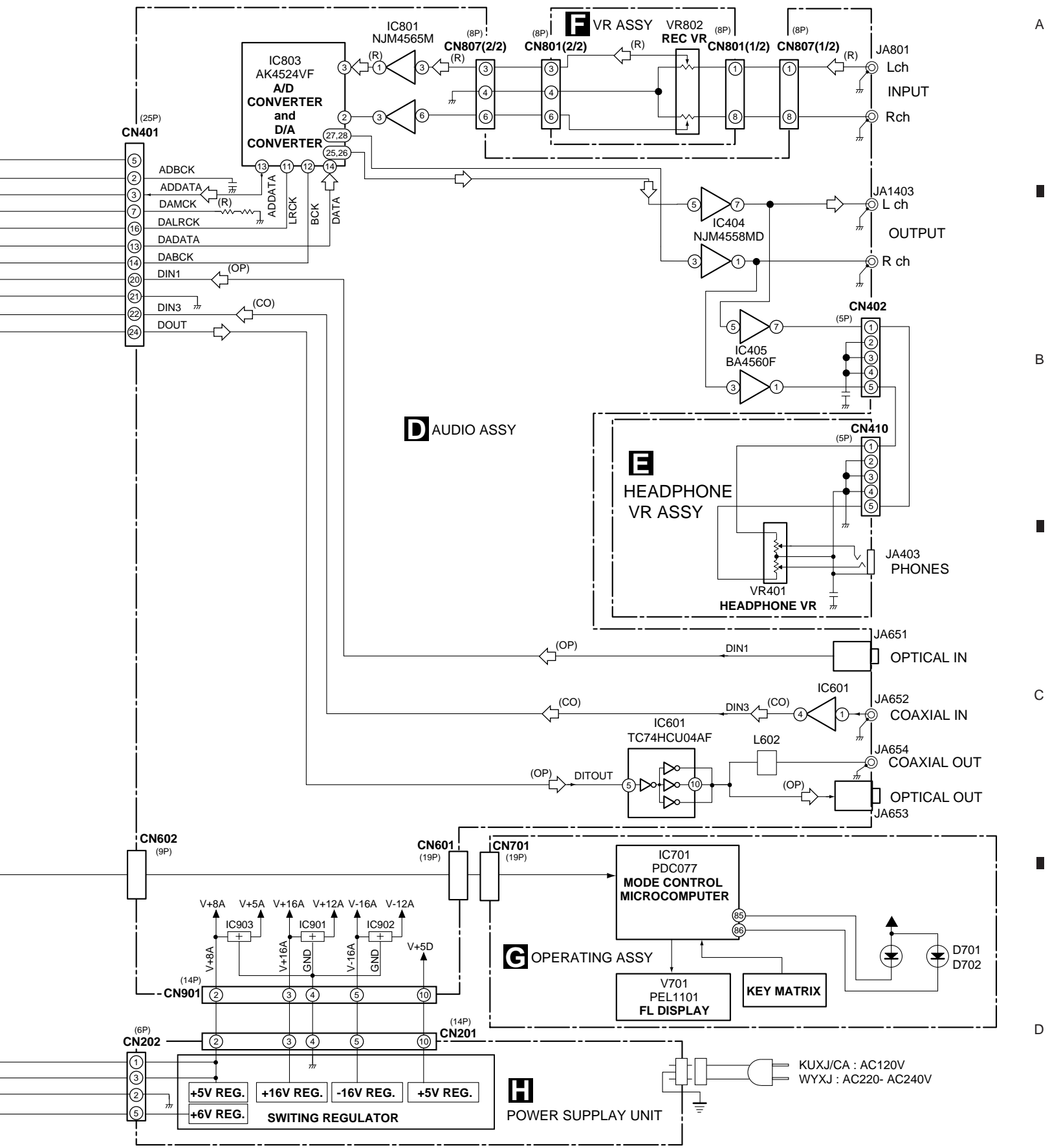
## ● CD-R CORE ASSY(2/2) PARTS LIST

Mark	No.	Description	Part No.
NSP	1	MECHA PCB Assy	PWX1625
	2	DC Motor (SPINDLE)	PXM1044
NSP	3	DC Motor (CARRIAGE)	PXM1045
	4	Float Rubber	PEB1308
	5	Carriage Motor Assy	PEA1353
NSP	6	Rack Spring	DBH1285
NSP	7	Reflection Sheet	PNM1325
	8	Float Base	PNW2964
	9	Pinion Gear	PNW2994
	10	Gear A	PNW2855
	11	Gear B	PNW2856
	12	Gear C	PNW2969
	13	Rack	PNW2965
	14	Rack Stopper	PNW2966
NSP	15	Disc Table	PNW2860
	16	Carriage Base	PNW2967
	17	Flexible Cable (08P)	VDA1822
	18	Guide Bar	VLL1504
	19	Sub Guide Bar	VLL1505
NSP	20	Magnet	VYM1024
	21	CD-R Pickup	PEA1356
	22	Screw	Z39-018
	23	●●●●●	
	24	Screw	JGZ17P028FMC
	25	Disc Table Assy	PEA1349
	26	Floating Spring (Gray)	PBH1232
	27	Floating Sprin B (Black)	PBH1234

### 3. BLOCK DIAGRAM AND SCHEMATIC DIAGRAM

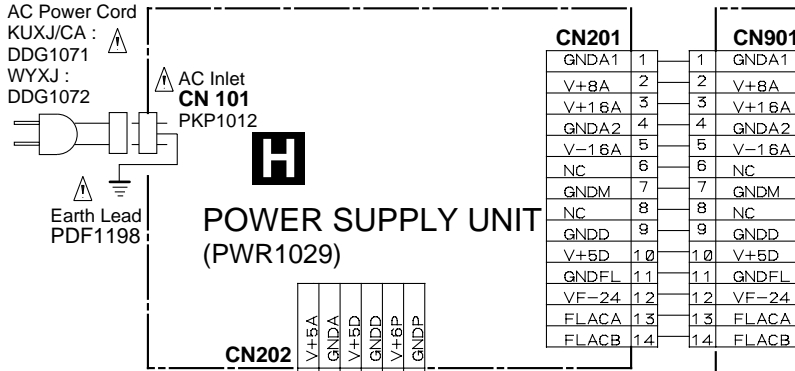
#### 3.1 BLOCK DIAGRAM



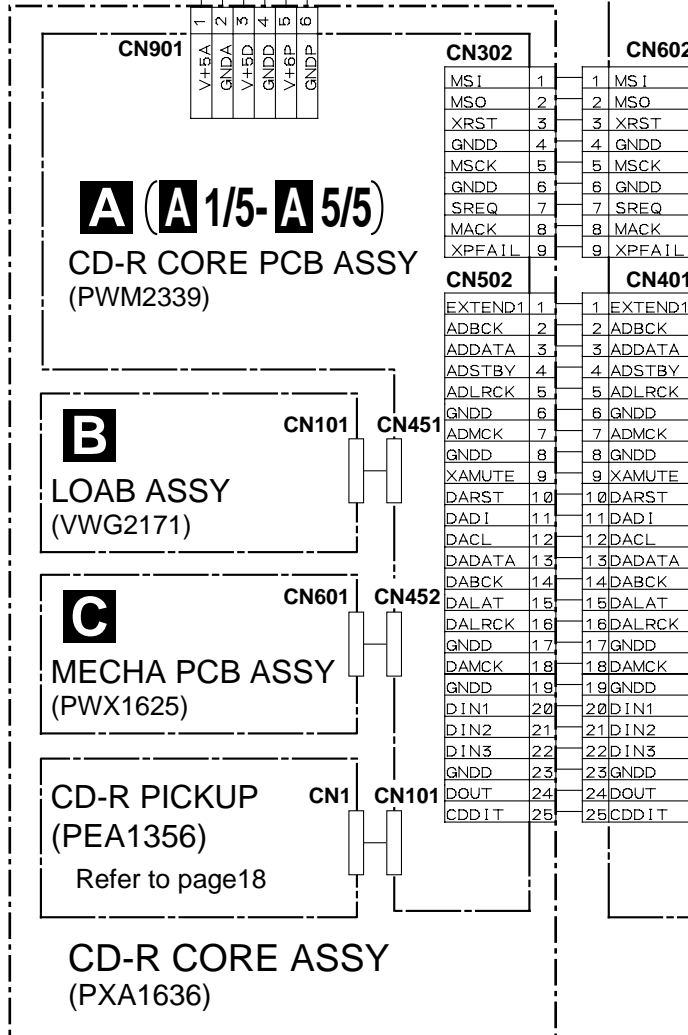


### 3.2 OVERALL CONNECTION DIAGRAM

A

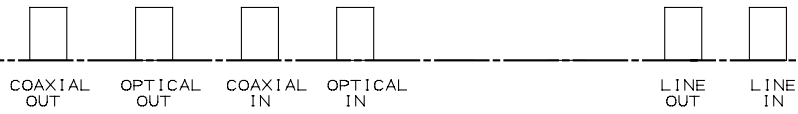


B



D

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



# D (D 1/2 - D 2/2)

**AUDIO ASSY**  
 (KUXJ/CA : PWZ4100)  
 (WYXJ : PWZ4102)

**CN601**

1	REMCON
2	MACK
3	REMIN
4	XPFAIL
5	SREQ
6	TEXT_SR
7	GNDD
8	MSCK
9	GNDD
10	MSO
11	MSI
12	12XRST
13	XOPT
14	V+5SD
15	15KLACB
16	GNDD
17	FLACA
18	VF-27
19	GNDS

**CN701**

**G OPERATING ASSY**  
 (KUZJ/CA : PWZ4110)  
 ( WYXJ : PWZ4112)

1	HP L
2	HP GND
3	HP GND
4	HP GND
5	HP R

**CN402**

**CN410**

**E HEADPHONE ASSY**  
 (KUXJ/CA : PWZ4120)  
 ( WYXJ : PWZ4122)

1	VRLIN
2	GND A
3	VRL_OUT
4	GND A
5	GND A
6	VRROUT
7	GND A
8	VRRIN

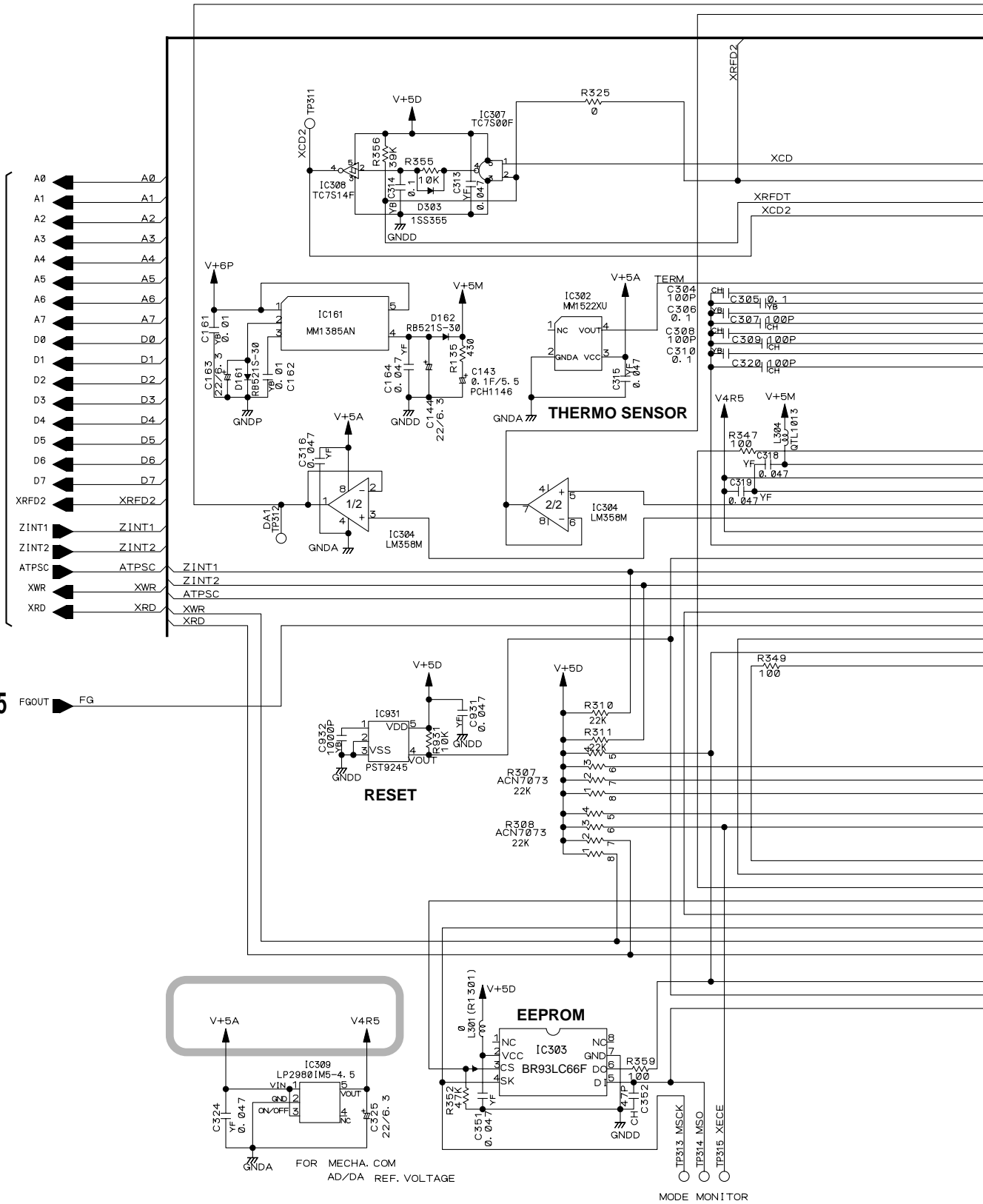
**CN801**

**CN807**

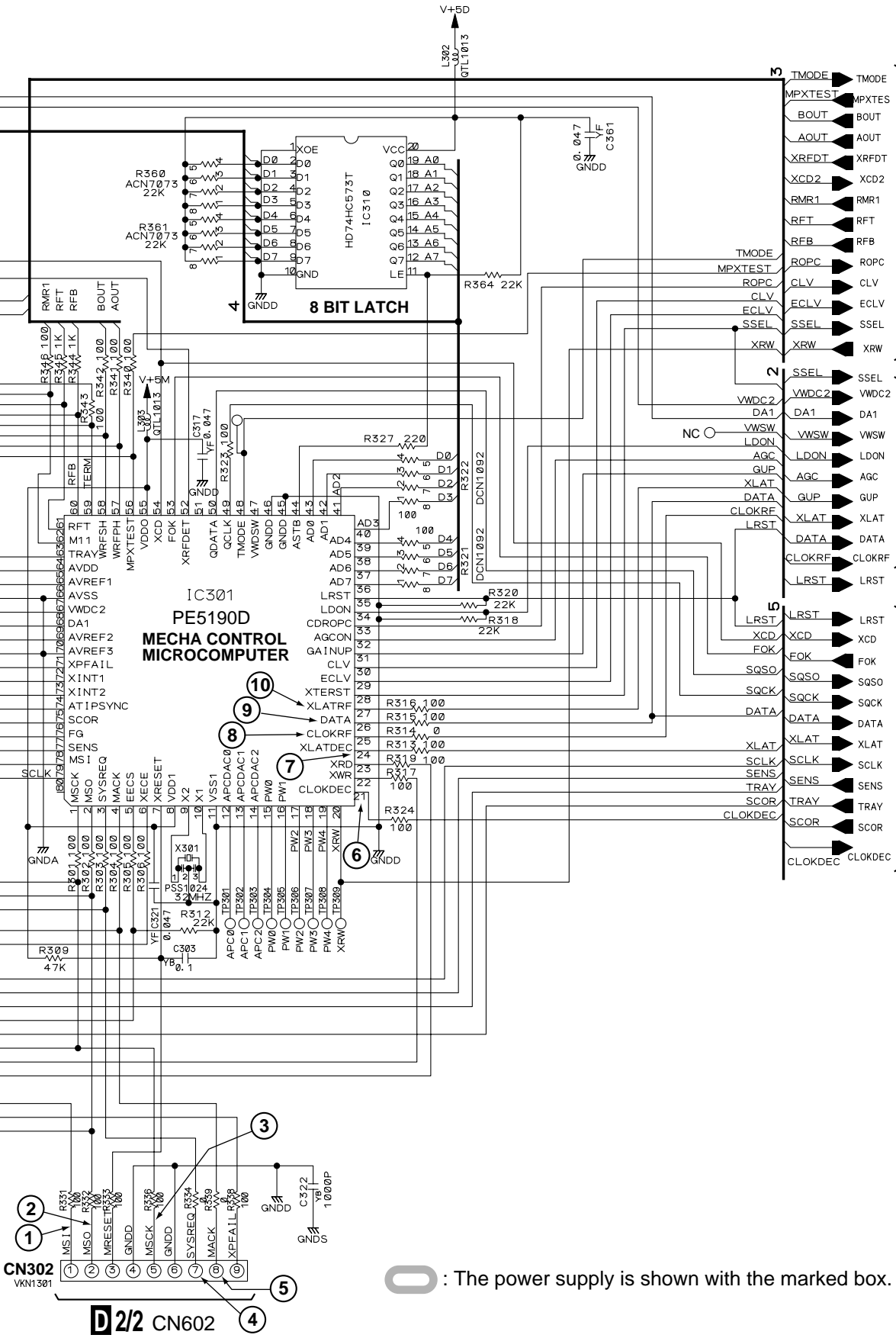
**F VOLUME ASSY**  
 (KUXJ/CA : PWZ4130)  
 (WYXJ : PWZ4132)

3.3 CD-R CORE PCB ASSY (1/5)

**A 1/5** CD-R CORE PCB ASSY (PWM2339)



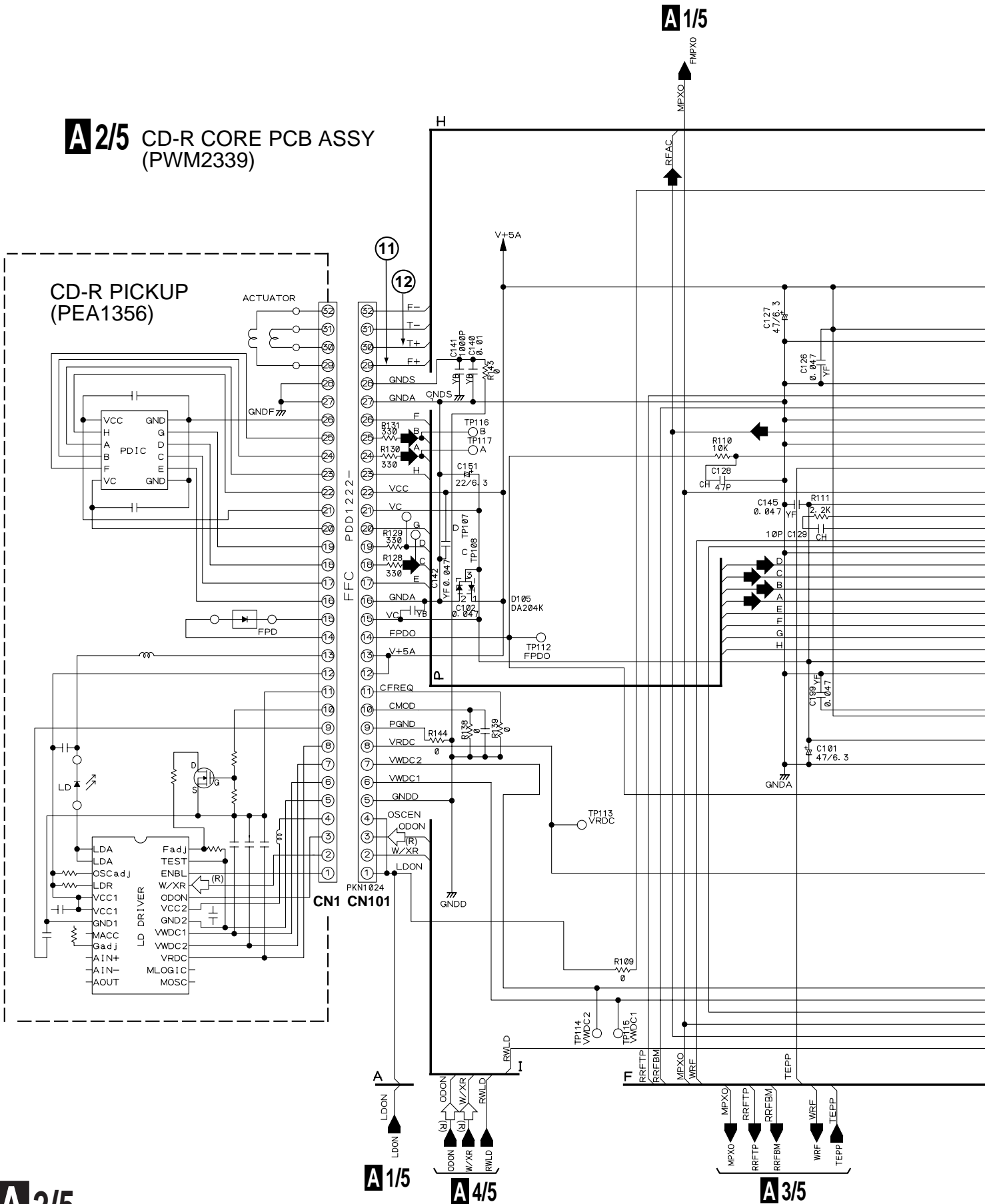


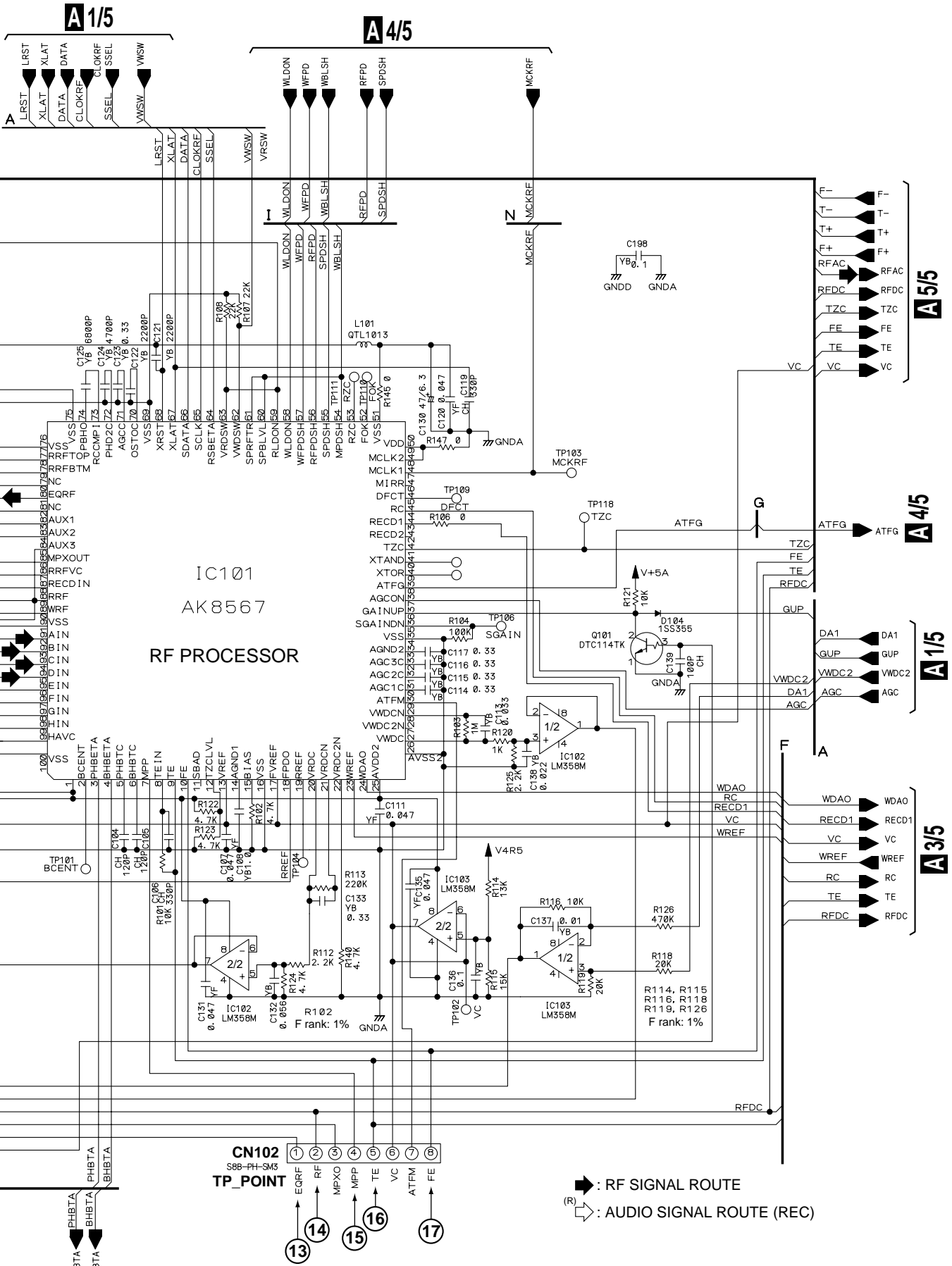


○ : The power supply is shown with the marked box.

3.4 CD-R CORE PCB ASSY (2/5)

A 2/5 CD-R CORE PCB ASSY (PWM2339)





A 3/5

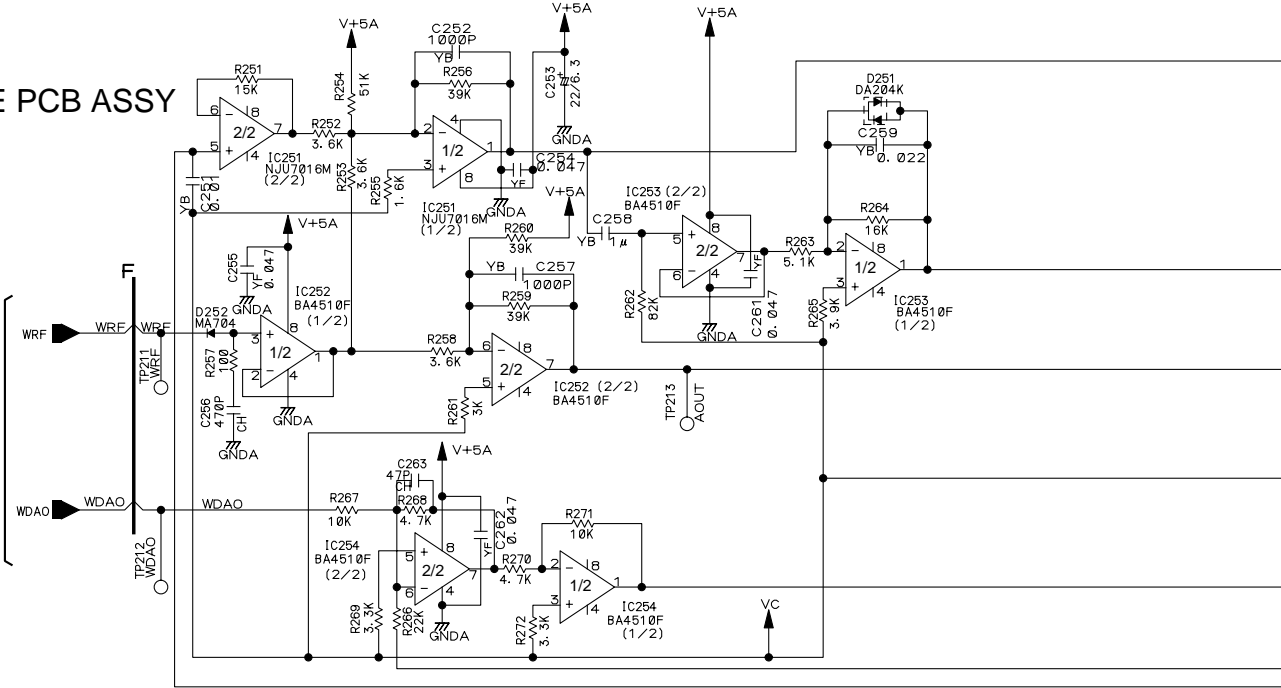
A 2/5 19

### 3.5 CD-R CORE PCB ASSY (3/5)

**A 3/5**

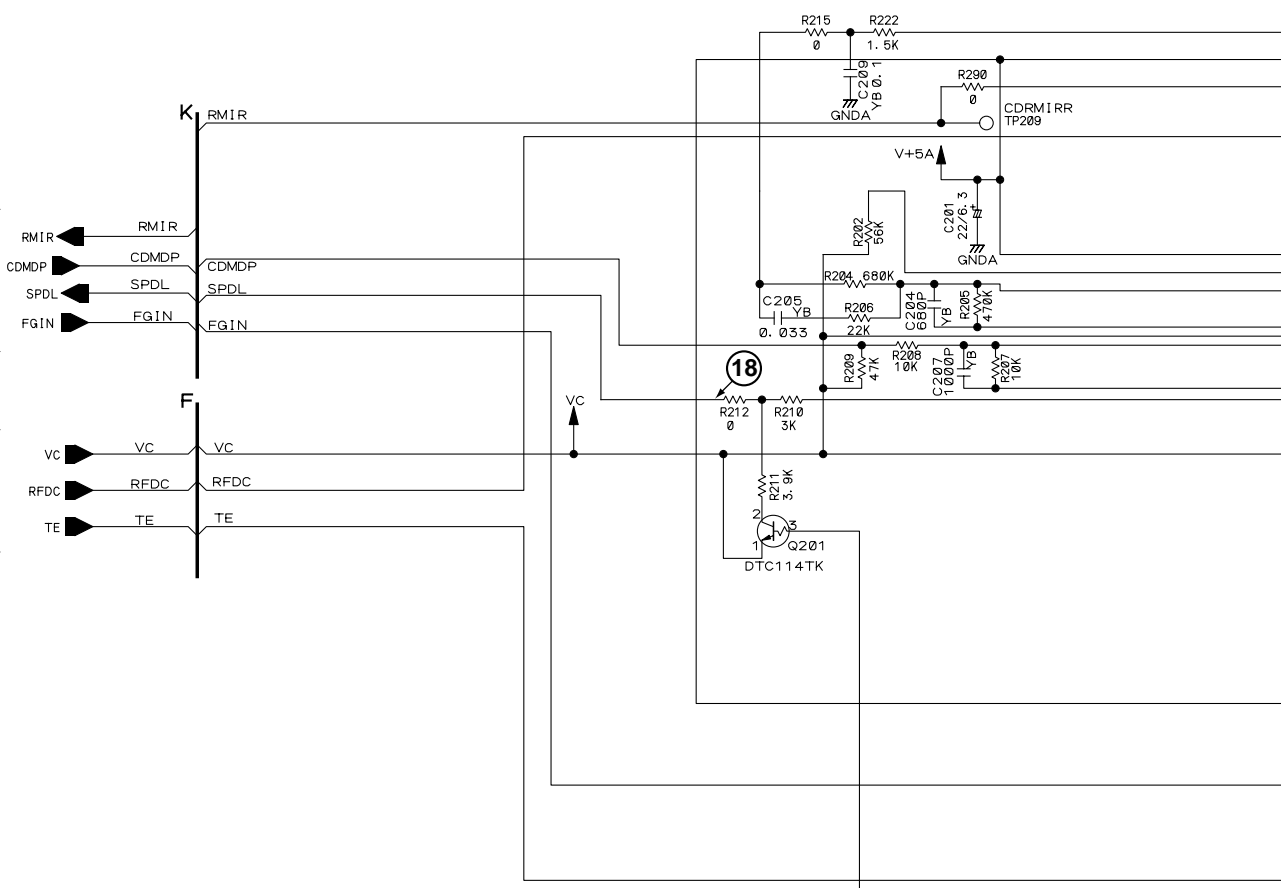
CD-R CORE PCB ASSY (PWM2339)

**A 2/5**

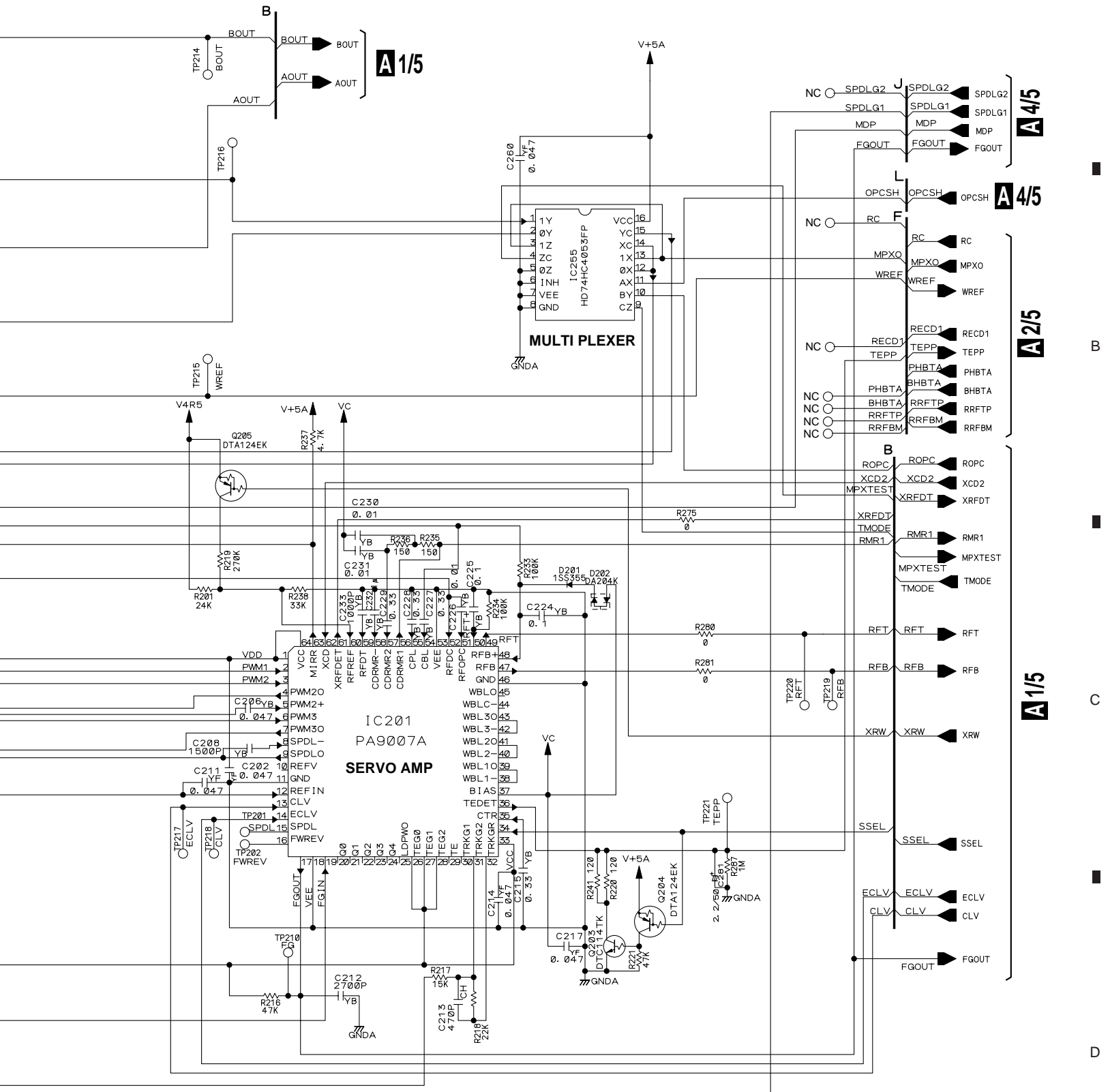


**A 5/5**

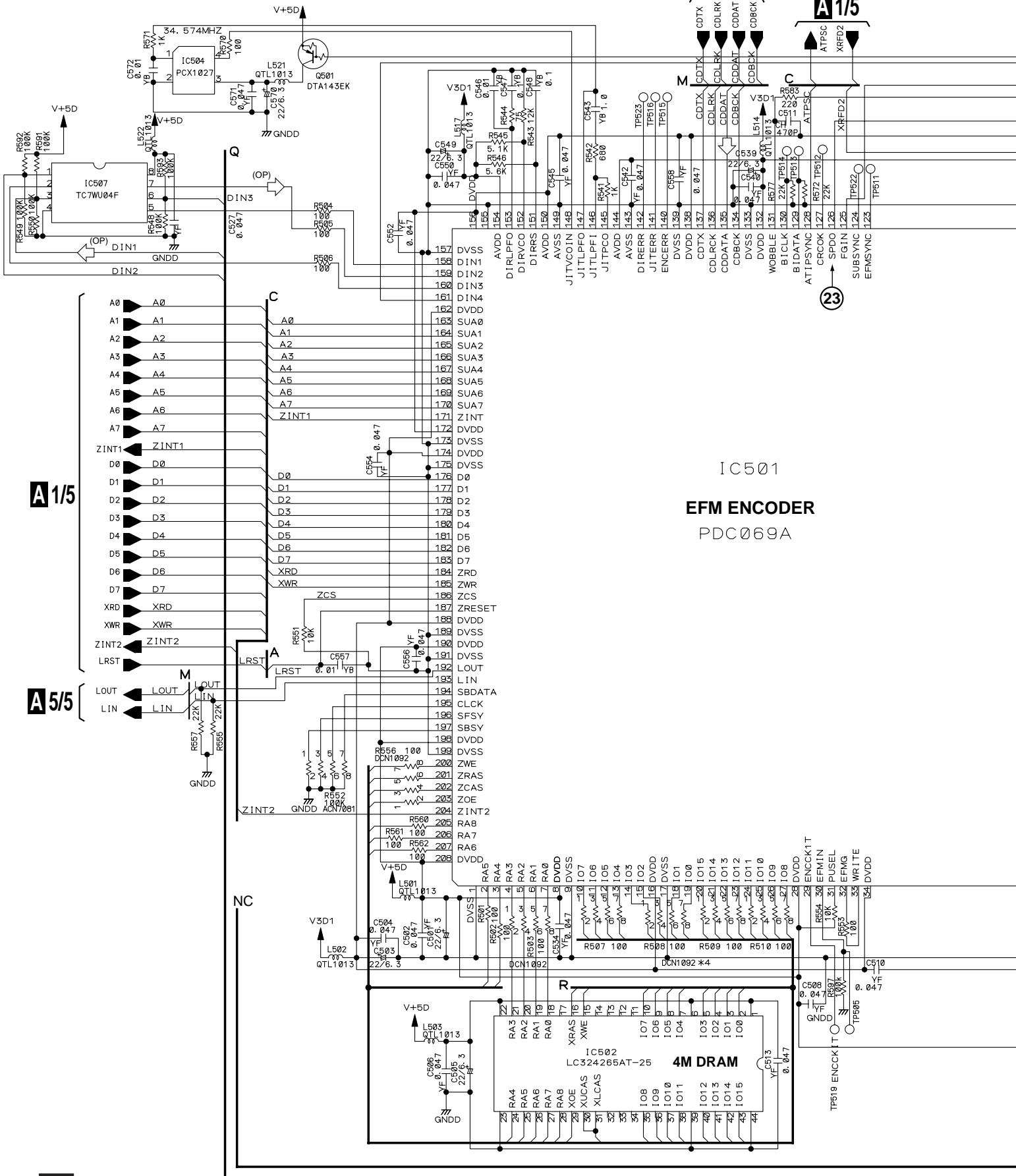
**A 2/5**



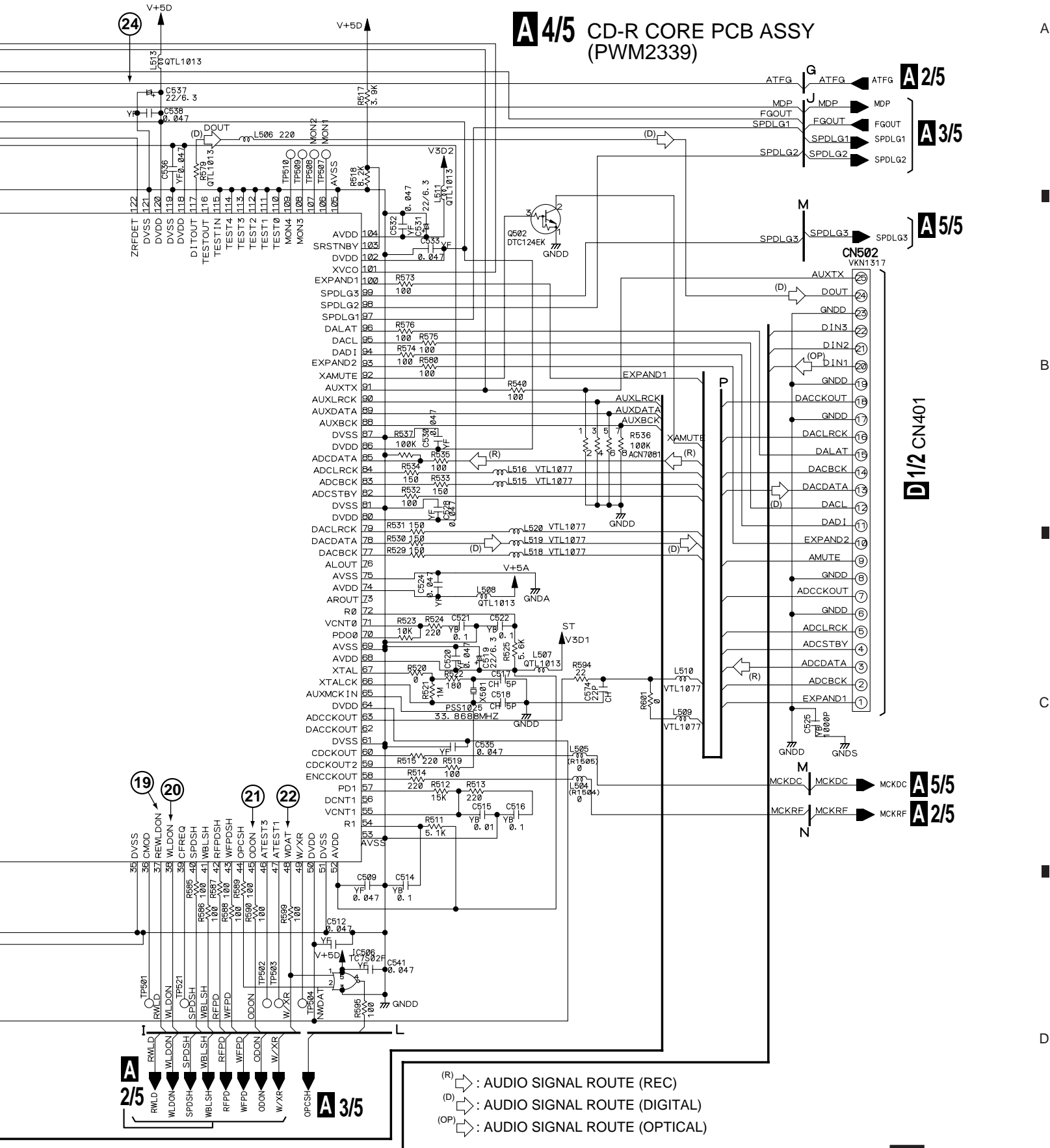
**A 3/5**



3.6 CD-R CORE PCB ASSY (4/5)



# A 4/5 CD-R CORE PCB ASSY (PWM2339)



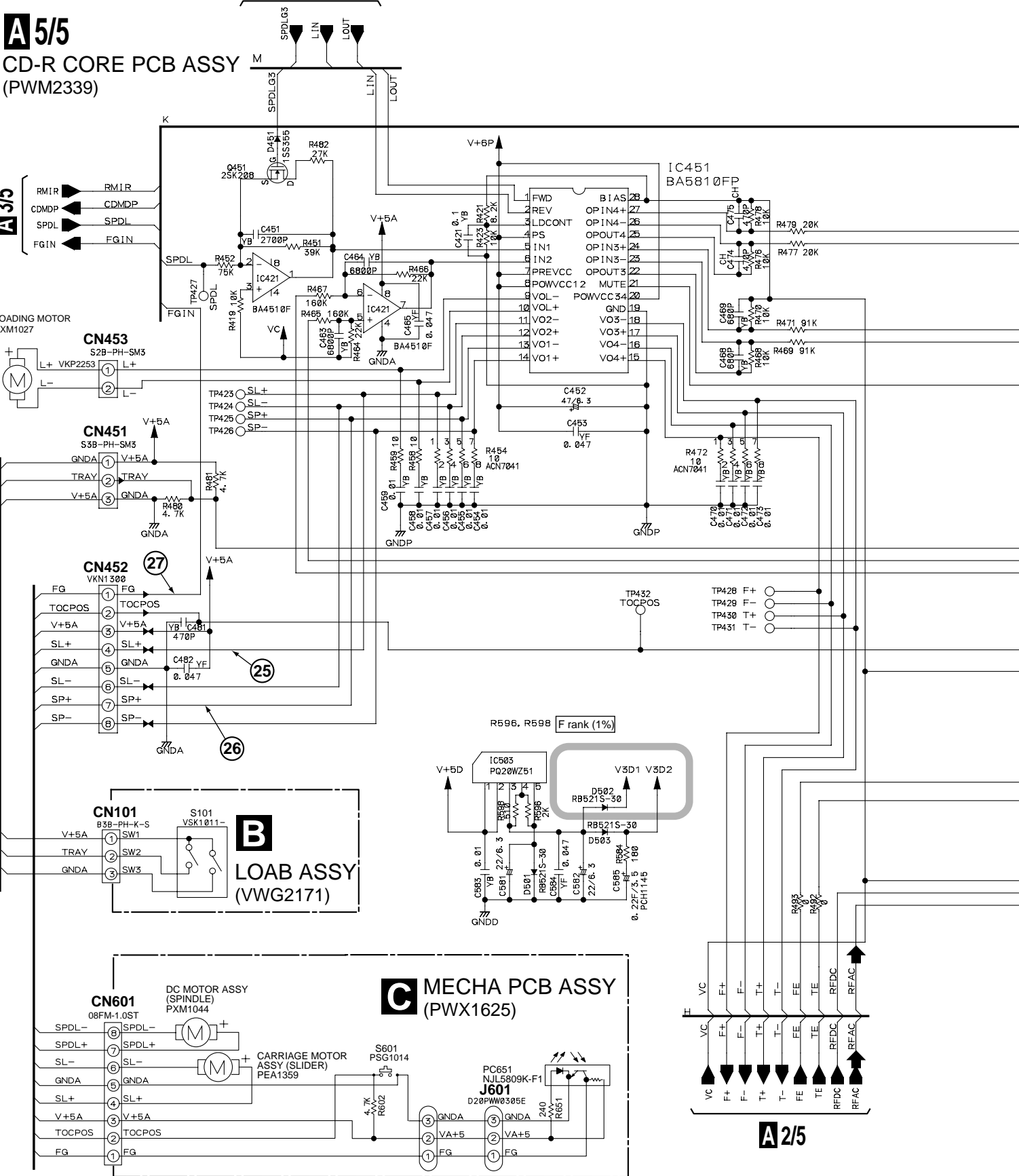
(R) : AUDIO SIGNAL ROUTE (REC)  
 (D) : AUDIO SIGNAL ROUTE (DIGITAL)  
 (OP) : AUDIO SIGNAL ROUTE (OPTICAL)

3.7 CD-R CORE PCB ASSY (5/5)

A 5/5

CD-R CORE PCB ASSY (PWM2339)

A 4/5

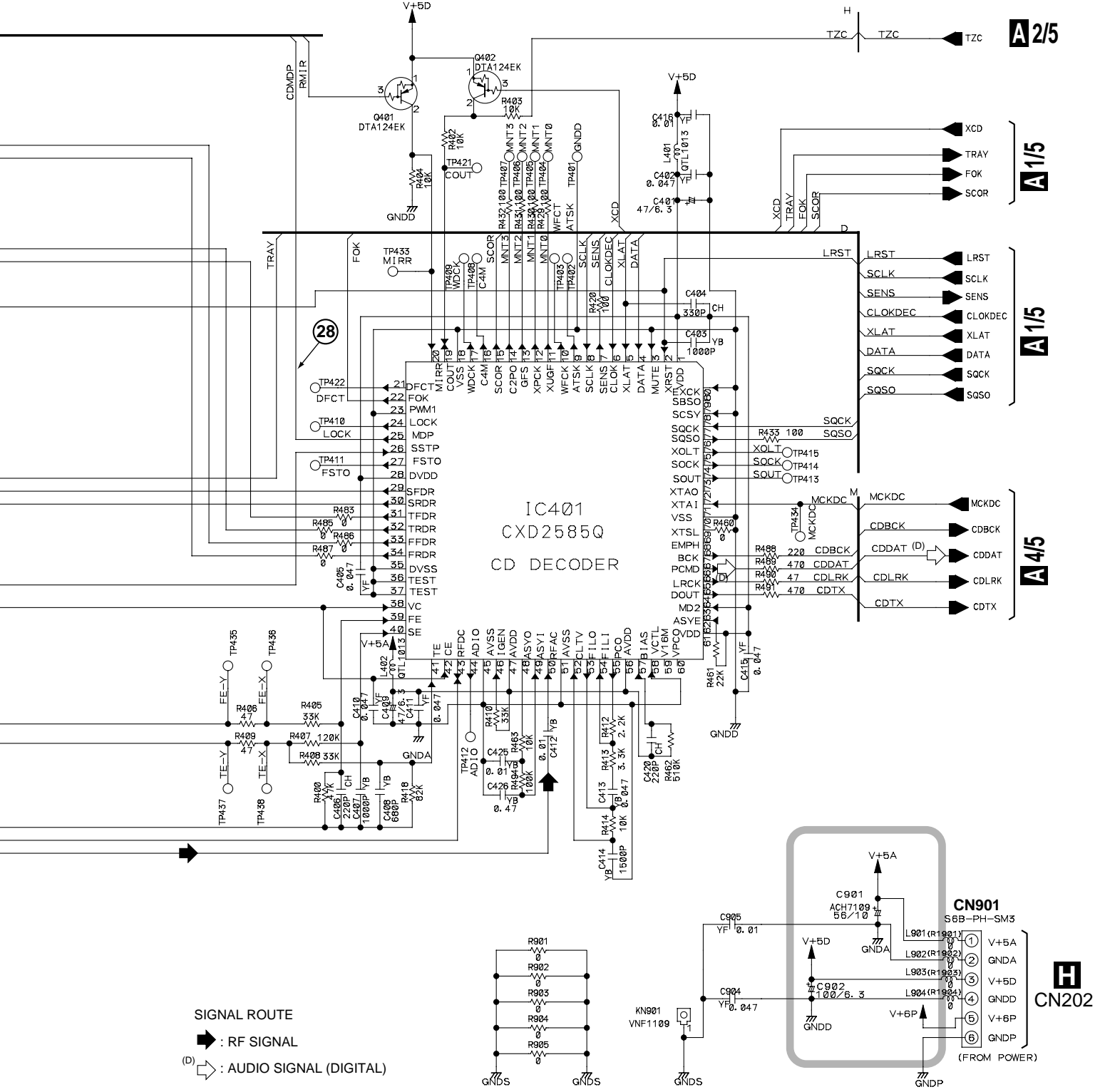


A 2/5

A 5/5 B C



R464~R471  
R476~R479 F rank (1%)



SIGNAL ROUTE  
 ➔ RF SIGNAL  
 - - - - - AUDIO SIGNAL (DIGITAL)

Ⓜ : The power supply is shown with the marked box.

**■ VOLTAGES and WAVEFORMS**

● Signal Logic

• Spindle System

**A4/5** CD-R CORE PCB ASSY

Media	Pickup Position	SPDLG1 (IC501-pin97)	SPDLG3 (IC501-pin99)
CD	Inner	5V	0V
	Outer	0V	5V
CD-R CD-RW	12cm Inner	5V	0V
	12cm Outer	0V	5V
	8cm CD-R	0V	5V
	STOP	5V	5V

\* Inner: Absolute time is less than 23 minutes.  
Outer: Absolute time is more than 23 minutes.

**A1/5** CD-R CORE PCB ASSY

Operating Mode	CLV (IC301-pin 30)	ECLV (IC301-pin 29)
STOP	0V	0V
CAV, W-CLV	5V	0V
E-CLV	5V	5V

\* W-CLV: WOBBLECLV , E-CLV: EFMCLV

• Digital Input System

**A4/5** CD-R CORE PCB ASSY

	at FS = 44.1 kHz	Others
XVCO (IC501-pin 101)	0V	5V

	at DIGITAL LOCK	at DIGITAL UNLOCK
DIRERR (IC501-pin 142)	0V	5V

• Audio System

**A4/5** CD-R CORE PCB ASSY

	A/D Converter used	
	at Analog REC Pause, REC, Monitor	Others
ADCSTBY (CN502-pin 4)	5V	0V

	at MUTE ON (Audio Signal Not Output)	at MUTE OFF (Audio Signal Output)
	AMUTE (CN502-pin 9)	5V

• Others

**A1/5** CD-R CORE PCB ASSY

XPFail (CN302-pin 9)	5V
-------------------------	----

Note :

The encircled numbers denote measuring point in the schematic diagram.

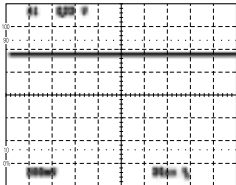
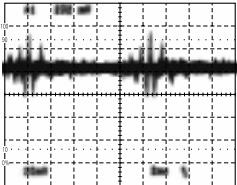
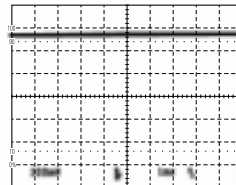
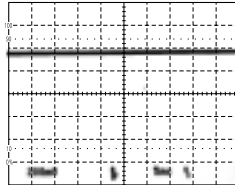
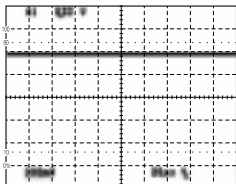
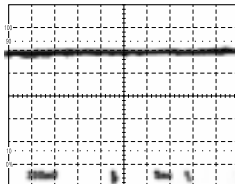
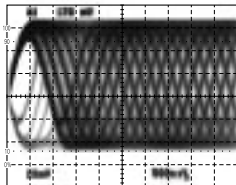
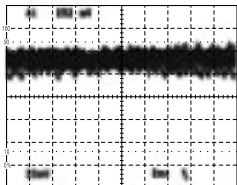
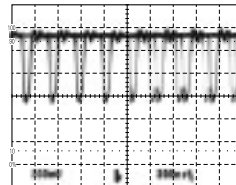
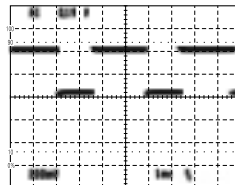
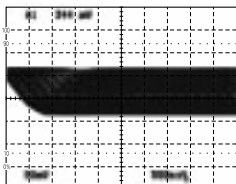
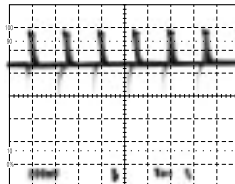
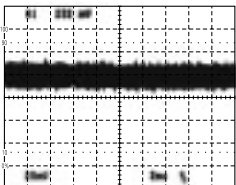

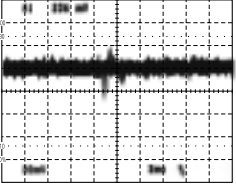

**A1/5** CD-R CORE PCB ASSY

<p>① CN302 - pin 1 (MSI) V: 200mV/div. , H: 5msec/div.</p>	<p>⑥ IC301 - pin 21 (CLOCKDEC) V: 200mV/div. , H: 5msec/div.</p>
<p>② CN302 - pin 2 (MSO) V: 200mV/div. , H: 5msec/div.</p>	<p>⑦ IC301 - pin 24 (XLATDEC) V: 200mV/div. , H: 5msec/div.</p>
<p>③ CN302 - pin 5 (MSCK) V: 200mV/div. , H: 500nsec/div. (PLAY)</p>	<p>⑧ IC301 - pin 25 (CLOCKRF) V: 200mV/div. H: 5msec/div.</p>
<p>④ CN302 - pin 7 (SYSREQ) V: 200mV/div. , H: 5msec/div.</p>	<p>⑨ IC301 - pin 26 (DATA) V: 200mV/div. , H: 5msec/div.</p>
<p>⑤ CN302 - pin 8 (MACK) V: 200mV/div. , H: 5msec/div.</p>	<p>⑩ IC301 - pin 27 (XLATRF) V: 200mV/div. , H: 5msec/div.</p>

**A2/5** CD-R CORE PCB ASSY

**A4/5**  
CD-R CORE PCB ASSY

**A5/5**  
CD-R CORE PCB ASSY

<p><b>11</b> CN101 - pin 29 (F+) V: 200mV/div. , H: 20μsec/div.</p> 	<p><b>17</b> CN102-pin 8 (FE) V: 20mV/div. , H: 2msec/div. (PLAY)</p> 	<p><b>19</b> IC501 - pin 37 (REWLDON) V: 200mV/div. , H: 1msec/div. (REC) RW</p> 	<p><b>25</b> CN452 - pin 4 (SL+) V: 200mV/div. , H: 5msec/div. (PLAY)</p> 
<p><b>12</b> CN101 - pin 30 (T+) V: 200mV/div. , H: 20μsec/div.</p> 	<p><b>A3/5</b> CD-R CORE PCB ASSY</p>		<p><b>26</b> CN452 - pin 7 (SP+) V: 200mV/div. , H: 5msec/div. (PLAY)</p> 
<p><b>13</b> CN102 - pin 1 (EQR) V: 20mV/div. , H: 500nsec/div. (PLAY)</p> 	<p><b>18</b> Foot of R212 (SPDL) V: 20mV/div. , H: 2msec/div. (PLAY)</p> 	<p><b>21</b> IC501 - pin 45 (ODON) V: 200mV/div. , H: 200nsec/div. (REC)</p> 	<p><b>27</b> CN452 - pin 1 (FG) V: 200mV/div. , H: 1msec/div. (PLAY)</p> 
<p><b>14</b> CN102 - pin 2 (RF) V: 50mV/div. , H: 500nsec/div. (PLAY)</p> 	<p><b>A3/5</b> CD-R CORE PCB ASSY</p>		<p><b>28</b> IC401 - pin 25 (MDP) V: 200mV/div. , H: 5μsec/div. (PLAY)</p> 
<p><b>15</b> CN102 - pin 4 (MPP) V: 20mV/div. , H: 2msec/div. (PLAY)</p> 	<p><b>A3/5</b> CD-R CORE PCB ASSY</p>		<p><b>23</b> IC501 - pin 126 (SPDO) V: 200mV/div. , H: 100μsec/div. (REC)</p> 
<p><b>16</b> CN102 - pin 5 (TE) V: 20mV/div. , H: 2msec/div. (PLAY)</p> 	<p><b>A3/5</b> CD-R CORE PCB ASSY</p>		<p><b>24</b> Foot of R583 (ATFG) V: 200mV/div. , H: 20μsec/div. (REC)</p> 

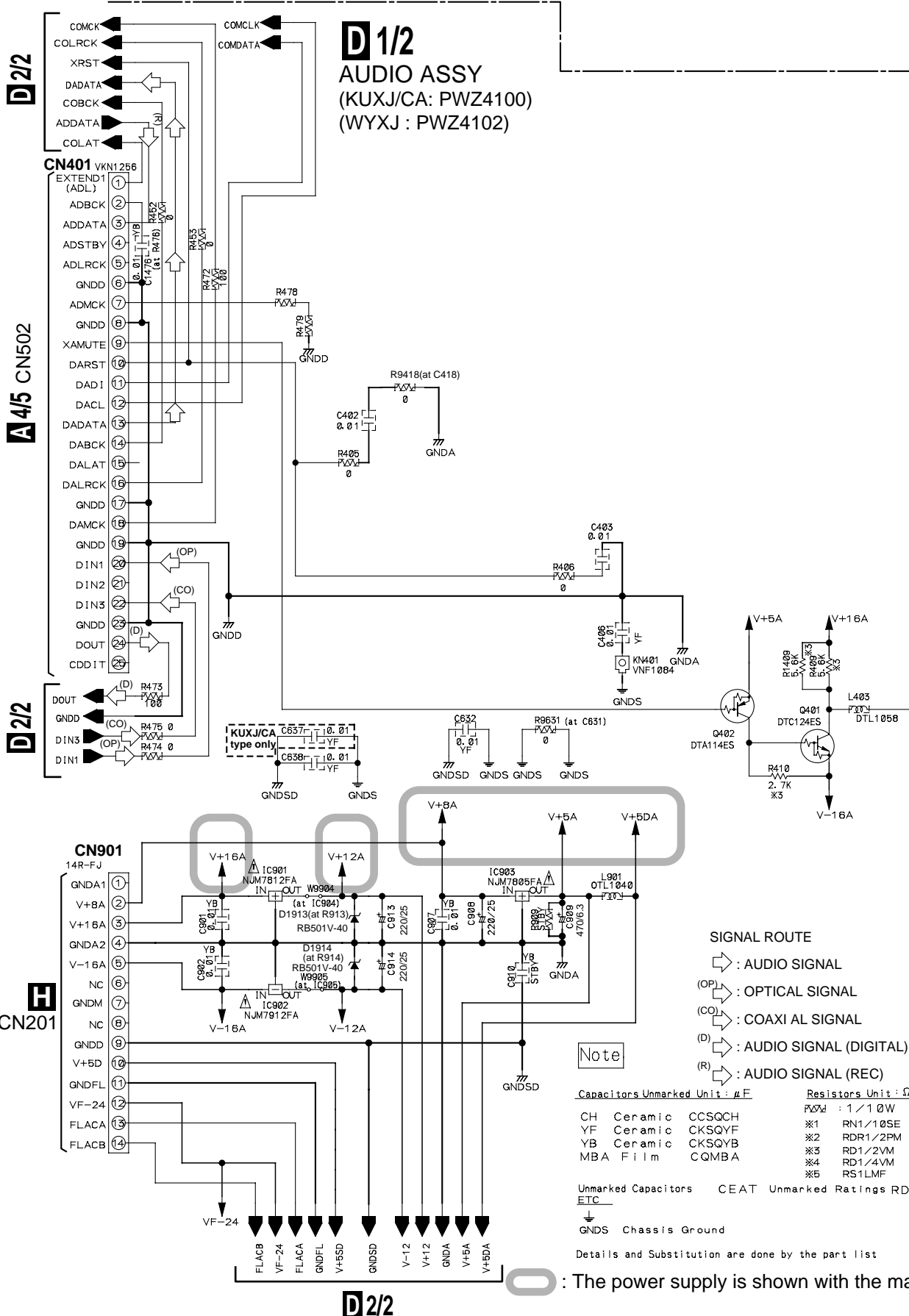
3.8 AUDIO ASSY (1/2)

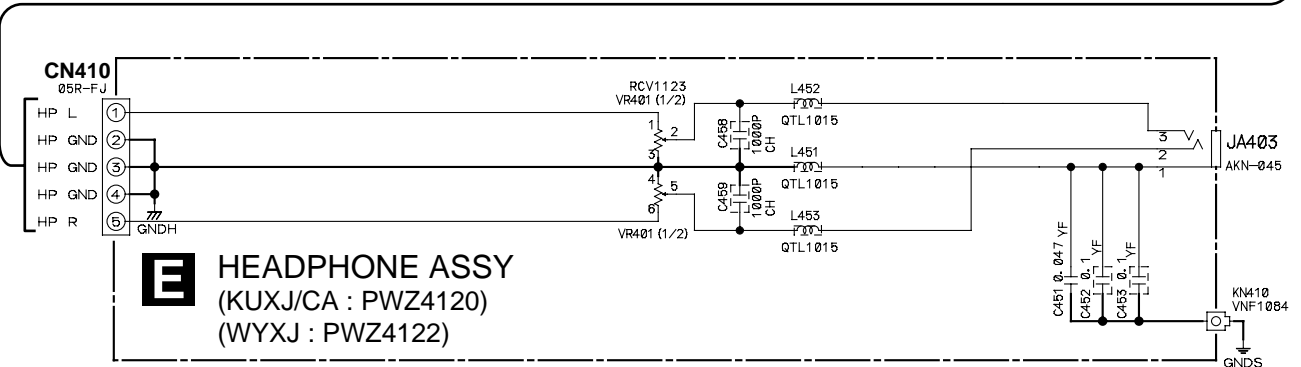
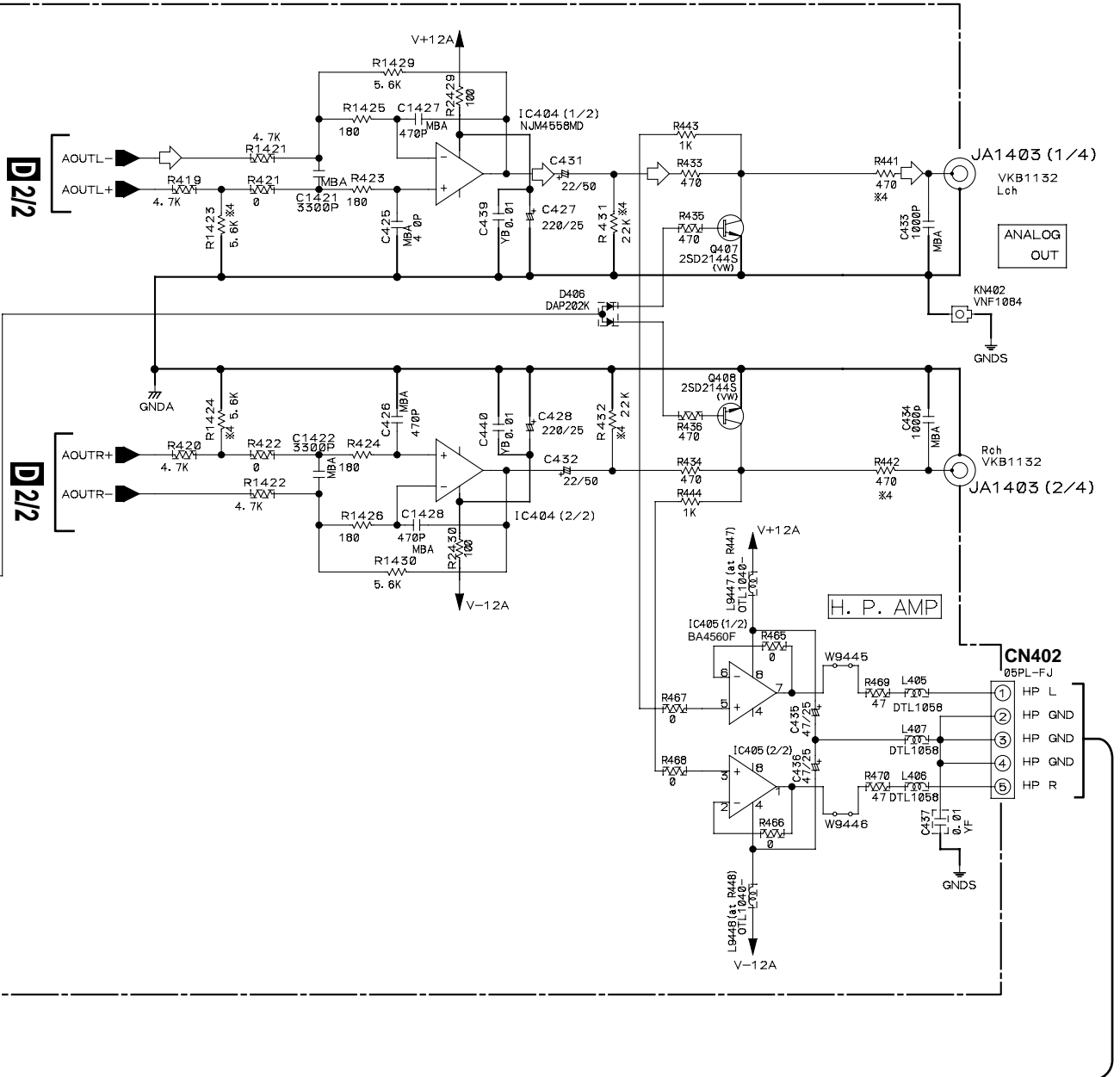
A

B

C

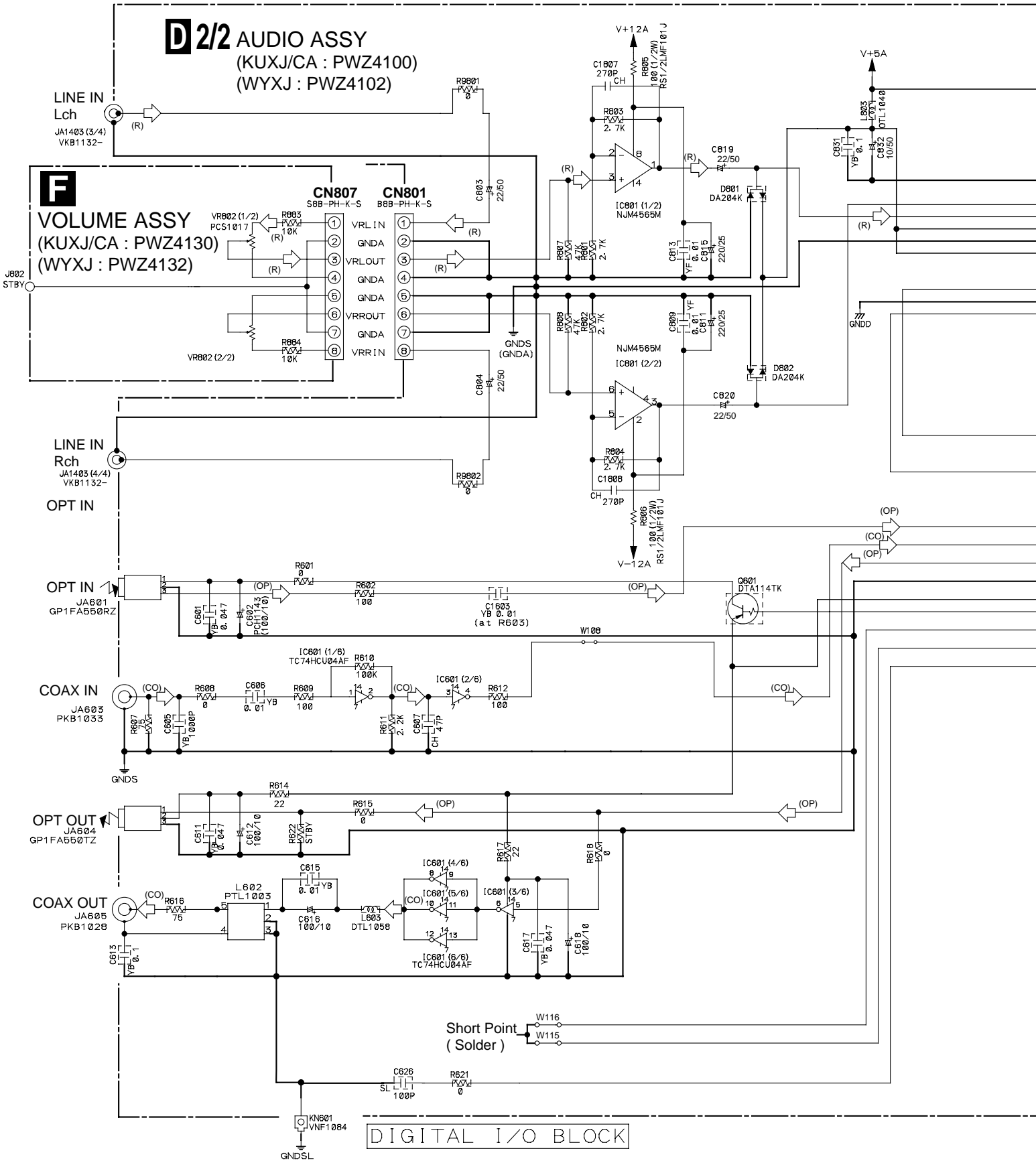
D

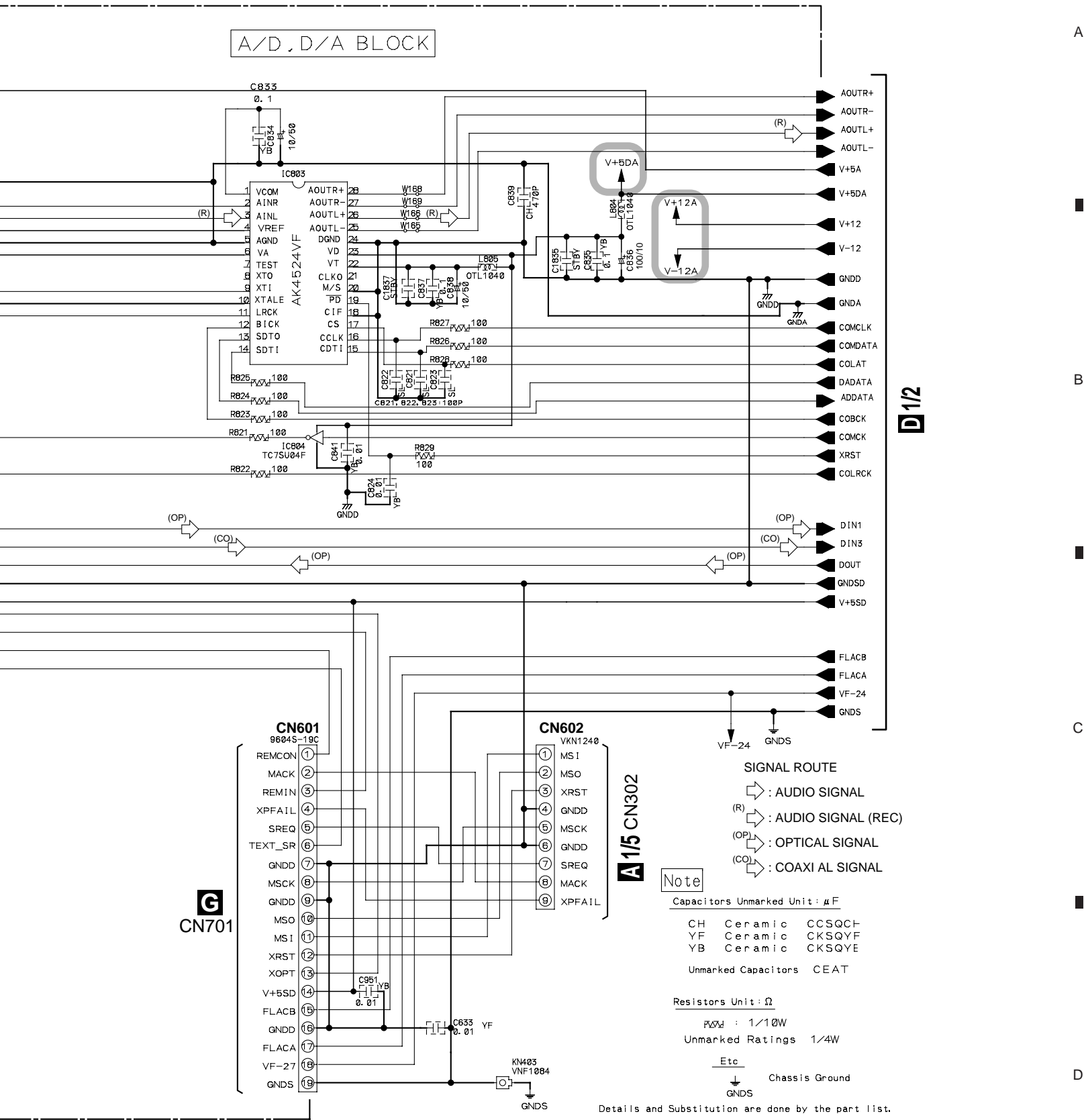




**E** HEADPHONE ASSY  
 (KUXJ/CA : PWZ4120)  
 (WYXJ : PWZ4122)

3.9 AUDIO ASSY (2/2)





A/D, D/A BLOCK

D1/2

G CN701

A1/5 CN302

- SIGNAL ROUTE**
- : AUDIO SIGNAL
  - : AUDIO SIGNAL (REC)
  - : OPTICAL SIGNAL
  - : COAXIAL SIGNAL

Note

Capacitors Unmarked Unit:  $\mu$ F

CH	Ceramic	CKSQCH
YF	Ceramic	CKSQYF
YB	Ceramic	CKSQYE

Unmarked Capacitors CEAT

Resistors Unit:  $\Omega$

$\text{P}\Omega$  : 1/10W

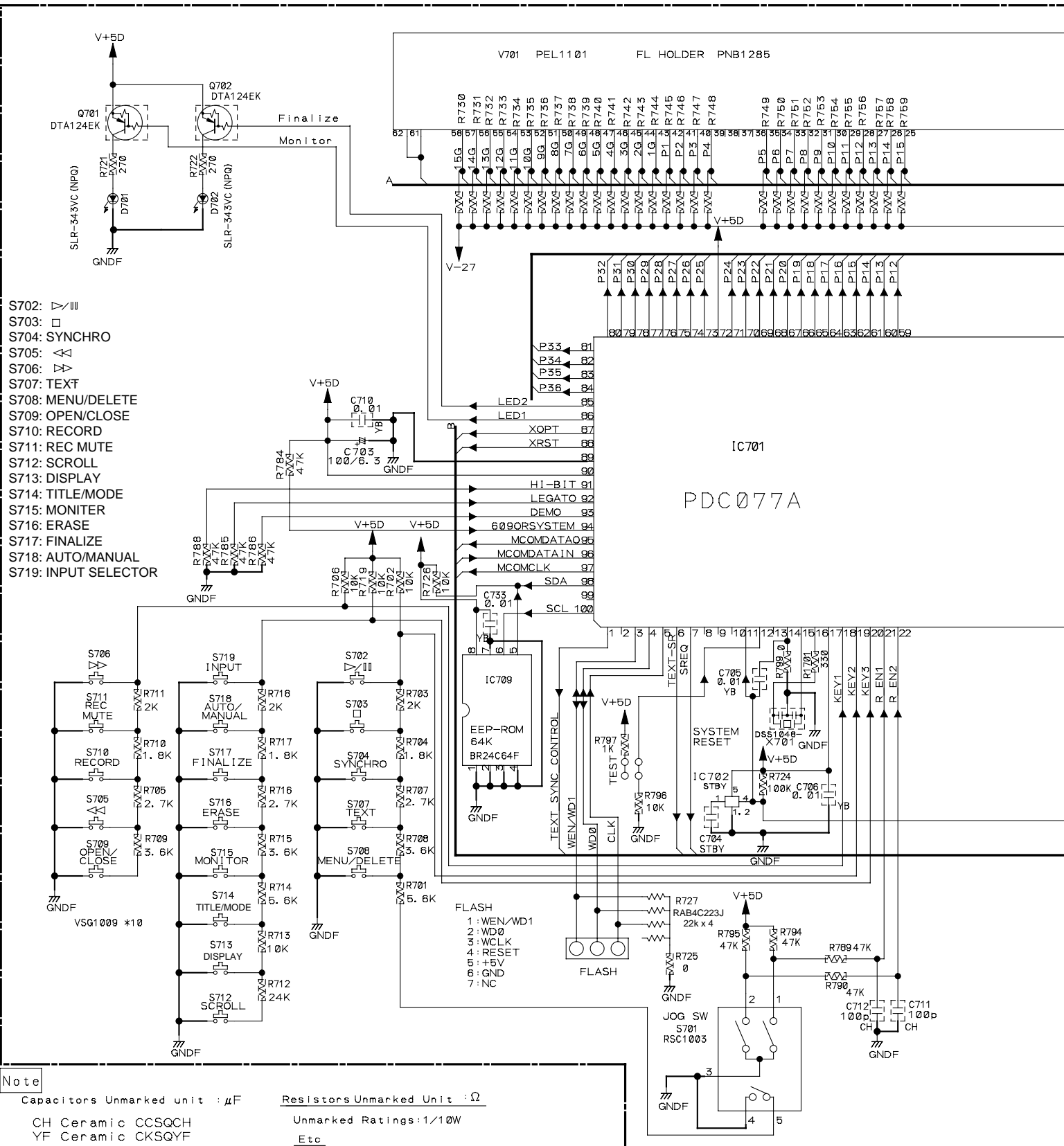
Unmarked Ratings 1/4W

Etc  
 Chassis Ground  
 GNDS

Details and Substitution are done by the part list.

: The power supply is shown with the marked box.

3.10 OPERATING ASSY



Note

Capacitors Unmarked unit :  $\mu$ F

Resistors Unmarked Unit :  $\Omega$

CH Ceramic CCSQCH  
 YF Ceramic CKSQYF  
 YB Ceramic CKSQYB  
 LA Film CFTLA

Unmarked Ratings: 1/10W

Etc

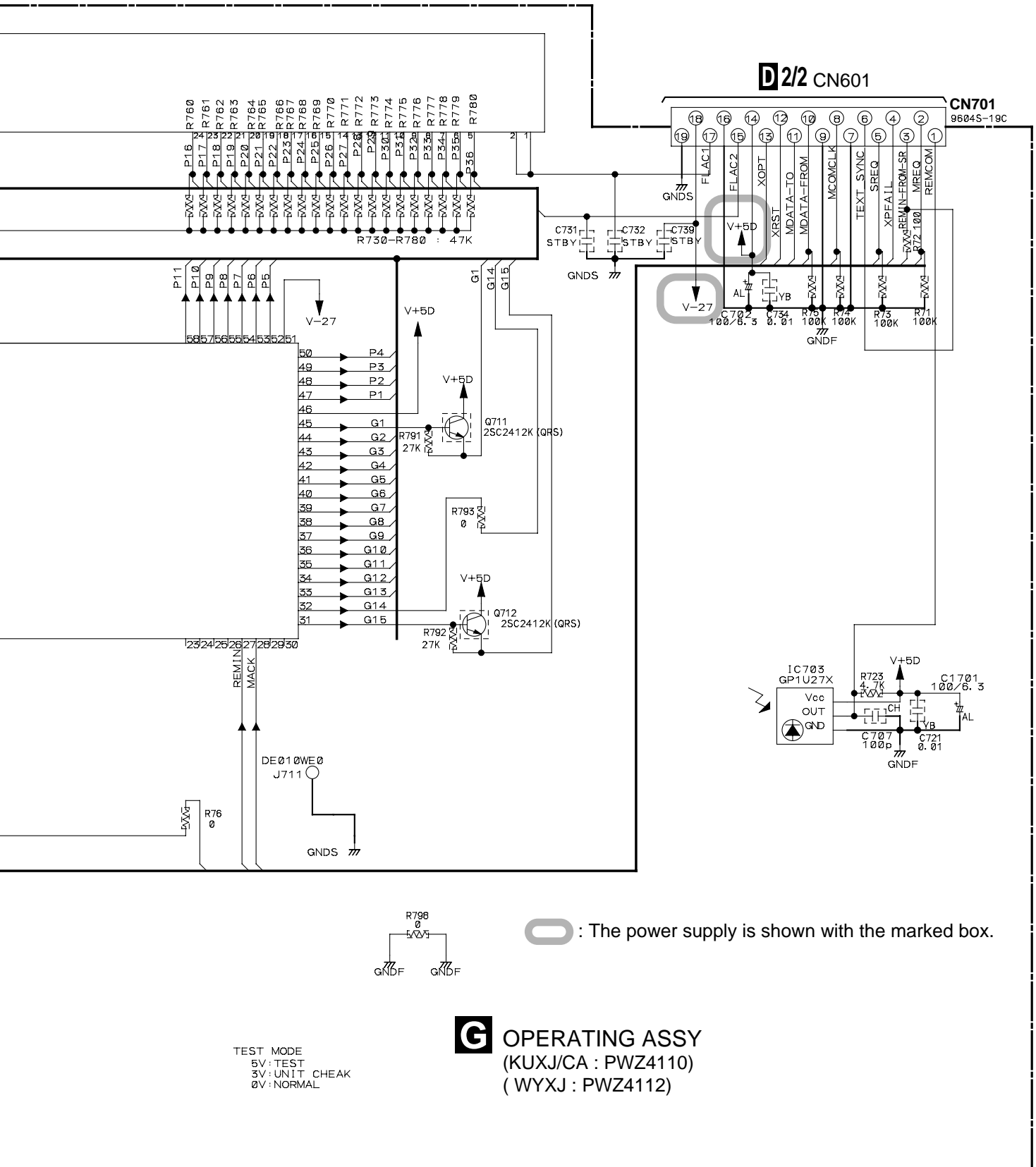
Chassis Ground

Unmarked Capacitor CEAT-TS

Details and Substitution are done by the part list.







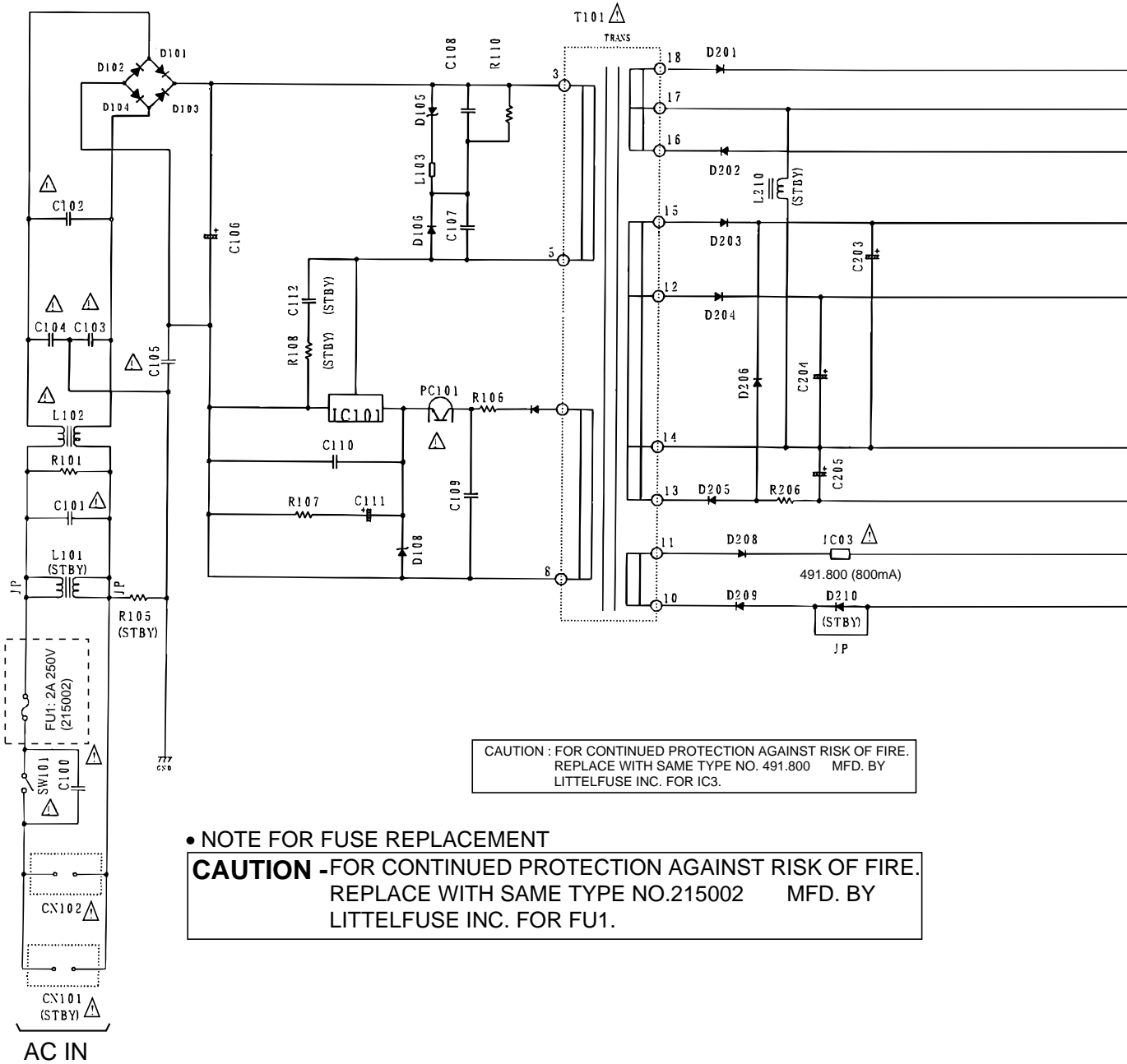
: The power supply is shown with the marked box.

**G** OPERATING ASSY  
 (KUXJ/CA : PWZ4110)  
 (WYXJ : PWZ4112)

TEST MODE  
 5V : TEST  
 3V : UNIT CHEAK  
 0V : NORMAL

3.11 POWER SUPPLY ASSY

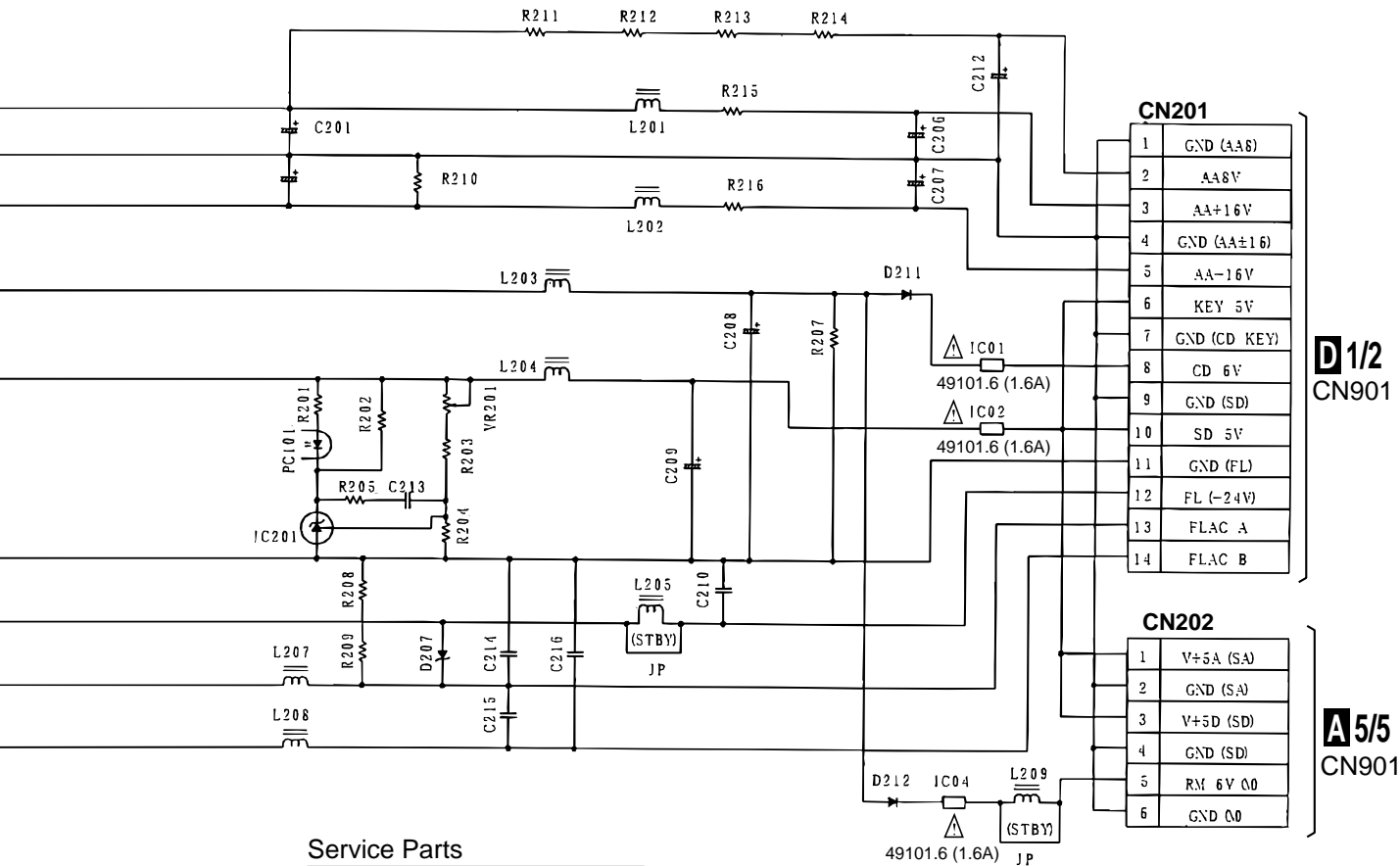
**H** POWER SUPPLY ASSY  
(PWR1029)



CAUTION : FOR CONTINUED PROTECTION AGAINST RISK OF FIRE.  
REPLACE WITH SAME TYPE NO. 491.800 MFD. BY  
LITTELFUSE INC. FOR IC3.

• NOTE FOR FUSE REPLACEMENT  
**CAUTION** -FOR CONTINUED PROTECTION AGAINST RISK OF FIRE.  
REPLACE WITH SAME TYPE NO.215002 MFD. BY  
LITTELFUSE INC. FOR FU1.





Service Parts

No.	Part No.
FU1	215002 (2A)
IC01	49101.6 (1.6A)
IC02	49101.6 (1.6A)
IC03	491.800 (0.8A)
IC04	49101.6 (1.6A)


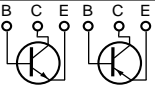

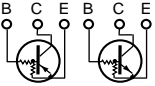

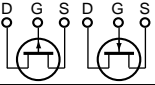
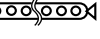
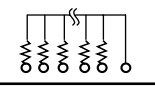

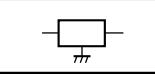
CAUTION : FOR CONTINUED PROTECTION AGAINST RISK OF FIRE.  
 REPLACE WITH SAME TYPE NO. 49101.6 MFD. BY  
 LITTELFUSE INC. FOR IC1, IC2 and IC4 .

marked parts: Only these parts are supplied as service parts.

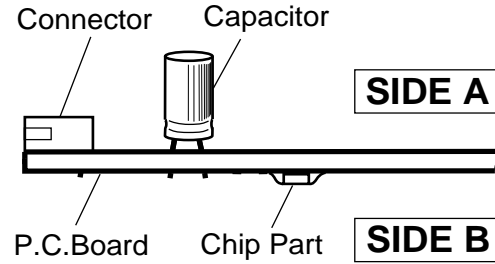
# 4. PCB CONNECTION DIAGRAM

## 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.

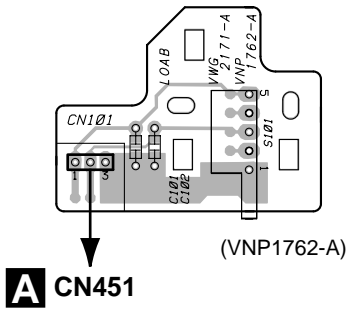


### 4.1 LOAB and MECHA PCB ASSYS

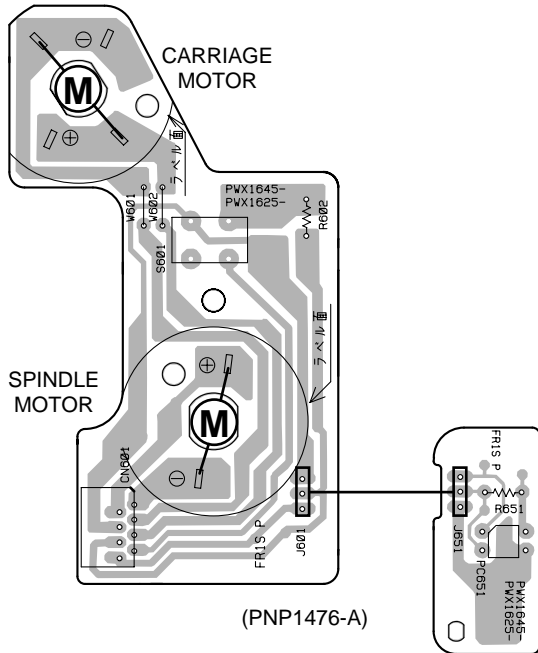
**SIDE A**

**SIDE B**

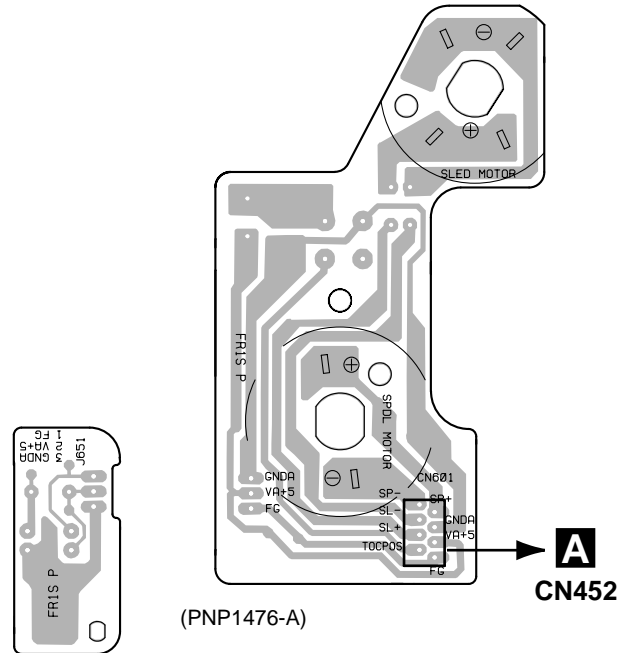
#### **B** LOAB ASSY



#### **C** MECHA PCB ASSY



#### **C** MECHA PCB ASSY

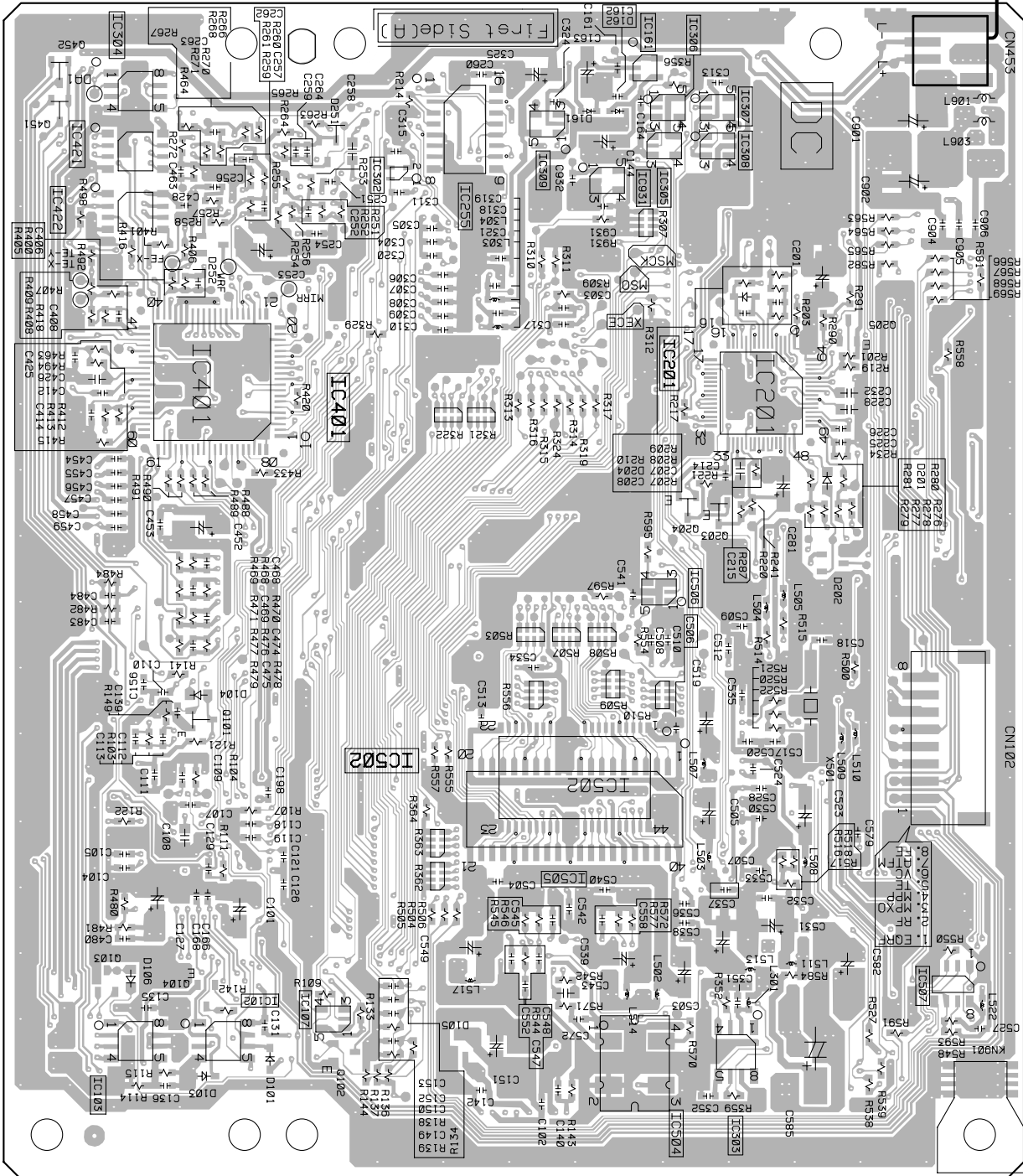


4.2 CD-R CORE PCB ASSY

SIDE A

A CD-R CORE PCB ASSY

LOADING MOTOR



(PNP1477-B)

IC307 IC308  
IC161 IC306 IC305 IC931  
IC309  
Q452 Q451 IC255  
IC304 IC421 IC422

IC201  
IC401

Q203 IC506  
Q204

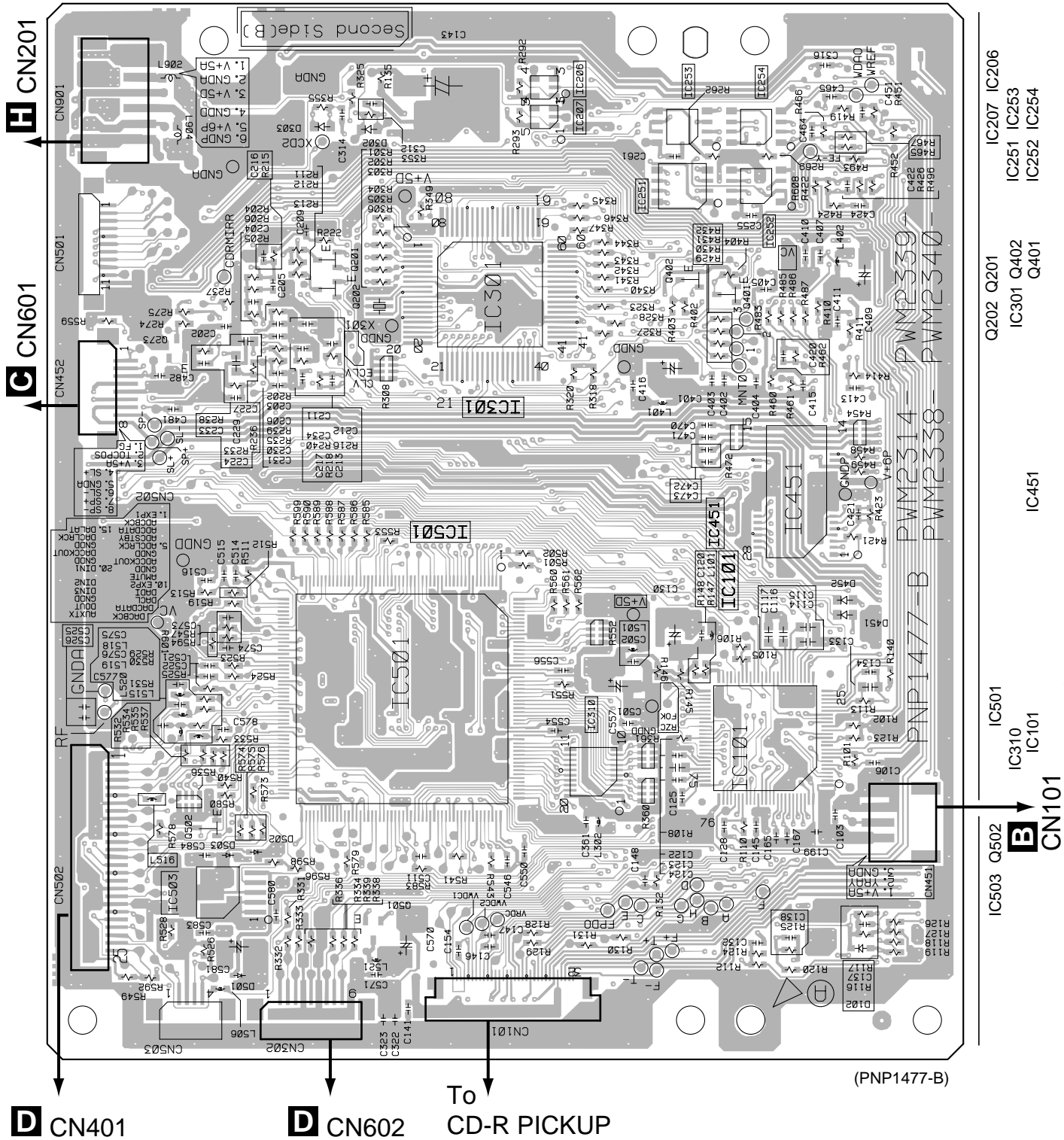
Q101 IC502

IC507 IC303  
IC107 IC504  
IC102  
IC103



SIDE B

# A CD-R CORE PCB ASSY



D CN401

D CN602

To CD-R PICKUP

(PNP1477-B)

A

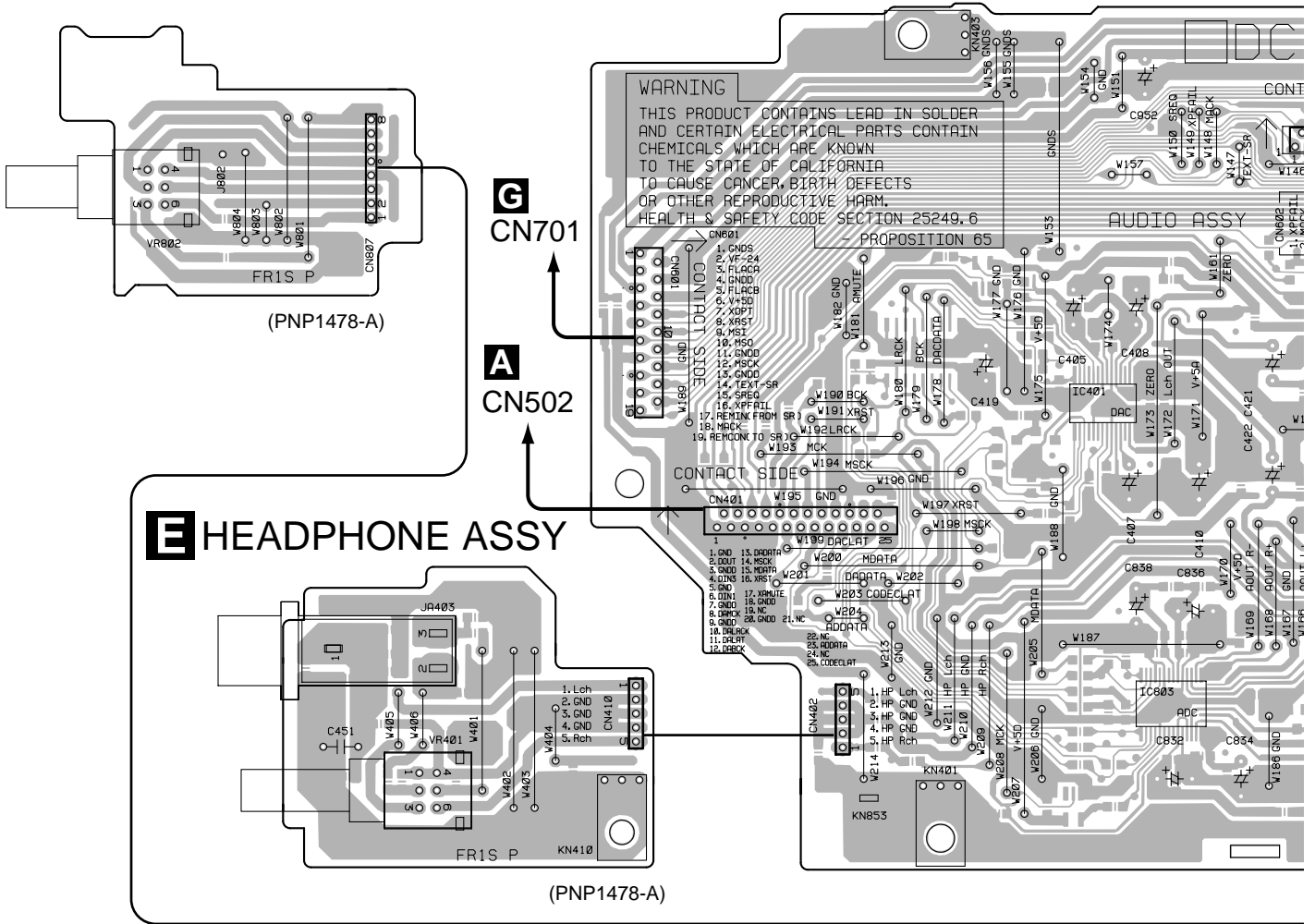
### 4.3 AUDIO, HEADPHONE and VOLUME ASSYS

**A**  
**SIDE A**

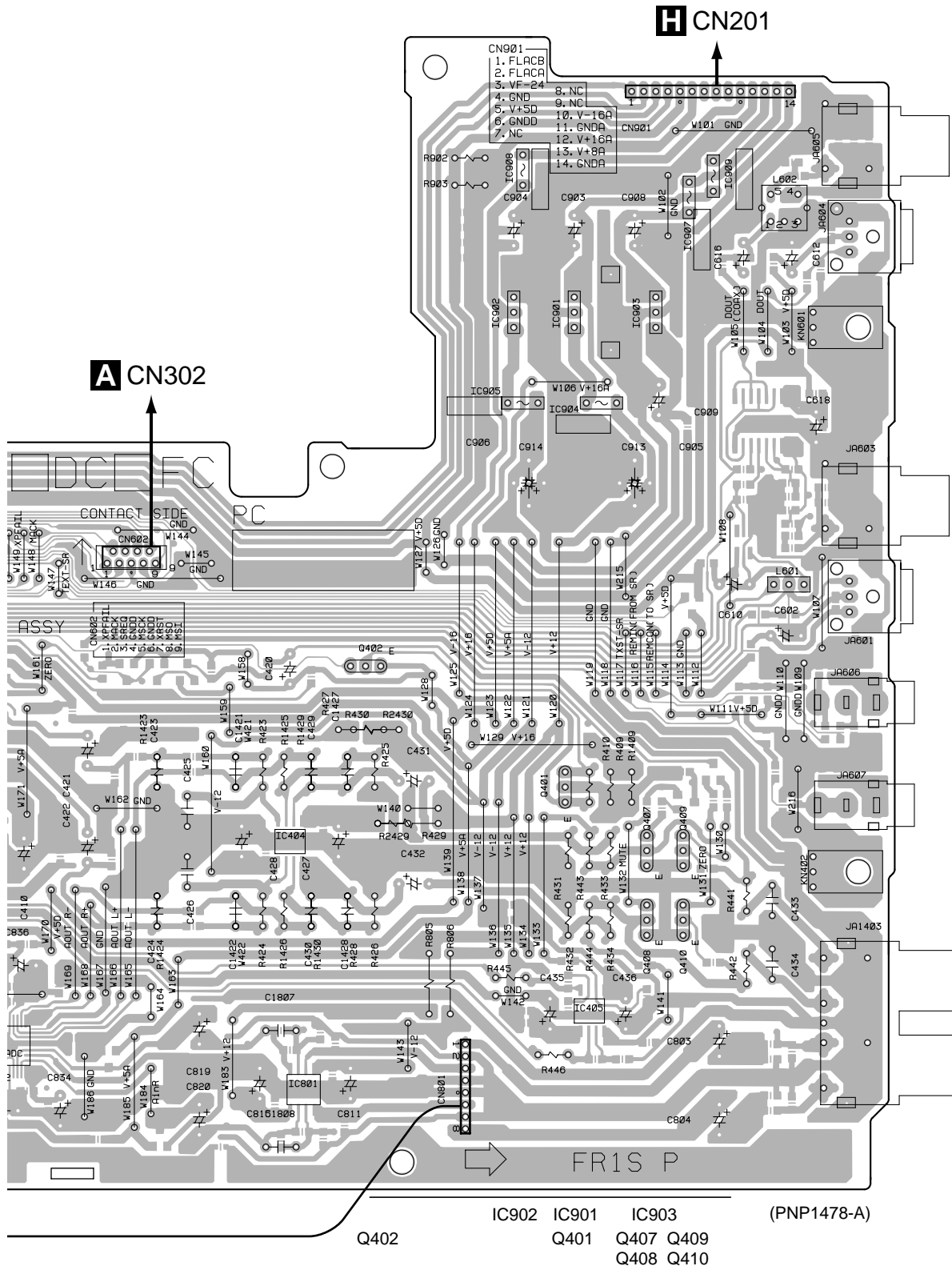
**F** VOLUME ASSY

**D** AUDIO ASSY

**A**







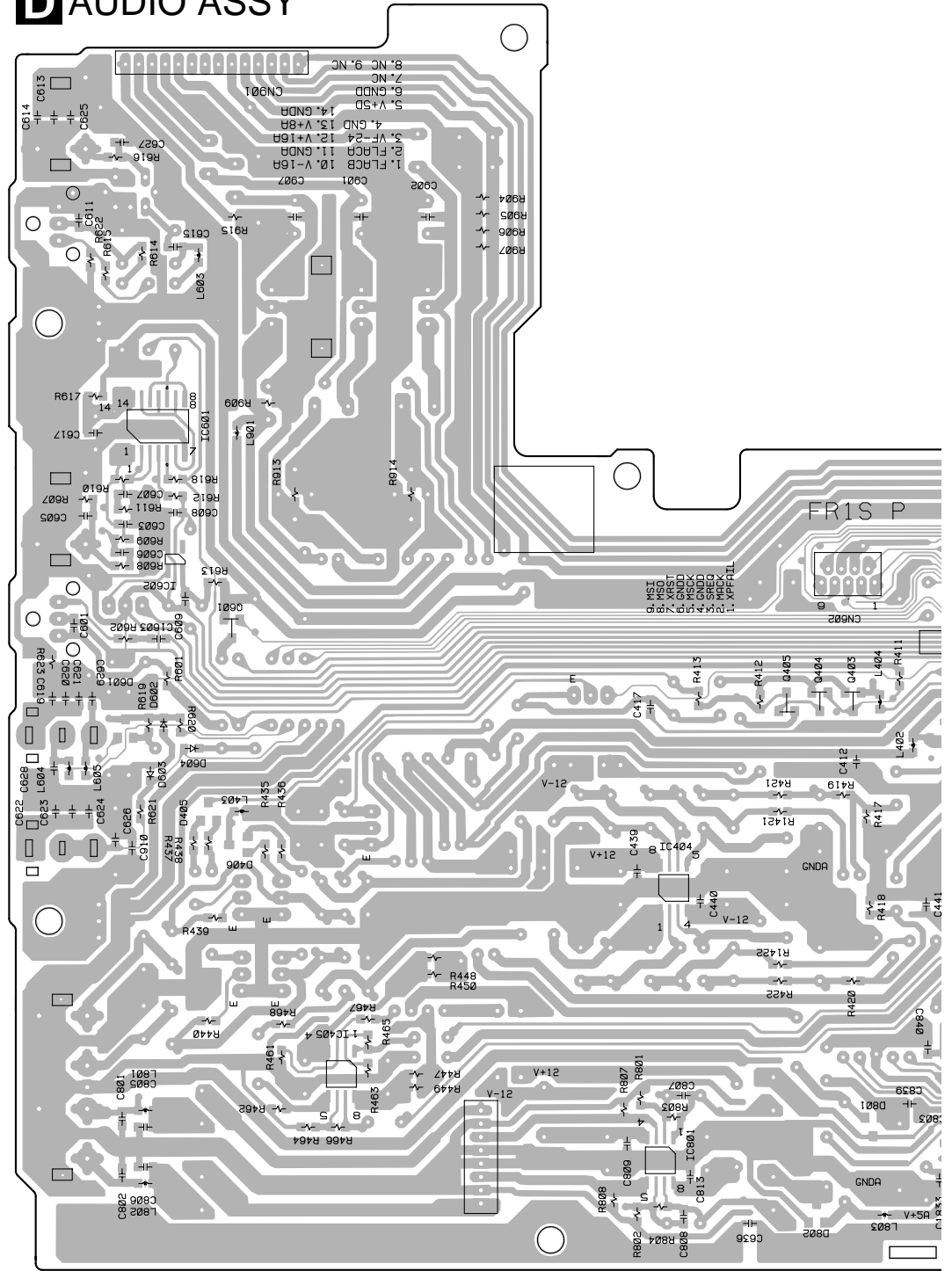
SIDE A

A  
B  
C  
D

D

**SIDE B**

# D AUDIO ASSY



(PNP1478-A)

IC601

IC405

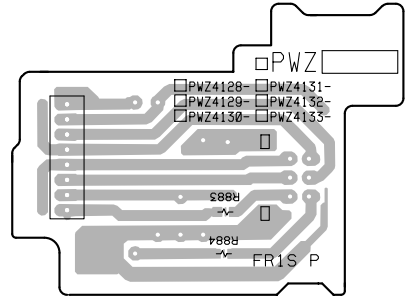
IC801  
IC807

Q405 Q404 Q403



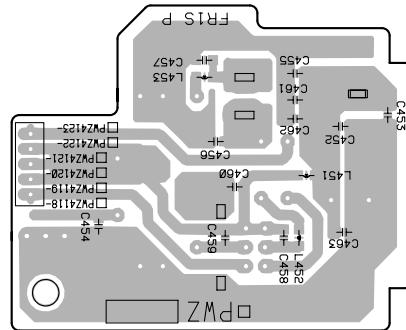
SIDE B

F VOLUME ASSY

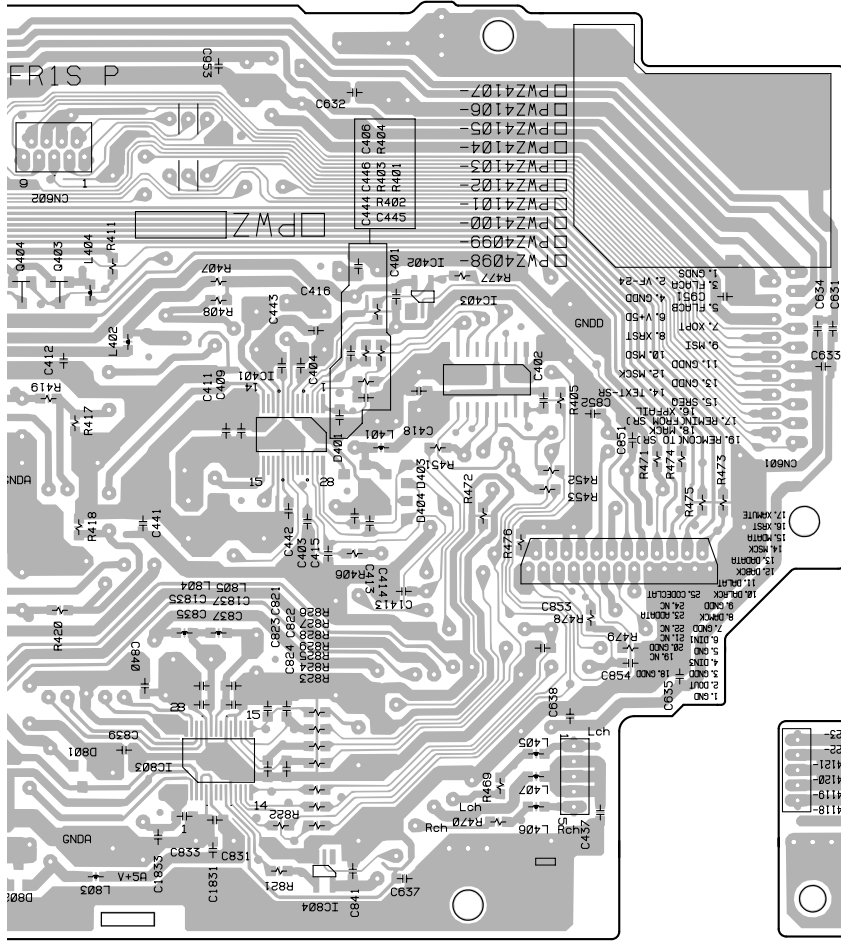


(PNP1478-A)

E HEADPHONE ASSY



(PNP1478-A)

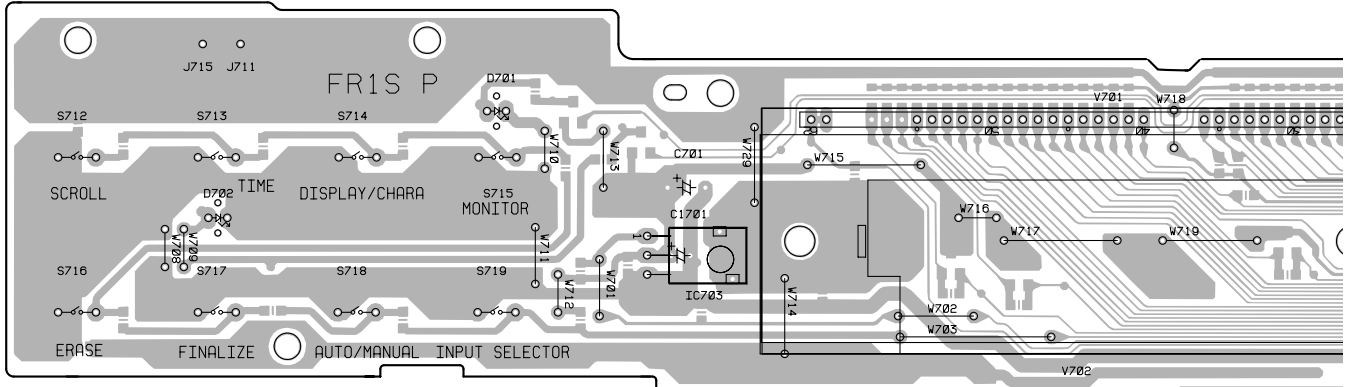


Q404 Q403 IC401 IC402 IC403 IC803 IC804

### 4.4 OPERATING ASSY

SIDE A

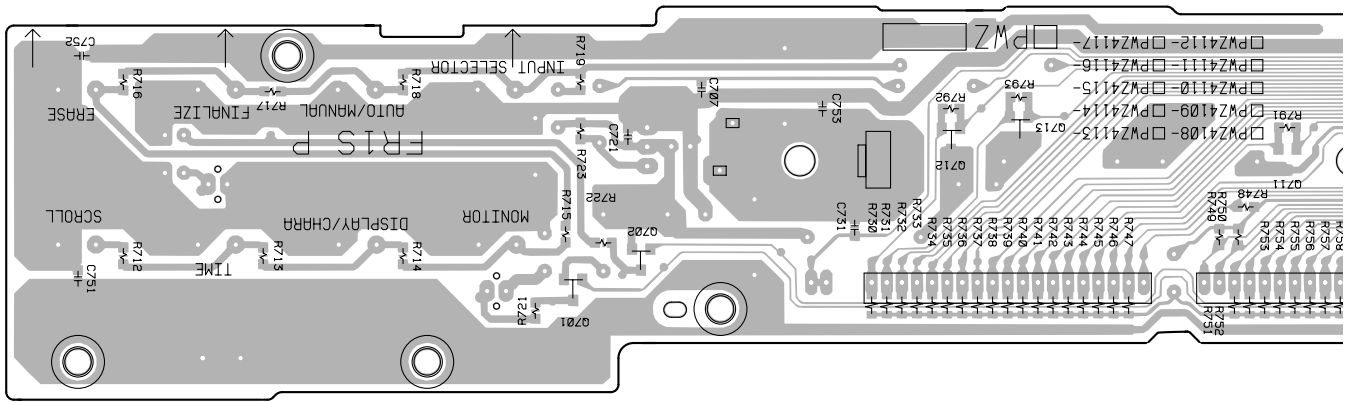
## G OPERATING ASSY



(PNP1478-A)

## G OPERATING ASSY

SIDE B



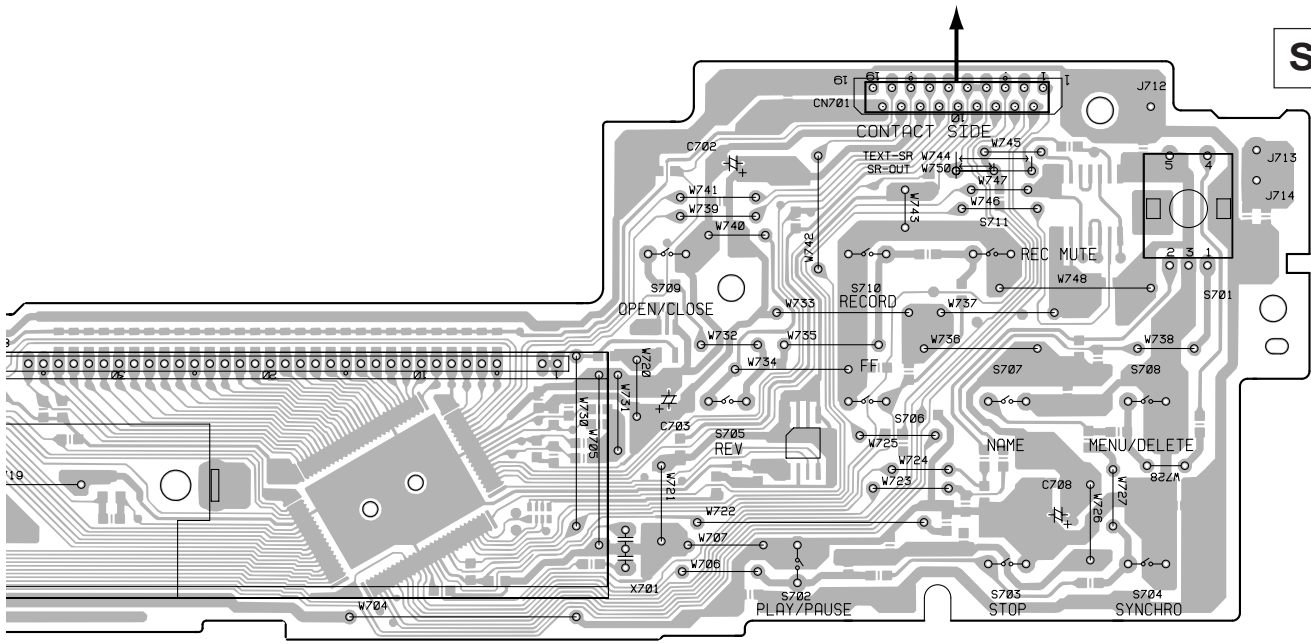
(PNP1478-A)

Q701 Q702

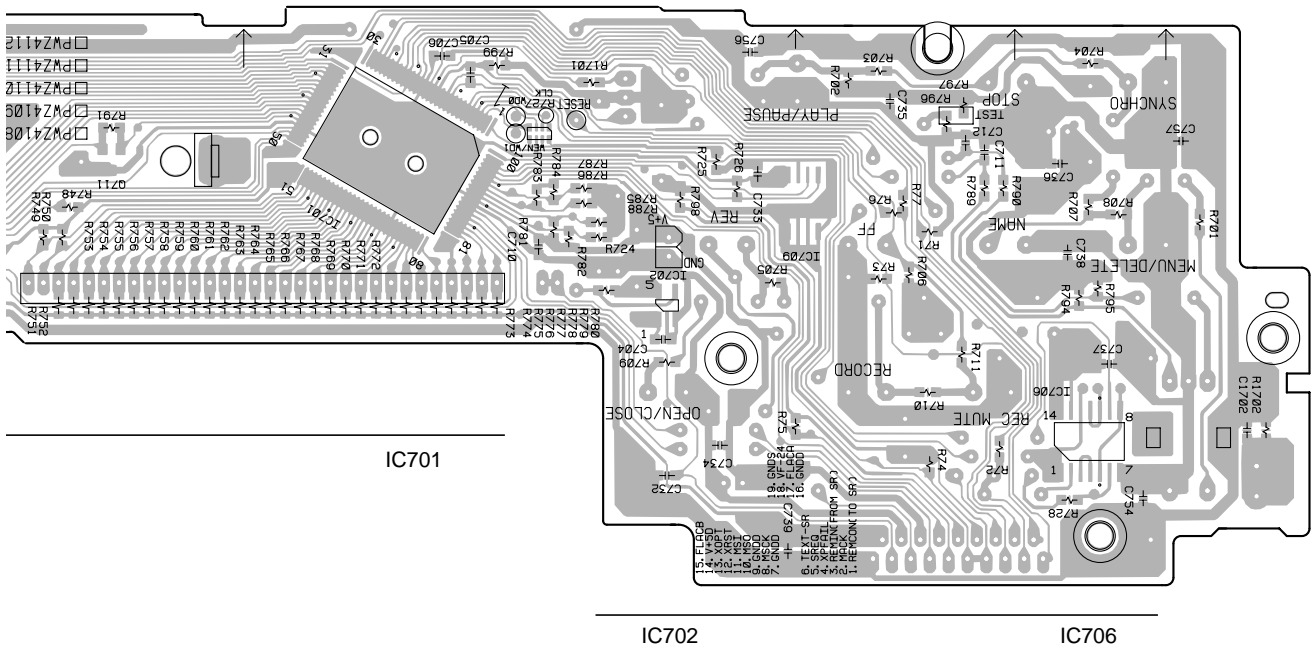
Q712 Q713

D CN601

SIDE A



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  $\Delta$  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  $\Omega$   $\rightarrow$   $56 \times 10^1 \rightarrow 561$  ..... RD1/4PU  $\boxed{5} \boxed{6} \boxed{1} J$   
 47k  $\Omega$   $\rightarrow$   $47 \times 10^3 \rightarrow 473$  ..... RD1/4PU  $\boxed{4} \boxed{7} \boxed{3} J$   
 0.5  $\Omega$   $\rightarrow$  R50 ..... RN2H  $\boxed{R} \boxed{5} \boxed{0} K$   
 1  $\Omega$   $\rightarrow$  1R0 ..... RS1P  $\boxed{1} \boxed{R} \boxed{0} K$
- Ex. 2 When there are 3 effective digits (such as in high precision metal film resistors).
- 5.62k  $\Omega$   $\rightarrow$   $562 \times 10^1 \rightarrow 5621$  ..... RN1/4PC  $\boxed{5} \boxed{6} \boxed{2} \boxed{1} F$

### 5.1 LIST OF WHOLE PCB ASSEMBLIES

Mark	Symbol and Description	Part No.		Remarks
		KUXJ/CA type	WYXJ type	
NSP NSP	CD-R CORE PCB ASSY MECHA PCB ASSY LOAB ASSY	PWM2339 PWX1625 VWG2171	PWM2339 PWX1625 VWG2171	
NSP NSP NSP NSP	COMPLEX ASSY ├ AUDIO ASSY ├ OPERATING ASSY ├ HEADPHONE ASSY └ VOLUME ASSY	PWM2317 PWZ4100 PWZ4110 PWZ4120 PWZ4130	PWM2319 PWZ4102 PWZ4112 PWZ4122 PWZ4132	
$\Delta$	POWER SUPPLY UNIT	PWR1029	PWR1029	

#### ■ CONTRAST OF PCB ASSEMBLIES

##### **E** HEADPHONE ASSY

Although PWZ4120 and PWZ4122 are different in part number, they consist of the same components.

##### **F** VOLUME ASSY

Although PWZ4130 and PWZ4132 are different in part number, they consist of the same components.

##### **G** OPERATING ASSY

Although PWZ4110 and PWZ4112 are different in part number, they consist of the same components.

**PCB PARTS LIST FOR CDR-830/KUXJ/CA UNLESS OTHERWISE NOTED**

Mark	No.	Description	Part No.	Mark	No.	Description	Part No.
<b>A CDR-CORE ASSY</b>							
<b>SEMICONDUCTORS</b>							
	IC101		AK8567		C902		CEV101M6R3
	IC252-IC254, IC421		BA4510F		C144, C151, C163, C201, C253		CEV220M6R3
	IC451		BA5810FP		C325, C501, C503, C505, C519		CEV220M6R3
	IC303		BR93LC66F		C531, C537, C539, C549, C570		CEV220M6R3
	IC401		CXD2585Q		C581, C582		CEV220M6R3
	IC255		HD74HC4053FP		C281		CEV2R2M50
	IC310		HD74HC573T		C101, C127, C130, C401, C409		CEV470M6R3
	IC502		LC324265AT-25		C452		CEV470M6R3
	IC102, IC103, IC304		BA10358F		C108, C232, C258, C543		CKSQYB105K10
	IC309		LP2980IM5-4.5		C114-C117, C123, C133, C215		CKSQYB334K16
	IC161		MM1385AN		C227-C229		CKSQYB334K16
	IC302		MM1522XU		C426		CKSQYB474K16
	IC251		NJU7016M		C141, C207, C233, C252, C257		CKSRYB102K50
	IC201		PA9007A		C322, C403, C407, C525, C932		CKSRYB102K50
	IC504		PCX1027		C121, C137, C140, C161, C162		CKSRYB103K50
	IC501		PDC069A		C226, C230, C231, C251, C412		CKSRYB103K50
	IC301		PE5190D		C425, C454-C459, C470-C473		CKSRYB103K50
	IC503		PQ20WZ51		C515, C546, C557, C572, C583		CKSRYB103K50
	IC931		PST9245		C136, C198, C209, C224, C225		CKSRYB104K16
	IC307		TC7S00F		C303, C305, C306, C310, C314		CKSRYB104K16
	IC506		TC7S02F		C421, C514, C516, C521, C522		CKSRYB104K16
	IC308		TC7S14F		C547, C548		CKSRYB104K16
	IC507		TC7WU04F		C208, C414		CKSRYB152K50
	Q451, Q452		2SK208		C122		CKSRYB222K50
	Q204, Q205, Q401, Q402		DTA124EK		C138, C259		CKSRYB223K50
	Q501		DTA143EK		C212, C451		CKSRYB272K50
	Q101, Q201, Q203		DTC114TK		C113, C205		CKSRYB333K16
	Q502		DTC124EK		C480, C481		CKSRYB471K50
	D104, D201, D303, D451, D452		1SS355		C124		CKSRYB472K50
	D105, D202, D251		DA204K		C102, C206, C413		CKSRYB473K16
	D252		MA704		C132		CKSRYB563K16
	D161, D162, D501-D503		RB521S-30		C204, C408, C468, C469		CKSRYB681K50
					C125, C463, C464		CKSRYB682K50
					C416, C905		CKSRYF103Z50
					C107, C111, C120, C126, C131		CKSRYF473Z25
					C135, C142, C145, C164, C199		CKSRYF473Z25
					C202, C211, C214, C217		CKSRYF473Z25
					C254, C255, C260-C262, C313		CKSRYF473Z25
					C315-C319, C321, C324, C351		CKSRYF473Z25
					C361, C402, C405, C410, C411		CKSRYF473Z25
					C415, C453, C465, C482, C502		CKSRYF473Z25
					C504, C506, C508-C510		CKSRYF473Z25
					C512, C513, C520, C524		CKSRYF473Z25
					C527, C528, C530, C532-C536		CKSRYF473Z25
					C538, C540-C542, C545, C550		CKSRYF473Z25
					C552, C554, C556, C558, C571		CKSRYF473Z25
					C584, C904, C931		CKSRYF473Z25
					C585 (0.22F/3.5V)		PCH1145
					C143 (0.1F/5.5V)		PCH1146
<b>COILS AND FILTERS</b>				<b>RESISTORS</b>			
	X301 (32MHz)		PSS1024		R454, R472 (10 $\Omega$ x4)		RAB4C100J
	X501 XTal Res (OSC)		PSS1025		R307, R308, R360, R361 (22k $\Omega$ x4)		RAB4C223J
	L101, L1579, L302-L304		QTL1013		R536, R552 (100k $\Omega$ x4)		RAB4C104J
	L401, L402, L501-L503		QTL1013		R321, R322, R503 (100 $\Omega$ )		RAB4C101J
	L507, L508, L511, L513, L514		QTL1013		R507-R510, R556 (100 $\Omega$ )		RAB4C101J
	L517, L521, L522		QTL1013				
	L509, L510, L515, L516		VTL1077				
	L518-L520		VTL1077				
<b>CAPACITORS</b>							
	C901 (56 $\mu$ F/10V)		ACH7109				
	C129		CCSRCH100D50				
	C139, C304, C307-C309, C320		CCSRCH101J50				
	C104, C105		CCSRCH121J50				
	C574		CCSRCH220J50				
	C406, C420		CCSRCH221J50				
	C106, C119, C404		CCSRCH331J50				
	C128, C263, C352		CCSRCH470J50				
	C213, C256, C474, C475, C511		CCSRCH471J50				
	C517, C518		CCSRCH5R0C50				

# CDR-830

Mark	No.	Description	Part No.
	R1901–R1904, R901–R905		RS1/10S0R0J
	R116, R468, R470, R476, R478		RS1/16S1002F
	R114		RS1/16S1302F
	R115		RS1/16S1502F
	R465, R467		RS1/16S1603F
	R596		RS1/16S2001F
	R118, R119, R477, R479		RS1/16S2002F
	R464, R466		RS1/16S2202F
	R102		RS1/16S4701F
	R126		RS1/16S4703F
	R598		RS1/16S5100F
	R469, R471		RS1/16S9102F
	Other Resistors		RS1/16S□□□ J

## OTHERS

CN101	FFC CONNECTOR 32P	PKN1024
CN453	CONNECTOR 2P	S2B-PH-SM3
CN451	CONNECTOR 3P	S3B-PH-SM3
CN901	CONNECTOR 6P	S6B-PH-SM3
CN102	CONNECTOR 8P	S8B-PH-SM3
CN452	FFC CONNECTOR 8P	VKN1300
CN302	FFC CONNECTOR 9P	VKN1301
CN502	FFC CONNECTOR 25P	VKN1317
KN901	EARTH METAL FITTING	VNF1109

## **B** MECHA PCB ASSY

### SEMICONDUCTORS

PC651		NJL5809K-F1
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### SWITCHE

S601		PSG1014
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### RESISTORS

Other Resistors		RD1/4PU□□□ J
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### OTHERS

J601		D20PWW0305E
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## **C** LOAB ASSY

### OTHERS

CN101	KR CONNECTOR (3P)	S3B-PH-K-S
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### SWITCHE

S101		VSK1011
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## **D** AUDIO ASSY

### SEMICONDUCTORS

IC803		AK4524VF
IC405		BA4560F
IC404		NJM4558MD
IC801		NJM4565M
△ IC903		NJM7805FA
△ IC901		NJM7812FA
△ IC902		NJM7912FA
IC601		TC74HCU04AF
IC804		TC7SU04F
Q407, Q408		2SD2144S
Q402		DTA114ES
Q601		DTA114TK

Mark	No.	Description	Part No.
	Q401		DTC124ES
	D801, D802		DA204K
	D406, D601		DAP202K
	D1913, D1914		RB501V-40

## COILS AND FILTERS

L403, L405–L407, L603		DTL1058
L803–L805, L901, L9447, L9448		OTL1040
L602		PTL1003

## CAPACITORS

C626, C821–C823		CCSQCH101J50
C807, C808		CCSQCH271J50
C607		CCSQCH470J50
C839		CCSQCH471J50
C834, C838		CEAT100M50
C602, C612, C616, C618		CEAT101M10
C832, C836		CEAT101M10
C909		CEAT471M10
C431, C432, C803, C804		CEAT220M50
C819, C820		CEAT220M50
C427, C428, C811, C815		CEAT221M25
C913, C914		CEAT221M25
C435, C436		CEAT470M25
C605		CKSQYB102K50
C1413, C1476, C1603, C439, C440		CKSQYB103K50

C606, C615, C809, C824, C841		CKSQYB103K50
C901, C902, C907, C951		CKSQYB103K50
C613, C831, C833, C835, C837		CKSQYB104K25
C601, C611, C617		CKSQYB473K25
C402, C403, C406, C437		CKSQYF103Z50

C632, C633, C637, C638, C813		CKSQYF103Z50
C433, C434		CQMBA102J50
C1421, C1422		CQMBA332J50
C1427, C1428, C425, C426		CQMBA471J50

## RESISTORS

R2429, R2430		RD1/2VM101J
R410		RD1/2VM272J
R1409, R409		RD1/2VM562J
R443, R444		RD1/4VM102J
R1425, R1426, R423, R424		RD1/4VM181J

R431, R432		RD1/4VM223J
R433, R434, R441, R442		RD1/4VM471J
R1423, R1424, R1429, R1430		RD1/4VM562J
R1421, R1422, R419, R420		RN1/10SE4701D
R805, R806		RS1/2LMF101J

Other Resistors		RS1/10S□□□ J
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## OTHERS

CN402	CONNECTOR 5P	05PL-FJ
CN801	KR CONNECTOR(8P)	B8B-PH-K-S
CN901	CONNECTOR 14P	14R-FJ
CN601	FFC CONNECTOR 19P	9604S-19C
JA601	OPTICAL LINK IN	GP1FA550RZ

JA604	OPTICAL LINK OUT	GP1FA550TZ
JA605	1P JACK (ORG)	PKB1028
JA603	1P JACK (ORG)	PKB1033
JA1403	4P JACK	VKB1132
CN602	FFC CONNECTOR 9P	VKN1240

CN401	FFC CONNECTOR 25P	VKN1256
KN401–KN403, KN601	EARTH METAL FITTING	VNF1084



Mark	No.	Description	Part No.
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## **G** OPERATING ASSY

### SEMICONDUCTORS

IC709		BR24C64F
IC701		PDC077A
Q711, Q712		2SC2412K
Q701, Q702		DTA124EK
D701, D702		SLR-343VC

### COILS AND FILTERS

X701 (10MHz)		DSS1048
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### SWITCHES

S701		RSC1003
S702-S719		VSG1009

### CAPACITORS

C707, C711, C712		CCSQCH101J50
C1701, C702, C703		CEAL101M6R3
C705, C706, C710, C721		CKSQYB103K50
C733, C734		CKSQYB103K50

### RESISTORS

R727 (22k $\Omega$ )		RAB4C223J
Other Resistors		RS1/10S□□□ J

### OTHERS

CN701	FFC CONNECTOR 19P	9604S-19C
	REMOTE RECEIVER UNIT	GP1U27X
V701	FL TUBE	PEL1101

## **E** HEADPHONE ASSY

### COILS AND FILTERS

L451-L453		QTL1015
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### CAPACITORS

C458, C459		CCSQCH102J50
C451		CKCYF473Z50
C452, C453		CKSQYF104Z25

### RESISTORS

VR401 (500 $\Omega$ -B x2)		RCV1123
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### OTHERS

CN410	FJ CONNECTOR 5P	05R-FJ
JA403	HEADPHONE JACK	AKN-045
KN410	EARTH METAL FITTING	VNF1084

## **F** VOLUME ASSY

### RESISTORS

VR802 (50k $\Omega$ -A x2)		PCS1017
R883, R884		RS1/10S103 J

### OTHERS

NSP	CN807	KR CONNECTOR(8P)	S8B-PH-K-S
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## **H** POWER SUPPLY UNIT

### SEMICONDUCTORS

IC3 (800mA/125V)		491.800
IC1, IC2, IC4 (1.6A/125V)		49101.6

## 6. ADJUSTMENT

### 6.1 DISCS TO BE USED

#### • SERVO SYSTEM ADJUSTMENT

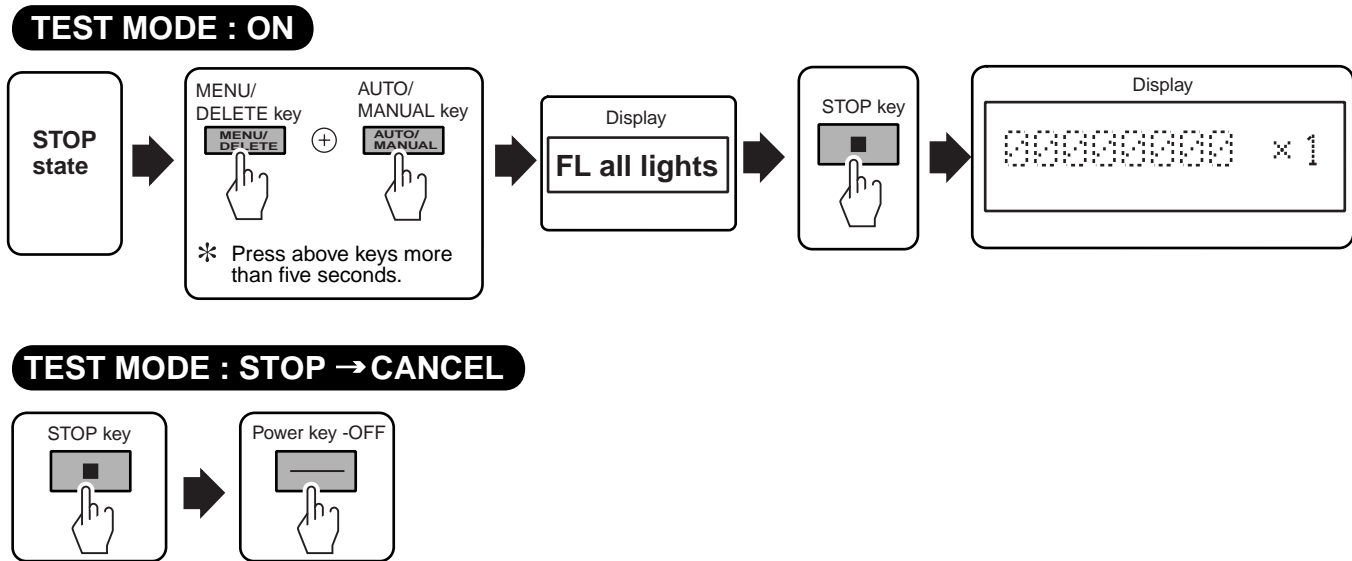
CD: Test disc for adjustment (STD-903) or equivalent  
 Test disc for inspection (STD-914) or equivalent

### 6.2 MEASURING INSTRUMENTS

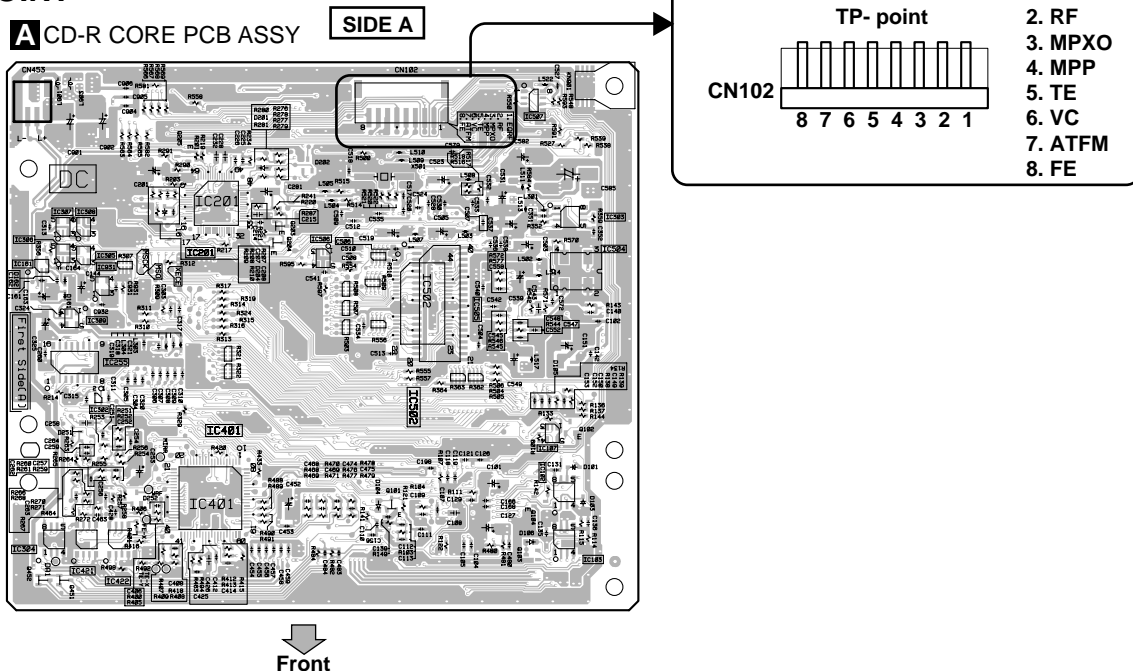
- (1) Laser power meter  
 Following power meter manufactured by Advantest Corporation or equivalent:  
 TQ8210 + TQ82017  
 TQ8215 + TQ82021  
 TQ8215 + TQ82010 + TQ82017  
 LE8010 (by LEADER)
- (2) Oscilloscope
- (3) CD Jitter Meter

### 6.3 TEST MODE

#### 6.3.1 How to Enter the Test Mode



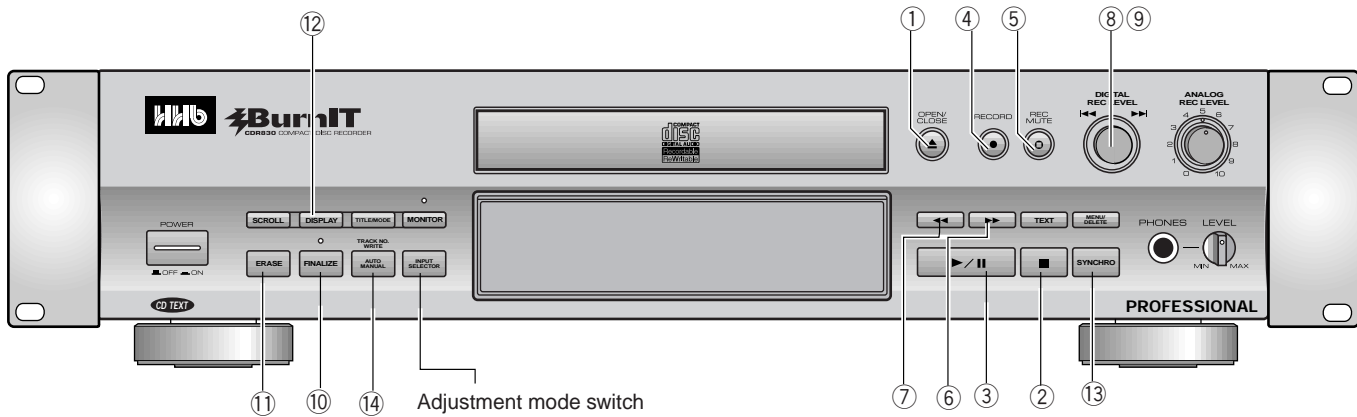
### 6.3.2 TP- POINT



### 6.4 NECESSARY ADJUSTMENT POINTS

When	Adjustment Points
<b>■ EXCHANGE CD-R CORE (Mechanism) ASSY</b>	
Exchange Mechanism Assy CD-R Pickup	<p><b>Mechanical point</b> _____</p> <p><b>Electric point</b> 6.6 LD Power adjustment 6.7 Servo Adjustment (Automatic Adjustment)</p>
Exchange Mechanism Assy Spindle Motor	<p><b>Mechanical point</b> _____</p> <p><b>Electric point</b> 6.7 Servo Adjustment (Automatic Adjustment)</p>
<b>■ EXCHANGE CD-R CORE (PCB) ASSY</b>	
Exchange PCB CDR CORE (PCB) ASSY IC303	<p><b>Mechanical point</b> _____</p> <p><b>Electric point</b> 6.6 LD Power adjustment 6.7 Servo Adjustment (Automatic Adjustment)</p>

## 6.5 OPERATIONS IN TEST MODE



### ■ LD Power Adjustment (INPUT SELECTOR: ANALOG)

Key No.	Assignment Key	Contents of Movement
①	▲ (OPEN/CLOSE)	Tray Open/Close
②	■ (STOP)	LD power adjustment end Turn off the LD and disc selection set to CD.
③	▶/   (PLAY/PAUSE)	Store the power adjustment value to the EEPROM and shift to the next power adjustment.
④	● (RECORD)	LD POWER adjustment standby Switch the setting of ◀◀▶▶ key during adjustment. (coarse adjustment ◀▶ fine adjustment : default is the coarse adjustment)
⑤	○ (REC MUTE)	Starts the LD POWER adjustment (from 0) (CD: Playback power, CD-R/RW: Record power)
⑥	▶▶ (F SCAN)	Move the pickup to outer periphery of the disc
⑦	◀◀ (R SCAN)	Move the pickup to inner periphery of the disc
⑧	◀◀▶▶ (JOG ±)	Adjustment value setting
⑨	ENTER(JOGDIAL PUSH)	Adjustment data register
⑪	ERASE	Disc specification switch
⑫	DISPLAY	Adjustment from the adjustment result stored in the EEPROM at adjustment standby. During adjustment, shift to the next power adjustment not to store the current power adjustment value in the EEPROM.

### ■ Servo Adjustment (INPUT SELECTOR: OPTICAL)

Key No.	Assignment Key	Contents of Movement
①	▲ (OPEN/CLOSE)	Tray Open/Close
②	■ (STOP)	Servo OFF
③	▶/   (PLAY/PAUSE)	Spindle servo ON, Tracking servo ON/OFF
④	● (RECORD)	Starts the automatic adjustment of servo adjustment ("FEOS" is displayed.)
⑥	▶▶ (F SCAN)	Move the pickup to outer periphery of the disc
⑦	◀◀ (R SCAN)	Move the pickup to inner periphery of the disc
⑧	◀◀▶▶ (JOG ±)	Adjustment value setting
⑨	ENTER(JOGDIAL PUSH)	Adjustment data register
⑩	FINALIZE	Focus servo ON
⑪	ERASE	Disc specification switch Continue pressing it more than three seconds and initialize the adjustment data.
⑬	SYNCHRO	Execute the average adjustment
⑭	AUTO/MANUAL	Servo adjustment mode feed

## 6.6 LD POWER ADJUSTMENT

**DANGER – LASER RADIATION WHEN OPEN.  
AVOID DIRECT EXPOSURE TO BEAM.**

### 6.6.1 Playback Power Adjustment

<b>Test Point</b>	Pickup objective lens	
<b>Adjustment Value</b>	0.9 mW $\pm$ 0.05 mW	
<b>Purpose</b>	Optimizing playback power of laser diode.	
<b>Symptom when Out of Adjustment</b>	Incapable of disc discrimination, playback, or track searches. Or track jumping.	
Adjustment method		
FL Indication		
<p><b>[Procedure]</b></p> <ol style="list-style-type: none"> <li>1. Enter the Test mode.</li> <li>2. Press the INPUT SELECTOR key so that "ANALOG" appears on the FL display.</li> <li>3. Press the ERASE key so that "CD" appears on the FL display.</li> <li>4. Move the pickup to the position where the power is easy to measure by pressing the SCAN key. ( ◀▶▶▶ )</li> <li>5. Press the RECORD and REC MUTE key in order, and light the LD.</li> <li>6. Turn the JOG key to adjust the power. Switch the coarse adjustment and the fine adjustment by pressing the RECORD key, and adjust it. (initial state is the coarse adjustment.)</li> <li>7. Press the ENTER key to register the adjustment if the power became the adjustment value.</li> <li>8. Press the STOP key to goes out the LD, and adjustment is completed.</li> </ol>		<p>『00000000__x1』</p> <p>『PLAY__*00__』</p> <p>『00000000__x1』</p>

**DANGER – LASER RADIATION WHEN OPEN.  
AVOID DIRECT EXPOSURE TO BEAM.**

### 6.6.2 CD-R Record Power Adjustment

<b>Test Point</b>	Pickup objective lens	
<b>Adjustment Value</b>	R REC : 4.3 mW $\pm$ 0.1 mW (= A value) ; R Over Drive : A value + 0.1mW $\pm$ 0.01 mW	
<b>Purpose</b>	Optimizing CD-R recording power of laser diode.	
<b>Symptom when Out of Adjustment</b>	Incapable of CD-R recording, self-pre recorded CD-R disc playback. Sound pauses, track jumping, or bad RF wave shape (though no failure in playing CD).	
Adjustment method		
FL Indication		
<p><b>[Procedure]</b></p> <ol style="list-style-type: none"> <li>1. Enter the Test mode.</li> <li>2. Press the INPUT SELECTOR key so that "ANALOG" appears on the FL display.</li> <li>3. Press the ERASE key so that "CD-R" appears on the FL display.</li> <li>4. Move the pickup to the position where the power is easy to measure by pressing the SCAN key. ( ◀▶▶▶ )</li> <li>5. Press the RECORD and REC MUTE key in order, and light the LD.</li> </ol> <p>&lt;Adjustment of CD-R Record Power&gt;</p> <ol style="list-style-type: none"> <li>6. Turn the JOG key to adjust the power. Switch the coarse adjustment and the fine adjustment by pressing the RECORD key, and adjust it. (initial state is the coarse adjustment.)</li> <li>7. Press the PLAY/PAUSE key to register the adjustment if the power became the adjustment value. (assume the power when it was decided by A value) When it is registered, shift to the Overdrive power adjustment automatically.</li> </ol> <p>&lt;Adjustment of CD-R Overdrive Power&gt;</p> <ol style="list-style-type: none"> <li>8. Turn the JOG key to adjust the power. Switch the coarse adjustment and the fine adjustment by pressing the RECORD key, and adjust it. (initial state is the coarse adjustment.)</li> <li>9. Press the ENTER key to register the adjustment if the power became the adjustment value.</li> <li>10. Press the STOP key to goes out the LD, and adjustment is completed.</li> </ol>		<p>『00000000__x1』</p> <p>『R_REC__*0000』</p> <p>『R_OD__*0000』</p> <p>『00000000__x1』</p>

**DANGER – LASER RADIATION WHEN OPEN.  
AVOID DIRECT EXPOSURE TO BEAM.**

### 6.6.3 CD-RW Record Power Adjustment

<b>Test Point</b>	Pickup objective lens	
<b>Adjustment Value</b>	RW Bias : 2.3 mW ± 0.05 mW, RW Rec : 3.2 mW ± 0.05 mW, RW Erase : 5.2 mW ± 0.1 mW	
<b>Purpose</b>	Optimizing CD-RW recording power of laser diode.	
<b>Symptom when Out of Adjustment</b>	Incapable of CD-RW recording, self-pre recorded CD-RW disc playback. Sound pauses, track jumping, or bad RF wave shape (though no failure in playing CD).	
	<b>Adjustment method</b>	<b>FL Indication</b>
	<p><b>[Procedure]</b></p> <ol style="list-style-type: none"> <li>1. Enter the Test mode.</li> <li>2. Press the INPUT SELECTOR key so that "ANALOG" appears on the FL display.</li> <li>3. Press the ERASE key so that "CD-RW" appears on the FL display.</li> <li>4. Move the pickup to the position where the power is easy to measure by pressing the SCAN key. ( ◀▶▶▶ )</li> <li>5. Press the RECORD and REC MUTE key in order, and light the LD.</li> </ol> <p>&lt;Adjustment of CD-RW BIAS Power&gt;</p> <ol style="list-style-type: none"> <li>6. Turn the JOG key to adjust the power. Switch the coarse adjustment and the fine adjustment by pressing the RECORD key, and adjust it. (initial state is the coarse adjustment.)</li> <li>7. Press the PLAY/PAUSE key to register the adjustment if the power became the adjustment value. When it is registered, shift to the CD-RW Record Power Adjustment automatically.</li> </ol> <p><b>Note:</b> In the CD-RW Bias Power Adjustment, in the case that the power is over 2.3 mW when the LD lighted, do not need to perform the Bias Power Adjustment. Set adjustment value of the CD-RW record power to + 0.9mW ± 0.05mW against the power in LD lighting then.</p> <p>&lt;Adjustment of CD-RW Record Power&gt;</p> <ol style="list-style-type: none"> <li>8. Turn the JOG key to adjust the power. Switch the coarse adjustment and the fine adjustment by pressing the RECORD key, and adjust it. (initial state is the coarse adjustment.)</li> <li>9. Press the PLAY/PAUSE key to register the adjustment if the power became the adjustment value. When it is registered, shift to the CD-RW Erase Power Adjustment automatically.</li> </ol> <p>&lt;Adjustment of CD-RW Erase Power&gt;</p> <ol style="list-style-type: none"> <li>10. Turn the JOG key to adjust the power. Switch the coarse adjustment and the fine adjustment by pressing the RECORD key, and adjust it. (initial state is the coarse adjustment.)</li> <li>11. Press the ENTER key to register the adjustment if the power became the adjustment value.</li> <li>12. Press the STOP key to goes out the LD, and adjustment is completed.</li> </ol>	
		<p>『 0 0 0 0 0 0 0 0 ____ x 1 』</p> <p>『 R w B I A S ____ * 0 0 0 0 』</p> <p>『 R w R E C ____ * 0 0 0 0 』</p> <p>『 R w E R A S ____ * * * * * 』</p> <p>『 0 0 0 0 0 0 0 0 ____ x 1 』</p>

**Cautions:**

- (1) All the reading values of power meter of this adjustment are values with an average.
- (2) How to confirm the adjustment value:  
When enter the power adjustment mode, enter it by pressing the RECORD and DISPLAY keys in order.  
Furthermore, can confirm the adjustment value of each power stored in EEPROM by switching the DISPLAY key.  
However, RW cannot see all adjustment results. Use DAC the same as erase power in the Bias Power Adjustment, and perform the adjustment of record power while outputting the setting value of erase power decided in the Bias Power Adjustment. And perform the Erase Power Adjustment while outputting the setting value of the record power.  
Therefore, the value of Bias Power Adjustment does not remain after adjustment of the erase power. (as for the displayed adjustment value, erase power is the same as bias power.)  
It is only erase power that can confirm the adjustment result with the power meter among power of RW.  
As for the value of Record Power Adjustment, only setting numeric value is readable, but output power becomes the same as the erase power.  
Bias power cannot confirm the setting value, too. Be not used during actual record operations either.

## 6.7 SERVO ADJUSTMENT

### ■ MANUAL ADJUSTMENT

#### 6.7.1 Preparations

1. Enter the TEST mode.
2. Press the INPUT SELECTOR key so that "OPTICAL" appears on the FL display.
3. Press the ERASE key more than three seconds to initialize it.
4. Press the SYNCHRO key to perform the average process.  
 → "OPTICAL" disappears on the FL display when completed.

#### 6.7.2 Focus Offset Adjustment

<b>Test Point</b>	CN102-pin 8 (Focus err)	
<b>Adjustment Value</b>	0 mV ± 30 mV	
<b>Purpose</b>	Optimizing DC offset voltage of focus-error amplifier.	
<b>Symptom when Out of Adjustment</b>	Focus-in does not function, or bad RF wave shape.	
<b>Adjustment method</b>		<b>FL Indication</b>
<p><b>[Procedure]</b></p> <ol style="list-style-type: none"> <li>1. Monitor the FOCUS ERROR waveform with VC.</li> <li>2. Adjust the JOG key so that FE offset becomes zero.</li> <li>3. Press the ENTER key to register the adjustment.</li> </ol>		<p>『FEOS__00__』</p> <p>『FEOS__*_*_*?』</p> <p>『FEOS__*_*_*__』</p>

#### 6.7.3 SRFO Offset Adjustment

<b>Test Point</b>	CN102-pin 2 (RF)	
<b>Adjustment Value</b>	0 mV ± 30 mV	
<b>Purpose</b>	Optimizing DC offset voltage of RFDC output circuit when recording.	
<b>Symptom when Out of Adjustment</b>	Recording does not function.	
<b>Adjustment method</b>		<b>FL Indication</b>
<p><b>[Procedure]</b></p> <ol style="list-style-type: none"> <li>1. Press the AUTO/MANUAL key and shift to the SRFO Offset Adjustment.</li> <li>2. Monitor the RFDC waveform with VC.</li> <li>2. Adjust the JOG key so that RFDC offset becomes zero.</li> <li>3. Press the ENTER key to register the adjustment.</li> </ol>		<p>『SRFOS__00__』</p> <p>『SRFOS__*_*_*?』</p> <p>『SRFOS__*_*_*__』</p>

### 6.7.4 RFOM Offset Adjustment

<b>Test Point</b>	CN102-pin 2 (RF)
<b>Adjustment Value</b>	0 mV ± 30 mV
<b>Purpose</b>	Optimizing DC offset voltage of RFDC output circuit when playing back.
<b>Symptom when Out of Adjustment</b>	Focus-in does not function, incapable of searching, or track jumping.
Adjustment method	
<p><b>[Procedure]</b></p> <ol style="list-style-type: none"> <li>1. Press the AUTO/MANUAL key and shift to the RFOM Offset Adjustment.</li> <li>2. Monitor the RFDC waveform with VC.</li> <li>2. Adjust the JOG key so that RFDC offset becomes zero.</li> <li>3. Press the ENTER key to register the adjustment.</li> </ol>	<p>『RFOMO_00__』</p> <p>『RFOMO_**_?』</p> <p>『RFOMO_**__』</p>

### 6.7.5 MPP Offset Adjustment

<b>Test Point</b>	CN102-pin 4 (MPP)
<b>Adjustment Value</b>	0 mV ± 50 mV
<b>Purpose</b>	Optimizing DC offset voltage of main signal output circuit.
<b>Symptom when Out of Adjustment</b>	Playback does not function, incapable of searching, or track jumping.
Adjustment method	
<p><b>[Procedure]</b></p> <ol style="list-style-type: none"> <li>1. Press the AUTO/MANUAL key and shift to the MPP Offset Adjustment.</li> <li>2. Monitor the MPP waveform with VC.</li> <li>2. Adjust the JOG key so that MPP offset becomes zero.</li> <li>3. Press the ENTER key to register the adjustment.</li> </ol>	<p>『MPPOS_00__』</p> <p>『MPPOS_**_?』</p> <p>『MPPOS_**__』</p>



### 6.7.6 SPP Offset Adjustment

<b>Test Point</b>	CN102-pin 3 (MPX)
<b>Adjustment Value</b>	0 mV ± 50 mV
<b>Purpose</b>	Optimizing DC offset voltage of sub-signal output circuit.
<b>Symptom when Out of Adjustment</b>	Playback does not function, incapable of searching, or track jumping.
Adjustment method	
<p><b>[Procedure]</b></p> <ol style="list-style-type: none"> <li>1. Press the AUTO/MANUAL key and shift to the SPP Offset Adjustment.</li> <li>2. Monitor the MPX waveform with VC.</li> <li>2. Adjust the JOG key so that SPP offset becomes zero.</li> <li>3. Press the ENTER key to register the adjustment.</li> </ol>	<p>『S P P O S _ 0 0 _ _』</p> <p>『S P P O S _ * * _ ?』</p> <p>『S P P O S _ * * _ _』</p>

### 6.7.7 Tracking Gain adjustment

<b>Test Point</b>	CN102-pin 3 (MPX)
<b>Adjustment Value</b>	Minimize (MPP+SPP)
<b>Purpose</b>	Matching gains of pickup main signal output and sub-signal output.
<b>Symptom when Out of Adjustment</b>	Playback does not function, or incapable of searching.
Adjustment method	
<p><b>[Procedure]</b></p> <ol style="list-style-type: none"> <li>1. Press the AUTO/MANUAL key and shift to the Tracking Gain (MS MIX) Adjustment.</li> <li>2. Move the Pickup to center of the disc by pressing the SCAN key. ( ◀▶ )</li> <li>3. Monitor the MPX signal and set a CD disc.</li> <li>4. Press the FINALIZE key to FOCUS IN.</li> <li>5. Press the PLAY/PAUSE key to turn the SPINDLE. (CAV)</li> <li>6. Adjust the JOG key so that MPX waveform (MPP+SPP) becomes minimum.</li> <li>7. Press the ENTER key to register the adjustment.</li> <li>8. Press the STOP key to stop the disc rotation.</li> </ol>	<p>『S P P G _ _ 7 0 _ _』</p> <p>『S P P G _ _ * * _ ?』</p> <p>『S P P G _ _ * * _ _』</p>

### 6.7.8 MPP Offset Readjustment

<b>Test Point</b>	CN102-pin 5 (Tracking err)	
<b>Adjustment Value</b>	0 mV ± 50 mV	
<b>Purpose</b>	Optimizing DC offset voltage of tracking-error output circuit.	
<b>Symptom when Out of Adjustment</b>	Playback does not function, incapable of searching, or track jumping.	
	<b>Adjustment method</b>	<b>FL Indication</b>
<b>[Procedure]</b>	<ol style="list-style-type: none"> <li>1. Press the AUTO/MANUAL key and shift to the MPP Offset Readjustment. (Press the AUTO/MANUAL key several times to appear the right indication.)</li> <li>2. Monitor the TE waveform with VC. Be careful with monitoring TE waveform instead of MPP waveform in the readjustment !</li> <li>3. Adjust the JOG key so that TE offset becomes zero.</li> <li>4. Press the ENTER key to register the adjustment.</li> </ol>	<p>『M P P O S _ * * _ _』</p> <p>『M P P O S _ * * _ ?』</p> <p>『M P P O S _ * * _ _』</p>
	<p>The diagram shows a vertical connector labeled CN102. Two pins are highlighted: pin 5, labeled 'TE', and pin 6, labeled 'VC'. Both pins are connected to a single input of a '10: 1 probe'. The other end of the probe is connected to the input of an 'Oscilloscope'.</p>	

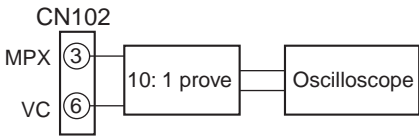
### 6.7.9 Focus Bias Adjustment

<b>Test Point</b>	CN102-pin 2 (RF)
<b>Adjustment Value</b>	Minimize jitter value
<b>Purpose</b>	Optimizing DC offset voltage of focus servo loop circuit including pickup.
<b>Symptom when Out of Adjustment</b>	Focus-in does not function, sound pauses, bad RF wave shape, or incapable to playback some discs.
Adjustment method	
<p><b>[Procedure]</b></p> <ol style="list-style-type: none"> <li>1. Press the AUTO/MANUAL key and shift to the Focus Bias Adjustment.</li> <li>2. Press the SYNCHRO key to perform the average process.                      ➔ "OPTICAL" disappears on the FL display when completed.</li> <li>3. Move the Pickup to center of the disc by pressing the SCAN key. ( ◀▶ )</li> <li>4. Monitor the jitter value and set a CD disc. (use the jitter meter)</li> <li>5. Press the FINALIZE key to FOCUS IN.</li> <li>6. Press the PLAY/PAUSE key to turn the SPINDLE. (CAV)</li> <li>7. Press the PLAY/PAUSE key to TRACKING ON. (EFM CLV)</li> <li>8. Adjust the JOG key so that jitter value becomes minimum.</li> <li>9. Press the ENTER key to register the adjustment.                      ➔ Shift to the RFDC Level Adjustment automatically.</li> <li>10. Adjustment is completed automatically.                      ➔ Each display the reason that became abnormal when adjustment was not completed normally.                      When did not converge in limit of adjustment possibility                      (when it became the lowest level)                      When failed in writing to the EEPROM</li> <li>11. Press the STOP key to stop the unit.</li> </ol> <p><b>Caution:</b>                      In this adjustment, shift to the RFDC Adjustment when pressing the ENTER key before step 9, and there is it when completed in normal on the indication.                      However, must not omit operation of steps 7 from 5 because RFDC is not adjusted to normal when pressing the ENTER key with the state that steps 7 from 5 are not executed.</p> <div style="text-align: center;"> <pre>                     graph LR                     subgraph CN102                     RF[RF ②]                     VC[VC ⑥]                     end                     RF --- Probe[10:1 probe]                     VC --- Probe                     Probe --- Oscilloscope[Oscilloscope]                     </pre> </div>	<p style="text-align: center;">FL Indication</p> <p>『 F B I A S _ 0 0 _ _ 』</p> <p>『 F B I A S _ * * _ ? 』                      『 F B I A S _ * * _ _ 』                      『 R F D C _ * * _ _ 』                      『 R F D C _ _ A D J _ O K 』</p> <p>『 R F D C _ _ A D J _ N G 』</p> <p>『 R F D C _ _ E E P _ N G 』                      『 F B I A S _ * * _ _ 』</p>

- The arbitrary value that "\*" "\*" modified it by adjustment.
- "?" is not displayed in the point that selected an item with the AUTO/MANUAL key, and blink when changes setting value by the input of the JOG key. Press the ENTER key to register the setting value, and disappear the FL indication that the setting value is stored in the EEPROM by normal.

■ AUTOMATIC ADJUSTMENT

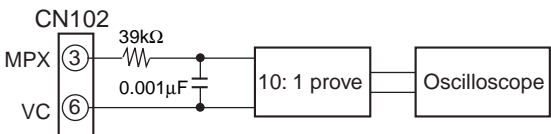
6.7.10 Preparation

<b>Test Point</b>	CN102-pin 3 (MPX)	
<b>Discs to be Used</b>	CD test disc (STD-903)	
<b>Method</b>		<b>FL Indication</b>
<p><b>[Procedure]</b></p> <ol style="list-style-type: none"> <li>Press the INPUT SELECTOR key so that "OPTICAL" appears on the FL display.                      ➔ If it was not displayed the Focus Offset Adjustment, press the AUTO/MANUAL key and shift to the Focus Offset Adjustment.</li> <li>Monitor the MPX signal with VC and set a CD disc.</li> </ol> 		『 F E O S ___ * * ___ 』

6.7.11 Automatic Adjustment Start

<b>Method</b>	<b>FL Indication</b>
<p><b>[Procedure]</b></p> <ol style="list-style-type: none"> <li>Press the RECORD key to start the automatic adjustment.                      ➔ Execute it from "6.7.1 preparations" to "6.7.6 SPP Offset Adjustment" of the Manual Adjustment automatically. And stop by the state that selected an item of next "6.7.7 Tracking Gain Adjustment" once.</li> </ol>	<p>『 F E O S ___ 0 0 ___ ? 』</p> <p>『 S P P G ___ 7 0 ___ 』</p>

6.7.12 Tracking Gain Adjustment

<b>Test Point</b>	CN102-pin 3 (MPX)	
<b>Adjustment Value</b>	Minimize (MPP + SPP)	
<b>Purpose</b>	Matching gains of pickup main signal output and sub-signal output.	
<b>Symptom when Out of Adjustment</b>	Playback does not function, or incapable of searching.	
<b>Adjustment method</b>		<b>FL Indication</b>
<p><b>[Procedure]</b></p> <ol style="list-style-type: none"> <li>Move the Pickup to center of the disc by pressing the SCAN key. ( ◀▶ )</li> <li>Monitor the MPX signal with VC and set a CD disc.</li> <li>Press the FINALIZE key to FOCUS IN.</li> <li>Press the PLAY/PAUSE key to turn the SPINDLE. (CAV)</li> <li>Adjust the JOG key so that MPX waveform (MPP+SPP) becomes minimum.</li> <li>Press the ENTER key to register the adjustment.                      ➔ Stop the disc rotation and Excute "6.7.8 MPP Offset Readjustment" automatically. And select an item of next "6.7.9 Focus Bias Adjustment", and stop with the state completed to average processing.</li> </ol> 		<p>『 S P P G ___ * * ___ ? 』</p> <p>『 S P P G ___ * * ___ 』</p> <p>『 F B I A S _ 0 0 ___ 』</p>

### 6.7.13 Focus Bias Adjustment

<b>Test Point</b>	CN102-pin 2 (RF)
<b>Adjustment Value</b>	Minimize jitter value
<b>Purpose</b>	Optimizing DC offset voltage of focus servo loop circuit including pickup.
<b>Symptom when Out of Adjustment</b>	Focus-in does not function, sound pauses, bad RF wave shape, or incapable to playback some discs.
Adjustment method	
FL Indication	
<p><b>[Procedure]</b></p> <ol style="list-style-type: none"> <li>1. Move the Pickup to center of the disc by pressing the SCAN key. ( ◀▶ )</li> <li>2. Monitor the jitter value and set a CD disc. (use the jitter meter)</li> <li>3. Press the FINALIZE key to FOCUS IN.</li> <li>4. Press the PLAY/PAUSE key to turn the SPINDLE. (CAV)</li> <li>5. Press the PLAY/PAUSE key to TRACKING ON. (EFM CLV)</li> <li>6. Adjust the JOG key so that jitter value becomes minimum.</li> <li>7. Press the ENTER key to register the adjustment.             <ul style="list-style-type: none"> <li>➔ Shift to the RFDC Level Adjustment automatically.</li> </ul> </li> <li>8. Adjustment is completed automatically.             <ul style="list-style-type: none"> <li>➔ Each display the reason that became abnormal when adjustment was not completed normally.                 <ul style="list-style-type: none"> <li>When did not converge in limit of adjustment possibility (when it became the lowest level)</li> <li>When failed in writing to the EEPROM</li> </ul> </li> </ul> </li> <li>9. Press the STOP key to stop the operation.</li> </ol> <p><b>Caution:</b></p> <p>In this adjustment, shift to the RFDC Adjustment when pressing the ENTER key before step 7, and there is it when completed in normal on the indication.</p> <p>However, must not omit operation of steps 5 from 3 because RFDC is not adjusted to normal when pressing the ENTER key with the state that steps 5 from 3 are not executed.</p>	
<pre> graph LR     subgraph CN102         RF[RF 2]         VC[VC 6]     end     RF --- P1(( ))     VC --- P2(( ))     P1 --- P2     P1 --- P2 --- Probe[10:1 probe]     Probe --- Oscilloscope[Oscilloscope]     </pre>	
<pre> 『 F B I A S _ * * _ ? 』 『 F B I A S _ * * _ 』 『 R F D C _ * * _ 』 『 R F D C _ _ A D J _ O K 』  『 R F D C _ _ A D J _ N G 』  『 R F D C _ _ E E P _ N G 』 『 F B I A S _ * * _ 』             </pre>	

How to execute the automatic adjustment once again after the automatic adjustment is completed:

1. Press the STOP key to stop the disc rotation. (servo OFF)
2. Press the AUTO/MANUAL key and shift to the Focus Offset adjustment.
3. Press the RECORD key to start the automatic adjustment.

Adjust from "6.7.11 automatic Adjustment Start" to "6.7.13 Focus Bias Adjustment".

Press the STOP key when stops execution of the automatic adjustment on the way and stop processing. Then return to the state of "6.7.10 Preparations" and stop the operation.

## <Pickup replacement repair, the final check inspection method after adjustment>

Disc required:

CD-R disc

\* [STD-R07(PVC:RDD-74B,RDD-74BJ)]

[STD-R08(PVC:RDD-74,RDD-74U)]

or equivalent

CD-RW disc

\* [STD-R11(PVC:RDW-74,RDW-74J)]

or equivalent

### [Inspection items]

#### 1. Recording-playback jitter

Method: Measure RF signal (CN102-pin2) by Jitter Meter (Trailing edge).

Specification: 35nS or below.

#### 2. Recording-playback block error

Method: While pushing "MENU/DELETE" key, press "MONITOR" key.

Display: appears in about 4 sec like C1\*\*\*\*\*

Specification: 65 pieces or less

(Press "STOP" key to reset display)

#### 3. Recording-playback ATIP error

Method: While pushing "MENU/DELETE" key, press "TITLE/MODE" key.

Display: appears in about 10 sec like ATIP\*\*\* \*\*

Left 3 digit datum = Total number of errors

Right 3 digit datum = Maximum continuous error number (Specification item)

Specification: Max continuous error (Right side datum) must be 7 pieces or less.

(Press "STOP" key to reset display)

[Warning]

Scratch, dust, fingerprint, etc. on recording disc may cause deterioration of performance. Be careful no to be occurred.

When CD-RW disc is used for measurement, do not use the same position at more than 100 times.

# 7. GENERAL INFORMATION

## 7.1 DIAGNOSIS

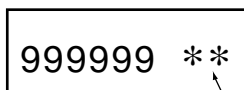
### 7.1.1 ERROR CODE

Error Code Display for Service

The CDR-830 can display the error codes for service.

When the STOP key is held down for about 10 seconds in stop state in Normal mode, an FL display as shown below is obtained.

- Display



Error code Number(2 digits)

Right 2 FL digits : Error code for service

The error code for service is displayed as a number (ERROR NUMBER), which follows a message "CHECK DISC" or "CHECK." For details, see the table below.

Error code table for service

Code	Symptom	Contents of Error	Possible Cause	Checkpoints
L*	The unit stops during the tray open/close operation. (CHECK display)	Improper loading	<ul style="list-style-type: none"> <li>• Defective tray position sensor</li> <li>• Defective loading motor</li> <li>• Improper soldering</li> <li>• Pattern short</li> <li>• Improper power supply</li> </ul>	IC451 (BA5810FP)
E*	The unit stops when PLAY or REC/PAUSE starts. (CHECK display)	Defective slider <ul style="list-style-type: none"> <li>• The pickup cannot be returned to the specified position.</li> </ul>	<ul style="list-style-type: none"> <li>• Disconnected flexible cable</li> <li>• Defective drive circuit</li> <li>• Abnormal power supply</li> <li>• Abnormal TOC position switch</li> <li>• Improper soldering</li> </ul>	S601 (PSG1014) IC451 (BA5810FP) IC401 (CXD2585Q)
P*	The unit does not read the inserted disc, and stops. (CHECK DISC display)	Defect in spindle <ul style="list-style-type: none"> <li>• Disc upside-down.</li> <li>• Dirty or cracked disc</li> <li>• Abnormal disc rotation</li> <li>• No signal obtained from the disc</li> </ul>	<ul style="list-style-type: none"> <li>• Defective spindle motor</li> <li>• Defective spindle drive circuit</li> <li>• Abnormal FG signals</li> <li>• Defective WBL circuit</li> <li>• Defective decoder circuit</li> <li>• Unable to read ATIP or subcode</li> <li>• High error rate</li> </ul>	PC651 (NJL5809K-F1) IC451 (BA5810FP) IC401 (CXD2585Q)
C*	The unit stops before it enters REC/PAUSE mode.	Defects related to the recording laser power <ul style="list-style-type: none"> <li>• Dirty or cracked disc</li> <li>• The optimum recording power cannot be obtained.</li> <li>• Trouble in RF detection.</li> </ul>	<ul style="list-style-type: none"> <li>• Defective laser diode</li> <li>• Trouble in RF detection</li> <li>• Defective RFT RFB circuit</li> <li>• Recording power is not sufficient.</li> <li>• Improper soldering, pattern short</li> <li>• Trouble with power supply</li> <li>• Unable to read ATIP or subcode</li> </ul>	IC201 (PA9007A) IC101 (AK8567) IC308 (TC7S14F)
F*	The unit stops during playback or recording.	Defective pickup <ul style="list-style-type: none"> <li>• Unable to focus because of dirt or crack on the inserted disc.</li> <li>• Unable to output the proper laser power</li> </ul>	<ul style="list-style-type: none"> <li>• Defective laser diode</li> <li>• Defective focus drive circuits</li> <li>• Defective pickup</li> <li>• Improper soldering</li> <li>• Pattern short</li> <li>• Trouble of power supply</li> </ul>	IC451 (BA5810FP) IC401 (CXD2585Q)
A*	The unit stops in a recording-related operation, displaying "CHECK DISC."	<ul style="list-style-type: none"> <li>• Unable to focus</li> <li>• Stop during recording</li> <li>• The unit stops, being obstructed by a dirt or a crack on the disc.</li> </ul>	If any hardware trouble occurs before displaying A* or d*, the unit stops displaying a code other than these codes. Therefore, these service codes are generated only for troubles with the disc.	
d*	The unit stops in a recording related operation, displaying "CHECK DISC." The unit does not read the inserted disc, and stops.			

The indication for \* shows the mechanism mode listed below.

No.	Mechanism Mode	No.	Mechanism Mode	No.	Mechanism Mode
0	PLAY	5	SETUP	A	REC
1	OPEN	6	TOC READ	B	TOC REC
2	STOP	7	—	C	OPC
3	—	8	SEARCH	D	TOC CHECK
4	—	9	REC/PAUSE	E	PMA, ACTUAL PAUSE REC

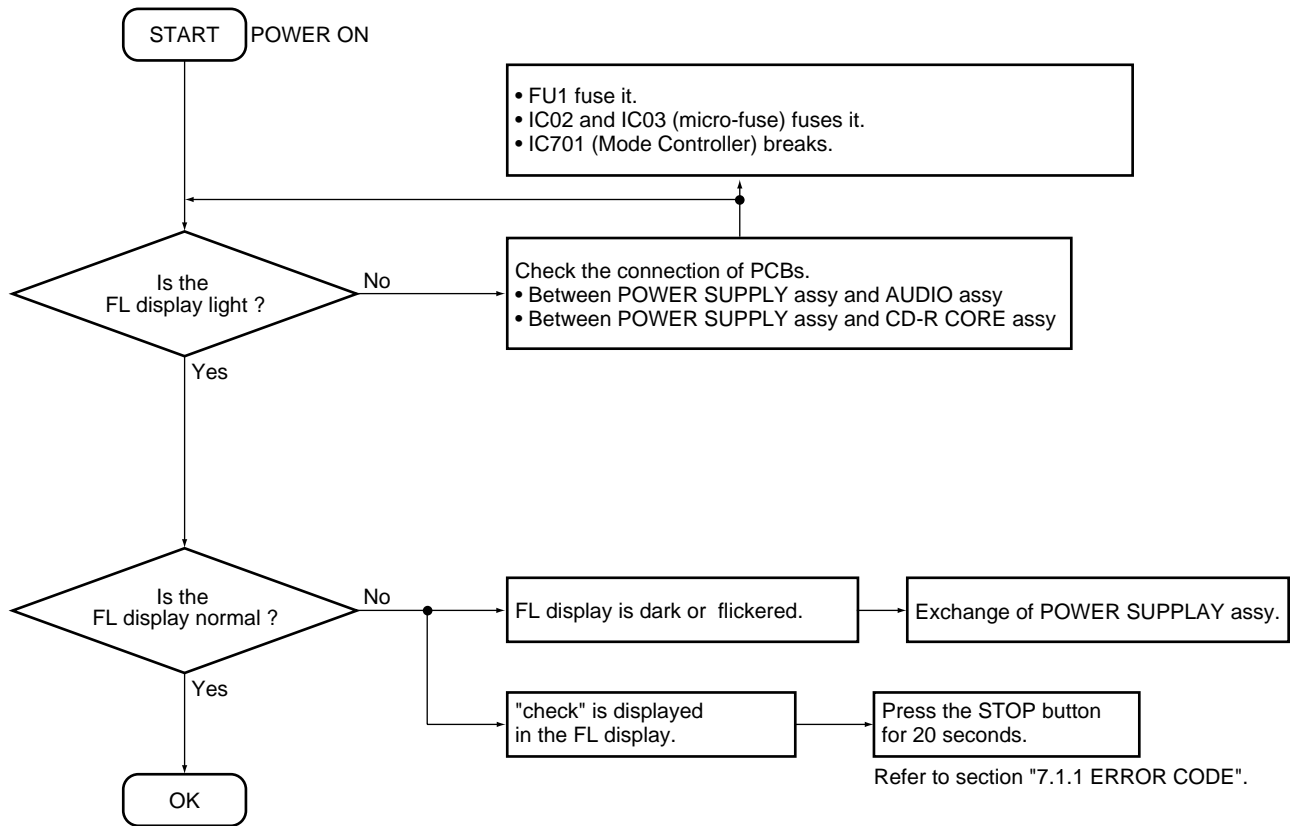
**Error code table for service**

Code	Generation Condition
L*	<p>In the tray opening procedure, if opening action is not completed within 4.5 sec., the procedure moves to closing action. Afterwards if this closing action is not completed within 4.5 sec., the procedure recalls opening action again. This recalled opening action is not also completed within 4.5 sec., the operation halts.</p> <p>In the tray closing procedure, if closing action is not completed within 4.5 sec., the procedure moves to opening action. Afterwards if this opening action is not completed within 4.5 sec., the operation halts.</p>
E*	<p>(1) When the slider moves in REV direction, and if TOC position SW does not become "H" within 3.4 sec., the operation halts.</p> <p>(2) After (1) is completed normally and then the slider moves in the FWD direction, and if TOC position SW does not become "L" within 300 msec., the operation halts.</p> <p>(3) After (2) is completed normally and then the slider moves in the REV direction, and if TOC position SW does not become "H" within 300 msec., the operation halts.</p>
P*	<p>When Q data is not read in 1 sec. and ATIP data is not read in 1 sec. ,the system tries to read them for 3 times. And when even then both Q data and ATIP data are not read, the operation halts, etc.</p>
C*	<p>When reading PCA area, searching to playback starting position is failed, then even this is tried twice and the search is not completed, the operation halts.</p> <p>When writing PCA area, the rotation does not reach to the required speed at writing position, so that writing is not possible to start. Or searching to writing starting position is failed and retried for 19 times, as a result that both are incomplete, then the operation halts.</p>
F*	<p>Once disc discrimination is completed, and focus-in action is failed, then the operation halts.</p>
A*	<p>If the pick-up jump occurs during recording, and not recovered, then the operation halts.</p> <p>If ATIP data is not to be read for 4 sec. during recording, then the operation halts.</p>
d*	<p>If PMA writing is not completed within 60 sec., then the operation halts.</p> <p>If reading of TOC and PMA is failed, or missing information is observed in read data, the error occurs.</p> <p>When to start recording and RF signal exists instead at the end edge boundary of disc, the error occurs.</p>

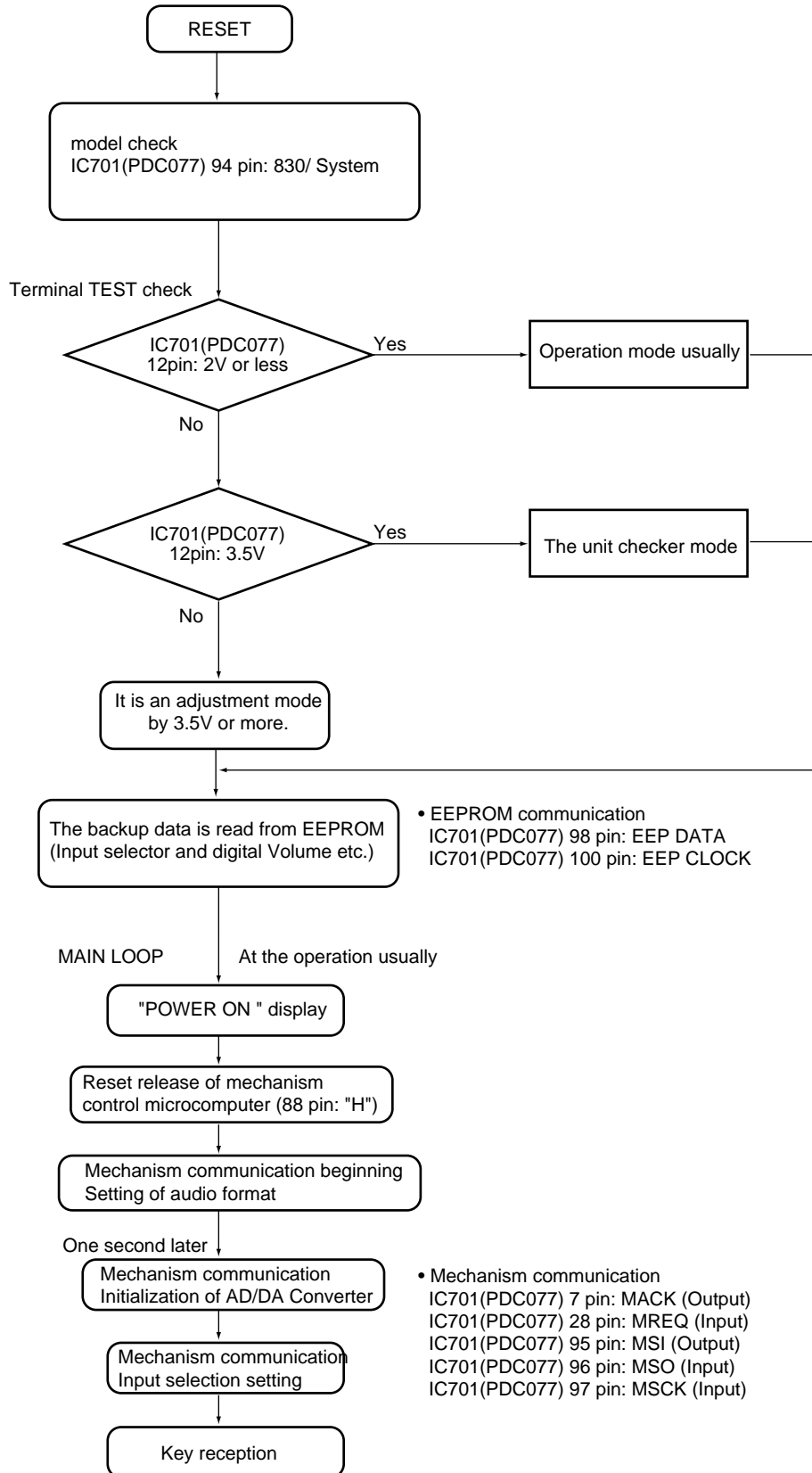


### 7.1.2 TROUBLE SHOOTING

■ Power isn't turn on. FL display isn't light up. FL display is abnormal.



■ Power ON Sequence



### 7.1.3 ERROR MESSAGE "CHECK TEMP"

If recording is operated on CDR-830 at high or low temperature atmosphere, a message "CHECK TEMP" is displayed the operation halts.

This message is displayed to indicate clearly the problem that would probably happen to recording and playback operation if the product is placed on a heating object like an amplifier or in a closed space like a rack in which heating object such as an amplifier causes utmost high temperature, and then if the product is moved into different atmosphere then the problem disappears. The temperature sensor which is placed inside of the product becomes +70°C or higher or -15°C or lower, the message is displayed. Once this is displayed, all the actions stop. In addition, the product itself has its own temperature rise, outside product threshold temperature would be a little lower. And these temperatures are not the specification values that guarantee the operation.

### ■ CLEARNESS of EEPROM ( When you exchange IC709 )

After replacing the EEPROM (IC709 mounted on the system controller), press the SCROLL button and the MENU button simultaneously with no disc loaded to initialize the EEPROM.

\* It's because EEPROM's with some TEXT and CLIP data recorded are supplied as spare parts.

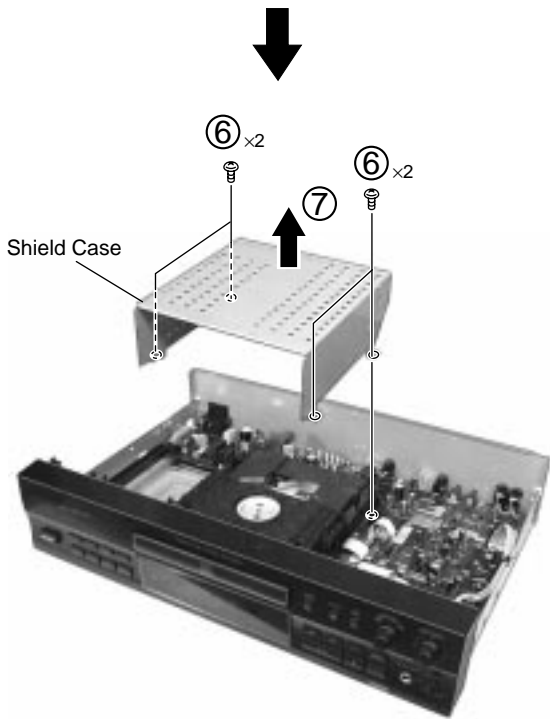
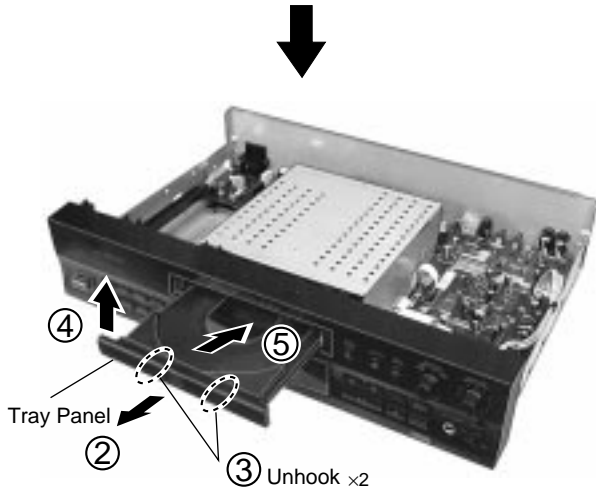
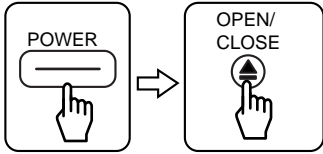
\* Make sure that there is no disc loaded before the EEPROM initialization. If a disc is loaded, the TEXT data memorized in the SRAM will be recorded in the EEPROM at the same time when the tray opens.

### 7.1.4 DISASSEMBLY

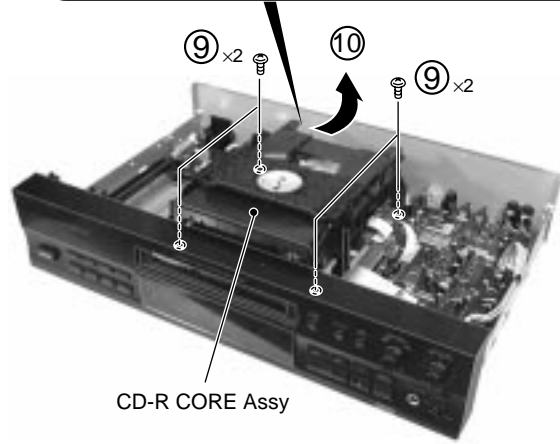
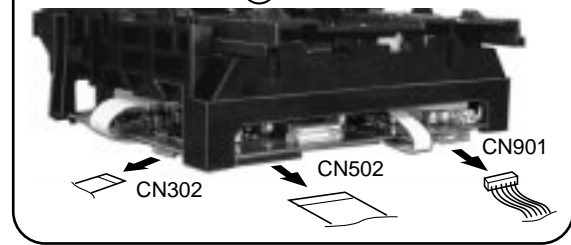
#### ■ CD-R CORE ASSY

① Remove a Bonnet (six screws).

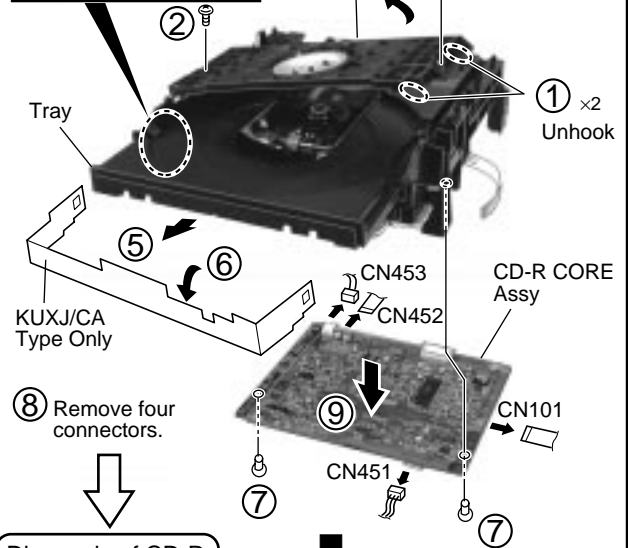
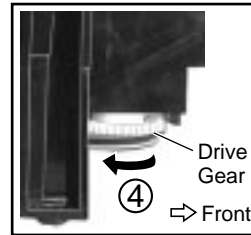
② Tray Open



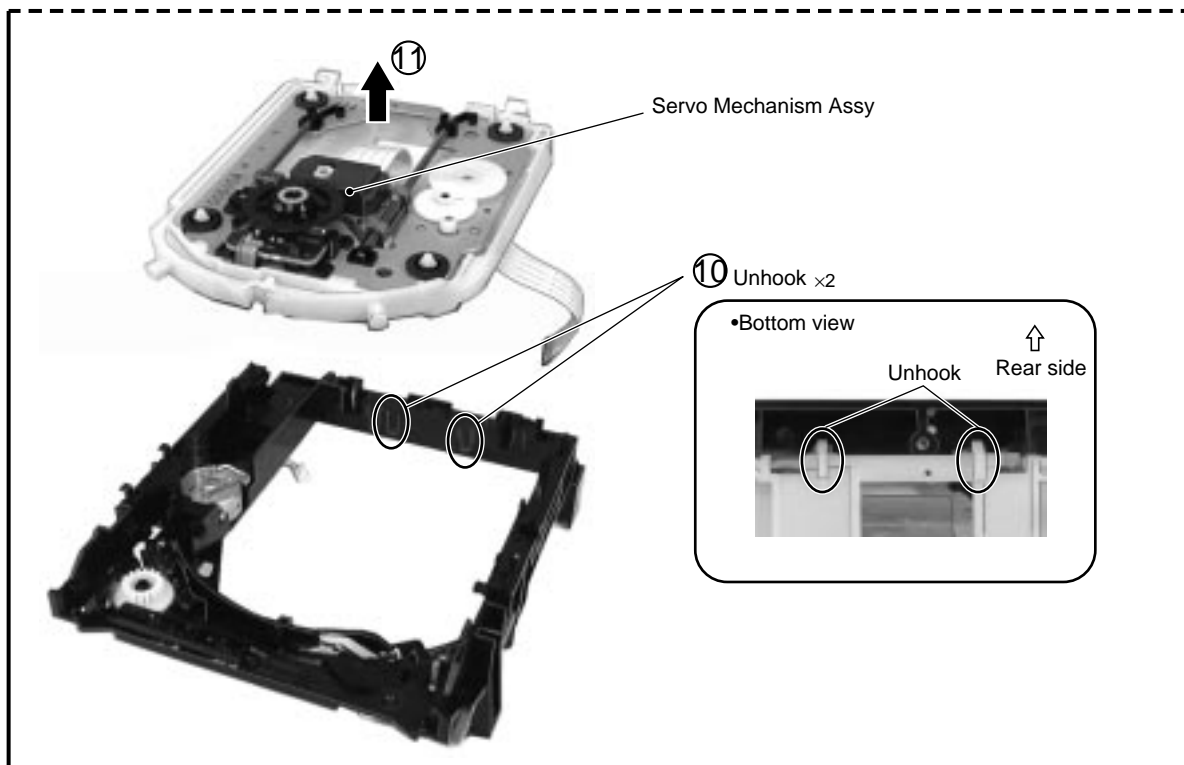
⑧ Remove three connectors.



#### ● Servo Mechanism Block



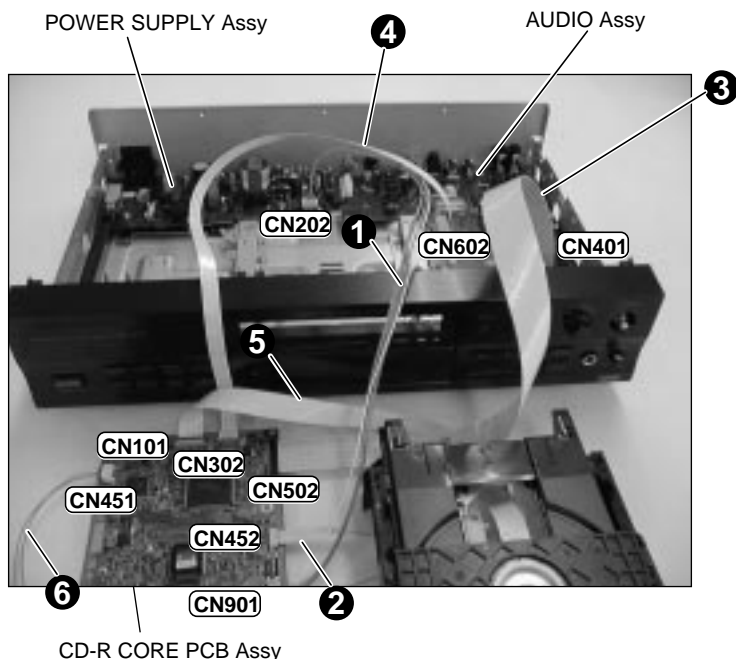
Diagnosis of CD-R CORE Assy



### 7.1.5 DIAGNOSIS OF CD-R CORE ASSY

When diagnosing the CD-R CORE Assy, use the following Flexible Cables and Connector Assys for service.

- ① Remove the CD-R CORE Assy. (Refer to the Disassembly of the CD-R CORE Assy and steps ① to ⑦ of the Servo Mechanism Block.
- ② Replace seven cables (① ~ ⑥) for service and diagnose it.



**• Flexible Cables and Connector Assys for service**  
CD-R CORE PCB Assy ↔ Other Assys

- ① CN901 ↔ CN202 (POWER SUPPLY Assy)  
Connector Assy (6P) : PG06KK-F50
- ② CN452 ↔ CN601 (Servo Mechanism Assy)  
8P FFC : PDD1225
- ③ CN502 ↔ CN401 (AUDIO Assy)  
25P FFC : PDD1225
- ④ CN302 ↔ CN602 (AUDIO Assy)  
9P FFC : PDD1226
- ⑤ CN101 ↔ CN1 (Pickup)  
32P FFC : PDD1224
- ⑥ CN451 ↔ CN101 (LOAB Assy)  
Connector Assy (3P) : PG03KK-50

## 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

PDC069, PE5190, BA5810FP, AK8567, PDC077

## ■ PDC069 (CD-R CORE PCB ASSY : IC501)

## • Encoder IC

## • Pin Function (1/5)

No.	Signal	TYPE	COMMENT
1	DVss	P	Digital system ground (VSS)
2	RA5	0	Address lines for the audio data delay buffer DRAM
3	RA4	0	
4	RA3	0	
5	RA2	0	
6	RA1	0	
7	RA0	0	
8	DVdd	P	Digital system power supply (5V)
9	DVss	P	Digital system ground (VSS)
10	I07	B	Data lines with pull-up resistor for the audio data delay buffer DRAM
11	I06	B	
12	I05	B	
13	I04	B	
14	I03	B	
15	I02	B	
16	DVdd	P	Digital system power supply (3.3V)
17	DVss	P	Digital system ground (VSS)
18	I01	B	Data lines with pull-up resistor for the audio data delay buffer DRAM
19	I00	B	
20	I015	B	
21	I014	B	
22	I013	B	
23	I012	B	
24	I011	B	
25	I010	B	
26	I09	B	
27	I08	B	
28	DVdd	P	Digital system power supply (5V)
29	ENCCK1T	0	1T clock output for write strategy (4.3218MHz when x1-speed)
30	EFMIN	I	EFM signal for recoding directly.
31	PUSEL	I	Pickup select (0 : SANYO method, 1 : PIONEER method)
32	EFMG	0	EFM output control signal
33	WRITE	I	Write Strategy signal control
34	DVdd	P	Digital system power supply (3.3V)
35	DVss	P	Digital system ground (VSS)
36	CMOD	0	Write Strategy output signal
37	REWLDON	0	
38	WLDON	0	
39	CFREQ	0	Servo sampling pulse output
40	SSP2	0	

## ●Pin Function (2/5)

No.	Signal	TYPE	COMMENT
41	SSP1	0	Servo sampling pulse output
42	RAPC	0	Laser sampling pulse output
43	WAPC	0	
44	H11TO	0	Running OPC Sampling pulse
45	LDH	0	Recoding LD control signal
46	ATEST3	0	Analog block test output
47	ATEST1	0	
48	WDAT	0	Recoding LD control signal
49	NWDAT	0	Recoding LD control signal
50	DVdd	P	Digital system power supply (5V)
51	DVss	P	Digital system ground (Vss)
52	AVdd	P	Analog system power supply 3.3V (Write Strategy)
53	AVss	P	Analog system ground (Vss)
54	R1	I	Write Strategy analog signal
55	VCNT1	I	
56	MDC1	0	
57	PD01	0	
58	ENCCKOUT	0	RF processor clock output (34.5744MHz or 17.2872MHz)
59	CDCKOUT2	0	CD decoder clock output (33.8688MHz or 16.9344MHz)
60	CDCKOUT	0	CD decoder clock output (33.8688MHz or 16.9344MHz)
61	DVss	P	Digital system ground (Vss)
62	DACCKOUT	0	External D/A converter clock output (33.8688MHz or 16.9344MHz)
63	ADCCKOUT	0	External A/D converter clock output (33.8688MHz or 16.9344MHz)
64	DVdd	P	Digital system power supply (5V)
65	AUXMCKIN	I	External clock input
66	XTALCK	I	Crystal oscillator circuit input (33.8688MHz)
67	XTAL	0	Crystal oscillator circuit output
68	AVdd	P	Analog system power supply 3.3V (PLL)
69	AVss	P	Analog system ground(Vss) (PLL)
70	PD00	0	PLL analog signals
71	VCNT0	I	
72	R0	I	
73	ROUT	0	Internal D/A converter output
74	AVdd	P	Analog system power supply 5V (Internal D/A converter)
75	AVss	P	Analog system ground(Vss) (Internal D/A converter)
76	LOUT	0	Internal D/A converter output
77	DACBCK	0	Internal D/A converter BCK signal output
78	DACDATA	0	Internal D/A converter DATA signal output
79	DACLRCK	0	Internal D/A converter LRCK signal output
80	DVdd	P	Digital system power supply 3.3V
81	DVss	P	Digital system ground (Vss)
82	ADCSTBY	0	External A/D converter standby signal output
83	ADCBCK	0	External A/D converter BCK signal output
84	ADCLRCK	0	External A/D converter LRCK signal output
85	ADCDATA	I	External A/D converter DATA signal input
86	DVdd	P	Digital system power supply 5V
87	DVss	P	Digital system ground (Vss)
88	AUXBCK	I	External BCK signal input

## ●Pin Function (3/5)

No.	Signal	TYPE	COMMENT
89	AUXDATA	I	External DATA signal input
90	AUXLRCK	I	External LRCK signal input
91	AUXTX	I	DIT DATA signal input
92	Reserve0	0	Reserved
93	Reserve1	0	
94	Reserve2	0	
95	Reserve3	0	
96	Reserve4	0	
97	Reserve5	0	
98	Reserve6	0	
99	Reserve7	0	
100	Reserve8	0	
101	Reserve9	0	
102	DVdd	P	Digital system power supply (5V)
103	SRSTNBY	I	Internal SRAM standby signal input.
104	AVdd	P	Analog system power supply(3.3V) (Internal SRAM)
105	AVss	P	Analog system power supply(Vss) (Internal SRAM)
106	MON1	0	Monitor outputs
107	MON2	0	
108	MON3	0	
109	MON4	0	
110	TEST0	I	TEST signal inputs These pins must be tied to ground (VSS) in normal operation.
111	TEST1	I	
112	TEST2	I	
113	TEST3	I	
114	TEST4	I	
115	TESTIN	I	
116	TESTOUT	0	TEST signal output : This pin must be open in normal operation.
117	DITOUT	0	DIT data output
118	DVdd	P	Digital system power supply (3.3V)
119	DVss	P	Digital system ground (Vss)
120	DVdd	P	Digital system power supply (5V)
121	DVss	P	Digital system ground (Vss)
122	ZRFDET	I	RF detection signal input
123	EFMSYNC	0	7.35kHz(x1)
124	SUBSYNC	0	Subcode synchronization signal
125	FGIN	I	CAV servo FG input
126	SPDO	0	Spindle output
127	CRCOK	0	ATIP-CRC checked result output
128	ATIPSYNC	0	ATIPSYNC signal output
129	BIDATA	B	Bi-phase data input and output signal
130	BICLK	B	Bi-phase clock input and output signal
131	WOBBLE	I	WOBBLE Bi-phase signal
132	DVdd	P	Digital system power supply (3.3V)
133	DVss	P	Digital system ground (Vss)
134	CDBCK	I	CD BCK input



## ●Pin Function (4/5)

No.	Signal	TYPE	COMMENT
135	CDDATA	I	CD serial data input
136	CDLRCK	I	CD LRCK input
137	CDTX	I	DIT data input
138	DVdd	P	Digital system power supply (5V)
139	DVss	P	Digital system ground (Vss)
140	ENCERR	O	Encoder error signal output
141	JITERR	O	CJS error signal output
142	DIRERR	O	PLL lock and data error signal output
143	AVss	P	Analog system ground(Vss) (CJS block)
144	AVdd	P	Analog system power supply(3.3V) (CJS block)
145	JITPCO	O	PLL, phase and frequency comparator output
146	JITLPFI	I	PLL, low pass filter input
147	JITLPFO	O	PLL, low pass filter output
148	JITVCOIN	I	PLL, VCO clock input
149	AVss	P	Analog system ground(Vss) (CJS block)
150	AVdd	P	Analog system power supply(5V) (CJS block)
151	DIRRS	I	VCO gain control input
152	DIRVCO	I	VCO free running oscillator frequency control input
153	DIRLPF	O	Loop filter setting
154	AVdd	P	Analog system power supply(3.3V) (DIR block)
155	AVss	P	Analog system ground(Vss) (DIR block)
156	DVdd	P	Digital system power supply (5V)
157	DVss	P	Digital system ground (Vss)
158	DIN1	I	Digital data inputs
159	DIN2	I	
160	DIN3	I	
161	DIN4	I	
162	DVdd	P	Digital system power supply (3.3V)
163	SUA0	I	Command register selection address
164	SUA1	I	
165	SUA2	I	
166	SUA3	I	
167	SUA4	I	
168	SUA5	I	
169	SUA6	I	
170	SUA7	I	
171	ZINT	O	Interrupt request output to the micro controller
172	DVdd	P	Digital system power supply (5V)
173	DVss	P	Digital system ground (Vss)
174	DVdd	P	Digital system power supply (3.3V)
175	DVss	P	Digital system ground (Vss)

## ●Pin Function (5/5)

No.	Signal	TYPE	COMMENT
176	D0	B	Micro controller data lines with Pull up resistor
177	D1	B	
178	D2	B	
179	D3	B	
180	D4	B	
181	D5	B	
182	D6	B	
183	D7	B	
184	ZRD	I	Micro controller data read signal input
185	ZWR	I	Micro controller chip select signal input
186	ZCS	I	Micro controller data write signal input
187	ZRESET	I	System reset
188	DVdd	P	Digital system power supply (3.3V)
189	DVss	P	Digital system ground (Vss)
190	DVdd	P	Digital system power supply (5V)
191	DVss	P	Digital system ground (Vss)
192	Reserve10	0	Reserve
193	Reserve11	0	
194	SBDATA	B	Subcode interface serial data signal
195	CLCK	B	Subcode interface data shift clock signal
196	SFSY	B	Subcode interface frame sync signal
197	SBSY	B	Subcode interface block sync signal
198	DVdd	P	Digital system power supply (5V)
199	DVss	P	Digital system ground (Vss)
200	ZWE	0	Write Enable signal output for the audio data delay buffer DRAM
201	ZRAS	0	RAS signal output for the audio data delay buffer DRAM
202	ZCAS	0	CAS signal output for the audio data delay buffer DRAM
203	ZOE	0	Read Enable signal output for the audio data delay buffer DRAM
204	ZINT2	0	Interrupt request output to the micro controller
205	RA8	0	Address lines for the audio data delay buffer DRAM
206	RA7	0	
207	RA6	0	
208	DVdd	P	

## ■ PE5190D (CD-R CORE PCB ASSY : IC301)

### • Mechanism Control IC

#### ● Pin Function (1/2)

No.	Mark	Pin Name	I/O	Pin Function
1	P32/XCLK0/SCL	MSCK	I/O	Serial transfer clock output of clock synchronous system
2	P33/SO0/SDA	MSO	I/O	Serial transfer data output of clock synchronous system
3	P34/TO0	SREQ	I	Serial hand shake to the system control IC input
4	P35/TO1	MACK	O	Serial hand shake to the system control IC output
5	P36/TO2	EECS	O	Enable output for EEPROM access
6	P37/TO3	XECE	O	Enable output for reading the jig for test
7	XRESET	XRESET	I	Reset input (L: Reset)
8	VDD1	Vdd1	-	+5V
9	X2	X2	-	Crystal input for system clock (32MHz)
10	X1	X1	-	Crystal output for system clock (32MHz)
11	VSS1	Vss1	-	GND
12	P00	APCDAC0	O	NC
13	P01	APCDAC1	O	NC
14	P02	APCDAC2	O	NC
15	P03	PW0	O	Recording laser power monitor Output (0)
16	P04	PW1	O	Recording laser power monitor Output (1)
17	P05	PW2	O	Recording laser power monitor Output (2)
18	P06	PW3	O	Recording laser power monitor Output (3)
19	P07	PW4	O	Recording laser power monitor Output (4)
20	P67/XREFRQ/HLDAK	XRW	O	CD-RWreversing output (CD/CD-R: H, CD-RW: L)
21	P66/XWAIT/HLDRQ	CLOKDEC	O	CLOCK output for CXD2585Q command
22	P65/XWR	XWR	O	Strobe signal output for read operation of the external memory
23	P64/XRD	XRD	O	Strobe signal output for write operation of the external memory
24	P63/A19	XLATDEC	O	Latch output of CXD2585Q command
25	P62/A18	CLOKRF	O	When communicating output AK8567 exclusive use clock (CXD2585 ("H" fixation) (AKCLOCK)
26	P61/A17	DATA	O	CXD2585Q/AK8567 common DATA output
27	P60/A16	XLATRF	O	LATCH output for AK8567 command
28	P57/A15	XTERST	O	Tracking error envelope detection reset output
29	P56/A14	ECLV	O	Spindle servo EFMCLV mode switch output
30	P55/A13	CLV	O	Spindle servo CAV and WOBBLE CLV mode switch output
31	P54/A12	GAINUP	O	GAIN set switch output for CD-RW (CD-RW="H")
32	P53/A11	AGCON	O	WOBBLE extraction AGC circuit ON/OFF switch output
33	P52/A10	CDROPC	O	Signal output for AC circuit control for CD-R running OPC
34	P51/A9	LDON	O	LASER DIODE ON/OFF output (ON="H")
35	P50/A8	LRST	O	Reset output for the servo and digital system ICs (L: Reset)
36	P47/AD7	AD7	O	Data address line
37	P46/AD6	AD6		
38	P45/AD5	AD5		
39	P44/AD4	AD4		
40	P43/AD3	AD3		

## ●Pin Function (2/2)

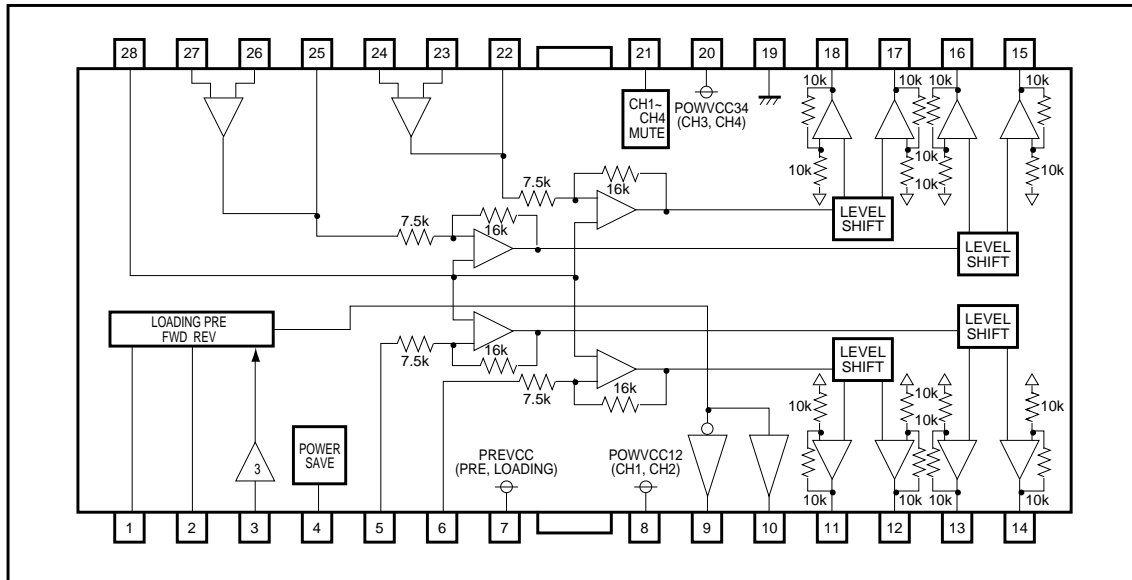
No.	Mark	Pin Name	I/O	Pin Function
41	P42/AD2	AD2	O	Data address line
42	P41/AD1	AD1		
43	P40/AD0	AD0		
44	ASTB/CLKOUT	ASTB	O	External latch signal of lower address signal for external memory access
45	Vss0	GND	-	GNDD
46	TEST	GND	-	GNDD
47	P10/PWM0	VWDSW	O	Laser driver time constant switch output for WRITE (H:ON,L:OFF)
48	P11/PWM1	TMODE	O	TEST MODE output (TEST MODE:H)
49	P12/ASCK2/XSCK2	QCLK	O	CLOCK output CXD2585Q sub-Q reading
50	P13/RXD2/SI2	QDATA	I	DATA output CXD2585Q sub-Q reading
51	P14/TXD2/SO2	N.C	O	-
52	P15	XRFDET	I	EFM playback RF detection
53	P16	FOK	I	FOCUS OK input (L: Focus OK)
54	P17	XCD	O	CD/other switch output (CD="L")
55	Vdd0	Vdd0	-	+5V
56	P70/ANI0	MPXTEST	I(A)	AK8567 MPX input (various data for servo system adjustment)
57	P71/ANI1	WRFPH	I(A)	A OUT input (running OPC)
58	P72/ANI2	WRFSH	I(A)	B OUT input (running OPC)
59	P73/ANI3	TERM	I(A)	Temperature sensor input
60	P74/ANI4	RFB	I(A)	Playback RF lower side envelope input
61	P75/ANI5	RFT	I(A)	Playback RF upper part envelope input
62	P76/ANI6	M11	I(A)	CDRMR1 (RF upper part (envelope without coupling) input
63	P77/ANI7	TRAY	I(A)	LOADING POSITION input (OPEN="L")
64	Avdd	Avdd	-	+5V
65	Avref1	Avref1	-	+4.5V
66	Avss	Avss	-	GNDA
67	ANO0	VWDC2	O(A)	CD-R OverDrive/CD-RW record power output (0)
68	ANO1	DA1	O(A)	CD-R OverDrive/CD-RW record power output (1)
69	Avref2	AVref2	-	+4.5V
70	Avref3	AVref3	-	GNDA
71	P20/NMI	XPFAIL	I	Power failure detection
72	P21/INTP0	XINT1	I	The EFM ENCODER SYNC1 detection
73	P22/INTP1	XINT2	I	The EFM ENCODER SYNC1 detection
74	P23/INTP2/C1	ATIPSYNC	I	ATIP FLAME SYNC detection
75	P24/INTP3	SCOR	I	EFM DECODER FLAME SYNC detection
76	P25/INTP4/ASCK	FG	I	SPINDLE FG detection
77	P26/INTP5	SENS	I	SENS input
78	P27/SI0	MSI	I	Synchronous serial transfer data input
79	P30/RXD/SI1	SCLK	O	CLOCK output for SONY CXD2585Q serial READ OUT reading
80	P31/TXD/SO1	N.C	O	-

Note: (A) in item I/O shows "ANALOG".

■ BA5810FP (CD-R CORE PCB ASSY : IC451)

• 5 Channel Driver IC

●Block Diagram



●Pin Function

No.	Pin Name	Pin Function	No.	Pin Name	Pin Function
1	FWD	Input for loading forward	15	V04(+)	Not inverted output of CH4
2	REV	Input for loading reverse	16	V04(-)	Inverted output of CH4
3	LDCONT	Output control terminal for loading	17	V03(+)	Not inverted output of CH3
4	PS	Control terminal for power saving mode	18	V03(-)	Inverted output of CH3
5	IN1	Input of CH1	19	GND	Substrate GND terminal
6	IN2	Input of CH2	20	POWVCC34	power supply input terminal (CH3, CH4)
7	PREVCC	Pre and loading power steps power supply input terminal	21	MUTE	Input for mute control terminal
8	POWVCC12	Power supply input terminal (CH1, CH2)	22	OPOUT3	Output of CH3 OP-AMP
9	VOL(-)	Inverted output of loading	23	OPIN3(-)	Inverting input of CH3 OP-AMP
10	VOL(+)	Not inverted output of loading	24	OPIN3(+)	Not inverting input of CH3 OP-AMP
11	V02(-)	Inverted output of CH2	25	OPOUT4	Output of CH4 OP-AMP
12	V02(+)	Not inverted output of CH2	26	OPIN4(-)	Inverting input of CH4OP-AMP
13	V01(-)	Inverted output of CH1	27	OPIN4(+)	Not inverting input of CH4 OP-AMP
14	V01(+)	Not inverted output of CH1	28	BIAS	Input of Bias-amplifier

## ■ AK8567 (CD-R CORE PCB ASSY : IC101)

• RF Processor

### ● Pin Function (1/2)

Pin Number	Pin Name	I/O	Functions
1	AVDD3	I	Analog Positive Power Source Pin
2	BCENT	O	Center Signal Output Pin
3	PHBETA	O	$\beta$ Signal Top Level Output Pin
4	BHBETA	O	$\beta$ Signal Bottom Level Output Pin
5	PHBTC	O	External Capacitor Connector Pin for PHBETA Droop Rate Setting
6	BHBTC	O	External Capacitor Connector Pin for BHBETA Droop Rate Setting
7	MPP	O	Main Push-Pull Signal Output Pin
8	TEIN	I	Input Pin for Tracking Signal Processing Circuit
9	TE	O	Tracking Error Signal Output Pin
10	FE	O	Focus Error Signal Output Pin
11	SBAD	O	SBAD Signal Output Pin
12	TZCLVL	I	Compare Level Input Pin for Tracking Zero Cross
13	VREF	I/O	Decoupling Pin for Internal Reference Voltage/Reference Voltage Input Pin
14	AGND1	O	Decoupling Pin for Internal Reference Voltage
15	BIAS	O	Bias Resistance Connector Pin (BIAS=4.7k $\Omega$ )
16	VSS	I	Analog Ground Pin
17	FVREF	I	Reference Voltage Input Pin for APC
18	FPDO	I	Laser Monitor Output Pin
19	RREF	I/O	Power Setting Voltage Input Pin for Read APC/Built-in DAC Setting Voltage Output Pin
20	VRDC	O	Laser Driver Control Output Pin for Read
21	VRDCN	I	Laser Driver Control Amp. (-) Pin for Read
22	VRDCN2	I	Laser Driver Time Constant Setting Pin for Read
23	WREF	I/O	Power Setting Voltage Input Pin for Write APC/Built-in DAC Setting Voltage Output Pin
24	WDAO	O	Power Setting for Write APC Built-in DAC Voltage Output Pin
25	AVDD2	I	Analog Positive Power Source Pin
26	AVSS2	I	Analog Ground Pin
27	VWDC	O	Laser Driver Control Output Pin for Write
28	VWDCN2	I	Laser Driver Time Constant Setting Pin for Write
29	VWDCN	I	Laser Driver Control Amp. (-) Pin for Write
30	ATFM	O	Wobble Signal Output Pin
31	AGC1C	O	External Capacitor Connection Pin for AGC1 Response Speed Setting
32	AGC2C	O	External Capacitor Connection Pin for AGC2 Response Speed Setting
33	AGC3C	O	External Capacitor Connection Pin for AGC3 Response Speed Setting
34	AGND2	O	Decoupling Pin for Internal Reference Voltage
35	VSS	I	Analog Ground Pin
36	SGAINDN	I	Gain Switch Control Signal Input Pin
37	GAINUP	I	CD-RW Switch Control Signal Input Pin
38	AGCON	I	Wobble AGC Enable Signal Input Pin ("H"AGC ON, "L"AGC Reset)
39	ATFG	O	ATIP FG (Digital Wobble Signal) Output Pin
40	XTOR	O	Tracking Amplitude Detection Signal Output Pin
41	XTAND	O	Off Tracking Detection Signal Output Pin
42	TZC	O	Tracking Zero Cross Detection Signal Output Pin
43	RECD2	O	Recorded Area Detection Signal Output Pin 2 ("H"Recorded, "L"Unrecorded)
44	RECD1	O	Recorded Area Detection Signal Output Pin 1 ("H"Recorded, "L"Unrecorded)
45	RC	O	RC Signal Output Pin
46	DFCT	O	DFCT Signal Output Pin
47	MIRR	O	MIRR Signal Output Pin
48	MCLK 1	I	Main Clock Input Pin 1 (Input Sine Wave)
49	MCLK 2	I	Main Clock Input Pin 2 (Input Sine Wave)
50	DVSS	I	Digital Ground Pin

## ●Pin Function (2/2)

Pin Number	Pin Name	I/O	Functions
51	DVDD	I	Digital Power Source Pin
52	FOK	O	FOK Signal Output Pin
53	RZC	O	RF Zero Cross Detection Signal Output Pin
54	MPDSH	O	Sample Pulse Input Pin for Main Beam Signal ("H"Sample, "L"Hold)
55	SPDSH	I	Sample Pulse Input Pin for Side Beam Signal ("H"Sample, "L"Hold)
56	RFPDSH	I	Sample Pulse Input Pin for Read APC ("H"Sample, "L"Hold)
57	WFPDSH	I	Sample Pulse Input Pin for Write APC ("H"Sample, "L"Hold)
58	WLDON	I	Write Laser Diode Control Signal Input Pin ("L"Write APC Setting to Zero, "H"Laser Diode ON)
59	RLDON	I	Read Laser Diode Control Signal Input Pin ("L"Read APC Setting to Zero, "H"Laser Diode ON)
60	SPBLVL	I	BLEVEL Signal Sample Pulse Input Pin ("H"Sample, "L"Hold)
61	SPRFTR	I	WRFTR Signal Sample Pulse Input Pin ("H"Sample, "L"Hold)
62	VWDSW	I	Laser Driver Time Constant Switch Control Signal Input Pin for Write ("H"ON, "L"OFF)
63	VRDSW	I	Laser Driver Time Constant Switch Control Signal Input Pin for Read ("H"ON, "L"OFF)
64	RSBETA	I	$\beta$ Measurement Circuit Reset Pin ("H" PHBETA, BHBETA Output to Reset)
65	SCLK	I	Clock Input Pin for Register Setting
66	SDATA	I	Data Input pin for Register Setting
67	XLAT	I	Latch Signal Input Pin for Register Setting
68	XRST	I	Register Reset pin ("L"Initialize Registers)
69	VSS	I	Analog Ground Pin
70	OSTCC	O	External CAP Connector Pin for EQ Output Offset Cancelor fc Setting
71	AGCC	O	External CAP Connector Pin for RFAGC Response Speed Setting
72	PHD2C	O	External CAP Connection Pin for P/H2 Droop Rate Setting
73	RCCMPI	I	Comparator Input Pin for RC Detection
74	PBHO	O	RRF Signal Bottom/Top Level Output Pin
75	AVDD1	I	Analog Positive Power Source Pin
76	AVSS1	I	Analog Ground Pin
77	RRFTOP	O	RRF Signal Peak Level Output Pin
78	RRFBTM	O	RRF Signal Bottom Level Output Pin
79	NC	-	
80	EORF	O	Equalizer Filter Output Pin
81	NC	-	
82	AUX1	I	Auxiliary Input Pin for Signal Monitoring 1
83	AUX2	I	Auxiliary Input Pin for Signal Monitoring 2
84	AUX3	I	Auxiliary Input Pin for Signal Monitoring 3
85	MPXOUT	O	Multiplexer Output Pin for Signal monitoring
86	RRFVC	I	Level Shift Voltage Input Pin for RRF Signal
87	RECDIN	I	RF Input Pin for Recorded Area Detection
88	RRF	O	Read RF Signal Output Pin
89	WRF	O	Write RF Signal Output Pin
90	VSS	I	Analog Ground Pin
91	AIN	I	Main Beam Signal (A) Input Pin
92	BIN	I	Main Beam Signal (B) Input Pin
93	CIN	I	Main Beam Signal (C) Input Pin
94	DIN	I	Main Beam Signal (D) Input Pin
95	EIN	I	Side Beam Signal (E) Input Pin
96	FIN	I	Side Beam Signal (F) Input Pin
97	GIN	I	Side Beam Signal (G) Input Pin
98	HIN	I	Side Beam Signal (H) Input Pin
99	HAVC	I	Main/Side Beam Signal Reference Voltage Input Pin
100	AVSS3	I	Analog Ground Pin

NC pin is connected to VSS.

■ PDC077 (OPERATING ASSY : IC701)

- System microcomputer

● Pin Function (1/2)

No.	Pin Name	Type	Pin Function
1	TEXT SYNC CONTRL	O	Remote control crimp control terminal for TEXT synchronized
2	NC	O	-
3	WEN/WD1	I/O	Terminal for flash writing (ENA/DATA)
4	WD0	I/O	Terminal for flash writing (DATA)
5	CLK	I	Terminal for flash writing (CLOCK)
6	TEXT SR	O	Remote control crimp output terminal for TEXT synchronized
7	SREQ	O	Mechanism communication beginning REQ output
8	NC	O	-
9	NC	O	-
10	NC	O	-
11	RESET (XPFAIL)	-	Reset terminal
12	TEST	I	Test mode (0V: usually , 5V :Adjustment mode)
13	NC	O	-
14	VSS	-	GND
15	CF1	-	Ceramic departure pendulum (10MHz)
16	CF2	-	Ceramic departure pendulum
17	VDD	-	VDD
18	KEY IN1	I	Key input (A/D conversion)
19	KEY IN2	I	Key input (A/D conversion)
20	KEY IN3	I	Key input (A/D conversion)
21	R-EN1	I	Remote control input of rotary encoder 1 input
22	R-EN2	I	Remote control input of rotary encoder 2 input
23	NC	O	-
24	NC	O	-
25	NC	O	-
26	NC	O	-
27	REMIN	I	-
28	MACK	I	Communication request terminal from mechanism
29	NC	O	-
30	NC	-	-
31 I 45	G15 I G1	-	Output terminal for VFD digit
46	VDD3	-	VDD
47 I 50	P1 I P4	O	Output terminal for VFD segment
51	VP	-	GND
52 I 71	P5 I P24	O	Output terminal for VFD segment



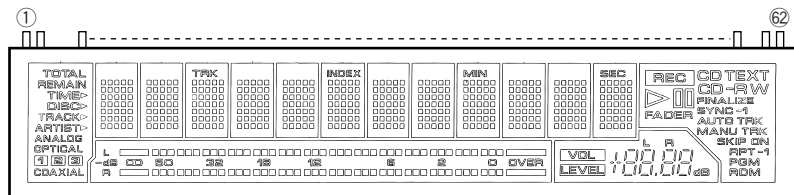
## ●Pin Function (2/2)

No.	Pin Name	Type	Pin Function
72	VDD	-	VDD
73   84	P25   P36	O	Output terminal for VFD segment
85	LED2	O	Finalize LED
86	LED1	O	Monitor LED
87	XOPT	O	Optical input control output terminal
88	XRST	O	Mechanism control reset output terminal
89	VSS	-	GND
90	VDD	-	VDD
91	HI- BIT	I	There is the model switch "It is H" Hi bit.
92	LEGATO	I	There is the model switch "It is H" legato link.
93	DEMO	I	There is a mode for the model switch "It is H" demonstration.
94	609 or SYSTEM	I	Model switch PDR-609 is fixed "H".
95	MCOMDATAO	O	Mechanism control communication DATA OUT.
96	MCOMDATAI	I	Mechanism control communication DATA IN.
97	MCOMCLK	O	Mechanism control communication clock.
98	SDA	I/O	EEPROM data OUT/IN
99	NC	O	-
100	SCL	O	EEPROM clock

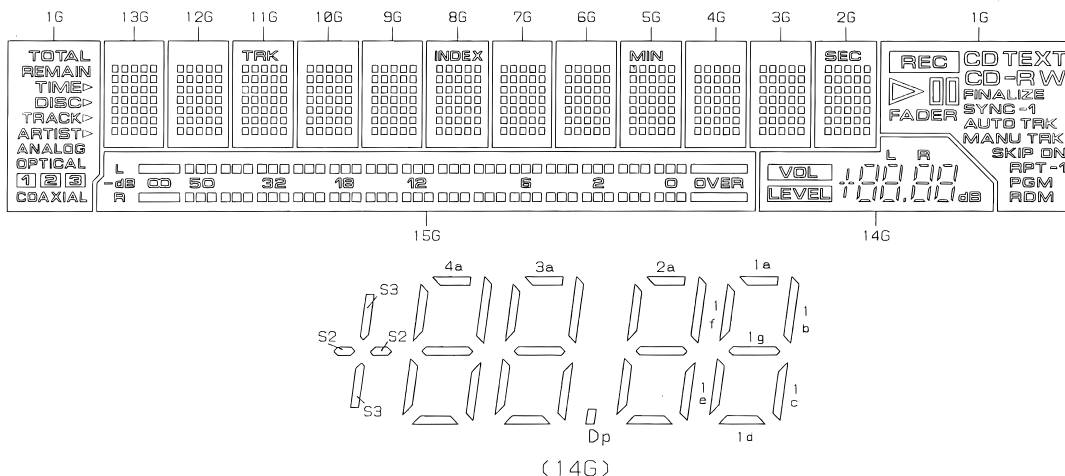
### 7.2.2 DISPLAY

### ■ PEL1101 (OPERATING ASSY : V701)

• FL TUBE



• Grid Assignment



• Pin Connection

PIN NO.	5	4	4	4	4	4	4	4	4	3	3	3	3	3	3	2	2	2	2	2	2	2	2	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1								
CONNECTION	0	9	8	7	6	5	4	3	2	1	P	P	N	N	N	N	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	N	F	F	1
	G	G	G	G	G	G	G	1	2	3	4	X	X	5	6	7	8	9	0	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6	P	F	1

PIN NO.	6	6	5	5	5	5	5	5	5						
CONNECTION	2	1	0	9	8	7	6	5	4	3	2	1	0	9	8
	2	1	0	9	8	7	6	5	4	3	2	1	0	9	8
	2	1	0	9	8	7	6	5	4	3	2	1	0	9	8
	2	1	0	9	8	7	6	5	4	3	2	1	0	9	8

NOTE 1) F1, F2 --- Filament  
 2) NP ----- No pin  
 3) NX ----- No extend pin  
 4) DL ----- Datum Line  
 5) 1G~15G --- Grid

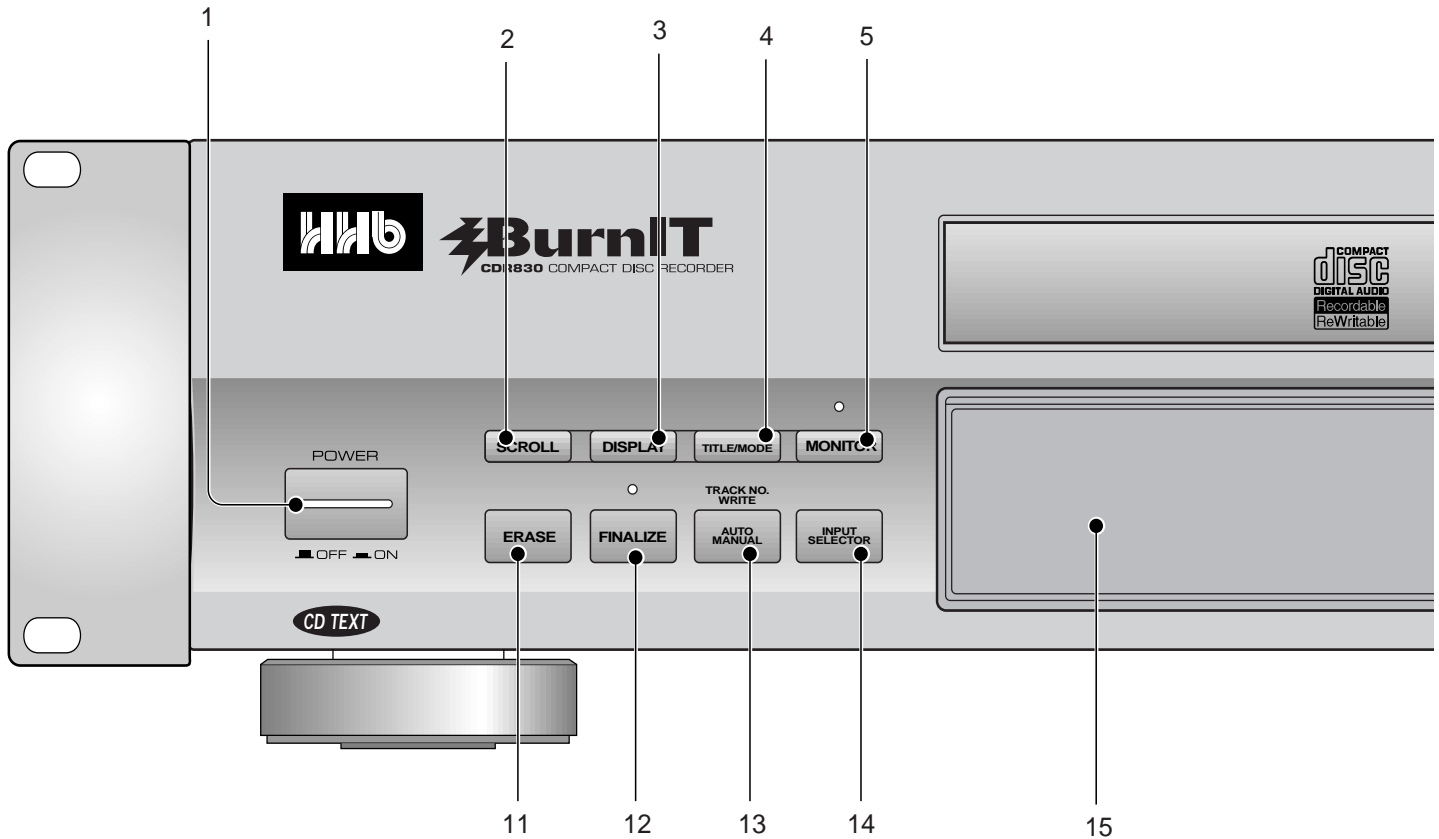
• Anode Connection

	15G	14G	13G	12G	11G	10G	9G	8G	7G	6G	5G	4G	3G	2G	1G
P1	B1	VOL	1-1	1-1	1-1	1-1	1-1	1-1	1-1	1-1	1-1	1-1	1-1	1-1	REC
P2	B2	LEVEL	2-1	2-1	2-1	2-1	2-1	2-1	2-1	2-1	2-1	2-1	2-1	2-1	⏏
P3	B3	1a	3-1	3-1	3-1	3-1	3-1	3-1	3-1	3-1	3-1	3-1	3-1	3-1	▶
P4	B4	1b	4-1	4-1	4-1	4-1	4-1	4-1	4-1	4-1	4-1	4-1	4-1	4-1	CDTEXT
P5	B5	1f	5-1	5-1	5-1	5-1	5-1	5-1	5-1	5-1	5-1	5-1	5-1	5-1	FADER
P6	B6	1g	1-2	1-2	1-2	1-2	1-2	1-2	1-2	1-2	1-2	1-2	1-2	1-2	CD
P7	B7	1c	2-2	2-2	2-2	2-2	2-2	2-2	2-2	2-2	2-2	2-2	2-2	2-2	-R
P8	B8	1e	3-2	3-2	3-2	3-2	3-2	3-2	3-2	3-2	3-2	3-2	3-2	3-2	W
P9	B9	1d	4-2	4-2	4-2	4-2	4-2	4-2	4-2	4-2	4-2	4-2	4-2	4-2	FINALIZE
P10	B10	dB	5-2	5-2	5-2	5-2	5-2	5-2	5-2	5-2	5-2	5-2	5-2	5-2	SYNC
P11	B11	2a	1-3	1-3	1-3	1-3	1-3	1-3	1-3	1-3	1-3	1-3	1-3	1-3	-1 (SYNC)
P12	B12	2b	2-3	2-3	2-3	2-3	2-3	2-3	2-3	2-3	2-3	2-3	2-3	2-3	AUTO TRK
P13	B13	2f	3-3	3-3	3-3	3-3	3-3	3-3	3-3	3-3	3-3	3-3	3-3	3-3	MANU TRK
P14	B14	2g	4-3	4-3	4-3	4-3	4-3	4-3	4-3	4-3	4-3	4-3	4-3	4-3	SKIP
P15	B15	2c	5-3	5-3	5-3	5-3	5-3	5-3	5-3	5-3	5-3	5-3	5-3	5-3	ON
P16	B16	2e	1-4	1-4	1-4	1-4	1-4	1-4	1-4	1-4	1-4	1-4	1-4	1-4	RPT
P17	B17	2d	2-4	2-4	2-4	2-4	2-4	2-4	2-4	2-4	2-4	2-4	2-4	2-4	-1 (RPT)
P18	B18	Dp	3-4	3-4	3-4	3-4	3-4	3-4	3-4	3-4	3-4	3-4	3-4	3-4	PGM
P19	B19	R	4-4	4-4	4-4	4-4	4-4	4-4	4-4	4-4	4-4	4-4	4-4	4-4	RDM
P20	B20	L	5-4	5-4	5-4	5-4	5-4	5-4	5-4	5-4	5-4	5-4	5-4	5-4	TOTAL
P21	B21	3a	1-5	1-5	1-5	1-5	1-5	1-5	1-5	1-5	1-5	1-5	1-5	1-5	REMAIN
P22	B22	3b	2-5	2-5	2-5	2-5	2-5	2-5	2-5	2-5	2-5	2-5	2-5	2-5	TIME▶
P23	B23	3f	3-5	3-5	3-5	3-5	3-5	3-5	3-5	3-5	3-5	3-5	3-5	3-5	DISC▶
P24	B24	3g	4-5	4-5	4-5	4-5	4-5	4-5	4-5	4-5	4-5	4-5	4-5	4-5	TRACK▶
P25	B25	3c	5-5	5-5	5-5	5-5	5-5	5-5	5-5	5-5	5-5	5-5	5-5	5-5	ARTIST▶
P26	B26	3e	1-6	1-6	1-6	1-6	1-6	1-6	1-6	1-6	1-6	1-6	1-6	1-6	ANALOG
P27	B27	3d	2-6	2-6	2-6	2-6	2-6	2-6	2-6	2-6	2-6	2-6	2-6	2-6	OPTICAL
P28	B28	4a	3-6	3-6	3-6	3-6	3-6	3-6	3-6	3-6	3-6	3-6	3-6	3-6	1
P29	B29	4b	4-6	4-6	4-6	4-6	4-6	4-6	4-6	4-6	4-6	4-6	4-6	4-6	2
P30	B30	4f	5-6	5-6	5-6	5-6	5-6	5-6	5-6	5-6	5-6	5-6	5-6	5-6	3
P31	B31	4g	1-7	1-7	1-7	1-7	1-7	1-7	1-7	1-7	1-7	1-7	1-7	1-7	COAXIAL
P32	B32	4c	2-7	2-7	2-7	2-7	2-7	2-7	2-7	2-7	2-7	2-7	2-7	2-7	-
P33	OVER	4e	3-7	3-7	3-7	3-7	3-7	3-7	3-7	3-7	3-7	3-7	3-7	3-7	-
P34	S1	4d	4-7	4-7	4-7	4-7	4-7	4-7	4-7	4-7	4-7	4-7	4-7	4-7	-
P35	-	S2	5-7	5-7	5-7	5-7	5-7	5-7	5-7	5-7	5-7	5-7	5-7	5-7	-
P36	-	S3	-	-	TRK	-	-	INDEX	-	-	MIN	-	-	SEC	-

## 8. PANEL FACILITIES AND SPECIFICATIONS

### 8.1 PANEL FACILITIES

#### ■ Front Panel



#### 1 POWER switch

Switches power to the unit on and off.

#### 2 SCROLL

Press to scroll through long names in CD text.

#### 3 DISPLAY

Switches the display mode (elapsed track time, remaining track time, total disc playing time, etc.)

#### 4 TITLE/MODE

Press to switch between display modes (disc title, artist name, track title), and between upper- and lower-case characters while using CD text.

#### 5 MONITOR

Press to monitor the selected input and display digital source information. Indicator lights up to remind you when you are monitoring.

#### 6 OPEN/CLOSE ▲

Press to open or close the disc tray.

#### 7 RECORD ●

Press to enter record-pause mode for setting input levels, etc.

#### 8 REC MUTE ○

Records a blank section on a disc (for space between tracks, etc.)

#### 9 DIGITAL REC LEVEL / ◀▶▶▶ (Jog dial)

Turn the jog dial to: set the digital recording level ; skip tracks; select options in the menu ; cycle through characters in CD text ; select tracks to erase .

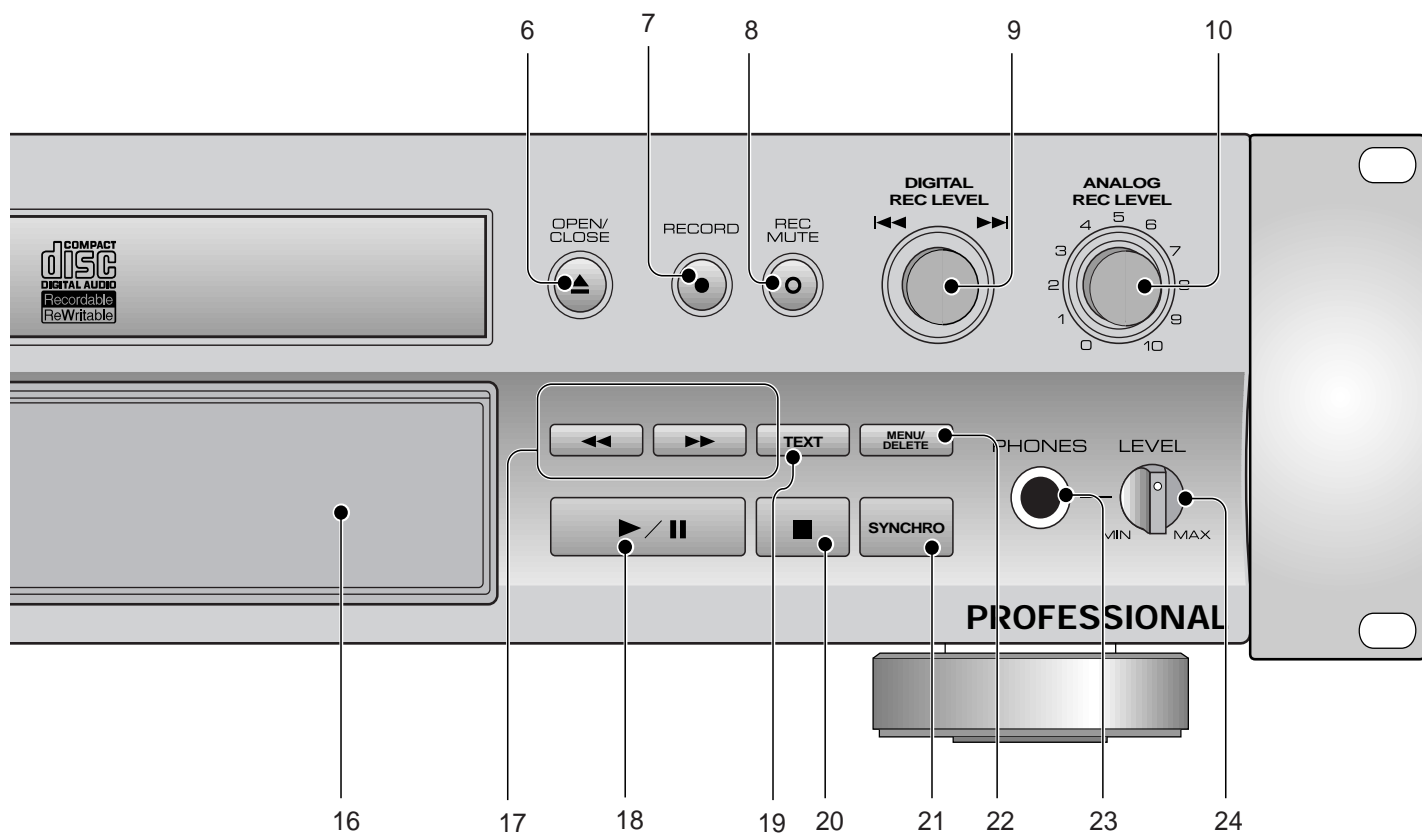
Push the jog dial to: start playback (stop mode only) ; input track numbers (during programming) ; select characters in CD text ; confirm menu settings .

#### 10 ANALOG REC LEVEL

Sets the recording level for analog-input recording.

#### 11 ERASE

Press to start erasing tracks, or to re-initialize a disc.

**12 FINALIZE**

Press to start the disc finalization process (to make recordable CDs playable on ordinary CD players). Indicator lights up during finalization.

**13 AUTO/MANUAL**

Switches between automatic and manual track numbering when recording a disc.

**14 INPUT SELECTOR**

Switches between the analog, optical digital and coaxial digital inputs.

**15 Remote sensor****16 Character display****17 ◀▶ / REC BALANCE**

Press and hold for fast-reverse and fast-forward playback. Use when recording to set left and right input levels. Use to move cursor back and forth across character display while using CD text.

**18 ▶/||**

Press to play, pause, or resume playing, a disc. Also use to start recording from record-pause mode and to start finalization and erasing.

**19 TEXT**

Use to cycle through CD text naming options.

**20 ■**

Press to stop playback or recording.

**21 SYNCHRO**

Press to start recording on detection of an input signal.

**22 MENU/DELETE**

Press to cycle through the preference menu options. Press to delete characters while editing CD text.

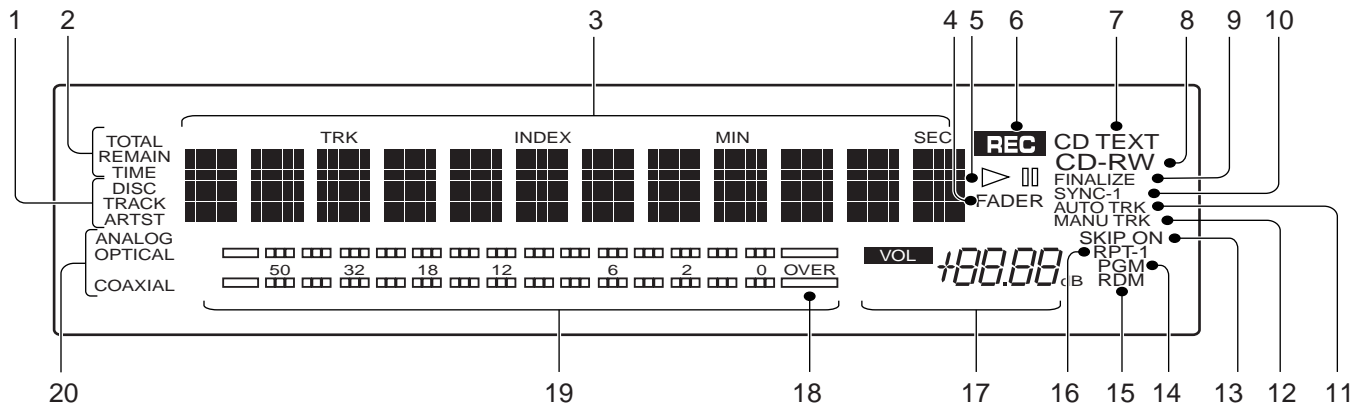
**23 PHONES jack**

Plug in a pair of stereo headphones for private listening or monitoring.

**24 LEVEL**

Use to adjust the phones volume.

## ■ Display



### 1 CD text indicators

- DISC** Lights up when disc information is displayed.
- TRACK** Lights up when track information is displayed.
- ARTST** Lights up when artist information is displayed.

### 2 TOTAL / REMAIN / TIME

Indicates whether the current displayed time is elapsed, remaining, or total time for a disc or individual tracks.

### 3 Message/time display

### 4 FADER

Blinks during fade in or fade out.

### 5 ► Lights up during playback.

■ Lights during play- or record-pause.

### 6 REC

Lights up to when recording or record-paused. Blinking display indicates record muting.

### 7 CD TEXT

Lights if the CD currently loaded contains CD text.

### 8 CD / CD-R / CD-RW

Indicates the type of disc currently loaded.

### 9 FINALIZE

Lights up if the CD-RW currently loaded has been finalized. Also blinks during automatic finalization recording .

### 10 SYNC / SYNC-1

Lights up when the recorder is in automatic synchro recording mode.

### 11 AUTO TRK

Lights when automatic track numbering is on during recording.

### 12 MANU TRK

Lights up when manual track numbering is on

during recording.

### 13 SKIP ON

Lights up to indicate that a disc contains skip IDs. When setting or clearing skip IDs, the word SKIP blinks.

### 14 PGM

Lights up when program-play is active.

### 15 RDM

Lights up when random-play is active.

### 16 RPT / RPT-1

Lights up when repeat play is active.

### 17 Recording level balance

Displays the digital recording volume. If the balance has been changed, the indicator (L or R) of the louder channel lights up. Both indicators light when the balance is unchanged. Track numbers are displayed while using CD text.

### 18 OVER indicator

Indicates that the input signal overloaded the disc during recording.

### 19 Recording level meter

Displays the input level during recording, or the recorded level during playback.

### 20 ANALOG

Lights when the analog input is selected.

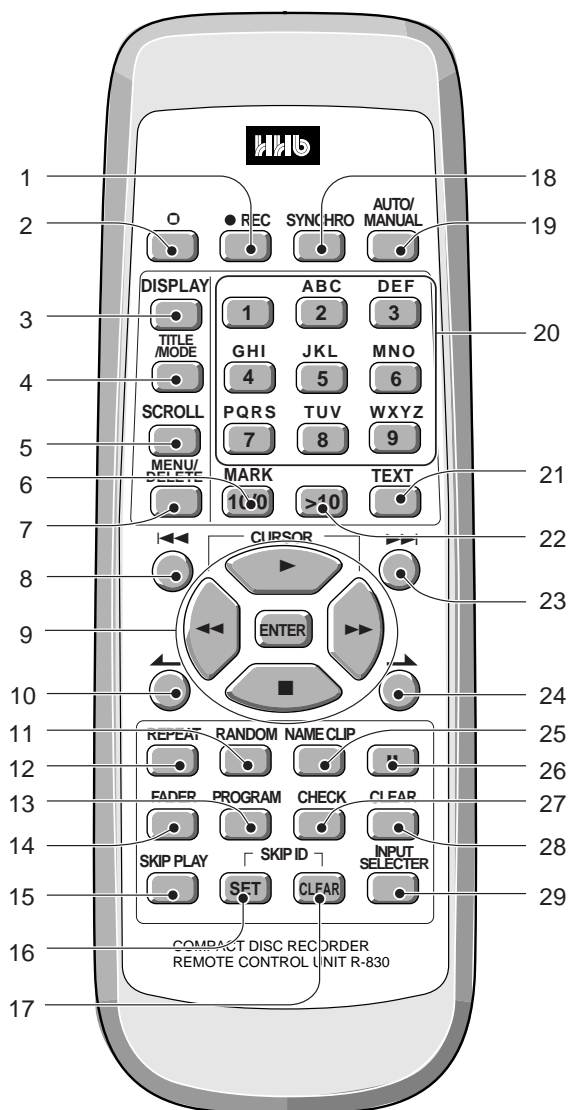
### OPTICAL

Lights when the optical digital input is selected.

### COAXIAL

Lights when the coaxial digital input is selected.

## ■ REMOTO CONTROL UNIT



- 1 ● REC  
Press to enter record-pause mode.
- 2 ○ REC MUTE  
Records a blank section on a disc (for space between tracks, etc.)
- 3 DISPLAY  
Switches the display mode (elapsed track time, remaining track time, total disc playing time, etc.)
- 4 TITLE/MODE  
Press to switch between display modes (disc title, artist name, track title), and between upper- and lower-case characters while using CD text .
- 5 SCROLL  
Press to scroll through long names in CD text.
- 6 MARK / 10/0  
Press to choose symbol characters when using CD text. As a numeric key, this represents zero.
- 7 MENU/DELETE  
Press to cycle through the preference menu options.  
Press to delete characters while editing CD text.

- 8 ◀◀  
Press to skip backward tracks. Also performs those operations assigned to turning the jog dial .
- 9 Playback control / ENTER  
▶ Press to play, or resume playing, a disc.  
◀◀ and ▶▶ Press and hold for fast-reverse and fast-forward playback, and to move cursor position using CD text.  
■ Press to stop playback or recording.  
ENTER Confirm playback, recording, menu settings, and characters in CD text.
- 10 ←  
Press to skip backward index points.
- 11 RANDOM  
Press to start random playback.
- 12 REPEAT  
Use to set the repeat mode (current track, disc, or repeat off).
- 13 PROGRAM  
Use to program the playback order of tracks on a disc.
- 14 FADER  
Press to fade in or fade out during playback or recording.
- 15 SKIP PLAY  
Press to switch skip play on and off.
- 16 SKIP ID SET  
Instructs the player to skip a particular track on playback.
- 17 SKIP ID CLEAR  
Clears the above setting.
- 18 SYNCHRO  
Press to start recording on detection of an input signal.
- 19 AUTO/MANUAL  
Switches between automatic and manual track numbering when recording a disc.
- 20 Number / Letter buttons  
Use to jump directly to track numbers for playback, selecting track numbers for editing / programming, and selecting letters when using CD text.
- 21 TEXT  
Use to cycle through CD text naming options.
- 22 >10  
Use to select track numbers over 10.
- 23 ▶▶  
Press to skip forward tracks. Also performs those operations assigned to turning the jog dial .
- 24 →  
Press to skip forward index points.
- 25 NAME CLIP  
Press to copy the current CD text to the recorder's memory.
- 26 ||  
Press to pause playback or recording and start finalization and erasing.
- 27 CHECK  
Press repeatedly to step through the program playlist.
- 28 CLEAR  
Press to clear the last track in a programmed playlist.
- 29 INPUT SELECTOR  
Switches between the analog, optical digital and coaxial digital inputs.

## 8.2 SPECIFICATIONS

### 1 GENERAL

Model ..... Compact disc audio system  
 Applicable discs CD (playback), CD-R and CD-RW  
 Power supply  
 ... AC 120 V, 60 Hz (U.S. and Canadian models)  
 AC 220-240 V, 50/60 Hz (European model)  
 Power consumption  
 ..... 13 W (U.S. and Canadian models)  
 14 W (European model)  
 Operating temperature  
 ..... +5 °C to +35 °C (+41 °F to +95 °F)  
 Weight (without package) ..... 3.9 kg (8 lb 10 oz)  
 Max. dimensions  
 ..... 482.6 (W) x 295 (D) x 105 (H) mm  
 ..... 19 (W) x 11 5/8 (D) x 4 1/8 (H) in  
 Height excluding feet ..... 89 mm / 3 1/2 in

### 2 AUDIO

Frequency characteristics  
 ..... 10 Hz to 20 kHz ± 0.5 dB  
 RCA phono output level (0 dBFS, 10 kΩ load)  
 ..... 9 dBu  
 Wow & flutter ..... unmeasurable

#### Playback

Signal to noise ratio ..... > 108 dB  
 Dynamic range ..... > 98 dB  
 Total Harmonic Distortion @ 1 kHz < 0.0023 %  
 Channel Separation ..... > 98 dB

#### Recording (analog input)

Signal to noise ratio ..... > 92 dB  
 Dynamic range ..... > 92 dB  
 Total Harmonic Distortion @ 1 kHz < 0.003 %

#### Recording (digital input, fs=44.1 kHz)

Signal to noise ratio ..... > 108 dB  
 Dynamic range ..... > 97 dB  
 Total Harmonic Distortion @ 1 kHz < 0.0023 %  
 All audio measurements are to EIAJ standards.

### 3 I/O CONNECTIONS

#### Analog connectors

Line input - unbalanced  
 ..... RCA Phono (input impedance 10 kΩ)  
 Line output - unbalanced ..... RCA Phono  
 Headphone output ..... 1/4" stereo jack

#### Digital connectors

Coaxial digital input (SPDIF) ..... RCA Phono 75 Ω  
 Coaxial digital output (SPDIF) .... RCA Phono 75 Ω  
 Optical digital input (SPDIF) ..... TOSlink  
 Optical digital output (SPDIF) ..... TOSlink  
 Optical wavelength 660 nm ± 30 nm

### 4 ACCESSORIES

- Remote control unit ..... 1
- Size AA/R6P dry cell batteries ..... 2
- Audio connection cord - RCA phono ..... 2
- AC power cord ..... 1
- HHB CDR 80 Silver disc ..... 1
- Operating Instructions ..... 1
- Registration card ..... 1
- HHB CDR830 BurnIT brochure ..... 1
- BurnIT quick start guide ..... 1

**NOTE :** The specifications and design of this product are subject to change without notice, due to improvements.

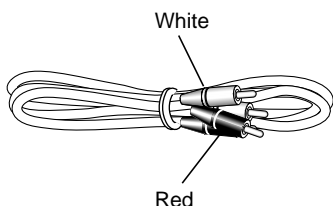
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### Accessories

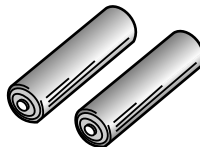
- Remote control (PWW1173)



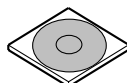
- Audio connection cord - RCA phono (RDE1036) (L=1m)



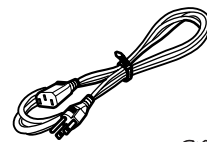
- dry cell batteries (size AA/R6) × 2



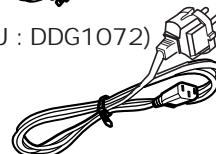
- HHB CDR 80 Silver disc



- AC Power cords (KUXJ/CA : DDG1071)



- (WYXJ : DDG1072)









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