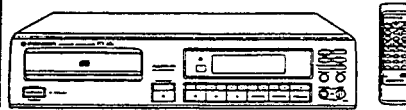


# Service Manual

**PIONEER**  
The Art of Entertainment



ORDER NO.  
ARP2681

COMPACT DISC PLAYER

# PD-202

## PD-102

PD-202 AND PD-102 HAVE THE FOLLOWING:

Type	Model		Power Requirement	Remarks
	PD-202	PD-102		
KU	○	○	AC120V only	
KUXJ	○	○	AC120V only	
KUXJS	○	○	AC120V only	
KC	○	○	AC120V only	
KCXJ	○	○	AC120V only	
WEMXJS	○	○	AC220 - 240V	
WBXJS	○	○	AC220 - 240V	
WPW	○	○	AC220 - 240V	
RD	○	○	AC110 - 127V, 220 - 240V (switchable)	
WL	○	○	AC220 - 240V	

- This manual is applicable to the following: PD-202/KU, KUXJ, KUXJS, KC, KCXJ, WEMXJS, WBXJS, WPW and RD; PD-102/KU, KUXJ, KUXJS, KC, KCXJ, WEMXJS, WBXJS, WPW, RD and WL.
- For the following: PD-202/KUXJ, KUXJS, KC, KCXJ, WEMXJS, WBXJS, WPW and RD; PD-102/KU, KUXJ, KUXJS, KC, KCXJ, WEMXJS, WBXJS, WPW, RD and WL, refer to page 39.

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# 1. SAFETY INFORMATION



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

**WARNING**

Lead in solder used in this product is listed by the California Health and Welfare agency as a known reproductive toxicant which may cause birth defects or other reproductive harm (California Health & Safety Code, Section 25249.5). When servicing or handling circuit boards and other components which contain lead in solder, avoid unprotected skin contact with the solder. Also, when soldering do not inhale any smoke or fumes produced.



**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.

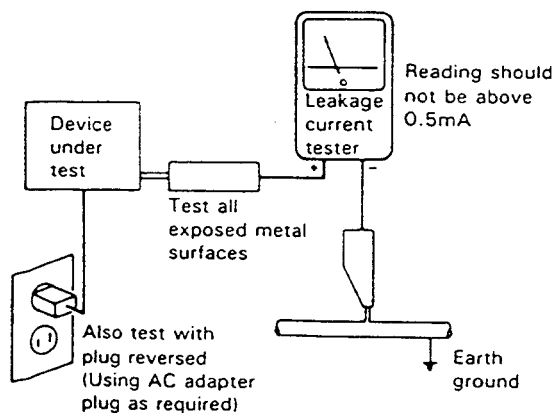
(FOR USA MODEL ONLY)

## 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 PIONEER 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 PIONEER Service Manual. A subscription to, or additional copies of, PIONEER Service Manual may be obtained at a nominal charge from PIONEER.

(FOR EUROPEAN MODEL ONLY)

**VARO!**  
AVATTAESSA JA SUOJALUKITUS OHITETTAESSA OLET ALTTIINA NÄKYMÄTTÖMÄLLE LASERSATEILYLLE. ÄLÄ KATSO SÄTEESEEN.

**ADVERSEL:**  
USYNLIG LASERSTRÅLING VED ÅBNING NÅR SIKKERHEDSAFBRYDERE ER UDE AF FUNKTION. UNDGÅ UDSÆTTELSE FOR STRÅLING.

**VARNING!**  
OSYNLIG LASERSTRÅLNING NÅR DENNA DEL ÄR ÖPPNAD OCH SPÄRREN ÄR URKOPPLAD. BETRakta EJ STRÅLEN.




LASER  
Kuva 1  
Lasersateilyn varoitusmerkki

**WARNING!**  
DEVICE INCLUDES LASER DIODE WHICH EMITS INVISIBLE INFRARED RADIATION WHICH IS DANGEROUS TO EYES. THERE IS A WARNING SIGN ACCORDING TO PICTURE 1 INSIDE THE DEVICE CLOSE TO THE LASER DIODE.

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

**LASER DIODE CHARACTERISTICS**  
MAXIMUM OUTPUT POWER: 5 mw  
WAVELENGTH: 780-785 nm



LASER  
Picture 1  
Warning sign for laser radiation

LABEL CHECK (SINGLE type)


**WBXJS type**

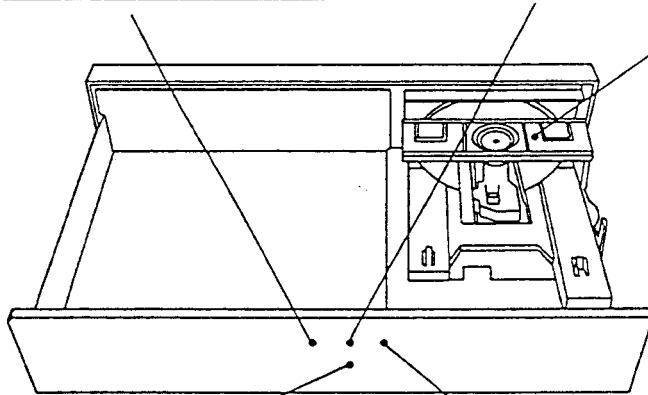
**CAUTION**  
INVISIBLE LASER RADIATION WHEN OPEN, AVOID EXPOSURE TO BEAM  
PRW1018

**WEMXJS type**

**ADVARSEL**  
USYNLIG LASERSTRÅLING VED ÅBNING NÅR SIKKERHEDSAFBRYDERE ER UDE AF FUNKTION. UNDGÅ UDSÆTTELSE FOR STRÅLING.  
VORSICHT!  
UNSICHTBARE LASERSTRÅLUNG TRITT AUS, WENN DECKEL (ODER KLAPPE) GEÖFFNET IST! NICHT DEM STRAHL AUSSETZEN!  
VRW1094

**WEMXJS and WBXJS types**





**VARO!**  
Avattaessa ja suojalukitus ohitettaessa olet alttiina näkymättömälle lasersäteilylle. Älä katso säteeseen.  
**VARNING!**  
Osynlig laserstrålning när denna del är öppnad och spärren är urkopplad. Betrakta ej strålen.  
PRW1233

**WEMXJS and WBXJS types**

**CLASS 1 LASER PRODUCT**  
VRW-328

**WEMXJS and WBXJS types**

**Additional Laser Caution**

- Laser Interlock Mechanism**  
The position of the switch (S601) for detecting loading completion is detected by the system microprocessor, and the design prevents laser diode oscillation when the switch (S601) is not in CLMP terminal side (when the mechanism is not clamped and CLMP signal is high level). Thus, the interlock will no longer function if the switch (S601) is deliberately set to CLMP terminal side (if CLMP signal is low level). In the test mode \* the interlock mechanism will not function. Laser diode oscillation will continue, if pin 1 of M51593FP (IC101) on the preamplifier board loaded on pickup assembly are connected to GND, or pin 19 is connected to low level (ON), or else the terminals of Q101 are shorted to each other (fault condition).
- When the cover is opened, close viewing of the objective lens with the naked eye will cause exposure to a Class 1 laser beam.

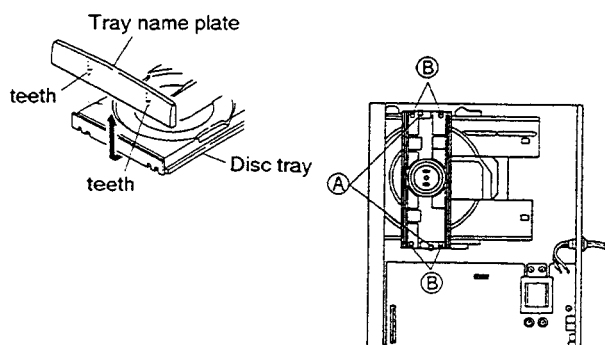
\* Refer to page 29.

## 2. DISASSEMBLY

### 2.1 REMOVING THE TRAY (See Fig. 2 - 1.)

As the teeth of the tray cannot be bent, remove the tray according to the following procedures.

- ① Remove the bonnet.
- ② Press the OPEN/CLOSE (▲) button on the front panel, and move the tray to the OPEN position.
- ③ Remove the tray name plate.  
(Release the two teeth of the tray name plate, and lift it up.)
- ④ Push in the tray.
- ⑤ Remove the clamber base.  
(Remove the two screws (A) and release the four teeth of clamp base.)
- ⑥ Remove the operation panel.
- ⑦ Pull out the tray.



Note: When opening with your hands, do so as follows.

- 1) Pull the right edge (A) of the clamber cam in the direction of the operation panel. The servo mechanism descends, the clamber is released, and the tray opens about 2 cm.

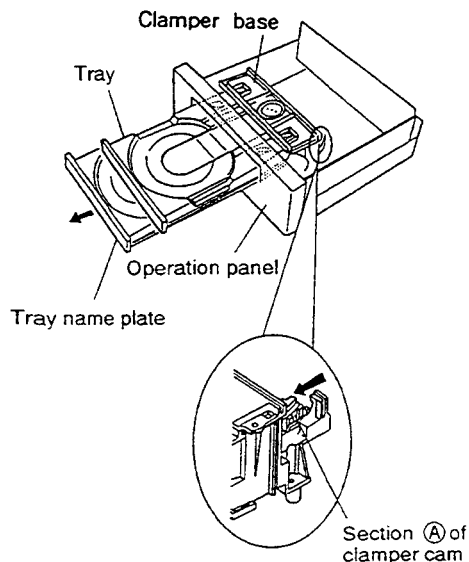


Fig. 2 - 1.

### 2.2 REMOVING THE SERVO MECHANISM ASSEMBLY

- ① Remove the tray and clamber base. (See 2.1.)
- ② With the servo mechanism assembly in the descended condition (tray open position), remove the 4 screws (B) holding this assembly, and screw (C) holding the ground lead. Cut the binder holding the bundle of wires onto the loading base with a pair of nippers.

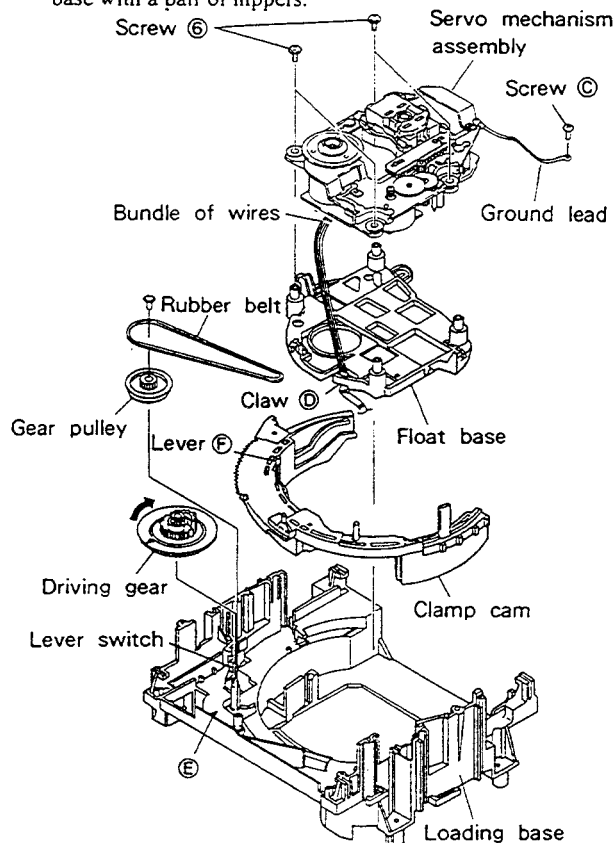


Fig. 2 - 2.

### 2.3 REMOVING THE FLOAT BASE (See Fig. 2 - 2.)

- ① Remove the servo mechanism assembly. (See 2.2.)
- ② Rotate the driving gear in the clockwise direction fully. The clamp cam will rotate in the counterclockwise direction, and the float base will rise.
- ③ After removing the bundle of wires from claw (D) of the float base, remove the float base.

Note: If the clamp cam does not rotate even if the driving gear is rotated, it means that these gears are not engaged. In this case, engage them in the correct position according to the following procedures, and rotate the driving gear.

- 1) Adjust the ▼ mark of the driving gear (on the round hole) to the ▲ mark (E) of the loading base.
- 2) Rotate lever (F) on the clamp cam in the counterclockwise direction.

### 3. EXPLODED VIEWS, PACKING 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.
- Parts marked by "⊙" are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.

#### 3.1 EXTERIOR

**Parts List**

Mark	No.	Description	Part No.
	1	Bonnet	PYY1147
	2	Screw	FBT40P080FZK
	3	Screw	BBZ30P080FZK
	4	Screw	BBZ30P160FMC
NSP	5	Single mechanism assembly	PXA1487
	6	Tray name plate	PNW2240
NSP	7	PCB spacer	PNY - 404
	8	Insulator	PNW1912
$\triangle$	9	Power transformer	PTT1237
	10	Screw	IBZ30P100FCC
	11	Screw	IBZ30P150FCC
$\triangle$	12	Cord stopper	CM - 22C
$\triangle$	13	AC power cord	PDG1015
	14	Screw	BBZ30P060FMC
⊙	15	Mother board assembly	PWM1735
NSP	16	Headphone board assembly	PWZ2522
	17	Headphone knob	PAC1707
NSP	18	Rear base	PNA1921
	19	Function panel assembly	PEA1267
	20	Display window	PAM1599
	21	PIONEER badge	PAM1608
	22	Function panel	PNW2248
	23	Mode button	PAC1709
NSP	24	Under base	PNA1732
	25	10 key	PAC1735
	26	Function button	PAC1711
	27	LED lens	PNW2019
	28	Power button	PAC1708
NSP	29	Switch board assembly	PWZ2518
	30	Screw	PPZ30P120FMC
	31	Function board assembly	PWZ2511
	32	32P F.F.C./30V	PDD1041
NSP	33	65 label	ORW1069
	34	Screw	PDZ30P050FMC

## 2.4 REMOVING THE CLAMP CAM

- ① Remove the float base. (See 2.3.)
- ② Remove the gear pulley and driving gear.
- ③ After rotating the clamp cam fully in the counter clockwise direction, pull it up.

## 2.5 REMOVING THE MOTHER BOARD ASSEMBLY

- ① Remove CN131, CN202, CN205, CN351, and CN401 (connectors).
- ② Remove the screw (A) securing the LINE OUT terminal from the rear.
- ③ Remove the screw (B) to remove the wrapping of the power cord.
- ④ Remove the four screws (C) securing the board and the four screws (D) securing the power transformer.
- ⑤ Lift the mother board assembly straight up to remove it.

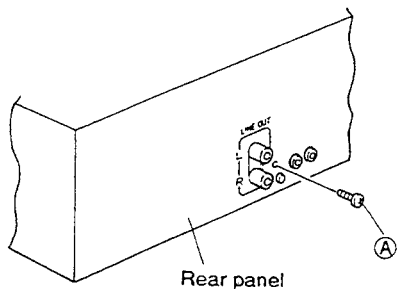
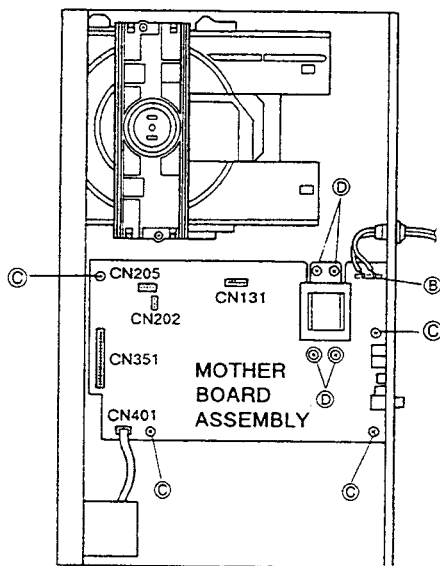


Fig. 2 - 3.

## 2.6 INSTALLING THE CLAMP CAM

- ① While pushing down the lever switch on the loading base towards the transformer board assembly, install the clamp cam.

## 2.7 INSTALLING THE FLOAT BASE

- ① Rotate the clamp cam in the counterclockwise direction fully, and install the float base.  
For details on rotating the clamp cam, refer to "2.3 Removing the Float Base".

## 2.8 INSTALLING THE TRAY

- ① Rotate the driving gear in the counterclockwise direction, and lower the servo mechanism assembly to the maximum.
- ② Rotate the driving gear in the counterclockwise direction, and adjust the ▼ mark of the driving gear (on the round hole) to the ▲ mark of the loading base.
- ③ Insert the tray.

Note 1: If the servo mechanism assembly does not descend even if the driving gear is rotated, it means that the gears are not engaged.

In this case, perform ②, and rotate the driving gear once again.

Note 2: The servo mechanism assembly will not rise fully even if the tray is inserted completely. However, it rises to the maximum automatically when the power is supplied.

Exterior

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

A

B

C

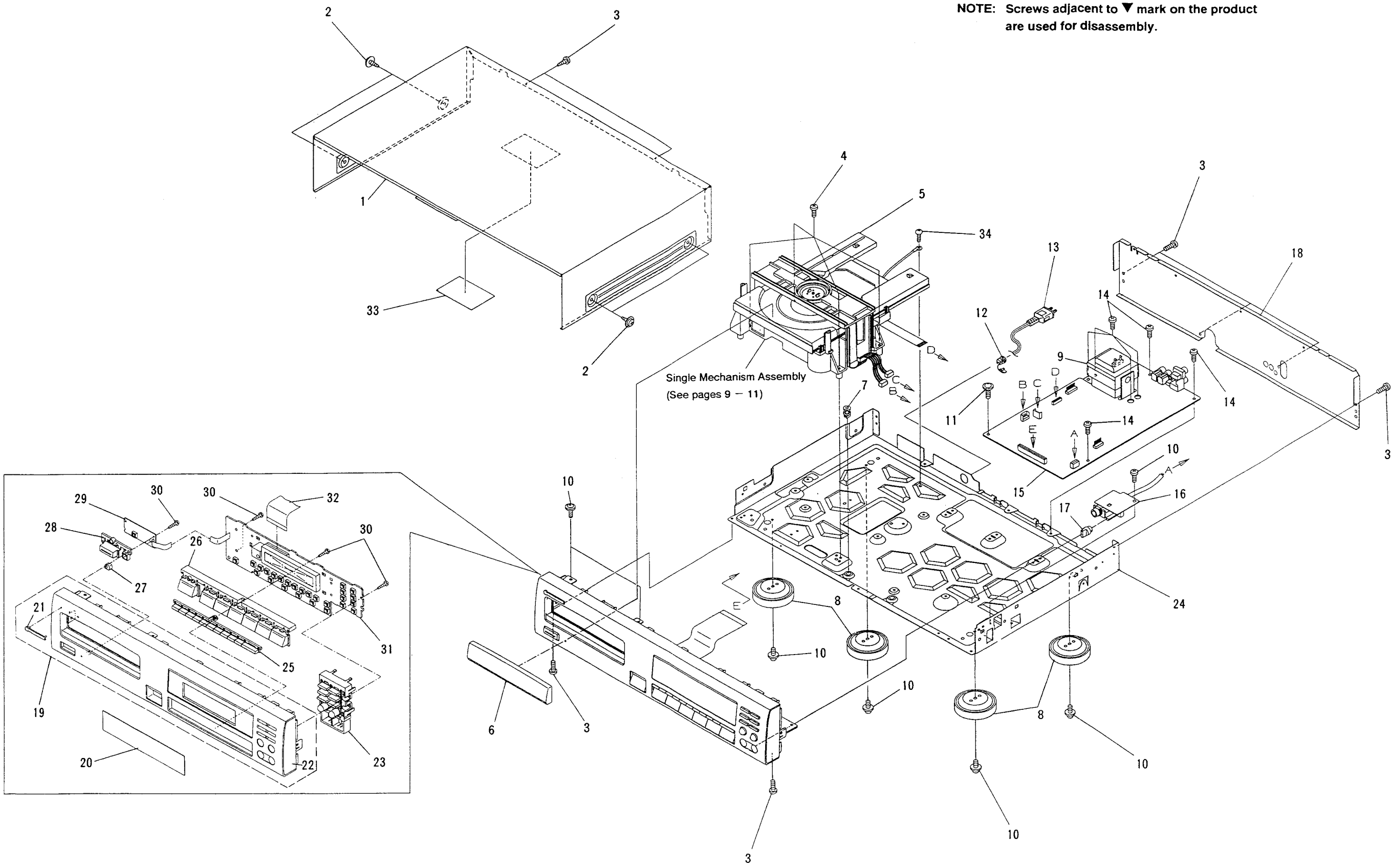
D

A

B

C

D

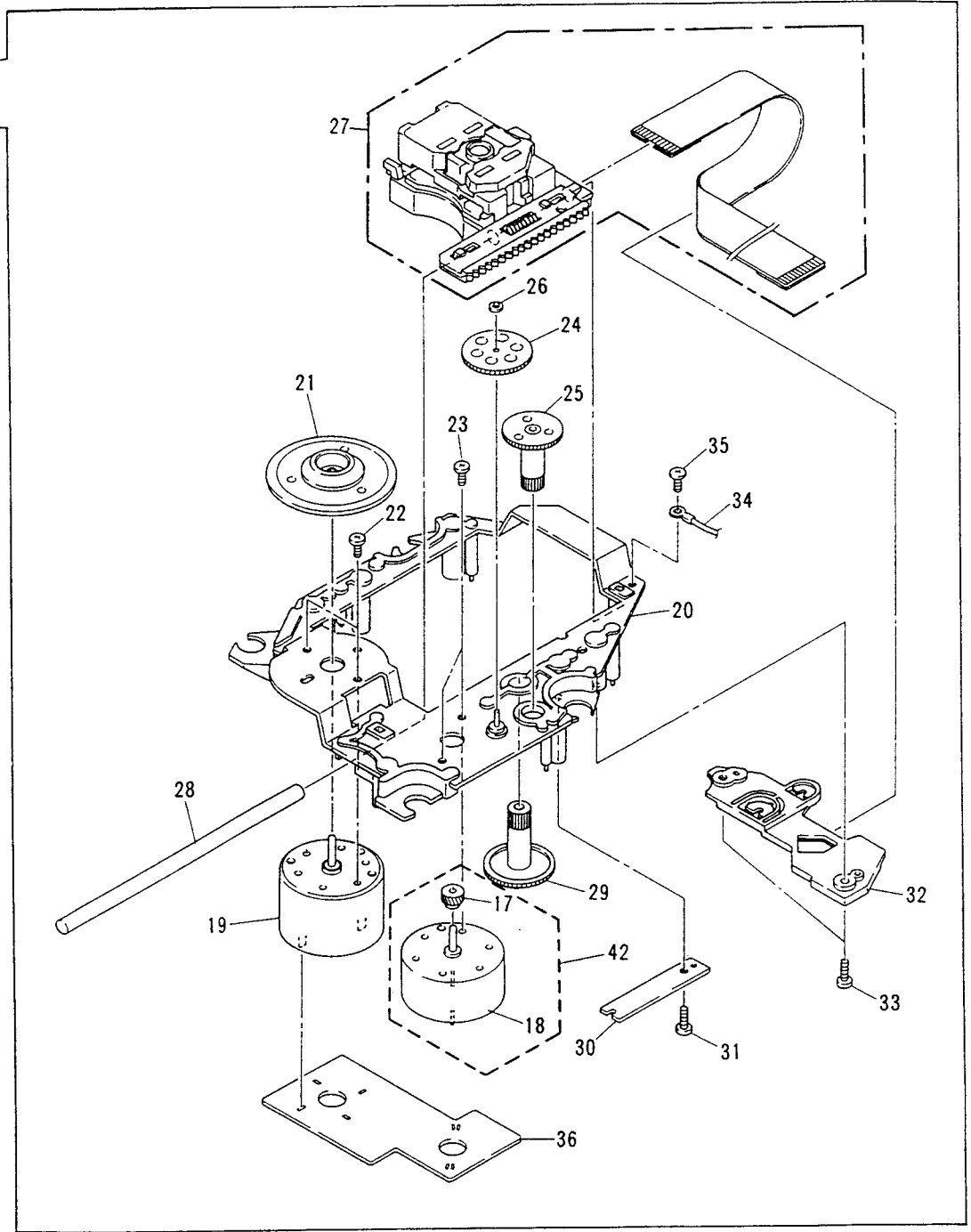
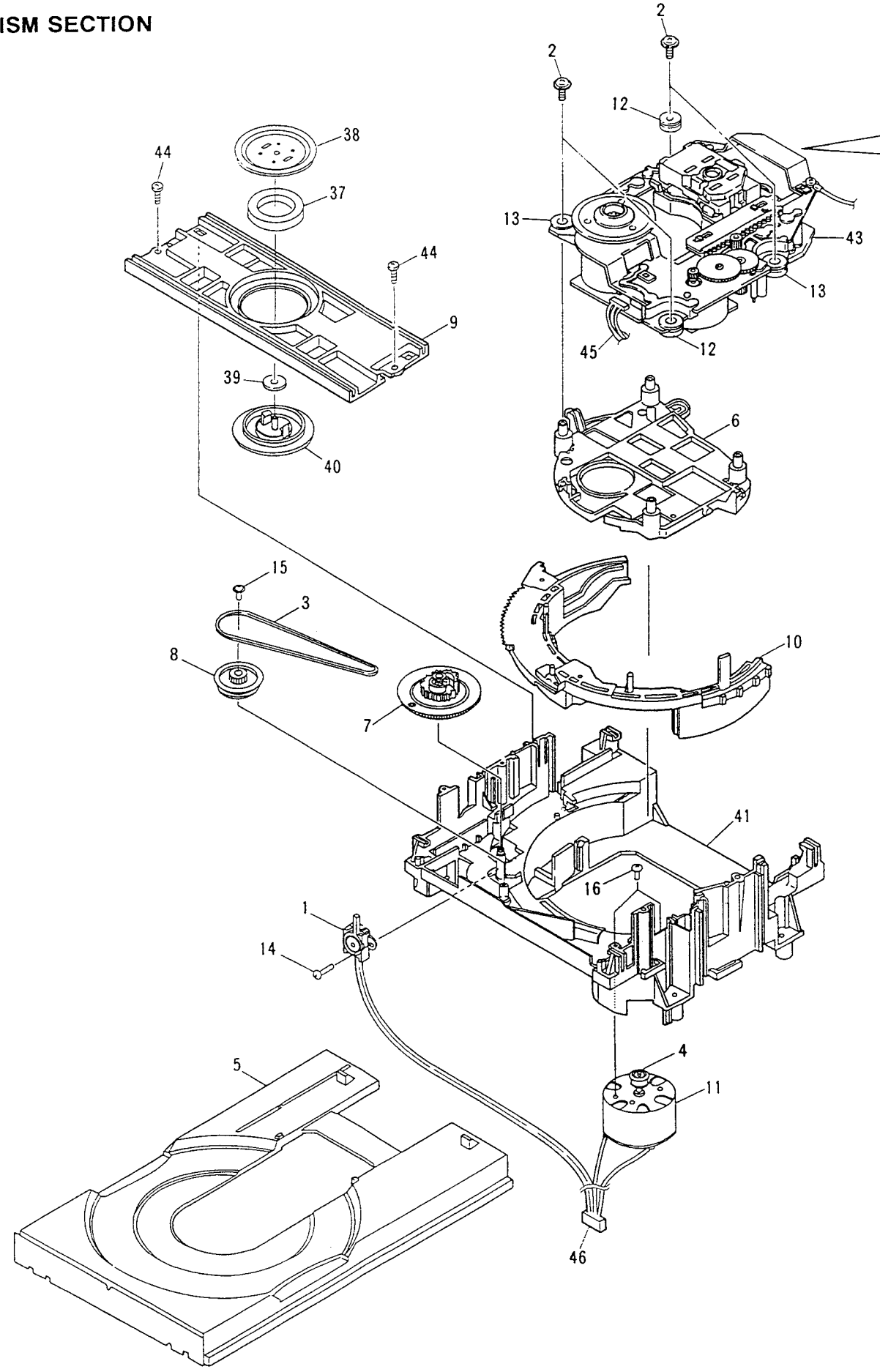


1 | 2 | 3 | 4 | 5 | 6

1 | 2 | 3 | 4 | 5 | 6

3.2 MECHANISM SECTION

A  
B  
C  
D



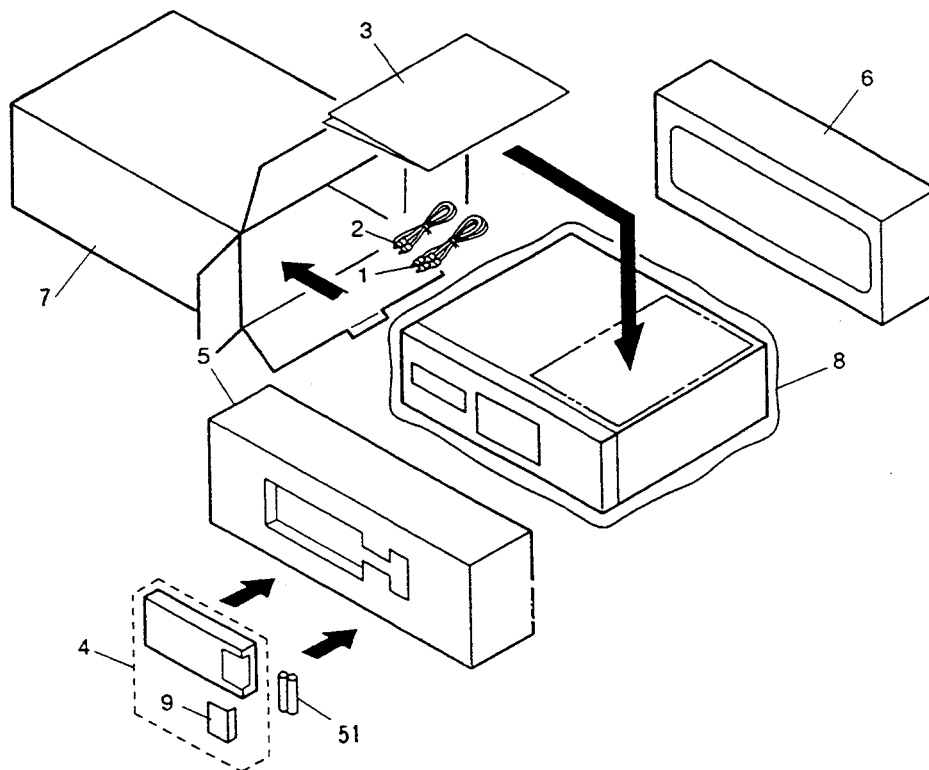
A  
B  
C  
D



### 3.3 PACKING

#### Parts List

Mark	No.	Description	Part No.	Mark	No.	Description	Part No.
	1	Connection cord with mini plug	PDE - 319		6	Protector R	PHA1240
	2	Connection cord with pin plug	PDE1109		7	CD packing case	PHG1877
	3	Operating instructions (English)	PRB1182		8	Sheet	Z23 - 007
	4	Remote control unit	PWW1061		9	Battery cover	PZN1010
	5	Protector F	PHA1239	NSP	51	Dry cell battery (R03, AAA)	VEM - 022



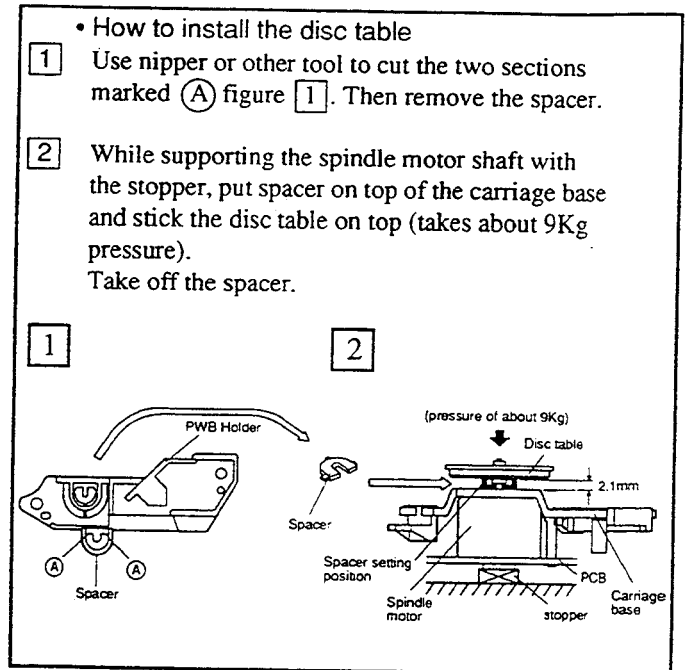
Note : The above packing diagram applies to products above serial number 3605002.

The following packing materials are used for products with serial number 3603001 to 3605001. As the packing materials are not interchangeable, do not use them for products with other serial number.

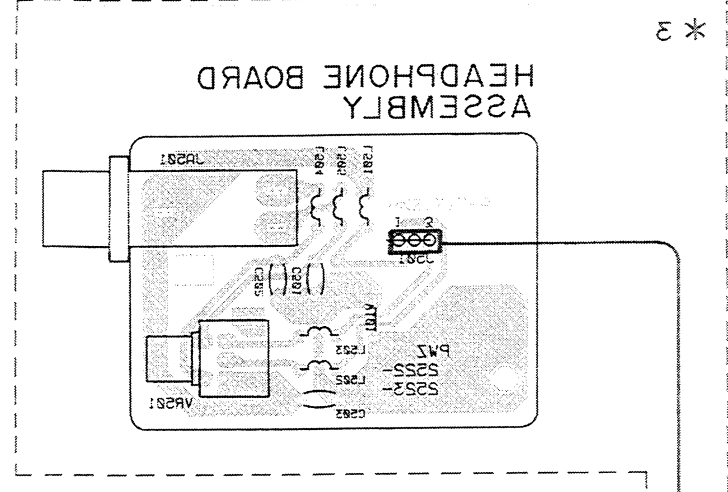
- Protector (L) PHA1255
- Protector (R) PHA1256
- Packing case PHG1959
- Spacer (FRONT) PHA1257
- Spacer (REAR) PHA1258

Parts List

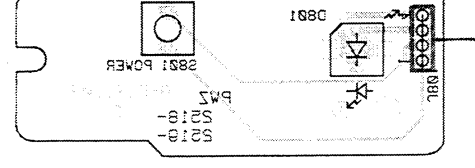
Mark	No.	Description	Part No.
	1	Lever switch (CLAMP)	DSK1003
	2	Float screw	PBA1048
	3	Rubber belt	PEB1193
	4	Motor pulley	PNW1634
	5	Tray	PNW2265
	6	Float base	PNW2032
	7	Drive gear	PNW2266
	8	Gear pulley	PNW2034
	9	Clamper base	PNW2035
	10	Clamp cam	PNW2036
	11	DC motor / 0.75W (LOADING)	PXM1010
	12	Float rubber	PEB1014
	13	Float rubber	PEB1132
	14	Screw	BPZ26P080FMC
	15	Screw	Z39 - 019
	16	Screw	PMZ26P040FMC
	17	Pinion gear	PNW2055
	18	DC motor (CARRIAGE)	PXM1027
	19	DC motor assembly (SPINDLE)	PEA1235
	20	Carriage base	PNW2058
	21	Disc table	PNW1608
	22	Screw	JFZ20P030FNI
	23	Screw	JFZ17P025FZK
	24	Gear 3	PNW2054
	25	Gear 2	PNW2053
	26	Washer	WT12D032D025
	27	Pickup assembly	PEA1179
	28	Guide bar	PLA1094
	29	Gear 1	PNW2052
NSP	30	Gear stopper	PNB1303
	31	Screw	BPZ20P060FMC
	32	PWB holder	PNW2057
	33	Screw	BPZ26P100FMC
NSP	34	Earth lead unit	PDF1104
	35	Screw	BBZ26P060FMC
NSP	36	Mechanism board assembly	PWX1192
NSP	37	Clamp magnet	PMF1014
NSP	38	Yoke	PNB1216
NSP	39	H spacer	PEB1249
NSP	40	Clamper S	PNW1609
NSP	41	Loading base	PNW2030
	42	DC motor assembly (CARRIAGE)	PEA1246
NSP	43	Servo mechanism assembly	PXA1478
	44	Screw	BBZ30P080FZK
NSP	45	Connector assembly (4P)	PDE1145
NSP	46	Connector assembly (5P)	PDE1201



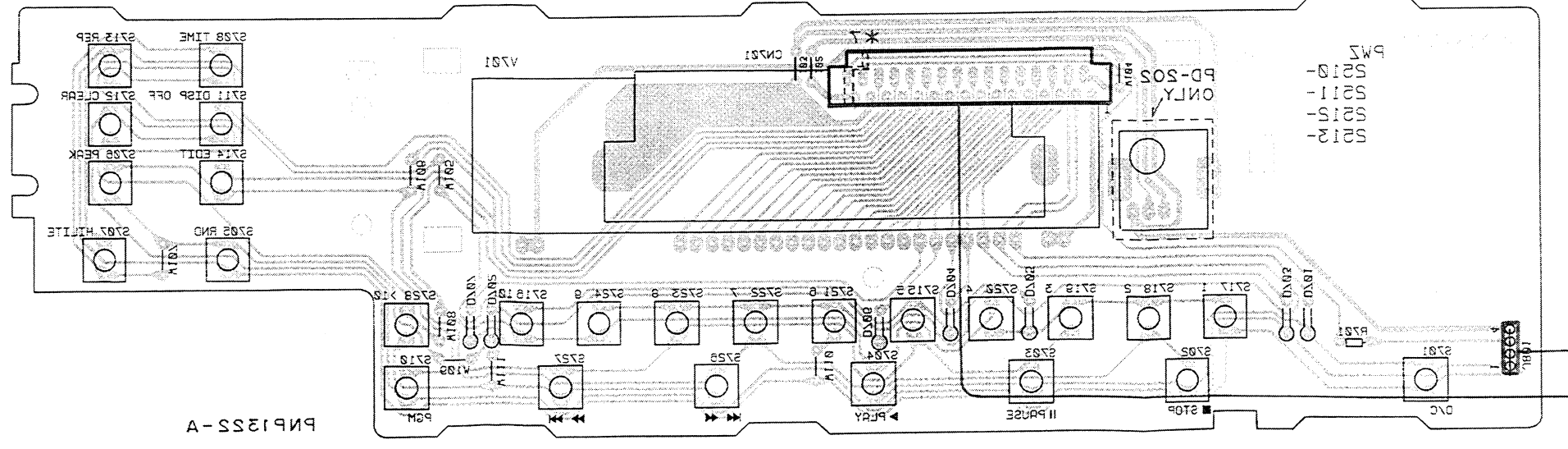
MOTHER BOARD ASSEMBLY  
 (PWW130:PD-102\KU,KC,KUX1,KUX2,KCX1)  
 (PWW131:PD-102\WEMX12,WBX12)  
 (PWW132:PD-102\WPW)  
 (PWW133:PD-102\RD)  
 (PWW134:PD-102\WL)  
 (PWW135:PD-202\KU,KC,KUX1,KUX2,KCX1)  
 (PWW136:PD-202\WEMX12,WBX12,WPW,WL)  
 (PWW137:PD-202\RD)



SWITCH BOARD ASSEMBLY



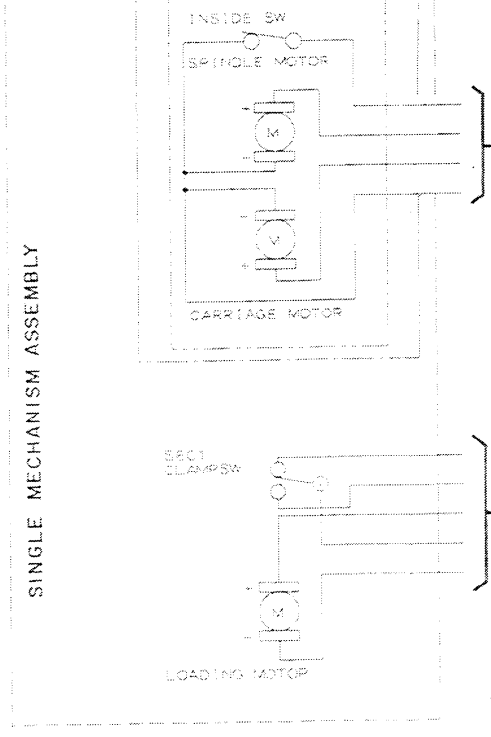
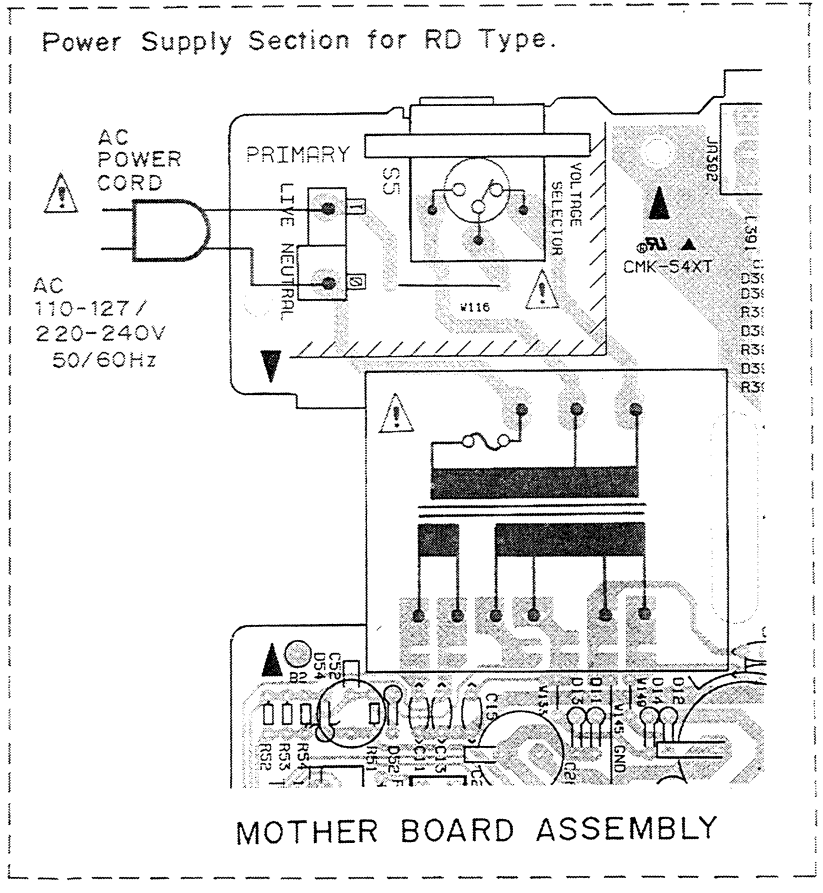
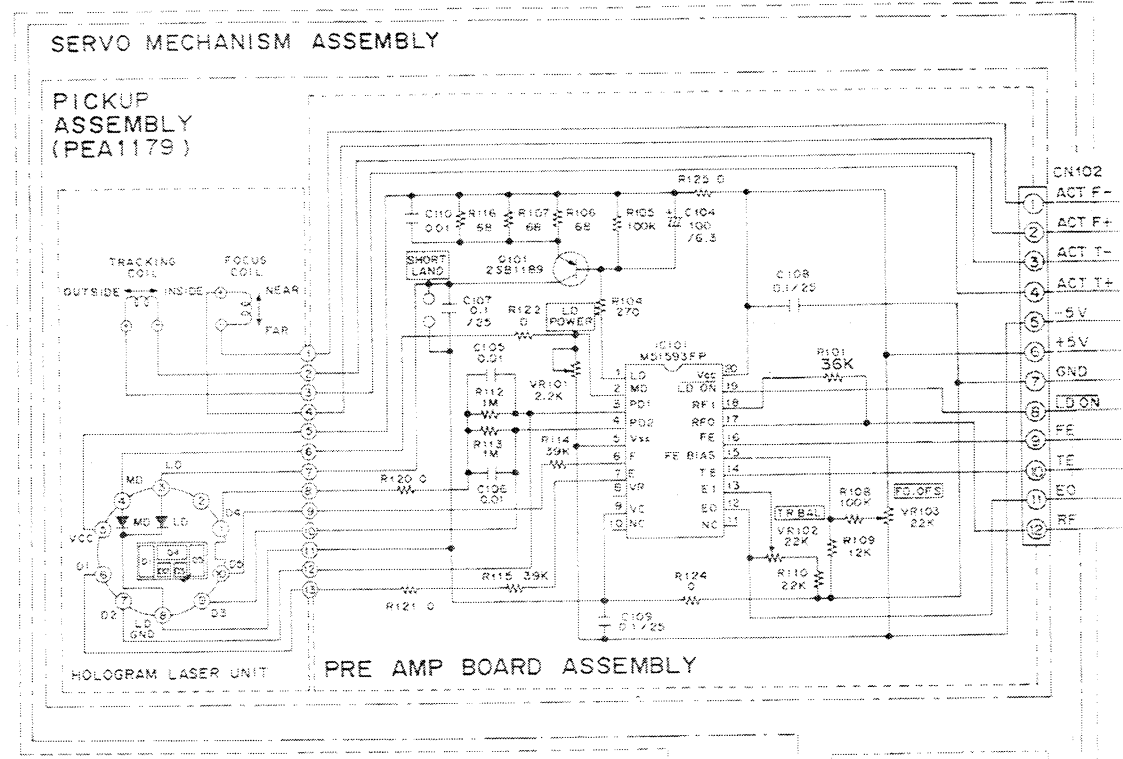
FUNCTION BOARD (PW2510:PD-102)  
 (PW2511:PD-202)



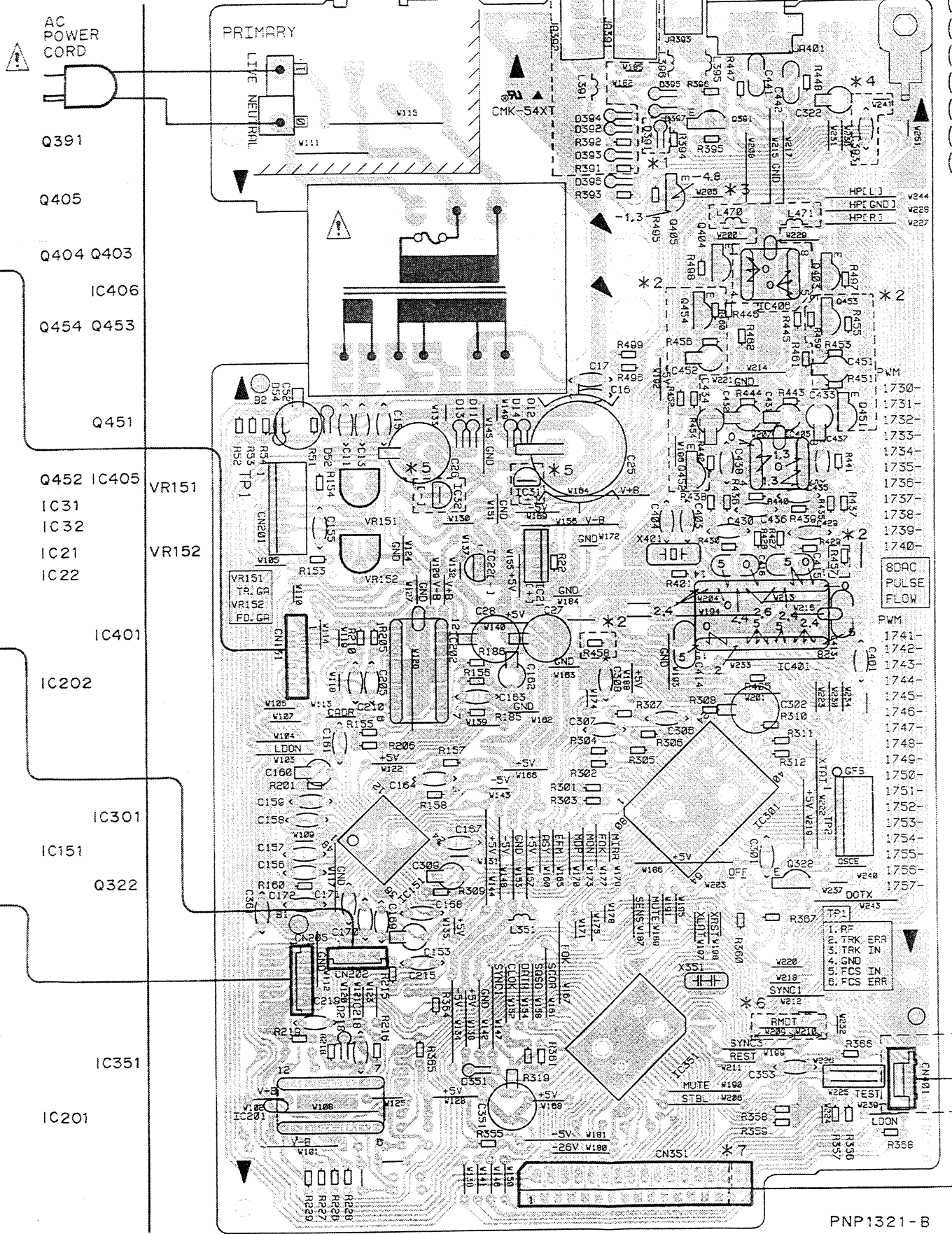
Pin No	Voltage [V]	Pin No	Voltage [V]	Pin No	Voltage [V]	Pin No	Voltage [V]
1	2.0	21	0	41	NC	61	NC
2	NC	22	2.5	42	2.0	62	NC
3	2.0	23	2.0	43	NC	63	0
4	2.5						



• View from component side



	CN351	CN701
PD-202	32pin	32pin
PD-102	30pin	30pin



MOTHER BOARD AS  
 (PWM1730: PD-102/  
 (PWM1731: PD-102/  
 (PWM1732: PD-102/  
 (PWM1733: PD-102/  
 (PWM1734: PD-102/  
 (PWM1735: PD-202/  
 (PWM1736: PD-202/  
 (PWM1737: PD-202/

\* 3 HEAD ASSE

SWITCH

FUNCTION ASSE

MOTHER BOARD ASSEMBLY  
 (PWM1730:PD-102/KU, KC, KUXJ, KUXJS, KCXJ)  
 (PWM1731:PD-102/WEMXJS, WBXJS)  
 (PWM1732:PD-102/WPW)  
 (PWM1733:PD-102/RD)  
 (PWM1734:PD-102/WL)  
 (PWM1735:PD-202/KU, KC, KUXJ, KUXJS, KCXJ)  
 (PWM1736:PD-202/WEMXJS, WBXJS, WPW, WL)  
 (PWM1737:PD-202/RD)

IC151 (CXA1372Q)

Pin No.	Voltage [V]	Pin No.	Voltage [V]
1	0	25	5.0
2	0	26	0
3	0	27	5.0
4	0	28	0
5	-0.3	29	0
6	0	30	-5.0
7	0.2	31	2.5
8	0	32	2.5
9	0	33	5.0
10	5.0	34	-1.5
11	0	35	-1.7
12	0	36	5.0
13	0	37	-0.7
14	0 to 0.2	38	-1.6
15	0	39	0
16	-4.0	40	0.8
17	1.3	41	-5.0
18	0	42	0
19	-5.0	43	0
20	5.0	44	0
21	5.0	45	0
22	5.0	46	0
23	5.0	47	0
24	5.0	48	0

IC301 (CXD2500BQ)

Pin No.	Voltage [V]	Pin No.	Voltage [V]	Pin No.	Voltage [V]	Pin No.	Voltage [V]
1	5.0	21	0	41	NC	61	NC
2	NC	22	2.5	42	5.0	62	NC
3	5.0	23	5.0	43	NC	63	0
4	2.6	24	2.5	44	NC	64	NC
5	NC	25	NC	45	NC	65	0
6	5.0	26	0	46	4.4	66	3.3 to 4.6
7	NC	27	2.5	47	0	67	5.0
8	NC	28	NC	48	0	68	0
9	0	29	0	49	0 to 0.1	69	2.1 to 3.0
10	0	30	NC	50	NC	70	5.0
11	NC	31	1.3 to 2.2	51	NC	71	5.0
12	0	32	2.5	52	0	72	5.0
13	NC	33	5.0	53	2.5	73	5.0
14	NC	34	2.5	54	NC	74	5.0
15	NC	35	NC	55	0	75	5.0
16	NC	36	NC	56	NC	76	0
17	0	37	NC	57	NC	77	5.0
18	2.5	38	NC	58	NC	78	5.0
19	2.4	39	NC	59	0	79	5.0
20	2.4	40	NC	60	NC	80	0

\* 5

	KU, KC, KUXJ KUXJS, KCXJ	OTHERS
IC31	JUMPER	USED

\* 6

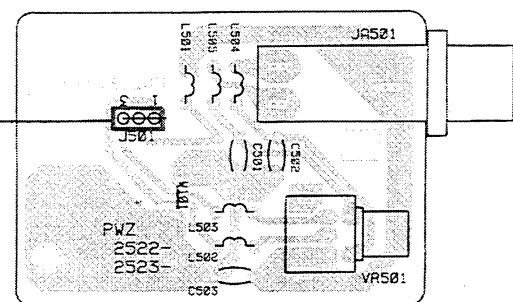
	W209	W210
PD-202/WEMXJS, WBXJS, WL, WPW, RD	UNUSED	USED
PD-102 PD-202/KU, KC, KUXJ, KUXJS, KCXJ	USED	UNUSED

P.C.B. pattern diagram indication	Corresponding part symbol	Part name	P.C.B. pattern diagram indication	Corresponding part symbol	Part name
		Transistor			Ceramic capacitor
		FET			Mylar capacitor
		Diode			Styrol capacitor
		Zener diode			Electrolytic capacitor (Non polarized)
		LED			Electrolytic capacitor (Noiseless)
		Varactor			Electrolytic capacitor (Polarized)
		Tact switch			Electrolytic capacitor (Polarized)
		Inductor			Power capacitor
		Coil			Semi-fixed resistor
		Transformer			Resistor array
		Filter			Resistor
					Resonator
					Thermistor

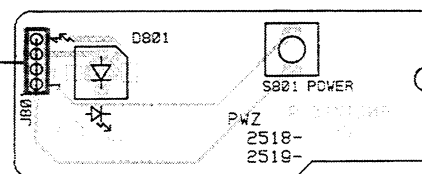
- This P.C.B. connection diagram is viewed from the parts mounted side.
- The parts which have been mounted on the board can be replaced with those shown with the corresponding wiring symbols listed in the above Table.
- The capacitor terminal marked with shows negative terminal.
- The diode marked with shows cathode side.
- The transistor terminal marked with shows emitter.

\* 3

HEADPHONE BOARD ASSEMBLY



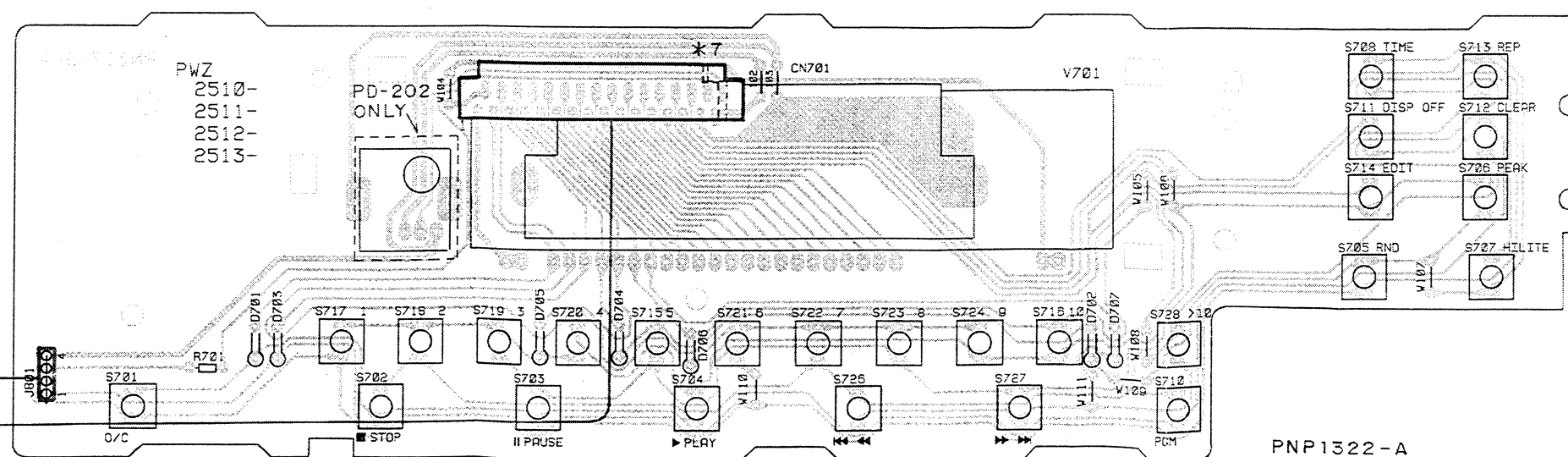
SWITCH BOARD ASSEMBLY



NOTE

- \* 1: PD-202/KU, KC, KUXJS, KCXJ, KUXJ ONLY
- \* 2: PD-202, PD-102/WEMXJS, WBXJS, WL ONLY
- \* 3: PD-202, PD-102/KU, KC, KUXJ, KCXJ, WEMXJS, WBXJS, WL, KUXJS ONLY
- \* 4: PD-202/KU, KC, KUXJS, KCXJ, KUXJ  
PD-102/KU, KC, KUXJ, KUXJS, KCXJ, WEMXJS, WBXJS, WL ONLY

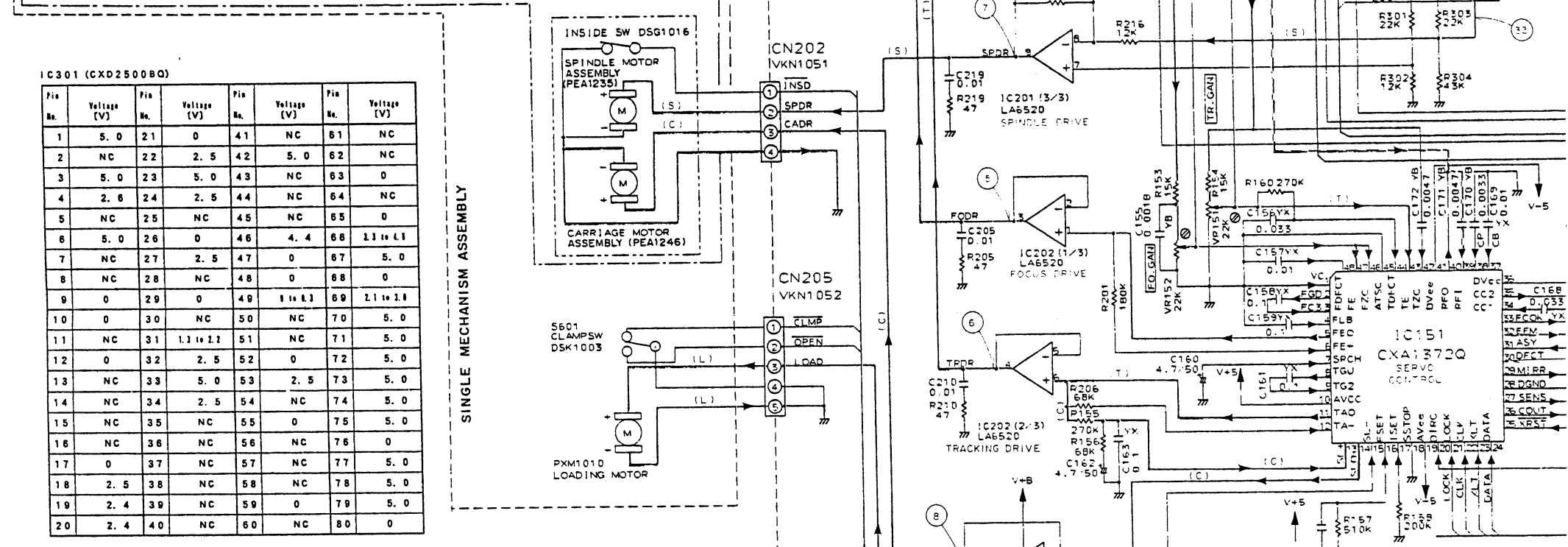
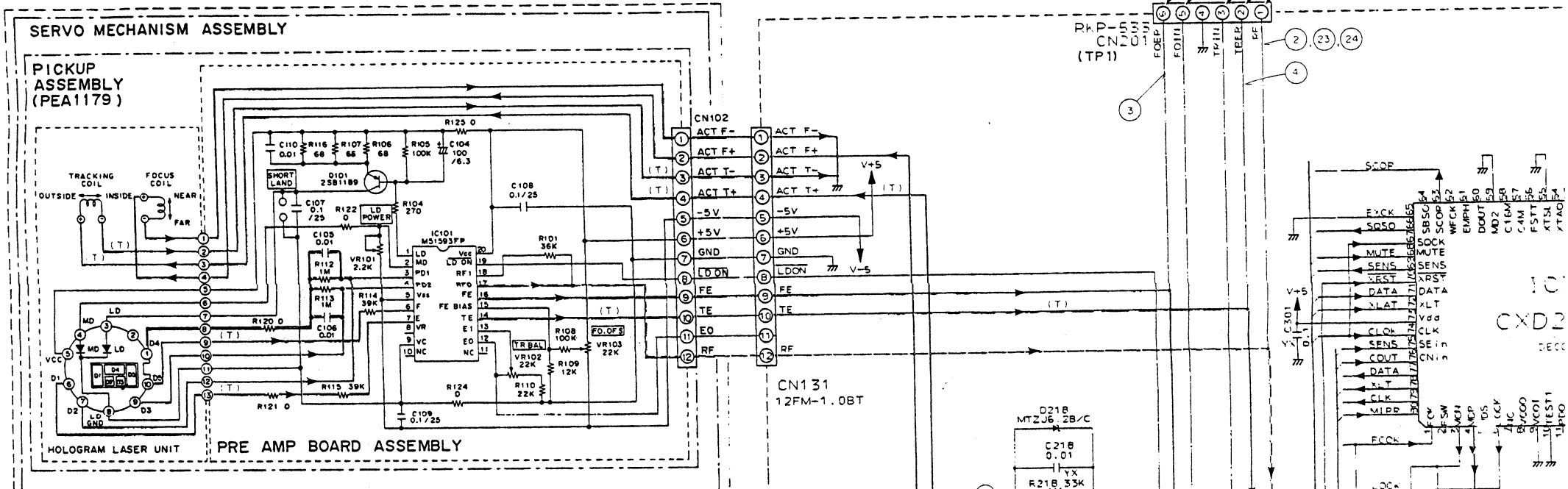
FUNCTION BOARD (PWZ2510:PD-102)  
ASSEMBLY (PWZ2511:PD-202)



IC351 (PD4457A)

Pin No.	Voltage [V]	Pin No.	Voltage [V]	Pin No.	Voltage [V]	Pin No.	Voltage [V]
1	5.0	17	-3.0 to -22.0	33	5.0	49	0
2	-24.0 to -22.0	18	-26.0	34	3.3 to 4.7	50	5.0
3	-24.0 to -22.0	19	-5.0	35	5.0	51	0
4	-24.0 to -23.0	20	-3.0 to -22.0	36	0	52	5.0
5	-24.0 to -23.0	21	-3.0 to -22.0	37	5.0	53	5.0
6	-24.0 to -23.0	22	-3.0 to -22.0	38	5.0	54	5.0
7	-24.0 to -23.0	23	-3.0 to -22.0	39	NC	55	0
8	-24.0 to -23.0	24	-3.0 to -22.0	40	NC	56	2.5
9	-24.0 to -23.0	25	-3.0 to -22.0	41	0	57	2.5
10	-24.0 to -23.0	26	5.0	42	0	58	0
11	-24.0 to -23.0	27	-3.0 to -22.0	43	NC	59	0
12	0	28	-3.0 to -22.0	44	NC	60	NC
13	0	29	-3.0 to -22.0	45	0	61	0
14	NC	30	-3.0 to -22.0	46	5.0	62	0
15	0	31	5.0	47	NC	63	0
16	-3.0 to -22.0	32	5.0	48	NC	64	0

PNP1322-A



IC301 (CXD2500BQ)

Pin No.	Voltage (V)	Pin No.	Voltage (V)	Pin No.	Voltage (V)	Pin No.	Voltage (V)
1	5.0	21	0	41	NC	61	NC
2	NC	22	2.5	42	5.0	62	NC
3	5.0	23	5.0	43	NC	63	0
4	2.6	24	2.5	44	NC	64	NC
5	NC	25	NC	45	NC	65	0
6	5.0	26	0	46	4.4	66	1.1 to 1.1
7	NC	27	2.5	47	0	67	5.0
8	NC	28	NC	48	0	68	0
9	0	29	0	49	1.1 to 1.1	69	2.1 to 1.1
10	0	30	NC	50	NC	70	5.0
11	NC	31	1.1 to 1.1	51	NC	71	5.0
12	0	32	2.5	52	0	72	5.0
13	NC	33	5.0	53	2.5	73	5.0
14	NC	34	2.5	54	NC	74	5.0
15	NC	35	NC	55	0	75	5.0
16	NC	36	NC	56	NC	76	0
17	0	37	NC	57	NC	77	5.0
18	2.5	38	NC	58	NC	78	5.0
19	2.4	39	NC	59	0	79	5.0
20	2.4	40	NC	60	NC	80	0

IC151 (CXA1372Q)

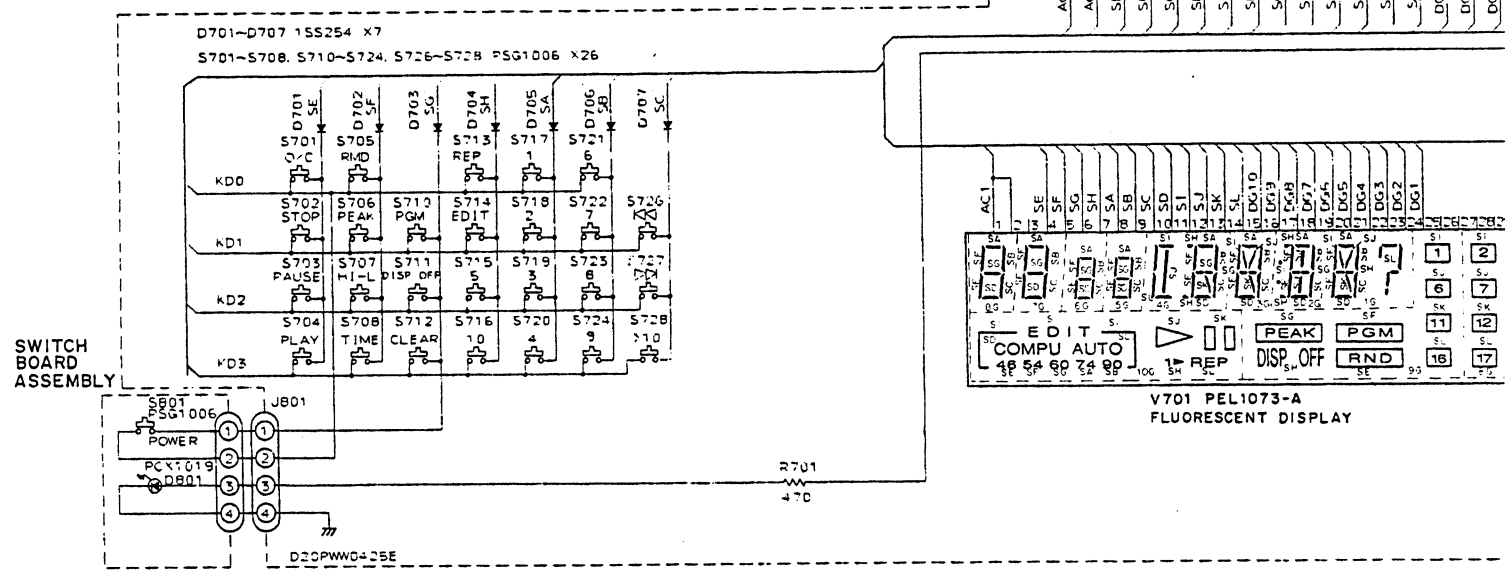
Pin No.	Voltage (V)	Pin No.	Voltage (V)
1	0	25	5.0
2	0	26	0
3	0	27	5.0
4	0	28	0
5	-0.3	29	0
6	0	30	-5.0
7	0.2	31	2.5
8	0	32	2.5
9	0	33	5.0
10	5.0	34	-1.5
11	0	35	-1.7
12	0	36	5.0
13	0	37	-0.7
14	1 to 1.1	38	-1.6
15	0	39	0
16	-4.0	40	0.8
17	1.3	41	-5.0
18	0	42	0
19	-5.0	43	0
20	5.0	44	0
21	5.0	45	0
22	5.0	46	0
23	5.0	47	0
24	5.0	48	0

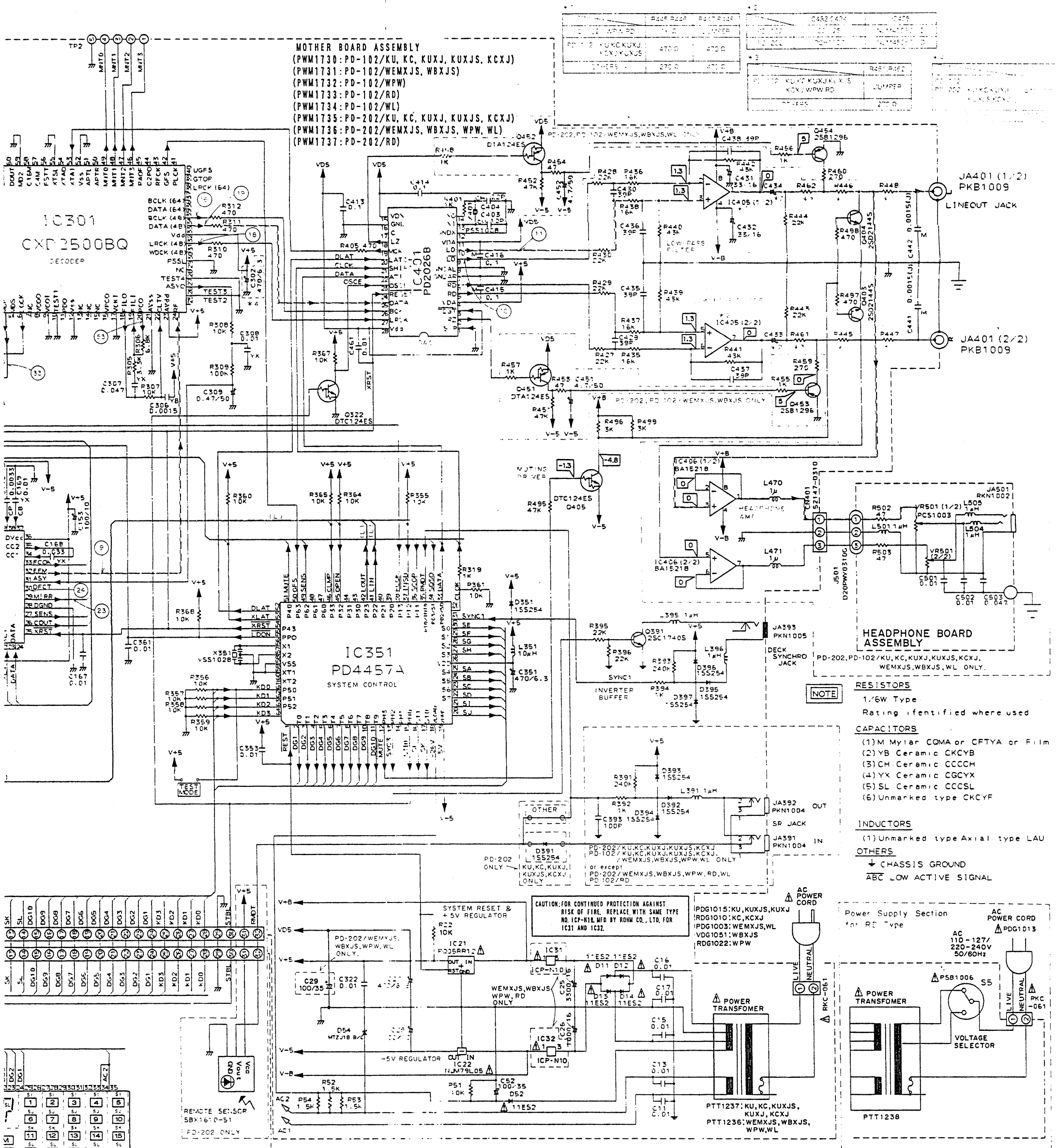
IC401 (PD2026B)

Pin No.	Voltage (V)	Pin No.	Voltage (V)
1	0	15	5.0
2	0	16	0
3	5.0	17	NC
4	5.0	18	0
5	2.4	19	2.0
6	2.6	20	5.0
7	0	21	5.0
8	0	22	5.0
9	2.6	23	5.0
10	2.4	24	5.0
11	5.0	25	2.4
12	0	26	2.4
13	2.4	27	2.4
14	2.4	28	5.0

IC351 (PD4457A)

Pin No.	Voltage (V)	Pin No.	Voltage (V)	Pin No.	Voltage (V)	Pin No.	Voltage (V)
1	5.0	17	-1.1 to -12.1	33	5.0	49	0
2	-24.8 to -21.1	18	-26.0	34	1.1 to 4.7	50	5.0
3	-24.8 to -21.1	19	-5.0	35	5.0	51	0
4	-24.8 to -21.1	20	-1.1 to -12.1	36	0	52	5.0
5	-24.8 to -21.1	21	-1.1 to -12.1	37	5.0	53	5.0
6	-24.8 to -21.1	22	-1.1 to -12.1	38	5.0	54	5.0
7	-24.8 to -21.1	23	-1.1 to -12.1	39	NC	55	0
8	-24.8 to -21.1	24	-1.1 to -12.1	40	NC	56	2.5
9	-24.8 to -21.1	25	-1.1 to -12.1	41	0	57	2.5
10	-24.8 to -21.1	26	5.0	42	0	58	0
11	-24.8 to -21.1	27	-1.1 to -12.1	43	NC	59	0
12	0	28	-1.1 to -12.1	44	NC	60	NC
13	0	29	-1.1 to -12.1	45	0	61	0
14	NC	30	-1.1 to -12.1	46	5.0	62	0
15	0	31	5.0	47	NC	63	0
16	-1.1 to -12.1	32	5.0	48	NC	64	0

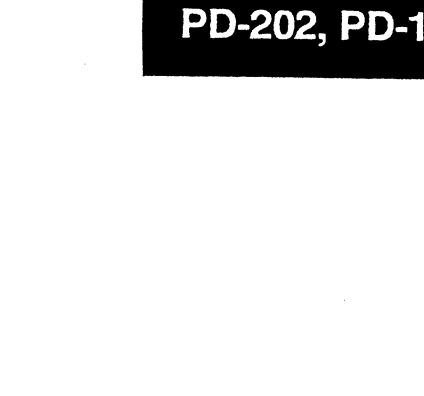
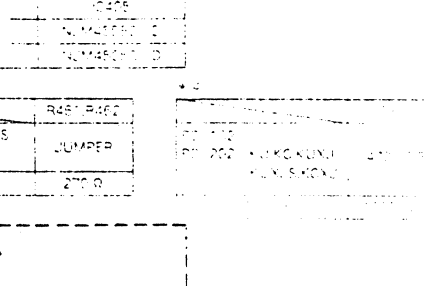
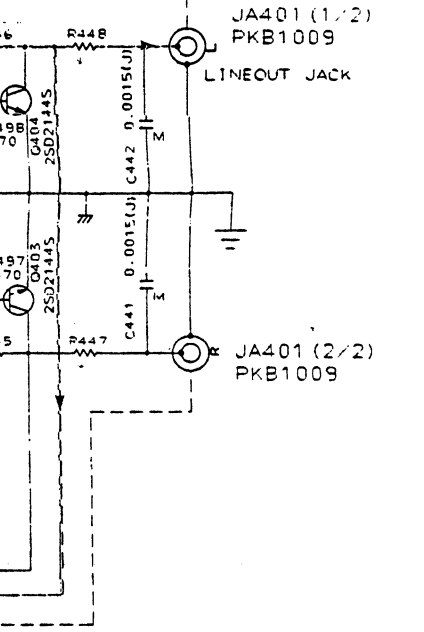
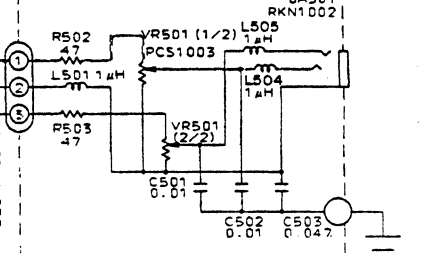
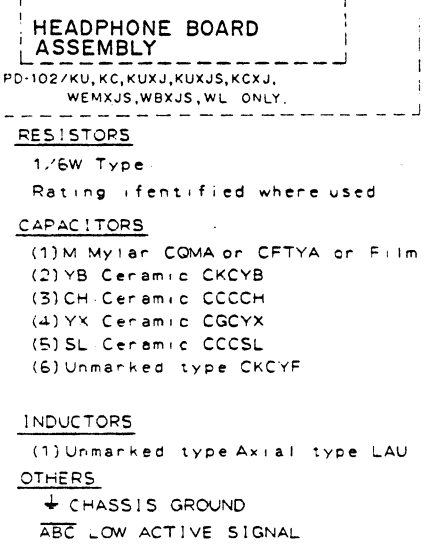
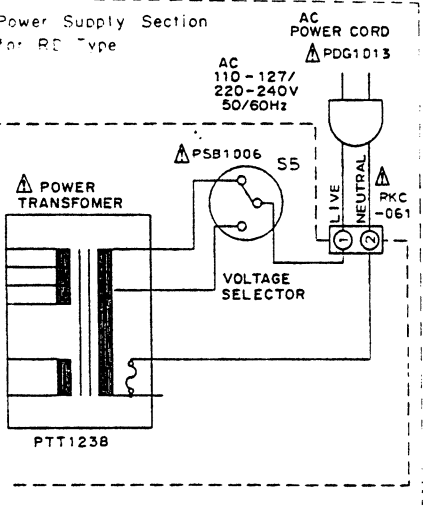




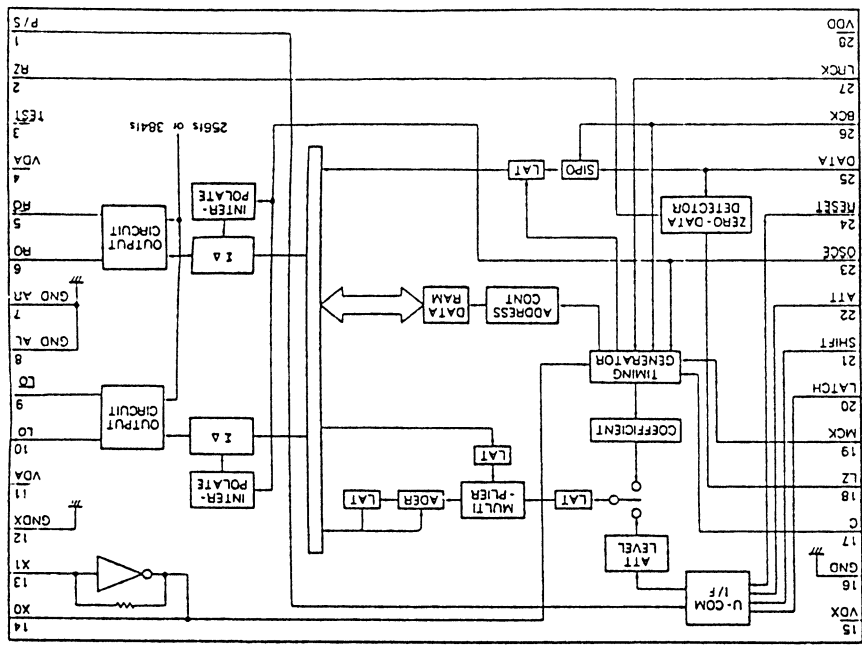
PD-102	PD-202
CN351	HLEM303-1
CN701	HLEM303-1
J701	PDD1349

- : FOCUS SERVO LOOP
- - -: SIGNAL ROUTE
- (T): TRACKING SERVO LOOP
- (C): CARRIAGE SERVO LOOP
- (L): LOADING MOTOR ROUTE
- (S): SPINDLE MOTOR ROUTE

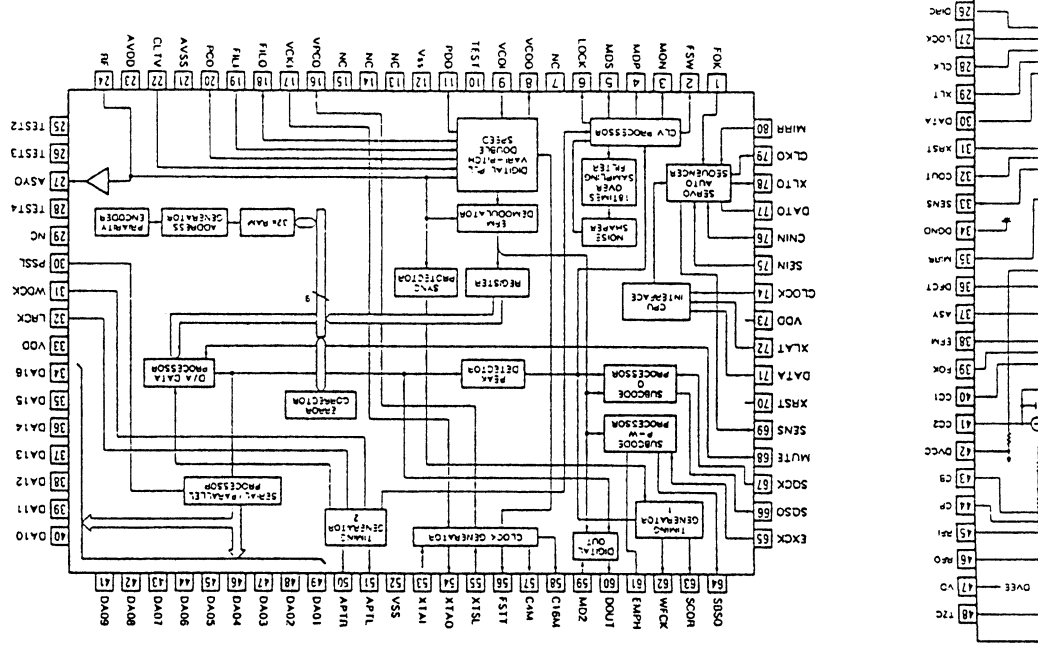
FUNCTION BOARD ASSEMBLY  
 (PWZ2510: PD-102)  
 (PWZ2511: PD-202)







IC401:PD2026B



IC301:CXD2500B0

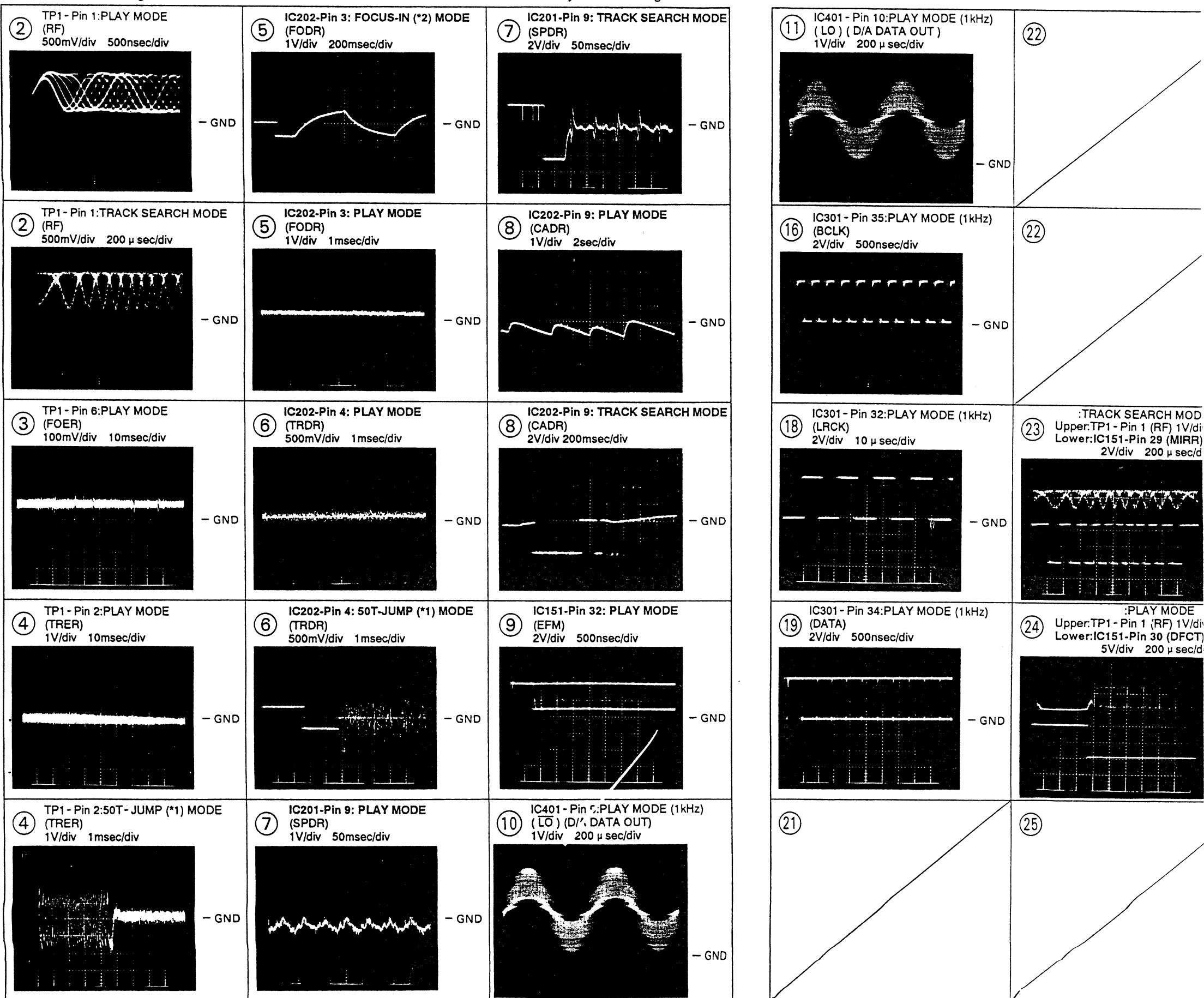
PD-202, PD-102

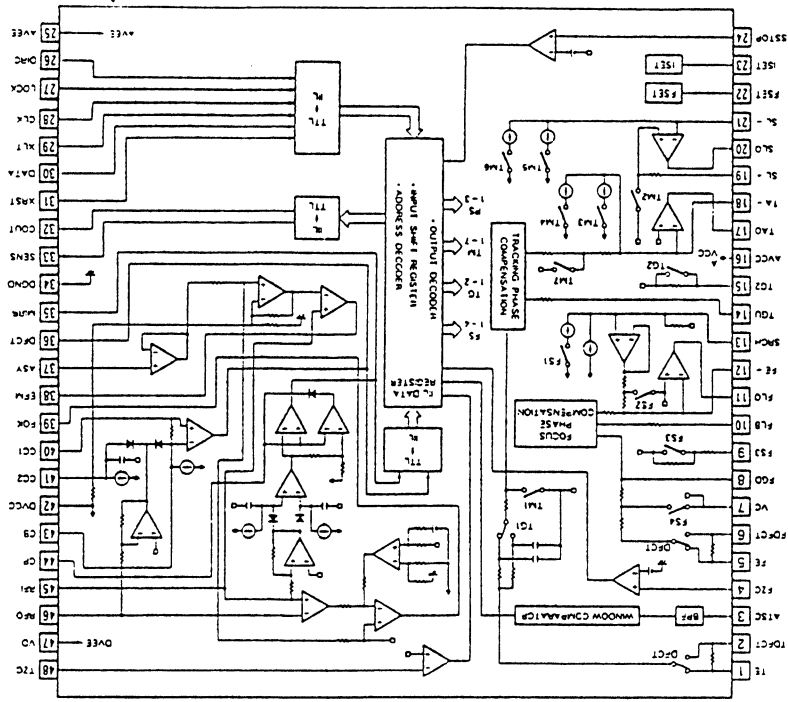
Wave Forms

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

\*1 50T - JUMP: After switching to the pause mode, press the manual search key.

\*2 FOCUS - IN: Press the key without loading a disc.





● IC BLOCK DIAGRAMS  
IC151:CXA1372Q

8. SWITCHES (Underline indicates switch position):
- FUNCTION BOARD ASSEMBLY
- S701 : O/C  
S715 : 5  
S702 : STOP  
S716 : 10  
S703 : PAUSE  
S717 : 1  
S704 : PLAY  
S718 : 2  
S705 : RMD  
S719 : 3  
S706 : PEAK  
S720 : 4  
S707 : HI-L  
S721 : 6  
S708 : TIME  
S722 : 7  
S710 : PGM  
S723 : 8  
S711 : DISP OFF  
S724 : 9  
S712 : CLEAR  
S726 : 10  
S713 : REP  
S727 : 11  
S714 : EDIT  
S728 : 12
- SWITCH BOARD ASSEMBLY
- S801 : POWER

- Note:
- When ordering service parts, be sure to refer to "PARTS LIST of EXPLODED VIEWS" or "PCB PARTS LIST".
  - Since these are basic circuits, some parts of them or the values of some components may be changed for improvement.
  - RESISTORS:  
Unit: k:K, M:M, or Ω unless otherwise noted.  
Rated power: 1/4W, 1/6W, 1/8W, 1/10W unless otherwise noted.  
Tolerance: (F): ±1%, (G): ±2%, (K): ±10%, (M): ±20% or ±5% unless otherwise noted.
  - CAPACITORS:  
Unit: p:pF or μF unless otherwise noted.  
Rated voltage (V) in PLAY mode unless otherwise noted.  
Ratings: capacitor (μF)/ voltage (V) unless otherwise noted.
  - COILS:  
Unit: m:mH or μH unless otherwise noted.
  - VOLTAGE AND CURRENT:  
□ : DC voltage (V) in PLAY mode unless otherwise noted.  
◊ : mA or - mA : DC current in PLAY mode unless otherwise noted.  
Value in ( ) is DC current in STOP mode.
  - OTHERS:  
→ : Signal route.  
⊙ : Adjusting point.  
▲ (Red) : Measurement point.  
• : mark found on some component parts indicates the importance of the safety factor of the parts. Therefore, when replacing, be sure to use parts of identical designation.

## 5. PCB PARTS LIST

### NOTES:

- Parts marked by "NSP" are generally unavailable because they are not in our Master Spare Parts List.
- The ▲ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.
- Parts marked by "⊙" are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.
- When ordering resistors, first convert resistance values into code form as shown in the following examples.

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

560 Ω → 56 × 10<sup>1</sup> → 561 ..... RD1/8PM 561J  
47k Ω → 47 × 10<sup>3</sup> → 473 ..... RD1/4PS 473J  
0.5 Ω → 0R5 ..... RN2H 0R5K  
1 Ω → 010 ..... RS1P 010K

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

5.62k Ω → 562 × 10<sup>1</sup> → 5621 ..... RN1/4PC 5621F

Mark	No.	Description	Part No.	Mark	No.	Description	Part No.
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### LIST OF ASSEMBLIES

⊙		MOTHER BOARD ASSEMBLY	PWM1735				
NSP		SUB BOARD ASSEMBLY	PWX1262				
NSP		FUNCTION BOARD ASSEMBLY	PWZ2511				
NSP		SWITCH BOARD ASSEMBLY	PWZ2518				
NSP		HEADPHONE BOARD ASSEMBLY	PWZ2522				
NSP		MECHANISM BOARD ASSEMBLY	PWX1192				

		C28, C153	CEAS101M10
		C52	CEAS101M35
		C26	CEAS102M16
		C431, C432	CEAS330M16
		C25	CEAS332M16
		C27, C302, C351	CEAS471M6R3

### MOTHER BOARD ASSEMBLY

#### SEMICONDUCTORS

	IC406	BA15218
	IC151	CXA1372Q
	IC301	CXD2500BQ
▲	IC201, IC202	LA6520
	IC405	NJM4565D-D
▲	IC22	NJM79L05A
	IC401	PD2026B
	IC351	PD4457A
▲	IC21	PQ05RR12
	Q453, Q454	2SB1296
	Q391	2SC1740S
	Q403, Q404	2SD2144S
	Q451, Q452	DTA124ES
	Q322, Q405	DTC124ES
▲	D11-D14, D52	11ES2
	D351, D391-D397	1SS254
	D54	MTZJ18B
	D218	MTZJ6.2B

#### COILS

	L391, L395, L396, L470, L471	LAU010K
	L351	LAU100K

#### CAPACITORS

	C403	CCCCH120J50
	C404	CCCCH220J50
	C429, C430, C435-C438	CCCCH390J50
	C393	CCCSL101J50

	C160, C162, C451, C452	CEAS4R7M50
	C309	CEASR47M50
	C413-C416	CFTYA104J50
	C157, C164, C169, C218, C308	CGCYX103K25
	C158, C159, C161, C163, C301	CGCYX104K25
	C156, C168	CGCYX333K25
	C307	CGCYX473K25
	C306	CKCYB152K50
	C155	CKCYB182K50
	C170	CKCYB332K50
	C171, C172	CKCYB472K50
	C11, C13, C15-C17, C167, C205,	CKCYF103Z50
	C210, C215, C219, C322, C353, C361, C461	
	C433, C434 (C=220, V(AC)=25)	PCH1107
	C441, C442 (C=0.0015U, V(AC)=50V)	PCL1030

#### RESISTORS

	VR151, VR152 (R=22K, W=0.1)	RCP1046
	OTHER RESISTORS	RD1/6PM □□□□

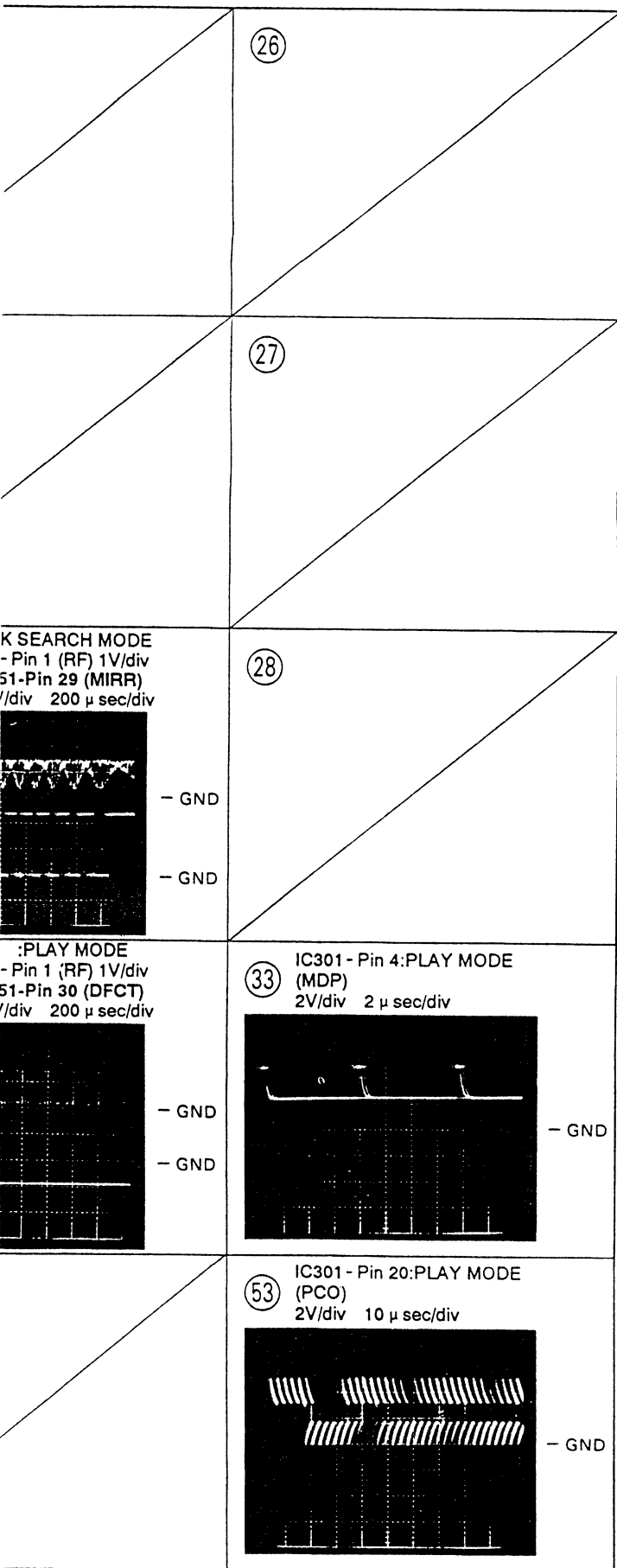
#### OTHERS

	CN131 CONNECTOR	12FM-1.0BT
	CN351 32P FFC CONNECTOR	HLEM32S-1
	JA401 2P PIN JACK	PKB1009
	JA391, JA392 REMOTE CONTROL JACK	PKN1004
	JA393 MINI JACK	PKN1005
	X401 CRYSTAL RESONATOR (16.9344MHz)	PSS1008
▲	TERMINAL	RKC-061
	X351 CERAMIC RESONATOR (4.19MHz)	VSS1028

### FUNCTION BOARD ASSEMBLY

#### SEMICONDUCTORS

	D701-D707	1SS254
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Mark	No.	Description	Part No.
------	-----	-------------	----------

**SWITCHES**

	S701-S708, S710-S724, S726-S728		PSG1006
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**RESISTORS**

	ALL RESISTORS		RD1/6PM□□□J
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**OTHERS**

	CN701 32P FFC CONNECTOR		HLEM32R-1
	V701 FL INDICATOR TUBE		PEL1073
	REMOTE CONTROL SENSOR		SBX1610

**SWITCH BOARD ASSEMBLY**

**SEMICONDUCTORS**

	D801		PCX1019
--	------	--	---------

**SWITCHES**

	S801		PSG1006
--	------	--	---------

**HEADPHONE BOARD ASSEMBLY**

**COILS**

	L501, L504, L505		LAU010K
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**CAPACITORS**

	C501, C502		CKCYF103Z50
	C503		CKCYF473Z50

**RESISTORS**

	VR501		PCS1003
	OTHER RESISTORS		RD1/6PM□□□J

**OTHERS**

	JA501 HEADPHONE JACK		RKN1002
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**MECHANISM BOARD ASSEMBLY**

**SWITCHES**

	S610		DSG1016
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## 6. ADJUSTMENTS

### ● Adjustment Methods

If a disc player is adjusted incorrectly or inadequately, it may malfunction or not work at all even though there is nothing at all wrong with the pickup or the circuitry. Adjust correctly following the adjustment procedure.

### ● Adjustment Items/Verification Items and Order

If the specified values cannot be obtained or no adjustment is possible by performing the verifications or adjustments described in steps 1 – 4, the pickup block may be defective.

Step	Item	Test Point	Adjustment Location
1	Focus offset verification	TP1, Pin 6(FCS. ERR)	None
2	Tracking error balance verification	TP1, Pin 2(TRK. ERR)	None
3	Pickup radial/tangential direction tilt adjustment	TP1, Pin 1(RF)	Radial tilt adjustment screw, Tangential tilt adjustment screw
4	RF level verification	TP1, Pin 1(RF)	None
5	Focus servo loop gain adjustment	TP1, Pin 5(FCS. IN) TP1, Pin 6(FCS. ERR)	VR152(FCS. GAN)
6	Tracking servo loop gain adjustment	TP1, Pin 3(TRK. IN) TP1, Pin 2(TRK. ERR)	VR151 (TRK. GAN)

#### ● Abbreviation table

FCS. ERR	:Focus Error
TRK. ERR	:Tracking Error
FCS GAN	:Focus Gain
TRK GAN	:Tracking Gain
FCS. IN	:Focus In
TRK. IN	:Tracking In

### ● Measuring Instruments and Tools

1. Dual trace oscilloscope (10:1 probe)
2. Low-frequency oscillator
3. Test disc (YEDS-7)
4. 8cm disc (With at least about 20 minutes of recording)
5. Low-pass filter (39k $\Omega$  + 0.001  $\mu$ F)
6. Resistor (100 k $\Omega$  )
7. Ball point hexagon wrench (GGK1002)
8. Standard tools

● **Test Point and Adjustment Variable Resistor Positions**

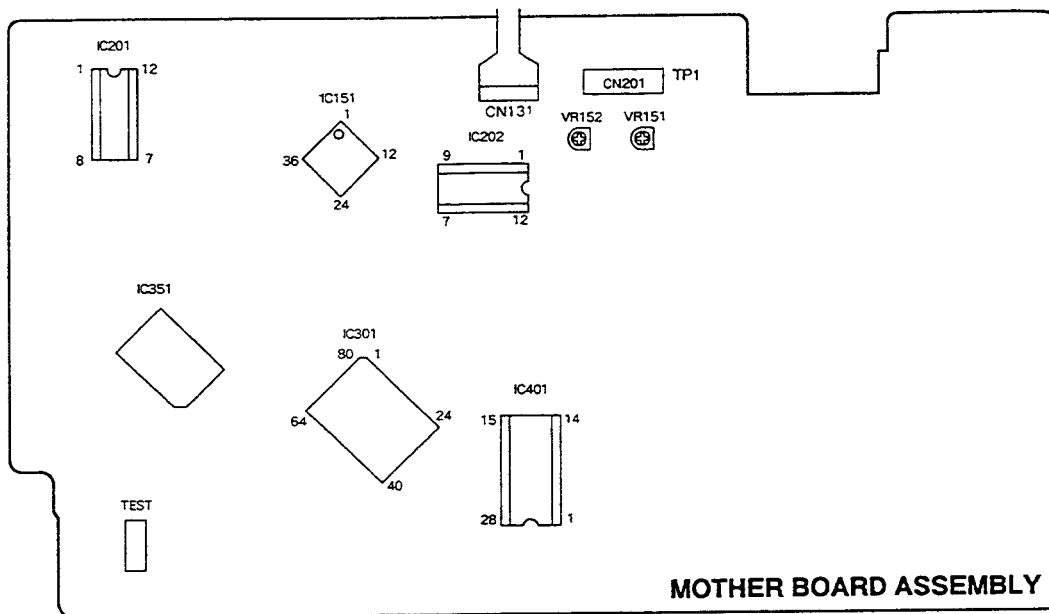


Figure 1 Adjustment Locations

● **Notes**

1. Use a 10:1 probe for the oscilloscope.
2. All the knob positions (settings) for the oscilloscope in the adjustment procedures are for when a 10:1 probe is used.

● **Test Mode**

These models have a test mode so that the adjustments and checks required for service can be carried out easily. When these models are in test mode, the keys on the front panel work differently from normal. Adjustments and checks can be carried out by operating these keys with the correct procedure. For these models, all adjustments are carried out in test mode.

**[Setting these models to test mode]**

How to set this model into test mode.

1. Unplug the power cord from the AC socket.
2. Short the test mode jumper wires. (See Figure 1.)
3. Plug the power cord back into the AC socket.

When the test mode is set correctly, the display is different from what it usually is when the power is turned on. If the display is still the same as usual, test mode has not been set correctly, so repeat Steps 1 – 3.





**[Release from test mode]**

Here is the procedure for releasing the test mode:

1. Press the STOP key and stop all operations.
2. Unplug the power cord from the AC socket.

**[Operations of the keys in test mode]**

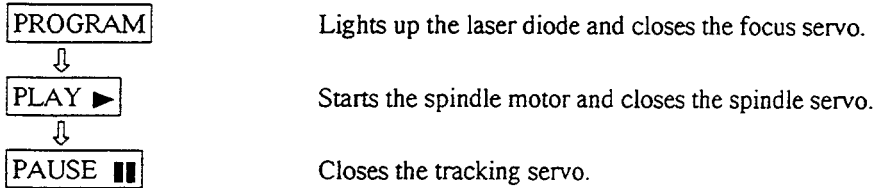
Code	Key Name	Function in Test Mode	Explanation
	PROGRAM	Focus servo close	<p>The laser diode is lit up and the focus actuator is lowered, then raised slowly and the focus servo is closed at the point where the objective lens is focused on the disc.</p> <p>With the player in this state, if you lightly rotate the stopped disc by hand, you can hear the sound the focus servo.</p> <p>If you can hear this sound, the focus servo is operating correctly. If you press this key with no disc mounted, the laser diode lights up, the focus actuator is pulled down, then the actuator is raised and lowered three times and returned to its original position.</p>
▶	PLAY	Spindle servo ON	<p>Starts the spindle motor in the clockwise direction and when the disc rotation reaches the prescribed speed (about 500 rpm at the inner periphery), sets the spindle servo in a closed loop.</p> <p>Be careful. Pressing this key when there is no disc mounted makes the spindle motor run at the maximum speed.</p> <p>If the focus servo does not go correctly into a closed loop or the laser light shines on the mirror section at the outermost periphery of the disc, the same symptom is occurred.</p>
	PAUSE	Tracking servo close/open	<p>Pressing this key when the focus servo and spindle servo are operating correctly in closed loops puts the tracking servo into a closed loop, displays the track number being played back and the elapsed time on the front panel, and outputs the playback signal.</p> <p>If the elapsed time is not displayed or not counted correctly or the audio is not played back correctly, it may be that the laser is shining on the section with no sound recorded at the outer edge of the disc, that something is out of adjustment, or that there is some other problem.</p> <p>This key is a toggle key and open/close the tracking servo alternately. This key has no effect if no disc is mounted.</p>

Code	Key Name	Function in Test Mode	Explanation
	MANUAL TRACK SEARCH REV	Carriage reverse (inwards)	Moves the pickup position toward the inner diameter of the disc. When this key is pressed with the tracking servo in a closed loop, the tracking servo automatically goes into an open loop. Since the motor does not automatically stop at the mechanical end point in test mode, be careful with this operation.
	MANUAL TRACK SEARCH FWD	Carriage forward (outwards)	Moves the pickup position toward the outer diameter of the disc. When this key is pressed with the tracking servo in a closed loop, the tracking servo automatically goes into an open loop. Since the motor does not automatically stop at the mechanical end point in test mode, be careful with this operation.
	STOP	Stop	Switches off all the servos and initialized. The pickup remains where it was when this key was pressed.
	OPEN/CLOSE	Disc tray open/close	Open/close the disc tray. This key is a toggle key and open/close tray alternately. Pressing this key when the disc is turning stops the disc, then opens the tray. This key operation does not affect the position of the pickup.

**[How to play back a disc in test mode]**

In test mode, since the servos operate independently, playing back a disc requires that you operate the keys in the correct order to close the servos.

Here is the key operation sequence for playing back a disc in test mode.



Wait at least 2-3 seconds between each of these operations.

**1. Focus Offset Verification**

● Objective	Verify the DC offset for the focus error amp.		
● Symptom when out of adjustment	The model does not focus in and the RF signal is dirty.		
● Measurement instrument connections	Connect the oscilloscope to TP1, Pin 6 (FCS. ERR)  [Settings] 5 mV/division 10 ms/division DC mode	● Player state  ● Adjustment location  ● Disc	Test mode, stopped (just the Power switch on)  None  None needed
<b>[Procedure]</b>			
Verify the DC voltage at TP1, Pin 6 (FCS. ERR) is $0 \pm 50$ mV.			

Note : If the specified values cannot be obtained or no adjustment is possible by performing the verifications or adjustments described in adjustment items 1 – 4, the pickup block may be defective.



## 2. Tracking Error Balance Verification

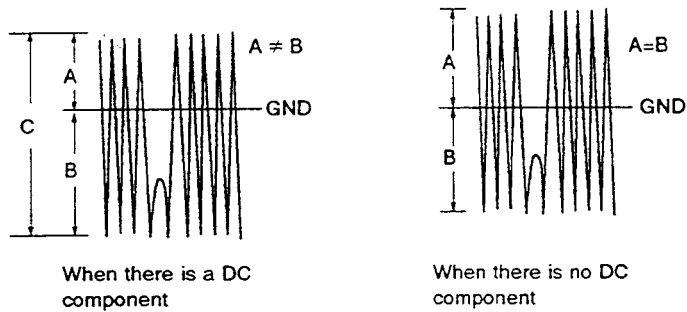
● Objective	To verify that there is no variation in the sensitivity of the tracking photo diode.		
● Symptom when out of adjustment	Play does not start or track search is impossible.		
● Measurement instrument connections	Connect the oscilloscope to TP1, Pin 2 (TRK. ERR). This connection may be via a low pass filter.  [Settings] 50 mV/division 5 ms/division DC mode	● Player state  ● Adjustment location  ● Disc	Test mode, focus and spindle servos closed and tracking servo open  None  YEDS-7

### [Procedure]

1. Move the pickup to midway across the disc (R=35 mm) with the MANUAL TRACK SEARCH FWD  $\blacktriangleright\blacktriangleright$  •  $\blacktriangleright$  or REV  $\blacktriangleleft$  •  $\blacktriangleleft$  key.
2. Press the PROGRAM key, then the PLAY  $\blacktriangleright$  key in that order to close the focus servo then the spindle servo.
3. Line up the bright line (ground) at the center of the oscilloscope screen and put the oscilloscope into DC mode.
4. Supposing that the positive amplitude of the tracking error signal at TP1, pin 2 (TRK ERR) is (A) and the negative amplitude is (B), the following expression is satisfied.

$$\text{When } A \geq B, \frac{A-B}{C} \times \frac{1}{2} \leq 0.1$$

$$\text{When } A < B, \frac{B-A}{C} \times \frac{1}{2} \leq 0.1$$



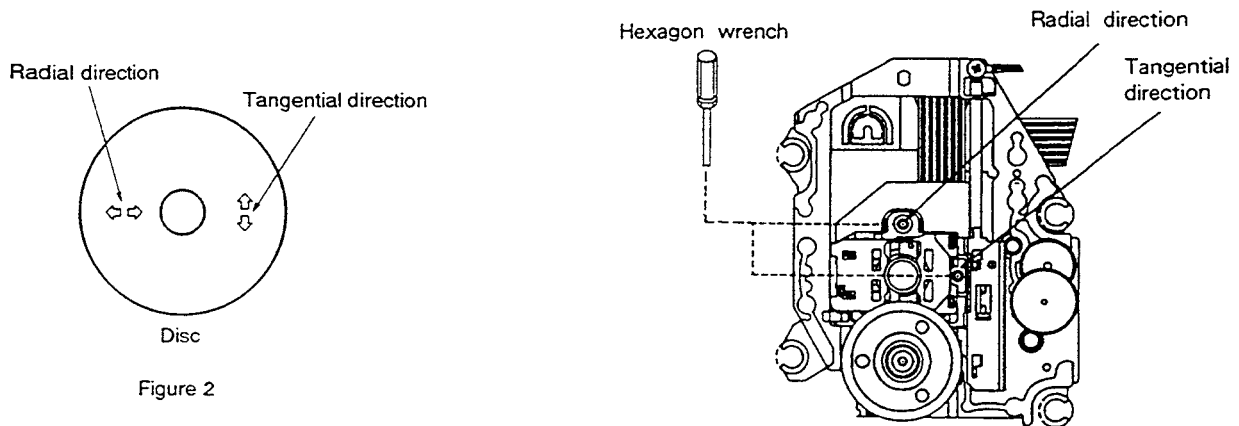
### 3. Pickup Radial/Tangential Tilt Adjustment

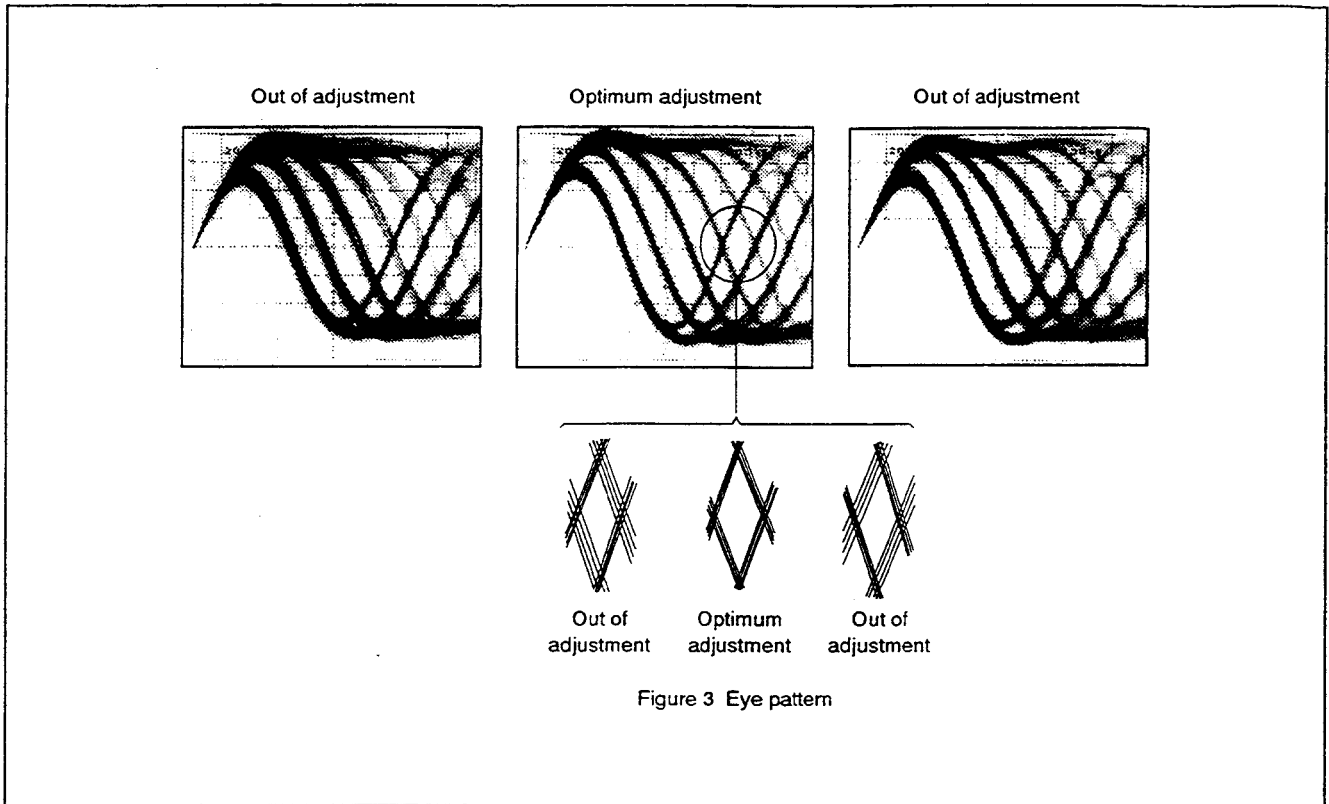
<ul style="list-style-type: none"> <li>● Objective</li> </ul>	To adjust the angle of the pickup relative to the disc so that the laser beams are shone straight down into the disc for the best read out of the RF signals.		
<ul style="list-style-type: none"> <li>● Symptom when out of adjustment</li> </ul>	Sound broken; some discs can be played but not others.		
<ul style="list-style-type: none"> <li>● Measurement instrument connections</li> </ul>	Connect the oscilloscope to TP1, Pin 1 (RF).  [Settings] 20 mV/division 200 ns/division AC mode	<ul style="list-style-type: none"> <li>● Player state</li> </ul>	Test mode, play
		<ul style="list-style-type: none"> <li>● Adjustment location</li> </ul>	Pickup radial tilt adjustment screw and tangential tilt adjustment screw
		<ul style="list-style-type: none"> <li>● Disc</li> </ul>	8 cm disc (However, those with approx. 20 min of audio signal (music).)

**[Procedure]**

1. Press the MANUAL TRACK SEARCH FWD ►► • ►► or REV ◄◄ • ◄◄ key to move the pickup to the external circumference of the disc.  
Press the PROGRAM key, the PLAY ► key, then the PAUSE || key in that order to close the respective servos and put the player into play mode.
2. First, adjust the radial tilt adjustment screw with the hexagon wrench (GGK1002) so that the eye pattern (the diamond shape at the center of the RF signal) can be seen the most clearly.
3. Next, adjust the tangential tilt adjustment screw with the hexagon wrench (GGK1002) so that the eye pattern (the diamond shape at the center of the RF signal) can be seen the most clearly (Figure 3).  
※ The ball-point type hexagonal wrench is used because the disc will get in the way if a normal hexagonal wrench is used.
4. Adjust the radial tilt adjustment screw and the tangential tilt adjustment screw again so that the eye pattern can be seen the most clearly. As necessary, adjust the two screws alternately so that the eye pattern can be seen the most clearly.
5. When the adjustment is completed, lock the radial and tangential adjustment screw.

**Note:** Radial and tangential mean the directions relative to the disc shown in Figure 2.





#### 4. RF Level Verification

● Objective	To verify the playback RF signal amplitude		
● Symptom when out of adjustment	No play or no search		
● Measurement instrument connections	Connect the oscilloscope to TP1, Pin 1 (RF).	● Player state	Test mode, play
	[Settings] 50 mV/division 10 ms/division AC mode	● Adjustment location	None
		● Disc	YEDS-7
<b>[Procedure]</b>			
<ol style="list-style-type: none"> <li>1. Move the pickup to midway across the disc (R=35 mm) with the MANUAL TRACK SEARCH FWD ►► • ►► or REV ◀◀ • ◀◀ key, then press the PROGRAM key, the PLAY ► key, then the PAUSE ■■ key in that order to close the respective servos and put the player into play mode.</li> <li>2. Verify the RF signal amplitude is 1.2 Vp-p ± 0.2 V.</li> </ol>			

**5. Focus Servo Loop Gain Adjustment**

● Objective	To optimize the focus servo loop gain.		
● Symptom when out of adjustment	Playback does not start or focus actuator noisy.		
● Measurement instrument connections	See figure 4. [Settings] CH1                      CH2 20 mV/division    5 mV/division X-Y mode	● Player state  ● Adjustment location  ● Disc	Test mode, play  VR152 (FCS. GAN)  YEDS-7

**[Procedure]**

1. Set the AF generator output to 1.2 kHz and 1 Vp-p.
2. Press the MANUAL TRACK SEARCH FWD ►► • ►► or REV ◀◀ • ◀◀ key to move the pickup to halfway across the disc (R=35 mm), then press the PROGRAM key, the PLAY ► key, then the PAUSE ■■ key in that order to close the corresponding servos and put the player into play mode.
3. Adjust VR152 (FCS. GAN) so that the Lissajous waveform is symmetrical about the X axis and the Y axis.

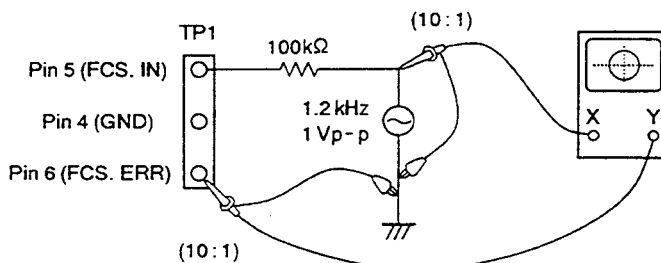
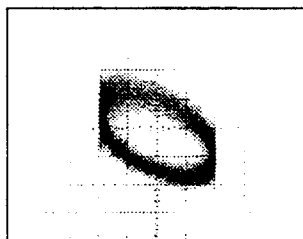
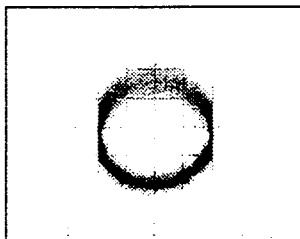


Figure 4

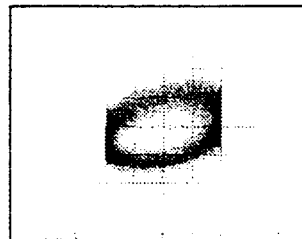
**Focus Gain Adjustment**



Higher gain



Optimum gain



Lower gain



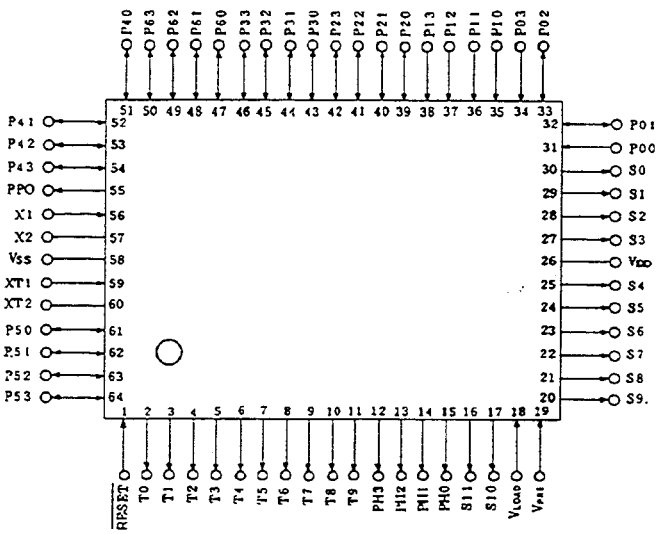
## 7. IC INFORMATION

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

### ■ PD4457A (IC351)

- System Control

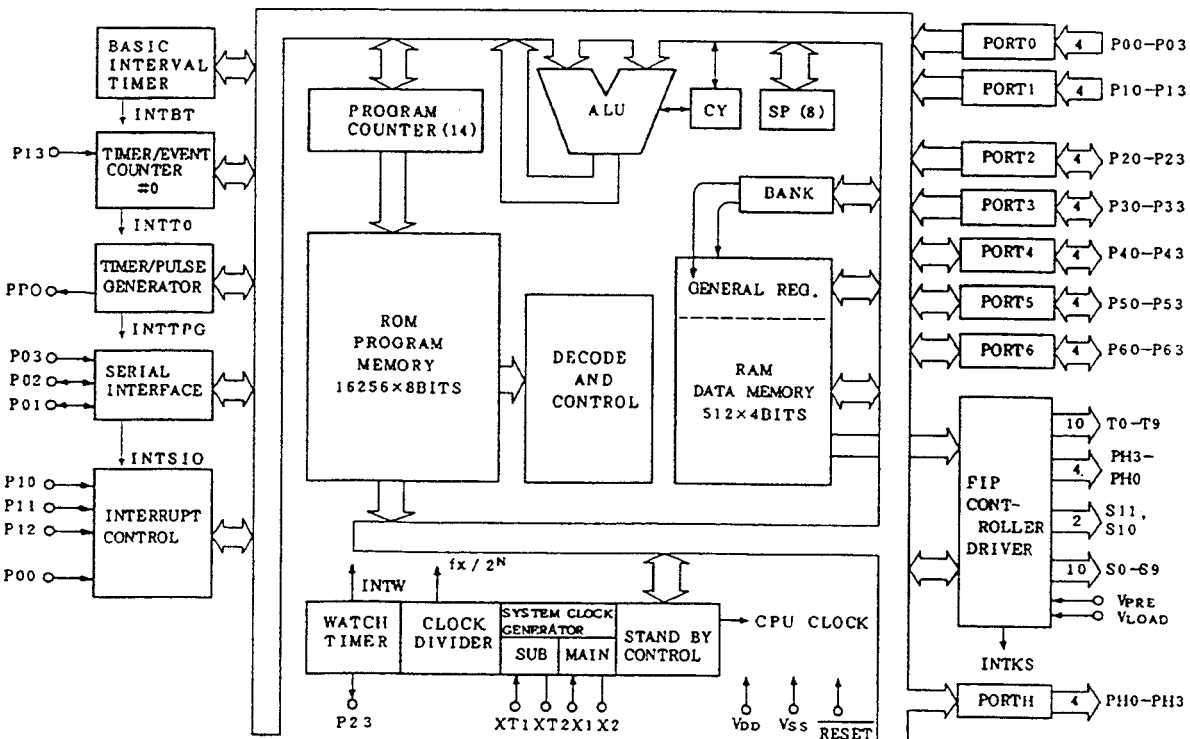
#### ● Pin Arrangement (Top view)



#### ● Pin Function

No.	Pin Name	Function
1	RESET	Reset input.
2-11	T0-T9	Digit output.
12-15	PH3-PH0	Port H.
16,17	S11,S10	Segment output.
18	VLOAD	Power supply terminal for FIP driver.
19	VPRE	Power supply terminal for FIP driver.
20-25	S9-S4	Segment output.
26	VDD	+ Power supply terminal.
27-30	S3-S0	Segment output.
31-34	P00-P03	Port 0.
35-38	P10-P13	Port 1.
39-42	P20-P23	Port 2.
43-46	P30-P33	Port 3.
47-50	P60-P63	Port 6.
51-54	P40-P43	Port 4.
55	PPO	Pulse output.
56,57	X1,X2	Clock oscillation terminal of Main system.
58	VSS	Ground
59,60	XT1,XT2	Clock oscillation terminal of Sub system.
61-64	P50-P53	Port 5.

#### ● Block Diagram



## 8. FOR PD-202/KUXJ, KUXJS, KC, KCXJ, WEMXJS, WBXJS, WPW, RD AND WL TYPES

### CONTRAST OF MISCELLANEOUS PARTS

#### 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.
- Parts marked by "⊙" are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.

PD-202/KUXJ, KUXJS, KC, KCXJ, WEMXJS, WBXJS, WPW, RD, WL and KU have the same construction except for the following:

Mark	Symbol & Description	Part No.									
		KU type	KUXJ type	KUXJS type	KC type	KCXJ type	WEMXJS type	WBXJS type	WPW type	RD type	WL type
⊙	Mother board assembly	PWM1735	PWM1735	PWM1735	PWM1735	PWM1735	PWM1736	PWM1736	PWM1736	PWM1737	PWM1736
$\Delta$	Cord stopper	CM - 22C	CM - 22C	CM - 22C	CM - 22	CM - 22	CM - 22B	CM - 22B	CM - 22B	CM - 22B	CM - 22B
$\Delta$	AC power cord	PDG1015	PDG1015	PDG1015	RDG1010	RDG1010	PDG1003	VDG1051	RDG1022	PDG1013	PDG1003
$\Delta$	Power transformer (AC120V)	PTT1237	PTT1237	PTT1237	PTT1237	PTT1237	.....	.....	.....	.....	.....
$\Delta$	Power transformer (AC120 - 240V)	.....	.....	.....	.....	.....	PTT1236	PTT1236	PTT1236	.....	PTT1236
$\Delta$	Power transformer (AC110 - 127/220 - 240V)	.....	.....	.....	.....	.....	.....	.....	.....	PTT1238	.....
	Function panel assembly	PEA1267	PEA1267	.....	PEA1267	PEA1267	PEA1267	PEA1267	.....	.....	.....
	Display window	PAM1599	PAM1599	PAM1599	PAM1599	PAM1599	PAM1602	PAM1602	PAM1599	PAM1599	PAM1599
	Insulator	PNW1912	PNW1912	PNW1912	PNW1912	PNW1912	PNW1912	PNW1912	.....	.....	.....
	Foot assembly	.....	.....	.....	.....	.....	.....	.....	PXA1201	PXA1201	PXA1201
NSP	Rear base	PNA1921	PNA1952	PNA2013	PNA1953	PNA1954	PNA1955	PNA1956	PNA1958	PNA1957	PNA2032
NSP	65 label	ORW1069	ORW1069	ORW1069	.....	.....	.....	.....	.....	.....	.....
	CD Packing case	PHG1877	PHG1892	PHG1949	PHG1893	PHG1894	PHG1895	PHG1896	PHG1898	PHG1897	PHG1898
	Operating instructions (French)	.....	.....	.....	PRC1054	PRC1054	.....	.....	.....	.....	.....
	Operating instructions (English)	PRB1182	PRB1182	PRB1182	PRB1182	PRB1182	.....	PRB1182	PRB1182	PRB1182	PRB1182
	Operating instructions (English/French/German/Italian/Dutch/Spanish/Swedish/Portuguese)	.....	.....	.....	.....	.....	PRE1176	.....	.....	.....	.....
	Operating instructions (Spanish)	.....	.....	.....	.....	.....	.....	.....	.....	PRC1057	.....
	Connection cord with mini plug	PDE - 319	PDE - 319	PDE - 319	PDE - 319	PDE - 319	.....	.....	.....	.....	.....
	Protector (R)	PHA1240	PHA1260	PHA1260	PHA1240	PHA1260	PHA1260	PHA1254	PHA1240	PHA1240	PHA1240

#### MOTHER BOARD ASSEMBLY

PWM1736, PWM1737 and PWM1735 have the same construction except for the following:

Mark	Symbol & Description	Part No.			Remarks
		PWM1735	PWM1736	PWM1737	
$\Delta$	IC31, IC32	.....	ICP - N10	ICP - N10	
	D391 - D394	1SS254	.....	.....	
	S5 (Voltage selector)	.....	.....	PSB1006	
	L391	LAU010K	.....	.....	
	C393	CCCSL101J50	.....	.....	
	C29	.....	CEAS101M35	.....	
	C302	CEAS471M6R3	CEAS102M6R3	.....	
	R391	RD1/6PM244J	.....	.....	
	R392	RD1/6PM102J	.....	.....	
	JA391, JA392 Remote control jack	PKN1004	.....	.....	

## 9. FOR PD-102/KU, KUXJ, KUXJS, KC, KCXJ, WEMXJS, WBXJS, RD AND WL TYPES

### CONTRAST OF MISCELLANEOUS PARTS

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.
- Parts marked by "⊙" are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.

PD-102/KU, KUXJ, KUXJS, KC, KCXJ, WEMXJS, WBXJS, WPW, RD, WL and PD-202/KU have the same construction except for the following:

Mark	Symbol & Description	Part No.										
		PD-202/ KU type	PD-102/ KU type	PD-102/ KUXJ type	PD-102/ KUXJS type	PD-102/ KC type	PD-102/ KCXJ type	PD-102/ WEMXJS type	PD-102/ WBXJS type	PD-102/ WPW TYPE	PD-102/ RD type	PD-102/ WL type
⊙	Mother board assembly	PWM1735	PWM1730	PWM1730	PWM1730	PWM1730	PWM1730	PWM1731	PWM1731	PWM1732	PWM1733	PWM1734
NSP	Sub board assembly	PWX1260	PWX1260	PWX1260	PWX1260	PWX1260	PWX1260	PWX1260	PWX1260	PWX1261	PWX1261	PWX1260
	Function board assembly	PWZ2511	PWZ2510	PWZ2510	PWZ2510	PWZ2510	PWZ2510	PWZ2510	PWZ2510	PWZ2510	PWZ2510	PWZ2510
NSP	Headphone board assembly	PWZ2522	PWZ2522	PWZ2522	PWZ2522	PWZ2522	PWZ2522	PWZ2522	PWZ2522	.....	.....	PWZ2522
$\Delta$	Cord stopper	CM - 22C	CM - 22C	CM - 22C	CM - 22C	CM - 22	CM - 22	CM - 22B	CM - 22B	CM - 22B	CM - 22B	CM - 22B
$\Delta$	AC power cord	PDG1015	PDG1015	PDG1015	PDG1015	RDG1010	RDG1010	PDG1003	VDG1051	RDG1022	PDG1013	PDG1003
$\Delta$	Power transformer (AC120V)	PTT1237	PTT1237	PTT1237	PTT1237	PTT1237	PTT1237	.....	.....	.....	.....	.....
$\Delta$	Power transformer (AC220 - 240V)	.....	.....	.....	.....	.....	.....	PTT1236	PTT1236	PTT1236	.....	PTT1236
$\Delta$	Power transformer (AC110 - 127/220 - 240V)	.....	.....	.....	.....	.....	.....	.....	.....	.....	PTT1238	.....
	32P F.F.C/30V	PDD1041	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
	30P F.F.C/30V	.....	PDD1049	PDD1049	PDD1049	PDD1049	PDD1049	PDD1049	PDD1049	PDD1049	PDD1049	PDD1049
	10 key	PAC1735	PAC1710	PAC1710	PAC1710	PAC1710	PAC1710	PAC1710	PAC1710	PAC1710	PAC1710	PAC1710
	Display window	PAM1599	PAM1596	PAM1596	PAM1596	PAM1596	PAM1596	PAM1611	PAM1611	PAM1626	PAM1626	PAM1626
	Function panel assembly	PEA1267	PEA1260	PEA1260	PEA1260	PEA1260	PEA1260	PEA1260	PEA1260	.....	.....	.....
	Headphone knob	PAC1707	PAC1707	PAC1707	PAC1707	PAC1707	PAC1707	PAC1707	PAC1707	.....	.....	.....
	Function panel	PNW2248	PNW2241	PNW2241	PNW2241	PNW2241	PNW2241	PNW2241	PNW2241	PNW2277	PNW2276	PNW2276
	Insulator	PNW1912	PNW1912	PNW1912	PNW1912	PNW1912	PNW1912	PNW1912	PNW1912	.....	.....	.....
	Foot assembly	.....	.....	.....	.....	.....	.....	.....	.....	PXA1201	PXA1201	PXA1201
NSP	Rear base	PNA1921	PNA1910	PNA1945	PNA2012	PNA1946	PNA1947	PNA1948	PNA1949	PNA1951	PNA1950	PNA2026
NSP	65 label	ORW1069	ORW1069	ORW1069	ORW1069	.....	.....	.....	.....	.....	.....	.....
	CD Packing case	PHG1877	PHG1863	PHG1885	PHG1948	PHG1886	PHG1887	PHG1888	PHG1889	PHG1891	PHG1890	PHG1891
	Protector (R)	PHA1240	PHA1240	PHA1260	PHA1260	PHA1240	PHA1260	PHA1260	PHA1254	PHA1240	PHA1240	PHA1240
	Remote control unit	PWW1061	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
	Connection cord with mini plug	PDE - 319	PDE - 319	PDE - 319	PDE - 319	PDE - 319	PDE - 319	PDE - 319	PDE - 319	PDE - 319	.....	.....
NSP	Battery (R03, AAA)	VEM - 022	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
	Operating instructions (French)	.....	.....	.....	.....	PRC1054	PRC1054	.....	.....	.....	.....	.....
	Operating instructions (English)	PRB1182	PRB1182	PRB1182	PRB1182	PRB1182	PRB1182	.....	PRB1182	PRB1182	PRB1182	PRB1182
	Operating instructions (English/French/German/Italian/Dutch/Spanish/Swedish/Portuguese)	.....	.....	.....	.....	.....	.....	PRE1176	.....	.....	.....	.....
	Operating instructions (Spanish)	.....	.....	.....	.....	.....	.....	.....	.....	.....	PRC1057	.....



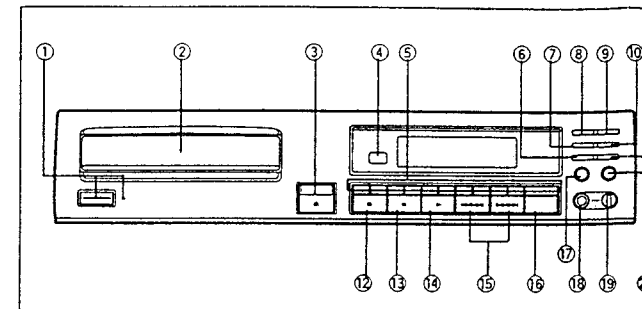
**MOTHER BOARD ASSEMBLY**  
 PWM1730, PWM1731, PWM1732, PWM1733, PWM1734 and PWM1735 have the same construction except for the following:

Mark	Symbol & Description	Part No.					
		PWM1735	PWM1730	PWM1731	PWM1732	PWM1733	PWM1734
IC405		NJM4565D - D	NJM4558D - D	NJM4558D - D	NJM4558D - D	NJM4558D - D	NJM4558D - D
IC31, IC32		.....	.....	ICP-N10	ICP-N10	ICP-N10	ICP-N10
IC406		BA15218	BA15218	BA15218	.....	.....	.....
Q451, Q452		DTA124ES	.....	DTA124ES	.....	.....	.....
Q453, Q454		2SB1296	.....	2SB1296	.....	.....	.....
D391		1SS254	.....	.....	.....	.....	.....
D392 - D394		1SS254	1SS254	1SS254	1SS254	.....	.....
L470, L471		LAU010K	LAU010K	LAU010K	.....	.....	.....
L391		LAU010K	LAU010K	LAU010K	LAU010K	.....	.....
C433, C434		PCH1107	CEAS220M25	CEAS220M25	CEAS220M25	CEAS220M25	CEAS220M25
C451, C452		CEAS4R7M50	.....	CEAS4R7M50	.....	.....	.....
C393		CCCSL101J50	CCCSL101J50	CCCSL101J50	CCCSL101J50	.....	.....
R445, R446		RD1/6PM271J	RD1/6PM471J	RD1/6PM271J	RD1/6PM102J	RD1/6PM102J	RD1/6PM102J
R459 - R462		RD1/6PM271J	.....	RD1/6PM271J	.....	.....	.....
R451, R452		RD1/6PM473J	.....	RD1/6PM473J	.....	.....	.....
R453, R454		RD1/6PM470J	.....	RD1/6PM470J	.....	.....	.....
R455 - R458		RD1/6PM102J	.....	RD1/6PM102J	.....	.....	.....
R447, R448		RD1/6PM471J	RD1/6PM471J	RD1/6PM471J	.....	.....	.....
R392		RD1/6PM102J	RD1/6PM102J	RD1/6PM102J	RD1/6PM102J	.....	.....
S5 (Voltage selector)		.....	.....	.....	.....	PSB1006	.....
CN351 32P FFC connector		HLEM32S - 1	.....	.....	.....	.....	.....
CN351 30P FFC connector		.....	HLEM30S - 1	HLEM30S - 1	HLEM30S - 1	HLEM30S - 1	HLEM30S - 1
JA391, JA392 Remote control jack		PKN1004	PKN1004	PKN1004	PKN1004	.....	.....

**FUNCTION BOARD ASSEMBLY**  
 PWZ2510 and PWZ2511 have the same construction except for the following:

Mark	Symbol & Description	Part No.		Remarks
		PWZ2511	PWZ2510	
CN701 32P FFC connector		HLEM32R - 1	.....	
CN701 30P FFC connector		.....	HLEM30R - 1	

## 10. PANEL FACILITIES



### FRONT PANEL

- ① POWER STANDBY/ON switch and STANDBY indicator
- ② Disc tray
- ③ OPEN/CLOSE button (▲)
- ④ Remote sensor  
 Receives the signal from the remote control unit.  
 • The PD-102 is not equipped with the remote sensor.
- ⑤ Digit buttons (1 - 10, >10)

- ⑥ COMPU/AUTO EDIT button
- ⑦ DISPLAY OFF button
- ⑧ TIME button
- ⑨ REPEAT button
- ⑩ CLEAR button
- ⑪ PEAK SEARCH button
- ⑫ Stop button (■)
- ⑬ Pause button (II)
- ⑭ Play button (▶)
- ⑮ Track/Manual search buttons (◀◀ ◀▶ ▶▶ ▶▶)
- ⑯ PROGRAM button
- ⑰ RANDOM button
- ⑱ Headphones jack (PHONES)\*
- ⑲ Headphones volume control (LEVEL)\*
- ⑳ HI-LITE scan button

\* The multi-voltage, Singapore and Australian models of the PD-102 are not equipped with the headphones jack and headphones volume control.

## 11. SPECIFICATIONS

### 1. General

Type ..... Compact disc digital audio system  
 Power requirements  
 European and Singapore models ..... AC 220 - 240 V, 50/60 Hz  
 U.K. and Australian models ..... AC 220 - 240 V, 60 Hz  
 U.S. and Canadian models ..... AC 120 V, 60 Hz  
 Other models ..... AC 110 - 127/220 - 240 V (Switchable), 50/60 Hz

Power consumption  
 U.S. and Canadian models ..... 11 W  
 Other models ..... 12 W  
 Operating temperature ..... +5°C - +35°C  
 +41°F - +95°F

Weight ..... 3.4 kg (7 lb, 11 oz)  
 External dimensions  
 U.S., Canadian, U.K. and  
 European models ..... 420(W) X 276(D) X 101(H) mm  
 16-9/16(W) X 10-7/8(D) X 4(H) in  
 Other models ..... 420(W) X 276(D) X 96(H) mm  
 16-9/16(W) X 10-7/8(D) X 3-3/4(H) in

### 2. Audio section

Frequency response ..... 2 Hz - 20 kHz  
 S/N ratio  
 PD-202, European and U.K. models  
 of PD-101 ..... 102 dB or more (EIAJ)  
 Other models ..... 98 dB or more (EIAJ)  
 Dynamic range ..... 96 dB or more (EIAJ)  
 Harmonic distortion ..... 0.003% or less (EIAJ)  
 Output voltage ..... 2.0V  
 Wow and flutter ..... Limit of measurement  
 (±0.001% W.PEAK) or less (EIAJ)  
 Channels ..... 2-channel (stereo)

### 3. Output terminal

Audio line output jacks  
 Control input/output jacks (available with the PD-102 (except for Singapore and multi-voltage models) and U.S. and Canadian models of the PD-202 only: Not available with models for military zones (multi-voltage types))  
 CD-DECK SYNCHRO jack  
 Headphones jack (with volume control) (Australia, Singapore and multi-voltage models of the PD-102 are not equipped with the headphones jack and headphones volume control.)

### 4. Accessories

- Remote control unit (PD-202 only) ..... 1
- Size AAA/R03/dry batteries (PD-202 only) ..... 2
- Control cord (provided with PD-102 (except for Singapore and multi-voltage models) and U.S. and Canadian models of PD-202 only: Not available with models for military zones (multi-voltage types)) ..... 1
- Output cable ..... 1
- Operating instructions ..... 1

### NOTE:

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