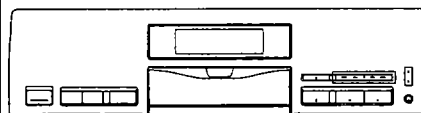


Service Manual



**ORDER NO.
RRV1146**

The chapter 1 of this Service Manual will not be reprinted. On your additional orders, we may supply only the chapter 2. For the chapter 1, please make copies and attach to the chapter 2 at your side if necessary.

COMPACT DISC PLAYER

PD-S703

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

Type	Model	Power Requirement	The voltage can be converted by the following method.
	PD-S703		
HB	○	AC230 – 240V	AC220 – 230V, *
HEM	○	AC220 – 230V	AC230 – 240V, *
HPW	○	AC230 – 240V	AC220 – 230V, *
SD	○	AC110V/120 – 127V/220V/240V	With the voltage selector

* : Alter the wiring of the Power-supply block at the primary winding of power transformer referring to the "Line Voltage Selection" described in Service Manual.

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CHAPTER2

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2.2 PCB CONNECTION DIAGRAM	2-7
2.3 SCHEMATIC DIAGRAM	2-13

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T – SSK APR. 1994 Printed in Japan

CHAPTER 1

1.1 SAFETY INFORMATION

(FOR EUROPEAN MODEL ONLY)

VARO!

AVATTAESSA JA SUOJALUKITUS
OHITETTAESSA OLET ALTTIINA
NÄKYMÄTTÖMÄLLE LASERSÄTEILYLLE.
ÄLÄ KATSO SÄTEESEEN.

ADVERSEL:

USYNLIG LASERSTRÅLING VED ÅBNING
NÅR SIKKERHEDSAFBRYDERE ER UDE AF
FUNKTION UNDGA UDSÆTTELSE FOR
STRÅLING.

VARNING!

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



LASER
Kuva 1
Lasersäteilyn
varoituserkki

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.



LASER
Picture 1
Warning sign for
laser radiation

IMPORTANT

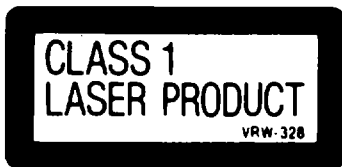
THIS PIONEER APPARATUS CONTAINS
LASER OF CLASS 1.
SERVICING OPERATION OF THE APPARATUS
SHOULD BE DONE BY A SPECIALLY
INSTRUCTED PERSON.

LASER DIODE CHARACTERISTICS

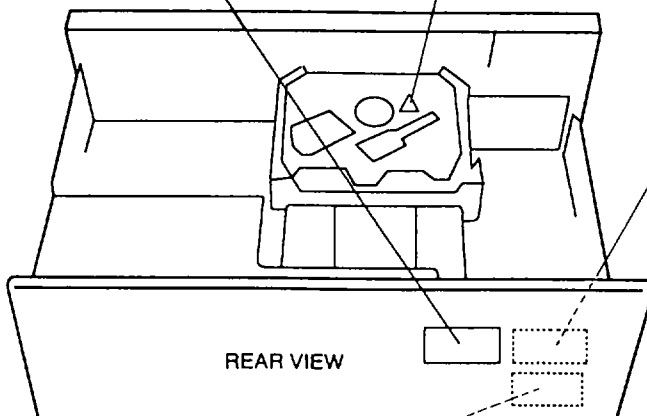
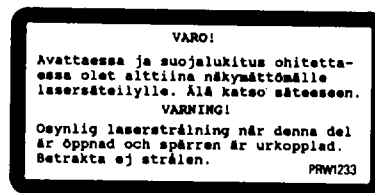
MAXIMUM OUTPUT POWER: 5 mw
WAVELENGTH: 780-785 nm

LABEL CHECK

HB and HEM types



HEM type



REAR VIEW

Additional Laser Caution

1. Laser Interlock Mechanism

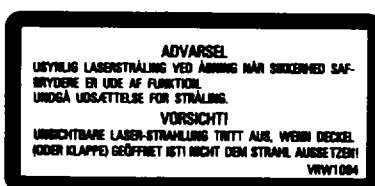
The position of the switch (S601) for detecting loading state is detected by the system microprocessor, and the design prevents laser diode oscillation when the switch (S601) is not on CLMP terminal side (CLMP signal is OFF or high level).

Thus, the interlock will no longer function if the switch (S601) is deliberately set to CLMP terminal side (low level). The interlock also does not function in the test mode *. Laser diode oscillation will continue, if pin 1 of M51593FP (IC101) on the PRE AMP BOARD ASSY mounted on the pickup assembly is 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).

2. When the cover is opened, close viewing of the objective lens with the naked eye will cause exposure to a Class 1 laser beam.

92S1B

* Refer to page 1-8.



HEM type



HB type

1.2 SPECIFICATIONS

1. General

Type	Compact disc digital audio system
Power requirements	AC 230 - 240 V, 50/60 Hz
Power consumption	17 W
Operating temperature	+5°C - +35°C
Weight	4.2 kg
External dimensions	420 (W) x 286 (D) x 125 (H) mm

2. Audio section

Frequency response	2 Hz - 20 kHz
S/N ratio	110 dB or more (EIAJ)
Dynamic range	96 dB or more (EIAJ)
Harmonic distortion	0.0026% or less (EIAJ)
Output voltage	2.0 V
Wow and flutter	Limit of measurement ($\pm 0.001\%$ V.PEAK) or less (EIAJ)
Channels	2-channel (stereo)

3. Output terminal

Audio line output jacks (FIXED)
Control input/output jacks (Australian model only)
Optical digital output jack
Coaxial digital output jack (U.K. model only)
CD-DECK SYNCHRO jack

4. Functions

Basic operation buttons

- PLAY, PAUSE, STOP

Search function

- Direct play
- Track search
- Manual search
- Index search

Programming

- Maximum 24 steps
- Pause
- Program check/correction
- Program clear (single track or all tracks)

Repeat functions

- 1 track repeat
- All tracks repeat
- Program play repeat
- Random play repeat

Random play (repeat also available)

Switching display

Time consumed, remaining time (track/disc), and total time

Display off function

Timer start

Peak search

Compu/Auto program editing

Selects the tracks within the specified time.

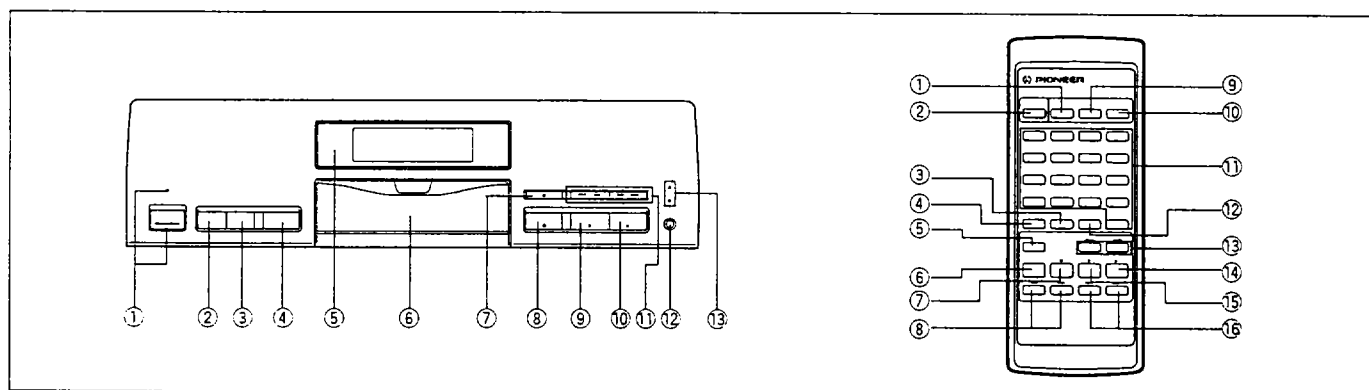
5. Accessories

● Remote control unit	1
● Size AAA/R03 dry cell batteries	2
● Control cable (Australian model only)	1
● Output cable	1
● Operating instructions	1

NOTE:

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

1.3 PANEL FACILITIES



FRONT PANEL

- ① **POWER STANDBY/ON switch and STANDBY indicator**
- ② **DISPLAY OFF button**
- ③ **TIME button**
- ④ **REPEAT button**
- ⑤ **Remote sensor**
Receives the signal from the remote control unit.
- ⑥ **Disc tray**
- ⑦ **Stop button (■)**
- ⑧ **OPEN/CLOSE button (▲)**
- ⑨ **Pause button (||)**
- ⑩ **Play button (▶)**
- ⑪ **Track/Manual search buttons (◀◀ ◀/▶ ▶▶▶)**
- ⑫ **OUTPUT SELECTOR button**
- ⑬ **DIGITAL/ANALOG output indicators**

REMOTE CONTROL UNIT

Remote control buttons with the same names or marks as buttons on the front panel of the player control the same operations as the corresponding front panel buttons.

- ① **OPEN/CLOSE button**
- ② **POWER button**
- ③ **CHECK button**
- ④ **PROGRAM button**
- ⑤ **COMPU/AUTO EDIT button**
- ⑥ **PEAK SEARCH button**
- ⑦ **Stop button (■)**
- ⑧ **Manual search buttons (◀◀/▶▶)**
- ⑨ **REPEAT button**
- ⑩ **RANDOM PLAY button**
- ⑪ **Track number/Digit buttons (1 - 16, >16)**
- ⑫ **CLEAR button**
- ⑬ **Index buttons (←/→)**
- ⑭ **Play button (▶)**
- ⑮ **Pause button (||)**
- ⑯ **Track search buttons (◀◀/▶▶)**

1.4 DISASSEMBLY

REMOVE THE TRAY PANEL AND THE TRAY LENS

Hold the tray panel with your hands as the figure shown right, and grasp the tray with your thumbs and then lift the tray panel up while pulling it toward you with the other fingers. (Figs.1 and 2)

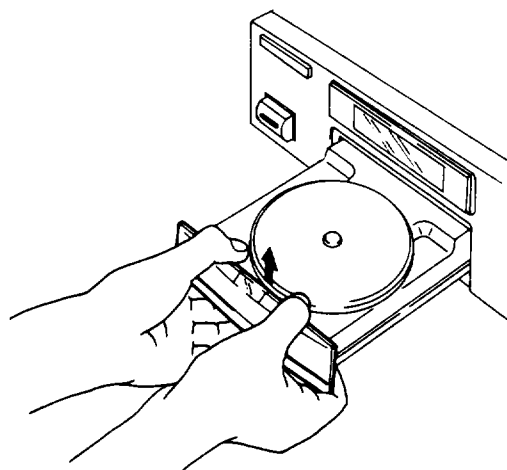


Fig. 1

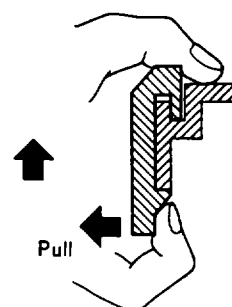


Fig. 2

INSTALL THE TRAY PANEL AND THE TRAY LENS

Align the tray panel with the grooves located at both edges of the tray while holding the tray lens with your fingers, and then press it down till it stops. (Fig. 3)

Hold the tray panel and the tray as shown in Fig. 4 and slide them down till you hear a click sound while pressing strongly with your thumbs. (Figs. 4 and 5)

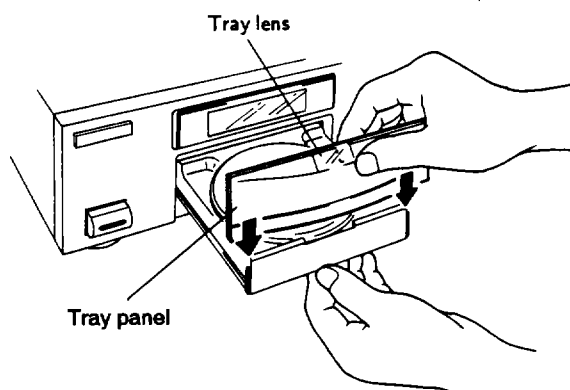


Fig. 3

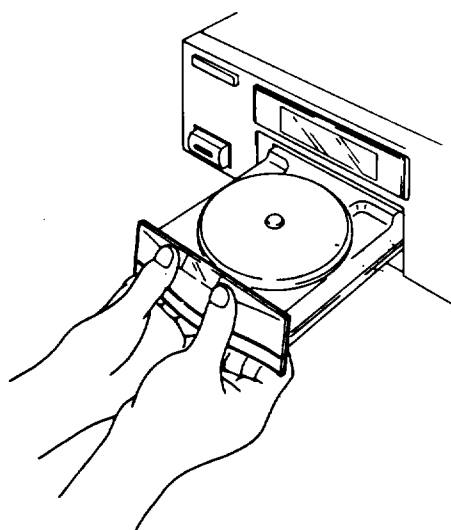


Fig. 4

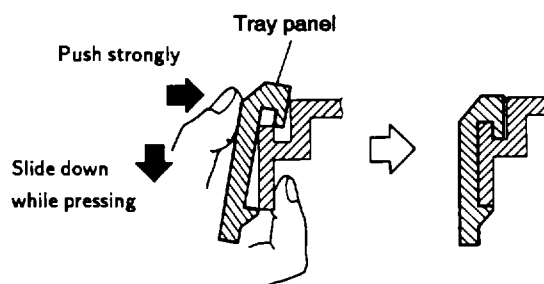
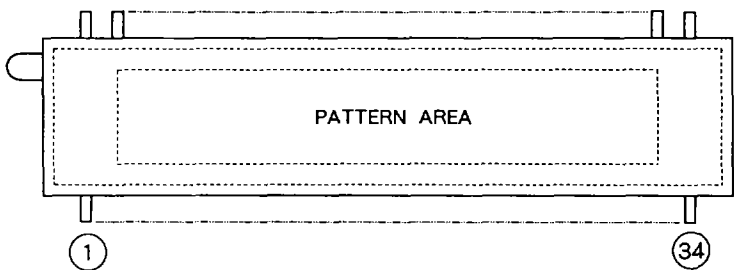


Fig. 5

1.5 FL INFORMATION

■ PEL1085 (V701)

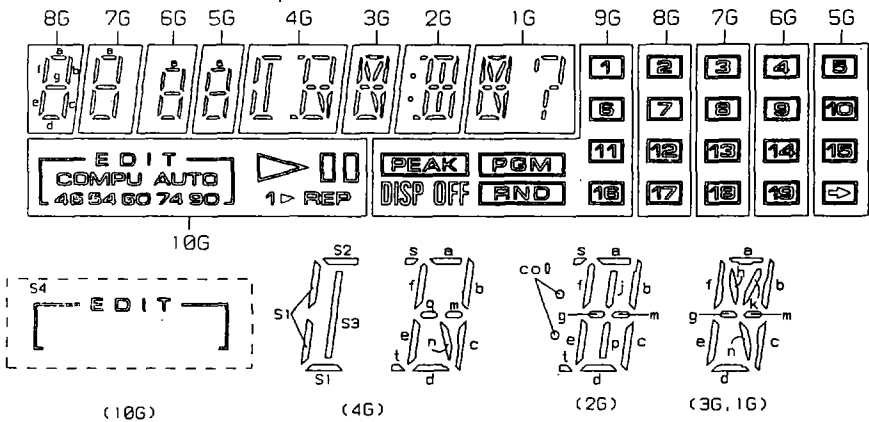


Pin Connection

PIN No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34
CONNECTION	F	F	N	P	P	P	P	P	P	P	P	P	P	P	1	0	9	8	7	6	5	4	3	2	1	N	N	N	N	N	N	N	N	F
	1	2	P	1	2	3	4	5	6	7	8	9	0	1	2	G	G	G	G	G	G	G	G	G	G	X	X	X	X	X	X	P	X	2

NOTE 1) F1, F2.....Filament
2) NP.....No pin
3) NX.....No extend pin
4) DL.....Datum Line
5) 1G – 10G.....Grid

Grid Assignment



Anode Connection

	10G	9G	8G	7G	6G	5G	4G	3G	2G	1G
P1	4G	RND	e	e	e	e	e	e	e	e
P2	5G	PGM	f	f	f	f	f	f	f	f
P3	6G	PEAK	g	g	g	g	g, m	g, m	g, m	g
P4	7G	DISP OFF	-	-	-	-	s, t	-	s, t	m
P5	8G	-	a	a	a	a	a	a	a	a
P6	9G	-	b	b	b	b	b	b	b	b
P7	AUTO	-	c	c	c	c	c	c	c	c
P8	COMPU	-	d	d	d	d	d	d	d	d
P9	S4	1	2	3	4	5	S2	h	coll	h
P10	▶	6	7	8	9	10	S3	k	j, p	k
P11	□	11	12	13	14	15	n	n	-	n
P12	REP	16	17	18	19	20	S1	-	-	?

1.6 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. Low pass filter ($39\text{k}\Omega$ $\pm 0.001\ \mu\text{F}$)
5. Resistor (100 k Ω)
6. Standard tools

● Test Point and Adjustment Variable Resistor Positions

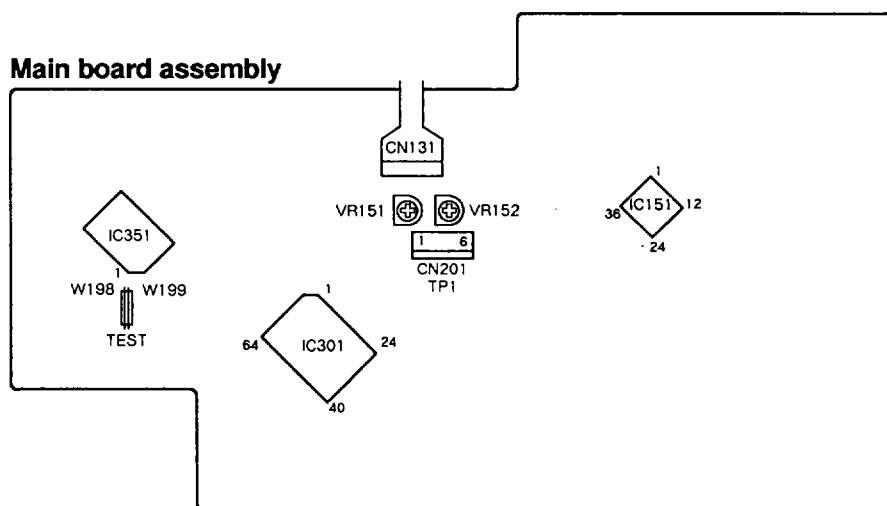


Figure 1. Adjustment Locations

● 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 wall 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. Turn off the power switch on the front panel.

[Operations of the keys in test mode]

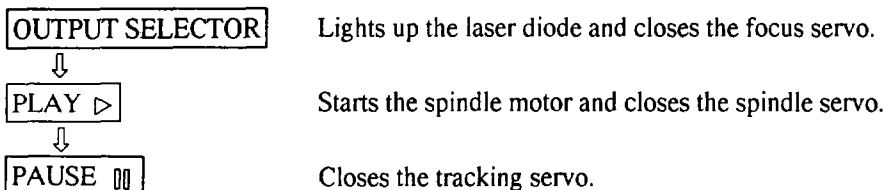
Code	Key Name	Function In Test Mode	Explanation
	OUTPUT SELECTOR	Focus servo close	The laser diode is lit up and the focus actuator is lifted up, then lowered slowly and the focus servo is closed at the point where the objective lens is focused on the disc. With the player in this state, if you lightly rotate the stopped disc by hand, you can hear the sound the focus servo. 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 up, then the actuator is lowered and raised three times and returned to its original position.
	PLAY	Spindle servo ON	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. Be careful. Pressing this key when there is no disc mounted makes the spindle motor run at the maximum speed. 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.
	PAUSE	Tracking servo close/open	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. 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. This key is a toggle key and open/close the tracking servo alternately. This key has no effect if no disc is mounted.

Code	Key Name	Function In Test Mode	Explanation
	TRACK / MANUAL 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.
	TRACK / MANUAL 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	Initializes and the disc rotation stops. The pickup and disc remain where they are when this key is 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.



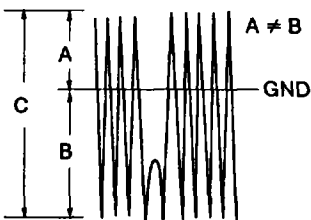
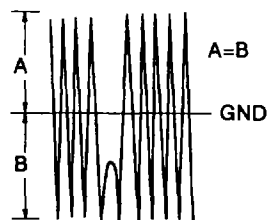
Wait at least 2-3 seconds between each of these operations.

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
[Procedure] Verify the DC voltage at TP1, Pin 6 (FCS. ERR) is 0 ± 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 TRACK/MANUAL SEARCH FWD $\triangleright \triangleright \triangleright$ or REV $\triangleleft \triangleleft \triangleleft$ key. 2. Press the OUTPUT SELECTOR key, then the PLAY $\triangleright$ 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. When $A \geq B$, $\frac{A-B}{C} \times \frac{1}{2} \leq 0.1$ When $A < B$, $\frac{B-A}{C} \times \frac{1}{2} \leq 0.1$  When there is a DC component  When there is no DC component			

3. Pickup Radial/Tangential Tilt Adjustment

● Objective	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.		
● Symptom when out of adjustment	Sound broken; some discs can be played but not others.		
● Measurement instrument connections	Connect the oscilloscope to TPI, Pin 1 (RF). [Settings] 20 mV/division 200 ns/division AC mode	● Player state ● Adjustment location ● Disc	Test mode, play Pickup radial tilt adjustment screw and tangential tilt adjustment screw YEDS-7

[Procedure]

1. Press the TRACK/MANUAL SEARCH FWD $\triangleright\triangleright$ • $\triangleright\triangleright$ or REV $\triangleleft\triangleleft$ • $\triangleleft\triangleleft$ key to move the pickup to halfway across the disc (R=35mm).
Press the OUTPUT SELECTOR key, the PLAY $\triangleright$ key, then the PAUSE $\square\square$ 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 a Phillips screwdriver 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 a Phillips screwdriver so that the eye pattern (the diamond shape at the center of the RF signal) can be seen the most clearly (Figure 3).
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.

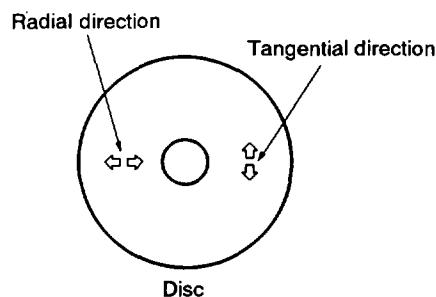
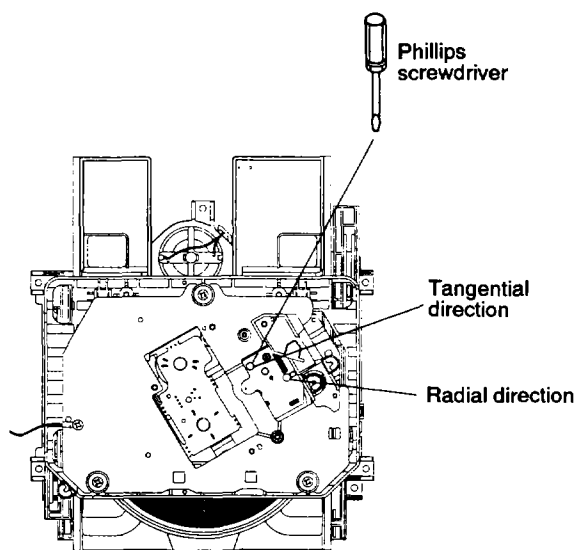


Figure 2



Adjustment locations

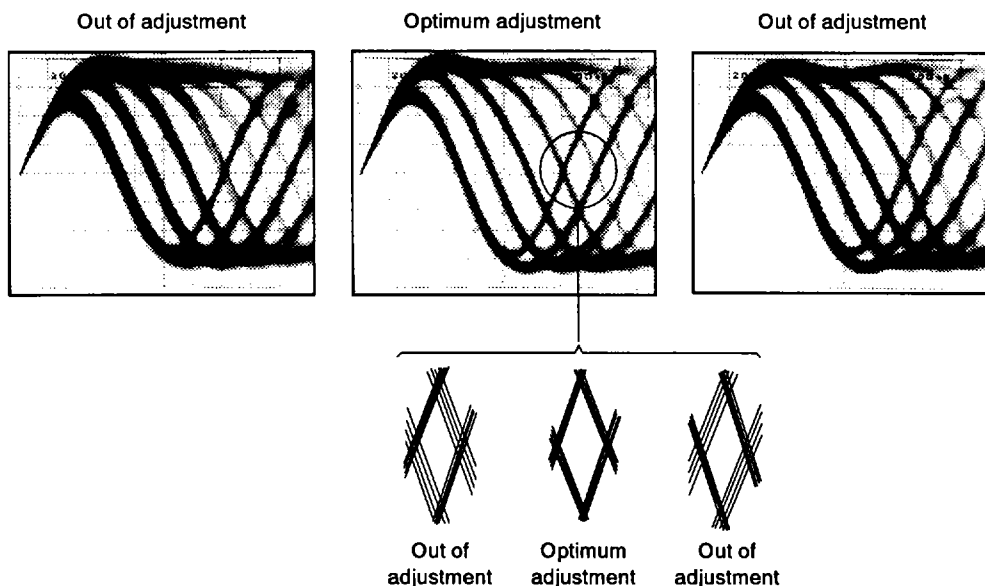


Figure 3. Eye pattern

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). [Settings] 50 mV/division 10 ms/division AC mode	● Player state ● Adjustment location ● Disc	Test mode, play None YEDS-7
[Procedure] 1. Move the pickup to midway across the disc (R=35 mm) with the TRACK/MANUAL SEARCH FWD $\triangleright\triangleright\triangleright$ or REV $\triangleleft\triangleleft\triangleleft$ key, then press the OUTPUT SELECTOR key, the PLAY $\triangleright$ key, then the PAUSE $\square\square$ key in that order to close the respective servos and put the player into play mode. 2. Verify the RF signal amplitude is $1.2\text{ V}_{\text{p-p}} \pm 0.2\text{ V}$.			

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.	● Player state	Test mode, play
	[Settings]	● Adjustment location	VR152 (FCS. GAN)
	CH1 CH2 20 mV/division 5 mV/division X - Y mode	● Disc	YEDS-7

[Procedure]

- 1. Set the AF generator output to 1.2 kHz and 1 Vp-p.
- 2. Press the TRACK/MANUAL SEARCH FWD or REV key to move the pickup to halfway across the disc (R=35 mm), then press the OUTPUT SELECTOR 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.

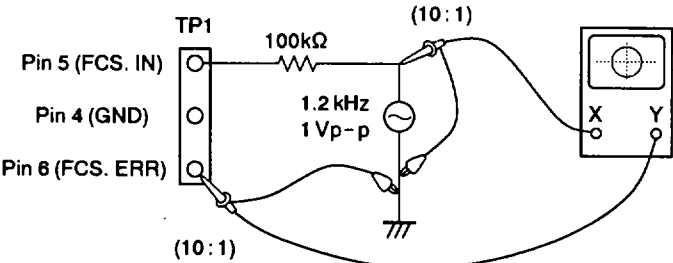
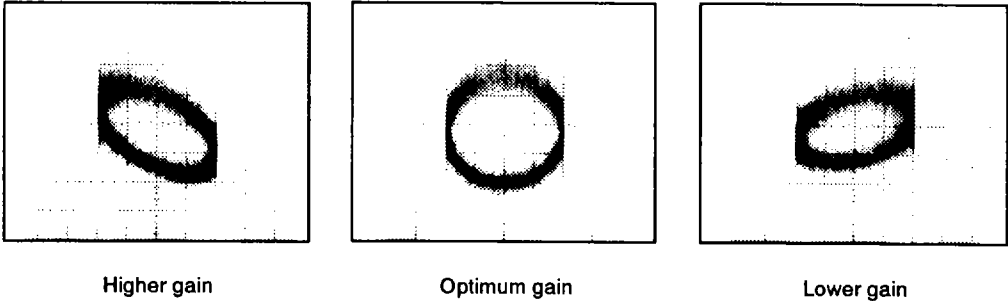


Figure 4

Focus Gain Adjustment



6. Tracking Servo Loop Gain Adjustment

● Objective	To optimize the tracking servo loop gain.		
● Symptom when out of adjustment	Playback does not start, during searches the actuator is noisy, or tracks are skipped.		
● Measurement instrument connections	See Figure 5.	● Player state	Test mode, play
	[Settings] CH1 CH2 50 mV/division 20 mV/division X - Y mode	● Adjustment location ● Disc	VR151 (TRK. GAN) YEDS-7

[Procedure]

1. Set the AF generator output to 1.2 kHz and 2 Vp-p.
2. Press the TRACK/MANUAL SEARCH FWD ►►► or REV ◄◄◄ key to move the pickup to halfway across the disc (R=35 mm), then press the OUTPUT SELECTOR 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 VR151 (TRK. GAN) so that the Lissajous waveform is symmetrical about the X axis and the Y axis.

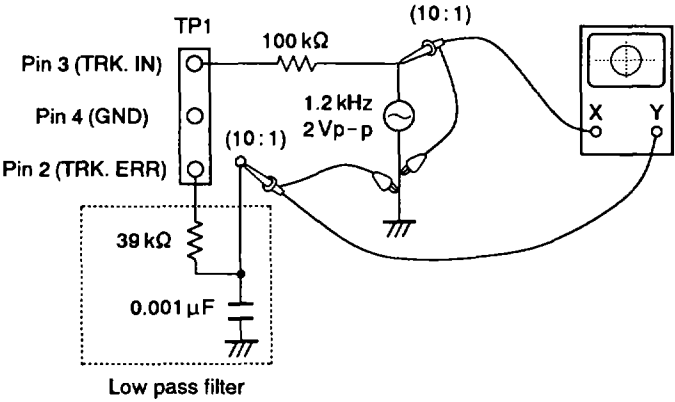
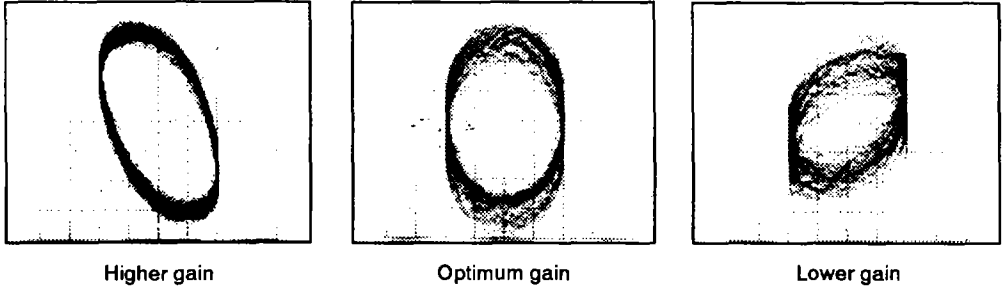


Figure 5

Tracking Gain Adjustment



1.7 PARTS LIST FOR EXPLODED VIEWS AND PACKING

NOTES:

- Parts marked by "NSP" are generally unavailable because they are not in our Master Spare Parts List.
- The Δ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.
- Parts marked by "⊙" are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.

1. EXTERIOR AND PACKING

■ CONTRAST OF HB, HEM, HPW AND SD TYPES

HB, HEM, HPW and SD types have the same construction except for the following:

Mark	No.	Symbol & Description	Part No.				Remarks
			HB type	HEM type	HPW type	SD type	
Δ	4	Display window	PAM1650	PAM1650	PAM1651	PAM1651	
Δ	21	Main board assy	PWZ2828	PWZ2825	PWZ2829	PWZ2825	
Δ	24	Power transformer (AC220 - 230/230 - 240V)	PTT1301	PTT1301	PTT1301	Not used	
Δ	24	Power transformer (AC110/120 - 127/220/240V)	Not used	Not used	Not used	PTT1302	
Δ	26	AC power cord	PDG1055	PDG1003	RDG1022	PDG1056	
NSP	32	Rear base	PNA2143	PNA2142	PNA2144	PNA2145	
Δ	33	Coaxial output board assy	PWZ2835	Not used	Not used	Not used	
Δ	35	Servo trans board assy	PWZ2864	PWZ2863	PWZ2866	PWZ2865	
Δ	37	Fuse (T5A)	PEK1003	Not used	Not used	Not used	
	46	CD packing case	PHG2087	PHG2053	PHG2054	PHG2059	
	48	Operating instructions (English)	PRB1214	Not used	PRB1214	Not used	
	48	Operating instructions (English/French/German/Italian/Dutch/ Swedish/Spanish/Portuguese)	Not used	PRE1207	Not used	Not used	
	48	Operating instructions (English/Spanish/Chinese)	Not used	Not used	Not used	PRE1210	
	52	Protector R	PHA1253	PHA1245	PHA1245	PHA1245	
	54	Polyethylene bag	Z21 - 013	Not used	Not used	Not used	
Δ	56	Voltage selector (AC110/120 - 127/220/240V)	Not used	Not used	Not used	PSB1002	
	57	Cord with mini plug	Not used	Not used	PDE1247	Not used	

■ PARTS LIST FOR HB TYPE

Mark	No.	Description	Part No.	Mark	No.	Description	Part No.
	1	Front panel	PAN1298		29	Screw	FBT40P080FZK
	2	Name plate	VAM1032		30		
	3	Function panel	PNW2279		31	Bonnet	PYY1175
	4	Display window	PAM1650		32	Rear base	PNA2143
	5	LED lens	PNW2019	NSP	33	Coaxial output board assy	PWZ2835
	6	Power button	PAC1743	Δ	34	Caution label	PRW1244
	7				35	Servo trans board assy	PWZ2864
NSP	8	Function button	PAC1744	NSP	36	Loading mechanism	PXA1509
	9	SW board assy	PWZ2861	Δ	37	Fuse (T5A)	PEK1003
	10	Screw	PPZ30P150FMC		38		
	11	Function board assy	PWZ2858	NSP	39	Cushion (3.5)	PEB1110
	12	Tray panel	PNW2280	NSP	40	Spacer A	PEB1228
	13				41		
	14	Screw	BBT30P080FCC	NSP	42	PCB holder	PNW2100
	15	Tray lens	PNW2242		43	Indicator lens	PEA1206
	16	Screw	IBZ30P060FCC		44	Output button	PAC1661
	17	Screw	IBZ30P080FCC		45	Mirror mat sheet	Z23 - 007
	18	Insulator	PNW1912		46	CD packing case	PHG2087
NSP	19				47	Cord with plug	PDE1248
	20	PCB spacer	PNY - 404		48	Operating instructions (English)	PRB1214
Δ	21	MAIN board assy	PWZ2828		49	Remote control unit	PWW1093
NSP	22	Under base	PNA2155		50	Battery cover	PZN1012
	23	Screw	BBZ30P080FCC		51	Protector F	PHA1243
Δ	24	Power transformer (12W) (AC220 - 230/230 - 240V)	PTT1301		52	Protector R	PHA1253
Δ	25	Cord stopper	CM - 22B	NSP	53	Battery (R03, AAA)	VEM - 022
	26	AC power cord	PDG1055		54	Polyethylene bag	Z21 - 013
	27	Screw	IBZ30P150FCC	NSP	55	Cord holder	DNF1128
	28	Screw	PDZ30P050FMC				

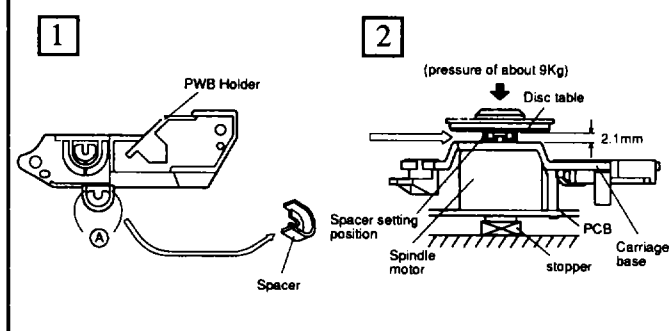
2. LOADING MECHANISM ASSY TT

Parts List

Mark	No.	Description	Part No.
	1	Lever switch (S601)	DSK1003
	2	Screw (steel)	PBA1027
	3	Rubber belt	PEB1186
	4	Motror pulley	PNW1634
	5	Drive gear	PNW1996
	6	Synchro lever	PNW2168
	7	Gear pulley	PNW1998
	8	SW head	PNW1999
	9	Float base	PNW2000
	10	Left cam	PNW2001
	11	Right cam	PNW2002
	12	Compression spring	PBH1120
	13	Tention spring	PBH1121
	14	Float (rubber)	PEB1014
	15	Table rubber sheet	PEB1181
	16	Tray	PNW2003
	17	Table guide	PNW2004
	18	Lock plate	PNW2005
	19	DC motor (LOADING)	PXM1010
	20	Rubber bush	PEB1031
	21	Rubber bush	PEB1170
	22	Screw	BMZ26P040FMC
	23	Screw	IPZ26P060FCU
	24	Screw	IPZ20P080FMC
	25	Screw	BBZ26P060FMC
NSP	26	Washer	YE20S
NSP	27	Loading base	PNW1995
NSP	28	Table bearing assy	PXA1383
NSP	29	Turn table (AL)	PNR1035
	30	DC motor (CARRIAGE)	PXM1027
	31	Pinion gear	PNW2055
	32	DC motor assy (SPINDLE) (with oil)	PEA1236
	33	Carriage base	PNW2455
	34	Disc table	PNW1067
	35	Screw	JFZ20P030FNI
	36	Screw	JFZ17P025FZK
	37	Gear 3	PNW2054
	38	Gear 2	PNW2053
	39	Washer	WT12D032D025
	40	Pickup assy	PEA1179
	41	Guide bar	PLA1094
NSP	42	Gear 1	PNW2052
	43	Gear stopper	PNB1303
	44	Screw	BPZ20P060FMC
	45	Spring	PBH1132
NSP	46	Mechanism base	PNB1431
	47	Screw	BPZ20P100FMC
	48	PWB holder	PNW2057
NSP	49	Earth lead unit	XDF - 503
NSP	50	Mechanism board assy	PWX1192
NSP	51	Cord clamber	PEC - 107
	52	Servo mechanism assy	PXA1479
	53	Screw	BPZ26P060FMC
	54	Turn table assy	PEA1165
	55		
	56	Shaft holder	PNB1382

•How to install the disc table

- 1 Use nipper or other tool to cut the two sections marked (A) figure 1. Then remove the spacer.
- 2 While supporting the spindle motor shaft with the stopper, put spacer on top of the motor base and stick the disc table on top (takes about 9kg pressure). Take off the spacer.



1.8 PCB PARTS LIST

NOTES:

- Parts marked by "NSP" are generally unavailable because they are not in our Master Spare Parts List.
- The Δ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.
- 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 $\rightarrow$ $56 \times 10^1 \rightarrow 561$ RD1/8PM $\begin{bmatrix} 5 & 6 & 1 \end{bmatrix}$ J

47k Ω $\rightarrow$ $47 \times 10^3 \rightarrow 473$ RD1/4PS $\begin{bmatrix} 4 & 7 & 3 \end{bmatrix}$ J

0.5 Ω $\rightarrow$ 0R5 RN2H $\begin{bmatrix} 0 & R & 5 \end{bmatrix}$ K

1 Ω $\rightarrow$ 010 RS1P $\begin{bmatrix} 0 & 1 & 0 \end{bmatrix}$ K

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

5.62k Ω $\rightarrow$ $562 \times 10^1 \rightarrow 5621$ RN1/4PC $\begin{bmatrix} 5 & 6 & 2 & 1 \end{bmatrix}$ F

LIST OF WHOLE PCB ASSEMBLIES

Mark	PCB Assemblies	Part No.				Remarks
		HB type	HEM type	HPW type	SD type	
Δ NSP	Mother board assy	PWM1903	PWM1902	PWM1905	PWM1902	
Δ	└ Main board assy	PWZ2828	PWZ2825	PWZ2829	PWZ2825	
NSP	└ Coaxial output board assy	PWZ2835	Not used	Not used	Not used	
Δ NSP	Sub board assy	PWX1377	PWX1378	PWX1379	PWX1378	
	└ Function board assy	PWZ2858	PWZ2858	PWZ2858	PWZ2858	
NSP	└ SW board assy	PWZ2861	PWZ2861	PWZ2861	PWZ2861	
Δ	└ Servo trans board assy	PWZ2864	PWZ2863	PWZ2866	PWZ2865	
NSP	Mechanism board assy	PWX1192	PWX1192	PWX1192	PWX1192	

MAIN BOARD ASSY

PWZ2828, PWZ2825 and PWZ2829 have the same construction except for the following:

Mark	Symbol & Description	Part No.			Remarks
		PWZ2828	PWZ2825	PWZ2829	
	IC405	NJM4558D - D	NJM4558D - D	NJM4565D - D	
	D319 - D394	Not used	Not used	1SS254	
	C152	PCH1128	PCH1128	CEAS221M25	
	C158, C230	CFTXA104J50	CFTXA104J50	CGCYX104K25	
	C205, C210, C215, C219	CFTXA103J50	CFTXA103J50	CKCYF103Z50	
	C173	CCCCH150J50	CCCCH150J50	Not used	
	C211, C212, C216, C217, C431, C432	PCH1126	PCH1126	CEAS101M25	
	C218	CFTXA272J50	CFTXA272J50	CKCYB272K50	
	C302, C322	PCH1123	PCH1123	CEAS471M6R3	
	C351	PCH1129	PCH1129	CEAS471M6R3	
	C393	Not used	Not used	CCCSL101J50	
	L391, L392	Not used	Not used	LAU010J	
	R321	RD1/6PM561J	RD1/6PM102J	RD1/6PM102J	
	R391	Not used	Not used	RD1/6PM244J	
	R392	Not used	Not used	RD1/6PM102J	
	CN301 JUMPER CONNECTOR 3P	52147 - 0310	Not used	Not used	
	JA391, JA392	Not used	Not used	RKN1004	

SERVO TRANS BOARD ASSY

PWZ2864, PWZ2863, PWZ2866 and PWZ2865 have the same construction except for the following:

Mark	Symbol & Description	Part No.				Remarks
		PWZ2864	PWZ2863	PWZ2866	PWZ2865	
	L1 L3 L2, L22 L13, L21 L15	Not used PTH1014 PTH1014 PTH1013 PTH1015	PTH1014 Not used PTH1014 PTH1013 PTH1015	Not used Not used Not used Not used Not used	Not used Not used Not used Not used Not used	
	L18, L24, L26 C18, C19 C25, C26, C31, C32 C27, C28 C52	PTH1016 PCH1127 PCH1125 PCH1123 PCH1126	PTH1016 PCH1127 PCH1125 PCH1123 PCH1126	Not used CEAS4R7M50 CEAS332M16 CEAS471M6R3 CEAS101M35	Not used PCH1127 PCH1125 PCH1123 PCH1126	
	C53	PCH1128	PCH1126	CEAS101M25	PCH1126	

■ PARTS LIST FOR HB TYPE

Mark	No.	Description	Part No.	Mark	No.	Description	Part No.
MECHANISM BOARD ASSY							
SWITCHES AND RELAYS							
	S610		DSG1016		C433, C434		CEANP220M35
					C153		CEAS101M10
					C160, C162, C451, C452		CEAS4R7M50
					C309		CEASR47M50
					C301		CENA101M25
MAIN BOARD ASSY							
SEMICONDUCTORS							
	IC151		CXA1372Q		C405		CENA471M25
	IC301		CXD2500BQ		C205, C210, C215, C219		CFTXA103J50
△	IC201, IC202		LA6520		C158, C161, C230, C321		CFTXA104J50
△	IC421		NJM2930L05		C413-C416		CFTXA104J50
	IC405		NJM4558D-D		C441, C442		CFTXA152J50
	IC401		PD2029A		C218		CFTXA272J50
	IC351		PD4539A		C151		CFTXA394J50
	Q391		2SC1740S		C406, C407		CFTXA471J50
	Q403, Q404, Q453, Q454		2SC3068		C303, C408		CFTXA474J50
	Q451, Q452		DTA124ES		C157, C164, C169, C308		CGCYX103K25
	Q322, Q405, Q455, Q456		DTC124ES		C159, C163		CGCYX104K25
	D218, D351, D395-D397		1SS254		C156, C168		CGCYX333K25
	D451-D454		1SS254		C307		CGCYX473K25
					C306		CKCYB152K50
					C155		CKCYB182K50
COILS AND FILTERS							
	L395, L396, L415, L416		LAU010J		C170		CKCYB332K50
	L301		LAU390J		C171, C172		CKCYB472K50
	L321		PTH1016		C167, C352, C353, C461		CKCYF103Z50
	L351		RTF1068		C355		CKPUYF103Z25
CAPACITORS					C302, C322 (470/6.3)		PCH1123
	C435-C438		CCCCH050C50		C211, C212, C216, C217 (100/50)		PCH1126
	C403		CCCCH120J50		C431, C432 (100/50)		PCH1126
	C173		CCCCH150J50		C152 (220/25)		PCH1128
	C404		CCCCH220J50		C351 (470/50)		PCH1129
	C429, C430		CCCCH390J50	RESISTORS			
					VR151, VR152 (22K)		PCP1030

Mark	No.	Description	Part No.
		Other Resistors	RD1/6PM□□□J
OTHERS			
	CN131	CONNECTOR	12FM-1.0BT
	CN204	CONNECTOR 5P	VKN1052
	CN353	JUMPER CONNECTOR 2P	52147-0210
	CN12, CN301	JUMPER CONNECTOR 3P	52147-0310
	CN11	JUMPER CONNECTOR 11P	52147-1110
	CN352	JUMPER CONNECTOR 15P	52147-1510
	CN351	JUMPER CONNECTOR 17P	52147-1710
	JA401	PIN JACK 2P	PKB1009
	JA393	MINI JHACK	PKN1005
	X401	CRYSTAL RESONATOR (16.9344MHz)	PSS1008
	CN201	CONNECTOR 6P	RKP-533
	JA301	OPTICAL OUTPUT JACK	TOTX178
	PCB	BINDER	VEF1008
	X351	CERAMIC TESONATOR (4.19MHz)	VSS1014
	CN202	CONNECTOR 4P	VKN1051

COAXIAL OUTPUT BOARD ASSY

SEMICONDUCTORS

IC331 MC74HCU04N

COILS AND FILTERS

L334 PTL1003

CAPACITORS

C335 CEAS470M25
C333 CENA101M25
C334 CFTXA103J50
C336, C339 CFTXA104J50
C331 CKCYF103Z50

RESISTORS

All Resistors RD1/6PM□□□J

OTHERS

JA331 PIN JACK 1P RKB1019

FUNCTION BOARD ASSY

SEMICONDUCTORS

Q701, Q702 DTC124ES
D701-D704 1SS254
D713 PCX1019
D712 PCX1023

SWITCHES AND RELAYS

S701-S707 PSG1006

CAPACITORS

C701 CFTXA104J50

RESISTORS

All Resistors RD1/6PM□□□J

OTHERS

V701 FL INDICATOR TUBE PEL1085
REMOTE SENSOR SBX1785-51

SW BOARD ASSY

SEMICONDUCTORS

D751 PCX1019

SWITCHES AND RELAYS

S751-S754 PSG1006

SERVO TRANS BOARD ASSY

SEMICONDUCTORS

△ IC31 ICP-N10
△ IC60 M51957AL
△ IC20 NJM78L05A
△ IC21 NJM79L05A
△ Q21 2SA1262

Q22 2SA933S
△ D11-D14, D21-D24, D52 11ES2
D54 MTZJ18B

COILS AND FILTERS

L13, L21 (FERRITE BEADS) PTH1013
L2, L22, L3 (FERRITE BEADS) PTH1014
L15 (FERRITE BEADS) PTH1015
L18, L24, L26 (FERRITE BEADS) PTH1016

CAPACITORS

C62 CEAS010M50
C61 CEASR33M50
C11-C16 CKCYF103Z50
C27, C28 (470/6.3) PCH1123
C25, C26, C31, C32 (3300/25) PCH1125
C52, C53 (100/50) PCH1126
C18, C19 (4.7/50) PCH1127

RESISTORS

R24 RD1/2PM010J
Other Resistors RD1/6PM□□□J

OTHERS

△ RAPPING TERMINAL RKC-061

Service Manual

ORDER NO.
RRZ1146

The chapter 1 of this Service Manual will not be reprinted. On your additional orders, we may supply only the chapter 2. For the chapter 1, please make copies and attach to the chapter 2 at your side if necessary.

COMPACT DISC PLAYER

PD-S703

CHAPTER 2

CONTENTS

CHAPTER2

2.1 EXPLODED VIEWS AND PACKING	2-3
2.2 PCB CONNECTION DIAGRAM	2-7
2.3 SCHEMATIC DIAGRAM	2-13

PIONEER ELECTRONIC CORPORATION 4-1, Meguro 1-Chome, Meguro-ku, Tokyo 153, Japan

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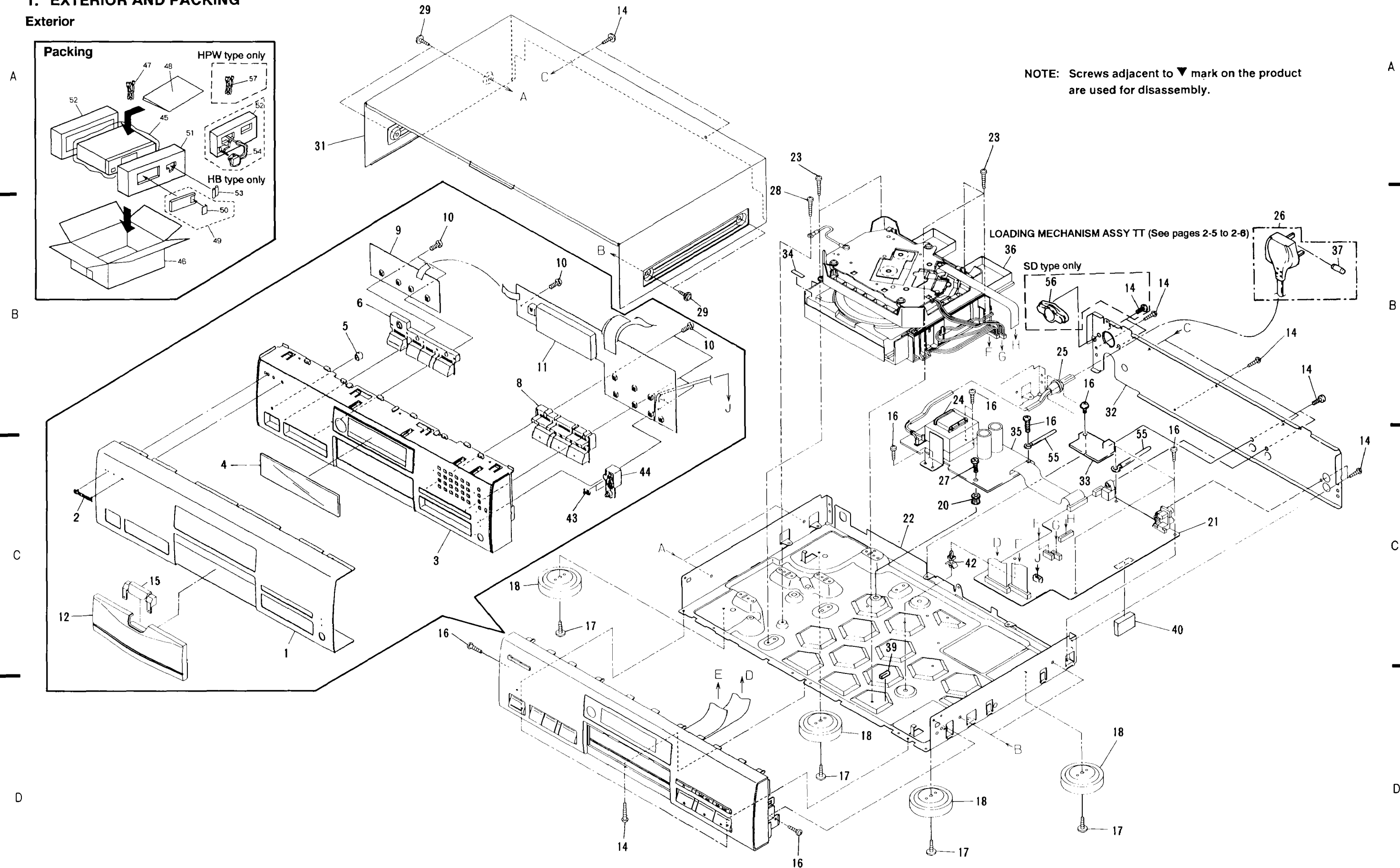
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T - SSK APR. 1994 Printed in Japan

2.1 EXPLODED VIEWS AND PACKING

1. EXTERIOR AND PACKING

Exterior



2. LOADING MECHANISM ASSY TT

A

B

C

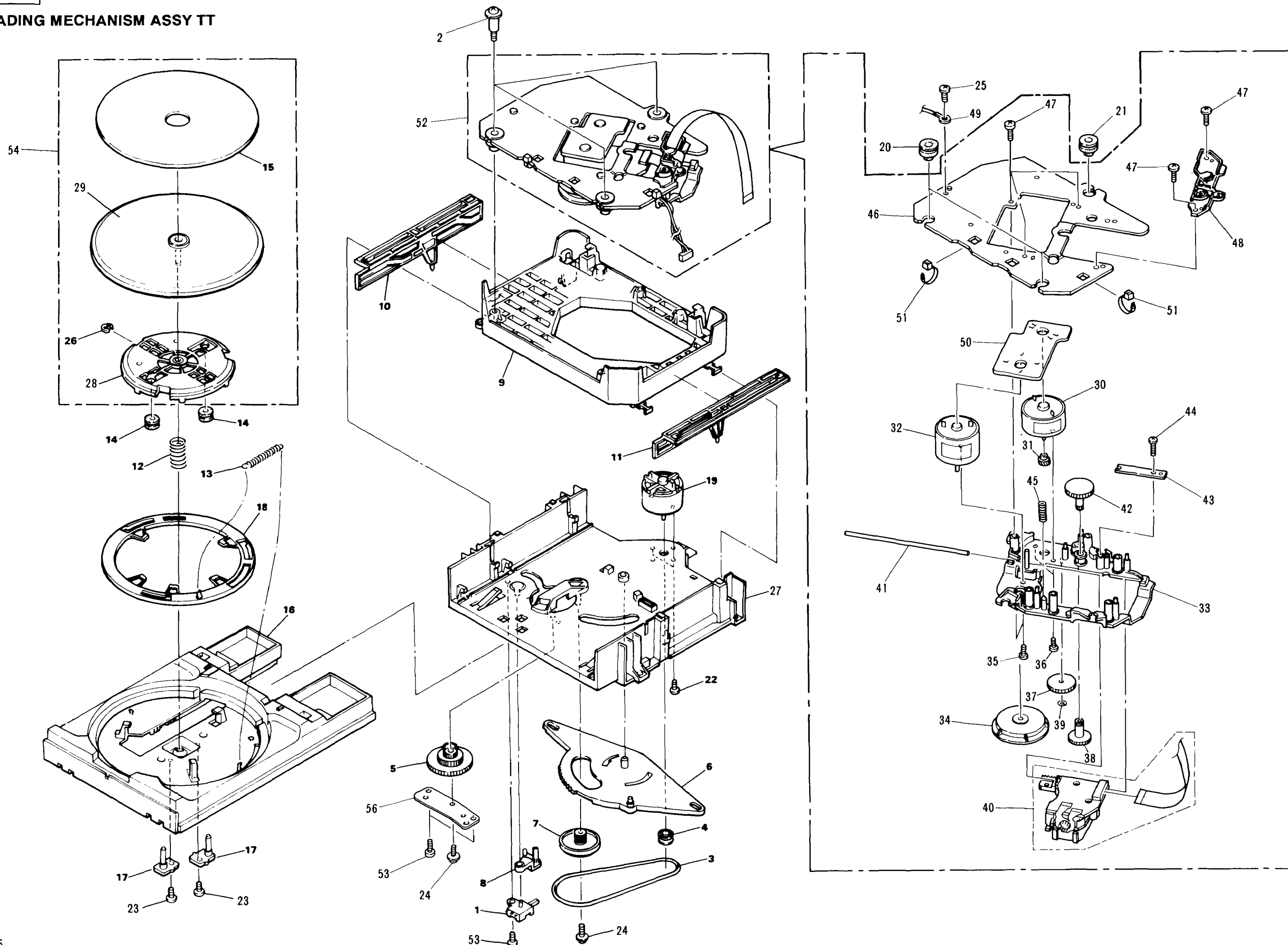
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A

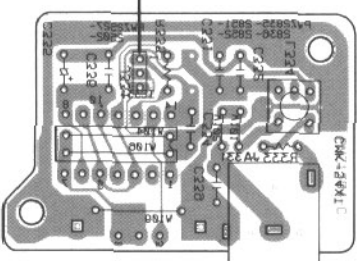
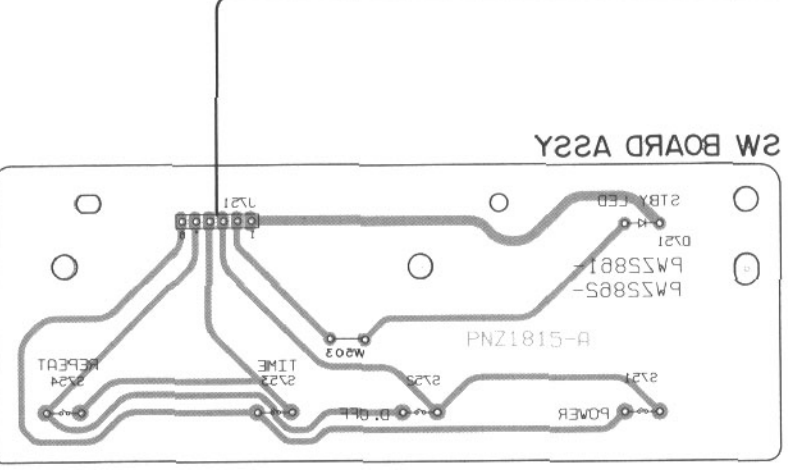
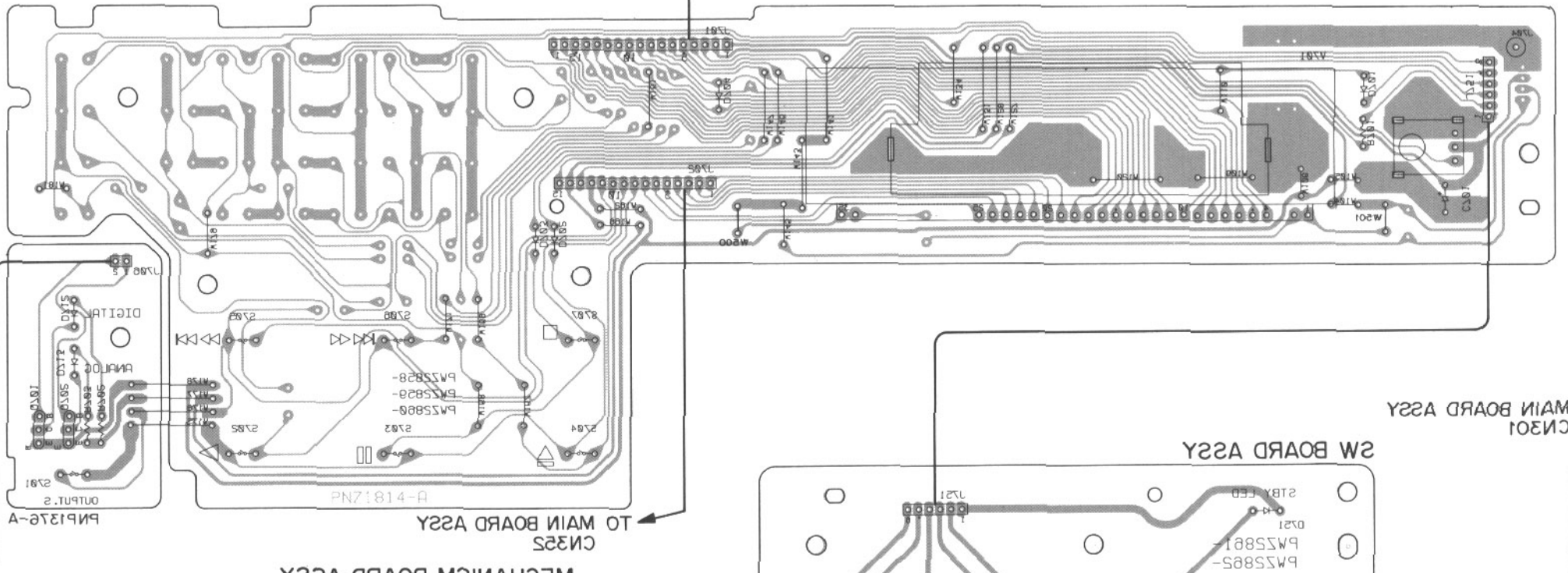
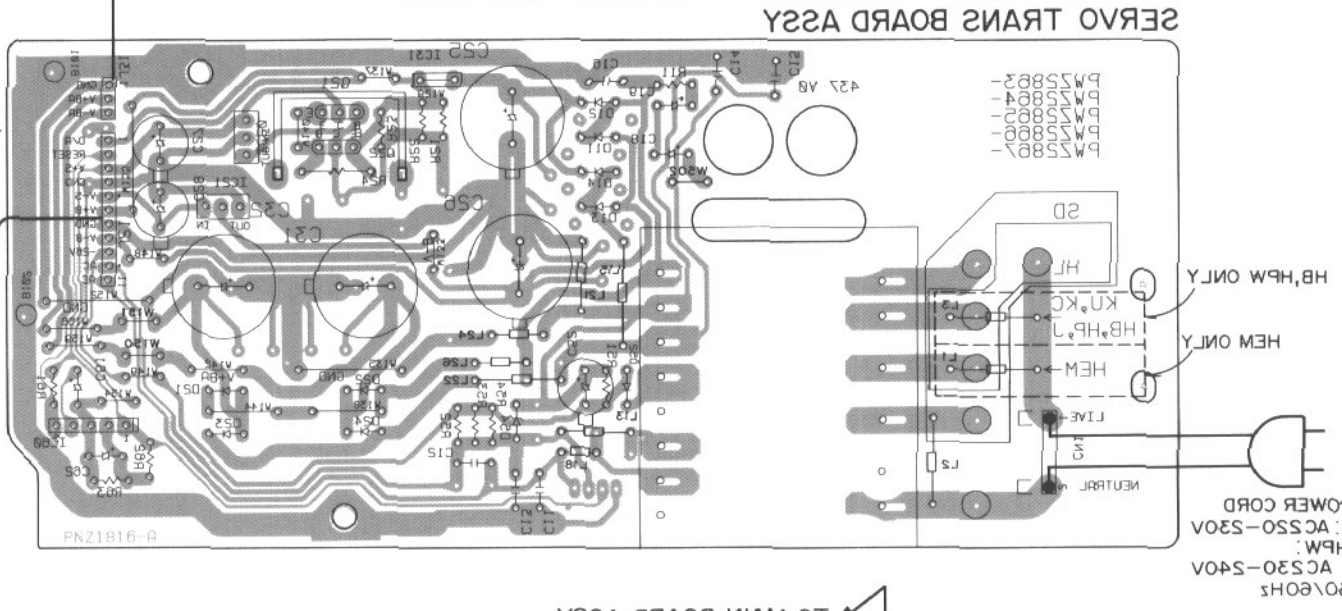
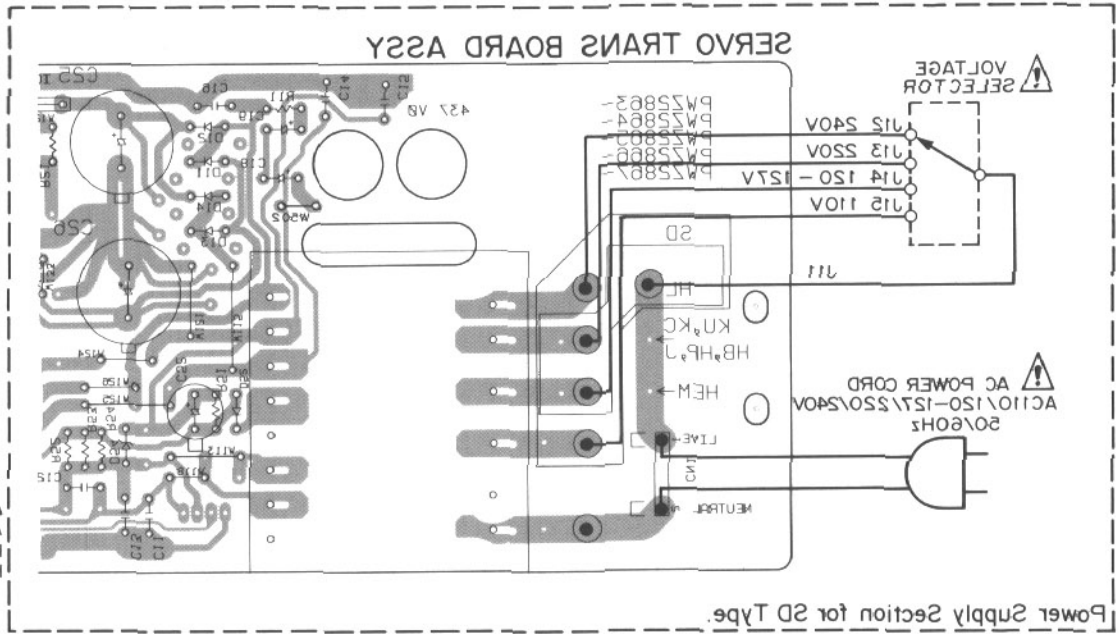
B

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D



• This diagram is viewed from the foil side.

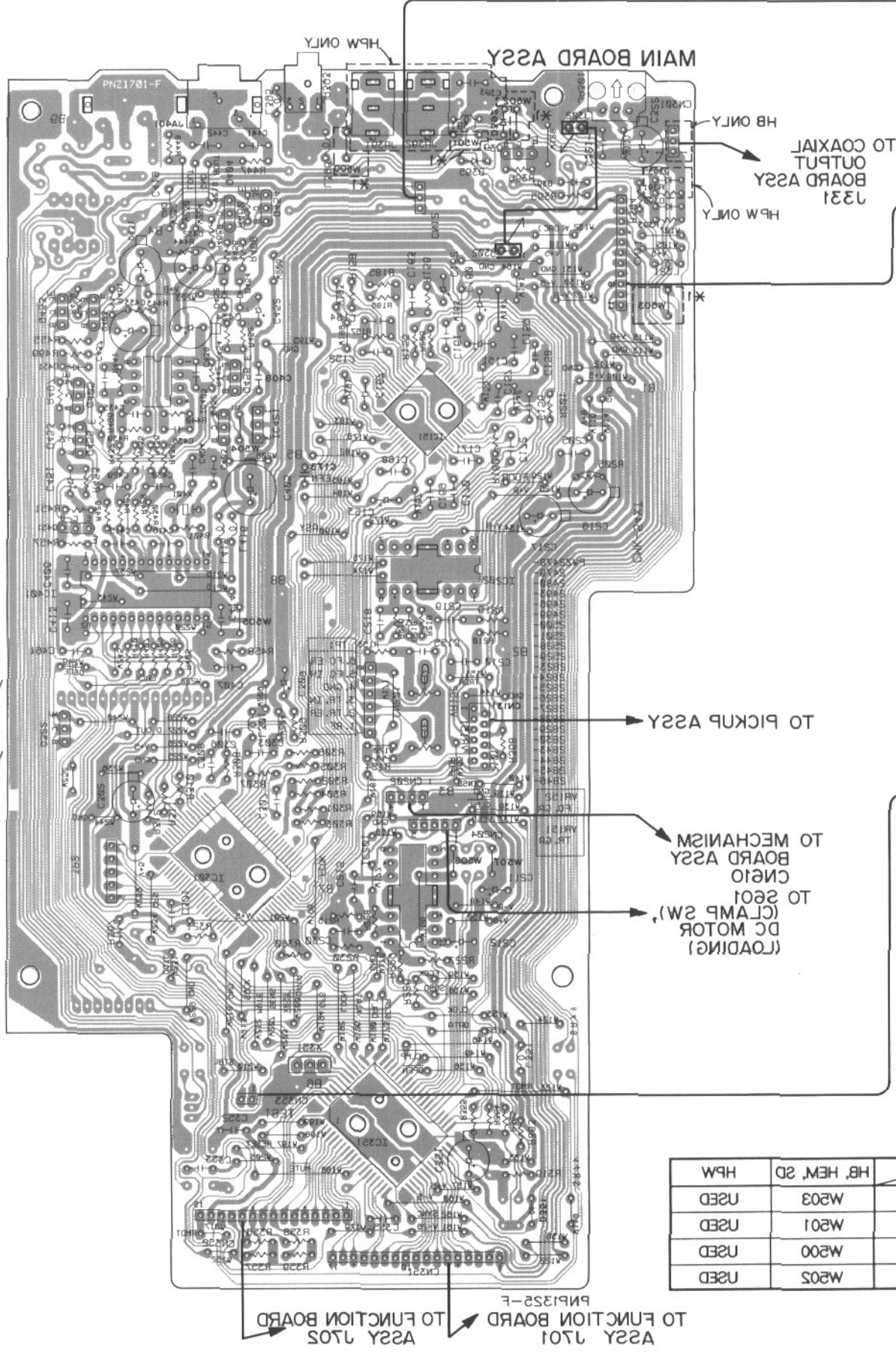


Part No.	Description
AAAX-183	230V label
AAAX-185	240V label

Line Voltage Selection
Line voltage can be changed by the following modification:
1. Disconnect the AC power cord.
2. Remove the cover.
3. Change the position of the L1 and L3 as follows.
4. Stick the line voltage label on the rear panel.

Voltage	L1 and L3 position
230V - 240V	L1 (SERVO TRANS BOARD ASSY) L3 (SERVO TRANS BOARD ASSY)
230V - 230V	L1 (SERVO TRANS BOARD ASSY) L3 (SERVO TRANS BOARD ASSY)
230V - 230V	L1 (SERVO TRANS BOARD ASSY) L3 (SERVO TRANS BOARD ASSY)

2.2 PCB CONNECTION DIAGRAM



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• This diagram is viewed from the mounted parts side.

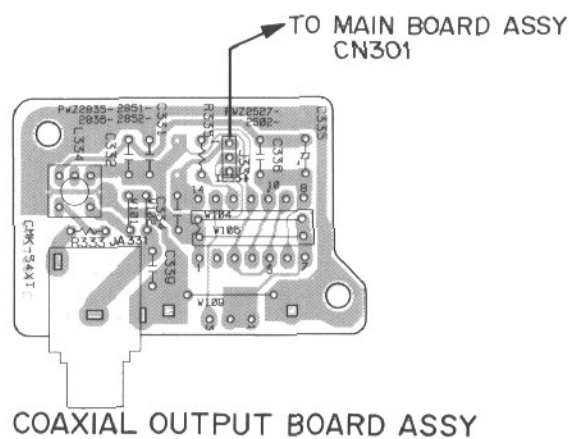
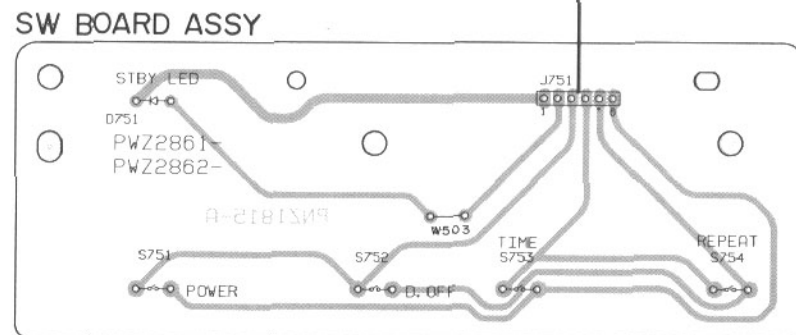
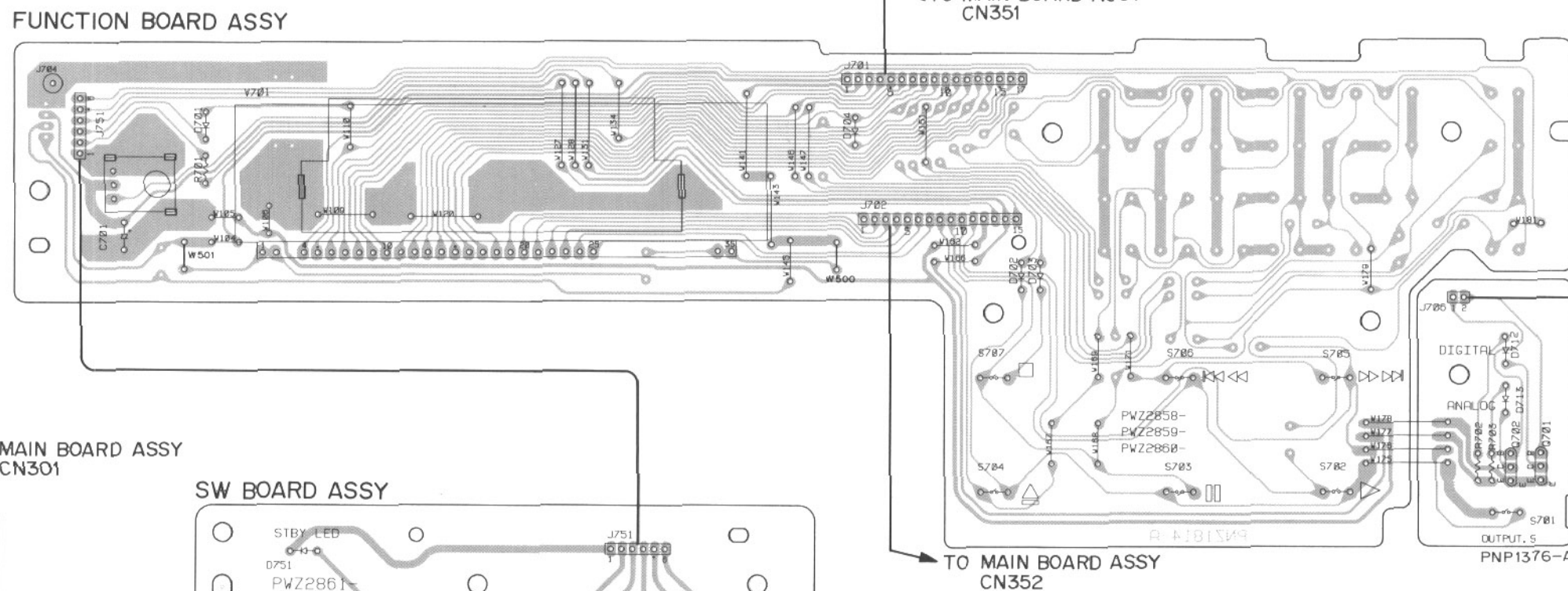
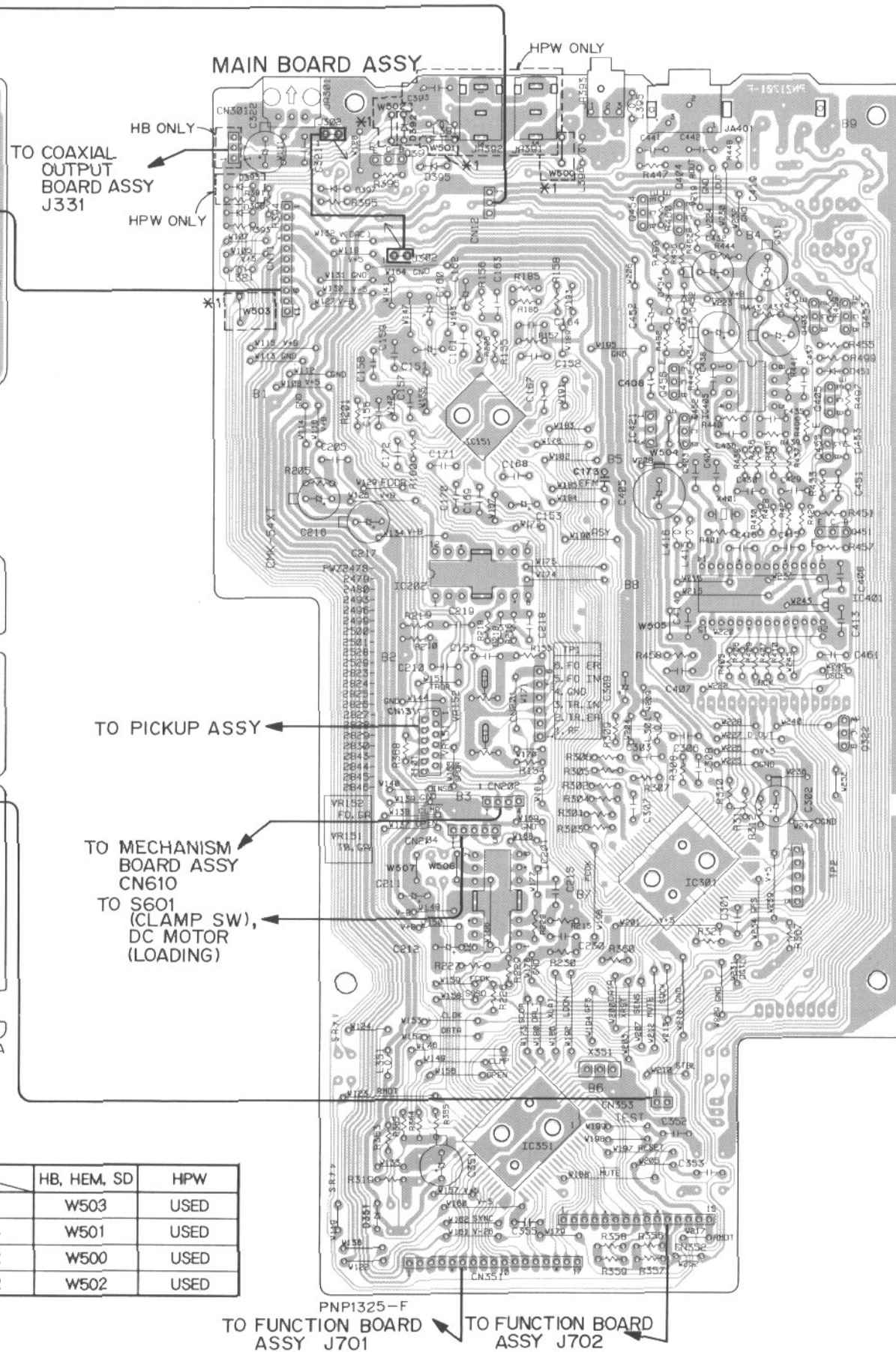
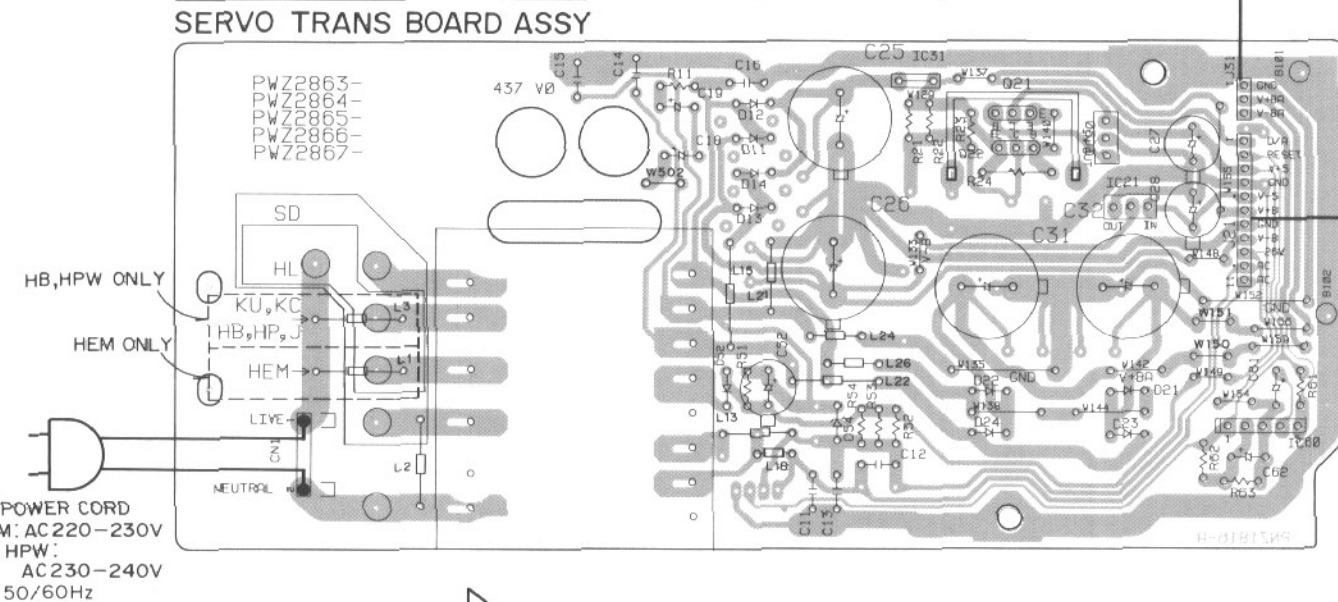
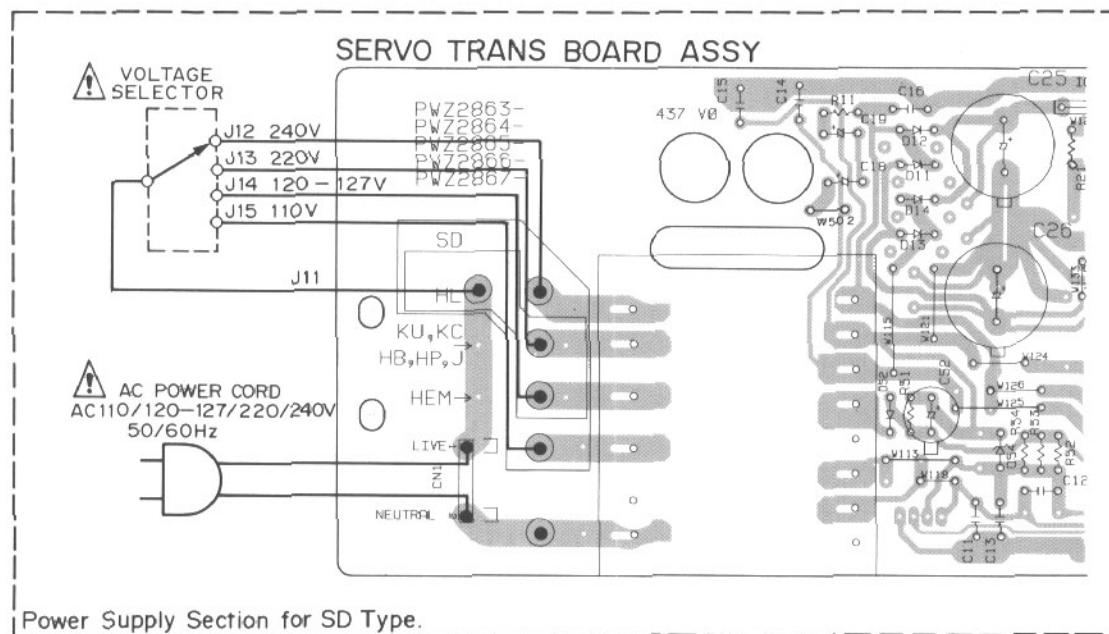
Line Voltage Selection

Line voltage can be changed by the following modification :

1. Disconnect the AC power cord.
2. Remove the cover.
3. Change the position of the L1 and L3 as follows.
4. Stick the line voltage label on the rear panel.

Voltage	L1 and L3 position
220V - 230V	L1 (SERVO TRANS BOARD ASSY)
230V - 240V	L3 (SERVO TRANS BOARD ASSY)

Parts No.	Description
AAX - 193	220V label
AAX - 192	240V label



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

	HB, HEM, SD	HPW
D391	W503	USED
D394	W501	USED
L392	W500	USED
R392	W502	USED

NOTE FOR SCHEMATIC DIAGRAMS

(Type 4A)

1. When ordering service parts, be sure to refer to "PARTS LIST of EXPLODED VIEWS" or "PCB PARTS LIST".

2. Since these are basic circuits, some parts of them or the values of some components may be changed for improvement.

3. RESISTORS:

Unit: k: k Ω , M: M Ω , or Ω unless otherwise noted.

Rated power: 1/4W, 1/6W, 1/8W, 1/10W unless otherwise noted.

Tolerance: (F): $\pm 1\%$, (G): $\pm 2\%$, (K): $\pm 10\%$, (M): $\pm 20\%$ or $\pm 5\%$ unless otherwise noted.

4. CAPACITORS:

Unit: p: pF or μ F unless otherwise noted.

Ratings: capacitor (μ F)/ voltage (V) unless otherwise noted.

Rated voltage: 50V except for electrolytic capacitors.

5. COILS:

Unit: m: mH or μ H unless otherwise noted.

6. VOLTAGE AND CURRENT:

$\square$ or $\leftarrow$ V $\pm$

DC voltage (V) in PLAY mode unless otherwise noted.

$\leftarrow$ mA or $\leftarrow$ mA :

DC current in PLAY mode unless otherwise noted.

Value in () is DC current in STOP mode.

7. OTHERS:

• $\odot$ or $\odot$: Adjusting point.

• $\triangle$: Measurement point.

• The $\triangle$ 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.

8. SCH- $\square$ ON THE SCHEMATIC DIAGRAM:

• SCH- $\square$ indicates the drawing number of the schematic diagram. (SCH stands for schematic diagram.)

9. SWITCHES (Underline indicates switch position):

FUNCTION BOARD ASSY

S701 : OUTPUT SELECTOR

S702 : PLAY $\blacktriangleright$

S703 : PAUSE $\parallel$

S704 : OPEN/CLOSE $\blacktriangle$

S705 : TRACK/MANUAL SEARCH $\blacktriangleright\blacktriangleright$

S706 : TRACK/MANUAL SEARCH $\blacktriangleleft\blacktriangleleft$

S707 : STOP $\blacksquare$

SW BOARD ASSY

S751 : TIME

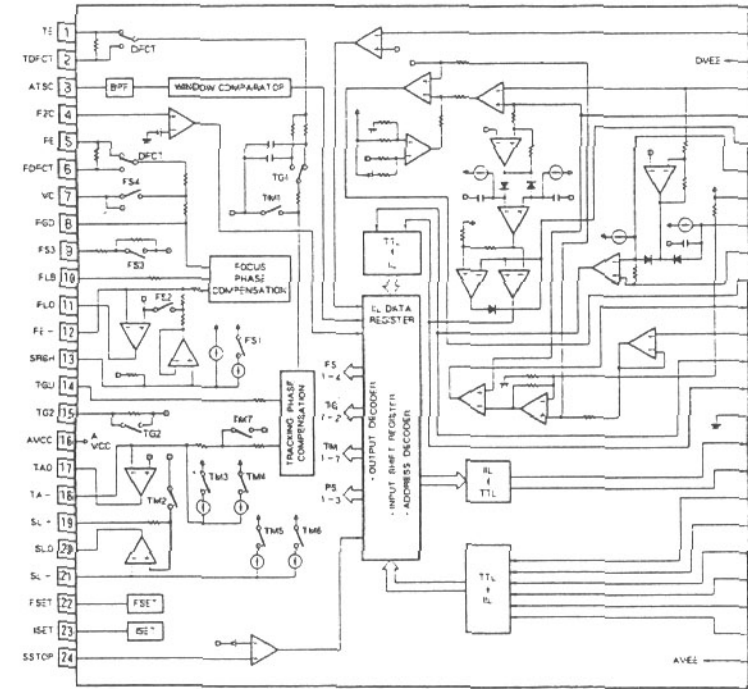
S752 : REPEAT

S753 : POWER STANDBY/ON

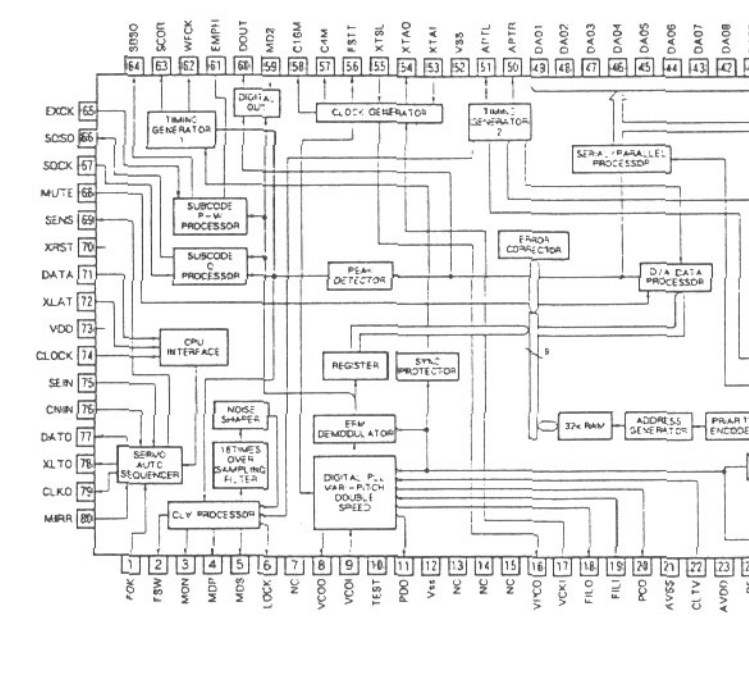
S754 : DISPLAY OFF

IC BLOCK DIAGRAMS

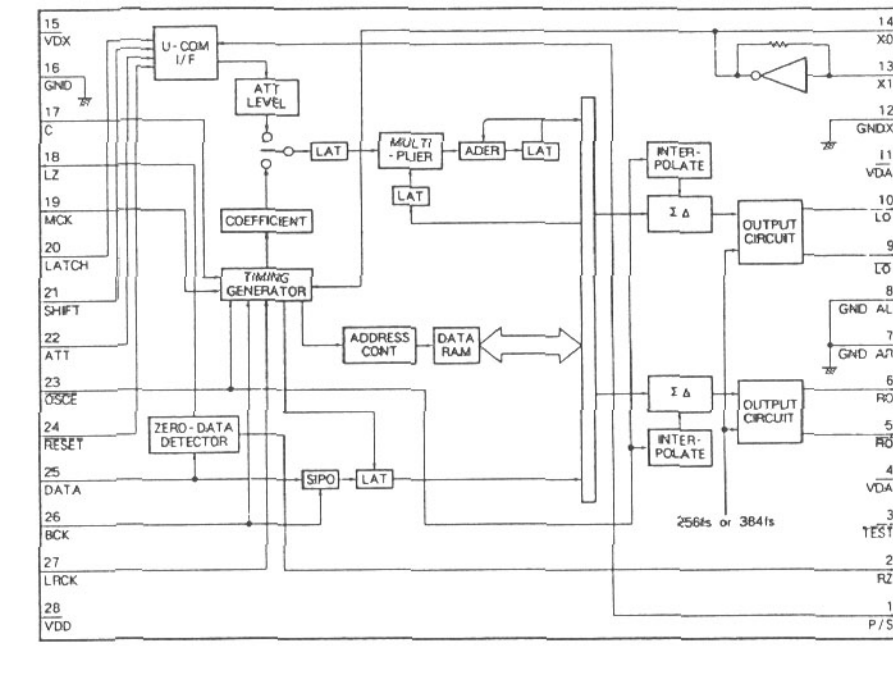
IC151 : CXA1372Q

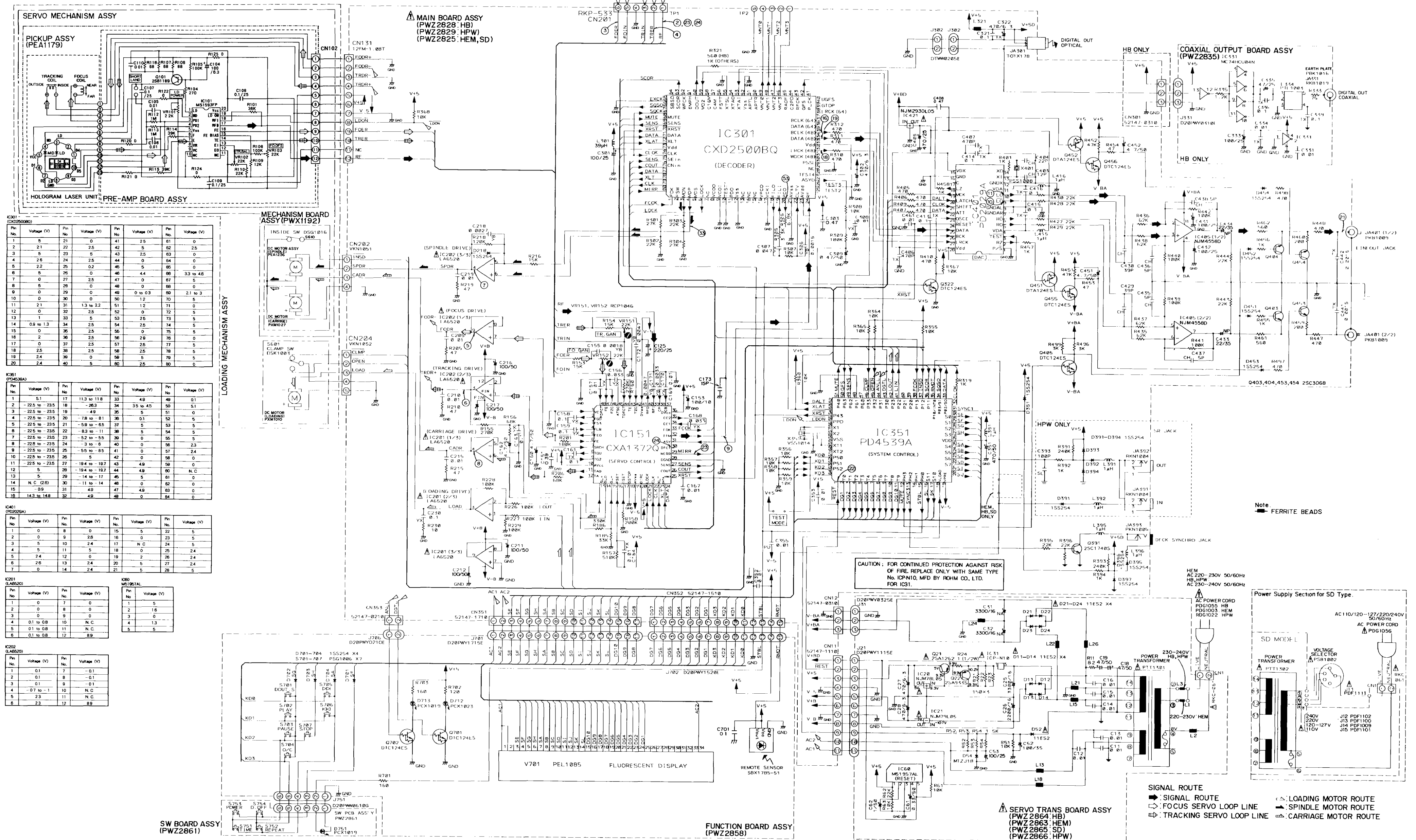


IC301 : CXD2500BQ



IC401 : PD2029A

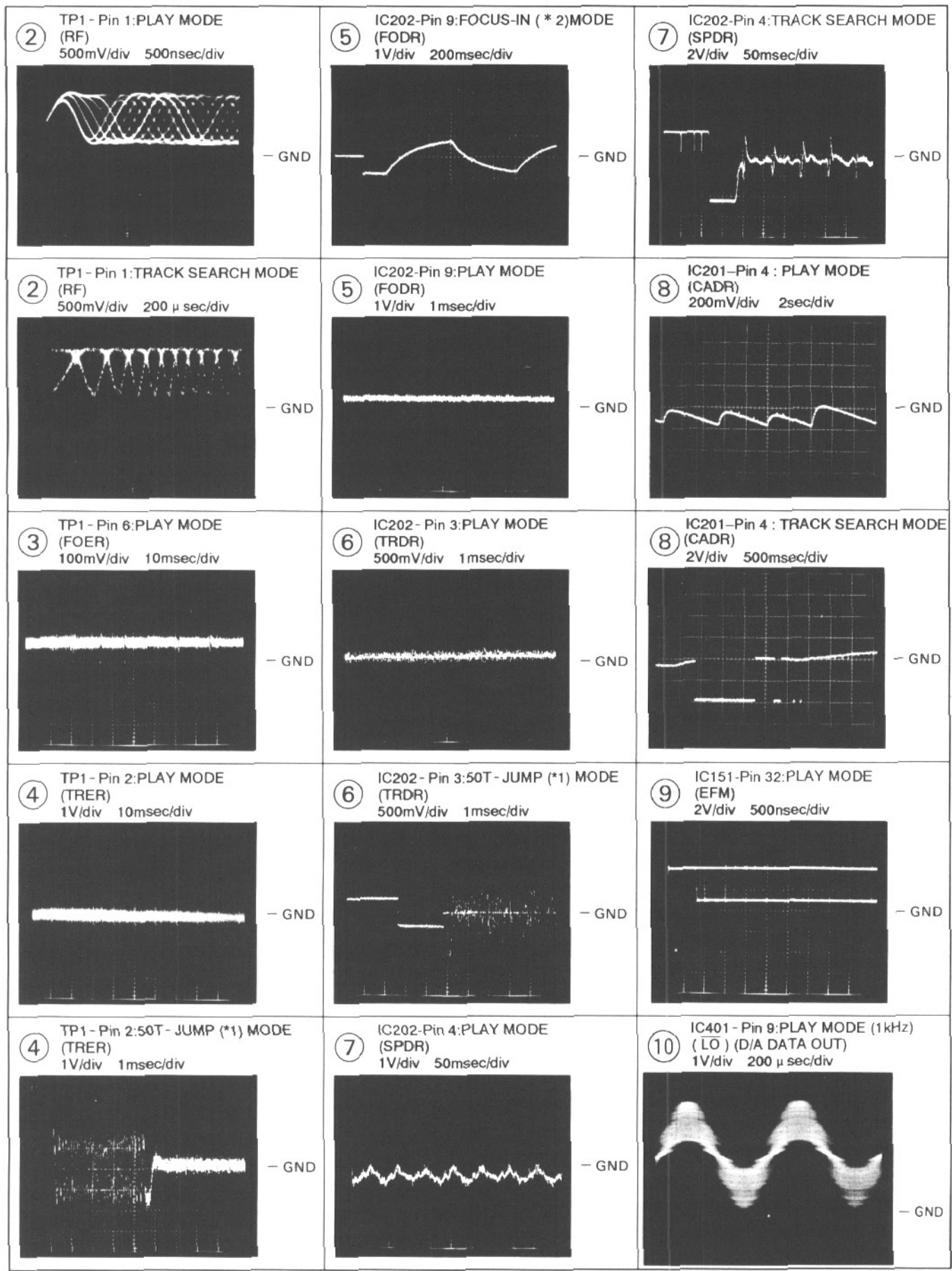




● WAVEFORMS

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.



*3 POWER ON : Plug AC cord into AC wall socket.
 *4 POWER OFF: Unplug AC cord from AC wall socket.

