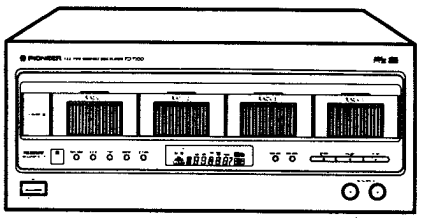
PIONEER®
The Art of Entertainment

Service Manual



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RRV1081

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FILE-TYPE COMPACT DISC PLAYER

PD-F100

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−F100		
KU/CA	○	AC120V	——
RD	○	AC110−127V/220−230V	With the voltage selector
WEM	○	AC220−240V	——

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CHAPTER 1

1.1 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.

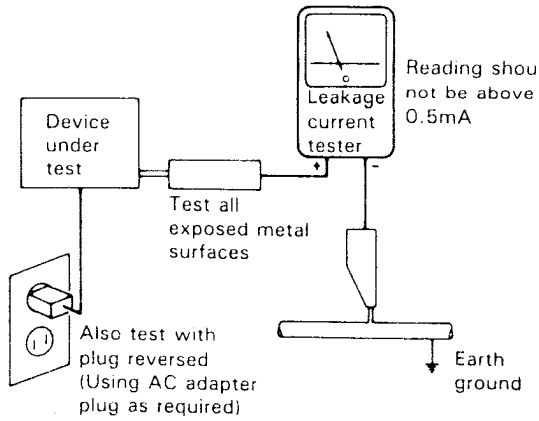
(FOR USA MODEL ONLY)

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 ⚠ on the schematics and on the parts list in this Service Manual.
The use of a substitute replacement component which dose 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 LASERSÄTEILYLLE. ÄLÄ KATSO SÄTEESEEN.

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

VARNING!
OSYNLIG LASERSTRÅLNING NÄR DENNA DEL ÄR ÖPPNAD OCH SPÄRREN ÄR URKOPPLAD. BETRAKTA EJ STRÅLEN.

LASER
Kuva 1
Lasersateilyn varoitusmerkki

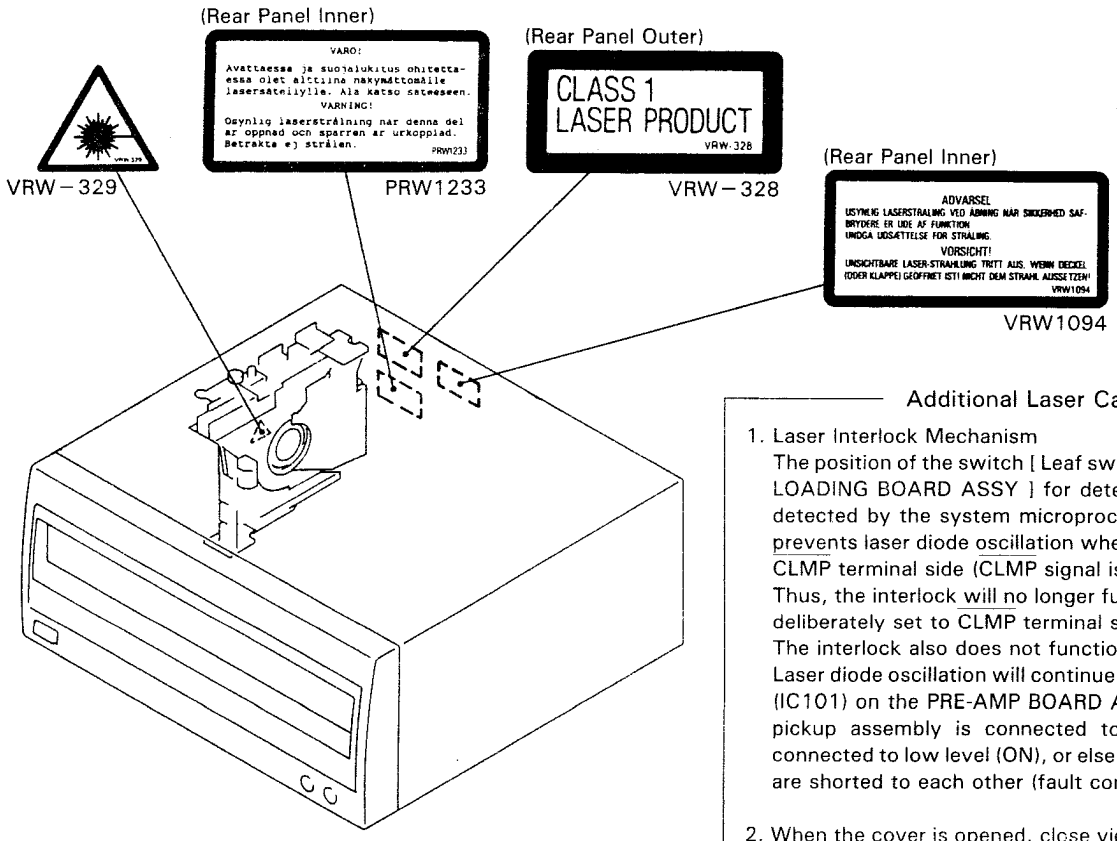
WARNING!
DEVICE INCLUDES LASER DIODE WHICH EMITS INVISIBLE INFRARED RADIATION WHICH IS DANGEROUS TO EYES. THERE IS A WARNING SIGN ACCORDING TO PICTURE 1 INSIDE THE DEVICE CLOSE TO THE LASER DIODE.

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



Additional Laser Caution

1. Laser Interlock Mechanism
   The position of the switch [Leaf switch (VSK1011) on the LOADING BOARD ASSY] for detecting loading state is detected by the system microprocessor, and the design prevents laser diode oscillation when the switch is not on CLMP terminal side (CLMP signal is OFF or high level.). Thus, the interlock will no longer function if the switch 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.

* Refer to page 1 – 10.

1.2 SPECIFICATIONS

1. General

Type ..... Compact disc digital audio system
Power requirements
U.S., Canadian models ..... AC 120 V, 60 Hz
European models ..... AC 220-240 V, 50/60 Hz
Other models ..... AC 110-127 V/220-240 V (Switchable) 50/60 Hz
Power consumption ..... 14 W
Operating temperature ..... +5°C - +35°C (+41°F - +95°F)
Weight ..... 11.0 kg (24 lb 4 oz)
External dimensions ..... 420(W) X 399(D) X 190(H) mm 16-9/16(W) X 15-11/16(D) X 7-1/2(H) in

2. Audio section

Frequency response ..... 2 Hz - 20 kHz
S/N ratio ..... 98 dB or more (EIAJ)
Dynamic range ..... 96 dB or more (EIAJ)
Channel separation ..... 96 dB or more (EIAJ)
Harmonic distortion ..... 0.003 % or less (EIAJ)
Level difference between channels ..... 1.0 dB or less (EIAJ)
Output voltage ..... 2 ± 0.3 Vrms (EIAJ)
Wow and flutter ..... less than ±0.001% (W.PEAK) (below measurable level) (EIAJ)
Channels ..... 2-channel (stereo)

3. Output terminal

Audio line output
Control input/output jacks (except for European models)
CD-DECK SYNCHRO jack
I/O INTERFACE (U.S. and Canadian models only)

4. Functions

Number of discs to be stored - maximum 100.

Basic Operation Buttons
- PLAY, PAUSE, STOP

Playback mode
- All Playback Mode
- Single Playback Mode
- Custom Playback Mode

Search Function
- Disc Search
- Track Search
- Manual Search

Programming
- Maximum 32 steps
- Pause
- Program Clear (single track or all tracks)

Repeat Functions
- 1 Track Repeat
- Single Repeat
- All Discs Repeat
- Program Repeat
- Single Random Repeat
- All Discs Random Repeat
- Custom Random Repeat
- Custom Repeat

Random Play
- Random Play (repeat also available)

Switching Display
Disc/Track Number, Time Consumed (track/disc), and Total Time

ADLC
Automatic Digital Level Controller

Memory Hold
Stored Playback Mode, Program Contents, or Custom Mode

Last Disc Memory

Direct Search with the Digit buttons (remote control unit)

Power On/Off (remote control unit)

CD-DECK SYNCHRO jack

Remote Control jack (except for European models)

5. Display

FL Tube Display
- Play indicator
- Pause indicator
- Playback Mode indicators (all, single, custom)
- Elapsed Time Display (min, sec)
- Total Time Display
- Disc Number, Track Number
- Program Step Number
- Custom Number
- Repeat indicator
- Random indicator
- Program indicator
- ADLC indicator

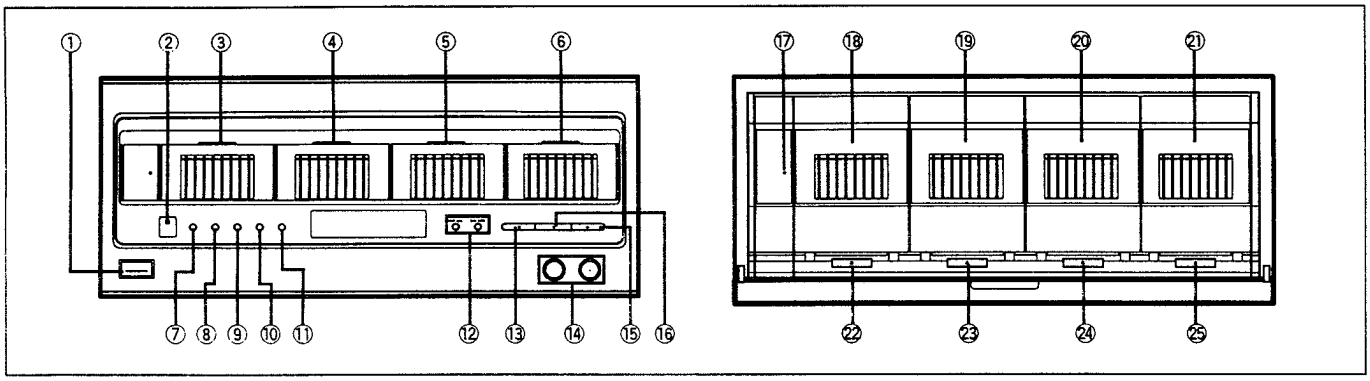
6. Accessories

- Remote control unit 1
- AAA/R03 dry cell batteries 2
- Output cable 1
- Control cable (except for European models) 1
- CD liner notes file 2
- Index label sheet 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**

② **Remote sensor**

Receives the signal from the remote control unit.

③ **Rack 1 indicator**

④ **Rack 2 indicator**

⑤ **Rack 3 indicator**

⑥ **Rack 4 indicator**

⑦ **RANDOM button**

⑧ **ADLC button**

⑨ **TIME button**

⑩ **MODE button**

⑪ **CLEAR button**

⑫ **Track/Manual search buttons**
(⏮ ◀◀ / ▶▶ ⏭)

⑬ **Stop button (■)**

⑭ **DISC NUMBER buttons (–/+)**

⑮ **Play button (►)**

⑯ **Pause button (II)**

⑰ **STANDBY indicator**

⑱ **Rolling RACK 1**

⑲ **Rolling RACK 2**

⑳ **Rolling RACK 3**

㉑ **Rolling RACK 4**

㉒ **EJECT button for RACK 1 (⏏)**

㉓ **EJECT button for RACK 2 (⏏)**

㉔ **EJECT button for RACK 3 (⏏)**

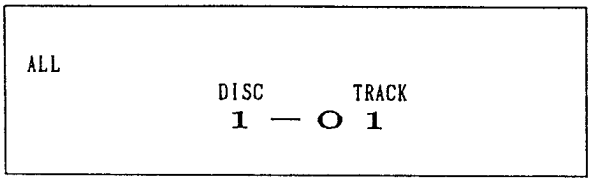
㉕ **EJECT button for RACK 4 (⏏)**

1.4 OPERATING DESCRIPTION

1. POWER SUPPLY RECEPTACLE ON

When the mechanism is not at the home position when the power supply receptacle is switched ON, it will return to the home position, the mechanism will be clamped and stop will be executed with the following display.
The normal play mode will be <ALL> mode when no mode specification has been made.

Receptacle ON (DISC Display)



2. POWER ON/OFF (Product, Remote Control)

2.1 POWER−OFF

1. When the <POWER ON/OFF> key is pressed at the time of POWER ON, the entire FL will go out, the standby LED will light, and power OFF condition will be reached.
2. Except for the <POWER ON/OFF> key, all other keys are disabled during POWER OFF.
3. When the <POWER ON/OFF> key is pressed during PLAY, during SEARCH, etc., the operation will be stopped, the disc will be stored, the mechanism will return to the home position, clamping will be executed, and then the power will be switched OFF.
   At this time, "OFF" is displayed at the 7-segment display to indicate that POWER−OFF is being executed.

During POWER−OFF

4. The play mode, the program, the customer, and the last disc are kept even when POWER OFF is executed.

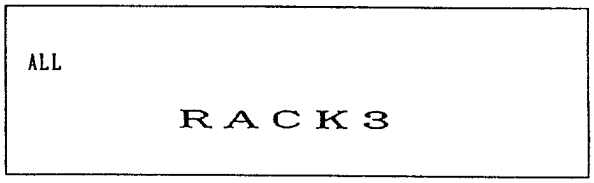
2.2 POWER−ON

1. When the <POWER ON/OFF> key is pressed at the time of POWER OFF, the FL will light, the standby LED will go out, and all keys will be enabled.
2. The disc No. at the time of POWER OFF will be displayed, and when then the <PLAY> key is pressed, that disc will be searched and played. (Last Disc Memory specifications)
3. When the <TRACK−BACK> key is pressed within 1 sec. after POWER−ON, the business demonstration display will be started. When a key is pressed or the door is opened, the demonstration will stop, and the display returns to the original display mode.

3. DOOR AND ROLLING RACK OPEN

1. As play operation is continued even when the door is opened, disc exchange is possible even during playback, but as the rolling rack with the mechanism behind it can not be tilted, the discs in that rack can not be exchanged.
2. While the door is open, the number of the rolling rack which can not be tilted is displayed on the 7-segment display. (Only "RACK" is displayed when all racks can be tilted.)
   At this time, the rack LED indicates which rack can not be tilted.

With open door



(The number of the rack which can not be tilted is shown.)

3. When the door is opened during selection or loading, the operation will be interrupted temporarily. The operation will be started again after confirmation that the door has been closed.
   Accordingly, when the <PLAY> key or the <RANDOM> key is pressed while the door and the rolling rack is open, play operation will not begin. Play will be started after confirmation that the door has been closed.
4. When a rolling rack is tilted, the disc existence information for that part, the program write information, and the random erasure information are cleared. (The customer writing information is not cleared.)
   When at this time all written information is cleared in <PROGRAM> mode, <ALL> mode will be entered.

4. PAUSE (Product, Remote Control)

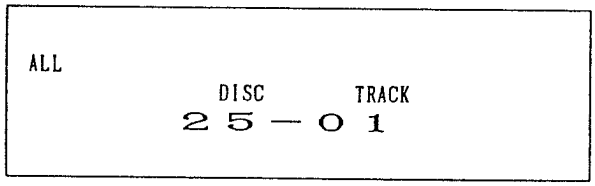
1. When the <PAUSE> key is pressed during play, the PAUSE segment will light and pause will be executed at that location.
   When the <PAUSE> key is pressed during search, pause will be executed at the search completion address.
2. When skip title selection is executed in pause condition, pause will be executed at the search completion address.
3. Pause is cancelled with the <PAUSE> key or the <PLAY> key.

5. STOP (Last Disc Memory specification) (Product, Remote Control)

1. When the <STOP> key is pressed during play, the number of the disc played immediately before will be displayed, the disc will be stored, the mechanism will return to the home position, clamping will be executed and stop condition will be reached.

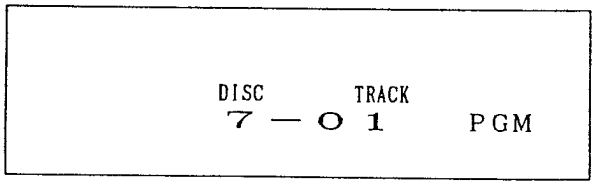
2. When the <PLAY> key is pressed again, the previously played disc will be searched and played (Last Disc Memory).
   When a program has been set up, the number of the first disc in the program will be displayed, and when then the <PLAY> key is pressed, play will start from that disc.

<STOP> key ON



(The number of the disc played immediately before is shown.)

<STOP> key ON (with a program)



(The number of the first disc of the program is shown.)

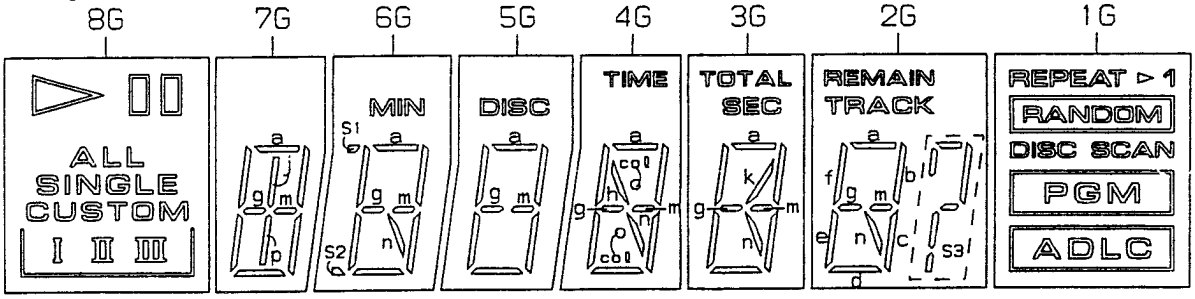
3. Last Disc Memory applies for all modes, <ALL>, <SINGLE>, and <CUSTOM>.
   (However, this applies only for normal play.)
4. When the <STOP> key is pressed during repeat or pause ON, repeat or pause also will be cancelled.
   When the <STOP> key is pressed during stop in <PROGRAM> mode, <PROGRAM> mode will be cancelled (when a program has been written, this also will be cleared), and <ALL> mode will be entered.

1.5 FL INFORMATION

■ PEL1079 (V701 : DISPLAY BOARD ASSY)

● FL Tube

● Grid Assignment

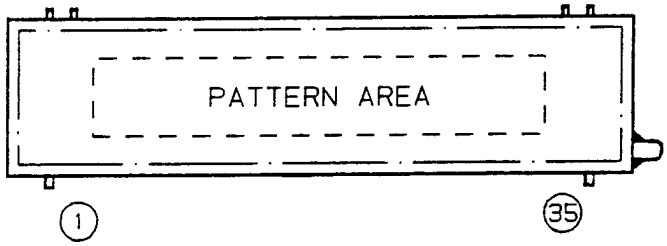


● Pin Connection

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	35
CONNECTION	F1	F1	NP	P5	P6	P7	P8	P1	P2	P3	P4	P9	P10	P11	P	P	P	P	P	P	P	P	P	P	8G	7G	6G	5G	4G	3G	2G	1G	NP	F1	F2

NOTE 1) F1,F2 --- Filament
2) NP ------ No pin
3) DL ------ Datum Line
4) 1G~8G --- Grid

● Pin Assignment



● Anode Connection

	8G	7G	6G	5G	4G	3G	2G	1G
P1	ALL	a	a	a	a	a	a	RANDOM
P2	SINGLE	b	b	b	b	b	b	-
P3	I	c	c	c	c	c	c	-
P4		d	d	d	d	d	d	ADLC
P5	II	e	e	e	e	e	e	PGM
P6	CUSTOM	f	f	f	f	f	f	DISC
P7	-	g,m	g,m	g,m	g,m	g	g,m	SCAN
P8	-	-	S1,S2	-	col	m	S3	-
P9	III	j,p	n	-	h,n	k,n	n	-
P10	▷	-	MIN	DISC	-	SEC	TRACK	▷1
P11	□□	-	-	-	TIME	TOTAL	REMAIN	REPEAT

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, Pin6 (FCS. ERR)	None
2	Tracking error balance verification	TP1, Pin2 (TRK. ERR)	None
3	Pickup radial/tangential direction tilt adjustment	TP1, Pin1 (RF)	Radial tilt adjustment screw, Tangential tilt adjustment screw
4	RF level verification	TP1, Pin1 (RF)	None
5	Focus servo loop gain adjustment	TP1, Pin5 (FCS. IN) TP1, Pin6 (FCS. ERR)	VR152 (FCS. GAN)
6	Tracking servo loop gain adjustment	TP1, Pin3 (TRK. IN) TP1, Pin2 (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 (39kΩ + 0.001μF)
5. Resistor (100kΩ)
6. 8cm disc (With at least about 20 minutes of recording)
7. Ball point hexagon wrench (GGK1002)
8. Standard tools

● Test Point and Adjustment Variable Resistor Positions

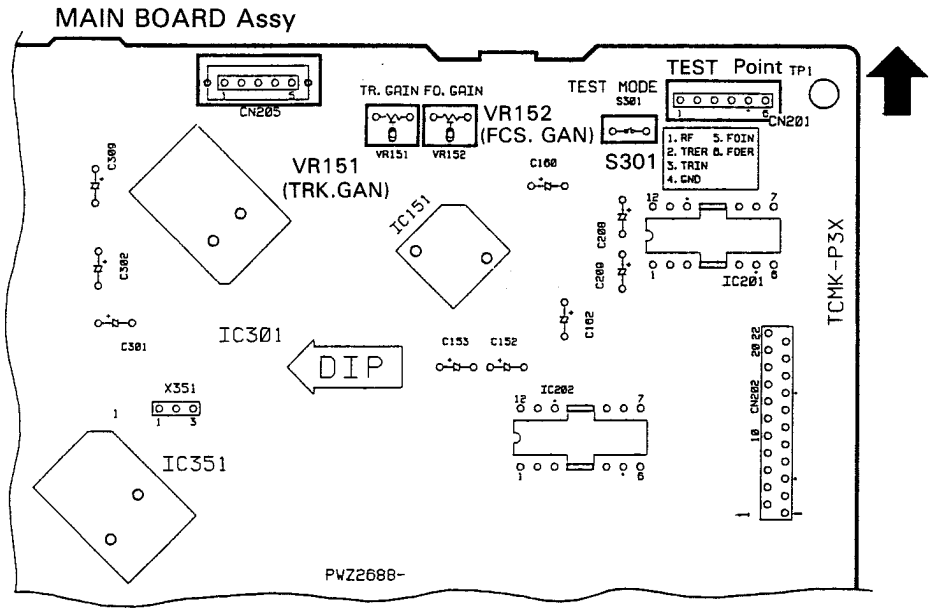


Fig. 1 Adjustment Location

● 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. Push the test mode switch (S301). (See Fig. 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
	MODE	Closes focus servo after the disc is clamped.	After the first disc is clamped, 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 500rpm 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. After this, return the disc to the rack and the mechanism back to its original position.

Note: Use the first disc in the test mode. (Other discs cannot be selected.)

[How to playback 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.

MODE	Lights up the laser diode and closes the focus servo after the first disc has been clamped.
⇩	
PLAY ▶	Starts the spindle motor and closes the spindle servo.
⇩	
PAUSE ❚❚	Closes the tracking servo.

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

Note:

1. *Carry out the following procedure only when the microcomputer (IC351) is PD3280A.*
   - *Advance (TRACK/MANUAL SEARCH key) the carriage after closing the focus servo (MODE key). If the carriage was previously advanced, stop the operation (STOP key) first, then repeat the procedure from the start. (If the operation is not stopped, the focus servo will not close.)*
2. *If the microcomputer (IC351) is PD3280B (or any other besides PD3280A):*
   - *The focus servo can be closed even if the carriage is previously advanced.*

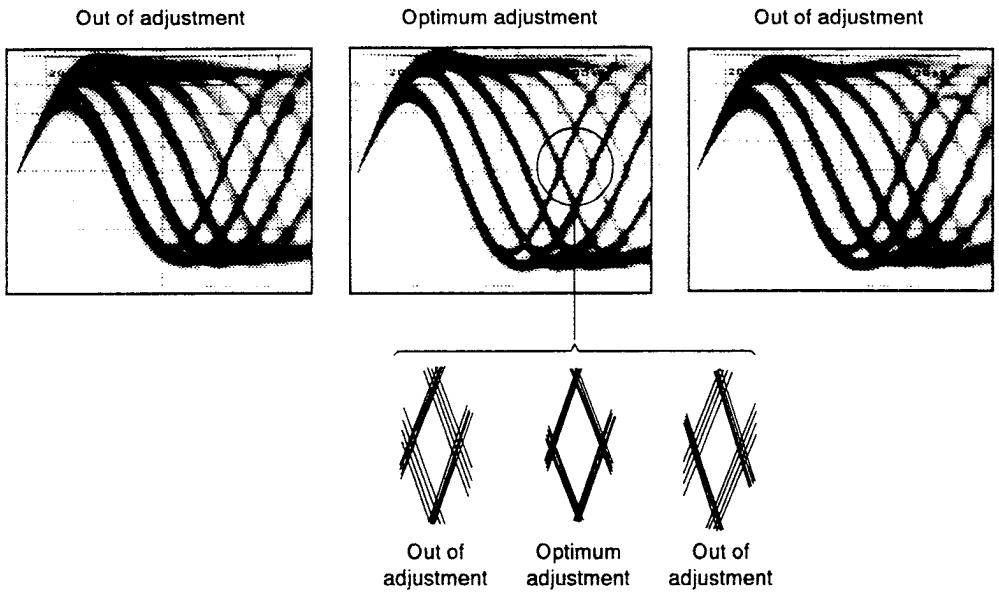


Fig. 3 Eye Pattern

■ RF Level Verification

● Objective ● Symptom when out of adjustment	To verify the playback RF signal amplitude. No play or no search		
● Measurement Instrument Connections	Connect the oscilloscope to TP1, Pin1 (RF). [Settings] 50mV/division 10ms/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=35mm) with the TRACK/MANUAL SEARCH FWD ▶▶ • ▶▶▌ key or REV ▐◀◀ • ◀◀ key, then press the MODE key, the PLAY ▶ key, then the PAUSE ▮▮ key in that order to close the respective servos and put the player into play mode.
2. Verify the RF signal amplitude is 1.2Vp−p±0.2V.

■ 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 Fig. 4. [Settings] CH1 20mV/division X−Y mode CH2 5mV/division	● Player State ● Adjustment Location ● Disc	Test mode, play VR152 (FCS. GAN) YEDS−7

[Procedure]

1. Set the AF generator output to 1.2kHz and 1Vp−p.
2. Press the TRACK/MANUAL SEARCH FWD ▶▶ • ▶▶▌ key or REV ▐◀◀ • ◀◀ key to move the pickup to halfway across the disc (R=35mm), then press the MODE 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.

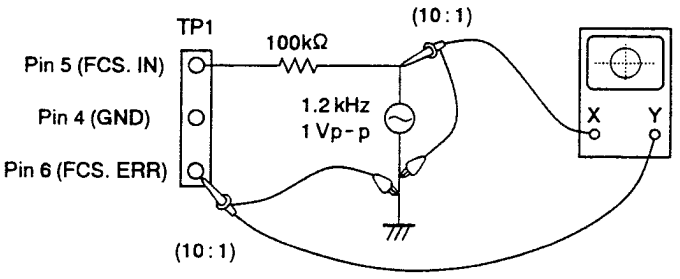
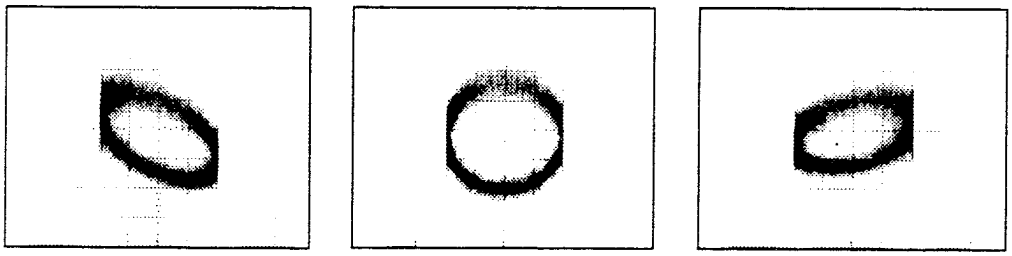


Fig. 4

Focus Gain Adjustment



Higher gain　　Optimum gain　　Lower gain

■ Focus Offset Verification

● Objective ● Symptom when out of adjustment	Verify the DC offset for the focus error amp. The model does not focus in and the RF signal is dirty.		
● Measurement Instrument Connections	Connect the oscilloscope to TP1, Pin6 (FCS. ERR) [Settings] 5mV/division 10ms/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, Pin6 (FCS. ERR) is 0±50mV.			

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.

■ Tracking Error Balance Verification

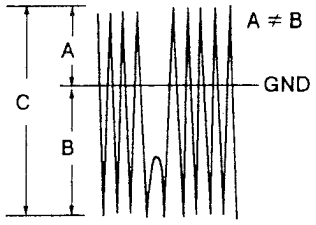
● Objective ● Symptom when out of adjustment	To verify that there is no variation in the sensitivity of the tracking photo diode. Play does not start or track search is impossible.		
● Measurement Instrument Connections	Connect the oscilloscope to TP1, Pin2 (TRK. ERR). This connection may be via a low pass filter. [Settings] 50mV/division 5ms/division DC mode	● Player State ● Adjustment Location ● Disc	Test mode, focus and spindle servos closed and tracking servo open. None YEDS−7

[Procedure]

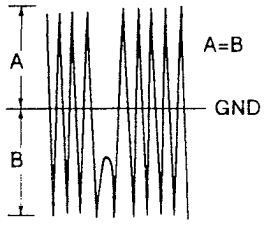
1. Move the pickup to midway across the disc (R=35mm) with the TRACK/MANUAL SEARCH FWD ▶▶ • ▶▶▌ key or REV ▐◀◀ • ◀◀ key.
2. Press the MODE key, then the PLAY ▶ key in that order to close the focus servo then the spindle servo.
3. Line up the bright line (ground) at the center of the oscilloscope screen and put the oscilloscope into DC mode.
4. Supposing that the positive amplitude of the tracking error signal at TP1, pin2 (TRK. ERR) is (A) and the negative amplitude is (B), the following expression is satisfied.

When $A \geqq B$, $\frac{A-B}{C} \times \frac{1}{2} \leqq 0.1$

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



When there is a DC component



When there is no DC component

■ 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 TP1, Pin1 (RF). [Settings] 20mV/division 200ns/division AC mode	● Player State	Test mode, play
		● Adjustment Location	Pickup radial tilt adjustment screw and tangential tilt adjustment screw
		● Disc	8 cm disc [Hewever, those with approx. 20 min of audio signal (music).]

[Procedure]

1. Press the TRACK/MANUAL SEARCH FWD ▶▶ • ▶▶▌ key or REV ▐◀◀ • ◀◀ key to move the pickup to the external circumference of the disc.
   Press the MODE 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 (Fig. 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 Fig. 2.

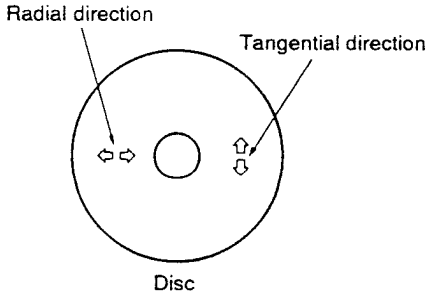
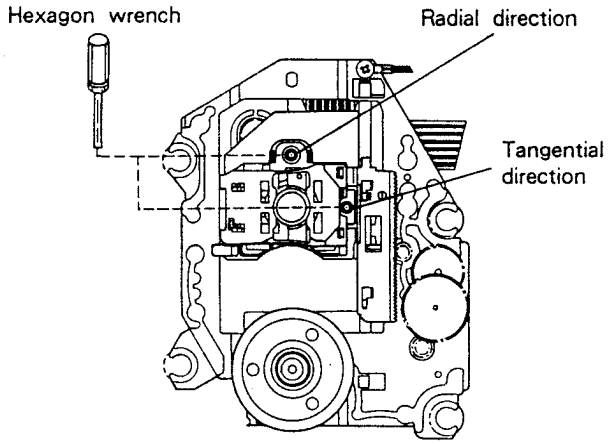


Fig. 2



■ Tracking Servo Loop Gain Adjustment

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

[Procedure]

1. Set the AF generator output to 1.2kHz and 2Vp−p.
2. Press the TRACK/MANUAL SEARCH FWD ▶▶ • ▶▶▌ key or REV ▐◀◀ • ◀◀ key to move the pickup to halfway across the disc (R=35mm), then press the MODE 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.

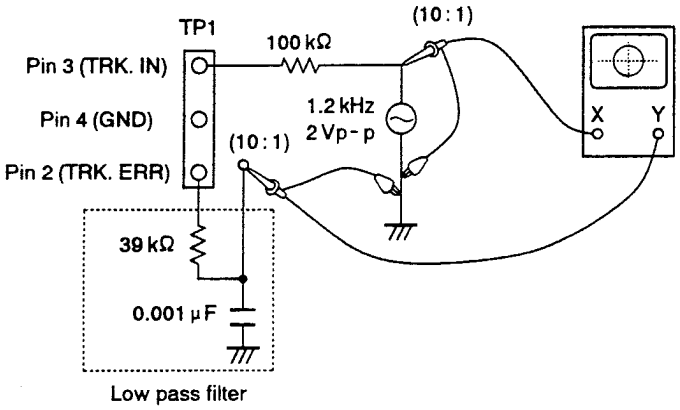
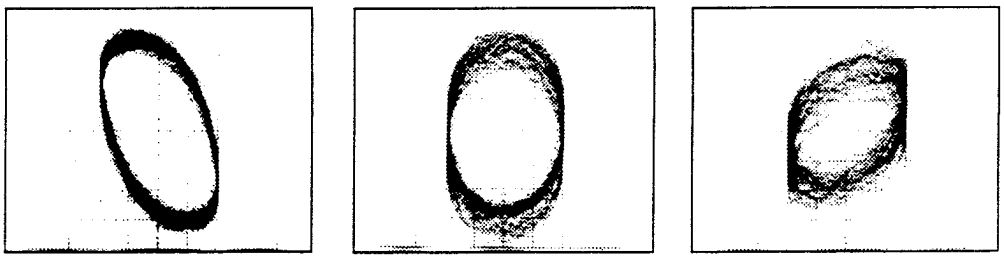


Fig. 5

Tracking Gain Adjustment



Higher gain | Optimum gain | Lower gain

1.7 PARTS LIST FOR PACKING AND EXPLODED VIEWS

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.*

(1). PACKING

■ CONTRAST OF KU/CA, RD and WEM TYPES

PD−F100/KU/CA, RD and WEM have the same construction except for the following :

Mark	No.	Description	Part No.			Remarks
			PD−F100			
			KU/CA	RD	WEM	
	1	Cord with mini plug	PDE1247	PDE1247	Not used	
	6	Wireless remote control unit	PWW1091	PWW1091	PWW1097	
	7	Battery lid	PZN1010	PZN1010	PZN1014	
	13	Packing case	PHG2047	PHG2058	PHG2058	
NSP	17	Warranty card	ARY1044	Not used	ARY−088	
	20	Operating instructions (English, Spanish, Chinese)	Not used	PRE1211	Not used	
	21	Operating instructions (English, French, Germany, Italian)	Not used	Not used	PRE1208	
	22	Operating instructions (Dutch, Swedish, Spanish, Portuguese)	Not used	Not used	PRE1209	

■ PARTS LIST FOR KU/CA TYPE

Mark	No.	Description	Parts No.
	1	CORD WITH MINI PLUG	PDE1247
	2	CORD WITH PLUG	PDE1248
	3	JACKET FILE	PHN1047
	4	OPERATING INSTRUCTIONS (English)	PRB1213
	5	INDEX LABEL 100	PRW1360
	6	WIRELESS REMOTE CONTROL UNIT	PWW1091
	7	BATTERY LID	PZN1010
NSP	8	BATTERY (R03, AAA)	VEM−022
	9	TRANSPORTATION SCREW	PBA1088
	10	TRANSPORTATION SCREW	PBA1089
	11	STYROL PROTECTOR (F)	PHA1278
	12	STYROL PROTECTOR (R)	PHA1279
	13	PACKING CASE	PHG2047
	14	CAUTION	PRM1033
	15	BAG (0.03×230×340)	Z21−038
	16	SHEET (800×900×0.5)	Z23−020
NSP	17	WARRANTY CARD	ARY1044
	18	STYROL PROTECTOR (U)	PHA1286
	19	SHEET	PHC1079

(2). EXTERIOR

■ CONTRAST OF KU/CA, RD and WEM TYPES

PD−F100/KU/CA, RD and WEM have the same construction except for the following :

Mark	No.	Description	Part No.			Remarks
			PD−F100			
			KU/CA	RD	WEM	
⚠	1	Cord stopper	CM−22C	CM−22B	CM−22B	
⚠	7	AC power cord	PDG1015	PDG1056	PDG1003	
⚠	8	Power transformer	PTT1297	PTT1299	PTT1298	
NSP	9	Cord holder	DNF1128	Not used	Not used	
	14	Rear base	PNA2075	PNA2077	PNA2076	
	48	65 label	ORW1069	Not used	Not used	
	64	MAIN BOARD assy	PWZ2688	PWZ2690	PWZ2689	
NSP	65	OUTPUT BOARD assy	PWZ2708	PWZ2708	PWZ2709	
NSP	66	I/O CONNECTOR assy	PWX1390	Not used	Not used	
	67	POWER BOARD assy	PWZ2720	PWZ2719	PWZ2718	
	85	Caution label	Not used	Not used	PRW1233	
NSP	86	Caution label (F)	Not used	Not used	VRW−328	
	87	Caution label (B)	Not used	Not used	VRW−329	
	88	Caution label	Not used	Not used	VRW1094	

■ PARTS LIST FOR KU/CA TYPE

Mark	No.	Description	Parts No.
⚠	1	CORD STOPPER (PLASTIC)	CM−22C
	2	LEVER SWITCH (S)	DSK1003
	3	.....	
	4	22P F.F.C/30V	PDD1157
	5	.....	
	6	34P F.F.C/30V	PDD1159
⚠	7	AC POWER CORD	PDG1015
⚠	8	POWER TRANSFORMER	PTT1297
NSP	9	CORD HOLDER	DNF1128
	10	CANCEL SPRING	PBH1173
	11	SUPPORT SPRING	PBH1192
	12	BONNET CASE	PYY1178
NSP	13	UNDER BASE	PNA2057
	14	REAR BASE (FE)	PNA2075
	15	PCB ANGLE	PNB1468
	16	SIDE ANGLE	PNB1469
	17	ESCUTCHEON ANGLE	PNB1502
	18	FFC HOLDER	PNM1238
	19	INSULATOR	PNW1912
	20	ROLLER	PNW2468
NSP	21	SPACER 24 (PLASTIC)	PNW2484
NSP	22	SPACER (PLASTIC)	PNY−404
	23	.....	
	24	RIVET (PLASTIC)	RBM−003
	25	CORD CLAMPER (STEEL)	RNH−184
NSP	26	SPACER	VEC1596
	27	WIRE SPRING	PBH1182
	28	EJECT SPRING	PBH1186
	29	ROPE UNIT	PBL1003
	30	SHAFT	PLA1130
	31	MAIN BASE	PNA2108
	32	REAR ANGLE	PNA2126
	33	SELECT GUIDE	PNB1479
	34	ANGLE L	PNB1480
	35	SIDE ANGLE R	PNB1481
NSP	36	SCREW HOLDER	PNW2489
	37	DISC RACK ASS'Y	PXA1558
	38	GUIDE SPRING	PBH1177
	39	GUIDE PLATE	PNB1476
	40	RACK	PNW2404
	41	TOP GUIDE	PNW2405
	42	RACK PANEL	PNW2406
	43	.....	
	44	RACK WINDOW 1	PAM1643
	45	RACK WINDOW 2	PAM1644
	46	RACK WINDOW 3	PAM1645
	47	RACK WINDOW 4	PAM1646
	48	65 LABEL	ORW1069
	49	ADDRESS LABEL	PRW1359
NSP	50	RACK BASE ASS'Y	PXA1534

(3). DOOR PANEL ASS'Y (FOR ALL TYPES)

Mark	No.	Description	Parts No.
NSP	51	RACK BOARD A ASSY	PWZ2779
NSP	52	RACK BOARD B ASSY	PWZ2781
	53	CONNECTOR ASSY	PDE1236
	54	LOCK SPRING	PBH1178
	55	LEVER SPRING	PBH1179
	56	SWITCH PLATE	PBK1131
	57	RACK BASE	PNW2407
	58	RACK LOCK	PNW2408
	59	LOCK LEVER	PNW2409
	60	SCREW	BPZ26P060FZK
	61	SCREW	IPZ30P060FMC
	62	SCREW	PPZ30P060FMC
NSP	63	LOADING MECHANISM ASSY	PXA1535
	64	MAIN BOARD ASSY	PWZ2688
NSP	65	OUTPUT BOARD ASSY	PWZ2708
NSP	66	I/O CONNECTOR ASSY	PWX1390
	67	POWER BOARD ASSY	PWZ2720
	68	SCREW	BBZ30P080FZK
	69	SCREW	BBZ30P080FCC
	70	SCREW	IBZ30P060FCC
	71	SCREW	IBZ30P150FCC
	72	SCREW	IBZ30P100FCC
	73	E RING	YE30FUC
NSP	74	BOTTOM PLATE	PNB1511
	75	FFC PLATE	PNM1241
	76	SCREW	PBA1085
	77	DISC GUARD	PNM1245
	78	WASHER	WT30D120D050
	79	EARTH PLATE	PBK1135
	80	SCREW	IBZ30P080FCC
	81	SCREW	BBZ26P060FCC
	82	SCREW	FBT40P080FZK
	83	BONNET GUARD	PNM1244
NSP	84	JOINT BOARD ASSY	PWZ2732

Mark	No.	Description	Parts No.
	1	CONTROL BUTTON L	PAC1771
	2	CONTROL BUTTON R	PAC1772
	3	POWER BUTTON D	PAC1773
	4	DISC BUTTON	PAC1775
	5	CLEAR PLATE	PAM1637
	6	SHEET	PAM1638
	7	SCREW	PBA1071
	8	DOOR STAY	PNB1470
	9	DOOR ANGLE L	PNB1471
	10	DOOR ANGLE R	PNB1472
	11	TILT UNIT	PNB1495
	12	DOOR ARM L	PNB1500
	13	DOOR ARM R	PNB1501
	14	ISOLATION SHEET	PNM1234
	15	ESCUTCHEON	PNW2383
	16	DOOR PANEL	PNW2384
	17	FRONT WINDOW (KU/CA and RD types)	PNW2385
	17	FRONT WINDOW (WEM type)	PNW2485
	18	BUTTON RING	PNW2386
	19	LENS A	PNW2467
NSP	20	REFLECTOR	PRW1369
	21	MAGNET LATCH	PXA1555
	22	NAME PLATE (AL)	VAM1032
	23	DISPLAY BOARD ASSY	PWZ2723
NSP	24	SWITCH BOARD ASSY	PWZ2726
NSP	25	ESCUTCHEON ASSY	PWZ2729
	26	.....	
NSP	27	LED A BOARD ASSY	PWZ2733
NSP	28	LED B BOARD ASSY	PWZ2735
	29	34P F.F.C /30	PDD1158
	30	SCREW	BBZ30P060FZK
	31	SCREW	PPZ30P100FMC
	32	SCREW	PPZ30P060FMC
	33	WASHER	WT26D070D050
	34	CUSHION	PNM1059
NSP	35	PROTECTION TAPE	PNM1242
	36	PARALLEL WIRE 3P (J)	D20PYY0360E
NSP	37	CAUTION LABEL	PRW1361
	38	EARTH LEAD UNIT	PDF1118

(4). LOADING MECHANISM ASSY (FOR ALL TYPES)

Mark	No.	Description	Parts No.
NSP	1	MECHA BOARD ASSY	PWZ2776
NSP	2	SENSOR BOARD ASSY	PWZ2777
NSP	3	LOADING BOARD ASSY	PWZ2778
	4	SELECT MOTOR BOARD ASSY	PWZ2782
	5	LOADING MOTOR BOARD ASSY	PWZ2783
	6	CONNECTOR ASSY (3P)	PDE1234
	7	CONNECTOR ASSY (4P)	PDE1235
	8	SCREW	PBA1090
	9	STOPPER SPRING	PBH1183
	10	ARM SPRING	PBH1185
	11	BELT	PEB1268
	12	BELT	PEB1269
	13	LEVER RUBBER	PEB1273
	14	CUSHION (ART. SUEDE)	PED−049
	15	CUSHION (ART. SUEDE)	PED1016
NSP	16	SYNCHRO SHAFT	PLA1131
	17	SPACER	PLA1133
NSP	18	LOADING BASE	PNB1483
NSP	19	LEVER	PNB1486
NSP	20	SLIDE ANGLE	PNB1489
NSP	21	K LEVER	PNB1508
NSP	22	DRIVE LEVER	PNB1509
	23	ROLLER	PNW2299
	24	SYNCHRO GEAR	PNW2413
	25	ARM A	PNW2414
	26	ARM B	PNW2415
	27	PULLEY	PNW2416
	28	SELECT LEVER	PNW2417
	29	DRIVE PLATE	PNW2418
	30	CLAMPER	PNW2419
NSP	31	TENSIONER	PNW2423
	32	RACK	PNW2424
	33	SUB GEAR	PNW2425
	34	A CUP	PNW2426
	35	B CUP	PNW2427
	36	D CUP	PNW2429
	37	STOPPER	PNW2431
	38	CLAMPER BASE	PNW2432
	39	BUSHING	PNW2435
	40	DISC GUIDE	PNW2500
	41	ROLLER SHAFT	DLA1520
	42	ROLLER	DNK2391
	43	SEARCH SPRING	PBH1187
	44	BELT A	PEB1244
	45	.....	
	46	SIDE ANGLE	PNB1484
	47	GEAR ANGLE	PNB1485
	48	SLIDE LINK	PNB1490
	49	P LEVER A	PNB1491
	50	P LEVER B	PNB1492
	51	GEAR ANGLE B	PNB1496
	52	SLIDER	PNB1510
	53	GUARD PLATE	PNM1240
	54	ROLLER	PNW1967
	55	GEAR PULLEY	PNW2411
	56	GEAR L	PNW2412
	57	.....	
	58	GEAR A	PNW2420
	59	WORM WHEEL	PNW2421
	60	WORM	PNW2422
	61	C CUP	PNW2428
	62	K LEVER	PNW2430
	63	GEAR S	PNW2433
	64	SYNCHRO GEAR S	PNW2434
	65	PULLEY	PNW2460
	66	MOTOR ASSY	PEA1320
	67	MOTOR PULLEY	PNW1634
NSP	68	MOTOR	PXM1002
	69	SCREW	PBA1084
	70	SCREW	PBA1087
	71	FLOAT SPRING	PBH1180
	72	FROAT SPRING B	PBH1188
	73	CONNECTOR ASS'Y	PDE1146
	74	FLOAT RUBBER	PEB1267
	75	RUBBER BUSHING	VEB1138
	76	SCREW	BBZ26P060FZK
	77	SCREW	BBZ30P050FZK
	78	SCREW	BBZ30P080FCC
	79	SCREW	BPZ30P060FZK
	80	SCREW	IBZ30P080FCC
	81	SCREW	PMZ20P030FMC
	82	WASHER	WA31D054D013
	83	WASHER	WT17D034D025
	84	WASHER	WT21D050D025
	85	WASHER	WT26D047D025
	86	WASHER	WT26D047D050
	87	WASHER	WT36D072D025
	88	E RING	YE25FUC
	89	E RING	YE30FUC
NSP	90	SERVO MECHANISM ASS'Y B	PXA1539
NSP	91	MECHANISM BOARD ASSY	PWX1192
	92	.....	
	93	GUIDE BAR (STEEL)	PLA1094
	94	.....	
NSP	95	SERVO BASE	PNB1477
	96	GEAR 1 (POM)	PNW2052
	97	GEAR 2 (POM)	PNW2053
	98	GEAR 3 (POM)	PNW2054
	99	CARRIDGE BASE (FE)	PNW2445
	100	PICK UP ASS'Y	PEA1319
	101	D.C. MOTOR ASSY (SPINDLE)	PEA1235
	102	D.C. MOTOR ASSY (CARRIAGE)	PEA1246
	103	PINION GEAR (POM)	PNW2055
NSP	104	DC MOTOR	PXM1027
	105	DISC TABLE ASS'Y	PEA1314
	106	.....	
	107	.....	
	108	SCREW	BPZ26P100FNC
	109	SCREW	JFZ17P025FZK
	110	SCREW	JFZ20P040FMC
	111	WASHER	WT12D032D025
	112	BINDER	RNH−184

1.8 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%).

560Ω → 56 × 10¹ → 561 ····· RD1/8PM 5 6 1 J
47kΩ → 47 × 10³ → 473 ····· RD1/4PS 4 7 3 J
0.5Ω → 0R5 ····· RN2H 0 R 5 K
1Ω → 010 ····· RS1P 0 1 0 K

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

5.62kΩ → 562 × 10¹ → 5621 ····· RM1/4PC 5 6 2 1 F

Mark	No.	Description	Parts No.
LIST OF ASSEMBLIES			
NSP⚠		MOTHER BOARD ASSY (KU/CA type)	PWM1835
NSP⚠		MOTHER BOARD ASSY (RD type)	PWM1837
NSP⚠		MOTHER BOARD ASSY (WEM type)	PWM1836
		├─MAIN BOARD ASSY (KU/CA type)	PWZ2688
		├─MAIN BOARD ASSY (RD type)	PWZ2690
		├─MAIN BOARD ASSY (WEM type)	PWZ2689
NSP		├─OUTPUT BOARD ASSY (KU/CA and RD types)	PWZ2708
NSP		└─OUTPUT BOARD ASSY (WEM type)	PWZ2709
NSP		I/O CONNECTOR ASSY (KU/CA type only)	PWX1390
NSP⚠		SUB BOARD ASSY (KU/CA type)	PWX1318
NSP⚠		SUB BOARD ASSY (RD type)	PWX1317
NSP⚠		SUB BOARD ASSY (WEM type)	PWX1316
		├─POWER BOARD ASSY (KU/CA type)	PWZ2720
		├─POWER BOARD ASSY (RD type)	PWZ2719
		├─POWER BOARD ASSY (WEM type)	PWZ2718
		├─DISPLAY BOARD ASSY	PWZ2723
NSP		├─SWITCH BOARD ASSY	PWZ2726
NSP		├─ESCUTCHEON ASSY	PWZ2729
NSP		├─JOINT BOARD ASSY	PWZ2732
NSP		├─LED A BOARD ASSY	PWZ2733
NSP		└─LED B BOARD ASSY	PWZ2735
NSP		RACK BASE ASSY	PXA1534
NSP		└─RACK BOARD ASSY	PWX1340
NSP		├─ RACK BOARD A ASSY	PWZ2779
NSP		└─ RACK BOARD B ASSY	PWZ2781
NSP		LOADING MECHANISM ASSY	PXA1535
NSP		├─LOADING MECHANISM BOARD ASSY	PWX1339
NSP		├─ MECHA BOARD ASSY	PWZ2776
NSP		├─ SENSOR BOARD ASSY	PWZ2777
NSP		├─ LOADING BOARD ASSY	PWZ2778
		├─ SELECT MOTOR BOARD ASSY	PWZ2782
		└─ LOADING MOTOR BOARD ASSY	PWZ2783
NSP		└─SERVO MECHANISM ASSY B	PXA1539
NSP		└─ MECHANISM BOARD ASSY	PWX1192

Mark	No.	Description	Parts No.
MAIN BOARD ASSY			
SEMICONDUCTORS			
		IC151	CXA1372Q
		IC301	CXD2500BQ
⚠		IC201, IC202	LA6520
		IC405	NJM4558M
		IC401	PD2026B (L)
		IC351	PD3280A
		Q391	2SC2412K
		Q403, Q404	2SD2114K
		Q322, Q405	DTC124EK
		D391–D394 (Except WEM type)	1SS133X
		D395–D397	1SS133X
SWITCH			
		S301	PSG1006
COILS AND FILTERS			
		L351	LFA820K
CAPACITORS			
		C435–C438	CCSQCH050C50
		C354	CCSQCH101J50
		C393 (Except WEM type)	CCSQCH101J50
		C403	CCSQCH120J50
		C404	CCSQCH220J50
		C429, C430	CCSQCH390J50
		C152, C153	CEJA101M10
		C433, C434	CEJA220M25
		C208, C209, C301, C302, C401	CEJA330M16
		C431, C432, C71–C74	CEJA330M16
		C351	CEJA331M6R3
		C160, C162	CEJA4R7M50
		C309	CEJAR47M50
		C413, C415, C416, C421	CFTYA104J50
		C157, C164, C167, C169, C205	CKSQYB103K50
		C210, C215, C218, C219, C225	CKSQYB103K50
		C230, C308	CKSQYB103K50
		C158, C159, C161, C163, C303	CKSQYB104K25
		C306	CKSQYB152K50
		C155	CKSQYB182K50
		C170	CKSQYB332K50
		C156, C168	CKSQYB333K25
		C171, C172	CKSQYB472K50
		C307	CKSQYB473K25

Mark	No.	Description	Parts No.
	C352, C353, C355, C361, C367		CKSQYF103Z50
	C461		CKSQYF103Z50
	C304, C305, C406, C410, C414		CKSQYF104Z25
	C423, C424, C75−C79		CKSQYF104Z25
RESISTORS			
	VR151, VR152 (22K)		RCP1084
	R358 (KU/CA type only)		RS1/10S000J
	R390 (WEM type only)		RS1/10S000J
	R391 (Except WEM type)		RS1/10S244J
	R392 (Except WEM type)		RS1/10S102J
	R397−R399 (Except RD type)		RS1/10S000J
	Other Resistors		RS1/10S□□□J
OTHERS			
	CN202		52044−2245
	CN352		52147−0310
	CN353 (KU/CA type only)		52147−0810
	CN11		52147−1210
	CN351		9604S−34C
	X401 (16.9344MHZ)		PSS1008
	CN201		VKN−004
	CN205		VKN−027
	CN203		VKN1052
	X351		VSS1031

OUTPUT BOARD ASSY

Mark	No.	Description	Parts No.
COILS AND FILTERS			
	L391 (Except WEM type)		LFA010K
	L395, L396		LFA010K
CAPACITORS			
	C397, C399 (except WEM type)		CCCCH470J50
	C441, C442		CFTXA152J50
	C398 (except WEM type)		CGCYX104K25
	C388, C389		CKSQYB104K25
OTHERS			
	JA401		PKB1009
	JA393		PKN1005
	JA391, JA392 (Except WEM type)		RKN1004

I/O CONNECTOR ASSY

Mark	No.	Description	Parts No.
SEMICONDUCTORS			
	D1301−D1314		1SS254
CAPACITORS			
	C1301−C1305		CKPUYB101K50
	C1306−C1308		CKPUYF103Z25
RESISTORS			
	R1301−R1307		RD1/6PM471J
OTHERS			
	JA394		PKP−038

POWER BOARD ASSY

Mark	No.	Description	Parts No.
SEMICONDUCTORS			
⚠	IC31, IC32 (Except KU/CA type)		ICP−N10
⚠	IC22		NJM79M05FA
⚠	IC21		PQ05RR12
⚠	D11−D14, D52		11ES2
	D54		MTZJ18B
SWITCH			
	S5 (RD type only)		PSB1006
CAPACITORS			
	C52		CEAS101M35
	C26		CEAS332M16
	C27, C28		CEAS471M6R3
	C25		CEAS472M16
	C11, C13, C15−C17		CKCYF103Z50
RESISTORS			
	All Resistors		RD1/6PM□□□J
OTHERS			
⚠	TERMINAL		RKC−061

DISPLAY BOARD ASSY

Mark	No.	Description	Parts No.
SEMICONDUCTORS			
	Q701		2SA1399
	Q702−Q705		2SA933S
	D703, D704		1SS254
	D711−D718		PCX1023
SWITCHES AND RELAYS			
	S703, S707, S708, S711, S712		PSG1006
	S715, S716		PSG1006
RESISTORS			
	All Resistors		RD1/6PM□□□J
OTHERS			
	CN701		9604S−34F
	V701 FL TUBE		PEL1079

SWITCH BOARD ASSY

Mark	No.	Description	Parts No.
SEMICONDUCTORS			
	D701, D702		1SS254
SWITCHES AND RELAYS			
	S701, S702, S709, S710		PSG1006
	S713, S714		PSG1006
OTHERS			
	REMOTE SENSOR		SBX1785

ESCUTCHEON ASSY

Mark	No.	Description	Parts No.
SEMICONDUCTORS			
	D801		SEL6210S
RESISTORS			
	All Resistors		RD1/6PM□□□J
OTHERS			
	CN801		52151−0310
	J802		PDE1250

JOINT BOARD ASSY

Mark	No.	Description	Parts No.
OTHERS			
	CN751, CN752		9604S−34F

LED A BOARD ASSY

Mark	No.	Description	Parts No.
SEMICONDUCTORS			
	D731−D736		SEL2915A
RESISTORS			
	All Resistors		RD1/6PM□□□J

Mark	No.	Description	Parts No.
LED B BOARD ASSY			
SEMICONDUCTORS			
	D737–D742		SEL2915A
RESISTORS			
	All Resistors		RD1/6PM□□□J
RACK BOARD A ASSY			
SWITCHES AND RELAYS			
	S651, S652		DSG1015
OTHERS			
	CN651		VKN1062
RACK BOARD B ASSY			
SWITCHES AND RELAYS			
	S653, S654		DSG1015
MECHA BOARD ASSY			
OTHERS			
	CN621		12FMZ–ABT
	CN622		4–173979–3
	CN624		6–173979–3
	CN626		6–173979–4
	CN627		VKN1060
	CN623		VKN1061
	CN625		VKN1138
SENSOR BOARD ASSY			
SEMICONDUCTORS			
	Q631		GP1A53HR
SWITCHES AND RELAYS			
	S631		DSG1016
RESISTORS			
	All Resistors		RD1/6PM□□□J
OTHERS			
	CN631		6–173979–4
LOADING BOARD ASSY			
SWITCH			
	REAF SWITCH		VSK1011
OTHERS			
	CN641		4–173979–3
SELECT MOTOR BOARD ASSY			
OTHERS			
	J627		PDE1244
LOADING MOTOR BOARD ASSY			
OTHERS			
	J624		PDE1245

Mark	No.	Description	Parts No.
MECHANISM BOARD ASSY			
SWITCHES AND RELAYS			
	S610		DSG1016
OTHERS			
	CN610		VKN1061

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Service Manual

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FILE-TYPE COMPACT DISC PLAYER

PD-F100

CHAPTER 2

CONTENTS

PIONEER ELECTRONIC CORPORATION 4-1, Meguro 1-Chome, Meguro-ku, Tokyo 153, Japan
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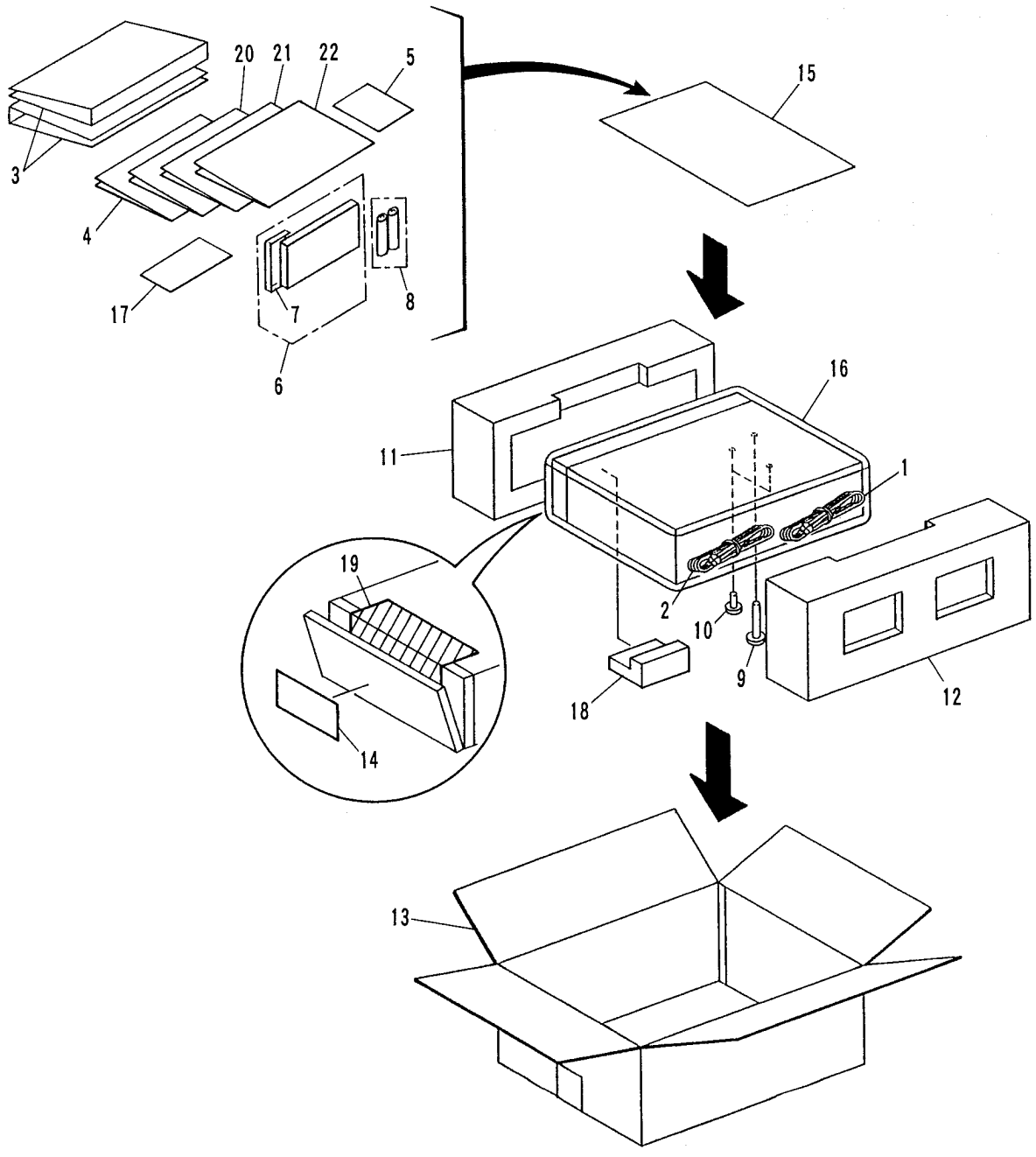
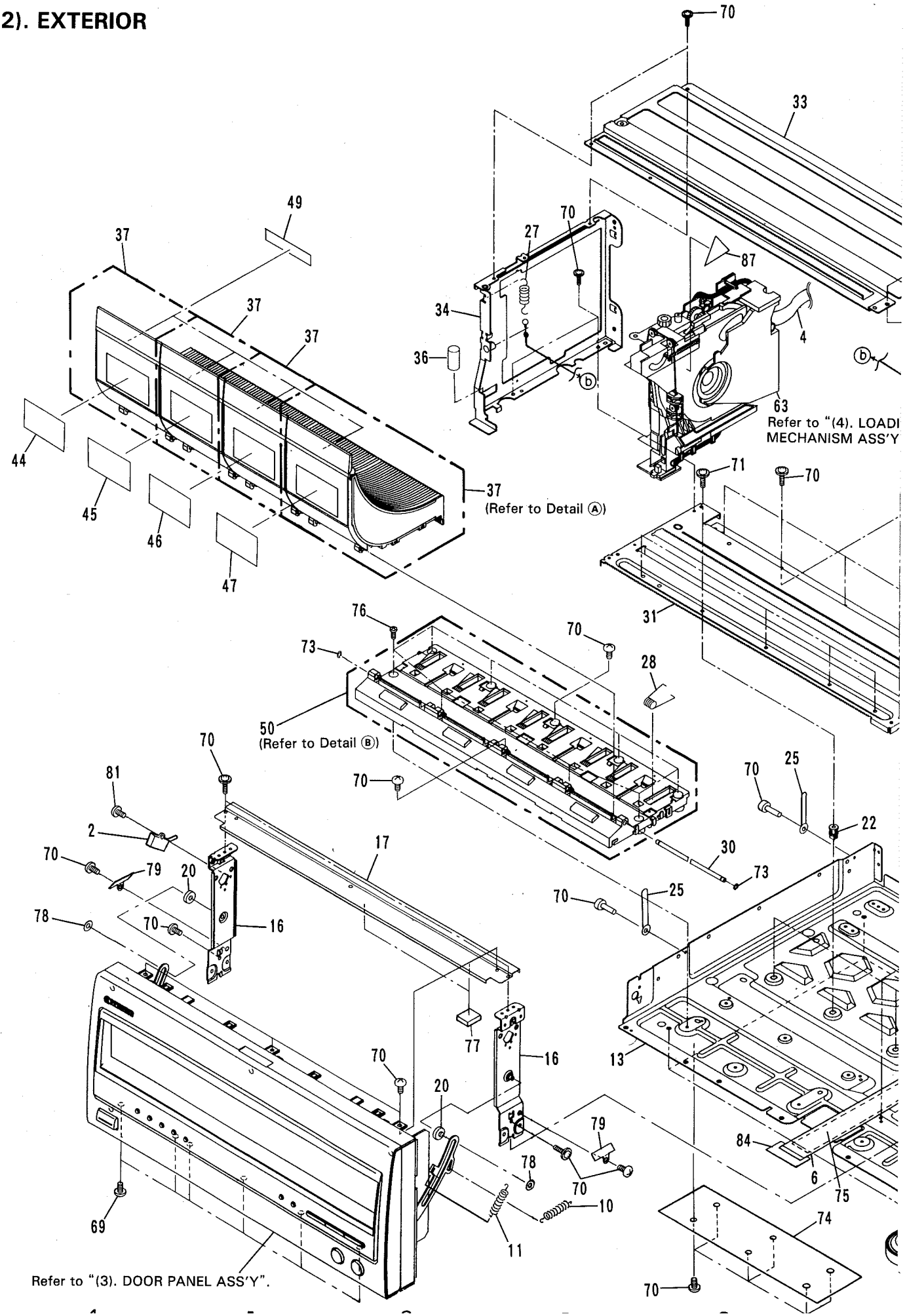
T−DEL MAR 1994 Printed in Japan

2.1 PACKING AND EXPLODED VIEWS

(1). PACKING



(2). EXTERIOR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Refer to "(4). LOADI
MECHANISM ASS'Y
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(Refer to Detail Ⓐ)
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(Refer to Detail Ⓑ)
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Refer to "(3). DOOR PANEL ASS'Y".
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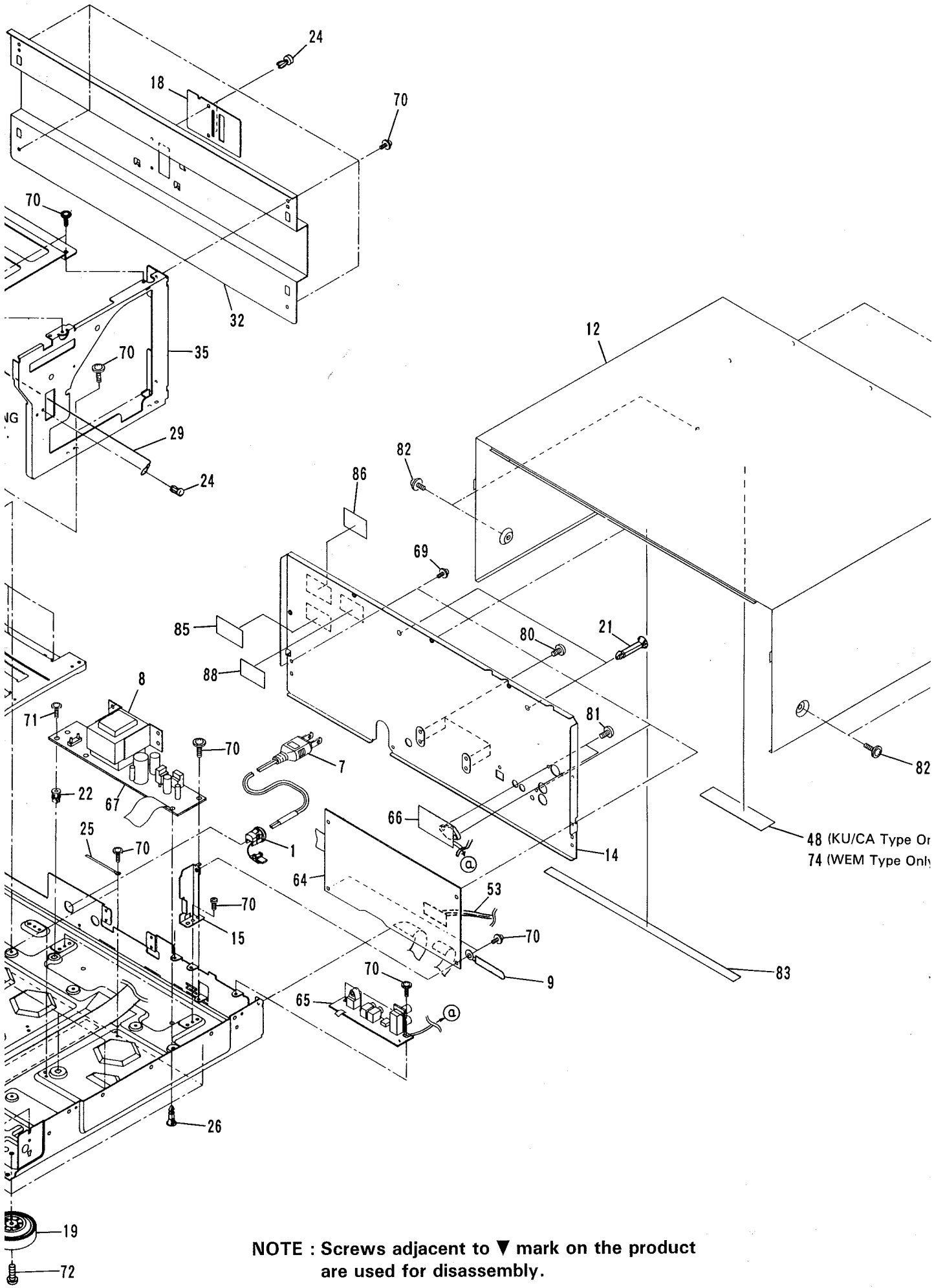
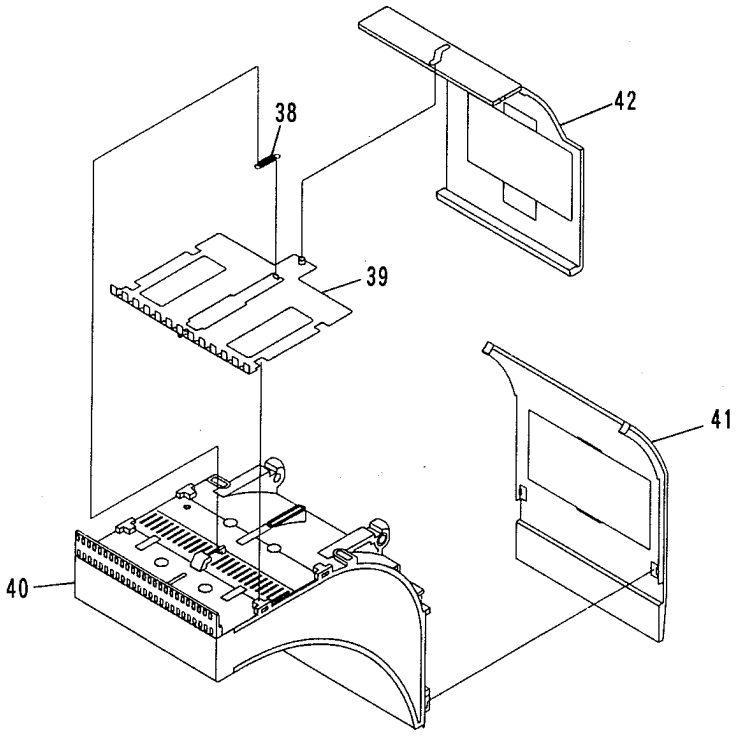
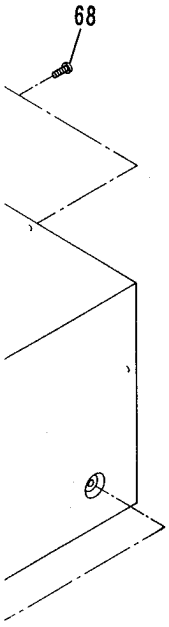


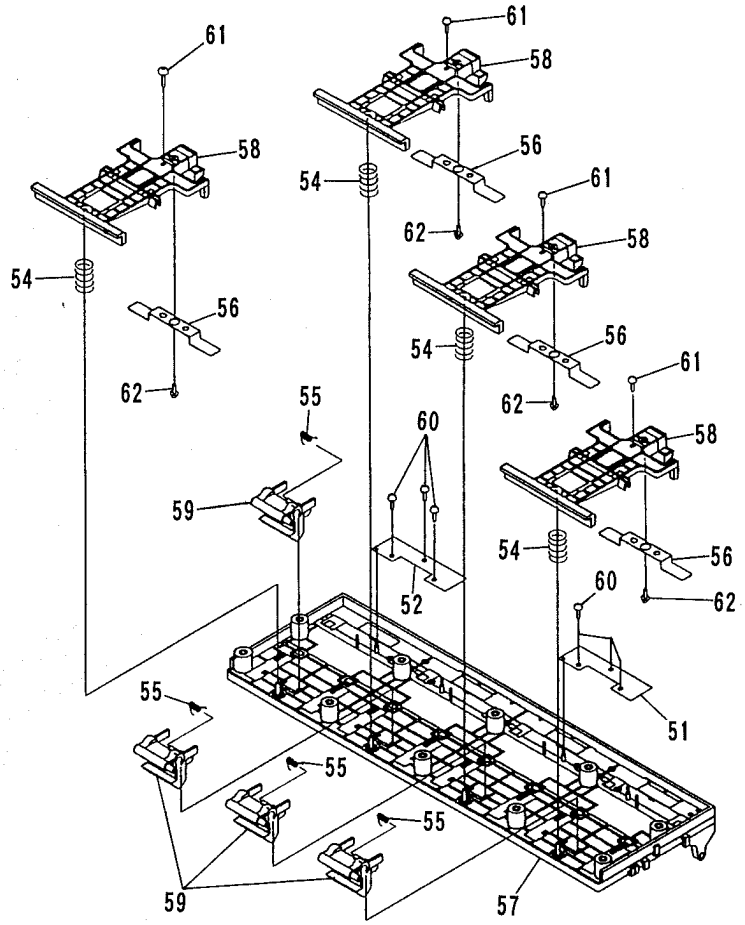
NOTE : Screws adjacent to ▼ mark on the product are used for disassembly.

● Detail Ⓐ

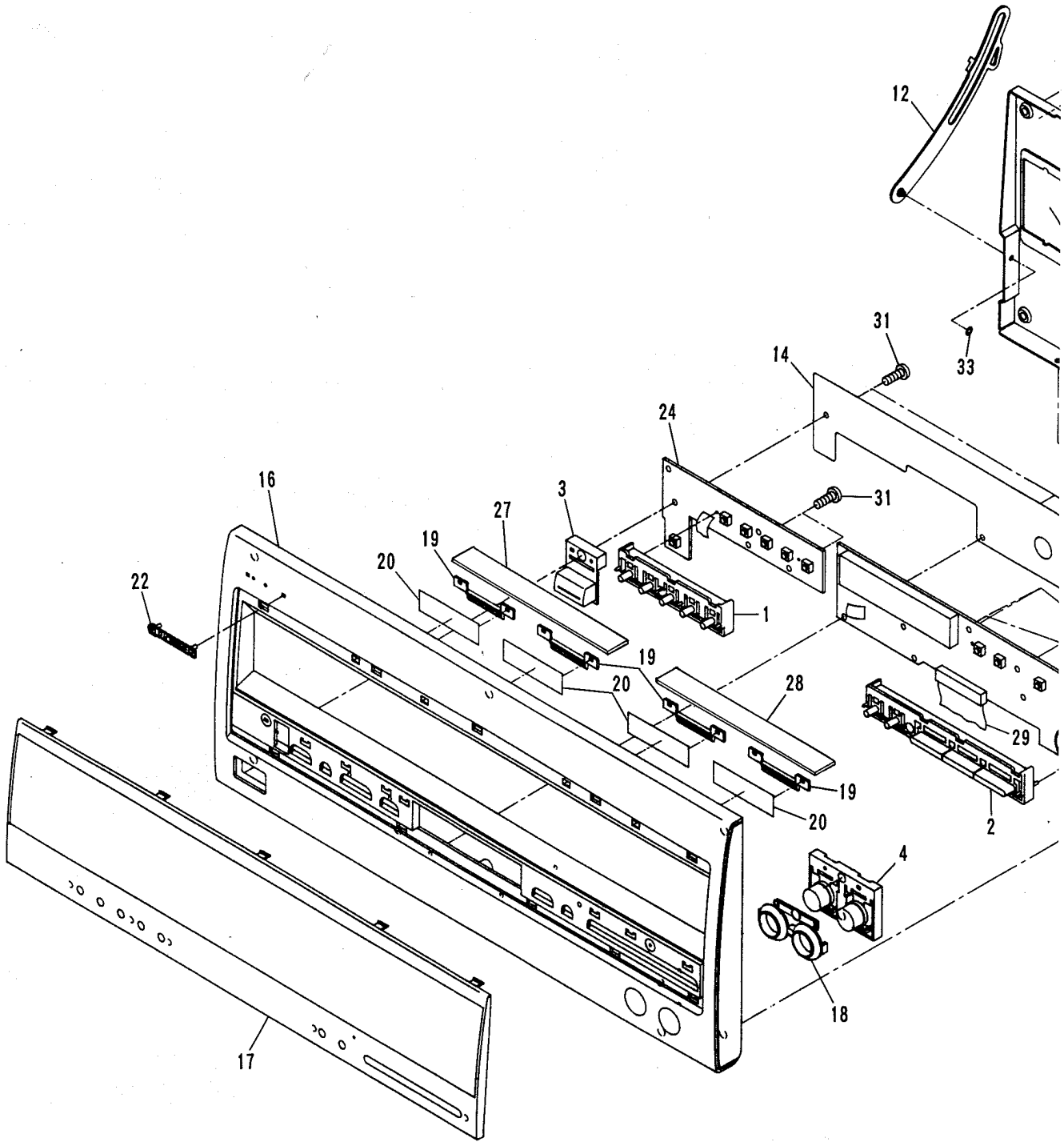


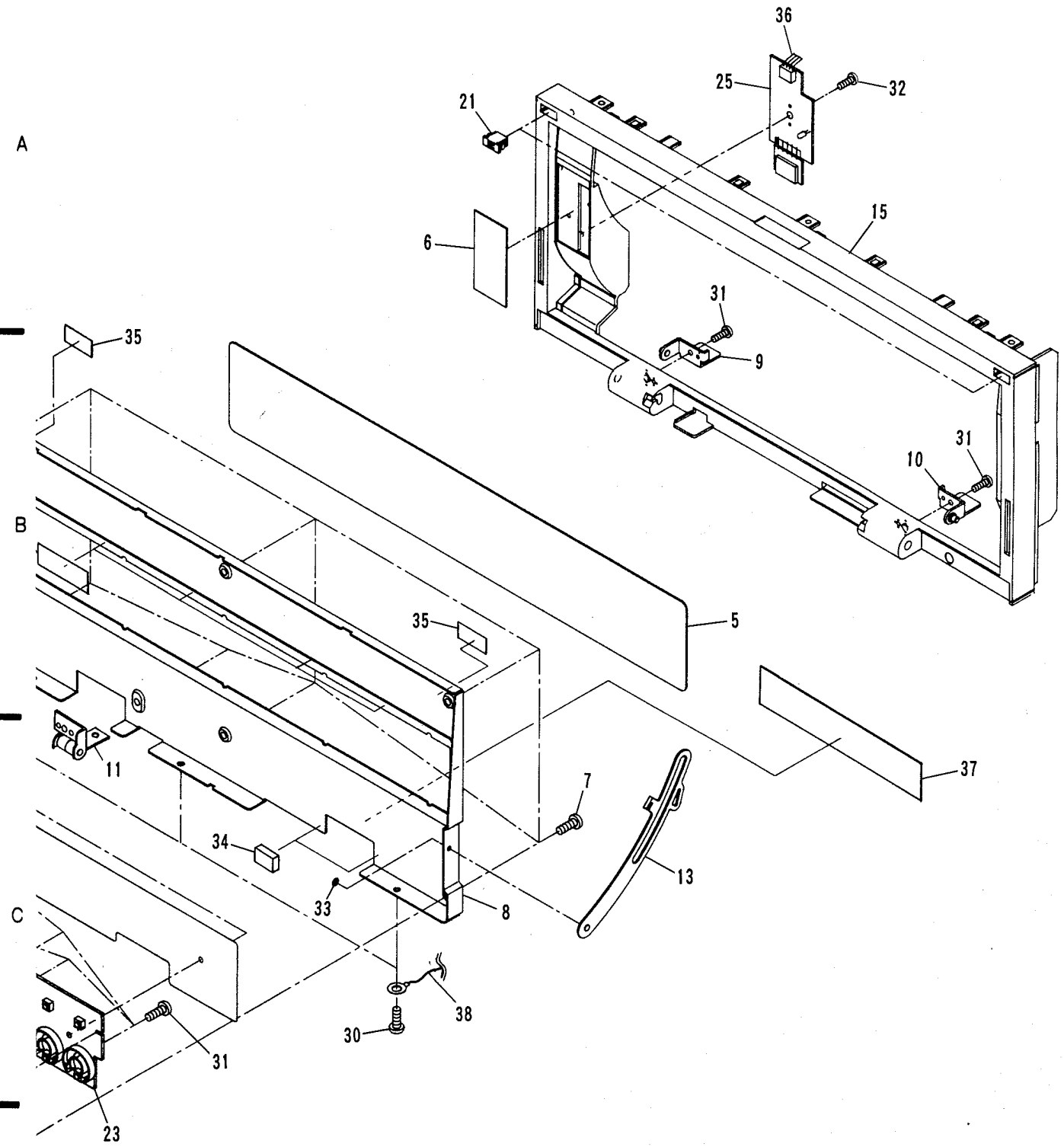


● Detail Ⓑ



(3). DOOR PANEL ASS'Y

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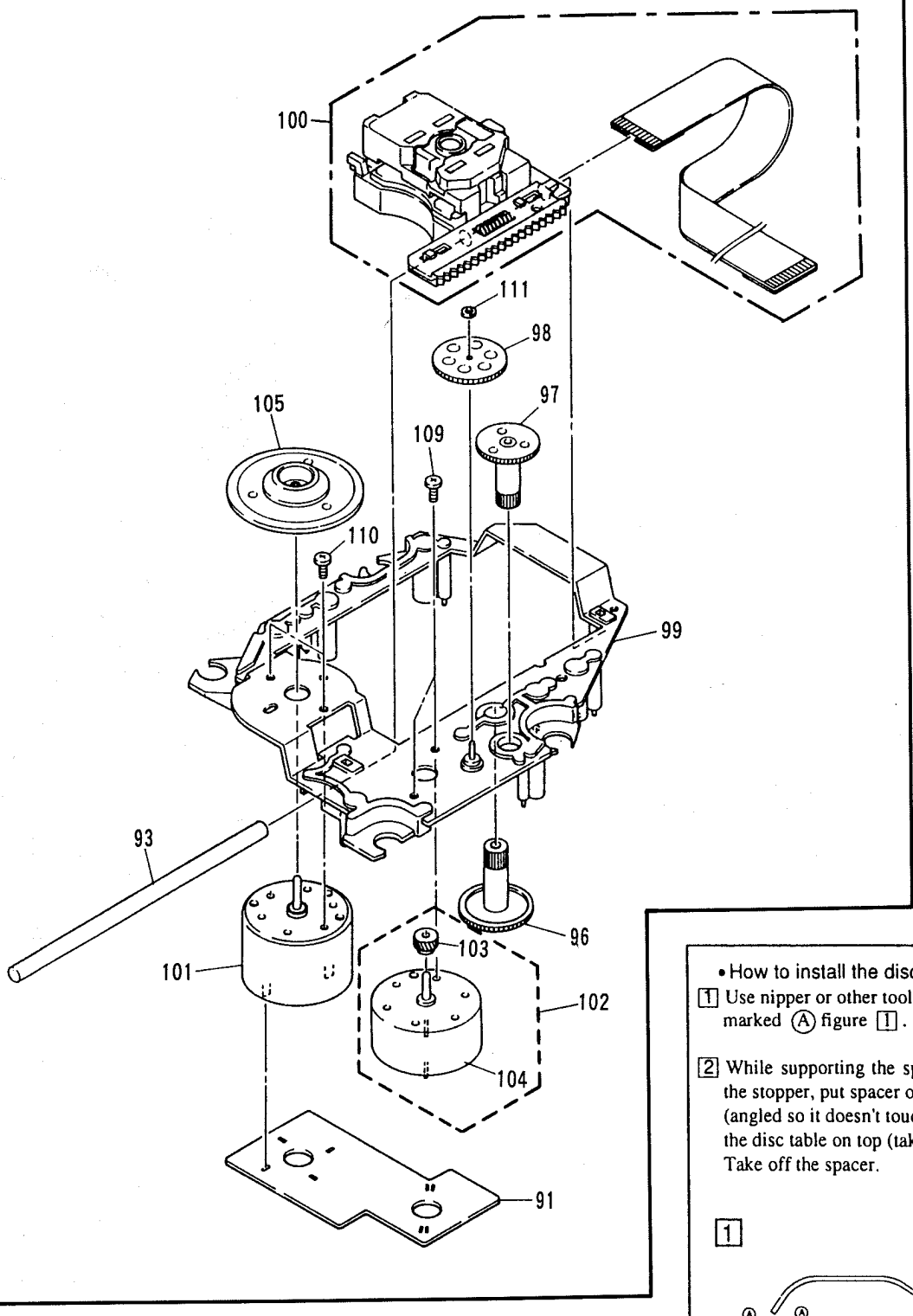
(4). LOADING MECHANISM ASS'Y

(4)－1. Exterior (1/2) (Servo Mechanism Assy B)

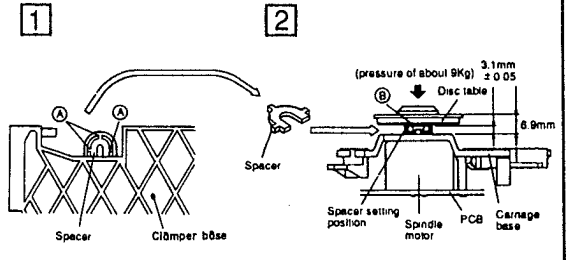
● Detail ⓒ



• How to install the disc table

[1] Use nipper or other tool to cut the three sections marked Ⓐ figure [1]. Then remove the spacer.

[2] While supporting the spindle motor shaft with the stopper, put spacer on top of the motor base (angled so it doesn't touch section Ⓑ),and stick the disc table on top (takes about 9Kg pressure). Take off the spacer.



2.2 SCHEMATIC AND PCB CONNECTION DIAGRAMS

(1). MECHA BOARD ASSY, SENSOR BOARD ASSY, LOADING BOARD ASSY, SELECT MOTOR BOARD ASSY, LOADING MOTOR BOARD ASSY AND MECHANISM BOARD ASSY

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:kΩ, M:MΩ, 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.
4. **CAPACITORS:**
   Unit: p:pF or μF unless otherwise noted.
   Ratings: capacitor (μF)/ voltage (V) unless otherwise noted.
   Rated voltage: 50V except for electrolytic capacitors.
5. **COILS:**
   Unit: m:mH or μH unless otherwise noted.
6. **VOLTAGE AND CURRENT:**
   ▭ or ← V :
   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.
7. **OTHERS:**
   - ⊘ or ● : Adjusting point.
   - : Measurement point.
   - The ⚠ 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—□ ON THE SCHEMATIC DIAGRAM:**
   - SCH—□ indicates the drawing number of the schematic diagram. (SCH stands for schematic diagram.)
9. **SWITCHES** (Underline indicates switch position):

MECHANISM BOARD ASSY
- S610 INSIDE SW

MAIN BOARD ASSY
- S301 TEST MODE

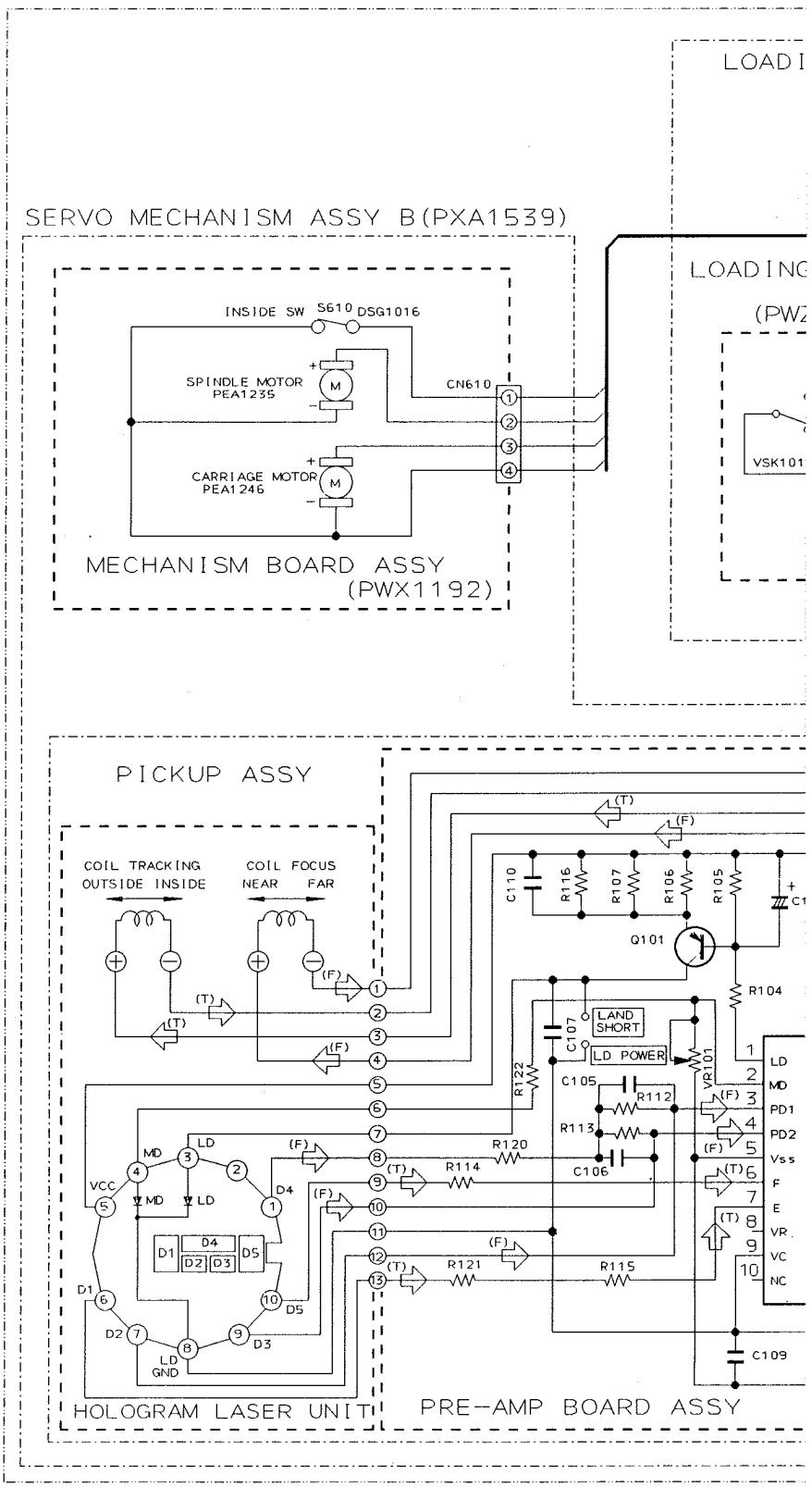
DISPLAY BOARD ASSY
- S703 |◀◀ ◀◀
- S707 PAUSE
- S708 DISC NUMBER −
- S711 ▶▶ ▶▶|
- S712 STOP
- S715 PLAY
- S716 DISC NUMBER +

SWITCH BOARD ASSY
- S701 RANDOM
- S702 POWER
- S709 MODE
- S710 CLEAR
- S713 ADLC
- S714 TIME

SENSOR BOARD ASSY
- S631 HOME

RACK BOARD A ASSY
- S651 EJECT
- S652 EJECT

RACK BOARD B ASSY
- S653 EJECT
- S654 EJECT

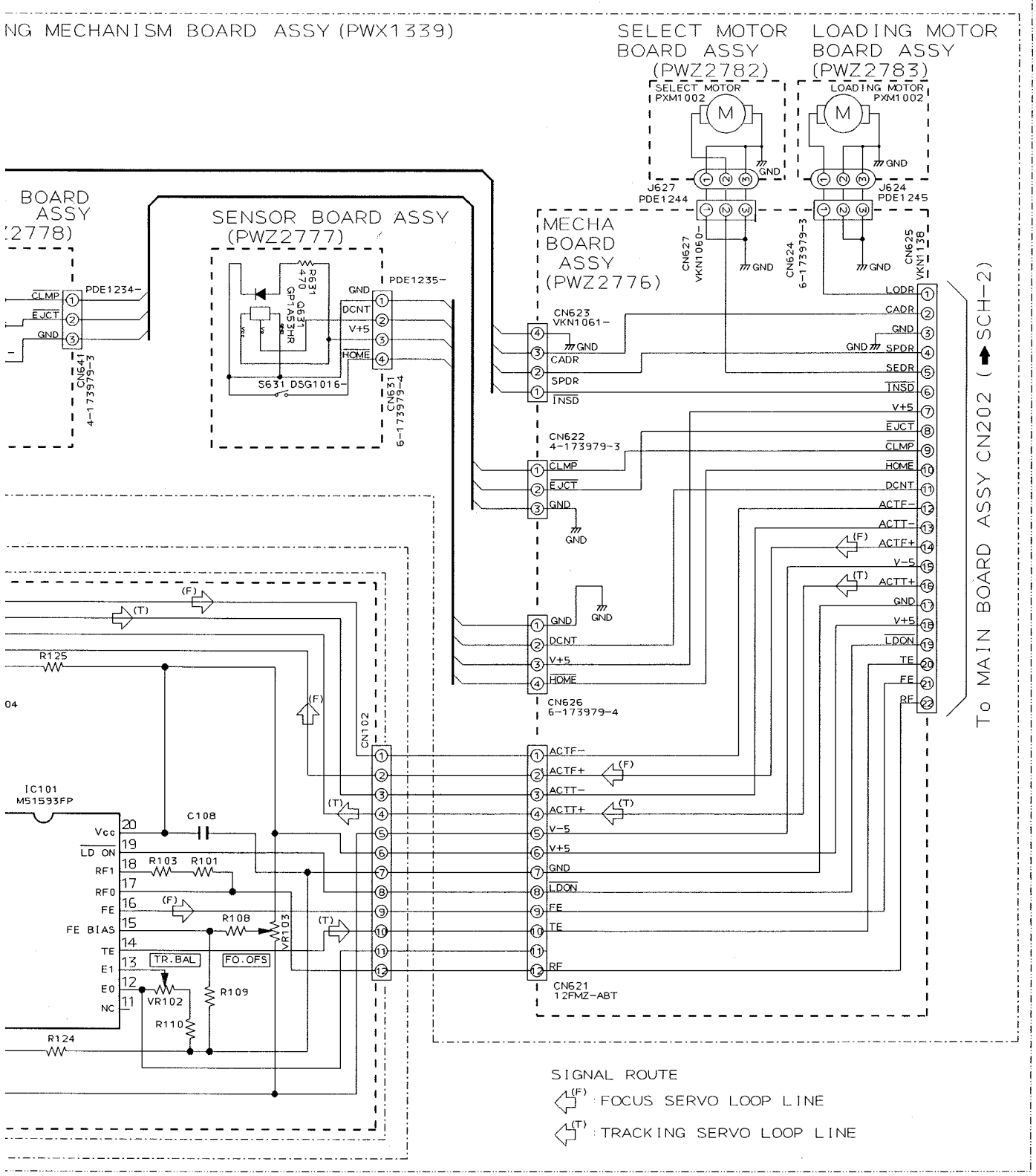


SCH—1 MECHA BOARD ASSY, SENSOR BOARD ASSY, LOADING BOARD ASSY, SELECT MOTOR BOARD ASSY, LOADING MOTOR BOARD ASSY, MECHANISM BOARD ASSY

SCH-1

NG MECHANISM ASSY (PXA1535)

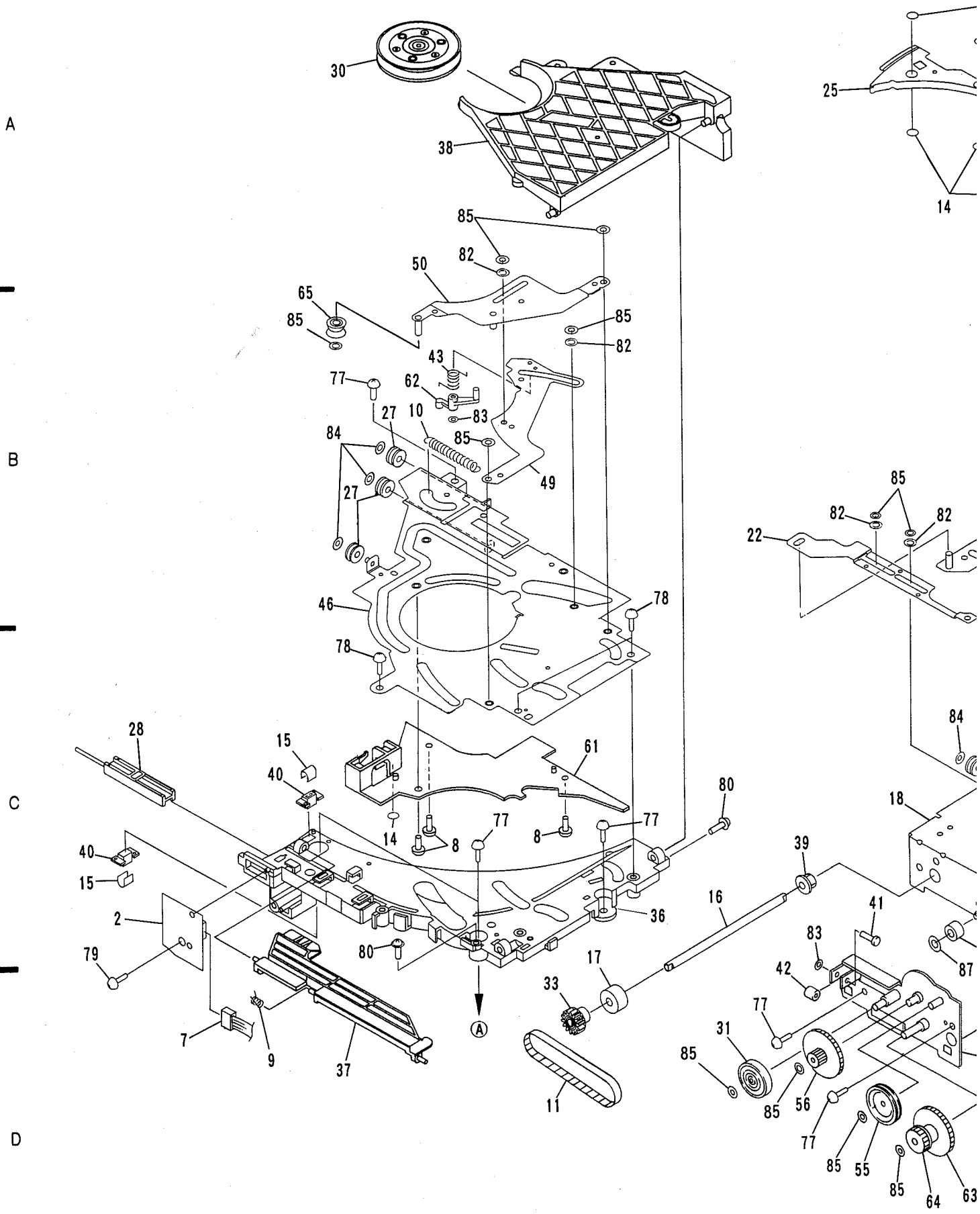
NG MECHANISM BOARD ASSY (PWX1339)

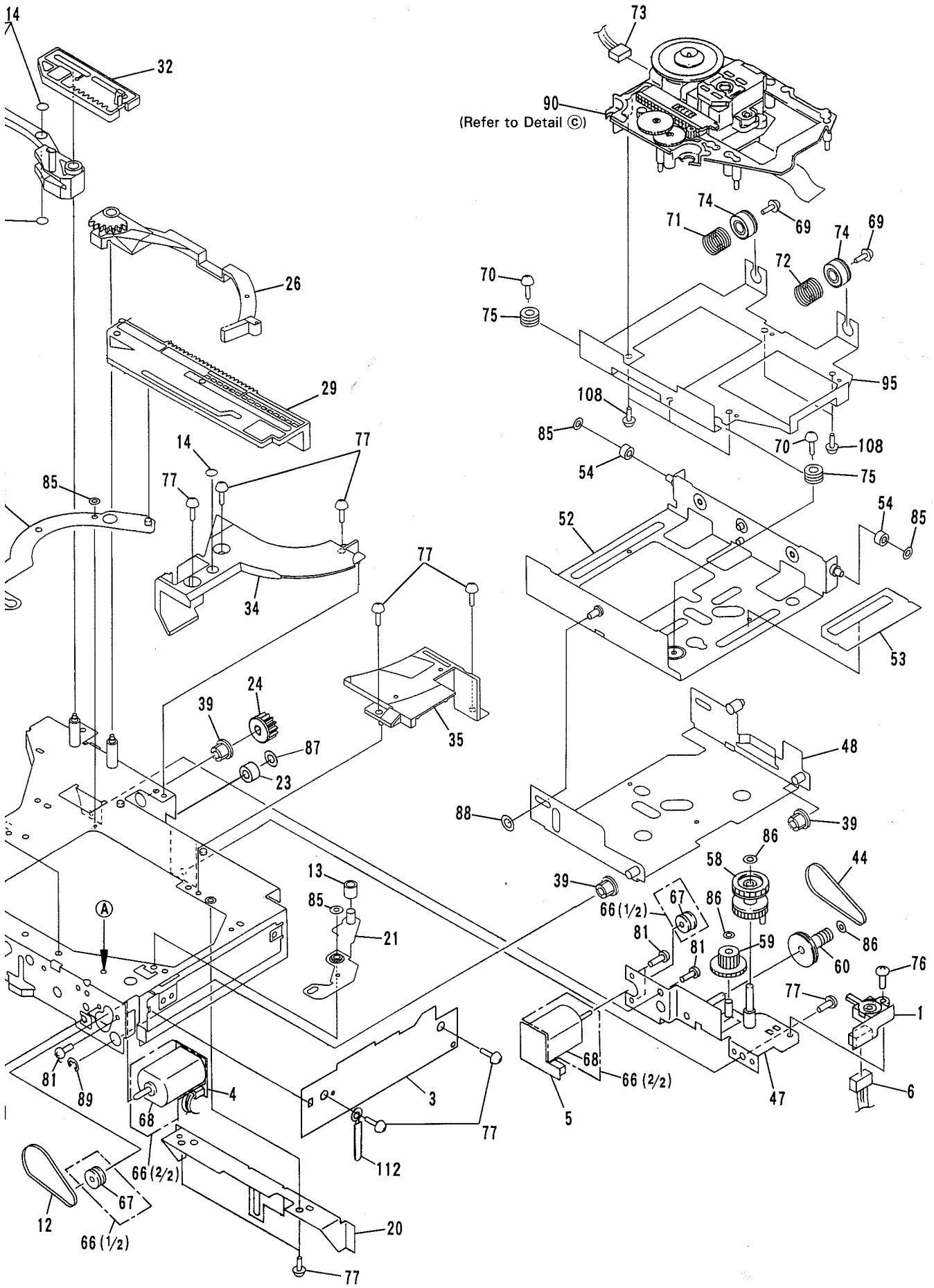


MECHA BOARD ASSY, SENSOR BOARD ASSY, LOADING BOARD ASSY, SELECT MOTOR BOARD ASSY, LOADING MOTOR BOARD ASSY, MECHANISM BOARD ASSY

SCH-1

(4)－2. Exterior (2/2)

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(Refer to Detail ⓒ)
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66 (1/2)
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66 (2/2)
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66 (1/2)
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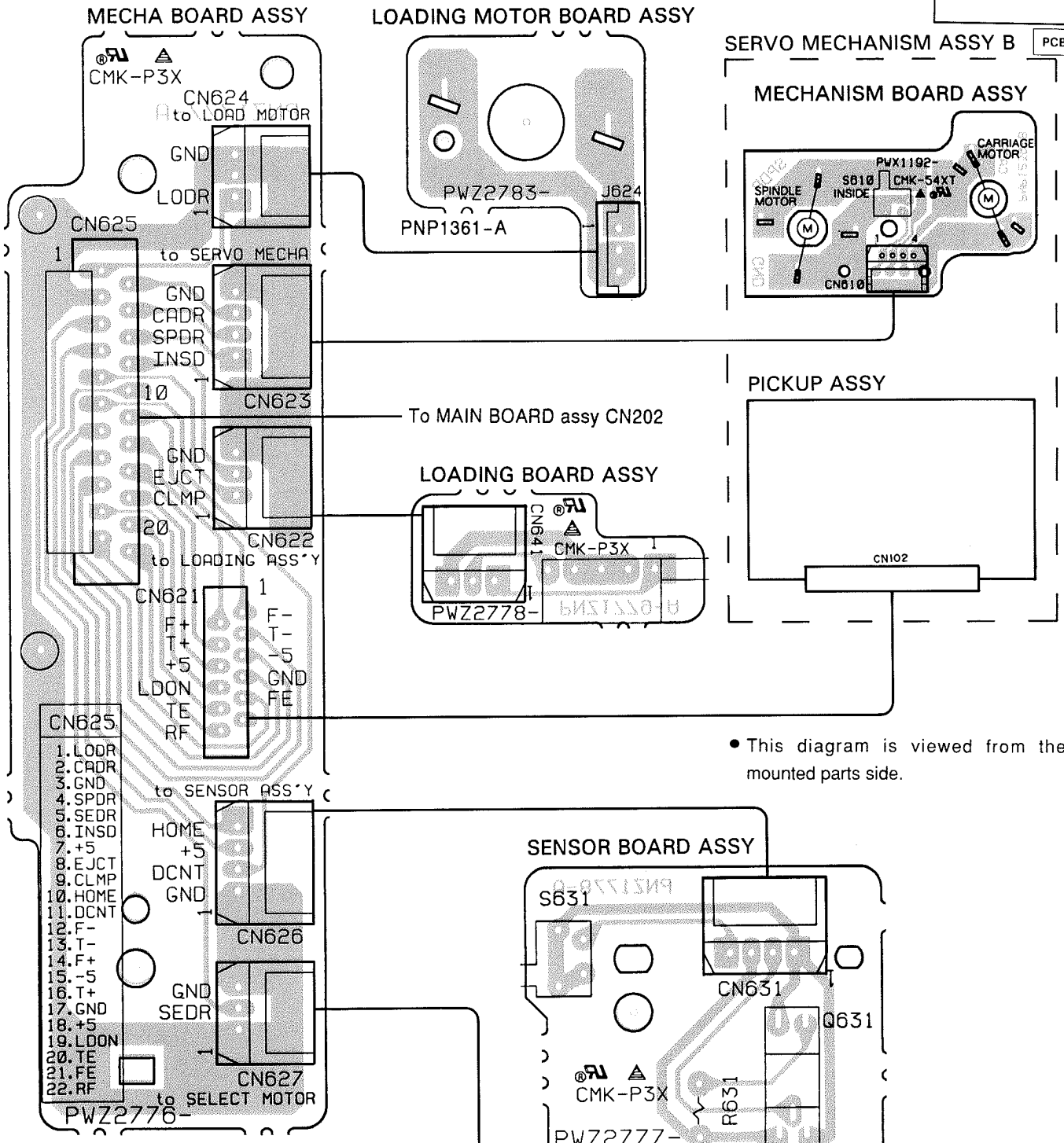


- This diagram is viewed from the mounted parts side.

NOTE FOR PCB DIAGRAMS:

1. Part numbers in PCB diagrams match those in the schematic diagrams.
2. A comparison between the main parts of PCB and schematic diagrams is shown below.

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

- This diagram is viewed from the foil side.

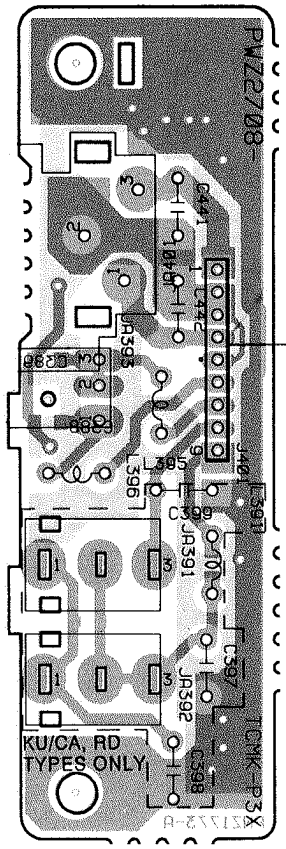
- This diagram is viewed from the gray colored foil side.
- This PCB is double side.

- This diagram is viewed from the foil side.

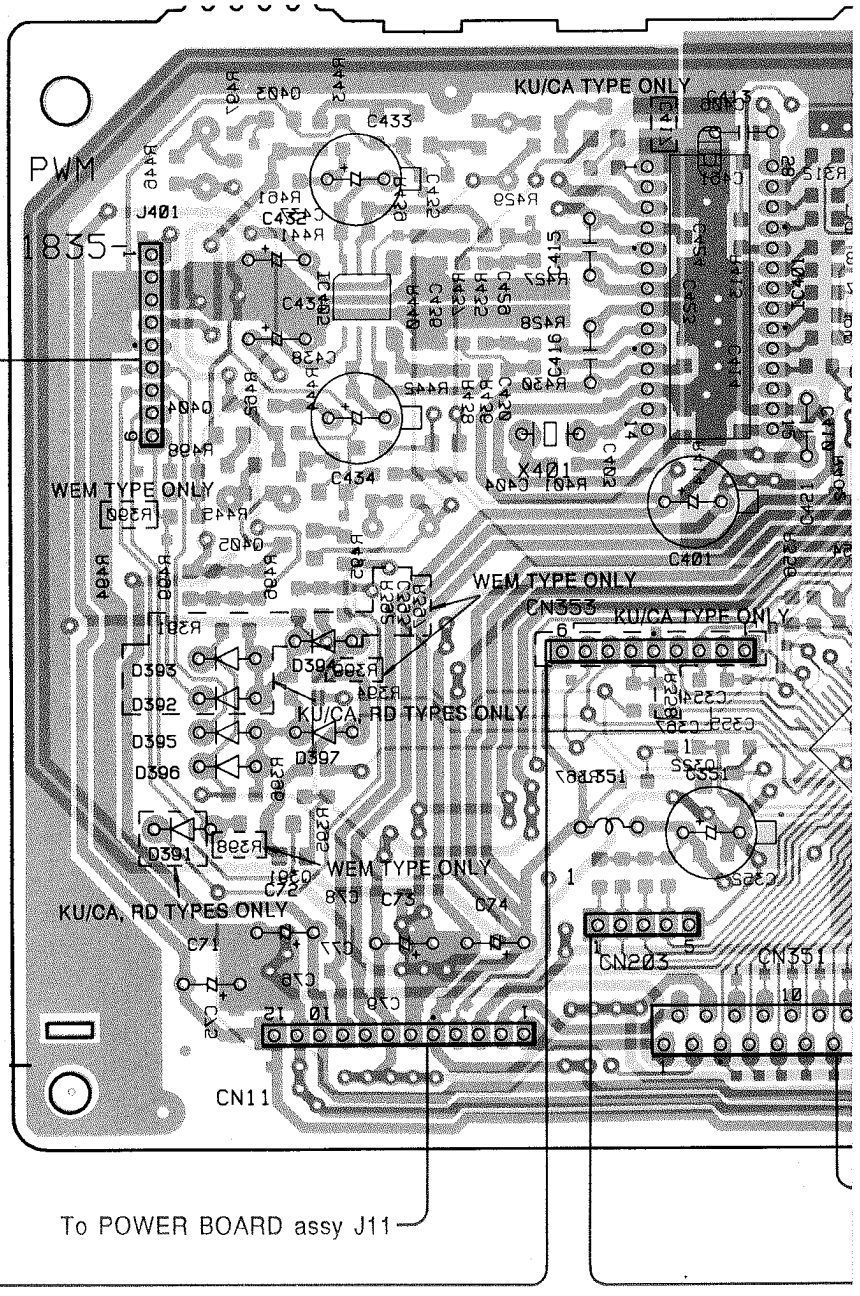
(2). MAIN BOARD ASSY, OUTPUT BOARD ASSY, RACK BOARD A ASSY, RACK BOARD B ASSY AND I/O CONNECTOR ASSY

(2). MAIN BOARD ASSY, OUTPUT BOARD ASSY, RACK BOARD A ASSY, RACK BOARD B ASSY AND I/O CONNECTOR ASSY

OUTPUT BOARD ASSY

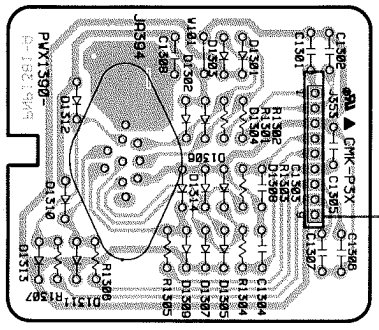


MAIN BOARD ASSY



KU/CA TYPE ONLY

I/O CONNECTOR ASSY



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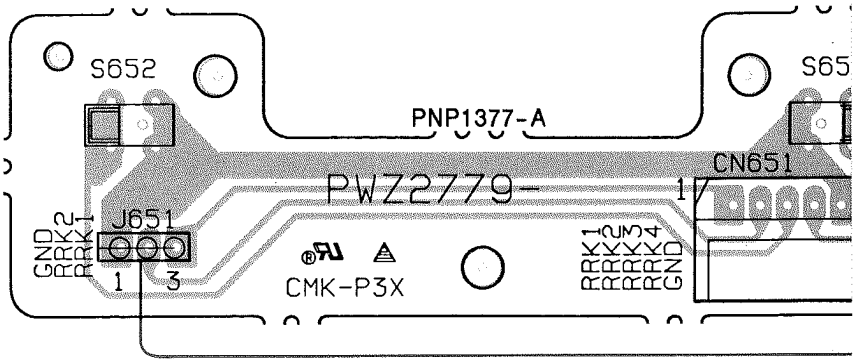
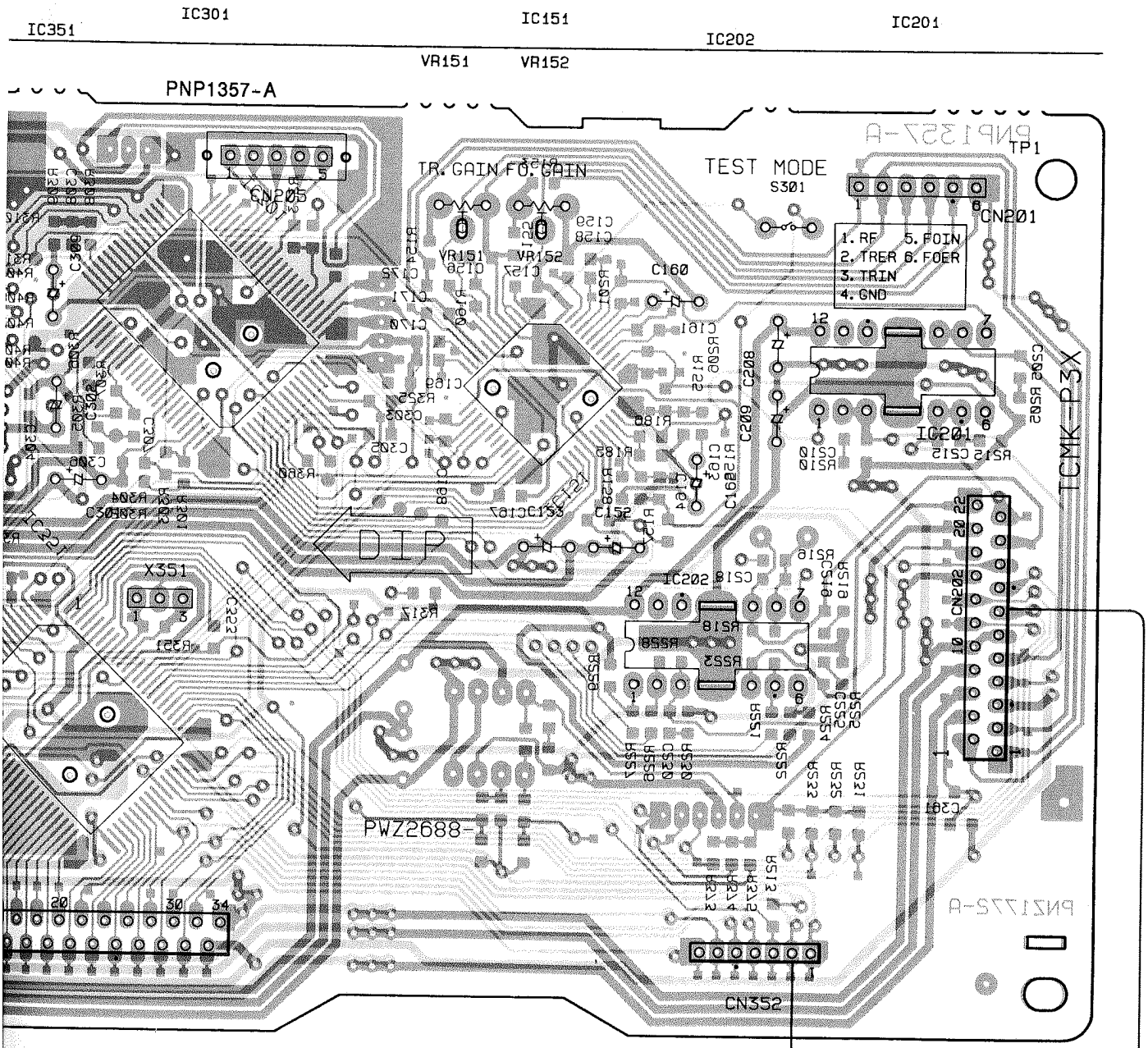
RACK BOARD A ASSY



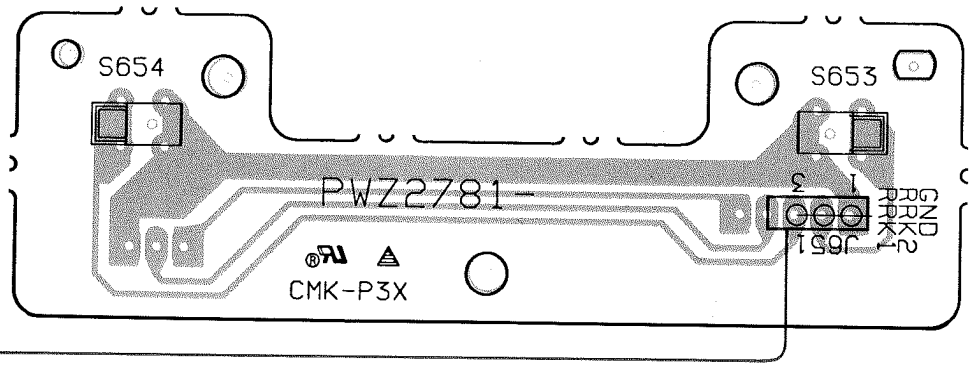
PCB–2

- This diagram is viewed from the pink colored foil side.
- This PCB is double sided.



- This diagram is viewed from the mounted parts side.

RACK BOARD B ASSY

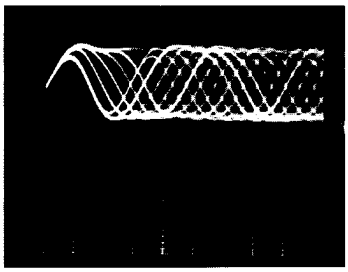
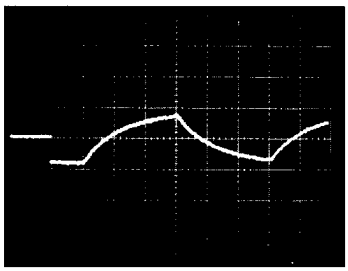
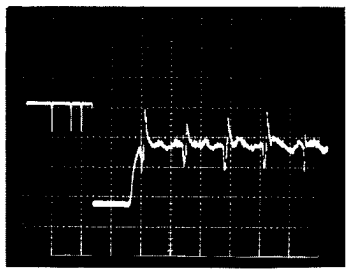
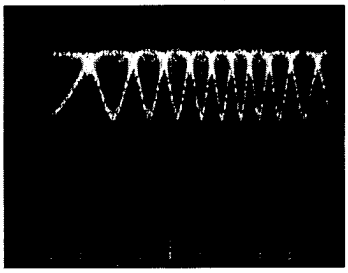
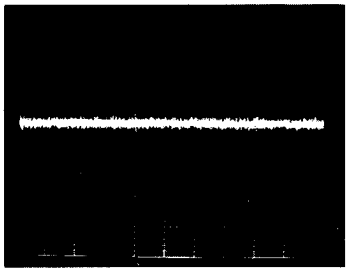
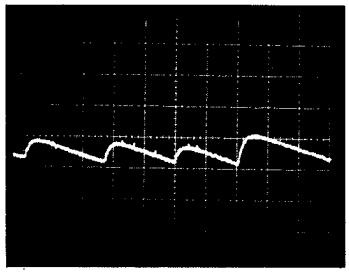
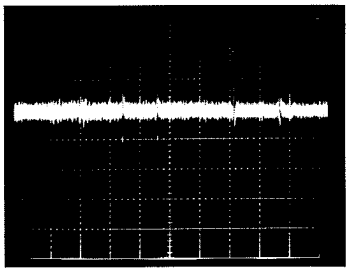
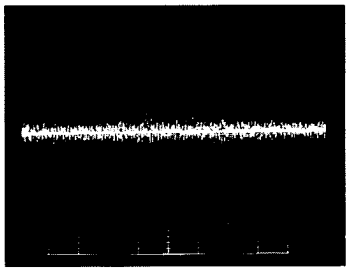
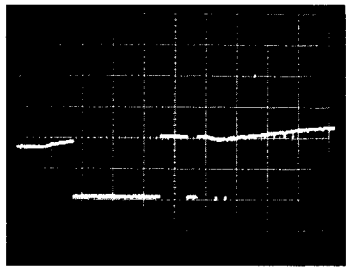
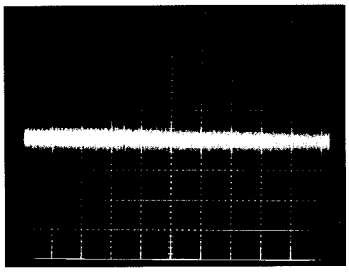
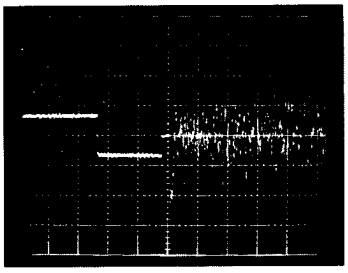
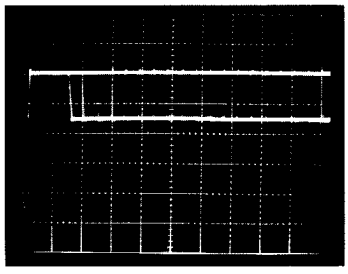
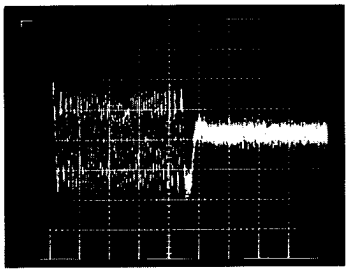
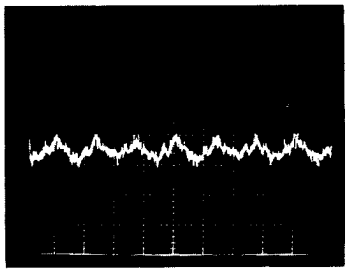
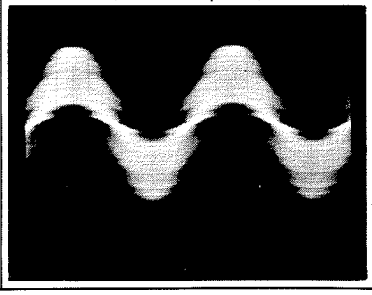


Waveforms

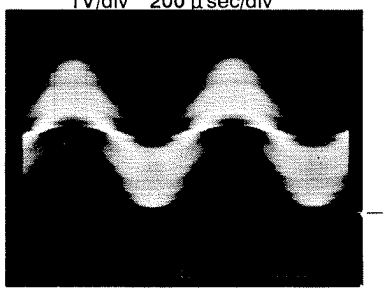
Note: The encircled numbers denote measuring point in the schematic disgram.

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

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

② TP1 - Pin 1:PLAY MODE (RF) 500mV/div 500nsec/div  – GND	⑤ IC201 – Pin9: FOCUS-IN (*2) MODE (FODR) 1V/div 200msec/div  – GND	⑦ IC202 – Pin9: TRACK SEARCH MODE (SPDR) 2V/div 50msec/div  – GND
② TP1 - Pin 1:TRACK SEARCH MODE (RF) 500mV/div 200 μsec/div  – GND	⑤ IC201 – Pin9: PLAY MODE (FODR) 1V/div 1msec/div  – GND	⑧ IC201 – Pin4: PLAY MODE (CADR) 1V/div 2sec/div  – GND
③ TP1 - Pin 6:PLAY MODE (FOER) 100mV/div 10msec/div  – GND	⑥ IC201 – Pin3: PLAY MODE (TRDR) 500mV/div 1msec/div  – GND	⑧ IC202 - Pin 9 :TRACK SEARCH MODE (CADR) 2V/div 200msec/div  – GND
④ TP1 - Pin 2:PLAY MODE (TRER) 1V/div 10msec/div  – GND	⑥ IC201 – Pin3: 50T-JUMP (*1) MODE (TRDR) 500mV/div 1msec/div  – GND	⑨ IC151 - Pin 32:PLAY MODE (EFM) 2V/div 500nsec/div  – GND
④ TP1 - Pin 2:50T-JUMP (*1) MODE (TRER) 1V/div 1msec/div  – GND	⑦ IC202 – Pin9: PLAY MODE (SPDR) 1V/div 50msec/div  – GND	⑩ IC401 - Pin 9:PLAY MODE (1kHz) ($\overline{LO}$) (D/A DATA OUT) 1V/div 200 μsec/div  – GND

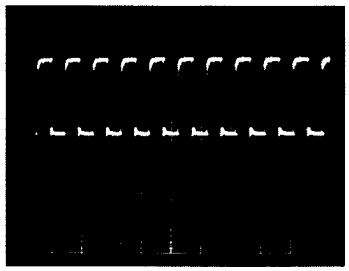
(11) IC401 - Pin 10:PLAY MODE (1kHz)
(LO) (D/A DATA OUT)
1V/div 200 μsec/div



(22)

(26)

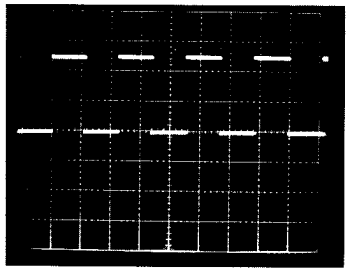
(16) IC301 - Pin 35:PLAY MODE (1kHz)
(BCLK)
2V/div 500nsec/div



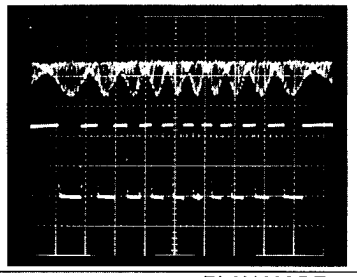
(22)

(27)

(18) IC301 - Pin 32:PLAY MODE (1kHz)
(LRCK)
2V/div 10 μsec/div

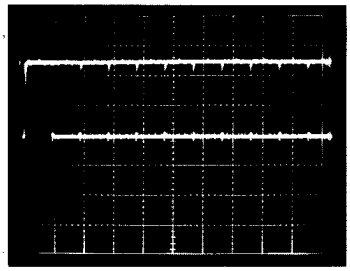


:TRACK SEARCH MODE
(23) Upper:TP1 - Pin 1 (RF) 1V/div
Lower: IC151 - Pin 29 (MIRR)
2V/div 200 μsec/div

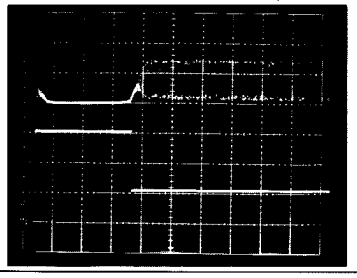


(28)

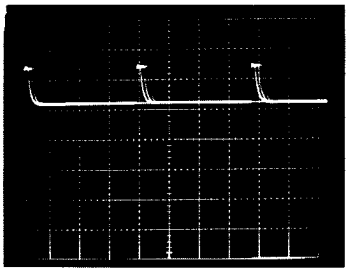
(19) IC301 - Pin 34:PLAY MODE (1kHz)
(DATA)
2V/div 500nsec/div



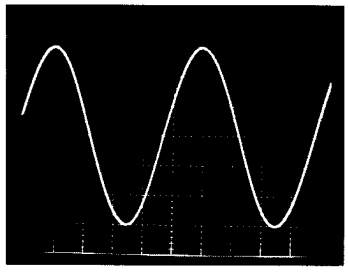
:PLAY MODE
(24) Upper:TP1 - Pin 1 (RF) 1V/div
Lower: IC151 - Pin 30 (DFCT)
5V/div 200 μsec/div



(33) IC301 - Pin 4:PLAY MODE
(MDP)
2V/div 2 μsec/div

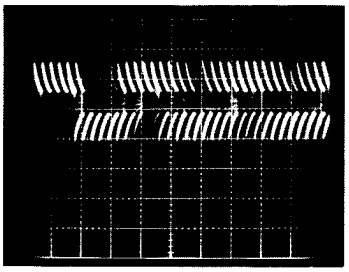


(21) Pin - OUTPUT:PLAY MODE(1kHz)
1V/div 200 μsec/div



(25)

(53) IC301 - Pin 20:PLAY MODE
(PCO)
2V/div 10 μsec/div



● IC401
[PD2026B (L)]

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

● IC301
(CXD2500BQ)

Pin No.	Voltage[V]	Pin No.	Voltage[V]	Pin No.	Voltage[V]
1	5	31	1.3−2.2	61	0
2	2.1	32	2.5	62	2.5
3	5	33	5	63	0
4	2.6	34	2.5	64	0
5	2.2	35	2.5	65	0
6	5	36	2.5	66	3.3−4.8
7	0	37	2.5	67	5
8	5	38	2.5	68	0
9	0	39	0	69	2.1−3
10	0	40	5	70	5
11	2.1	41	2.5	71	5
12	0	42	5	72	5
13	1	43	2.5	73	5
14	0.9−1.3	44	0	74	5
15	0	45	5	75	5
16	2	46	4.4	76	0
17	0	47	0	77	5
18	2.5	48	0	78	5
19	2.4	49	0 −0.3	79	5
20	2.4	50	1.2	80	0
21	0	51	1.2		
22	2.5	52	0		
23	5	53	2.5		
24	2.5	54	2.5		
25	0.2	55	0		
26	0	56	2.9		
27	2.5	57	2.5		
28	0	58	2.5		
29	0	59	0		
30	0	60	0		

● IC201 (LA6520)

Pin No.	Voltage[V]
1	0
2	0
3	0
4	0
5	0
6	0
7	0
8	0
9	0
10	0
11	0.1
12	8.4
FIN	−8.2

● IC202 (LA6520)

Pin No.	Voltage[V]
1	0
2	0
3	0
4	0
5	0
6	0
7	1.7
8	1.7
9	0.5−0.8
10	0
11	0.1
12	8.4
FIN	−8.2

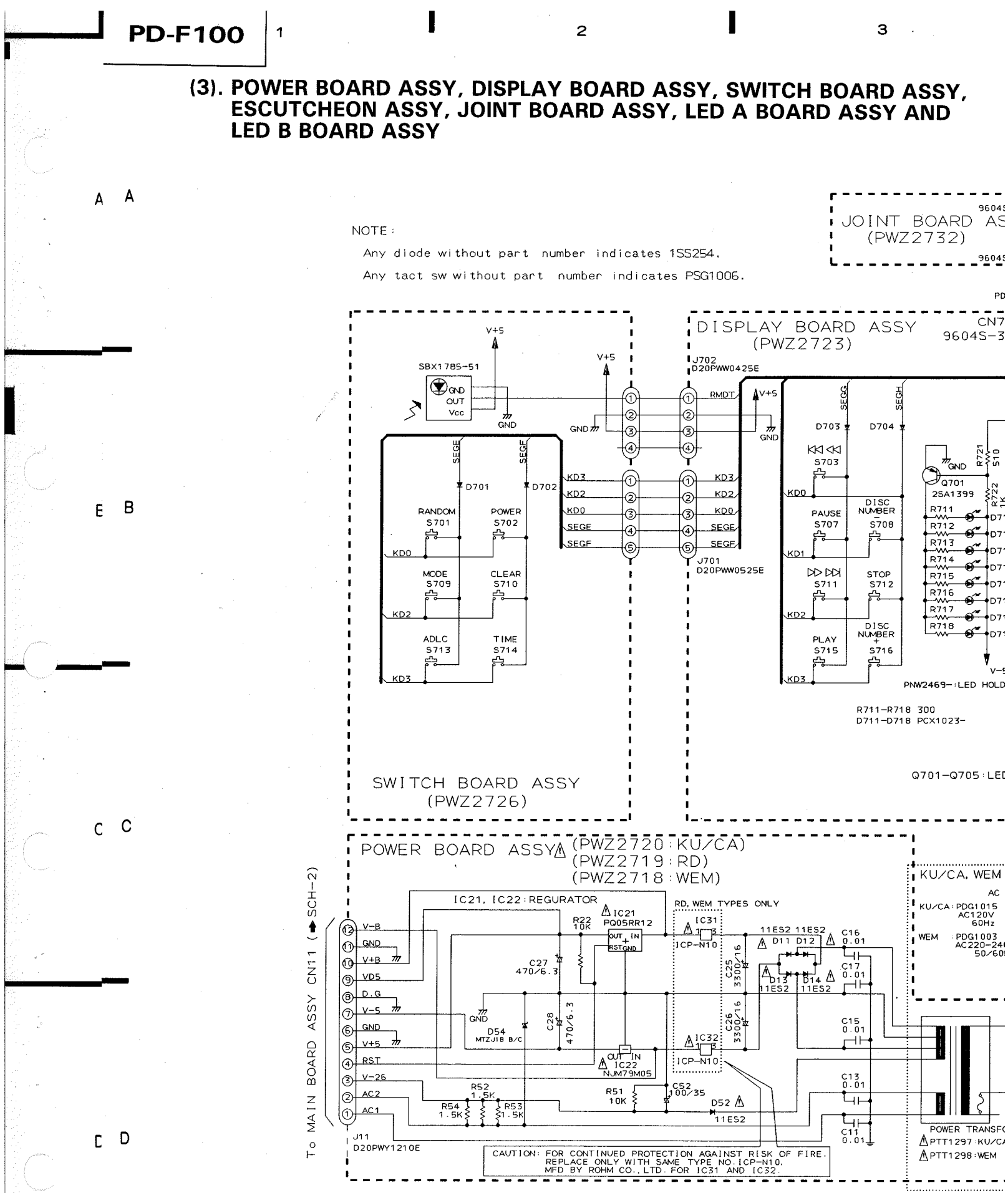
● IC151
(CXA1372Q)

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

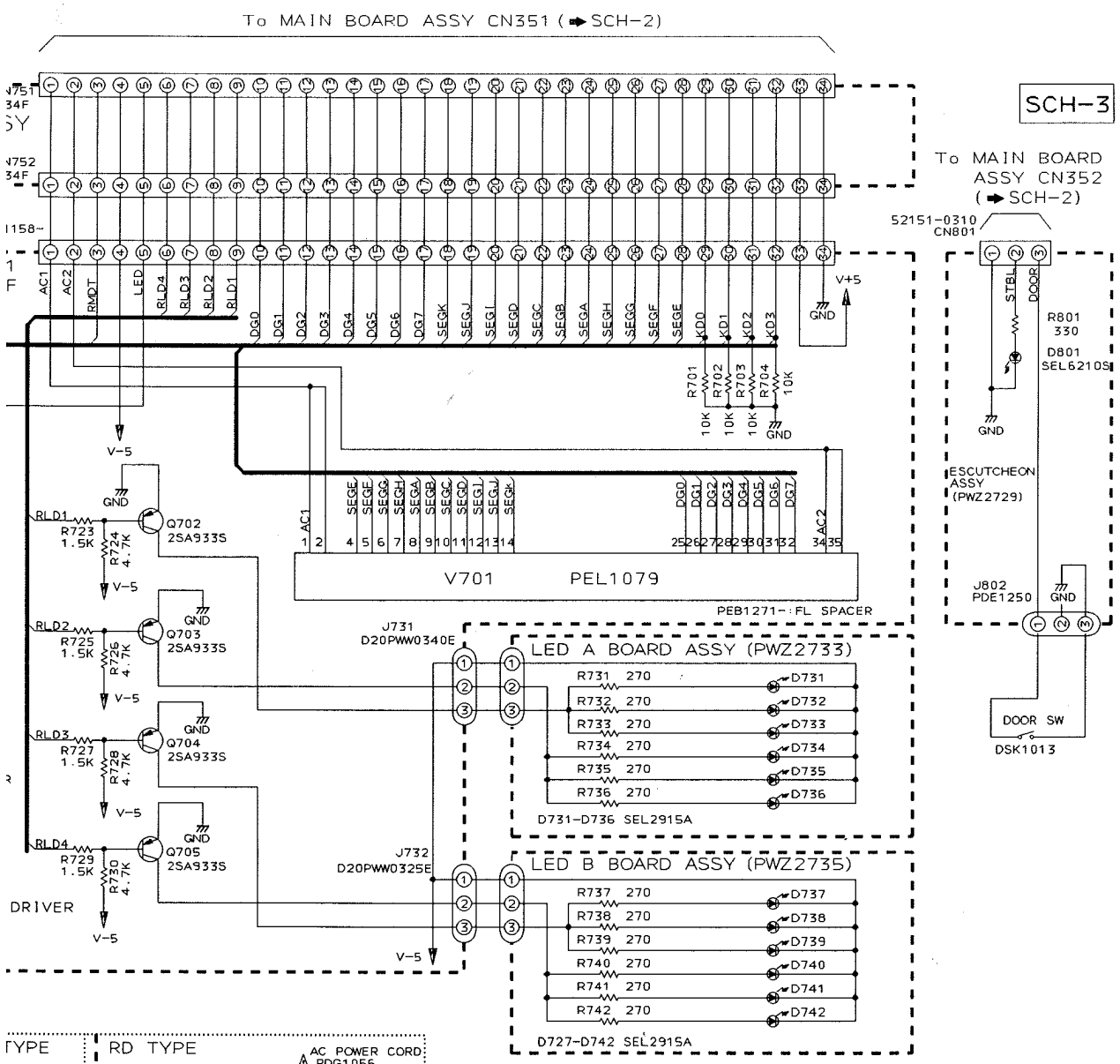
● IC351
(PD3280A)

Pin No.	Voltage[V]	Pin No.	Voltage[V]	Pin No.	Voltage[V]	Pin No.	Voltage[V]
1	5	21	0	41	-25.7	61	5
2	5	22	0	42	-25.7	62	0
3	5	23	0	43	-25.7	63	5
4	0	24	5	44	-25.7	64	5
5	0	25	5	45	-25.7	65	5
6	0	26	5	46	-25.7	66	0
7	0	27	5	47	-25.7	67	5
8	5	28	0	48	-25.7	68	5
9	0	29	5	49	-25.7	69	5
10	2.3	30	0	50	-25.7	70	5
11	2.3	31	5	51	-25.7	71	5
12	5	32	-25.7	52	5	72	5
13	5	33	-25.7	53	-0.9	73	5
14	0	34	-25.7	54	-0.9	74	0
15	0	35	-25.7	55	-0.9	75	0
16	0	36	-25.7	56	-0.9	76	5
17	0	37	-25.7	57	5	77	0
18	0	38	-25.7	58	5	78	0
19	5	39	-25.7	59	5	79	5
20	0	40	-25.7	60	5	80	5

(3). POWER BOARD ASSY, DISPLAY BOARD ASSY, SWITCH BOARD ASSY, ESCUTCHEON ASSY, JOINT BOARD ASSY, LED A BOARD ASSY AND LED B BOARD ASSY

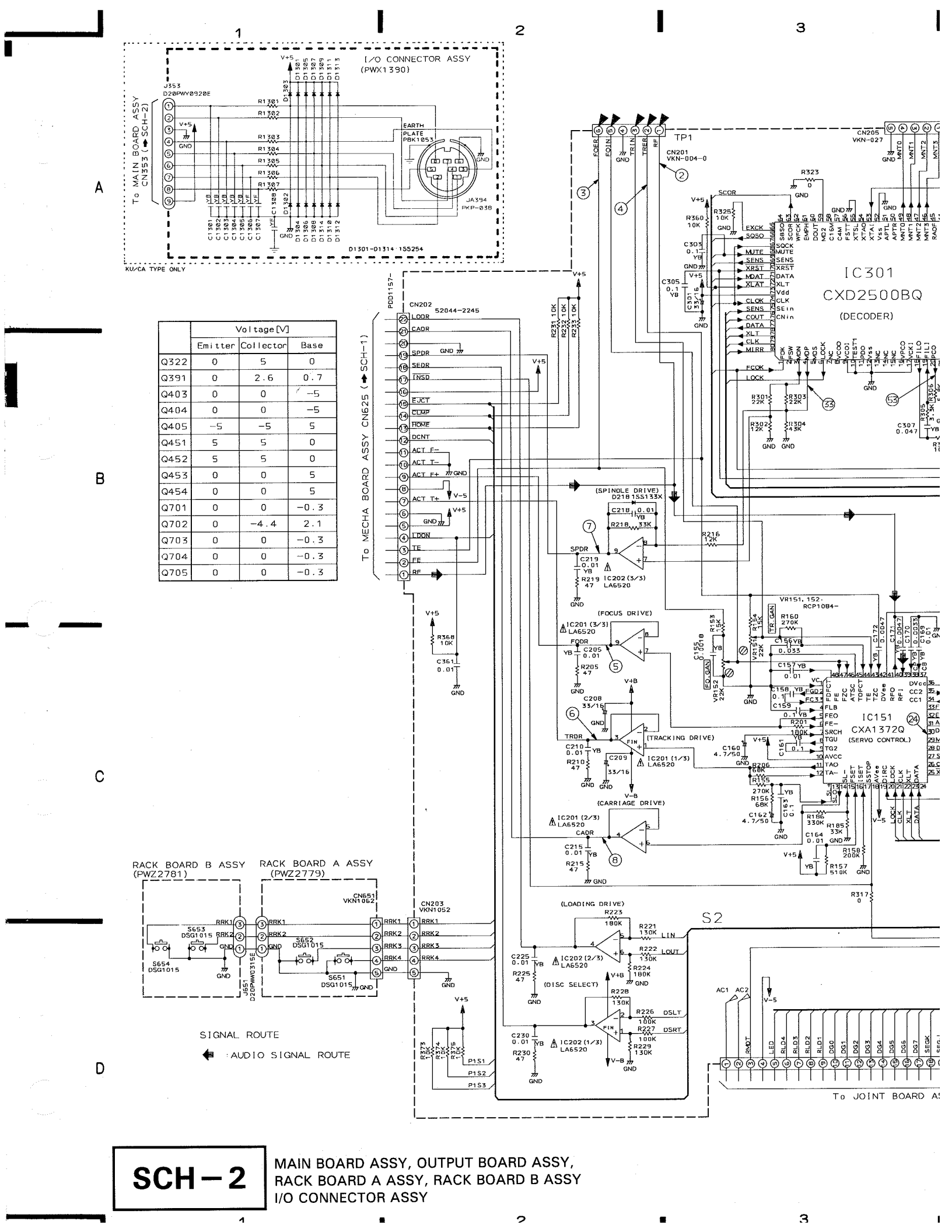


SCH-3 POWER BOARD ASSY, DISPLAY BOARD ASSY, SWITCH BOARD ASSY, ESCUTCHEON ASSY, JOINT BOARD ASSY, LED A BOARD ASSY, LED B BOARD ASSY



POWER BOARD ASSY, DISPLAY BOARD ASSY,
SWITCH BOARD ASSY, ESCUTCHEON ASSY,
JOINT BOARD ASSY, LED A BOARD ASSY,
LED B BOARD ASSY

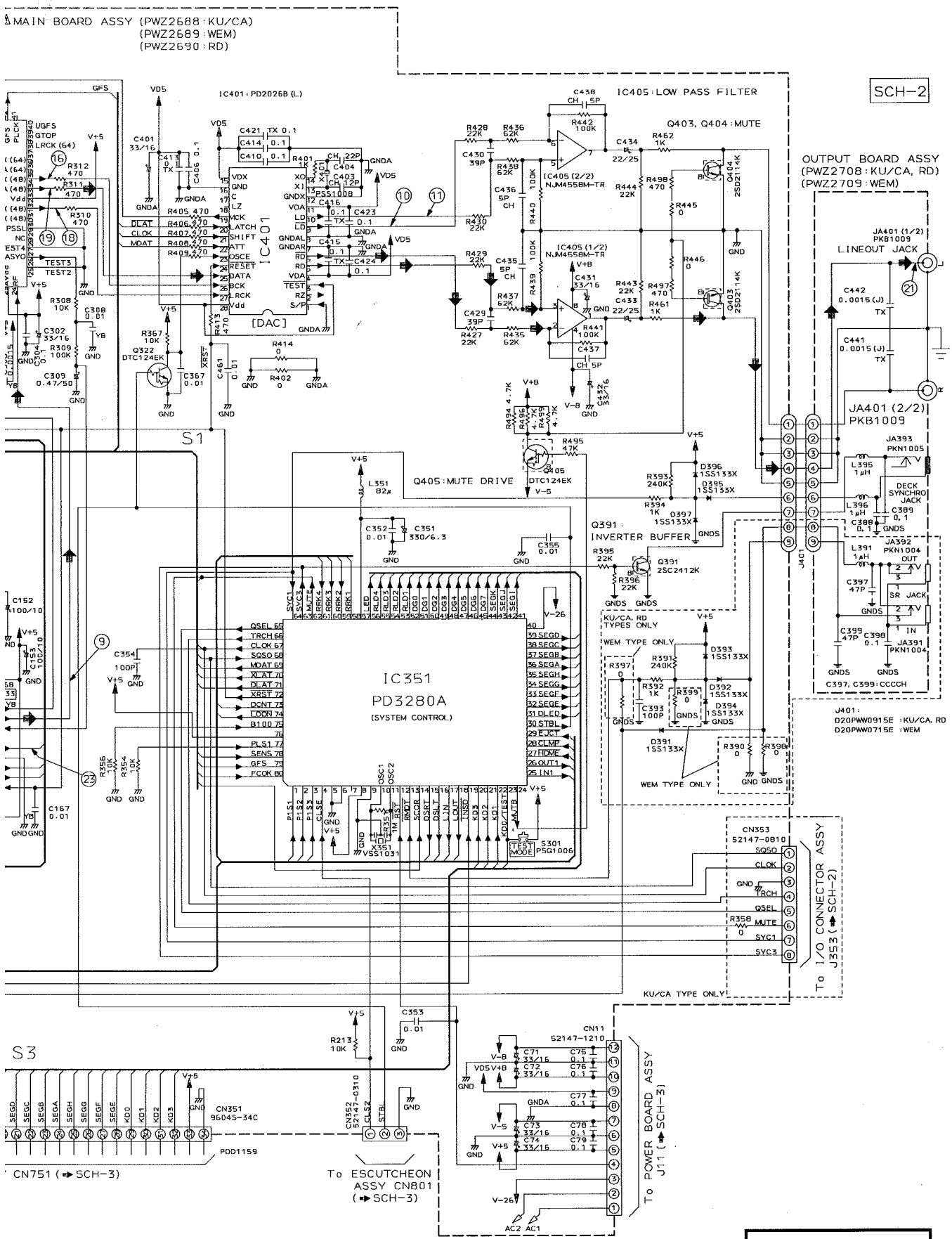
SCH-3



	Voltage [V]		
	Emitter	Collector	Base
Q322	0	5	0
Q391	0	2.6	0.7
Q403	0	0	−5
Q404	0	0	−5
Q405	−5	−5	5
Q451	5	5	0
Q452	5	5	0
Q453	0	0	5
Q454	0	0	5
Q701	0	0	−0.3
Q702	0	−4.4	2.1
Q703	0	0	−0.3
Q704	0	0	−0.3
Q705	0	0	−0.3

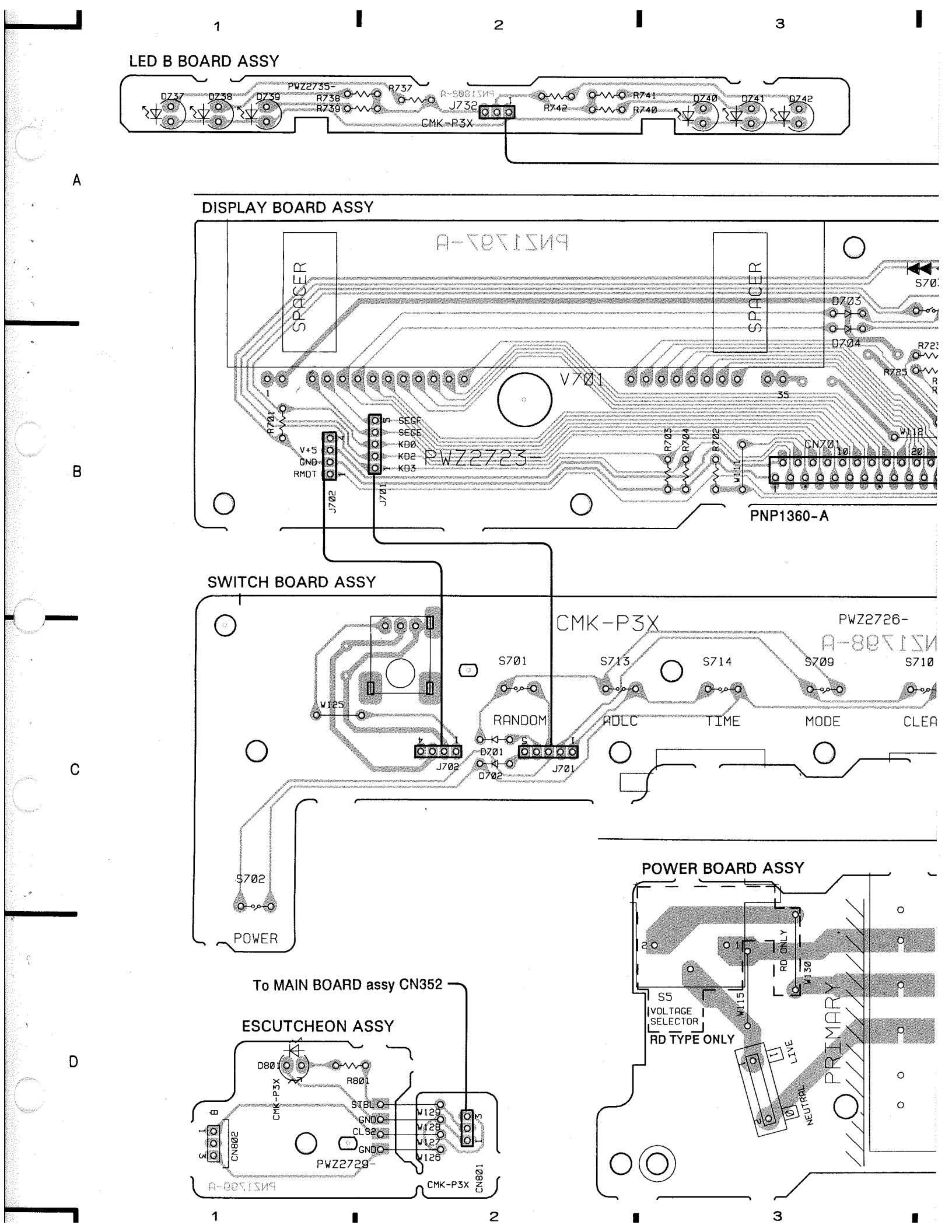
SCH−2

MAIN BOARD ASSY, OUTPUT BOARD ASSY,
RACK BOARD A ASSY, RACK BOARD B ASSY
I/O CONNECTOR ASSY

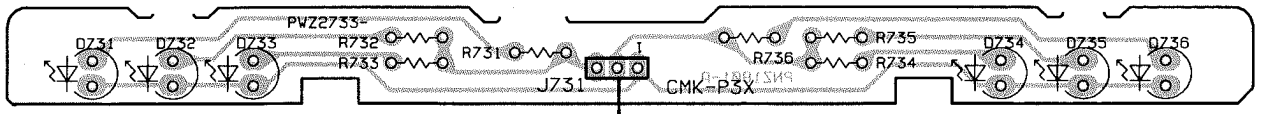


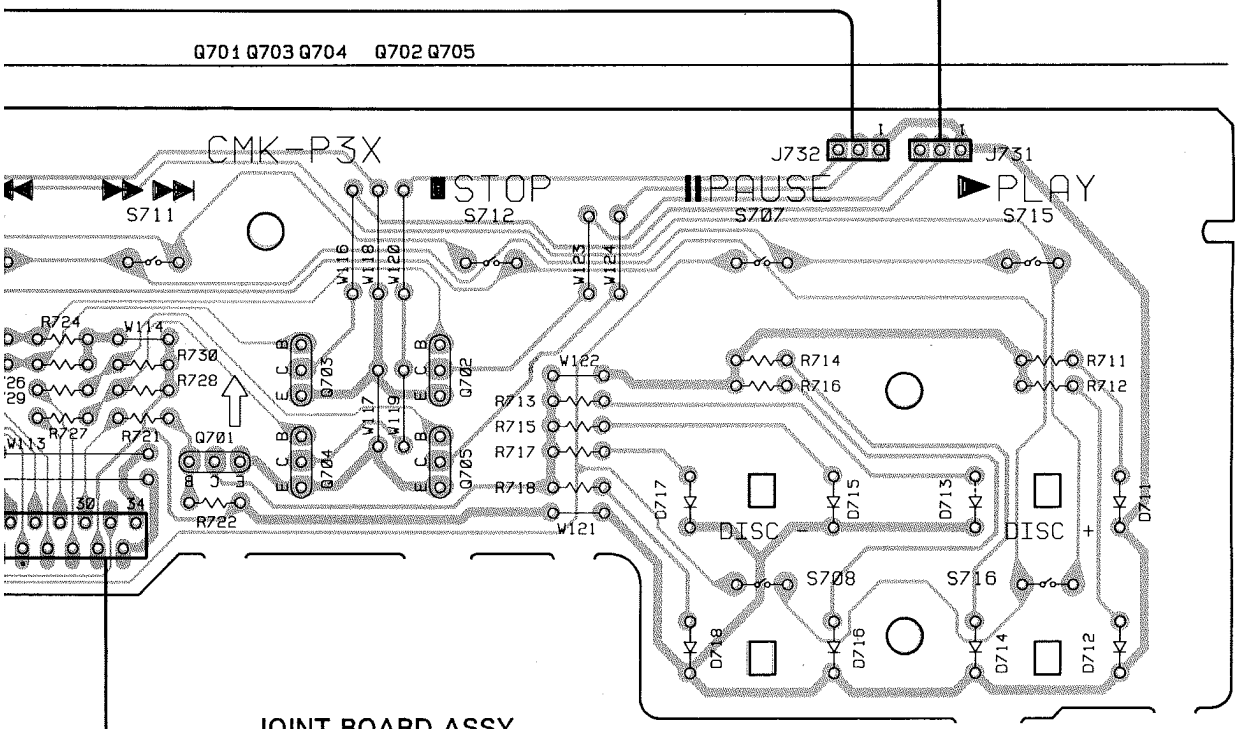
MAIN BOARD ASSY, OUTPUT BOARD ASSY,
RACK BOARD A ASSY, RACK BOARD B ASSY,
I/O CONNECTOR ASSY

SCH-2

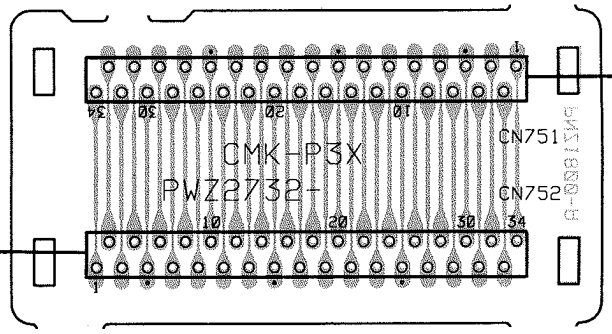

LED B BOARD ASSY
D737
D738
D739
PWZ2735-
R738
R739
R737
J732
CMK-P3X
R742
R741
R740
D740
D741
D742
DISPLAY BOARD ASSY
SPACER
SPACER
V701
D703
D704
R701
V+5
GND
RMDT
J702
SEGF
SEGE
KD0
KD2
KD3
J701
PWZ2723
R705
R704
R702
CN701
PNP1360-A
SWITCH BOARD ASSY
CMK-P3X
PWZ2726-
S701
S713
S714
S709
S710
W125
RANDOM
ADLC
TIME
MODE
D701
D702
J702
J701
S702
POWER
POWER BOARD ASSY
S5
VOLTAGE
SELECTOR
RD TYPE ONLY
RD ONLY
W130
W115
LIVE
NEUTRAL
PRIMARY
To MAIN BOARD assy CN352
ESCUTCHEON ASSY
D801
R801
CMK-P3X
STBL
GND
CLS2
GND
W129
W128
W127
W126
CN802
PWZ2729-
CMK-P3X
CN801

LED A BOARD ASSY

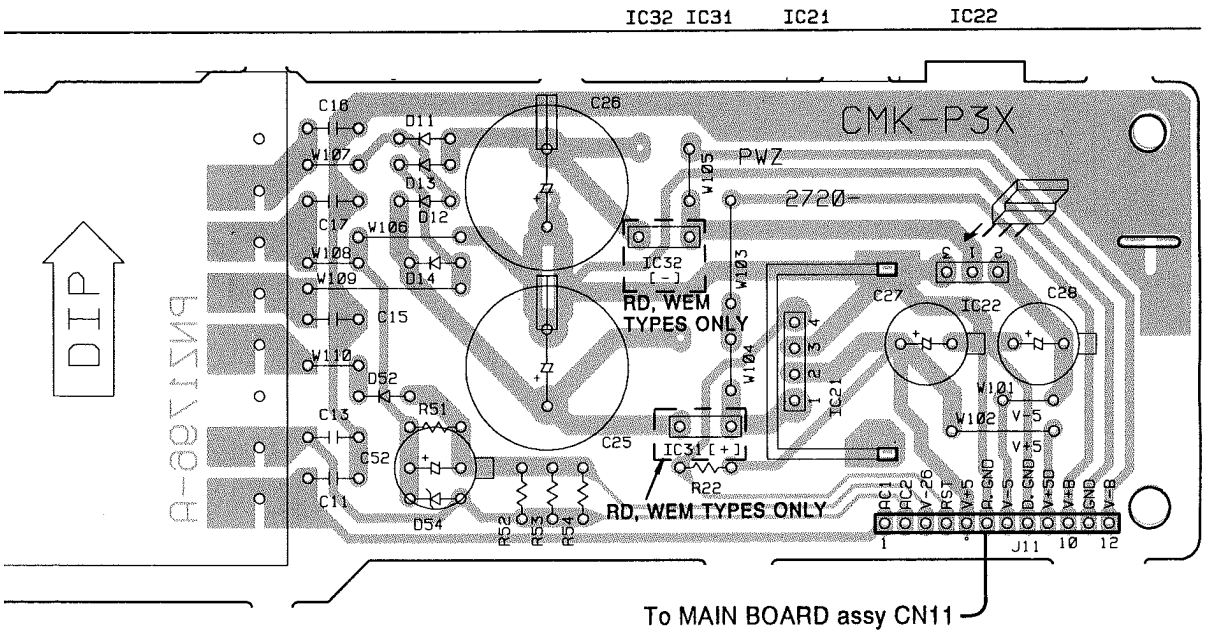




JOINT BOARD ASSY



- This diagram is viewed from the mounted parts side.



- This diagram is viewed from the foil side.

LED B BOARD ASSY
DISPLAY BOARD ASSY
PNZ1797-A
SPEAKER
SPEAKER
PNP1360-A
SWITCH BOARD ASSY
CMK-P3X
PWZ2726-
A-8671ZN
MODE
TIME
ADJC
RANDOM
POWER
POWER BOARD ASSY
BATTERY
RD TYPE ONLY
VOLTAGE SELECTOR
To MAIN BOARD assy CN352
ESCUTCHEON ASSY
CMK-P2X
CMK-P2X
PWZ2726-
PNZ1799-A

2.3 BLOCK DIAGRAM