

D-242CK

SERVICE MANUAL

Australian Model



Model Name Using Similar Mechanism	D-245
CD Mechanism Type	KSM-331CAN (S)
Optical Pick-up Name	KSS-331C

SPECIFICATIONS

System

Compact disc digital audio system

Laser diode properties

Material : GaAlAs

Wavelength : $\lambda = 780$ nm

Emission duration : Continuous

Laser output : Less than 44.6 μ W (measured at 200 nm away from the objective lens surface)

Error correction

Sony Super Strategy Cross Interleave Reed Solomon Code

D-A conversion

1-bit quartz time-axis control

Frequency response

20–20,000Hz $\pm \frac{1}{2}$ dB (measured by EIAJ CP-307)

Output (at 4.5V input level)

Headphones (stereo minijack)

15 mW + 15 mW at 16 ohms

Line output (stereo minijack)

Output level 0.7V rms at 50 kilohms

Recommended load impedance over 10 kilohms

General

Power requirements

- Rechargeable battery : 2.4 V DC
- Two LR6 (size AA) batteries : 3 V DC
- AC power adaptor (DC IN 4.5V jack) : 240 V, 50Hz
- Sony CPM-300P mount plate and CPM-300PK mount arm for use on car battery : 4.5 V DC

Dimensions (w/h/d) (without projecting parts and controls)

Approx. 134 × 32 × 152 mm
(5 $\frac{3}{8}$ × 1 $\frac{5}{16}$ × 6 in.)

Mass (without rechargeable battery)

Approx. 270 g (9.6 oz)

Operating temperature

5 °C–35 °C (41 °F–95 °F)

Supplied accessories

- AC power adaptor (1)
- Connecting cord (Phono plug × 2 ↔ stereo miniplug (1))
- Car battery cord (1)
- Car connecting pack (1)
- Spiral tube (1)
- Spare fuse (1)
- Velcro tapes (2)

Design and specifications are subject to change without notice.

COMPACT DISC COMPACT PLAYER
SONY®

TABLE OF CONTENTS

Specification	1
1. GENERAL	
Location and Function of Controls.....	3
2. SERVICE NOTES.....	3
3. DISASSEMBLY	5
4. SERVICE MODE	6
5. ELECTRICAL ADJUSTMENTS	7
6. EXPLANATION OF IC TERMINALS	11
7. DIAGRAMS	
7-1. Printed Wiring Boards	14
7-2. Schematic Diagram	17
8. EXPLODED VIEWS	
8-1. Cabinet Section-1	25
8-2. Cabinet Section-2	26
8-3. Optical Pick-up Section (KSM-331CAN (S)).....	27
9. ELECTRICAL PARTS LIST	28

DANGER

Invisible laser radiation when open and interlock failed or defeated.
Avoid direct exposure to beam.

For the customers in Australia

The supply cord of the AC power adaptor cannot be replaced; if the cord is damaged, the AC power adaptor should be discarded.

CAUTION

Use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure.

Flexible Circuit Board Repairing

- Keep the temperature of the soldering iron around 270°C during repairing.
- Do not touch the soldering iron on the same conductor of the circuit board (within 3 times).
- Be careful not to apply force on the conductor when soldering or unsoldering.

Notes on chip component replacement

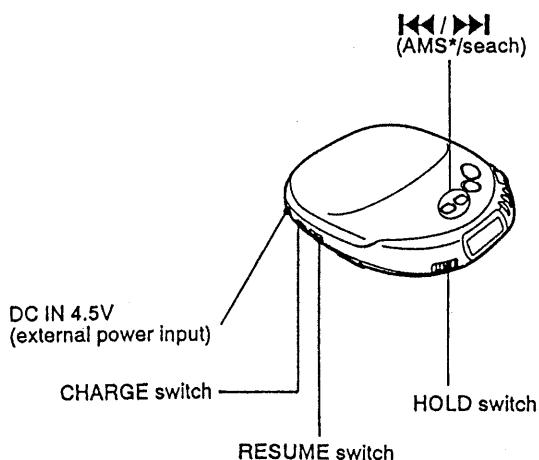
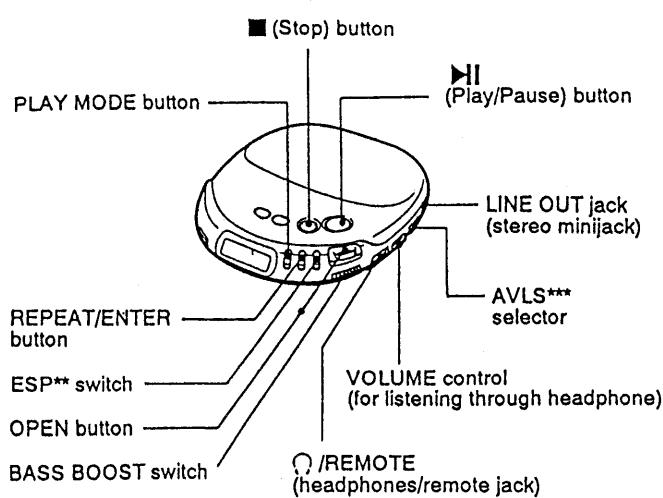
- Never reuse a disconnected chip component.
- Notice that the minus side of a tantalum capacitor may be damaged by heat.

SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY MARK  OR DOTTED LINE WITH MARK  ON THE SCHEMATIC DIAGRAMS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

SECTION 1 GENERAL

Location and function of controls



*AMS : Automatic Music Sensor
**ESP : Electronic shock protection
***AVLS : Automatic Volume Limiter System

SECTION 2 SERVICE NOTE

NOTES ON HANDLING THE OPTICAL PICK-UP BLOCK OR BASE UNIT

The laser diode in the optical pick-up block may suffer electrostatic breakdown because of the potential difference generated by the charged electrostatic load, etc. on clothing and the human body. During repair, pay attention to electrostatic breakdown and also use the procedure in the printed matter which is included in the repair parts.

The flexible board is easily damaged and should be handled with care.

NOTES ON LASER DIODE EMISSION CHECK

The laser beam on this model is concentrated so as to be focused on the disc reflective surface by the objective lens in the optical pick-up block. Therefore, when checking the laser diode emission, observe from more than 30cm away from the objective lens.

Before Replacing the Optical Pick-up Block

Please be sure to check thoroughly the parameters as per the "Optical Pick-up Block Checking Procedure" (Part No. : 9-960-027-11) issued separately before replacing the optical Pick-up block.

Note and specifications required to check are given below.

- FOK output : IC501 ⑫ pin
When checking FOK, remove the lead wire to disc motor.
- S curve P-to-P value : 1.0 – 2.6Vp-p IC501 ⑩ pin.
When checking S curve P-to-P value, remove the lead wire to disc motor.
- Adjusted part for focus gain adjustment : RV602
- RF signal P-to-P value : 0.8 – 1.2Vp-p
- Traverse signal P-to-P value : 1.0 – 2.4Vp-p
- The repairing grating holder is impossible.
- Adjusted part for tracking gain adjustment : RV601

Precautions for Checking Emission of Laser Diode

Laser light of the equipment is focused by the object lens in the optical pick-up so that the light focuses on the reflection surface of the disc. Therefore, be sure to keep your eyes more than 30cm apart from the object lens when you check the emission of laser diode.

Laser Diode Checking Methods

During normal operation of the equipment, emission of the laser diode is prohibited unless the upper panel is closed while turning ON the S808 (push switch type).

The following two checking methods for the laser diode are operable.

Method-1 (In the service mode or normal operation) :

Emission of the laser diode is visually checked.

1. Open the upper lid.
2. Push the S808 as shown in Fig. 1.
3. Check the object lens for confirming normal emission of the laser diode. If not emitting, there is a trouble in the automatic power control circuit or the optical pick-up.
During normal operation, the laser diode is turned ON about 2.5 seconds for focus searching.

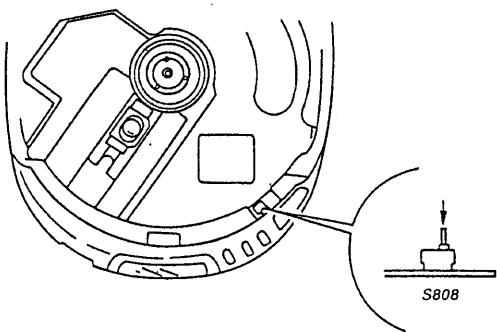


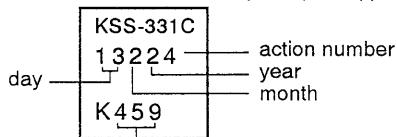
Fig. 1 Method to push S808

Method-2 (In the service mode or normal operation) :

Check the value of current flowing in the laser diode.

1. Remove the upper panel.
2. Read the current printed on the label attached on the rear side of the optical pick-up.

(Label stuck outside of the optical pick-up)



Indicates current value.
(In this case 45.9mA)

3. Connect a level meter as shown in Fig. 2
4. Press the **▶II** key.
5. Calculate the current value by the reading of the VOM.
Reading of the tester (V) \div 4.7 (Ω) = current value (A)
(Example) Reading of the VOM of 0.216 V :
 $0.216 \text{ V} \div 4.7 \Omega = 0.0459 \text{ A} = 45.9 \text{ mA}$

6. Check that the current value is within the following range.

- Current value of the label $^{+5}_{-11} \text{ mA}(25^\circ\text{C})$
Variation by temperature : $0.4 \text{ mA} / {}^\circ\text{C}$
Current increases with temperature increased.
Current decreases with temperature decreased.

If the current is more than the range above, there is a trouble in the automatic power control circuit or the laser diode is in deterioration.

If less than the range, a trouble exists in the automatic power control circuit or the optical pick-up.

- MAIN BOARD - (Conductor side)

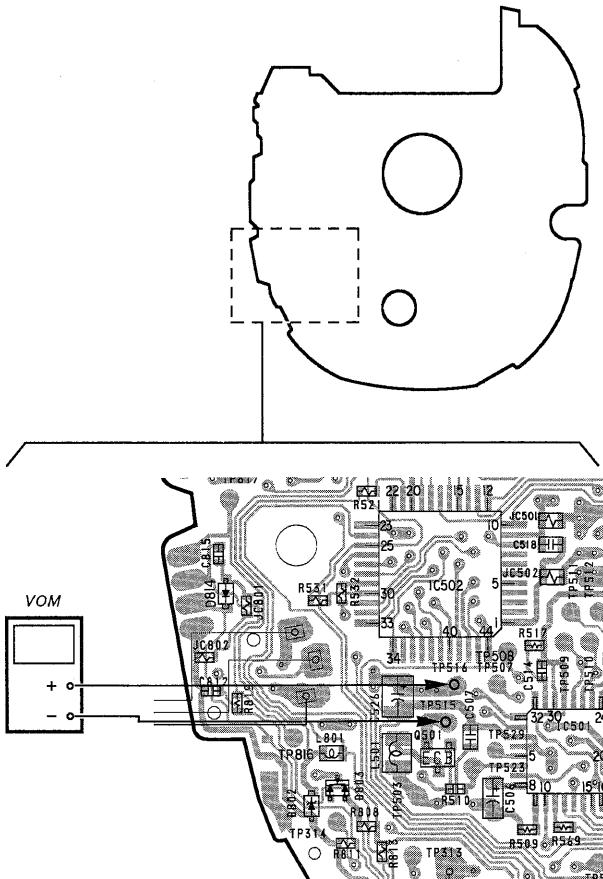
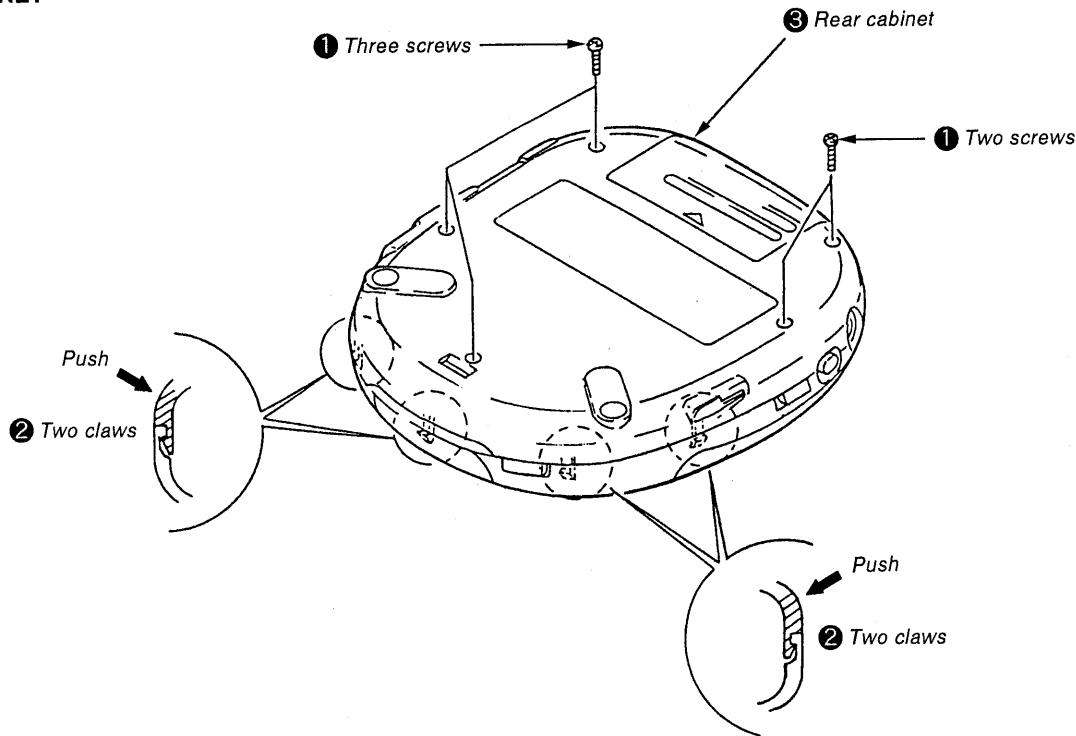


Fig. 2 VOM Connecting location

SECTION 3 DISASSEMBLY

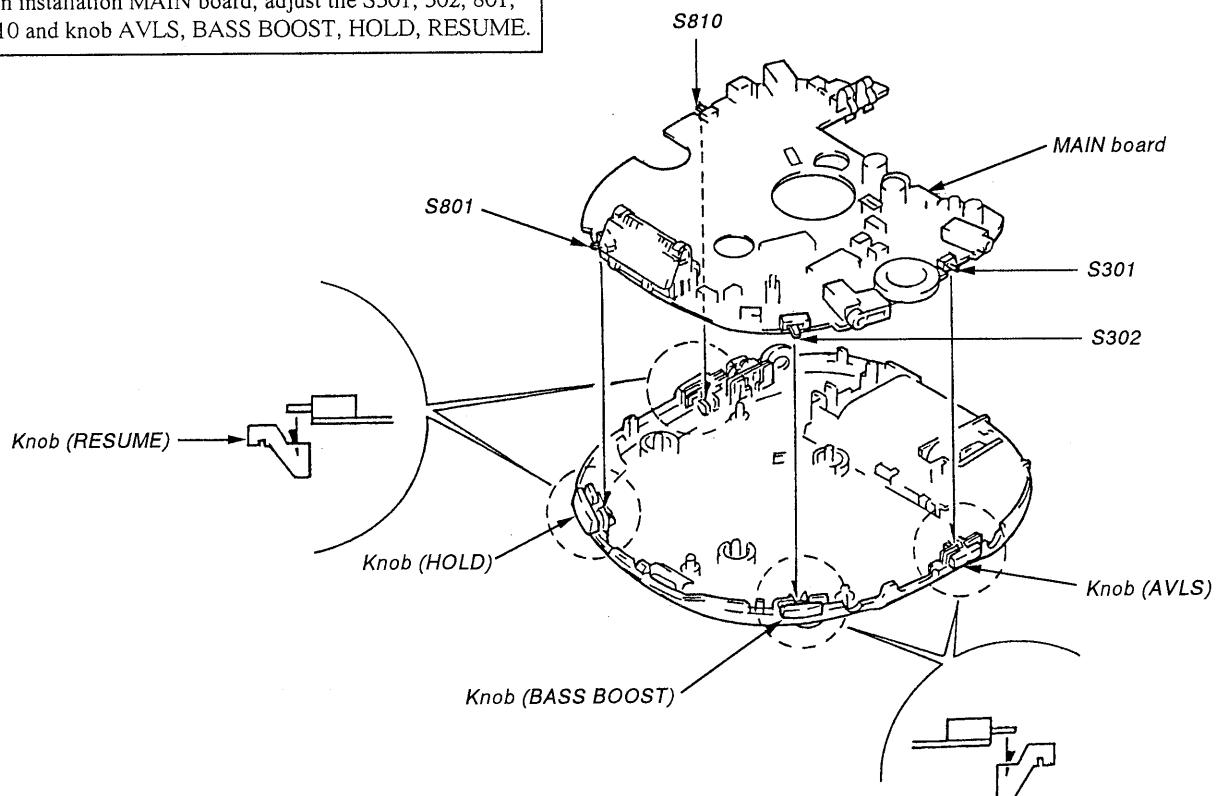
Note : Follow the disassembly procedure in the numerical order given.

REAR CABINET



INSTALLATION MAIN BOARD

On installation MAIN board, adjust the S301, 302, 801, 810 and knob AVLS, BASS BOOST, HOLD, RESUME.



SECTION 4 SERVICE MODE

Service Mode (service program)

The equipment is provided with a service program built in the microcomputer, like conventional models.

Service program operation methods are described in the following.

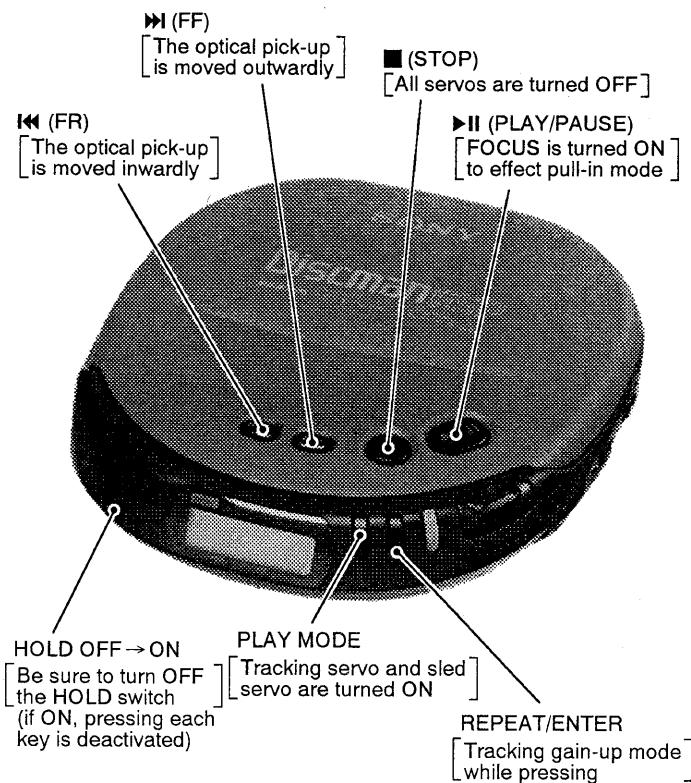


Fig. 3 Layout of each key

• Step 1 (Service mode setting method)

1. Turn OFF the HOLD switch the external power supply disconnected (power is not applied to the set).
2. Solder across the TEST terminals (pin ⑩, IC801 (TEST) is grounded)
3. Connect an external power supply.
Thus, the set is switched to the service mode.

• Step 2 (Operation in the service mode)

1. Once the service mode is effected, the LCD displays 5 indications each of which is repeatedly displayed.
However, the following operations can be activated even if LCD indication is effected.
2. By pressing the ▶I or ▶II key, the optical pick-up movable inwardly or outwardly. However, if this is activated, tracking servo and sled servo are turned OFF, so it can be turned ON by pressing the PLAY MODE key if required.
3. By pressing the REPEAT/ENTER key, the tracking gain-up mode becomes active.
4. By pressing the ▷II key, focus is turned ON from focus searching while entering CLV-S (pull-in mode).
Without disc, focus searching is repeated continuously.

5. By pressing the PLAY MODE key, tracking servo, sled servo and CLV-A (servo in PLAY) are turned ON.
6. When 4. and 5. are performed, playing begins. No muting is ON in the service mode.
7. By pressing the ■ key, all servos (focus, tracking and sled) are turned OFF. However, the disc motor revolves for a while by inertia.

• Step 3 (Resetting of service mode)

1. Be sure to disconnect the external power supply and remove the solder bridge at the TEST terminals connected before in setting.
2. The set thus becomes available for normal operation.

– MAIN BOARD – (Component side)

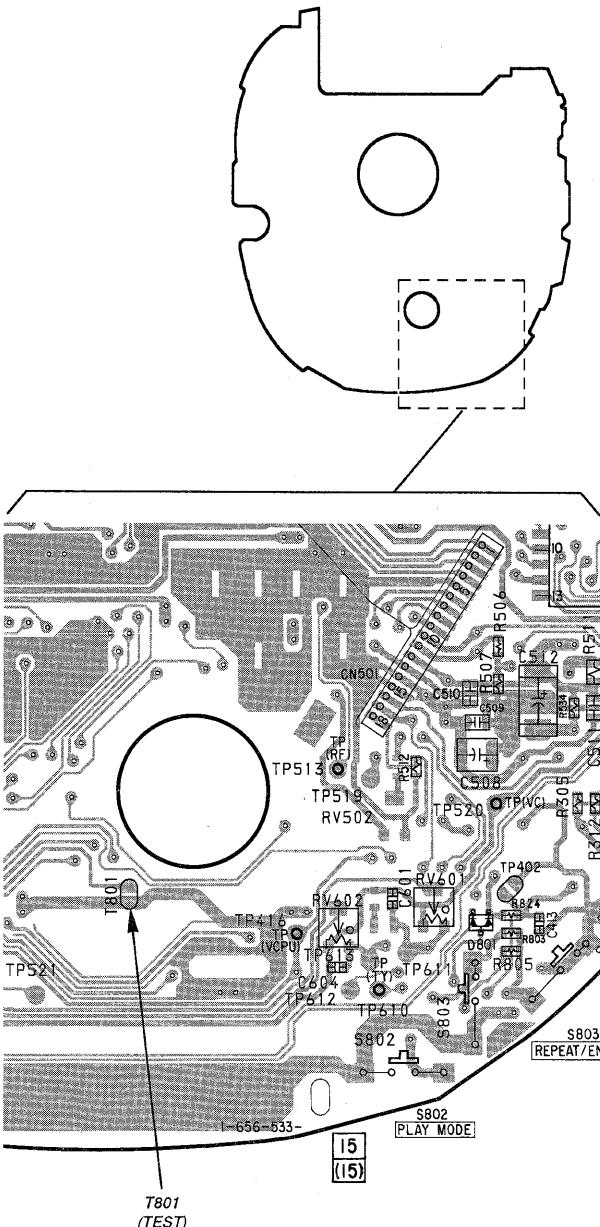


Fig. 4 Location of test terminal

SECTION 5 ELECTRICAL ADJUSTMENTS

CD SECTION

Precautions for Adjustment

1. Before beginning adjustment, set the equipment to service mode.
After the completion of adjustment, be sure to reset the service mode.
For more information, see "Service Mode (service program)" on page 6.
2. Perform adjustments in the order given.
3. Use YEDS-18 disc (Part No. : 3-702-101-01) unless otherwise indicated.
4. Power supply voltage requirement : DC 4.5V

HOLD switch	: OFF
VOLUME switch	: Minimum
ESP switch	: OFF
BASS BOOST switch	: NORM
AVLS switch	: OFF

Before Beginning Adjustment

Set the equipment to service mode (See page 6) and check the following.
If there is an error, repair the equipment

● Checking of the sled motor

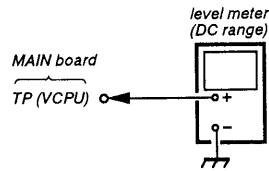
1. Open the upper panel.
2. Press the **▶▶** and **◀◀** keys and check that the optical pick-up can move smoothly without sluggishness or abnormal noise in innermost periphery → outermost periphery → innermost periphery
▶▶ : The optical pick-up moves outwardly
◀◀ : The optical pick-up moves inwardly

● Checking of focus searching

1. Open the upper panel.
2. Press the **▶▶** key. (Focus searching operation is activated continuously.)
3. Check the object lens of the optical pick-up for smooth up/down motion without sluggishness or abnormal noise.
4. Press the **■** key.
Check that focus searching operation is deactivated. If not, again press the **■** key slightly longer.

VDD Adjustment

Adjustment Procedure :



1. Set the equipment to service mode stop state (See page 6).
2. Connect the level meter to TP (VCPU) of the MAIN board.
3. Adjust RV401 on the MAIN board so that the reading level meter goes $3.0 \pm 0.05V$.
4. After the completion of adjustment, reset service mode.
(See page 6)

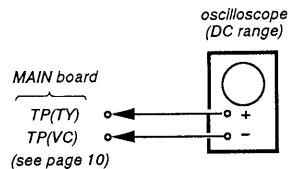
Adjustment Location : MAIN board

Tracking Balance Adjustment

Condition :

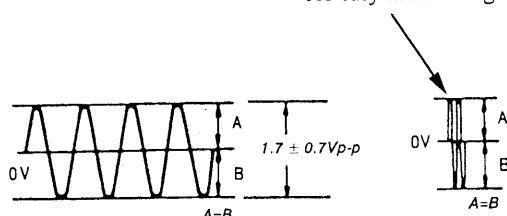
- Hold the set in horizontal state.

Adjustment Procedure :



1. Connect the oscilloscope to TP (TY) of the MAIN board.
2. Set the equipment to service mode stop state (See page 6).
3. Move the optical pick-up by Pressing the **▶▶** and **◀◀** keys.
4. Put the disc (YEDS-18).
5. Press the **▶▶** key.
(From focus searching, focus is turned ON while entering CLV drawing-in mode. Tracking and sled are turned OFF.)
6. Adjust RV501 so that the waveform on the oscilloscope becomes up/down symmetrical with an axis of 0V.

Note : Take long sweep time for easy monitoring.



7. Stop removing of the disc motor by pressing the **■** key.
8. After the completion of adjustment, reset service mode.
(See page 6)

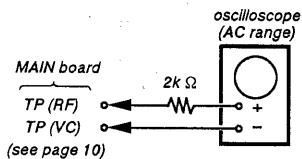
Adjustment Location : MAIN board (Page 10)

Focus Bias Check

Conditions :

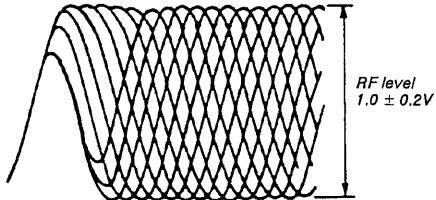
- Hold the set in horizontal state.

Adjustment Procedure :



1. Set the equipment to service mode stop state. (See page 6)
2. Connect the oscilloscope to the test point TP (RF) of the MAIN board.
3. Move the optical pick-up by Pressing the **▶▶** and **◀◀** keys.
4. Put the disc (YEDS-18).
5. Press the **▶▶** key.
(From focus searching, focus is turned ON while entering CLV drawing-in mode. Tracking and sled are turned OFF.)
6. Press the PLAY MODE key. (Both tracking and sled are turned ON.)
7. Check the oscilloscope waveform is as shown below.
A good eye pattern means that the diamond shape (◇) in the center of the waveform can be clearly distinguished.

VOLT DIV : 200mV (with the 10 : 1 probe in use)
TIME DIV : 500ns



● RF Signal Reference Waveform (eye pattern)

To watch the eye pattern, set the oscilloscope to AC range and increase the vertical sensitivity of the oscilloscope for easy watching.

8. Stop revolving of the disc motor by pressing the **■** key.
9. After the completion of adjustment, reset service mode.
(See page 6)

Adjustment Location : MAIN board (Page 10)

Focus/Tracking Gain Adjustment

A servo analyzer is necessary in order to perform this adjustment exactly.

However, this gain has a margin, so even if it is slightly off, there is no problem. Therefore, do not perform this adjustment.

Focus/tracking gain determines the pick-up follow-up relative to mechanical noise and mechanical shock when the 2-axis device operate. However, as these reciprocate, the adjustment is at the point where both are satisfied.

- When gain is raised, the noise when 2-axis device operates increases.
- When gain is lowered, it is more susceptible to mechanical shock and skipping occurs more easily.

This adjustment has to be performed upon replacing any of the following parts :

- Optical pick-up
- RV602 (Focus gain VR)
- RV601 (Tracking gain VR)

Normally, be sure not to move RV602 (focus gain VR) and RV601 (tracking gain VR).

Adjustment method :

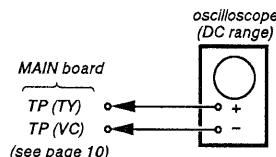
– Focus Gain Adjustment –

This adjustment is not performed.

If focus gain VR RV602 is turned, set to mechanical center

– Tracking Gain Adjustment –

(perform at normal operation)



1. Place the optical pick-up level, horizontally. (If the optical pick-up is not level, the 2-axis device will be weighted and adjustment cannot be done.)
2. Connect the oscilloscope to TP (TY) and TP (VC) on the MAIN board.
3. Set the disc (YEDS-18) and Press the **▶(▶)** key.
4. Turn RV601 slightly clockwise (tracking gain drops) and obtain a waveform with a fundamental wave (waveform has large waves) as in Figure 1.
5. Turn RV601 slowly counterclockwise (tracking gain rises) until the fundamental wave disappears (no large waves) as in Figure 2.
6. Set RV601 to the position about 30° counterclockwise from the position obtained in step 5. If RV601 contact point is more than 90° counterclockwise from mechanical center, tracking gain is too high. In this case, readjust from step 4.
7. Press **▶(▶)** or **◀◀** keys and observe the 100 track jump waveform. Check that no traverse waveform appears for both **▶(▶)** or **◀◀** directions. (See Figures 3 and 4.) It is acceptable if the traverse waveform appears only now and then, but if it appears constantly raise tracking gain slightly and check step 7 again.
8. Check that there is not abnormal amount of operation noise (white noise) from the 2-axis device. If there is, tracking gain is too high, readjust starting with step 4.

The waveforms are those measured with the oscilloscope set as shown below.

- VOLT/DIV : 50 mV
- TIME/DIV : 5 ms
- Waveform when tracking gain is lowered.
Fundamental wave appears (large waves).



Fig. 1

- Waveform when fundamental wave disappears (no large waves).



Fig. 2

- Waveform with no traverse waveform during 100 track jump.
(Brake application is smooth because of adjustment.)

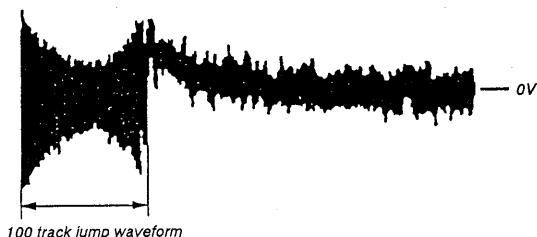


Fig. 3

- Waveform with traverse waveform during 100 track jump.
(Brake application is poor because of adjustment.)

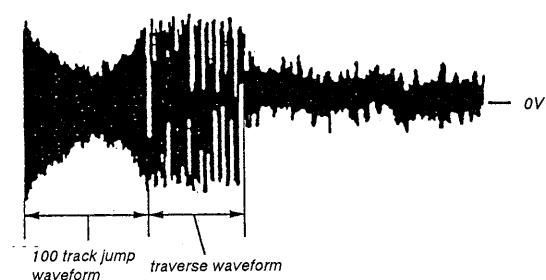
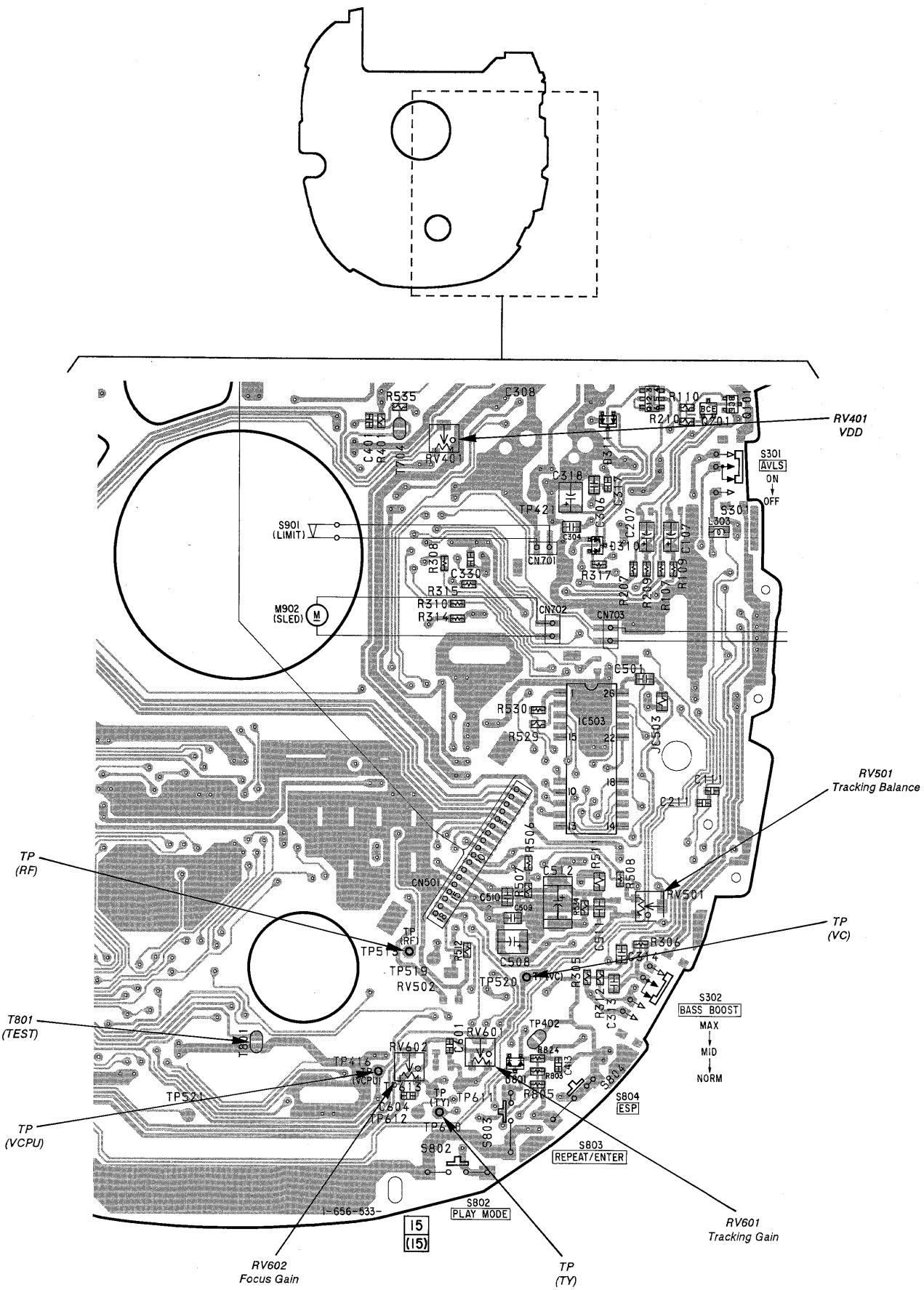


Fig. 4

Adjustment Parts Location :

— MAIN BOARD — (Component side)



SECTION 6

EXPLANATION OF IC TERMINALS

MAIN BOARD IC801 CXP83412-017Q (SYSTEM CONTROL)

Pin No.	Pin Name	I/O	Description
1	HICURR	I	Overcurrent detection terminal (short detection).
2	LOBAT	I	Lo-battery detection terminal. "L" : Lo-battery
3	—	—	Not used (Open).
4	BEEP	O	Beep sound pulse output terminal.
5	MDSLTT	I	Input terminal for MD setting (KSM-331CAN, AX-24). "H" : KSM-331CAN, "L" : AX-24
6	PCON	O	Power control output terminal. "L" : Power ON, "H" : Power OFF
7	SQCK	O	Clock output signal to enter SUB-Q signal from IC601 (BU9312AKS).
8	SUBQ	I	SUB-Q signal input terminal (from IC601 BU9312AKS).
9	CDATA	O	Serial data output terminal.
10	YMCLK	O	Clock signal output terminal to read serial data.
11	ZSENCE	I	IC502 (SM5856AIF) internal status serial input terminal.
12	YMDATA	O	Serial data output terminal.
13	BUSY	I	BUSY signal input terminal. "L" : Track jumping, "H" : Sarvo loop ON
14	FOK	I	FOK signal input terminal. "H" : OK, "L" : NG
15	XRCHG	I	Rechargeable battery detection terminal. "L" : Rechargeable battery present, "H" : No rechargeable battery
16	XRST	I	Reset signal input terminal.
17	XHOLD	I	Hold switch input terminal. "L" : Hold ON, "H" : Hold OFF
18	XRSM	I	RESUME switch input terminal. "L" : RESUME ON, "H" : RESUME OFF
19	XTEST	I	TEST mode at "L", when the system is reset.
20	XLIMIT	I	Input terminal of MD inside track sensor (S901). "L" : Inside track
21	C2MNT	I	C2PO signal output monitor.
22	ESP	I	ESP switch (Q505, 506) control terminal. "L" : ESP switch OFF, "H" : ESP switch ON
23	BAT-MNT	I	Rechargeable battery/dry cell detection terminal.
24	CHGON	I	Charging on input terminal.
25	RMKEY	I	A/D input terminal for headphone remote control key.
26	HKEY	I	A/D input terminal for main unit keys (REPEAT/ENTER, PLAYMODE, ESP, CHARGE)
27	JKEY	I	A/D input terminal for switch unit.
28	CHGMNT	I	A/D input terminal for charging voltage monitor.
29	DCINMNT	I	A/D input terminal for DC IN voltage detection. Also used for DC IN detection.
30	RESET	I	System reset input terminal. System is reset at "L".
31	OSCI	I	X801 (4.19MHz) clock oscillator input terminal.
32	OSCO	O	X801 (4.19MHz) clock oscillator output terminal.
33	VSS	—	Ground terminal.
34	VL	—	LCD bias resistor current control terminal. (Cut off at standby)
35 - 37	VLC3 - 1	—	LCD801 bias power supply terminal.
38 - 41	COM0 - 3	O	LCD801 common signal output terminal.
42 - 50	SEGO - 8	O	LCD801 segment signal output terminal.

Pin No.	Pin name	I/O	Description
51	—	—	Not used (Open).
52 – 55	SEG10 – 13	O	LCD801 segment signal output terminal.
56	—	—	Not used (Open).
57	—	—	Not used (Open).
58	DMUTE	—	Not used (Open).
59	DACLT	O	CPU serial data input latch signal output (For DAC only).
60	AMUTE	O	Analog mute control output terminal. “H” : Mute
61	CLVMUTE	O	CLV mute control ouput terminal. “H” : Mute
62	RW	O	Read/Write switching signal output terminal. “L” : Read, “H” : Write
63	L1	O	Not used (Open).
64	L2	O	Not used (Open).
65	H1	O	Not used (Open).
66	H2	O	Not used (Open).
67	—	O	Not used (Open).
68	EMPH	—	Not used (Open).
69	SHCK	—	Not used (Open).
70	C2POEN	O	C2PO signal control output terminal. “L” : Stop, “H” : Searching
71	—	—	Not used (Open).
72	VDD	—	Power supply terminal.
73	TX	I	Not used (Open).
74	TEX	O	Not used (Connect to ground).
75	NC	—	Not used (Connect to VDD).
76	RMDAT	O	Serial data output terminal to LCD remote controller.
77	YMLT	O	CPU serial data input latch signal output terminal. “L” : Latch
78	WP	I	Input terminal to reset the system stop status. The stop status is reset with the falling edge if input signal.
79	OPEN	I	Door switch input terminal. The stop status is reset with the falling edge if input signal. “L” : Close, “H” : Open
80	SCOR	I	Sub code sync SO+SI input terminal.

SECTION 7 DIAGRAMS

7-1. PRINTED WIRING BOARDS

• SEMICONDUCTOR LOCATION

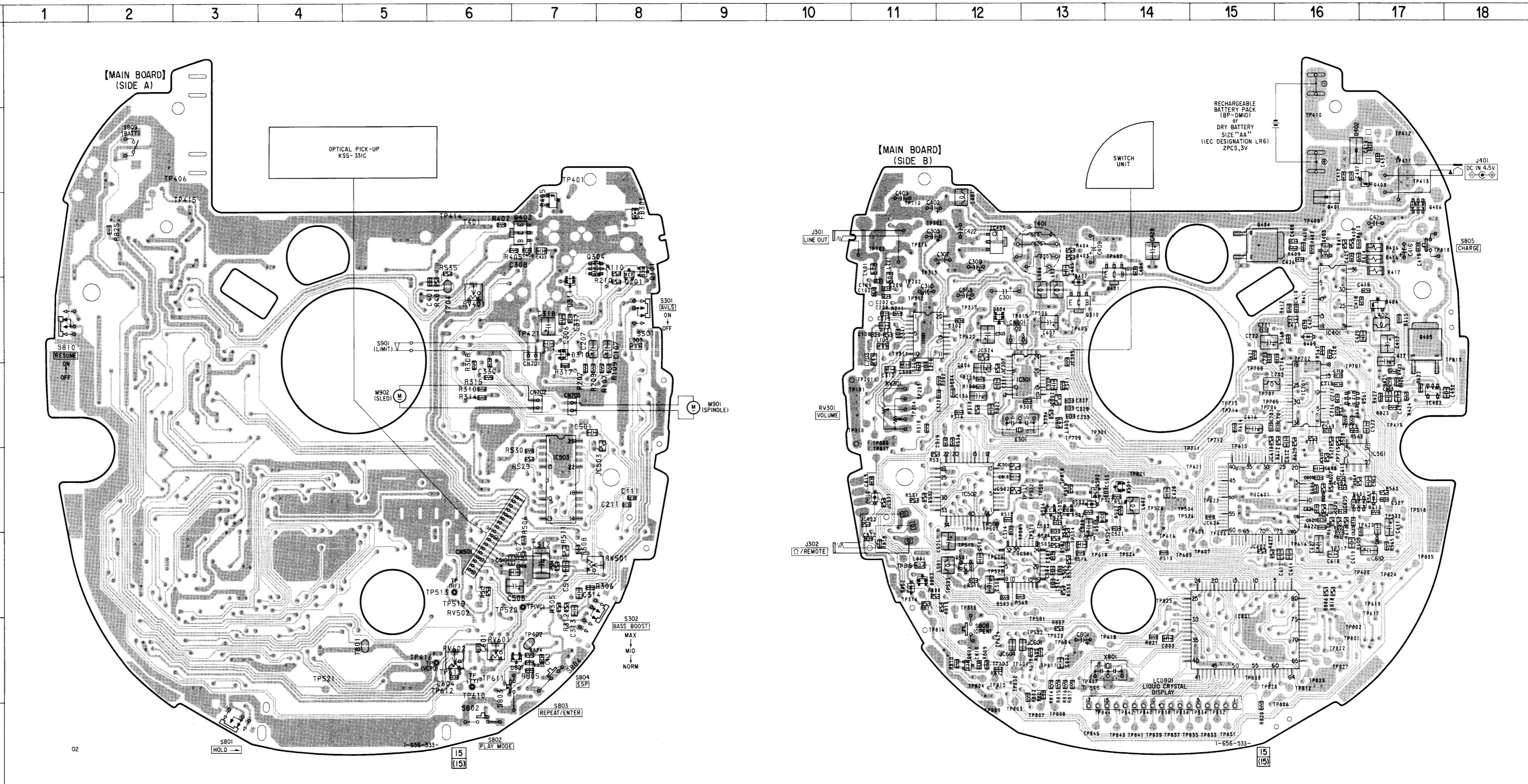
Ref. No.	Location	Ref. No.	Location
D310	D - 7	IC701	E - 16
D311	D - 7	IC801	H - 15
D401	C - 16		
D402	B - 16		
D403	B - 17	Q101	C - 8
		Q201	C - 8
D404	D - 17	Q304	C - 7
D405	C - 7	Q310	D - 13
D407	D - 13	Q401	C - 14
D409	D - 16		
D501	F - 14	Q402	C - 7
		Q403	C - 16
D502	F - 13	Q404	C - 15
D561	F - 17	Q405	D - 17
D801	H - 7	Q406	C - 17
D802	G - 11		
D803	G - 11	Q501	G - 12
		Q502	F - 13
D804	D - 12	Q503	F - 13
D814	F - 11	Q505	F - 13
		Q506	F - 13
IC301	E - 13	Q561	E - 16
IC302	D - 11	Q601	F - 16
IC401	D - 16	Q801	H - 12
IC402	C - 12		
IC403	E - 17		
IC501	G - 12		
IC502	F - 12		
IC503	F - 7		
IC561	F - 16		
IC601	F - 15		

Note:

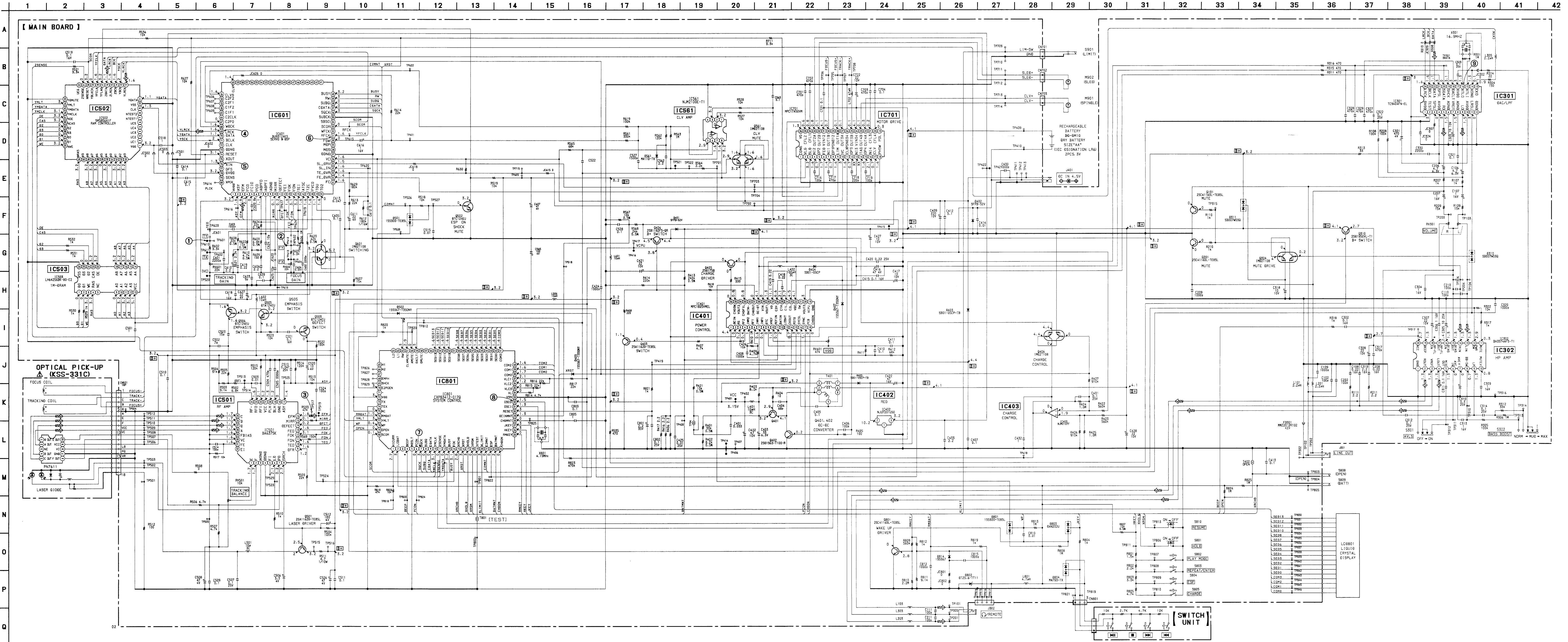
- : parts extracted from the component side.
 - ◎ : Pattern from the side which enables seeing.
(The other layers' patterns are not indicated)

Caution :

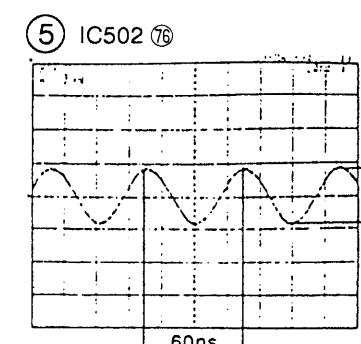
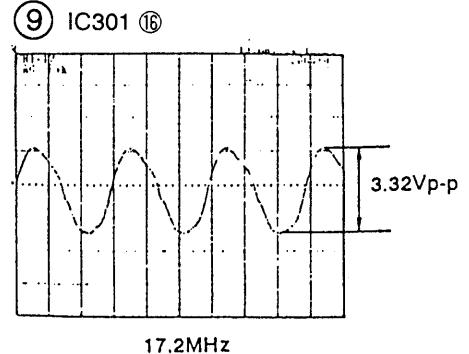
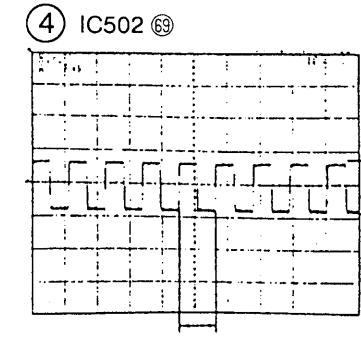
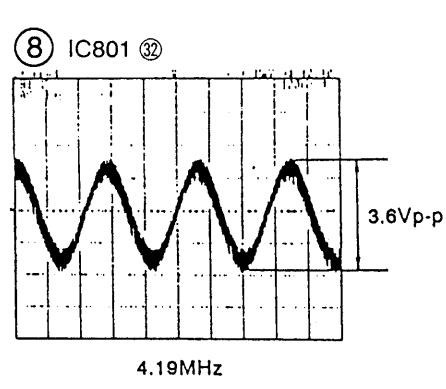
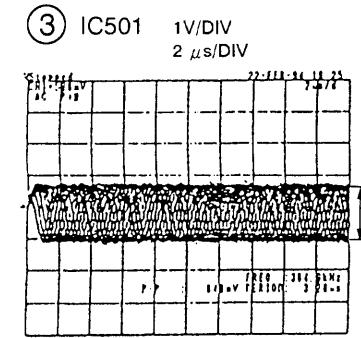
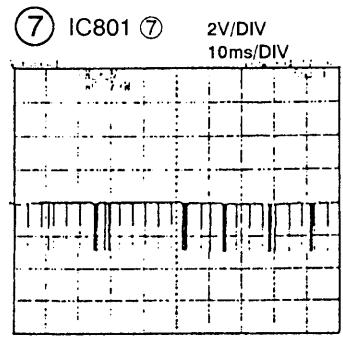
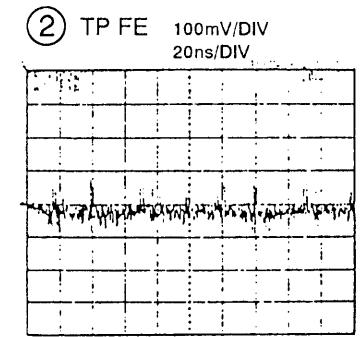
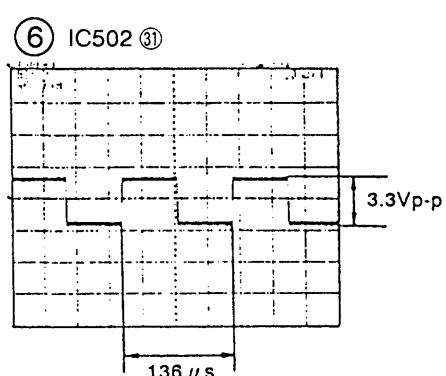
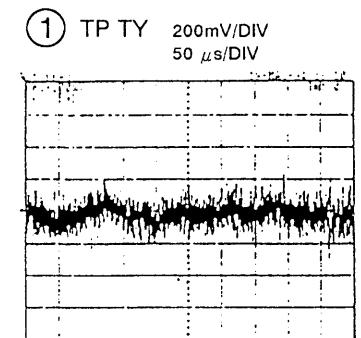
Pattern face side : Parts on the pattern face side seen from (Conductor Side) the pattern face are indicated.
Parts face side : Parts on the parts face side seen from the (Component side) parts face are indicated.



7-2. SCHEMATIC DIAGRAM • Refer to page 22 for Waveforms. • Refer to page 23 for IC Block Diagrams.

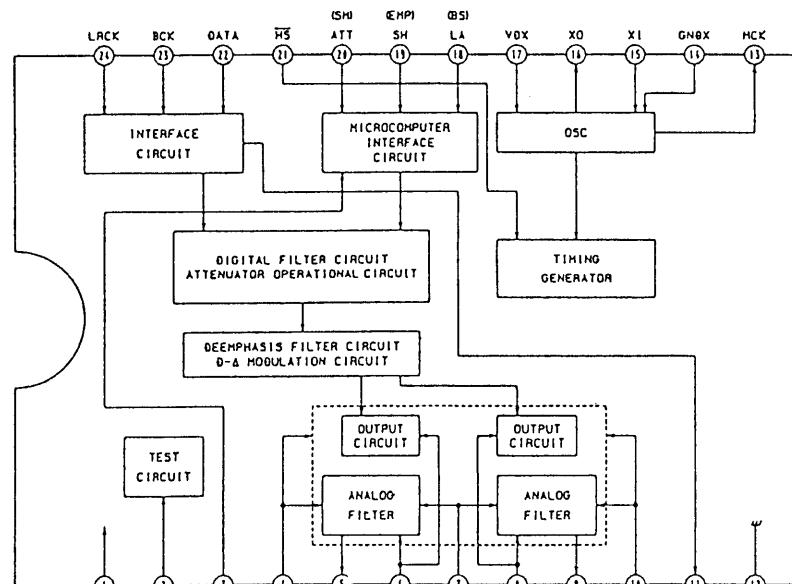


• WAVEFORMS

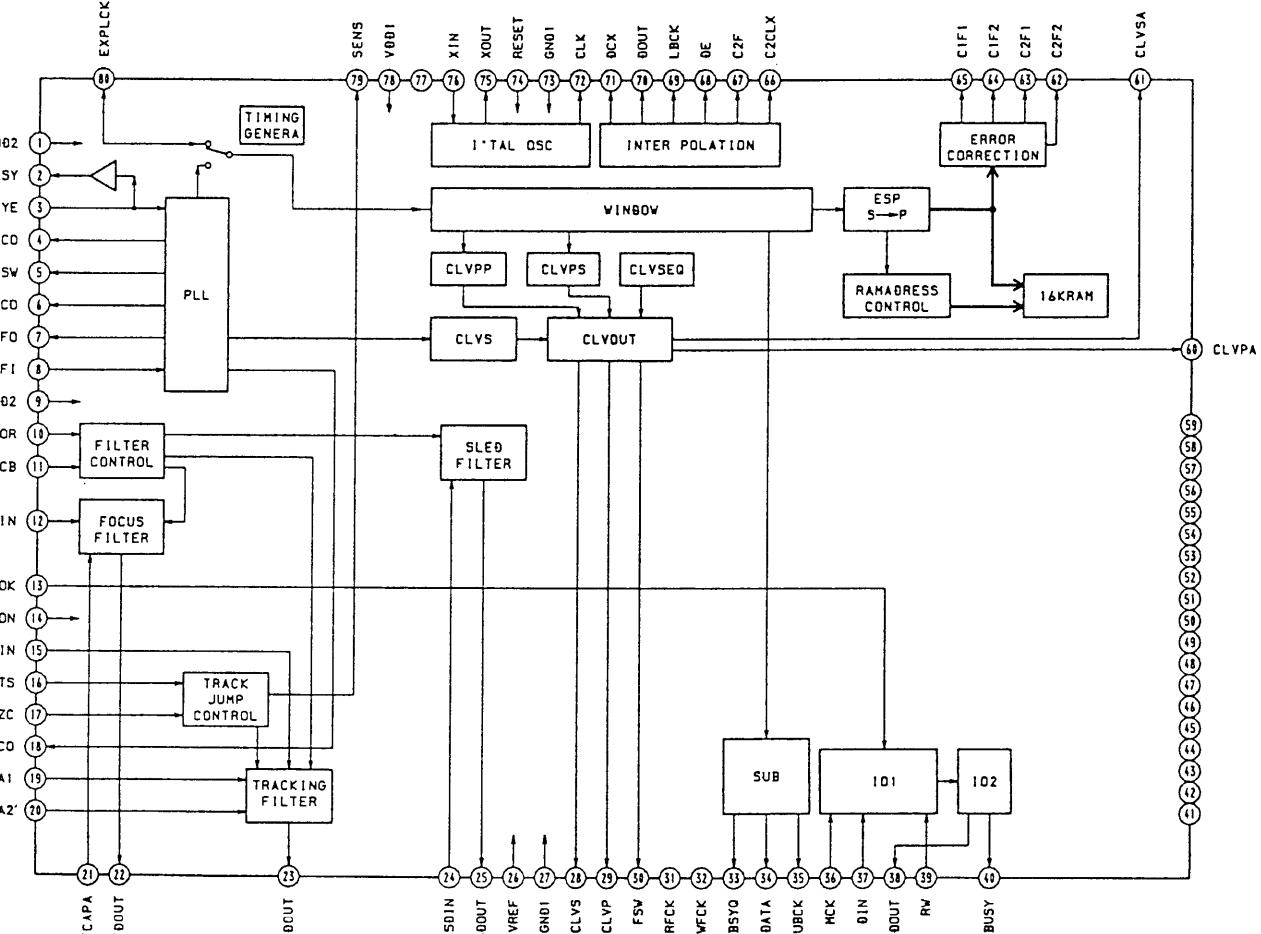


• IC BLOCK DIAGRAMS

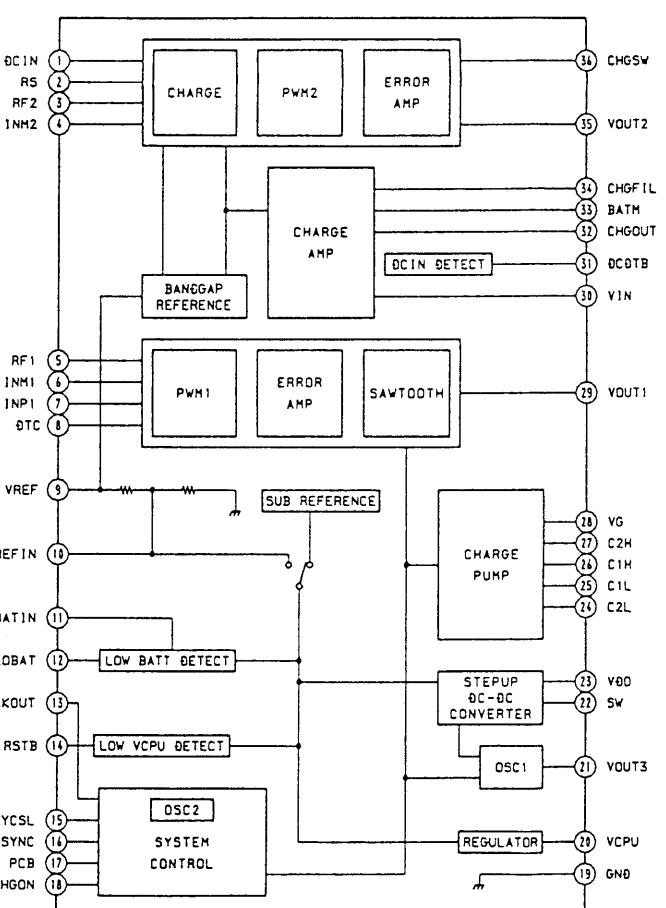
IC301 TC9404FN-EL



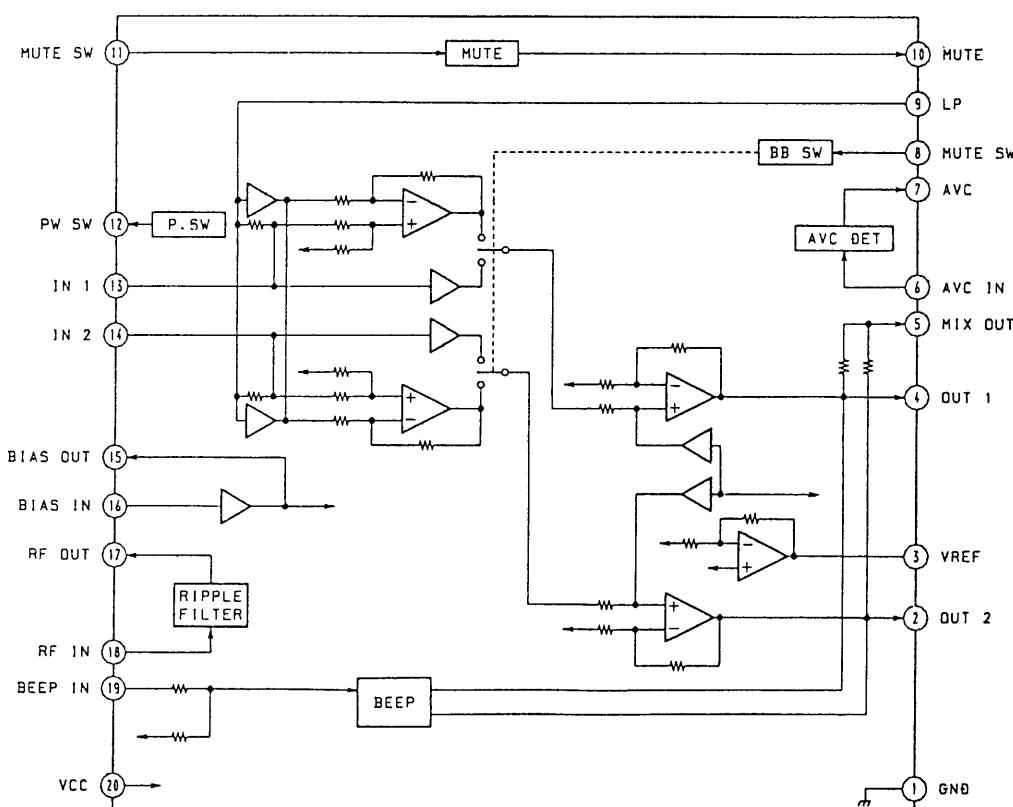
IC601 BU9312AKS



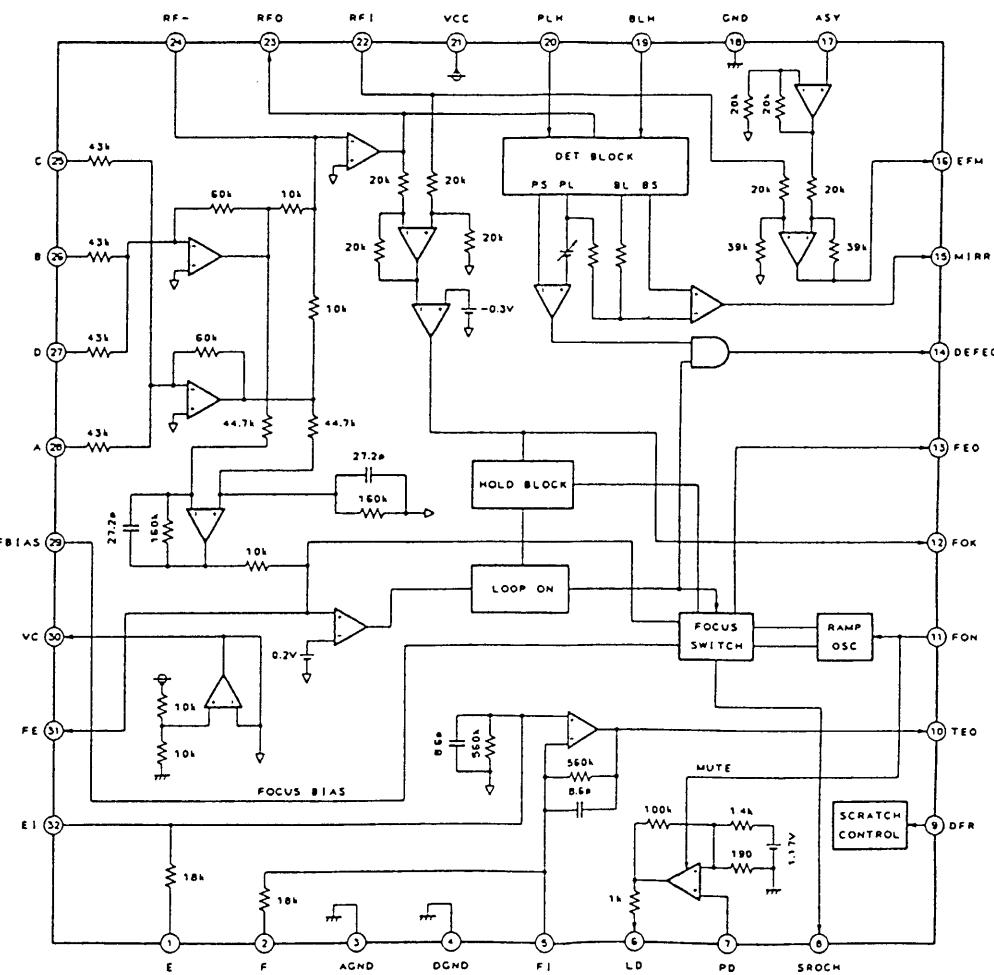
IC401 MPC1825A/SC285VMEL



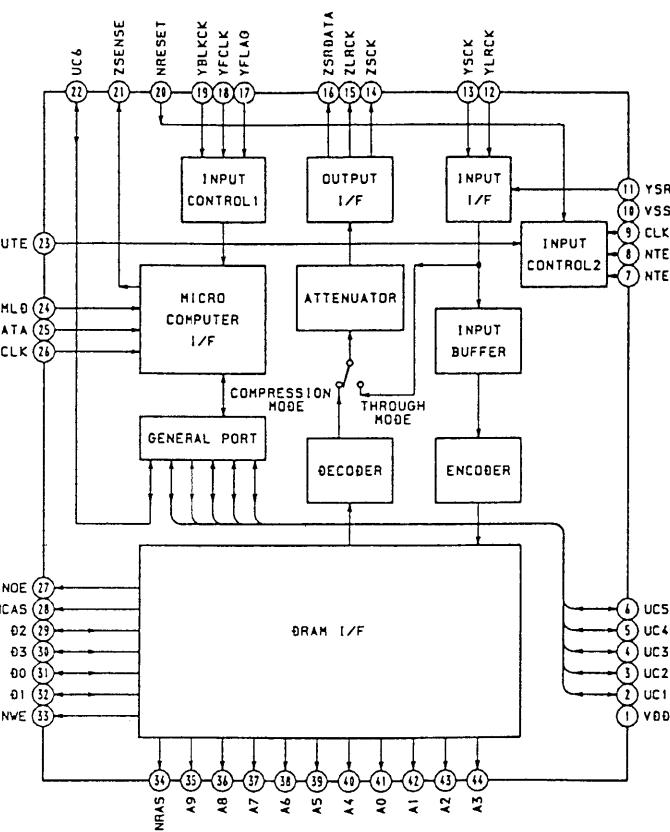
IC302 BA3574BFS



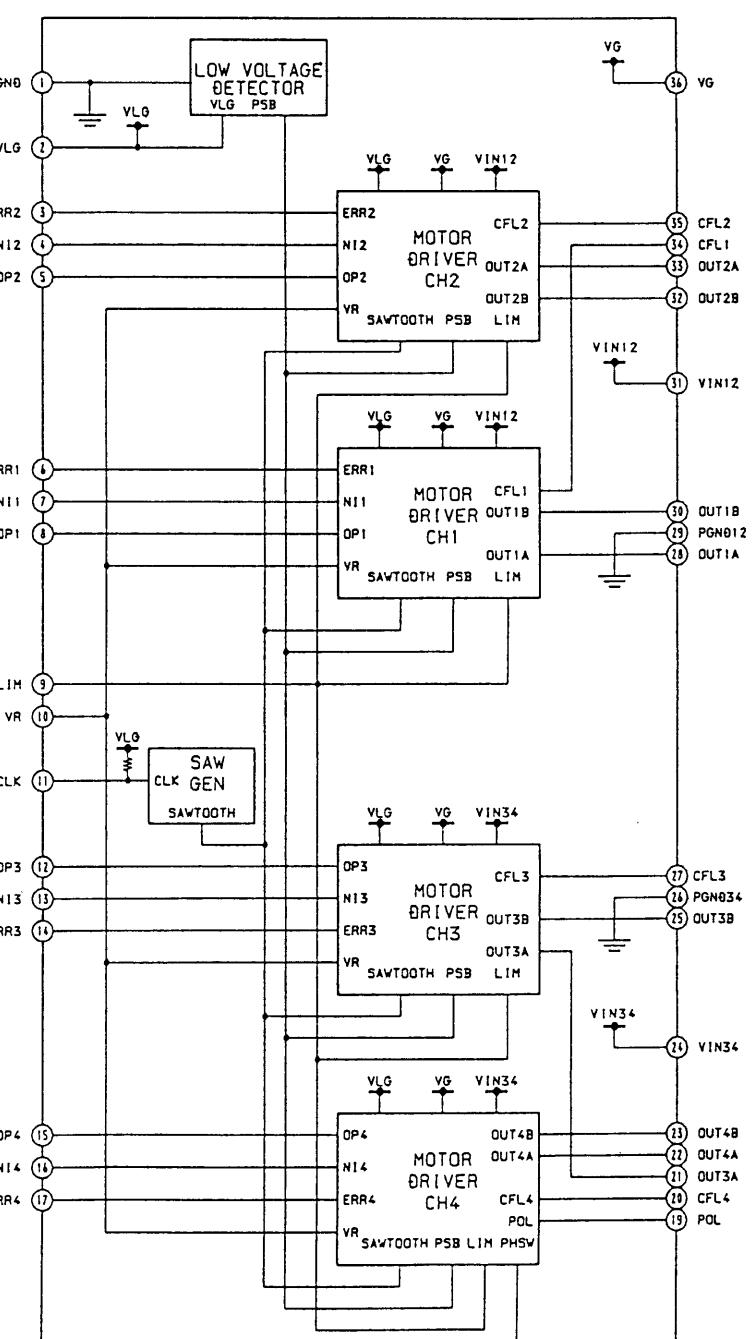
IC501 BA6375K



IC502 SM5856A1F



IC701 MPC17A50VMEL



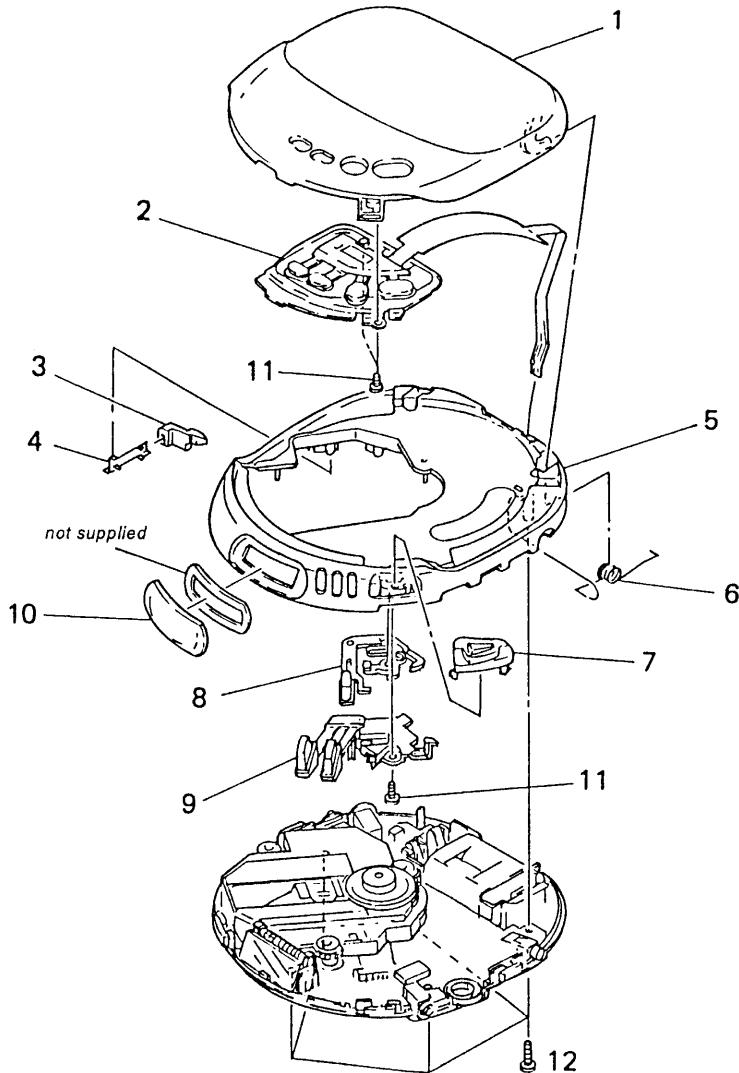
SECTION 8 EXPLODED VIEWS

NOTE :

- -XX, -X mean standardized parts, so they may have some difference from the original one.
- Items marked “ * ” are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

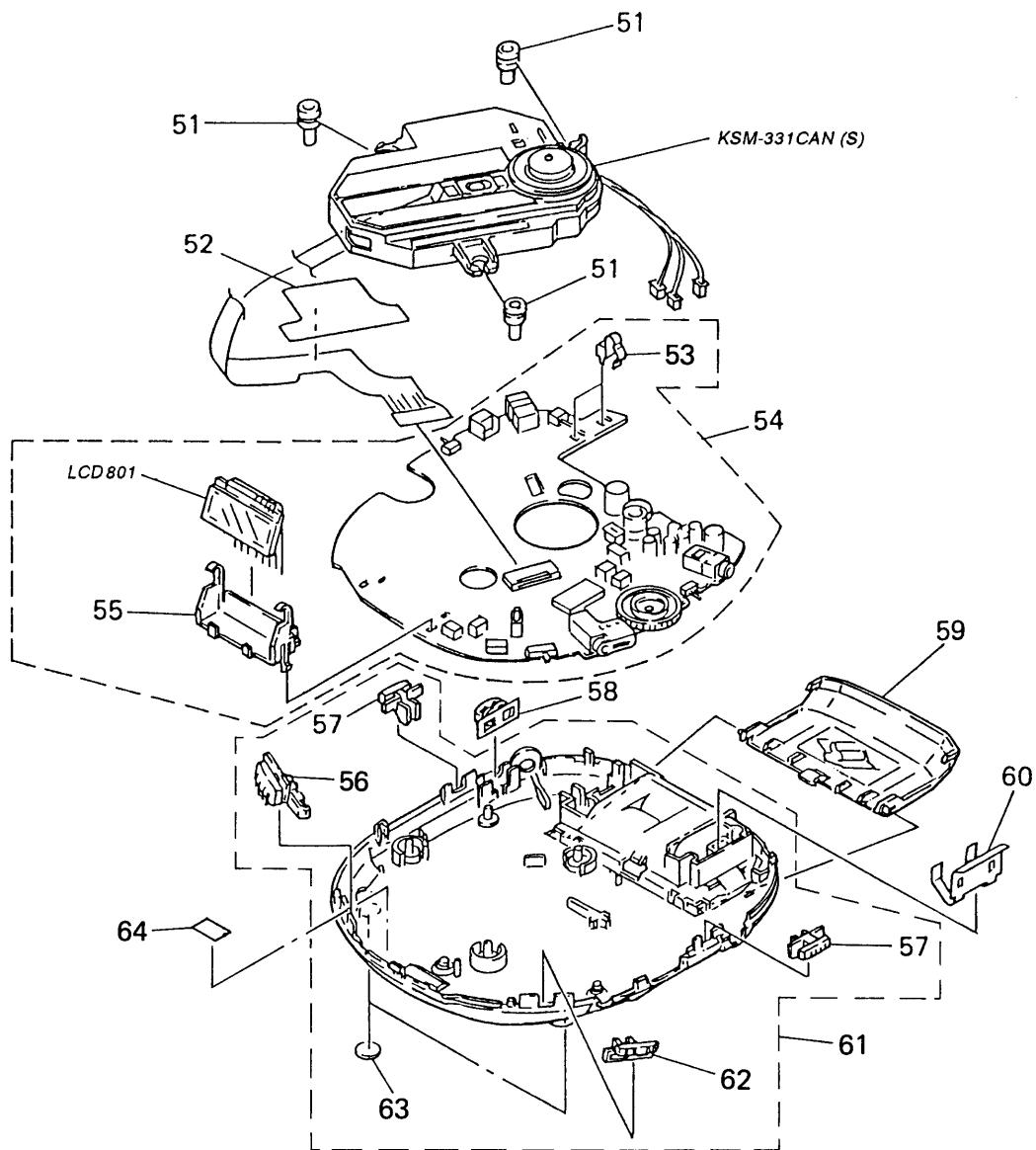
The components identified by mark \triangle or dotted line with mark Δ are critical for safety.
Replace only with part number specified.

8-1. CABINET SECTION-1



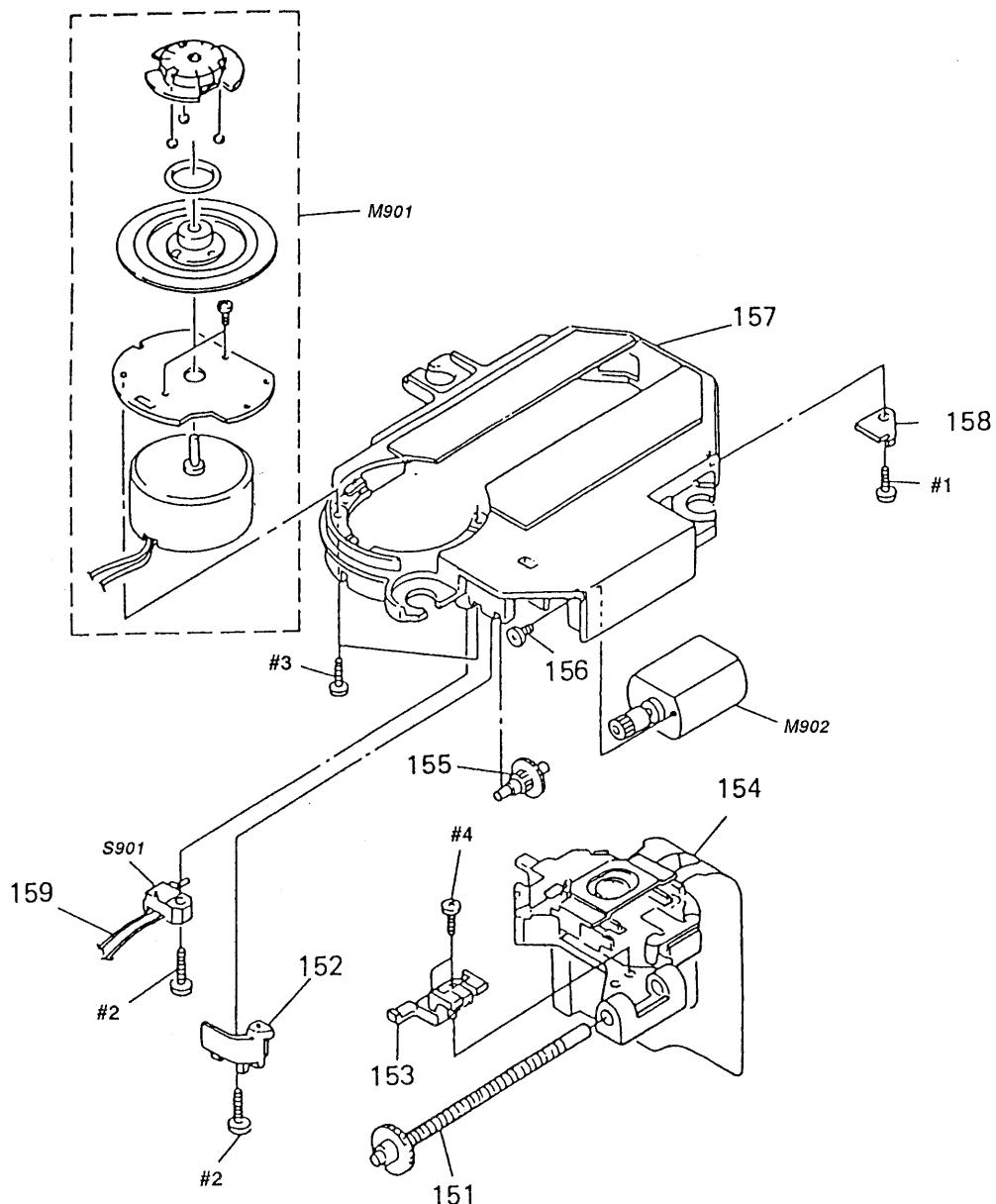
Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
1	4-972-733-71	LID, UPPER		7	4-972-744-01	BUTTON (OPEN)	
2	1-473-074-11	SWITCH UNIT		8	4-972-745-01	LOCK-ESP	
3	4-972-780-01	DETECTOR		9	4-972-742-01	BUTTON (MODE)	
4	4-972-866-01	SPRING (DETECTOR)		10	4-972-735-01	WINDOW (LCD)	
5	4-972-731-01	CABINET (FRONT)		11	4-945-318-01	SCREW	
6	4-972-741-01	SPRING, TORSION		12	4-958-597-11	SCREW	

8-2. CABINET SECTION-2



Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
51	4-947-759-01	INSULATOR		59	4-972-734-01	LID, BATTERY CASE	
* 52	4-956-818-01	RETAINER, FLEXIBLE		60	4-965-555-01	TERMINAL BOARD (RELAY), BATTERY	
53	4-969-086-01	TERMINAL BOARD, BATTERY		61	X-4946-141-1	CABINET (R) SUB ASSY	
54	A-3276-763-A	MAIN BOARD, COMPLETE		62	4-972-737-01	KNOB (B.B)	
55	4-972-740-01	HOLDER (LCD)		63	4-966-278-01	FOOT, RUBBER	
56	4-972-736-01	KNOB (HOLD)		64	3-831-441-XX	CUSHION, STOPPER	
57	4-972-738-01	KNOB (A-R)		LCD801	1-810-875-11	DISPLAY PANEL, LIQUID CRYSTAL	
58	4-972-739-01	BUTTON (CHARGE)					

**8-3. OPTICAL PICK-UP SECTION
(KSM-331CAN (S))**



The components identified by mark \triangle or dotted line with mark \triangle are critical for safety.
Replace only with part number specified.

Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
151	X-2625-483-1	SCREW ASSY, SLED		157	2-625-415-05	CHASSIS, MD	
152	2-625-412-02	SPRING, SLED		158	2-625-411-01	RETAINER, SHAFT	
153	2-625-414-02	RACK		159	1-948-418-21	HARNESS	
\triangle 154	8-848-295-51	OPTICAL PICK-UP KSS-331C		M901	X-2625-485-1	MOTOR ASSY (MS), T.T. (SPINDLE)	
155	2-625-410-01	GEAR (B)		M902	X-2625-171-2	MOTOR ASSY, (SLED)	
156	3-732-988-01	SCREW (M2X2.5)		S901	1-570-771-11	SWITCH (LIMIT)	

SECTION 9

ELECTRICAL PARTS LIST

NOTE :

● Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.

● -XX, -X mean standardized parts, so they may have some difference from the original one.

● RESISTORS

All resistors are in ohms

METAL : Metal-film resistor

METAL OXIDE :Metal oxide-film resistor

F : nonflammable

● Items marked “*” are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

● SEMICONDUCTORS

In each case, μ : μ , for example :
 $\mu A....$: $\mu A....$, $\mu PA....$: $\mu PA....$
 $\mu PB....$: $\mu PB....$, $\mu PC....$: $\mu PC....$
 $\mu PD....$: $\mu PD....$

● CAPACITORS

μF : μF

● COILS

μH : μH

The components identified by mark Δ or dotted line with mark Δ are critical for safety.
Replace only with part number specified.

When indicating parts by reference number, please include the board.

Ref. No.	Part No.	Description	Remark		Ref. No.	Part No.	Description	Remark	
	A-3276-763-A	MAIN BOARD, COMPLETE	*****		C319	1-164-505-11	CERAMIC CHIP	2.2uF	16V
					C320	1-162-964-11	CERAMIC CHIP	0.001uF	10% 50V
	4-969-086-01	TERMINAL BOARD, BATTERY			C321	1-163-038-91	CERAMIC CHIP	0.1uF	25V
	4-972-740-01	HOLDER (LCD)			C322	1-163-038-91	CERAMIC CHIP	0.1uF	25V
					C323	1-163-038-91	CERAMIC CHIP	0.1uF	25V
		< CAPACITOR >			C327	1-164-362-11	CERAMIC CHIP	470PF	5% 50V
C102	1-162-953-11	CERAMIC CHIP	100PF	5%	C328	1-164-362-11	CERAMIC CHIP	470PF	5% 50V
C106	1-135-181-21	TANTALUM CHIP	4.7uF	20%	C329	1-164-362-11	CERAMIC CHIP	470PF	5% 50V
C107	1-135-091-00	TANTALUM CHIP	1uF	20%	C330	1-162-966-11	CERAMIC CHIP	0.0022uF	10% 50V
C108	1-165-128-11	CERAMIC CHIP	0.22uF	16V	C401	1-164-677-11	CERAMIC CHIP	0.033uF	10% 16V
C109	1-162-964-11	CERAMIC CHIP	0.001uF	10% 50V	C402	1-126-785-11	ELECT	47uF	20% 10V
C110	1-162-953-11	CERAMIC CHIP	100PF	5% 50V	C403	1-115-310-11	ELECT (SOLID)	33uF	20% 6.3V
C111	1-162-953-11	CERAMIC CHIP	100PF	5% 50V	C404	1-162-951-11	CERAMIC CHIP	68PF	5% 50V
C202	1-162-953-11	CERAMIC CHIP	100PF	5% 50V	C405	1-164-004-11	CERAMIC CHIP	0.1uF	10% 25V
C206	1-135-181-21	TANTALUM CHIP	4.7uF	20% 6.3V	C406	1-162-953-11	CERAMIC CHIP	100PF	5% 50V
C207	1-135-091-00	TANTALUM CHIP	1uF	20% 16V	C407	1-164-360-11	CERAMIC CHIP	0.1uF	16V
C208	1-165-128-11	CERAMIC CHIP	0.22uF	16V	C408	1-162-964-11	CERAMIC CHIP	0.001uF	10% 50V
C209	1-162-964-11	CERAMIC CHIP	0.001uF	10% 50V	C409	1-126-176-11	ELECT	220uF	20% 10V
C210	1-162-953-11	CERAMIC CHIP	100PF	5% 50V	C410	1-164-360-11	CERAMIC CHIP	0.1uF	16V
C211	1-162-953-11	CERAMIC CHIP	100PF	5% 50V	C411	1-163-038-91	CERAMIC CHIP	0.1uF	25V
C301	1-128-110-11	ELECT	470uF	20% 4V	C412	1-164-360-11	CERAMIC CHIP	0.1uF	16V
C302	1-164-360-11	CERAMIC CHIP	0.1uF	16V	C413	1-164-360-11	CERAMIC CHIP	0.1uF	16V
C303	1-135-216-11	TANTALUM CHIP	10uF	20% 10V	C414	1-162-970-11	CERAMIC CHIP	0.01uF	10% 25V
C304	1-164-346-11	CERAMIC CHIP	1uF	16V	C415	1-164-360-11	CERAMIC CHIP	0.1uF	16V
C305	1-126-096-11	ELECT	10uF	20% 35V	C416	1-126-513-11	ELECT	47uF	20% 4V
C306	1-164-346-11	CERAMIC CHIP	1uF	16V	C417	1-135-216-11	TANTALUM CHIP	10uF	20% 10V
C307	1-126-783-11	ELECT	22uF	20% 10V	C418	1-165-128-11	CERAMIC CHIP	0.22uF	16V
C308	1-126-783-11	ELECT	22uF	20% 10V	C419	1-165-128-11	CERAMIC CHIP	0.22uF	16V
C309	1-164-346-11	CERAMIC CHIP	1uF	16V	C420	1-164-222-11	CERAMIC CHIP	0.22uF	25V
C310	1-126-162-11	ELECT	3.3uF	20% 50V	C421	1-126-783-11	ELECT	22uF	20% 10V
C311	1-164-360-11	CERAMIC CHIP	0.1uF	16V	C422	1-126-786-11	ELECT	47uF	20% 16V
C312	1-163-038-91	CERAMIC CHIP	0.1uF	25V	C424	1-162-964-11	CERAMIC CHIP	0.001uF	10% 50V
C313	1-164-346-11	CERAMIC CHIP	1uF	16V	C425	1-162-970-11	CERAMIC CHIP	0.01uF	10% 25V
C314	1-163-038-91	CERAMIC CHIP	0.1uF	25V	C426	1-162-915-11	CERAMIC CHIP	10PF	0.5PF 50V
C317	1-164-362-11	CERAMIC CHIP	470PF	5% 50V	C427	1-104-851-11	TANTAL. CHIP	10uF	20% 10V
C318	1-135-216-11	TANTALUM CHIP	10uF	20% 10V	C428	1-104-852-11	TANTAL. CHIP	22uF	20% 10V
					C430	1-162-964-11	CERAMIC CHIP	0.001uF	10% 50V

Ref. No.	Part No.	Description		Remark	Ref. No.	Part No.	Description		Remark
C431	1-163-038-91	CERAMIC CHIP	0.1uF	25V	C628	1-163-038-91	CERAMIC CHIP	0.1uF	25V
C432	1-164-346-11	CERAMIC CHIP	1uF	16V	C701	1-164-362-11	CERAMIC CHIP	470PF	5% 50V
C433	1-164-505-11	CERAMIC CHIP	2.2uF	16V	C702	1-164-362-11	CERAMIC CHIP	470PF	5% 50V
C501	1-164-346-11	CERAMIC CHIP	1uF	16V	C703	1-164-362-11	CERAMIC CHIP	470PF	5% 50V
C502	1-162-912-11	CERAMIC CHIP	7PF	0.5PF 50V	C704	1-164-360-11	CERAMIC CHIP	0.1uF	16V
C503	1-162-970-11	CERAMIC CHIP	0.01uF	10%	C716	1-162-953-11	CERAMIC CHIP	100PF	5% 50V
C504	1-164-362-11	CERAMIC CHIP	470PF	5% 50V	C717	1-164-362-11	CERAMIC CHIP	470PF	5% 50V
C505	1-162-967-11	CERAMIC CHIP	0.0033uF	10% 50V	C718	1-162-957-11	CERAMIC CHIP	220PF	5% 50V
C506	1-135-180-21	TANTALUM CHIP	3.3uF	20% 6.3V	C719	1-162-953-11	CERAMIC CHIP	100PF	5% 50V
C507	1-163-038-91	CERAMIC CHIP	0.1uF	25V	C721	1-164-360-11	CERAMIC CHIP	0.1uF	16V
C508	1-104-908-11	TANTAL. CHIP	47uF	20% 4V	C722	1-104-852-11	TANTAL. CHIP	22uF	20% 10V
C509	1-163-038-91	CERAMIC CHIP	0.1uF	25V	C801	1-124-257-00	ELECT	2.2uF	20% 50V
C510	1-163-038-91	CERAMIC CHIP	0.1uF	25V	C802	1-163-038-91	CERAMIC CHIP	0.1uF	25V
C511	1-163-038-91	CERAMIC CHIP	0.1uF	25V	C803	1-163-038-91	CERAMIC CHIP	0.1uF	25V
C512	1-104-848-11	TANTAL. CHIP	100uF	20% 4V	C805	1-164-346-11	CERAMIC CHIP	1uF	16V
C513	1-163-809-11	CERAMIC CHIP	0.047uF	10% 25V	C810	1-162-970-11	CERAMIC CHIP	0.01uF	10% 25V
C514	1-162-953-11	CERAMIC CHIP	100PF	5% 50V	C812	1-164-360-11	CERAMIC CHIP	0.1uF	16V
C515	1-162-970-11	CERAMIC CHIP	0.01uF	10% 25V	C815	1-162-964-11	CERAMIC CHIP	0.001uF	10% 50V
C518	1-164-346-11	CERAMIC CHIP	1uF	16V	< CONNECTOR >				
C519	1-164-360-11	CERAMIC CHIP	0.1uF	16V	CN501	1-566-534-11	CONNECTOR, FPC (ZIF) 18P		
C520	1-135-201-11	TANTALUM CHIP	10uF	20% 4V	* CN701	1-695-320-51	PIN, CONNECTOR (1.5MM) (SMD) 2P		
C521	1-164-360-11	CERAMIC CHIP	0.1uF	16V	* CN702	1-695-320-31	PIN, CONNECTOR (1.5MM) (SMD) 2P		
C522	1-164-360-11	CERAMIC CHIP	0.1uF	16V	* CN703	1-695-320-21	PIN, CONNECTOR (1.5MM) (SMD) 2P		
C523	1-162-917-11	CERAMIC CHIP	15PF	5% 50V	* CN801	1-770-849-11	HOUSING, CONNECTOR 3P		
C524	1-162-953-11	CERAMIC CHIP	100PF	5% 50V	< DIODE >				
C526	1-104-908-11	TANTAL. CHIP	47uF	20% 4V	D310	8-719-988-78	DIODE SB007W03Q		
C527	1-162-965-11	CERAMIC CHIP	0.0015uF	10% 50V	D311	8-719-988-78	DIODE SB007W03Q		
C528	1-164-360-11	CERAMIC CHIP	0.1uF	16V	D401	8-719-048-98	DIODE RB160L-40TE25		
C562	1-164-505-11	CERAMIC CHIP	2.2uF	16V	D401	8-719-313-73	DIODE SFPB-52		
C563	1-164-360-11	CERAMIC CHIP	0.1uF	16V	D402	8-719-048-98	DIODE RB160L-40TE25		
C565	1-124-433-00	ELECT	100uF	20% 4V	D402	8-719-313-73	DIODE SFPB-52		
C601	1-162-966-11	CERAMIC CHIP	0.0022uF	10% 50V	D403	8-719-938-72	DIODE SB01-05CP		
C602	1-162-966-11	CERAMIC CHIP	0.0022uF	10% 50V	D404	8-719-938-72	DIODE SB01-05CP		
C603	1-162-964-11	CERAMIC CHIP	0.001uF	10% 50V	D405	8-719-938-72	DIODE SB01-05CP		
C604	1-162-964-11	CERAMIC CHIP	0.001uF	10% 50V	D407	8-719-049-09	DIODE 1SS367-T3SONY		
C605	1-164-004-11	CERAMIC CHIP	0.1uF	10% 25V	D409	8-719-049-09	DIODE 1SS367-T3SONY		
C606	1-164-505-11	CERAMIC CHIP	2.2uF	16V	D501	8-719-024-81	DIODE 1SS300-TE85L		
C607	1-104-908-11	TANTAL. CHIP	47uF	20% 4V	D502	8-719-049-09	DIODE 1SS367-T3SONY		
C610	1-135-149-21	TANTALUM CHIP	2.2uF	20% 10V	D561	8-719-404-46	DIODE MA110		
C611	1-104-847-11	TANTAL. CHIP	22uF	20% 4V	D801	8-719-024-81	DIODE 1SS300-TE85L		
C612	1-107-826-11	CERAMIC CHIP	0.1uF	10% 16V	D802	8-719-977-03	DIODE DTZ5.6B		
C613	1-165-176-11	CERAMIC CHIP	0.047uF	10% 16V	D803	8-719-941-86	DIODE DAN202U		
C614	1-163-038-91	CERAMIC CHIP	0.1uF	25V	D804	8-719-027-45	DIODE MA740		
C615	1-163-038-91	CERAMIC CHIP	0.1uF	25V	D804	8-719-989-73	DIODE SB007T03C		
C616	1-135-091-00	TANTALUM CHIP	1uF	20% 16V	D814	8-719-049-09	DIODE 1SS367-T3SONY		
C618	1-164-346-11	CERAMIC CHIP	1uF	16V	< FERRITE BEAD >				
C619	1-164-489-11	CERAMIC CHIP	0.22uF	10% 16V	FB301	1-500-245-11	BEAD, FERRITE (CHIP)		
C620	1-162-913-11	CERAMIC CHIP	8PF	0.5PF 50V					
C623	1-162-914-11	CERAMIC CHIP	9PF	0.5PF 50V					
C624	1-162-915-11	CERAMIC CHIP	10PF	0.5PF 50V					
C625	1-162-915-11	CERAMIC CHIP	10PF	0.5PF 50V					
C627	1-104-847-11	TANTAL. CHIP	22uF	20% 4V					

MAIN

Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
< IC >							
IC301	8-759-327-78	IC TC9404FN-EL		L801	1-412-002-31	INDUCTOR CHIP 4.7uH	
IC302	8-759-386-50	IC BA3574BFS				< LIQUID CRYSTAL DISPLAY >	
IC401	8-759-373-57	IC MPC1825A/SC285VMEL		LCD801	1-810-875-11	DISPLAY PANEL, LIQUID CRYSTAL	
IC402	8-759-711-38	IC NJU7201U50				< TRANSISTOR >	
IC403	8-759-710-79	IC NJM2107F					
IC501	8-759-325-52	IC BA6375K		Q101	8-729-231-74	TRANSISTOR 2SC4116-GL	
IC502	8-759-351-65	IC SM5856A1F		Q201	8-729-231-74	TRANSISTOR 2SC4116-GL	
IC503	8-759-342-73	IC LH64256BK-80		Q304	8-729-907-39	TRANSISTOR IMD2	
IC561	8-759-293-74	IC NJM2100E		Q310	8-729-320-66	TRANSISTOR 2SD1870	
IC601	8-759-394-55	IC BU9312AKS		Q401	8-729-320-66	TRANSISTOR 2SD1870	
IC701	8-759-326-66	IC MPC17A50VMEL		Q402	8-729-923-36	TRANSISTOR 2SD1963-Q.R	
IC801	8-752-867-84	IC CXP83412-017Q		Q403	8-729-216-22	TRANSISTOR 2SA1162-G	
< JACK >							
J301	1-565-287-41	JACK (LINE OUT)		Q404	8-729-921-93	TRANSISTOR 2SB1182F5-QR	
J302	1-580-680-31	JACK (Ω /REMOTE)		Q405	8-729-922-34	TRANSISTOR 2SD1758F5-QR	
J401	1-691-099-51	JACK,DC (POLARITY UNIFIED TYPE) (DC IN 4.5V)		Q406	8-729-907-39	TRANSISTOR IMD2	
< CONDUCTOR >							
JC302	1-216-295-00	METAL CHIP 0	5% 1/16W	Q501	8-729-216-22	TRANSISTOR 2SA1162-G	
JC307	1-216-864-11	METAL CHIP 0	5% 1/16W	Q502	8-729-905-61	TRANSISTOR DTC124EU	
JC309	1-216-864-11	METAL CHIP 0	5% 1/16W	Q503	8-729-905-61	TRANSISTOR DTC124EU	
JC324	1-216-295-00	METAL CHIP 0	5% 1/16W	Q505	8-729-905-57	TRANSISTOR DTA124EU	
JC501	1-216-295-00	METAL CHIP 0	5% 1/16W	Q506	8-729-905-61	TRANSISTOR DTC124EU	
< RESISTOR >							
JC502	1-216-295-00	METAL CHIP 0	5% 1/16W	R107	1-216-821-11	METAL CHIP 1K 5% 1/16W	
JC503	1-216-295-00	METAL CHIP 0	5% 1/16W	R108	1-216-845-11	METAL CHIP 100K 5% 1/16W	
JC601	1-216-295-00	METAL CHIP 0	5% 1/16W	R109	1-216-835-11	METAL CHIP 15K 5% 1/16W	
JC602	1-216-864-11	METAL CHIP 0	5% 1/16W	R110	1-216-821-11	METAL CHIP 1K 5% 1/16W	
JC604	1-216-295-00	METAL CHIP 0	5% 1/16W	R111	1-216-789-11	METAL CHIP 2.2 5% 1/16W	
JC615	1-216-864-11	METAL CHIP 0	5% 1/16W	R207	1-216-821-11	METAL CHIP 1K 5% 1/16W	
JC618	1-216-864-11	METAL CHIP 0	5% 1/16W	R208	1-216-845-11	METAL CHIP 100K 5% 1/16W	
JC620	1-216-864-11	METAL CHIP 0	5% 1/16W	R209	1-216-835-11	METAL CHIP 15K 5% 1/16W	
JC626	1-216-864-11	METAL CHIP 0	5% 1/16W	R210	1-216-821-11	METAL CHIP 1K 5% 1/16W	
JC801	1-216-295-00	METAL CHIP 0	5% 1/16W	R211	1-216-789-11	METAL CHIP 2.2 5% 1/16W	
JC802	1-216-295-00	METAL CHIP 0	5% 1/16W	R301	1-216-857-11	METAL CHIP 1M 5% 1/16W	
< COIL >							
L101	1-410-997-31	INDUCTOR CHIP 2.2uH		R302	1-216-833-11	METAL CHIP 10K 5% 1/16W	
L103	1-500-245-11	BEAD, FERRITE (CHIP)		R304	1-216-811-11	METAL CHIP 150 5% 1/16W	
L201	1-410-997-31	INDUCTOR CHIP 2.2uH		R305	1-216-845-11	METAL CHIP 100K 5% 1/16W	
L203	1-500-245-11	BEAD, FERRITE (CHIP)		R306	1-216-857-11	METAL CHIP 1M 5% 1/16W	
L303	1-500-245-11	BEAD, FERRITE (CHIP)		R308	1-216-864-11	METAL CHIP 0 5% 1/16W	
L305	1-410-997-31	INDUCTOR CHIP 2.2uH		R310	1-216-864-11	METAL CHIP 0 5% 1/16W	
L401	1-412-029-11	INDUCTOR CHIP 10uH		R311	1-216-817-11	METAL CHIP 470 5% 1/16W	
L402	1-412-032-11	INDUCTOR CHIP 100uH		R312	1-216-839-11	METAL CHIP 33K 5% 1/16W	
L501	1-412-029-11	INDUCTOR CHIP 10uH		R313	1-216-803-11	METAL CHIP 33 5% 1/16W	
L506	1-412-029-11	INDUCTOR CHIP 10uH		R314	1-216-801-11	METAL CHIP 22 5% 1/16W	
L601	1-412-029-11	INDUCTOR CHIP 10uH		R315	1-216-817-11	METAL CHIP 470 5% 1/16W	
L602	1-412-029-11	INDUCTOR CHIP 10uH		R316	1-216-817-11	METAL CHIP 470 5% 1/16W	
L702	1-414-402-11	INDUCTOR 47uH		R317	1-216-821-11	METAL CHIP 1K 5% 1/16W	
				R318	1-216-821-11	METAL CHIP 1K 5% 1/16W	

Ref. No.	Part No.	Description			Remark	Ref. No.	Part No.	Description			Remark
R401	1-218-883-11	METAL CHIP	33K	0.50%	1/16W	R534	1-216-845-11	METAL CHIP	100K	5%	1/16W
R402	1-218-714-11	METAL CHIP	8.2K	0.50%	1/16W	R535	1-216-817-11	METAL CHIP	470	5%	1/16W
R403	1-216-832-11	METAL CHIP	8.2K	5%	1/16W	R536	1-216-833-11	METAL CHIP	10K	5%	1/16W
R404	1-216-797-11	METAL CHIP	10	5%	1/16W	R561	1-216-851-11	METAL CHIP	330K	5%	1/16W
R405	1-216-809-11	METAL CHIP	100	5%	1/16W	R562	1-216-846-11	METAL CHIP	120K	5%	1/16W
R406	1-216-134-00	METAL CHIP	2.2	5%	1/8W	R563	1-216-857-11	METAL CHIP	1M	5%	1/16W
R407	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	R564	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R408	1-216-813-11	METAL CHIP	220	5%	1/16W	R565	1-216-843-11	METAL CHIP	68K	5%	1/16W
R409	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	R567	1-216-716-11	METAL CHIP	10K	0.50%	1/16W
R410	1-216-857-11	METAL CHIP	1M	5%	1/16W	R568	1-216-725-11	METAL CHIP	24K	0.50%	1/16W
R411	1-216-853-11	METAL CHIP	470K	5%	1/16W	R569	1-216-847-11	METAL CHIP	150K	5%	1/16W
R412	1-216-843-11	METAL CHIP	68K	5%	1/16W	R602	1-216-827-11	METAL CHIP	3.3K	5%	1/16W
R413	1-218-749-11	METAL CHIP	240K	0.50%	1/16W	R603	1-218-867-11	METAL CHIP	6.8K	0.50%	1/16W
R414	1-218-748-11	METAL CHIP	220K	0.50%	1/16W	R605	1-216-827-11	METAL CHIP	3.3K	5%	1/16W
R415	1-216-815-11	METAL CHIP	330	5%	1/16W	R606	1-216-857-11	METAL CHIP	1M	5%	1/16W
R416	1-216-134-00	METAL CHIP	2.2	5%	1/8W	R607	1-216-835-11	METAL CHIP	15K	5%	1/16W
R417	1-216-134-00	METAL CHIP	2.2	5%	1/8W	R608	1-218-724-11	METAL CHIP	22K	0.50%	1/16W
R418	1-216-833-11	METAL CHIP	10K	5%	1/16W	R609	1-216-811-11	METAL CHIP	150	5%	1/16W
R422	1-216-854-11	METAL CHIP	560K	5%	1/16W	R610	1-218-708-11	METAL CHIP	4.7K	0.50%	1/16W
R423	1-216-854-11	METAL CHIP	560K	5%	1/16W	R612	1-216-848-11	METAL CHIP	180K	5%	1/16W
R424	1-216-857-11	METAL CHIP	1M	5%	1/16W	R613	1-216-837-11	METAL CHIP	22K	5%	1/16W
R425	1-216-857-11	METAL CHIP	1M	5%	1/16W	R614	1-216-837-11	METAL CHIP	22K	5%	1/16W
R426	1-202-931-11	METAL GLAZE	910K	5%	1/16W	R619	1-216-845-11	METAL CHIP	100K	5%	1/16W
R427	1-202-931-11	METAL GLAZE	910K	5%	1/16W	R621	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R502	1-216-831-11	METAL CHIP	6.8K	5%	1/16W	R622	1-218-720-11	METAL CHIP	15K	0.50%	1/16W
R503	1-218-345-11	METAL GLAZE	9.1K	5%	1/16W	R623	1-218-735-11	METAL CHIP	62K	0.50%	1/16W
R504	1-218-347-11	METAL GLAZE	91K	5%	1/16W	R624	1-218-724-11	METAL CHIP	22K	0.50%	1/16W
R505	1-216-837-11	METAL CHIP	22K	5%	1/16W	R627	1-216-833-11	METAL CHIP	10K	5%	1/16W
R506	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	R629	1-216-848-11	METAL CHIP	180K	5%	1/16W
R507	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	R711	1-216-827-11	METAL CHIP	3.3K	5%	1/16W
R508	1-216-864-11	METAL CHIP	0	5%	1/16W	R801	1-216-823-11	METAL CHIP	1.5K	5%	1/16W
R509	1-216-837-11	METAL CHIP	22K	5%	1/16W	R802	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R510	1-216-821-11	METAL CHIP	1K	5%	1/16W	R803	1-216-827-11	METAL CHIP	3.3K	5%	1/16W
R511	1-216-308-00	METAL CHIP	4.7	5%	1/10W	R804	1-216-821-11	METAL CHIP	1K	5%	1/16W
R512	1-216-809-11	METAL CHIP	100	5%	1/16W	R805	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
R513	1-216-833-11	METAL CHIP	10K	5%	1/16W	R806	1-216-833-11	METAL CHIP	10K	5%	1/16W
R515	1-216-846-11	METAL CHIP	120K	5%	1/16W	R807	1-218-873-11	METAL CHIP	12K	0.50%	1/16W
R516	1-216-846-11	METAL CHIP	120K	5%	1/16W	R808	1-216-857-11	METAL CHIP	1M	5%	1/16W
R517	1-216-833-11	METAL CHIP	10K	5%	1/16W	R809	1-216-854-11	METAL CHIP	560K	5%	1/16W
R518	1-216-833-11	METAL CHIP	10K	5%	1/16W	R810	1-216-861-11	METAL CHIP	2.2M	5%	1/16W
R519	1-216-833-11	METAL CHIP	10K	5%	1/16W	R811	1-218-345-11	METAL GLAZE	9.1K	5%	1/16W
R521	1-216-827-11	METAL CHIP	3.3K	5%	1/16W	R812	1-216-821-11	METAL CHIP	1K	5%	1/16W
R522	1-216-845-11	METAL CHIP	100K	5%	1/16W	R813	1-216-857-11	METAL CHIP	1M	5%	1/16W
R523	1-216-833-11	METAL CHIP	10K	5%	1/16W	R814	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
R527	1-216-833-11	METAL CHIP	10K	5%	1/16W	R815	1-216-837-11	METAL CHIP	22K	5%	1/16W
R528	1-216-833-11	METAL CHIP	10K	5%	1/16W	R816	1-216-837-11	METAL CHIP	22K	5%	1/16W
R529	1-216-821-11	METAL CHIP	1K	5%	1/16W	R817	1-216-837-11	METAL CHIP	22K	5%	1/16W
R530	1-216-821-11	METAL CHIP	1K	5%	1/16W	R818	1-216-841-11	METAL CHIP	47K	5%	1/16W
R531	1-216-821-11	METAL CHIP	1K	5%	1/16W	R819	1-216-821-11	METAL CHIP	1K	5%	1/16W
R532	1-216-821-11	METAL CHIP	1K	5%	1/16W	R820	1-216-821-11	METAL CHIP	1K	5%	1/16W
R533	1-216-841-11	METAL CHIP	47K	5%	1/16W	R821	1-216-821-11	METAL CHIP	1K	5%	1/16W
						R823	1-216-853-11	METAL CHIP	470K	5%	1/16W

MAIN

Ref. No.	Part No.	Description			Remark
R824	1-216-857-11	METAL CHIP	1M	5%	1/16W
R825	1-216-857-11	METAL CHIP	1M	5%	1/16W
		< VARIABLE RESISTOR >			
RV301	1-223-382-11	RES, VAR, CARBON 10K/10K (VOLUME)			
RV401	1-223-588-11	RES, ADJ, CARBON 47K (VDD)			
RV501	1-223-586-11	RES, ADJ, CARBON 10K (TRACKING BALANCE)			
RV601	1-241-396-11	RES, ADJ, METAL GLAZE 22K (TRACKING GAIN)			
RV602	1-241-396-11	RES, ADJ, METAL GLAZE 22K (FOCUS GAIN)			
		< SWITCH >			
S301	1-572-922-11	SWITCH, SLIDE (AVLS)			
S302	1-692-605-11	SWITCH, SLIDE (BASS BOOST)			
S801	1-572-922-11	SWITCH, SLIDE (HOLD)			
S802	1-762-400-11	SWITCH (PLAY MODE)			
S803	1-762-400-11	SWITCH (REPEAT/ENTER)			
S804	1-762-400-11	SWITCH (ESP)			
S805	1-554-088-00	SWITCH, KEY BOARD (CHARGE)			
S808	1-570-953-11	SWITCH, PUSH (1 KEY) (OPEN)			
S809	1-571-754-31	SWITCH, PUSH (1 KEY) (BATT)			
S810	1-572-922-11	SWITCH, SLIDE (RESUME)			
		< TRANSFORMER >			
T401	1-427-958-11	TRANSFORMER, DC-DC CONVERTER			
		< VIBRATOR >			
X301	1-760-307-11	VIBRATOR, CERAMIC (16.93MHz)			
X801	1-577-101-11	VIBRATOR, CERAMIC (4.19MHz)			

MISCELLANEOUS

2	1-473-074-11	SWITCH UNIT
△154	8-848-295-51	OPTICAL PICK-UP KSS-331C
159	1-948-418-21	HARNESS
LCD801	1-810-875-11	DISPLAY PANEL, LIQUID CRYSTAL
M901	X-2625-485-1	MOTOR ASSY (MS), T.T. (SPINDLE)
M902	X-2625-171-2	MOTOR ASSY, (SLED)
S901	1-570-771-11	SWITCH (LIMIT)

Ref. No.	Part No.	Description	Remark
		ACCESSORIES & PACKING MATERIALS	

△	1-467-007-21	ADAPTOR, AC (AC-E455)	
△	1-532-433-11	FUSE, GLASS TUBE (1A/250V)	
	1-558-145-32	CORD, CONNECTION	
	2-201-810-00	TAPE, MAGIC	
	3-798-801-21	MANUAL, INSTRUCTION (ENGLISH)	
*	3-798-995-21	MANUAL, INSTRUCTION (ENGLISH)	
*	4-965-709-01	LABEL, COUNTRY OF ORIGIN	
*	4-985-771-01	INDIVIDUAL CARTON	
	8-916-813-90	CORD,CAR BATTERY DCC-E2455	
	8-951-804-90	PACK, CAR CONNECTING CPA-7 SET	

HARDWARE LIST

#1	7-685-104-19	SCREW (2X6), TAPPING (B)
#2	7-685-105-19	SCREW (2X8), TAPPING (B)
#3	7-627-852-17	+P 1.7X4
#4	7-627-852-18	SCREW, PRECISION +P 1.7X4 TYPE3

The components identified by mark △ or dotted line with mark △ are critical for safety.
Replace only with part number specified.