CDP-M20S

SERVICE MANUAL

UK Model

System	Compact disc digital audio system
Laser	Semiconductor laser (λ = 780 nm)
Laser output	Max. 0.4 mW*
	* This ouput is the value measured at a distance of about 1.6 mm from the objective lens surface on the Optical Pick-up Block.
Error correction	Sony Super Strategy Cross Interleave Reed Solomon Code
Number of channels	2
D-A conversion	16-bit linear
Frequency response	2 Hz – 20 kHz ($\pm^{0.5}_{1.0}$ dB)
Signal to noise ratio	More than 95 dB
Harmonic distortion	Less than 0.01% (at 1 kHz)
Channel separation	More than 90 dB

Out puts

	Type	Output level	Load impedance
LINE OUT	Phono jack	2 V (50 kilohms)	more than 10 kilohms
HEADPHONES	Stereo phone jack	4.5 mW (32 ohms)	—

SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY SHADING AND 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.

General

Power requirements	Supplied from HST-D3CD/D4CD
Dimensions	Approx. 355 × 80 × 275 mm (w/h/d) (14 × 3¼ × 10⅘ inches) including projecting parts and controls
Weight	Approx. 2.5 kg (5 lbs 9 oz), net

CONTENTS

COMPACT DISC PLAYER

SONY®

FEATURES

- PROGRAM play for playing the selections in a desired order
- SHUFFLE play for playing the selections in a random order
- REPEAT function for a single selection, the whole disc, PROGRAM play, or SHUFFLE play
- Easy-to-read display window shows the track number being played, elapsed playing time, and the remaining time

PROTECTION OF EYES FROM LASER BEAM DURING SERVICING

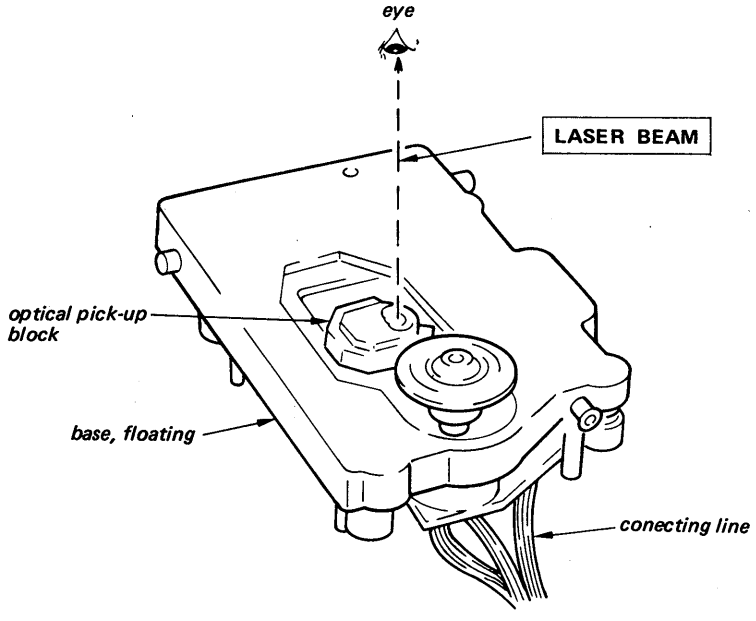
CAUTION
Use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure.

CLASS 1
LASER PRODUCT

This Compact Disc player is classified as a CLASS 1 LASER product.
The CLASS 1 LASER PRODUCT label is located on the rear exterior.

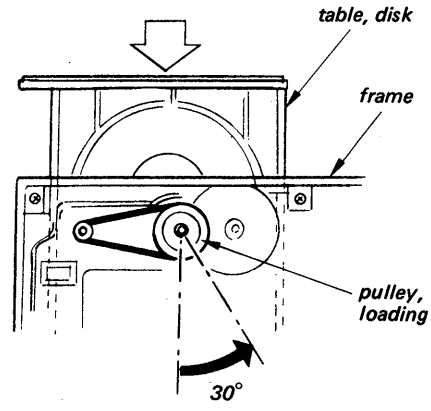
WARNING !!

WHEN SERVICING, DO NOT APPROACH THE LASER EXIT WITH THE EYE TOO CLOSELY. IN CASE IT IS NECESSARY TO CONFIRM LASER BEAM EMISSION, BE SURE TO OBSERVE FROM A DISTANCE OF MORE THAN 30 cm FROM THE SURFACE OF THE OBJECTIVE LENS ON THE OPTICAL PICK-UP BLOCK.

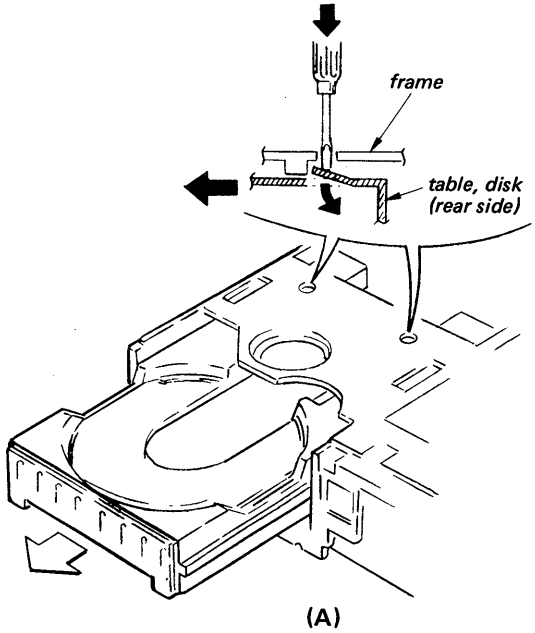


NOTES ON REPAIR

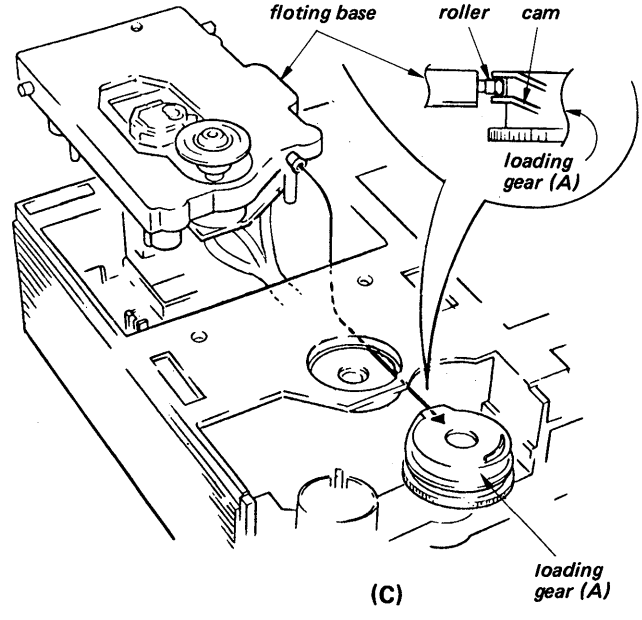
- When removing the disk-table, put the small screwdriver into the hole.
  Pull off the disk-table toward you while pushing the screwdriver. See figure (A).
- When re-assembling the disk-table, rotate the loading pulley by 30-degree in the direction of the arrow by finger, and put the table slowly. See figure (B).
- When re-assembling the floating base, set it so that the floating-base roller is engaged with the cam of the loading gear (A). See figure (C).



(B)



(A)



(C)

TROUBLESHOOTING

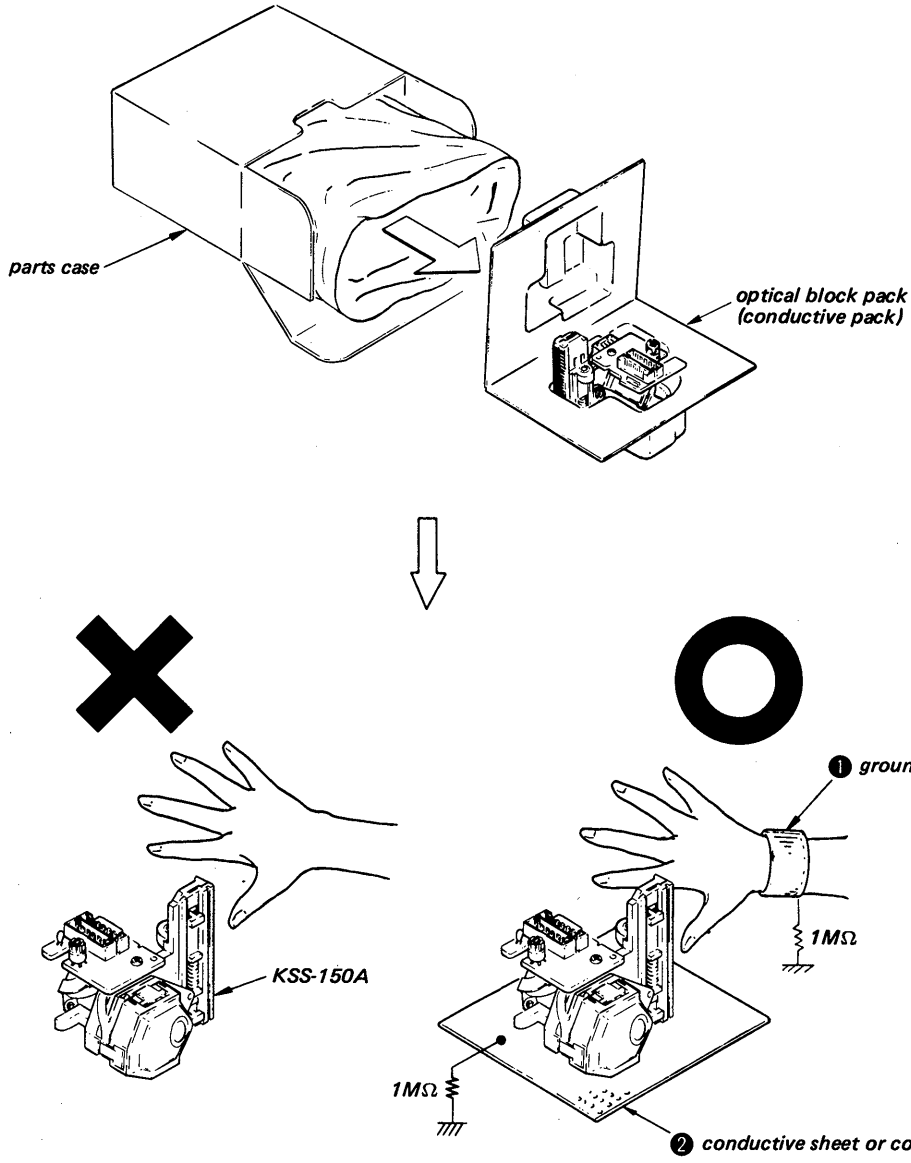
Play does not begin.	The disc is incorrectly inserted.	Insert the disc correctly.
	The disc is extremely dirty.	Clean the disc.
	The disc is inserted upside down.	Insert the disc with the label surface up.
	The ▶II button has been pressed.	Press the ▶II button again to release pause.
	Moisture condensation.	Leave the player turned on for about an hour.
No audio from one or both channels	Incorrect connections	Connect properly.

NOTES ON HANDLING THE OPTICAL BLOCK (KSS-150A)

The laser diode inside the optical block may be damaged by static electricity in clothes or the human body.

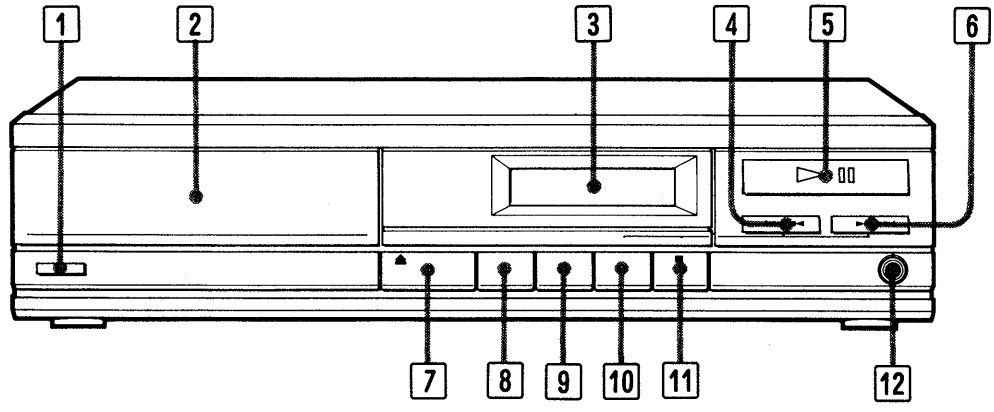
The following procedures are required when unpacking and repairing KSS-150A in order to avoid static electricity damage.

1. Body grounding
   Be sure to wear a ground belt (less than $10^8\,\Omega$) in order to release the static electricity stored in the body.
2. Workbench grounding
   Place a conductive sheet (less than $10^9\,\Omega$) or copper plate on the bench where KSS-150A is to be placed to ground it.
3. Static electricity in the clothing will not be released by the ground belt, so be careful not to let KSS-150A touch clothing.

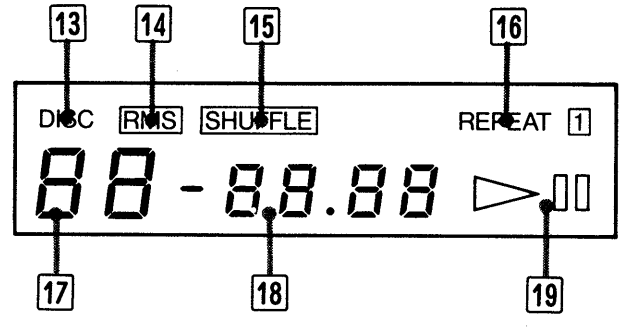


SECTION 1
LOCATION AND FUNCTION OF CONTROLS

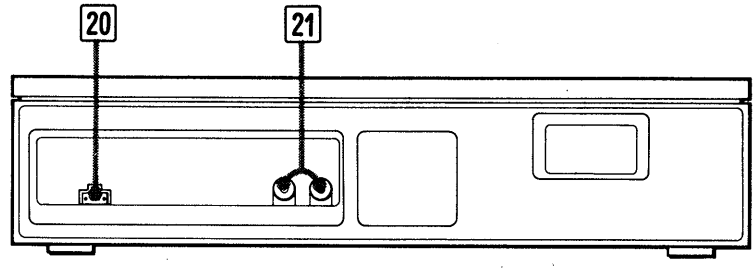
Front panel



Display window



Rear panel



[1] **POWER switch**

[2] **Disc compartment**

[3] **Display window**

[4] **⏮ ◀◀ (AMS/manual search) button**
Press momentarily to locate the beginning of the selection being played.
Keep the button pressed to go back at high speed.

[5] **▶ ⏸ (play/pause) button**
Press to play during stop.
Press to pause during play.
Press to play during pause.

[6] **▶▶ ⏭ (AMS/manual search) button**
Press momentarily to skip to the beginning of the next selection.
Keep the button pressed to go ahead at high speed.

[7] **⏏ OPEN/CLOSE button**
Press to open or close the disc compartment.

[8] **SHUFFLE button**
Press to start shuffle play.
To release, press again.

[9] **REPEAT button**
Press to repeat play.

[10] **TIME/PROGRAM button**
Press once during play to display the index number of the selection being played, and press again to display the remaining time of the whole disc or program.
Press during stop to program the desired selection.

[11] **■/CLEAR (stop/clear) button**
Press to stop disc play.
Press to clear the memory of the programmed selections one by one.

[12] **HEADPHONES jack**

[13] **DISC indicator**
Lights up when a compact disc is inside or when the disc compartment is opened.

[14] **RMS indicator**
Lights up during programming of the selections and program play.

[15] **SHUFFLE indicator**
Lights up during shuffle play.

[16] **REPEAT indicator**
REPEAT 1: Lights up during repeat play of the selection being played.
REPEAT: Lights up during repeat play of the whole disc, program play or shuffle play.

[17] **TRACK indicator**
Shows the track number of the selection being played. When a disc is inserted, this indication shows the total selection number of the disc for a while.

[18] **TIME counter**
Shows the elapsed playing time of the selection being played in minutes and seconds. When the disc is inserted, this indication shows the total playing time of the disc for a while.

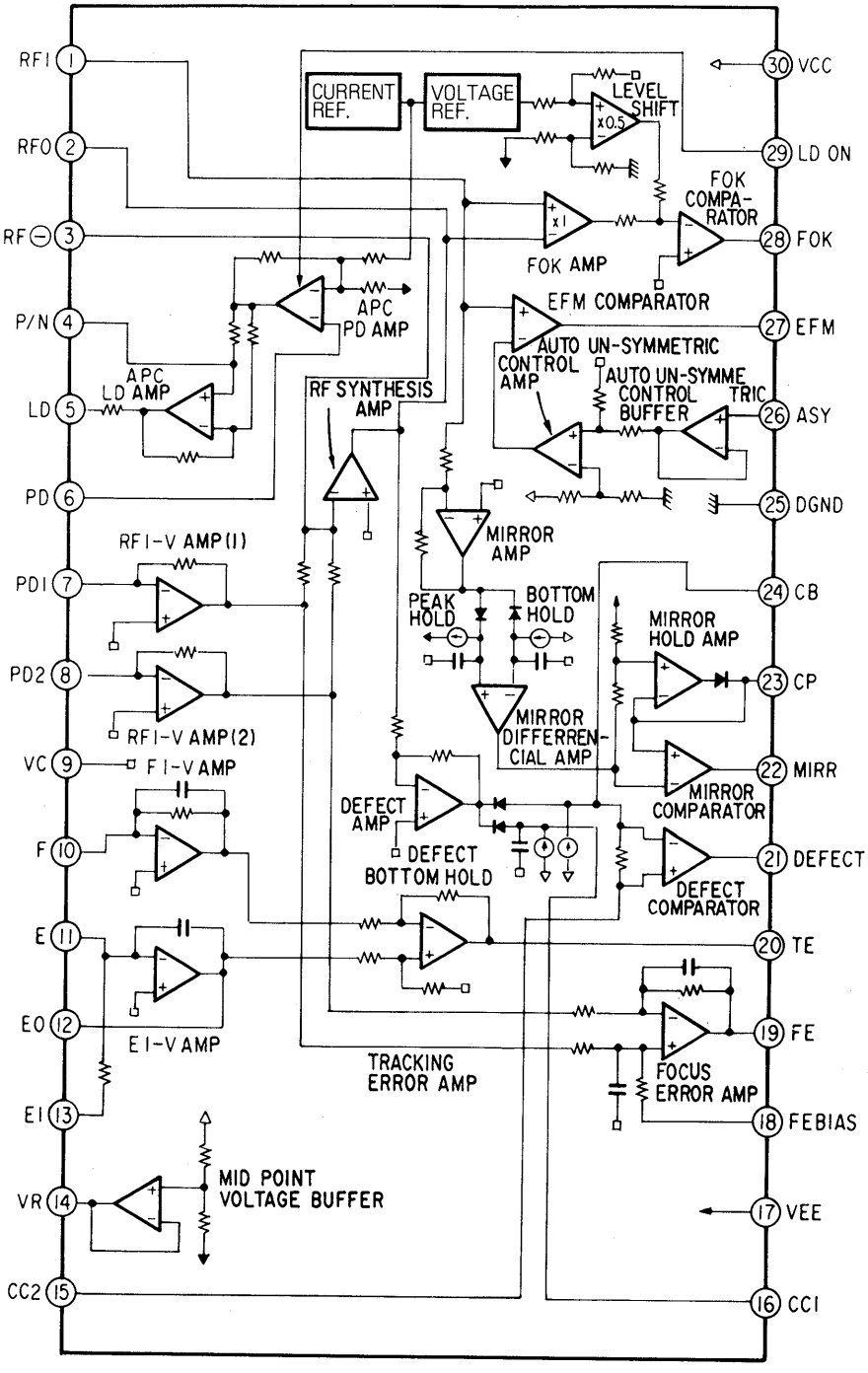
[19] **▶ indicator**
Lights up during play.
▶ ⏸ indicator
Lights up during pause.

[20] **AC IN jack**

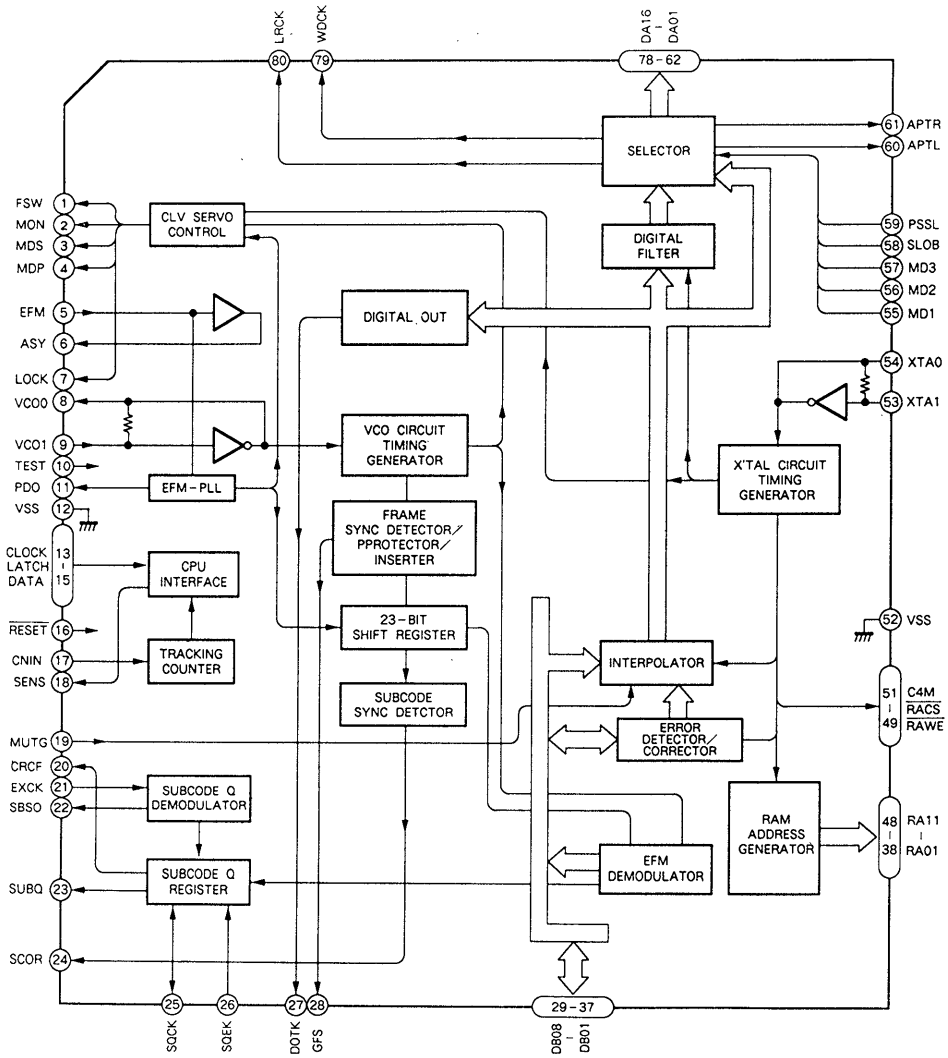
[21] **LINE OUT (left/right) terminal**

SECTION 2
IC BLOCK DIAGRAM

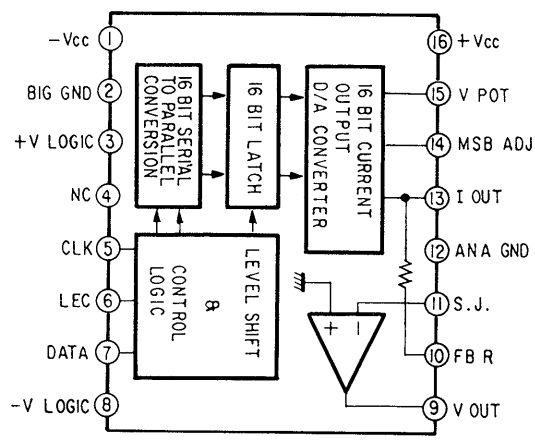
- **IC1**
  CXA-1081M (RF AMP/SIGNAL PROCESSOR/LASER ON CIRCUIT/MID POINT VOLTAGE GENERAT)



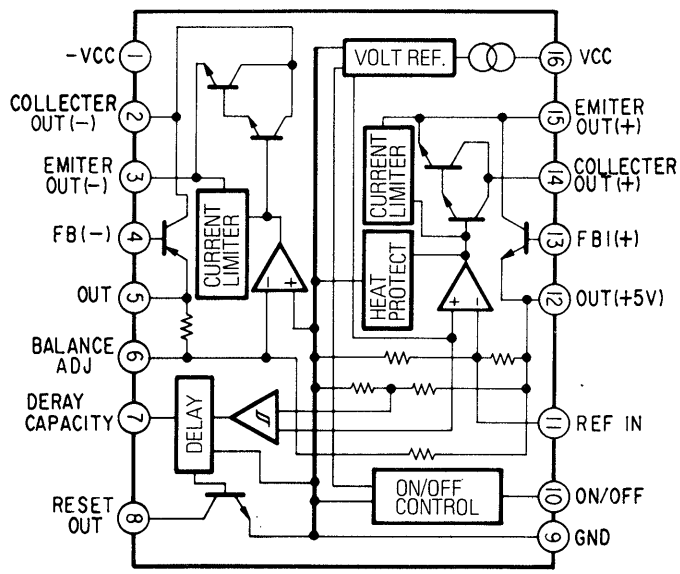
- **IC3**
  CXD-1135Q (DIGITAL SIGNAL PROCESSOR/CLV SERVO)



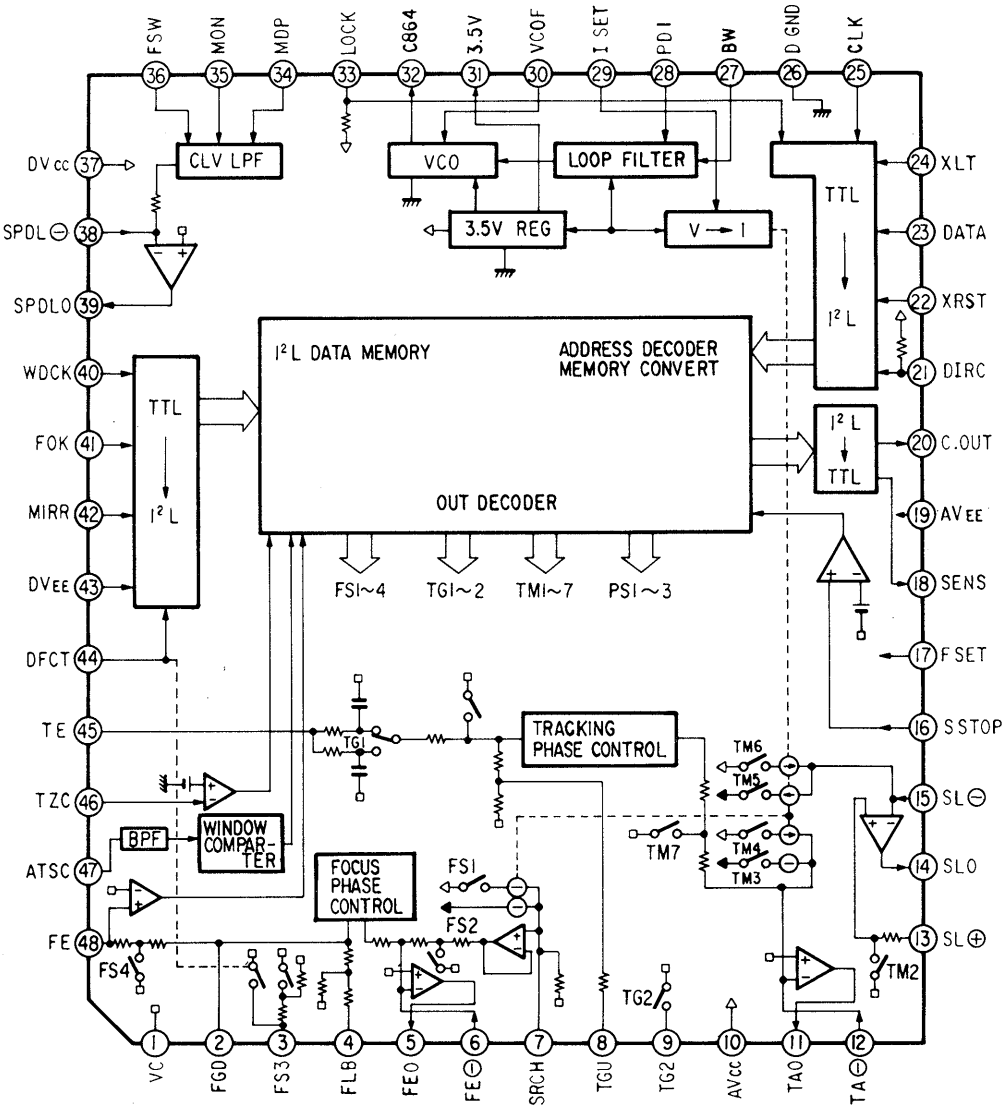
- **IC10**
  PCM56P-S (D/A CONVERTER)



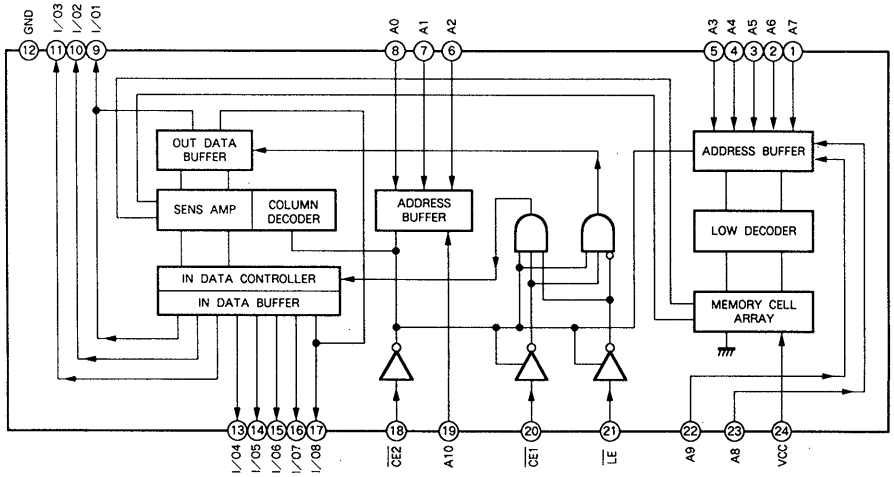
- **IC8**
  M5290P (POWER)



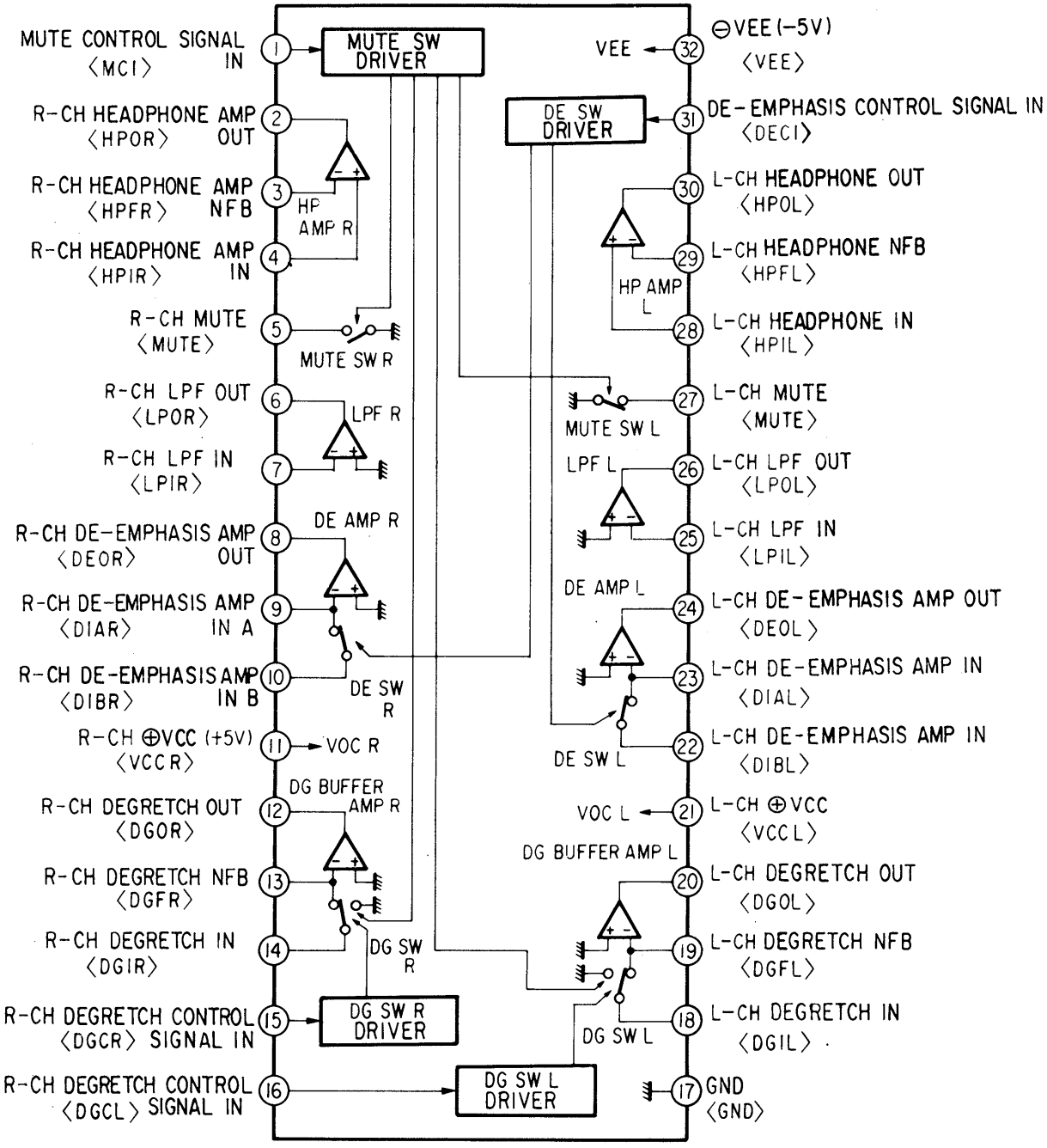
- **IC2**
  CXA-1082Q (FOCUS/TRACKING/SLED SERVO)



- **IC4**
  LC-3516AML (16K BIT RAM)



- **IC9**
  M5156SP (AUDIO)



SECTION 3
ADJUSTMENTS

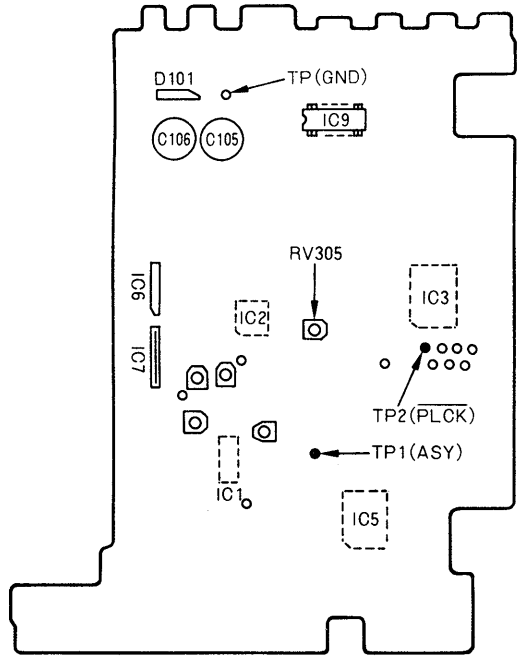
ELECTRICAL ADJUSTMENT

1. Perform adjustments in the order given.
2. Use YEDS-1 disc unless otherwise indicated.
3. Use the osdilloscope with more than 10 MΩ impedance.

RF PLL FREE-RUN FREQUENCY CHECK

1. Ground both test points TP1 (ASY).
2. Press OPEN/CLOSE button and open the disk holder.
3. Check for 4.3218 MHz at test point TP2 ($\overline{\text{PLCK}}$) using a frequency counter. If not, adjust RV305.

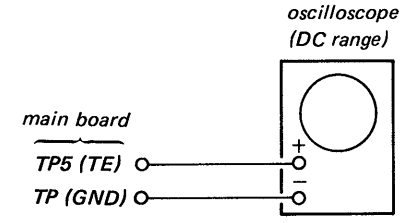
Adjustment Location: main board



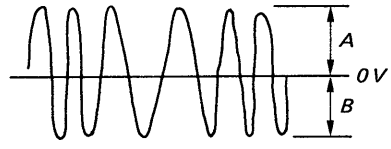
E-F BALANCE ADJUSTMENT

This adjustment should be made when replacing TOP (T-type Optical Pick-up).

Procedure:

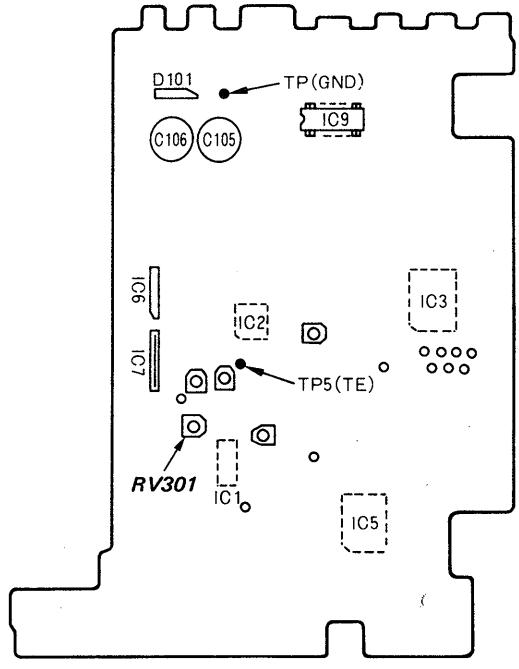


1. Connect oscilloscope to test point TP5 (TE) and ground.
2. Turn POWER switch on.
3. Put disc (YEDS-1) in and press ▷ button.
4. Press ◀◀ FF or ▶▶ REW botton.
5. Adjust RV301 for a vertically-symmetrical waveform as shown below. (A = B).



VOLT/DIV: 1V
TIME/DIV: 1ms

Adjustment Location: main board



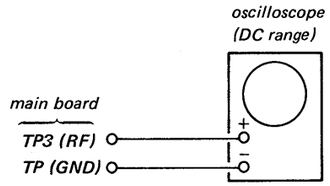
CDP-M20S

REFERENCE

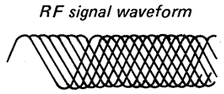
Focus Bias Adjustment

This adjustment should be made when replacing TOP (T-type Optical Pick-up).

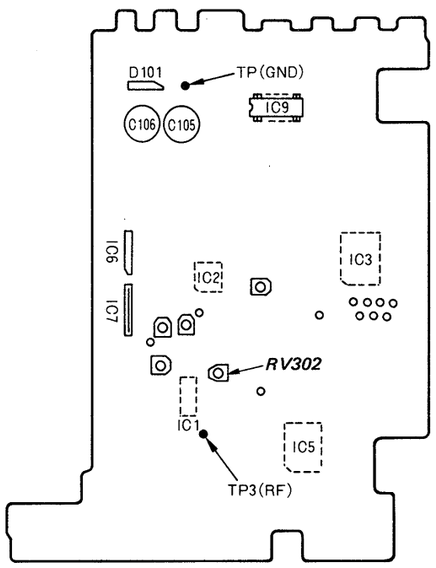
Procedure:



1. Connect oscilloscope to test points TP3 (RF) and ground.
2. Turn POWER switch on.
3. Put disc (YEDS-1) in and press ▷ button.
4. Adjust RV302 for an optimum waveform eye pattern or so that the peak is maximum. Optimum eye pattern means that shape "◇" can be clearly distinguished at the center of the waveform.



Adjustment Location: main board



Focus/Tracking Gain Adjustment

A frequency response 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 (vertical and horizontal) 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 the 2-axis device operates increases.
- When gain is lowered, it is more susceptible to mechanical shock and skipping occurs more easily.
- When gain adjustment is off, the symptoms below appear.

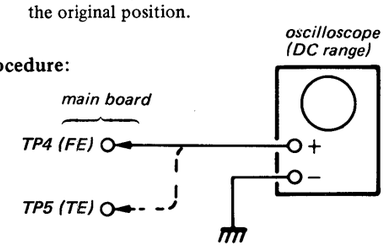
Symptoms \ Gain	Focus	Tracking
• The time until music starts becomes longer for STOP →▷PLAY or automatic selection (⏮, ⏭buttons pressed. (Normally takes about 2 seconds.)	low	low or high
• Music does not start and disc continues to rotate for STOP→▷PLAY or automatic selection (⏮, ⏭buttons pressed.)	–	low
• Disc table opens shortly after STOP→▷PLAY.	low or high	–
• Sound is interrupted during PLAY. Or time counter display stops progressing.	–	low
• More poise during 2-axis device operation.	high	high

The following is a simple adjustment method.

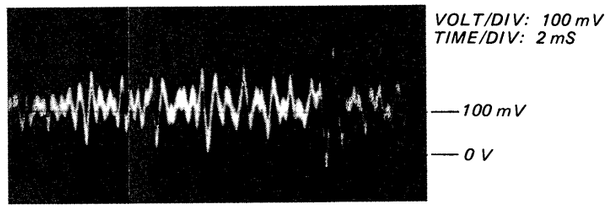
– Simple Adjustment –

Note: Since exact adjustment cannot be performed, remember the positions of the controls before performing the adjustment. If the positions after the simple adjustment are only a little different, return the controls to the original position.

Procedure:

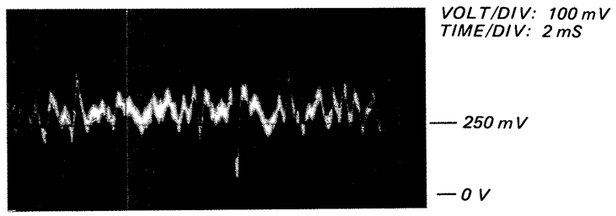


1. Keep the set horizontal.
   (If the set is not horizontal, this adjustment cannot be performed due to the gravity against the 2 axis device.)
2. Insert disc (YEDS-1) and press ▷ PLAY button.
3. Connect oscilloscope to main amp board TP4 (FE).
4. Adjustment RV303 so that the waveform is as shown in the figure below. (focus gain adjustment)

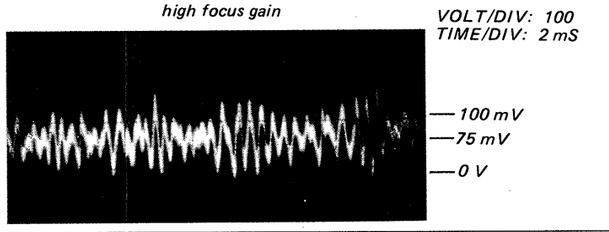


- Incorrent Examples (DC level changes more than on adjusted waveform)

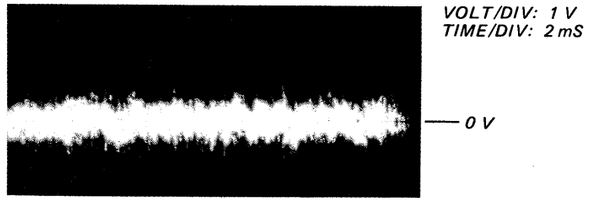
low focus gain



high focus gain

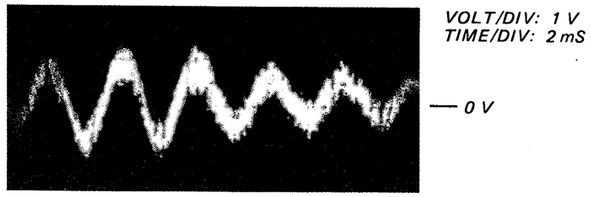


5. Connect oscilloscope to main board TP TE.
6. Adjust RV304 so that the waveform is as shown in the figure below. (tradking gain adjustment)

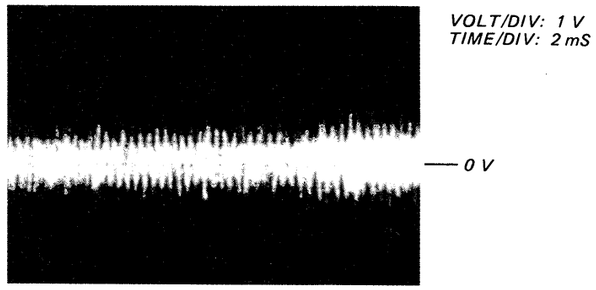


- Incorrect Examples (fundamental wave appears)

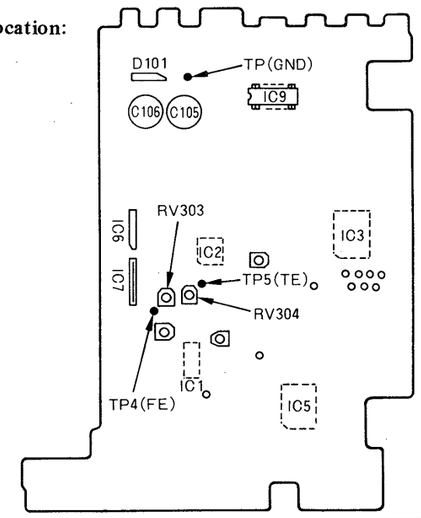
low tracking gain



high tracking gain
(higher fundamental wave than for low gain)



Adjustment Location:
main board



SECTION 4
MOUNTING DIAGRAM

- Semiconductor Lead Layouts

BX1457

M51565SP

1SS1555

M5290P
PCM56P-S

2SB1013

CXA1081M

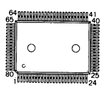
STA341M

2SB1133-R
2SD1666-R

CXA1082Q

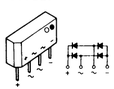
TA7256P

CXD1135Q
M50930-426FP



2SC3399
DTA124XS

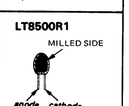
S1VB20



2SC3623-L

CXK5816M-10L

LT8500R1

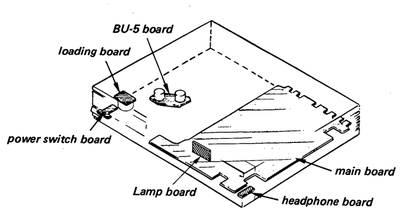


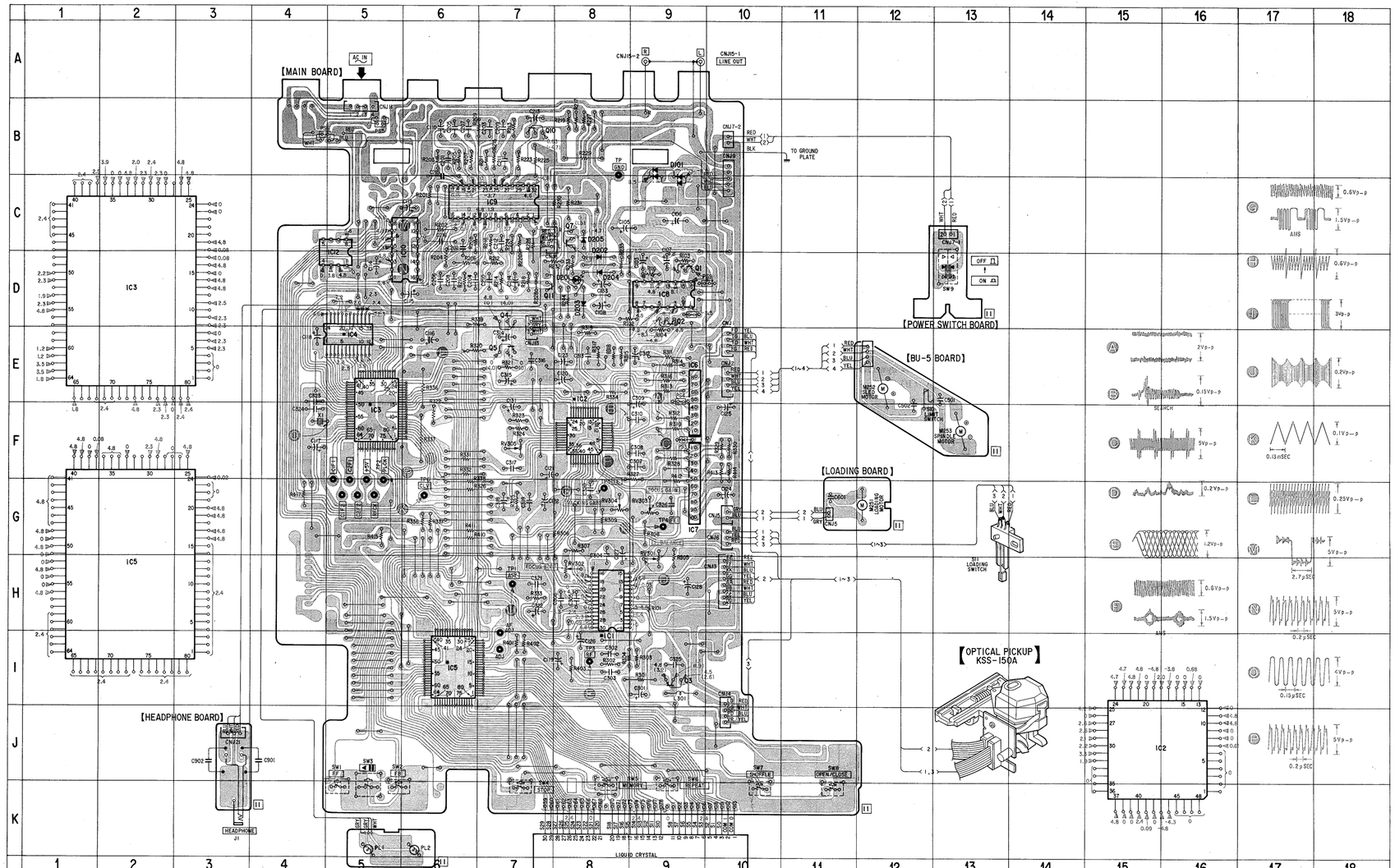
LC4969

- Semiconductor Locations

Ref. No.	Location
D101	B-9
D201	D-8
D202	D-8
D203	D-8
D204	D-8
D205	C-8
IC1	H-8
IC2	F-8
IC3	F-5
IC4	E-5
IC5	I-6
IC6	E-9
IC7	G-9
IC8	D-9
IC9	C-7
IC10	C-5
IC12	D-5
Q1	D-9
Q2	D-9
Q3	I-9
Q4	D-7
Q5	E-7
Q7	C-8
Q10	B-7
Q11	D-7

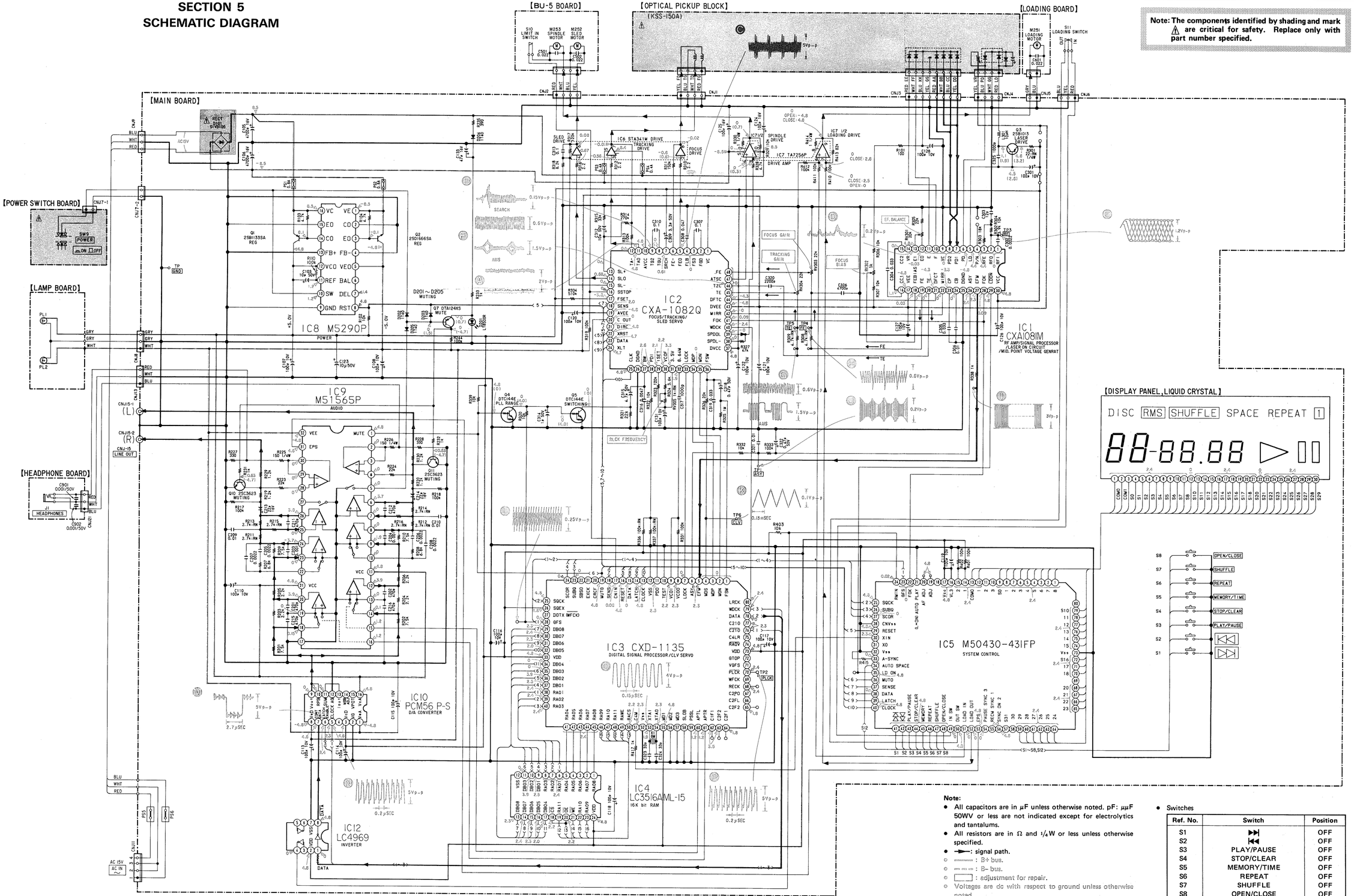
CIRCUIT BOARD LAYOUT





SECTION 5
SCHEMATIC DIAGRAM

Note: The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.


【BU-5 BOARD】
【OPTICAL PICKUP BLOCK】
(KSS-150A)
【LOADING BOARD】
【MAIN BOARD】
【POWER SWITCH BOARD】
【LAMP BOARD】
【HEADPHONE BOARD】
【DISPLAY PANEL,LIQUID CRYSTAL】
IC1 CXA1081M
RF AMP/SIGNAL PROCESSOR /LASER ON CIRCUIT /MID. POINT VOLTAGE GENRAT
IC2 CXA-1082Q
FOCUS/TRACKING/ SLED SERVO
IC3 CXD-1135
DIGITAL SIGNAL PROCESSOR/CLV SERVO
IC4 LC3516AML-15
16K bit RAM
IC5 M50430-431FP
SYSTEM CONTROL
IC8 M5290P
POWER
IC9 M51565P
AUDIO
IC10 PCM56 P-S
D/A CONVERTER
IC12 LC4969
INVERTER
IC6 STA341M DRIVE
TRACKING DRIVE
FOCUS DRIVE
SLED DRIVE
IC7 TA7256P
DRIVE AMP
IC7 1/2 LOADING DRIVE
SPINDLE DRIVE
Q3 2SB1013 LASER DRIVE
Q1 2SA1666SA REG
Q2 2SD1666SA REG
Q7 DTA124XS MUTE
Q4 DTC144E PLL RANGE
Q5 DTC144E SWITCHING
Q10 2SC3623 MUTING
Q11 2SC3623 MUTING
D201~D205 MUTING
FOCUS GAIN
TRACKING GAIN
FOCUS BIAS
EF. BALANCE
BLCK FREQUENCY
SW9 POWER
ON OFF
S1 ▶▶|
S2 |◀◀
S3 PLAY/PAUSE
S4 STOP/CLEAR
S5 MEMORY/TIME
S6 REPEAT
S7 SHUFFLE
S8 OPEN/CLOSE
DISC RMS SHUFFLE SPACE REPEAT 1
88-88.88
CDMD
CNJ1
CNJ2
CNJ3
CNJ4
CNJ5
CNJ6
CNJ7
CNJ8
CNJ11
CNJ15
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CNJ44
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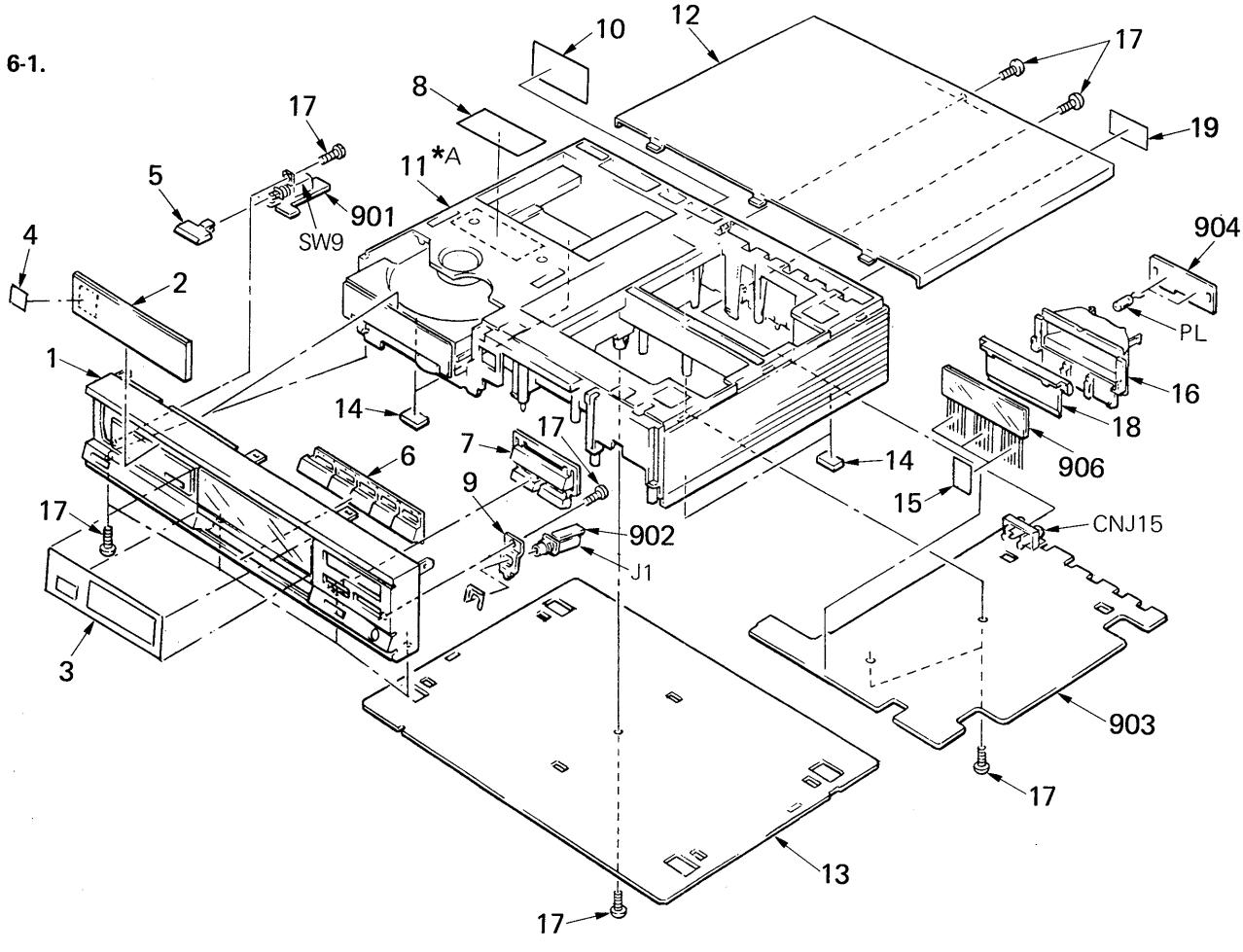
CNJ46
CNJ47
CNJ48
CNJ49
CNJ50
CNJ51
CNJ52
CNJ53
CNJ54

SECTION 6
EXPLODED VIEWS AND PARTS LIST

NOTE:
- The mechanical parts with no reference number in the exploded views are not supplied.
- Items marked " * " are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- The construction parts of an assembled part are indicated with a collation number in the remark column.
- Color Indication of Appearance Parts
  Example: (RED) ..... KNOB, BALANCE (WHITE)
  ↑ Cabinet's Color ↑ Parts' Color

The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

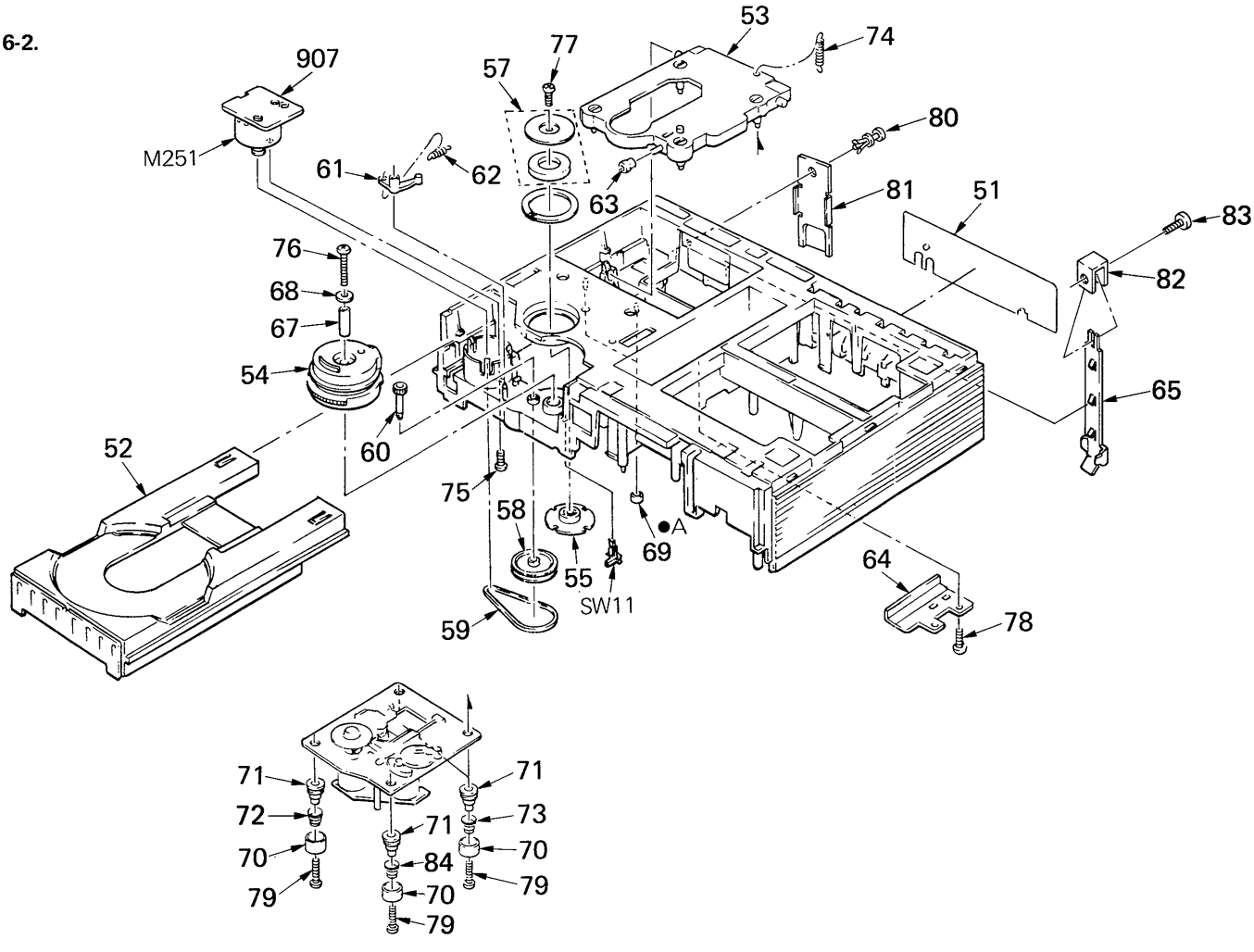
6-1.



No.	Part No.	Description	Remarks
1	X-4917-516-1	PANEL ASSY, CONTROL	
2	4-917-531-22	PANEL, LOADING	
3	4-918-642-01	PLATE (C), INDICATION	
4	3-703-713-41	STICKER, SONY SYMBOL (10)	
5	4-917-525-11	KNOB, POWER	
6	4-917-533-11	KNOB (A), CONTROL(OPEN/CLOSE,CHUFFLE etc)	
7	4-917-532-01	KNOB (B), CONTROL(PLAY/PASE,AMS)	
8	4-885-843-02	LABEL, CAUTION, LASER	
9	*4-917-513-01	BRACKET, HEADPHONE	
10	*4-885-838-00	LABEL, CLASS 1	
11	X-4917-506-1	FRAME ASSY	
12	4-917-536-01	CASE	
13	*4-917-535-01	PLATE, BOTTOM	
14	4-917-524-01	FELT, FOOT	

No.	Part No.	Description	Remarks	S
15	3-831-441-XX	CUSHION (25X15X0.3)		
16	*4-917-529-01	HOUSE, LAMP		
17	7-685-133-14	SCREW +P 2.6X6 TYPE1		
18	*4-917-528-01	ILLUMINATOR		
19	3-701-030-00	LABEL, SERIAL NUMBER		
901	*1-620-604-11	PC BOARD, POWER SW		
902	*1-620-605-11	PC BOARD, HEADPHONE		
903	*A-4651-119-A	MOUNTED PCB, MAIN		
904	*1-620-606-11	PC BOARD, LAMP		
906	1-807-686-11	DISPLAY PANEL, LIQUID CRYSTAL		
907	*1-620-603-11	PC BOARD, LOADING MOTOR		
J1	1-563-485-21	JACK, LARGE TYPE (HEADPHONES)		
PL1	1-518-606-11	LAMP, PILOT		
PL2	1-518-606-11	LAMP, PILOT		

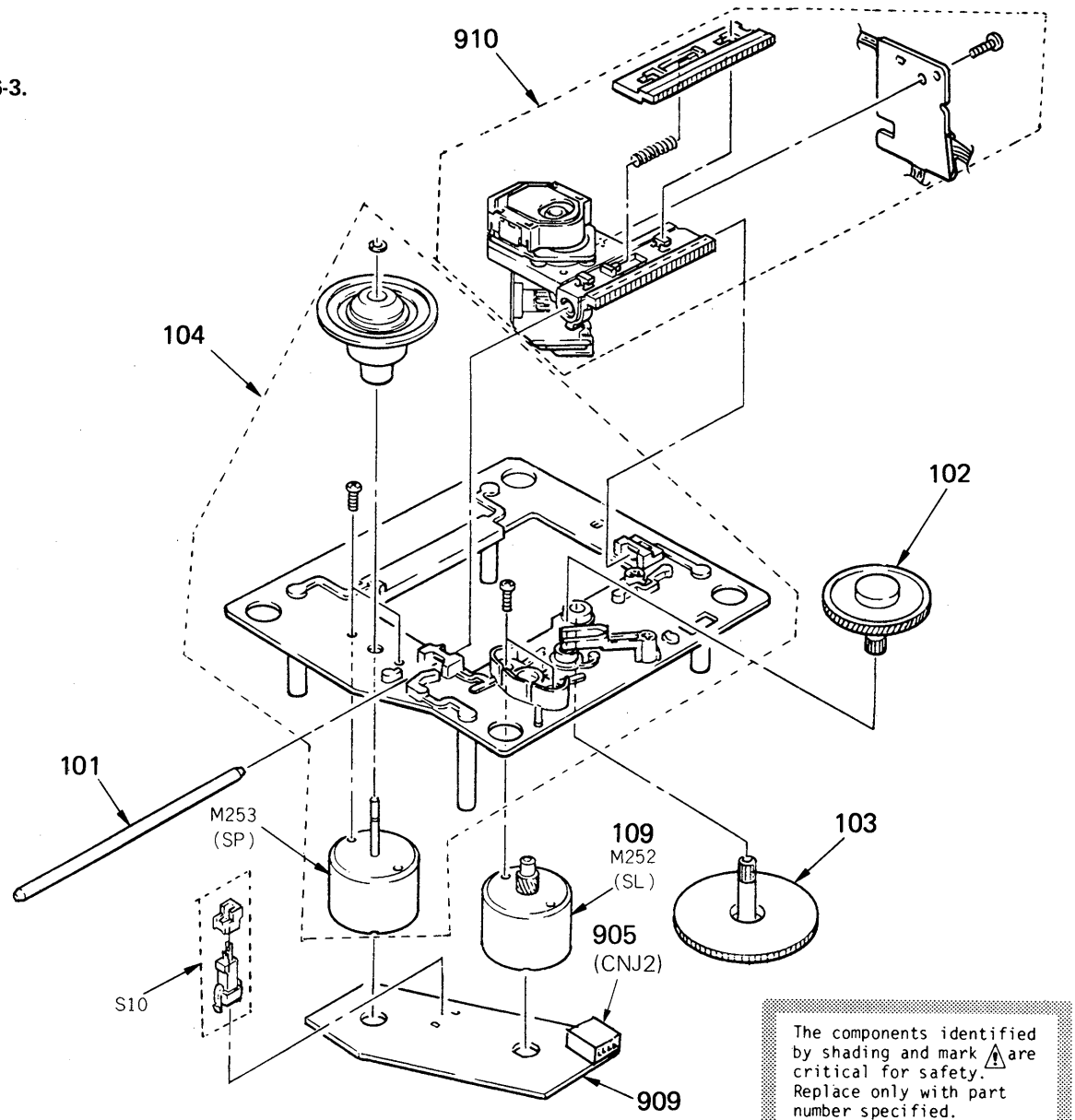
6-2.



No.	Part No.	Description	Remarks
51	*4-917-643-01	PLATE (D), INDICATION, TERMINAL	
52	4-917-539-02	TABLE, DISK	
53	4-917-537-01	BASE, FLOATING	
54	4-917-534-01	GEAR (A), LOADING	
55	4-917-527-01	PULLEY, CHUCKING	
57	A-4665-012-A	MAGNET ASSY	
58	4-917-521-01	PULLEY, LOADING	
59	4-917-522-01	BELT	
60	4-917-516-01	GEAR (B), LOADING	
61	4-917-519-01	LEVER, SET	
62	4-917-514-01	SPRING, TENSION	
63	4-917-515-01	ROLLER	
64	*4-917-517-01	GUIDE, LEAD	
65	*4-917-511-01	PLATE, GROUND	
67	4-917-523-01	COLLAR, CAM	
69	*3-576-990-01	CUSHION	

No.	Part No.	Description	Remarks
70	4-917-508-01	HOLDER, SP	
72	4-917-541-01	SPRING (B)	
73	4-917-507-01	SPRING (H)	
74	4-917-526-01	SPRING, TENSION	
75	7-628-254-00	+PSW, 2.6X5	
76	7-685-552-19	SCREW +BTP 3X25 TYPE2 N-S	
77	7-685-532-19	SCREW +BTP 2.6X5 TYPE2 N-S	
78	7-685-647-19	SCREW +BVTP 3X10 TYPE2 N-S	
79	7-685-535-19	SCREW +BTP 2.6X10 TYPE2 N-S	
80	4-812-134-11	RIVET NYLON, 3.5	
81	4-918-641-01	COVER, INLET	
82	*4-918-670-01	SUPORT, GROUND	
83	7-682-148-09	SCREW +BV 3X8	
84	4-918-669-01	SPRING (W)	
M251	A-4608-330-A	MOTOR ASSY (LOADING)	
S11	1-570-203-11	SWITCH, LEAF	

6-3.



The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

No.	Part No.	Description	Remarks
101	4-917-565-01	SHAFT, SLED	
102	4-917-567-01	GEAR (M)	
103	4-917-564-01	GEAR (P), FLATNESS	
104	X-4917-505-1	BASE (OUTSURT) ASSY	
109	X-4917-504-1	MOTOR ASSY	
905	*1-564-720-11	PIN, CONNECTOR (SMALL TYPE) 4P	
909	*1-620-097-11	PC BOARD, SL/SP MOTOR	
910	⚠8-848-062-01	PICKUP, OPTICS KSS-150A	
S10	1-570-822-11	SWITCH, LEAF	

SECTION 7
ELECTRICAL PARTS LIST

NOTE:

- Items marked " ★ " are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- If there are two or more same circuitsin a set such as a stereophonic machine, only typical circuit parts may be indicated and capacitors and resistors in other same circuits may be omitted.

CAPACITORS:
MF:μF, PF:μμF.

RESISTORS
- All resistors are in ohms.
- F : nonflammable

COILS
- MMH : mH, UH : μH

SEMICONDUCTORS
In each case, U : μ, for example:
UA...: μA..., UPA...: μPA..., UPC...: μPC, UPD...: μPD...

The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

ELECTRICAL PARTS

Ref.No.	Part No.	Description			
901	*1-620-604-11	PC BOARD, POWER SW			
902	*1-620-605-11	PC BOARD, HEADPHONE			
903	*A-4651-108-A	MOUNTED PCB, MAIN			
904	*1-620-606-11	PC BOARD, LAMP			
906	1-807-686-11	DISPLAY PANEL, LIQUID CRYSTAL			
907	*1-620-603-11	PC BOARD, LOADING MOTOR			
909	*1-620-097-11	PC BOARD, SL/SP MOTOR			
910	⚠8-848-062-01	PICKUP, OPTICS KSS-150A			
C103	1-124-907-00	ELECT	10MF	20%	50V
C105	1-124-898-11	ELECT	4700MF	20%	16V
C106	1-124-898-11	ELECT	4700MF	20%	16V
C107	1-124-443-00	ELECT	100MF	20%	10V
C108	1-124-443-00	ELECT	100MF	20%	10V
C110	1-124-443-00	ELECT	100MF	20%	10V
C113	1-124-443-00	ELECT	100MF	20%	10V
C114	1-124-443-00	ELECT	100MF	20%	10V
C115	1-124-443-00	ELECT	100MF	20%	10V
C116	1-124-443-00	ELECT	100MF	20%	10V
C117	1-124-443-00	ELECT	100MF	20%	10V
C118	1-124-443-00	ELECT	100MF	20%	10V
C119	1-124-443-00	ELECT	100MF	20%	10V
C120	1-124-443-00	ELECT	100MF	20%	10V
C121	1-124-443-00	ELECT	100MF	20%	10V
C122	1-124-443-00	ELECT	100MF	20%	10V
C123	1-124-907-00	ELECT	10MF	20%	50V
C124	1-123-821-00	ELECT	47MF	20%	16V
C125	1-123-821-00	ELECT	47MF	20%	16V
C126	1-124-443-00	ELECT	100MF	20%	10V
C127	1-124-443-00	ELECT	100MF	20%	10V
C128	1-124-443-00	ELECT	100MF	20%	10V
C131	1-124-443-00	ELECT	100MF	20%	10V
C133	1-123-821-00	ELECT	47MF	20%	16V
C150	1-102-121-00	CERAMIC	0.0022MF	10%	50V
C201	1-110-217-11	MYLAR	470PF	5%	50V
C202	1-110-217-11	MYLAR	470PF	5%	50V
C203	1-110-195-00	MYLAR	0.001MF	5%	50V
C204	1-110-195-00	MYLAR	0.001MF	5%	50V
C205	1-110-199-00	MYLAR	0.0022MF	5%	50V
C206	1-110-199-00	MYLAR	0.0022MF	5%	50V
C207	1-110-199-00	MYLAR	0.0022MF	5%	50V
C208	1-110-199-00	MYLAR	0.0022MF	5%	50V
C209	1-136-153-00	FILM	0.01MF	5%	50V
C210	1-136-153-00	FILM	0.01MF	5%	50V
C211	1-110-217-11	MYLAR	470PF	5%	50V
C212	1-110-217-11	MYLAR	470PF	5%	50V
C213	1-123-330-00	ELECT	22MF	20%	16V
C214	1-123-330-00	ELECT	22MF	20%	16V

ELECTRICAL PARTS

Ref.No.	Part No.	Description			
C215	1-162-290-31	CERAMIC	470PF	10%	50V
C216	1-162-290-31	CERAMIC	470PF	10%	50V
C301	1-124-443-00	ELECT	100MF	20%	10V
C302	1-110-199-00	MYLAR	0.0022MF	5%	50V
C303	1-162-201-31	CERAMIC	12PF	5%	50V
C304	1-136-159-00	FILM	0.033MF	5%	50V
C305	1-136-159-00	FILM	0.033MF	5%	50V
C306	1-136-153-00	FILM	0.01MF	5%	50V
C307	1-136-165-00	FILM	0.1MF	5%	50V
C308	1-136-161-00	FILM	0.047MF	5%	50V
C309	1-124-905-11	ELECT	3.3MF	20%	50V
C310	1-136-165-00	FILM	0.1MF	5%	50V
C312	1-124-907-00	ELECT	10MF	20%	50V
C313	1-136-165-00	FILM	0.1MF	5%	50V
C314	1-124-903-00	ELECT	1MF	20%	50V
C315	1-124-927-11	ELECT	4.7MF	20%	50V
C316	1-110-203-00	MYLAR	0.0047MF	5%	50V
C317	1-162-294-31	CERAMIC	0.001MF	10%	50V
C318	1-124-902-00	ELECT	0.47MF	20%	50V
C319	1-136-159-00	FILM	0.033MF	5%	50V
C320	1-110-199-00	MYLAR	0.0022MF	5%	50V
C321	1-136-153-00	FILM	0.01MF	5%	50V
C322	1-124-902-00	ELECT	0.47MF	20%	50V
C323	1-162-211-31	CERAMIC	33PF	5%	50V
C324	1-162-211-31	CERAMIC	33PF	5%	50V
C325	1-162-294-31	CERAMIC	0.001MF	10%	50V
C326	1-162-304-31	CERAMIC	0.0047MF	20%	16V
C401	1-162-306-31	CERAMIC	0.01MF	20%	16V
C601	1-136-157-00	FILM	0.022MF	5%	50V
CNJ1	*1-564-720-11	PIN, CONNECTOR (SMALL TYPE) 4P			
CNJ2	*1-564-720-41	PIN, CONNECTOR (SMALL TYPE) 4P			
CNJ3	*1-564-724-11	PIN, CONNECTOR (SMALL TYPE) 8P			
CNJ4	*1-564-720-31	PIN, CONNECTOR (SMALL TYPE) 4P			
CNJ5	*1-564-495-11	PIN, CONNECTOR 2P			
CNJ6	*1-564-496-11	PIN, CONNECTOR 3P			
⚠CNJ7-1.	*1-566-214-11	PIN, CONNECTOR (PC BOARD) 2P			
⚠CNJ7-2.	*1-564-718-11	PIN, CONNECTOR (SMALL TYPE) 2P			
CNJ8	*1-564-705-11	PIN, CONNECTOR (SMALL TYPE) 3P			
⚠CNJ9 .	*1-564-498-11	PIN, CONNECTOR 5P			
⚠CNJ11.	*1-566-211-11	PIN, CONNECTOR 4P			
CNJ13	*1-564-337-00	PIN, CONNECTOR 3P			
CNJ15	*1-562-999-21	JACK, PIN 2P (LINE OUT)			
CNJ21	*1-564-705-11	PIN, CONNECTOR (SMALL TYPE) 3P			
D101	⚠8-719-511-20	DIODE S1VB20			
D201	8-719-941-37	DIODE LT8500R1			
D202	8-719-815-55	DIODE 1S1555			

ELECTRICAL PARTS

Ref.No.	Part No.	Description
D203	8-719-815-55	DIODE 1S1555
D204	8-719-815-55	DIODE 1S1555
D205	8-719-815-55	DIODE 1S1555
IC1	8-752-030-93	IC CXA1081M
IC2	8-752-030-94	IC CXA1082Q
IC3	8-752-322-05	IC CXD1135Q
IC4	8-752-320-44	IC CXK5816M-10L
IC5	8-759-604-62	IC M50430-431FP
IC6	8-759-303-90	IC STA341M
IC7	8-759-202-01	IC TA7256P
IC8	8-759-604-03	IC M5290P
IC9	8-759-604-00	IC M51565SP
IC10	8-759-604-00	IC PCM56PS
IC12	8-759-803-41	IC LC4969
J1	1-563-485-21	JACK, LARGE TYPE (HEADPHONES)
L301	1-408-563-00	MICRO INDUCTOR 10UH
M251	A-4608-330-A	MOTOR ASSY (LOADING)
PL1	1-518-606-11	LAMP, PILOT
PL2	1-518-606-11	LAMP, PILOT
PS1	1-532-685-00	LINK, IC
PS2	1-532-685-00	LINK, IC
PS3	1-532-605-00	LINK, IC
PS4	1-532-605-00	LINK, IC
PS5	1-532-686-00	LINK, IC
PS6	1-532-686-00	LINK, IC
Q1	8-729-804-67	TRANSISTOR 2SB1133-R
Q2	8-729-804-17	TRANSISTOR 2SD1666-R
Q3	8-729-801-83	TRANSISTOR 2SB1013
Q4	8-729-806-38	TRANSISTOR 2SC3399
Q5	8-729-806-38	TRANSISTOR 2SC3399
Q7	8-729-900-67	TRANSISTOR DTA124XS
Q10	8-729-107-77	TRANSISTOR 2SC3623-L
Q11	8-729-107-77	TRANSISTOR 2SC3623-L
R101	1-249-405-11	CARBON 100 5% 1/6W
R102	1-249-429-11	CARBON 10K 5% 1/6W
R103	1-249-425-11	CARBON 4.7K 5% 1/6W
R104	1-249-425-11	CARBON 4.7K 5% 1/6W
R110	1-249-441-11	CARBON 100K 5% 1/6W
R201	1-247-852-00	CARBON 7.5K 5% 1/6W
R202	1-247-852-00	CARBON 7.5K 5% 1/6W
R203	1-247-839-00	CARBON 2.2K 5% 1/6W
R204	1-247-839-00	CARBON 2.2K 5% 1/6W

ELECTRICAL PARTS

Ref.No.	Part No.	Description			
R205	1-247-838-00	CARBON	2K	5%	1/6W
R206	1-247-838-00	CARBON	2K	5%	1/6W
R207	1-247-851-00	CARBON	6.8K	5%	1/6W
R208	1-247-851-00	CARBON	6.8K	5%	1/6W
R209	1-247-852-00	CARBON	7.5K	5%	1/6W
R210	1-247-852-00	CARBON	7.5K	5%	1/6W
R211	1-215-431-00	METAL	2.7K	1%	1/6W
R212	1-215-431-00	METAL	2.7K	1%	1/6W
R213	1-215-431-00	METAL	2.7K	1%	1/6W
R214	1-215-431-00	METAL	2.7K	1%	1/6W
R215	1-215-431-00	METAL	2.7K	1%	1/6W
R216	1-215-431-00	METAL	2.7K	1%	1/6W
R217	1-249-441-11	CARBON	100K	5%	1/6W
R218	1-249-441-11	CARBON	100K	5%	1/6W
R219	1-247-833-00	CARBON	1.2K	5%	1/6W
R220	1-247-833-00	CARBON	1.2K	5%	1/6W
R223	1-249-433-11	CARBON	22K	5%	1/6W
R224	1-249-433-11	CARBON	22K	5%	1/6W
R225	1-247-702-11	CARBON	150	5%	1/4W
R226	1-247-702-11	CARBON	150	5%	1/4W
R227	1-247-819-00	CARBON	330	5%	1/6W
R228	1-247-819-00	CARBON	330	5%	1/6W
R229	1-247-833-00	CARBON	1.2K	5%	1/6W
R230	1-247-833-00	CARBON	1.2K	5%	1/6W
R231	1-249-417-11	CARBON	1K	5%	1/6W
R232	1-249-417-11	CARBON	1K	5%	1/6W
R233	1-249-417-11	CARBON	1K	5%	1/6W
R235	1-247-821-00	CARBON	390	5%	1/6W
R244	1-249-441-11	CARBON	100K	5%	1/6W
R301	1-214-092-00	METAL	22	1%	1/4W
R302	1-247-845-00	CARBON	3.9K	5%	1/6W
R303	1-249-432-11	CARBON	18K	5%	1/6W
R304	1-249-429-11	CARBON	10K	5%	1/6W
R305	1-249-433-11	CARBON	22K	5%	1/6W
R306	1-249-429-11	CARBON	10K	5%	1/6W
R307	1-249-429-11	CARBON	10K	5%	1/6W
R308	1-215-437-00	METAL	4.7K	1%	1/6W
R309	1-215-437-00	METAL	4.7K	1%	1/6W
R310	1-247-767-00	CARBON	2.2	5%	1/6W
R311	1-247-883-00	CARBON	150K	5%	1/6W
R312	1-247-767-00	CARBON	2.2	5%	1/6W
R313	1-249-441-11	CARBON	100K	5%	1/6W
R314	1-247-889-00	CARBON	270K	5%	1/6W
R315	1-249-435-11	CARBON	33K	5%	1/6W
R316	1-247-767-00	CARBON	2.2	5%	1/6W

ELECTRICAL PARTS

Ref.No.	Part No.	Description			
R317	1-247-881-00	CARBON	120K	5%	1/6W
R318	1-247-853-00	CARBON	8.2K	5%	1/6W
R319	1-249-441-11	CARBON	100K	5%	1/6W
R320	1-249-429-11	CARBON	10K	5%	1/6W
R321	1-249-433-11	CARBON	22K	5%	1/6W
R322	1-249-429-11	CARBON	10K	5%	1/6W
R323	1-247-881-00	CARBON	120K	5%	1/6W
R324	1-215-434-00	METAL	3.6K	1%	1/6W
R325	1-247-903-00	CARBON	1M	5%	1/6W
R326	1-247-862-00	CARBON	20K	5%	1/6W
R327	1-249-437-11	CARBON	47K	5%	1/6W
R328	1-249-425-11	CARBON	4.7K	5%	1/6W
R329	1-249-429-11	CARBON	10K	5%	1/6W
R330	1-259-033-11	CARBON	1	5%	1/6W
R331	1-249-441-11	CARBON	100K	5%	1/6W
R332	1-249-429-11	CARBON	10K	5%	1/6W
R333	1-249-441-11	CARBON	100K	5%	1/6W
R334	1-247-896-00	CARBON	510K	5%	1/6W
R336	1-215-469-00	METAL	100K	1%	1/6W
R337	1-215-469-00	METAL	100K	1%	1/6W
R338	1-249-417-11	CARBON	1K	5%	1/6W
R339	1-249-429-11	CARBON	10K	5%	1/6W
R340	1-247-806-00	CARBON	91	5%	1/6W
R401	1-249-441-11	CARBON	100K	5%	1/6W
R402	1-249-441-11	CARBON	100K	5%	1/6W
R403	1-249-429-11	CARBON	10K	5%	1/6W
R410	1-249-441-11	CARBON	100K	5%	1/6W
R411	1-249-441-11	CARBON	100K	5%	1/6W
R412	1-249-441-11	CARBON	100K	5%	1/6W
R413	1-249-440-11	CARBON	82K	5%	1/6W
R414	1-259-033-11	CARBON	1	5%	1/6W
R415	1-249-441-11	CARBON	100K	5%	1/6W
R417	1-249-425-11	CARBON	4.7K	5%	1/6W
RV301	1-237-194-21	RES, ADJ, CARBON 20K			
RV302	1-237-192-21	RES, ADJ, CARBON 5K			
RV303	1-237-194-21	RES, ADJ, CARBON 20K			
RV304	1-237-194-21	RES, ADJ, CARBON 20K			
RV305	1-228-990-00	RES, ADJ, METAL GLAZE 1K			

ELECTRICAL PARTS

Ref.No.	Part No.	Description
SW1	1-554-088-51	SWITCH, KEY BOARD
SW2	1-554-088-51	SWITCH, KEY BOARD
SW3	1-570-577-11	SWITCH, PUSH (PLAY/PAUSE)
SW4	1-554-088-61	SWITCH, KEY BOARD (STOP/CLEAR)
SW5	1-554-088-61	SWITCH, KEY BOARD (MEMORY/TIME)
SW6	1-554-088-61	SWITCH, KEY BOARD (REPEAT)
SW7	1-554-088-61	SWITCH, KEY BOARD (SHUFFLE)
SW8	1-554-088-61	SWITCH, KEY BOARD (OPEN/CLOSE)
SW9	⚠1-552-928-00	SWITCH (POWER)
SW11	1-570-203-11	SWITCH, LEAF
X1	1-567-301-21	OSCILLATOR, CRYSTAL

ACCESSORY & PACKING MATERIAL

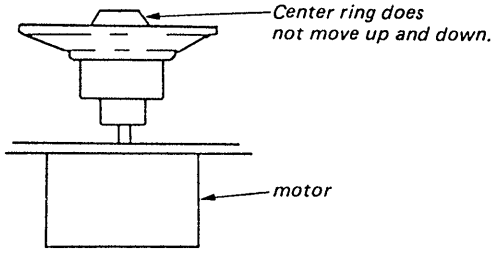
Part No.	Description
3-701-613-00	BAG, POLYETHYLENE
3-703-713-41	STICKER, SONY SYMBOL (10)
*4-885-838-00	LABEL, CLASS 1
4-917-578-01	CUSHION
4-917-589-51	INDIVIDUAL CARTON
4-918-640-01	FASTENER, SIDE PLATE
4-918-644-01	PLATE, SIDE
7-632-650-75	SHEET, PROTECTION (500MH)

The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

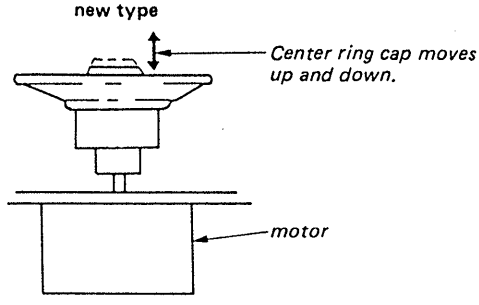
The mechanism section has been changed partly during manufacturing. There are 2 types of magnet assy and base (out surt) assy. When replacing these parts, please use new type parts.

1. Discrimination between former and new type.
   - base (outsurt) assy

former type

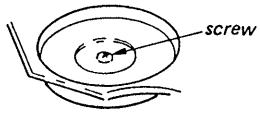


new type

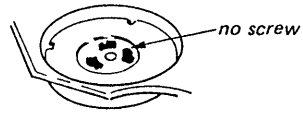


   - magnet assy

former type



new type



2. Interchangeability between former and new type/Caution on replacing.
   - No interchangeability between former and new type.
   - Please replace magnet assy toghter when replacing base (outsurt) assy and please replace base (outsurt) assy toghter when replace magnet assy and also please use new type parts at that time.

3. Former and new type parts list. (page 21, 22)

former type				new type		
No	Part No.	Description		No	Part No.	Description
57	A-4665-012-A	MAGNET ASSY	⇨	57	A-4665-024-A	MAGNET ASSY
104	X-4917-505-1	BASE (OUTSURT) ASSY		104	X-4917-523-1	BASE (OUTSURT) ASSY

9-952-712-12
(Including 9-972-712-81
9-972-712-91
9-972-712-92)

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