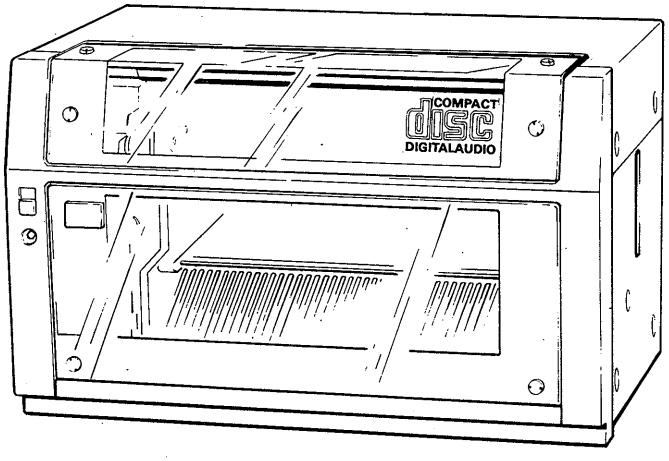
CDK-006

SERVICE MANUAL

REVISED

(US Model)

US Model
AEP Model



SPECIFICATIONS

Player

Disc: Compact disc
Laser diode properties
  Material: GaAlAS
  Wave length: 780nm
  Emission duration: Continuous
Laser output: Max. 0.6mW*
  *This output is the value measured at a distance of approximately 1.6mm from the objective lens surface on the Optical Pick-up Block.
Spindle revolution: 500 to 200 rpm (CLV)
Scan velocity: 1.2 - 1.4 m/sec.
Error correction: Sony Super Strategy Cross Interleave Reed-Solomon Code
Number of channels: 2 (stereo)
D-A conversion: 16-bit linear
Frequency response: 20-20,000Hz ±1.0dB
Harmonic distortion: Less than 0.01%(1kHz)
Dynamic range: More than 90dB(1kHz)
Channel separation: More than 90dB(1kHz)
Wow and flutter: Below measurable limit
Audio outputs: RCA type pinjack
  Max. output level: 2V rms ±1.5dB
  Load impedance: More than 10 kΩ
Access time: Approx. 16 sec. (Test disc: Sony YEDS-18 type IV track 21)
Interface
  Logical level: TTL Compatible
  Drive capability: 1 TTL (LS type)

Loader

Disc holding capacity: Max. 60

General

Operating temperature: 5°C to 40°C (41°F to 104°F)
Storage temperature: −20°C to 60°C (−4°F to 140°F)
  *Temperature cycling will not result in moisture condensation.
Input power requirement
  Power requirement:
    US model: 120 V AC ±10%, 60/50 Hz
    AEP model: 220 or 240 V AC adjustable ±10%, 60/50 Hz
  Power consumption: Approx. 40 W
Dimensions: Approx. 500 x 318 x 420 mm (w/h/d) (19 3/4 x 12 5/8 x 16 5/8 inches)
Weight: Approx. 21 kg (46 lbs 5 oz) without disc

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.

AUTO DISC LOADER

SONY®

TABLE OF CONTENTS

SAFETY CHECK-OUT

After correcting the original service problem, perform the following safety check before releasing the set to the customer:
Check the antenna terminals, metal trim, "metallized" knobs, screws, and all other exposed metal parts for AC leakage. Check leakage as described below.

LEAKAGE TEST

The AC leakage from any exposed metal part to earth ground and from all exposed metal parts to any exposed metal part having a return to chassis, must not exceed 0.5 mA (500 microampers). Leakage current can be measured by any one of three methods.

1. A commercial leakage tester, such as the Simpson 229 or RCA WT-540A. Follow the manufacturers' instructions to use these instruments.
2. A battery-operated AC milliammeter. The Data Precision 245 digital multimeter is suitable for this job.
3. Measuring the voltage drop across a resistor by means of a VOM or battery-operated AC voltmeter. The "limit" indication is 0.75 V, so analog meters must have an accurate low-voltage scale. The Simpson 250 and Sanwa SH-63Trd are examples of a passive VOM that is suitable. Nearly all battery operated digital multimeters that have a 2V AC range are suitable. (See Fig. A)

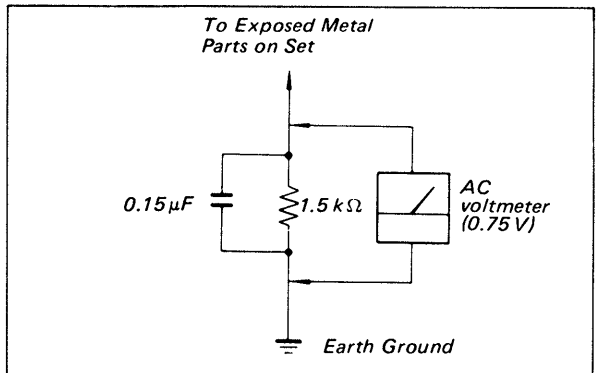


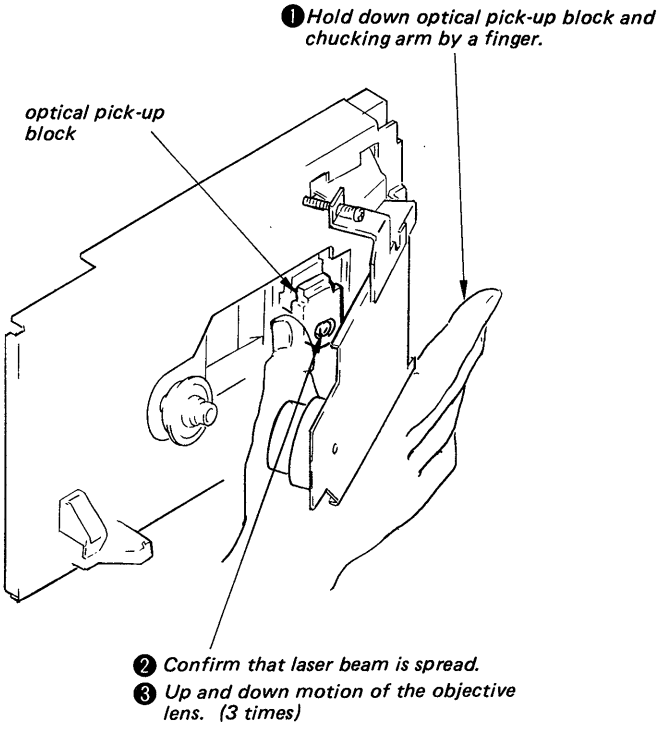
Fig. A. Using an AC voltmeter to check AC leakage.

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 more than 25 cm away from the objective lens.

LASER DIODE AND FOCUS SERCH OPERATION CHECK

1. Make POWER switch on with no disc inserted and disc table closed.
2. Confirm that the following operation at right is performed while observing the objective lens.



PROTECTION OF EYES FROM LASER BEAM DURING SERVICING

This set employs a laser. Therefore, be sure to follow carefully the instructions below when servicing.

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 25 cm FROM THE SURFACE OF THE OBJECTIVE LENS ON THE OPTICAL PICK-UP BLOCK.

CAUTION:

The use of optical instrument with this product will increase eye hazard.

CAUTION

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

1. Laser Diode Properties
   - Material: GaAlAs
   - Wavelength: 780 nm
   - Emission Duration: continuous
   - Laser Output: max. 0.4 mW*
     * This output is the value measured at a distance of about 1.6 mm from the objective lens surface on the Optical Pick-up Block.
   - Classification: Class IIIb
2. During service, do not take the Optical Pick-up Block apart, and do not adjust the APC circuit. If there is a breakdown in the APC circuit (including laser diode), replace the entire Optiocal Pick-up Block (including APC borad).

BESKYTTELSE AF ØJNE MOD LASERSTRÅLING UNDER SERVICE

I dette apparat anvendes laserlys. Derfor skal nedenstående instruktioner nøje følges under service.

Følg iøvrigt instruktionerne i servicemanualen.

ADVARSEL!!

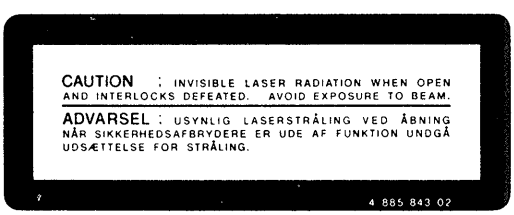
Under service må øjnene ikke komme nær objektiv-linsen på den optiske pick-up enhed. I tilfælde af at det er nødvendigt at kontrollere udsendelsen af laserlys, skal det ske i en afstand af mere end 25 cm fra den optiske pick-up.

1. Laser-didoe data
   - Materiale: GaAlAs
   - Bølgelængde: 780 nm
   - Udstråling: Kontinuerlig
   - Laseroutput: Max. 0,4 mW*
     * Målt i 1,6 mm afstand fra overfladen af objektivlinsen på den optiske pick-up enhed.
   - Klassifikation: Klasse IIIb.
2. Adskil aldrig den optiske pick-up enhed under service, og juster ikke APC kredsløbet (Automatic Power Control). Hvis APC kredsløbet (incl. laserdioden) bryder ned, skal hele den optiske pick-up enhed (incl. APC printkortet) udskiftes.

LASER ADVARSEL MÆRKNING

Følgende mærkning findes indvendig i apparatet:

1. Advarsel Mærkning



VAROITUS: Laite sisältää, laserdiodin, joka lähettää (näkymätöntä) silmille vaarallista lasersateilyä.

– CAUTION FOR ELECTROSTATIC BREAKDOWN –

NOTES ON HANDLING THE OPTICAL PICK-UP BLOCK (BU-1B)

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.

The printed matter below is included in the repair parts. During repair, use the procedure in the printed matter.

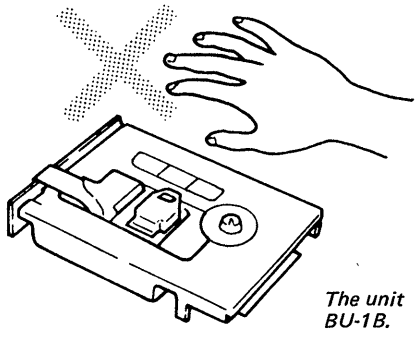
The following method is an example for reference purposes:

1. Place a conductive sheet on the workbench. (The black sheet used as repair parts wrapping).
2. Place the set on the conductive sheet so that the chassis touches the sheet. (This makes it the same potential as the conductive sheet).
3. Place your hands on the conductive sheet. (This makes them the same potential as the sheet).
4. Remove the optical pick-up block.
5. Perfrom work on top of the conductive sheet. Be careful that clothing does not touch the optical pick-up block.

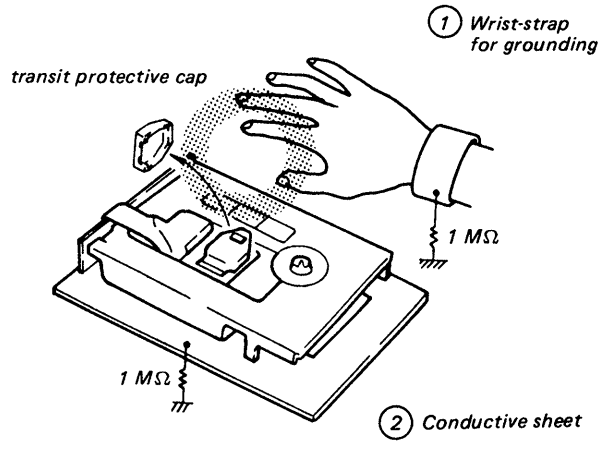
Printed Matter Included in the Repair Parts

When opening or repairing a BU-1B, the procedure for grounding as follows is required to prevent damage caused by static electricity.

1. Grounding for the human body.
   Be sure to put on a wrist-strap for grounding (with impedance lower than $10^8\,\Omega$) whose other end is grounded
   The strap works to drain away the static electricity built-up on the human body.
2. Grounding for the work table.
   Be sure to lay on the table a cunductive sheet (with impedance lower than $10^9\,\Omega$) such as sheet of copper which is grounded.
3. As static electricity built-up on clothes is not drained away, be careful not to let your clothes touch the BU-1B.

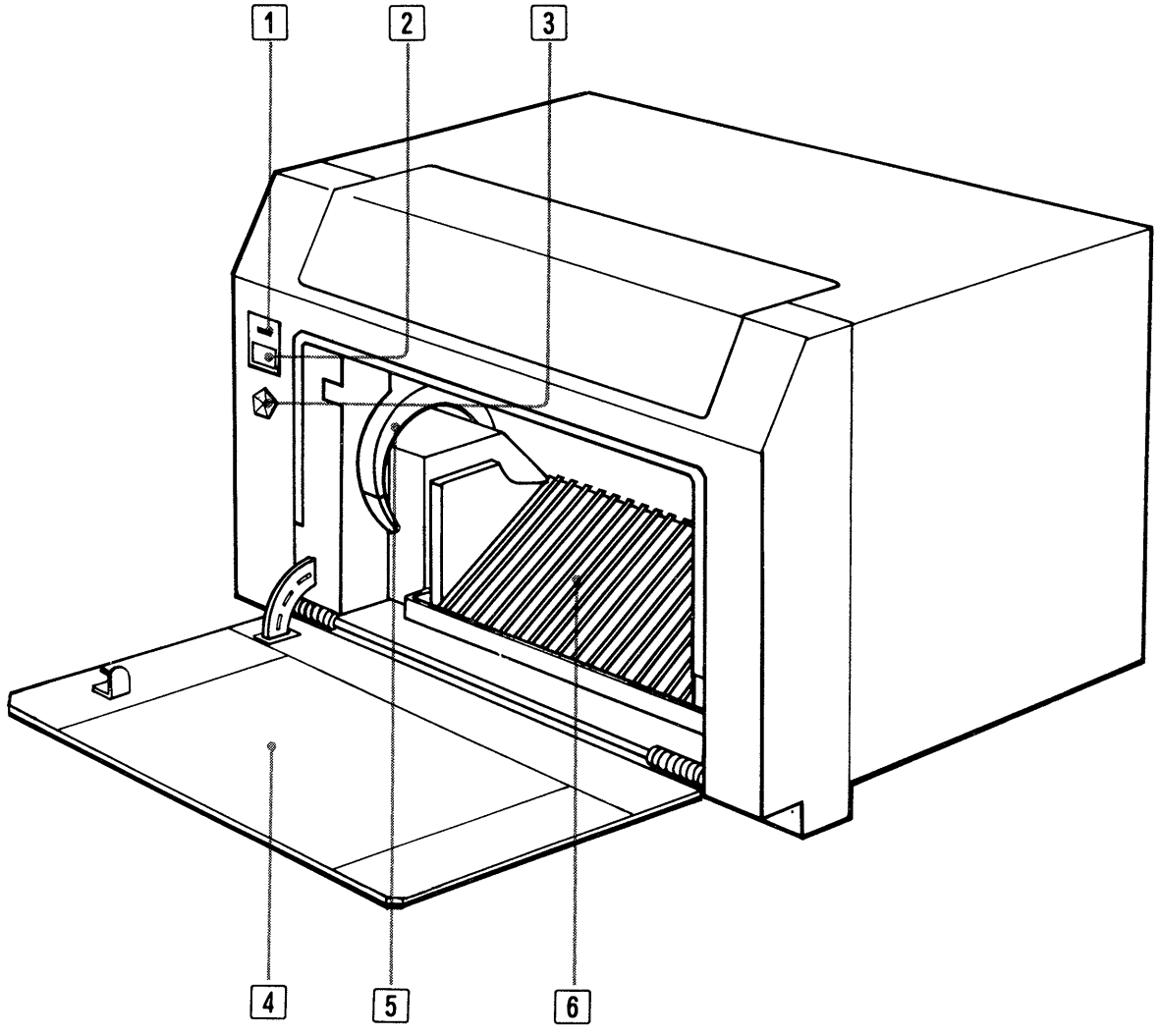


The unit BU-1B.



PARTS IDENTIFICATION

Front panel



1 Indicator
Lights when the supplied key is inserted into the keyhole and turned counterclockwise. In this condition, the door lock will be released when the OPEN button is pressed after the carrier arm has returned to the home position.

2 OPEN button
Press this button while the indicator is lit to release the door lock. The door lock will not be released even when the button is pressed if the indicator is not lit.

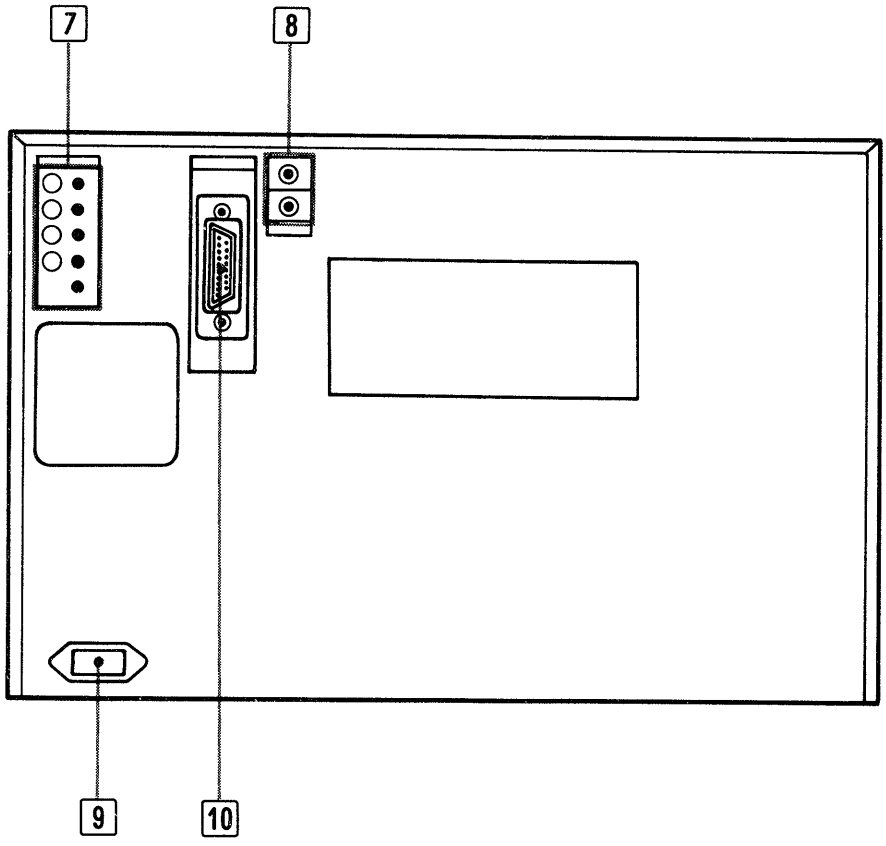
3 Key hole
Insert the supplied key here and turn counterclockwise until the indicator lights.

4 Door
Compact discs are placed and removed from the unit through this door. The door will open slightly when the OPEN button is pressed while the indicator is lit. Open the door manually until it lies horizontal when actually placing or removing compact discs.

5 Carrier arm
Picks up the selected compact disc by sliding along the CD case. However, the arm will not operate even if signals are sent from the control unit, when 1) the CD case handle has not been locked, 2) the door is open, or 3) the carrier arm lock has not been released. Do not touch the carrier arm.

6 CD case
Stores compact discs with the labels facing right. Be sure to lock the CD case handle before beginning play.

Connector panel

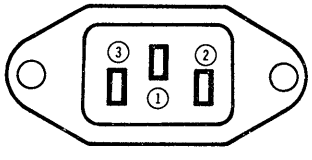


7 Screws holder
Stores the shipping screws and stoppers after they have been removed from the unit.

8 LINE OUT connector
For outputting signals.

9 AC IN connector
Connect to an appropriate ac power source by using the supplied ac power cord.

Power supply connector pin assignment

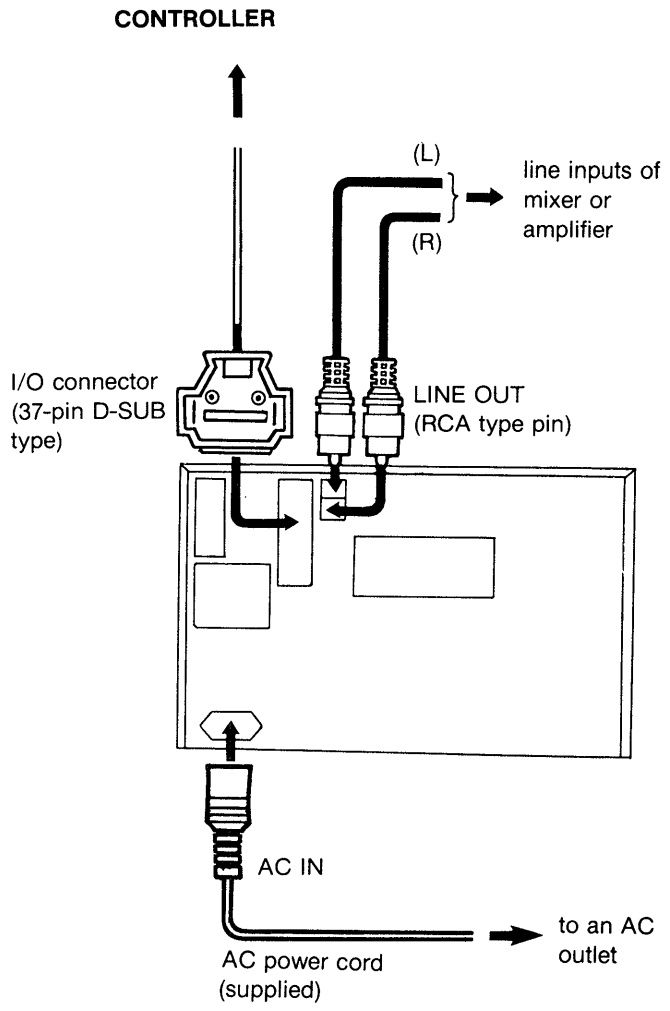


① Ground
② Neutral side
③ Live side

10 CONTROLLER connector (37-pin D-SUB type)
For connecting to the controller unit. Details on the data interface format of this connector are shown on pages 12-18.

CONNECTIONS

The power cord should be connected in order to open the unit's door after the shipping lock has been released.



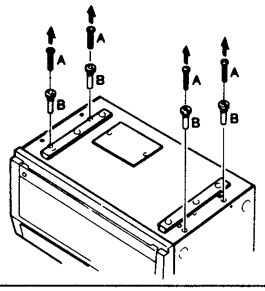
Notes

- Connect the unit and the controller with the I/O connector cable before the power cord is plugged into an electric outlet.
- The unit and the controller should have the same power source.
- Use an interface cable shorter than 5m (16 3/8 ft.)

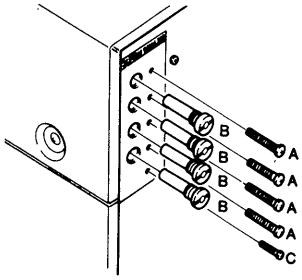
REMOVING TRANSIT SCREWS

This unit is supplied with shipping screws and stoppers to absorb shock during shipping. These are colored red to distinguish them from other screws. These screws should be removed carefully to avoid damaging the unit.

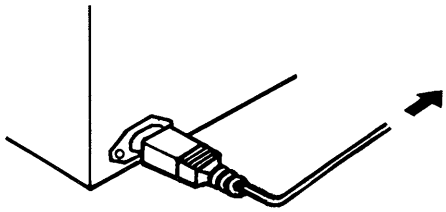
1 Turn the bottom side of the carton up and remove the four screws (A) and four stoppers (B).

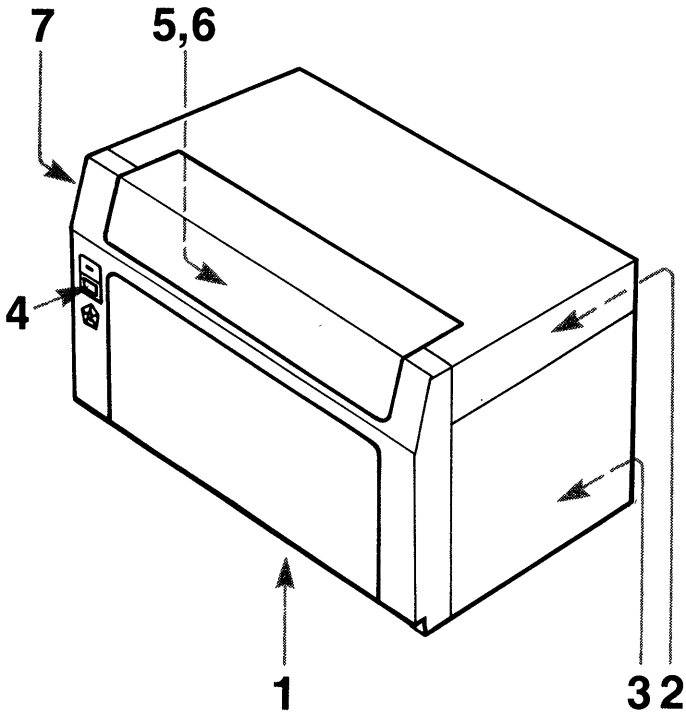


2 Carefully turn the carton back upright. Insert screws (A) and stoppers (B) into the screws holder. The screws from step (7) should also be inserted into the screws holder.

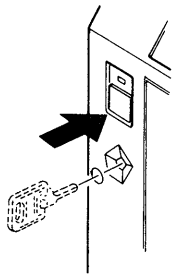


3 Connect the power cord to an electric outlet.

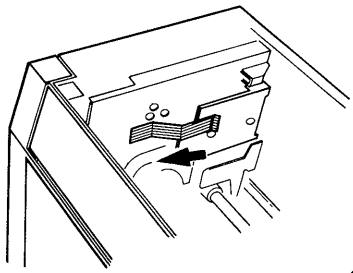




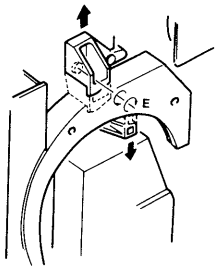
4 Insert the supplied key into the keyhole and turn counterclockwise until the indicator lights. Press the OPEN button to release the door lock, then manually open the door until it lies horizontally. The OPEN button will not operate unless the indicator is lit.



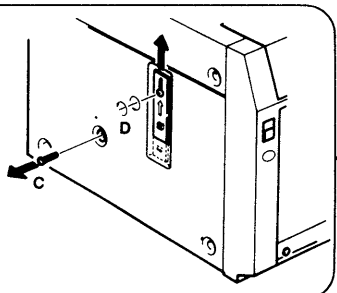
5 Remove the tape as shown in the illustration.



6 Loosen screw (E) and slide the shipping lock until it lines up at the arrow, then tighten screw (E).



7 Remove screw (C) and insert into the shipping screws holder in the rear panel. Loosen screw (D) and slide the shipping lock until it lines up at the arrow, then tighten screw (D).

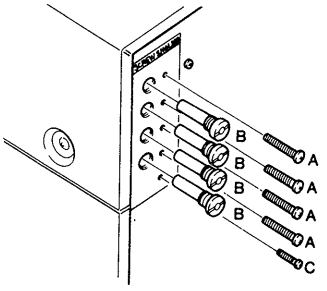


8 After completing this operation, unplug the power cord.

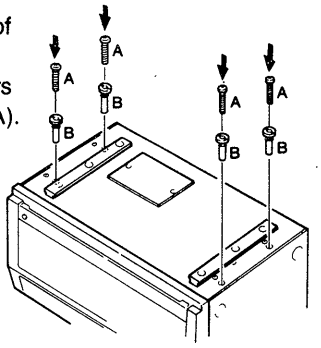
PREPARATION FOR REPACKING

Before reattaching shipping screws and locks, remove the compact discs and the CD case from the unit, close the door, and unplug the power cord while the indicator is lit.

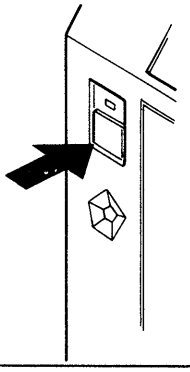
1 Remove the four shipping screws (A), four stoppers (B), and screw (C) from the screws holder.

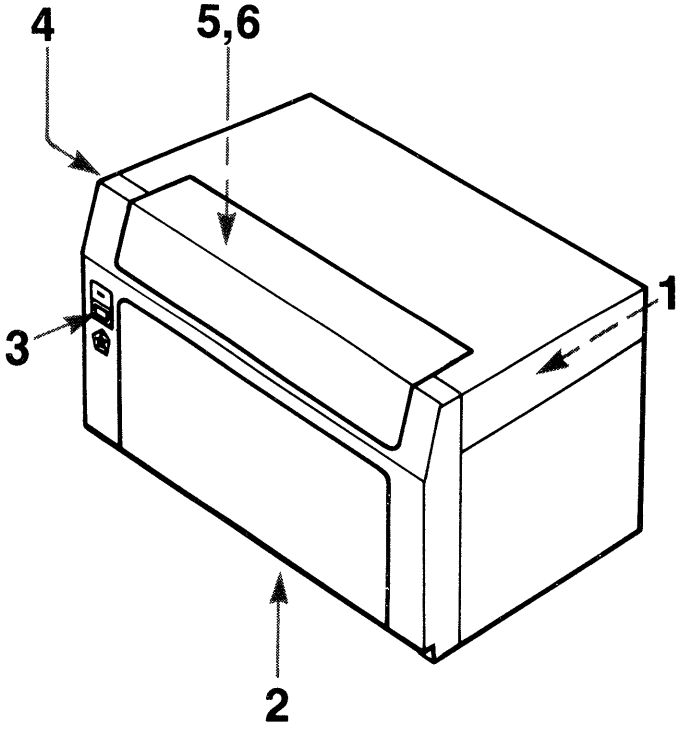


2 Turn the bottom side of the carton up and attach the four stoppers (B) with four screws (A).

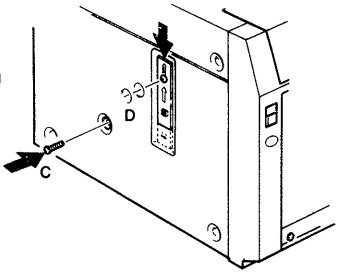


3 Turn the unit back upright, and connect the power cord to an outlet. Press the OPEN button to release the door lock. Manually open the door until it lies horizontally, and unplug the power cord.

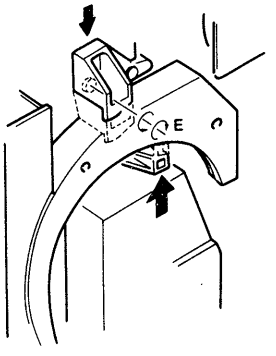




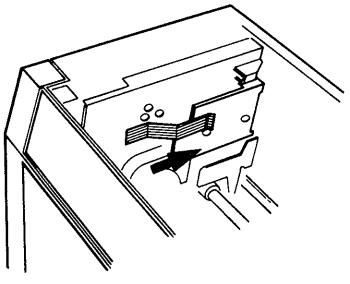
4 Attach screw (C). Loosen screw (D) and slide the shipping lock down completely, then tighten screw (D).



5 Loosen screw (E) and slide the shipping lock until it lines up at the arrow, then tighten screw (E).



6 Apply the tape as shown in the illustration.

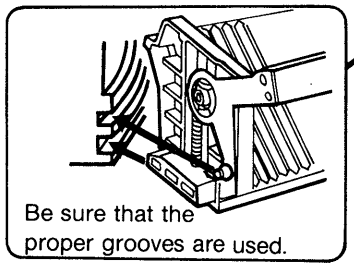


7 Close the door completely. Go over steps 1-6 to see that they have been carried out properly.

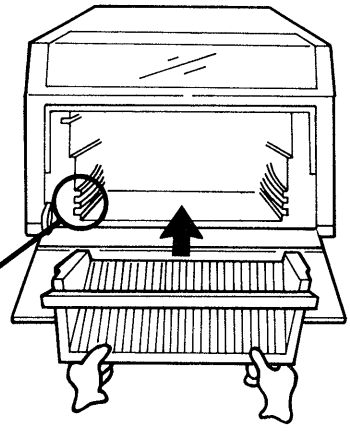
HOW TO PLACE DISCS

1 Press the OPEN button to release the door lock, and manually open the door until it lies horizontally. The door lock will not release even when the OPEN button is press if the indicator is not lit. Insert the supplied key in the keyhole and turn counterclockwise to light the indicator.

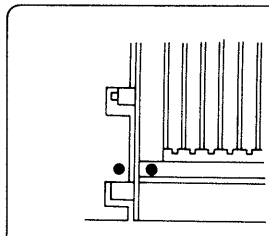
2 Slide the CD case into the disc loader.



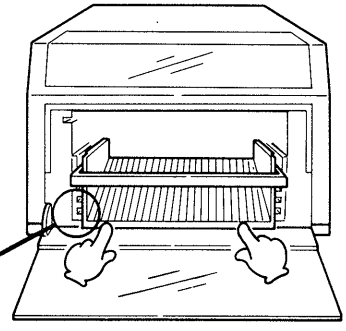
Be sure that the proper grooves are used.



Hold the bottom edge of the CD case when inserting.

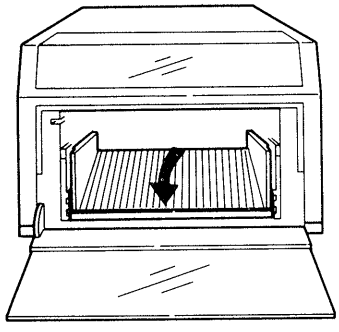


Be sure that the two dots (•) line up after inserting.

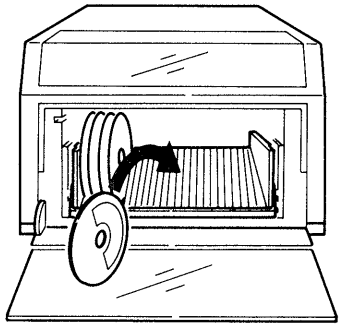


Press the bottom edge of the CD case to fix it into place.

3 Lower the handle to lock it into place.



4 Place the compact discs into the CD case. Be sure to place them so that the labels face right.



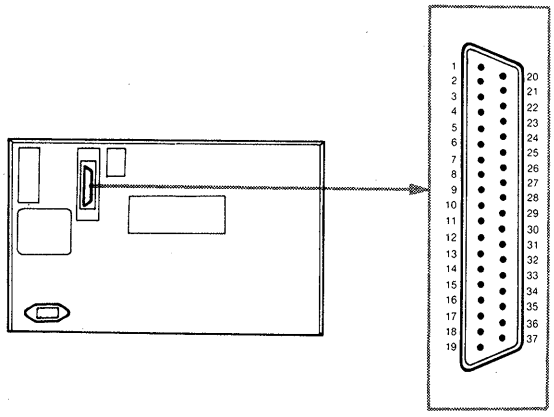
5 Close the door. A click will indicate that it has locked.

6 Insert the key and turn clockwise until the indicator light goes off. Be sure to preserve the key.

TECHNICAL DATA

The following information is provided as reference for the design of controller.

SIGNAL CONNECTION PIN ASSIGNMENT



Signal Connector
Receptacle: D-SUBMINIATURE 37 Contacts
4-40 THREAD Stand off Insert

No.	DESCRIPTION	FUNCTION
1 2 3 4	ECMD 3 ECMD 2 ECMD 1 ECMD 0	To be connected to command data lines from the controller. True when set to high.
5	L/$\overline{R}$	Indicates local or remote for data transfer from the controller. "Local" when set to high, "Remote" when low. The controller transfers data in the remote level.
*6	($\overline{HELP}$)	Indicates whether the loader is in test mode. True when set to low.
*7	CHECK	Indicates whether the loader is in "Power-on". True when set to high.
8 9 10 11 12 13	$\overline{WFCK}$ SCOR EXCK SBSO SUBQ CRCF	Pins for CD graphics.
14 15 16	GND GND GND	Ground
*17	REFERENCE	The loader's logic circuit power (+5V DC) is present on this pin.
18	($\overline{EXAM}$)	This pin must be left open. It is used for factory test purpose.
19	GND	Ground
20	CLOSE/$\overline{OPEN}$	Indicates condition of the loader's door (open/close) and CD case (in-out).
21	$\overline{EACK}$	Hand shake signal output to the controller. BUSY when set to low.
22	$\overline{EREQ}$	Hand shake signal input from the controller. REQUEST when set to low.
23	MUTING	Pin for CD graphics.
24	$\overline{QSTB}$ ($\overline{QINT}$)	Negative pulse generates on this when new data are set on QDATA.
25 26 27 28	QDATA-3 QDATA-2 QDATA-1 QDATA-0	Data lines informing modes of the loader and disc information. True when set to high.
29 30 31 32 33 34	$\overline{ARM-FWD}$ $\overline{ARM-REV}$ $\overline{CARRIER-RIGHT}$ $\overline{CARRIER-LEFT}$ $\overline{CHUCKING-RELEASE}$ $\overline{CHUCKING-HOLD}$	These pins are to be used for field service only.
35 36	GND GND	Ground
37	$\overline{TEST}$	This pin is to be used for field service only.

*These pins must be connected to high-impedance.

DEFINITIONS OF STATES

Following are the definitions of the states which are quoted in "COMMANDS" and "RETURN CODES".

1	Stand-by	The state when the loader is on stand-by. Receives POWER ON command only.
2	Power-on	The state when the loader is in active mode. There are Mechanical and Optical states.
3	Mechanical	The state when the loader is carrying the disc, or when the loader is in stop, including states 4-8 below.
4	Door Open or No CD Case Set	The state when the door is open or when the CD case is not set. Receives Door Command.
5	Door Close and CD Case Set	The state when the door is closed and the CD case is set. The unit will not work, however, until it receives DISC command to start play.
6	Disc Access	The state when the specified disc is picked up from the CD case and carried to the optical read position upon receipt of DISC command. SETOK code is returned when the disc is set in the position and the state moves to "TOC Read". NODISC is returned when the specified disc is not found, and the state moves to "Door Close and CD Case Set".
7	Disc Return	The sate when the disc is carried from the optical read position to the specified slot in the CD case. RETOK is returned.
8	Disc Reset	The state when the disc is carried back to the specified slot in the CD case in order to open the door. After returning RSTOK code, the door will be opened.
9	Optical	The state when the disc is set in the playing position and the optical mechanism is working. Composed of "Disc Rotate" and "Disc Break".
10	Disc Rotate	The state when the disc is ready to play or being played, including "TOC Read" and "Playing".
11	TOC Read	The state when the optical head is searching for the start of play. Then loader enters this state when TOC is returned.
12	Playing	The state of searching, playing or pausing after TOC READ. This state is inclusive of 13-14 below.
13	Play	The state when the disc is actually being played or the specified track is being searched.
14	Pause	The state when the optical head is fixed at a certain place (track, minute, second). This occurs when PAUSE command is sent.
15	Disc Break	The state when the disc rotation is being stopped. Inclusive of 16-18 below. OPENOK is returned.
16	Disc Break 1	The intermediate state when shifting to "Disc Return" after the rotation is stopped.
17	Disc Break 2	The intermediate state when shifting to "Disc Reset" after the rotation is stopped.
18	Disc Break 3	The intermediate state when shifting to "Disc Access" after the rotation is stopped.

COMMANDS

NAME	FORMAT	No.	FUNCTION
POWER ON	6	1	By this command, the loader escapes from "Stand-by" and becomes ready to receive other commands. CHECK will go high.
POWER OFF	7	1	By this command, the loader will enter "Stand-by" without cutting AC power supply. CHECK will go low. The loader will remain on stand-by unless POWER ON command is given.
DOOR	0	1	The command to open the door. Can be used any time in "Power-on". If it is in "Optical" or "Disc Access", it opens the door after carrying back the disc. This command works regardless of the state of door lock key on the front panel. When the door is opened, RSTOK will be returned. No code is returned while in "Door Open or No CD Case".
STOP	1	1	The command to return the carrier arm to its home position. When in "Optical" or "Disc Access", the loader stops play and carries back the disc to the CD case with the carrier arm returning to home position. RETOK will be returned. This command can be also used to cancel DOOR command.
PLAY	2	1	No actions will be provoked in "Disc Rotate" or "Disc Access". Ineffective in "Door Open Stop". In other states, track No. 1 of disc No.1 will be played by this command. When external control is used, however, this is not necessary and the use of the command is not recommended.
PAUSE	3	1	When in "Play", this command makes the loader pause. When in "Pause", it makes the loader escape from "Pause". The command does not work in "Door Open or No CD Case Set", but it functions as a PLAY command in any other states.
FAST FORWARD	4	1	Effective only in "Playing". When this command is sent in "Play" and "Pause", the pick-up starts tracing the track at a speed decuples higher than normal play back. Audio signal level will drop by 12dB in "Play", and the sound will be completely muted in "Pause". To obtain fast forward/reverse functions, the command must be continuously sent.
FAST REVERSE	5	1	
AMS	BabE	4	Track number is specified in two digits by "ab". By this command, a specified track is selected, and play is started. This command is effective only in "Playing" and "TOC Read". In "TOC Read", furthermore, the loader will not work until the first and last track of the disc have been read. If a track number not existing in a disc is given, the disc's first tack will be played.
TIME LOCATION	Aab01efgh0E	11	Track number is specified by "ab". The subsequent "01" is the default index number. Minutes unit of the track time data is specified by "ef", and seconds unit by "gh". The subsequent "0" is the default frame number. By this command, the loader moves to a designated time of designated track to play. If the designated time does not exist, it starts from the beginning of the designated track. Condition of the function is the same as AMS.
INDEX	CabcdE	6	Track number is specified by "ab", and index number by "cd". By this command, the loader selects a specified index number of specified track to play. If the specified track number does not exist, it starts from index No.1 of the first track. If the specified index number does not exist, it starts from the maximum index number of the track. Condition of the function is the same as AMS.
DISC	DabE	4	Disc number (01-60) is specified by "ab". This command makes the loader select a specified disc. If the specified disc exists, SETOK is returned. If it is not found, NODISC is returned. When the player holds the disc which is not the specified one, the loader carries back the disc first and proceeds to execute the command. If the disc is the same as the specified one, it promptly executes the command, and SETOK or TOC will be returned. When in "Door Open or No CD Case Set", the command will be ignored.

Note
In the above format column, lower case characters indicate numbers.

RETURN CODES

NAME	FORMAT	No.	FUNCTION
SETOK	9F	2	This code indicates the end of "Disc Access" upon receipt of DISC command. The state then moves to "TOC Read".
RETOK	8F	2	This code indicates the end of "Disc Return", usually upon the receipt of STOP command. The loader then enters "Door Close and CD Case Set" and completely stops its mechanical movement. However, this code is returned without waiting for STOP command when LEADOUT or ERROR is received.
RSTOK	7F	2	This code is returned when the door is opened by DOOR command and the state moves to the "Door Open or No CD Case Set". If DOOR command is received while in "Door Open or No CD Case Set", the door will be opened without returning RSTOK.
NODISC	6F	2	This code is returned when the specified disc is not found at its designated place upon receipt of DISC command in "Disc Access". Mechanical devices promptly return to their home position and come to a halt.
TOC	C00cdefghijklmF	15	This code indicates disc contents. It is returned after SETOK is received in "TOC Read". When "cd" is "A0", "jk" gives the first track number. When "cd" is "A1", "jk" gives the last track number. When "cd" is "A2", "jklm" gives the start point of the lead-out track. When "cd" is within a range of 01-99, "jk" gives the starting minutes of the track number "cd", and "lm" the starting seconds. The minutes/seconds values are absolute time data of the disc.
Q	Cabcdefghijklmf	15	This code is returned in "Play" at 8 times/sec intervals. It gives time data read by the player's pick-up. Track number is given by "ab", index number by "cd", minutes data by "ef", and seconds data by "gh". The first digit of frame data, which ranges from "00" to "74", is given by "i". Absolute minutes data is given by "jk" and absolute seconds data by "lm". The range of "ab" is 01-99. It is 00-99 for "cd", "ef" and "jk", and 00-59 for "gh" and "lm", and 0-7 for "i". This code is generated when any one of "a-i" is changed.
ERROR	EF	2	This code indicates optical error. When the code is returned, rotation of the disc is stopped and the state moves to "Disc Return". However, OPENOK will not be returned.
OPENOK	DF	2	This code is returned when the disc rotation stops after play is stopped. The state moves from "Disc Break" to either "Disc Return", "Disc Reset" or "Disc Access".
LEADOUT	BF	2	This code is returned after the last track has been played. The state moves to "Disc Break" and the loader automatically carries back the disc to the CD case.

Note
In the above format column, lower case characters indicate numbers.

HAND-SHAKE PROCEDURES

COMMAND TRANSMISSION

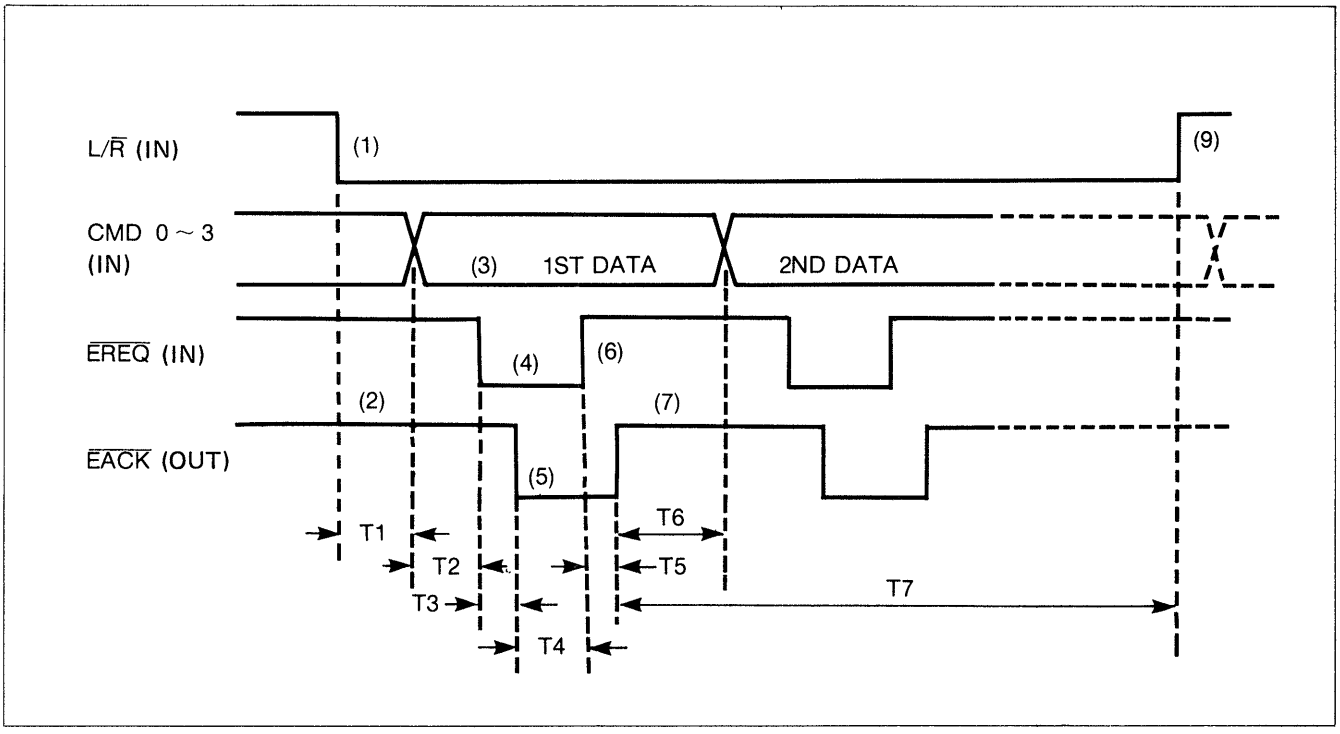


Fig. 1 Transmission from controller

Procedures

1) Set L/R̄ low.
2) Make sure EACK̄ is high.
3) Set data to CMD 0-3.
4) Set EREQ̄ low.
5) Make sure EACK̄ is low.
6) Set EREQ̄ high.
7) Make sure EACK̄ is high.
8) For additional data, repeat from 3.
9) After all data is set, set L/R̄ high.

Definition of Timing

Controller side			Specification min.	typ.	max.	unit
T1:	Setting L/R̄ low	→ setting data	0	——	——	msec
T2:	Setting data	→ setting EREQ̄ low	0	——	——	msec
T4:	Confirming EACK̄ low	→ setting EREQ̄ high	0	——	——	msec
T6:	Confirming EACK̄ high	→ setting next data	0	——	——	msec
T7:	Confirming EACK̄ high	→ setting L/R̄ high	0	——	——	msec

Loader side			min.	typ.	max.	unit
T3:	EREQ becoming low	→ setting EACK̄ low	0	——	10	msec
T5:	EREQ becoming high	→ setting EACK̄ high	0	10	120	msec

RETURN CODE RECEPTION

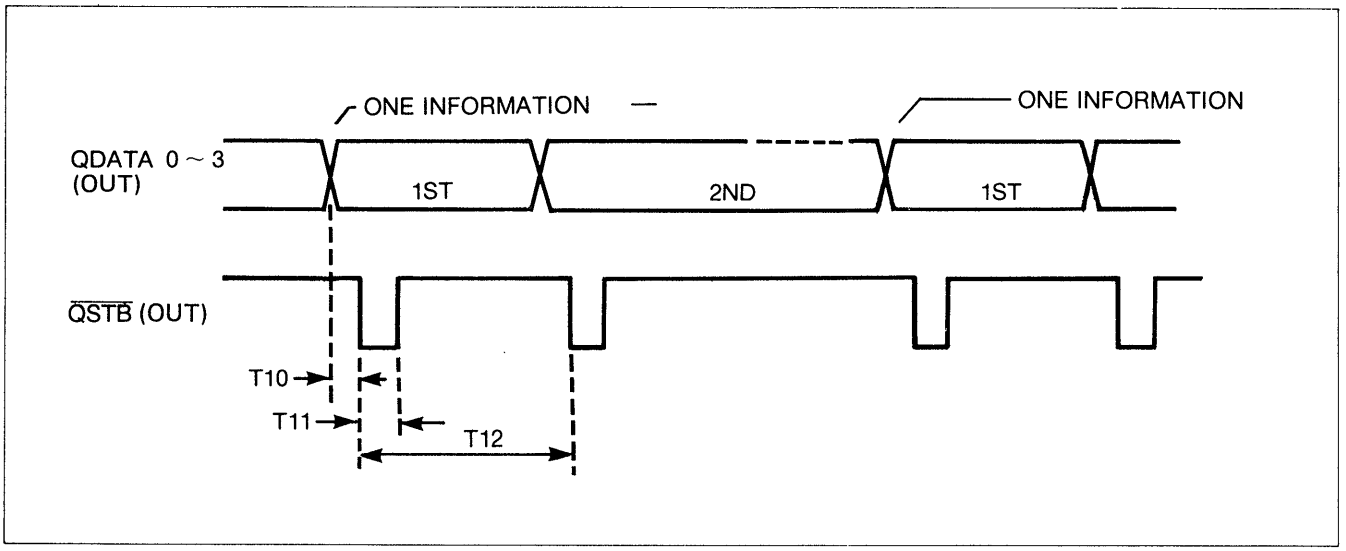


Fig. 2 Reception of return code

Caution on return code reception

As shown above, the loader's transmission is unilateral and uses signals on $\overline{\text{QSTB}}$ as timing information. Normally, $\overline{\text{QSTB}}$ is connected to the negative edge triggered interrupt terminal of a micro-computer to enable data input at the timing of $\overline{\text{QSTB}}$'s negative edge.

Definition of Timing

T10: Setting data → setting $\overline{\text{QSTB}}$ low
T11: Pulse width of $\overline{\text{QSTB}}$ low
T12: Negative edge width of $\overline{\text{QSTB}}$ → next negative edge within continuous data

Specification

Symbol	min.	typ.	max.	unit
T10	2	—	20	μsec
T11	10	100	200	μsec
T12	250	1000	2000	μsec

COMMENTS ON CODE TRANSMISSION

L/$\overline{R}$ (Local/$\overline{Remote}$)
Low level of this pin indicates that the loader will accept commands from the controller, and high level indicates that it will reject commands without hand-shake. If the pin is set to high during transmission, the previous data will be canceled. This pin can be thus used to reset hand-shake. While the pin is on low level, the Door Open/Close key of the front panel does not operate. (Fig. 1)

TOC read defective
TOC is a code to be returned after receipt of SETOK. Under certain conditions, however, TOC may not be read and ERROR will not be returned. If a code is not returned within approximately 20 seconds after receipt of SETOK, therefore, it is necessary to send DISC command with the same disc number and to wait for TOC code again. The same situation may occur while in "Playing".

Data in TOC
Although TOC code is not required by the external controller, the first track and the last track data must be read for the loader. Unless these data are returned, commands such as AMS, TIME LOCATION and INDEX will be ignored.

Selection of necessary codes
Despite the large number of return codes thus far discussed, only a minimum number of codes will be required for the control of the system. Other codes may be simply ignored. The same applies to commands. The same action can be provoked by several different commands.

General cautions
1) The system's state will not change until the transmission of a command is completed. In certain cases, however, return code is given during the transmission of a command allowing the state to change.

2) Once the transmission of a command is started, it should not be interrupted. In other words, the required hand-shake procedures must always be followed.

3) Data lines for both command transmission and return code reception should be active high.

4) All return codes finish with "F". The detection of an "F" indicates that the code has been read.

5) Return code should be ignored if it does not match the required format. LEADOUT code "BF", however, can be accepted by the detection of "B" alone.

6) If a code ending with a character other than "F" is input and there is no further code input for 5 msec, the code should be ignored.

7) All commands must be sent 410 msec after CHECK has gone to high.

REFERENCE
+5V DC for the loader's logic circuit is output. This is provided for checking whether the loader's logic circuit power supply is healthy.

CHECK
Accepts only POWER ON code when low. After accepting POWER ON code, it goes to high.

CLOSE/$\overline{OPEN}$
It is set to low either when the door is open or when the CD case is not set. If the CD case is set and door is closed, it will go to high. Since it makes chattering, the pin should be checked at a 50 msec interval for 3 times prior to determine the open/close of the door.

In case of emergency stop
When the loader does not function upon receipt of a command due to mechanical error, it enters TEST MODE* and $\overline{HELP}$ pin goes to low.

* TEST MODE is reserved for field test only. The unit does not function normally in that mode.

SECTION 1
OUTLINE

1. CIRCUIT DESCRIPTION

1-1. OVERALL STRUCTURE (Microcomputers and Command Flow)

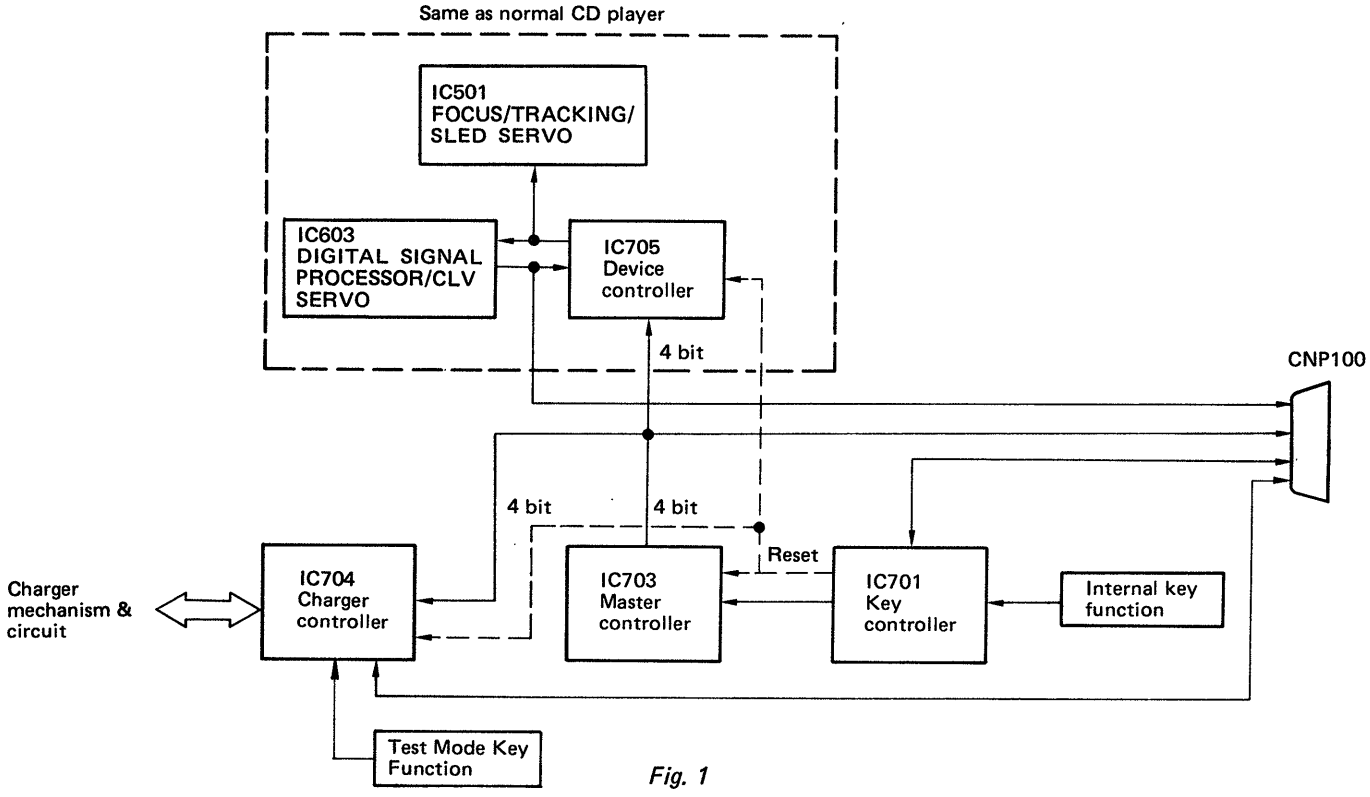


Fig. 1

1-2. IC701 (Key controller)

This decodes command signals from outside (from CNP100) and internal key input and sends to IC703 as serial data. This IC begins operating when the power switch is turned on and resets the other CPU's.

1-2-1. Pin Functions

Pin No.	Pin Name	Function
1	XTAL	Not used.
2	ECMD0	This pin (39) (L/R) is low, input other than at this input pin is prohibited. However, even if pin (39) goes low during processing of other input signals, the signals are taken in from CNP100 after the processing is completed. When the signals are being taken in from CNP100, pin (35) (R/A) goes low.
3	ECMD1	
4	ECMD2	
5	ECMD3	
6	$\overline{INT}$	Not used.
7	$\overline{RES}$	Reset signal input pin. Reset timing is within 3 seconds of power on.
8	PD0	KEY SCAN input ports.
9	PD1	
10	PD2	
11	PBIN	Not used.
12	PE0	KEY SCAN output ports.
13	PE1	
14	PE2	
15	PE3	
16	LED	Not used. (Goes low for 200 mS during remote control signal reception.)
17	CLOCK	Not used.
18	LATCH	Not used.
19	DATA	Not used.
20	TEST	Used during manufacture of IC connect to GND.
21	Vss	GND
22	VOL UP	Not used. (Outputs high continuously when volume is turned up.)
23	VOL DOWN	Not used. (Outputs high continuously when volume is turned down.)
24	POWER	Reset ON/OFF control output to other microcomputers. RESET OFF: outputs high RESET ON: outputs low
25	$\overline{ERROR}$	Not used. (Goes low when inputs not in input form enter pins (2) – (5).)
26	SPEED0	Not used.
27	SPEED1	
28	SPEED2	
29	SPEED3	
30	TIMER NORMAL	Not used. (When this pin is low and AC power is turned on, PLAY occurs.)
31	TIMER P1	Not used. (When this pin is low and AC power is turned on, P1 position program play can be done.) Connect to GND.
32	MUTE	Not used. MUTE output.

Pin No.	Pin Name	Function
33	SI	Output pin for serial data to master controller (IC703). Transmits in 4 bit x 2 form.
34	SCLK	Output pin for serial data clock to master controller (IC703).
35	R/$\overline{A}$	Not used. (This pin informs if the input is from CNP100 or not. "L": "L": input from CNP100)
36	$\overline{EACK}$	This pin outputs the signal which indicates completion of reception of external data from CNP100. Outputs high when input data processing is completed.
37	$\overline{RE1}$	Reset signal input pin.
38	REMOTE	Not used. (When a pulse of more than 1.8 mS and less than 2.8 mS is applied to this pin, remote control reception begins.)
39	L/$\overline{R}$	When this port is low, external input other than that from CNP100 is prohibited.
40	$\overline{EREQ}$	Data transmission request pin. "L": request.
41	VDD	B +5 V.
42	EXTAL	External clock input pin (4.0 MHz).

Table 1

1-2-2. Data Input Processing Order

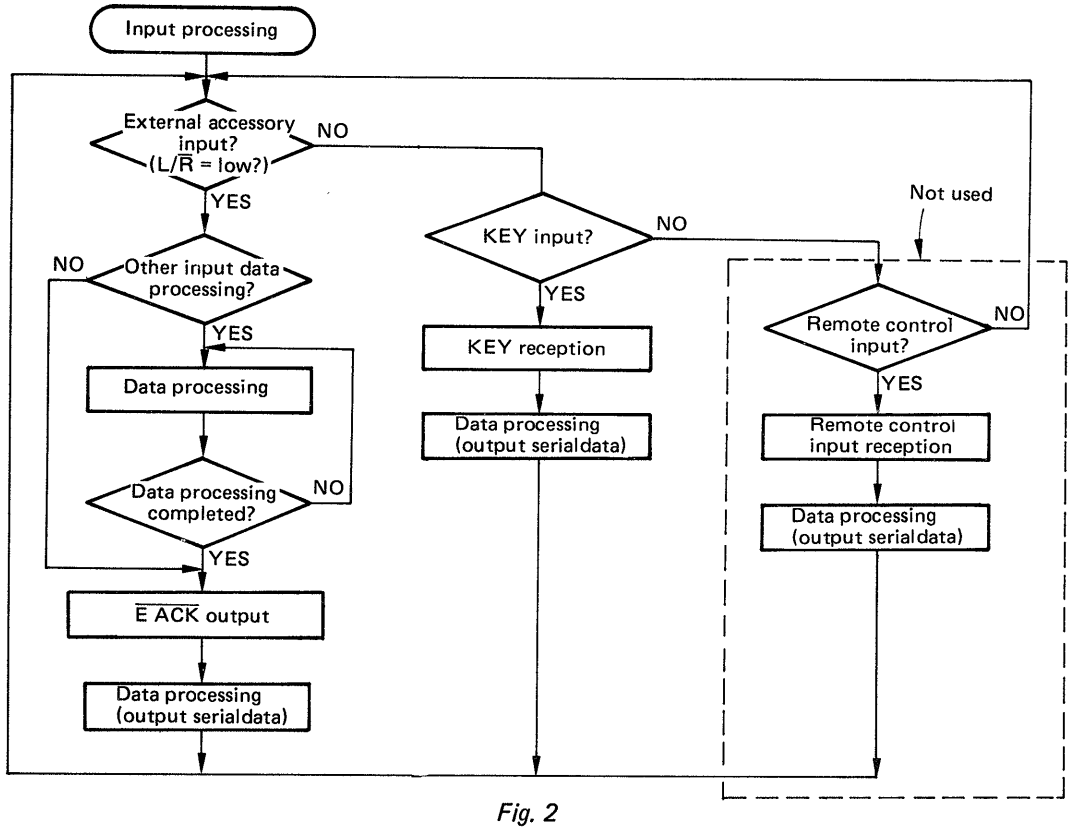


Fig. 2

1-3. IC703 (Master Controller)

This receives the serial data sent from IC701 (key controller) and sends corresponding commands to the changer controller (IC704) and device controller (IC705). It also reads in the responses to the sent commands, sends out the necessary commands corresponding to the answers, and performs overall control. It also drives the plunger (PS701) which opens the door and detects whether the door is open or not and CD-case is in or out.

1-3-1. Pin Functions

Pin No.	Pin Name	Function
1	CMD0	Data bus pins.
2	CMD1	
3	CMD2	
4	CMD3	
5	D0	Data bus pins for external memory. The memory is not used, but these pins must be low when pin (29) is high.
6	D1	
7	D2	
8	D3	
9	$\overline{\text{CREQ}}$	Handshake signal output (for IC704).
10	$\overline{\text{DREQ}}$	Handshake signal output (for IC705).
11	PM	Door open plunger drive output (low on).
12	$\overline{\text{CACK}}$	Handshake signal input (for IC704).
13	$\overline{\text{DACK}}$	Handshake signal input (for IC705).
14	DPAK	Handshake input pin for when data is transferred at pins (33) – (36). On this set it is connected to the handshake signal output pin ((39)) as if data transfer is done.
15	TRAY	Door open/close and CD case in/out detection pin. ("H": door close & CD case in. "L": other wise.)
16	EX	Clock input. (4.0 MHz)
17	NC	
18	$\overline{\text{RESET}}$	Reset input.
19	$\overline{\text{QINT}}$	Interrupt pin for data transmission from IC704 and IC705.
20	NC	
21	GND	
22	SC	Serial clock input (from IC701).
23	SI	Serial data input (from IC701).
24	NC	
25	NC	
26	NC	
27	NC	
28	NC	

Pin No.	Pin Name	Function
29	A4	External memory address pin (A4–A7). Only A4 is used on this set.
30	A5	Not used.
31	A6	Not used.
32	A7	Not used.
33	DD0	Not used.
34	DD1	Not used.
35	DD2	Not used.
36	DD3	Not used.
37	A8	Not used.
38	R/W	Not used.
39	DPRQ	Hanshake signal output pin for data transfer at pins (33) – (36).
40	MUTE	Not used.
41	ST	Not used.
42	Vcc	B +5 V

Table 4

1-4. IC704 (Changer Controller)

This moves the mechanism while checking the changer mechanism detection switches, according to the commands sent from the master controller (IC703), and when the designated operation is completed, sends data (response) to IC703 informing it of completion. The signal communication with IC703 is the same as that of IC705. In addition, key input for test mode is performed.

1-4-1. Pin Functions

Pin No.	Pin Name	Function
1	LIMIT SW	Carrier left side limit switch detection. Low on.
2	END	Carrier right side limit switch detection. Low on.
3	FS OFF	Not used.
4	FS ON	
5	FS SW	
6	M MEM	Mechanical memory detection pin.
7	PH1	Carrier position count pin.
8	PH2	Carrier position count pin.
9, 10	SCAN OUTPUT	IC714, IC715 (port expansion IC's) port switching data output.
11	DP	Not used.
12	K0	Input ports from IC714, IC715 (expanded input).
13	K1	
14	K2	
15	K3	

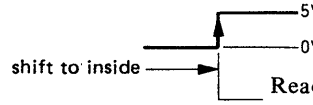
16	CLOCK	Clock input (4.0 MHz).
17	NC	
18	$\overline{\text{RESET}}$	Reset signal input.
19	$\overline{\text{MCREQ}}$	Handshake signal input pin with IC703.
20	NC	
21	GND	
22	NC	
23	NC	
24	NC	
25	$\overline{\text{TEST}}$	Test mode indicator LED control. Low for test mode.
26	$\overline{\text{SMF}}$	Carrier motor left rotation ON/OFF output.
27	$\overline{\text{SMR}}$	Carrier motor right rotation ON/OFF output.
28	SMS	Carrier motor speed output. Low: high speed, High: low speed
29	$\overline{\text{AMF}}$	Arm motor forward direction rotation ON/OFF output.
30	$\overline{\text{AMR}}$	Arm motor reverse direction rotation ON/OFF output.
31	FS IN	Not used.
32	FS OUT	Not used.
33	$\overline{\text{QINT}}$	Interrupt output pin during data transmission.
34	$\overline{\text{CACK}}$	Handshake signal output pin with IC703.
35	$\overline{\text{CMF}}$	Chucking motor close direction rotation ON/OFF output.
36	$\overline{\text{CMF}}$	Chucking motor open direction rotation ON/OFF output.
37	D0	Data buses with IC703.
38	D1	
39	D2	
40	D3	
41	START	Not used.
42	Vcc	B +5 V

Table 5

1-5. IC705 (Device Controller)

The mechanism control IC (IC705) uses the DATA pin, CLOCK pin and LATCH pin to instruct IC501 (servo IC CX20108) and IC603 (digital processing/ CLV servo IC CX23035), and also has TOC data and Q data memorized, which it uses in performing direct search, etc.

Pin Functions

Pin No.	I/O	Pin Name	Function
1	OUT	A MUTE	Audio signal muting control output. "H" during muting.
2	OUT	COPY	Not used.
3	OUT	ID	Disc identification signal output. Normally "L". "H" for CD ROM disc.
4	——	OSCO	Clock pin.
5	——	OSCI	Clock pin. Not used.
6	IN	$\overline{\text{RESET}}$	Reset input pin. Goes "H" in about 1.5 seconds after power ON.
7	IN	TEST	LSI test pin. Not used.
8	IN	SCOR	SUB Q sync signal input pin.
9	IN	$\overline{\text{ADJ}}$	When this pin goes "L", IC705 detects servo or other abnormalities and disc load out is not performed. Used for servo and PLL adjustment. Also, direct search is not performed, and access can only be done by conventional track jump.
10	IN	$\overline{\text{IN SW}}$	Not used.
11	IN	$\overline{\text{OUT SW}}$	
12	IN	$\overline{\text{FOK}}$	Focus OK signal input pin.
13	IN	WFCK	WFCK (Write Frame Clock) input pin.
14	IN	GFS	Guarded Frame Sync input pin. "H" is input when disc data can be read normally.
15	IN	SUB Q	SUB Q signal (selection address, emphasis data, etc.) input pin.
16	——	GND	Ground pin.
17	——	NC	Not used.
18	IN	SENS	Input pin for IC501, IC603 SENS output.
19	IN	Q CHECK	Inputs CRC results of SUB Q output from IC603.
20	OUT	LATCH	Latch output pin for serial data to IC501, IC603.
21	OUT	$\overline{\text{DIRECT}}$	Output pin to IC501 during 1 track jump. Normally "H". Reverses track jump pulse direction at "L". When "H" again, set to normal tracking mode. Outputs "L" for a set time by detection of TZC (Tracking Zero Cross) rise and fall.
22	OUT	DATA	Output pin for serial data to IC501, IC603.
23	OUT	CLOCK	Output pin for serial data transmission clock to IC501, IC603.
24	OUT	$\overline{\text{SLED G}}$	Output pin which controls sled motor gain. Normally "H". "L" during access.
25	IN	SLED S	Input pin which detects optical block at innermost circumference.  Reaches innermost circumference. Detected by going from "L" to "H".

Pin No.	I/O	Pin Name	Function
26	IN	AF ADJ	Not used. Normally "H".
27	OUT	Q INT	Trigger output pin for data sent to IC703.
28	OUT	S ACK	IC703 M REQ signal acknowledge signal output pin.
29	IN	M REQ	IC703 M REQ signal input pin.
30	—	NC	Not used.
31 – 34	IN/OUT	CMD0 – CMD3	Data input/output with IC703.
35	OUT	LD ON	Output pin which controls laser diode ON/OFF.
36	OUT	LOAD IN	Not used.
37	OUT	LOAD OUT	
38	OUT	EPS	Output pin which detects disc emphasis and switches emphasis ON/OFF.
39	——	V_{DD}	Power supply pin (5 V)
40	OUT	REC MUTE	Not used.
41	OUT	PAUSE	
42	IN	$\overline{\text{REC M}}$	
43	——	NC	
44	OUT	D MUTE	Digital signal muting control output pin. "H" for muting.

1-6. IC714 AND IC715

These IC's are for IC704 port expansion, and have switch input as shown in Table 6 below. When all are in low, switches are ON.

IC No.	Pin No.	Name of Switch	Function
715	5	CON	Chucking closed position detection.
715	11	COFF	Chucking opened position detection.
714	5	CMID	Chucking mid position detection.
714	10	DDET	Disc detection switch input pin.
714	6	RLS	Input pin which detects carrier claw open.
715	6	HOLD	Input pin which detects that carrier claw has grasped disc.
715	10	UP	Input pin which detects carrier arm raising.
714	11	TEST	Key for setting in test mode. Set in test mode by pushing this switch while turning the power swtich on, then continue to press until the the TEST LED goes out.
715	3	A-F	Test mode key. Rotates arm motor in forward direction.
715	13	A-R	Test mode key. Rotates arm motor in reverse direction.
714	12	RLS	Test mode key. Rotates chucking motor in opening direction.
714	4	HOLD	Test mode key. Rotates chucking motor in closing direction.
715	12	LEFT	Test mode key. Rotates carrier motor to the left.
715	4	RIGHT	Test mode key. Rotates carrier motor to the right.

Table 6

1-7. CHANGER MECHANISM

The changer consists of three blocks, the chucking block, carrier block and arm block. Each has one motor and several detection functions.

1-7-1. The 3 Blocks and Detection Switches

Block Name	S-No.	Name	Function
Chucking Blocks	M701	CHUCKING MOTOR	
	S706	CON SW	Detects chucking mechanism closed.
	S701	COFF SW	Detects chucking mechanims open.
	S709	CMID SW	Detects chucking mechanism midway.
Carrier Block	M703	CARRIER MOTOR	
	S702	LIMIT SW	Detects carrier position at the left edge.
	S704	END SW	Detects carrier position at the right edge.
	PH701	PHOTO 1	Counts what slot number the disc is in, and detects carrier stop position.
	PH702	PHOTO 2	
	PH703	M MEM	Disc return position memory.
Arm Block	M702	ARM MOTOR	
	S707	D DET SW	Detects if disc is in tray or not.
	S705	HOLD SW	Detects if disc is grasped.
	S708	RLS SW	Detects if disc is released.
	S703	UP SW	Detects arm raising.
Other Detection	S710	TRAY SW	Detects if tray is set.
	S711	DOOR SW	Detects if door is closed.
	S715	MOTOR CUT SW	Linked with arm lock lever; when OFF, carrier motor does not move.
	S714	LASER CUT SW	In same place as S711; when OFF, current does not flow to laser diode.

Table 7

1-7-2. Mechanism Operation Timing Chart

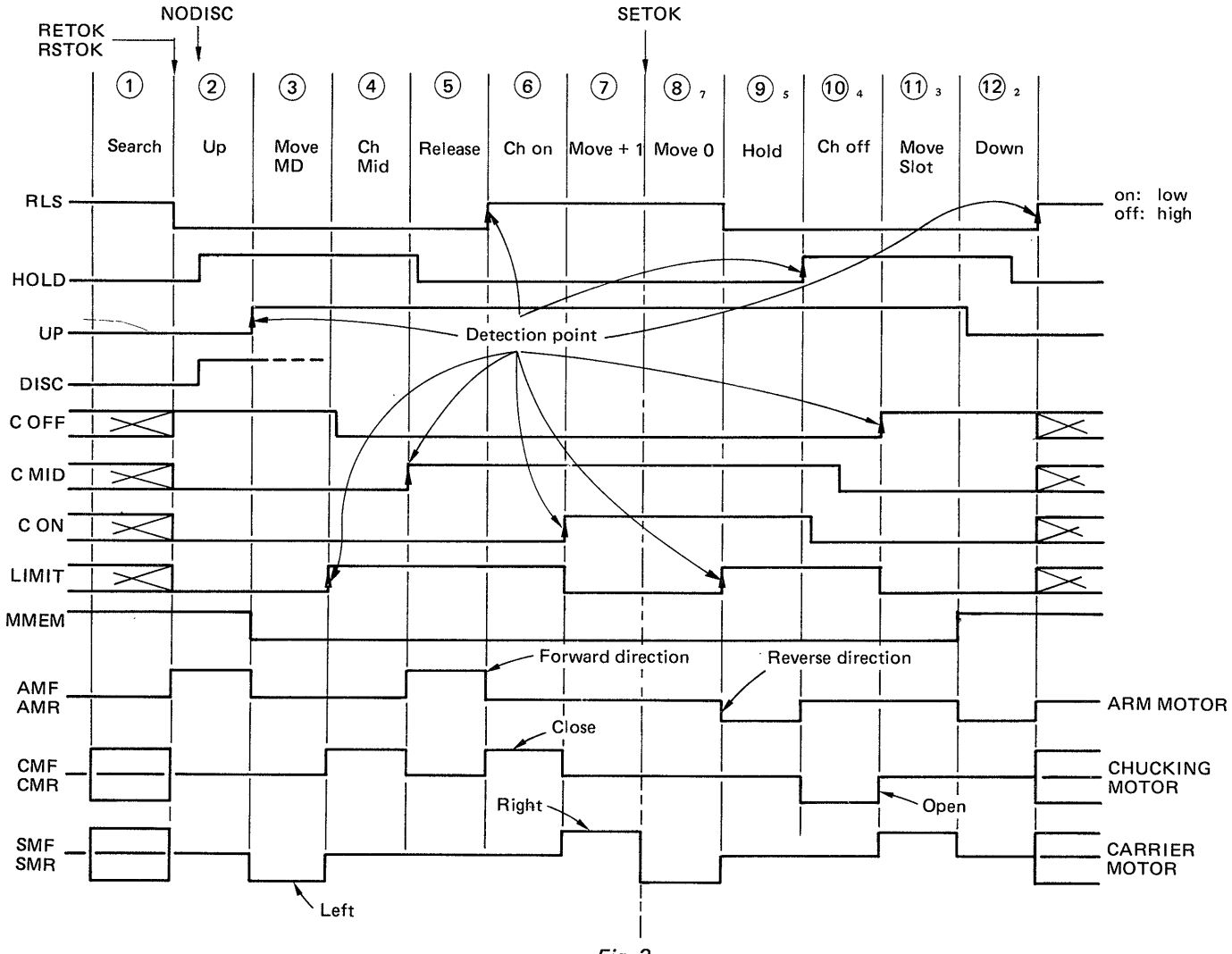


Fig. 3

1-7-3. Mechanism Operation Flow Chart (Numbers correspond to those in Fig. 3, Timing Chart.)

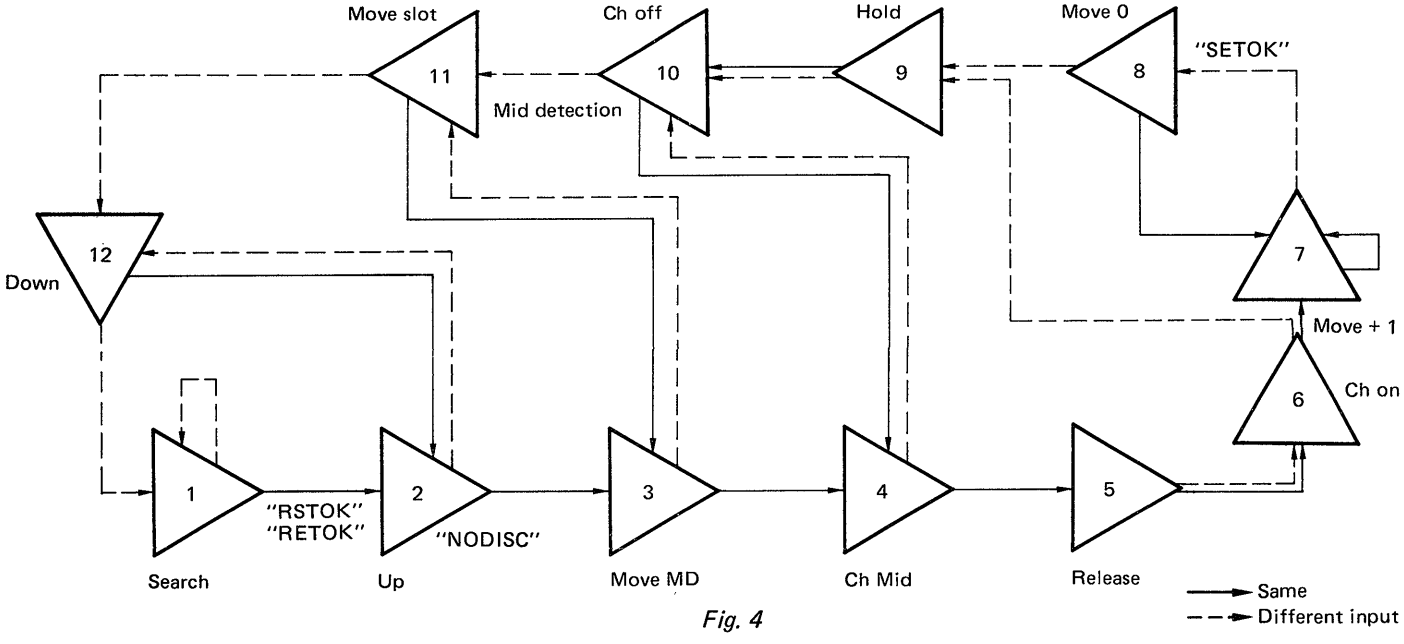


Fig. 4

1-7-4. Carrier Position Counting Method

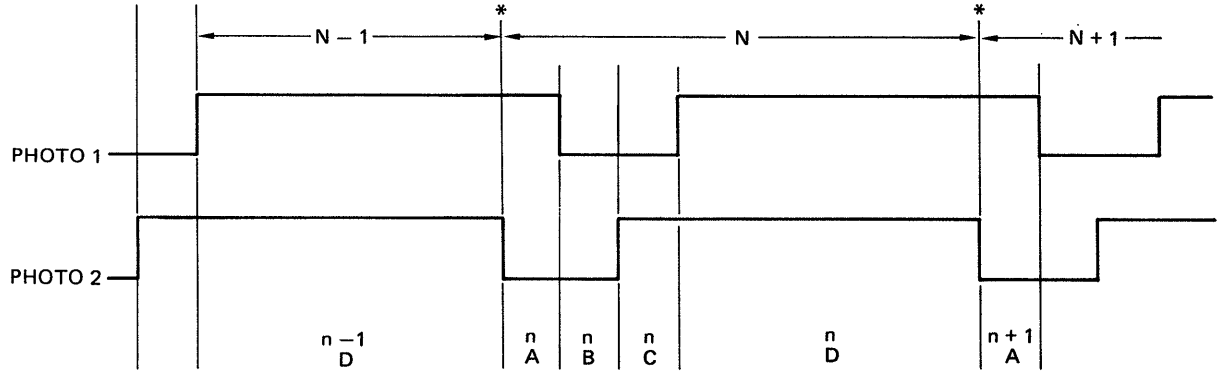


Fig. 5

PHOTO 1	PHOTO 2	Carrier Position	Note
"H"	"L"	A	Area B when PHOTO 1 goes from high → low. *Area D when PHOTO 2 goes from low → high. (count down)
"L"	"L"	B	Area A when PHOTO 1 goes from low → high. Area C when PHOTO 2 goes from low → high.
"L"	"H"	C	Area D when PHOTO 1 goes from low → high. Area B when PHOTO 2 goes from high → low.
"H"	"H"	D	Area C when PHOTO 1 goes from low → high. *Area A when PHOTO 2 goes from high → low. (count up)

Table 8

Note:

- PHOTO 1 indicates left side and PHOTO 2 right side (as seen from the front of the set).
- The above four states A – D exist within one slot counting.
- Counting is done at the points marked (*).
- Stop area is "B".
- When the carrier present position and target position are more than 5 slots apart, movement is done at high speed, and at low speed when less than 5 slots apart. Also, when the target disc is in area A or C, pulse movement is done and it stops in area B.

1-8. MECHANICAL MEMORY

The mechanical memory is at the rear of the carrier and detection is by photointerrupter. This locks with the carrier when the arm is down, and the lock is released when the arm goes up and it is freed.

Then, when the arm goes for a disc, it locks, and when the disc is grasped and moves toward the BU (CD player), the mechanical memory remains in that position. Then, when the disc is returned, even if there is a miscount, the disc is returned to the original position due to the memory. Also, even if power is cut during PLAY, the disc can be returned to the correct position after power is turned on again.

1-9. TEST MODE

Test mode is a service founction, and enables the changer mechanism only to be moved manually.

1-9-1. How to Set TEST Mode

1) Press the manual function key power and turn D915 off.
2) Turn power on again while pressing the TEST key.
3) Continue to press the TEST key until D715 LED goes out.

After performing the above, the changer mechanism will not operate at all. (However, the carrier motor will try to move to a disc position (area B).)

IC704 is in a special state, and the other CPU's operate normally. External control and signal lines are also the same as usual.

1-9-2. Movement in TEST Mode

By pressing the 6 keys A-F, A-R, LEFT, RIGHT RLS, HOLD, the motors will move in the prescribed directions. Two or more will not move at the same time.

When any key is pressed, movement will occur, and will stop when the key is released. Also, when a detection point is reached, the motor will stop even though the key continues to be pressed. In order to continue moving at this point, turn off once, then press again.

Also, when the limit position is reached (the position where further rotation will cause the mechanism to break) the motor stops.

Stop detection points:

Arm: When the four switches go on.
Carrier: When right or left limit switch goes on.
Chucking: Open direction, when COFF goes on; Close direction, when CMID or CON goes on.

1-9-3. Precautions

1) Movement done by pressing the keys will not cause the blocks to break, but two blocks might collide, causing stress on the mechanism.
   Example: Chucking and arm
   Also, the possibility of colliding with a disc, etc. exists, so be sure to observe when moving the blocks.
2) After moving manually, return to normal operation may not be possible without returning to the following state:
   - Arm down (claw open)
   - Mechanism memory locked (D711 lit up)
   - Carrier moves smoothly to the right and left

1-10. MANUAL KEYS

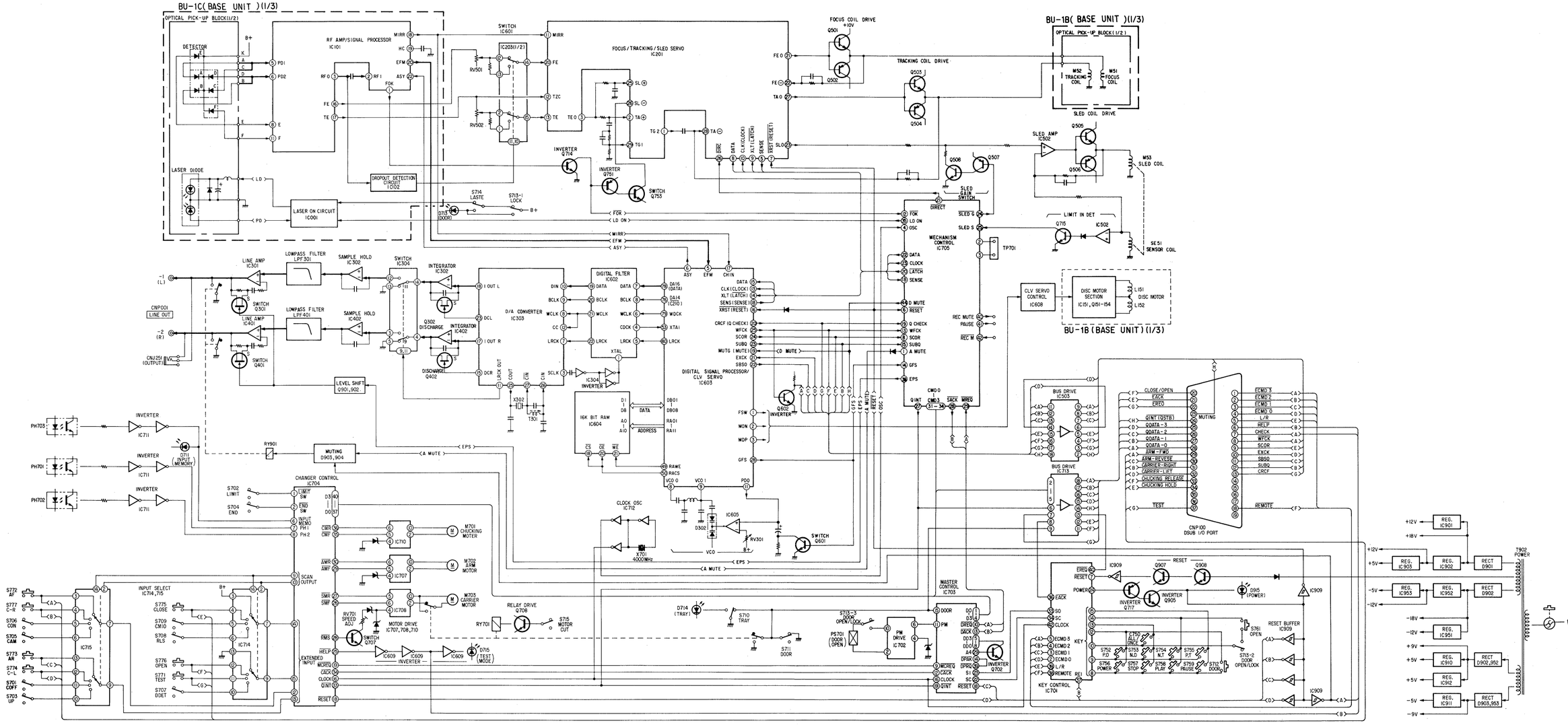
The 9 keys lined up on the top of the board are the manual keys, and are accepted at any time.

1-10-1. Key Functions

Name of Key	S-No.	Function	
POWER	S756	CPU reset control switch. D915 lights up when this is pressed.	
PLAY	S758	Normally first selection is played.	Same as regular CD player.
PAUSE	S759		
STOP	S757		
N.T	S754	Next Track	
P.T	S755	Previous Track	
N.D	S753	Next Disc	
P.D	S752	Previous Disc	
ALL/ONCE	S750	When this key is pressed once, ALL state results. In ALL state, when disc playing is completed, the next disc is automatically played. When there is no next disc, search is performed, and when a disc is found it is played. To put in ONCE state, power must be turned off once.	

Table 9

2. BLOCK DIAGRAM



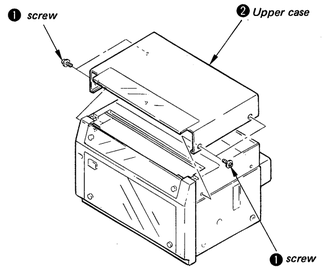
SECTION 2
DISASSEMBLY

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

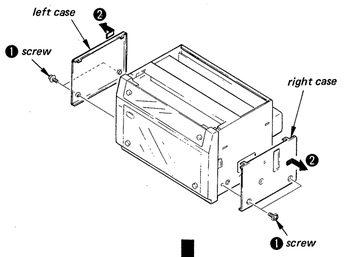
2-1. REMOVAL

PANEL

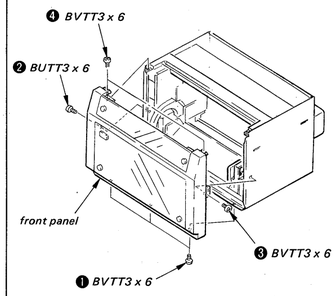
- UPPER



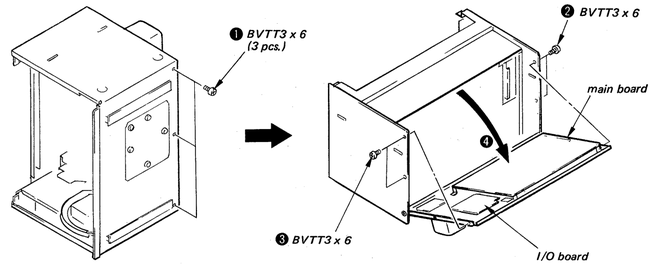
- LEFT/RIGHT CASE



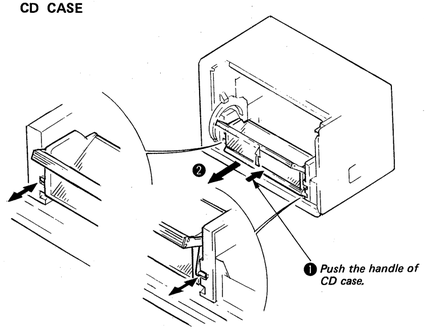
- FRONT PANEL



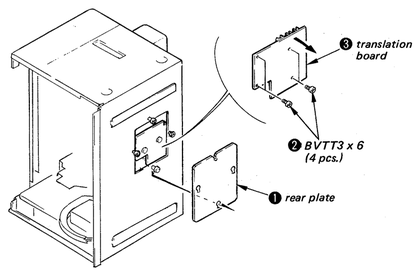
MAIN BOARD



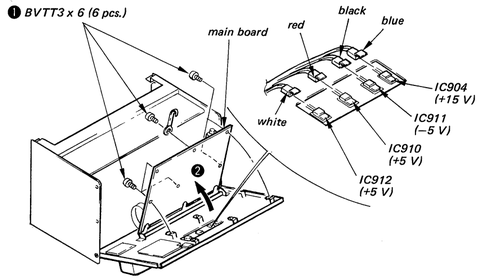
CD CASE



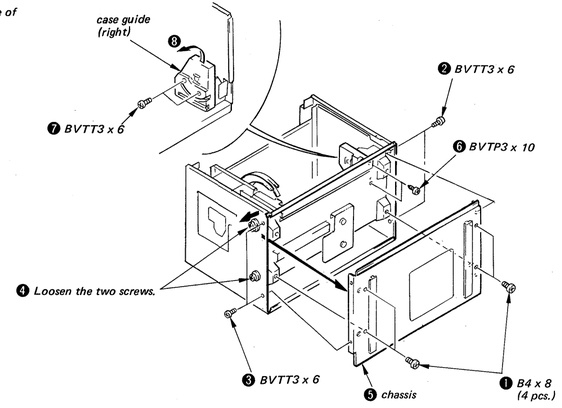
TRANSLATION BOARD



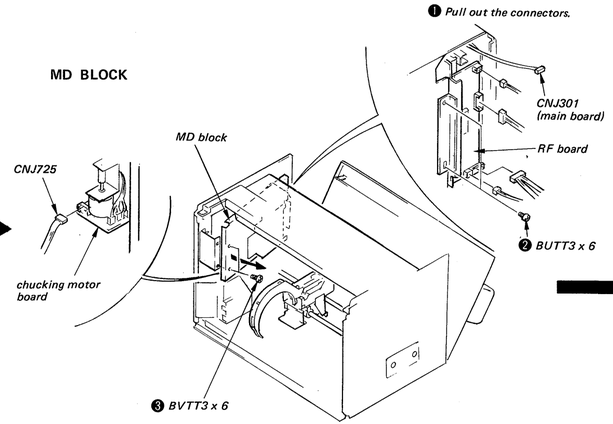
REGULATOR IC (IC904, 910–912)



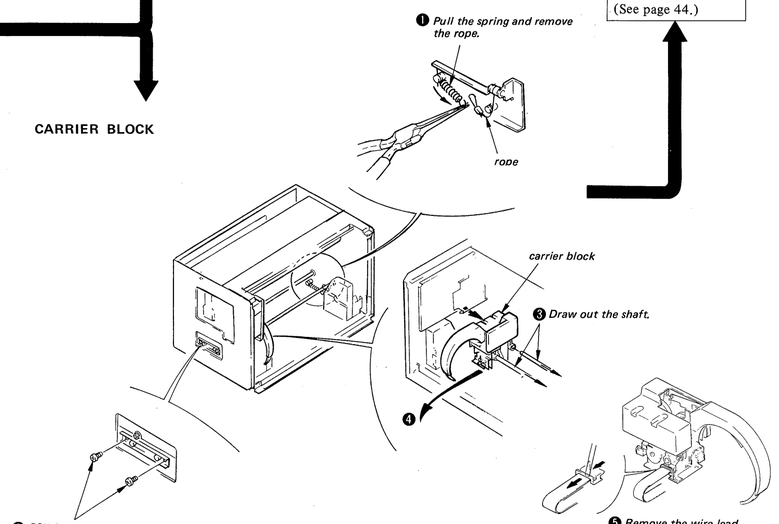
CASE GUIDE (RIGHT)



MD BLOCK

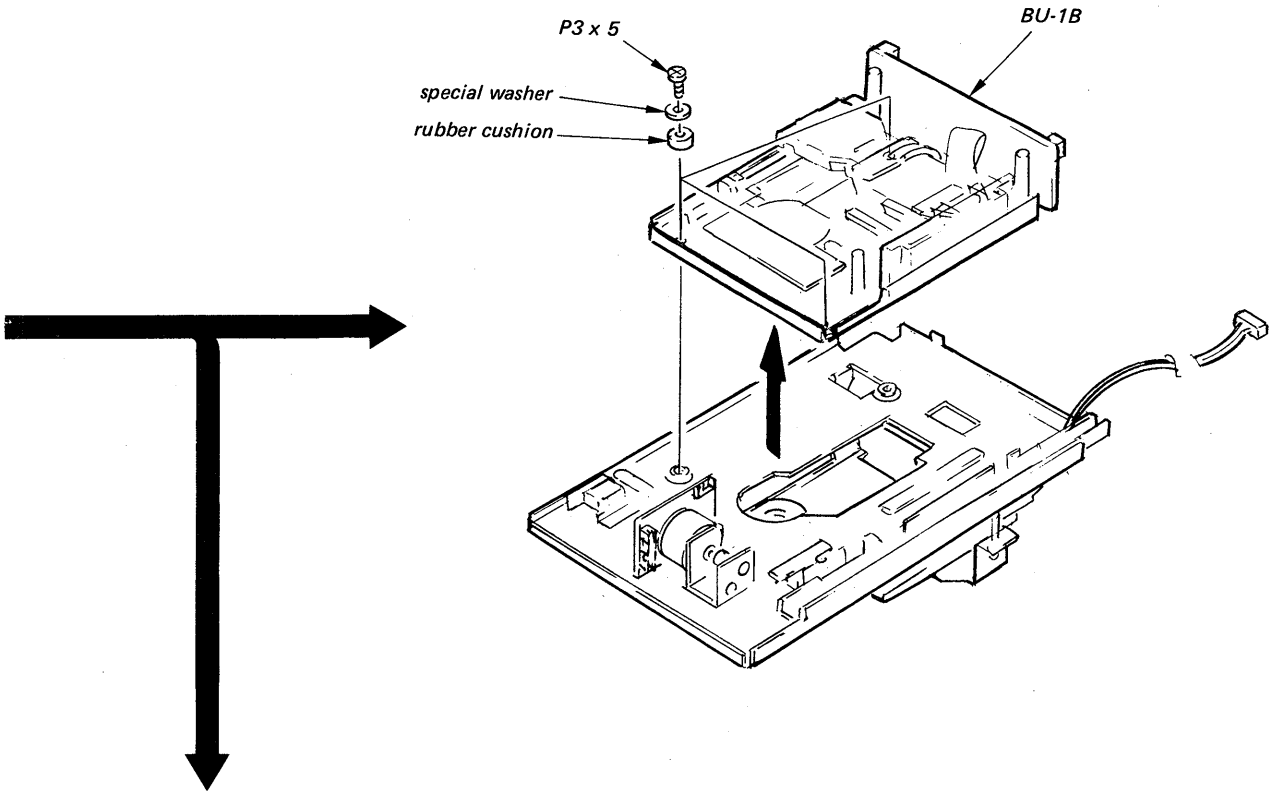


CARRIER BLOCK

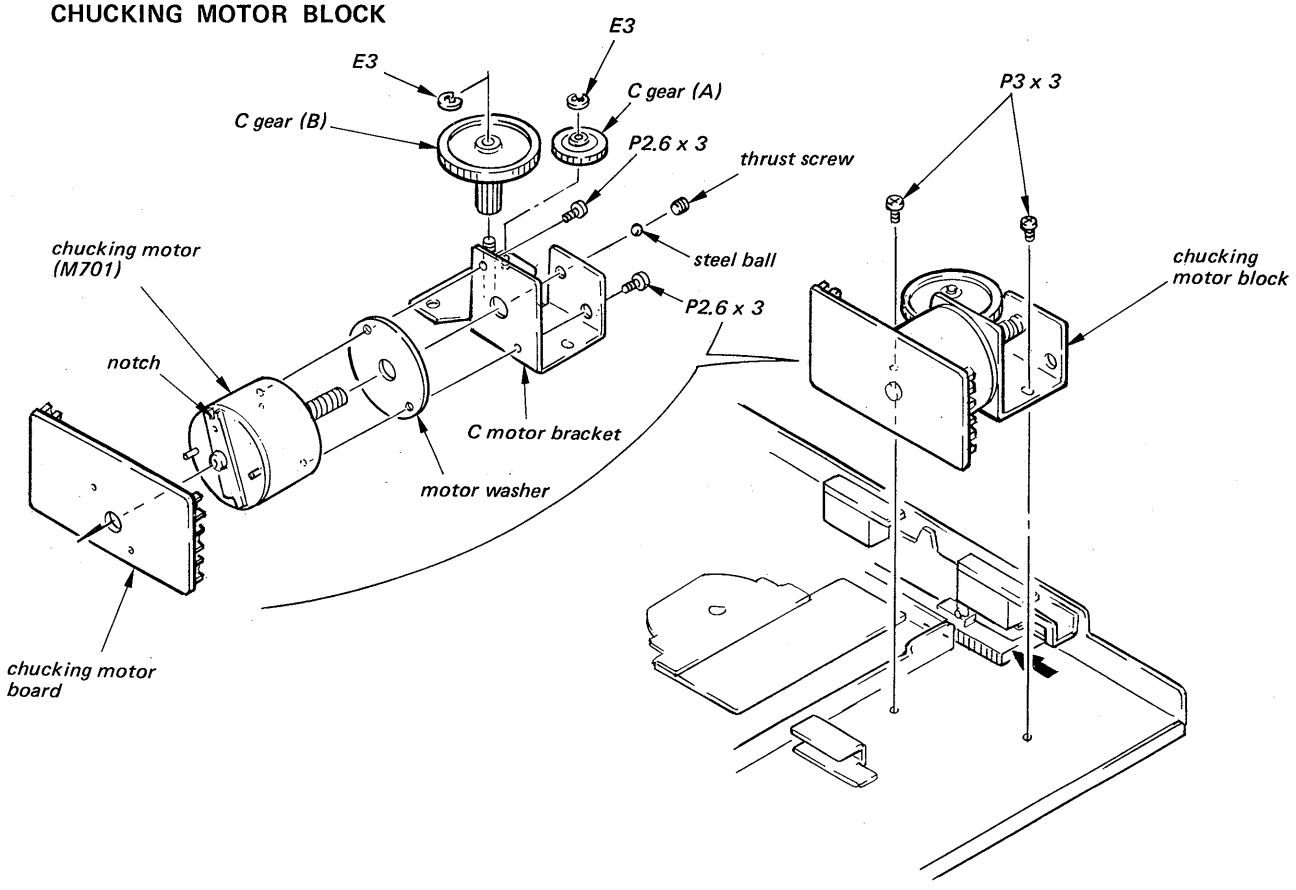


ROPE STRINGING
(See page 44.)

BU-1B UNIT



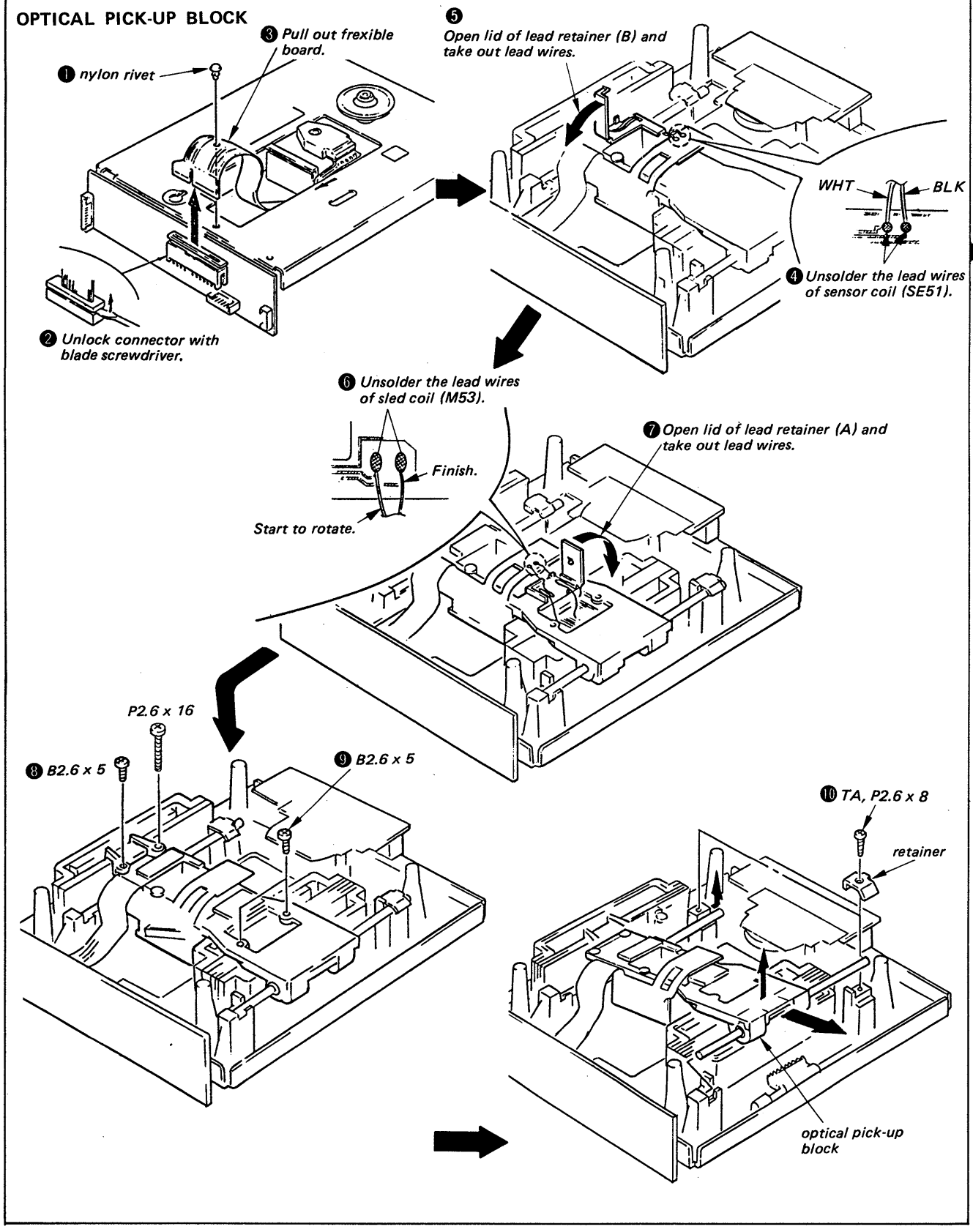
CHUCKING MOTOR BLOCK



BASE UNIT (BU-1B)
(See page 23.)

Refer to "NOTES ON HANDLING BASE UNIT (BU-1B)" on page 5 to prevent damage caused by static electricity.

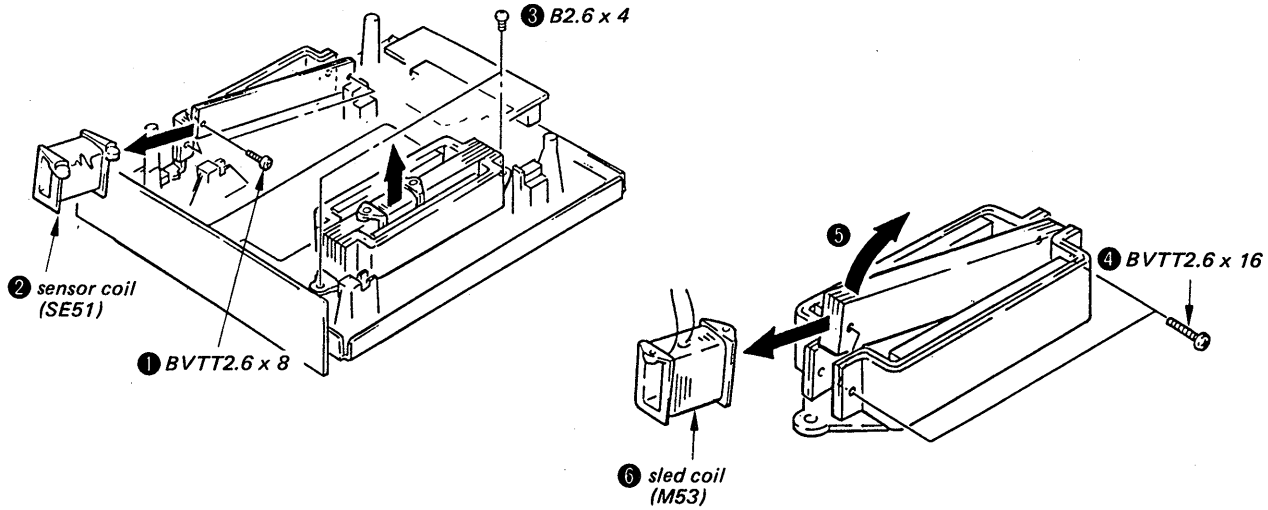
OPTICAL PICK-UP BLOCK



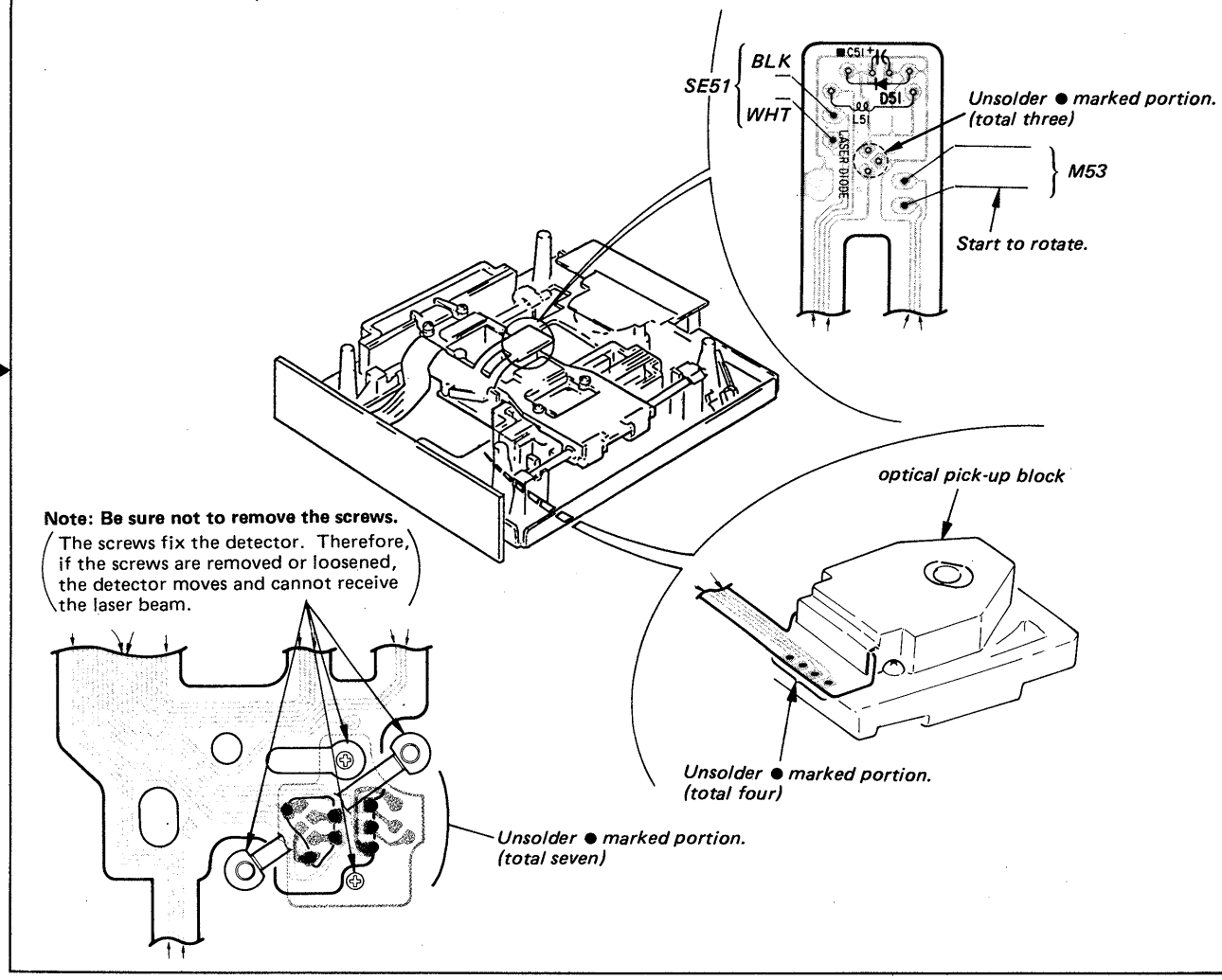
SLED COIL (M53), SENSOR COIL (SE51)

❶, ❷ : *sensor coil (SE51)*

❸~❻ : *sled coil (M53)*



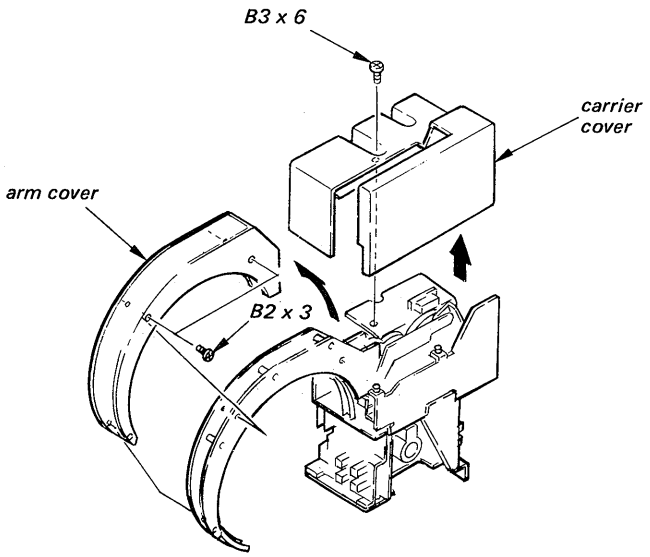
FLEXIBLE BOARD



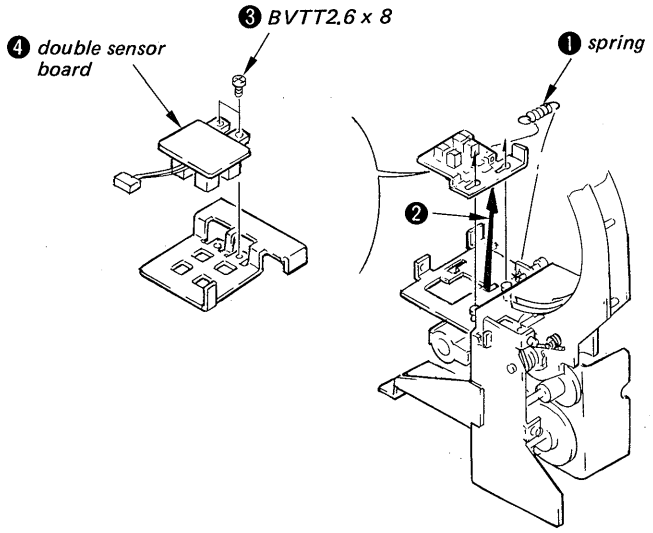
Note: Be sure not to remove the screws.
The screws fix the detector. Therefore, if the screws are removed or loosened, the detector moves and cannot receive the laser beam.

2-2. CARRIER SECTION REMOVAL

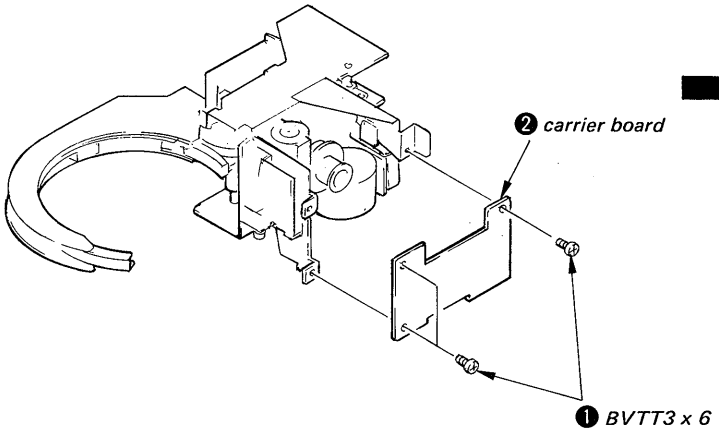
CARRIER COVER AND ARM COVER



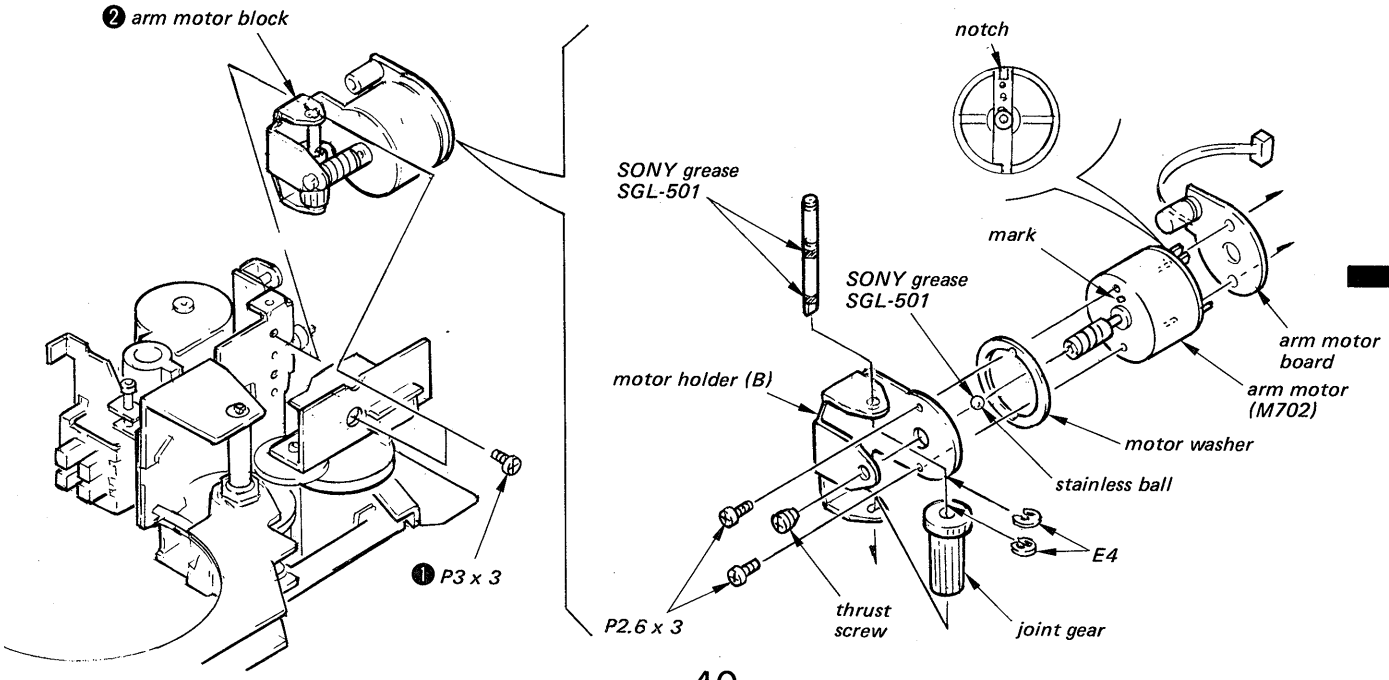
DUBLE SENSOR BOARD



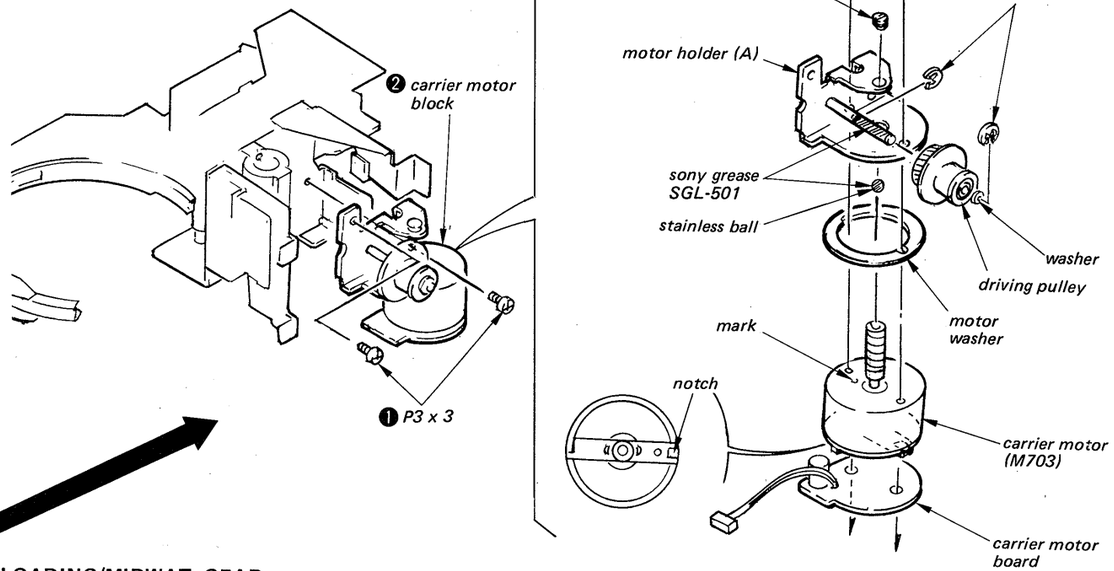
CARRIER BOARD



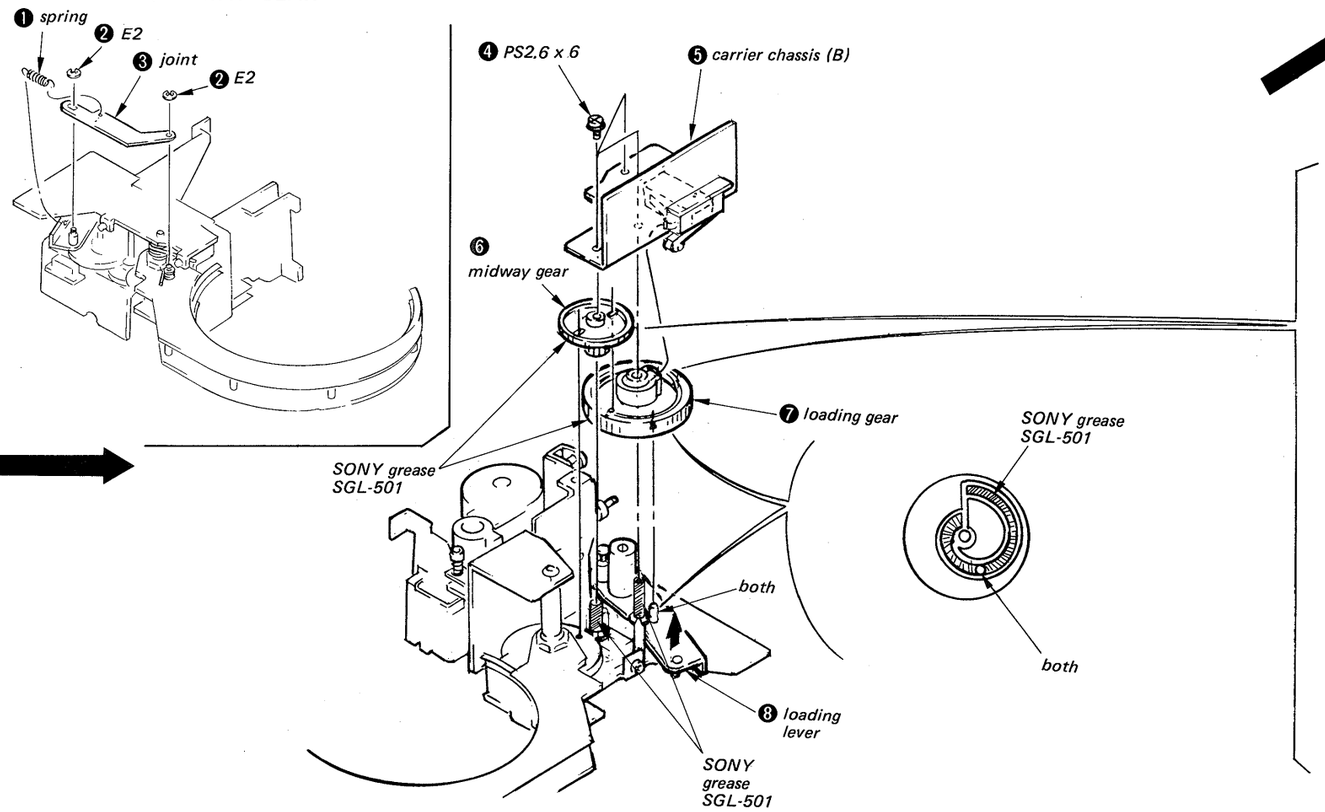
ARM MOTOR BLOCK



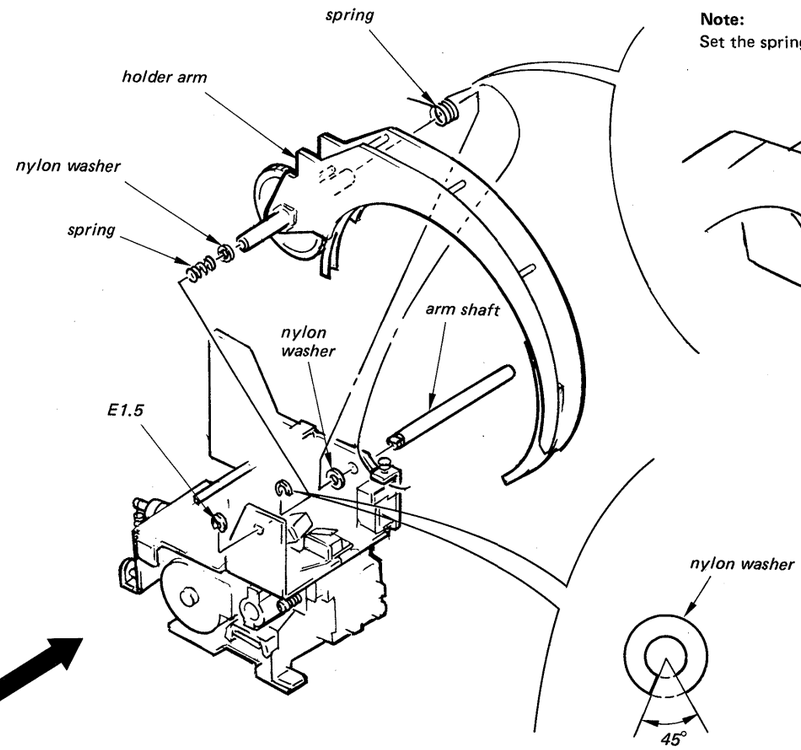
CARRIER MOTOR BLOCK



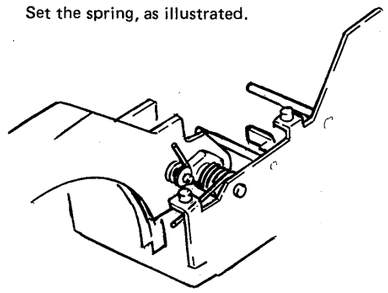
LOADING/MIDWAT GEAR



HOLDER ARM



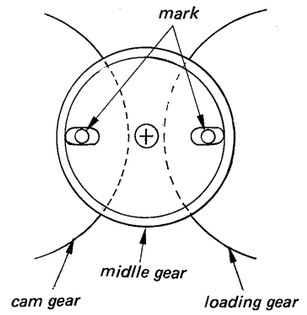
Note:
Set the spring, as illustrated.



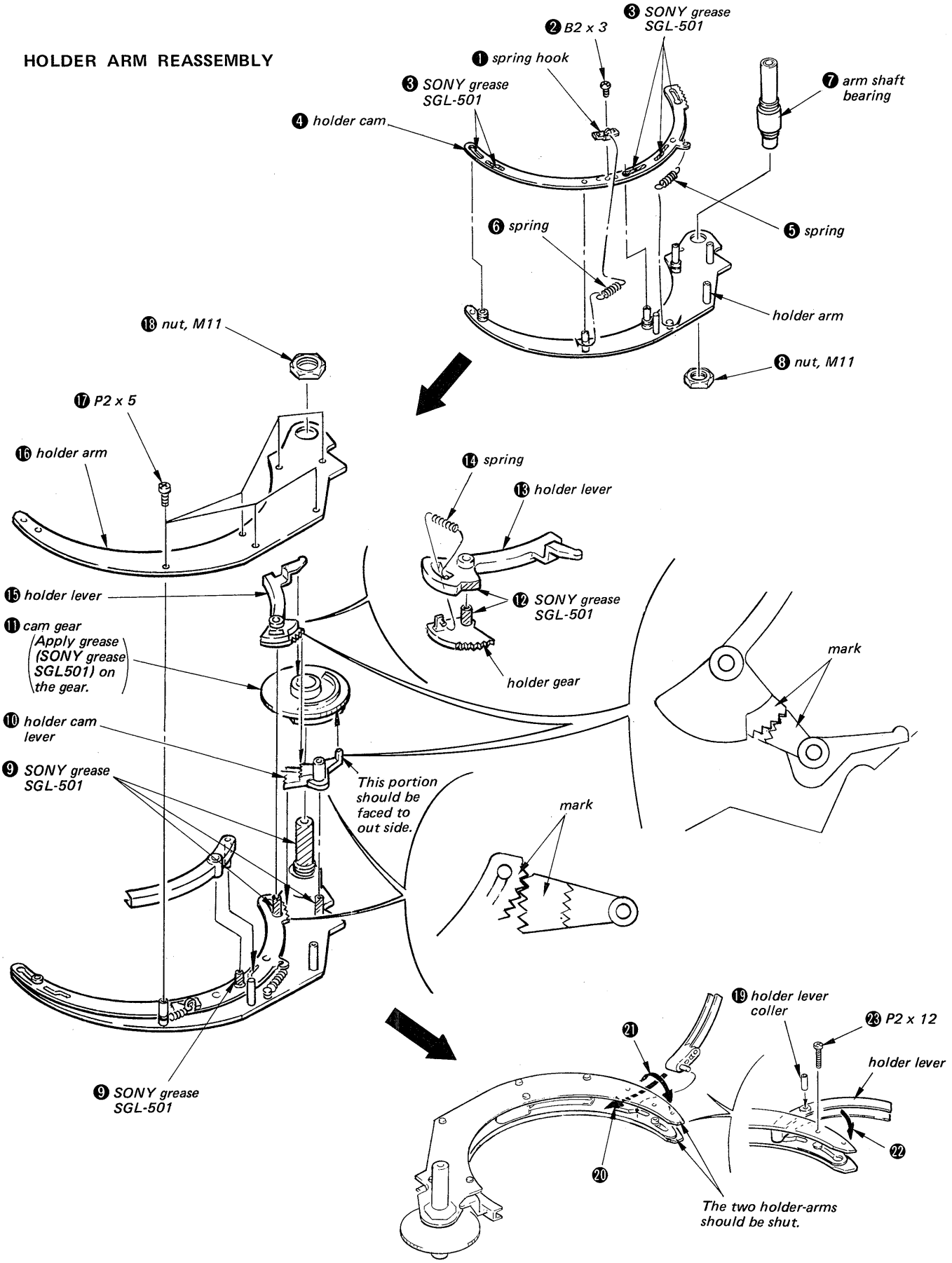
Cut this portion.

Note:

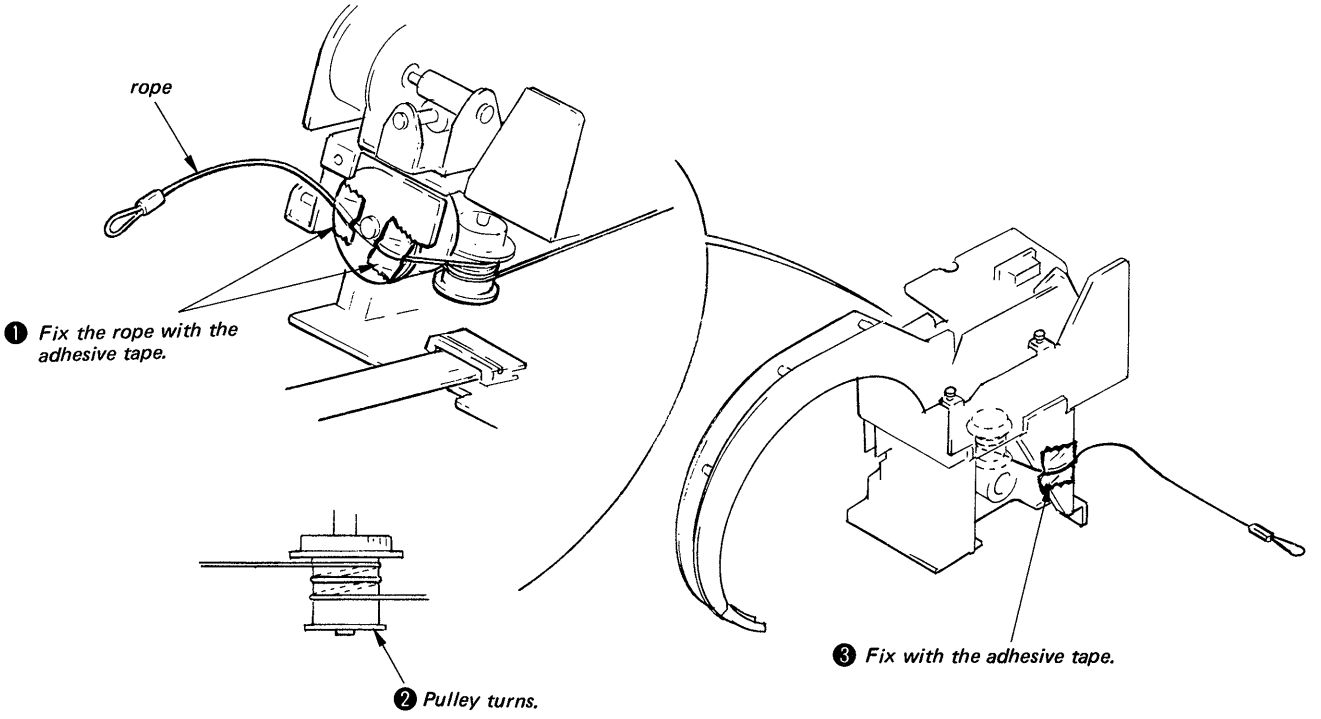
1) Set the com-gier and lording gear as illustrated.
2) After assembling midlle gear, check the position of the three gears as illustrated.



HOLDER ARM REASSEMBLY

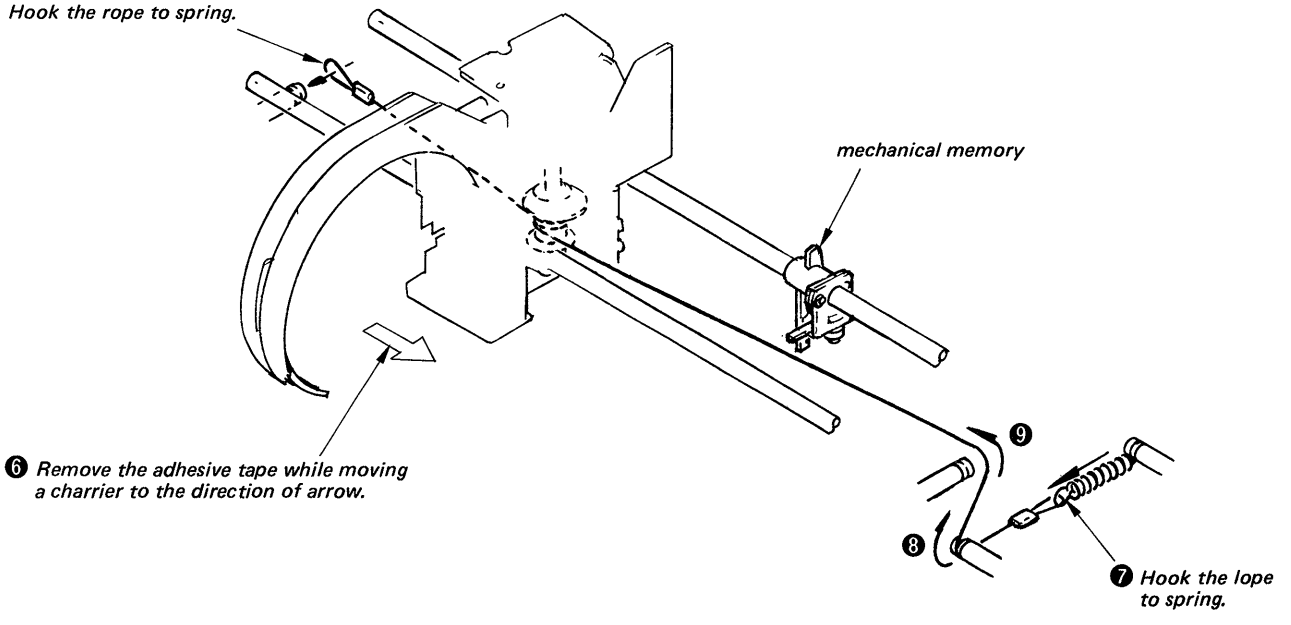


2-3. ROPE STRINGING



❹ Set the charrier block. (See page 36)

❺ Hook the rope to spring.



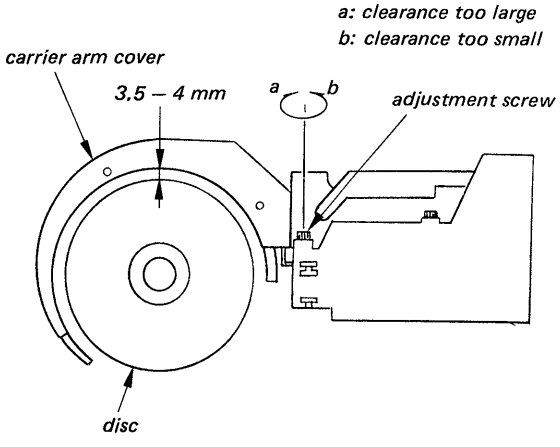
SECTION 3
ADJUSTMENTS

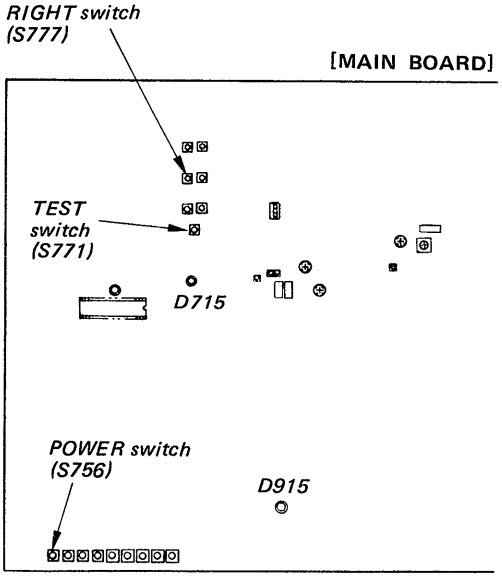
3-1. MECHANICAL ADJUSTMENTS

When making mechanical adjustment, upper main plate (P56, No. 157) should be set.
If the upper mainplate is set after the adjustment, it will be warped.

Carrier Arm Height Adjustment

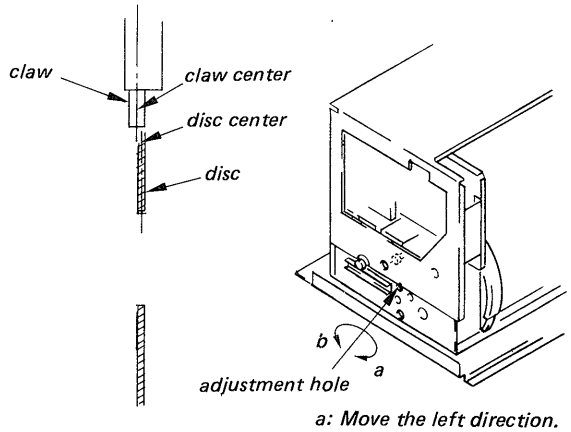
1. Put set into a test mode. (See page 35.)
2. Insert a disc in the CD case slot number 19.
3. Press the RIGHT switch (S777) and move the carrier to the 17th slot position.
4. Adjust the adjustment screw so that the clearance between the carrier arm cover and the top surface of the disc is 3.5 – 4 mm.

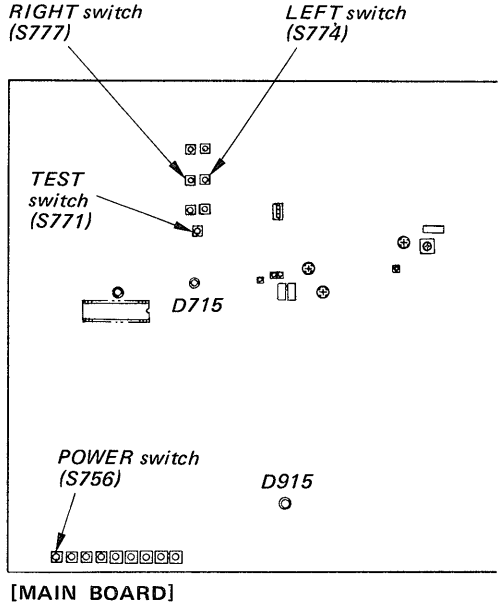




W Sensor Position Adjustment

1. Put set into a test mode. (See page 35.)
2. Insert a disc in the CD case slot number 19.
3. Press the RIGHT switch (S777) or LEFT switch (S774) and move the carrier to the 19th slot position.
4. Check the amount of shift of the position with the mirror an claw center to disc center, and move the charrier to the home position.
5. Adjust the charrier position with the hexagonal wrench (Amount of shift: 0.5 mm/rev).

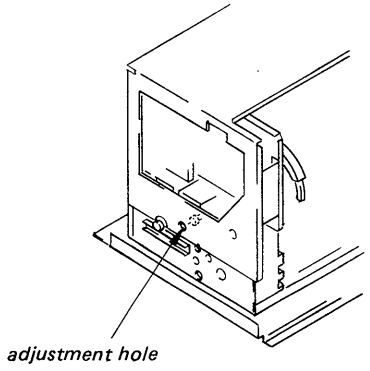


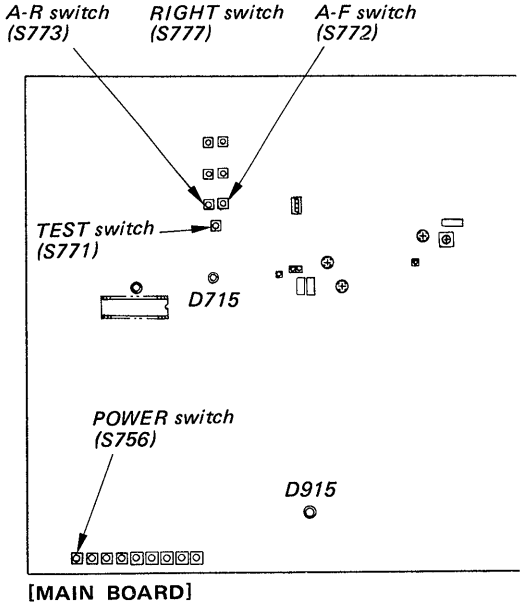


6. Press the RIGHT switch (S777) and move the carrier to the 19th slot position, then check the shift out of positions on claw center to disc center.
7. Repeat the procedure 4 to 6 several times and make the no shift out of position on claw center to disc center, when moving the carrier to the 19th slot position.

Hold Switch (S705) Adjustment

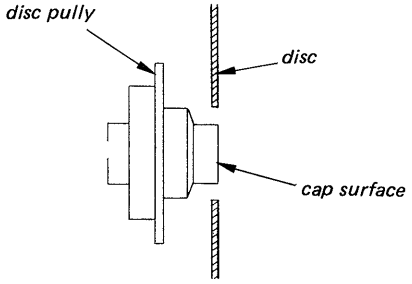
1. Put set into a test mode. (See page 30.)
2. Move the carrier to 1st slot position by using the RIGHT switch (S777).
3. Press the A-F switch (S772) until the carrier arm is raised by 45 degree.
4. Turn the adjustment screw counterclockwise through the adjustment hole iwth an hexagonal wrench and find the point where the switch (IC715's pin ⑥ becomes low) switches.
5. From that position, turn 1.5 rotations more in the counterclockwise direction.
6. Press the A-R switch (S773) and open the carrier arm claw.





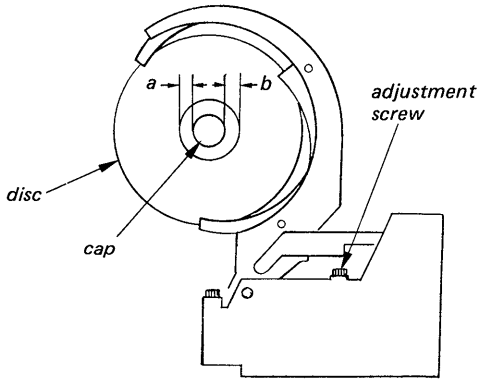
Carrier up Position Adjustment

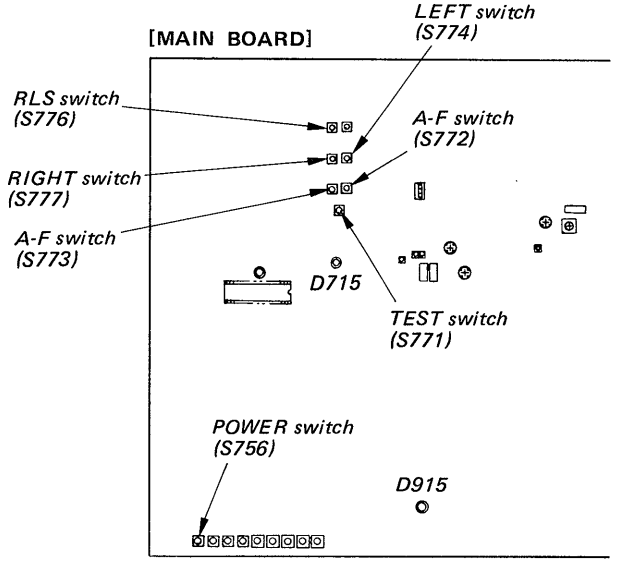
1. Put set into a test mode. (See page 30.)
2. Press the RLS switch (S776) to open the chucking arm fully.
3. Press the RIGHT switch (S777) or LEFT switch (S774) and move the carrier to the disc position.
4. Press the A-F switch (S772) so that the carrier takes the disc and rises.
5. Press the LEFT switch (S774) to move the carrier to the left and stop when the disc playing surface reaches the cap surface.



6. Adjust the adjustment screw so that the disc position relative to the cap is a=b.

   Check a=b using a mirrer.





[Home Position Adjustment]

1. Put the set into the test mode.

(See page 30 in the service manual.)

2. Confirm the W sensor position adjustment is done.
3. Move the carrier fully right with pushing RIGHT switch (S777).
4. Take out the CD case and loosen the screw in the following figure. When the screw is locked with the locking compound, wipe it with the alcohol.

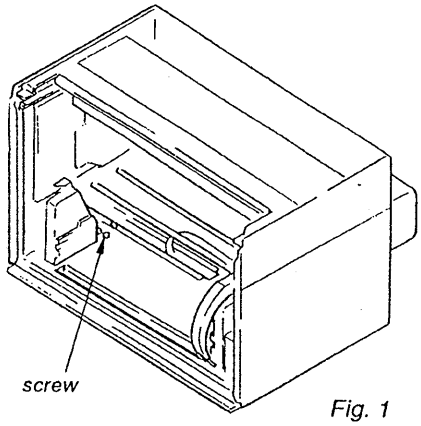


Fig. 1

5. Fully open the chucking arm with pushing RLS switch (S776).
6. Completely open the claws of the carrier arm with pressing A-F switch (S772) over and over again.
7. Move the carrier fully left with pushing LEFT switch (S774).
8. Install a disc on the spindle of the base unit by hand, and make it chucking with pushing HOLD switch (S775). At MID position, the chucking arm is stopped once. Push HOLD switch (S775) again.
9. Push the carrier bearing position gradually to left by hand as following figure. When the vibration caused by the carrier motor starting to rotate is felt, gradually return it to right. When the carrier motor stops rotating, let go of the carrier gently. At this time, check the position of two claws on the top and the bottom of the carrier arm. (See Fig. 4)

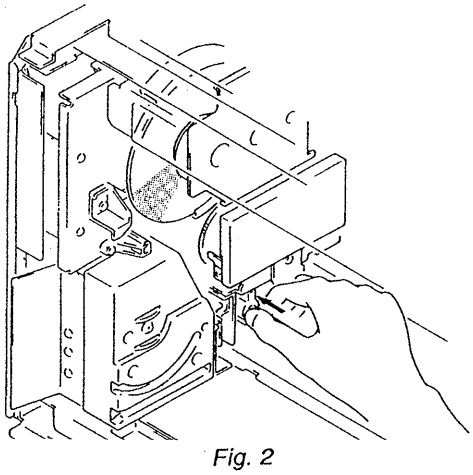


Fig. 2

10. Pull the carrier plate ass'y gradually to right by hand as following figure. When the vibration caused by the carrier motor starting to rotate is felt, gradually return it to right. When the carrier motor stops rotating, let go of the carrier plate ass'y. At this time, check the position of two claws in the same manner as the item 9. (See Fig. 4)

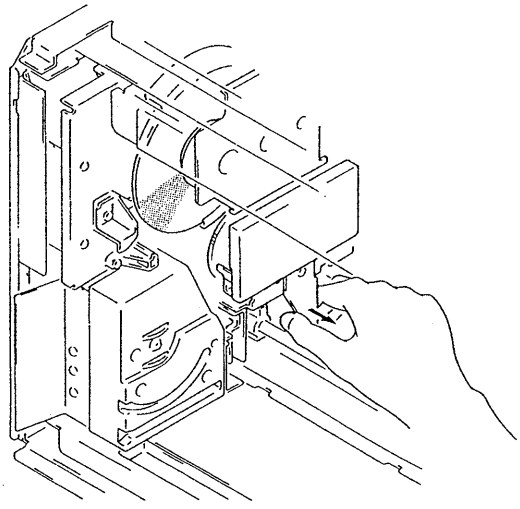


Fig. 3

11. Adjust so that the position of two claws in the items 9 and 10 becomes a=b as the following figure by inserting the hexagonal wrench to the adjusting hole and turning it.

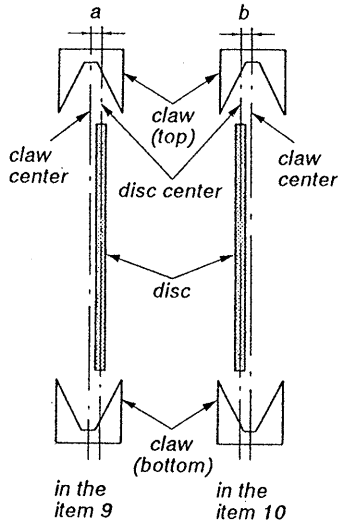


Fig. 4

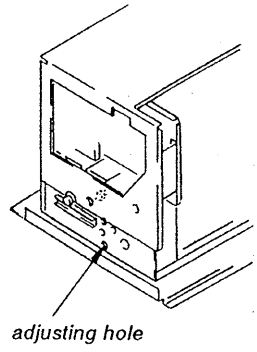
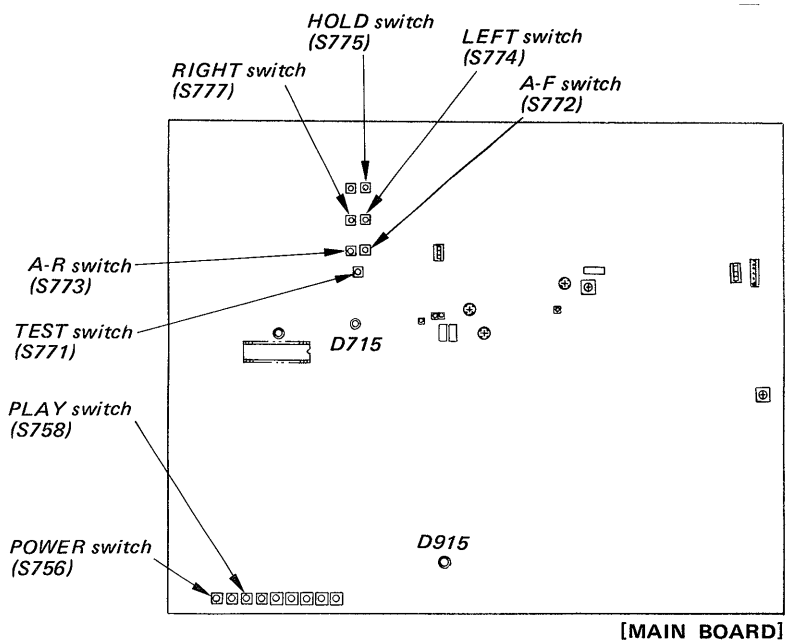


Fig. 5

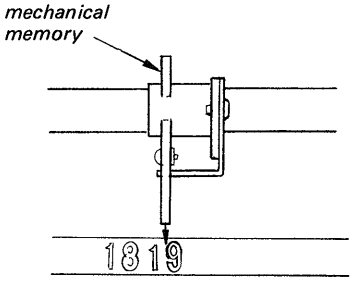
12. Tighten the stopper screw loosened in the item 4. Don't use the screw locking compound.



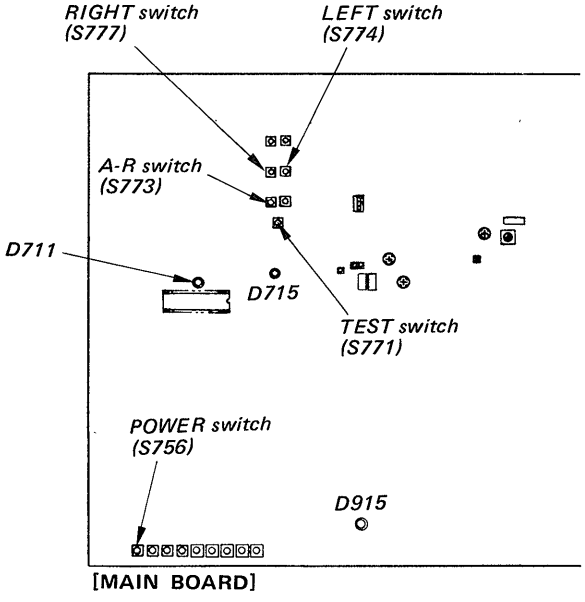
[MAIN BOARD]

Mechanical Memory Setting

1. Put set into a test mode. (See page 30.)
2. Set the tip of the mechanical memory to any (at the position where no disc is set) of the numbers (1 – 60) located under the mechanical memory.



3. With the carrier arm up, press the RIGHT switch and move until the MECH MEM LED (D711) lights up.
4. Press the A-R switch (S773) to lower the carrier arm.
5. Press the RIGHT switch (S777) and LEFT switch (S774) and move the carrier back and forth several slots worth and check that the mechanical memory is released.

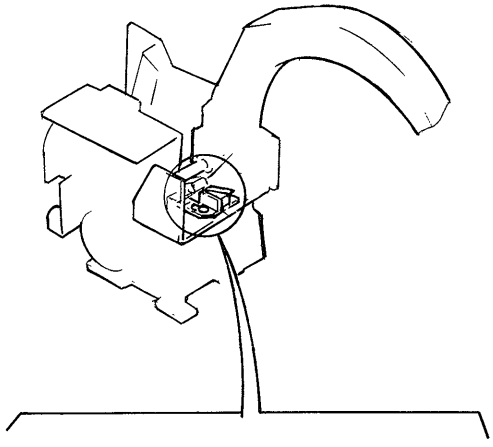


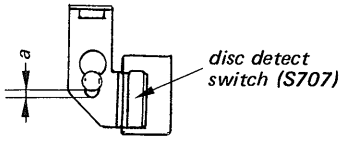
[MAIN BOARD]

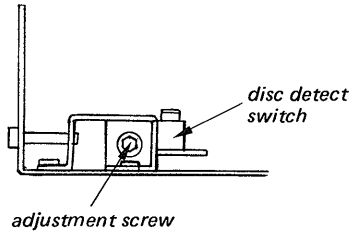
Disc Detect Switch (S707) Adjustment

Turn the adjustment screw to meet the specification.

Specification: a = 1 mm



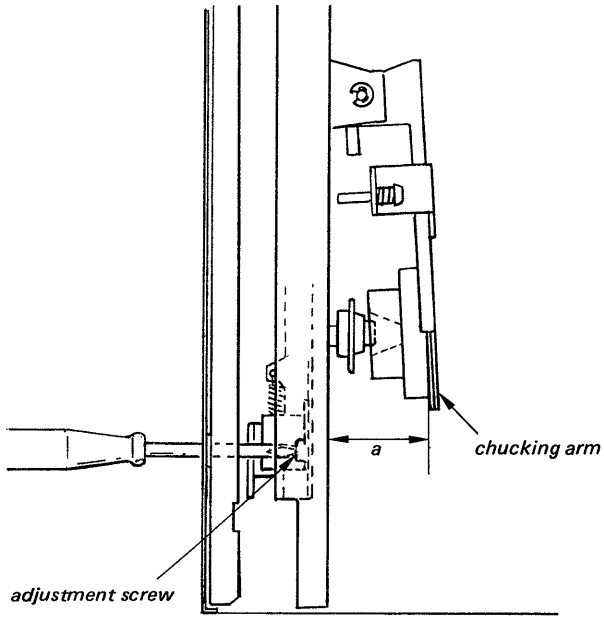


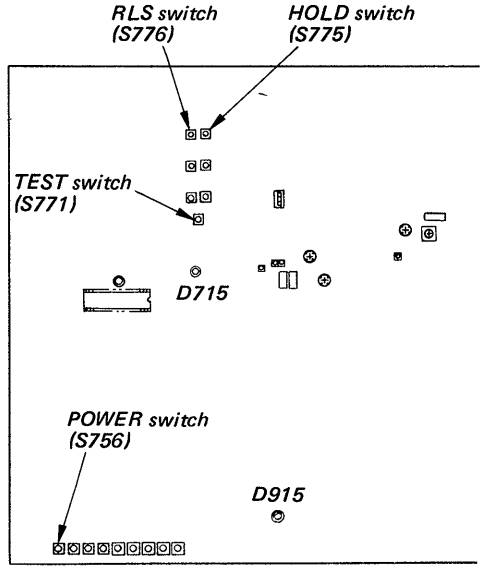


MID Position Adjustment

1. Set to the test mode. (See page 30.)
2. Open the chucking arm by pressing RLS switch (S776).
3. Press the HOLD switch (S775) once, and adjust the distance "a" by adjustment screw, after chucking arm stops.
   "a" should be in 39.5 ±1 mm.
4. Repeat the procedures 2, 3 two or three times for the specification.
5. Apply locking compound to the adjustment screw.

Specification: a = 39.5 ±1 mm

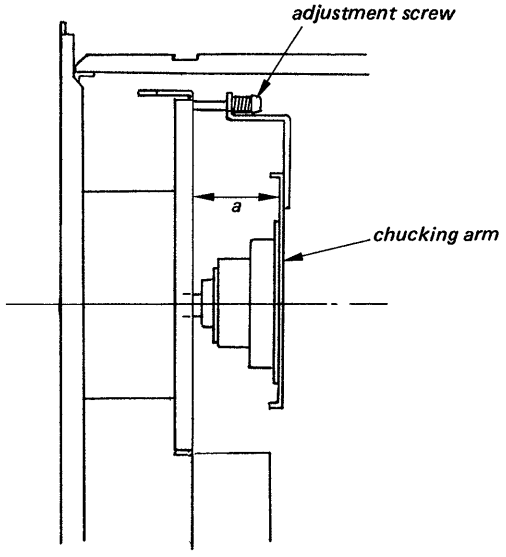


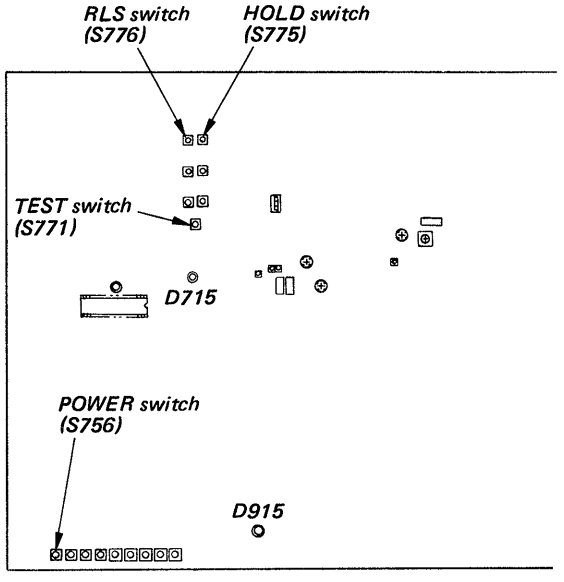


Chucking Arm Height Adjustment

1. Set to the test mode. (See page 30.)
2. Open the chucking arm, by pressing RLS switch (S776).
3. Press the HOLD switch (S775) once. Then, press the HOLD switch again, after stoped chucking arm.
4. Turn the adjustment screw so that the "a" becomes in 32 ±0.5 mm.
5. Repeat the procedures 2 to 4 two or three times for the specification.
6. Apply locking compound to the adjustment screw.

Specification: a = 32 ±0.5 mm





3-2. ELECTRICAL ADJUSTMENTS

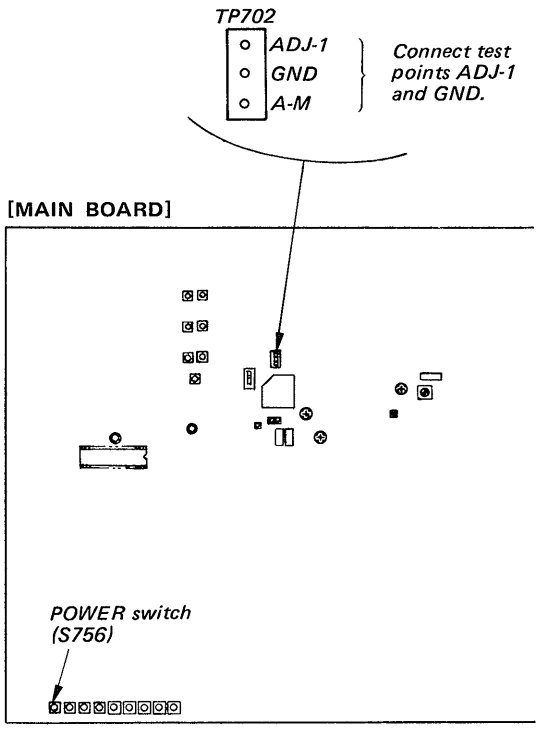
1. Perform adjustments in the order given.
2. Use YEDS-1 disc unless otherwise indicated.
3. Use the oscilloscope with more than 10 MΩ impedance.

Adjustment Mode

1. Connect main amp board test point TP702 (ADJ-1) and GND.
   [This is to prevent the disc table from opening even though pits are not read, by making microcomputer IC705 pin ⑨ low.]
2. Turn power swtich (S756) on.
   (To reset microcomputer.)

After adjustment, remove the lead wire connecting test points TP702 (ADJ-1) and GND.

Adjustment Location: main board



REFERENCE

Focus/Tracking Gain Adjustment

A frequency responce 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.

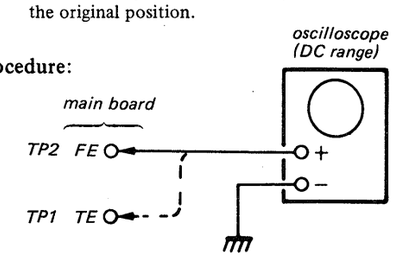
Symptoms \ Gain	Focus	Tracking
• The time until music starts becomes longer for STOP →PLAY. (Normally takes about 2 seconds.)	low	low or high
• Music does not start and disc continues to rotate for STOP →PLAY.	–	low
• Disc table opens shortly after STOP →PLAY.	low or high	–
• Sound is interrupted du 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.

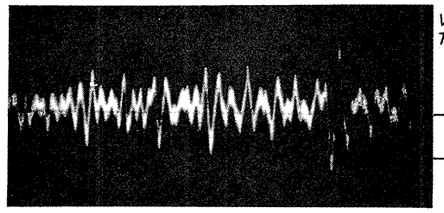
– Simple Adjustment –

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:

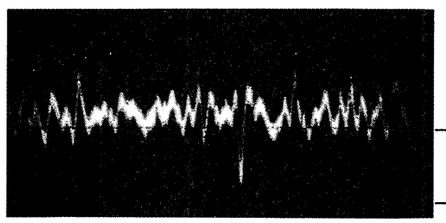


1. Keep the set horizontal.
   (If the set is not horizontal, this adjustment cannot be performed due to the gravity against the 2 axis device.)
2. Put set in adjustment mode. (See page 50.)
3. Insert disc (YEDS-1) and press ▷PLAY button.
4. Connect oscilloscope to main amp board TP FE.
5. Adjustment RV502 so that the waveform is as shown in the figure below. (focus gain adjustment)

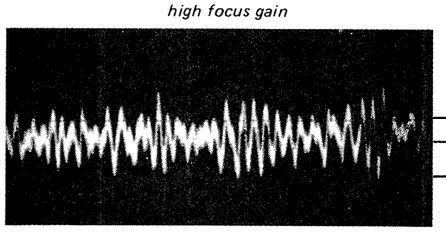


- Incorrent Examples (DC level changes more than on adjusted waveform)

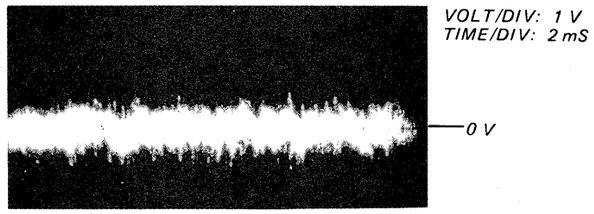
low focus gain



high focus gain

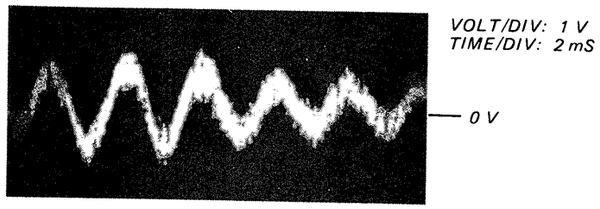


6. Connect oscilloscope to main board TP TE.
7. Adjust RV501 so that the waveform is as shown in the figure below. (tracking gain adjustment)

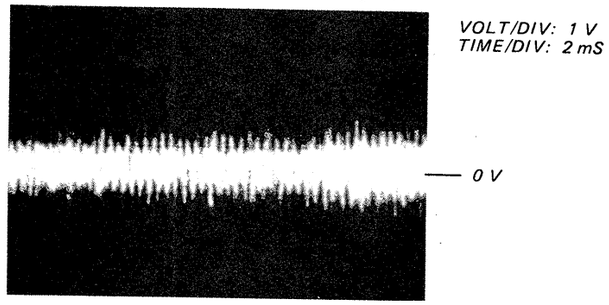


- Incorrect Examples (fundamental wave appears)

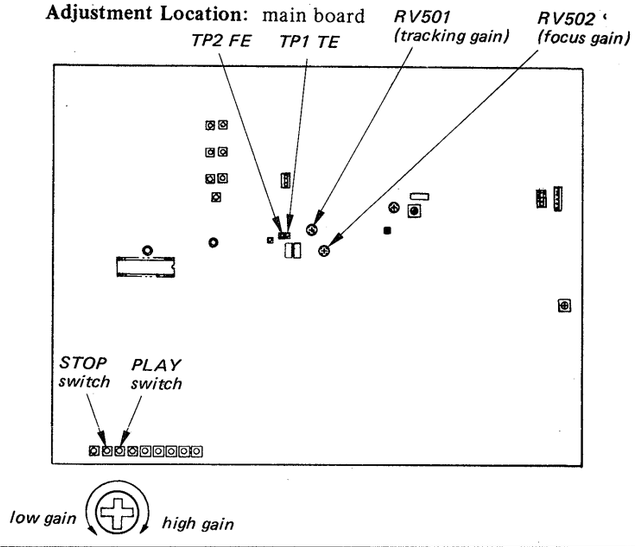
low tracking gain



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



Adjustment Location: main board



SECTION 4
EXPLODED VIEWS AND PARTS LIST

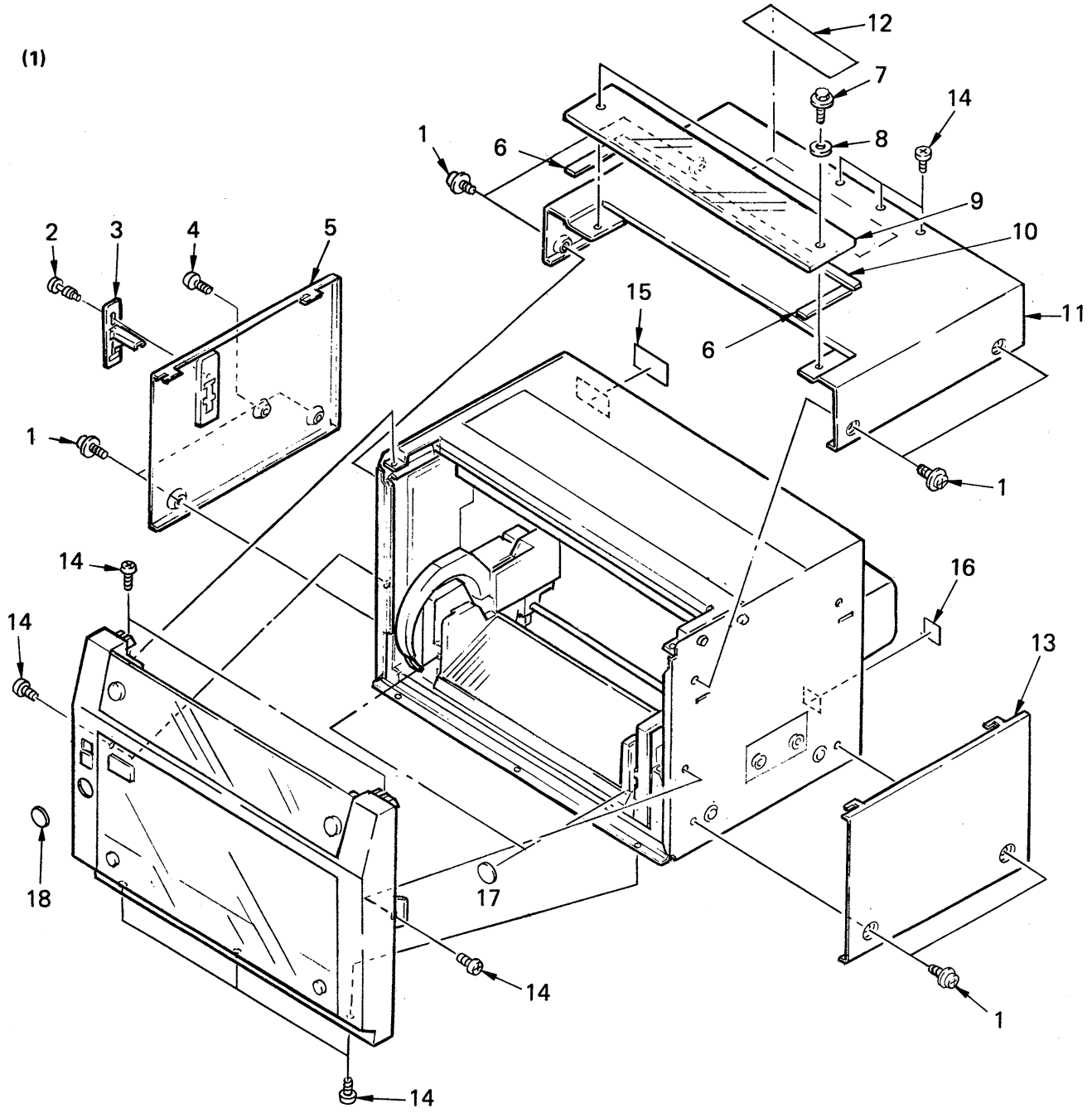
NOTE:
The mechanical parts with no reference number in the exploded views are not supplied.

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.

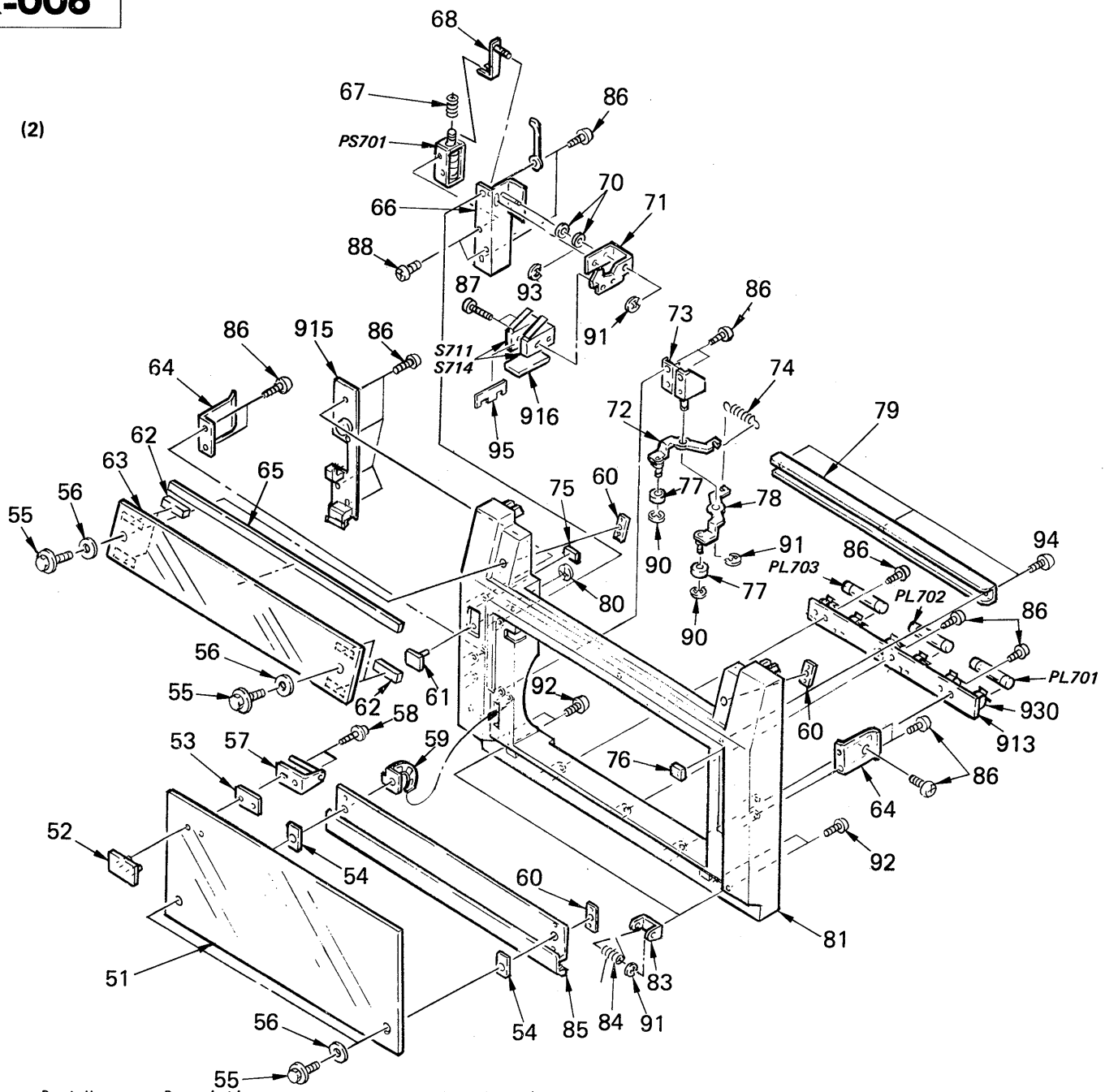
The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

(1)



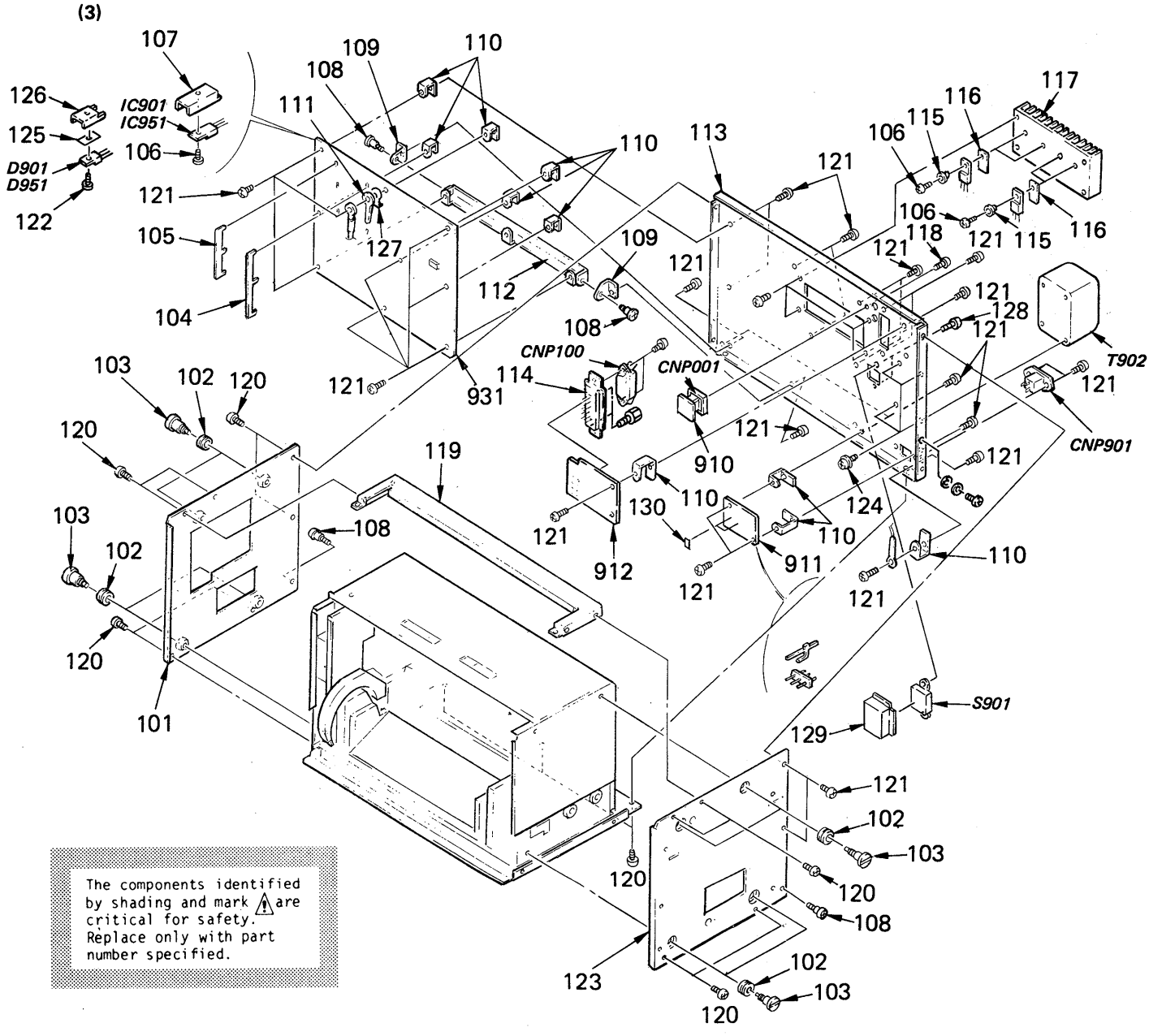
No.	Part No.	Description	Remarks
1	4-889-321-31	SCREW	
2	4-915-026-01	SCREW, TRANSPORT ARM	
3	*4-915-182-01	LEVER (BU), TRANSPORT LOCK	
4	4-915-129-01	SCREW (PSW) (4X20), TRANSPORT	
5	4-915-187-01	CASE, LEFT	
6	4-915-127-01	CUSHION (B), GLASS	
7	4-915-243-01	SCREW (FLANGE) (M4X12:5), LH	
8	4-915-042-01	WASHER (DIA.4)	
9	4-915-174-01	WINDOW (A), GLASS	
10	4-915-126-01	CUSHION (A), GLASS	
11	4-915-200-01	CASE, UPPER	
12	4-915-898-01	LABEL, SERVICE	
13	4-915-186-01	CASE, RIGHT	
14	7-682-547-09	SCREW +BVTT 3X6 (S)	
15	*4-915-214-01	(US).....LABEL, SERVICE CONTACT	
16	3-703-680-00	(US).....LABEL, CAUTION, SAFETY NEW UL	
17	4-915-854-01	(AEP).....LABEL, MARK	
18	*4-915-248-01	PLATE, ORNAMENTAL	

(2)



No.	Part No.	Description	Remarks
51	4-915-184-01	DOOR, GLASS	
52	4-915-059-01	PLATE, ORNAMENTAL, DOOR	
53	4-915-040-01	CUSHION (B), RUBBER	
54	4-915-039-01	CUSHION (A), RUBBER	
55	4-915-243-01	SCREW (FLANGE) (M4X12.5), LH	
56	4-915-042-01	WASHER (DIA.4)	
57	X-4915-010-1	PLATE ASSY, LOCK, DOOR	
58	7-687-233-11	SCREW (+ PTPWH) (2.6X6)	
59	*4-915-063-01	STAY	
60	*4-915-055-01	HOLDER, GLASS	
61	4-901-617-11	BUTTON, LIFTER	
62	4-915-127-01	CUSHION (B), GLASS	
63	4-915-160-01	WINDOW (B), GLASS	
64	*4-915-062-01	BRACKET, PANEL	
65	4-915-128-01	CUSHION (C), GLASS	
66	*X-4915-005-1	HOLDER ASSY, SOLENOID	
67	4-915-038-01	SPRING (SOLENOID), COMPRESSION	
68	*X-4915-009-1	LEVER ASSY, SOLENOID	
70	3-701-441-21	WASHER	
71	*4-915-061-01	LEVER, LOCK	
72	*X-4915-008-1	LEVER (B) ASSY, FRICTION	
73	*X-4915-006-1	HOLDER ASSY, FRICTION LEVER	
74	4-306-348-XX	SPRING	
75	4-879-561-00	COVER (B), LED	
76	4-887-636-01	CUSHION (B)	
77	4-915-060-01	ROLLER, FRICTION	
78	*X-4915-007-1	LEVER (A) ASSY, FRICTION	

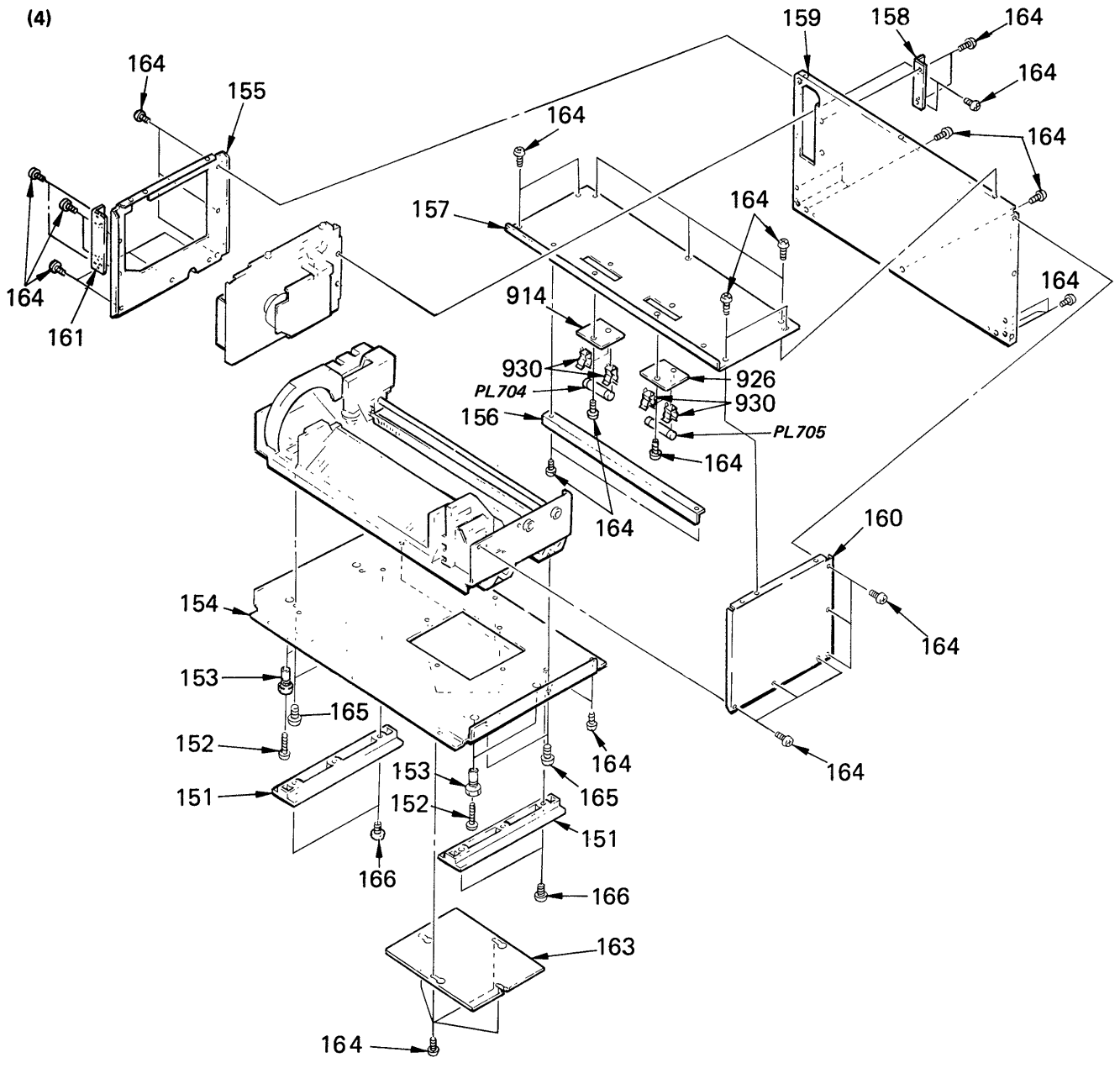
No.	Part No.	Description	Remarks
79	*4-915-159-01	REINFORCEMENT, PANEL	
80	7-624-190-81	STOP RING 2, TYPE-CS	
81	4-915-198-01	PANEL	
82	*4-915-056-01	SHAFT, DOOR	
83	4-915-057-01	HINGE, DOOR	
84	4-915-058-01	SPRING	
85	X-4915-034-1	PANEL ASSY, DOOR	
86	7-685-646-79	SCREW +BVTP 3X8 TYPE2 N-S	
87	7-621-258-05	SCREW +P 2.3X16	
88	7-621-284-00	SCREW +P 2.6X4	
90	7-624-104-04	STOP RING 2.0, TYPE -E	
91	7-624-106-04	STOP RING 3.0, TYPE -E	
92	7-682-948-09	SCREW +PSW 3X8	
93	7-624-105-04	STOP RING 2.3, TYPE-E	
94	7-685-647-79	SCREW +BVTP 3X10 TYPE 2 SLIT	
95	*4-915-227-01	SPACER, SW	
913	*A-4655-028-A	MOUNTED PCB, LAMP (A)	
915	*A-4644-337-A	MOUNTED PCB, DOOR LOCK	
916	*1-618-438-11	PC BOARD, CLOSE SW	
930	1-517-072-00	LAMP HOLDER	
PL701	1-518-594-11	LAMP, PILOT	
PL702	1-518-594-11	LAMP, PILOT	
PL703	1-518-594-11	LAMP, PILOT	
PS701	1-454-411-11	SOLENOID, PLUNGER	
S711	1-570-562-11	SWITCH, MICRO (DOOR)	
S714	1-570-562-11	SWITCH, MICRO (LASER)	



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

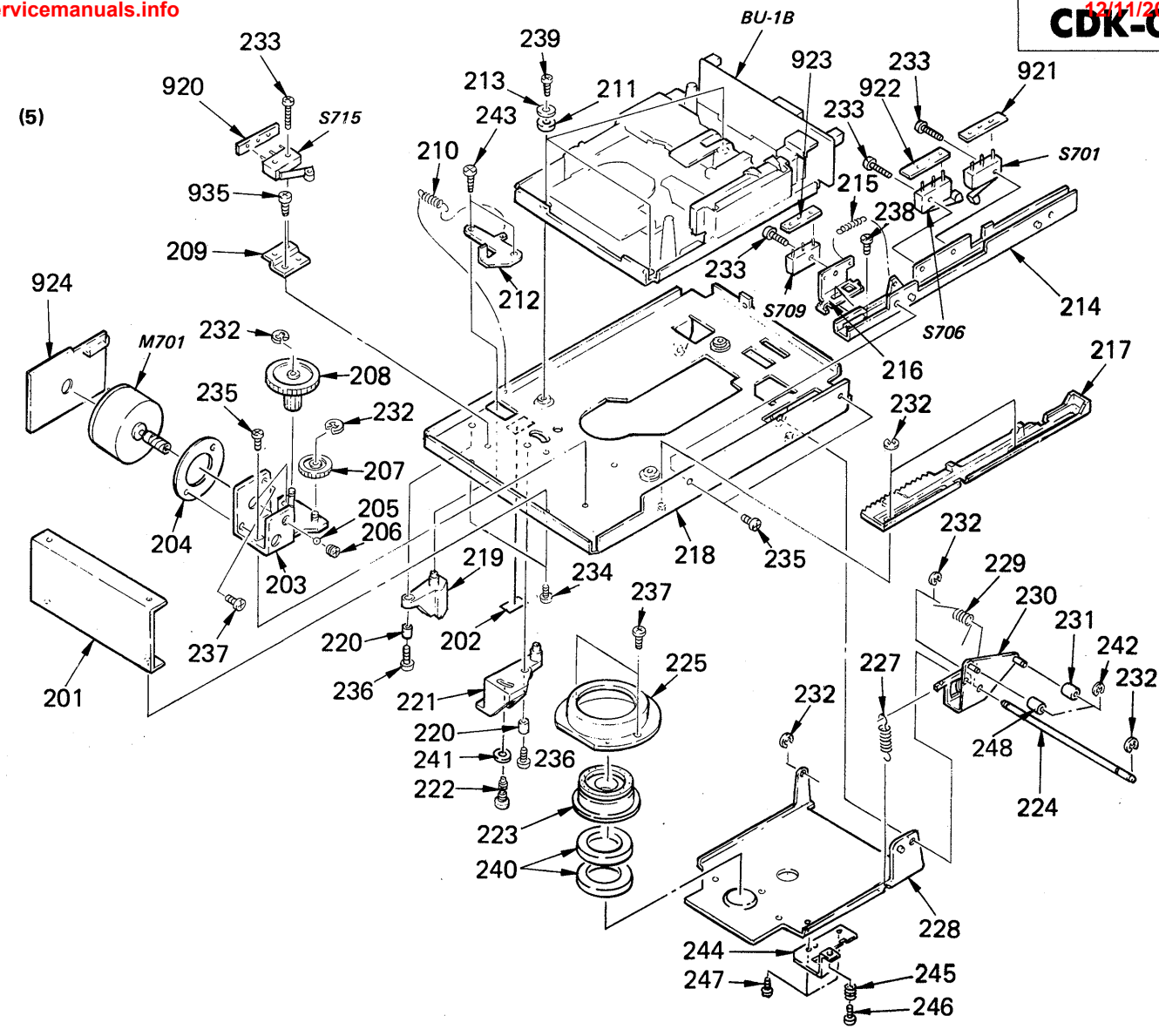
No.	Part No.	Description	Remarks
101	*4-915-189-01	PLATE (LEFT), SIDE	
102	4-915-202-01	CUSHION, RUBBER	
103	4-915-149-01	SCREW, SIDE PLATE	
104	*4-915-125-11	BUS BAR	
105	*4-915-125-01	BUS BAR	
106	7-682-547-09	SCREW, +B3X6	
107	*4-854-790-00	HEAT SINK	
108	2-236-956-00	SCREW, STEP	
109	*4-915-121-01	HOLDER (D), PC BOARD	
110	*4-915-120-01	HOLDER (B), PC BOARD	
111	*3-701-822-00	HOLDER, WIRE	
112	*4-915-171-01	HOLDER (A), PC BOARD	
113	*4-915-199-11	(US).....PLATE, JACK	
	*4-915-199-21	(AEP).....PLATE, JACK	
114	*4-915-122-01	HOLDER, CONNECTOR	
115	2-371-561-00	BUSHING (P), INSULATING	
116	3-703-037-00	INSULATOR, TO-220	
117	*4-915-170-01	HEAT SINK	
118	4-887-711-11	SCREW, TERMINAL, CLAW, + BVTP	
119	*4-915-173-01	REINFORCEMENT	
120	7-685-751-09	SCREW +BVTT 3X6 (S)	
121	7-685-871-01	SCREW +BVTT 3X6 (S)	

No.	Part No.	Description	Remarks
122	7-682-548-09	SCREW +B 3X8	
123	*4-915-188-01	PLATE (RIGHT), SIDE	
124	7-682-961-01	SCREW +PSW 4X8	
125	4-870-272-00	HEAT SINK	
126	*4-886-555-00	HEAT SINK	
127	4-870-539-00	PLATE, GROUND	
128	7-685-646-11	(AEP).....SCREW, +BVTP 3X8	
129	*4-915-247-01	(AEP).....COVER (D)	
130	3-701-947-18	(AEP).....LABEL, FUSE	
910	*1-618-432-11	PC BOARD, 2P PJ	
911	*1-618-433-11	PC BOARD, POWER FILTER	
912	*1-618-434-11	PC BOARD, I/O	
931	*A-4651-088-A	MOUNTED PCB, MAIN	
CNP001	1-507-912-21	JACK, PIN 2P	
CNP100	1-563-346-11	CONNECTOR, D SUB 37P	
CNP901	1-509-547-00	3P INLET	
S901	⚠1-570-046-21	(AEP).....SWITCH, VOLTAGE CHANGE	
T902	⚠1-448-431-11	(US).....TRANSFORMER, POWER	
T902	⚠1-449-101-11	(AEP).....TRANSFORMER, POWER	



No.	Part No.	Description	Remarks
151	X-4915-018-1	FOOT ASSY	
152	4-915-130-01	SCREW (PSW) (4X35), TRANSPORT	
153	*4-915-124-01	BOLT, TRANSPORT LOCK	
154	*4-915-201-01	CHASSIS	
155	*4-915-191-01	PLATE (LEFT), SIDE, MAIN	
156	*4-915-181-01	COVER, ILLUMINATION	
157	*4-915-192-01	PLATE, UPPER, MAIN	
158	*4-915-027-01	BRACKET (REAR), MD	
159	*4-915-196-01	PLATE, BACK	

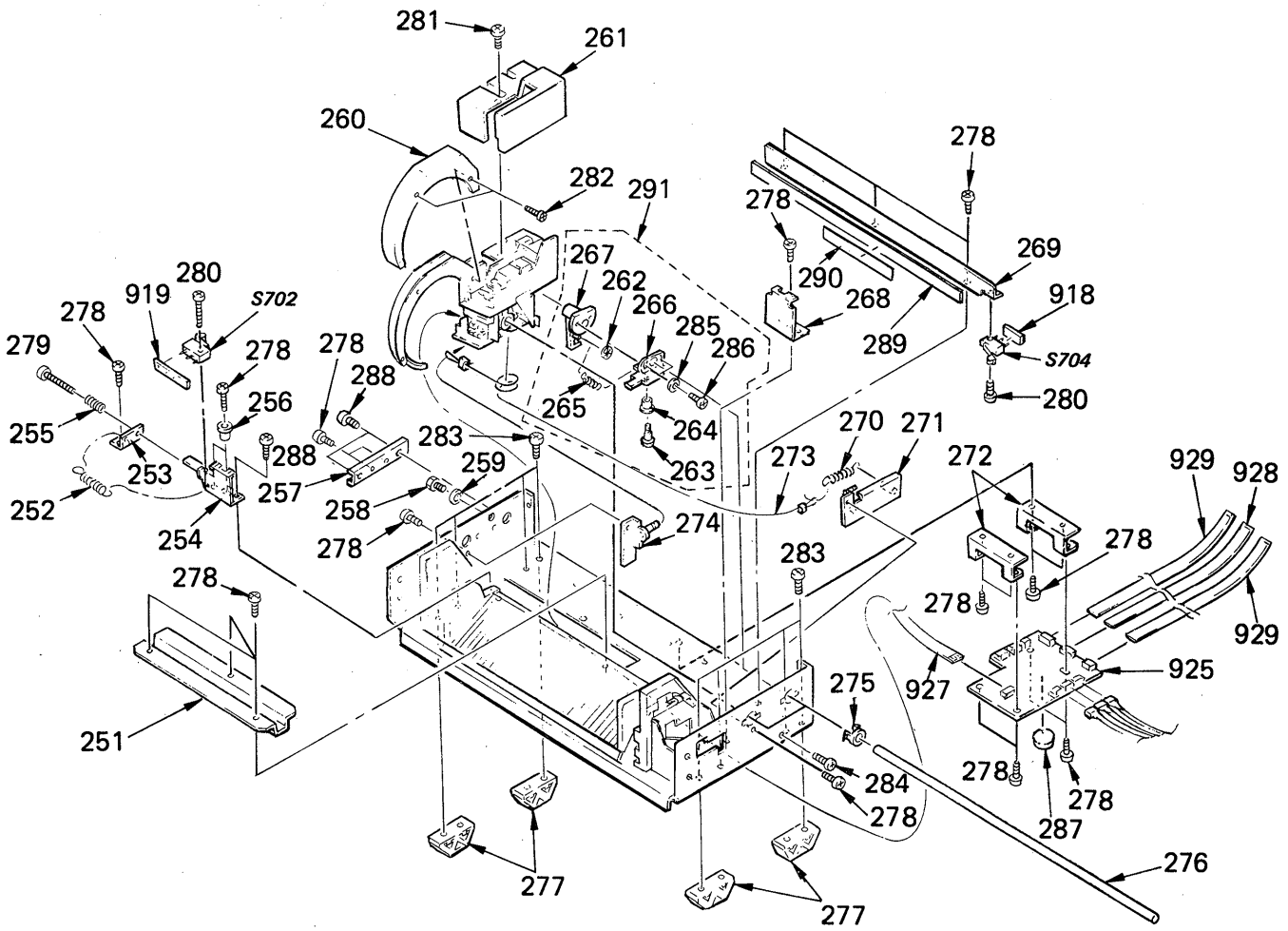
No.	Part No.	Description	Remarks
160	*4-915-190-01	PLATE (RIGHT), SIDE, MAIN	
161	*4-915-208-01	REINFORCEMENT, MAIN SIDE PLATE	
163	*4-915-172-01	PLATE, REAR	
164	7-685-751-09	SCREW +BVTT 3X6 (S)	
165	7-682-561-09	SCREW +B 4X8	
166	7-685-881-09	SCREW +BVTT 4X8 (S)	
914	*1-618-436-11	PC BOARD, LAMP (B)	
926	*1-619-303-11	PC BOARD, LAMP (C)	
930	1-517-072-00	LAMP HOLDER	
PL704	1-518-594-11	LAMP, PILOT	
PL705	1-518-594-11	LAMP, PILOT	



No.	Part No.	Description	Remarks
201	*4-915-028-01	BRACKET (FRONT), MD	
202	4-915-206-01	CUSHION, C ARM	
203	*X-4915-021-1	BRACKET ASSY, C MOTOR	
204	*4-915-104-01	WASHER, MOTOR	
205	7-671-113-02	STEEL BALL 3.0	
206	3-489-073-00	SCREW, THRUST	
207	4-915-020-01	GEAR (A), C	
208	4-915-021-01	GEAR (B), C	
209	*4-915-032-01	BRACKET, SW, TRANSPORT LOCK	
210	4-915-133-01	SPRING, TENSION	
211	4-915-203-01	CUSHION, RUBBER	
212	*4-915-035-01	LEVER, JOINT	
213	*4-301-647-00	WASHER, SPECIAL	
214	*4-915-154-01	BRACKET, C SW	
215	4-908-555-01	SPRING, TENSION (C ARM)	
216	*4-915-029-01	BRACKET, SW, MID	
217	4-915-153-01	CAM, ARM	
218	*X-4915-023-1	CHASSIS ASSY, MECHANICAL	
219	*4-915-034-01	LEVER (B), CARRIER LOCK	
220	4-915-205-01	COLLAR, FULCRUM	
221	*4-915-033-01	LEVER (A), CARRIER LOCK	
222	4-915-026-01	SCREW, TRANSPORT ARM	
223	X-4915-025-1	PULLEY ASSY, PRESS	
224	*4-915-013-01	SHAFT, FULCRUM, C ARM	
225	*4-915-023-01	STOPPER, PULLEY	
227	4-915-030-01	SPRING (C ARM), TENSION	
228	*X-4915-022-1	ARM ASSY, C	
229	4-915-016-01	SPRING	

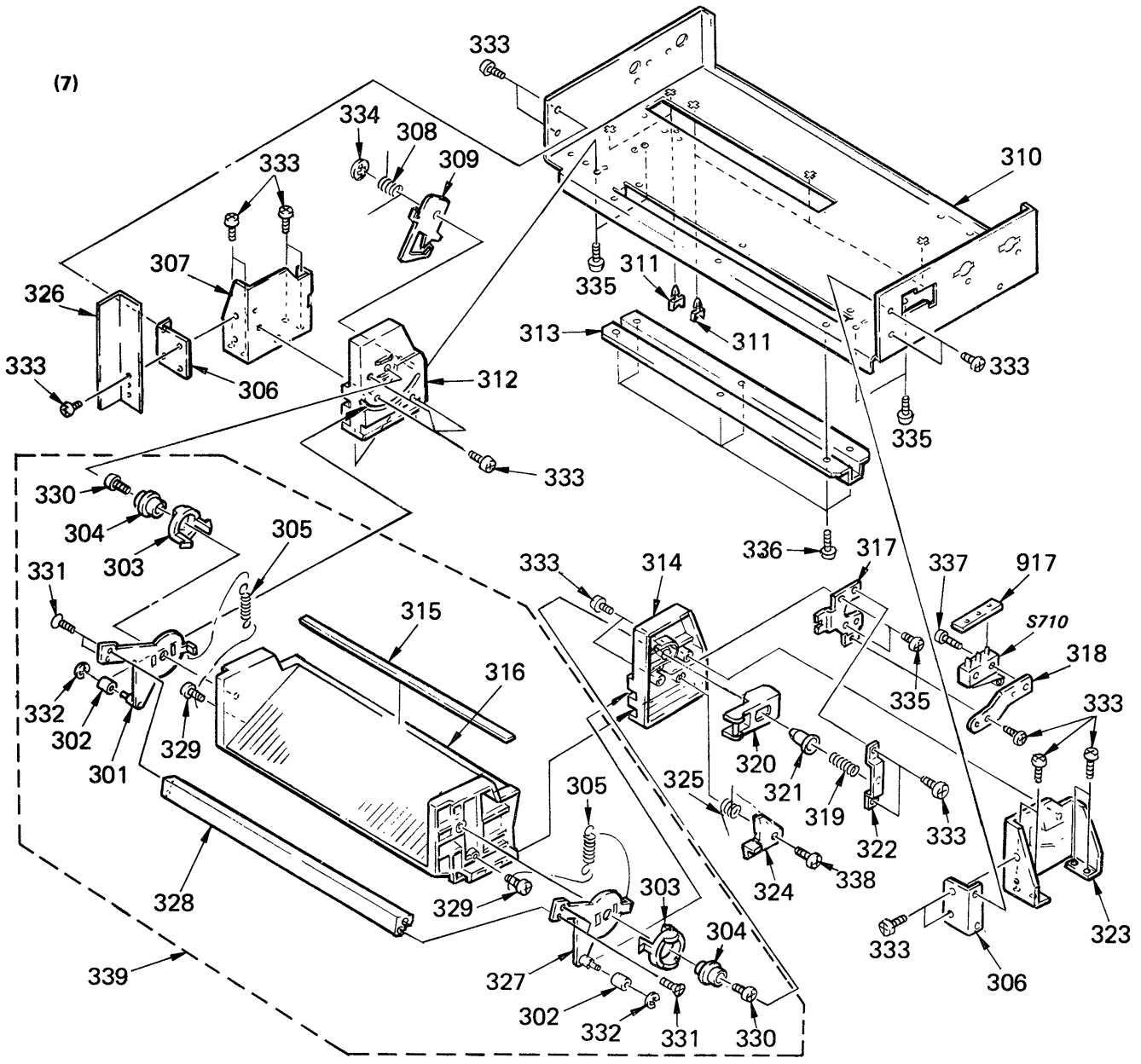
No.	Part No.	Description	Remarks
230	*X-4915-004-3	LEVER ASSY, CHUCKING	
231	4-915-017-01	ROLLER, CHUCKING	
232	7-624-106-04	STOP RING 3.0, TYPE -E	
233	7-621-257-55	SCREW +P 2.3X8	
234	7-685-751-09	SCREW +BVTT 3X6 (S)	
235	7-682-144-09	SCREW +P 3X3	
236	7-682-548-09	SCREW +B 3X8	
237	7-621-259-01	SCREW +P 2.6X3	
238	7-621-759-35	+PSW, 2.6X5	
239	7-682-146-09	SCREW +P 3X5	
240	1-452-340-11	MAGNET	
241	7-688-003-02	W 3, SMALL	
242	7-624-104-04	STOP RING 2.0, TYPE -E	
243	7-685-133-19	SCREW +BTP 2.6X6 TYPE2 N-S	
244	*4-915-210-01	PLATE, ADJUSTMENT, ARM	
245	4-836-836-00	SPRING, COMPRESSION	
246	7-682-153-09	SCREW +P 3X20	
247	7-621-284-00	SCREW +P 2.6X4	
248	4-904-652-01	BEARING (NO FLANGE), BALL	
920	*1-618-444-11	PC BOARD, MOTOR OFF	
921	*1-618-445-11	PC BOARD, CHUCKIG OFF	
922	*1-618-446-11	PC BOARD, CHUCKIG ON	
923	*1-618-447-11	PC BOARD, CHUCKIG MID	
924	*1-618-448-11	PC BOARD, CHUCKIG MOTOR	
M701	A-4608-329-A	MOTOR (C) ASSY (CHUKING)	
S701	1-570-561-11	SWITCH, MICRO (CHUCKING OFF)	
S706	1-570-561-11	SWITCH, MICRO (CHUCKING ON)	
S709	1-570-561-11	SWITCH, MICRO (MID)	
S715	1-570-561-11	SWITCH, MICRO (MOTOR OFF)	

(6)



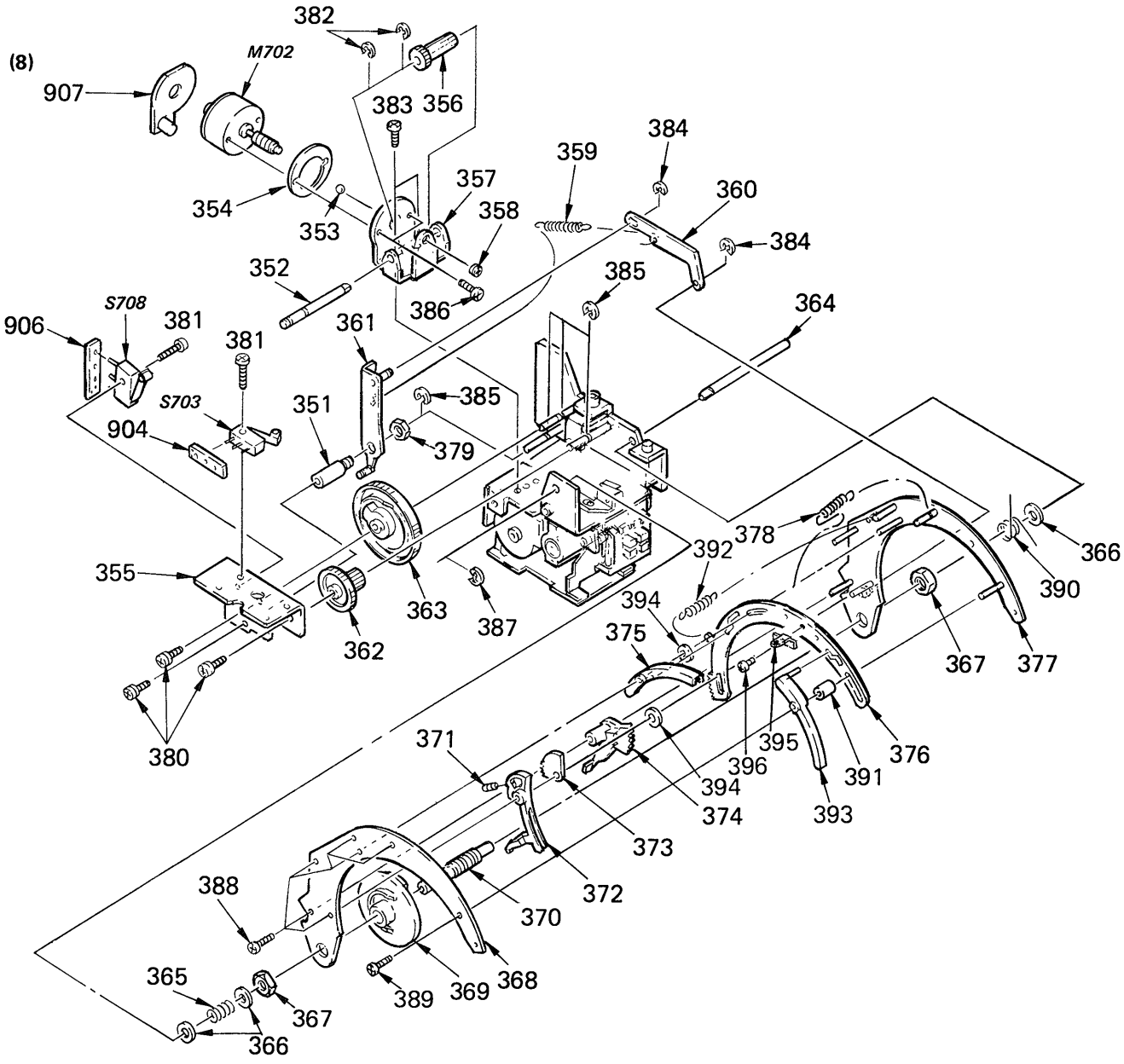
No.	Part No.	Description	Remarks
251	*4-915-176-01	GUIDE, CABLE	
252	4-915-133-01	SPRING, TENSION	
253	*4-915-144-01	PLATE, ADJUSTMENT, C	
254	*4-915-177-01	BOARD (L), DETECTION, CARRIER	
255	4-836-836-00	SPRING, COMPRESSION	
256	4-915-145-01	COLLAR, C DETECTION PLATE	
257	*4-915-117-01	RETAINER, SHAFT	
258	4-915-116-01	GUIDE, SCREW	
259	4-901-681-00	SPACER (S)	
260	4-915-166-01	COVER, ARM	
261	*4-915-165-01	COVER, CARRIER	
262	7-624-190-81	STOP RING 2, TYPE-CS	
263	3-489-077-21	SCREW, MOTOR STOPPER	
264	4-915-101-01	ROLLER	
265	3-509-123-11	SPRING, TENSION	
266	*4-915-102-01	HOLDER, MEMORY	
267	4-915-115-01	MEMORY, MECHANICAL	
268	*4-915-147-01	PLATE (R), DETECTION, CARRIER	
269	*4-915-175-01	PLATE, LOCK	
270	3-437-331-01	SPRING, TENSION	
271	*X-4915-016-1	GUIDE (RIGHT) ASSY, ROPE	
272	*4-915-146-01	BRACKET, MIDWAY PC BOARD	
273	4-915-131-01	ROPE	

No.	Part No.	Description	Remarks
274	*X-4915-017-1	GUIDE (LEFT) ASSY, ROPE	
275	*4-915-118-01	HOLDER, SHAFT	
276	*4-915-119-01	SHAFT	
277	*4-915-132-01	INSULATOR	
278	7-682-547-09	SCREW +B 3X6	
279	7-683-307-07	BOLT, HEXAGON 3X14	
280	7-621-257-55	SCREW +P 2.3X8	
281	7-682-547-09	SCREW +B 3X6	
282	7-621-772-00	SCREW +B 2X3	
283	7-682-561-09	SCREW +B 4X8	
284	7-682-144-09	SCREW +P 3X3	
285	7-688-001-12	W 2, MIDDLE	
286	7-685-133-19	SCREW +BTP 2.6X6 TYPE2 N-S	
287	*4-907-980-01	FOOT	
288	7-682-947-09	SCREW +PSW 3X6	
289	4-915-212-01	SHEET, LOCK	
290	*4-915-156-01	LABEL, CD CASE	
291	A-4675-149-A	MEMORY ASSY	262-267,285,286
918	*1-618-442-11	PC BOARD, END SW	
919	*A-4644-300-A	MOUNTED PCB, LIMIT SW	
925	*A-4646-293-A	MOUNTED PCB, TRANSLATION	
927	1-558-483-11	WIRE, PVC (FLAT TYPE)(14 CORE)	
928	1-558-484-11	WIRE, PVC (FLAT TYPE)(14 CORE)	
929	1-558-485-11	WIRE, PVC (FLAT TYPE)(14 CORE)	
S702	1-570-561-11	SWITCH, MICRO (LIMIT)	
S704	1-570-561-11	SWITCH, MICRO (END)	



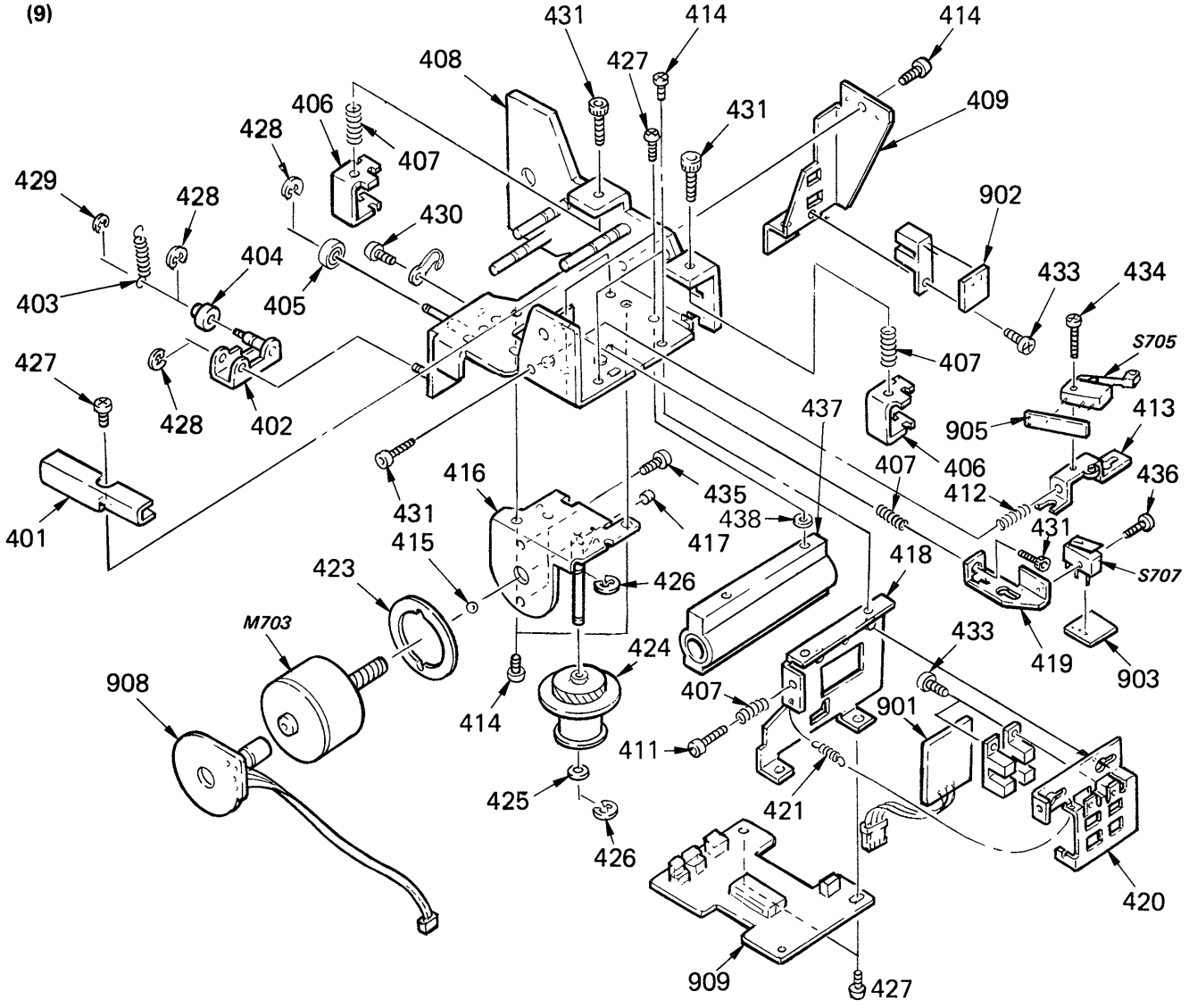
No.	Part No.	Description	Remarks
301	*X-4915-002-1	ARM (LEFT) ASSY, LOCK HANDLE	
302	4-915-008-01	COLLAR, LOCK HANDLE	
303	4-915-002-01	RING, GUIDE	
304	*4-915-003-01	COLLAR, CENTER RING	
305	4-915-001-01	SPRING (LOCK HANDLE), TENSION	
306	*4-915-148-01	REINFORCEMENT, CHASSIS	
307	*4-915-178-01	REINFORCEMENT(LEFT), CASE GUIDE	
308	4-915-137-01	SPRING	
309	4-915-138-01	CAM, LOCK	
310	*4-915-197-01	CHASSIS, MAIN	
311	*4-314-320-00	HOLDER, WIRE	
312	*4-915-194-01	GUIDE (LEFT), CASE	
313	*4-915-180-01	REINFORCEMENT, MAIN CHASSIS	
314	*4-915-193-01	GUIDE (RIGHT), CASE	
315	*4-915-156-01	LABEL, CD CASE	
316	*4-915-195-01	CASE, CD	
317	*4-915-136-01	HOLDER, CENTER RING	
318	*4-915-139-01	BRACKET, CASE SW	
319	4-915-143-01	SPRING(CENTERING), COMPRESSION	
320	*4-915-134-01	LEVER, CENTER RING	

No.	Part No.	Description	Remarks
321	*4-915-135-01	SHAFT, CENTER RING	
322	*4-915-142-01	RETAINER, SPRING	
323	*4-915-179-01	REINFORCEMENT(RIGHT), CASEGUIDE	
324	*4-915-140-01	LEVER, DETECTION, DISC	
325	4-915-141-01	SPRING	
326	*4-915-213-01	COVER, REED	
327	*X-4915-001-1	ARM (RIGHT) ASSY, LOCK HANDLE	
328	*4-915-155-01	JOINT, HANDLE	
329	7-685-133-19	SCREW +BTP 2.6X6 TYPE2 N-S	
330	7-685-134-19	SCREW +P 2.6X8 TYPE2 SLIT	
331	7-627-454-58	SCREW, PRECISION +K 2.6X6 TYPE1	
332	7-624-104-04	STOP RING 2.0, TYPE -E	
333	7-685-751-09	SCREW +BVTT 3X6 (S)	
334	7-624-190-11	STOP RING 3, TYPE-CS	
335	7-685-647-79	SCREW +BVTP 3X10 TYPE2 SLIT	
336	7-682-144-09	SCREW +P 3X3	
337	7-621-257-55	SCREW +P 2.3X8	
338	7-685-645-29	SCREW +BVTP 3X6 TYPE2 SLIT	
339	A-4675-151-D	CASE ASSY, CD	
917	*1-618-441-11	PC BOARD, TRAY SW,	
S710	1-570-561-11	SWITCH, MICRO (TRAY)	



No.	Part No.	Description	Remarks
351	*4-915-105-01	BEARING, LOADING LEVER	
352	*4-915-094-01	SHAFT, JOINT GEAR	
353	7-671-156-01	BALL, STAINLESS	
354	*4-915-104-01	WASHER, MOTOR	
355	*4-915-091-01	CHASSIS (B), CARRIER	
356	4-915-093-01	GEAR, JOINT	
357	*4-915-092-01	HOLDER (B), MOTOR	
358	3-489-073-00	SCREW, THRUST	
359	3-583-539-00	SPRING, TENSION	
360	4-915-089-01	JOINT	
361	*X-4915-011-1	LEVER ASSY, LOADING	
362	4-915-100-01	GEAR, MIDWAY	
363	4-915-164-01	GEAR, LOADING	
364	*4-915-088-01	SHAFT, ARM	
365	3-568-802-00	SPRING, COMPRESSION	
366	7-623-925-01	WASHER 4.0, NYLONE	
367	4-915-110-01	NUT	
368	*4-915-161-01	ARM, HOLDER	
369	4-915-167-01	GEAR, CAM	
370	*4-915-087-01	BEARING, ARM	
371	3-534-512-01	SPRING, COMPRESSION	
372	4-915-085-01	LEVER, HOLDING	
373	4-915-086-01	GEAR, HOLDING	
374	4-915-163-01	LEVER, HOLDER CAM	
375	X-4915-012-1	LEVER ASSY, HOLDER	
376	4-915-162-02	CAM, HOLDER	
377	X-4915-020-2	ARM ASSY, HOLDER	

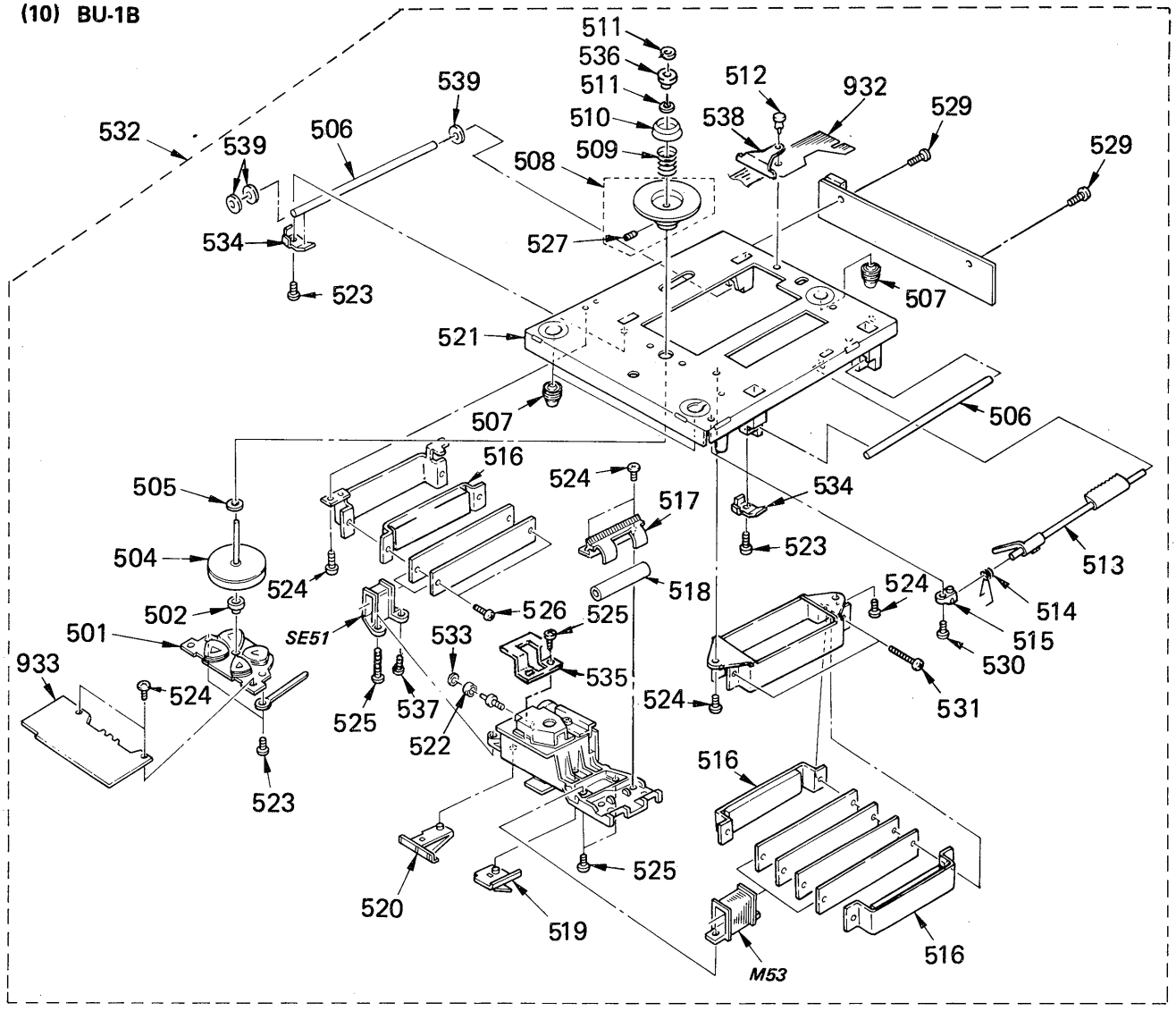
No.	Part No.	Description	Remarks
378	3-669-979-00	SPRING, TENSION	
379	3-703-078-01	NUT	
380	7-628-254-10	SCREW +PS 2.6X6	
381	7-621-257-55	SCREW +P 2.3X8	
382	7-624-108-04	STOP RING 4.0, TYPE -E	
383	7-682-144-09	SCREW +P 3X3	
384	7-624-104-04	STOP RING 2.0, TYPE -E	
385	7-624-105-04	STOP RING 2.3, TYPE -E	
386	7-621-775-10	SCREW +P 2.6X3	
387	7-624-102-04	STOP RING 1.5, TYPE -E	
388	7-621-283-00	SCREW +P 2X5	
389	7-621-283-70	SCREW +P 2X12	
390	4-915-106-01	SPRING	
391	4-915-108-01	COLLAR, HOLDER LEVER	
392	3-642-512-01	SPRING, TENSION	
393	X-4915-028-1	LEVER (B) ASSY, HOLDER	
394	3-701-439-01	WASHER, PLASTIC, 3	
395	4-915-223-01	HOOK, SPRING	
396	7-621-772-00	SCREW +B 2X3	
904	*1-618-425-11	PC BOARD, UP SW	
906	*1-618-427-11	PC BOARD, RLS SW	
907	*1-618-428-11	PC BOARD, ARM MOTOR	
M702	A-4608-327-A	MOTOR (B) ASSY	
S703	1-570-561-11	SWITCH, MICRO (UP)	
S708	1-570-561-11	SWITCH, MICRO (RLS)	



No.	Part No.	Description	Remarks
401	*4-915-107-01	CLAMP	
402	*X-4915-015-1	GUIDE ASSY, CARRIER	
403	3-515-170-00	SPRING, TENSION	
404	4-915-101-01	ROLLER	
405	4-908-208-01	BEARING (NO-FLANGE), BALL	
406	4-915-099-01	STOPPER, MECHANICAL	
407	4-836-836-00	SPRING, COMPRESSION	
408	*X-4915-019-1	CHASSIS (A) ASSY, CARRIER	
409	*4-915-096-01	HOLDER (B), SENSOR	
411	7-683-306-07	BOLT, HEXAGON 3X12	
412	3-544-222-01	SPRING, COMPRESSION	
413	*4-915-098-01	PLATE (C), ADJUSTMENT, SWITCH	
414	7-682-144-09	SCREW +P 3X3	
415	7-671-156-01	BALL, STAINLESS	
416	*X-4915-013-1	HOLDER (A) ASSY, MOTOR	
417	3-489-073-00	SCREW, THRUST	
418	*X-4915-014-1	BRACKET ASSY, SENSOR HOLDER	
419	*4-915-097-01	PLATE (B), ADJUSTMENT, SWITCH	
420	*4-915-095-01	HOLDER (A), SENSOR	
421	3-639-392-01	SPRING, TENSION	
423	*4-915-104-01	WASHER, MOTOR	
424	4-915-090-01	PULLEY, DRIVING	

No.	Part No.	Description	Remarks
425	3-701-441-21	WASHER	
426	7-624-106-04	STOP RING 3.0, TYPE -E	
427	7-685-751-09	SCREW +BVTT 3X6 (S)	
428	7-624-105-04	STOP RING 2.3, TYPE -E	
429	7-624-102-04	STOP RING 1.5, TYPE -E	
430	7-682-646-09	SCREW +PS 3X5	
431	7-683-308-07	BOLT, HEXAGON 3X16	
433	7-685-863-09	SCREW +BVTT 2.6X8 (S)	
434	7-621-257-55	SCREW +P 2.3X8	
435	7-621-775-10	SCREW +P 2.6X3	
436	7-621-255-50	SCREW +P 2X8	
437	*4-915-244-01	BEARING, CARRIER	
438	3-701-439-01	WASHER, DIA.3	
701	*1-618-422-11	PC BOARD, DOUBLE SENSOR	
902	*1-618-423-11	PC BOARD, MECH MEMORY	
903	*1-618-424-11	PC BOARD, DISC SW	
905	*1-618-426-11	PC BOARD, HOLD SW	
908	*1-618-429-11	PC BOARD, CARRIER MOTOR	
909	*1-618-430-11	PC BOARD, CARRIER	
M703	A-4608-325-A	MOTOR (A) ASSY	
S705	1-570-561-11	SWITCH, MICRO (HOLD)	
S707	1-570-028-11	SWITCH, MICRO (DISC DET)	

(10) BU-1B



No.	Part No.	Description	Remarks
501	A-4675-068-A	BRACKET ASSY, MOTOR	
502	2-622-105-01	RETAINER, THRUST	
504	A-4675-136-A	ROTOR ASSY	
505	3-701-439-21	WASHER	
506	4-908-201-03	SHAFT, SLIDE	
507	4-908-593-00	INSULATOR	
508	X-4908-202-1	PULLEY ASSY, DISK	
509	4-908-213-01	SPRING, COMPRESSION	
510	4-915-212-01	CAP, CENTERING	
511	3-558-708-21	WASHER, STOPPER	
512	3-531-576-01	RIVET	
513	4-908-227-01	LEVER, LOCK	
514	4-908-230-01	SPRING	
515	4-908-220-01	HOLDER, ROD	
516	*A-4675-110-A	MAGNET ASSY, LINEAR	
517	4-908-224-01	HOLDER, BEARING	
518	4-908-221-01	BEARING	
519	4-908-225-01	RETAINER (A), LEAD	
520	4-908-219-01	RETAINER (B), LEAD	

No.	Part No.	Description	Remarks
521	*X-4908-214-1	BASE (OUTSERT) ASSY	
522	4-908-208-01	BEARING (NO-FLANGE), BALL	
523	7-685-134-19	SCREW +P 2.6X8 TYPE2 SLIT	
524	7-621-775-10	SCREW +B 2.6X4	
525	7-621-775-20	SCREW +B 2.6X5	
527	7-621-734-09	SET-SCT, HEX. 2.6X3	
528	7-688-002-01	W 2.6, SMALL	
529	7-685-864-01	SCREW +BVTT 2.6X10 (S)	
531	7-685-867-01	SCREW +BVTT 2.6X16 (S)	
532	⚠X-4915-031-1	MD ASSY (BU-1B)	
533	7-624-105-04	STOP RING 2.3, TYPE -E	
534	4-908-245-01	RETAINER (C), SHAFT, SLIDE	
535	*4-915-036-01	RETAINER, SLED	
536	4-915-037-01	CAP, C	
537	7-621-260-00	SCREW +P 2.6X16	
538	4-908-254-00	HOLDER, P BOARD	
539	*4-908-269-01	CUSHION, SLIDE	
932	A-4646-215-A	MOUNTED PCB, FLEXIBLE	
933	*A-4656-008-A	MOUNTED PCB, MOTOR	
M153	1-422-197-14	COIL (DRIVE)	
SE51	1-422-198-11	COIL (SENSOR)	

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

SECTION 5
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	*1-618-422-11	PC BOARD, DOUBLE SENSOR
902	*1-618-423-11	PC BOARD, MECH MEMORY
903	*1-618-424-11	PC BOARD, DISC SW
904	*1-618-425-11	PC BOARD, UP SW
905	*1-618-426-11	PC BOARD, HOLD SW
906	*1-618-427-11	PC BOARD, RLS SW
907	*1-618-428-11	PC BOARD, ARM MOTOR
908	*1-618-429-11	PC BOARD, CARRIER MOTOR
909	*1-618-430-11	PC BOARD, CARRIER
910	*1-618-432-11	PC BOARD, 2P PJ
911	*1-618-433-11	PC BOARD, POWER FILTER
912	*1-618-434-11	PC BOARD, I/O
913	*A-4655-028-A	MOUNTED PCB, LAMP (A)
914	*1-618-436-11	PC BOARD, LAMP (B)
915	*A-4644-337-A	MOUNTED PCB, DOOR LOCK
916	*1-618-438-11	PC BOARD, CLOSE SW
917	*1-618-441-11	PC BOARD, TRAY SW
918	*1-618-442-11	PC BOARD, END SW
919	*A-4644-300-A	MOUNTED PCB, LIMIT SW
920	*A-4644-298-A	MOUNTED PCB, MOTOR OFF
921	*1-618-445-11	PC BOARD, CHUCKIG OFF
922	*1-618-446-11	PC BOARD, CHUCKIG ON
923	*1-618-447-11	PC BOARD, CHUCKIG MID
924	*A-4656-015-A	MOUNTED PCB, CHUCKIG MOTOR
925	*A-4646-293-A	MOUNTED PCB, TRANSLATION
926	*1-619-303-11	PC BOARD, LAMP (C)
927	1-558-483-11	WIRE, PVC (FLAT TYPE)(14 CORE)
928	1-558-484-11	WIRE, PVC (FLAT TYPE)(14 CORE)
929	1-558-485-11	WIRE, PVC (FLAT TYPE)(14 CORE)
930	1-517-072-00	LAMP HOLDER
931	*A-4651-088-A	MOUNTED PCB, MAIN
932	A-4646-215-A	MOUNTED PCB, FLEXIBLE
933	*A-4656-008-A	MOUNTED PCB, MOTOR
C51	1-135-008-00	TANTAL, CHIP 2.2MF 20% 6.3V
C151	1-162-302-31	CERAMIC 0.0022MF 20% 16V
C152	1-162-302-31	CERAMIC 0.0022MF 20% 16V
C153	1-161-494-00	CERAMIC 0.022MF 30% 25V
C154	1-161-494-00	CERAMIC 0.022MF 30% 25V
C301	1-123-332-00	ELECT 47MF 20% 25V
C302	1-107-310-00	MICA 220PF 5% 500V
C303	1-136-219-11	FILM 0.0047MF 2% 100V
C304	1-123-330-00	ELECT 22MF 20% 25V
C305	1-123-330-00	ELECT 22MF 20% 25V
C306	1-162-052-00	CERAMIC 22PF 5% 50V
C307	1-123-330-00	ELECT 22MF 20% 25V

ELECTRICAL PARTS

Ref.No.	Part No.	Description			
C308	1-123-330-00	ELECT	22MF	20%	25V
C309	1-104-266-00	POLYSTYRENE	180PF	5%	500V
C310	1-104-230-00	POLYSTYRENE	0.0015MF	5%	50V
C311	1-123-333-00	ELECT	100MF	20%	25V
C312	1-161-772-00	CERAMIC	0.1MF	20%	25V
C313	1-162-052-00	CERAMIC	22PF	5%	50V
C314	1-102-523-00	CERAMIC	56PF	5%	50V
C315	1-130-479-00	MYLAR	0.0047MF	5%	50V
C316	1-102-514-00	CERAMIC	22PF	5%	50V
C317	1-123-332-00	ELECT	47MF	20%	25V
C318	1-123-333-00	ELECT	100MF	20%	25V
C319	1-123-332-00	ELECT	47MF	20%	25V
C320	1-123-333-00	ELECT	100MF	20%	25V
C321	1-161-772-11	CERAMIC	0.1MF	20%	25V
C322	1-123-330-00	ELECT	22MF	20%	25V
C323	1-123-330-00	ELECT	22MF	20%	25V
C324	1-124-471-00	ELECT	1000MF	20%	6.3V
C325	1-124-471-00	ELECT	1000MF	20%	6.3V
C326	1-162-294-31	CERAMIC	0.001MF	10%	50V
C327	1-123-330-00	ELECT	22MF	20%	25V
C328	1-161-772-11	CERAMIC	0.1MF	20%	25V
C329	1-161-772-11	CERAMIC	0.1MF	20%	25V
C330	1-161-772-11	CERAMIC	0.1MF	20%	25V
C401	1-123-332-00	ELECT	47MF	20%	25V
C402	1-107-310-00	MICA	220PF	5%	500V
C403	1-136-219-11	FILM	0.0047MF	2%	100V
C404	1-123-330-00	ELECT	22MF	20%	25V
C405	1-123-330-00	ELECT	22MF	20%	25V
C406	1-162-052-00	CERAMIC	22PF	5%	50V
C407	1-123-330-00	ELECT	22MF	20%	25V
C408	1-123-330-00	ELECT	22MF	20%	25V
C409	1-104-266-00	POLYSTYRENE	180PF	5%	500V
C410	1-104-230-00	POLYSTYRENE	0.0015MF	5%	50V
C411	1-123-333-00	ELECT	100MF	20%	25V
C412	1-161-772-11	CERAMIC	0.1MF	20%	25V
C413	1-162-052-00	CERAMIC	22PF	5%	500V
C414	1-161-772-11	CERAMIC	0.1MF	20%	25V
C420	1-161-772-11	CERAMIC	0.1MF	20%	25V
C501	1-162-290-31	CERAMIC	470PF	10%	50V
C502	1-136-169-00	FILM	0.22MF	5%	50V
C503	1-161-375-00	CERAMIC	0.0022MF	30%	16V
C504	1-162-291-31	CERAMIC	560PF	10%	50V
C505	1-161-375-00	CERAMIC	0.0022MF	30%	16V
C506	1-136-169-00	FILM	0.22MF	5%	50V
C507	1-130-479-00	MYLAR	0.0047MF	5%	50V

ELECTRICAL PARTS

Ref.No.	Part No.	Description			
C508	1-136-157-00	FILM	0.022MF	5%	50V
C509	1-126-101-11	ELECT	100MF	20%	6.3V
C510	1-136-165-00	FILM	0.1MF	5%	50V
C511	1-136-174-00	FILM	0.56MF	5%	50V
C512	1-130-475-00	MYLAR	0.0022MF	5%	50V
C513	1-136-157-00	FILM	0.022MF	5%	50V
C514	1-136-165-00	FILM	0.1MF	5%	50V
C515	1-123-333-00	ELECT	100MF	20%	16V
C516	1-123-333-00	ELECT	100MF	20%	16V
C517	1-136-169-00	FILM	0.22MF	5%	50V
C518	1-136-161-00	FILM	0.047MF	5%	50V
C519	1-162-294-31	CERAMIC	0.001MF	10%	50V
C520	1-136-159-00	FILM	0.033MF	5%	50V
C521	1-162-294-31	CERAMIC	0.001MF	10%	50V
C522	1-130-475-00	MYLAR	0.0022MF	5%	50V
C523	1-124-555-00	ELECT	1000MF	20%	16V
C524	1-124-555-00	ELECT	1000MF	20%	16V
C525	1-136-173-00	FILM	0.47MF	5%	50V
C526	1-131-373-00	TANTALUM	22MF	10%	16V
C528	1-136-173-00	FILM	0.47MF	5%	50V
C529	1-136-153-00	FILM	0.01MF	5%	50V
C530	1-123-356-00	ELECT	10MF	20%	50V
C532	1-162-282-31	CERAMIC	100PF	10%	50V
C534	1-123-306-00	ELECT	47MF	20%	10V
C601	1-162-290-31	CERAMIC	470PF	10%	50V
C602	1-136-169-00	FILM	0.22MF	5%	50V
C603	1-136-165-00	FILM	0.1MF	5%	50V
C604	1-130-481-00	MYLAR	0.0068MF	5%	50V
C605	1-136-165-00	FILM	0.1MF	5%	50V
C606	1-124-002-11	ELECT	1MF	20%	50V
C607	1-162-286-31	CERAMIC	220PF	10%	50V
C608	1-162-282-31	CERAMIC	100PF	10%	50V
C609	1-136-153-00	FILM	0.01MF	5%	50V
C610	1-123-356-00	ELECT	10MF	20%	50V
C611	1-124-903-00	ELECT	1MF	20%	50V
C612	1-161-772-11	CERAMIC	0.1MF	20%	25V
C613	1-162-596-00	CERAMIC	0.022MF		25V
C614	1-162-596-00	CERAMIC	0.022MF		25V
C615	1-102-725-00	CERAMIC	36PF	5%	50V
C616	1-102-658-00	CERAMIC	180PF	5%	50V
C617	1-102-647-00	CERAMIC	39PF	5%	50V
C618	1-162-306-31	CERAMIC	0.01MF	20%	16V
C619	1-126-101-11	ELECT	100MF	20%	6.3V
C620	1-126-101-11	ELECT	100MF	20%	6.3V
C621	1-161-772-11	CERAMIC	0.1MF	20%	25V
C622	1-161-772-11	CERAMIC	0.1MF	20%	25V
C623	1-161-772-11	CERAMIC	0.1MF	20%	25V
C624	1-161-772-11	CERAMIC	0.1MF	20%	25V
C625	1-161-772-11	CERAMIC	0.1MF	20%	25V
C626	1-124-903-00	ELECT	1MF	20%	50V
C635	1-126-101-11	ELECT	100MF	20%	6.3V
C701	1-162-294-31	CERAMIC	0.001MF	10%	50V
C702	1-162-294-31	CERAMIC	0.001MF	10%	50V
C703	1-162-294-31	CERAMIC	0.001MF	10%	50V
C704	1-162-294-31	CERAMIC	0.001MF	10%	50V
C705	1-162-294-31	CERAMIC	0.001MF	10%	50V
C706	1-162-294-31	CERAMIC	0.001MF	10%	50V

ELECTRICAL PARTS

Ref.No.	Part No.	Description			
C707	1-162-294-31	CERAMIC	0.001MF	10%	50V
C708	1-162-294-31	CERAMIC	0.001MF	10%	50V
C709	1-162-294-31	CERAMIC	0.001MF	10%	50V
C710	1-162-294-31	CERAMIC	0.001MF	10%	50V
C711	1-162-294-31	CERAMIC	0.001MF	10%	50V
C712	1-161-772-11	CERAMIC	0.1MF	20%	25V
C713	1-124-471-00	ELECT	1000MF	20%	6.3V
C714	1-161-772-11	CERAMIC	0.1MF	20%	25V
C715	1-161-772-11	CERAMIC	0.1MF	20%	25V
C716	1-161-772-11	CERAMIC	0.1MF	20%	25V
C719	1-162-294-31	CERAMIC	0.001MF	10%	50V
C720	1-162-294-31	CERAMIC	0.001MF	10%	50V
C721	1-162-294-31	CERAMIC	0.001MF	10%	50V
C722	1-162-294-31	CERAMIC	0.001MF	10%	50V
C723	1-102-529-00	CERAMIC	100PF	5%	50V
C724	1-102-529-00	CERAMIC	100PF	5%	50V
C726	1-124-471-00	ELECT	1000MF	20%	6.3V
C727	1-161-772-11	CERAMIC	0.1MF	20%	25V
C729	1-162-294-31	CERAMIC	0.001MF	10%	50V
C735	1-124-360-00	ELECT	1000MF	20%	16V
C738	1-124-360-00	ELECT	1000MF	20%	16V
C739	1-124-471-00	ELECT	1000MF	20%	6.3V
C741	1-161-772-11	CERAMIC	0.1MF	20%	25V
C742	1-161-772-11	CERAMIC	0.1MF	20%	25V
C743	1-124-555-00	ELECT	1000MF	20%	16V
C744	1-162-286-31	CERAMIC	220PF	10%	50V
C745	1-162-286-31	CERAMIC	220PF	10%	50V
C746	1-162-286-31	CERAMIC	220PF	10%	50V
C747	1-124-963-11	ELECT	33MF	20%	10V
C749	1-161-772-11	CERAMIC	0.1MF	20%	16V
C750	1-162-294-31	CERAMIC	0.001MF	10%	50V
C752	1-161-772-11	CERAMIC	0.1MF	20%	25V
C753	1-161-772-11	CERAMIC	0.1MF	20%	25V
C754	1-161-772-11	CERAMIC	0.1MF	20%	25V
C755	1-161-772-11	CERAMIC	0.1MF	20%	25V
C756	1-161-772-11	CERAMIC	0.1MF	20%	25V
C757	1-161-772-11	CERAMIC	0.1MF	20%	25V
C758	1-161-772-11	CERAMIC	0.1MF	20%	25V
C768	1-162-306-31	CERAMIC	0.01MF	20%	16V
C769	1-162-306-31	CERAMIC	0.01MF	20%	16V
C770	1-162-306-31	CERAMIC	0.01MF	20%	16V
C771	1-162-282-31	CERAMIC	100PF	10%	50V
C772	1-162-306-31	CERAMIC	0.01MF	20%	16V
C773	1-162-306-31	CERAMIC	0.01MF	20%	16V
C774	1-161-772-11	CERAMIC	0.1MF	20%	25V
C778	1-124-186-00	ELECT	10MF	20%	50V
C780	1-124-186-00	ELECT	10MF	20%	50V
C781	1-124-186-00	ELECT	10MF	20%	50V
C901	1-124-555-00	ELECT	1000MF	20%	16V
C902	⚠1-130-789-00	FILM	1MF	10%	100V
C903	1-124-966-11	ELECT	10000MF	20%	25V
C904	1-124-360-00	ELECT	1000MF	20%	16V
C905	1-124-471-00	ELECT	1000MF	20%	6.3V
C906	⚠1-130-789-00	FILM	1MF	10%	100V
C907	1-124-965-11	ELECT	10000MF	20%	16V

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ELECTRICAL PARTS

Ref.No.	Part No.	Description			
C908	1-124-471-00	ELECT	1000MF	20%	6.3V
C909	1-130-789-00	FILM	1MF	10%	100V
C910	1-161-772-11	CERAMIC	0.1MF	20%	25V
C912	1-161-772-11	CERAMIC	0.1MF	20%	25V
C913	1-161-772-11	CERAMIC	0.1MF	20%	25V
C914	1-124-471-00	ELECT	1000MF	20%	6.3V
C915	1-161-772-11	CERAMIC	0.1MF	20%	25V
C916	1-161-772-11	CERAMIC	0.1MF	20%	25V
C917	1-124-360-00	ELECT	1000MF	20%	16V
C918	1-161-772-11	CERAMIC	0.1MF	20%	25V
C919	1-161-772-11	CERAMIC	0.1MF	20%	25V
C920	1-124-499-11	ELECT	1MF	20%	50V
C921	1-123-333-00	ELECT	100MF	20%	16V
C923	1-161-772-11	CERAMIC	0.1MF	20%	25V
C951	1-124-360-00	ELECT	1000MF	20%	16V
C952	⚠1-130-789-00	FILM	1MF	10%	100V
C953	1-124-966-11	ELECT	10000MF	20%	25V
C954	1-124-360-00	ELECT	1000MF	20%	16V
C955	1-124-471-00	ELECT	1000MF	20%	6.3V
C956	⚠1-130-789-00	FILM	1MF	10%	100V
C957	1-124-965-11	ELECT	10000MF	20%	16V
C958	1-124-471-00	ELECT	1000MF	20%	6.3V
C961	1-123-356-00	ELECT	10MF	20%	50V
C962	1-161-772-11	CERAMIC	0.1MF	20%	25V
C963	1-161-772-11	CERAMIC	0.1MF	20%	25V
C965	1-161-772-11	CERAMIC	0.1MF	20%	25V
C966	1-161-772-11	CERAMIC	0.1MF	20%	25V
C968	1-161-772-11	CERAMIC	0.1MF	20%	25V
C969	1-161-772-11	CERAMIC	0.1MF	20%	25V
C972	⚠1-161-742-00	CERAMIC	0.0022MF	20%	400V
C973	⚠1-161-742-00	CERAMIC	0.0022MF	20%	400V
C975	⚠1-161-744-00	CERAMIC	0.01MF		400V
C976	⚠1-161-742-00	CERAMIC	0.0022MF	20%	400V
C977	⚠1-161-744-00	CERAMIC	0.01MF		400V
C978	⚠1-161-742-00	CERAMIC	0.0022MF	20%	400V
CB901	⚠1-532-519-00	(US).....BREAKER, CIRCUIT			
CB901	⚠1-532-538-00	(AEP).....BREAKER, CIRCUIT			
CNJ151*1-560-073-00		PIN, CONNECTOR			
CNJ251 1-507-766-00		JACK, LARGE TYPE			
CNP001 1-507-912-21		JACK, PIN 2P			
CNP100 1-563-346-11		CONNECTOR, D SUB 37P			
CNP101*1-564-507-41		PLUG, CONNECTOR 4P			
CNP205*1-564-510-11		PLUG, CONNECTOR 7P			
CNP206*1-564-521-31		PLUG, CONNECTOR 6P			
CNP207*1-564-506-11		PLUG, CONNECTOR 3P			
CNP208*1-564-509-11		PLUG, CONNECTOR 6P			
CNP209*1-564-506-11		PLUG, CONNECTOR 3P			
CNP210*1-564-507-11		PLUG, CONNECTOR 4P			
CNP251*1-564-507-11		PLUG, CONNECTOR 4P			
CNP252*1-564-507-11		PLUG, CONNECTOR 4P			
CNP255*1-564-522-11		PLUG, CONNECTOR 7P			
CNP301 1-564-710-11		PIN, CONNECTOR (SMALL TYPE) 8P			
CNP302*1-564-707-21		PIN, CONNECTOR (SMALL TYPE) 5P			
CNP303*1-564-706-11		PIN, CONNECTOR (SMALL TYPE) 4P			
CNP304*1-564-507-31		PLUG, CONNECTOR 4P			
CNP305*1-564-704-11		PIN, CONNECTOR (SMALL TYPE) 2P			
CNP403*1-564-511-11		PLUG, CONNECTOR 8P			

ELECTRICAL PARTS

Ref.No.	Part No.	Description
CNP453*1-564-523-11		PLUG, CONNECTOR 8P
CNP501*1-564-509-11		PLUG, CONNECTOR 6P
CNP551*1-564-511-31		PLUG, CONNECTOR 8P
CNP561*1-564-523-31		PLUG, CONNECTOR 8P
CNP701 1-563-187-11		SOCKET, CONNECTOR 14P
CNP702 1-563-187-11		SOCKET, CONNECTOR 14P
CNP703 1-563-187-11		SOCKET, CONNECTOR 14P
CNP704 1-563-187-11		SOCKET, CONNECTOR 14P
CNP705 1-563-187-11		SOCKET, CONNECTOR 14P
CNP706 1-563-187-11		SOCKET, CONNECTOR 14P
CNP707 1-563-188-11		SOCKET, CONNECTOR 14P
CNP708 1-563-188-11		SOCKET, CONNECTOR 14P
CNP709*1-564-507-21		PLUG, CONNECTOR 4P
CNP710*1-560-071-00		PIN, CONNECTOR
CNP711*1-560-076-00		PIN, CONNECTOR
CNP712*1-564-508-11		PLUG, CONNECTOR 5P
CNP713*1-564-505-31		PLUG, CONNECTOR 2P
CNP714*1-564-505-21		PLUG, CONNECTOR 2P
CNP717*1-564-517-41		PLUG, CONNECTOR 2P
CNP719*1-564-517-41		PLUG, CONNECTOR 2P
CNP720*1-564-517-31		PLUG, CONNECTOR 2P
CNP722*1-564-505-31		PLUG, CONNECTOR 2P
CNP723*1-564-505-11		PLUG, CONNECTOR 2P
CNP724*1-564-505-41		PLUG, CONNECTOR 2P
CNP725*1-564-521-11		PLUG, CONNECTOR 6P
CNP726*1-564-521-11		PLUG, CONNECTOR 6P
CNP727*1-564-523-11		PLUG, CONNECTOR 8P
CNP728*1-564-517-21		PLUG, CONNECTOR 2P
CNP729*1-564-704-11		PIN, CONNECTOR (SMALL TYPE) 2P
CNP730*1-564-705-21		PIN, CONNECTOR (SMALL TYPE) 3P
CNP734*1-564-518-11		PLUG, CONNECTOR 3P
CNP735*1-564-517-41		PLUG, CONNECTOR 2P
CNP736*1-564-706-11		PIN, CONNECTOR (SMALL TYPE) 4P
CNP737*1-564-705-11		PIN, CONNECTOR (SMALL TYPE) 3P
CNP738*1-564-704-31		PIN, CONNECTOR (SMALL TYPE) 2P
CNP739*1-564-704-41		PIN, CONNECTOR (SMALL TYPE) 2P
CNP740*1-564-705-31		PIN, CONNECTOR (SMALL TYPE) 3P
CNP741*1-564-704-11		PIN, CONNECTOR (SMALL TYPE) 2P
CNP751*1-564-510-21		PLUG, CONNECTOR 7P
CNP771 1-564-522-11		PLUG, CONNECTOR 7P
CNP901	⚠1-509-547-00	3P INLET
CNP902*1-535-140-00		BASE POST 22MM (10MM PITCH) 3P
CNP910*1-564-505-31		PLUG, CONNECTOR 2P
CNP951*1-564-104-00		PIN, CONNECTOR 3P
CNP952*1-564-104-00		PIN, CONNECTOR 3P
D51	8-719-901-33	DIODE 1SS133
D301	8-719-910-65	DIODE HZ6B2L
D302	8-719-910-65	DIODE HZ6B2L
D303	8-719-224-12	DIODE 1OYD1.3-A
D401	8-719-910-65	DIODE HZ6B2L
D403	8-719-224-12	DIODE 1OYD1.3-A
D501	8-719-940-76	DIODE 1SS132
D504	8-719-940-76	DIODE 1SS132
D505	8-719-940-76	DIODE 1SS132
D506	8-719-951-13	DIODE HZ5CLL
D601	8-719-940-76	DIODE 1SS132
D611	8-719-936-69	DIODE KV1260T

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ELECTRICAL PARTS

Ref.No.	Part No.	Description
D701	8-719-933-74	DIODE HZ12A2L
D703	8-719-933-70	DIODE HZ11C2L
D704	8-719-933-57	DIODE HZ9B2L
D705	8-719-200-77	DIODE 10E2E
D706	8-719-904-55	DIODE GL-5HD5
D708	8-719-904-55	DIODE GL-5HD5
D709	8-719-904-55	DIODE GL-5HD5
D711	8-719-904-55	DIODE GL-5HD5
D712	8-719-940-76	DIODE 1SS132
D713	8-719-952-51	DIODE AA5525S
D714	8-719-933-74	DIODE HZS12A2L
D715	8-719-904-55	DIODE GL-5HD5
D717	8-719-904-55	DIODE PR5534S
D753	8-719-933-74	DIODE HZ12A2L
D754	8-719-933-74	DIODE HZ12A2L
D755	8-719-933-57	DIODE HZ9B2L
D756	8-719-907-77	DIODE PG5534SY
D901 ⚠	8-719-200-68	DIODE C10P20FU
D902 ⚠	8-719-200-31	DIODE 21DQ05
D903 ⚠	8-719-200-31	DIODE 21DQ05
D904	8-719-200-77	DIODE 10E2N
D905	8-719-200-77	DIODE 10E2N
D906	8-719-904-55	DIODE GL-5HD5
D907	8-719-907-77	DIODE PG5534SY
D914	8-719-940-76	DIODE 1SS132
D915	8-719-904-55	DIODE GL-5HD5
D951 ⚠	8-719-200-69	DIODE C10P20FUR
D952 ⚠	8-719-200-31	DIODE 21DQ05
D953 ⚠	8-719-200-31	DIODE 21DQ05
D957	8-719-907-77	DIODE PG5534SY
F910 ⚠	1-532-747-11	(US).....FUSE, GLASS TUBE
F910 ⚠	1-532-299-11	(AEP).....FUSE, GLASS TUBE
F960 ⚠	1-532-747-11	(US).....FUSE, GLASS TUBE
F960 ⚠	1-532-299-11	(AEP).....FUSE, GLASS TUBE
H151	8-719-800-31	DIODE THS103A-1
H152	8-719-800-31	DIODE THS103A-1
IC151	8-759-145-58	IC UPC4558C
IC301	8-759-905-42	IC NE5534P
IC302	8-759-910-77	IC LF353N/GLEA312
IC303	8-752-015-20	IC CX20152
IC304	8-759-140-53	IC UPD4053BC
IC401	8-759-905-42	IC NE5534P
IC402	8-759-910-77	IC LF353N/GLEA312
IC501	8-752-010-80	IC CX20108
IC502	8-759-700-58	IC NJM4558D-FA
IC503	8-759-004-70	IC MC74HCT245N
IC601	8-759-140-53	IC UPD4053BC
IC602	8-759-912-53	IC CX23034
IC603	8-759-912-52	IC CX23035
IC604	8-759-302-72	IC HM6116LFP-3
IC605	8-759-990-82	IC TL082CP
IC608	8-759-145-58	IC UPC4558C
IC609	8-759-202-13	IC TC74HCU04P
IC610	8-759-204-97	IC TC74HCU04F
IC701	8-759-802-44	IC LM6402G-1894
IC702	8-759-802-76	IC LB1645N
IC703	8-759-924-09	IC CXQ88501-380S
IC704	8-759-924-08	IC CXQ88501-451S
IC705	8-759-925-63	IC MSM6404A-117GS-K
IC707	8-759-802-76	IC LB1645N

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

ELECTRICAL PARTS

Ref.No.	Part No.	Description
IC708	8-759-802-76	IC LB1645N
IC710	8-759-802-76	IC LB1645N
IC711	8-759-220-04	IC TC40H004P
IC712	8-759-220-04	IC TC40H004P
IC713	8-759-004-70	IC MC74HCT245N
IC714	8-759-202-93	IC TC74HC153P
IC715	8-759-202-93	IC TC74HC153P
IC901	8-759-700-06	IC NJM7812B
IC902	8-759-700-06	IC NJM7812B
IC903	8-759-700-51	IC NJM7805A
IC904	8-759-171-15	IC UPC7815H
IC909	8-759-045-84	IC MC14584BCP
IC911	8-759-700-28	IC NJM7905A
IC910	8-759-925-54	IC LM2940CT-5.0
IC912	8-759-925-54	IC LM2940CT-5.0
IC951	8-759-179-12	UPC-7912H
IC952	8-759-179-12	UPC-7912H
IC953	8-759-700-28	IC NJM7905A
L51	1-408-563-00	MICRO INDUCTOR 10UH
L301	1-408-569-00	MICRO INDUCTOR 33UH
L302	1-408-569-00	MICRO INDUCTOR 33UH
L303	1-408-569-00	MICRO INDUCTOR 33UH
L304	1-408-569-00	MICRO INDUCTOR 33UH
L305	1-408-569-00	MICRO INDUCTOR 33UH
L601	1-408-569-00	MICRO INDUCTOR 33UH
L701	1-408-569-00	MICRO INDUCTOR 33UH
L702	1-408-569-00	MICRO INDUCTOR 33UH
L703	1-408-569-00	MICRO INDUCTOR 33UH
L704	1-408-569-00	MICRO INDUCTOR 33UH
LPF3	1-464-613-11	(US:FORMER TYPE)...FILTER UNIT, LOW PASS
LPF3	1-464-845-11	FILTER UNIT, LOW PASS
LPF4	1-464-613-11	(US:FORMER TYPE)...FILTER UNIT, LOW PASS
LPF4	1-464-845-11	FILTER UNIT, LOW PASS
M153	1-422-197-14	COIL (DRIVE)
M701	A-4608-329-A	MOTOR (C) ASSY (CHUKING)
M702	A-4608-327-A	MOTOR (B) ASSY
M703	A-4608-325-A	MOTOR (A) ASSY
PH701	8-719-801-84	TLP802
PH702	8-719-801-84	TLP802
PH703	8-719-801-84	TLP802
PL701	1-518-594-11	LAMP, PILOT
PL702	1-518-594-11	LAMP, PILOT
PL703	1-518-594-11	LAMP, PILOT
PL704	1-518-594-11	LAMP, PILOT
PL705	1-518-594-11	LAMP, PILOT
PS701	1-454-411-11	SOLENOID, PLUNGER
PS951 ⚠	1-532-686-00	LINK, IC
PS952 ⚠	1-532-686-00	LINK, IC
PS955 ⚠	1-532-675-00	LINK, IC
PS956 ⚠	1-532-675-00	LINK, IC
PS957 ⚠	1-532-675-00	LINK, IC
Q151	8-729-206-47	TRANSISTOR 2SC3666Y
Q152	8-729-206-43	TRANSISTOR 2SA1426Y
Q153	8-729-206-47	TRANSISTOR 2SC3666Y
Q154	8-729-206-43	TRANSISTOR 2SA1426Y
Q301	8-729-802-43	TRANSISTOR 2SK125-3
Q302	8-729-800-43	TRANSISTOR 2SK152-3

ELECTRICAL PARTS

Ref.No.	Part No.	Description			
Q401	8-729-802-43	TRANSISTOR 2SK125-3			
Q402	8-729-800-43	TRANSISTOR 2SK152-3			
Q501	8-729-206-49	TRANSISTOR 2SC3666Y			
Q502	8-729-206-43	TRANSISTOR 2SA1426Y			
Q503	8-729-206-49	TRANSISTOR 2SC3666Y			
Q504	8-729-206-43	TRANSISTOR 2SA1426Y			
Q505	8-729-206-49	TRANSISTOR 2SC3666Y			
Q506	8-729-206-43	TRANSISTOR 2SA1426Y			
Q507	8-729-117-54	TRANSISTOR 2SA1175			
Q508	8-729-178-54	TRANSISTOR 2SC2785			
Q601	8-729-900-80	TRANSISTOR DTC114ES			
Q602	8-729-178-54	TRANSISTOR 2SC2785			
Q616	8-729-900-80	TRANSISTOR DTC114ES			
Q702	8-729-900-80	TRANSISTOR DTC114ES			
Q707	8-729-900-89	TRANSISTOR DTC144ES			
Q708	8-729-900-80	TRANSISTOR DTC114ES			
Q714	8-729-900-80	TRANSISTOR DTC114ES			
Q715	8-729-900-80	TRANSISTOR DTC114ES			
Q717	8-729-900-61	TRANSISTOR DTA114ES			
Q731	8-729-900-80	TRANSISTOR DTC114ES			
Q732	8-729-900-80	TRANSISTOR DTC114ES			
Q733	8-729-900-80	TRANSISTOR DTC114ES			
Q734	8-729-900-74	TRANSISTOR DTC143TS			
Q735	8-729-900-89	TRANSISTOR DTC144ES			
Q751	8-729-900-65	TRANSISTOR DTA144ES			
Q753	8-729-900-74	TRANSISTOR DTC143TS			
Q901	8-729-900-61	TRANSISTOR DTA114ES			
Q902	8-729-900-80	TRANSISTOR DTC114ES			
Q903	8-729-178-54	TRANSISTOR 2SC2785			
Q904	8-729-900-80	TRANSISTOR DTC114ES			
Q905	8-729-900-80	TRANSISTOR DTC114ES			
Q907	8-729-178-54	TRANSISTOR 2SC2785			
Q908	8-729-178-54	TRANSISTOR 2SC2785			
R151	1-249-417-11	CARBON	1K	5%	1/6W
R152	1-249-417-11	CARBON	1K	5%	1/6W
R153	1-249-417-11	CARBON	1K	5%	1/6W
R154	1-249-417-11	CARBON	1K	5%	1/6W
R155	1-249-417-11	CARBON	1K	5%	1/6W
R156	1-249-417-11	CARBON	1K	5%	1/6W
R157	1-247-887-00	CARBON	220K	5%	1/6W
R158	1-247-887-00	CARBON	220K	5%	1/6W
R159	1-247-887-00	CARBON	220K	5%	1/6W
R160	1-247-887-00	CARBON	220K	5%	1/6W
R301	1-249-786-11	METAL	220	1%	1/2W
R302	1-215-469-00	METAL	100K	1%	1/6W
R303	1-247-903-00	CARBON	1M	5%	1/4W
R304	1-215-493-00	METAL	1M	1%	1/6W
R305	1-249-826-11	CARBON	10K	1%	1/2W
R306	1-249-794-11	CARBON	470	1%	1/2W
R307	1-249-815-11	CARBON	3.6K	1%	1/2W
R308	1-249-814-11	CARBON	3.3K	1%	1/2W
R309	1-247-720-11	CARBON	3.9K	1%	1/4W
R310	1-249-942-11	CARBON	6.2K	1%	1/4W
R311	1-247-713-11	CARBON	1K	1%	1/4W
R312	1-215-429-00	METAL	2.2K	1%	1/6W
R314	1-247-715-11	CARBON	1.5K	1%	1/4W
R315	1-247-721-11	CARBON	4.7K	1%	1/4W
R316	1-215-453-00	METAL	22K	1%	1/6W
R317	1-249-818-11	METAL	4.7K	1%	1/2W
R319	1-249-437-11	CARBON	47K	5%	1/4W
R401	1-249-786-11	CARBON	220	1%	1/2W
R402	1-215-469-00	METAL	100K	1%	1/6W
R403	1-247-903-00	CARBON	1M	5%	1/6W

ELECTRICAL PARTS

Ref.No.	Part No.	Description			
R404	1-214-493-00	METAL	1M	1%	1/6W
R405	1-249-826-11	CARBON	10K	1%	1/2W
R406	1-249-794-11	CARBON	470	1%	1/2W
R407	1-249-815-11	CARBON	3.6K	1%	1/2W
R408	1-249-814-11	CARBON	3.3K	1%	1/2W
R409	1-247-720-11	CARBON	3.9K	1%	1/4W
R410	1-249-942-11	CARBON	6.2K	1%	1/4W
R411	1-247-713-11	CARBON	1K	1%	1/4W
R412	1-215-429-00	METAL	2.2K	1%	1/6W
R415	1-247-721-11	CARBON	4.7K	1%	1/4W
R501	1-249-434-11	CARBON	27K	5%	1/6W
R502	1-247-851-00	CARBON	6.8K	5%	1/6W
R503	1-249-405-11	CARBON	100	5%	1/6W
R504	1-249-434-11	CARBON	27K	5%	1/6W
R505	1-249-405-11	CARBON	100	5%	1/6W
R506	1-247-883-00	CARBON	150K	5%	1/6W
R507	1-247-899-00	CARBON	680K	5%	1/6W
R508	1-247-815-00	CARBON	220	5%	1/6W
R509	1-249-425-11	CARBON	4.7K	5%	1/6W
R510	1-247-819-00	CARBON	330	5%	1/6W
R511	1-247-859-00	CARBON	15K	5%	1/6W
R512	1-247-869-00	CARBON	39K	5%	1/6W
R513	1-247-869-00	CARBON	39K	5%	1/6W
R514	1-249-417-11	CARBON	1K	5%	1/6W
R515	1-247-903-00	CARBON	1M	5%	1/6W
R516	1-247-845-00	CARBON	3.9K	5%	1/6W
R517	1-249-429-11	CARBON	10K	5%	1/6W
R518	1-249-423-11	CARBON	3.3K	5%	1/6W
R519	1-247-859-00	CARBON	15K	5%	1/6W
R520	1-249-417-11	CARBON	1K	5%	1/6W
R521	1-249-429-11	CARBON	10K	5%	1/6W
R522	1-249-429-11	CARBON	10K	5%	1/6W
R523	1-247-895-00	CARBON	470K	5%	1/6W
R524	1-249-422-11	CARBON	2.7K	5%	1/6W
R525	1-249-405-11	CARBON	100	5%	1/6W
R526	1-249-405-11	CARBON	100	5%	1/6W
R527	1-247-857-00	CARBON	12K	5%	1/6W
R528	1-249-429-11	CARBON	10K	5%	1/6W
R529	1-249-429-11	CARBON	10K	5%	1/6W
R530	1-247-837-00	CARBON	1.8K	5%	1/6W
R531	1-249-441-11	CARBON	100K	5%	1/6W
R532	1-247-859-00	CARBON	15K	5%	1/6W
R533	1-247-851-00	CARBON	6.8K	5%	1/6W
R534	1-249-417-11	CARBON	1K	5%	1/6W
R535	1-249-435-11	CARBON	33K	5%	1/6W
R536	1-247-864-00	CARBON	24K	5%	1/6W
R537	1-247-851-00	CARBON	6.8K	5%	1/6W
R538	1-247-895-00	CARBON	470K	5%	1/5W
R539	1-247-895-00	CARBON	470K	5%	1/6W
R540	1-249-433-11	CARBON	22K	5%	1/6W
R541	1-249-429-11	CARBON	10K	5%	1/6W
R542	1-249-425-11	CARBON	4.7K	5%	1/6W
R543	1-249-417-11	CARBON	1K	5%	1/6W
R544	1-249-417-11	CARBON	1K	5%	1/6W
R545	1-249-417-11	CARBON	1K	5%	1/6W
R546	1-249-433-11	CARBON	22K	5%	1/6W
R547	1-249-423-11	CARBON	3.3K	5%	1/6W

ELECTRICAL PARTS

Ref.No.	Part No.	Description			
R548	1-249-437-11	CARBON	47K	5%	1/6W
R552	1-249-435-11	CARBON	33K	5%	1/6W
R601	1-247-887-00	CARBON	220K	5%	1/6W
R602	1-249-423-11	CARBON	3.3K	5%	1/6W
R603	1-247-869-00	CARBON	39K	5%	1/6W
R604	1-215-449-00	METAL	15K	1%	1/6W
R605	1-215-453-00	METAL	22K	1%	1/6W
R606	1-249-433-11	CARBON	22K	5%	1/6W
R607	1-247-856-00	CARBON	11K	5%	1/6W
R608	1-247-856-00	CARBON	11K	5%	1/6W
R609	1-215-441-00	METAL	6.8K	1%	1/6W
R610	1-247-903-00	CARBON	1M	5%	1/6W
R611	1-215-441-00	METAL	6.8K	1%	1/6W
R612	1-247-851-00	CARBON	6.8K	5%	1/6W
R613	1-215-453-00	METAL	22K	1%	1/6W
R614	1-249-425-11	CARBON	4.7K	5%	1/6W
R615	1-215-453-00	METAL	22K	1%	1/6W
R616	1-249-422-11	CARBON	2.7K	5%	1/6W
R617	1-247-857-00	CARBON	12K	5%	1/6W
R618	1-249-417-11	CARBON	1K	5%	1/6W
R619	1-249-435-11	CARBON	33K	5%	1/6W
R620	1-249-433-11	CARBON	22K	5%	1/6W
R621	1-249-429-11	CARBON	10K	5%	1/6W
R622	1-249-425-11	CARBON	4.7K	5%	1/6W
R623	1-249-441-11	CARBON	100K	5%	1/6W
R624	1-249-441-11	CARBON	100K	5%	1/6W
R625	1-249-441-11	CARBON	100K	5%	1/6W
R626	1-249-429-11	CARBON	10K	5%	1/6W
R627	1-249-433-11	CARBON	22K	5%	1/6W
R628	1-249-429-11	CARBON	10K	5%	1/6W
R651	1-249-429-11	CARBON	10K	5%	1/6W
R660	1-247-903-00	CARBON	1M	5%	1/6W
R701	1-249-429-11	CARBON	10K	5%	1/6W
R702	1-249-429-11	CARBON	10K	5%	1/6W
R703	1-249-429-11	CARBON	10K	5%	1/6W
R704	1-249-429-11	CARBON	10K	5%	1/6W
R707	1-249-429-11	CARBON	10K	5%	1/6W
R709	1-249-429-11	CARBON	10K	5%	1/6W
R710	1-247-811-00	CARBON	150	5%	1/6W
R711	1-247-811-00	CARBON	150	5%	1/6W
R712	1-247-811-00	CARBON	150	5%	1/6W
R713	1-247-811-00	CARBON	150	5%	1/6W
R714	1-247-811-00	CARBON	150	5%	1/6W
R715	1-247-811-00	CARBON	150	5%	1/6W
R716	1-249-429-11	CARBON	10K	5%	1/6W
R718	1-249-417-11	CARBON	1K	5%	1/6W
R720	1-249-425-11	CARBON	4.7K	5%	1/4W
R721	1-249-425-11	CARBON	4.7K	5%	1/4W
R722	1-247-811-00	CARBON	150	5%	1/6W
R723	1-247-811-00	CARBON	150	5%	1/6W
R724	1-249-429-11	CARBON	10K	5%	1/6W
R725	1-249-429-11	CARBON	10K	5%	1/6W
R726	1-247-811-00	CARBON	150	5%	1/6W
R728	1-247-819-00	CARBON	330	5%	1/6W
R730	1-249-429-11	CARBON	10K	5%	1/6W
R731	1-249-429-11	CARBON	10K	5%	1/6W
R732	1-249-429-11	CARBON	10K	5%	1/6W

ELECTRICAL PARTS

Ref.No.	Part No.	Description			
R733	1-247-811-00	CARBON	150	5%	1/6W
R734	1-249-429-11	CARBON	10K	5%	1/6W
R735	1-249-425-11	CARBON	4.7K	5%	1/6W
R736	1-249-425-11	CARBON	4.7K	5%	1/6W
R741	1-247-811-00	CARBON	150	5%	1/6W
R743	1-249-420-11	CARBON	1.8K	5%	1/6W
R744	1-249-420-11	CARBON	1.8K	5%	1/6W
R745	1-249-417-11	CARBON	1K	5%	1/6W
R751	1-249-425-11	CARBON	4.7K	5%	1/6W
R752	1-247-813-00	CARBON	180	5%	1/6W
R753	1-247-824-00	CARBON	510	5%	1/6W
R754	1-249-412-11	CARBON	390	5%	1/6W
R755	1-249-441-11	CARBON	100K	5%	1/6W
R756	1-249-441-11	CARBON	100K	5%	1/6W
R757	1-249-441-11	CARBON	100K	5%	1/6W
R758	1-247-903-00	CARBON	1M	5%	1/6W
R759	1-247-903-00	CARBON	1M	5%	1/6W
R760	1-247-903-00	CARBON	1M	5%	1/6W
R762	1-249-420-11	CARBON	1.8K	5%	1/6W
R763	1-249-420-11	CARBON	1.8K	5%	1/6W
R764	1-249-420-11	CARBON	1.8K	5%	1/6W
R765	1-249-420-11	CARBON	1.8K	5%	1/6W
R766	1-249-420-11	CARBON	1.8K	5%	1/6W
R767	1-249-420-11	CARBON	1.8K	5%	1/6W
R768	1-249-420-11	CARBON	1.8K	5%	1/6W
R769	1-249-441-11	CARBON	100K	5%	1/6W
R770	1-247-851-00	CARBON	6.8K	5%	1/6W
R771	1-249-433-11	CARBON	22K	5%	1/6W
R772	1-249-417-11	CARBON	1K	5%	1/6W
R773	1-247-811-00	CARBON	150	5%	1/6W
R774	1-247-811-00	CARBON	150	5%	1/6W
R775	1-247-811-00	CARBON	150	5%	1/6W
R776	1-247-811-00	CARBON	150	5%	1/6W
R777	1-247-811-00	CARBON	150	5%	1/6W
R778	1-247-811-00	CARBON	150	5%	1/6W
R779	1-247-811-00	CARBON	150	5%	1/6W
R785	1-249-429-11	CARBON	10K	5%	1/6W
R786	1-247-811-00	CARBON	150	5%	1/6W
R787	1-249-429-11	CARBON	10K	5%	1/6W
R789	1-249-405-11	CARBON	100	5%	1/6W
R790	1-249-429-11	CARBON	10K	5%	1/6W
R791	1-249-425-11	CARBON	4.7K	5%	1/6W
R792	1-249-425-11	CARBON	4.7K	5%	1/6W
R793	1-249-425-11	CARBON	4.7K	5%	1/6W
R794	1-249-425-11	CARBON	4.7K	5%	1/6W
R795	1-249-425-11	CARBON	4.7K	5%	1/6W
R796	1-249-425-11	CARBON	4.7K	5%	1/6W
R797	1-249-425-11	CARBON	4.7K	5%	1/6W
R902	1-247-837-00	CARBON	1.8K	5%	1/6W
R904	1-249-429-11	CARBON	10K	5%	1/6W
R905	1-249-429-11	CARBON	10K	5%	1/6W
R906	1-249-435-11	CARBON	33K	5%	1/6W
R907	1-247-881-00	CARBON	120K	5%	1/6W
R908	1-249-429-11	CARBON	10K	5%	1/6W
R909	1-247-783-00	CARBON	10	5%	1/6W
R910	1-249-417-11	CARBON	1K	5%	1/6W
R911	1-249-425-11	CARBON	4.7K	5%	1/6W

ELECTRICAL PARTS

Ref.No.	Part No.	Description			
R915	1-249-425-11	CARBON	4.7K	5%	1/6W
R916	1-249-433-11	CARBON	22K	5%	1/6W
R917	1-249-441-11	CARBON	100K	5%	1/6W
R918	1-249-425-11	CARBON	4.7K	5%	1/6W
R919	1-249-425-11	CARBON	4.7K	5%	1/6W
R920	1-249-425-11	CARBON	4.7K	5%	1/6W
R961	1-249-425-11	CARBON	4.7K	5%	1/6W
R968	1-249-425-11	CARBON	4.7K	5%	1/6W
R969	1-249-425-11	CARBON	4.7K	5%	1/6W
RV501	1-226-703-11	RES, ADJ, METAL GLAZE 10K			
RV502	1-226-703-11	RES, ADJ, METAL GLAZE 10K			
RV602	1-226-772-11	RES, ADJ, METAL GLAZE 4.7K			
RV701	1-226-770-11	RES, ADJ, METAL GLAZE 470			
RY701	1-515-519-00	RELAY			
RY901	1-515-519-00	RELAY			
S701	1-570-561-11	SWITCH, MICRO (CHUCKING OFF)			
S702	1-570-561-11	SWITCH, MICRO (LIMIT)			
S703	1-570-561-11	SWITCH, MICRO (UP)			
S704	1-570-561-11	SWITCH, MICRO (END)			
S705	1-570-561-11	SWITCH, MICRO (HOLD)			
S706	1-570-561-11	SWITCH, MICRO (CHUCKING ON)			
S707	1-570-028-11	SWITCH, MICRO (DISS DET)			
S708	1-570-561-11	SWITCH, MICRO (RLS)			
S709	1-570-561-11	SWITCH, MICRO (MID)			
S710	1-570-561-11	SWITCH, MICRO (TRAY)			
S711	1-570-562-11	SWITCH, MICRO (DOOR)			
S713	1-570-560-11	(US:FORMER TYPE)...SWITCH, ROTARY			
S714	1-570-562-11	SWITCH, MICRO (LASER)			
S715	1-570-561-11	SWITCH, MICRO (MOTOR OFF)			
S750	1-570-313-11	SWITCH, KEY BOARD (ALL ONCE)			
S752	1-570-313-11	SWITCH, KEY BOARD (P.D)			
S753	1-570-313-11	SWITCH, KEY BOARD (N.D)			
S754	1-570-313-11	SWITCH, KEY BOARD (N.T)			
S755	1-570-313-11	SWITCH, KEY BOARD (P.T)			
S756	1-554-303-21	SWITCH, KEY BOARD (POWER)			
S757	1-570-313-11	SWITCH, KEY BOARD (STOP)			
S758	1-570-313-11	SWITCH, KEY BOARD (PLAY)			
S759	1-570-313-11	SWITCH, KEY BOARD (PAUSE)			
S761	1-552-539-00	SWITCH, KEY BOARD (DOOR)			
S771	1-554-303-21	SWITCH, KEY BOARD (TEST)			
S772	1-570-313-11	SWITCH, KEY BOARD (A-R)			
S773	1-570-313-11	SWITCH, KEY BOARD (A-F)			

ELECTRICAL PARTS

Ref.No.	Part No.	Description
S774	1-570-313-11	SWITCH, KEY BOARD (LEFT)
S775	1-570-313-11	SWITCH, KEY BOARD (HOLD)
S776	1-570-313-11	SWITCH, KEY BOARD (RLS)
S777	1-570-313-11	SWITCH, KEY BOARD (RIGHT)
S901	⚠1-570-046-21	(AEP).....SWITCH, VOLTAGE CHANGE
SE51	1-422-198-11	COIL (SENSOR)
T301	1-406-123-11	COIL (OSC)
T601	1-426-212-11	COIL (RF)
T901	⚠1-421-580-00	(US).....TRANSFORMER, LINE FILTER (LFT)
T901	⚠1-421-340-00	(AEP).....TRANSFORMER, LINE FILTER
T902	⚠1-448-431-11	(US).....TRANSFORMER, POWER
T902	⚠1-449-101-11	(AEP).....TRANSFORMER, POWER
TP701	*1-560-060-00	PIN, CONNECTOR 2P
TP702	*1-560-061-00	PIN, CONNECTOR 3P
X301	1-567-336-11	VIBRATOR, CRYSTAL
X701	1-527-822-00	OSCILLATOR, CERAMIC

ACCESSORY & PACKING MATERIAL

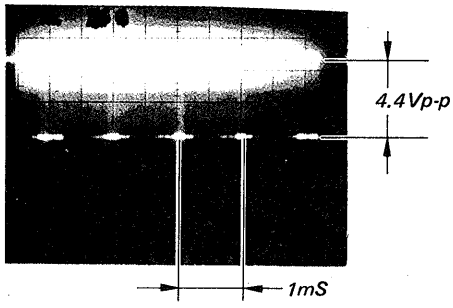
Part No.	Description
⚠1-534-827-00	(US).....CORD, POWER
⚠1-556-760-11	(AEP).....CORD, POWER (3 CORE)
3-701-616-00	BAG, POLYETHYLENE
3-701-630-00	BAG, POLYETHYLENE
3-705-596-21	MANUAL, INSTRUCTION
*4-915-124-01	BOLT, TRANSPORT LOCK
4-915-129-01	SCREW (PSW) (4X20), TRANSPORT
4-915-130-01	SCREW (PSW) (4X35), TRANSPORT
4-915-225-01	INDIVIDUAL CARTON
4-915-221-01	SHEET, UPPER CUSHION
4-915-222-01	SHEET, LOWER CUSHION
4-915-879-01	HOLDER, TRAY
4-915-880-01	SHEET, PROTECTION
4-915-881-01	SHEET, PROTECTION, TRAY
4-915-882-01	CUSHION (RIGHT), UPPER
4-915-883-01	CUSHION (LEFT), UPPER
4-915-884-01	CUSHION (RIGHT), LOWER
4-915-885-01	CUSHION (LEFT), LOWER
X-4904-613-1	KEY ASSY

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

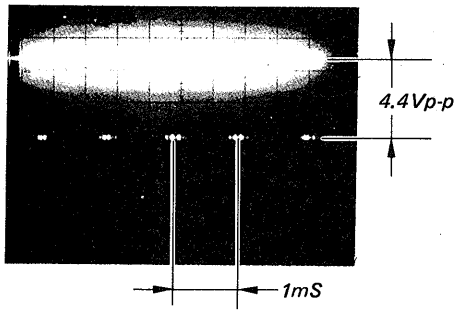
SECTION 6
DIAGRAMS

6-1. WAVEFORME

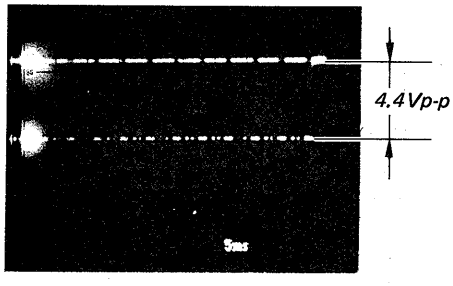
① CLK



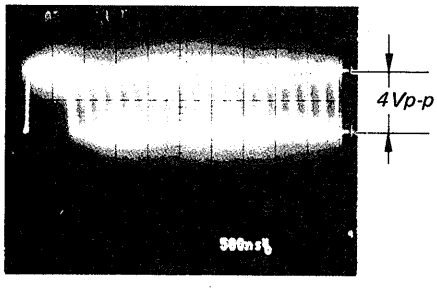
② LATCH



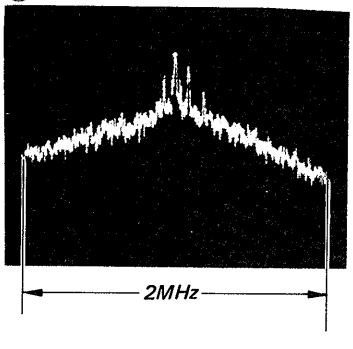
③ DATA



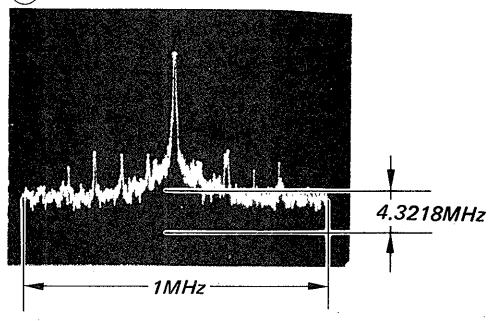
④ EFM



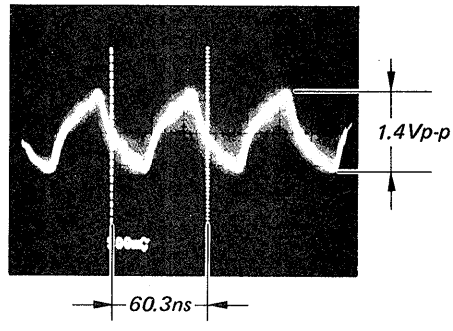
⑤ PLCK (4.3218 MHz)



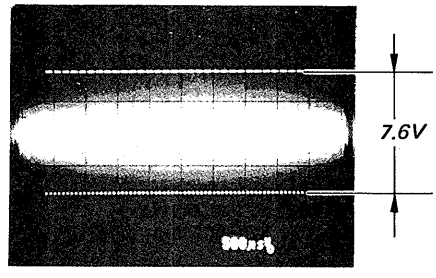
⑤ PLCK (out of lock)



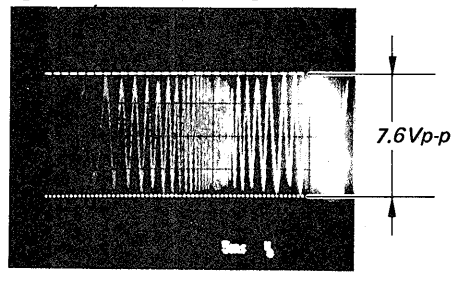
⑥ SL (16.9 MHz)



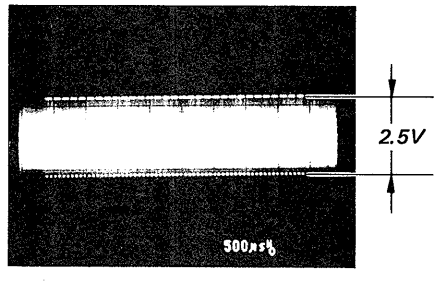
⑦ T.E



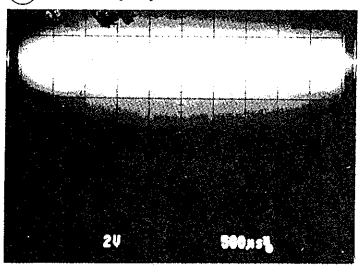
⑧ Traverse (ground at ⑦)



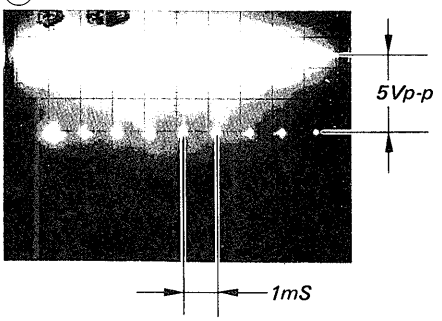
⑨ VCO out



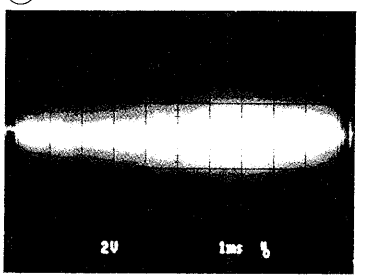
⑩ F.O.K (play)



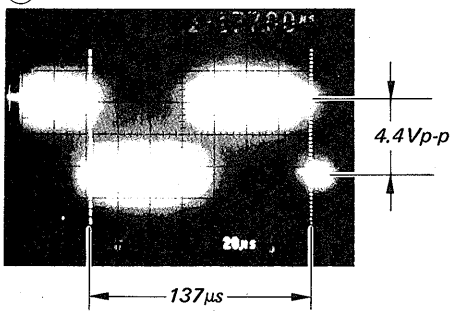
⑭ Q.INT



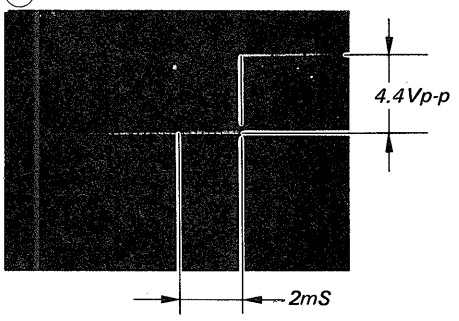
⑲ Focus



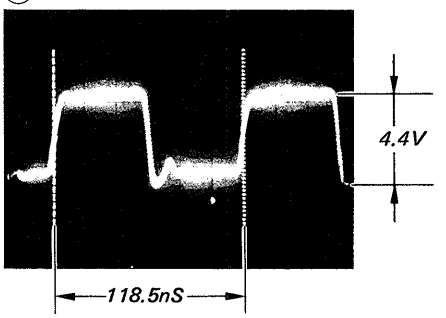
⑪ RFCK



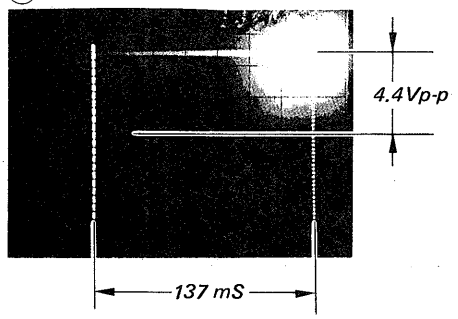
⑮ DATA



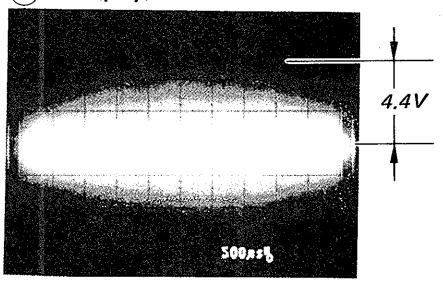
⑳ 8.467 MHz



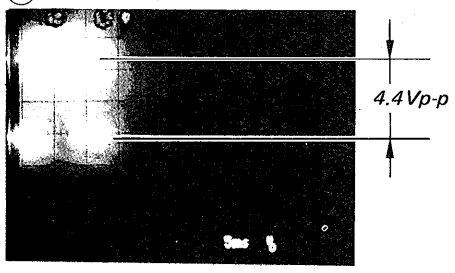
⑫ GFS (normal)



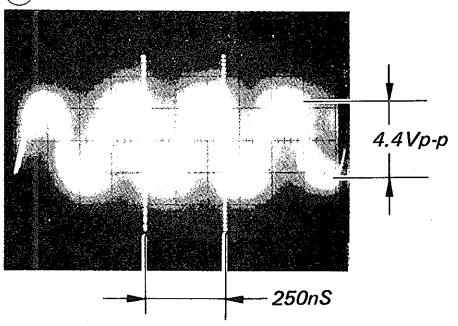
⑯ MIR (play)



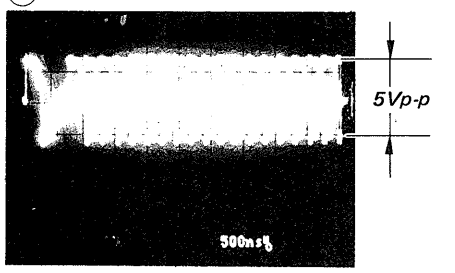
⑫ GFS (acsess)



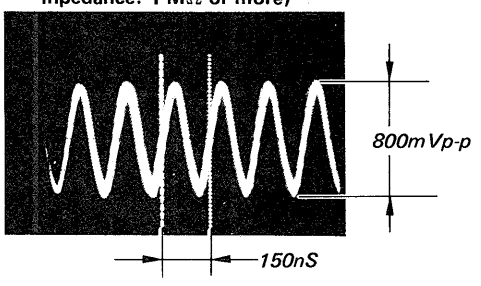
⑰



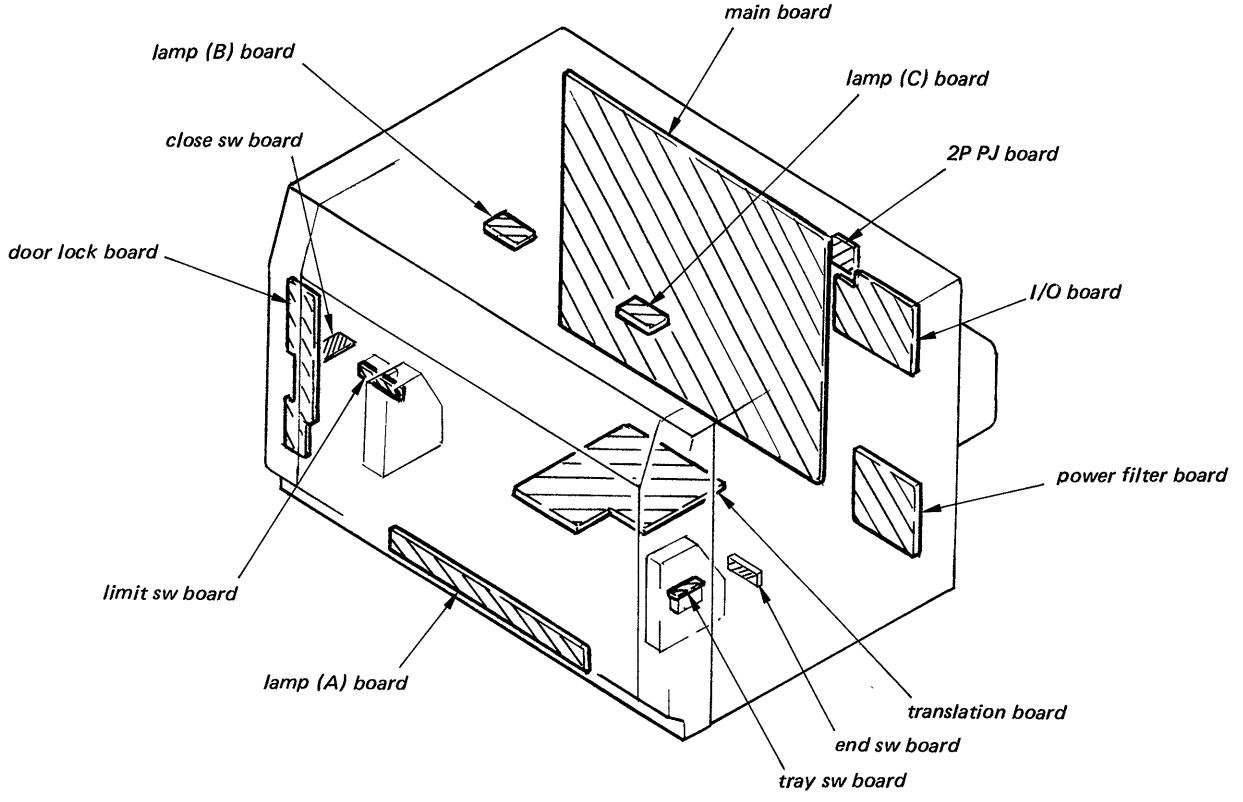
⑬ ASY



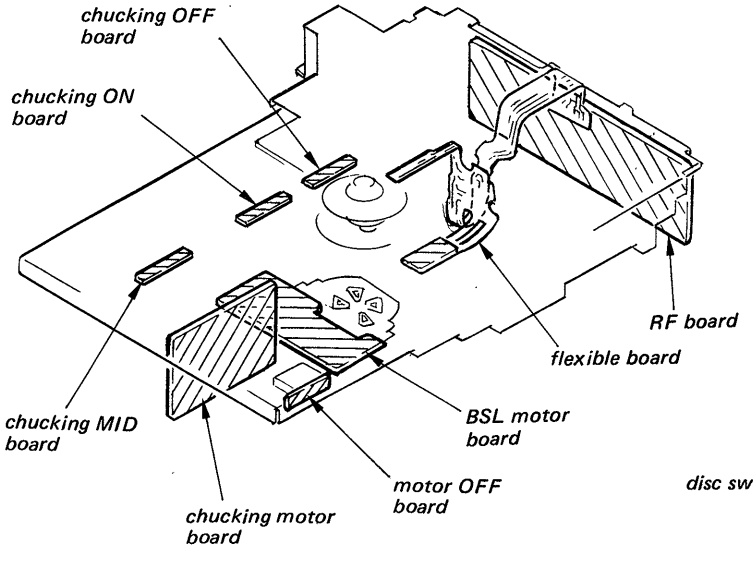
⑱ 73 MHz (measuring inpedance: 1 MΩ or more)



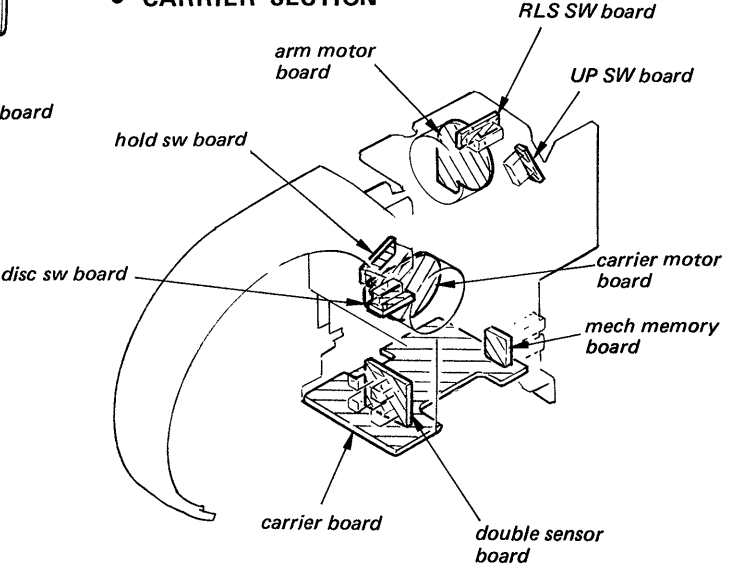
6-2. CIRCUIT BOARD LOCATION



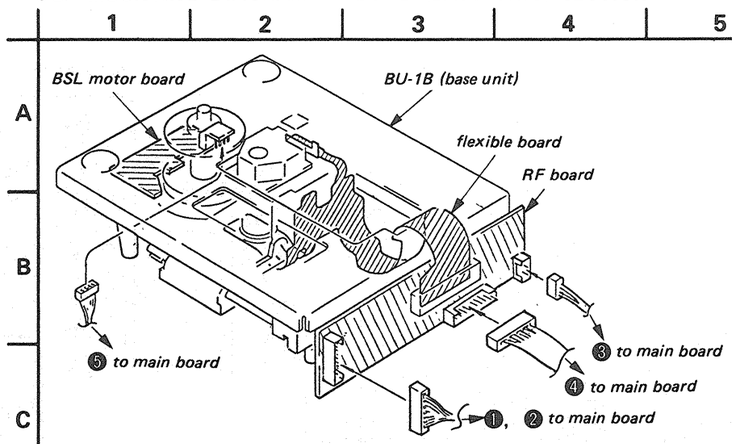
- **MD SECTION**

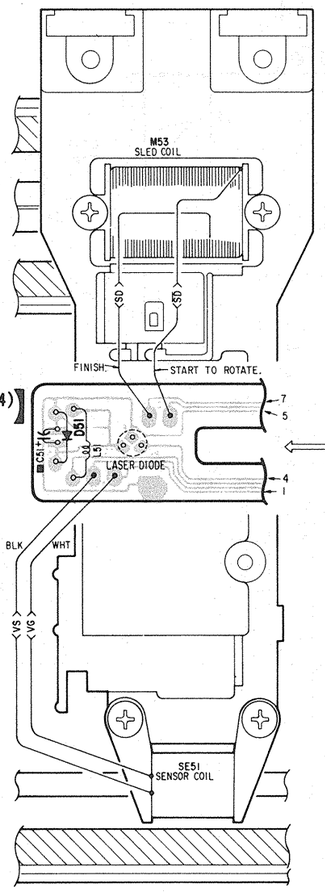


- **CARRIER SECTION**

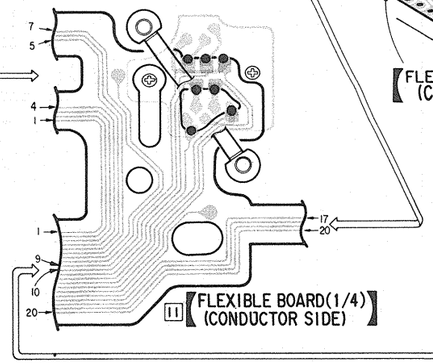


6-3. MOUNTING DIAGRAM — BU-1B (BASE UNIT) SECTION —

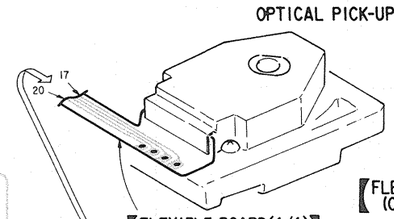




【FLEXIBLE BOARD(1/4) (CONDUCTOR SIDE)】

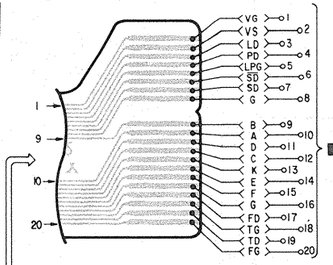


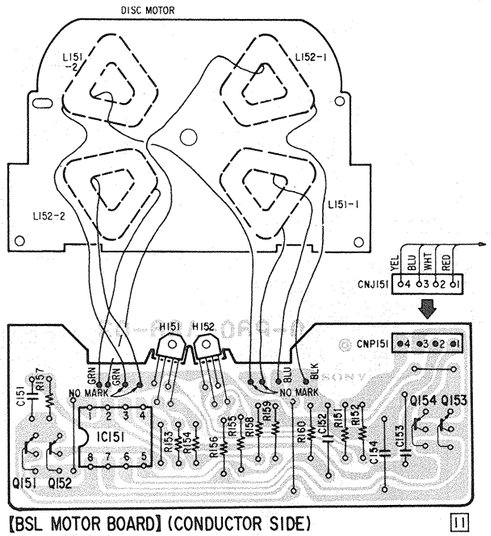
【FLEXIBLE BOARD(1/4) (CONDUCTOR SIDE)】 11



【FLEXIBLE BOARD(1/4) (CONDUCTOR SIDE)】

【FLEXIBLE BOARD(1/4) (COMPONENT SIDE)】

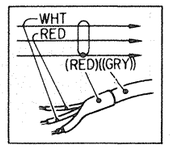




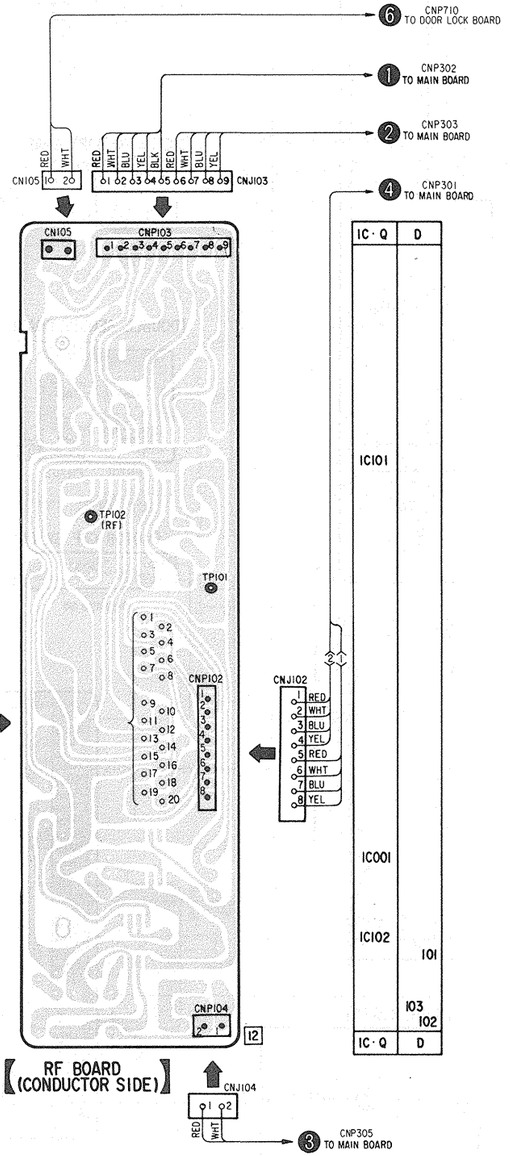
【BSL MOTOR BOARD】(CONDUCTOR SIDE) 11

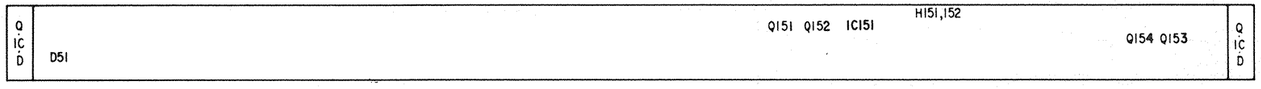
Note:

- Color code or sleeving over the end of the jacket.



- ○— : parts extracted from the component side.
- ●— : parts extracted from the conductor side.
- ■ : part mounted on the conductor side.
- ⊡ : indicates side identified with part number.



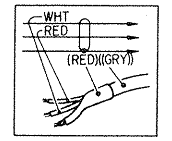


6-4. MOUNTING DIAGRAM

— Conductor Side —

Note:

- Color code or sleeving over the end of the jacket.



- ○—— : parts extracted from the component side.
- ●—— : parts extracted from the conductor side.

● SEMICONDUCTOR LOCATION

Ref. No.	Location	Ref. No.	Location	Ref. No.	Location
D301	H-29	IC301	K-28	PH701	G-5
D302	G-26	IC302	I-29	PH702	G-6
D303	I-29	IC303	G-28	PH703	E-5
D401	I-26	IC304	I-28		
D403	I-27	IC401	K-27	Q301	K-28
D501	C-23	IC402	I-27	Q302	H-29
D504	F-23	IC501	C-26	Q401	K-27
D505	C-23	IC502	C-24	Q402	H-26
D506	C-25	IC503	C-22	Q501	B-26
D601	E-26	IC601	E-23	Q502	B-26
D611	F-26	IC602	F-27	Q503	B-26
D701	F-17	IC603	D-28	Q504	B-26
D703	H-17	IC604	C-28	Q505	B-24
D704	G-18	IC605	E-24	Q506	B-24
D705	D-17	IC608	F-26	Q507	D-25
D706	D-23	IC609	F-20	Q508	D-25
D708	D-24	IC610	F-28	Q601	F-24
D709	D-19	IC701	K-18	Q602	D-24
D711	F-19	IC702	F-17	Q616	C-23
D712	D-17	IC703	J-18	Q702	J-17
D713	G-3	IC704	F-19	Q707	G-17
D714	D-18	IC705	E-22	Q708	E-17
D715	F-20	IC707	H-17	Q714	C-23
D717	C-19	IC708	F-17	Q715	C-23
D753	G-18	IC710	H-18	Q717	J-20
D754	G-18	IC711	E-19	Q731	E-17
D755	G-17	IC712	B-22	Q732	E-17
D756	I-20	IC713	I-18	Q733	E-17
D901	K-25	IC714	G-17	Q734	D-18
D902	J-23	IC715	C-18	Q735	C-19
D903	I-22	IC901	I-25	Q751	B-23
D904	K-25	IC902	H-25	Q753	B-23
D905	K-25	IC903	H-25	Q901	G-25
D906	J-23	IC904	C-33	Q902	G-25
D907	I-26	IC909	K-21	Q903	J-23
D914	K-28	IC910	C-32	Q904	K-23
D915	K-22	IC911	C-33	Q905	K-22
D951	K-24	IC912	C-32	Q907	K-21
D952	J-22	IC951	I-23	Q908	K-22
D953	J-22	IC952	H-23		
D957	I-23	IC953	H-24		

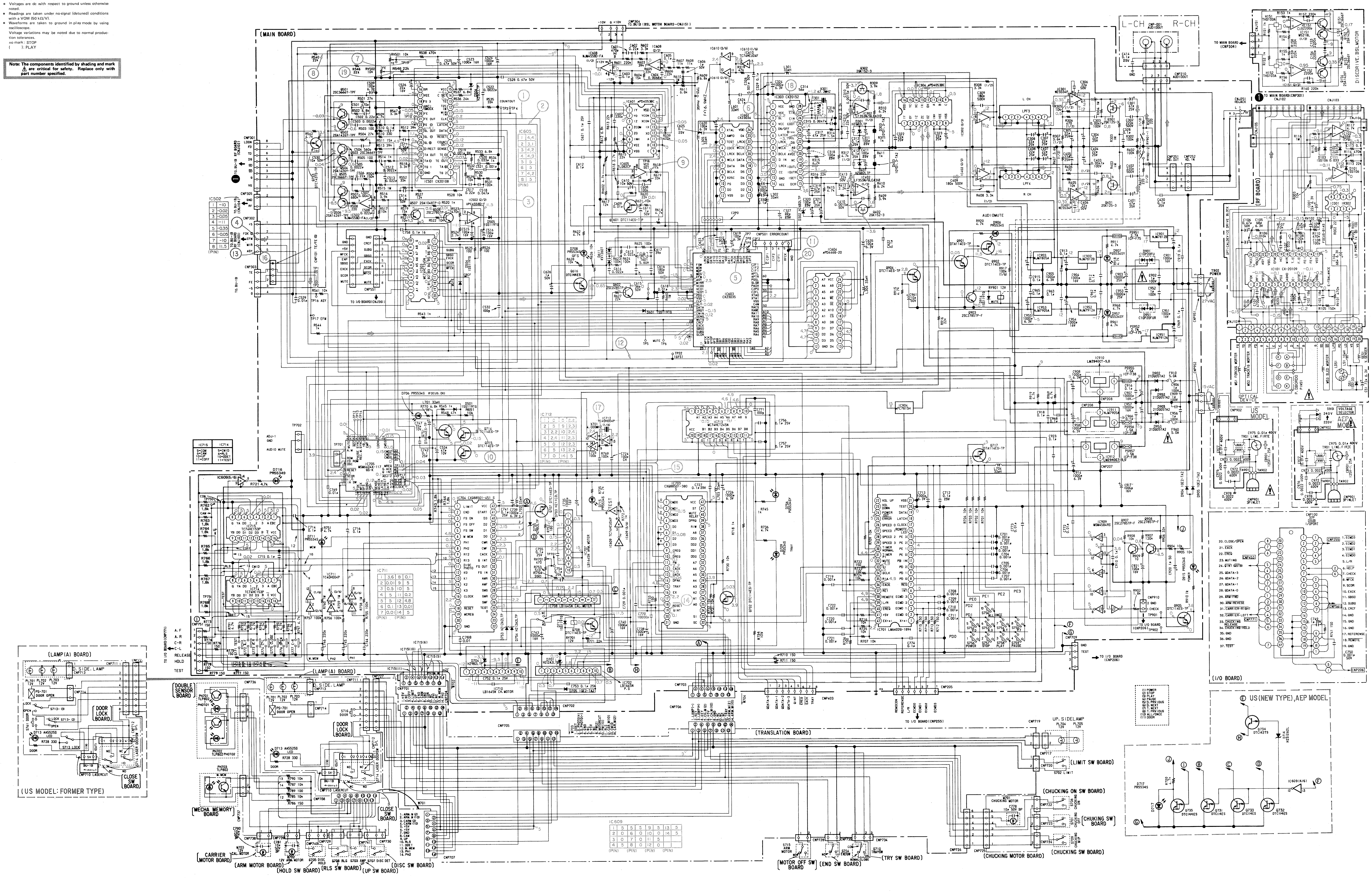
6-5. SCHEMATIC DIAGRAM

Note:

- All capacitors are in μF unless otherwise noted. pF: μμF 50WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in Ω and ¼ W or less unless otherwise specified.

- ⊙ : signal path.
- ⊙ ▬▬ : B+ bus.
- ⊙ ▭▭ : B– bus.
- ⊙ Voltages are dc with respect to ground unless otherwise noted.
- ⊙ Readings are taken under no-signal (detuned) conditions with a VOM (50 kΩ/V).
- ⊙ Waveforms are taken to ground in play mode by using oscilloscope.
  Voltage variations may be noted due to normal production tolerances.
  no mark: STOP
  ( ): PLAY

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



Ref. No.	Description	Function
IC001	1R302	LASER ON CIRCUIT
IC101	CX20109	RF AMP/SIGNAL PROCESSOR
IC102	μPC456C	DROP OUT DETECTION
IC151	μPC456C	DISC MOTOR DRIVE
IC301	NE5534P	LINE AMP
IC302	LF353N/GLE4312	SAMPLE HOLD/INTEGRATOR
IC303	CX20152	D/A CONVERTER
IC304	μPD4053BC	SWITCH
IC401	NE5534P	LINE AMP
IC402	LF353N/GLE4312	SAMPLE HOLD/INTEGRATOR
IC501	CX20108	FOCUS/TRACKING/SLED SERVO
IC502	LM4558D-FA	SLED AMP/LIMIT IN DET
IC503	MC74HCT245N	BUS DRIVE
IC601	μPD4053BC	SWITCH
IC603	CX23035	DIGITAL SIGNAL PROCESSOR/CLV SERVO
IC604	CX22034	DIGITAL FILTER
IC605	TLCB2CP	VCO
IC606	HM6116LFP-3	16K BIT RAM
IC608	μPC456C	CLV SERVO CONTROL
IC609	TC74HCU04P	INVERTER
IC610	TC74HCU04F	INVERTER
IC701	LM6402G-1894	KEY CONTROL
IC702	LB1645N	PM DRIVE
IC703	CX088501-380S	MASTER CONTROL
IC704	CX088501-451S	CHANGER CONTROL
IC705	MSM6404A-117GS-K	MECHANISM CONTROL
IC707	LB1645N	MOTOR DRIVE
IC708	LB1645N	MOTOR DRIVE
IC710	LB1645N	MOTOR DRIVE
IC711	TC40H004P	INVERTER
IC712	TC40H004P	CLOCK OSC
IC713	MC74HCT245N	BUS DRIVE
IC714	TC74HC153P	INPUT SELECT
IC715	TC74HC153P	INPUT SELECT
IC901	LM7812B	VOLT REG (+12V)
IC902	NJM7812B	VOLT REG (+12V)
IC903	NJM7805A	VOLT REG (+5V)
IC904	μPC7815H	VOLT REG (+15V)
IC909	MC14584BCP	RESET BUFFER
IC910	LM2940CT-5.0	VOLT REG (+5V)
IC911	NJM7905A	VOLT REG (−5V)
IC912	LM2940CT-5.0	VOLT REG (+5V)
IC961	NJM7912A	VOLT REG (−12V)
IC962	NJM7912A	VOLT REG (−12V)
IC963	NJM7905A	VOLT REG (−5V)

Ref. No.	Description	Function
Q151	2SC3669Y	DISC MOTOR DRIVE
Q152	2SA1428Y	DISC MOTOR DRIVE
Q153	2SC3669Y	DISC MOTOR DRIVE
Q154	2SA1428Y	DISC MOTOR DRIVE
Q301	2SK125-3	SWITCH
Q302	2SK152-3	DISCHARGE
Q401	2SK125-3	SWITCH
Q402	2SK152-3	DISCHARGE
Q501	2SC3669Y	FOCUS COIL DRIVE
Q502	2SA1428Y	FOCUS COIL DRIVE
Q503	2SC3669Y	TRACKING COIL DRIVE
Q504	2SA1428Y	TRACKING COIL DRIVE
Q505	2SC3669Y	SLED COIL DRIVE
Q506	2SA1428Y	SLED COIL DRIVE
Q507	2SA1048	SLED GAIN SWITCH
Q508	2SC2785F	SLED GAIN SWITCH
Q601	DTC114ES	SWITCH
Q602	2SC2785-F	INVERTER
Q616	DTC144ES	LED DRIVE
Q702	DTC114ES	INVERTER
Q707	DTC144ES	SWITCH
Q708	DTC114ES	RELAY DRIVE
Q714	DTC114ES	INVERTER
Q715	DTC114ES	LIMIT IN DET
Q717	DTA114ES	INVERTER
Q751	DTA114ES	INVERTER
Q753	DTC143TS	SWITCH
Q901	DTA114ES	LEVEL SHIFT
Q902	DTC114ES	LEVEL SHIFT
Q903	2SC2785-F	MUTING
Q904	DTC114ES	MUTING
Q905	DTC114ES	INVERTER
Q907	2SC2785F	RESET
Q908	2SC2785F	RESET

6-6. MOUNTING DIAGRAM – MAIN BOARD –
(US model: Former type)

【MAIN BOARD】

CDK-006

SONY

SERVICE MANUAL

US Model
AEP Model

SUPPLEMENT-1

File this supplement with the service manual.

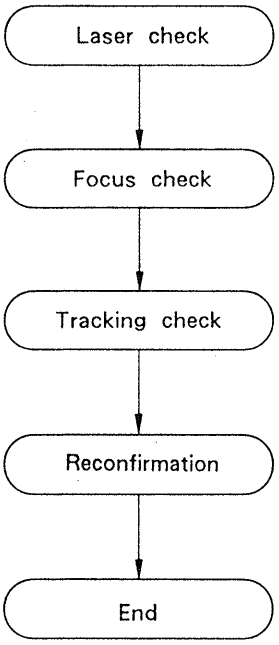
SUBJECT:	BU1B CHECKING PROCEDURES /SERVO GAIN MEASUREMENT METHOD

- The following materials will be helpful for your understanding the operation of compact disc players.

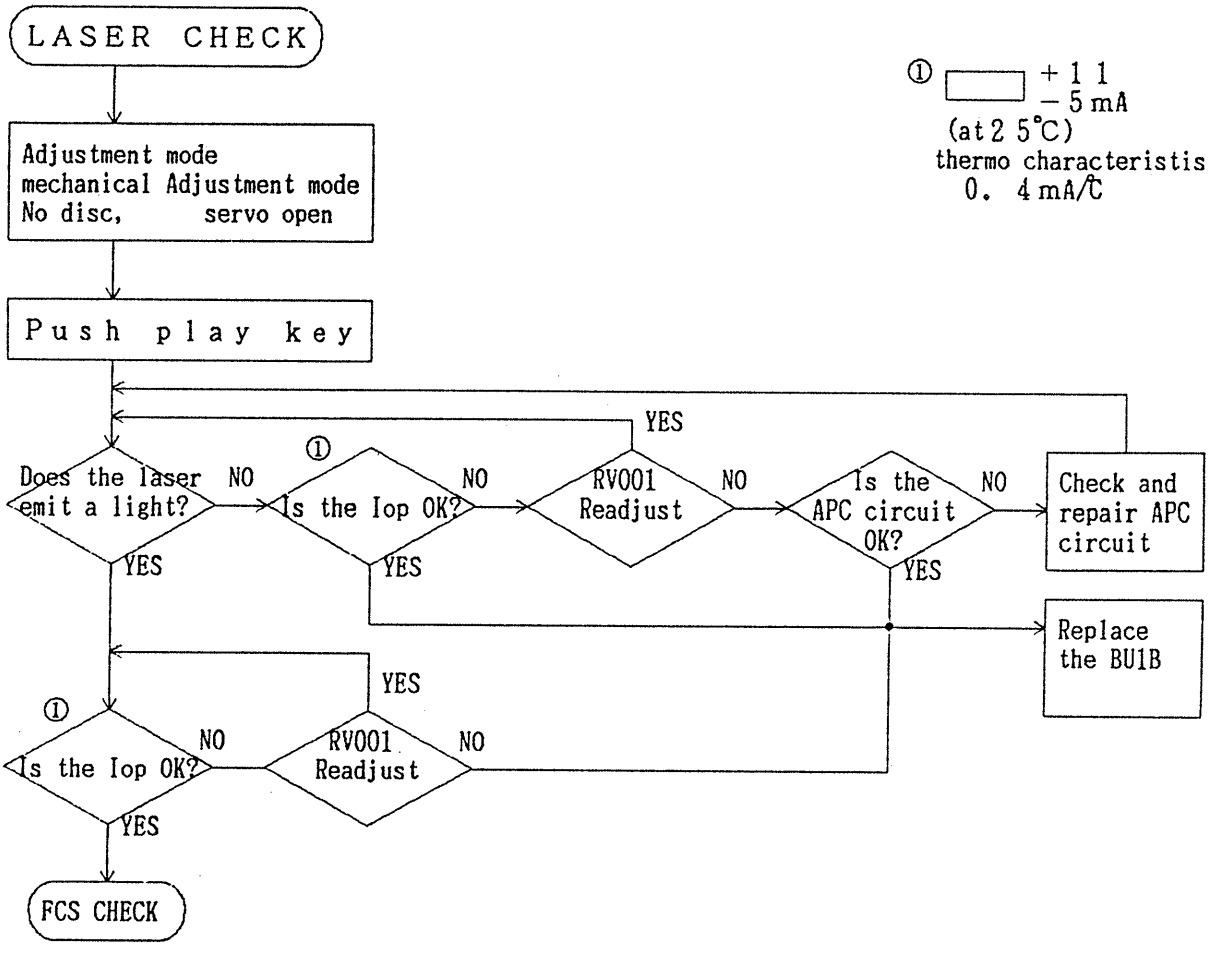
• NEW TECHNICAL THEORY FOR SERVICING IC's FOR SECOND GENERATION CD PLAYERS CX20108, CX20109, CX23035, CX23034, CX20152 PRINCIPLE OF OPERATION (No. 9-960-012-11)

BU1B CHECKING PROCEDURES

This document summarizes the checking procedure as those for measuring waveforms, of the optical block used in CDK-006S.
Before replacing the BU1B, check each of the items listed in this document thoroughly.

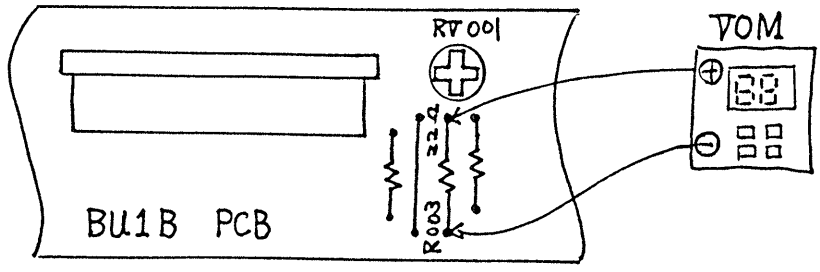


Important :
Inaccurate adjustments will cause some malfunctions, as de-track, of the CD player.
To avoid repetitive repairs, accurately perform all the necessary adjustments.
For all the adjustments, use a disc having no scratch on its surface.
Especially for the focus and tracking gain adjustments, use a YEDS-18 disc. (P/N 3-702-101-01)
Use of other discs may not yield a proper result.



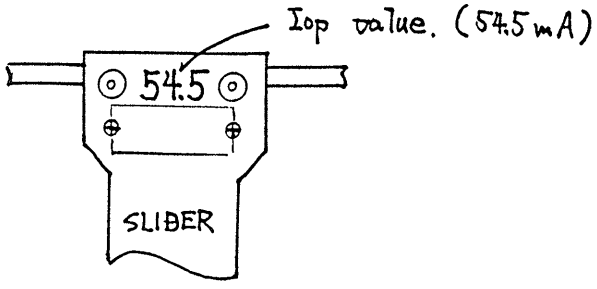
① Iop measurement method;

(connecting diagram)



(1) Calculate Iop value from the VOM reading.

$$Iop(A) = \frac{\text{VOM reading (V)}}{22\ (\Omega)}$$



+11

(2) Confirm that the Iop is within value on label-5 mA (25℃), which stick on optical block.

thermo characteristics; 0.4 mA/ ℃

② Checking FOK;

Confirm that the FOK indicator LED(D706) is lit,or connect an oscilloscope to CX-20109 PIN 1. and check FOK.

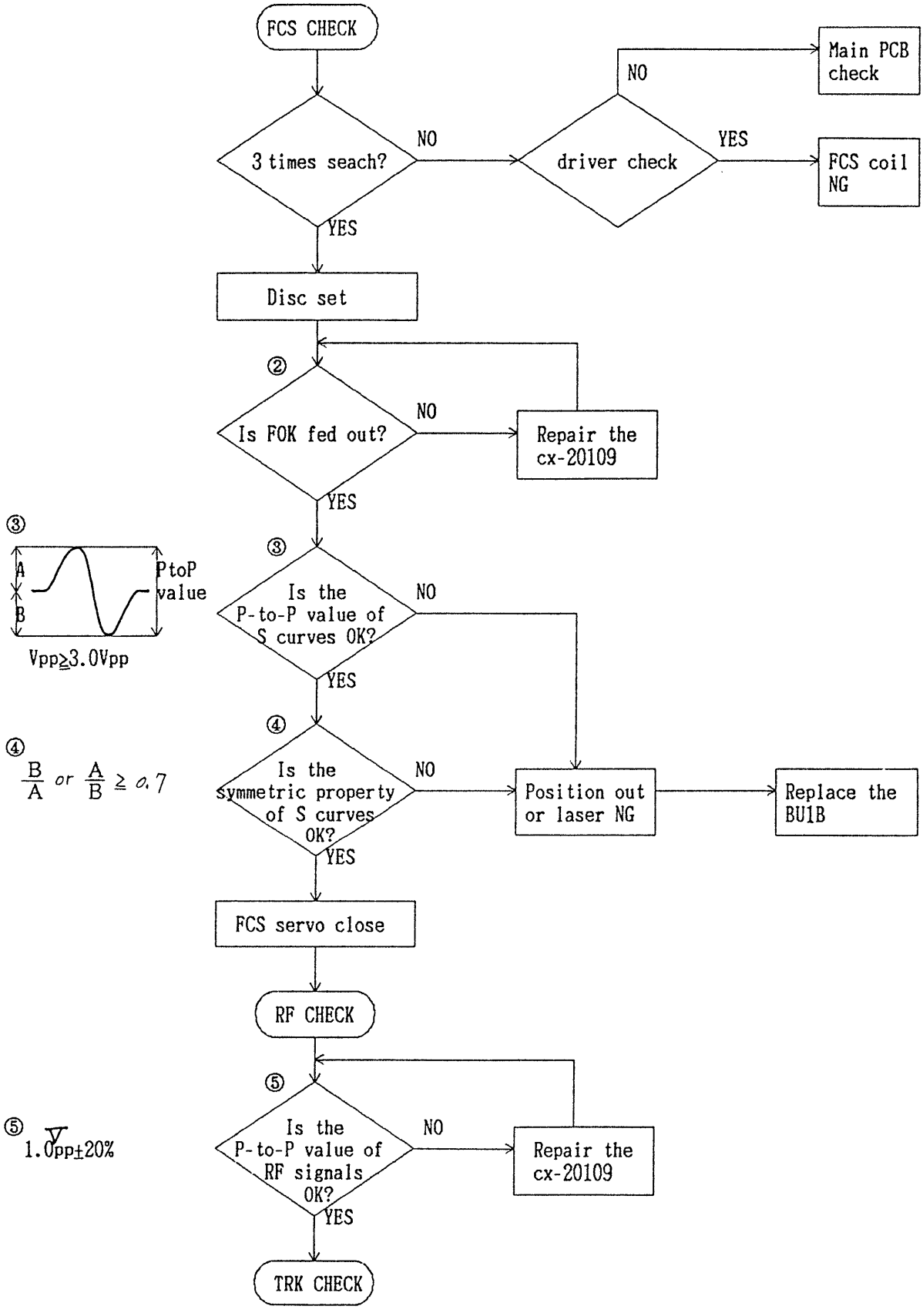
③ Checking the P-to-P value of S curves;

④ Checking the symmetric property of S curves;

Connect an oscilloscope to FCS E terminal TP2 (on the main PCB) or CX-20109 PIN 16.

⑤ Checking the P-to-P value of RF signals(eye pattern);

Connect an oscilloscope to TP102 (on the BU1B PCB),and GND to TP101 (on the BU1B PCB).



⑥ Checking the P-to-P value of traverse signals;

⑦ Checking the tracking balance;

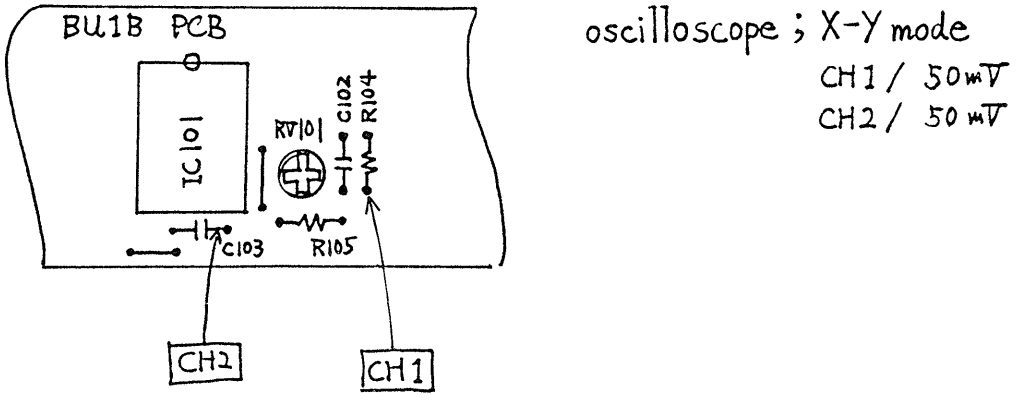
⑧ Checking the envelope of the traverse;

Connect an oscilloscope to TRK E terminal TP1 (on the main PCB),or CX-20109 PIN 17.

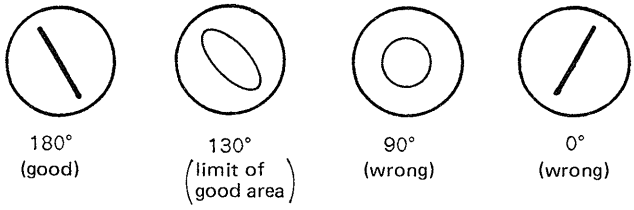
⑨ Checking EFphase (Lissajous's figure);

Connect CH1 of an oscilloscope to CX-20109 PIN 9, and its CH2 to CX-20109 PIN 10.

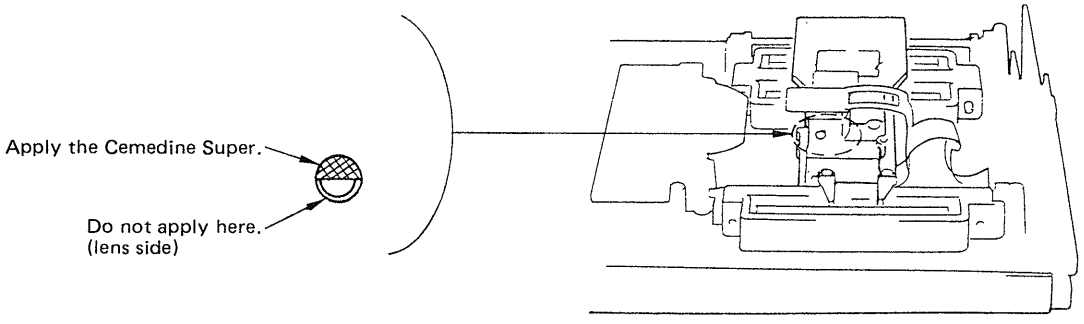
(Connecting diagram)



Lissajous's figure

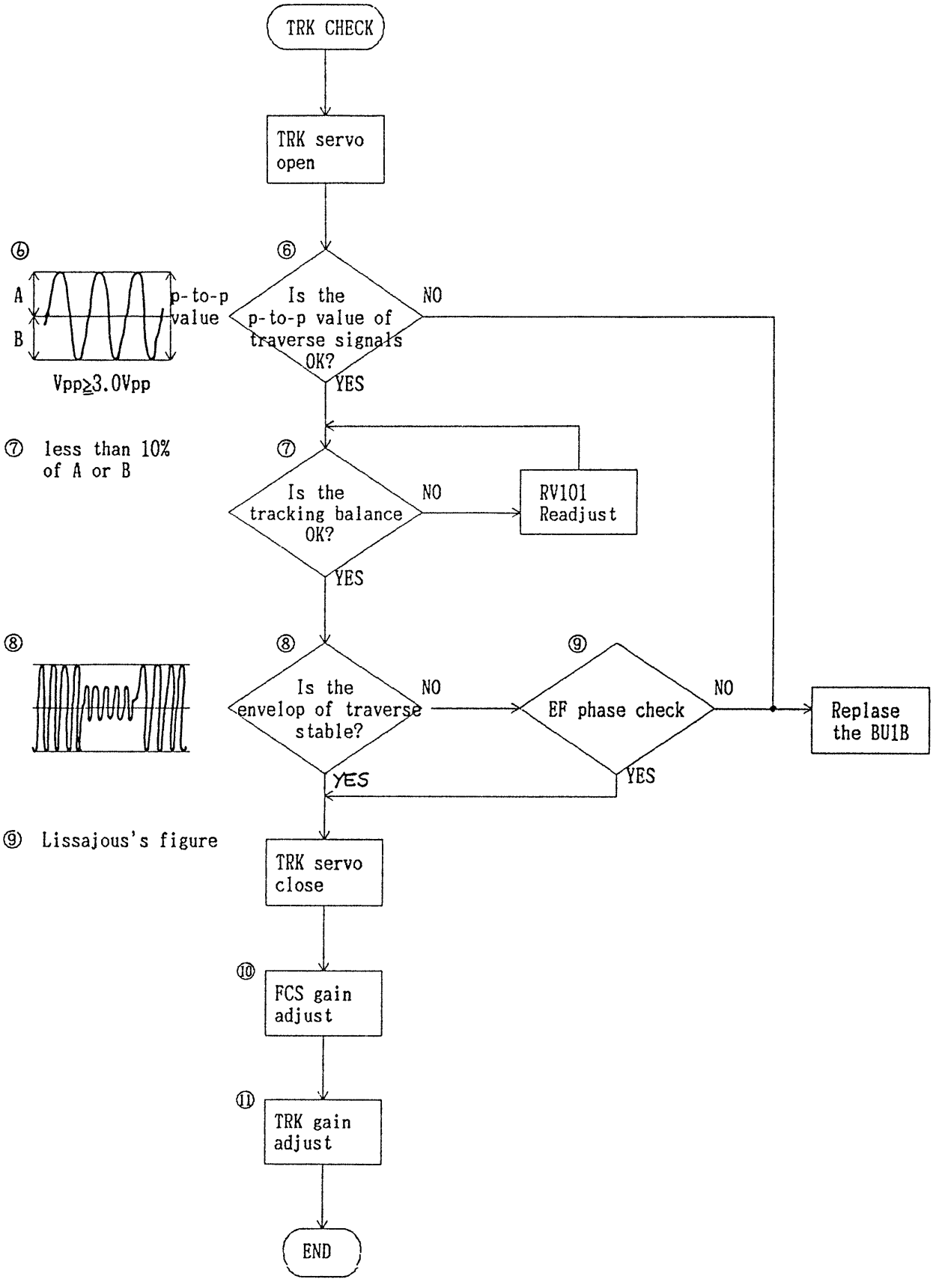


When the waveform is good, apply the Cemedine Super (P/N 7-432-501-01) to the portion.



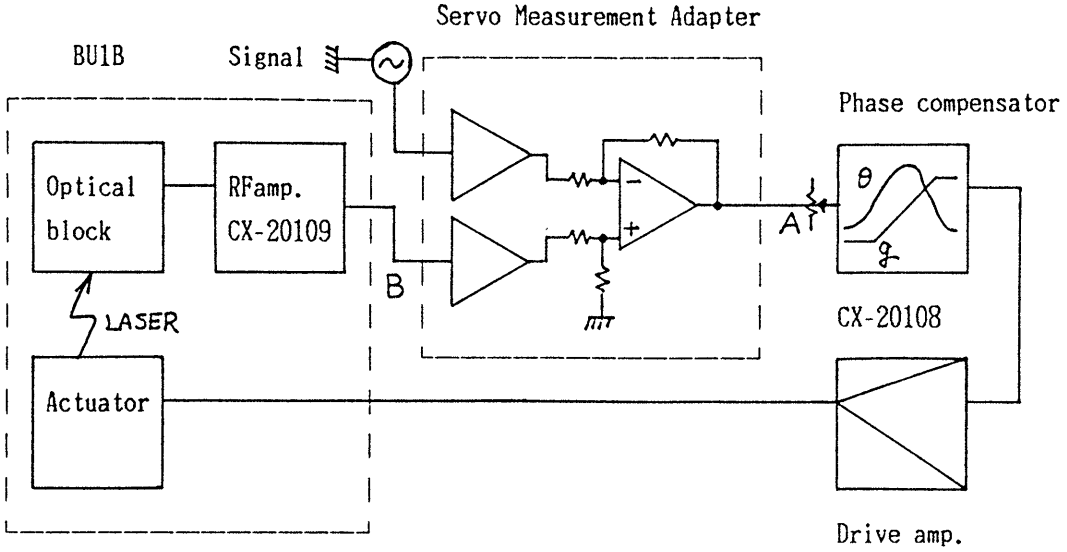
Note. 1. After applying the Cemedine Super, keep the right side of the unit lift up a lift up a little (approx. 10cm) for 24 hours. So that the Cemedine Super does not go to the lens portion.

2. After 24 hours, confirm E-F phase again.



⑩ ⑪ SERVO GAIN ADJUSTMENT

(1) How to measure the servo gain;



B/A ;open loop gain

Cut the servo signals at point A-B to open the servo loop.

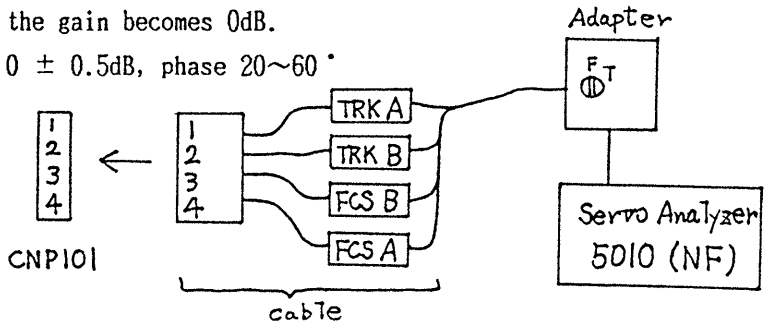
Connect the adapter between A and B, and apply the signal. Measure the open loop gain by the Servo Analyzer.

(2) FCS servo gain adjustment;

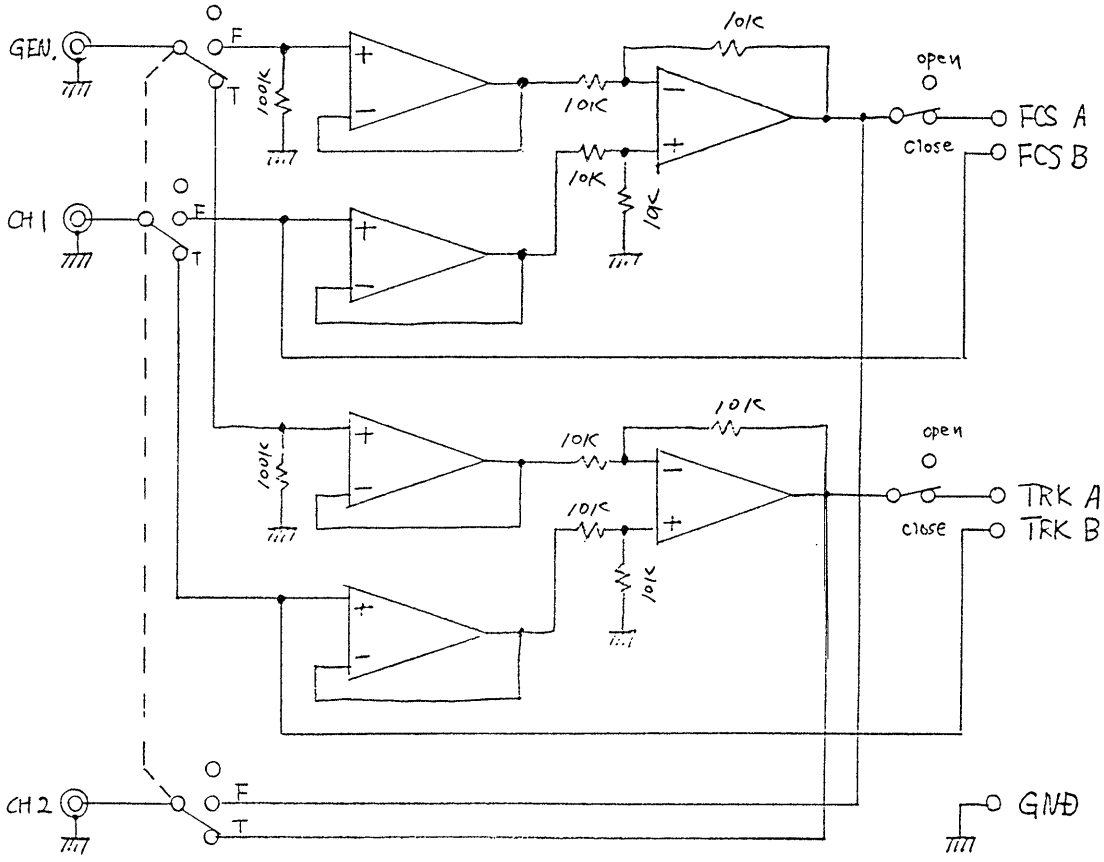
1. Remove the shorting connector(CNP101), and connect the Servo Measurement Adapter connector to CNP101.
2. Switch the Servo Measurement Adapter selector to FCS position.
3. Set up the Servo analyzer; Freq. 1.2KHz, output level 0.1Vrms
4. Adjust RV502 so that the gain becomes 0dB.
   Specification; gain 0 ± 0.5dB, phase 20 ~60 °

(4) TRK servo gain adjustment;

1. Remove the shorting connector(CNP101), and connect the Servo Measurement Adapter connector to CNP101.
2. Switch the Servo Measurement Adapter selector to TRK position.
3. Set up the Servo Analyzer; Freq. 1.5KHz, ooutput level 0.1Vrms
4. Adjust RV501 so that the gain becomes 0dB.
   Specification; gain 0 ± 0.5dB, phase 20~60 °

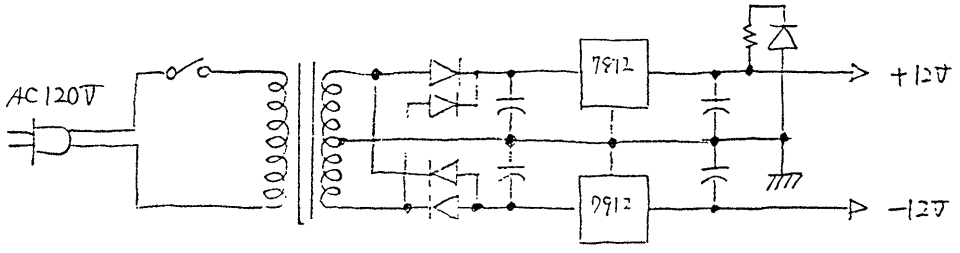


CDK-006S SERVO MEASUREMENT ADAPTER



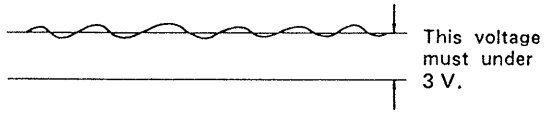
Opamp. ; μPC4558 , TL-082 or TL-072

Connect CH1, CH2, GEN to the Servo Analyzer (5010)



* 1. This adapter is available to open and close the servo loop.
When checking and adjusting the S curves and traverse signals, you may use this function.

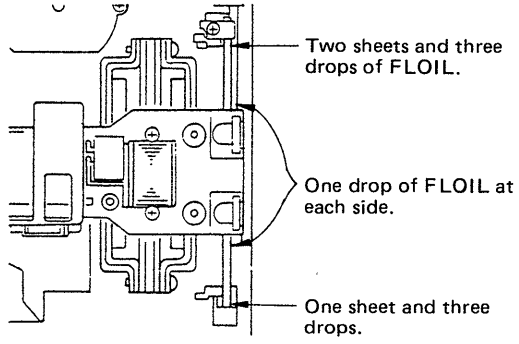
- Checking the sled servo :
  Connect the oscilloscope to the sled motor.
  Put the playback mode, and measure the sled motor drive signal.
  Confirm that the drive signal is as shown below.



Sled mechanism defective instance : dry oil of slide shaft, dust stick on guide rail.

[Procedure]

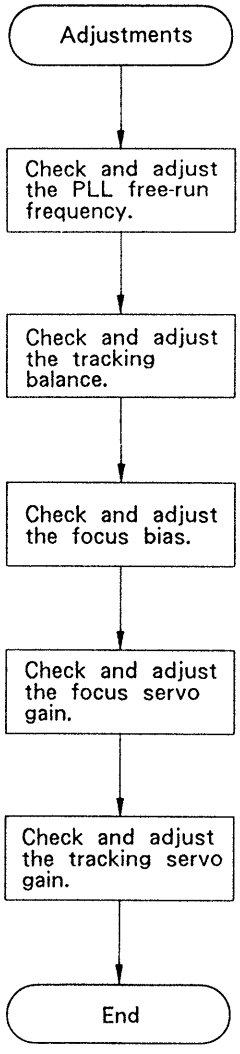
1. Remove slide shaft, and clean the metal portion of Optical Block.
2. Install new slide shaft. Add slide cushion assy (P/N X-4915-839-1) both sides of slide shaft as below, and apply FLOIL (P/N 4-913-121-01).



【BU-1B】

Note: Be sure to install cushions in order to obtain high reliability under nomal operation voltage.

- RECONFIRMATION



Trough the necessary adjustments have been performed in following the flow charts, confirm each adjustment item before returning the player to its user.
Inaccurate adjustments will cause some malfunctions, as de-track, of the CD player.
To avoid repetitive repairs, accurately perform all the necessary adjustments.

Caution :
For all the adjustments, use a disc having no scratch on its surface. Especially for the focus and tracking gain adjustments, use a YEDS-18 disc. Use of other discs may not yield a proper result.

9-952-445-81

Sony Corporation
Audio Group

English
88H0507-1
Printed in Japan

Published by A/V Engineering Service Dept.

CDK-006

SONY

SERVICE MANUAL

US Model
AEP Model

SUPPLEMENT -2

File this supplement with the service manual.

Subjects:
1. Removal of End Detect Switch (S704).
2. Addition of Time Indicator (H901).
3. Removal of Motor Relay (RY701).
4. Removal of Door Close Switch (S711).
5. The latest Schematic-, Printed Wiring Boards-Diagrams and Electrical Parts List.

The above modifications (1-4) have been applied to the sets serial-numbered later than 1000 (006:US model) and 0050 (006:AE model). (See the last 4 digits of the serial number.)

1. Since the carrier detection plate (R) (4-915-147-01) has been changed to Suffix -04 type, S704 cannnot operate at all. Accordingly, S704 may be removed from the set with such a carrier detection plate (4-915-147-04).

Ref. No.	Part No.	Modification	Description
913	*1-618-442-11	Removal	PC BOARD, END SWITCH
S704	1-570-561-11	Removal	SWITCH, MICRO

2. The elasped time indicator was added onto MAIN BOARD to measure the laser operating time. The indicator can count up to approximately 5,000 hours with full-scale.

Ref. No.	Part No.	Modification	Description
H901	1-548-119-21	Addition	TIME INDICATOR
R596	1-247-903-00	Addition	RES, CARBON (SMALL) 1M, 5%1/4W
R597	1-247-903-00	Addition	RES, CARBON (SMALL) 1M, 5%1/4W
R598	1-247-903-00	Addition	RES, CARBON (SMALL) 1M, 5%1/4W
R599	1-247-903-00	Addition	RES, CARBON (SMALL) 1M, 5%1/4W

9-952-445-82

Sony Corporation
Audio Group

English
89A05069-1
Printed in Japan

Published by A/V Engineering Service Dept.

3. In the modeified type, IC708 controls CARRIER MOTOR even under transportaion protection. Then RY701 was removed and MAIN and MOTOR OFF BOARDS were modified.

Ref. No.	Part No.	Modification	Description
RY701	1-515-519-00	Removal	RELAY
D712	8-719-940-76	Removal	DIODE 1SS132
Q708	8-729-900-80	Removal	DIGITAL TRANSISTOR DTC114ES
931	1-618-431-11, to -14	Change to -15	MOUNTED PCB, MAIN
920	1-618-444-11,-12	Change to -13	MOUNTED PCB, MOTOR OFF

Note: When either MAIN or MOTOR OFF BOARDS is replaced to new one, the following modifications are needed on MOTOR OFF BOARD, depending on the combination.

a) MAIN(-11 to -14) & MOTOR OFF(-13)

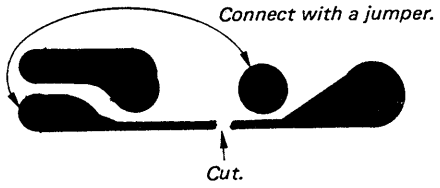


Fig. (a)

b) MAIN(-15) & MOTOR OFF(-11, -12)

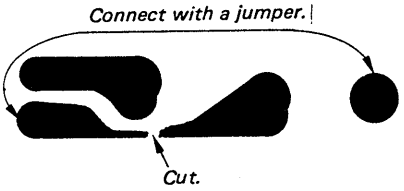
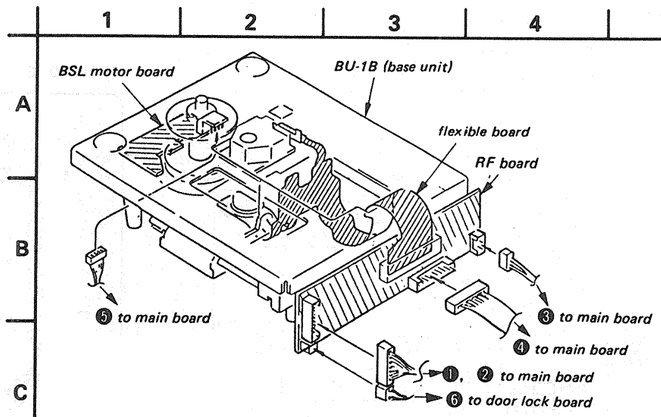


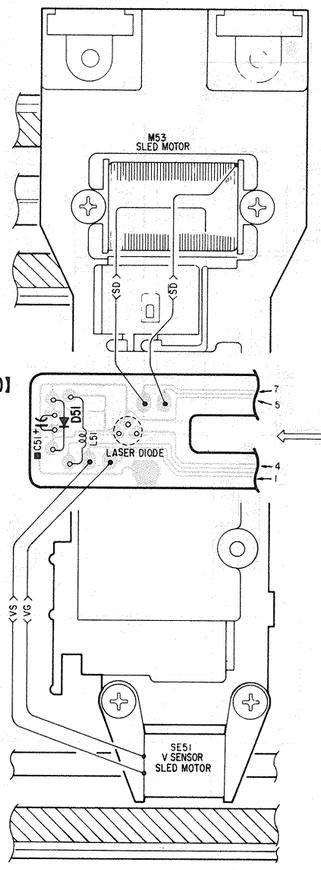
Fig. (b)

4. S711(Door open/close detection switch) is removed, and DOOR LOCK and CLOSE SW BOARDS are modified. When necessary to replace one of them,replace both of them to new ones.

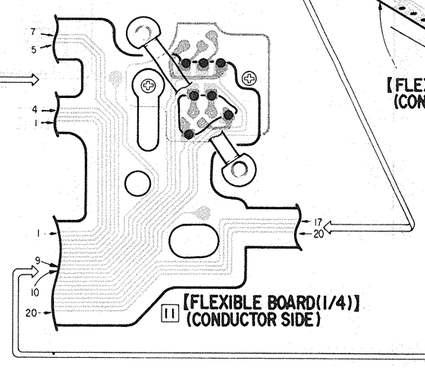
Ref. No.	Part No.	New Part No.	Description
915	*A-464-337-A (1-618-437-11)	*A-464-337-A (1-618-437-12)	MOUNTED PCB, DOOR LOCK (Bare board is not supplied.)
916	*1-618-438-11	*1-618-438-12	PCB, CLOSE SW
CNP711	*1-560-071-00	Removal	PLUG,CONNECTOR (2P)
CNP714	1-564-505-21	1-564-506-11	PLUG,CONNECTOR (5P to 3P)
S714	1-570-562-11	Removal	SWITCH, MICRO

MOUNTING DIAGRAM — BU-1B (BASE UNIT) SECTION —



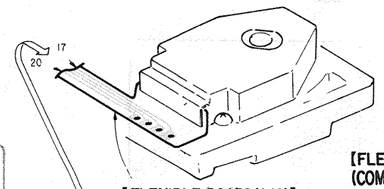


【FLEXIBLE BOARD (1/4)】
(CONDUCTOR SIDE)



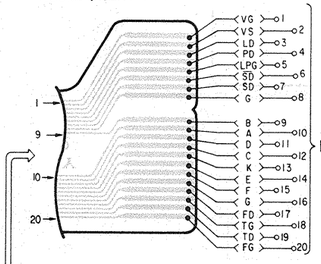
【FLEXIBLE BOARD(1/4)】
(CONDUCTOR SIDE)

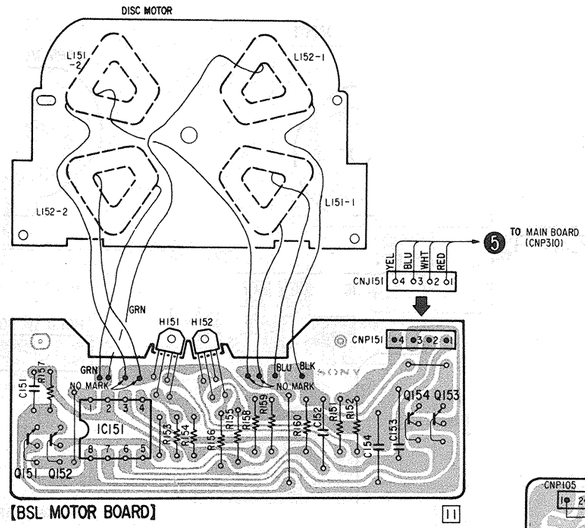
BU-1B OPTICAL PICK-UP BLOCK



【FLEXIBLE BOARD(1/4)】
(CONDUCTOR SIDE)

【FLEXIBLE BOARD (1/4)】
(COMPONENT SIDE)

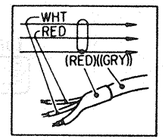




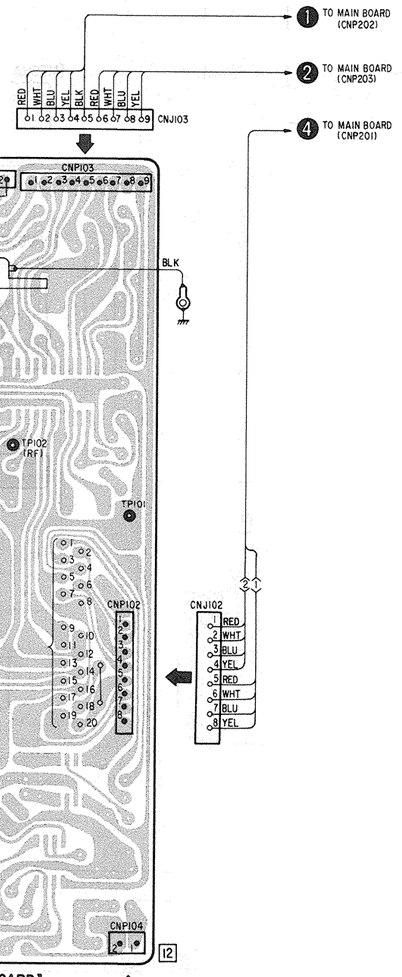
【BSL MOTOR BOARD】 11

Note:

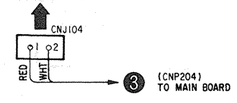
- Color code or sleeving over the end of the jacket.



- ○—— : parts extracted from the component side.
- ●—— : parts extracted from the conductor side.
- ■ : parts mounted on the conductor side.
- ▨ : Pattern of the rear side.



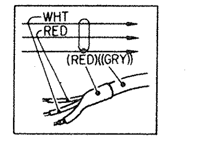
【RF BOARD】
(CONDUCTOR SIDE)



Q IC D	D51	Q151 Q152 IC151	H151,152	Q154 Q153	Q IC D

MOUNTING DIAGRAM
– Conductor Side –

Note:
- Color code or sleeving over the end of the jacket.



- ○—— : parts extracted from the component side.
- ●—— : parts extracted from the conductor side.

● SEMICONDUCTOR LOCATION

Ref. No.	Location	Ref. No.	Location	Ref. No.	Location
D301	H-29	IC301	K-28	PH701	G-5
D302	G-26	IC302	I-29	PH702	G-6
D303	I-29	IC303	G-28	PH703	E-5
D401	I-26	IC304	I-28		
D403	I-27	IC401	K-27	Q301	K-28
D501	C-23	IC402	I-27	Q302	H-29
D504	F-23	IC501	C-26	Q401	K-27
D505	C-23	IC502	C-24	Q402	H-26
D506	C-25	IC503	C-22	Q501	B-26
D601	E-26	IC601	E-23	Q502	B-26
D611	F-26	IC602	F-27	Q503	B-26
D701	F-17	IC603	D-28	Q504	B-26
D703	H-17	IC604	C-28	Q505	B-24
D704	G-18	IC605	E-24	Q506	B-24
D705	D-17	IC608	F-26	Q507	D-25
D706	D-23	IC609	F-20	Q508	D-25
D708	D-24	IC610	F-28	Q601	F-24
D709	D-19	IC701	K-18	Q602	D-24
D711	F-19	IC702	F-17	Q616	C-23
D712	D-17	IC703	J-18	Q702	J-17
D713	G-3	IC704	F-19	Q707	G-17
D714	D-18	IC705	E-22	Q708	E-17
D715	F-20	IC707	H-17	Q714	C-23
D717	C-19	IC708	F-17	Q715	C-23
D753	G-18	IC710	H-18	Q717	J-20
D754	G-18	IC711	E-19	Q731	E-17
D755	G-17	IC712	B-22	Q732	E-17
D756	I-20	IC713	I-18	Q733	E-17
D901	K-25	IC714	G-17	Q734	D-18
D902	J-23	IC715	C-18	Q735	C-19
D903	I-22	IC901	I-25	Q751	B-23
D904	K-25	IC902	H-25	Q753	B-23
D905	K-25	IC903	H-25	Q901	G-25
D906	J-23	IC904	C-33	Q902	G-25
D907	I-26	IC909	K-21	Q903	J-23
D914	K-28	IC910	C-32	Q904	K-23
D915	K-22	IC911	C-33	Q905	K-22
D951	K-24	IC912	C-32	Q907	K-21
D952	J-22	IC951	J-23	Q908	K-22
D953	J-22	IC952	H-23		
D957	I-23	IC953	H-24		

SCHEMATIC DIAGRAM

Note:

- All capacitors are in μF unless otherwise noted. pF: μμF 50WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in Ω and ¼ W or less unless otherwise specified.

- ⇨ : signal path.
- ▬▬ : B+ bus.
- ▬ ▬ : B− bus.
- Voltages are dc with respect to ground unless otherwise noted.
- Readings are taken under no-signal (detuned) conditions with a VOM (50 kΩ/V).
- Waveforms are taken to ground in play mode by using oscilloscope.

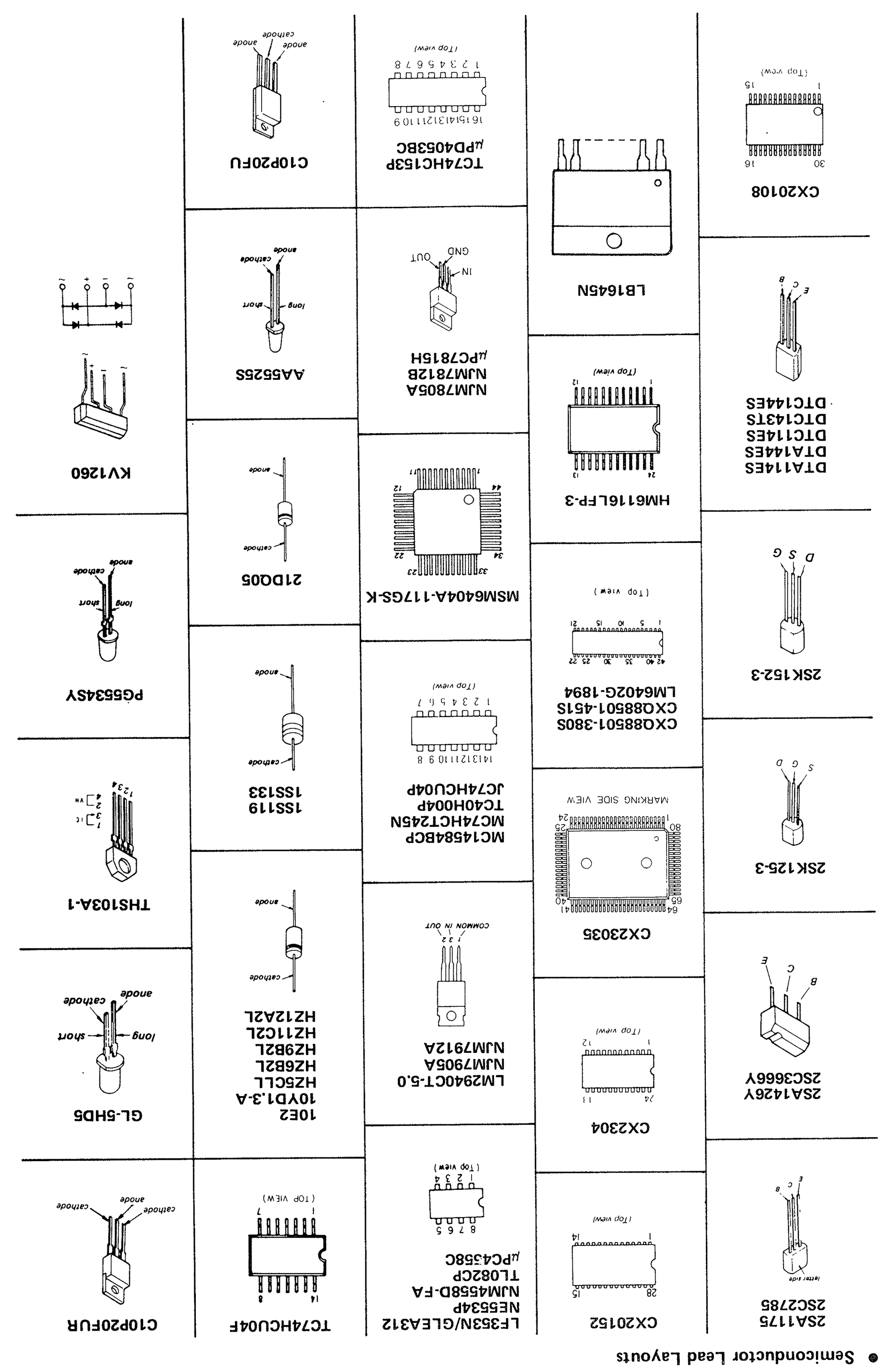
  Voltage variations may be noted due to normal production tolerances.

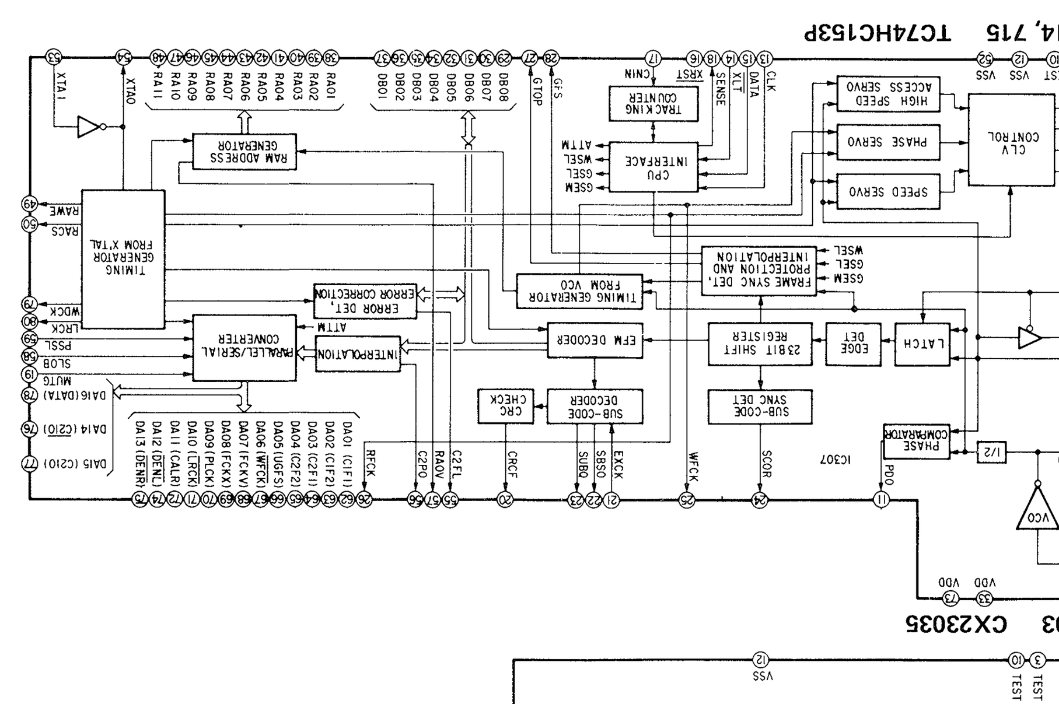
  no mark: STOP

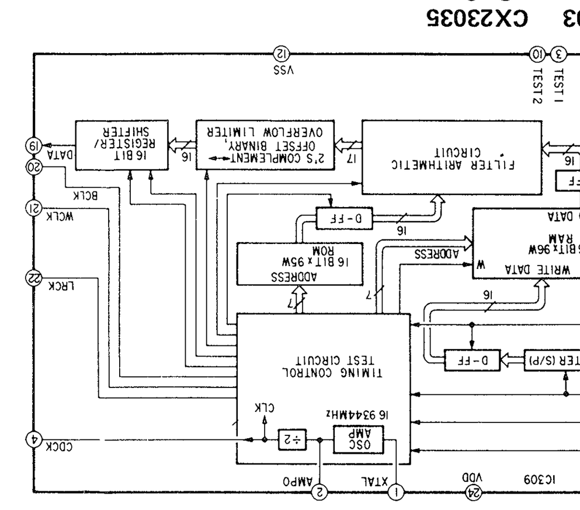
  ( ): PLAY

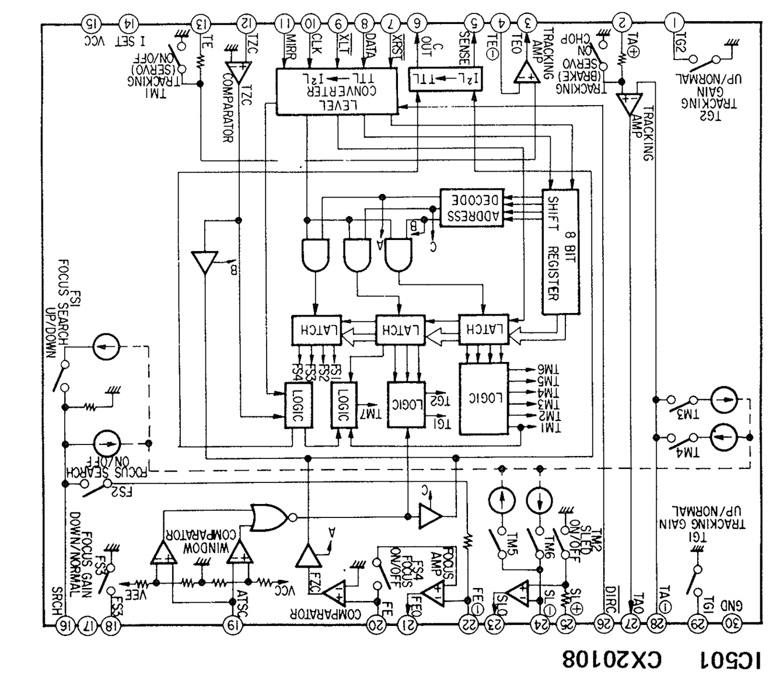
Note: The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

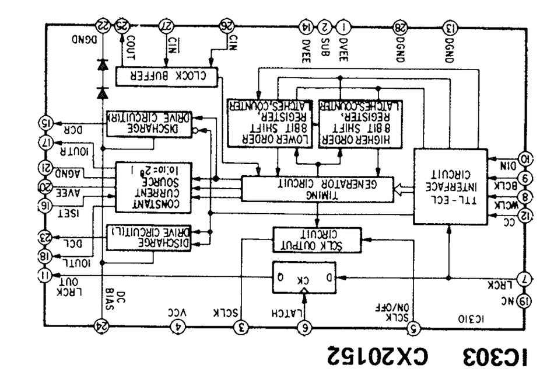
● Semiconductor Lead Layouts

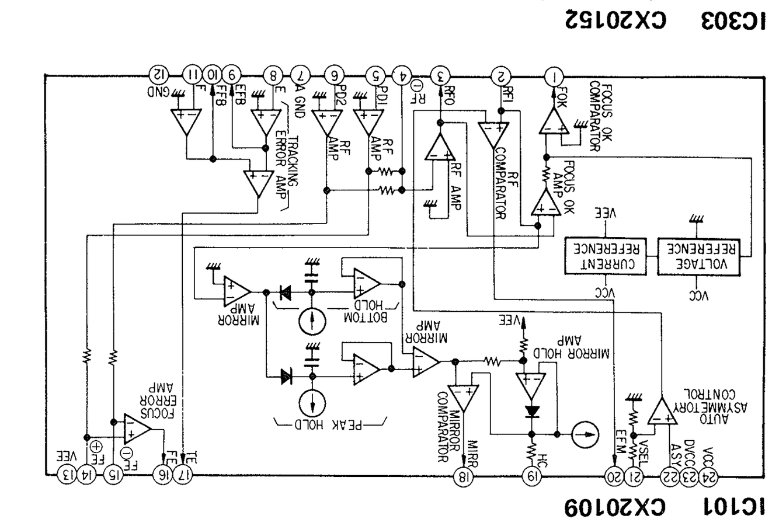


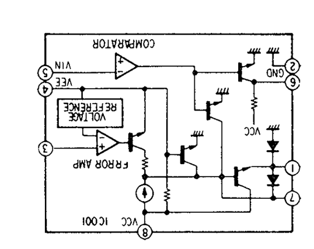

IC714, 715 TC74HC153P
IC603 CX23035


IC602 CX23034


IC501 CX20108


IC303 CX20152


IC101 CX20109


IC001 1R302

Ref. No.	Description	Function
IC001	1R302	LASER ON CIRCUIT
IC101	CX20109	RF AMP/SIGNAL PROCESSOR
IC102	μPC4558C	DROP OUT DETECTION
IC151	μPC4558C	DISC MOTOR DRIVE
IC301	NE5534P	LINE AMP
IC302	LF353N/GLEA312	SAMPLE HOLD/INTEGRATOR
IC303	CX20152	D/A CONVERTER
IC304	μPD4053BC	SWITCH
IC401	NE5534P	LINE AMP
IC402	LF353N/GLEA312	SAMPLE HOLD/INTEGRATOR
IC501	CX20108	FOCUS/TRACKING/SLED SERVO
IC502	NJM4558D-FA	SLED AMP/LIMIT IN DET
IC503	MC74HCT245N	BUS DRIVE
IC601	μPD4053BC	SWITCH
IC602	CX23034	DIGITAL FILTER
IC603	CX23035	DIGITAL SIGNAL PROCESSOR/CLV SERVO
IC604	HM6116LFP-3	16K BIT RAM
IC605	TL082CP	VCO
IC608	μPC4558C	CLV SERVO CONTROL
IC609	TC74HCU04P	INVERTER
IC610	TC74HCU04F	INVERTER
IC701	LM6402G-1894	KEY CONTROL
IC702	LB1645N	PM DRIVE
IC703	CXQ88501-380S	MASTER CONTROL
IC704	CXQ88501-451S	CHANGER CONTROL
IC705	MSM6404A-117GS-K	MECHANISM CONTROL
IC707	LB1645N	MOTOR DRIVE
IC708	LB1645N	MOTOR DRIVE
IC710	LB1645N	MOTOR DRIVE
IC711	TC40H004P	INVERTER
IC712	TC40H004P	CLOCK OSC
IC713	MC74HCT245N	BUS DRIVE
IC714	TC74HC153P	INPUT SELECT
IC715	TC74HC153P	INPUT SELECT
IC901	NJM7812B	VOLT REG (+12V)
IC902	NJM7812B	VOLT REG (+12V)
IC903	NJM7805A	VOLT REG (+5V)
IC904	μPC7815H	VOLT REG (+15V)
IC909	MC14584BCP	RESET BUFFER
IC910	LM2940CT-5.0	VOLT REG (+5V)
IC911	NJM7905A	VOLT REG (−5V)
IC912	LM2940CT-5.0	VOLT REG (+5V)
IC951	NJM7912A	VOLT REG (−12V)
IC952	NJM7912A	VOLT REG (−12V)
IC953	NJM7905A	VOLT REG (−5V)

Ref. No.	Description	Function
Q151	2SC3666Y	DISC MOTOR DRIVE
Q152	2SA1426Y	DISC MOTOR DRIVE
Q153	2SC3666Y	DISC MOTOR DRIVE
Q154	2SA1426Y	DISC MOTOR DRIVE
Q301	2SK125-3	SWITCH
Q302	2SK152-3	DISCHARGE
Q401	2SK125-3	SWITCH
Q402	2SK152-3	DISCHARGE
Q501	2SC3666Y	FOCUS COIL DRIVE
Q502	2SA1426Y	FOCUS COIL DRIVE
Q503	2SC3666Y	TRACKING COIL DRIVE
Q504	2SA1426Y	TRACKING COIL DRIVE
Q505	2SC3666Y	SLED COIL DRIVE
Q506	2SA1426Y	SLED COIL DRIVE
Q507	2SA1048	SLED GAIN SWITCH
Q508	2SC2785F	SLED GAIN SWITCH
Q601	DTC114ES	SWITCH
Q602	2SC2785-F	INVERTER
Q616	DTC144ES	LED DRIVE
Q702	DTC114ES	INVERTER
Q707	DTC144ES	SWITCH
Q708	DTC114ES	RELAY DRIVE
Q714	DTC114ES	INVERTER
Q715	DTC114ES	LIMIT IN DET
Q717	DTA114ES	INVERTER
Q751	DTA114ES	INVERTER
Q753	DTC143TS	SWITCH
Q901	DTA114ES	LEVEL SHIFT
Q902	DTC114ES	LEVEL SHIFT
Q903	2SC2785-F	MUTING
Q904	DTC114ES	MUTING
Q905	DTC114ES	INVERTER
Q907	2SC2785F	RESET
Q908	2SC2785F	RESET

CDK-006

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.
- 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 circuits in 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 mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Ref.No.	Part No.	Description			
901	*1-618-422-11	PC BOARD, DOUBLE SENSOR			
902	*1-618-423-11	PC BOARD, MECH MEMORY			
903	*1-618-424-11	PC BOARD, DISC SW			
904	*1-618-425-11	PC BOARD, UP SW			
905	*1-618-426-11	PC BOARD, HOLD SW			
906	*1-618-427-11	PC BOARD, RLS SW			
907	*1-618-428-11	PC BOARD, ARM MOTOR			
908	*1-618-429-11	PC BOARD, CARRIER MOTOR			
909	*1-618-430-11	PC BOARD, CARRIER			
910	*1-618-432-11	PC BOARD, 2P PIN JACK			
911	*1-618-433-11	PC BOARD, POWER FILTER			
912	*1-618-434-11	PC BOARD, I/O			
913	*A-4655-028-A	MOUNTED PCB, LAMP (A)			
914	*1-618-436-11	PC BOARD, LAMP (B)			
915	*A-4644-337-A	MOUNTED PCB (2), DOOR LOCK			
916	*1-618-438-11	PC BOARD, CLOSE SW			
917	*1-618-441-11	PC BOARD, TRAY SW			
919	*A-4644-300-A	MOUNTED PCB, LIMIT SW			
920	*A-4644-298-A	MOUNTED PCB, MOTOR OFF			
921	*1-618-445-11	PC BOARD, CHUCKING OFF			
922	*1-618-446-11	PC BOARD, CHUCKING ON			
923	*1-618-447-11	PC BOARD, CHUCKING MID			
924	*A-4656-015-A	MOUNTED PCB, CHUCKING MOTOR			
925	*A-4646-293-A	MOUNTED PCB, TRANSLATION			
928	1-558-484-11	WIRE, PVC (FLAT TYPE)(14 CORE)			
929	1-558-485-11	WIRE, PVC (FLAT TYPE)(14 CORE)			
930	1-517-072-00	LAMP HOLDER			
931	*A-4651-088-A	MOUNTED PCB, MAIN			
932	A-4646-215-A	MOUNTED PCB, FLEXIBLE			
933	*A-4656-008-A	MOUNTED PCB, MOTOR			
934	*A-4688-007-A	MOUNTED PCB, RF			
935	1-533-162-00	HOLDER, FUSE			
936	1-559-897-11	CORD, CONNECTION			
937	*X-4915-029-1	MD ASSY			
938	X-4915-840-1	CORD, CONNECTION (FLAT TYPE) ASSY			
C51	1-135-008-00	TANTAL. CHIP	2.2MF	20%	6.3V
C001	1-131-373-91	TANTALUM	22MF	10%	16V
C101	1-161-377-00	CERAMIC	0.0047MF	10%	16V
C102	1-162-205-31	CERAMIC	18PF	5%	50V
C103	1-162-205-31	CERAMIC	18PF	5%	50V
C104	1-131-388-00	TANTALUM	68MF	20%	6.3V
C105	1-131-388-00	TANTALUM	68MF	20%	6.3V
C106	1-124-465-00	ELECT	0.47MF	20%	50V
C107	1-136-159-00	FILM	0.033MF	5%	50V
C108	1-162-282-31	CERAMIC	100PF	10%	50V
C109	1-162-282-31	CERAMIC	100PF	10%	50V
C111	1-136-159-00	FILM	0.033MF	5%	50V
C112	1-136-153-00	FILM	0.01MF	5%	50V
C113	1-136-165-00	FILM	0.1MF	5%	50V
C151	1-161-375-00	CERAMIC	0.0022MF	20%	16V
C152	1-161-375-00	CERAMIC	0.0022MF	20%	16V
C153	1-161-494-00	CERAMIC	0.022MF	30%	25V
C154	1-161-494-00	CERAMIC	0.022MF	30%	25V
C301	1-123-332-00	ELECT	47MF	20%	25V
C302	1-109-621-00	MICA	220PF	5%	500V
C303	1-136-219-11	FILM	0.0047MF	2%	100V
C304	1-123-330-00	ELECT	22MF	20%	25V
C305	1-123-330-00	ELECT	22MF	20%	25V
C306	1-162-052-11	CERAMIC	22PF	5%	50V
C307	1-123-330-00	ELECT	22MF	20%	25V
C308	1-123-330-00	ELECT	22MF	20%	25V
C309	1-104-266-00	POLYSTYRENE	180PF	5%	500V
C310	1-104-230-00	POLYSTYRENE	0.0015MF	5%	50V
C311	1-123-333-00	ELECT	100MF	20%	25V
C312	1-161-772-11	CERAMIC	0.1MF	20%	25V
C313	1-162-052-11	CERAMIC	22PF	5%	50V
C314	1-101-884-00	CERAMIC	56PF	5%	50V
C315	1-130-479-00	MYLAR	0.0047MF	5%	50V
C316	1-102-959-00	CERAMIC	22PF	5%	50V
C317	1-123-332-00	ELECT	47MF	20%	25V
C318	1-123-333-00	ELECT	100MF	20%	25V
C319	1-123-332-00	ELECT	47MF	20%	25V
C320	1-123-333-00	ELECT	100MF	20%	25V
C321	1-161-772-11	CERAMIC	0.1MF	20%	25V
C322	1-123-330-00	ELECT	22MF	20%	25V
C323	1-123-330-00	ELECT	22MF	20%	25V
C324	1-124-471-00	ELECT	1000MF	20%	6.3V
C325	1-124-471-00	ELECT	1000MF	20%	6.3V
C326	1-162-294-31	CERAMIC	0.001MF	10%	50V
C327	1-123-330-00	ELECT	22MF	20%	25V
C328	1-161-772-11	CERAMIC	0.1MF	20%	25V
C329	1-161-772-11	CERAMIC	0.1MF	20%	25V
C330	1-161-772-11	CERAMIC	0.1MF	20%	25V
C401	1-123-332-00	ELECT	47MF	20%	25V
C402	1-109-621-00	MICA	220PF	5%	500V
C403	1-136-219-11	FILM	0.0047MF	2%	100V
C404	1-123-330-00	ELECT	22MF	20%	25V
C405	1-123-330-00	ELECT	22MF	20%	25V
C406	1-162-052-11	CERAMIC	22PF	5%	50V
C407	1-123-330-00	ELECT	22MF	20%	25V
C408	1-123-330-00	ELECT	22MF	20%	25V
C409	1-104-266-00	POLYSTYRENE	180PF	5%	500V
C410	1-104-230-00	POLYSTYRENE	0.0015MF	5%	50V
C411	1-123-333-00	ELECT	100MF	20%	25V
C412	1-161-772-11	CERAMIC	0.1MF	20%	25V
C413	1-162-052-11	CERAMIC	22PF	5%	50V
C414	1-161-772-11	CERAMIC	0.1MF	20%	25V
C420	1-161-772-11	CERAMIC	0.1MF	20%	25V
C501	1-162-290-31	CERAMIC	470PF	10%	50V
C502	1-136-169-00	FILM	0.22MF	5%	50V
C503	1-161-375-00	CERAMIC	0.0022MF	30%	16V
C504	1-162-291-31	CERAMIC	560PF	10%	50V
C505	1-161-375-00	CERAMIC	0.0022MF	30%	16V
C506	1-136-169-00	FILM	0.22MF	5%	50V
C507	1-130-479-00	MYLAR	0.0047MF	5%	50V
C508	1-136-157-00	FILM	0.022MF	5%	50V
C509	1-126-101-11	ELECT	100MF	20%	6.3V
C510	1-136-165-00	FILM	0.1MF	5%	50V
C511	1-136-174-00	FILM	0.56MF	5%	50V
C512	1-130-475-00	MYLAR	0.0022MF	5%	50V
C513	1-136-157-00	FILM	0.022MF	5%	50V
C514	1-136-165-00	FILM	0.1MF	5%	50V
C515	1-123-333-00	ELECT	100MF	20%	16V
C516	1-123-333-00	ELECT	100MF	20%	16V
C517	1-136-169-00	FILM	0.22MF	5%	50V
C518	1-136-161-00	FILM	0.047MF	5%	50V
C519	1-162-294-31	CERAMIC	0.001MF	10%	50V
C520	1-136-159-00	FILM	0.033MF	5%	50V
C521	1-162-294-31	CERAMIC	0.001MF	10%	50V
C522	1-130-475-00	MYLAR	0.0022MF	5%	50V
C523	1-124-360-00	ELECT	1000MF	20%	16V
C524	1-124-360-00	ELECT	1000MF	20%	16V
C525	1-136-173-00	FILM	0.47MF	5%	50V
C526	1-131-373-91	TANTALUM	22MF	10%	16V
C528	1-136-173-00	FILM	0.47MF	5%	50V
C529	1-136-153-00	FILM	0.01MF	5%	50V
C530	1-123-356-00	ELECT	10MF	20%	50V
C532	1-162-282-31	CERAMIC	100PF	10%	50V
C534	1-123-306-00	ELECT	47MF	20%	10V
C601	1-162-290-31	CERAMIC	470PF	10%	50V
C602	1-136-169-00	FILM	0.22MF	5%	50V
C603	1-136-165-00	FILM	0.1MF	5%	50V
C604	1-130-481-00	MYLAR	0.0068MF	5%	50V
C605	1-136-165-00	FILM	0.1MF	5%	50V
C606	1-124-499-11	(NON POLAR)	1MF	20%	50V
C607	1-162-286-31	CERAMIC	220PF	10%	50V
C608	1-162-282-31	CERAMIC	100PF	10%	50V
C609	1-136-153-00	FILM	0.01MF	5%	50V
C610	1-123-356-00	ELECT	10MF	20%	50V
C611	1-124-499-11	ELECT	1MF	20%	50V
C612	1-161-772-11	CERAMIC	0.1MF	20%	25V
C613	1-161-494-00	CERAMIC	0.022MF		25V
C614	1-161-494-00	CERAMIC	0.022MF		25V
C615	1-102-964-00	CERAMIC	36PF	5%	50V
C616	1-102-976-00	CERAMIC	180PF	5%	50V
C617	1-102-965-00	CERAMIC	39PF	5%	50V
C618	1-161-379-00	CERAMIC	0.01MF	20%	16V
C619	1-126-101-11	ELECT	100MF	20%	6.3V
C620	1-126-101-11	ELECT	100MF	20%	6.3V
C621	1-161-772-11	CERAMIC	0.1MF	20%	25V
C622	1-161-772-11	CERAMIC	0.1MF	20%	25V
C623	1-161-772-11	CERAMIC	0.1MF	20%	25V
C624	1-161-772-11	CERAMIC	0.1MF	20%	25V
C625	1-161-772-11	CERAMIC	0.1MF	20%	25V
C626	1-124-499-11	ELECT	1MF	20%	50V
C635	1-126-101-11	ELECT	100MF	20%	6.3V
C691	1-161-772-11	CERAMIC	0.1MF	20%	25V
C692	1-161-772-11	CERAMIC	0.1MF	20%	25V
C693	1-161-772-11	CERAMIC	0.1MF	20%	25V
C694	1-161-772-11	CERAMIC	0.1MF	20%	25V
C701	1-162-294-31	CERAMIC	0.001MF	10%	50V
C702	1-162-294-31	CERAMIC	0.001MF	10%	50V
C703	1-162-294-31	CERAMIC	0.001MF	10%	50V
C704	1-162-294-31	CERAMIC	0.001MF	10%	50V
C705	1-162-294-31	CERAMIC	0.001MF	10%	50V
C706	1-162-294-31	CERAMIC	0.001MF	10%	50V
C707	1-162-294-31	CERAMIC	0.001MF	10%	50V
C708	1-162-294-31	CERAMIC	0.001MF	10%	50V
C709	1-162-294-31	CERAMIC	0.001MF	10%	50V
C710	1-162-294-31	CERAMIC	0.001MF	10%	50V
C711	1-162-294-31	CERAMIC	0.001MF	10%	50V
C712	1-161-772-11	CERAMIC	0.1MF	20%	25V
C713	1-124-471-00	ELECT	1000MF	20%	6.3V
C714	1-161-772-11	CERAMIC	0.1MF	20%	25V
C715	1-161-772-11	CERAMIC	0.1MF	20%	25V
C716	1-161-772-11	CERAMIC	0.1MF	20%	25V
C719	1-162-294-31	CERAMIC	0.001MF	10%	50V
C720	1-162-294-31	CERAMIC	0.001MF	10%	50V
C721	1-162-294-31	CERAMIC	0.001MF	10%	50V
C722	1-162-294-31	CERAMIC	0.001MF	10%	50V
C723	1-102-973-00	CERAMIC	100PF	5%	50V
C724	1-102-973-00	CERAMIC	100PF	5%	50V
C726	1-124-471-00	ELECT	1000MF	20%	6.3V
C727	1-161-772-11	CERAMIC	0.1MF	20%	25V
C729	1-162-294-31	CERAMIC	0.001MF	10%	50V
C735	1-124-360-00	ELECT	1000MF	20%	16V
C738	1-124-360-00	ELECT	1000MF	20%	16V
C739	1-124-471-00	ELECT	1000MF	20%	6.3V
C741	1-161-772-11	CERAMIC	0.1MF	20%	25V
C742	1-161-772-11	CERAMIC	0.1MF	20%	25V
C743	1-124-360-00	ELECT	1000MF	20%	16V
C744	1-162-286-31	CERAMIC	220PF	10%	50V
C745	1-162-286-31	CERAMIC	220PF	10%	50V
C746	1-162-286-31	CERAMIC	220PF	10%	50V
C747	1-124-963-11	ELECT	33MF	20%	10V
C749	1-161-772-11	CERAMIC	0.1MF	20%	25V
C750	1-162-294-31	CERAMIC	0.001MF	10%	50V
C752	1-161-772-11	CERAMIC	0.1MF	20%	25V
C753	1-161-772-11	CERAMIC	0.1MF	20%	25V
C754	1-161-772-11	CERAMIC	0.1MF	20%	25V
C755	1-161-772-11	CERAMIC	0.1MF	20%	25V
C756	1-161-772-11	CERAMIC	0.1MF	20%	25V
C757	1-161-772-11	CERAMIC	0.1MF	20%	25V
C758	1-161-772-11	CERAMIC	0.1MF	20%	25V
C768	1-161-379-00	CERAMIC	0.01MF	20%	16V
C768-B	1-161-772-11	CAP, CERAMIC	0.1MF X		
C769	1-161-379-00	CERAMIC	0.01MF	20%	16V
C770	1-161-379-00	CERAMIC	0.01MF	20%	16V
C771	1-162-282-31	CERAMIC	100PF	10%	50V
C772	1-161-379-00	CERAMIC	0.01MF	20%	16V
C773	1-161-379-00	CERAMIC	0.01MF	20%	16V
C774	1-161-772-11	CERAMIC	0.1MF	20%	25V
C901	1-124-360-00	ELECT	1000MF	20%	16V
C902	1-130-789-00	FILM	1MF	10%	100V
C903	1-124-966-11	ELECT	10000MF	20%	25V
C904	1-124-360-00	ELECT	1000MF	20%	16V
C905	1-124-471-00	ELECT	1000MF	20%	6.3V
C906	1-130-789-00	FILM	1MF	10%	100V
C907	1-124-965-11	ELECT	10000MF	20%	16V
C908	1-124-471-00	ELECT	1000MF	20%	6.3V
C909	1-130-789-00	FILM	1MF	10%	100V
C910	1-161-772-11	CERAMIC	0.1MF	20%	25V
C912	1-161-772-11	CERAMIC	0.1MF	20%	25V
C913	1-161-772-11	CERAMIC	0.1MF	20%	25V
C914	1-124-471-00	ELECT	1000MF	20%	6.3V
C915	1-161-772-11	CERAMIC	0.1MF	20%	25V
C916	1-161-772-11	CERAMIC	0.1MF	20%	25V
C917	1-124-360-00	ELECT	1000MF	20%	16V
C918	1-161-772-11	CERAMIC	0.1MF	20%	25V
C919	1-161-772-11	CERAMIC	0.1MF	20%	25V
C920	1-124-499-11	ELECT	1MF	20%	50V
C921	1-123-333-00	ELECT	100MF	20%	16V
C923	1-161-772-11	CERAMIC	0.1MF	20%	25V
C951	1-124-360-00	ELECT	1000MF	20%	16V
C952	⚠1-130-789-00	FILM	1MF	10%	100V
C953	1-124-966-11	ELECT	10000MF	20%	25V
C954	1-124-360-00	ELECT	1000MF	20%	16V
C955	1-124-471-00	ELECT	1000MF	20%	6.3V
C956	⚠1-130-789-00	FILM	1MF	10%	100V
C957	1-124-965-11	ELECT	10000MF	20%	16V
C958	1-124-471-00	ELECT	1000MF	20%	6.3V
C961	1-123-356-00	ELECT	10MF	20%	50V
C962	1-161-772-11	CERAMIC	0.1MF	20%	25V
C963	1-161-772-11	CERAMIC	0.1MF	20%	25V
C965	1-161-772-11	CERAMIC	0.1MF	20%	25V
C966	1-161-772-11	CERAMIC	0.1MF	20%	25V
C968	1-161-772-11	CERAMIC	0.1MF	20%	25V
C969	1-161-772-11	CERAMIC	0.1MF	20%	25V
C972	⚠1-161-742-00	CERAMIC	0.0022MF	20%	400V
C973	⚠1-161-742-00	CERAMIC	0.0022MF	20%	400V
C975	⚠1-161-744-00	CERAMIC	0.01MF		400V
C976	⚠1-161-742-00	CERAMIC	0.0022MF	20%	400V
C977	⚠1-161-744-00	CERAMIC	0.01MF		400V
C978	⚠1-161-742-00	CERAMIC	0.0022MF	20%	400V
CB901	⚠1-532-519-00	(US)....BREAKER, CIRCUIT			
CB901	⚠1-532-538-00	(AEP)...BREAKER, CIRCUIT			
CNJ101	1-564-733-11	SOCKET, CONNECTOR			
CNJ102	*1-564-710-11	PIN, CONNECTOR (SMALL TYPE) 8P			
CNJ104	*1-564-704-11	PIN, CONNECTOR (SMALL TYPE) 2P			
CNJ151	*1-560-073-00	PIN, CONNECTOR			
CNJ251	1-507-854-00	JACK, LARGE TYPE (HEADPHONES)			
CNP001	1-507-912-21	JACK, PIN 2P (AUDIO OUT)			
CNP100	1-563-346-11	CONNECTOR, D SUB 37P			
CNP101	*1-564-507-11	PLUG, CONNECTOR 4P			
CNP205	*1-564-510-11	PLUG, CONNECTOR 7P			
CNP206	*1-564-521-11	PLUG, CONNECTOR 6P			
CNP207	*1-564-506-11	PLUG, CONNECTOR 3P			
CNP208	*1-564-509-11	PLUG, CONNECTOR 6P			
CNP209	*1-564-506-11	PLUG, CONNECTOR 3P			
CNP210	*1-564-507-11	PLUG, CONNECTOR 4P			
CNP251	*1-564-507-11	PLUG, CONNECTOR 4P			
CNP252	*1-564-507-11	PLUG, CONNECTOR 4P			
CNP255	*1-564-522-11	PLUG, CONNECTOR 7P			
CNP301	*1-564-710-11	PIN, CONNECTOR (SMALL TYPE) 8P			
CNP302	*1-564-707-11	PIN, CONNECTOR (SMALL TYPE) 5P			
CNP303	*1-564-706-11	PIN, CONNECTOR (SMALL TYPE) 4P			
CNP304	*1-564-507-11	PLUG, CONNECTOR 4P			
CNP305	*1-564-704-11	PIN, CONNECTOR (SMALL TYPE) 2P			
CNP403	*1-564-511-11	PLUG, CONNECTOR 8P			
CNP453	*1-564-523-11	PLUG, CONNECTOR 8P			
CNP501	*1-564-509-11	PLUG, CONNECTOR 6P			
CNP551	*1-564-511-11	PLUG, CONNECTOR 8P			
CNP561	*1-564-523-11	PLUG, CONNECTOR 8P			
CNP701	1-563-187-11	SOCKET, CONNECTOR 14P			
CNP702	1-563-187-11	SOCKET, CONNECTOR 14P			
CNP703	1-563-187-11	SOCKET, CONNECTOR 14P			
CNP704	1-563-187-11	SOCKET, CONNECTOR 14P			
CNP705	1-563-187-11	SOCKET, CONNECTOR 14P			
CNP706	1-563-187-11	SOCKET, CONNECTOR 14P			
CNP707	1-565-411-21	SOCKET, CONNECTOR 14P			
CNP708	1-563-188-11	SOCKET, CONNECTOR 14P			
CNP709	*1-564-507-11	PLUG, CONNECTOR 4P			
CNP711	*1-560-076-00	PIN, CONNECTOR			
CNP712	*1-564-506-11	PLUG, CONNECTOR 3P			
CNP713	*1-564-505-11	PLUG, CONNECTOR 2P			
CNP714	*1-564-505-11	PLUG, CONNECTOR 2P			
CNP717	*1-564-517-41	PLUG, CONNECTOR 2P			
CNP719	*1-564-517-11	PLUG, CONNECTOR 2P			
CNP720	*1-564-517-11	PLUG, CONNECTOR 2P			
CNP722	*1-564-505-31	PLUG, CONNECTOR 2P			
CNP723	*1-564-505-11	PLUG, CONNECTOR 2P			
CNP724	*1-564-505-41	PLUG, CONNECTOR 2P			
CNP725	*1-564-521-11	PLUG, CONNECTOR 6P			
CNP726	*1-564-521-11	PLUG, CONNECTOR 6P			
CNP727	*1-564-523-11	PLUG, CONNECTOR 8P			
CNP728	*1-564-517-11	PLUG, CONNECTOR 2P			
CNP729	*1-564-704-11	PIN, CONNECTOR (SMALL TYPE) 2P			
CNP730	*1-564-705-21	PIN, CONNECTOR (SMALL TYPE) 3P			
CNP734	*1-564-518-11	PLUG, CONNECTOR 3P			
CNP736	*1-564-706-11	PIN, CONNECTOR (SMALL TYPE) 4P			
CNP737	*1-564-705-11	PIN, CONNECTOR (SMALL TYPE) 3P			
CNP738	*1-564-704-31	PIN, CONNECTOR (SMALL TYPE) 2P			
CNP739	*1-564-704-41	PIN, CONNECTOR (SMALL TYPE) 2P			
CNP740	*1-564-705-31	PIN, CONNECTOR (SMALL TYPE) 3P			
CNP741	*1-564-704-11	PIN, CONNECTOR (SMALL TYPE) 2P			
CNP751	*1-564-510-11	PLUG, CONNECTOR 7P			
CNP771	1-564-522-11	PLUG, CONNECTOR 7P			
⚠CNP901	.1-509-547-00	3P INLET			
CNP902	*1-535-140-00	BASE POST 22MM (10MM PITCH) 3P			
CNP910	*1-564-505-11	PLUG, CONNECTOR 2P			
CNP951	*1-564-104-00	PIN, CONNECTOR 3P			
CNP952	*1-564-104-00	PIN, CONNECTOR 3P			
D51	8-719-901-33	DIODE 1SS133			
D101	8-719-911-06	DIODE 1SS106			
D102	8-719-911-06	DIODE 1SS106			
D103	8-719-911-06	DIODE 1SS106			
D301	8-719-910-65	DIODE HZ6B2L			
D302	8-719-910-65	DIODE HZ6B2L			
D303	8-719-224-12	DIODE 10YD1.3-A			
D401	8-719-910-65	DIODE HZ6B2L			
D403	8-719-224-12	DIODE 10YD1.3-A			
D501	8-719-940-76	DIODE 1SS132			
D504	8-719-940-76	DIODE 1SS132			
D505	8-719-940-76	DIODE 1SS132			
D506	8-719-951-13	DIODE HZ5CLL			
D601	8-719-940-76	DIODE 1SS132			
D611	8-719-936-69	DIODE KV1260T			
D701	8-719-933-74	DIODE HZS12A2L			
D703	8-719-933-70	DIODE HZS11C2L			
D704	8-719-933-57	DIODE HZ9B2L			
D705	8-719-200-77	DIODE 10E2N			
D706	8-719-904-55	DIODE GL-5HD5			
D708	8-719-904-55	DIODE GL-5HD5			
D709	8-719-904-55	DIODE GL-5HD5			
D711	8-719-904-55	DIODE GL-5HD5			
D713	8-719-952-51	DIODE AA5525S			
D714	8-719-933-74	DIODE HZS12A2L			
D715A	8-719-904-55	DIODE GL-5HD5			
D715B	8-719-200-77	DIODE 10E2N			
D716A	8-719-904-55	DIODE GL-5HD5			
D716B	8-719-940-76	DIODE 1SS132			
D718	8-719-904-55	DIODE GL-5HD5			
D753	8-719-933-74	DIODE HZS12A2L			
D754	8-719-933-74	DIODE HZS12A2L			
D755	8-719-933-57	DIODE HZ9B2L			
D756	8-719-907-77	DIODE PG5534SY			
D901	⚠.8-719-200-68	DIODE C10P20FU			
D902	⚠.8-719-200-31	DIODE 21DQ05			
D903	⚠.8-719-200-31	DIODE 21DQ05			
D904	8-719-200-77	DIODE 10E2N			
D905	8-719-200-77	DIODE 10E2N			
D906	8-719-904-55	DIODE GL-5HD5			
D907	8-719-907-77	DIODE PG5534SY			
D914	8-719-940-76	DIODE 1SS132			
D915	8-719-904-55	DIODE GL-5HD5			
D951	⚠.8-719-200-69	DIODE C10P20FUR			
D952	⚠.8-719-200-31	DIODE 21DQ05			
D953	⚠.8-719-200-31	DIODE 21DQ05			
D957	8-719-907-77	DIODE PG5534SY			
F910	⚠.1-532-299-00	(AEP)...FUSE, TIME-LAG (5A)			
F910	⚠.1-532-747-11	(US)....FUSE, GLASS TUBE			
F960	⚠.1-532-299-00	(AEP)...FUSE, TIME-LAG (5A)			
F960	⚠.1-532-747-11	(US)....FUSE, GLASS TUBE			
H151	8-719-800-18	DIODE THS103A-1			
H152	8-719-800-18	DIODE THS103A-1			
H901	1-548-119-21	CLOCK			
IC001	8-759-923-61	IC IR3C02AN			
IC101	8-752-010-90	IC CX20109			
IC102	8-759-700-43	IC NJM4558M			
IC151	8-759-145-58	IC UPC4558C			
IC301	8-759-905-42	IC NE5534P			
IC302	8-759-910-77	IC LF353N/GLEA312			
IC303	8-752-015-20	IC CX20152			
IC304	8-759-140-53	IC UPD4053BC			
IC401	8-759-905-42	IC NE5534P			
IC402	8-759-910-77	IC LF353N/GLEA312			
IC501	8-752-010-80	IC CX20108			
IC502	8-759-700-58	IC NJM4558D-FA			
IC503	8-759-004-70	IC MC74HCT245N			
IC601	8-759-140-53	IC UPD4053BC			
IC602	8-752-303-40	IC CX23034			
IC603	8-759-947-02	IC CXD1125Q			
IC604	8-752-323-65	IC CXK5816M-10L			
IC605	8-759-990-82	IC TL082CP			
IC608	8-759-145-58	IC UPC4558C			
IC609	8-759-202-13	IC TC74HCU04P			
IC610	8-759-204-97	IC TC74HCU04F			
IC701	8-759-802-44	IC LM6402G-1894			
IC702	8-759-802-76	IC LB1645N			
IC703	8-759-924-09	IC CXQ88501-380S			
IC704	8-759-924-08	IC CXQ88501-451S			
IC705	8-759-925-63	IC MSM6404A-117GS-K			
IC707	8-759-802-76	IC LB1645N			
IC708	8-759-802-76	IC LB1645N			
IC710	8-759-802-76	IC LB1645N			
IC711	8-759-220-04	IC TC40H004P			
IC712	8-759-220-04	IC TC40H004P			
IC713	8-759-004-70	IC MC74HCT245N			
IC714	8-759-202-93	IC TC74HC153P			
IC715	8-759-202-93	IC TC74HC153P			
IC901	8-759-700-06	IC NJM7812B			
IC902	8-759-700-06	IC NJM7812B			
IC903	8-759-700-51	IC NJM7805A			
IC904	8-759-171-15	IC UPC7815H			
IC909	8-759-145-84	IC UPD4584BC			
IC910	8-759-925-54	IC LM2940CT-5.0			
IC911	8-759-700-28	IC NJM7905A			
IC912	8-759-925-54	IC LM2940CT-5.0			
IC951	8-759-179-12	IC UPC7912H			
IC952	8-759-179-12	IC UPC7912H			
IC953	8-759-700-28	IC NJM7905A			
L51	1-408-563-00	INDUCTOR	10UH		
L301	1-408-569-00	INDUCTOR	33UH		
L302	1-408-569-00	INDUCTOR	33UH		
L303	1-408-569-00	INDUCTOR	33UH		
L304	1-408-569-00	INDUCTOR	33UH		
L305	1-408-569-00	INDUCTOR	33UH		
L601	1-408-569-00	INDUCTOR	33UH		
L701	1-408-569-00	INDUCTOR	33UH		
L702	1-408-569-00	INDUCTOR	33UH		
L703	1-408-569-00	INDUCTOR	33UH		
L704	1-408-569-00	INDUCTOR	33UH		

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

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

Ref.No.	Part No.	Description
LPF3	1-464-845-11	FILTER UNIT, LOW PASS
LPF4	1-464-845-11	FILTER UNIT, LOW PASS
M153	1-422-197-14	COIL (DRIVE)
M701	A-4608-329-A	MOTOR (C) ASSY, CHUKING
M702	A-4608-327-A	MOTOR (B) ASSY, ARM
M703	A-4608-325-A	MOTOR (A) ASSY, CARRIER
PH701	8-719-801-84	TLP802
PH702	8-719-801-84	TLP802
PH703	8-719-801-84	TLP802
PL701	1-518-594-11	LAMP, PILOT
PL702	1-518-594-11	LAMP, PILOT
PL703	1-518-594-11	LAMP, PILOT
PL704	1-518-594-11	LAMP, PILOT
PL705	1-518-594-11	LAMP, PILOT
PS701	1-454-411-11	SOLENOID, PLUNGER
PS951	1-532-686-00	LINK, IC
PS952	1-532-686-00	LINK, IC
PS955	1-532-675-00	LINK, IC
PS956	1-532-675-00	LINK, IC
PS957	1-532-675-00	LINK, IC
Q151	8-729-206-47	TRANSISTOR 2SC3666Y
Q152	8-729-206-43	TRANSISTOR 2SA1426Y
Q153	8-729-206-47	TRANSISTOR 2SC3666Y
Q154	8-729-206-43	TRANSISTOR 2SA1426Y
Q301	8-729-802-44	TRANSISTOR 2SK125-4
Q302	8-729-800-43	TRANSISTOR 2SK152-3
Q401	8-729-802-44	TRANSISTOR 2SK125-4
Q402	8-729-800-43	TRANSISTOR 2SK152-3
Q501	8-729-206-49	TRANSISTOR 2SC3666Y
Q502	8-729-206-43	TRANSISTOR 2SA1426Y
Q503	8-729-206-49	TRANSISTOR 2SC3666Y
Q504	8-729-206-43	TRANSISTOR 2SA1426Y
Q505	8-729-206-49	TRANSISTOR 2SC3666Y
Q506	8-729-206-43	TRANSISTOR 2SA1426Y
Q507	8-729-117-54	TRANSISTOR 2SA1175
Q508	8-729-178-54	TRANSISTOR 2SC2785
Q601	8-729-900-80	TRANSISTOR DTC114ES
Q602	8-729-178-54	TRANSISTOR 2SC2785
Q616	8-729-900-80	TRANSISTOR DTC114ES
Q702	8-729-900-80	TRANSISTOR DTC114ES
Q707	8-729-900-89	TRANSISTOR DTC144ES
Q714	8-729-900-80	TRANSISTOR DTC114ES
Q715	8-729-900-80	TRANSISTOR DTC114ES
Q717	8-729-900-61	TRANSISTOR DTA114ES
Q731	8-729-900-80	TRANSISTOR DTC114ES
Q732	8-729-900-80	TRANSISTOR DTC114ES
Q733	8-729-900-80	TRANSISTOR DTC114ES
Q734	8-729-900-74	TRANSISTOR DTC143TS
Q735	8-729-900-89	TRANSISTOR DTC144ES
Q751	8-729-900-65	TRANSISTOR DTA144ES
Q753	8-729-900-74	TRANSISTOR DTC143TS
Q901	8-729-900-61	TRANSISTOR DTA114ES
Q902	8-729-900-80	TRANSISTOR DTC114ES
Q903	8-729-802-04	TRANSISTOR 2SC2603E
Q904	8-729-900-80	TRANSISTOR DTC114ES
Q905	8-729-900-80	TRANSISTOR DTC114ES
Q907	8-729-178-54	TRANSISTOR 2SC2785
Q908	8-729-178-54	TRANSISTOR 2SC2785

Ref.No.	Part No.	Description			
R001	1-249-405-11	CARBON	100	5%	1/4W
R002	1-249-429-11	CARBON	10K	5%	1/4W
R003	1-249-397-11	CARBON	22	5%	1/4W
R101	1-249-429-11	CARBON	10K	5%	1/4W
R102	1-249-432-11	CARBON	18K	5%	1/4W
R103	1-249-429-11	CARBON	10K	5%	1/4W
R104	1-247-893-11	CARBON	390K	5%	1/4W
R105	1-247-883-00	CARBON	150K	5%	1/4W
R106	1-249-441-11	CARBON	100K	5%	1/4W
R107	1-249-429-11	CARBON	10K	5%	1/4W
R108	1-247-881-00	CARBON	120K	5%	1/4W
R109	1-247-884-11	CARBON	160K	5%	1/4W
R110	1-247-895-00	CARBON	470K	5%	1/4W
R113	1-249-433-11	CARBON	22K	5%	1/4W
R114	1-247-895-00	CARBON	470K	5%	1/4W
R115	1-249-439-11	CARBON	68K	5%	1/4W
R116	1-247-903-00	CARBON	1M	5%	1/4W
R117	1-249-425-11	CARBON	4.7K	5%	1/4W
R151	1-249-417-11	CARBON	1K	5%	1/4W
R152	1-249-417-11	CARBON	1K	5%	1/4W
R153	1-249-417-11	CARBON	1K	5%	1/4W
R154	1-249-417-11	CARBON	1K	5%	1/4W
R155	1-249-417-11	CARBON	1K	5%	1/4W
R156	1-249-417-11	CARBON	1K	5%	1/4W
R157	1-247-887-00	CARBON	220K	5%	1/4W
R158	1-247-887-00	CARBON	220K	5%	1/4W
R159	1-247-887-00	CARBON	220K	5%	1/4W
R160	1-247-887-00	CARBON	220K	5%	1/4W
R301	1-249-786-11	CARBON	220	1%	1/2W
R302	1-215-469-00	METAL	100K	1%	1/6W
R303	1-247-903-00	CARBON	1M	5%	1/4W
R304	1-215-493-00	METAL	1M	1%	1/6W
R305	1-249-826-11	CARBON	10K	1%	1/2W
R306	1-249-794-11	CARBON	470	1%	1/2W
R307	1-249-815-11	CARBON	3.6K	1%	1/2W
R308	1-249-814-11	CARBON	3.3K	1%	1/2W
R309	1-247-720-11	CARBON	3.9K	1%	1/4W
R310	1-249-942-11	CARBON	6.2K	1%	1/4W
R311	1-247-713-11	CARBON	1K	1%	1/4W
R312	1-215-429-00	METAL	2.2K	1%	1/6W
R314	1-247-715-11	CARBON	1.5K	1%	1/4W
R315	1-247-721-11	CARBON	4.7K	1%	1/4W
R316	1-215-453-00	METAL	22K	1%	1/6W
R317	1-249-818-11	CARBON	4.7K	1%	1/2W
R319	1-249-437-11	CARBON	47K	5%	1/4W
R401	1-249-786-11	CARBON	220	1%	1/2W
R402	1-215-469-00	METAL	100K	1%	1/6W
R403	1-247-903-00	CARBON	1M	5%	1/4W
R404	1-215-493-00	METAL	1M	1%	1/6W
R405	1-249-826-11	CARBON	10K	1%	1/2W
R406	1-249-794-11	CARBON	470	1%	1/2W
R407	1-249-815-11	CARBON	3.6K	1%	1/2W
R408	1-249-814-11	CARBON	3.3K	1%	1/2W
R409	1-247-720-11	CARBON	3.9K	1%	1/4W
R410	1-249-942-11	CARBON	6.2K	1%	1/4W
R411	1-247-713-11	CARBON	1K	1%	1/4W
R412	1-215-429-00	METAL	2.2K	1%	1/6W

Ref.No.	Part No.	Description			
R415	1-247-721-11	CARBON	4.7K	1%	1/4W
R501	1-249-434-11	CARBON	27K	5%	1/4W
R502	1-249-427-11	CARBON	6.8K	5%	1/4W
R503	1-249-405-11	CARBON	100	5%	1/4W
R504	1-249-434-11	CARBON	27K	5%	1/4W
R505	1-249-405-11	CARBON	100	5%	1/4W
R506	1-247-883-00	CARBON	150K	5%	1/4W
R507	1-247-899-11	CARBON	680K	5%	1/4W
R508	1-249-409-11	CARBON	220	5%	1/4W
R509	1-249-425-11	CARBON	4.7K	5%	1/4W
R510	1-249-411-11	CARBON	330	5%	1/4W
R511	1-247-881-00	CARBON	120K	5%	1/4W
R512	1-249-436-11	CARBON	39K	5%	1/4W
R513	1-249-436-11	CARBON	39K	5%	1/4W
R514	1-249-417-11	CARBON	1K	5%	1/4W
R515	1-247-903-00	CARBON	1M	5%	1/4W
R516	1-249-424-11	CARBON	3.9K	5%	1/4W
R517	1-249-429-11	CARBON	10K	5%	1/4W
R518	1-249-423-11	CARBON	3.3K	5%	1/4W
R519	1-249-431-11	CARBON	15K	5%	1/4W
R520	1-249-417-11	CARBON	1K	5%	1/4W
R521	1-249-429-11	CARBON	10K	5%	1/4W
R522	1-249-429-11	CARBON	10K	5%	1/4W
R523	1-247-895-00	CARBON	470K	5%	1/4W
R524	1-249-422-11	CARBON	2.7K	5%	1/4W
R525	1-249-405-11	CARBON	100	5%	1/4W
R526	1-249-405-11	CARBON	100	5%	1/4W
R527	1-249-430-11	CARBON	12K	5%	1/4W
R528	1-249-429-11	CARBON	10K	5%	1/4W
R529	1-249-429-11	CARBON	10K	5%	1/4W
R530	1-249-420-11	CARBON	1.8K	5%	1/4W
R531	1-249-441-11	CARBON	100K	5%	1/4W
R532	1-249-431-11	CARBON	15K	5%	1/4W
R533	1-249-427-11	CARBON	6.8K	5%	1/4W
R534	1-249-417-11	CARBON	1K	5%	1/4W
R535	1-249-435-11	CARBON	33K	5%	1/4W
R536	1-247-864-11	CARBON	24K	5%	1/4W
R537	1-249-427-11	CARBON	6.8K	5%	1/4W
R538	1-247-895-00	CARBON	470K	5%	1/4W
R539	1-247-895-00	CARBON	470K	5%	1/4W
R540	1-249-433-11	CARBON	22K	5%	1/4W
R541	1-249-429-11	CARBON	10K	5%	1/4W
R542	1-249-425-11	CARBON	4.7K	5%	1/4W
R543	1-249-417-11	CARBON	1K	5%	1/4W
R544	1-249-417-11	CARBON	1K	5%	1/4W
R545	1-249-417-11	CARBON	1K	5%	1/4W
R546	1-249-433-11	CARBON	22K	5%	1/4W
R547	1-249-422-11	CARBON	2.7K	5%	1/4W
R548	1-249-437-11	CARBON	47K	5%	1/4W
R552	1-249-435-11	CARBON	33K	5%	1/4W
R596	1-247-903-00	CARBON	1M	5%	1/4W
R597	1-247-903-00	CARBON	1M	5%	1/4W
R598	1-247-903-00	CARBON	1M	5%	1/4W
R599	1-247-903-00	CARBON	1M	5%	1/4W
R601	1-247-887-00	CARBON	220K	5%	1/4W
R602	1-249-423-11	CARBON	3.3K	5%	1/4W
R603	1-249-436-11	CARBON	39K	5%	1/4W

Ref.No.	Part No.	Description			
R604	1-215-449-00	METAL	15K	1%	1/6W
R605	1-215-453-00	METAL	22K	1%	1/6W
R606	1-249-433-11	CARBON	22K	5%	1/4W
R607	1-247-856-00	CARBON	11K	5%	1/4W
R608	1-247-856-00	CARBON	11K	5%	1/4W
R609	1-215-441-00	METAL	6.8K	1%	1/6W
R610	1-247-903-00	CARBON	1M	5%	1/4W
R611	1-215-441-00	METAL	6.8K	1%	1/6W
R612	1-249-427-11	CARBON	6.8K	5%	1/4W
R613	1-215-453-00	METAL	22K	1%	1/6W
R614	1-249-425-11	CARBON	4.7K	5%	1/4W
R615	1-215-453-00	METAL	22K	1%	1/6W
R616	1-249-422-11	CARBON	2.7K	5%	1/4W
R617	1-249-430-11	CARBON	12K	5%	1/4W
R618	1-249-417-11	CARBON	1K	5%	1/4W
R619	1-249-435-11	CARBON	33K	5%	1/4W
R620	1-249-433-11	CARBON	22K	5%	1/4W
R621	1-249-429-11	CARBON	10K	5%	1/4W
R622	1-249-425-11	CARBON	4.7K	5%	1/4W
R623	1-249-441-11	CARBON	100K	5%	1/4W
R624	1-249-441-11	CARBON	100K	5%	1/4W
R625	1-249-441-11	CARBON	100K	5%	1/4W
R626	1-249-429-11	CARBON	10K	5%	1/4W
R627	1-249-433-11	CARBON	22K	5%	1/4W
R628	1-249-429-11	CARBON	10K	5%	1/4W
R651	1-249-429-11	CARBON	10K	5%	1/4W
R660	1-247-903-00	CARBON	1M	5%	1/4W
R661	1-249-409-11	CARBON	220	5%	1/4W
R662	1-249-409-11	CARBON	220	5%	1/4W
R663	1-249-409-11	CARBON	220	5%	1/4W
R664	1-249-409-11	CARBON	220	5%	1/4W
R665	1-249-409-11	CARBON	220	5%	1/4W
R701	1-249-429-11	CARBON	10K	5%	1/4W
R702	1-249-429-11	CARBON	10K	5%	1/4W
R703	1-249-429-11	CARBON	10K	5%	1/4W
R704	1-249-429-11	CARBON	10K	5%	1/4W
R707	1-249-429-11	CARBON	10K	5%	1/4W
R709	1-249-429-11	CARBON	10K	5%	1/4W
R710	1-249-407-11	CARBON	150	5%	1/4W
R711	1-249-407-11	CARBON	150	5%	1/4W
R712	1-249-407-11	CARBON	150	5%	1/4W
R713	1-249-407-11	CARBON	150	5%	1/4W
R714	1-249-407-11	CARBON	150	5%	1/4W
R715	1-249-407-11	CARBON	150	5%	1/4W
R716	1-249-429-11	CARBON	10K	5%	1/4W
R718	1-249-417-11	CARBON	1K	5%	1/4W
R720	1-249-425-11	CARBON	4.7K	5%	1/4W
R721	1-249-425-11	CARBON	4.7K	5%	1/4W
R722	1-249-407-11	CARBON	150	5%	1/4W
R723	1-249-407-11	CARBON	150	5%	1/4W
R724	1-249-429-11	CARBON	10K	5%	1/4W
R725	1-249-429-11	CARBON	10K	5%	1/4W
R726	1-249-407-11	CARBON	150	5%	1/4W
R728	1-249-411-11	CARBON	330	5%	1/4W
R730	1-249-429-11	CARBON	10K	5%	1/4W
R731	1-249-429-11	CARBON	10K	5%	1/4W
R732	1-249-429-11	CARBON	10K	5%	1/4W

Ref.No.	Part No.	Description			
R733	1-249-407-11	CARBON	150	5%	1/4W
R734	1-249-429-11	CARBON	10K	5%	1/4W
R735	1-249-425-11	CARBON	4.7K	5%	1/4W
R736	1-249-425-11	CARBON	4.7K	5%	1/4W
R741	1-249-407-11	CARBON	150	5%	1/4W
R743	1-249-420-11	CARBON	1.8K	5%	1/4W
R744	1-249-420-11	CARBON	1.8K	5%	1/4W
R745	1-249-417-11	CARBON	1K	5%	1/4W
R751	1-249-425-11	CARBON	4.7K	5%	1/4W
R752	1-249-408-11	CARBON	180	5%	1/4W
R753	1-249-442-11	CARBON	510	5%	1/4W
R754	1-249-412-11	CARBON	390	5%	1/4W
R755	1-249-441-11	CARBON	100K	5%	1/4W
R756	1-249-441-11	CARBON	100K	5%	1/4W
R757	1-249-441-11	CARBON	100K	5%	1/4W
R758	1-247-903-00	CARBON	1M	5%	1/4W
R759	1-247-903-00	CARBON	1M	5%	1/4W
R760	1-247-903-00	CARBON	1M	5%	1/4W
R762	1-249-420-11	CARBON	1.8K	5%	1/4W
R763	1-249-420-11	CARBON	1.8K	5%	1/4W
R764	1-249-420-11	CARBON	1.8K	5%	1/4W
R765	1-249-420-11	CARBON	1.8K	5%	1/4W
R766	1-249-420-11	CARBON	1.8K	5%	1/4W
R767	1-249-420-11	CARBON	1.8K	5%	1/4W
R768	1-249-420-11	CARBON	1.8K	5%	1/4W
R769	1-249-441-11	CARBON	100K	5%	1/4W
R770	1-249-427-11	CARBON	6.8K	5%	1/4W
R772	1-249-417-11	CARBON	1K	5%	1/4W
R773	1-249-407-11	CARBON	150	5%	1/4W
R774	1-249-407-11	CARBON	150	5%	1/4W
R775	1-249-407-11	CARBON	150	5%	1/4W
R776	1-249-407-11	CARBON	150	5%	1/4W
R777	1-249-407-11	CARBON	150	5%	1/4W
R778	1-249-407-11	CARBON	150	5%	1/4W
R779	1-249-407-11	CARBON	150	5%	1/4W
R791	1-249-425-11	CARBON	4.7K	5%	1/4W
R792	1-249-425-11	CARBON	4.7K	5%	1/4W
R793	1-249-425-11	CARBON	4.7K	5%	1/4W
R794	1-249-425-11	CARBON	4.7K	5%	1/4W
R795	1-249-425-11	CARBON	4.7K	5%	1/4W
R796	1-249-425-11	CARBON	4.7K	5%	1/4W
R797	1-249-425-11	CARBON	4.7K	5%	1/4W
R902	1-249-420-11	CARBON	1.8K	5%	1/4W
R904	1-249-429-11	CARBON	10K	5%	1/4W
R905	1-249-429-11	CARBON	10K	5%	1/4W
R906	1-249-435-11	CARBON	33K	5%	1/4W
R907	1-247-881-00	CARBON	120K	5%	1/4W
R908	1-249-429-11	CARBON	10K	5%	1/4W
R909	1-249-393-11	CARBON	10	5%	1/4W
R910	1-249-417-11	CARBON	1K	5%	1/4W
R911	1-249-425-11	CARBON	4.7K	5%	1/4W
R915	1-249-425-11	CARBON	4.7K	5%	1/4W
R916	1-249-433-11	CARBON	22K	5%	1/4W
R917	1-249-441-11	CARBON	100K	5%	1/4W
R918	1-249-425-11	CARBON	4.7K	5%	1/4W
R919	1-249-425-11	CARBON	4.7K	5%	1/4W
R920	1-249-425-11	CARBON	4.7K	5%	1/4W

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

Ref.No.	Part No.	Description			
R961	1-249-425-11	CARBON	4.7K	5%	1/4W
R968	1-249-425-11	CARBON	4.7K	5%	1/4W
R969	1-249-425-11	CARBON	4.7K	5%	1/4W
RV001	1-226-772-11	RES, ADJ, METAL GLAZE 4.7K			
RV101	1-226-704-11	RES, ADJ, METAL GLAZE 470K			
RV102	1-226-773-11	RES, ADJ, METAL GLAZE 22K			
RV501	1-226-703-11	RES, ADJ, METAL GLAZE 10K			
RV502	1-226-703-11	RES, ADJ, METAL GLAZE 10K			
RV602	1-226-772-11	RES, ADJ, METAL GLAZE 4.7K			
RV701	1-226-770-11	RES, ADJ, METAL GLAZE 470			
RY901	1-515-519-00	RELAY			
S701	1-570-561-11	SWITCH, MICRO (CHUCKING OFF)			
S702	1-570-561-11	SWITCH, MICRO (LIMIT)			
S703	1-570-561-11	SWITCH, MICRO (UP)			
S705	1-570-561-11	SWITCH, MICRO (HOLD)			
S706	1-570-561-11	SWITCH, MICRO (CHUCKING ON)			
S707	1-570-028-11	SWITCH, MICRO (DISS DET)			
S708	1-570-561-11	SWITCH, MICRO (RLS)			
S709	1-570-561-11	SWITCH, MICRO (MID)			
S710	1-570-561-11	SWITCH, MICRO (TRAY)			
S711	1-570-562-11	SWITCH, MICRO (DOOR)			
S713	1-570-560-11	(US:FORMER TYPE)...SWITCH, ROTARY			
S714	1-570-562-11	SWITCH, MICRO (LASER)			
S715	1-570-561-11	SWITCH, MICRO (MOTOR OFF)			
S750	1-570-313-11	SWITCH, KEY BOARD (ALL ONCE)			
S752	1-570-313-11	SWITCH, KEY BOARD (P.D)			
S753	1-570-313-11	SWITCH, KEY BOARD (N.D)			
S754	1-570-313-11	SWITCH, KEY BOARD (N.T)			
S755	1-570-313-11	SWITCH, KEY BOARD (P.T)			
S756	1-554-303-21	SWITCH, KEY BOARD (POWER)			
S757	1-570-313-11	SWITCH, KEY BOARD (STOP)			
S758	1-570-313-11	SWITCH, KEY BOARD (PLAY)			
S759	1-570-313-11	SWITCH, KEY BOARD (PAUSE)			
S761	1-552-539-00	SWITCH, KEY BOARD (DOOR OPEN)			
S771	1-554-303-21	SWITCH, KEY BOARD (TEST)			
S772	1-570-313-11	SWITCH, KEY BOARD (A-F)			
S773	1-570-313-11	SWITCH, KEY BOARD (A-R)			
S774	1-570-313-11	SWITCH, KEY BOARD (LEFT)			
S775	1-570-313-11	SWITCH, KEY BOARD (CLOSE)			
S776	1-570-313-11	SWITCH, KEY BOARD (RLS)			
S777	1-570-313-11	SWITCH, KEY BOARD (RIGHT)			
S901 ⚠	1-570-046-21	(AEP)...SWITCH, VOLTAGE CHANGE			
SE51	1-422-198-11	COIL (SENSOR)			
T301	1-406-123-11	COIL (OSC)			
T601	1-426-212-11	COIL (RF)			
T901 ⚠	1-421-340-00	(AEP)...TRANSFORMER, LINE FILTER			
T901 ⚠	1-421-580-00	(US)....TRANSFORMER, LINE FILTER (LFT)			
T902 ⚠	1-448-431-11	(US)....TRANSFORMER, POWER			
T902 ⚠	1-449-101-11	(AEP)...TRANSFORMER, POWER			
⚠ TA901	*1-535-476-11	TERMINAL			
⚠ TA902	*1-535-476-11	TERMINAL			
TP702	*1-560-061-00	PIN, CONNECTOR 3P			
X301	1-567-336-11	VIBRATOR, CRYSTAL 67.2MHz			
X701	1-527-822-00	OSCILLATOR, CRYSTAL 4MHz			

CDK-006

SONY
SERVICE MANUAL

US Model
Serial number after 207,551

AEP Model
Serial number after 500,548

SUPPLEMENT-3

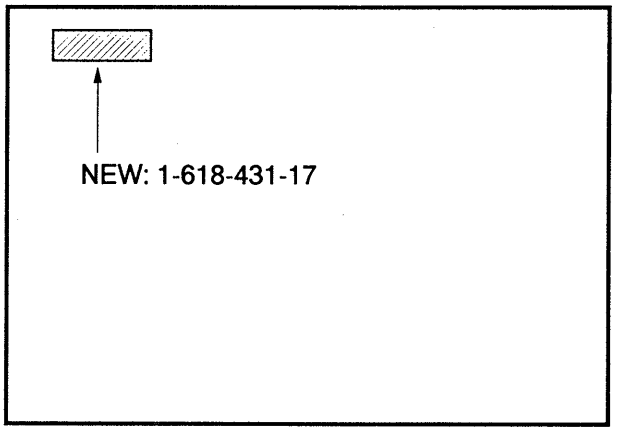
File this supplement with the service manual.

Subject: D/A CONVERTER CHANGE

D/A converter has been changed from Main Board suffix 17.
This supplement only contains the difference. Refer to the service manual and Supplement-2 for the other information.

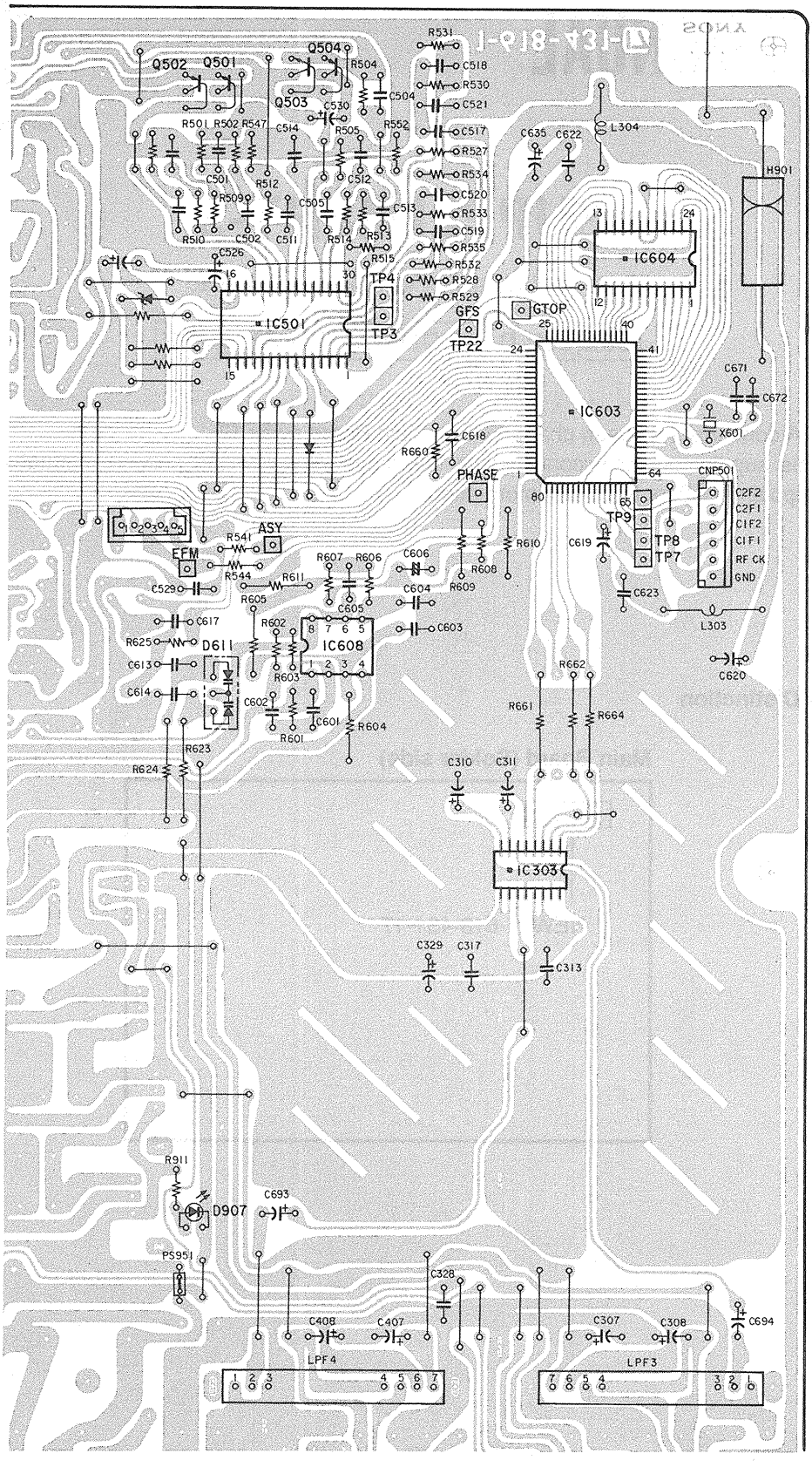
1. New/Former Distinction

Main Board (Solder side)



2. PRINTED WIRING BOARD

[MAIN BOARD]

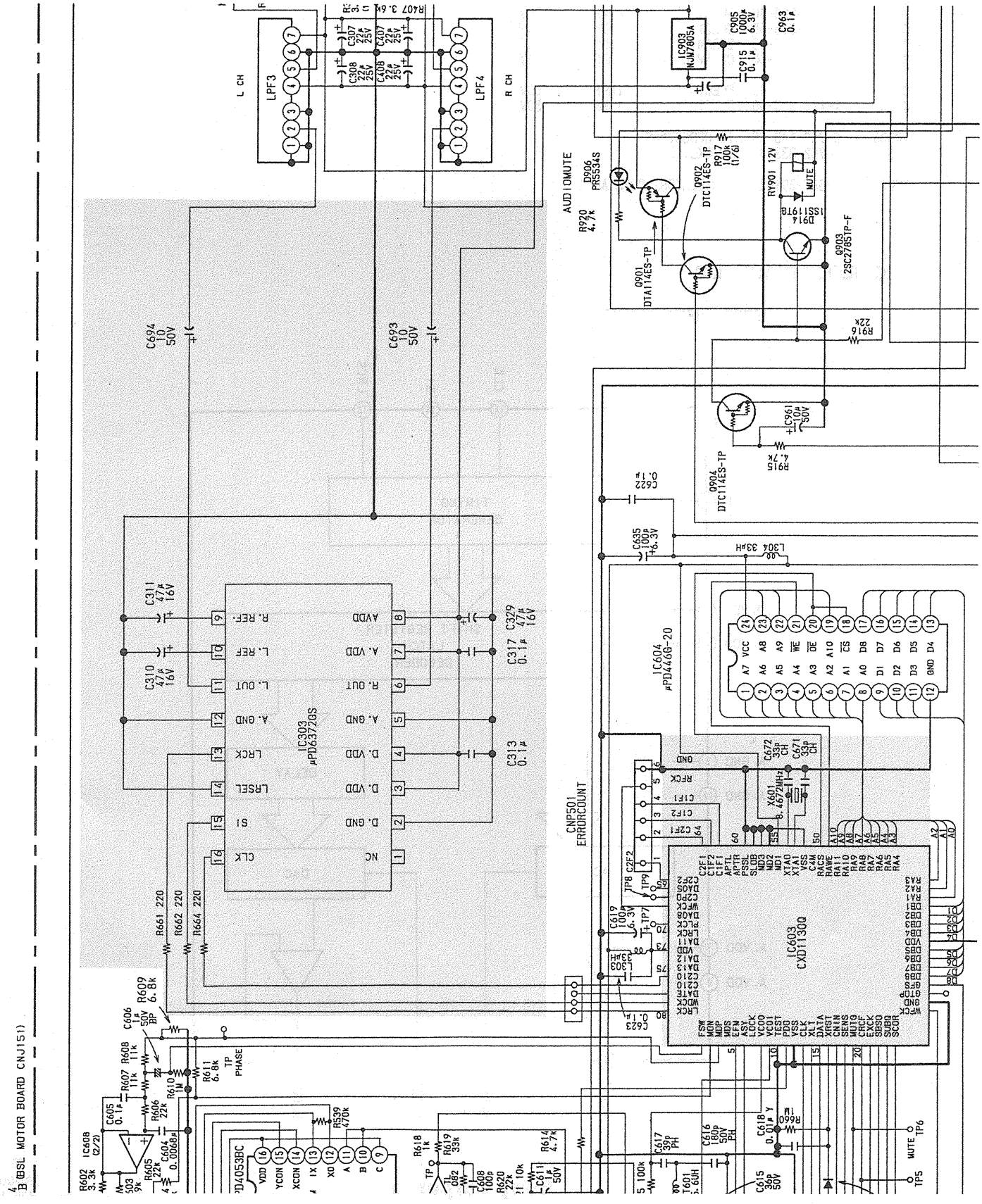


3. SCHEMATIC DIAGRAM

[MAIN BOARD]

Note:

- : Changed portion

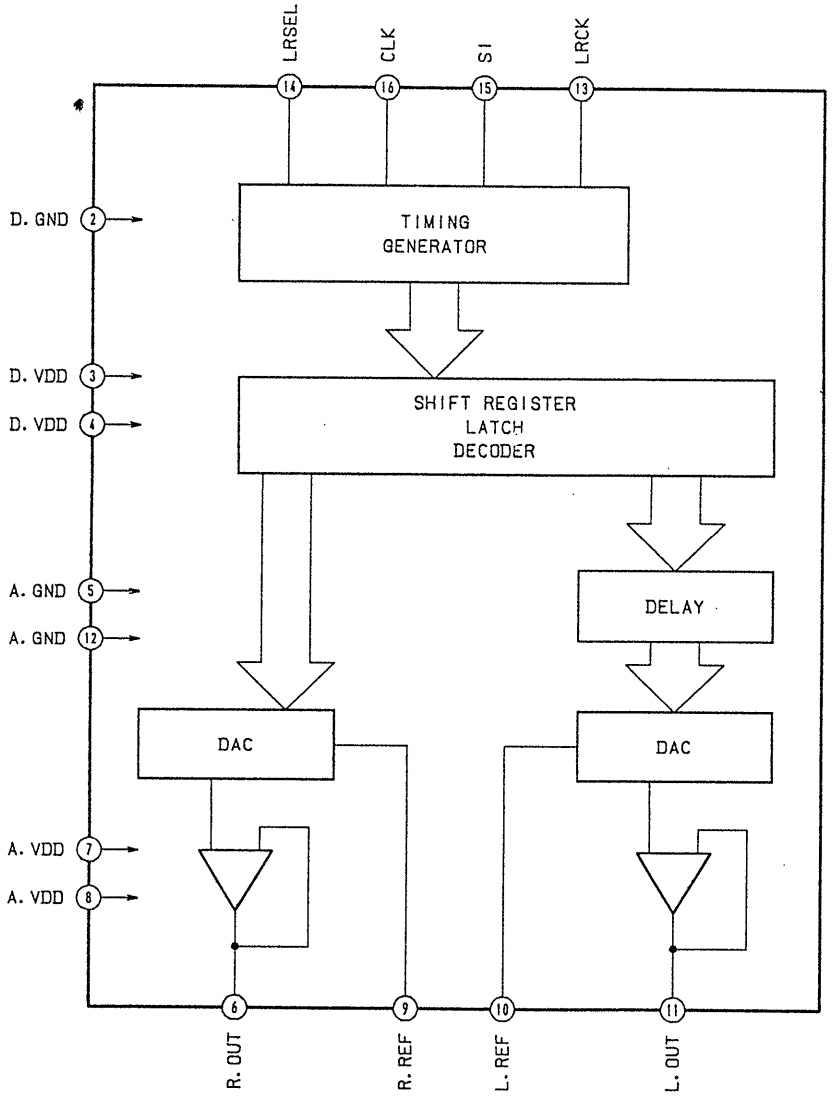


4. ELECTRICAL PARTS LIST

Ref. No.	Part No.	Description		Remark
C310	1-123-306-00	ELECT	47MF	25V
C311	1-123-306-00	ELECT	47MF	25V
C329	1-123-306-00	ELECT	47MF	25V
C671	1-102-963-00	CERAMIC	33PF	50V
C672	1-102-963-00	CERAMIC	33PF	50V
C693	1-123-356-00	ELECT	10MF	50V
C694	1-123-356-00	ELECT	10MF	50V
IC303	8-759-145-25	IC UPD6372GS		
IC603	8-752-332-40	IC CXD1130Q		
X601	1-567-301-21	OSCILLATOR, CRYSTAL		

5. IC BLOCK DIAGRAMS

- **IC303 μPD6372GS**



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