

CDP-302 / 302ES / 520ES

SERVICE MANUAL

Refer to RM-D302/D502 Service Manual issued separately for information of the remote controller supplied with this set.

CDP-302, CDP-520ES:

US Model

CDP-302:

Canadian Model

CDP-302ES:

AEP Model

UK Model

E Model

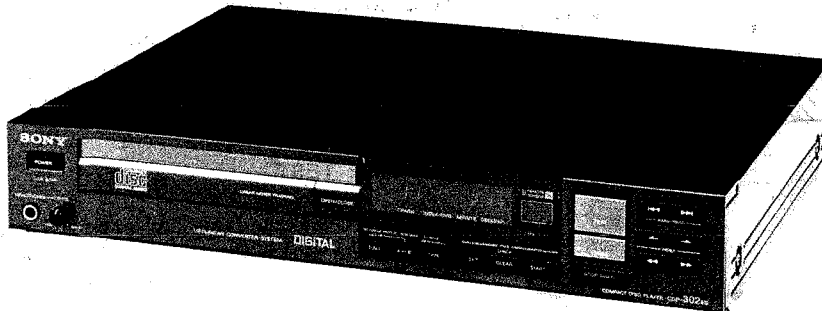


Photo: CDP-302ES

COMPACT
disc
DIGITAL AUDIO

SPECIFICATIONS


COMPACT DISC PLAYER

| | |
|------------------------|---|
| System | Compact disc digital audio system |
| Disc | Compact disc |
| Laser diode properties | Material: GaAlAs Wavelength: 780 nm Emission duration: Continuous Laser output: Max. 0.6 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.


| | |
|---------------------|--|
| Spindle speed | 500 r.p.m. to 200 r.p.m. (CLV) |
| Scan velocity | 1.2 - 1.4 m/sec. |
| Error correction | Sony Super Strategy Cross Interleave Reed Solomon Code |
| Number of channels | 2 |
| D-A conversion | 16-bit linear |
| Frequency response | 2 - 20,000 Hz ± 0.5 dB |
| Harmonic distortion | Less than 0.003 % (1 kHz) |
| Dynamic range | More than 96 dB |
| Channel separation | More than 95 dB |

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.

| | |
|--------------------|---|
| Wow and flutter | Below measurable limit |
| Outputs | Line outputs Output level 2 V rms (at MSB) Load impedance over 10 kilohms Headphones 28 mW at 32 ohms Remote control connectors (4-pin) |
| Other jacks | |
| Disc | |
| Track pitch | 1.6 μ m |
| Sampling frequency | 44.1 kHz |
| Quantization | 16 bit linear quantizing/channel |
| Modulation system | EFM |
| Transfer rate | 2.03 Mbit/sec. (before modulation) |
| General | |
| Dimensions | Approx. 430 x 80 x 335 mm (w/h/d) (17 x 3 ¹ / ₄ x 13 ³ / ₄ in.) including projecting parts and controls |
| Weight | Approx. 6.7 kg (14 lb 13 oz), net |

ATTENTION AU COMPOSANT AYANT RAPPORT À LA SÉCURITÉ!

LES COMPOSANTS IDENTIFIÉS PAR UNE TRAME ET UNE MARQUE  SUR LES DIAGRAMMES SCHÉMATIQUES ET LA LISTE DES PIÈCES SONT CRITIQUES POUR LA SÉCURITÉ DE FONCTIONNEMENT. NE REMPLACER CES COMPOSANTS QUE PAR DES PIÈCES SONY DONT LES NUMÉROS SONT DONNÉS DANS CE MANUEL OU DANS LES SUPPLÉMENTS PUBLIÉS PAR SONY.



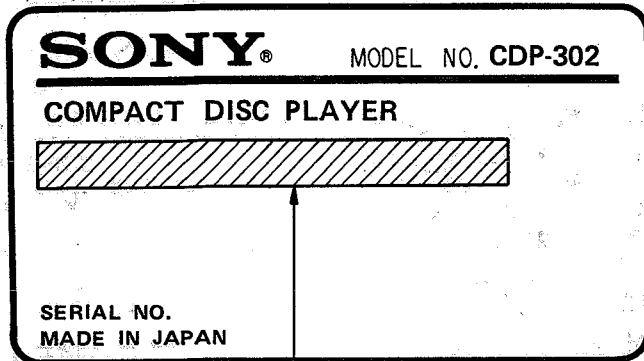
COMPACT DISK PLAYER
SONY[®]

AUD

CDP-302/302ES/520ES

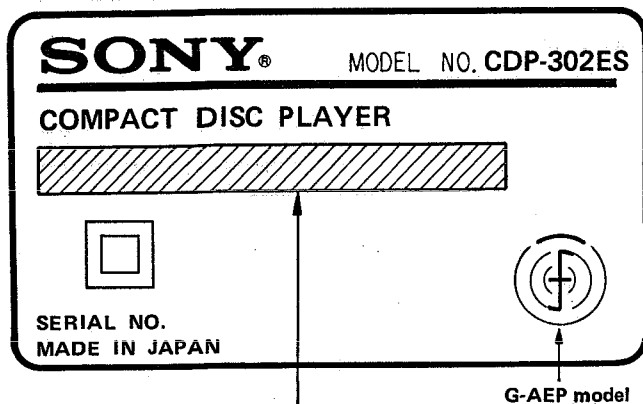
MODEL IDENTIFICATION

CDP-302



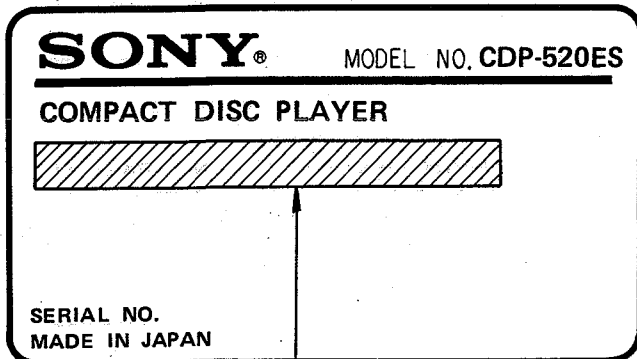
US model: AC: 120 V ~ 60 Hz 15 W
 Canadian model: AC: 120 V ~ 60 Hz 15 W

CDP-302ES



AEP model: AC: 220 V ~ 50/60 Hz 15 W
 G-AEP model: AC: 220 V ~ 50/60 Hz 15 W
 UK model: AC: 240 V ~ 50/60 Hz 15 W
 E model: AC: 110, 120, 220, 240 V ~ 50/60 Hz 15 W

CDP-520ES



US model: AC: 120 V ~ 60 Hz 15 W

SAFETY CHECK-OUT (US Model)

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 microamperes). 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 2 V AC range are suitable. (See Fig. A)

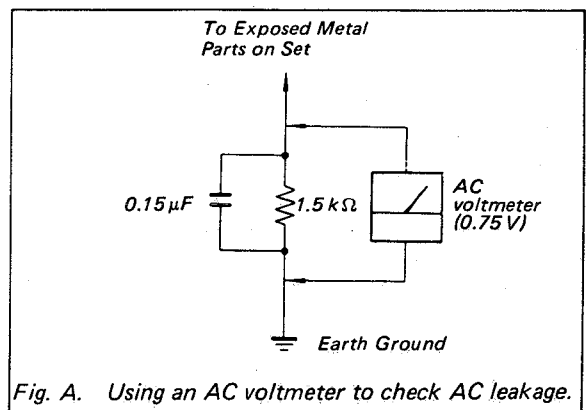


Fig. A. Using an AC voltmeter to check AC leakage.

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

1. Laser Diode Properties

- Material: GaAlAs
- Wavelength: 780 nm
- Emission Duration: continuous
- Laser Output: max. 0.6 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 Optical Pick-up Block (including APC board).

LASER WARNING LABELS

The labels shown below are affixed.

1. Protective Housing Label

DHHS Non-Interlocked Protective Housing Label
..... (US, Canadian model)

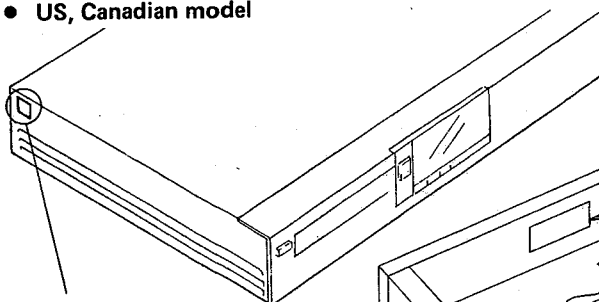
DANGER
INVISIBLE LASER RADIATION WHEN OPEN. AVOID DIRECT EXPOSURE TO BEAM. 4-908-401-01

2. Interlock defeatable Label

..... (US, Canadian model)

DANGER
INVISIBLE LASER RADIATION WHEN OPEN AND INTERLOCK DEFEATED. AVOID DIRECT EXPOSURE TO BEAM. 4-908-402-01

- US, Canadian model



Non-Interlocked Protective Housing Label

DANGER
INVISIBLE LASER RADIATION WHEN OPEN. AVOID DIRECT EXPOSURE TO BEAM. 4-908-401-01

Interlock defeatable Label

DANGER
INVISIBLE LASER RADIATION WHEN OPEN AND INTERLOCK DEFEATED. AVOID DIRECT EXPOSURE TO BEAM. 4-908-402-01

2. Aperture Label..... (AEP, UK, E model)

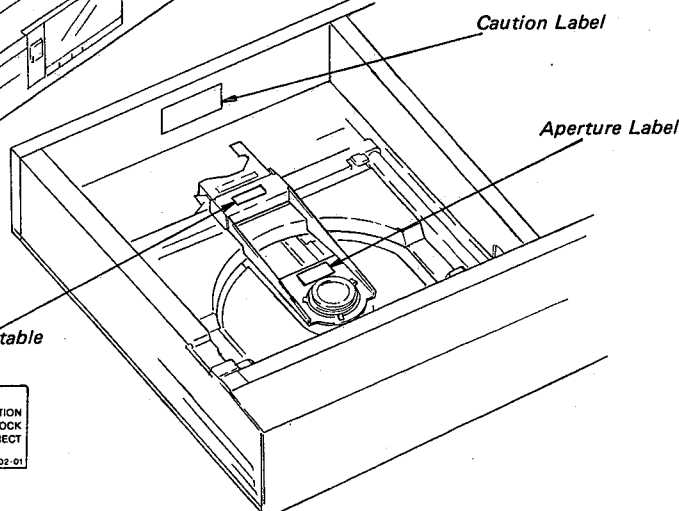
AVOID EXPOSURE
INVISIBLE LASER RADIATION IS EMITTED FROM THIS APERTURE. 4-908-404-01

- See figure on next page for location of label.

3. Caution Label..... (AEP, UK, E model)

CAUTION : INVISIBLE LASER RADIATION WHEN OPEN AND INTERLOCKS DEFEATED. AVOID EXPOSURE TO BEAM.
ADVARSEL : USYNLIG LASERSTRÅLING VED ÅBNING NÅR SIKKERHEDSAFBRYDERE ER UDE AF FUNKTION UDGÅ UDSÆTTELSE FOR STRÅLING.

- AEP, UK, E model



Caution Label

Aperture Label

BESKYTTELSE AF ØJNE MOD LASERSTRÅLING UNDER SERVICE

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

Følg iverigt 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 30 cm fra den optiske pick-up.

1. Data for Laser Diode

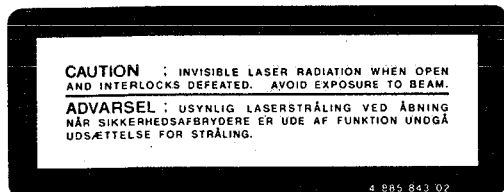
- Materiale: GaAlAs
- Bølgelængde: 780 nm
- Udstråling: Kontinuerlig
- Laser Output: max. 0.6 mW*
 - * målt i 1.6 mm afstand fra overfladen af objektiv-linsen på den optiske pick-up enhed.
- Klassifikation: Svarende til klasse IIIb

2. Adskil aldrig den optiske pick-up enhed under service, og juster ikke APC kredsløbet (Automatic Power Control). Hvis APC kredsløbet (incl. laser-dioden) bryder ned, skal hele den optiske pick-up enhed (incl. APC printkortet) udskiftes.

LASER ADVARSEL MÆRKNING (AEP model)

Følgende mærkning findes indvendig i apparatet:

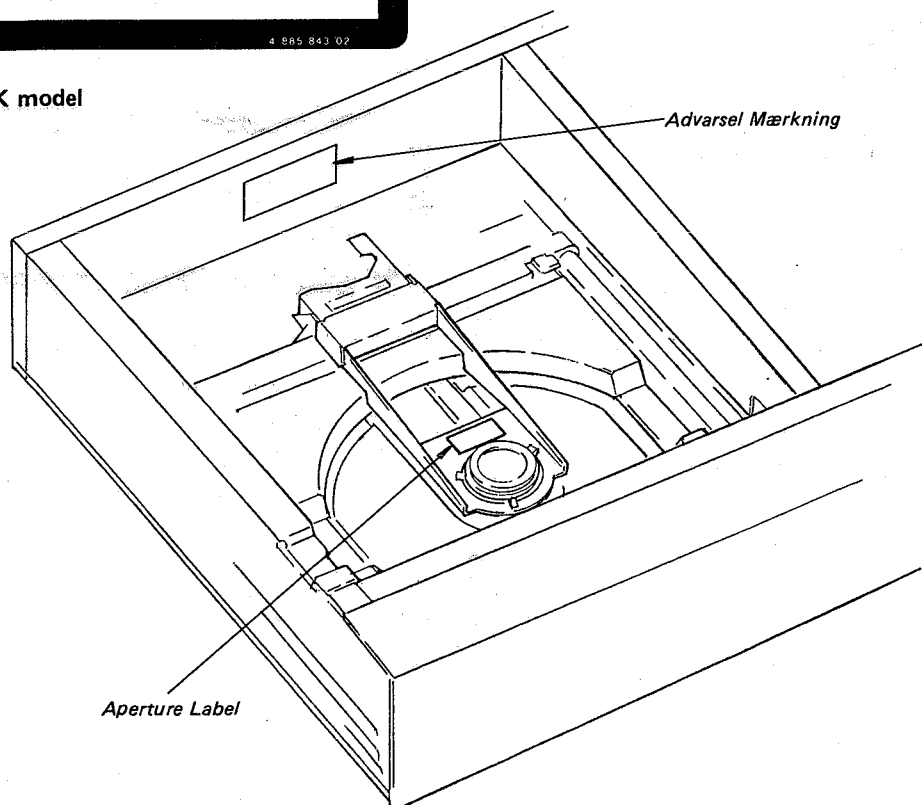
1. Advarsel Mærkning



2. Aperture Label



- AEP, UK model



— CAUTION FOR ELECTROSTATIC BREAKDOWN —

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

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.

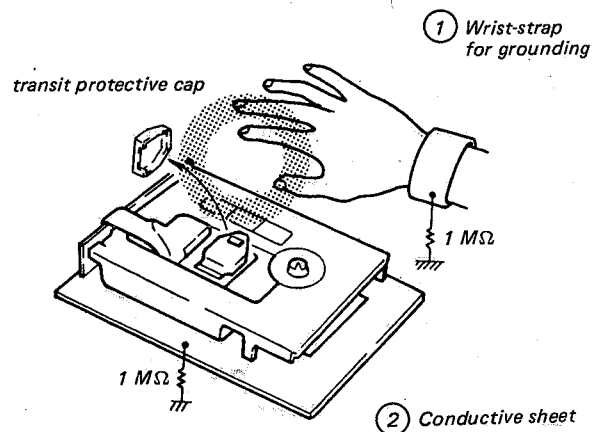
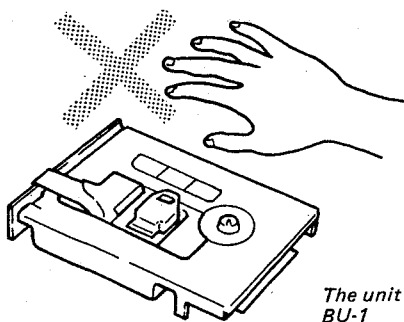
The following method is an example for reference purposes:

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. Perform 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-1, 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 conductive 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-1.



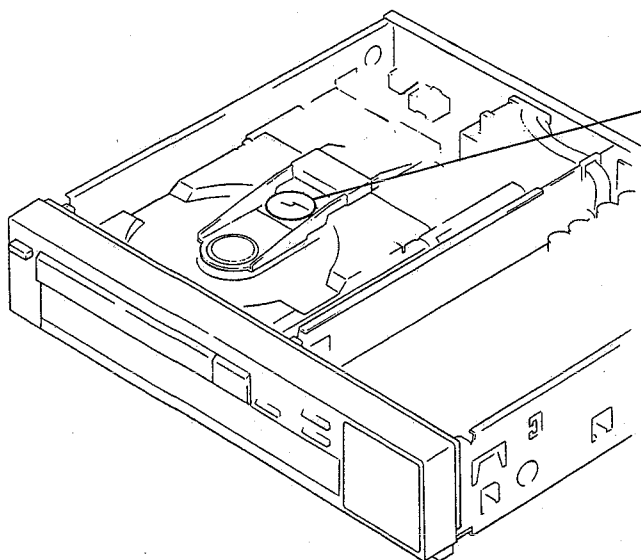
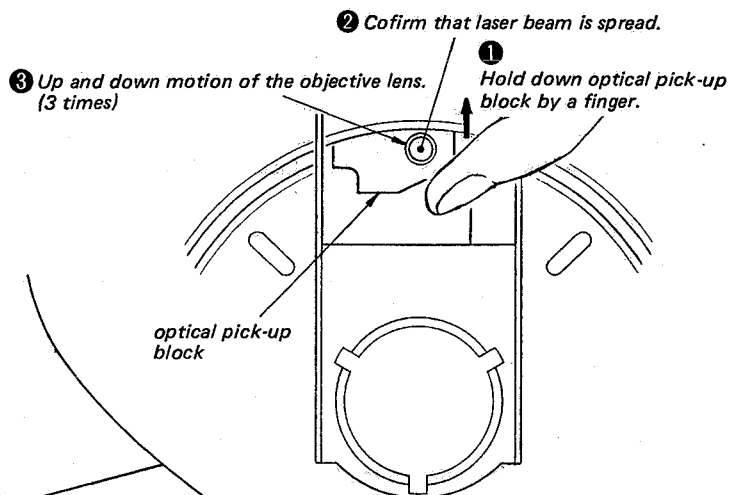
— SERVICING NOTE —

NOTES ON LASER DIODE EMISSION CHECK

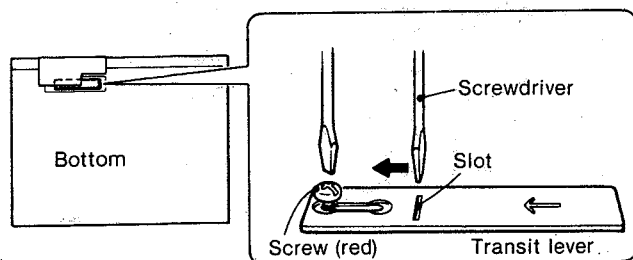
The laser beam on this model is concentrated so as to be focused on the disc reflective surface by the objective lens in the optical pick-up block. Therefore, when checking the laser diode emission, observe, from more than 30 cm away from the objective lens.

LASER DIODE AND FOCUS SEARCH OPERATION CHECK

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



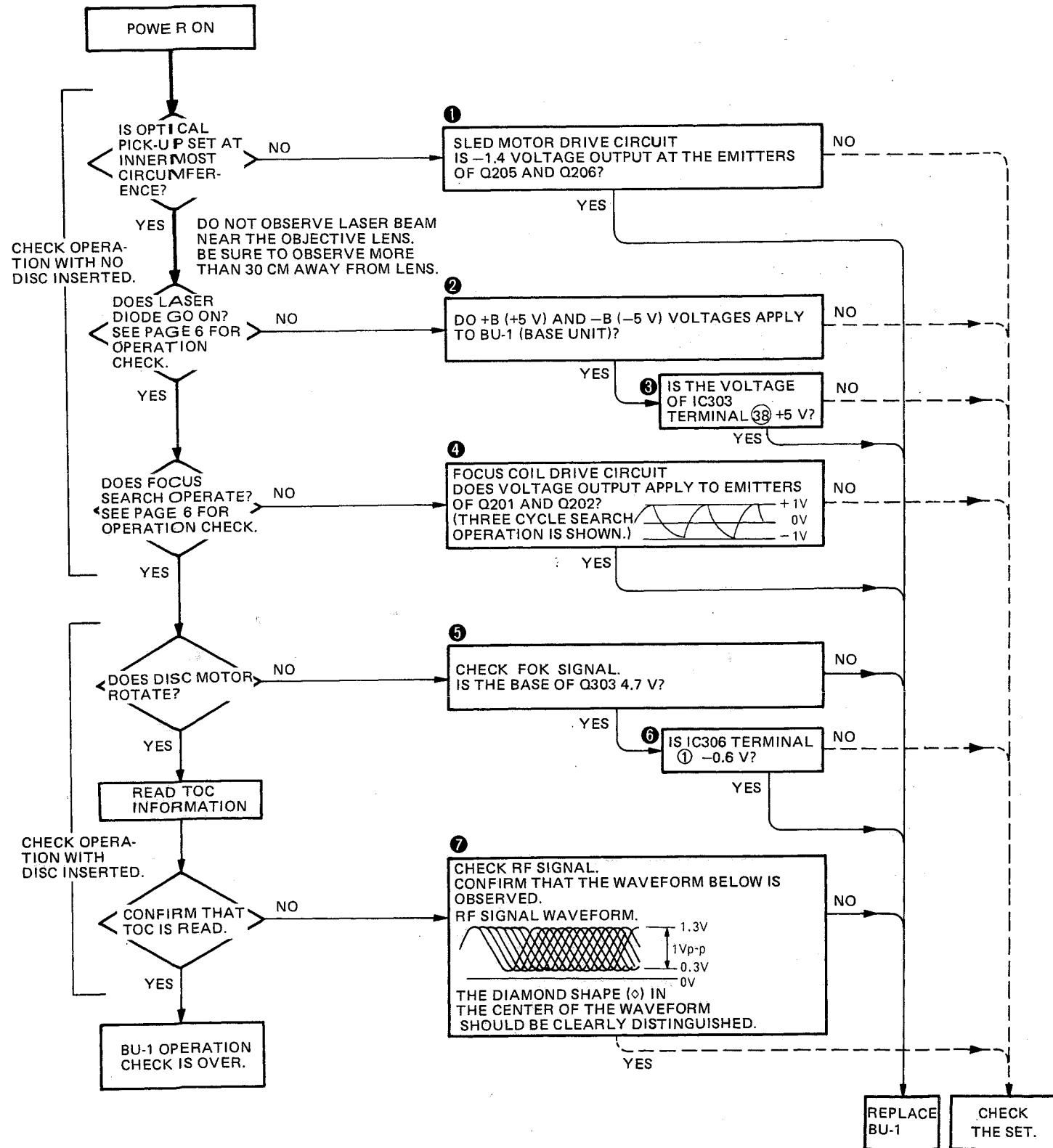
A transit lever is provided at the bottom of the unit to protect the optical system against shock during transportation. Before starting repairing, make following procedures.



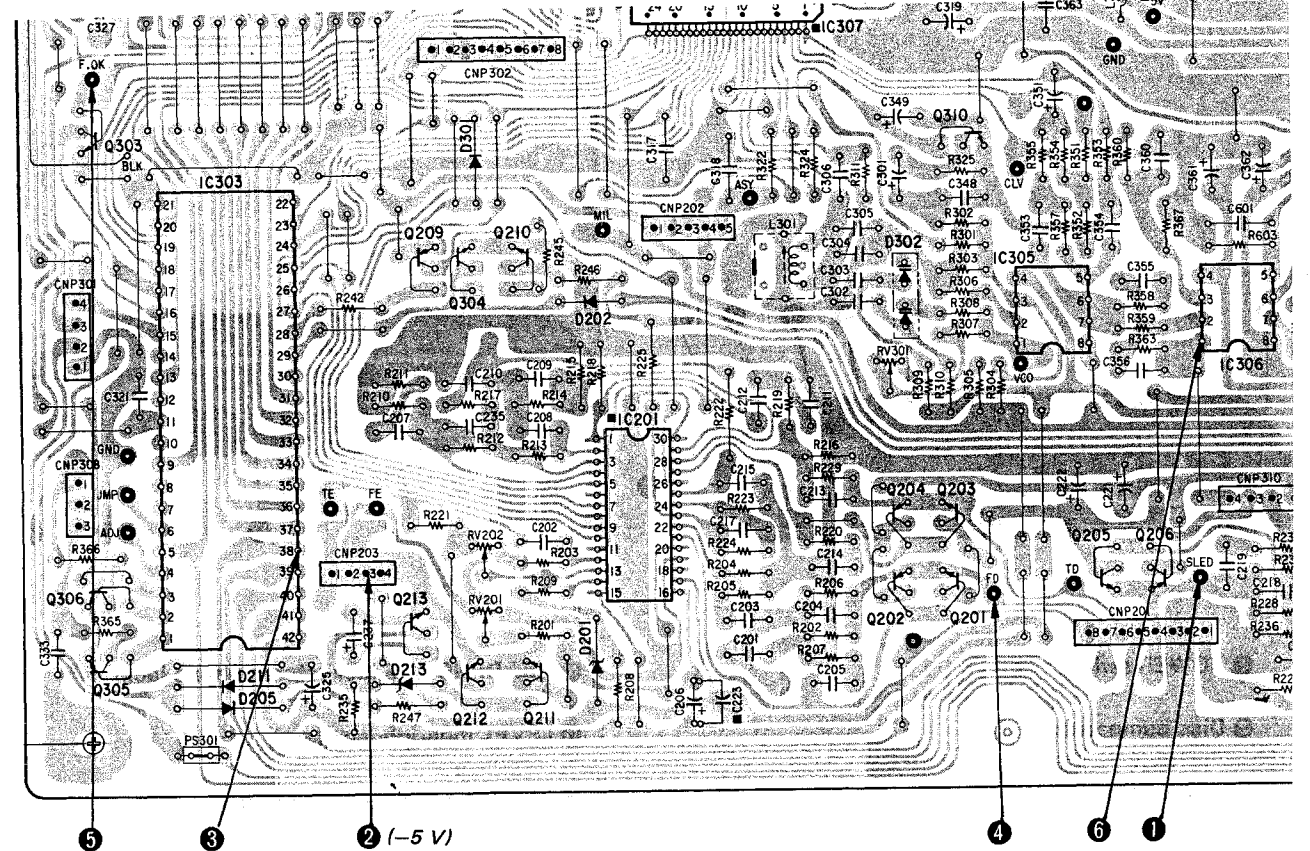
- 1 Loosen the screw (red) with the screwdriver.
- 2 Insert the screwdriver into the slot in the lever and move it in the direction of the arrow until it stops.
- 3 Tighten the screw.

**FLOW CHART OF BU-1 (BASE UNIT)
TROUBLE SHOOTING**

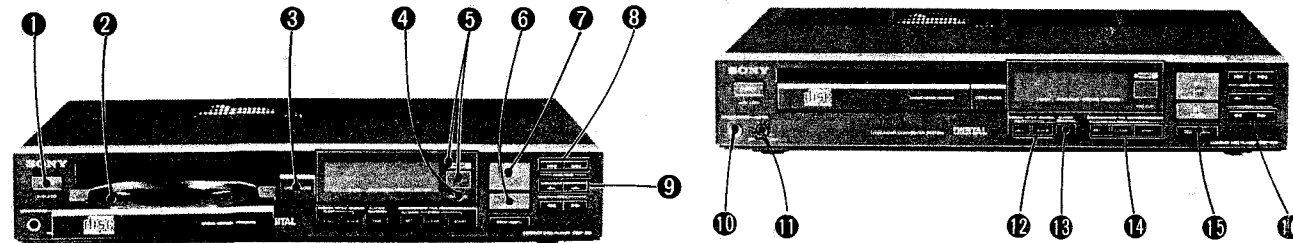
- Confirm all connectors around BU-1 (base unit) are secured before the following check.



MAIN BOARD



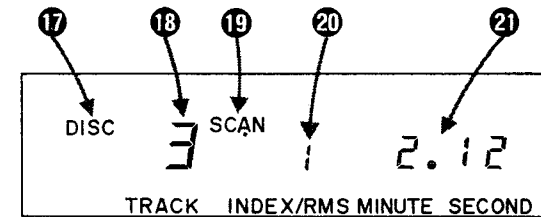
LOCATION AND FUNCTION OF CONTROLS



- 1 POWER switch
- 2 Disc compartment
- 3 OPEN/CLOSE button
- 4 RMS PLAY indicator
- 5 REMOTE SENSOR and indicator (for remote control)
- 6 || PAUSE button and indicator
- 7 ► PLAY button and indicator
- 8 AMS/RMS buttons
- 9 INDEX buttons

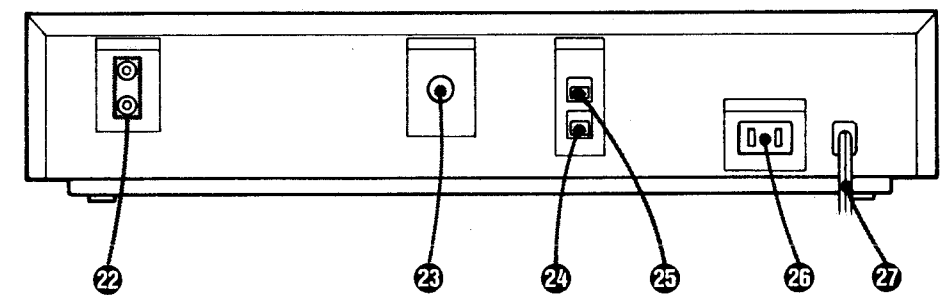
- 10 HEADPHONES jack (stereo phone jack)
- 11 LEVEL (headphones level) control
- 12 REPEAT programming buttons
- 13 ELAPSED/REMAINING TIME button
- 14 RMS buttons
- 15 STOP (RESET) button
- 16 Manual search buttons

Display window



- 17 DISC indicator
- 18 TRACK indicator
- 19 SCAN indicator
- 20 INDEX/RMS indicator
- 21 Time counter

Rear panel

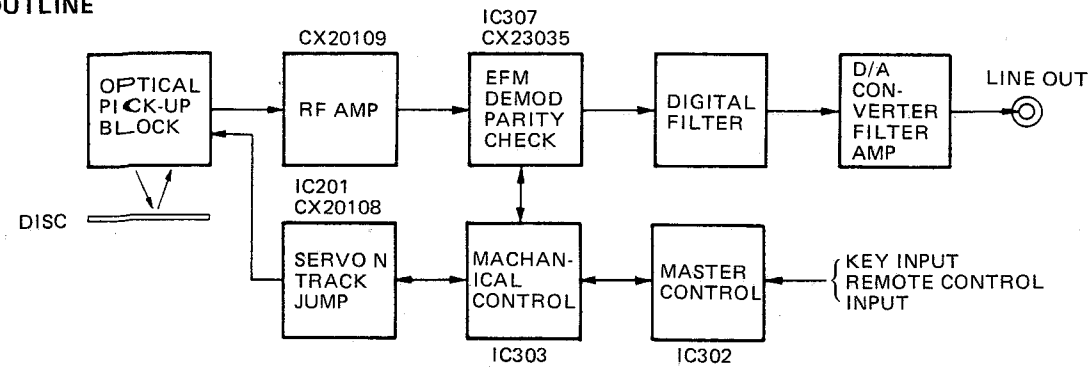


- 22 LINE OUT jacks
- 23 SUBCODE connector
This connector is provided to extend the utility of this compact disc player by allowing for the connection of optional equipment which will be available in the future.
- 24 REMOTE OUT (remote control output) connector
Connect this connector to remote control input connector of optional Sony TC-W7R cassette deck, etc. For details, refer to the operating instructions of the RM-S410 system controller.
- 25 REMOTE IN (remote control input) connector
Connect this connector to remote control output connector of optional, Sony RM-S410 system remote controller. For details, refer to the operating instructions of the RM-S410 system controller.
- 26 AC OUTLET
- 27 AC power cord

SECTION 1
OUTLINE

CIRCUIT DESCRIPTION

1-1. OUTLINE



Above block diagram shows configuration of this set. Master control IC (IC302) serves as the center of all operation. Master control IC (IC302) assumes interface between man and machine like key input and remote control input. Mechanical control IC (IC303) assumes interface between master control IC (IC302) and machine.

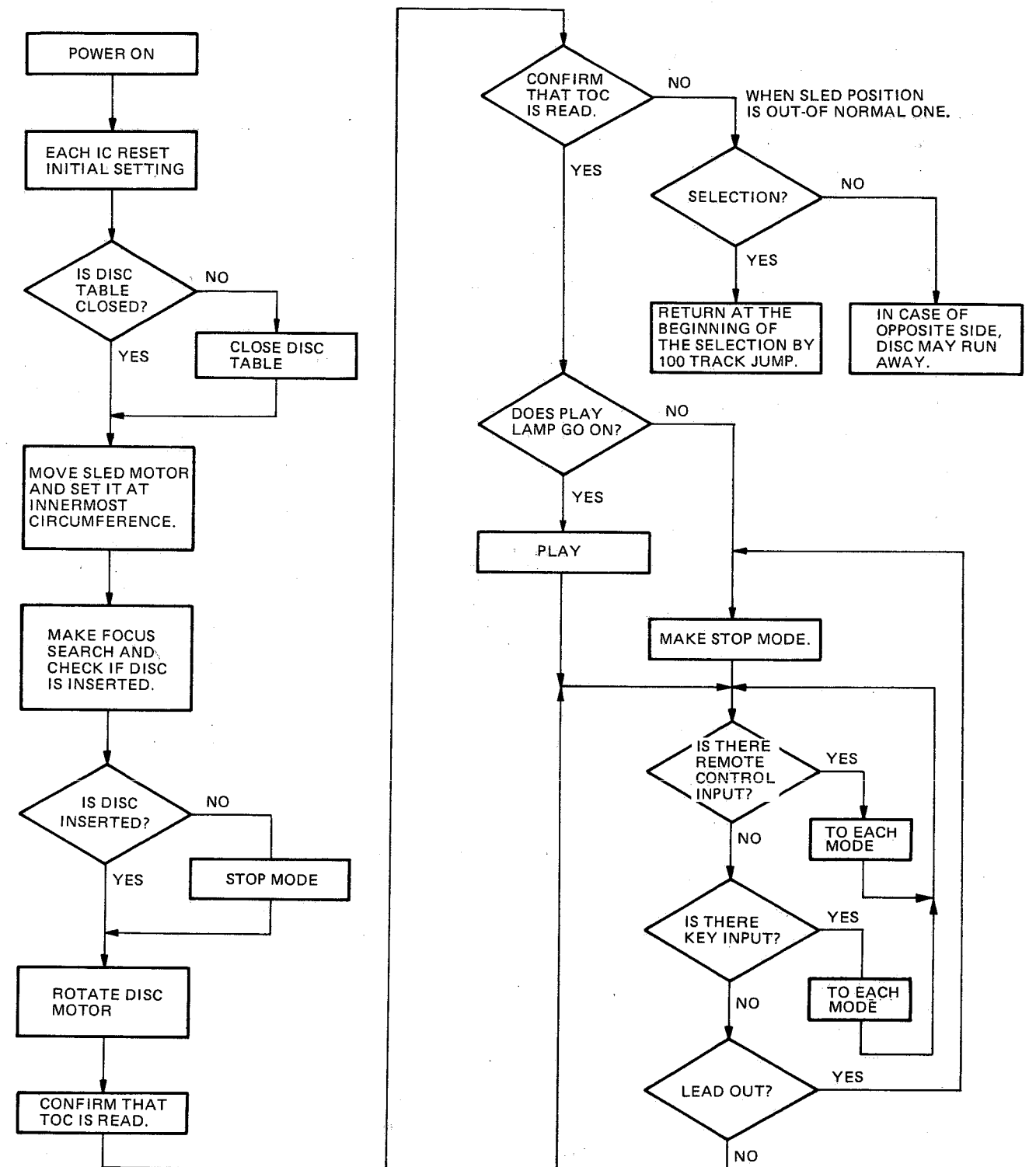
For example, if PLAY button is pressed from key input, master control (IC302) gives mechanical control IC (IC303) a command to make PLAY mode. When this command is given, mechanical control IC (IC303) works in routine operation to make PLAY mode. It gives every kind of commands for IC201, 307 and they are in PLAY mode.

Through IC201 and IC307 use common data bus, they distinguish a command for IC201 or IC307 by a higher rank 4 bit value of each command from mechanical control IC (IC303).

Command for IC201: higher rank 4 bit 0000-0011 (0-3 with hexadecimal number system) are used.

Command for IC307: higher rank 4 bit 1010-1110 (A-E with hexadecimal number system) are used. IC201 controls servo (focus, tracking, sled) mainly. IC307 checks EFM demodulation and CRC.

The illustration below shows flow chart of simple operation after power is ON.



1-2. MASTER CONTROL IC (IC302)

Master control IC (IC302) controls all of the operations of this set. Besides inputting key input and remote control input and data from mechanism control IC (IC303), it outputs display output and commands to mechanism control IC303.

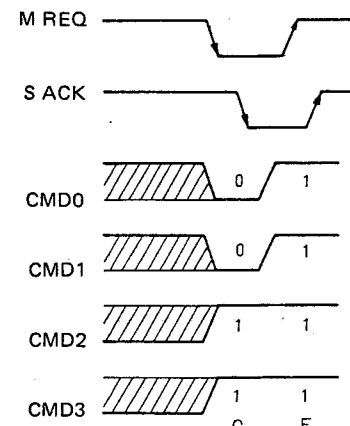
Pin Functions

| Pin. No. | I/O | Pin Name | Operation |
|----------|--------|-----------|---|
| 1-4 | OUT | D0-D3 | Data output pin for key scan digit signal and to display tube drive IC (IC801) |
| 5-8 | IN | K0-K3 | Key scan data input pin. |
| 9 | IN | OSC | Clock input pin. |
| 11 | IN | RESET | Reset input pin. Goes high about 1.5 seconds after power on. |
| 13 | IN | Q INT | Trigger input pin when data is transferred from IC303 to IC302. |
| 14 | IN | OUT SW | Input pin, goes low when disc compartment opens. When this pin goes high, IC302 outputs load in command to IC303. |
| 15 | - | H. L. | When this pin is low, IC302 does not output load in command to IC303 even if pin 14 is high. |
| 17 | IN | REC M | Syncro REC signal input pin. |
| 18 | IN | SI CLK | Clock input pin from remote control decoder. |
| 19 | IN | IN SW | Input pin, goes low when disc compartment closes. |
| 20 | IN | SI DATA | Serial data input pin from remote control decoder. |
| 21 | - | GND | Ground |
| 29 | OUT | CD F | Direct function output pin. High is output for 600 msec when PLAY, PAUSE button is pressed during STOP mode. |
| 30-33 | IN/OUT | CMD0-CMD3 | I/O pin for data with IC303. |
| 34 | OUT | M REQ | Control (request) signal output pin for commands to IC303. |
| 35 | IN | S ACK | IC303 acknowledge signal input pin. |
| 36 | OUT | RST | Reset output pin to display tube drive IC (IC810). |
| 37 | OUT | CTL | Clock output pin to display tube drive IC (IC801). |
| 38 | OUT | IDP | Output pin for data which controls display tube drive IC (IC801) characters. |
| 39 | OUT | RMS LED | RMS LED output pin. |
| 40 | OUT | PAUSE LED | PAUSE LED output pin. |
| 41 | OUT | PLAY LED | PLAY LED output pin. |
| 42 | OUT | VDD | Power supply pin (5 V) |

When commands are sent from the master control IC (IC302) to the mechanism control IC, the master control IC sets the data to be sent and makes the M REQ pin go low from high, as shown in the figure. When the M REQ pin goes low, the mechanism control IC (IC303) makes the S ACK pin go low from high. At the time data is taken in to the mechanism control IC (IC303).

When the master control IC (IC302) confirms that the S ACK pin has gone low, it sets the next data and makes the M REQ pin high. When the M REQ pin goes high, the mechanism control IC (IC303) makes the S ACK pin high and reads in the data.

Example: CLOSE command. (CF)



Command from master control IC (IC302) to mechanism control IC (IC303).

Command

| | | |
|---------------|---------------------------------|--|
| OPEN | DF | Opens disc compartment. |
| CLOSE | CF | Closes disc compartment. |
| AMS | A * * 01F | Perform AMS. If for the 5th selection: A0501F |
| | TRACK NO | |
| INDEX | A * * * * F | Performs index search. When the INDEX key is pressed, TRACK NO and INDEX NO are input and sent. |
| | TRACK NO INDEX NO | |
| LOCATION | B * * * * * * * * OF | Performs A → B repeat. The place for A is memorized, that data is put into the * section and set out, the pick-up is returned to the place with that value, and repeats play between that point and the point where B was pressed. |
| | TRACK NO INDEX NO MIN SEC FRAME | |
| STOP | 1F | Stops spindle motor and sled motor. |
| manual search | 4F-9F | Sends out during FF and REW. |
| | 4F | FF during PAUSE. Performs 40 track jump after a certain time passes. |
| | 5F | REW during PAUSE. |
| | 6F | FF Performs 10 track jump after a certain time passes. |
| | 7F | REW |
| | 8F, 9F | not used |
| PAUSE | 3F | PAUSE |
| PLAY | 2F | normal PLAY command |
| TOC REQ | * * * * * * * * (F) | This command is sent out when the TOC data in the mechanism control IC is desired, and is sent out during random access, when selection changes, etc. |
| | H L MIN SEC MIN SEC | |
| | (Selection N) (Selection N + 1) | |

The above signals are sent from CMD0-CMD3 to the mechanism control IC.

The mechanism control IC executes these commands.

Commands sent from the mechanism control IC (IC303) to the master control IC (IC302).

| | | |
|-------------|---|--|
| TOC, Q data | C * * * * * * * * * * F | TOC data or Q data is sent. |
| | TRACK NO INDEX NO MIN SEC FRAME MIN SEC | |
| | | elapsed time in the track elapsed time from beginning of disc |

| | | |
|--------------|-------|---|
| TOC READ END | A (F) | Sent out when TOC data read-in is finished. |
| LEAD OUT | B (F) | Sent out when disc ends. |
| NO DISC | E (F) | Sent out when there is no disc in the disc compartment. |
| OPEN | D (F) | Sent out when the disc compartment is open. |

The mechanism control IC (IC303) keeps the TOC data and Q data read in from the disc, and sends it to the master control IC (IC302) as required.

1-3. MECHANISM CONTROL IC (IC303)

Mechanism control IC303 sends commands to IC201 (servo IC CX20108) and IC307 (digital processing/CLV servo IC CX23035) via the DATA, CLOCK and LATCH pins, and also memorizes TOC and Q data, and performs direct search, etc. based on this data.

Pin Functions

| Pin No. | I/O | Pin Name | Operation |
|---------|--------|-----------|---|
| 1 | OUT | REC MUTE | Synchro REC MUTE signal output pin. |
| 2 | OUT | PAUSE | Synchro PAUSE release signal output pin. |
| 3 | IN | REC M | Synchro REC signal input pin. |
| 4 | - | ADJ | By making this pin low, IC303 will not load the disc out even if servo or other abnormalities are detected. Used for servo and PLL adjustment. |
| 5 | OUT | MUTE | Muting control output pin. |
| 6 | - | JMP | By making this pin low, direct search is not performed and access is done by track jump. Used for track jump check. |
| 9 | IN | OSC | Clock input pin. |
| 11 | IN | RESET | Reset input pin. Goes high about 1.5 seconds after power on. |
| 13 | IN | SCOR | SUB Q sync signal input pin. |
| 15 | IN | IN SW | Input pin; goes low when disc compartment closes. |
| 16 | IN | OUT SW | Input pin; goes low when disc compartment opens. |
| 17 | IN | FOK | Focus OK signal input pin. |
| 18 | IN | WFCK | WFCK (Write Frame Clock) input pin. |
| 19 | IN | GFS | Guard Frame Sync input pin. High is input when disc data can be read in normally. |
| 20 | IN | SUB Q | SUB Q signal (selection address, emphasis data, etc.) input pin. |
| 21 | - | GND | Ground |
| 22 | IN | SENSE | IC201, IC301 SENS output input pin. |
| 23 | IN | Q CHECK | Input pin for SUB Q CRC results output from IC307. |
| 24 | OUT | LATCH | Latch output pin for serial data to IC201, 307. |
| 25 | OUT | DIRECT | Output pin to IC201 during track jump. Normally high, reverses track jump pulse direction at low. Next, for high set to normal tracking mode. Outputs low for a set time at detection of TZC rise and fall. |
| 26 | OUT | DATA | Serial data output pin to IC201, 307. |
| 27 | OUT | CLOCK | Serial data transmission clock output pin to IC201, 307. |
| 28 | OUT | SLED G | Output pin; controls sled motor gain. Normally high. Low during access. |
| 29 | IN | SLED S | Low when sled motor operates. Inputs high when it stops. |
| 31 | OUT | Q INT | Trigger output pin for data sent to IC302. |
| 32 | OUT | S ACK | Acknowledge signal output pin for IC302 M REQ signal. |
| 33 | IN | M REQ | IC302 M REQ signal input pin. |
| 34-37 | IN/OUT | CMD0-CMD3 | I/O pin with IC302 data. |
| 38 | OUT | LD ON | Output pin; controls laser diode ON/OFF. |
| 39 | OUT | LOAD IN | Output pin; drives loading motor to the close side. |
| 40 | OUT | LOAD OUT | Output pin; drives loading motor to the open side. |
| 41 | OUT | EPS | Detects disc emphasis, switches emphasis ON/OFF. Output pin. |
| 42 | - | VDD | Power supply pin (5 V) |

The Q data called SUB Q is used for the TOC Table of Contents) data in the lead-in area, mode control signals such as preemphasis during the selections, and track number (TNO), index number, play time, etc. display and address data.

This data is input to mechanism control IC (IC303) SUB Q pin from IC307, and is written into the RAM by 8 bit units. Data is sent from the mechanism control IC (IC303) to the master control IC (IC302) as required, and is displayed. Data is sent from the mechanism control IC to the master control IC about 8 times in 1 second.

1-4. DIRECT SEARCH

On this set, a linear motor is used for the sled motor, so that besides 100, 10 and 1 track jump, the optical pick-up can be moved directly to the address specified by the microcomputer. (direct search). (On the conventional CD player, only the objective lens moves, and the optical pick-up follows it by servo in order to perform 100, 10 and 1 track jump only.) Higher performance access is enabled on this set.

On the conventional CD player, only three data, A0 (MNR of first selection on the disc), A1 (MNR of last selection on the disc) and A2 (leadout track start point) were memorized when TOC data was read in to the microcomputer. However, on this model, the absolute time from the first to the 21st selection is memorized in the microcomputer. This absolute time is converted to track numbers inside the microcomputer, and the track number to be jumped is obtained by subtracting the current address track number from the track number of the selection to be jumped to.

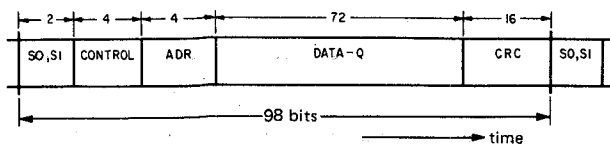
| Frame number | POINT | PMIN, PSEC, RFRAME |
|--------------|-------|--------------------|
| n | 01 | 00, 02, 32 |
| n + 1 | 01 | 00, 02, 32 |
| n + 2 | 01 | 00, 02, 32 |
| n + 3 | 02 | 10, 15, 12 |
| n + 4 | 02 | 10, 15, 12 |
| n + 5 | 02 | 10, 15, 12 |
| n + 6 | 03 | 16, 28, 63 |
| n + 7 | 03 | 16, 28, 63 |
| n + 8 | 03 | 16, 28, 63 |
| n + 9 | 04 | . . |
| n + 10 | 04 | . . |
| n + 11 | 04 | . . |
| n + 12 | 05 | . . |
| n + 13 | 05 | . . |
| n + 14 | 05 | . . |
| n + 15 | 06 | 49, 10, 03 |
| n + 16 | 06 | 49, 10, 03 |
| n + 17 | 06 | 49, 10, 03 |
| n + 18 | A0 | 01, 00, 00 |
| n + 19 | A0 | 01, 00, 00 |
| n + 20 | A0 | 01, 00, 00 |
| n + 21 | A1 | 06, 00, 00 |
| n + 22 | A1 | 06, 00, 00 |
| n + 23 | A1 | 06, 00, 00 |
| n + 24 | A2 | 52, 48, 41 |
| n + 25 | A2 | 52, 48, 41 |
| n + 26 | A2 | 52, 48, 41 |
| n + 27 | 01 | 00, 02, 32 |
| n + 28 | 01 | 00, 03, 32 |
| . | . | . . |
| . | . | . . |
| . | . | . . |

- Frame number: 98 symbol, 1 block No.
- POINT = For A0, PMIN indicates MNR of first selection on the disc. PSEC, PFRAME are "00".
- POINT = For A1, PMIN indicates MNR of last selection on the disc. PSEC, PFRAME are "00".
- POINT = For A2, PSEC, PFRAME indicate lead-out track start point.
- POINT = For 01-06, PMIN, PSEC indicate the absolute time of the selection.

Table A. TOC Structure (Example of a 6 selection disc)

Direct search is performed as follows:

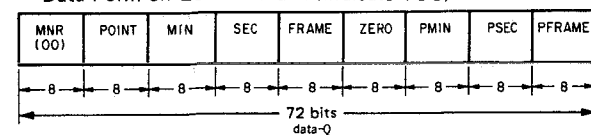
When the search command is input to the mechanism control to (IC303) from the master control IC (IC302) due to key input or remote control input, the mechanism control IC303 converts the current address to track number from the data Q of the current address channel Q (Figure 1) data. (This data Q is always input from pin 20 SUB Q during play.) The address to be jumped to is also converted to a track number, the track numbers are compared, and the number of tracks to be jumped is calculated.



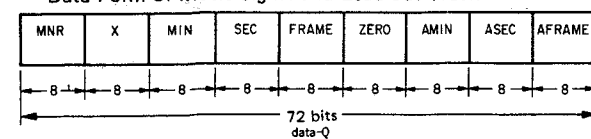
SO, S1: parts of sync pattern.
 CONTROL: Indicates channel number and preemphasis ON/OFF.
 Output from MSB
 0000 - 2CH, no pre-emphasis
 1000 - 4CH, no pre-emphasis
 0001 - 2CH, pre-emphasis
 1001 - 4CH, pre-emphasis
 LSB = 0 at lead-in and lead-out portions.
 ADR: Control bit for DATA-Q. Output from MSB.
 DATA-Q: 72 bits of data; output from MSB.
 CRC: CRC for CONTROL, ADR, DATA-Q. Refer to PCM-F1 Operation Manual for details on CRC.
 Output from MSB.
 Generation multinomial is
 $P(x) = X^{16} + X^{12} + X^5 + 1$

Figure 1. Channel Q Structure

- Data Form on Lead-in Track (indicate TOC) -



- Data Form of Music Signal and Lead-out Track -



MNR: Expresses Music Number as 2 digits of BCD.
 00 → Lead-in track
 01-99 → Music number
 AA → Lead-out track
 X: MNR index, expressed as 2 digits of BCD.
 1 MNR is divided into 100. The method of division is determined by the software, and numbering is in order from "00-99". Does not exist on lead-in track.
 00 → Pause encoding
 Applies pause. There is 2-3 seconds of pause encoding at the top of the selection.

01-99 → Sub-division number.

X = 01 on the lead-out track, MNR = 01-99 and X ≠ 00 during a selection. Initial value is "01", then increases by ones.

ZERO: All these 8 bits are "0".

MIN, SEC, FRAME: Selection running time is expressed by BCD 6 digits. All "0" at beginning of selection. Time increases during the selection, stops at pause. Become "0" at end of pause. Time increases on lead-in and lead-out tracks. 1MIN = 60 SEC, 1SEC = 75 FRAME (00-74)

AMIN, ASEC, AFRAME: Disc running time is expressed as BCD 6 digits. At start of disc program area, time is "0" and MNR is the first value of that disc. 1AMIN = 60 ASEC, 1ASEC = 75 AFRAME (00-74)

POINT, PMIN, PSEC, PFRAME: Disc table of contents is on this part of the lead-in track. As shown in the table, it is recorded continuously and repeatedly on the lead-in track, or MNR = 00 portion. Also, each content is recorded 3 times each.

PMIN, PSEC, PFRAME values each express selection start point. There is ±1 second precision on AMIN, ASEC, AFRAME time axes.

Figure 2. Data Q Structure

Next, the mechanism control IC puts the digital signal processing/CLV servo IC (IC307) CX23035 into counter set mode. By doing this, CX23035 outputs the CNIN pin (17) input signal CNIN/2h (Hz) signal from SENSE pin (18) (COUNT). At this time 41 is set in n, so a signal which is the input signal divided by 82 is output from the SENSE pin.

Then tracking and sled servo go off, focus servo goes on and the optical pick-up is moved quickly by the linear (sled) motor. When this happens the RF amp (IC201) CX20109 MIRR pin (18) mirror output is as shown in Figure 3. (For example, if there are 20000 tracks from the innermost to outermost circumference, and access is done in 0.5 seconds, mirror output is 40 kHz, which is too fast for the mechanism control IC to read.)

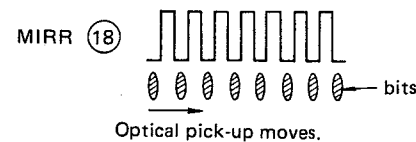


Figure 3. Mirror Output for Direct Search

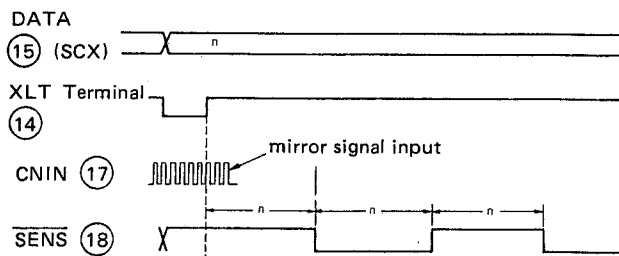
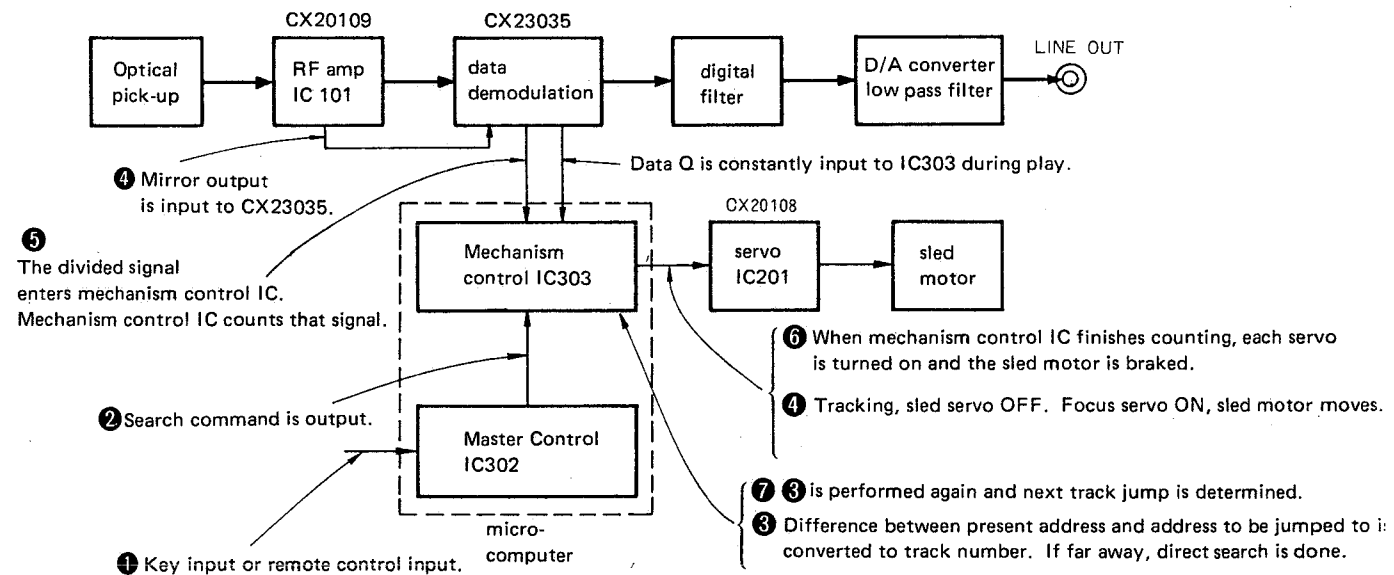


Figure 4. Count Signal Timing

This mirror output is input to CX23035 CNIN pin (17), then is divided into 41 and output from SENSE pin (18) to the mechanism control IC SENSE pin (22). (At this time, it is divided and can be read.) This input signal is counted by the mechanism control IC at rise or fall and is converted to the number of tracks to be jumped. For example, for a 1000 track jump, consecutive comparison, such as $1000/82 \approx 12$ is done and when that value is reached, each servo is turned on and the optical pick-up is braked. Then DATA-Q is read, converted to track number, and if within a certain range, 100, 10, 1 track jump are performed and convergence is done. Outside of that range, direct search is performed again.



1-5. LINEAR MOTOR AND SERVO CIRCUITS

A linear motor is used for optical pick-up transportation mechanism on this model.

Figure a shows the optical pick-up transportation mechanism. The linear motor drive coil (sled coil) is part of the optical pick-up and performs transporta-

tion operation. There is a sensor coil mounted on the opposite side of the linear motor. This detects when the optical pick-up reaches the innermost circumference and stops the linear motor.

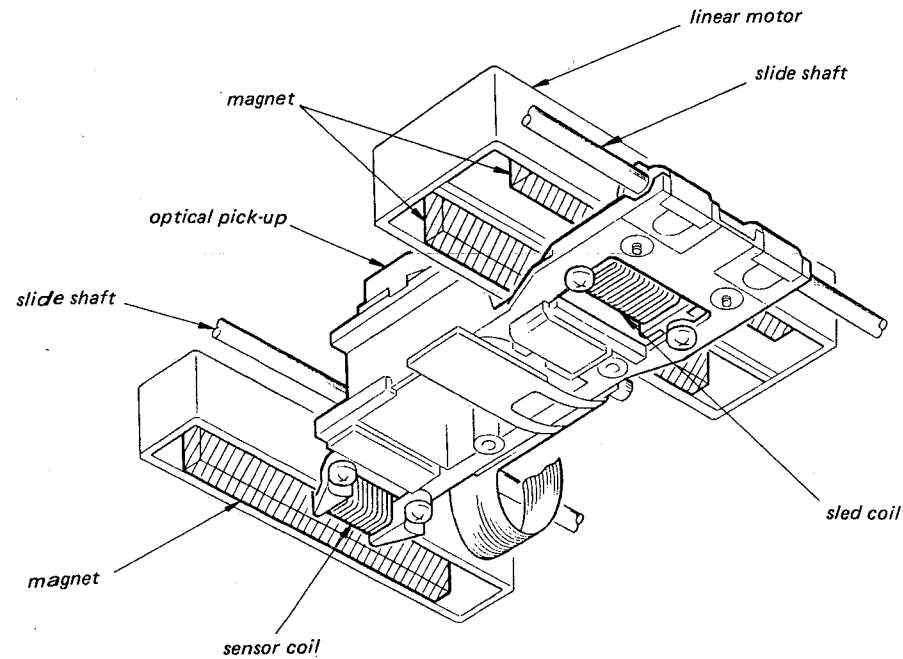


Figure a. Optical Pick-up Transportation Mechanism

The linear motor is structured with a coil wound around a yoke plate and a magnet at both ends. Figure b shows the theory of operation. The coil re-

ceives force in the direction of (A) when current flows to the coil in the magnetic field.

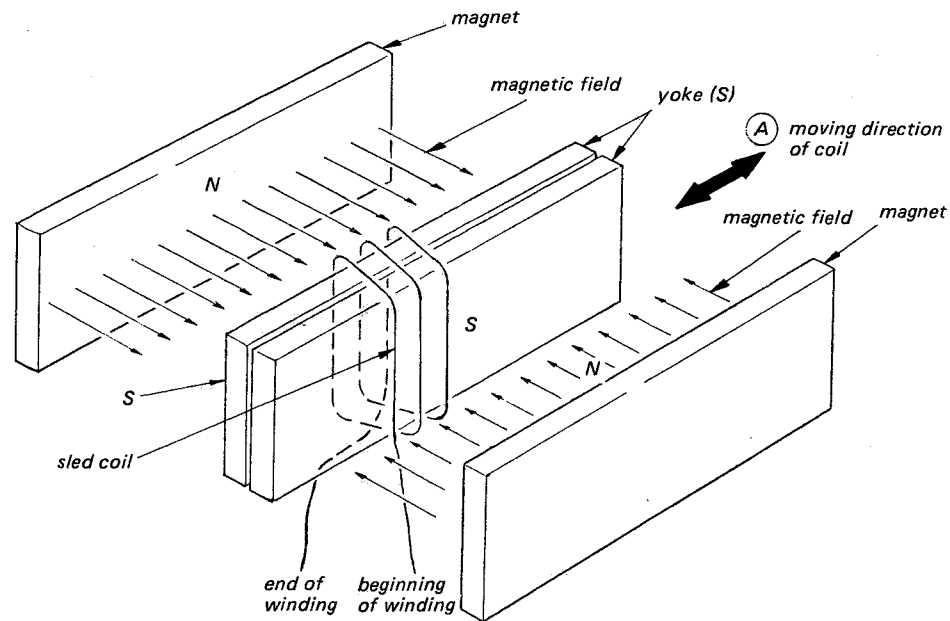
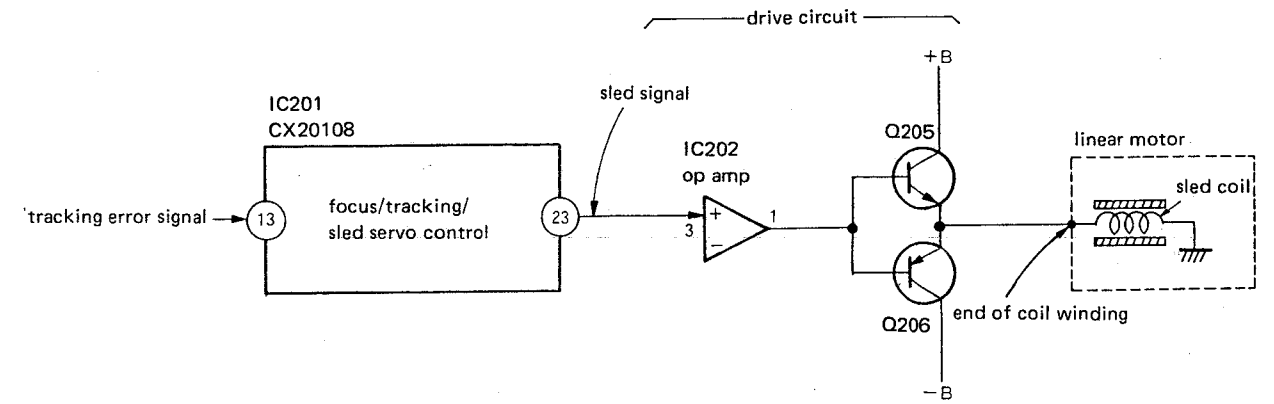


Figure b. Theory of Linear Motor Operation

The linear motor servo circuit receives a tracking error signal at CX20108 (IC201) servo control in order to prevent the optical pick-up laser spot from leaving the pit track, and outputs a sled signal. This sled signal drive controls the linear motor. Also, to

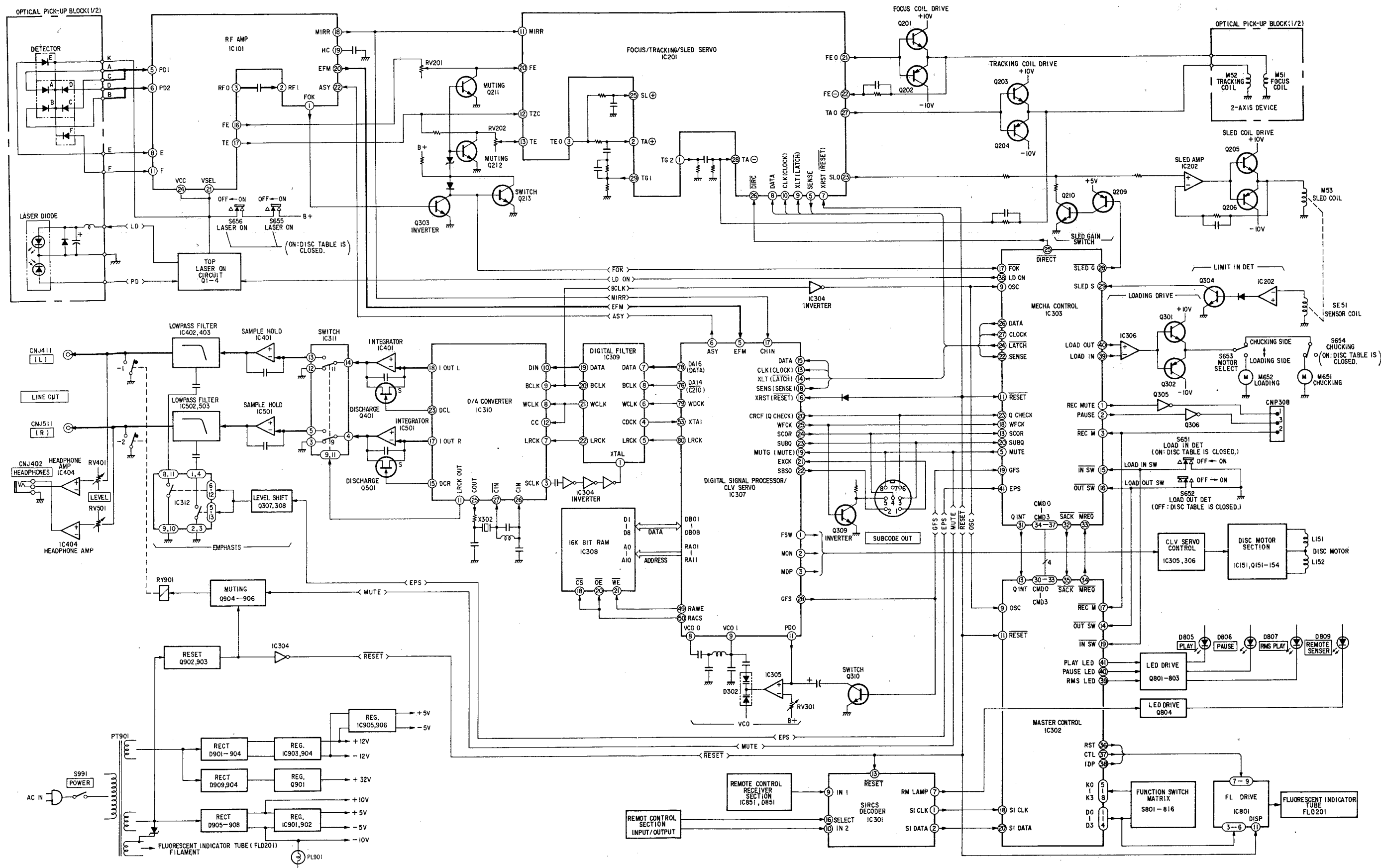
perform 1, 10, 100 track jump, the signal from IC303 (mechanism control) is controlled at IC201 (CX20108) and the linear motor is driven by the sled signal. This allows 1, 10, 100 track jump to be performed smoothly.



Linear Motor Servo Circuit Structure

CDP-302/302ES/520ES CDP-302/302ES/520ES

SECTION 2
BLOCK DIAGRAM



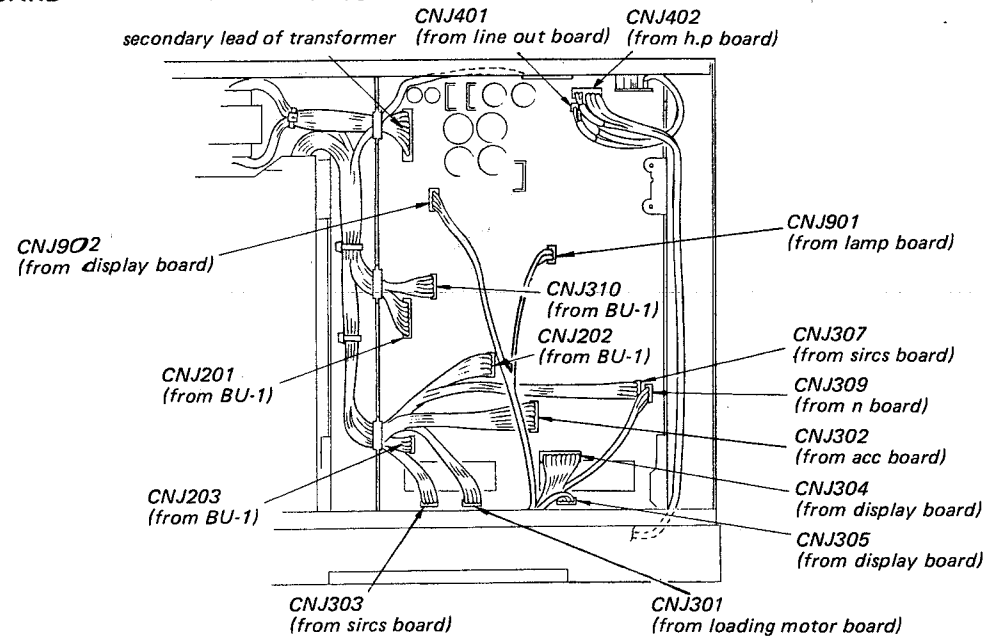
SECTION 3
DISASSEMBLY

3-1. DISASSEMBLY

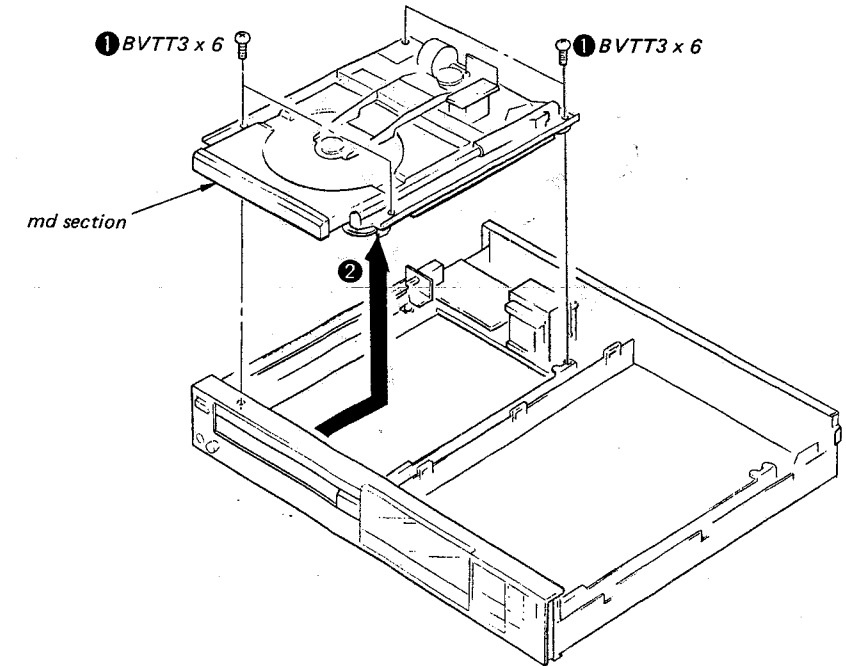
Note: Follow the disassembly procedure in the numerical order given.

- Remove case by taking out seven screws:
both sides, 4 pcs.
rear side, 3 pcs.

MAIN BOARD CONNECTOR LAYOUTS

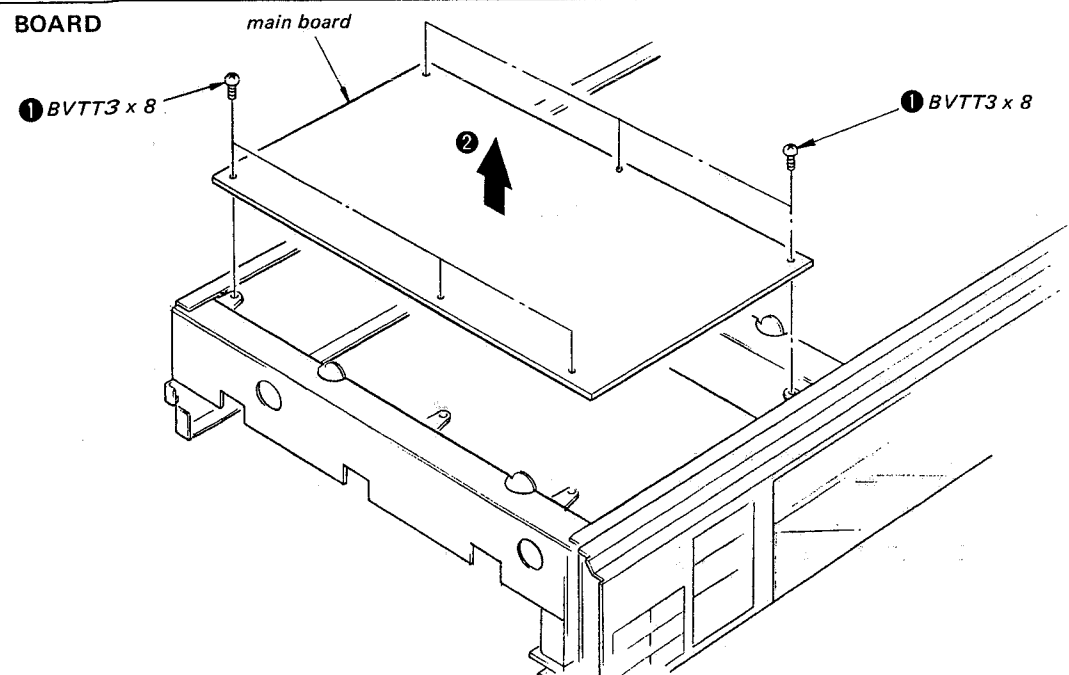


MD SECTION

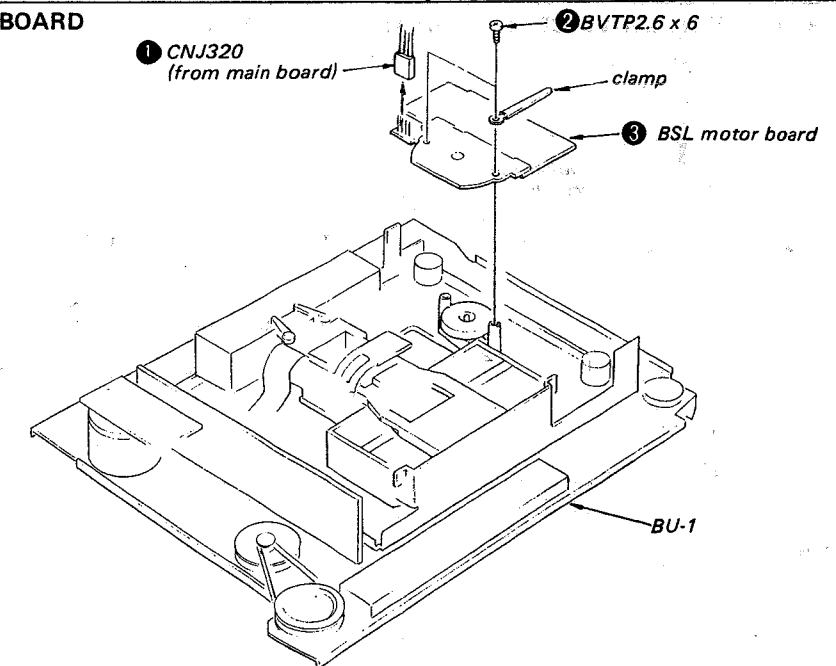


- Remove bottom plate.
(BVTT3 x 8 8 pcs.)

MAIN BOARD

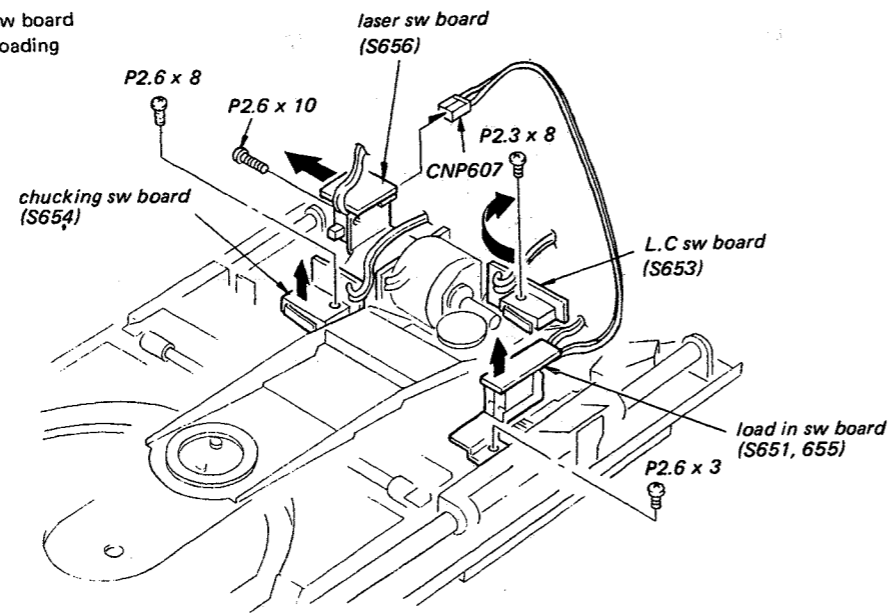


BSL MOTOR BOARD

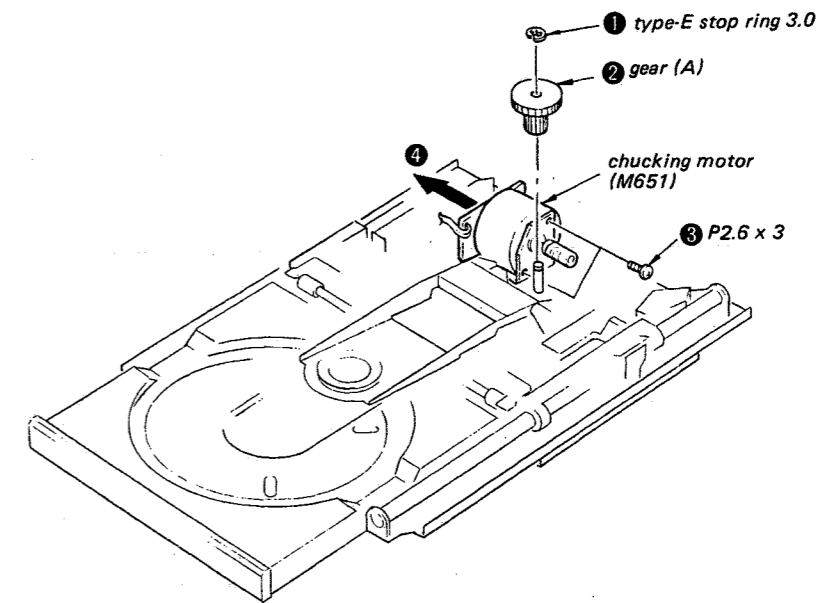


SWITCH BOARDS

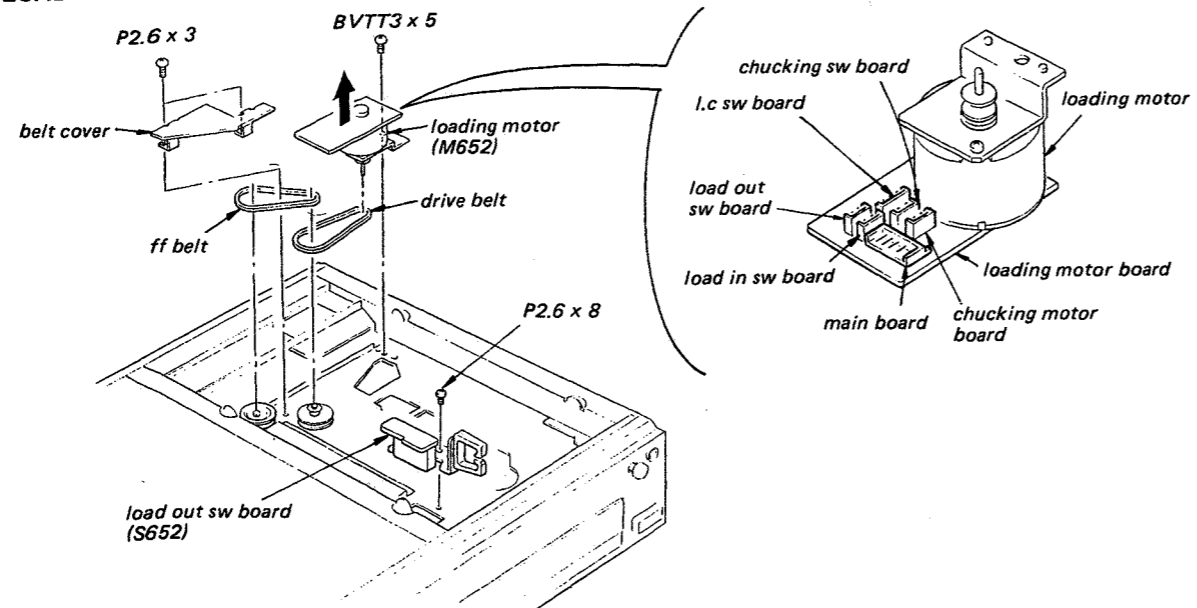
- All wires of each sw board are connected to loading motor board.



CHUCKING MOTOR (M651)

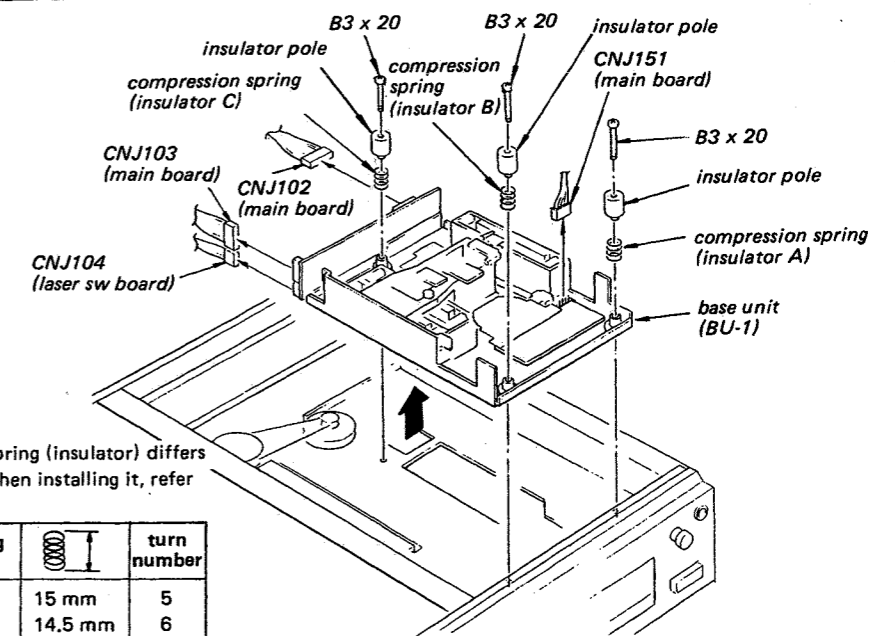



LOADING MOTOR, FF BELT, DRIVE BELT, LOAD OUT SW BOARD



BASE UNIT (BU-1)

- Note (1):** When replacing BU-1, refer to "NOTES ON HANDLING BASE UNIT (BU-1)" on page 5 to prevent damage caused by static electricity.
- Note (2):** Each compression spring (insulator) differs in size and turns. When installing it, refer to the following list.



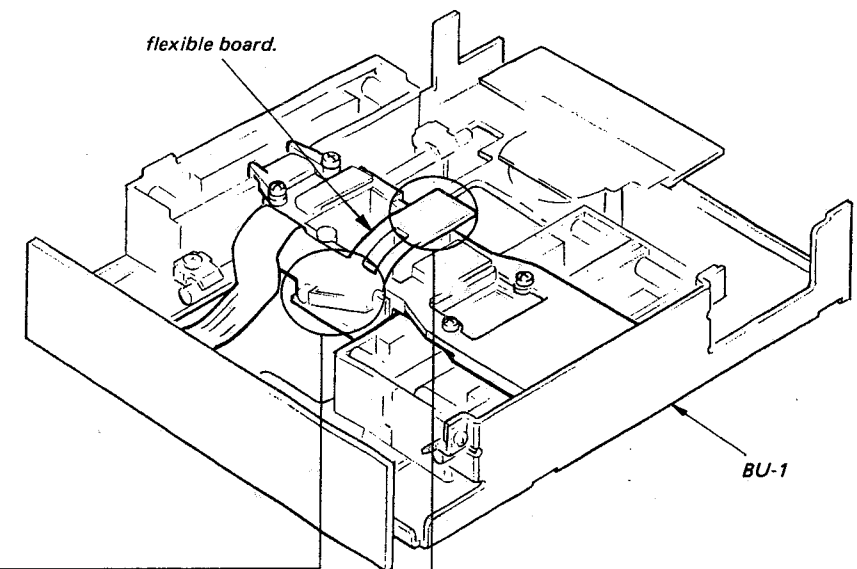
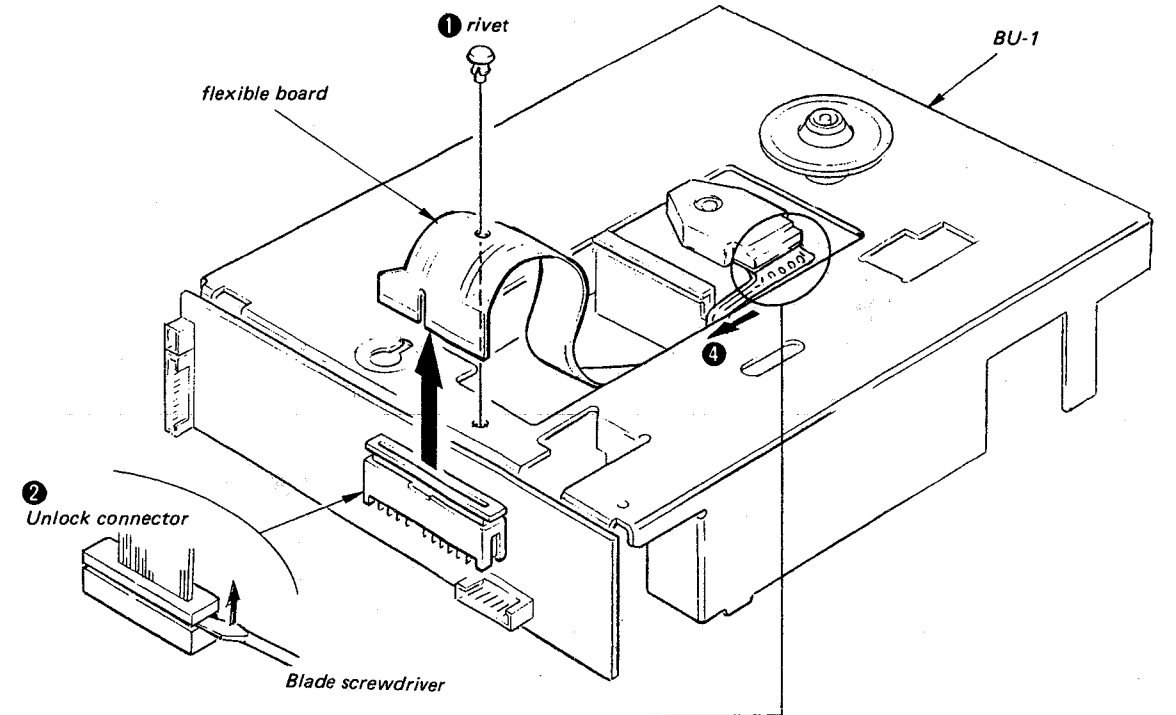
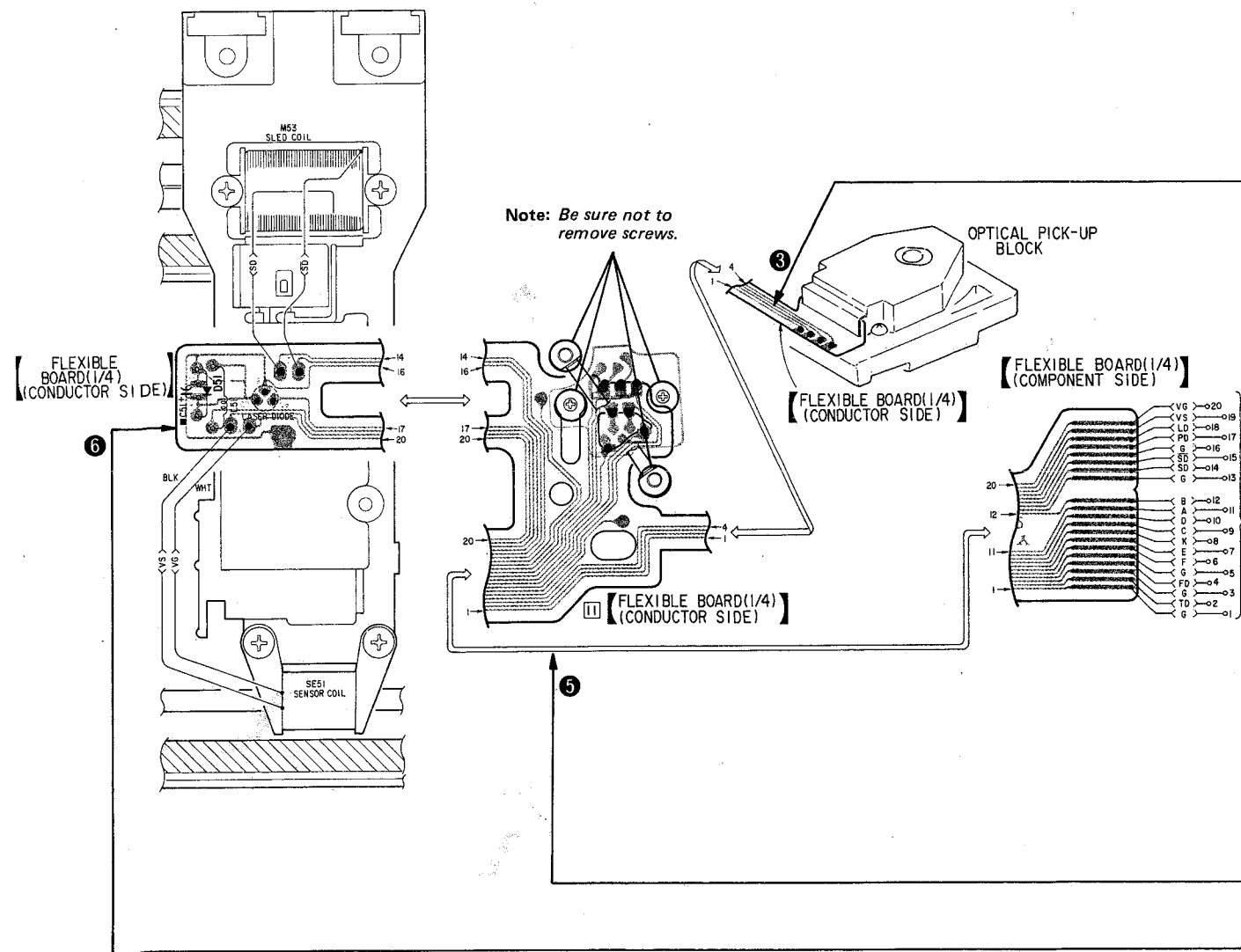
| compression spring (insulator) |  | turn number |
|--------------------------------|---|-------------|
| A | 15 mm | 5 |
| B | 14.5 mm | 6 |
| C | 20.5 mm | 5 |

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

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

FLEXIBLE BOARD

Unsolder marked portion of ref. no. 3, 5, and 6 and remove flexible board.

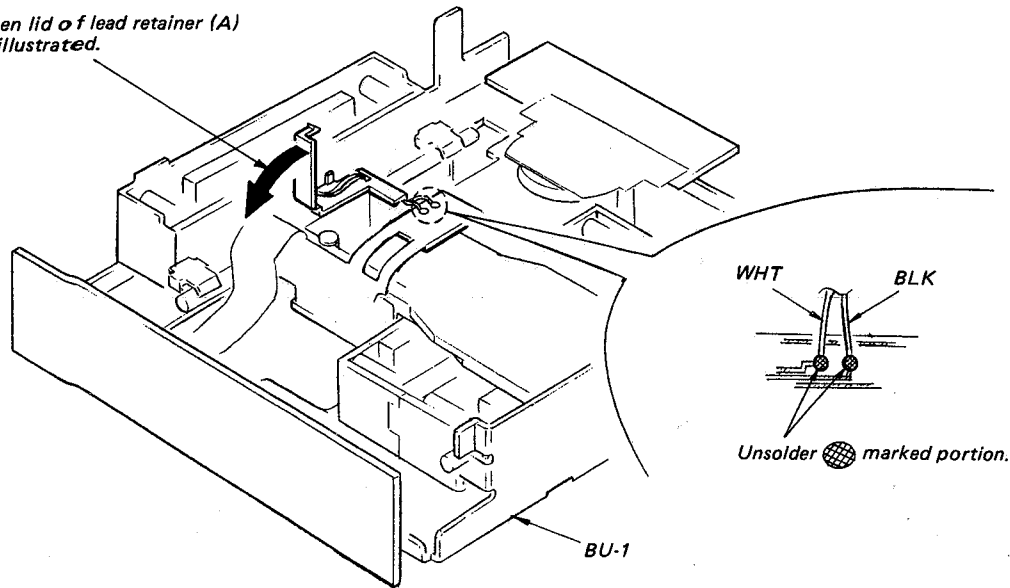


Refer to "NOTES ON HANDLING BU-1 (BASE UNIT)" on page 5 to prevent damage caused by static electricity.

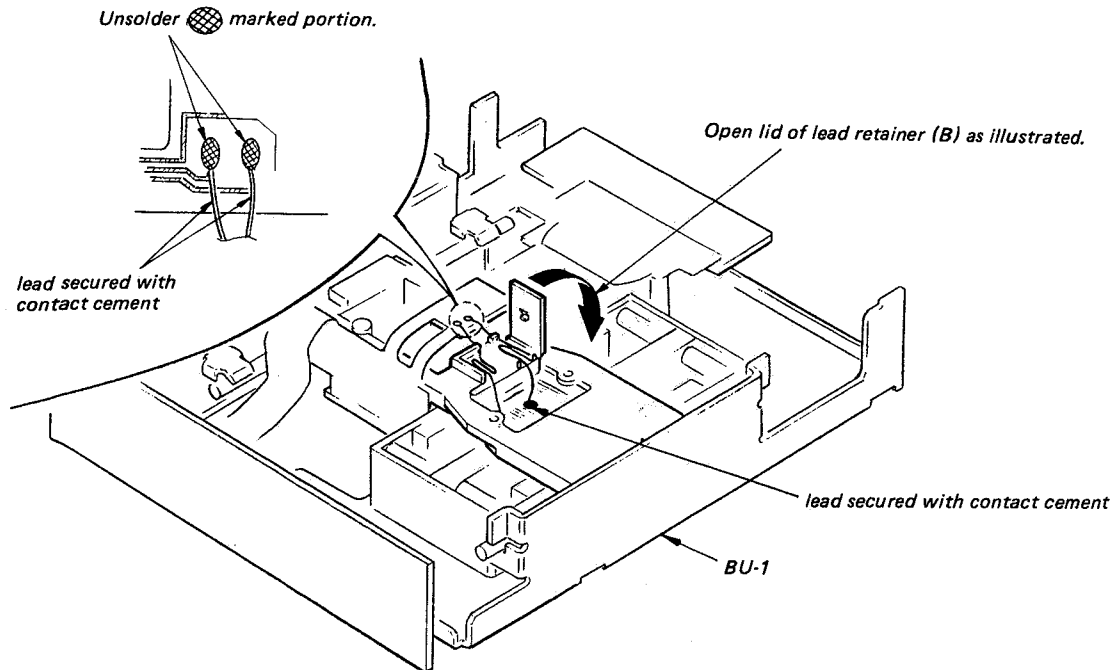
Refer to "NOTES ON HANDLING BU-1 (BASE UNIT)" on page 5 to prevent damage caused by static electricity.

SLED/SENSOR COIL (1)

Open lid of lead retainer (A) as illustrated.



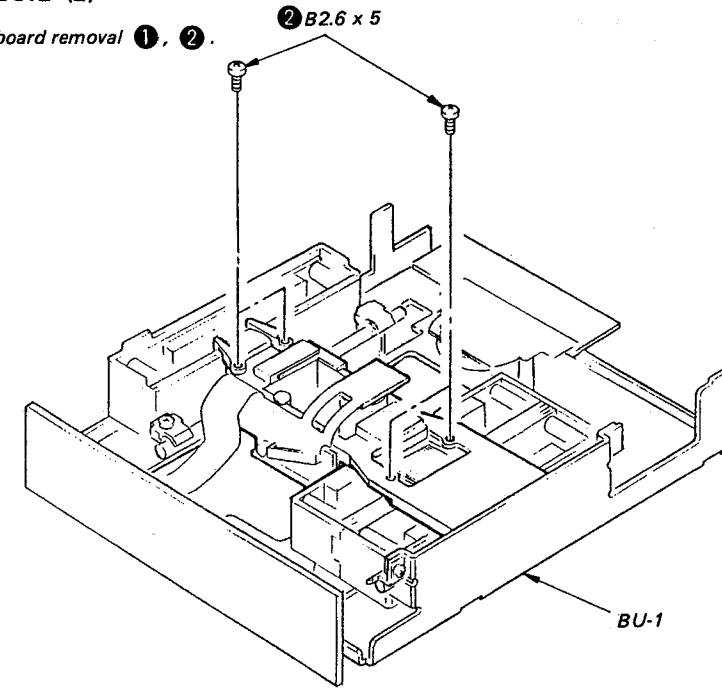
Unsolder marked portion.



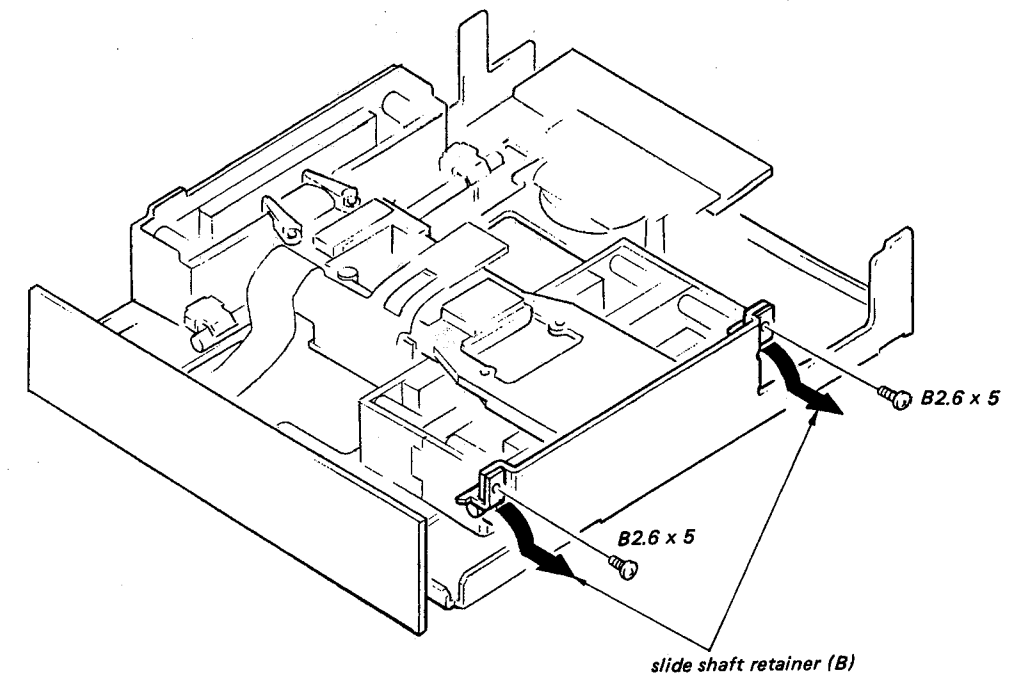
SLED/SENSOR COIL (2)

1 Perform flexible board removal 1, 2.

2 B2.6 x 5

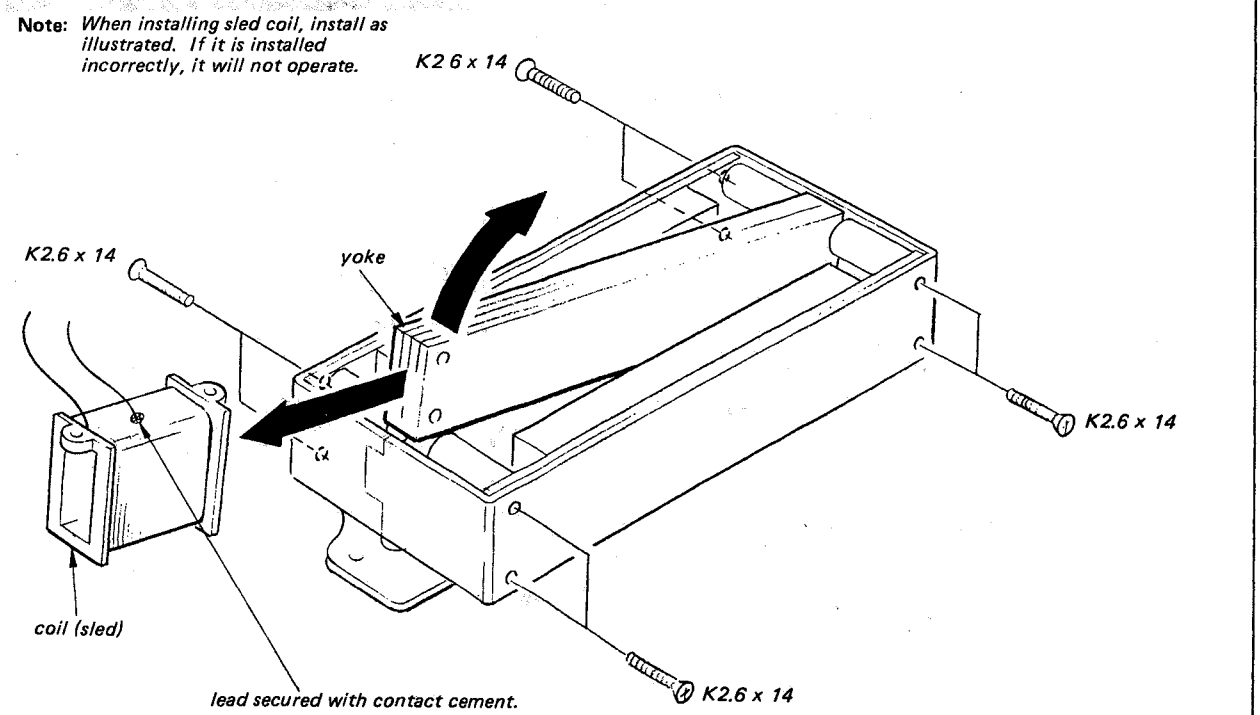
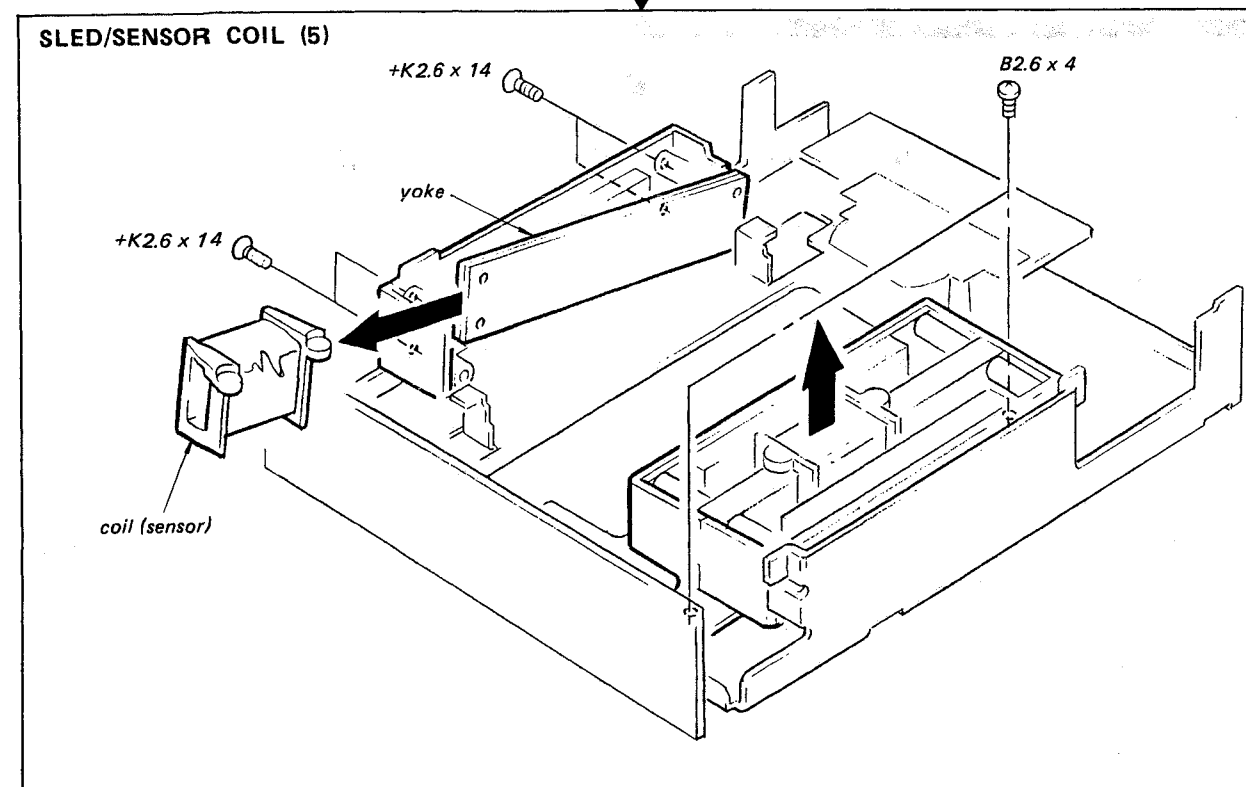
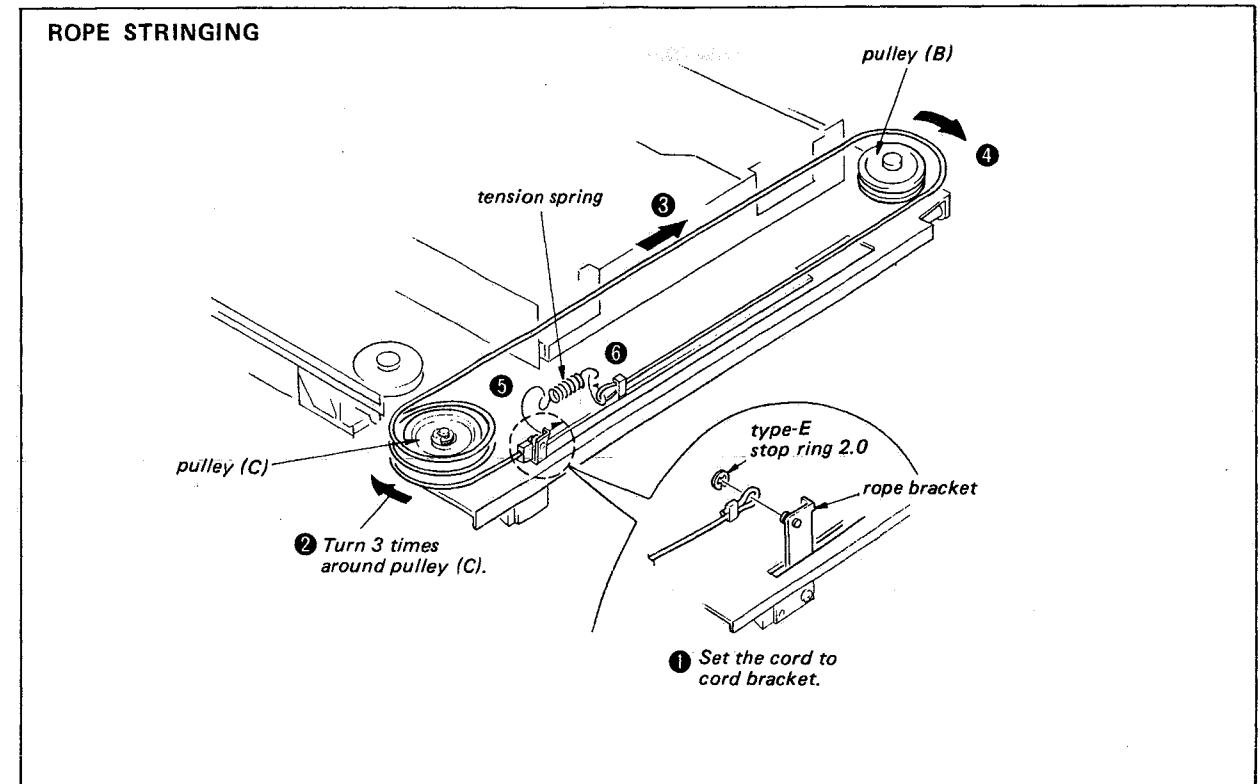
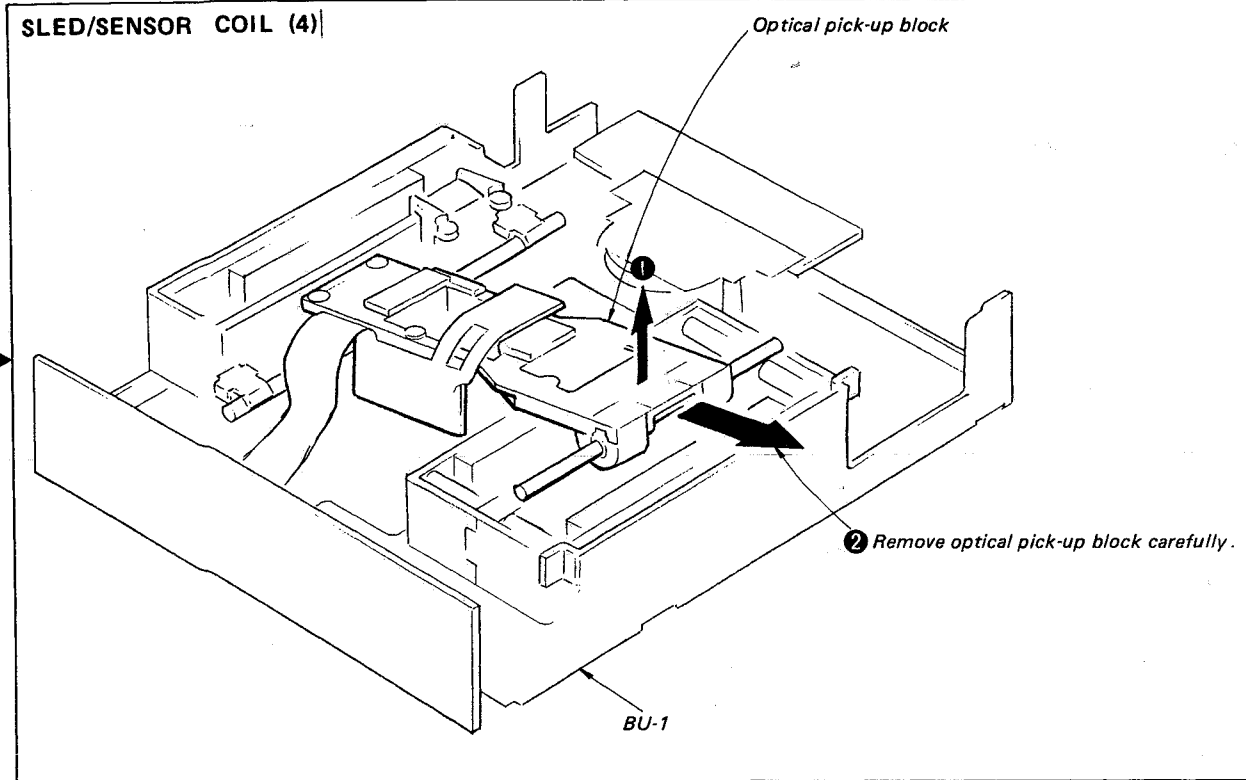


SLED/SENSOR COIL (3)



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

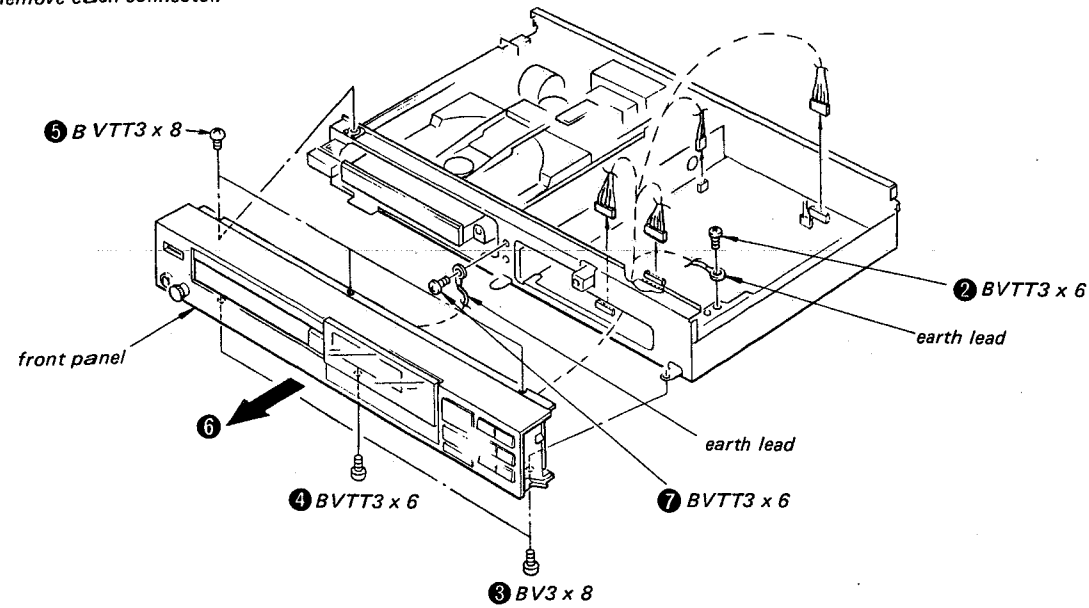
Refer to "NOTES ON HANDLING BU-1 (BASE UNIT)" on page 5 to prevent damage caused by static electricity.



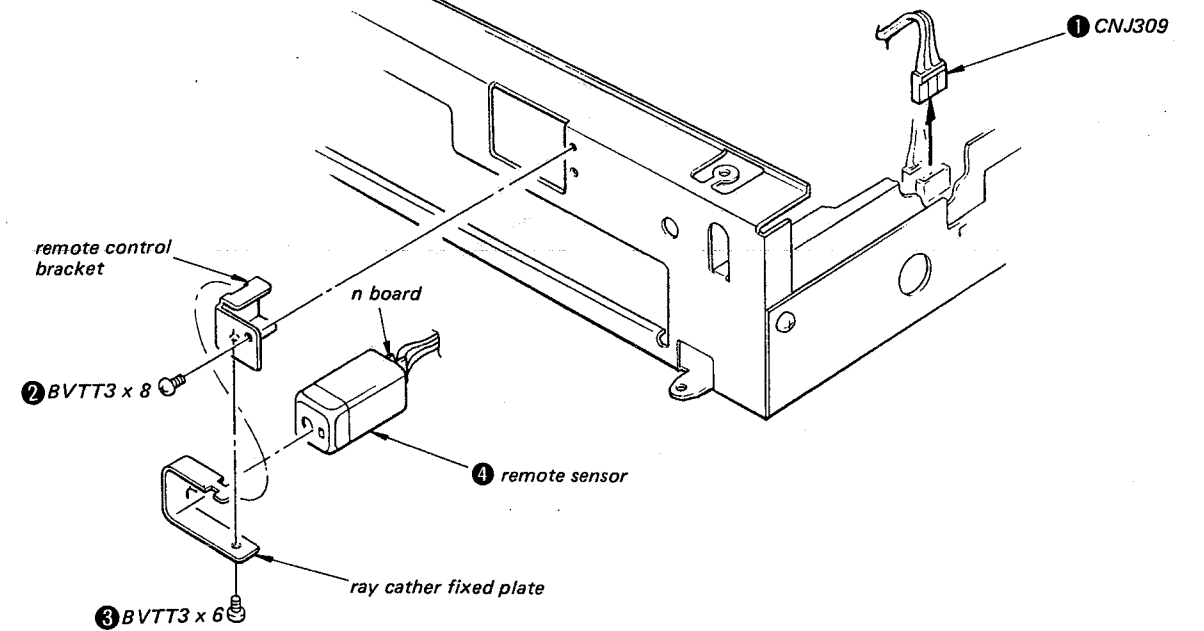
- Remove case by taking out seven screws:
both sides, 4 pcs.
rear side, 3 pcs.

FRONT PANEL

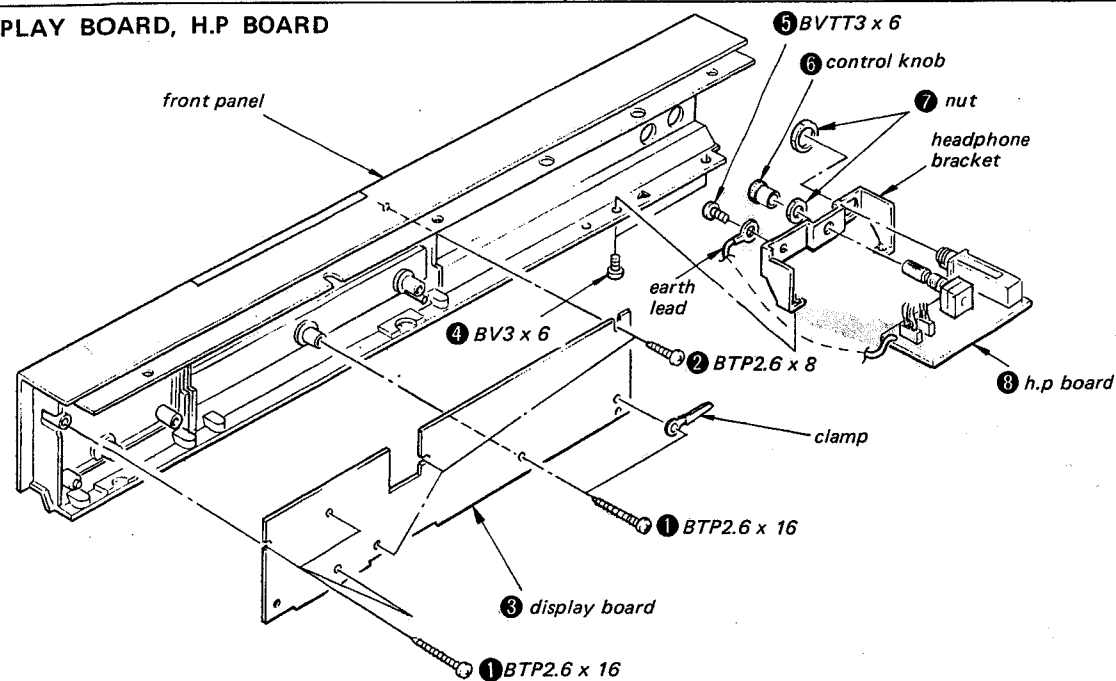
- 1 Remove each connector.



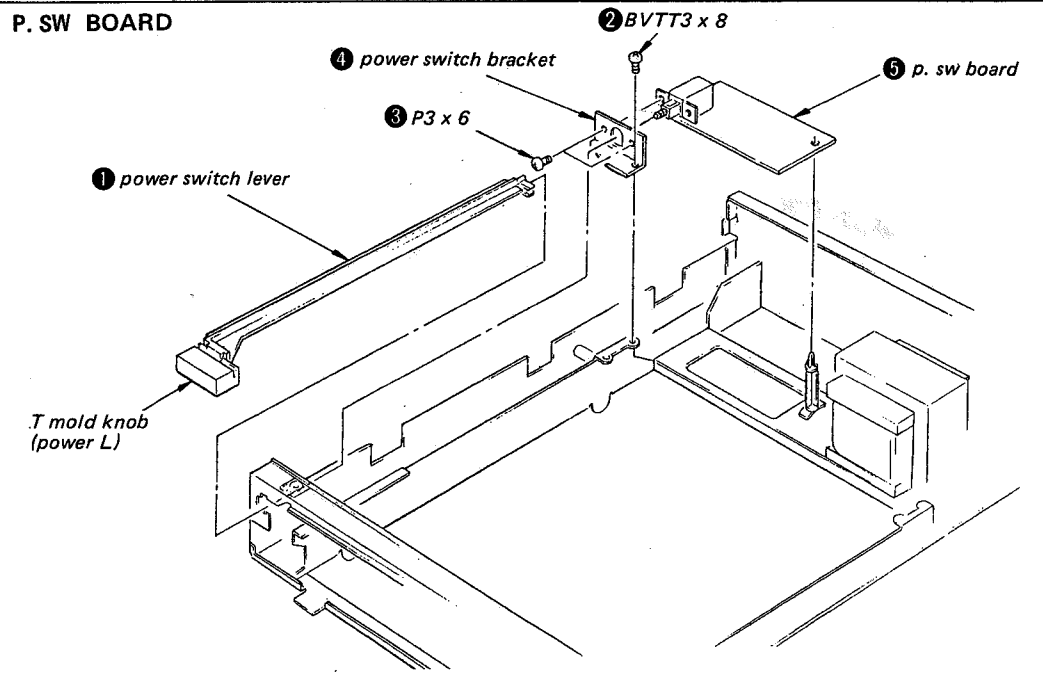
REMOTE SENSOR



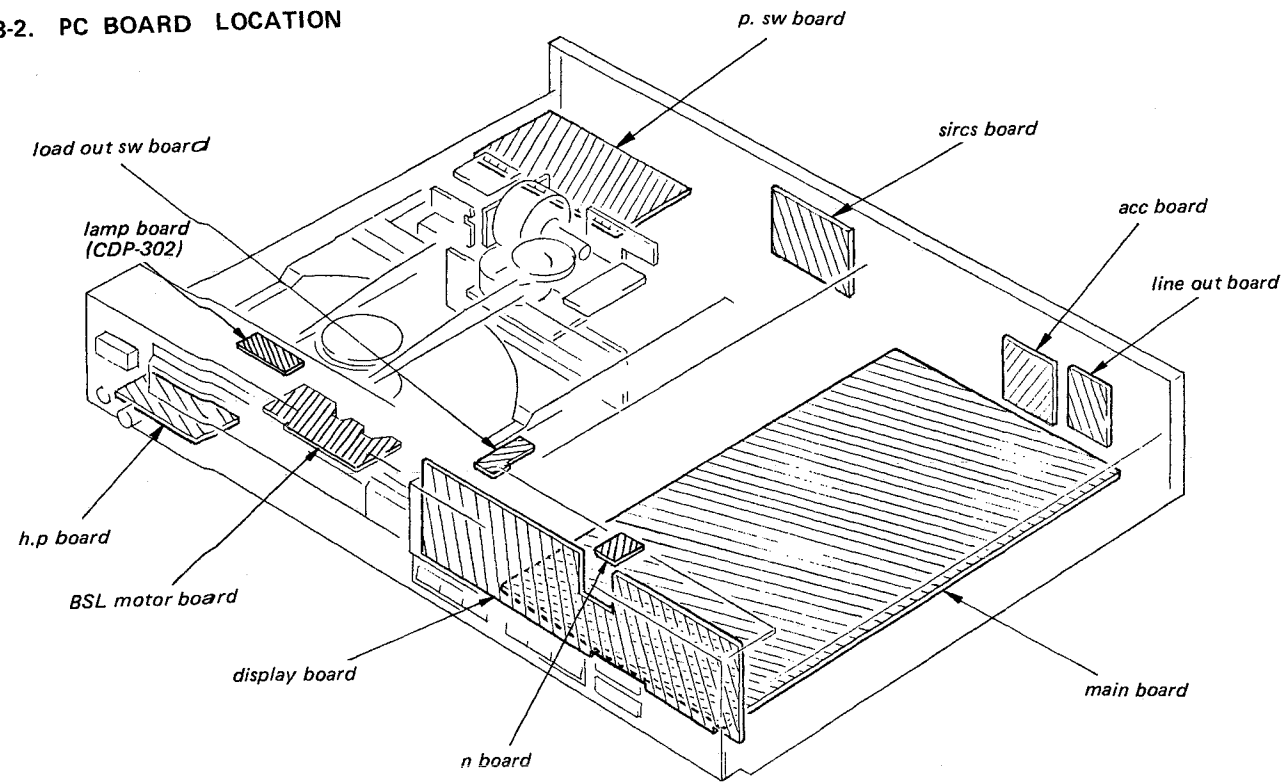
DISPLAY BOARD, H.P. BOARD



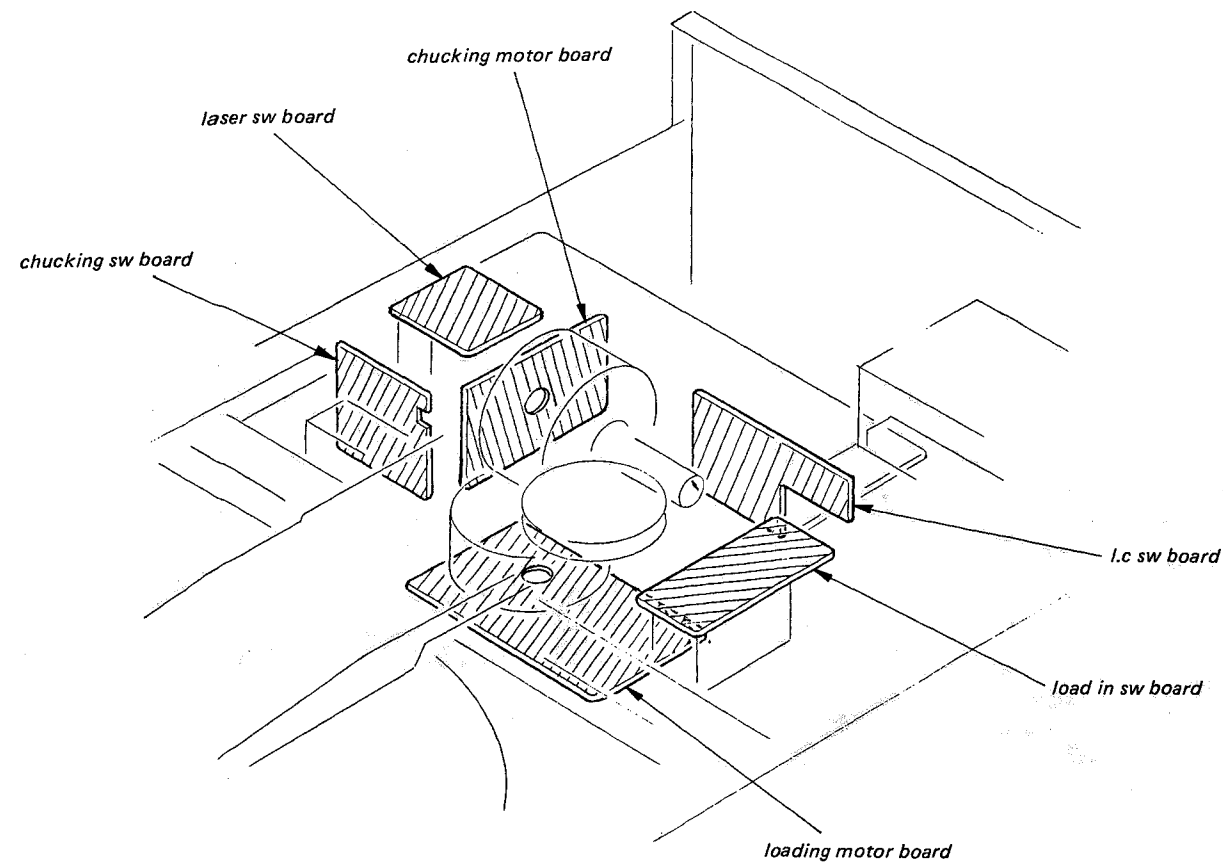
P. SW BOARD



3-2. PC BOARD LOCATION

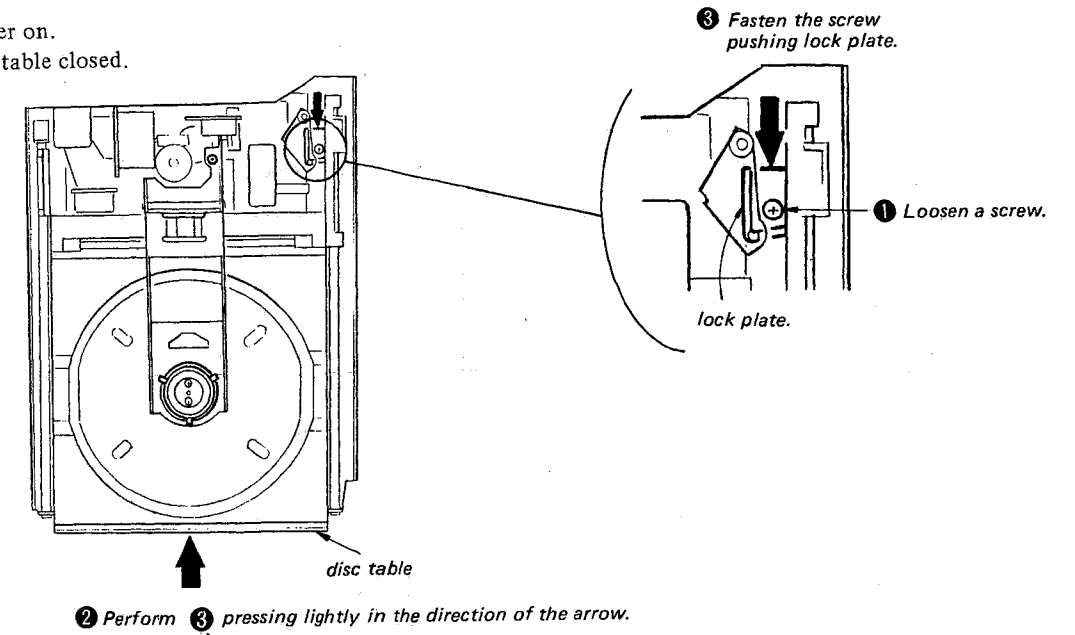


MECHANICAL SECTION



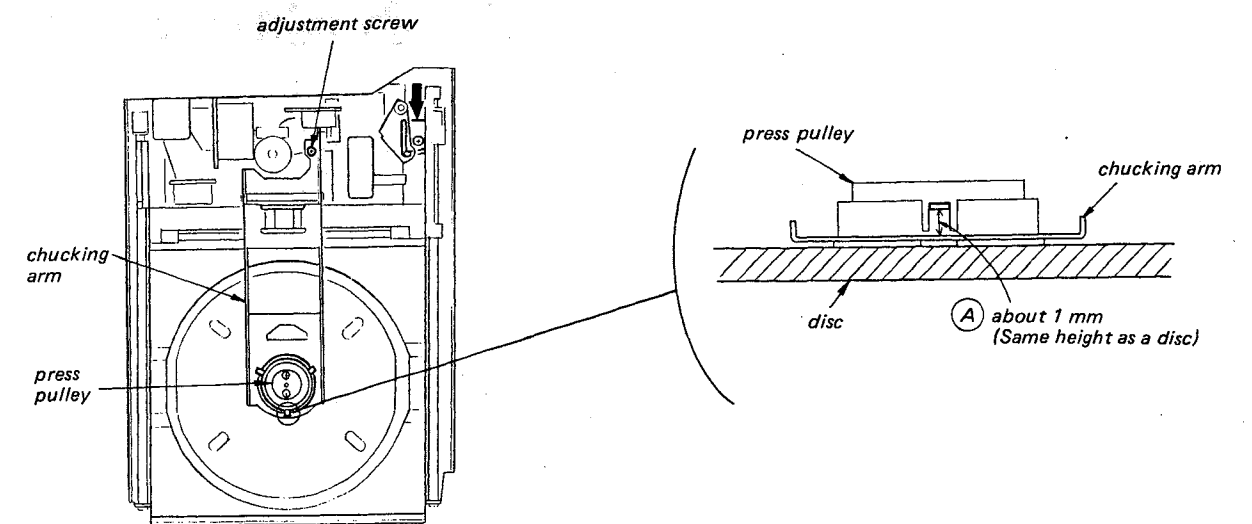
4-1. MECHANICAL ADJUSTMENT
DISC TABLE POINT ADJUSTMENT

- Setting:
- Turn power on.
 - Keep disc table closed.

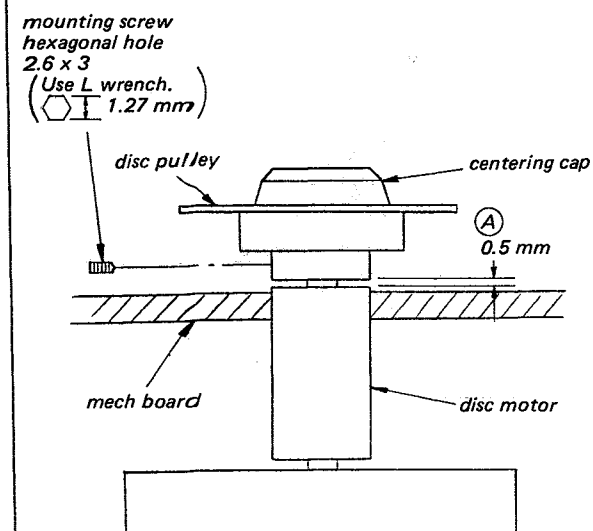


CHUCKING ARM HEIGHT ADJUSTMENT

Adjust the height of portion (A) with disc inserted and disc table closed.
Repeat loading and confirm that chucking arm does not touch disc pulley.



Disc Pulley Height Adjustment



Install the disc pulley so that clearance (A) is 0.5 mm.
Confirm that centering cap moves up and down.

4-2. ELECTRICAL ADJUSTMENTS

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

Adjustment Mode

1. Connect main amp board test point ADJ and GND. This is to prevent the disc table from opening even though pits are not read, by making micro-computer IC303 pin (4) low.
2. Turn POWER switch on. (To reset microcomputer.)

After adjustment, remove the lead wire connecting test points ADJ and GND.

Adjustment Location: main board.

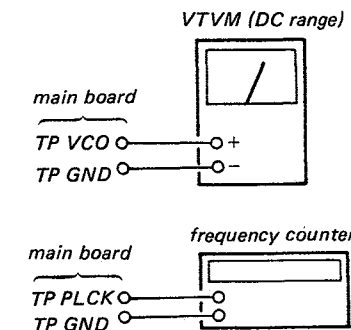


ADJ GND

Connect test points ADJ and GND.

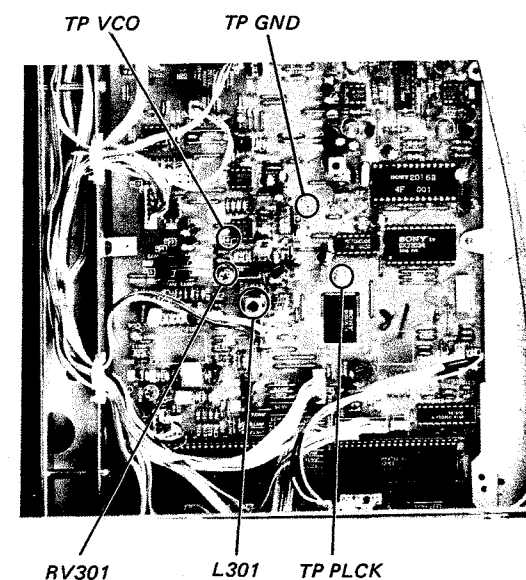
RF PLL Adjustment

Procedure:



1. Turn POWER switch ON. (stop mode).
2. Keep disc table opened.
3. Put set into adjustment mode (See page 37.)
4. Connect VTVM to main board test points TP VCO and TP GND.
5. Adjust main board RV301 so that reading on VTVM is 0V ± 50 mV.
6. Connect the frequency counter to main board test points TP PLCK and TP GND.
7. Adjust main board L301 so that reading on frequency counter is 4.2818 MHz ± 10 KHz.
8. Reconnect lead wires connected in adjustment mode.
9. Put disc (YEDS-1) in and press ▷ PLAY button.
10. Confirm that reading on frequency counter is 4.3218 MHz.

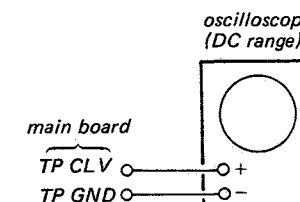
Adjustment Location: main board.



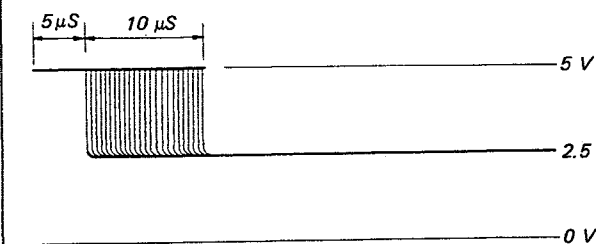
CLV Phase Lock Check

Perform this check when replacing BU-1 (base unit) and press pulley in chucking arm section.)

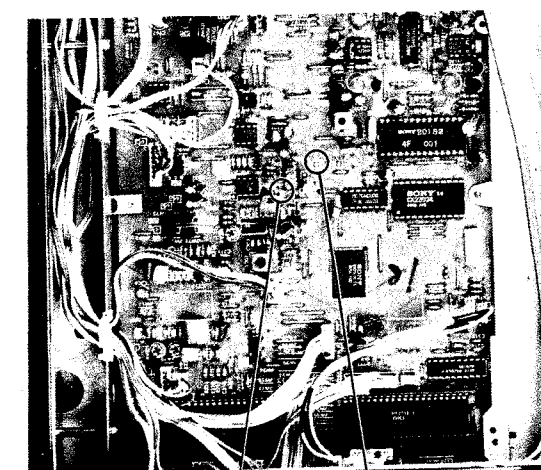
Procedure:



1. Put disc (YEDS-1) in.
2. Connect oscilloscope to main board test points TP CLV and TP GND.
3. Press ▷ PLAY button in TRACK 1 mode.
4. Confirm that the waveform is as shown in the figure below.



Adjustment Location: main board.



TP CLV

TP GND

SECTION 5
5-1. MOUNTING DIAGRAM
DIAGRAMS — BU-1 (BASE UNIT) Section —

CDP-302/302ES/520ES

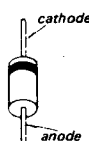
1 2 3 4 5 6 7 8 9

● Semiconductor Lead Layouts

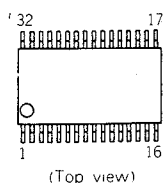
2SD774-5
2SB734-2



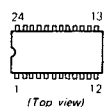
10DF2
10E-2
HZ5CLL
RD2.7E-L1
RD5.1E-B1
RD8.2E-B2
RD33E-B3



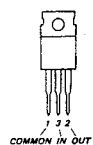
CX20108



CX23034



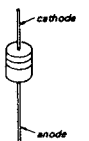
NJM79M12A



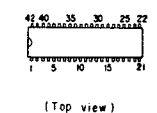
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2SC2001



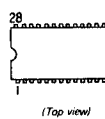
1SS119



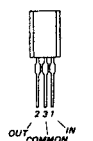
MSM6404A-39RS
MSM6404A-41RS



CX20152



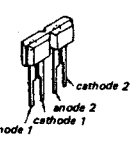
NJM78M05A



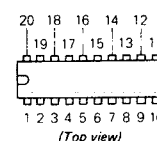
2SA1175
2SC2785-E



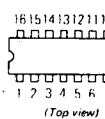
KV1236Z



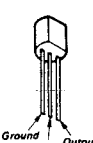
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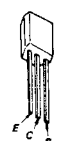
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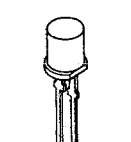
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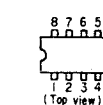
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DTC114ES
DTC144ES
DTC143TS



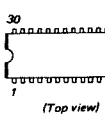
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CX20197
NJM4558D-FA
TDB0353DP
μPC4082C
μPC4558C



M54940P



NJM4560S



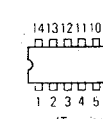
2SK152



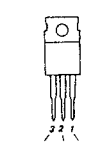
anode cathode



MB84066B
TC74HCU04P



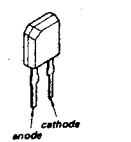
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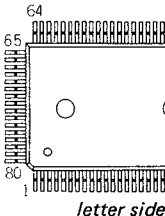
2SA874
DTC143TF



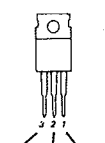
PH302B



CX23035



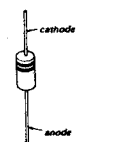
NJM7905A



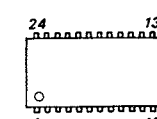
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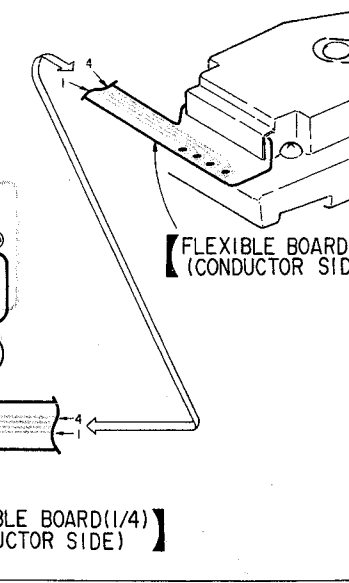
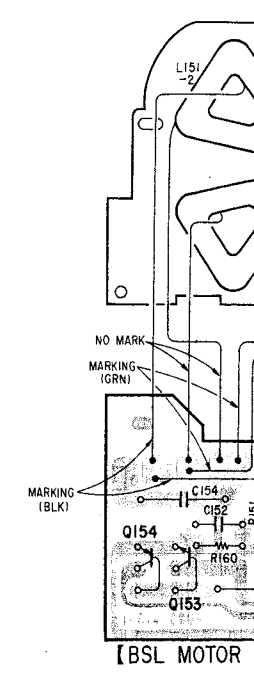
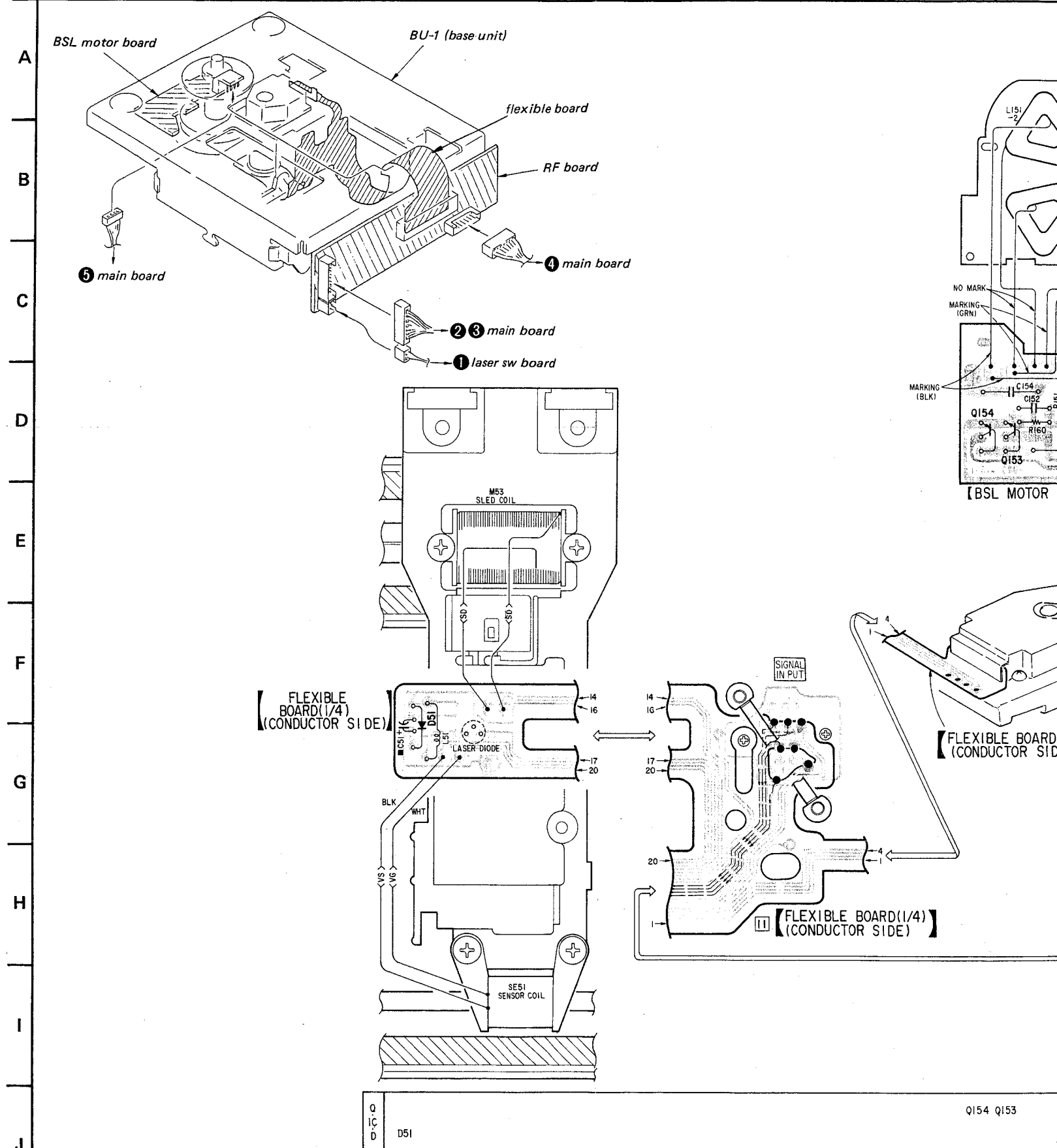
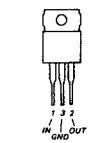
21DQ05



MB8416-20LPF

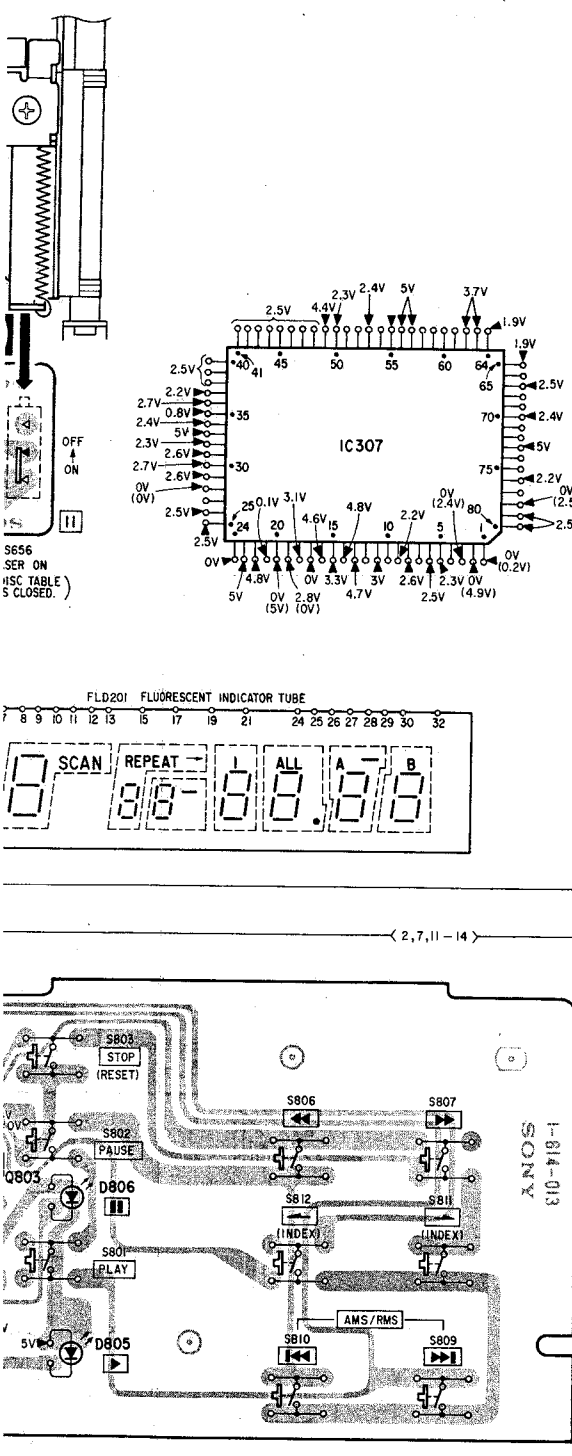


μPC78M12H

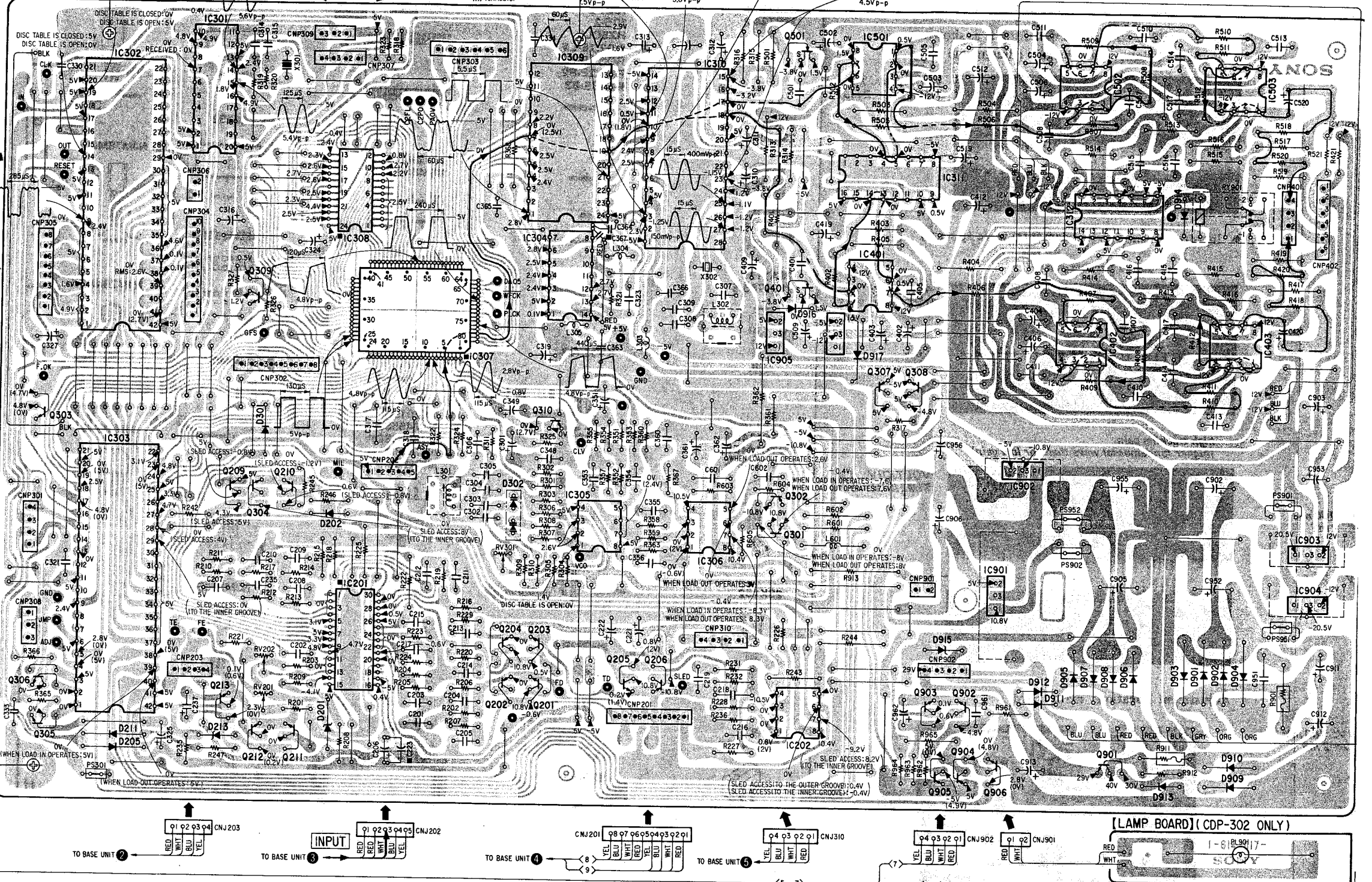


| | | | |
|---|-----|------|------|
| Q | D51 | Q154 | Q153 |
|---|-----|------|------|

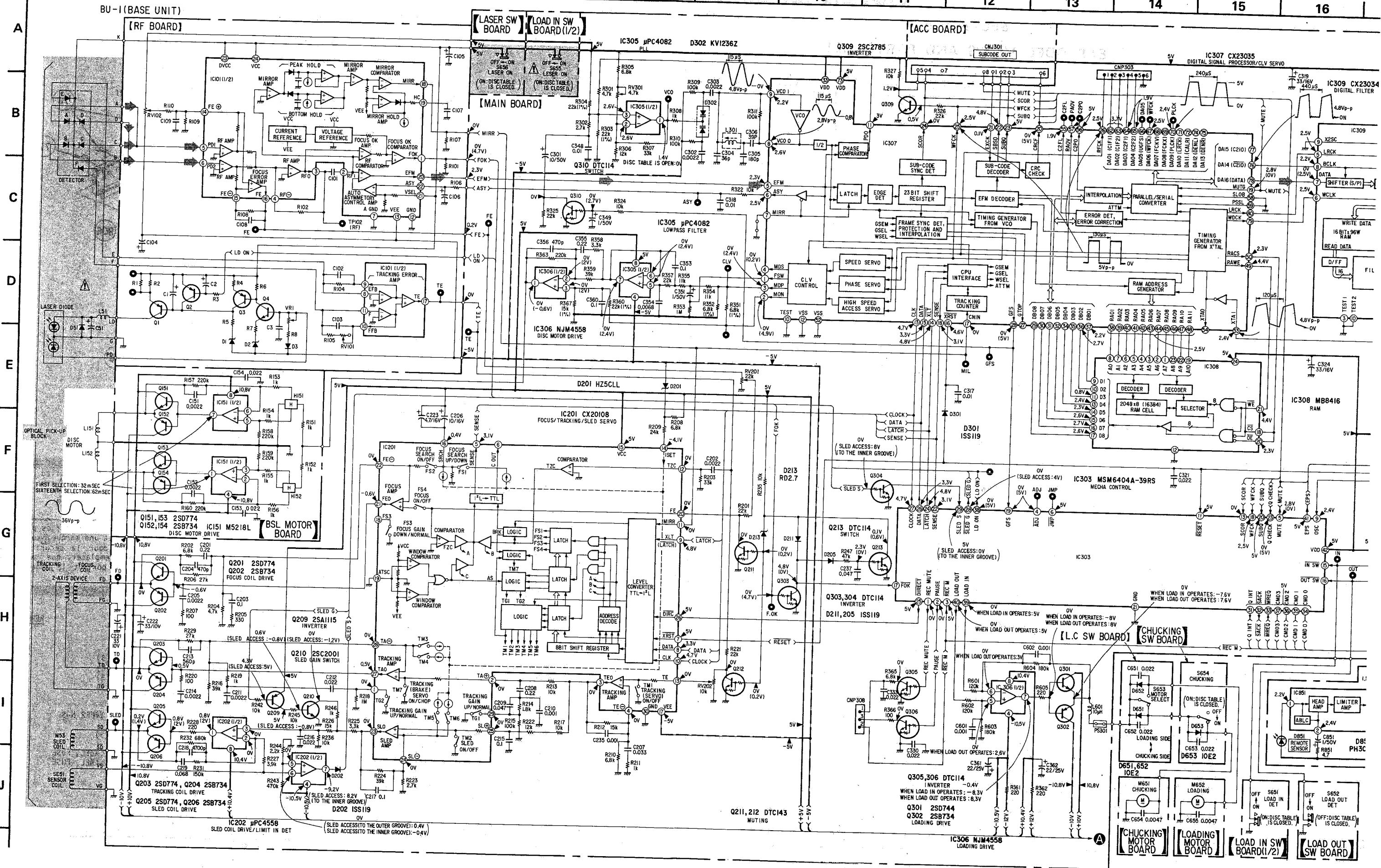
n in
OLT/DIV: 1 V
ME/DIV: 2 mS
0 V
OLT/DIV: 1 V
ME/DIV: 2 mS
0 V
OLT/DIV: 1 V
ME/DIV: 2 mS
0 V

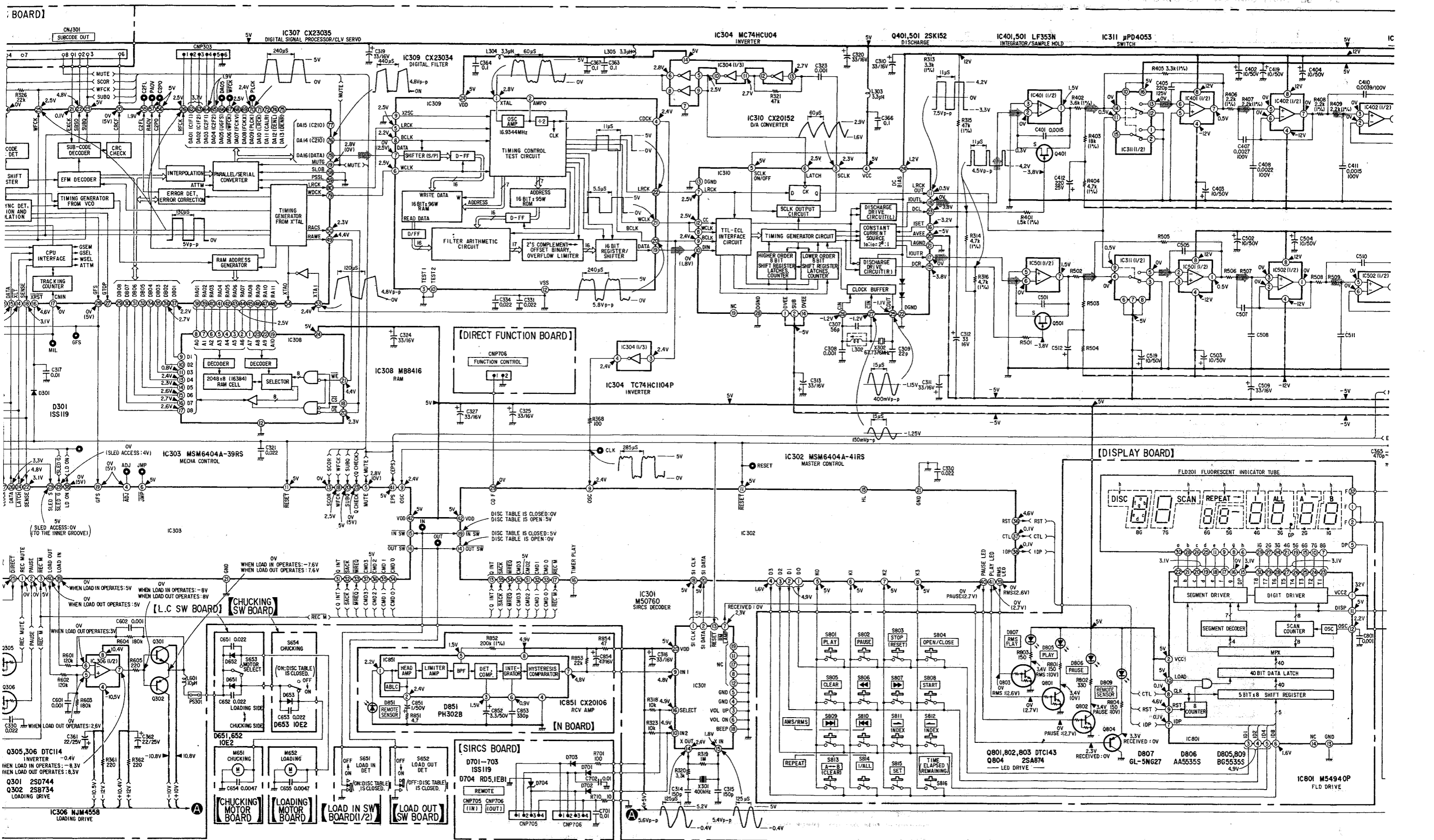


[MAIN BOARD]







| | | | | | | | | | | | | | | | | |
|---------|-------|---------|---------|-------|-------------|-------|----------------|-------|--------------|-------------------------|---------|------------------------|---------------------|-------|-----------------|----------------|
| 154 153 | IC151 | 151 152 | IC302 | IC301 | IC308 | IC307 | IC309 IC304 | IC310 | 501 401 | IC501 IC311 IC401 | 307 308 | IC502 IC312 | IC402 | IC503 | IC403 | IC903 IC904 |
| | | | 303 | 309 | 209 304 210 | | 310 | | IC905 302 | IC906 | | IC901 IC902 | | | | |
| | | | 306 | 213 | 212 211 | IC201 | 204 203 201 | | 205 206 | | | 903 902 905 904 906 | | | | |
| | | | 305 | | | | | | | | | | | | | |
| | | | | 301 | 202 | | 302 | | | | | | | | | |
| | | | 211 205 | 213 | 201 | | | | | | | 915 | | | | |
| | | | | | | | | | | | | | 912 905 907 908 906 | | 903 901 902 904 | 910 909 |
| | | | | | | | | | | | | | | 913 | | |












Note on Schematic Diagram:


Note:

- All capacitors are in μF unless otherwise noted. pF: μF 50 WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in Ω and $\frac{1}{4}\text{W}$ or less unless otherwise specified.
-  : signal path.
- Components for right channel have same values as for left channel.
-  : nonflammable resistor.
-  : B+ bus.
-  : B- bus.
- Voltages are dc with respect to ground unless otherwise noted.
- Readings are taken under no-signal conditions with a VOM (50 k Ω /V).
 no mark: STOP
 (): PLAY
- Voltage variations may be noted due to normal production tolerances.
- Waveforms are taken to ground under no-signal conditions by using oscilloscope.
 Voltage variations may be noted due to normal production tolerances.

Switch

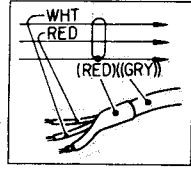







| Ref. No. | Switch | Position |
|----------|---|----------|
| S651 | LOAD IN DET | ON |
| S652 | LOAD OUT DET | OFF |
| S653 | MOTOR SELECT | CHUCKING |
| S654 | CHUCKING | SIDE |
| S655 | LASER ON (CHUCKING SIDE) | ON |
| S656 | LASER ON (LOADING SIDE) | ON |
| S801 |  | OFF |
| S802 |  | OFF |
| S803 | STOP | OFF |
| S804 | OPEN/CLOSE | OFF |
| S805 | CLEAR | OFF |
| S806 | | OFF |
| S807 | | OFF |
| S808 | RMS/START | OFF |
| S809 |  | OFF |
| S810 |  | OFF |
| S811 |  | OFF |
| S812 |  | OFF |
| S813 | A \leftrightarrow B | OFF |
| S814 | I/ALL | OFF |
| S815 | RMS/SET | OFF |
| S816 | TIME | OFF |
| S991 | POWER | OFF |

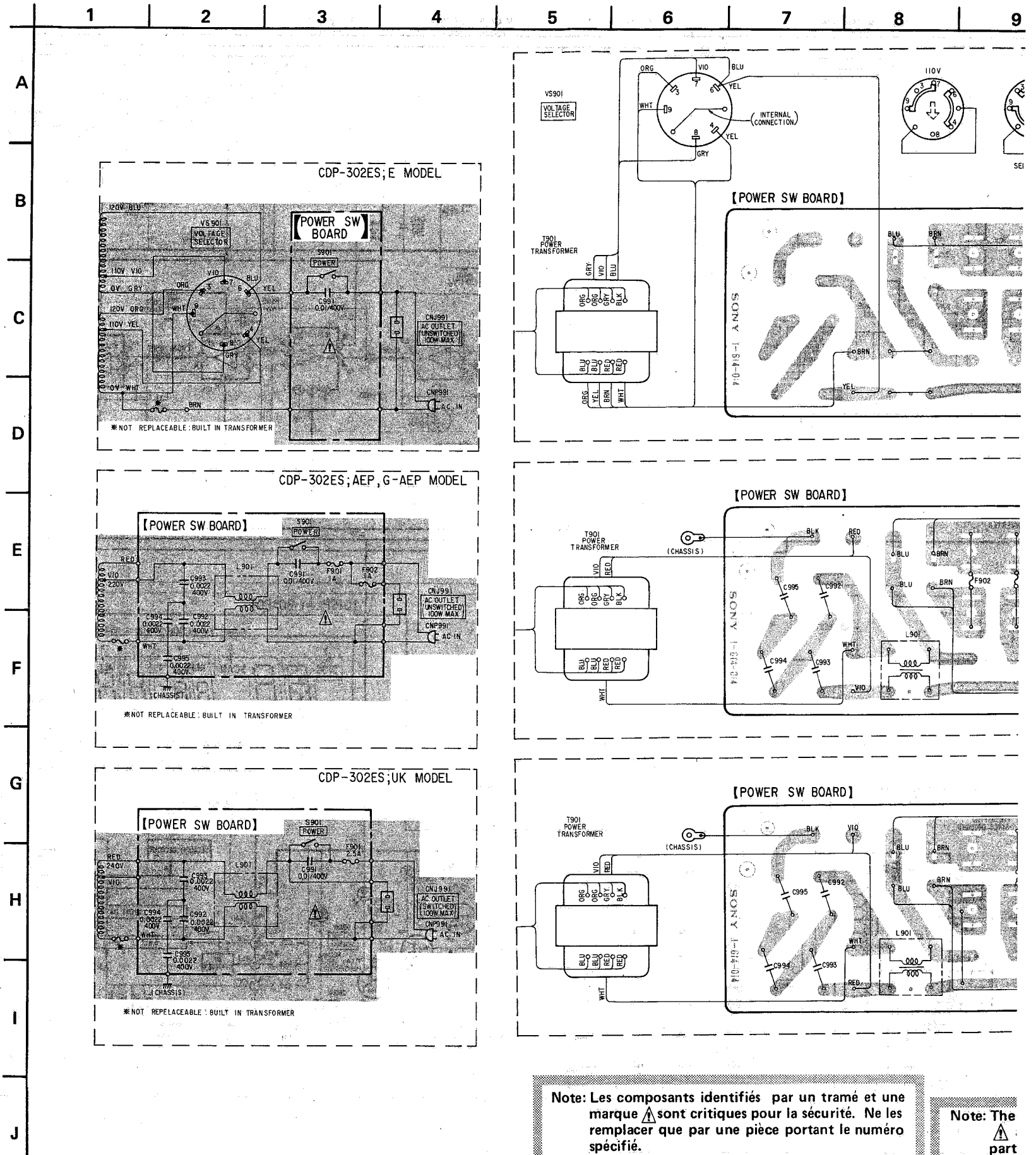
Note: The components identified by shading and mark  are critical for safety. Replace only with part number specified.


Note: Les composants identifiés par un trame et une marque  sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.


Note on Mounting Diagram:

Note:

- Color code of sleeving over the end of the jacket.
-  : WHT, RED, (RED)(GRY)
-  : parts extracted from the component side.
-  : parts extracted from the conductor side.
-  : indicates side identified with part number.
-  : signal path
-  : L-CH signal path
-  : R-CH signal path
-  : B+ pattern



Note: Les composants identifiés par un trame et une marque  sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

Note: The part  are critical for safety. Replace only with part number specified.

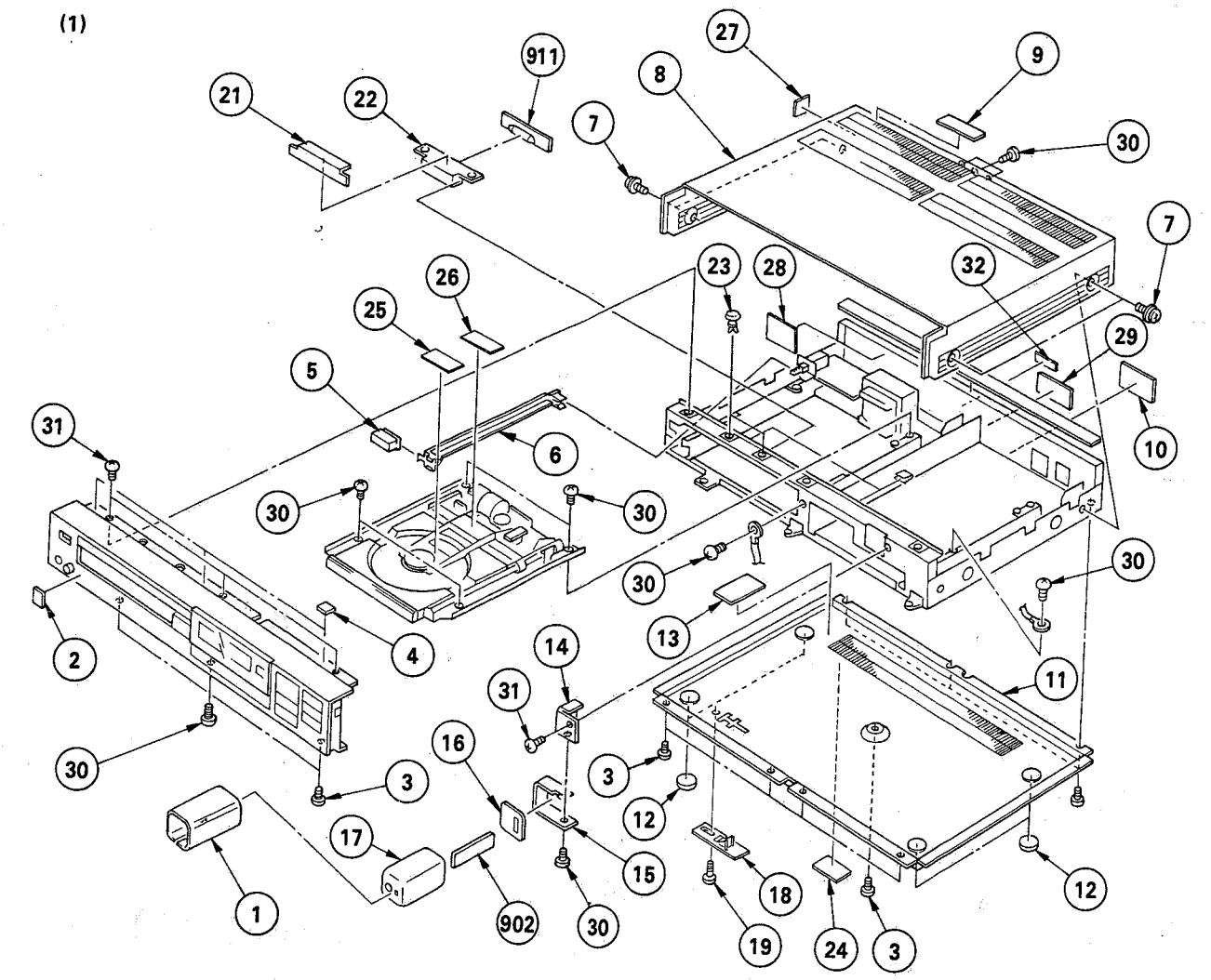
SECTION 6

EXPLODED VIEWS AND PARTS LIST

NOTE:

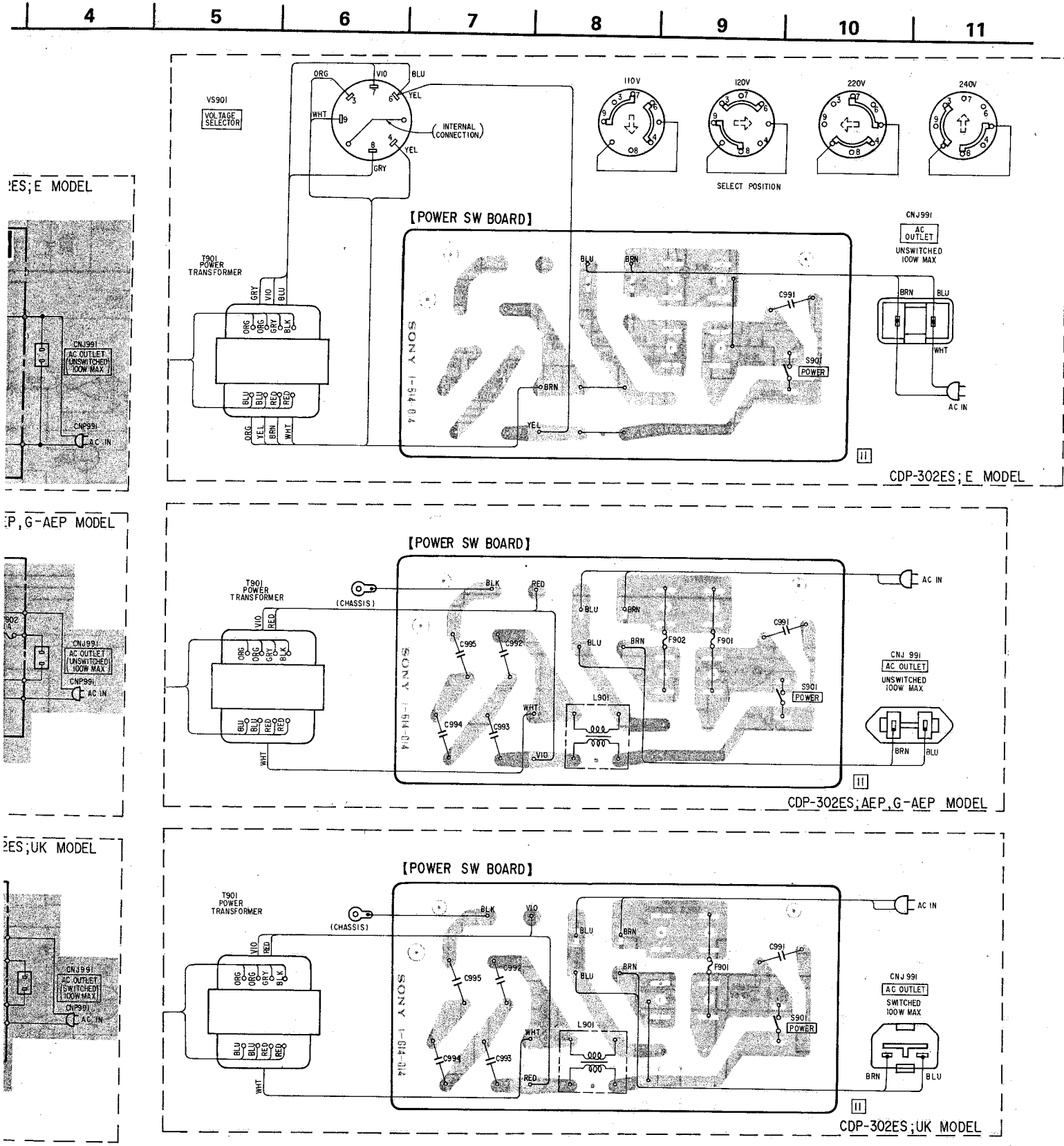
The mechanical parts with no reference number in the exploded views are not supplied.
 Items marked " * " are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
 The construction parts of an assembled part are indicated with a collation number on the remark column.

The components identified by shading and mark are critical for safety. Replace only with part number specified.
 Les composants identifiés par une trame et une marque sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.



| No. | Part No. | Description | REMARKS | No. | Part No. | Description | REMARKS |
|-----|---------------|---|---------|-----|---------------|---|---------|
| 1 | *4-884-637-00 | SHEET (C), INSULATING | | 15 | *4-908-408-01 | PLATE, FIXED, CATCHER, RAY | |
| 2 | 3-703-710-41 | (302ES,520ES)...STICKER, SONY SYMBOL | (12) | 16 | *4-342-118-00 | LID, SHIELD CASE, R | |
| 3 | 3-703-685-21 | SCREW (+BV 3X8) | | 17 | *4-342-117-00 | CASE, SHIELD (MAIN), R | |
| 4 | 9-911-840-XX | CUSHION | | 18 | *4-908-600-01 | LEVER, LOCK, TRANSPORT | |
| 5 | 3-318-911-11 | KNOB (POWER.L.), T MOLD | | 19 | 3-323-470-01 | SCREW (B3X6), (+ -) | |
| 6 | *4-908-425-01 | LEVER, POWER SWITCH | | 20 | 3-831-441-XX | CUSHION | |
| 7 | 4-889-321-31 | SCREW | | 21 | *4-908-459-01 | (302)...PLATE, LIGHT INTERCEPTION | |
| 8 | 4-908-438-01 | CASE | | 22 | *4-908-458-01 | (302)...BRACKET, LAMP | |
| 9 | 4-885-831-00 | LABEL, CAUTION | | 23 | 4-812-134-00 | (302)...RIVET NYLON, 3.5 | |
| 10 | *4-908-449-01 | (302).....LABEL, MODEL NUMBER (U) | | 24 | 3-703-079-21 | (302ES;UK)...LABEL, CAUTION (BACK) | |
| | *4-908-450-01 | (520ES).....LABEL, MODEL NUMBER (U) | | 25 | *3-703-680-00 | (302,520ES)...LABEL, CAUTION, SUB, NEW UL | |
| | *4-908-453-01 | (302ES;AEP)...LABEL, MODEL NUMBER (AE1) | | 26 | 4-908-404-01 | (302ES)...LABEL, APARTURTE, LASER, DHHS | |
| | *4-908-455-01 | (302ES;UK)...LABEL, MODEL NUMBER (UK) | | 27 | 4-908-402-01 | (302,520ES)...LABEL, INTERLOCK, DHHS | |
| | *4-908-457-01 | (302ES;E)...LABEL, MODEL NUMBER (E2/3) | | 28 | 4-908-401-01 | (302,520ES)...LABEL, HOUSING, DHHS | |
| | *4-908-463-01 | (302ES;G-AEP)...LABEL, MODEL NUMBER (AE4) | | 29 | 4-885-843-02 | (302ES)...LABEL, CAUTION, LASER | |
| 11 | *4-908-439-01 | (302).....PLATE, BOTTOM | | 30 | *4-885-838-01 | (302ES)...LABEL, CLASS 1 | |
| | *4-908-439-11 | (302ES,520ES)...PLATE, BOTTOM | | 31 | 7-685-751-09 | SCREW +BVTT 3X6 (S) | |
| 12 | 4-887-290-00 | LEG, RUBBER | | 32 | 7-685-872-09 | SCREW +BVTT 3X8 (S) | |
| 13 | *4-908-447-01 | SHEET, INSULATING | | 902 | *4-884-680-00 | (302;Canadian)...LABEL | |
| 14 | *4-908-409-01 | BRACKET, REMOTE CONTROL | | 911 | *1-611-717-11 | PC BOARD, N | |
| | | | | | *1-614-017-11 | (302).....PC BOARD, LAMP | |

See page 44 for Notes.




Note: Les composants identifiés par un trame et une marque sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.


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

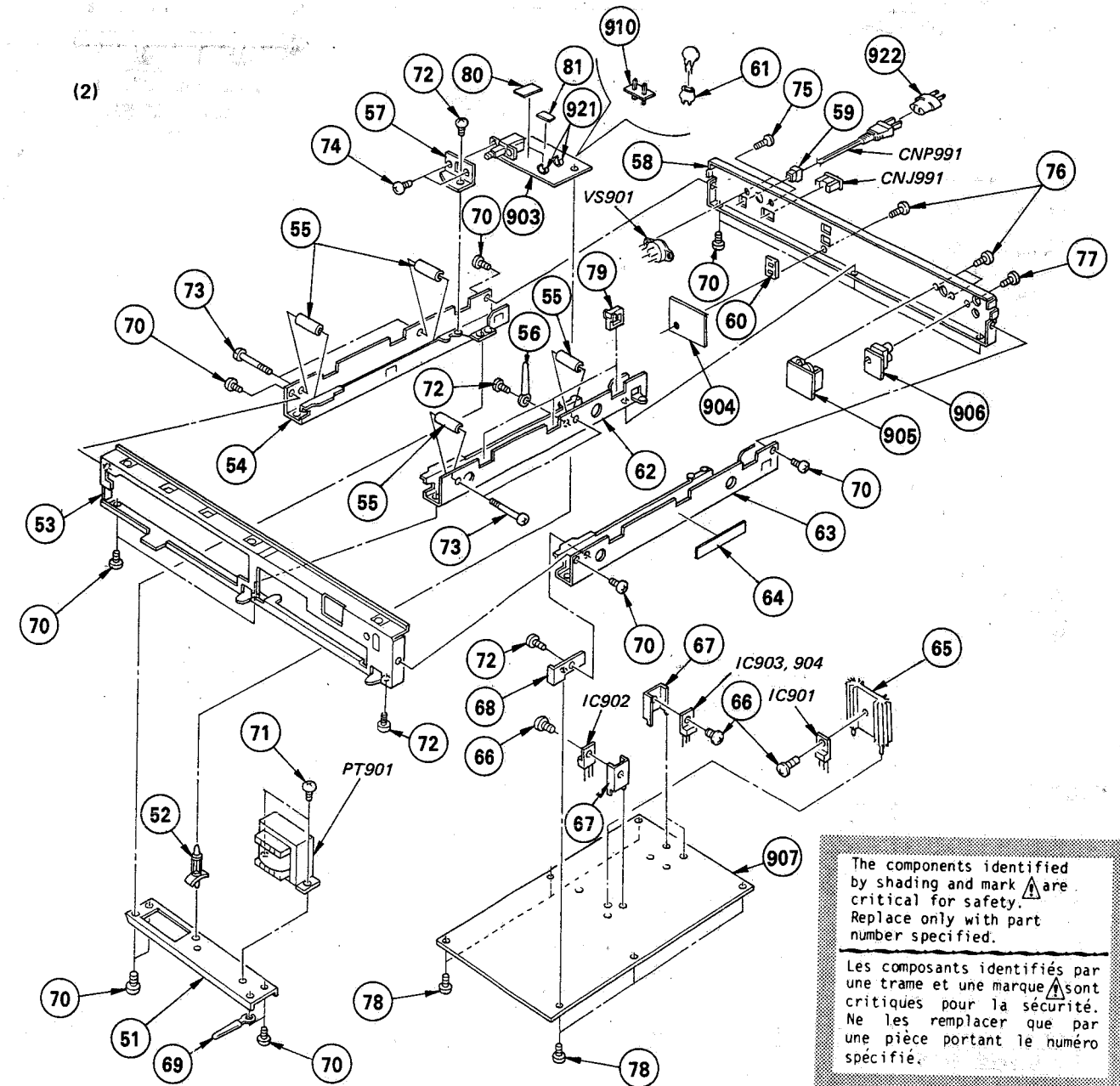
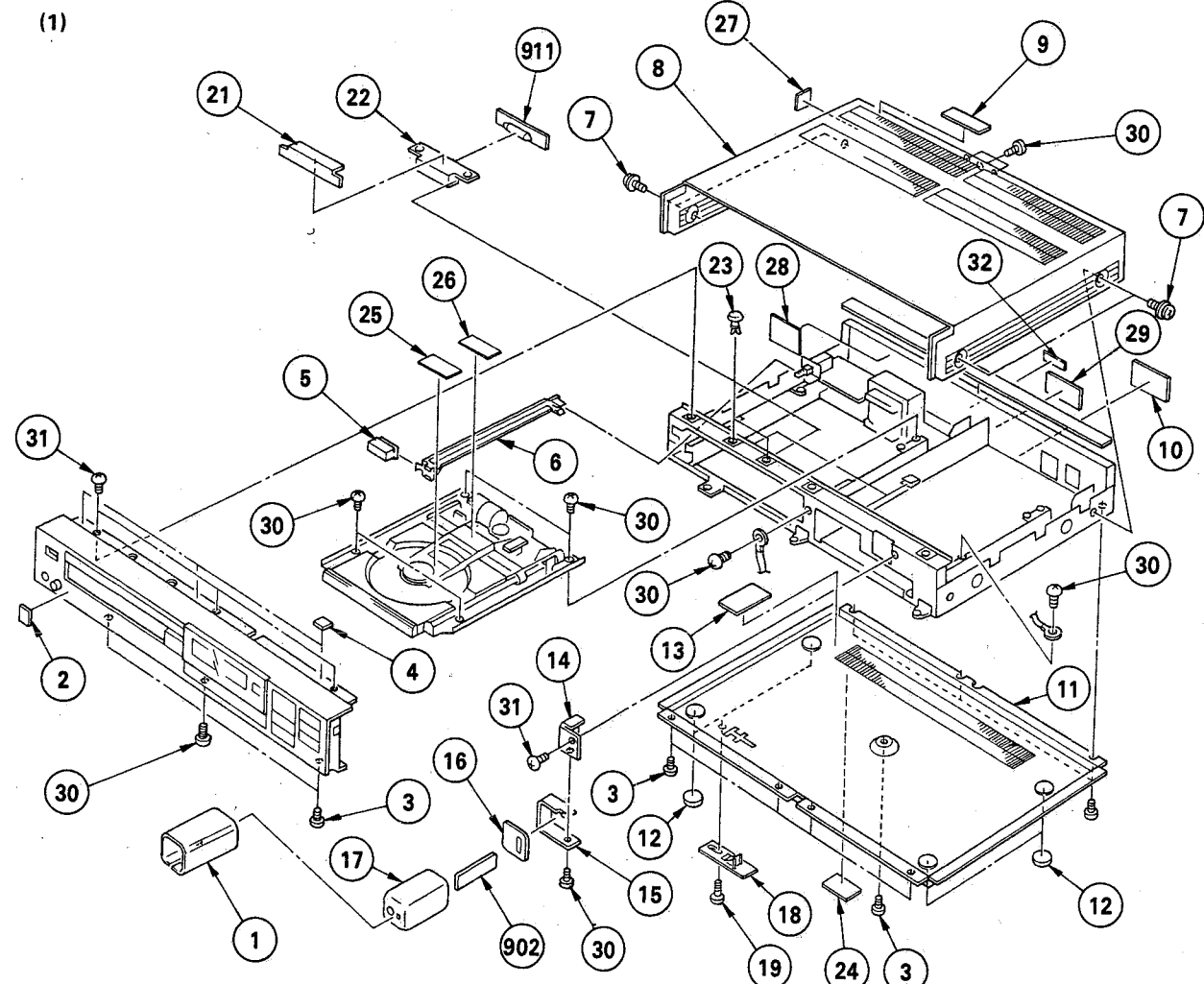
SECTION 6

EXPLODED VIEWS AND PARTS LIST

NOTE:
 • The mechanical parts with no reference number in the exploded views are not supplied.
 • Items marked " * " are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
 • The construction parts of an assembled part are indicated with a collation number on the remark column.

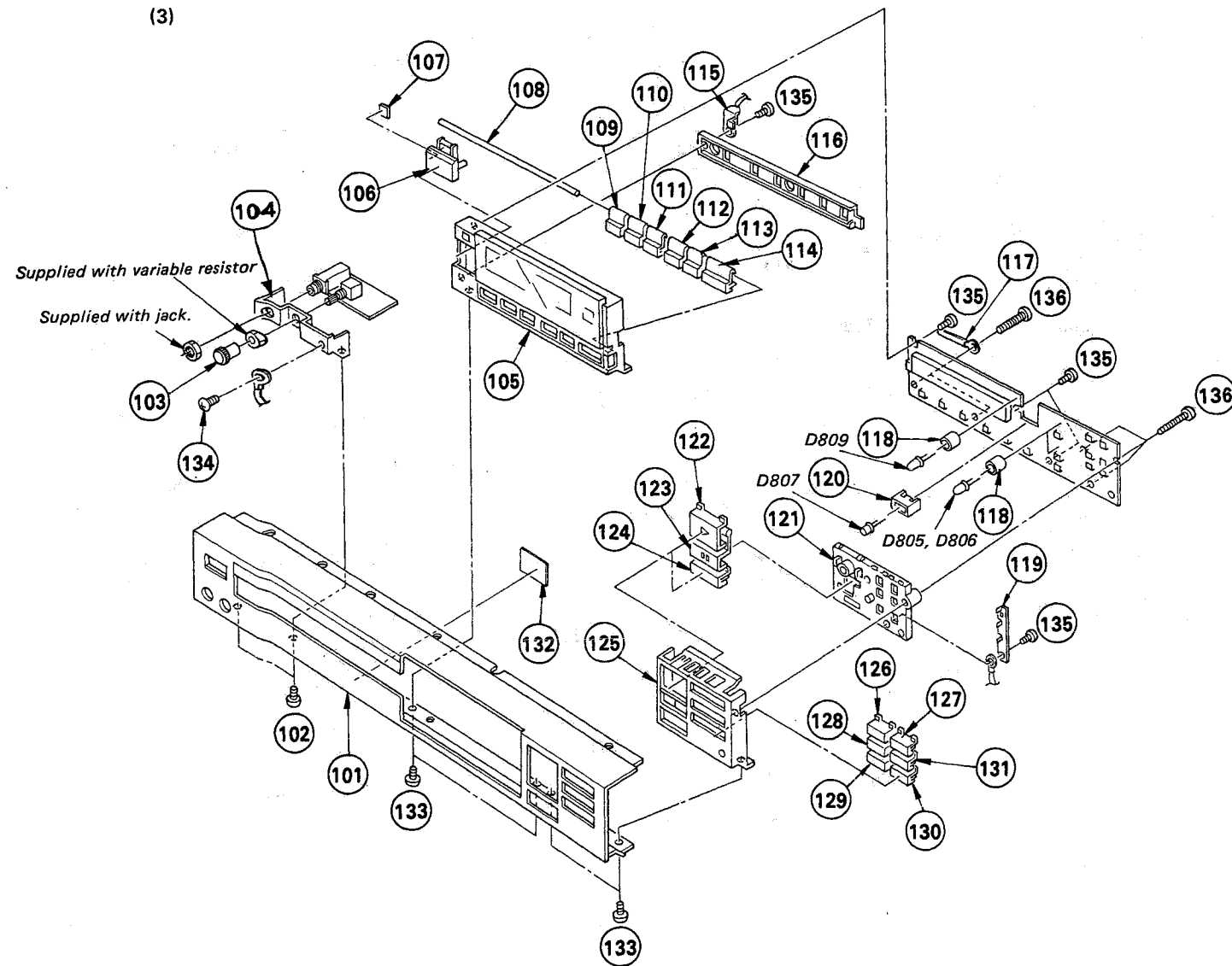
The components identified by shading and mark  are critical for safety. Replace only with part number specified.

Les composants identifiés par une trame et une marque  sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

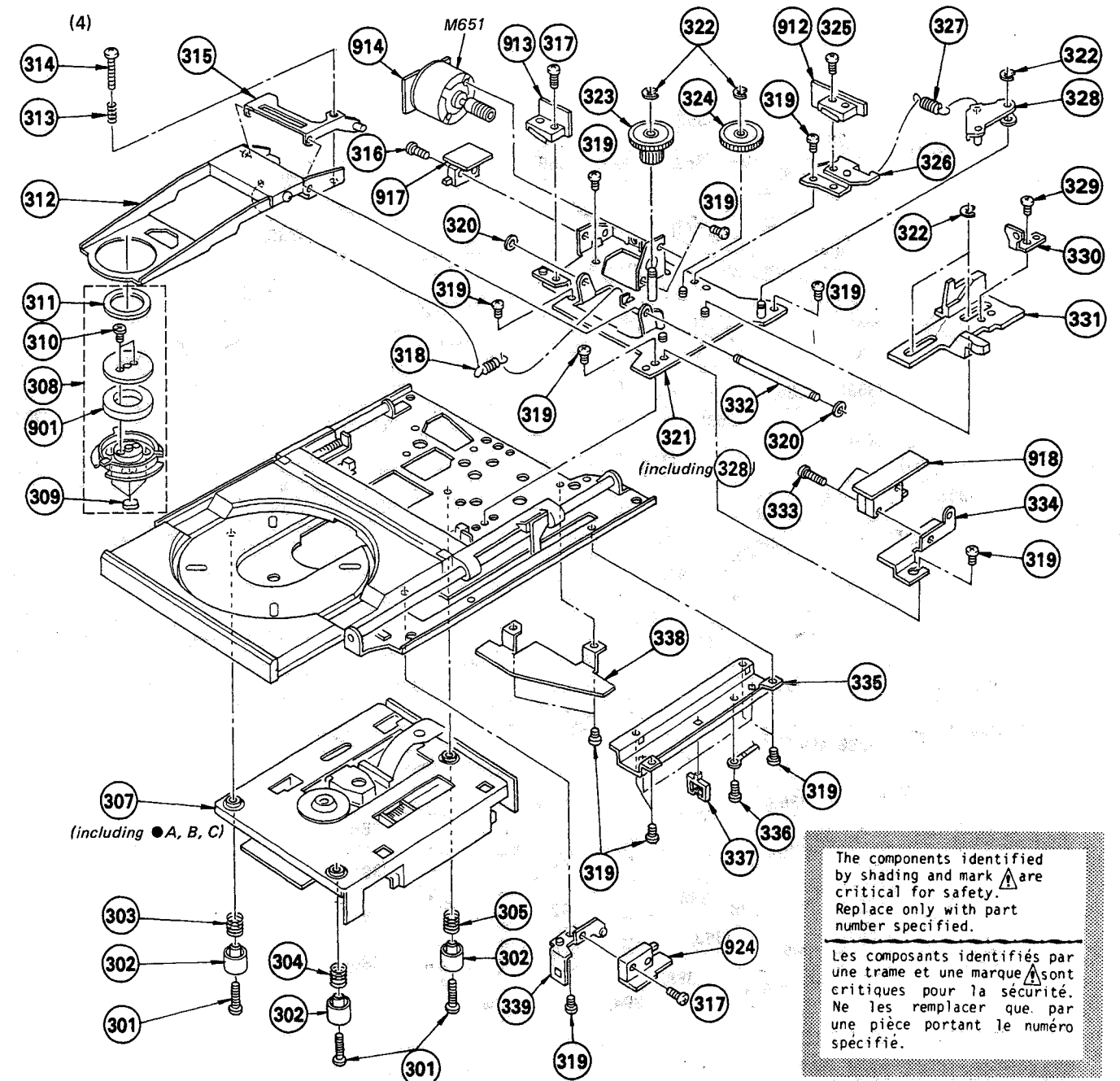


| No. | Part No. | Description | REMARKS | No. | Part No. | Description | REMARKS |
|-----|---------------|---|---------|-----|---------------|---|---------|
| 1 | *4-884-637-00 | SHEET (C), INSULATING | | 15 | *4-908-408-01 | PLATE, FIXED, CATCHER, RAY | |
| 2 | 3-703-710-41 | (302ES,520ES)...STICKER, SONY SYMBOL(12) | | 16 | *4-342-118-00 | LID, SHIELD CASE, R | |
| 3 | 3-703-685-21 | SCREW (+BV 3X8) | | 17 | *4-342-117-00 | CASE, SHIELD (MAIN), R | |
| 4 | 9-911-840-XX | CUSHION | | 18 | *4-908-600-01 | LEVER, LOCK, TRANSPORT | |
| 5 | 3-318-911-11 | KNOB (POWER.L.), T MOLD | | 19 | 3-323-470-01 | SCREW (B3X6), (+ -) | |
| 6 | *4-908-425-01 | LEVER, POWER SWITCH | | 20 | 3-831-441-XX | CUSHION | |
| 7 | 4-889-321-31 | SCREW | | 21 | *4-908-459-01 | (302)...PLATE, LIGHT INTERCEPTION | |
| 8 | 4-908-438-01 | CASE | | 22 | *4-908-458-01 | (302)...BRACKET, LAMP | |
| 9 | 4-885-831-00 | LABEL, CAUTION | | 23 | 4-812-134-00 | (302)...RIVET NYLON, 3.5 | |
| 10 | *4-908-449-01 | (302)...LABEL, MODEL NUMBER (U) | | 24 | 3-703-079-21 | (302ES;UK)...LABEL, CAUTION (BACK) | |
| | *4-908-450-01 | (520ES)...LABEL, MODEL NUMBER (U) | | | *3-703-680-00 | (302,520ES)...LABEL, CAUTION, SUB, NEW UL | |
| | *4-908-453-01 | (302ES;AEP)...LABEL, MODEL NUMBER (AE1) | | 25 | 4-908-404-01 | (302ES)...LABEL, APARTURTE, LASER, DHHS | |
| | *4-908-455-01 | (302ES;UK)...LABEL, MODEL NUMBER (UK) | | 26 | 4-908-402-01 | (302,520ES)...LABEL, INTERLOCK, DHHS | |
| | *4-908-457-01 | (302ES;E)...LABEL, MODEL NUMBER (E2/3) | | 27 | 4-908-401-01 | (302,520ES)...LABEL, HOUSING, DHHS | |
| | *4-908-463-01 | (302ES;G-AEP)...LABEL, MODEL NUMBER (AE4) | | 28 | 4-885-843-02 | (302ES)...LABEL, CAUTION, LASER | |
| 11 | *4-908-439-01 | (302)...PLATE, BOTTOM | | 29 | *4-885-838-01 | (302ES)...LABEL, CLASS 1 | |
| | *4-908-439-11 | (302ES,520ES)...PLATE, BOTTOM | | 30 | 7-685-751-09 | SCREW +BVTT 3X6 (S) | |
| 12 | 4-887-290-00 | LEG, RUBBER | | 31 | 7-685-872-09 | SCREW +BVTT 3X8 (S) | |
| 13 | *4-908-447-01 | SHEET, INSULATING | | 32 | *4-884-680-00 | (302;Canadian)...LABEL | |
| 14 | *4-908-409-01 | BRACKET, REMOTE CONTROL | | 902 | *1-611-717-11 | PC BOARD, N | |
| | | | | 911 | *1-614-017-11 | (302)...PC BOARD, LAMP | |

| No. | Part No. | Description | REMARKS | No. | Part No. | Description | REMARKS |
|-----|---------------|--|---------|-----|---------------|-------------------------------------|---------|
| 51 | *4-908-424-01 | BRACKET, TRANSFORMER | | 68 | *4-908-406-01 | BRACKET, PC BOARD | |
| 52 | *3-703-353-07 | SUPPORT, PC BOARD | | 69 | 3-703-150-11 | CLAMP | |
| 53 | *4-908-437-01 | PANEL, SUB | | 70 | 7-685-872-09 | SCREW +BVTT 3X8 (S) | |
| 54 | *4-908-432-01 | FRAME (LEFT) | | 71 | 7-685-880-01 | SCREW +BVTT 4X6 (S) | |
| 55 | *3-312-427-00 | SPACER (3X22) | | 72 | 7-685-751-09 | SCREW +BVTT 3X6 (S) | |
| 56 | 3-701-822-00 | HOLDER, WIRE | | 73 | 7-685-879-01 | SCREW +BVTT 3X30 (S) | |
| 57 | *4-908-407-01 | BRACKET, POWER SWITCH | | 74 | 7-682-147-09 | SCREW +P 3X6 | |
| 58 | *4-908-444-01 | (302;US)...PLATE, JACK | | 75 | 7-621-775-20 | SCREW +B 2.6X5 | |
| | *4-908-444-11 | (302;Canadian)...PLATE, JACK | | 76 | 7-685-134-19 | SCREW +BTP 2.6X8 TYPE2 N-S | |
| | *4-908-444-51 | (520ES)...PLATE, JACK | | 77 | 3-703-473-00 | SCREW, TERMINAL | |
| | *4-908-444-61 | (302ES;AEP,G-AEP)...PLATE, JACK | | 78 | 7-685-752-04 | SCREW +BVTT 3X8 (S) | |
| | *4-908-444-71 | (302ES;UK)...PLATE, JACK | | 79 | 4-308-840-00 | HOLDER, WIRE | |
| | *4-908-444-81 | (302ES;E)...PLATE, JACK | | 80 | *3-701-948-14 | (302ES;AEP,GAEP)...LABEL, FUSE | |
| 59 | 3-703-244-00 | (302;Canadian,302ES,520ES)...BUSHING, CORD | | 81 | 3-701-948-18 | (302ES;UK)...LABEL, FUSE | |
| | 3-703-571-11 | (302;US)...BUSHING (S), CORD | | 903 | *1-614-014-11 | PC BOARD, P.SW | |
| 60 | *3-322-818-01 | HOLDER, CONNECTOR | | 904 | *1-614-016-11 | PC BOARD, SIRCS | |
| 61 | 4-875-455-02 | (302ES;AEP,G-AEP,UK)...CAVER (DIA 20), CAPACITOR | | 905 | *1-614-021-11 | PC BOARD, ACC | |
| 62 | *4-908-431-01 | FRAME (INNER) | | 906 | *1-614-019-11 | PC BOARD, LINE OUT | |
| 63 | *4-908-430-01 | FRAME (RIGHT) | | 907 | *A-4651-033-A | (302)...MOUNTED PCB, MAIN | |
| 64 | *3-701-030-00 | LABEL, SERIAL NUMBER | | | A-4651-034-A | (302ES,520ES)...MOUNTED PCB, MAIN | |
| 65 | *4-902-345-01 | HEAT SINK | | 921 | 1-533-131-00 | (302ES;AEP,G-AEP,UK)...HOLDER, FUSE | |
| 66 | 2-259-121-00 | SCREW, TR | | 922 | *1-526-565-00 | (302ES;E)...AC PLUG ADAPTOR | |
| 67 | *4-908-502-01 | HEAT SINK | | | | | |



| No. | Part No. | Description | REMARKS | No. | Part No. | Description | REMARKS |
|-----|---------------|-------------------------------|---------|-----|---------------|-----------------------------|---------|
| 101 | X-4908-410-1 | (302ES)...FRONT PANEL ASSY | | 119 | 4-908-423-01 | SPACER, BUTTON | |
| | X-4908-411-1 | (302)...FRONT PANEL ASSY | | 120 | 4-908-554-01 | HOLDER, LED | |
| | X-4908-413-1 | (520ES)...FRONT PANEL ASSY | | 121 | 4-908-429-01 | PLATE (B), SWITCH | |
| 102 | 3-703-108-21 | SCREW +BV 3X6, S TIGHT | | 122 | X-4908-404-1 | PLAY KNOB ASSY | |
| 103 | 4-902-067-11 | KNOB, CONTROL | | 123 | X-4908-405-1 | PAUSE KNOB ASSY | |
| 104 | *4-908-426-01 | BRACKET, HEADPHONE | | 124 | 4-908-414-41 | KNOB (B) (BLACK), T | |
| 105 | X-4908-406-1 | FROSTED PLATE HOLDER (B) ASSY | | 125 | 4-908-436-01 | HOLDER, CONTROL BUTTON | |
| 106 | X-4908-402-1 | BUTTON (B) ASSY, OPEN/CLOSE | | 126 | 4-908-415-01 | KNOB (AMS), T | |
| 107 | 9-911-844-XX | RUBBER, BRAKE | | 127 | 4-908-415-11 | KNOB (AMS), T | |
| 108 | 4-908-412-01 | SHAFT, BUTTON | | 128 | 4-908-414-01 | KNOB (B) (BLACK), T | |
| 109 | 4-908-413-01 | KNOB (A) (BLACK), T | | 129 | 4-908-414-21 | KNOB (B) (BLACK), T | |
| 110 | 4-908-413-11 | KNOB (A) (BLACK), T | | 130 | 4-908-414-31 | KNOB (B) (BLACK), T | |
| 111 | 4-908-413-21 | KNOB (A) (BLACK), T | | 131 | 4-908-414-11 | KNOB (B) (BLACK), T | |
| 112 | 4-908-413-31 | KNOB (A) (BLACK), T | | 132 | 3-831-441-XX | CUSHION | |
| 113 | 4-908-413-41 | KNOB (A) (BLACK), T | | 133 | 7-685-646-19 | SCREW +BVTP 3X8 TYPE2 N-S | |
| 114 | 4-908-413-51 | KNOB (A) (BLACK), T | | 134 | 7-685-751-09 | SCREW +BVTT 3X6 (S) | |
| 115 | *4-908-446-01 | PLATE, GROUND | | 135 | 7-685-134-19 | SCREW +BTP 2.6X8 TYPE2 N-S | |
| 116 | 4-908-428-01 | PLATE (A), SWITCH | | 136 | 7-685-538-14 | SCREW +BTP 2.6X16 TYPE2 N-S | |
| 117 | 3-701-822-00 | HOLDER, WIRE | | 908 | *1-614-015-11 | PC BOARD, H.P | |
| 118 | 3-886-569-00 | TUBE, RUBBER | | 909 | *1-614-013-11 | PC BOARD, DISPLAY | |

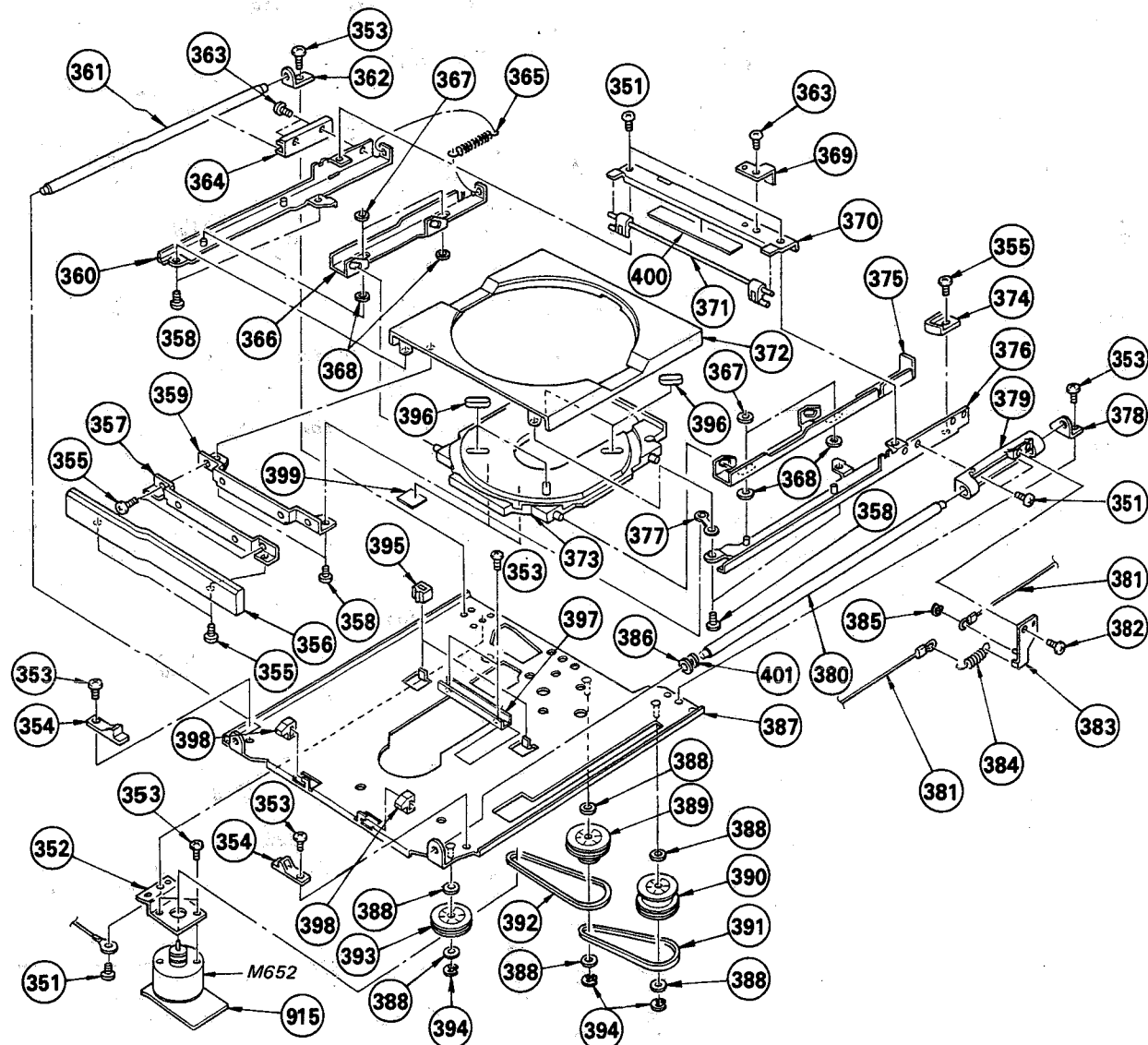


The components identified by shading and mark Δ are critical for safety. Replace only with part number specified.

Les composants identifiés par une trame et une marque Δ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

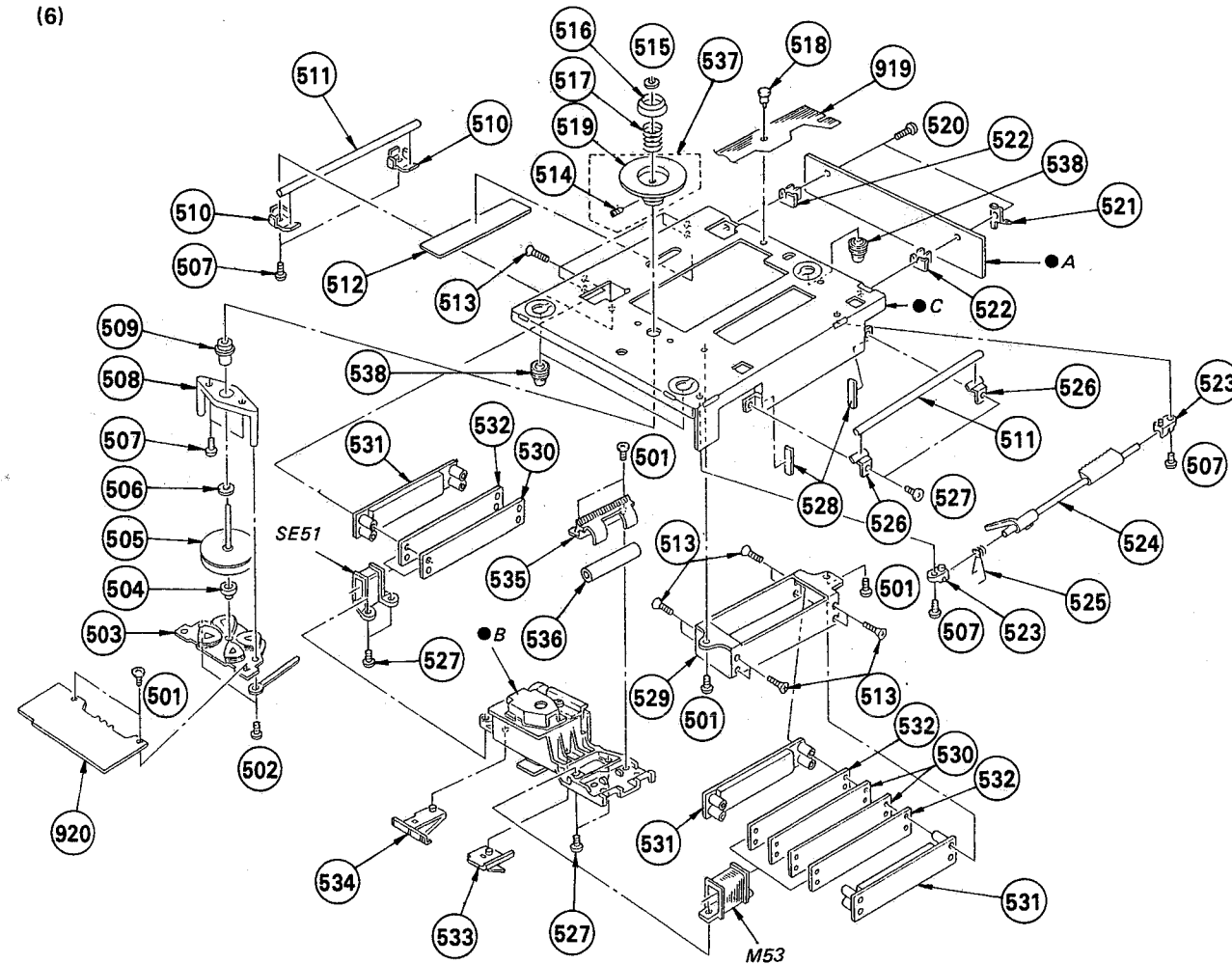
| No. | Part No. | Description | REMARKS | No. | Part No. | Description | REMARKS |
|-----|-----------------------|-----------------------------|---------|-----|---------------|------------------------------|---------|
| 301 | 7-682-553-09 | SCREW +B 3X20 | | 325 | 7-621-257-55 | SCREW +P 2.3X8 | |
| 302 | 4-908-592-01 | POLE (A), INSULATOR | | 326 | *4-908-522-01 | BRACKET (B), SWITCH | |
| 303 | 4-908-594-01 | SPRING, COMPRESSION | | 327 | 4-908-556-01 | SPRING, TENSION (LOCK LEVER) | |
| 304 | 4-908-595-01 | SPRING, COMPRESSION | | 328 | *X-4908-504-1 | LEVER ASSY, LOCK | |
| 305 | 4-908-596-01 | SPRING, COMPRESSION | | 329 | 7-685-132-19 | SCREW +BTP 2.6X8 TYPE2 N-S | |
| 307 | Δ X-4908-203-1 | BU-1 BASE UNIT | | 330 | *4-908-521-01 | PLATE, SWITCH | |
| 308 | A-4675-077-A | PULLEY ASSY, PRESS | | 331 | 4-908-570-01 | CAM, C | |
| 309 | 4-908-537-01 | FELT, PRESS | | 332 | 4-908-513-01 | SHAFT, FULCRUM, C ARM | |
| 310 | 4-908-618-01 | SCREW (+BTP)(2X4) | | 333 | 7-621-259-80 | SCREW +P 2.6X14 | |
| 311 | 4-908-551-01 | CUSHION | | 334 | *4-908-532-01 | BRACKET (A), SWITCH | |
| 312 | *X-4908-510-1 | ARM ASSY, C | | 335 | *4-908-508-01 | COVER, ROPE | |
| 313 | 4-908-559-01 | SPRING, COMPRESSION | | 336 | 7-685-751-04 | SCREW +PTT 3X6 (S) | |
| 314 | 7-621-775-80 | SCREW +B 2.6X16 | | 337 | 4-308-840-00 | HOLDER, WIRE | |
| 315 | X-4908-513-1 | PLATE ASSY, ADJUSTMENT, ARM | | 338 | *4-908-597-01 | COVER, BELT | |
| 316 | 7-685-864-01 | SCREW +BVTT 2.6X10 (S) | | 339 | *4-908-541-01 | BRACKET (C), SWITCH | |
| 317 | 7-621-284-30 | SCREW +P 2.6X8 | | 340 | 4-908-621-01 | SHEET | |
| 318 | 4-908-555-01 | SPRING, TENSION (C ARM) | | 901 | 1-452-340-11 | MAGNET | |
| 319 | 7-621-259-10 | SCREW +P 2.6X3 | | 912 | *1-614-023-11 | PC BOARD, L.C SW | |
| 320 | 3-558-708-21 | WASHER, STOPPER | | 913 | *1-614-024-11 | PC BOARD, CHUCKING SW | |
| 321 | *X-4908-509-1 | CHASSIS ASSY, SUB | | 914 | *1-614-025-11 | PC BOARD, CHUCKING MOTOR | |
| 322 | 7-624-106-04 | STOP RING 3.0, TYPE -E | | 917 | *1-614-028-11 | PC BOARD, LASER SW | |
| 323 | 4-908-528-01 | GEAR (A) | | 918 | *1-614-029-11 | PC BOARD, LOAD IN SW | |
| 324 | 4-908-529-01 | GEAR (B) | | 924 | *1-614-030-11 | PC BOARD, LOAD OUT SW | |

(5)



| No. | Part No. | Description | REMARKS | No. | Part No. | Description | REMARKS |
|-----|---------------|---------------------------------|---------|-----|---------------|----------------------------|---------|
| 351 | 7-685-870-09 | SCREW +BVTT 3X5 (S) | | 377 | *4-908-608-01 | PLATE (A), GROUND | |
| 352 | *4-908-523-01 | BRACKET, MOTOR | | 378 | *4-908-531-01 | PLATE (RIGHT), BEARING | |
| 353 | 7-621-259-10 | SCREW +P 2.6X3 | | 379 | 4-908-574-01 | BEARING (RIGHT), GUIDE | |
| 354 | 4-908-540-01 | GUIDE, ASSIST | | 380 | 4-908-503-01 | SHAFT (RIGHT), GUIDE | |
| 355 | 7-621-775-20 | SCREW +B 2.6X5 | | 381 | 4-908-544-01 | ROPE | |
| 356 | 4-908-571-11 | PANEL, LOADING | | 382 | 7-685-132-19 | SCREW +BTP 2.6X5 TYPE2 N-S | |
| 357 | *4-908-539-01 | BRACKET (B), LOADING PANEL | | 383 | *X-4908-502-1 | BRACKET ASSY, ROPE | |
| 358 | 7-685-646-29 | SCREW +BVTP 3X8 TYPE2 SLIT | | 384 | 4-908-553-01 | SPRING, COMPRESSION (ROPE) | |
| 359 | *4-908-538-01 | BRACKET (A), LOADING PANEL | | 385 | 7-624-104-04 | STOP RING 2.0, TYPE -E | |
| 360 | X-4908-508-1 | PLATE ASSY (LEFT), SIDE, TABLE | | 386 | 4-908-550-01 | STOPPER, RUBBER | |
| 361 | 4-908-505-01 | SHAFT (LEFT), GUIDE | | 387 | *X-4908-511-1 | CHASSIS ASSY, MECHANICAL | |
| 362 | *4-908-530-01 | PLATE (LEFT), BEARING | | 388 | 3-701-441-21 | WASHER | |
| 363 | 7-685-861-09 | SCREW +BVTT 2.6X5 (S) | | 389 | 4-908-519-01 | PULLEY (A) | |
| 364 | 4-908-572-01 | BEARING (LEFT), GUIDE | | 390 | 4-908-525-01 | PULLEY (C) | |
| 365 | 4-908-552-01 | SPRING, COMPRESSION | | 391 | 3-671-077-00 | BELT, FF | |
| 366 | *4-908-562-01 | PLATE (LEFT), CAM, DISK | | 392 | 4-908-591-01 | BELT, DRIVING | |
| 367 | 3-558-708-21 | WASHER, STOPPER | | 393 | 4-908-524-01 | PULLEY (B) | |
| 368 | 3-701-439-11 | WASHER | | 394 | 7-624-106-04 | STOP RING 3.0, TYPE -E | |
| 369 | *4-908-609-01 | PLATE (B), GROUND | | 395 | 4-887-175-00 | RUBBER, STOPPER | |
| 370 | *4-908-533-01 | REINFORCEMENT, TABLE | | 396 | 4-908-543-01 | RETAINER, DISK | |
| 371 | 4-908-534-01 | LEVER, FUNCTION | | 397 | *4-908-598-01 | REINFORCEMENT, CHASSIS | |
| 372 | 4-908-584-01 | TABLE, DISK | | 398 | 4-908-590-01 | RETAINER, TABLE | |
| 373 | X-4908-506-1 | PLATE ASSY, DISK | | 399 | *4-908-964-01 | SHEET, PS, DT | |
| 374 | 4-908-520-01 | PLATE, LOCK | | 400 | *4-908-965-01 | SHEET | |
| 375 | *4-908-561-01 | PLATE (RIGHT), CAM, DISK | | 401 | 4-908-622-01 | CUSHION (S) | |
| 376 | X-4908-507-1 | PLATE ASSY (RIGHT), SIDE, TABLE | | 915 | *1-614-026-11 | PC BOARD, LOADING MOTOR | |

(6)



| No. | Part No. | Description | REMARKS | No. | Part No. | Description | REMARKS |
|-----|--------------|--------------------------------|---------|-----|---------------|---------------------------|---------|
| 501 | 7-621-775-10 | SCREW +B 2.6X4 | | 521 | *4-908-232-01 | LUG | |
| 502 | 7-685-533-19 | SCREW +BTP 2.6X6 TYPE2 N-S | | 522 | 4-908-222-01 | HOLDER, PC BOARD | |
| 503 | A-4675-068-A | BRACKET ASSY, MOTOR (L151,152) | | 523 | 4-908-220-01 | HOLDER, ROD | |
| 504 | 2-622-105-01 | RETAINER, THRUST | | 524 | 4-908-227-01 | LEVER, LOCK | |
| 505 | A-4675-069-A | ROTOR ASSY | | 525 | 4-908-230-01 | SPRING | |
| 506 | 3-701-439-21 | WASHER | | 526 | 4-908-217-01 | RETAINER (B), SLIDE SHAFT | |
| 507 | 7-621-773-95 | SCREW +B 2.6X6 | | 527 | 7-621-775-20 | SCREW +B 2.6X5 | |
| 508 | 4-908-216-01 | HOLDER, STATOR | | 528 | *3-548-366-02 | CUSHION | |
| 509 | 4-908-206-01 | BEARING, SPINDLE | | 529 | 4-908-203-01 | YOKE (A) | |
| 510 | 4-908-205-01 | RETAINER (A), SLIDE SHAFT | | 530 | 4-908-214-01 | YOKE (C)-1 | |
| 511 | 4-908-201-01 | SHAFT, SLIDE | | 531 | A-4675-070-A | MAGNET ASSY, LINEAR | |
| 512 | 2-270-836-00 | RUBBER, RETAINER | | 532 | 4-908-215-01 | YOKE (C)-2 | |
| 513 | 7-621-559-80 | SCREW +K 2.6X14 | | 533 | 4-908-225-01 | RETAINER (A), LEAD | |
| 514 | 7-621-734-09 | SET-SCT, HEX. 2.6X3 | | 534 | 4-908-219-01 | RETAINER (B), LEAD | |
| 515 | 3-558-708-21 | WASHER, STOPPER | | 535 | 4-908-224-01 | HOLDER, BEARING | |
| 516 | 4-908-212-01 | CAP, CENTERING | | 536 | 4-908-221-01 | BEARING | |
| 517 | 4-908-213-01 | SPRING, COMPRESSION | | 537 | X-4908-202-1 | PULLEY ASSY, DISK | |
| 518 | 3-531-576-01 | RIVET | | 538 | 4-908-593-01 | INSULATOR | |
| 519 | 4-908-211-02 | PULLEY, DISK | | 919 | A-4646-215-A | MOUNTED PCB, FLEXIBLE | |
| 520 | 7-621-259-65 | SCREW +P 2.6X10 | | 920 | 1-614-086-11 | PC BOARD, BSL MOTOR | |

CDP-302/302ES/520ES

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 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 shading and mark  are critical for safety. Replace only with part number specified.

Les composants identifiés par une trame et une marque  sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

ELECTRICAL PARTS

| Ref.No. | Part No. | Description | | | |
|---------|---------------|-------------------------------------|----------|------|-----|
| 901 | 1-452-340-11 | MAGNET | | | |
| 902 | *1-611-717-11 | PC BOARD, N | | | |
| 903 | *1-614-014-11 | PC BOARD, P.SW | | | |
| 904 | *1-614-016-11 | PC BOARD, SIRCS | | | |
| 905 | *1-614-021-11 | PC BOARD, ACC | | | |
| 906 | *1-614-019-11 | PC BOARD, LINE OUT | | | |
| 907 | *A-4651-033-A | (302).....MOUNTED PCB, MAIN | | | |
| | A-4651-034-A | (302ES,520ES)...MOUNTED PCB, MAIN | | | |
| 908 | *1-614-015-11 | PC BOARD, H.P | | | |
| 909 | *1-614-013-11 | PC BOARD, DISPLAY | | | |
| 910 | *1-535-139-00 | BASE POST 19MM (10MM PITCH) 2P | | | |
| 911 | *1-614-017-11 | (302)....PC BOARD, LAMP | | | |
| 912 | *1-614-023-11 | PC BOARD, L.C SW | | | |
| 913 | *1-614-024-11 | PC BOARD, CHUCKING SW | | | |
| 914 | *1-614-025-11 | PC BOARD, CHUCKING MOTOR | | | |
| 915 | *1-614-026-11 | PC BOARD, LOADING MOTOR | | | |
| 916 | | | | | |
| 917 | *1-614-028-11 | PC BOARD, LASER SW | | | |
| 918 | *1-614-029-11 | PC BOARD, LOAD IN SW | | | |
| 919 | A-4646-215-A | MOUNTED PCB, FLEXIBLE | | | |
| 920 | *1-614-086-11 | PC BOARD, BSL MOTOR | | | |
| 921 | 1-533-131-00 | (302ES;AEP,G-AEP,UK)...HOLDER, FUSE | | | |
| 922 | 1-526-565-00 | (302ES;E)...AC PLUG ADAPTOR | | | |
| 923 | | | | | |
| 924 | *1-614-030-11 | PC BOARD, LOAD OUT SW | | | |
| C51 | 1-135-008-00 | TANTALUM(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 |
| C201 | 1-136-169-00 | FILM | 0.22MF | 5% | 50V |
| C202 | 1-162-302-31 | CERAMIC | 0.0022MF | 30% | 16V |
| C203 | 1-136-165-00 | FILM | 0.1MF | 5% | 50V |
| C204 | 1-162-290-31 | CERAMIC | 470PF | 10% | 50V |
| C205 | 1-130-475-00 | MYLAR | 0.0022MF | 5% | 50V |
| C206 | 1-131-371-00 | TANTALUM | 10MF | 10% | 16V |
| C207 | 1-136-159-00 | FILM | 0.033MF | 5% | 50V |
| C208 | 1-136-169-00 | FILM | 0.22MF | 5% | 50V |
| C209 | 1-136-161-00 | FILM | 0.047MF | 5% | 50V |
| C210 | 1-162-294-31 | CERAMIC | 0.001MF | 10% | 50V |
| C211 | 1-162-302-31 | CERAMIC | 0.0022MF | 30% | 16V |
| C212 | 1-130-487-00 | MYLAR | 0.022MF | 5% | 50V |
| C213 | 1-162-291-31 | CERAMIC | 560PF | 10% | 50V |
| C214 | 1-130-475-00 | MYLAR | 0.0022MF | 5% | 50V |
| C215 | 1-136-165-00 | FILM | 0.1MF | 5% | 50V |
| C216 | 1-130-487-00 | MYLAR | 0.022MF | 5% | 50V |

ELECTRICAL PARTS

| Ref.No. | Part No. | Description | | | | |
|---------|--------------|------------------|----------|-----|-----|--|
| C217 | 1-136-165-00 | FILM | 0.1MF | 5% | 50V | |
| C218 | 1-162-304-31 | CERAMIC | 0.0047MF | 30% | 16V | |
| C219 | 1-136-163-00 | FILM | 0.068MF | 5% | 50V | |
| C221 | 1-123-318-00 | ELECT | 33MF | 20% | 16V | |
| C222 | 1-123-318-00 | ELECT | 33MF | 20% | 16V | |
| C223 | 1-131-369-00 | TANTALUM | 4.7MF | 10% | 16V | |
| C235 | 1-162-294-31 | CERAMIC | 0.001MF | 10% | 50V | |
| C236 | 1-136-169-00 | FILM | 0.22MF | 5% | 50V | |
| C237 | 1-136-161-00 | FILM | 0.047MF | 5% | 50V | |
| C301 | 1-123-356-00 | ELECT | 10MF | 20% | 50V | |
| C302 | 1-162-302-31 | CERAMIC | 0.0022MF | 30% | 16V | |
| C303 | 1-162-302-31 | CERAMIC | 0.0022MF | 30% | 16V | |
| C304 | 1-102-725-00 | CERAMIC | 36PF | 5% | 50V | |
| C305 | 1-102-658-00 | CERAMIC | 180PF | 5% | 50V | |
| C306 | 1-102-647-00 | CERAMIC | 39PF | 5% | 50V | |
| C307 | 1-102-523-00 | CERAMIC | 56PF | 5% | 50V | |
| C308 | 1-162-294-31 | CERAMIC | 0.001MF | 10% | 50V | |
| C309 | 1-102-514-00 | CERAMIC | 22PF | 5% | 50V | |
| C310 | 1-123-318-00 | ELECT | 33MF | 20% | 16V | |
| C311 | 1-123-318-00 | ELECT | 33MF | 20% | 16V | |
| C312 | 1-123-318-00 | ELECT | 33MF | 20% | 16V | |
| C313 | 1-123-318-00 | ELECT | 33MF | 20% | 16V | |
| C314 | 1-162-284-31 | CERAMIC | 150PF | 10% | 50V | |
| C315 | 1-162-284-31 | CERAMIC | 150PF | 10% | 50V | |
| C316 | 1-123-318-00 | ELECT | 33MF | 20% | 16V | |
| C317 | 1-162-306-31 | CERAMIC | 0.01MF | 30% | 16V | |
| C318 | 1-162-306-31 | CERAMIC | 0.01MF | 30% | 16V | |
| C319 | 1-123-318-00 | ELECT | 33MF | 20% | 16V | |
| C321 | 1-130-487-00 | MYLAR | 0.022MF | 5% | 50V | |
| C323 | 1-162-294-31 | CERAMIC | 0.001MF | 10% | 50V | |
| C324 | 1-123-318-00 | ELECT | 33MF | 20% | 16V | |
| C325 | 1-123-318-00 | ELECT | 33MF | 20% | 16V | |
| C327 | 1-123-318-00 | ELECT | 33MF | 20% | 16V | |
| C330 | 1-101-005-00 | CERAMIC | 0.022MF | | 50V | |
| C331 | 1-101-005-00 | CERAMIC | 0.022MF | | 50V | |
| C332 | 1-131-374-00 | (302)...TANTALUM | 33MF | 10% | 16V | |
| C333 | 1-101-005-00 | CERAMIC | 0.022MF | | 50V | |
| C334 | 1-101-005-00 | CERAMIC | 0.022MF | | 50V | |
| C348 | 1-130-483-00 | MYLAR | 0.01MF | 5% | 50V | |
| C349 | 1-123-380-00 | ELECT | 1MF | 20% | 50V | |
| C351 | 1-123-380-00 | ELECT | 1MF | 20% | 50V | |
| C353 | 1-136-165-00 | FILM | 0.1MF | 5% | 50V | |
| C354 | 1-130-481-00 | MYLAR | 0.0068MF | 5% | 50V | |
| C355 | 1-136-169-00 | FILM | 0.22MF | 5% | 50V | |
| C356 | 1-162-290-31 | CERAMIC | 470PF | 10% | 50V | |
| C360 | 1-136-165-00 | FILM | 0.1MF | 5% | 50V | |

CDP-302/302ES/520ES

ELECTRICAL PARTS

| Ref.No. | Part No. | Description | | | |
|---------|--------------|-----------------------|----------|-----|------|
| C361 | 1-123-330-00 | ELECT | 22MF | 20% | 25V |
| C362 | 1-123-330-00 | ELECT | 22MF | 20% | 25V |
| C363 | 1-161-974-00 | CERAMIC | 0.1MF | 20% | 16V |
| C364 | 1-161-974-00 | CERAMIC | 0.1MF | 20% | 16V |
| C365 | 1-102-114-00 | CERAMIC | 470PF | 10% | 50V |
| C366 | 1-161-974-00 | CERAMIC | 0.1MF | 20% | 16V |
| C367 | 1-161-974-00 | CERAMIC | 0.1MF | 20% | 16V |
| C401 | 1-104-230-00 | POLYSTYRENE | 0.0015MF | 5% | 50V |
| C402 | 1-123-384-00 | ELECT | 10MF | 20% | 50V |
| C403 | 1-123-384-00 | ELECT | 10MF | 20% | 50V |
| C404 | 1-123-384-00 | ELECT | 10MF | 20% | 50V |
| C405 | 1-104-233-00 | POLYSTYRENE | 220PF | 5% | 125V |
| C406 | 1-123-384-00 | ELECT | 10MF | 20% | 50V |
| C407 | 1-130-967-00 | FILM | 0.0027MF | 3% | 100V |
| C408 | 1-136-230-00 | FILM | 0.0022MF | 3% | 100V |
| C409 | 1-123-318-00 | ELECT | 33MF | 20% | 16V |
| C410 | 1-136-257-00 | FILM | 0.0039MF | 3% | 100V |
| C411 | 1-136-252-00 | FILM | 0.0015MF | 3% | 100V |
| C412 | 1-123-334-00 | (302).....ELECT | 220MF | 20% | 25V |
| C412 | 1-123-694-52 | (302ES,520ES)...ELECT | 220MF | 20% | 25V |
| C413 | 1-130-955-00 | FILM | 0.01MF | 3% | 100V |
| C414 | 1-104-260-11 | POLYSTYRENE | 510PF | 2% | 125V |
| C415 | 1-130-340-00 | FILM | 0.018MF | 3% | 100V |
| C416 | 1-130-340-00 | FILM | 0.018MF | 3% | 100V |
| C417 | 1-136-252-00 | FILM | 0.0015MF | 3% | 100V |
| C419 | 1-123-356-00 | ELECT | 10MF | 20% | 50V |
| C420 | 1-123-330-00 | (302).....ELECT | 22MF | 20% | 25V |
| C420 | 1-123-700-52 | (302ES,520ES)...ELECT | 22MF | 20% | 35V |
| C421 | 1-101-005-00 | CERAMIC | 0.022MF | | 50V |
| C431 | 1-123-330-00 | ELECT | 22MF | 20% | 25V |
| C451 | 1-162-290-00 | CERAMIC | 470PF | 10% | 50V |
| C501 | 1-104-230-00 | POLYSTYRENE | 0.0015MF | 5% | 50V |
| C502 | 1-123-384-00 | ELECT | 10MF | 20% | 50V |
| C503 | 1-123-384-00 | ELECT | 10MF | 20% | 50V |
| C504 | 1-123-384-00 | ELECT | 10MF | 20% | 50V |
| C505 | 1-104-233-00 | POLYSTYRENE | 220PF | 5% | 125V |
| C506 | 1-123-384-00 | ELECT | 10MF | 20% | 50V |
| C507 | 1-130-967-00 | FILM | 0.0027MF | 3% | 100V |
| C508 | 1-136-230-00 | FILM | 0.0022MF | 3% | 100V |
| C509 | 1-123-318-00 | ELECT | 33MF | 20% | 16V |
| C510 | 1-136-257-00 | FILM | 0.0039MF | 3% | 100V |
| C511 | 1-136-252-00 | FILM | 0.0015MF | 3% | 100V |
| C512 | 1-123-334-00 | (302).....ELECT | 220MF | 20% | 25V |
| C512 | 1-123-694-52 | (302ES,520ES)...ELECT | 220MF | 20% | 25V |

ELECTRICAL PARTS

| Ref.No. | Part No. | Description | | | |
|---------|----------------|-----------------------|----------|-----|------|
| C513 | 1-130-955-00 | FILM | 0.01MF | 3% | 100V |
| C514 | 1-104-260-11 | POLYSTYRENE | 510PF | 2% | 125V |
| C515 | 1-130-340-00 | FILM | 0.018MF | 3% | 100V |
| C516 | 1-130-340-00 | FILM | 0.018MF | 3% | 100V |
| C517 | 1-136-252-00 | FILM | 0.0015MF | 3% | 100V |
| C519 | 1-123-356-00 | ELECT | 10MF | 20% | 50V |
| C520 | 1-123-330-00 | (302).....ELECT | 22MF | 20% | 25V |
| C520 | 1-123-700-52 | (302ES,520ES)...ELECT | 22MF | 20% | 35V |
| C521 | 1-101-005-00 | CERAMIC | 0.022MF | | 50V |
| C531 | 1-123-330-00 | ELECT | 22MF | 20% | 25V |
| C551 | 1-162-290-00 | CERAMIC | 470PF | 10% | 50V |
| C601 | 1-162-294-31 | CERAMIC | 0.001MF | 10% | 50V |
| C602 | 1-162-294-31 | CERAMIC | 0.001MF | 10% | 50V |
| C651 | 1-136-157-00 | FILM | 0.022MF | 5% | 50V |
| C652 | 1-136-157-00 | FILM | 0.022MF | 5% | 50V |
| C653 | 1-136-157-00 | FILM | 0.022MF | 5% | 50V |
| C654 | 1-130-479-00 | MYLAR | 0.0047MF | 5% | 50V |
| C655 | 1-130-479-00 | MYLAR | 0.0047MF | 5% | 50V |
| C701 | 1-162-306-31 | CERAMIC | 0.01MF | 30% | 16V |
| C702 | 1-162-113-00 | CERAMIC | 0.01MF | 30% | 16V |
| C801 | 1-162-294-31 | CERAMIC | 0.001MF | 10% | 50V |
| C851 | 1-123-611-00 | ELECT | 1MF | 20% | 50V |
| C852 | 1-123-613-00 | ELECT | 3.3MF | 20% | 50V |
| C853 | 1-162-288-31 | CERAMIC | 330PF | 10% | 50V |
| C854 | 1-123-821-00 | ELECT | 47MF | 20% | 16V |
| C902 | 1-123-339-00 | ELECT | 3300MF | 20% | 25V |
| C903 | 1-124-348-00 | ELECT | 470MF | 20% | 35V |
| C905 | 1-123-491-51 | (302).....ELECT | 4700MF | 20% | 16V |
| C905 | 1-123-327-00 | (302ES,520ES)...ELECT | 4700MF | 20% | 16V |
| C906 | 1-123-311-00 | ELECT | 1000MF | 20% | 10V |
| C911 | 1-123-346-00 | ELECT | 220MF | 20% | 35V |
| C912 | 1-123-360-00 | ELECT | 100MF | 20% | 50V |
| C913 | 1-123-345-00 | ELECT | 100MF | 20% | 35V |
| C951 | 1-130-789-00 | FILM | 1MF | 10% | 100V |
| C952 | 1-123-339-00 | ELECT | 3300MF | 20% | 25V |
| C953 | 1-124-348-00 | ELECT | 470MF | 20% | 35V |
| C955 | 1-123-326-00 | (302).....ELECT | 3300MF | 20% | 16V |
| C955 | 1-123-339-00 | (302ES,520ES)...ELECT | 3300MF | 20% | 25V |
| C956 | 1-123-311-00 | ELECT | 1000MF | 20% | 10V |
| C961 | 1-136-173-00 | FILM | 0.47MF | 5% | 50V |
| C962 | 1-123-307-00 | ELECT | 100MF | 20% | 10V |
| C991 | ▲ 1-161-744-00 | CERAMIC | 0.01MF | | 400V |
| C992 | ▲ 1-162-742-00 | (302ES)...CERAMIC | 0.0022MF | 20% | 400V |
| C993 | ▲ 1-161-742-00 | CERAMIC | 0.0022MF | 20% | 400V |
| C994 | ▲ 1-162-742-00 | (302ES)...CERAMIC | 0.0022MF | 20% | 400V |
| C995 | ▲ 1-162-742-00 | (302ES)...CERAMIC | 0.0022MF | 20% | 400V |

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ELECTRICAL PARTS

| Ref.No. | Part No. | Description |
|---------------------|--------------|--|
| CNJ301 | 1-562-677-11 | SOCKET, CONNECTOR |
| CNJ411 | 1-507-912-11 | (302).....JACK, PIN 2P |
| CNJ411 | 1-507-912-21 | (302ES,520ES)...JACK, PIN 2P |
| CNJ412 | 1-507-863-11 | JACK, LARGE TYPE, HEADPHONES |
| CNJ511 | 1-507-912-11 | JACK, PIN 2P |
| △ CNJ991 | 1-526-609-00 | (302 US, 302ES, E, 520ES).....CONNECTOR, AC OUTLET |
| △ CNJ991 | 1-526-751-11 | (302ES,UK).....OUTLET, AC |
| △ CNJ991 | 1-526-794-11 | (302ES;AEP,G-AEP).....OUTLET, AC |
| △ CNJ991 | 1-526-882-00 | (302 Canadian).....OUTLET, AC |
| CNP151*1-560-073-00 | | PIN, CONNECTOR (U TYPE) |
| CNP201 | 1-564-710-11 | PIN, CONNECTOR (SMALL TYPE) 8P |
| CNP202*1-564-707-11 | | PIN, CONNECTOR (SMALL TYPE) 5P |
| CNP203*1-564-706-11 | | PIN, CONNECTOR (SMALL TYPE) 4P |
| CNP301*1-564-507-41 | | PLUG, CONNECTOR 4P |
| CNP302 | 1-564-708-11 | (302ES)...PIN, CONNECTOR (SMALL TYPE) 6P |
| CNP302 | 1-564-710-11 | (302).....PIN, CONNECTOR (SMALL TYPE) 8P |
| CNP303*1-560-064-00 | | PIN, CONNECTOR 6P |
| CNP304*1-564-712-11 | | PIN, CONNECTOR (SMALL TYPE) 10P |
| CNP305 | 1-564-710-11 | PIN, CONNECTOR (SMALL TYPE) 8P |
| CNP306*1-564-505-11 | | PLUG, CONNECTOR 2P |
| CNP307*1-564-507-21 | | PLUG, CONNECTOR 4P |
| CNP308*1-564-506-11 | | PLUG, CONNECTOR 3P |
| CNP309*1-564-506-11 | | PLUG, CONNECTOR 3P |
| CNP310*1-564-507-31 | | PLUG, CONNECTOR 4P |
| CNP401*1-564-507-41 | | PLUG, CONNECTOR 4P |
| CNP402*1-564-509-11 | | PLUG, CONNECTOR 6P |
| CNP404*1-564-506-11 | | PLUG, CONNECTOR 3P |
| CNP504*1-564-506-11 | | PLUG, CONNECTOR 3P |
| CNP601*1-564-519-11 | | PLUG, CONNECTOR 4P |
| CNP602*1-564-505-11 | | PLUG, CONNECTOR 2P |
| CNP603*1-564-505-21 | | PLUG, CONNECTOR 2P |
| CNP604*1-564-505-31 | | PLUG, CONNECTOR 2P |
| CNP605*1-564-505-41 | | PLUG, CONNECTOR 2P |
| CNP606*1-564-506-11 | | PLUG, CONNECTOR 3P |
| CNP607*1-564-517-11 | | PLUG, CONNECTOR 2P |
| CNP702*1-564-519-21 | | PLUG, CONNECTOR 4P |
| CNP705*1-560-039-00 | | PIN, CONNECTOR |
| CNP706*1-560-039-00 | | PIN, CONNECTOR |
| CNP708*1-564-725-11 | | PIN, CONNECTOR (SMALL TYPE) 9P |
| CNP901*1-564-505-11 | | PLUG, CONNECTOR 2P |
| CNP902*1-564-507-11 | | PLUG, CONNECTOR 4P |
| △ CNP991 | 1-555-386-00 | (302ES;E).....CORD, POWER |
| △ CNP991 | 1-555-701-00 | (520ES).....CORD, POWER |
| △ CNP991 | 1-555-795-11 | (302ES;AEP,G-AEP).....CORD, POWER |
| △ CNP991 | 1-555-835-11 | (302ES;UK).....CORD, POWER |
| △ CNP991 | 1-555-874-00 | (302;US).....CORD, POWER |
| △ CNP991 | 1-557-577-11 | (302;Canadian).....CORD, POWER |

ELECTRICAL PARTS

| Ref.No. | Part No. | Description |
|---------|----------------|---|
| D51 | 8-719-911-19 | DIODE 1SS119 |
| D201 | 8-719-951-13 | DIODE HZ5CLL |
| D202 | 8-719-911-19 | DIODE 1SS119 |
| D205 | 8-719-911-19 | DIODE 1SS119 |
| D211 | 8-719-911-19 | DIODE 1SS119 |
| D213 | 8-719-101-32 | DIODE RD2.7EL1 |
| D301 | 8-719-911-19 | DIODE 1SS119 |
| D302 | 8-719-902-39 | DIODE KV1236Z |
| D651 | 8-719-200-02 | DIODE 10E-2 |
| D652 | 8-719-200-02 | DIODE 10E-2 |
| D653 | 8-719-200-02 | DIODE 10E-2 |
| D701 | 8-719-911-19 | DIODE 1SS119 |
| D702 | 8-719-911-19 | DIODE 1SS119 |
| D703 | 8-719-911-19 | DIODE 1SS119 |
| D704 | 8-719-100-29 | DIODE RD5.1EB1 |
| D805 | 8-719-907-81 | DIODE BG5535S |
| D806 | 8-719-907-80 | DIODE AA5335S |
| D807 | 8-719-918-57 | DIODE GL-5NG27 |
| D809 | 8-719-907-81 | DIODE BG5535S |
| D851 | 8-719-110-32 | DIODE PH302B |
| D901 | 8-719-200-31 | DIODE 21DQ05 |
| D902 | 8-719-200-31 | DIODE 21DQ05 |
| D903 | 8-719-200-31 | DIODE 21DQ05 |
| D904 | 8-719-200-31 | DIODE 21DQ05 |
| D905 | 8-719-210-12 | DIODE 10DF2 |
| D906 | 8-719-210-12 | DIODE 10DF2 |
| D907 | 8-719-210-12 | DIODE 10DF2 |
| D908 | 8-719-210-12 | DIODE 10DF2 |
| D909 | 8-719-200-02 | DIODE 10E-2 |
| D910 | 8-719-200-02 | DIODE 10E-2 |
| D911 | 8-719-911-19 | DIODE 1SS119 |
| D912 | 8-719-911-19 | DIODE 1SS119 |
| D913 | 8-719-101-07 | DIODE RD33EB3 |
| D914 | 8-719-911-19 | DIODE 1SS119 |
| D915 | 8-719-100-48 | DIODE RD8.2EB2 |
| F901 | △ 1-532-078-00 | (302ES;AEP,G-AEP).....FUSE, TIME LAG (1A) |
| F901 | △ 1-532-286-00 | (302ES;UK).....FUSE, TIME LAG (2.5A) |
| F902 | △ 1-532-078-00 | (302ES;AEP,G-AEP).....FUSE, TIME LAG (1A) |
| FLD201 | 1-519-304-00 | INDICATOR TUBE, FLUORESCENT |
| H151 | 8-719-800-31 | DIODE THS103A-1 |
| H152 | 8-719-800-31 | DIODE THS103A-1 |
| IC151 | 8-759-600-02 | IC CX20109 |
| IC201 | 8-752-010-80 | IC CX20108 |
| IC202 | 8-759-700-58 | IC NJM4558D-FA |

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CDP-302/302ES/520ES

ELECTRICAL PARTS

| Ref.No. | Part No. | Description |
|---------|--------------|---|
| IC301 | 8-759-602-25 | IC M50760-414P |
| IC302 | 8-759-913-84 | IC MSM6404A-41RS |
| IC303 | 8-759-913-82 | IC MSM6404A-39RS |
| IC304 | 8-759-202-13 | IC TC74HC04P |
| IC305 | 8-759-100-82 | IC UPC4082C |
| IC306 | 8-759-145-58 | IC UPC4558C |
| IC307 | 8-759-912-52 | IC CX23035 |
| IC308 | 8-759-913-72 | IC MB8416-20LPF |
| IC309 | 8-759-912-53 | IC CX23034 |
| IC310 | 8-752-015-20 | IC CX20152 |
| IC311 | 8-759-140-53 | IC UPD4053BC |
| IC312 | 8-759-984-66 | IC MB84066B |
| IC401 | 8-759-910-75 | IC TDB0353DP |
| IC402 | 8-759-602-33 | IC CX20197 |
| IC403 | 8-759-602-33 | IC CX20197 |
| IC501 | 8-759-910-75 | IC TDB0353DP |
| IC502 | 8-759-602-33 | IC CX20197 |
| IC503 | 8-759-602-33 | IC CX20197 |
| IC801 | 8-759-600-35 | IC M54940P |
| IC851 | 8-752-010-60 | IC CX20106 |
| IC901 | 8-759-700-51 | IC NJM7805A |
| IC902 | 8-759-700-28 | IC NJM7905A |
| IC903 | 8-759-170-12 | IC UPC78M12H |
| IC904 | 8-759-700-24 | IC NJM79M12A |
| IC905 | 8-759-700-11 | IC NJM78M05A |
| IC906 | 8-759-700-20 | IC NJM79M05A |
| L51 | 1-408-563-00 | MICRO INDUCTOR 10UH |
| L301 | 1-426-212-11 | COIL (RF) |
| L302 | 1-406-123-11 | COIL (OSC) |
| L303 | 1-408-597-00 | MICRO INDUCTOR 3.3UH |
| L304 | 1-408-597-00 | MICRO INDUCTOR 3.3UH |
| L305 | 1-408-597-00 | MICRO INDUCTOR 3.3UH |
| L601 | 1-408-117-00 | MICRO INDUCTOR 10UH |
| L901 | 1-421-580-00 | (302,520ES)...TRANSFORMER, POWER |
| L901 | 1-421-340-11 | (302ES;AEP,G-AEP,UK)...LINE FILTER |
| M53 | 1-422-197-13 | COIL (DRIVE) |
| M651 | X-4902-019-1 | MOTOR ASSY, CHUCKING |
| M652 | A-4608-303-A | MOTOR ASSY, LOADING |
| PL901 | 1-518-370-00 | (302)...LAMP, PILOT |
| PT901A | 1-448-016-11 | (302,520ES)...TRANSFORMER, POWER |
| PT901A | 1-448-017-11 | (302ES;E)...TRANSFORMER, POWER |
| PT901A | 1-448-018-11 | (302ES;AEP,G-AEP,UK)...TRANSFORMER, POWER |
| PS301 | 1-532-685-00 | LINK, IC |
| PS901 | 1-532-675-00 | LINK, IC |
| PS902 | 1-532-675-00 | LINK, IC |

ELECTRICAL PARTS

| Ref.No. | Part No. | Description |
|---------|--------------|----------------------|
| PS951 | 1-532-675-00 | LINK, IC |
| PS952 | 1-532-675-00 | LINK, IC |
| Q151 | 8-729-177-44 | TRANSISTOR 2SD774-5 |
| Q152 | 8-729-103-43 | TRANSISTOR 2SB734-2 |
| Q153 | 8-729-177-44 | TRANSISTOR 2SD774-5 |
| Q154 | 8-729-103-43 | TRANSISTOR 2SB734-2 |
| Q201 | 8-729-177-44 | TRANSISTOR 2SD774-5 |
| Q202 | 8-729-374-02 | TRANSISTOR 2SB740 |
| Q203 | 8-729-177-44 | TRANSISTOR 2SD774-5 |
| Q204 | 8-729-374-02 | TRANSISTOR 2SB740 |
| Q205 | 8-729-177-44 | TRANSISTOR 2SD774-5 |
| Q206 | 8-729-374-02 | TRANSISTOR 2SB740 |
| Q209 | 8-729-117-54 | TRANSISTOR 2SA1175 |
| Q210 | 8-729-100-13 | TRANSISTOR 2SC2001 |
| Q211 | 8-729-900-74 | TRANSISTOR DTC143TS |
| Q212 | 8-729-900-74 | TRANSISTOR DTC143TS |
| Q213 | 8-729-900-89 | TRANSISTOR DTC144ES |
| Q301 | 8-729-177-44 | TRANSISTOR 2SD774-5 |
| Q302 | 8-729-374-02 | TRANSISTOR 2SB740 |
| Q303 | 8-729-900-81 | TRANSISTOR DTC114ES |
| Q304 | 8-729-900-81 | TRANSISTOR DTC114ES |
| Q305 | 8-729-900-81 | TRANSISTOR DTC114ES |
| Q306 | 8-729-900-81 | TRANSISTOR DTC114ES |
| Q307 | 8-729-900-62 | TRANSISTOR DTA114ES |
| Q308 | 8-729-900-81 | TRANSISTOR DTC114ES |
| Q309 | 8-729-178-55 | TRANSISTOR 2SC2785-E |
| Q310 | 8-729-900-81 | TRANSISTOR DTC114ES |
| Q401 | 8-729-800-43 | TRANSISTOR 2SK152 |
| Q501 | 8-729-800-43 | TRANSISTOR 2SK152 |
| Q801 | 8-729-900-46 | TRANSISTOR DTC143TF |
| Q802 | 8-729-900-46 | TRANSISTOR DTC143TF |
| Q803 | 8-729-900-46 | TRANSISTOR DTC143TF |
| Q804 | 8-729-987-42 | TRANSISTOR 2SA874 |
| Q901 | 8-729-177-44 | TRANSISTOR 2SD774-5 |
| Q902 | 8-729-178-55 | TRANSISTOR 2SC2785-E |
| Q903 | 8-729-178-55 | TRANSISTOR 2SC2785-E |
| Q904 | 8-729-900-62 | TRANSISTOR DTA114ES |
| Q905 | 8-729-117-54 | TRANSISTOR 2SA1175 |
| Q906 | 8-729-900-81 | TRANSISTOR DTC114ES |
| R151 | 1-247-831-00 | CARBON 1K 5% 1/6W |
| R152 | 1-247-831-00 | CARBON 1K 5% 1/6W |
| R153 | 1-247-831-00 | CARBON 1K 5% 1/6W |
| R154 | 1-247-831-00 | CARBON 1K 5% 1/6W |
| R155 | 1-247-831-00 | CARBON 1K 5% 1/6W |
| R156 | 1-247-831-00 | CARBON 1K 5% 1/6W |

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ELECTRICAL PARTS

| Ref.No. | Part No. | Description | | | |
|---------|--------------|-------------|------|----|------|
| 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 |
| R201 | 1-247-863-00 | CARBON | 22K | 5% | 1/6W |
| R202 | 1-247-851-00 | CARBON | 6.8K | 5% | 1/6W |
| R203 | 1-247-867-00 | CARBON | 33K | 5% | 1/6W |
| R204 | 1-247-847-00 | CARBON | 4.7K | 5% | 1/6W |
| R205 | 1-247-819-00 | CARBON | 330 | 5% | 1/6W |
| R206 | 1-247-865-00 | CARBON | 27K | 5% | 1/6W |
| R207 | 1-247-807-00 | CARBON | 100 | 5% | 1/6W |
| R208 | 1-247-851-00 | CARBON | 6.8K | 5% | 1/6W |
| R209 | 1-247-864-00 | CARBON | 24K | 5% | 1/6W |
| R210 | 1-247-851-00 | CARBON | 6.8K | 5% | 1/6W |
| R211 | 1-247-831-00 | CARBON | 1K | 5% | 1/6W |
| R212 | 1-247-859-00 | CARBON | 15K | 5% | 1/6W |
| R213 | 1-247-855-00 | CARBON | 10K | 5% | 1/6W |
| R214 | 1-247-837-00 | CARBON | 1.8K | 5% | 1/6W |
| R215 | 1-247-879-00 | CARBON | 100K | 5% | 1/6W |
| R216 | 1-247-869-00 | CARBON | 39K | 5% | 1/6W |
| R217 | 1-247-855-00 | CARBON | 10K | 5% | 1/6W |
| R218 | 1-247-903-00 | CARBON | 1M | 5% | 1/6W |
| R219 | 1-247-831-00 | CARBON | 1K | 5% | 1/6W |
| R220 | 1-247-807-00 | CARBON | 100 | 5% | 1/6W |
| R221 | 1-247-863-00 | CARBON | 22K | 5% | 1/6W |
| R222 | 1-247-857-00 | CARBON | 12K | 5% | 1/6W |
| R223 | 1-247-841-00 | CARBON | 2.7K | 5% | 1/6W |
| R224 | 1-247-869-00 | CARBON | 39K | 5% | 1/6W |
| R225 | 1-247-843-00 | CARBON | 3.3K | 5% | 1/6W |
| R226 | 1-247-859-00 | CARBON | 15K | 5% | 1/6W |
| R227 | 1-247-845-00 | CARBON | 3.9K | 5% | 1/6W |
| R228 | 1-247-815-00 | CARBON | 220 | 5% | 1/6W |
| R229 | 1-247-865-00 | CARBON | 27K | 5% | 1/6W |
| R231 | 1-247-883-00 | CARBON | 150K | 5% | 1/6W |
| R232 | 1-247-899-00 | CARBON | 680K | 5% | 1/6W |
| R235 | 1-247-855-00 | CARBON | 10K | 5% | 1/6W |
| R236 | 1-247-855-00 | CARBON | 10K | 5% | 1/6W |
| R242 | 1-247-855-00 | CARBON | 10K | 5% | 1/6W |
| R243 | 1-247-895-00 | CARBON | 470K | 5% | 1/6W |
| R244 | 1-247-839-00 | CARBON | 2.2K | 5% | 1/6W |
| R245 | 1-247-855-00 | CARBON | 10K | 5% | 1/6W |
| R246 | 1-247-831-00 | CARBON | 1K | 5% | 1/6W |
| R247 | 1-247-871-00 | CARBON | 47K | 5% | 1/6W |
| R301 | 1-247-847-00 | CARBON | 4.7K | 5% | 1/6W |
| R302 | 1-247-841-00 | CARBON | 2.7K | 5% | 1/6W |

ELECTRICAL PARTS

| Ref.No. | Part No. | Description | | | |
|---------|--------------|-------------|------|----|------|
| R303 | 1-215-453-00 | METAL | 22K | 1% | 1/6W |
| R304 | 1-215-453-00 | METAL | 22K | 1% | 1/6W |
| R305 | 1-247-851-00 | CARBON | 6.8K | 5% | 1/6W |
| R306 | 1-247-857-00 | CARBON | 12K | 5% | 1/6W |
| R307 | 1-247-867-00 | CARBON | 33K | 5% | 1/6W |
| R308 | 1-247-831-00 | CARBON | 1K | 5% | 1/6W |
| R309 | 1-247-879-00 | CARBON | 100K | 5% | 1/6W |
| R310 | 1-247-879-00 | CARBON | 100K | 5% | 1/6W |
| R311 | 1-247-879-00 | CARBON | 100K | 5% | 1/6W |
| R313 | 1-214-741-00 | METAL | 3.3K | 1% | 1/4W |
| R314 | 1-214-745-00 | METAL | 4.7K | 1% | 1/4W |
| R315 | 1-214-769-00 | METAL | 47K | 1% | 1/4W |
| R316 | 1-214-745-00 | METAL | 4.7K | 1% | 1/4W |
| R317 | 1-247-855-00 | CARBON | 10K | 5% | 1/6W |
| R318 | 1-247-855-00 | CARBON | 10K | 5% | 1/6W |
| R319 | 1-247-903-00 | CARBON | 1M | 5% | 1/6W |
| R320 | 1-247-843-00 | CARBON | 3.3K | 5% | 1/6W |
| R321 | 1-247-871-00 | CARBON | 47K | 5% | 1/6W |
| R322 | 1-247-855-00 | CARBON | 10K | 5% | 1/6W |
| R323 | 1-247-855-00 | CARBON | 10K | 5% | 1/6W |
| R324 | 1-247-855-00 | CARBON | 10K | 5% | 1/6W |
| R325 | 1-247-863-00 | CARBON | 22K | 5% | 1/6W |
| R326 | 1-247-863-00 | CARBON | 22K | 5% | 1/6W |
| R327 | 1-247-855-00 | CARBON | 10K | 5% | 1/6W |
| R351 | 1-215-441-00 | METAL | 6.8K | 1% | 1/6W |
| R352 | 1-215-441-00 | METAL | 6.8K | 1% | 1/6W |
| R353 | 1-247-903-00 | CARBON | 1M | 5% | 1/6W |
| R354 | 1-247-856-00 | CARBON | 11K | 5% | 1/6W |
| R355 | 1-247-856-00 | CARBON | 11K | 5% | 1/6W |
| R357 | 1-247-863-00 | CARBON | 22K | 5% | 1/6W |
| R358 | 1-247-843-00 | CARBON | 3.3K | 5% | 1/6W |
| R359 | 1-247-869-00 | CARBON | 39K | 5% | 1/6W |
| R360 | 1-215-453-00 | METAL | 22K | 1% | 1/6W |
| R361 | 1-247-815-00 | CARBON | 220 | 5% | 1/6W |
| R362 | 1-247-815-00 | CARBON | 220 | 5% | 1/6W |
| R363 | 1-247-887-00 | CARBON | 220K | 5% | 1/6W |
| R365 | 1-247-851-00 | CARBON | 6.8K | 5% | 1/6W |
| R366 | 1-247-807-00 | CARBON | 100 | 5% | 1/6W |
| R367 | 1-215-449-00 | METAL | 15K | 1% | 1/6W |
| R368 | 1-247-807-00 | CARBON | 100 | 5% | 1/6W |
| R401 | 1-214-733-00 | METAL | 1.5K | 1% | 1/4W |
| R402 | 1-214-742-00 | METAL | 3.6K | 1% | 1/4W |
| R403 | 1-214-759-00 | METAL | 18K | 1% | 1/4W |
| R404 | 1-214-745-00 | METAL | 4.7K | 1% | 1/4W |
| R405 | 1-214-741-00 | METAL | 3.3K | 1% | 1/4W |


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ELECTRICAL PARTS

| Ref.No. | Part No. | Description | | | |
|---------|--------------|-------------|------|----|------|
| R406 | 1-214-737-00 | METAL | 2.2K | 1% | 1/4W |
| R407 | 1-214-737-00 | METAL | 2.2K | 1% | 1/4W |
| R408 | 1-214-737-00 | METAL | 2.2K | 1% | 1/4W |
| R409 | 1-214-737-00 | METAL | 2.2K | 1% | 1/4W |
| R410 | 1-214-738-00 | METAL | 2.4K | 1% | 1/4W |
| R411 | 1-214-738-00 | METAL | 2.4K | 1% | 1/4W |
| R412 | 1-214-742-00 | METAL | 3.6K | 1% | 1/4W |
| R413 | 1-214-731-00 | METAL | 1.2K | 1% | 1/4W |
| R414 | 1-214-964-00 | METAL | 1M | 1% | 1/4W |
| R415 | 1-214-742-00 | METAL | 3.6K | 1% | 1/4W |
| R416 | 1-214-743-00 | METAL | 3.9K | 1% | 1/4W |
| R417 | 1-214-777-00 | METAL | 100K | 1% | 1/4W |
| R418 | 1-214-705-00 | METAL | 100 | 1% | 1/4W |
| R419 | 1-214-761-00 | METAL | 22K | 1% | 1/4W |
| R420 | 1-214-717-00 | METAL | 330 | 1% | 1/4W |
| R421 | 1-247-815-00 | CARBON | 220 | 5% | 1/6W |
| R431 | 1-247-823-00 | CARBON | 470 | 5% | 1/6W |
| R432 | 1-247-831-00 | CARBON | 1K | 5% | 1/6W |
| R433 | 1-247-847-00 | CARBON | 4.7K | 5% | 1/6W |
| R434 | 1-247-867-00 | CARBON | 33K | 5% | 1/6W |
| R435 | 1-247-815-00 | CARBON | 220 | 5% | 1/6W |
| R501 | 1-214-733-00 | METAL | 1.5K | 1% | 1/4W |
| R502 | 1-214-742-00 | METAL | 3.6K | 1% | 1/4W |
| R503 | 1-214-759-00 | METAL | 18K | 1% | 1/4W |
| R504 | 1-214-745-00 | METAL | 4.7K | 1% | 1/4W |
| R505 | 1-214-741-00 | METAL | 3.3K | 1% | 1/4W |
| R506 | 1-214-737-00 | METAL | 2.2K | 1% | 1/4W |
| R507 | 1-214-737-00 | METAL | 2.2K | 1% | 1/4W |
| R508 | 1-214-737-00 | METAL | 2.2K | 1% | 1/4W |
| R509 | 1-214-737-00 | METAL | 2.2K | 1% | 1/4W |
| R510 | 1-214-738-00 | METAL | 2.4K | 1% | 1/4W |
| R511 | 1-214-738-00 | METAL | 2.4K | 1% | 1/4W |
| R512 | 1-214-742-00 | METAL | 3.6K | 1% | 1/4W |
| R513 | 1-214-731-00 | METAL | 1.2K | 1% | 1/4W |
| R514 | 1-214-964-00 | METAL | 1M | 1% | 1/4W |
| R515 | 1-214-742-00 | METAL | 3.6K | 1% | 1/4W |
| R516 | 1-214-743-00 | METAL | 3.9K | 1% | 1/4W |
| R517 | 1-214-777-00 | METAL | 100K | 1% | 1/4W |
| R518 | 1-214-705-00 | METAL | 100 | 1% | 1/4W |
| R519 | 1-214-761-00 | METAL | 22K | 1% | 1/4W |
| R520 | 1-214-717-00 | METAL | 330 | 1% | 1/4W |
| R521 | 1-247-815-00 | CARBON | 220 | 5% | 1/6W |
| R531 | 1-247-823-00 | CARBON | 470 | 5% | 1/6W |
| R532 | 1-247-831-00 | CARBON | 1K | 5% | 1/6W |
| R533 | 1-247-847-00 | CARBON | 4.7K | 5% | 1/6W |

ELECTRICAL PARTS

| Ref.No. | Part No. | Description | | | |
|-----------------|-------------------------|---------------------------|---------------|---------------|-----------------|
| R534 | 1-247-867-00 | CARBON | 33K | 5% | 1/6W |
| R535 | 1-247-815-00 | CARBON | 220 | 5% | 1/6W |
| R601 | 1-247-881-00 | CARBON | 120K | 5% | 1/6W |
| R602 | 1-247-881-00 | CARBON | 120K | 5% | 1/6W |
| R603 | 1-247-885-00 | CARBON | 180K | 5% | 1/6W |
| R604 | 1-247-885-00 | CARBON | 180K | 5% | 1/6W |
| R605 | 1-247-815-00 | CARBON | 220 | 5% | 1/6W |
| R701 | 1-247-783-00 | CARBON | 10 | 5% | 1/6W |
| R702 | 1-247-783-00 | CARBON | 10 | 5% | 1/6W |
| R801 | 1-247-111-00 | CARBON | 150 | 5% | 1/4W |
| R802 | 1-247-119-00 | CARBON | 330 | 5% | 1/4W |
| R803 | 1-247-111-00 | CARBON | 150 | 5% | 1/4W |
| R804 | 1-247-111-00 | CARBON | 150 | 5% | 1/4W |
| R851 | 1-247-775-00 | CARBON | 4.7 | 5% | 1/6W |
| R852 | 1-214-784-00 | METAL | 200K | 1% | 1/4W |
| R853 | 1-247-863-00 | CARBON | 22K | 5% | 1/6W |
| R854 | 1-247-799-00 | CARBON | 47 | 5% | 1/6W |
| R901 | 1-212-865-00 | FUSE | 22 | 5% | 1/4W |
| R911 | 1-212-857-00 | FUSE | 10 | 5% | 1/4W |
| R912 | 1-247-839-00 | CARBON | 2.2K | 5% | 1/6W |
| R913 | 1-244-837-00 | CARBON | 33 | 5% | 1/2W |
| R961 | 1-247-855-00 | CARBON | 10K | 5% | 1/6W |
| R962 | 1-247-859-00 | CARBON | 15K | 5% | 1/6W |
| R963 | 1-247-881-00 | CARBON | 120K | 5% | 1/6W |
| R964 | 1-247-855-00 | CARBON | 10K | 5% | 1/6W |
| R965 | 1-247-847-00 | CARBON | 4.7K | 5% | 1/6W |
| RV201 | 1-226-773-00 | RES, ADJ, METAL GLAZE | 22K | | |
| RV202 | 1-226-703-00 | RES, ADJ, METAL GLAZE | 10K | | |
| RV301 | 1-226-772-00 | RES, ADJ, METAL GLAZE | 4.7K | | |
| RV401 | 1-230-313-00 | RES, VAR, CARBON 20K/20K, | LEVEL | | |
| RV501 | 1-230-313-00 | RES, VAR, CARBON 20K/20K, | LEVEL | | |
| RY901 | 1-515-529-11 | RELAY | | | |
| S651 | 1-554-205-00 | SWITCH, PUSH | | | |
| S652 | 1-554-205-00 | SWITCH, PUSH | | | |
| S653 | 1-553-636-00 | SWITCH, MICRO | | | |
| S654 | 1-553-636-00 | SWITCH, MICRO | | | |
| S655 | 1-554-205-00 | SWITCH, PUSH | | | |
| S656 | 1-554-205-00 | SWITCH, PUSH | | | |
| S801 | 1-553-856-00 | SWITCH, KEY BOARD, PLAY | | | |
| S802 | 1-553-856-00 | SWITCH, KEY BOARD, PAUSE | | | |
| S803 | 1-553-856-00 | SWITCH, KEY BOARD, STOP | | | |
| S804 | 1-553-856-00 | SWITCH, KEY BOARD, OPEN | | | |
| S805 | 1-553-856-00 | SWITCH, KEY BOARD, CLEAR | | | |
| S806 | 1-553-856-00 | SWITCH, KEY BOARD, ◀◀ | | | |

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

Les composants identifiés par une trame et une marque  sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.


CDP-302/302ES/520ES


ELECTRICAL PARTS

| Ref.No. | Part No. | Description |
|---------|---------------|---|
| S807 | 1-553-856-00 | SWITCH, KEY BOARD, ►► |
| S808 | 1-553-856-00 | SWITCH, KEY BOARD, START |
| S809 | 1-553-856-00 | SWITCH, KEY BOARD, ◀◀ |
| S810 | 1-553-856-00 | SWITCH, KEY BOARD, ►►, ◀◀ |
| S811 | 1-553-856-00 | SWITCH, KEY BOARD, ← |
| S812 | 1-553-856-00 | SWITCH, KEY BOARD, → |
| S813 | 1-553-856-00 | SWITCH, KEY BOARD, A↔B |
| S814 | 1-553-856-00 | SWITCH, KEY BOARD, 1/ALL |
| S815 | 1-553-856-00 | SWITCH, KEY BOARD, SET |
| S816 | 1-553-856-00 | SWITCH, KEY BOARD, TIME |
| S901 | 1-553-318-00 | SWITCH, PUSH (AC POWER) (1 KEY), POWER |
| SE51 | 1-422-198-11 | COIL (SENSOR) |
| TB901 | *1-535-121-00 | TERMINAL |
| VS901 | 1-552-963-00 | (302ES;E)...SWITCH POWER/VOLTAGE SELECT |
| X301 | 1-527-532-00 | OSCILLATOR, CERAMIC |
| X302 | 1-567-336-11 | VIBRATOR, CRYSTAL |

ACCESSORY & PACKING MATERIAL

| No. | Part No. | Description |
|-----|--------------|--|
| 701 | A-4600-438-A | COMMANDER COMPLETE ASSY (RM-D902) |
| 702 | 1-551-315-11 | (302ES,520ES)..CORD, CONNECTION (RK-112) |
| 702 | 1-551-734-11 | (302)...CORD, CONNECTION (RK-74A) |
| 703 | 1-564-085-00 | (302ES;UK)...PLUG, AC (CM-35) |
| 704 | 1-556-372-41 | CORD, CONNECTION (4 CORE) |
| 705 | 3-701-630-00 | BAG, POLYETHYLENE |
| 706 | 3-703-390-01 | (302,520ES)...INSTRUCTION |
| 706 | 3-795-629-14 | (302ES;AEP)...INSTRUCTION |
| 707 | 3-760-149-11 | (302ES)...MANUAL, INSTRUCTION |
| 707 | 3-760-149-21 | (302)...MANUAL, INSTRUCTION |
| 707 | 3-760-149-31 | (302;Canadian)...MANUAL, INSTRUCTION |
| 707 | 3-760-149-41 | (302ES;AEP,G-AEP)...MANUAL, INSTRUCTION |
| 707 | 3-760-402-21 | (520ES)...MANUAL, INSTRUCTION |
| 708 | 4-884-695-03 | CLEANER, DISK |
| 709 | 4-907-610-01 | JOINT |
| 710 | 3-304-973-00 | SHEET, PROTECTION |
| 711 | 4-908-440-11 | (302)...INDIVIDUAL CARTON |
| 711 | 4-908-440-21 | (302ES)...INDIVIDUAL CARTON |
| 711 | 4-908-440-31 | (520ES)...INDIVIDUAL CARTON |
| 712 | 4-908-441-01 | CUSHION (RIGHT), UPPER |
| 713 | 4-908-442-01 | CUSHION (LEFT), UPPER |
| 714 | 4-908-443-01 | CUSHION, LOWER |
| 715 | 4-908-602-01 | HOLDER, COMMANDER |

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