CDP-10
(RM-101)

AEP Model
UK Model
US Model
Canadian Model
E Model

COMPACT DISC PLAYER

SPECIFICATIONS

System	Compact disc digital audio system
Disc	Compact disc
Laser	Semiconductor laser (λ = 780 nm)
Spindle speed	200 r.p.m. to 500 r.p.m. (CLV)
Scan velocity	1.2 - 1.4 m/sec.
Error correction	Sony Super Strategy Cross Interleave Read Solomon Code
Number of channels	2
D-A conversion	16-bit linear
Frequency response	5 - 20,000 Hz ±0.5 dB
Harmonic distortion	Less than 0.004 % (1 kHz)
Dynamic range	More than 90 dB
Signal to noise ratio	More than 90 dB
Channel separation	More than 90 dB
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

Disc

Track pitch	1.6 μm
Sampling frequency	44.1 kHz
Quantization	16 bit linear quantizing/channel
Modulation system	EFM
Transfer rate	2.03 M bit/sec. (before modulation)

General

Power requirements	AEP Model: 220 V ac 50/60 Hz UK model: 240 V ac 50/60 Hz US, Canadian model: 120 V ac 60 Hz E model: 110, 120, 220, or 240 V ac adjustable, 50/60 Hz
Power consumption	30 W
Dimensions	Approx. 355 x 105 x 325 mm (w/h/d) (14 x 4 1/4 x 12 7/8 in.) including Projecting parts and controls
Weight	Approx. 7.6 kg (16 kg (16 lbs 9 oz), net

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.

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.

MICROFILM

SONY®
SERVICE MANUAL

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

LASER WARNING LABELS

The labels shown below are affixed.

1. Protective Housing Label
   1) DHHS Protective Housing Label ..... (US model only)

   - See figure on next page for location of label.

   2) DNHW Protective Housing Label and Laser Radiation Sign Label ..... (Canadian model only)

DNHW Protective Housing Label

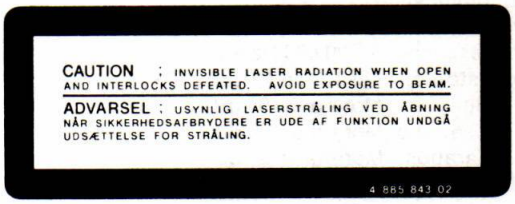
Laser Radiation Sign Label

   - See figure on next page for location of label.

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

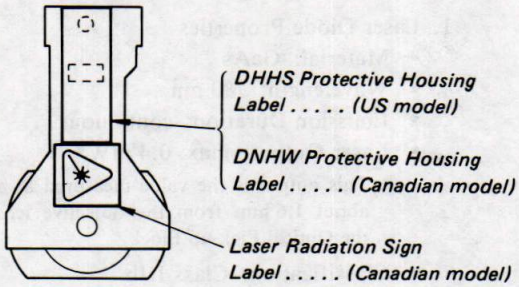
   - See figure on next page for location of label.

3. Caution Label ..... (AEP model only)

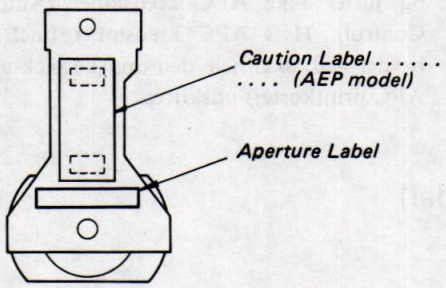


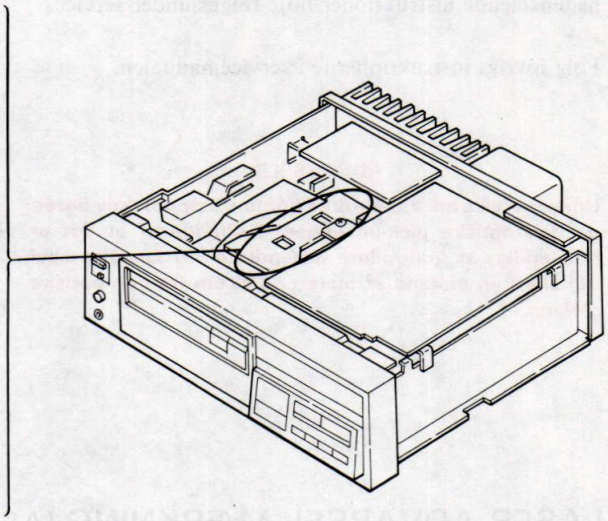
   - See figure on next page for location of label.

- **US, Canadian model**



- **AEP, UK model**





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 microampers). Leakage current can be measured by any one of three methods.

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

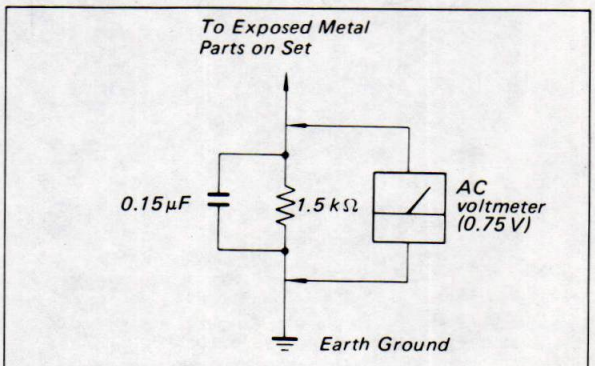


Fig. A. Using an AC voltmeter to check AC leakage.

BESKYTTELSE AF ØJNE MOD LASERSTRÅLING UNDER SERVICE

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

Følg iøvrigt instruktionerne i servicemanualen.

ADVARSEL!!

Under service må øjnene ikke komme nær objektiv-linsen på den optiske pick-up enhed. I tilfælde af at det er nødvendigt at kontrollere udsendelsen af laserlys, skal det ske i en afstand af mere end 30 cm fra den optiske pick-up.

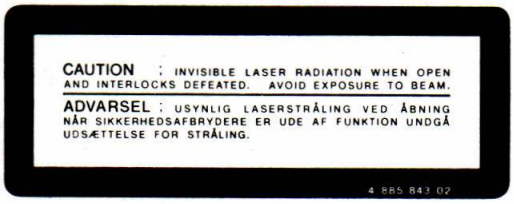
1. Laser Diode Properties
   - Material: GaAs
   - Wavelength: 780 nm
   - Emission Duration: continuous
   - Laser Output: max. 0.4 mW*
     * This output is the value measured at a distance of about 1.6 mm from the objective lens surface on the Optical Pick-up Block.
   - Classification: Class IIIb

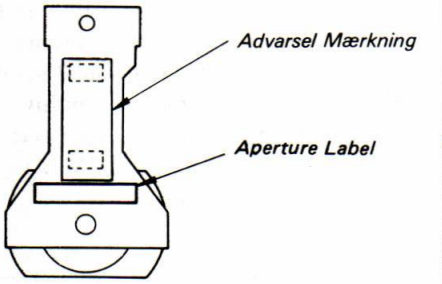
2. Adskil aldrig den optiske pick-up enhed under service, og juster ikke APC kredsløbet (Automatic Power Control). Hvis APC kredsløbet (incl. laser-dioden) bryder ned, skal hele den optiske pick-up enhed (incl. APC printkortet) udskiftes.

LASER ADVARSEL MÆRKNING (AEP model)

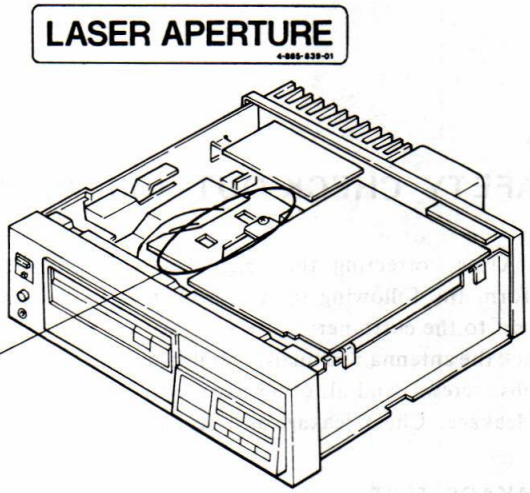
Følgende mærkning findes indvendig i apparatet:

1. Advarsel Mærkning





2. Aperture Label



FEATURES

Excellent Sound Quality and High Performance

The performance and sound quality surpass those of a conventional analog-type disc player.

○ Frequency response	5 Hz-20 kHz within ±0.5 dB
○ Dynamic range	more than 90 dB
○ Harmonic distortion	less than 0.004 % (1 kHz)
○ Channel separation	more than 90 dB
○ Wow & flutter	below measurable range

Full Auto Front Loading Linear Skating Disc Loading Mechanism

The disc is simply placed on the linear skating disc table, which goes in and out horizontally, in order to set the disc in the player. Then by pressing the PLAY button, the disc table closes, the disc is supported by the disc chucking mechanism and play begins.

Full-logic "Feather Touch" Operation

At the lightest touch, the "feather-touch" function buttons enable you to switch directly from one mode to another.

AMS and Repeat Function

The AUTOMATIC MUSIC SENSOR (AMS) function for locating the beginning of a selection on the disc, and the three types of repeat functions: one for the entire disc, one for a portion of the disc, and one for a specific selection allow you to program the operation as you desire.

Digital Readout Display

The track number and the playing time elapsed of the selection playing is shown on the display window. With one touch of the LAP/REMAINING TIME button, this time display will change to indicate with a minus sign how much playing time is left on the disc.

Remote Control Operation

Using the supplied Remote Commander, all the functions of the player as well as a 10-key music select function can be remotely controlled.

Non-contact Signal Readout System

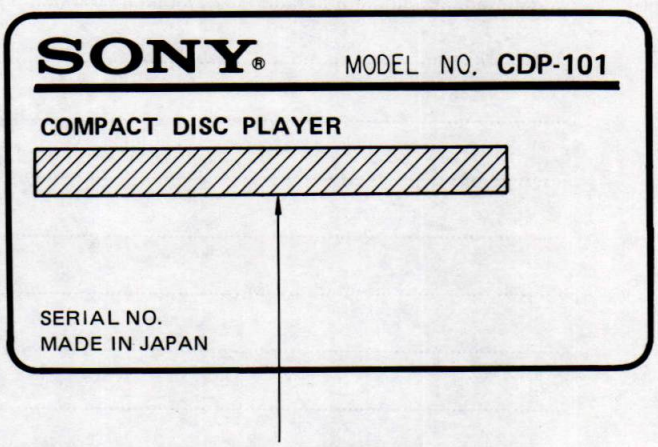
Because a laser beam is employed for signal pick-up, there is no physical contact with the disc, which means no wear.
In addition, because the pit pattern is recorded below the surface of the disc, it is not necessary to be constantly on guard against dust, making the disc easy to handle.

Other Features

- Timer play possible through use of an external timer.
- Auto pause function provided for sing-along enjoyment. (ON/OFF possible)
- Equipped with headphone output pin and level control.
- Accessory connector provided for future system grade-up.
- Equipped with warning mechanism for automatic detection of disc, and proper or improper disc setting.
- Beep sound ON/OFF to confirm remote control operation.
- Automatic detection of emphasis to further improve treble S/N ratio.

MODEL IDENTIFICATION

– Specifcations Labels –



AEP model: AC: 220 V ~50/60 Hz 30 W
UK model: AC: 240 V ~50/60 Hz 30 W
US, Canadian model: AC: 120 V 60 Hz 30 W
E model: AC: 110, 120, 220, 240 V ~50/60 Hz 30 W

MEMO

TABLE OF CONTENTS

RM-101

– CAUTION FOR ELECTROSTATIC BREAKDOWN –

NOTES ON HANDLING THE OPTICAL PICK-UP BLOCK (KSS-100A)

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 from the bag (conductive).
5. Perform work on top of the conductive sheet. Be careful that clothing does not touch the optical pick-up block.

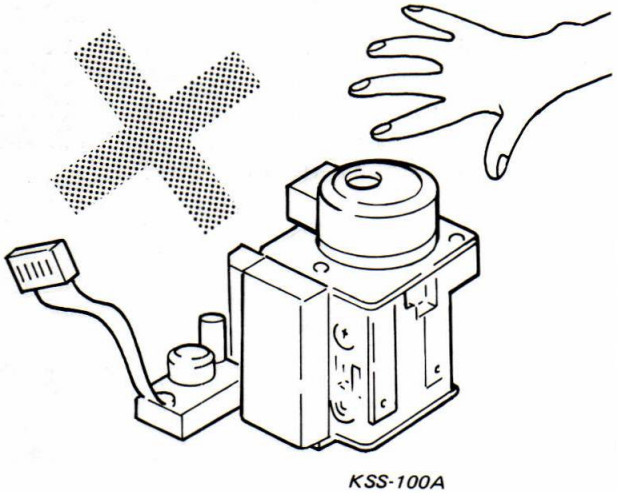
Printed Matter Included in the Repair Parts

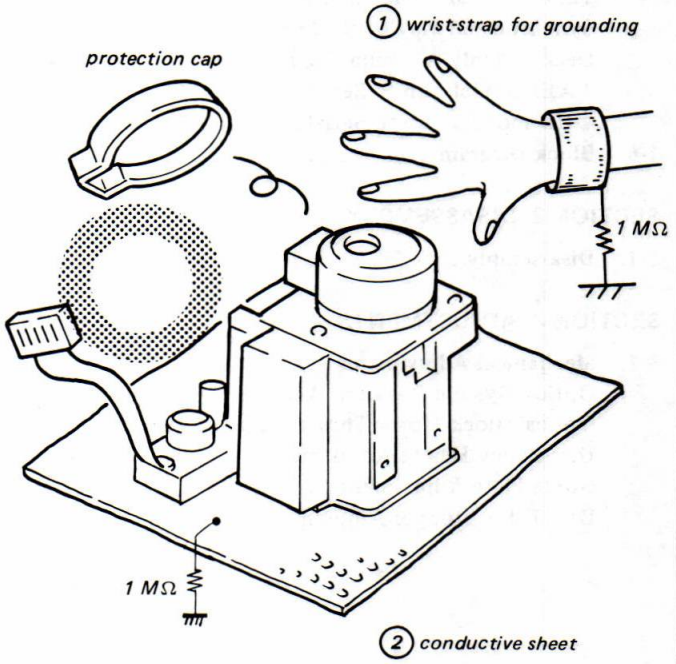
When opening or repairing a KSS-100A, the procedure for grounding as follows is required to prevent damage caused by static electricity.

1 Grounding for the human body
Be sure to put on a wrist-strap for grounding (with impedance lower than 10^8 Ω) whose other end is grounded. The strap works to drain away the static electricity build-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 Ω) such as a sheet of copper, which is grounded.

3 As static electricity build-up on clothes is not drainded away, be careful not to let your clothes touch the KSS-100A.


KSS-100A



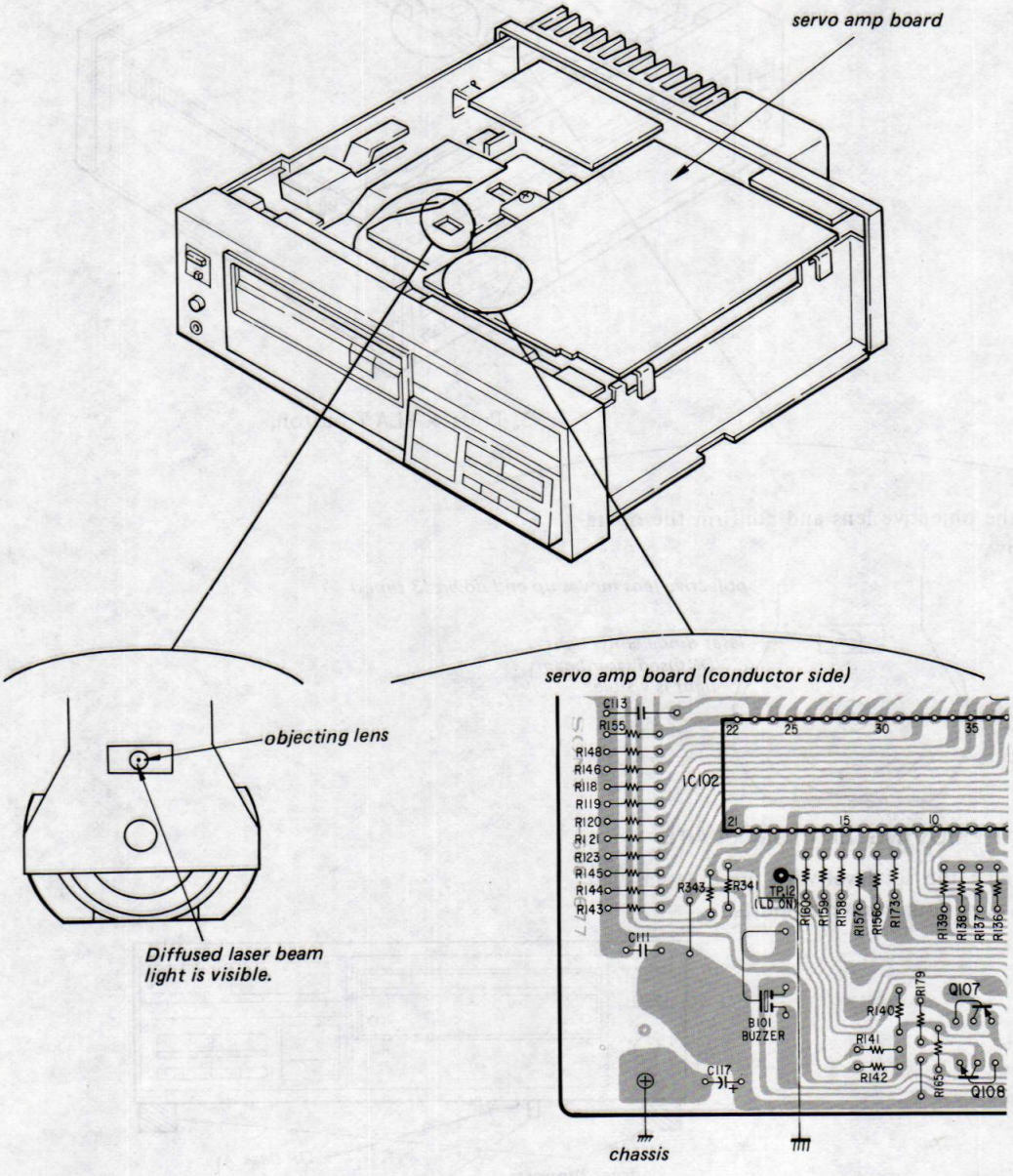
– SERVICING NOTE –

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.

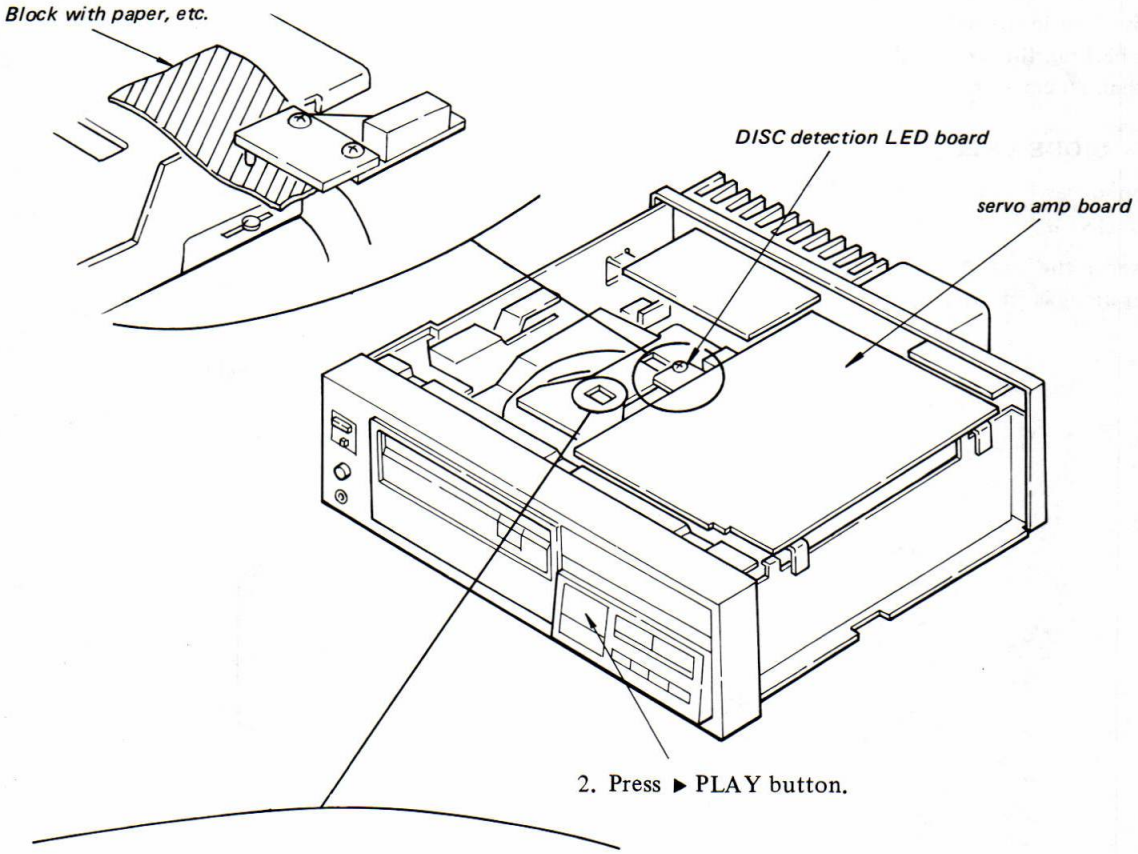
LASER DIODE CHECK

1. Ground servo amp board TP12 (IC102 pin (18) ($\overline{\text{LD ON}}$)).
2. Observe the objective lens and confirm that the laser diode is emitting light.

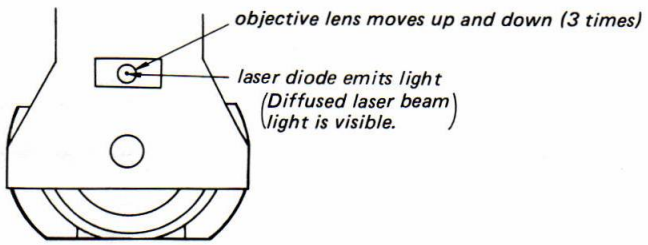


FOCUS SEARCH OPERATION CHECK

1. Block the disc detection phototransistor so that light does not hit it.

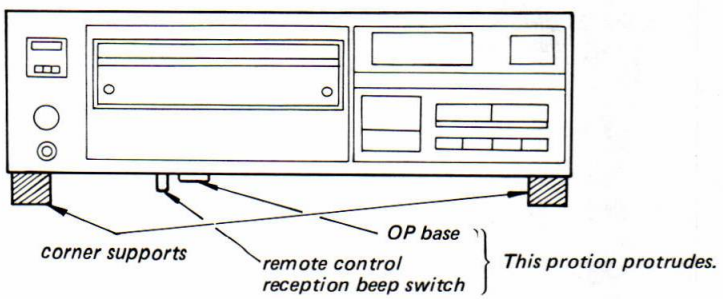


3. Observe the objective lens and confirm the operations below.

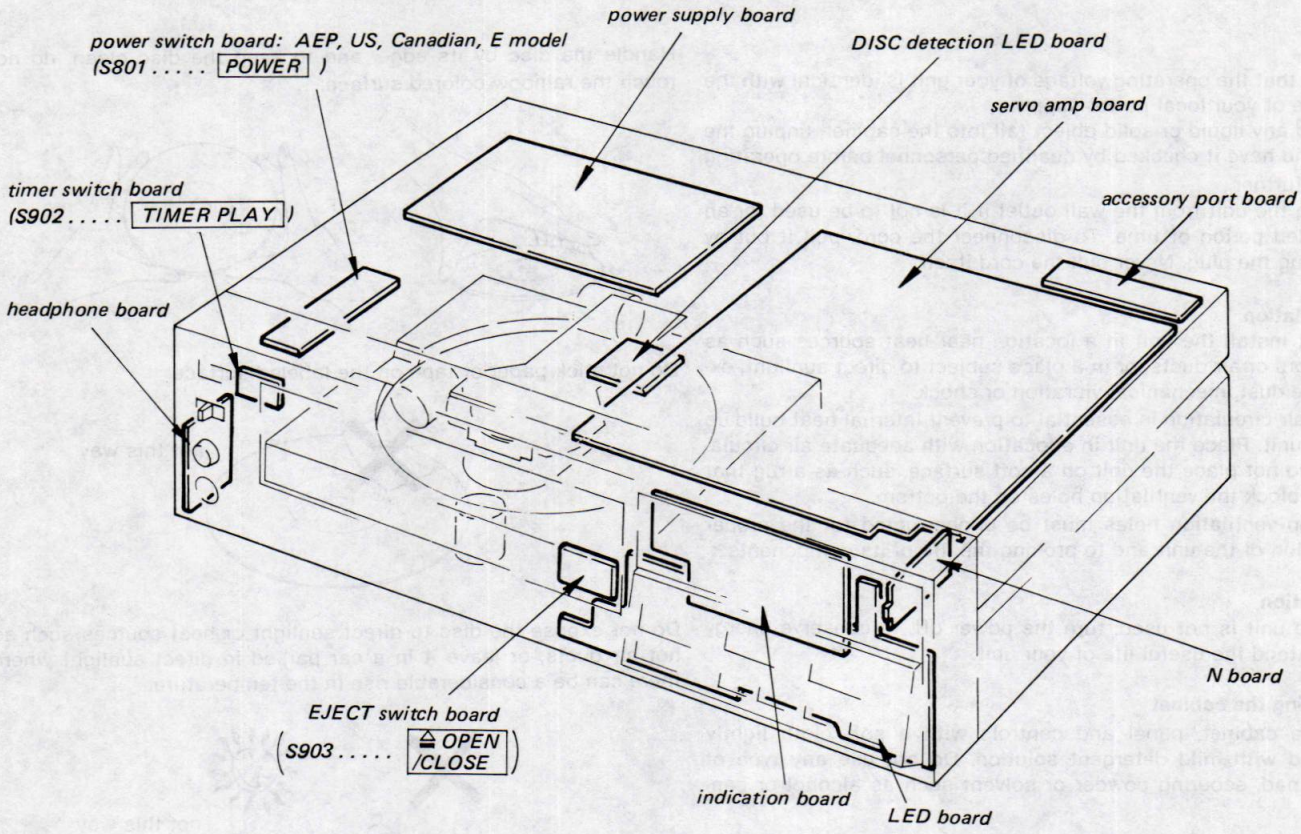


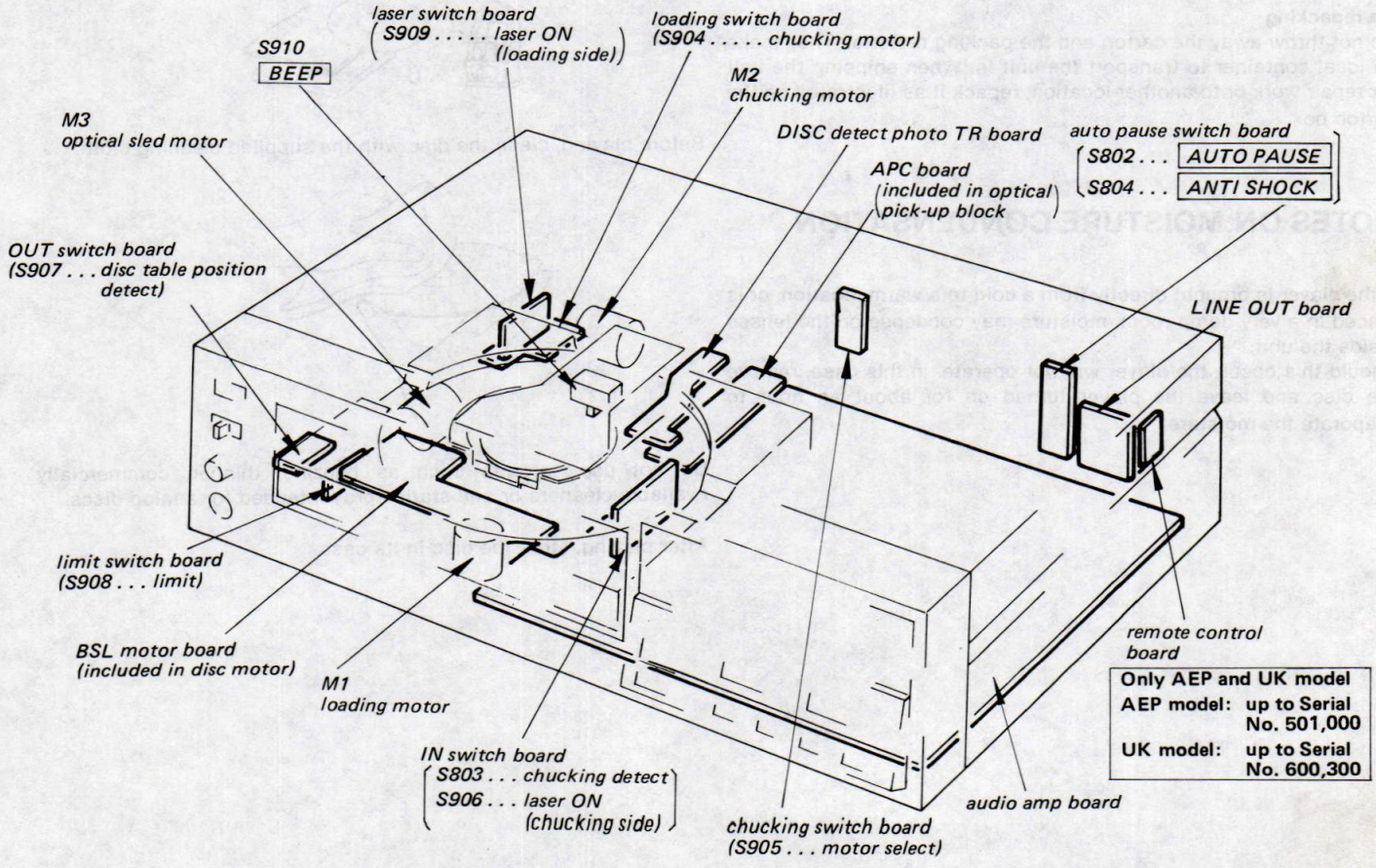
NOTES ON REMOVING BOTTOM PLATE

When placing the set level with the bottom plate removed, place on four corner supports.



CIRCUIT BOARD/SWITCH/MOTOR LOCATION





SECTION 1
OUTLINE

1-1. PRECAUTIONS

On safety

- Check that the operating voltage of your unit is identical with the voltage of your local power supply.
- Should any liquid or solid object fall into the cabinet, unplug the unit and have it checked by qualified personnel before operating it any further.
- Unplug the unit from the wall outlet if it is not to be used for an extended period of time. To disconnect the cord, pull it out by grasping the plug. Never pull the cord itself.

On installation

- Do not install the unit in a location near heat sources such as radiators or air ducts, or in a place subject to direct sunlight, excessive dust, mechanical vibration or shock.
- Good air circulation is essential to prevent internal heat build-up in the unit. Place the unit in a location with adequate air circulation. Do not place the unit on a soft surface, such as a rug that would block the ventilation holes on the bottom.
- The top ventilation holes must be unobstructed for the proper operation of the unit and to prolong the life of its components.

On operation

When the unit is not used, turn the power off, to conserve energy and to extend the useful life of your unit.

On cleaning the cabinet

Clean the cabinet, panel and controls with a soft cloth lightly moistened with mild detergent solution. Do not use any type of abrasive pad, scouring powder or solvent such as alcohol or benzine.

On repacking

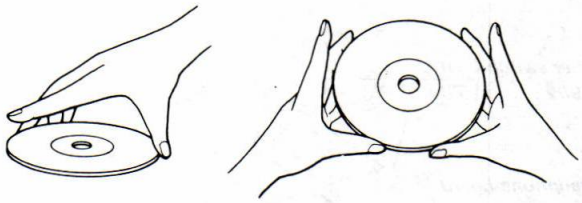
Do not throw away the carton and the packing material. They make an ideal container to transport the unit in. When shipping the unit for repair work or to another location, repack it as illustrated on the carton box.

NOTES ON MOISTURE CONDENSATION

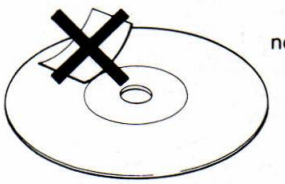
If the player is brought directly from a cold to a warm location, or is placed in a very damp room, moisture may condense on the lenses inside the unit.
Should this occur, the player will not operate. In this case, remove the disc and leave the player turned on for about an hour to evaporate the moisture.

1-2. NOTES ON COMPACT DISCS

Handle the disc by its edge, and to keep the disc clean, do not touch the rainbow colored surface.

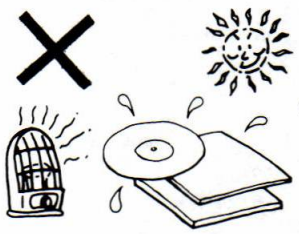


Do not stick paper or tape on the labeled surface.



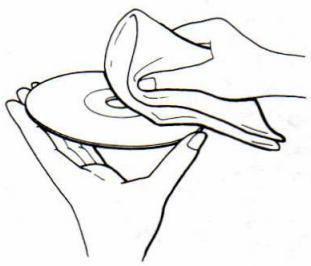
not this way

Do not expose the disc to direct sunlight or heat sources such as hot air ducts, or leave it in a car parked in direct sunlight where there can be a considerable rise in the temperature.



not this way

Before playing, clean the disc with the supplied cleaning cloth.

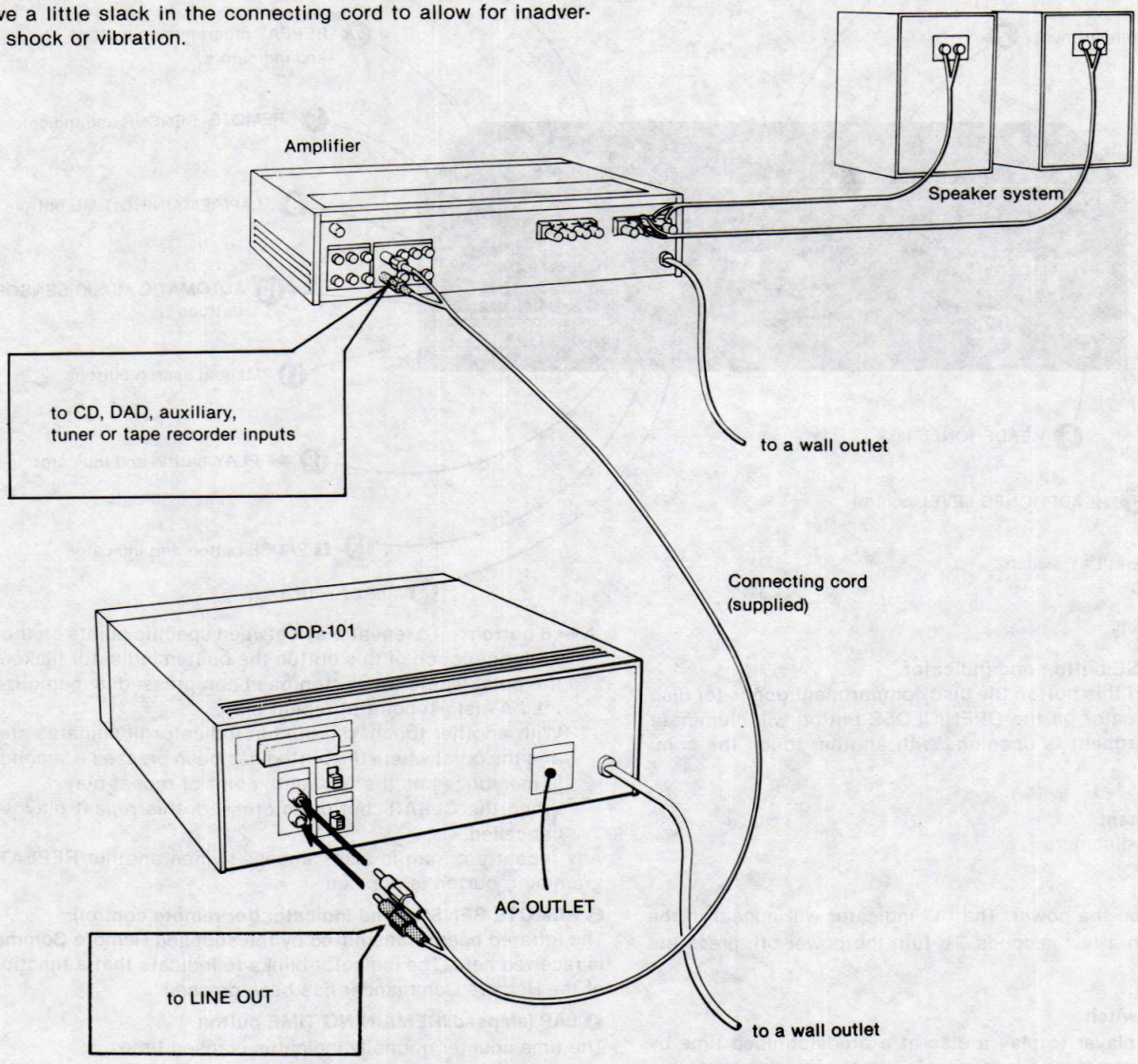


Do not use solvents such as benzine, thinner, commercially available cleaners or anti-static spray intended for analog discs.

After playing, store the disc in its case.

1-3. CONNECTIONS

- Turn off the amplifier before making connections.
- Be sure to insert the cable connectors firmly into the jacks. Loose connections may cause hum and noise.
- Connect the red plug of the supplied connecting cord to the right-channel jack [R] of the amplifier and the white plug to the left-channel jack [L]. Otherwise, the right and left channels will be reversed.
- Leave a little slack in the connecting cord to allow for inadvertent shock or vibration.
- Be sure not to connect the CDP-101 to the PHONO input jacks of the amplifier.
- If the CD player causes interference to radio and television reception, turn off the player or move the player away from the receiver.

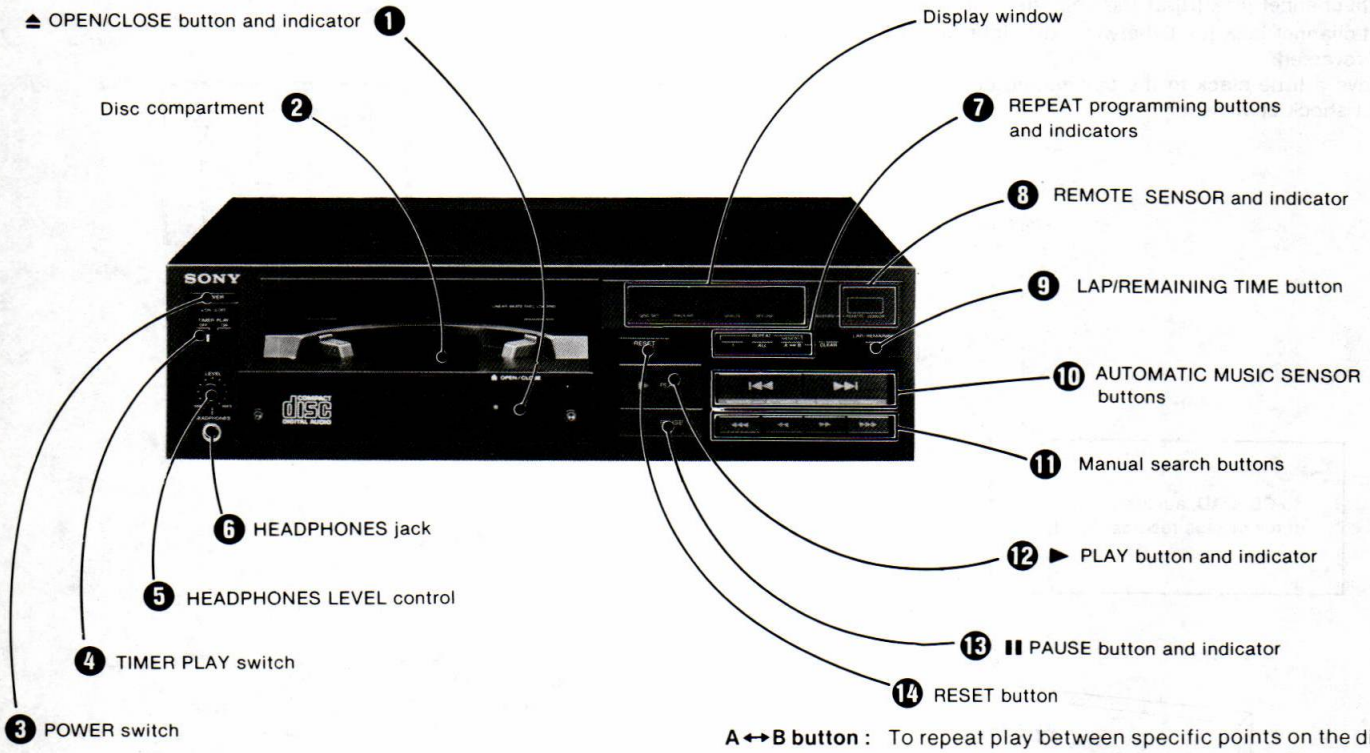


AC OUTLET
An audio component whose power consumption is under 100 watts can be connected to this outlet. This outlet is not controlled by the front panel POWER switch.
Do not connect an electrical home appliance, such as an electric iron, fan, TV or any other high-wattage equipment, to this ac outlet.

Power cord
A white mark is visible on one lead of the power cord. This will help you drive the CDP-101 and other components in the system "in phase" by aligning the ac power cord polarities with ac outlet polarities. In most cases, the marked plug of the CDP-101's power cord should be inserted into the negative potential of the ac outlet.

1-4. LOCATION AND FUCNTION OF CONTROLS

Before plugging in or attempting to operate this unit,
it is suggested that you familiarize yourself with all its switches and controls and the purpose of each.
Each number in the photo is keyed to the descriptive text.



❶ ⏏ OPEN/CLOSE button and indicator
With one touch of this button the disc compartment opens for disc loading. The indicator on the OPEN/CLOSE button will illuminate while the compartment is opening. With another touch the compartment closes.

❷ Disc compartment
Place a compact disc here.

❸ POWER switch
Depress to turn on the power. The "1" indicator will appear in the display window in a few seconds. To turn the power off, press the switch again.

❹ TIMER PLAY switch
You can set the player to play a disc at a predetermined time by connecting any commercially available timer. To play, set this switch to ON. See "Timer-activated play" on page 19.

❺ HEADPHONES LEVEL control
This control adjusts the volume at the headphones. At the minimum position, the sound is just audible.

❻ HEADPHONES jack (stereo phone jack)
Accepts any low or high impedance stereo headphones.

❼ REPEAT programming buttons
Press these buttons to program repeat play of the disc.
1 button : To repeat the selection now being played.
To release repeat play, press the button again.
ALL button : To repeat all the selections on the disc.
To release repeat play, press the button again.

A↔B button : To repeat play between specific points on the disc.
With one touch of this button the built-in indicator flickers and the point where the button has been pressed is memorized as the "A" (start) point of repeat play.
With another touch, the built-in indicator illuminates steadily and the point where the button has been pressed a second time is memorized as the "B" (end) point of repeat play.
When the **CLEAR** button is pressed, this repeat play will be cancelled.
Any repeat program is also cancelled when another REPEAT programming button is pressed.

❽ REMOTE SENSOR and indicator (for remote control)
The infrared beam transmitted by the supplied Remote Commander is received here. The indicator blinks to indicate that a function key of the Remote Commander has been pressed.

❾ LAP (elapsed)/REMAINING TIME button
The time counter normally indicates elapsed time.
When this button is pressed, the time counter will show the time remaining before the end of the last selection, preceded by a minus sign.
When this button is pressed a second time, the time counter will again become a normal time counter.

❿ AUTOMATIC MUSIC SENSOR buttons
⏮ (back selection) button : Press to go back to a previous selection.
⏭ (forward selection) button : Press to skip ahead to a later selection.

⓫ Manual search buttons
Keep holding the appropriate button down to search for a particular point on the disc during either play or pause.
You can monitor the disc sound reproduced in forward or in reverse at a high speed while searching during play.

When you release this button, normal-speed play will resume (during play) or the player will return to the pause mode (during pause).

◀◀ button: To go backwards at a high speed (several times higher than the normal playing speed).

◀◀◀ button: To go backwards at a higher speed than the ◀◀ button.

▶▶ button: To skip ahead at a high speed (several times higher than the normal playing speed).

▶▶▶ button: To skip ahead at a higher speed than the ▶▶ button.

⑫ ▶ PLAY button and indicator

Press to start normal disc play. The built-in ▶ indicator will illuminate.

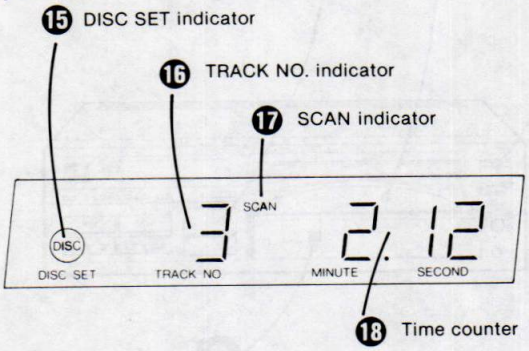
⑬ ❚❚ PAUSE button and indicator

Press to pause during play. The built-in ❚❚ indicator will illuminate. To release the pause mode, press this button again. The indicator will go off and disc play will resume.

⑭ RESET button

When this button is pressed, disc play is reset to the very beginning of the first selection and the player stands by.

Display window



⑮ DISC SET indicator

The indicator flickers when the disc compartment is moving. When the disc compartment has closed with a disc in place (in the standby mode), and during disc playing, the indicator illuminates steadily.

⑯ TRACK NO. indicator

The indicator shows the track number of the selection being played.

If you press the ▶▶ or ▶▶▶ button at the end of the disc, the indicator will change to "7 7" indicating that the end of the last selection has been reached. To return to a previous selection number, press the RESET, |◀◀, ◀◀ or ◀◀◀ button. If you press the ◀◀ or ◀◀◀ button at the beginning of the disc, the indicator will change to "1 1", indicating that the beginning of the first selection has been reached.

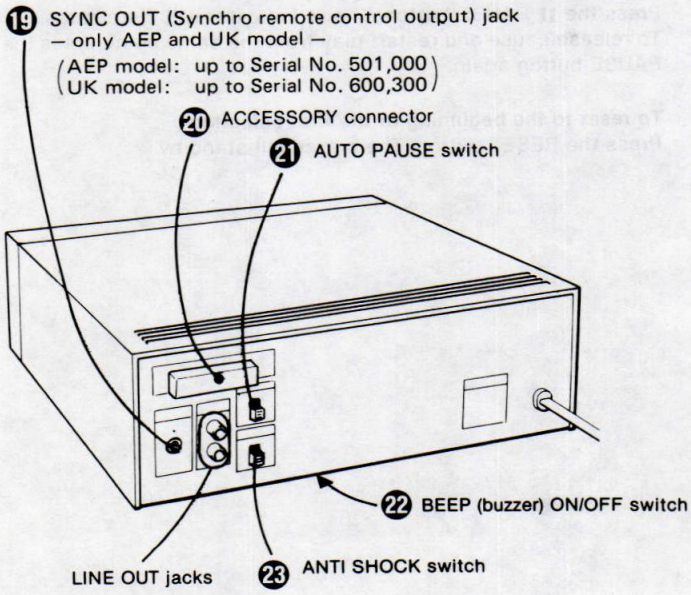
⑰ SCAN indicator

This indicator illuminates while the player is searching for the point on the disc you have programmed.

⑱ Time counter

The counter shows the location in a particular selection by means of actual elapsed time. The first two digits of the counter show playing time of the selection in minutes, and the last two digits show the seconds.

Rear panel



⑲ SYNC OUT (synchro remote control output) jack

— only AEP and UK model —

(AEP model: up to Serial No. 501,000
UK model: up to Serial No. 600,300)

Used for synchronized operation with Sony cassette decks. See page 20.

⑳ ACCESSORY connector

Used to extend the utility of this compact disc player by providing for the connection of optional equipment which will be available in the future.

Do not remove the cover except when connecting any equipment to this connector.

㉑ AUTO PAUSE switch

Normally set to OFF.

When this player is used with an optional microphone amplifier, set to ON to pause after having played each selection.

This auto pause mode is released when the START key on the Remote Commander is pressed.

㉒ BEEP (buzzer) ON/OFF switch (bottom)

Set to ON to have a signal tone sounded when a signal from the supplied Remote Commander is received. Set the switch to OFF when a signal tone is not necessary.

㉓ ANTI SHOCK switch

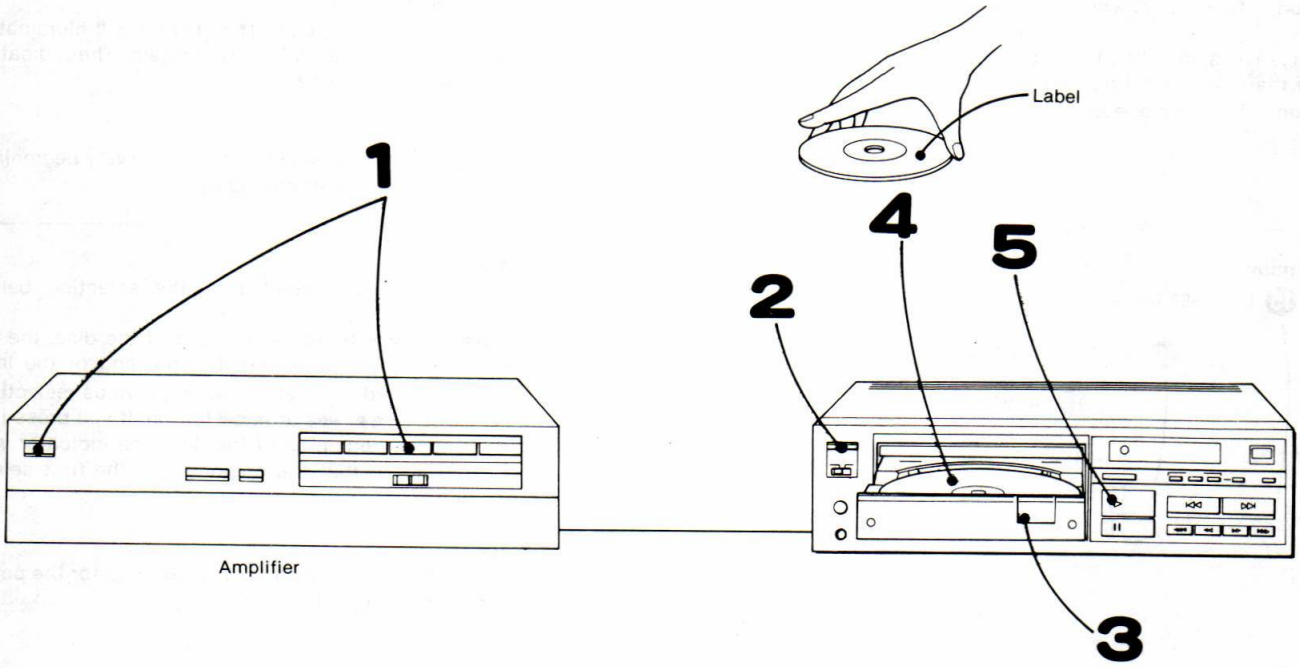
When the player is used in a place subject to excessive vibration and the disc skips frequently, set this switch to ON.

However, when a defective disc is played with this switch set to ON, and it may skip frequently, set this switch to OFF.

1-5. OPERATIONS

DISC PLAYING

TO PLAY



1 Turn the amplifier on and set the input selector to the position corresponding to the input jacks to which the CD player is connected.
2 Depress the POWER switch to turn the player on.
3 Press the OPEN/CLOSE button to open the disc compartment. The DISC SET indicator flickers and the compartment opens.
4 Holding the disc by the rim, place it with the label side up on the compartment.
5 Press the ▶ PLAY button. The compartment will close and play will begin from the beginning of the first selection.

If you press the AUTOMATIC MUSIC SENSOR buttons with the compartment opened, then press the ▶ PLAY button, the compartment will close and play will begin from that selection.

When the player reaches the end of the last selection of the disc, it is automatically reset to the beginning of the disc and stands by. To open the compartment, press the OPEN/CLOSE button.

An important point to remember
In the CD system, a wider dynamic range is achieved than that of the conventional analog system, and the peaks of high level inputs are recorded with high-fidelity. In addition, the noise level is very low.
If you turn up the volume inadvertently while listening to a portion where no audio signals or very low level inputs are recorded, the speakers may be damaged when the portion with peak levels is played.

TO STOP DURING PLAY

To open the compartment
Press the OPEN/CLOSE button. The disc will stop rotating and the compartment will open.

To pause for a moment during play
Press the ❚❚ PAUSE button. The ❚❚ indicator will illuminates.
To release pause and restart play from the same point, press the ❚❚ PAUSE button again.

To reset to the beginning of the first selection
Press the RESET button. The player will stand by.

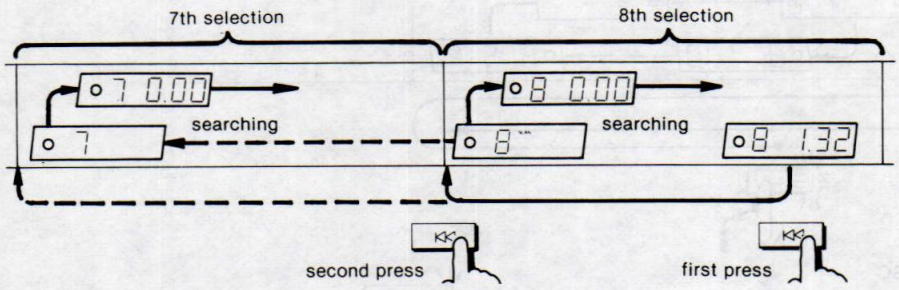
SEARCH OPERATION

TO SEARCH FOR A PARTICULAR SELECTION

Using the ⏮ or ⏭ button, you can quickly locate a desired selection ahead or back. When the button is pressed, the player searches the selection data recorded at the beginning of each selection and play will start from the beginning of the selection.

To search for a back selection

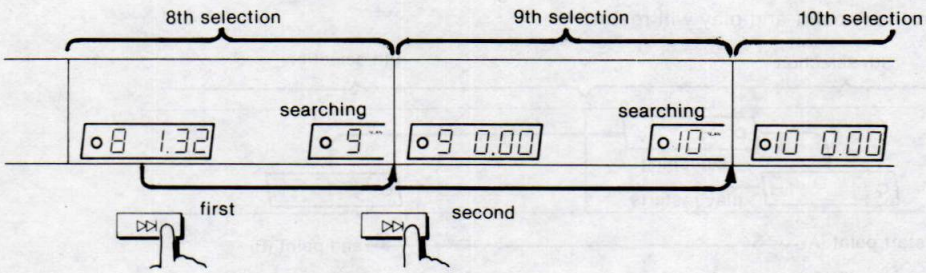
Press the ⏮ button during play or pause.
When the ⏮ button is pressed once, the beginning of the selection being palyed is searched for.
Each time the button is pressed, one selection back is searched for.



Press the ⏮ button repeatedly until the desired music number is displayed.
If you press the ⏮ button after the first selection is located, the TRACK NO. indicator will not change.

To search for a selection ahead

Press the ⏭ button during play or pause.
When the ⏭ button is pressed once, the next selection after that being played is searched for.
Each time the button is pressed, the selection ahead is searched for.

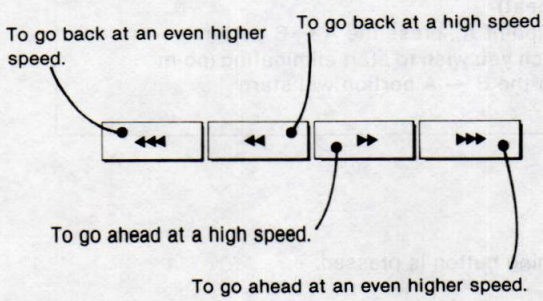


If you press the ⏭ button after the last selection is located, the TRACK NO. display will not change.

TO SEARCH FOR A PARTICULAR POINT IN A SELECTION

Using the manual search buttons, you can locate a particular point of a selection during play or pause. While one of the manual search buttons is held down, the disc playing goes ahead or back. Release the button at the desired point found by observing the time counter or monitoring the high-speed sound during play.

Manual search buttons



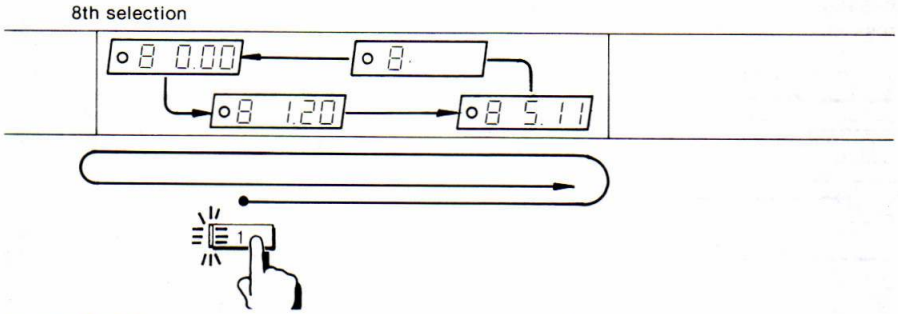
- While pressing the ⏭⏭ or ⏮⏮ button during pause, the time counter indicates only minutes.
- If you press the ⏭ or ⏭⏭ button at the end of the disc, the TRACK NO. indicator will change to "7 7" (end mark).
  To return to a TRACK NO. indicator, press the ⏮, ⏮ or ⏮⏮ button.
- If you press the ⏮ or ⏮⏮ button at the beginning of the disc, the TRACK NO. indicator will change to "1 1" (start mark).

REPEAT PLAY

Using the REPEAT programming buttons, you can repeat the selection being played, the whole disc, or particular portion of the disc.

TO REPEAT ONLY THE SELECTION BEING PLAYED

Press the **1** button during play. The built-in indicator will illuminate. When the disc reaches the end of the selection, it will automatically go back to the beginning of the selection and play will restart.

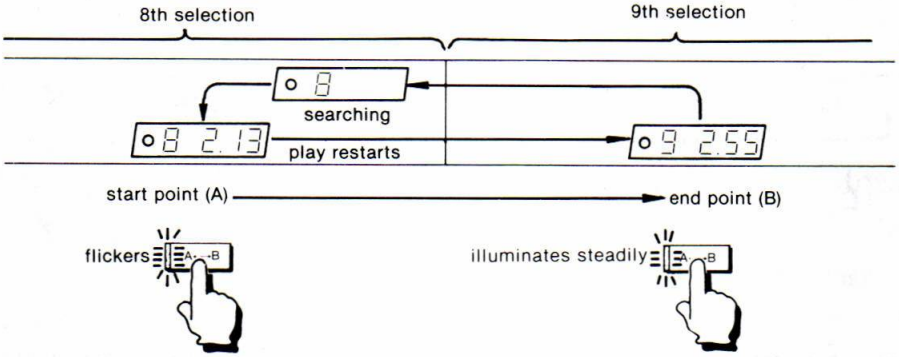


TO REPEAT THE WHOLE DISC

Press the **ALL** button. The built-in indicator will illuminate.
When the disc reaches the end of the last selection, the player will automatically go back to the beginning of the first selection, and play will restart.

TO REPEAT BETWEEN PARTICULAR POINTS

1 When the disc plays the point from which you wish to start the repeat play (point A), press the **A ↔ B** button. The built-in indicator will start flickering showing the A point is memorized.
2 When the disc reaches the point at which you wish to stop the repeat play (point B), press the **A ↔ B** button again. The built-in indicator will then illuminate steadily showing the B point is memorized. The disc will go back to the A point and play will restart.



MORE ABOUT A ↔ B REPEAT FUNCTION

To play from a desired point (memory play)

1 At the point from which you wish to listen later (point A), press the A ↔ B button.
2 When you press the ▶ PLAY button, the disc will go back to the point A and play will restart.

To cancel the point A, press the CLEAR button.

To repeat the whole disc eliminating an unwanted portion (jump repeat)

1 At the point where you wish to end the portion to be eliminated (point A), press the A ↔ B button.
2 Press the ⏮, ◀◀ or ◀◀◀ button to search for the point from which you wish to start eliminating (point B), and then press the A ↔ B button. The repeat play eliminating the B — A portion will start.

To cancel, press the CLEAR button.

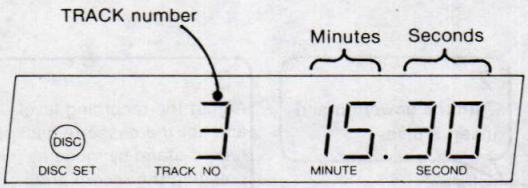
TO CANCEL THE REPEAT PLAY

The **1** or **ALL** repeat play continues until the button is pressed again.
To cancel the **A ↔ B** repeat play, press the **CLEAR** button.
Any repeat program is also cancelled when another REPEAT programming button is pressed.

USING THE TIME COUNTER

TO MONITOR THE ELAPSED PLAYING TIME

Generally, the time counter shows the elapsed playing time from the beginning of the selection in minutes and seconds.
When a new selection starts, the counter is reset to "0.00" and then starts counting time again.
If the selection has a blank space at its beginning, the counter is reset to the time preceded by the minus sign such as "–0.02", "–0.01", etc.



shows 15 minutes 30 seconds has elapsed from the beginning of the third selection

TO MONITOR THE REMAINING PLAYING TIME

When the LAP/REMAINING TIME button is pressed, the counter shows the remaining time, preceded by a minus sign, before the end of the last selection.

shows 30 minutes 00 seconds remaining before the end of the disc

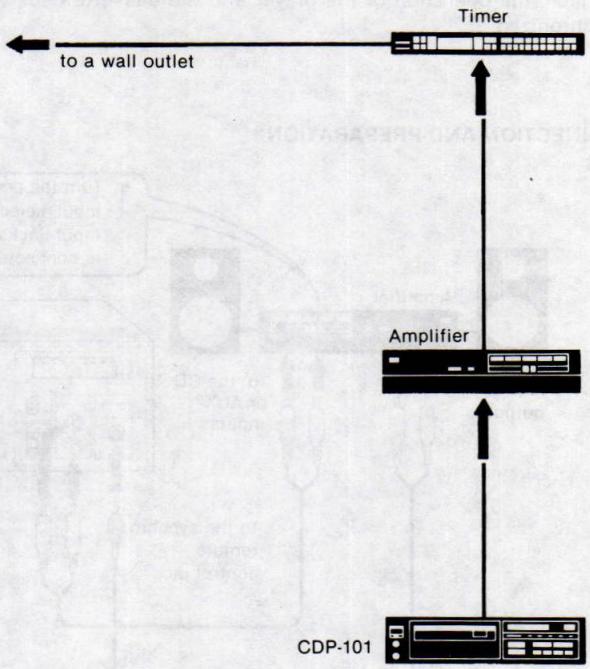
The digits will change, for example, from –30.00 to –29.59, –29.58... as the play goes on, and you can monitor the remaining playing time at any point of the disc.

To return the counter to the elapsed time, press the LAP/REMAINING TIME button again.
When the RESET or OPEN/CLOSE button is pressed, the counter will also return to an elapsed time indication.
Note: When the ⏮ or ⏭ button is pressed, the counter will show the track number of the selection for a few seconds.

TIMER-ACTIVATED PLAY

By connecting any of several commercially-available timers, you can play a disc at any desired time.

Power connection



To play using a timer

1 Set the player's TIMER PLAY switch to OFF.
2 Turn on the amplifier and set the appropriate switches for disk playing.
3 Turn on the player and insert a disc.
4 Set the timer for the desired time.
(At this point, power will be cut off.)
5 Set the player's TIMER PLAY switch to ON.

The player is now ready to start play of the first selection at the time set on the timer.

After the timer-activated play has been completed...
Be sure to set the TIMER PLAY switch of the CDP-101 to OFF.

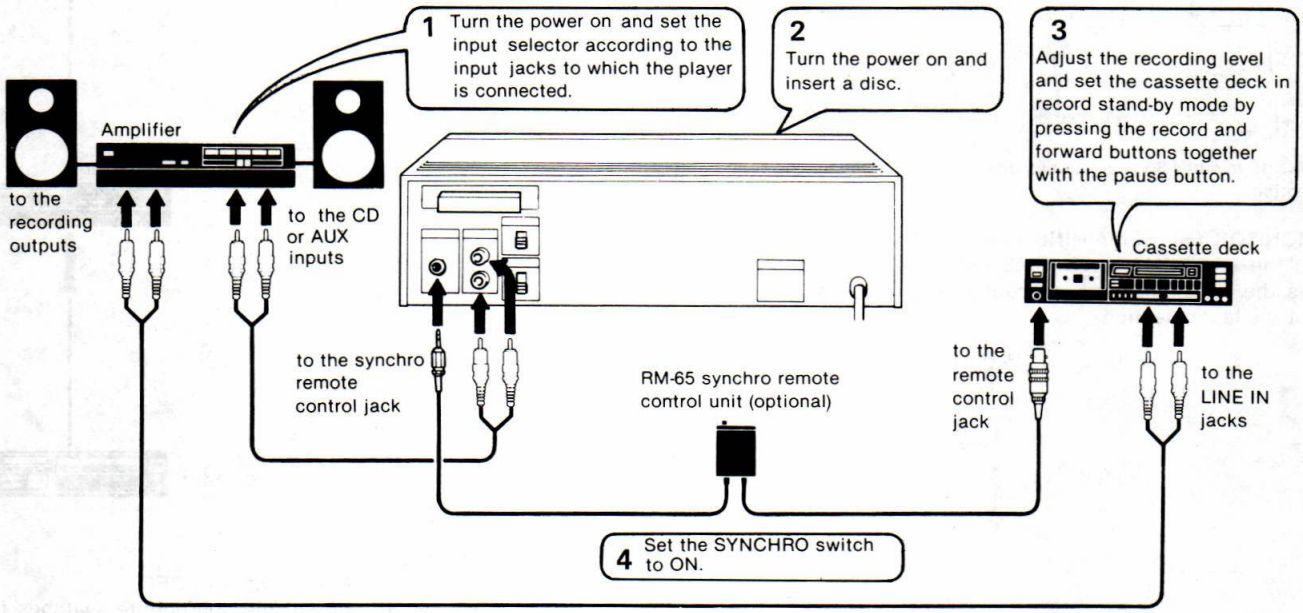
SYNCHRONIZED PLAY OF THE PLAYER AND A CASSETTE DECK — Only AEP and UK model —

(AEP model: up to Serial No. 501,000 UK model: up to Serial No. 600,300)

If an RM-65 synchro remote control unit is used to connect this player with a Sony cassette deck equipped with a 4-pin remote control jack, the operation of the player and the cassette deck will be synchronized.

Cassette decks which can be used with your CD player for this special synchronized operation are those Sony models which are equipped with a 4-pin remote control jack.
An RM-65 synchro remote control unit (optional) is required to connect the CD player and the cassette deck.

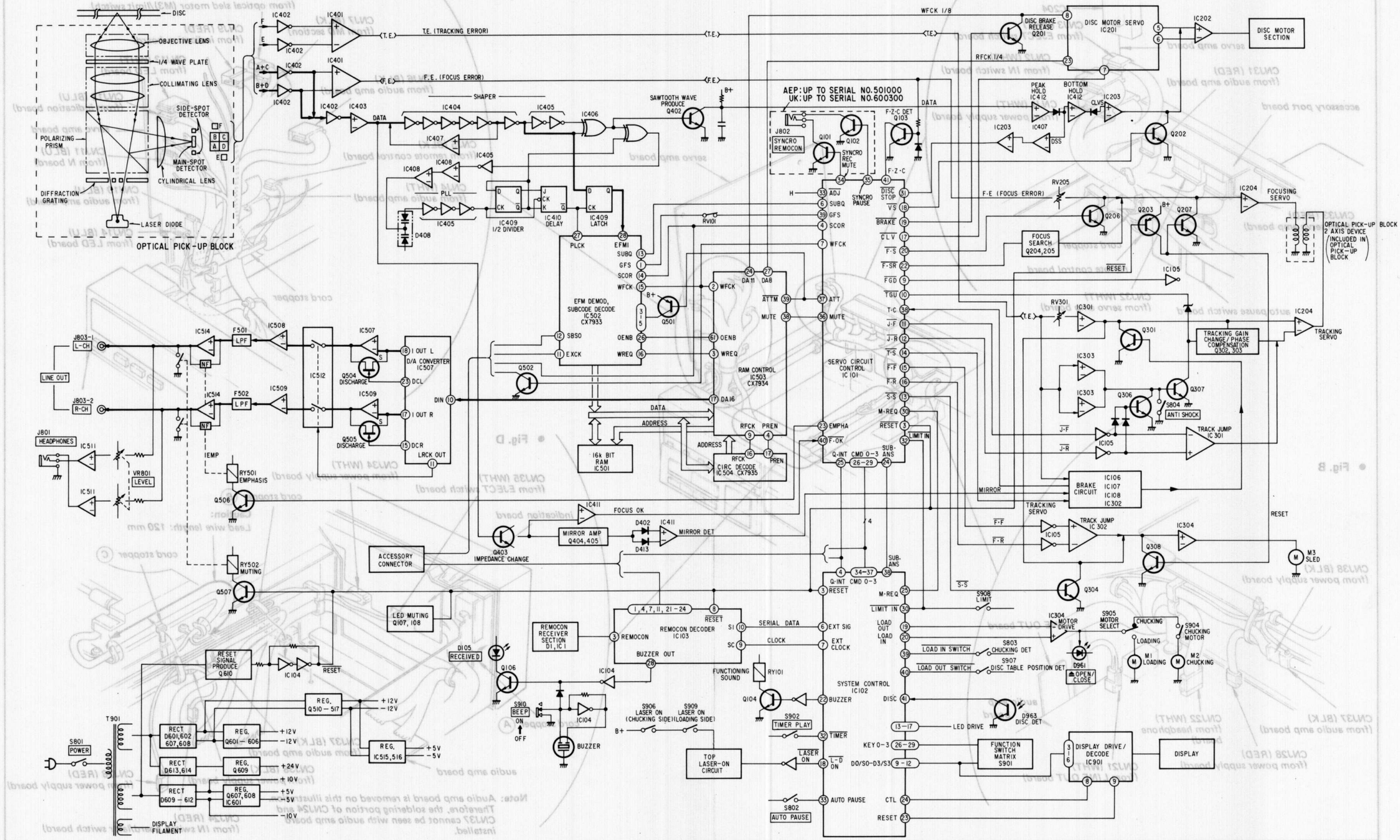
CONNECTION AND PREPARATION



RECORDING

Desired action	Player operation	Synchro operation of the cassette deck
To record from the beginning of a disc...	Press the ▶ PLAY button.	When play begins, the pause mode is released and recording begins.
To record from a particular point on a disc...	Press the ❚❚ PAUSE button and select the desired point with the ⏮, ⏭ or manual search buttons, then press the ❚❚ PAUSE button again to release the pause mode.	When play begins, the pause mode is released and recording begins.
To move to a different point on a disc...	At the point where you wish to stop recording, press the ❚❚ PAUSE button. Select the desired point with the ⏮, ⏭ and manual search buttons, then press the ❚❚ PAUSE button again to release the pause mode.	When play stops, auto record muting activates for four seconds then the pause mode is assumed. When play starts, the pause mode is released and recording begins.
When play ends...	Disc play is automatically reset to the beginning of the first selection and the player stands by.	When play stops, auto record muting activates for four seconds then the pause mode is assumed.
To stop recording during play...	Press the RESET button.	

1-6. BLOCK DIAGRAM



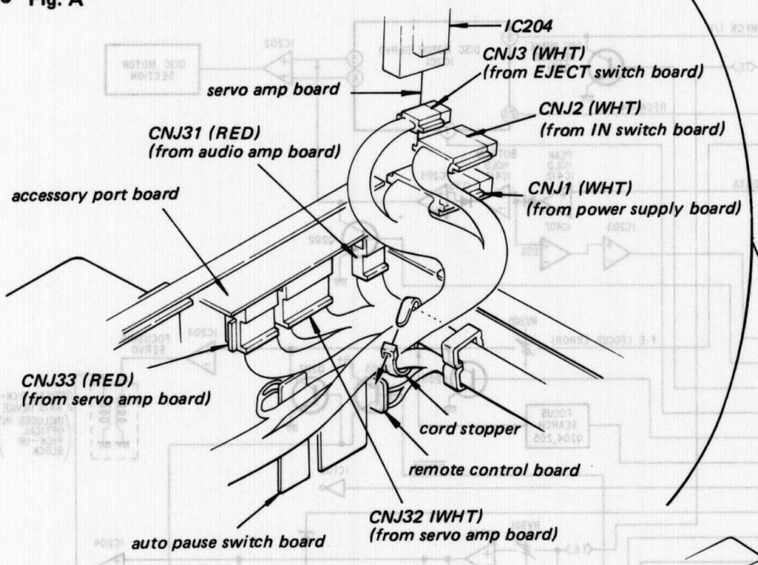
SECTION 2
DISASSEMBLY

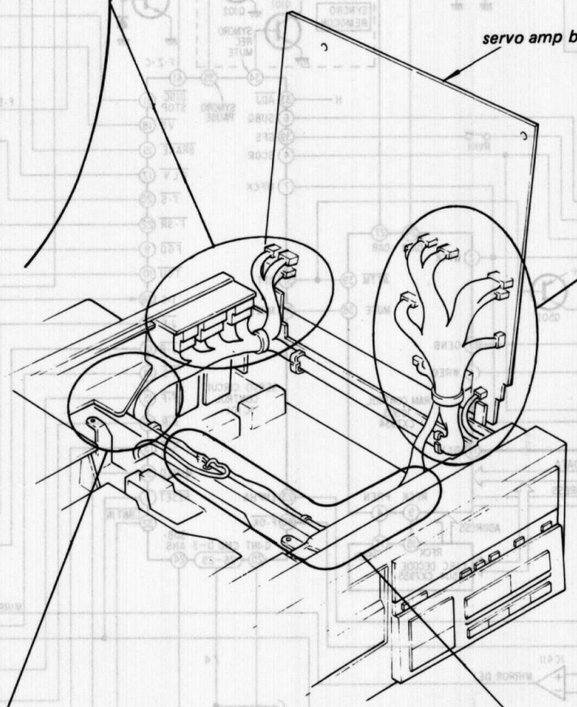
2-1. DISASSEMBLY

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

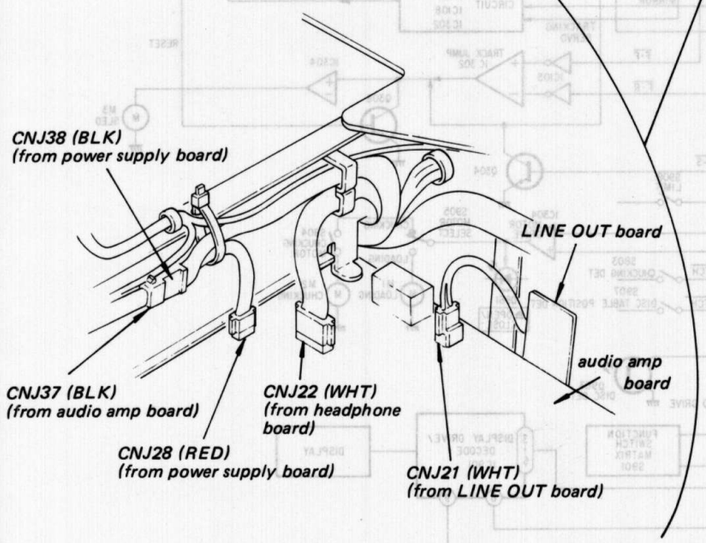
REFERENCE FOR WIRING

● **Fig. A**

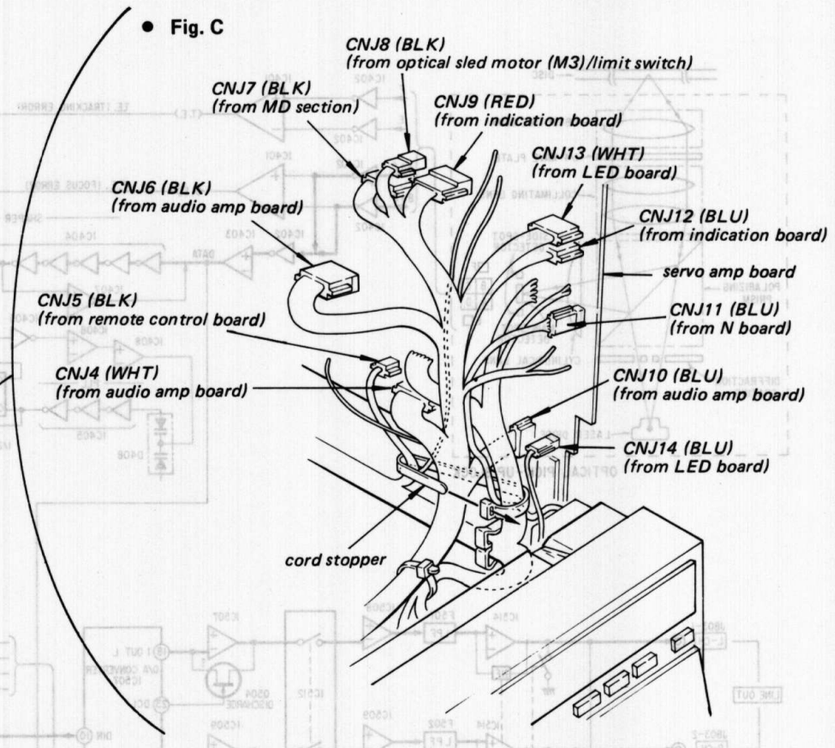




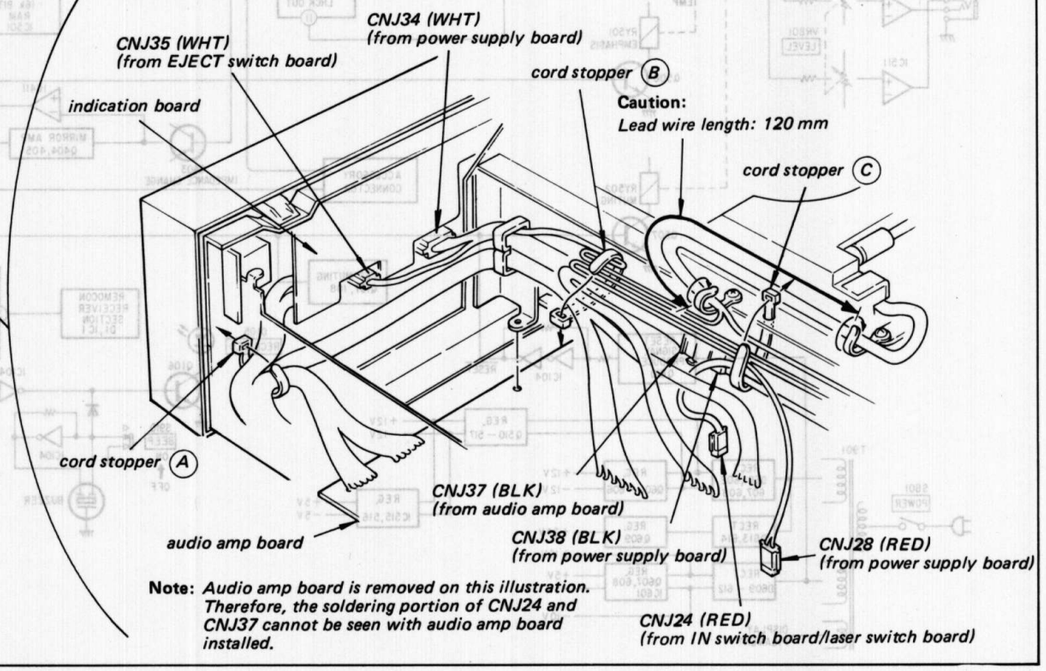
● **Fig. B**



● **Fig. C**

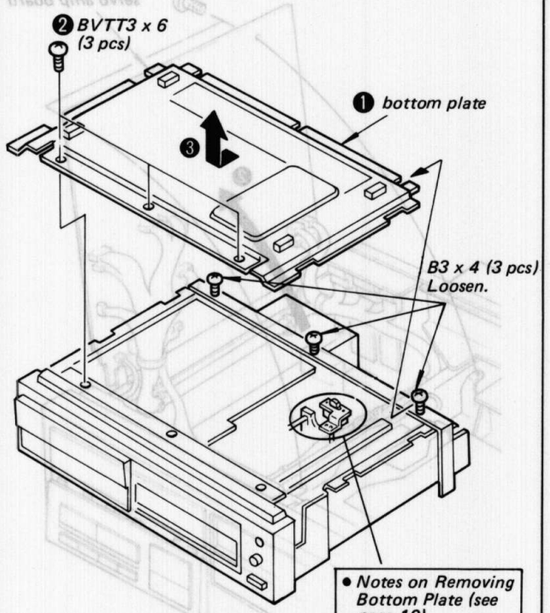


● **Fig. D**

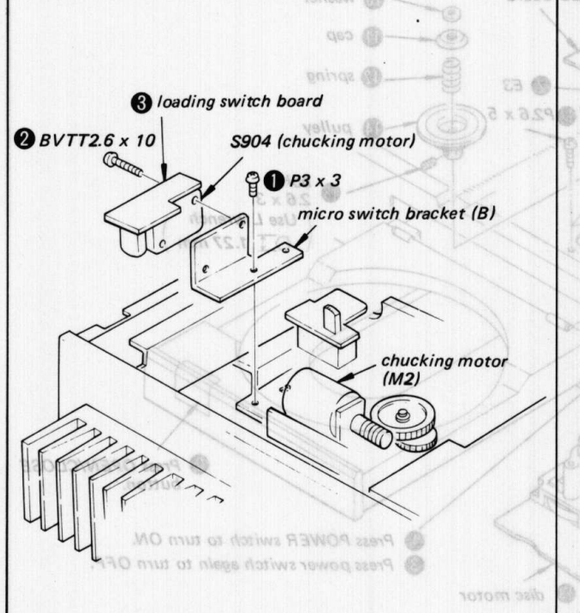


Note: *Audio amp board is removed on this illustration. Therefore, the soldering portion of CNJ24 and CNJ37 cannot be seen with audio amp board installed.*

BOTTOM PLATE

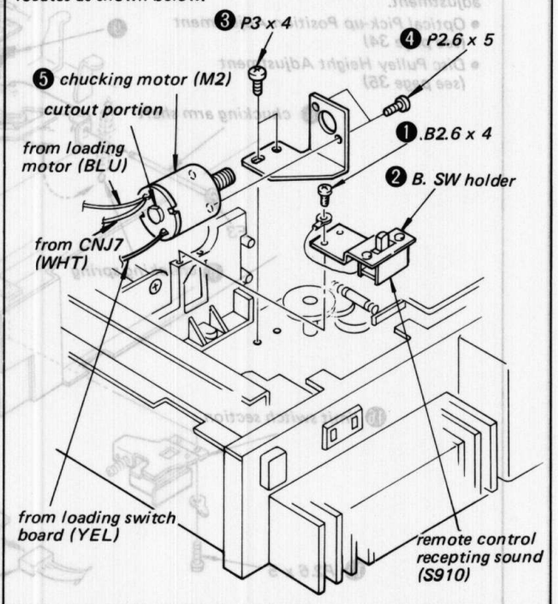


LOADING SWITCH BOARD

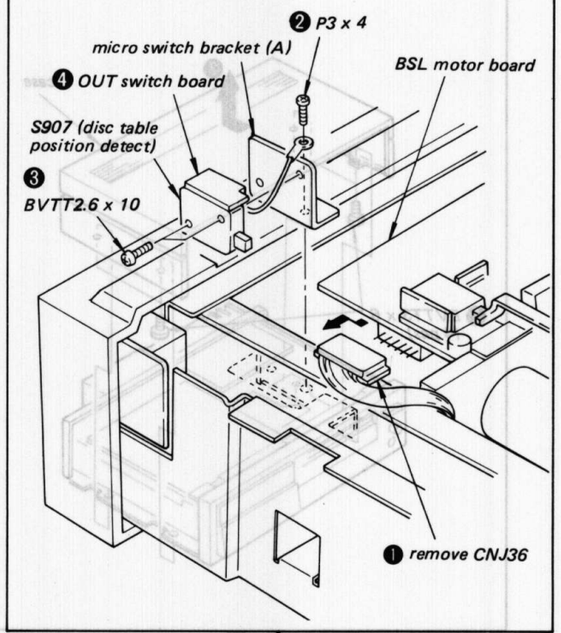


CHUCKING MOTOR (M2)

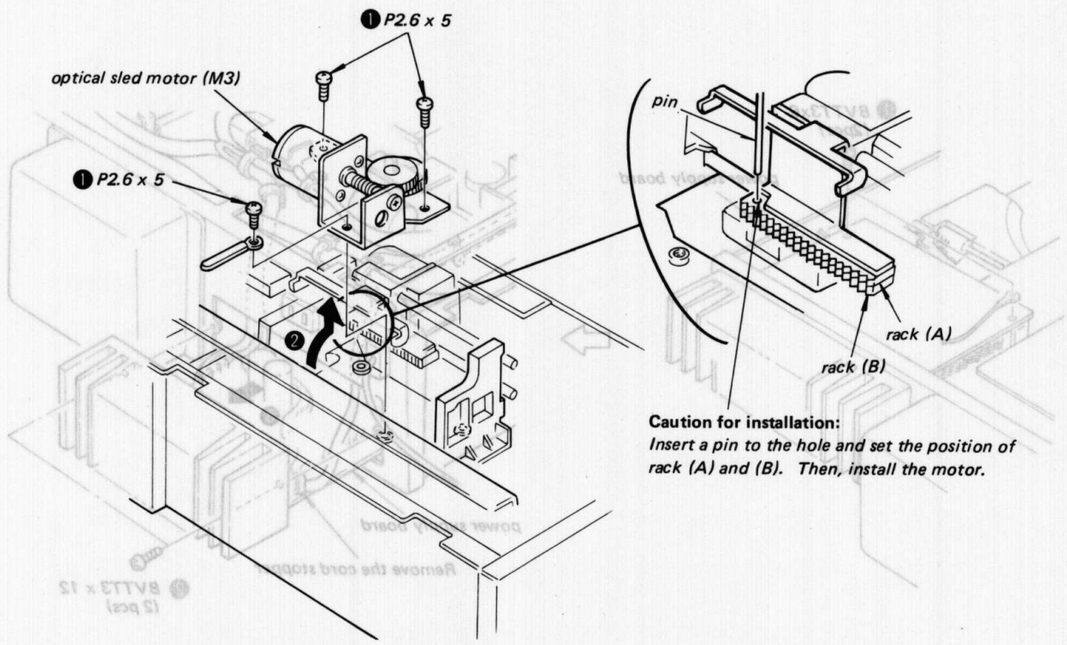
Install the motor so that the cutout portion locates as shown below.



OUT SWITCH BOARD

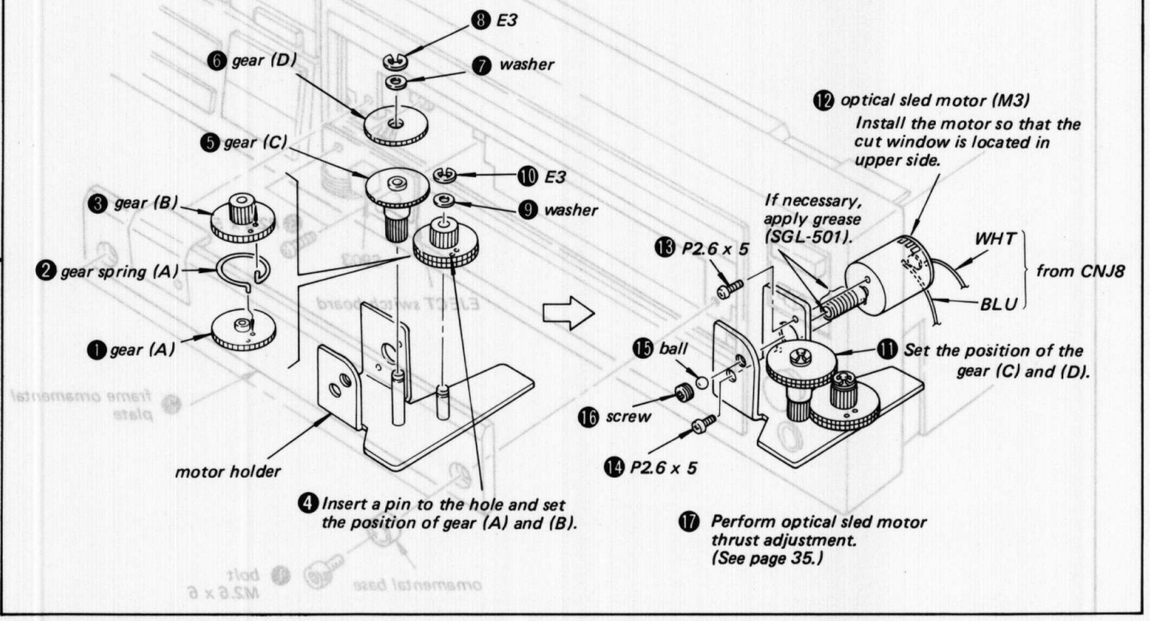


OPTICAL SLED MOTOR

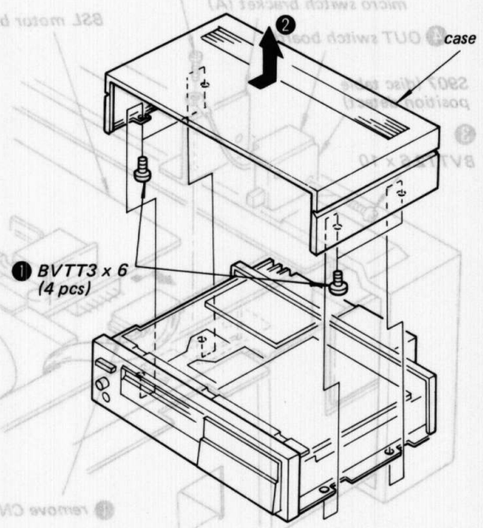


Caution for installation:
Insert a pin to the hole and set the position of rack (A) and (B). Then, install the motor.

OPTICAL SLED MOTOR ASSEMBLY



CASE

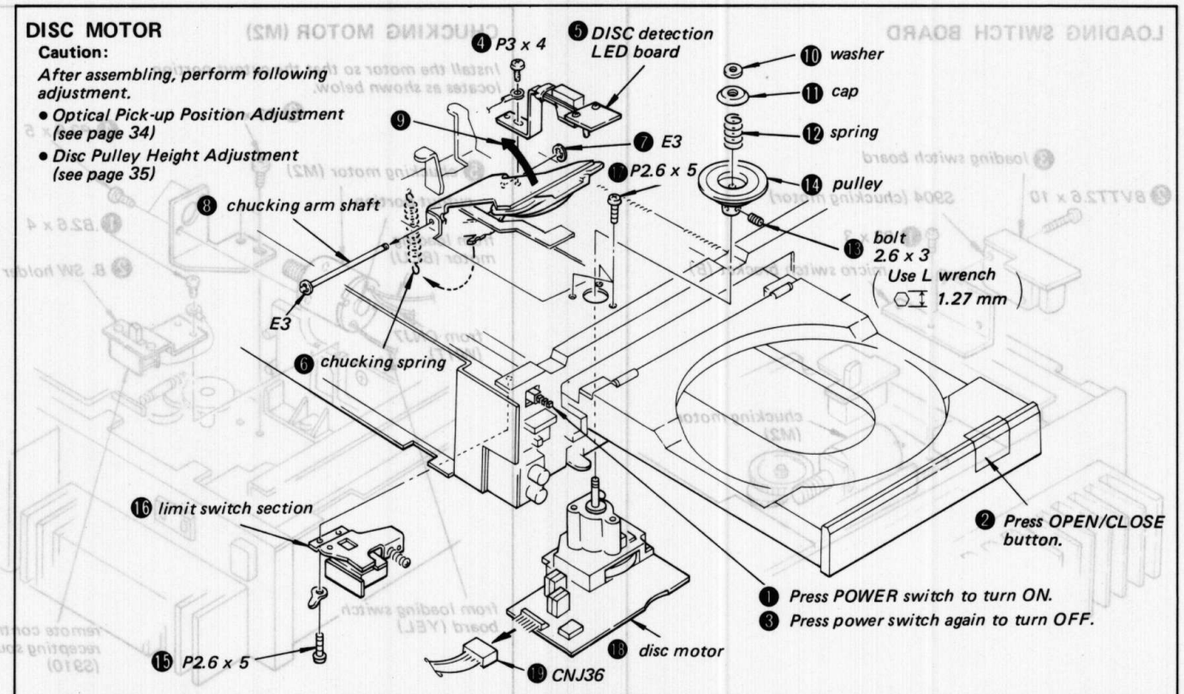


DISC MOTOR

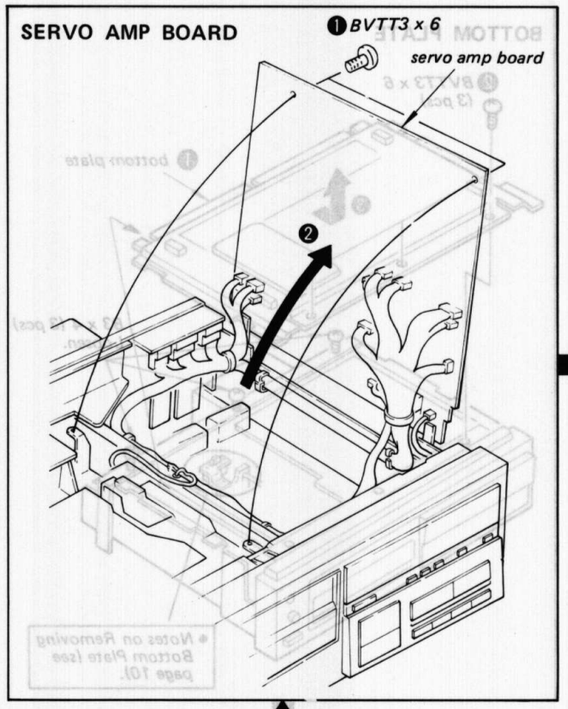
Caution:

After assembling, perform following adjustment.

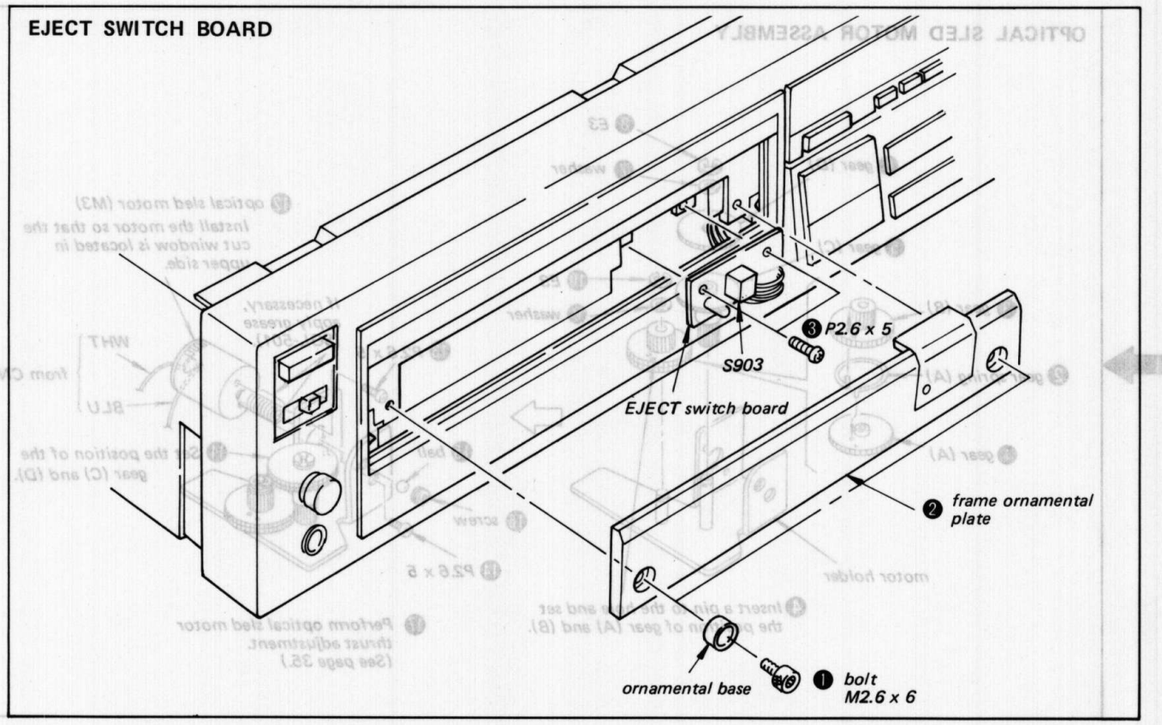
- *Optical Pick-up Position Adjustment (see page 34)*
- *Disc Pulley Height Adjustment (see page 35)*



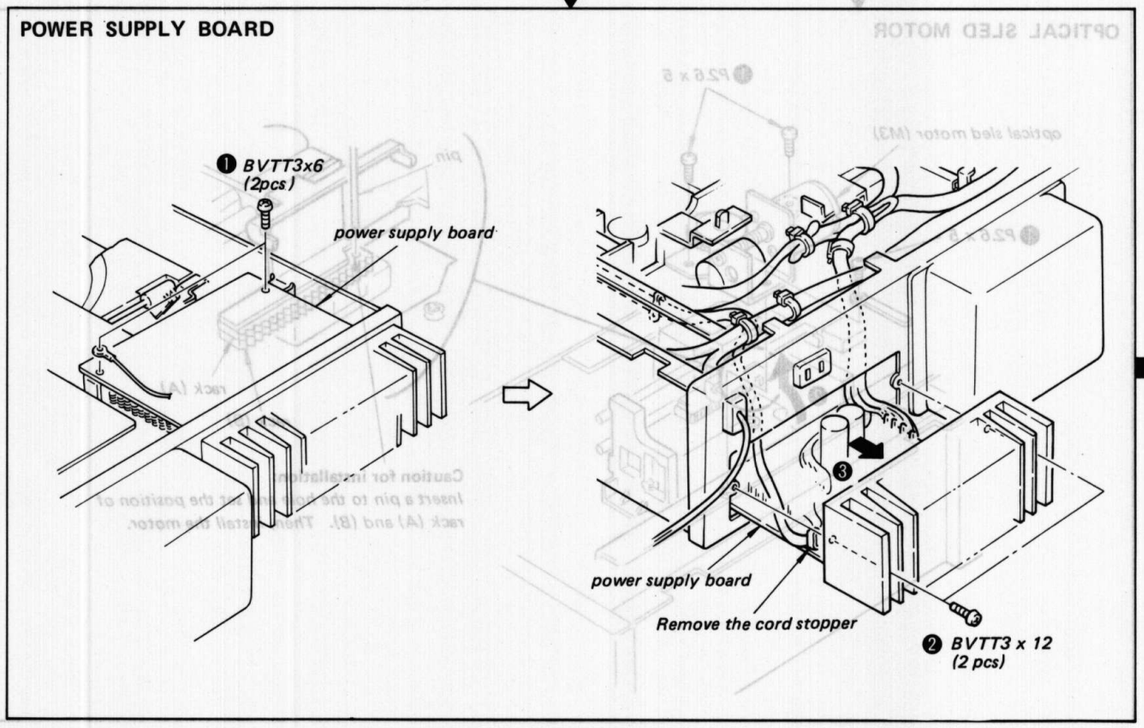
SERVO AMP BOARD



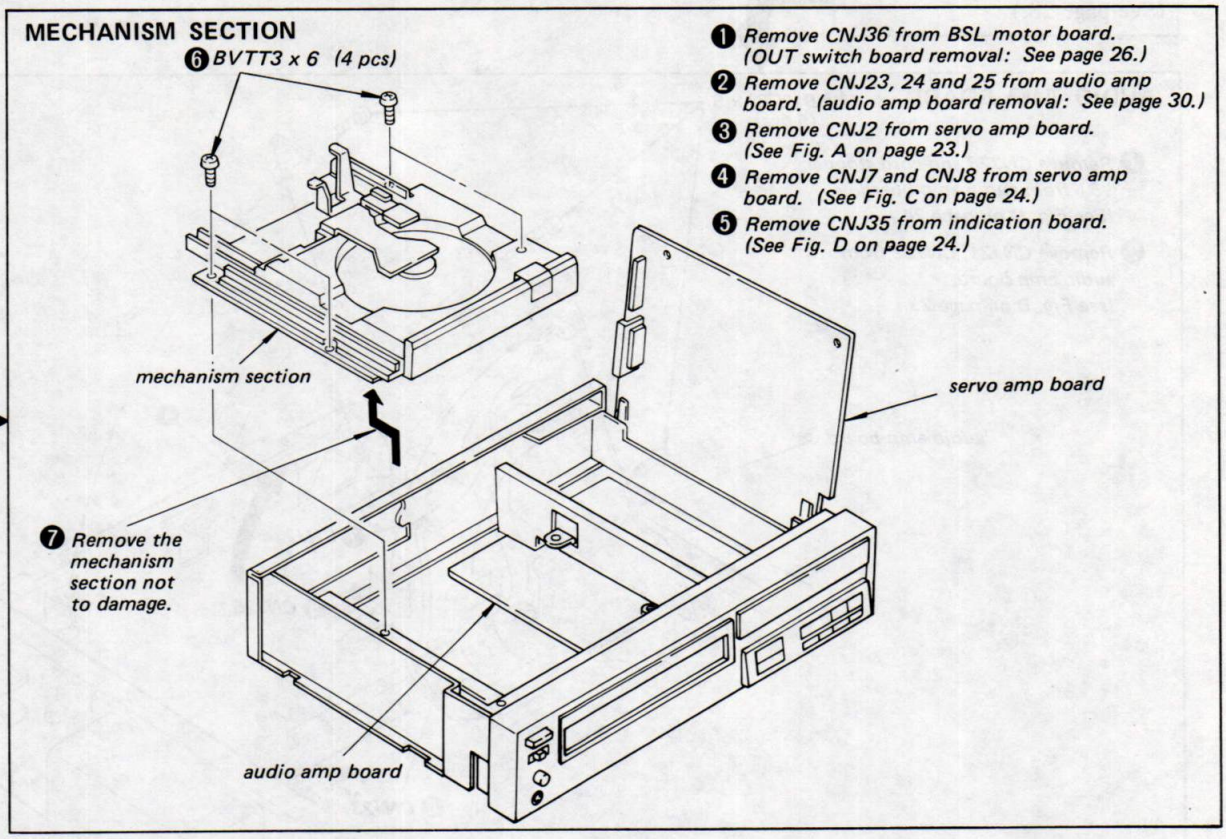
EJECT SWITCH BOARD



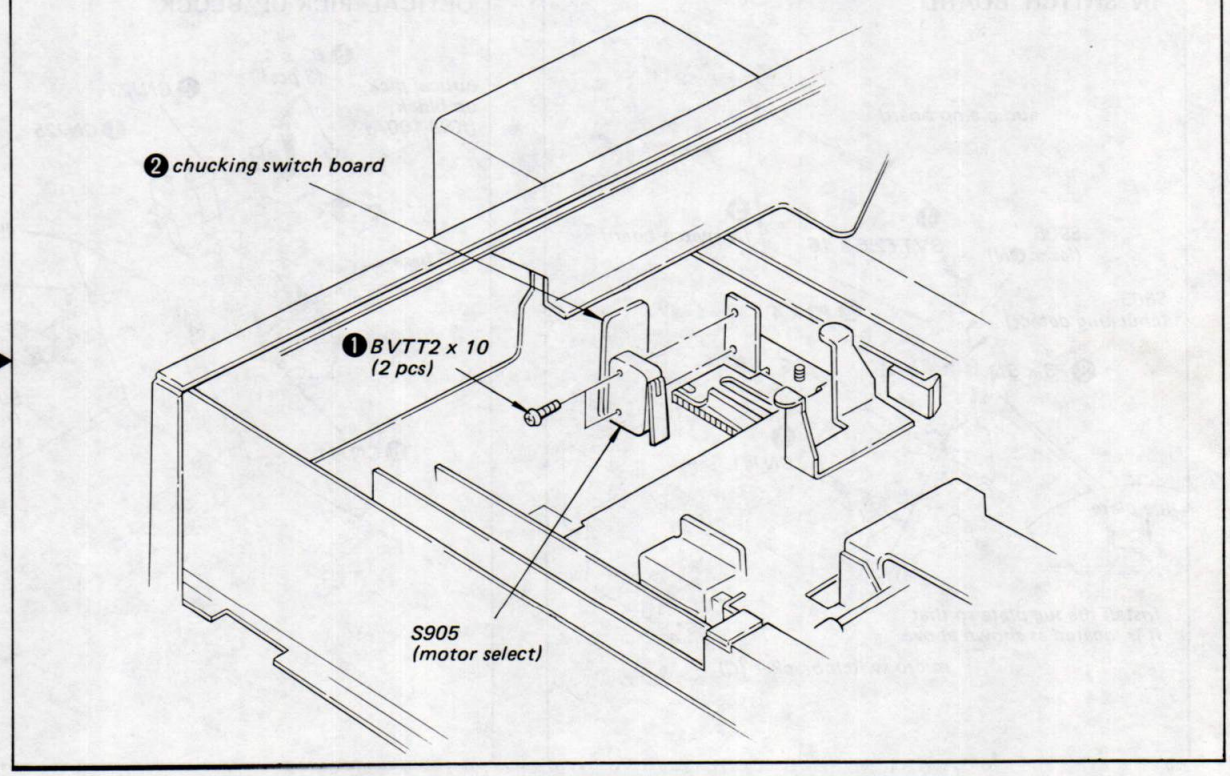
POWER SUPPLY BOARD



MECHANISM SECTION

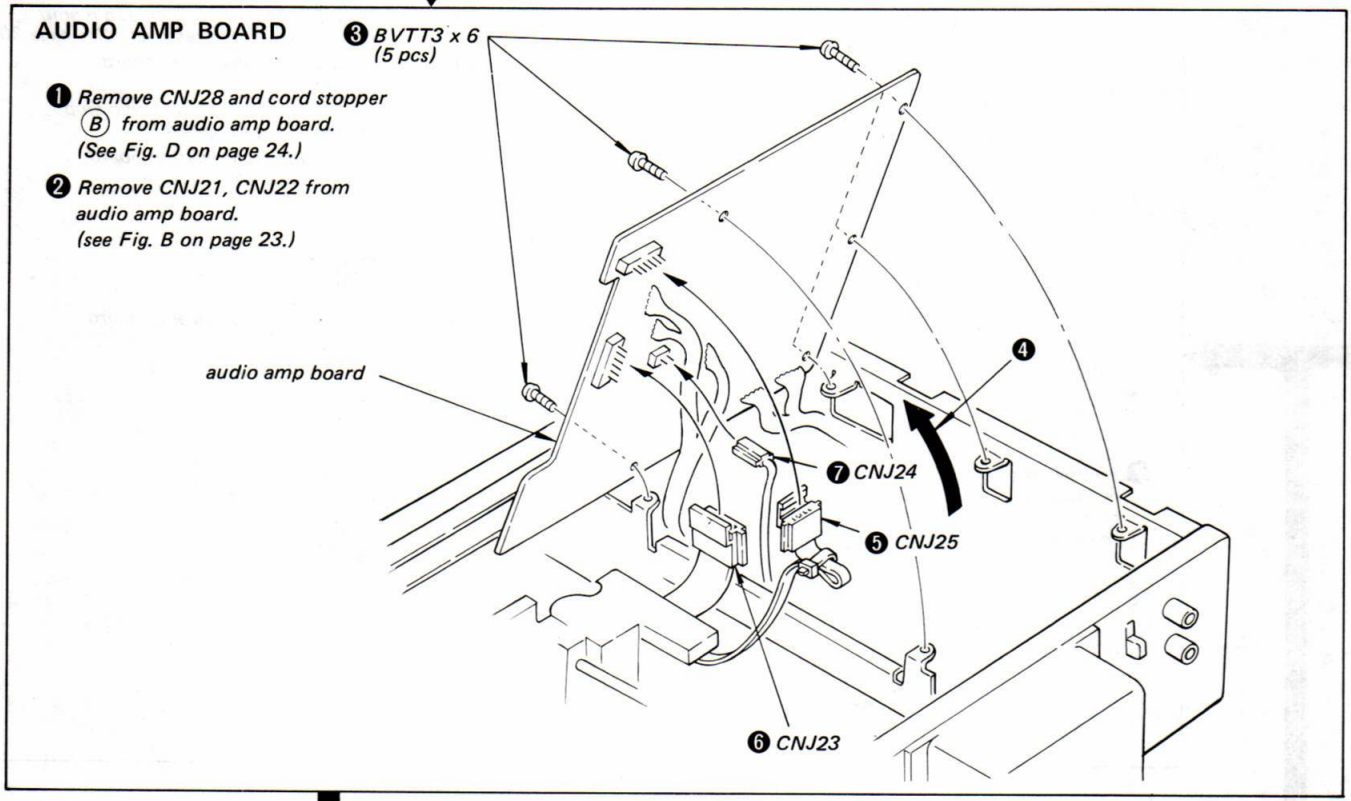


CHUCKING SWITCH BOARD

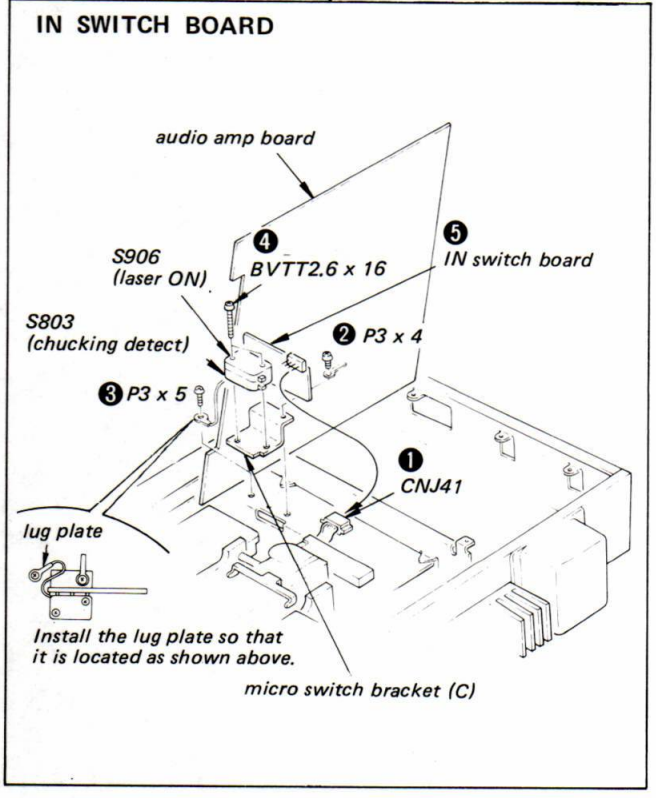


Remove the servo amp board.
(See page 28.)

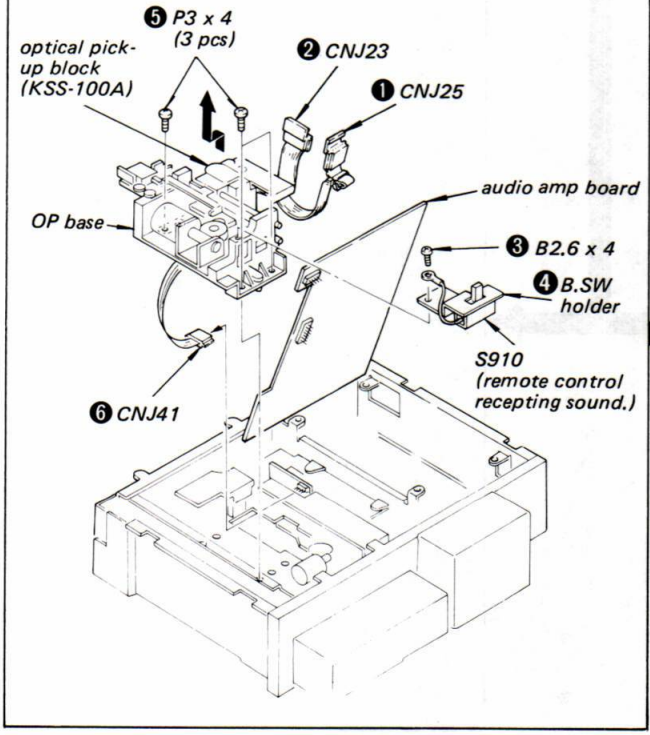
AUDIO AMP BOARD



IN SWITCH BOARD

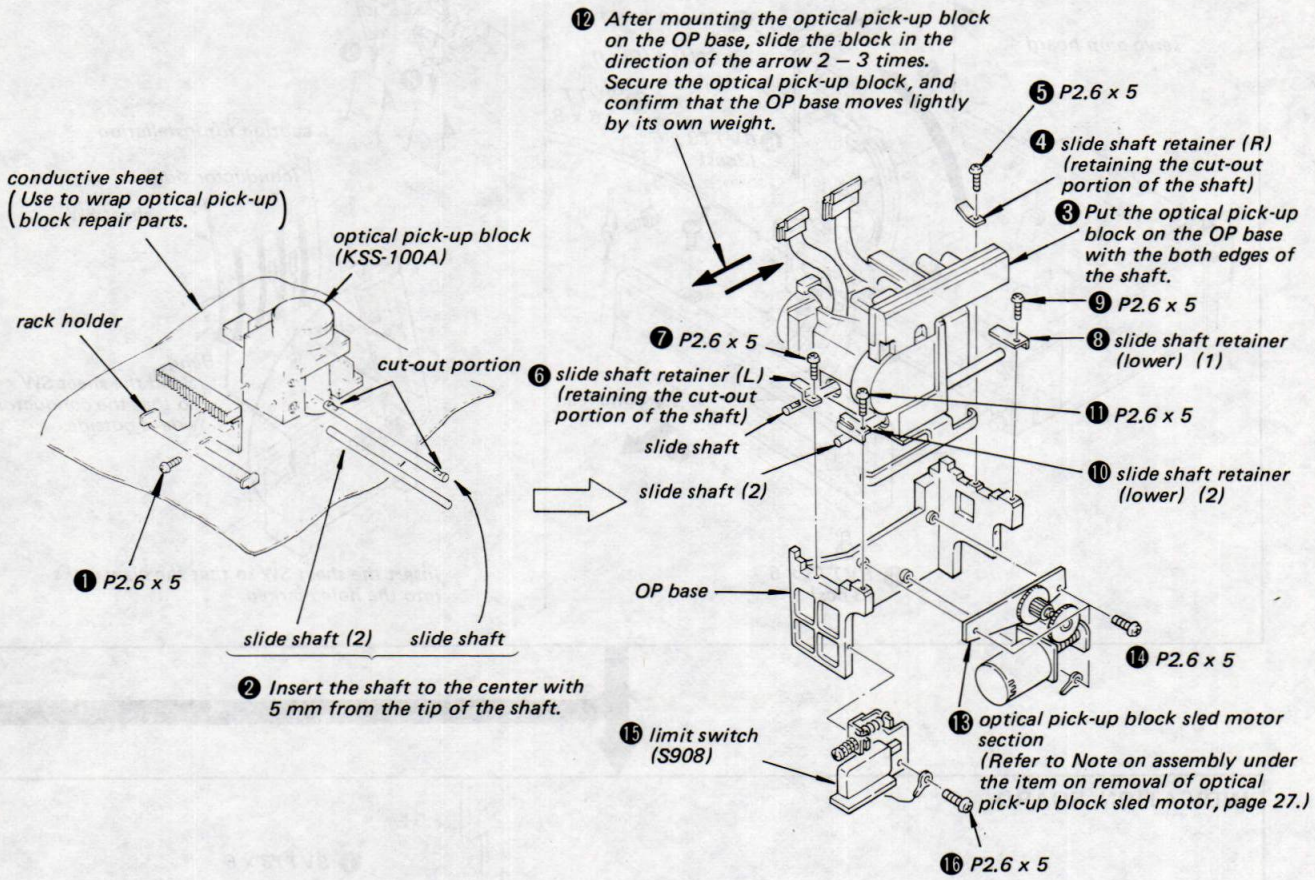


OPTICAL PICK-UP BLOCK



OPTICAL PICK-UP BLOCK ASSEMBLY

Refer to the Note on Handling the Optical Pick-up Block (KSS-100A). (page 8)



When replacing the optical pick-up block, check and adjust the items below in order.

1. RF Offset Adjustment (page 39)
2. Tracking Offset Adjustment (page 39)
3. Focus Bias Adjustment (page 40)
4. Tracking Balance Adjustment (page 41)
5. Optical Pick-up Block Position Adjustment (page 34)

After performing the above, confirm focus/tracking gain.

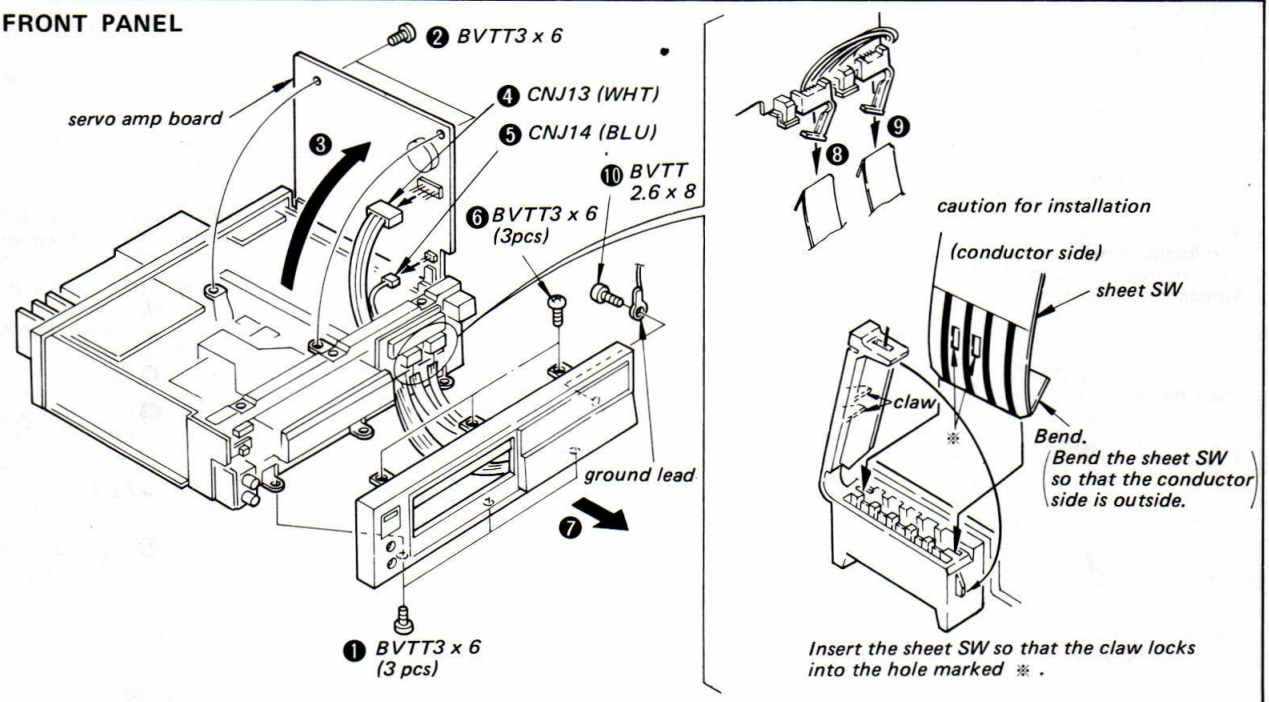
– Checking Focus/Tracking Gain –

Play a disc (YEDS-1) and check the following items.

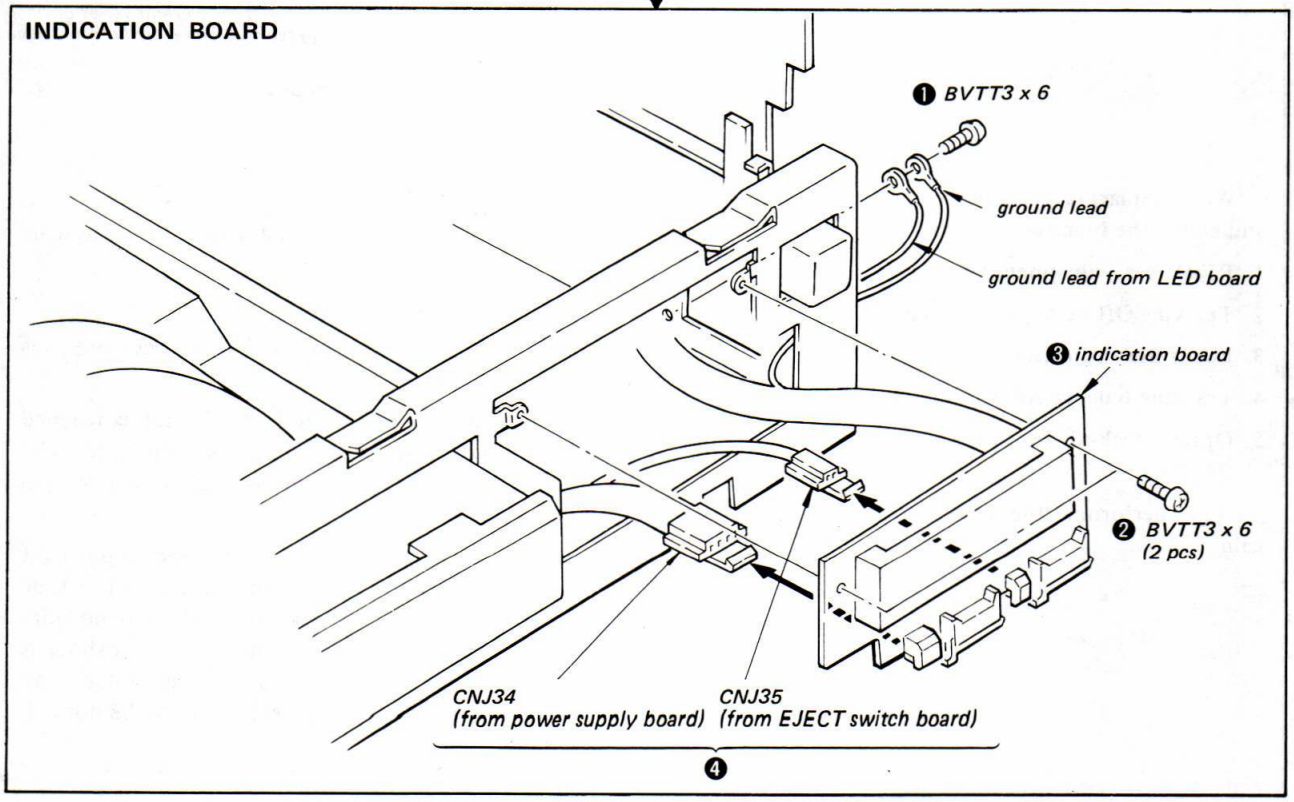
1. No skipping in the sound.
2. Mechanical noise when the 2-axis device operates should be minimum.
3. The beginning of the desired selection is reached when the (⏮ , ⏭) buttons are pressed. The time for reaching the beginning of a selection should be about 2 seconds.
4. Turn the anti-shock switch off, and apply light shocks to the sides and top of the set. At this time the display should change correctly and no skipping should occur. Then when a stronger shock is applied, the display may jump and sound may skip, but operation should subsequently be normal.

Remove the case. (See page 25.)

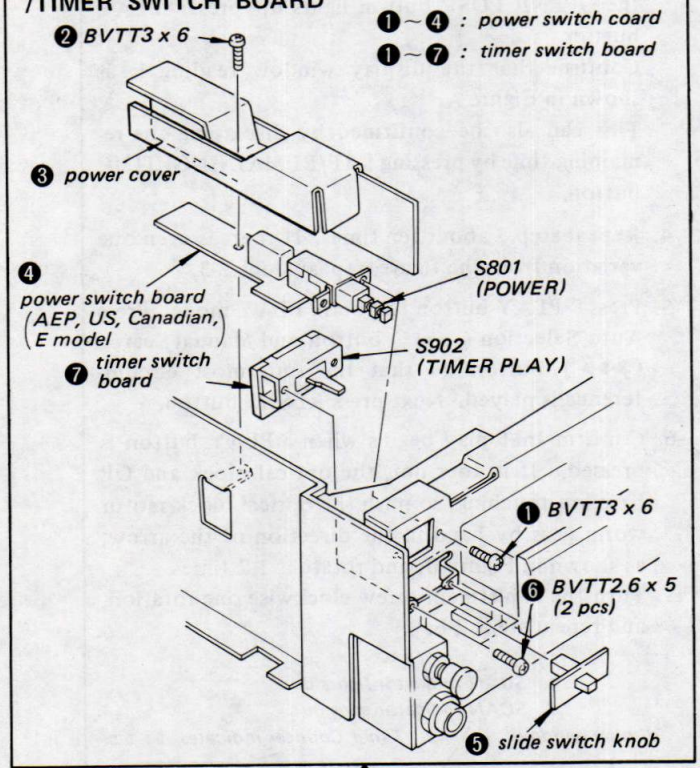
FRONT PANEL



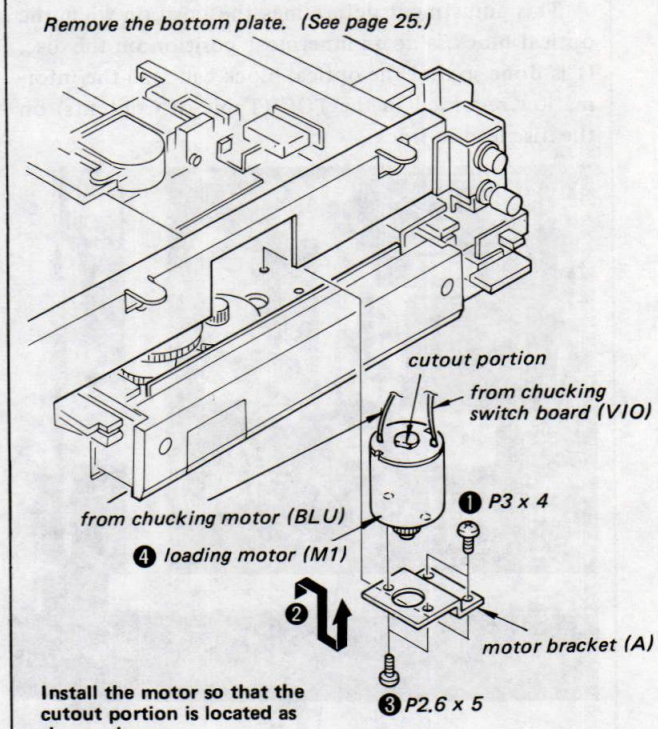
INDICATION BOARD



POWER SWITCH BOARD (AEP, US, Canadian Model) /TIMER SWITCH BOARD

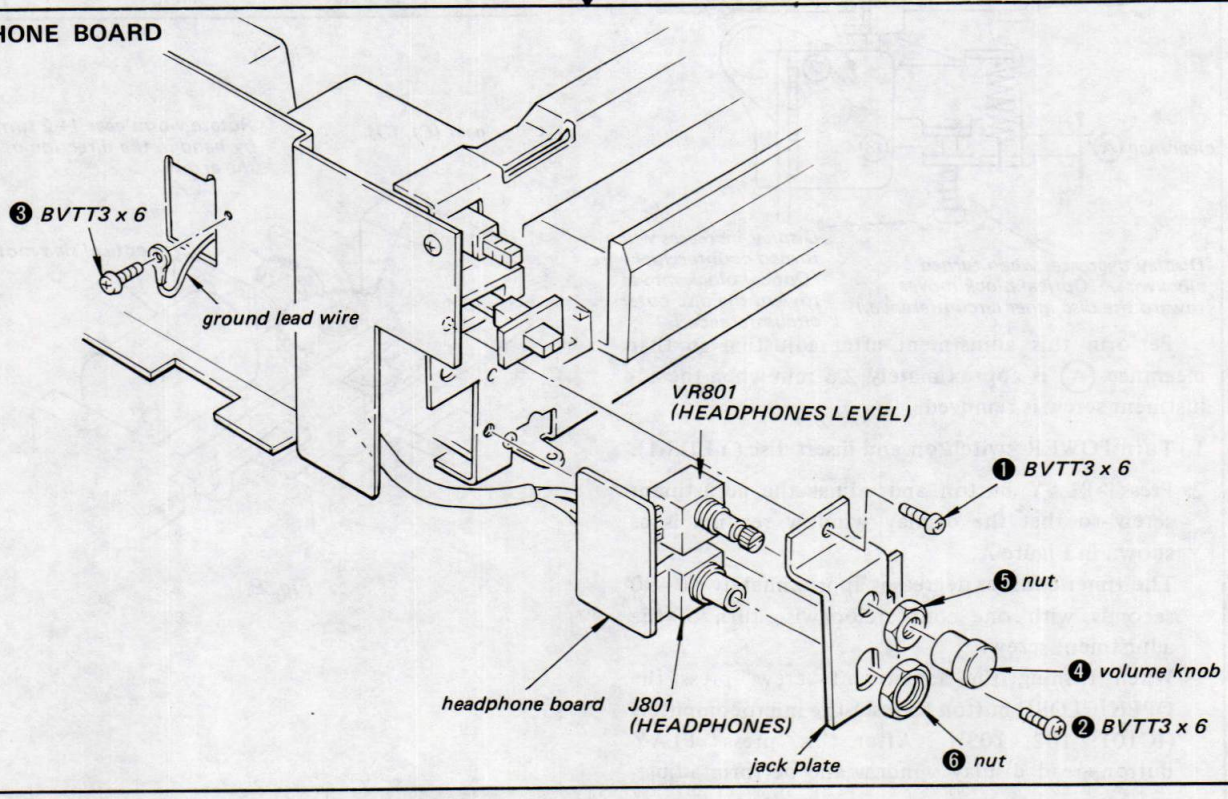


LOADING MOTOR



Install the motor so that the cutout portion is located as shown above.

HEADPHONE BOARD

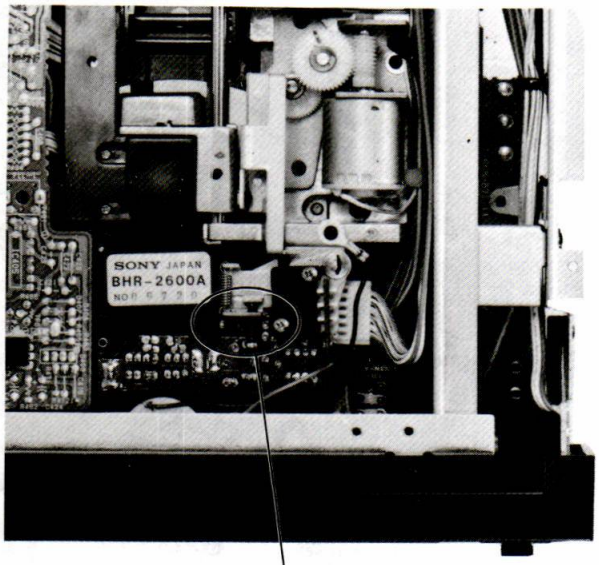


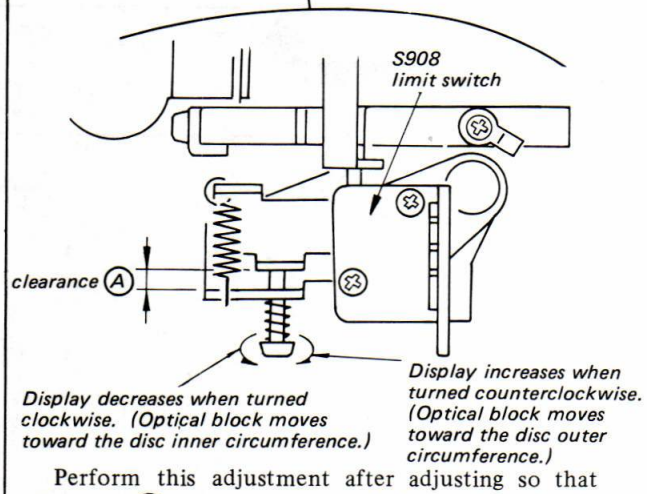
SECTION 3
ADJUSTMENTS

3-1. MECHANISM ADJUSTMENTS

Optical Pick-up Position Adjustment

This adjustment determines the position when the optical block is at its innermost position on the disc. It is done so that the optical block can read the information recorded in the TOC (Table of Contents) on the disc lead-in track.





Perform this adjustment after adjusting so that clearance (A) is approximately 2.6 mm when the adjustment screw is removed.

1. Turn POWER switch on and insert disc (YEDS-1).
2. Press ▷PLAY button and adjust the adjustment screw so that the display window reading is as shown in Figure A.
   The timer counter decreases approximately 10–20 seconds with one counterclockwise turn of the adjustment screw.
   When turning the adjustment screw, press the OPEN/CLOSE button to reset the microcomputers (IC101, 102, 103). After this, press ▷PLAY button, read display window and perform adjustment again.
3. Press OPEN/CLOSE button, and after the LED on the OPEN/CLOSE button lights up, press ▷PLAY button.
   Confirm that the display window reading is as shown in Figure A.
   This can also be confirmed by displaying the remaining time by pressing LAP/REMAINING TIME button.
4. Repeat step 3 about ten times. If there is even one variation from the figure, repeat steps 2-3.
5. Press ▷PLAY button to obtain PLAY mode. Press Auto Selection (▶▶|) button and Manual Search (▶▶▶) button so that the outermost circumference is played. Next press RESET button.
6. Confirm that play begins when ▷PLAY button is pressed. If it does not, the optical block and OP base are touching, so push the optical block motor worm gear by hand in the direction of the arrow, as shown in Figure B, and rotate it 1-2 times.
   Turn the adjustment screw clockwise one rotation, and repeat steps 2-6.

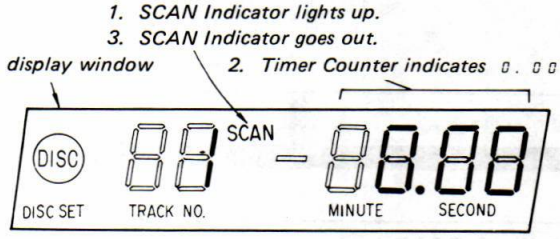


Fig. A

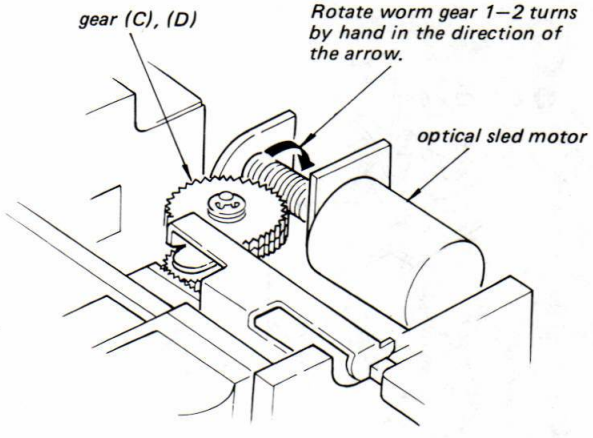
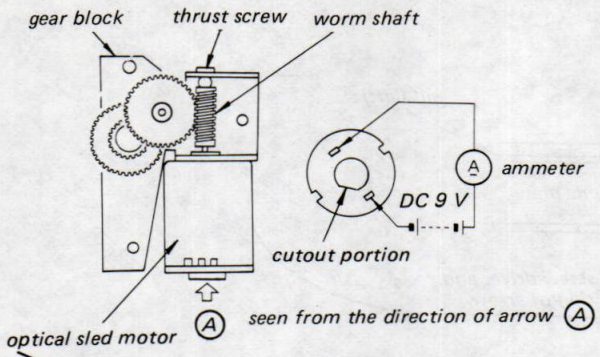
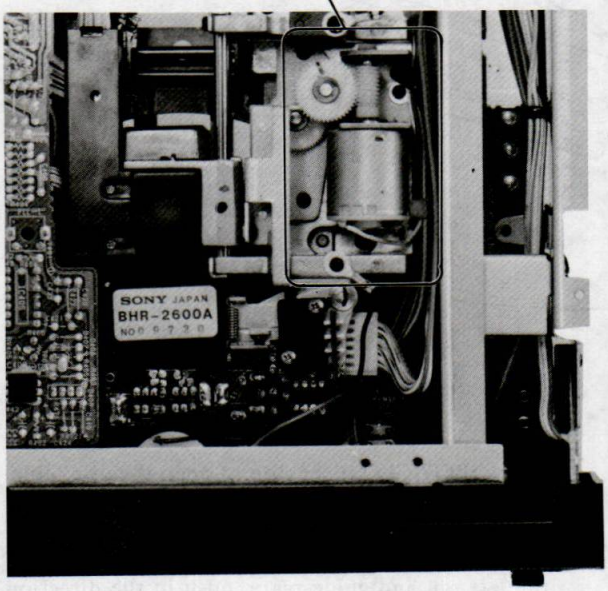


Fig. B

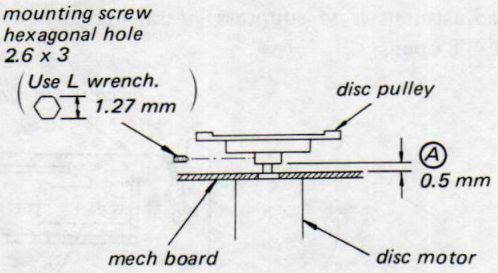
Optical Sled Motor Thrust Adjustment





1. Remove gear block. (see page 25)
2. Turn thrust screw counterclockwise to loosen.
3. Connect as shown above and remember the ammeter reading.
4. Next, turn the thrust screw clockwise slowly and adjust so that the ammeter reading is +1 mA from the reading in step 2.
   Motor drive current must be less than 25 mA.
   Reference value: 17–20 mA.
5. Confirm that there is no worm shaft thrust play.
6. After adjustment, lock the screw.
7. Install the gear block. (see page 25)

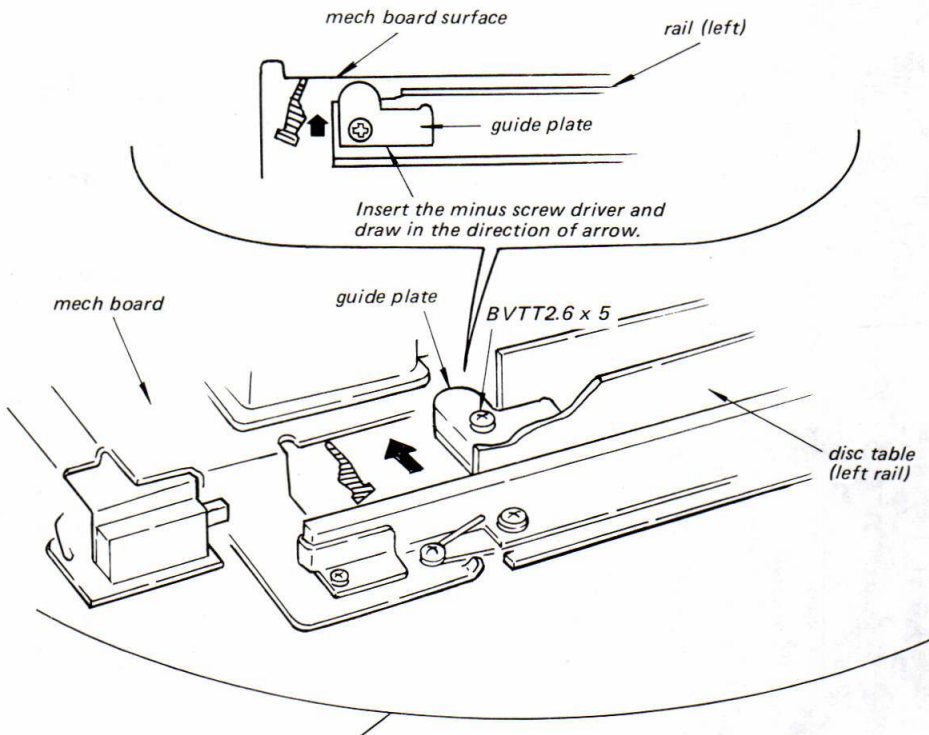
Disc Pulley Height Adjustent

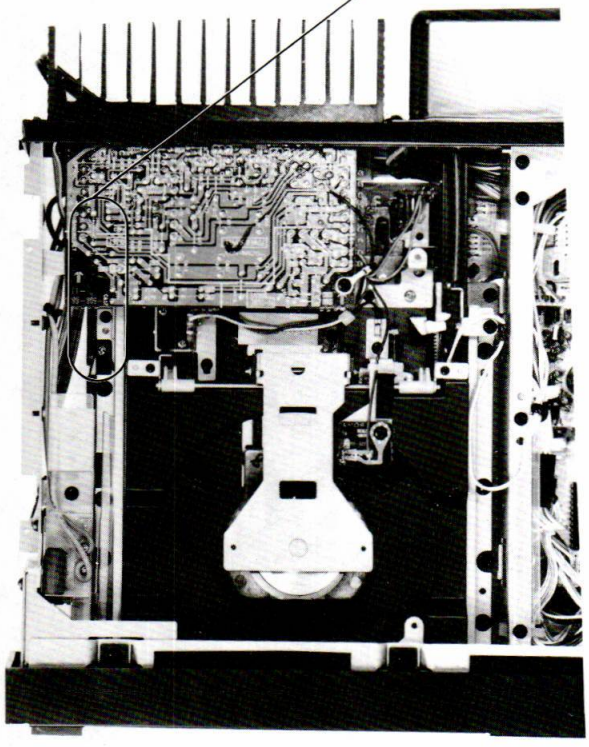


Install the disc pulley so that clearance (A) is 0.5 mm.

Guide Plate Adjustment

This adjustment is to suppress lateral play when the disc table opens.

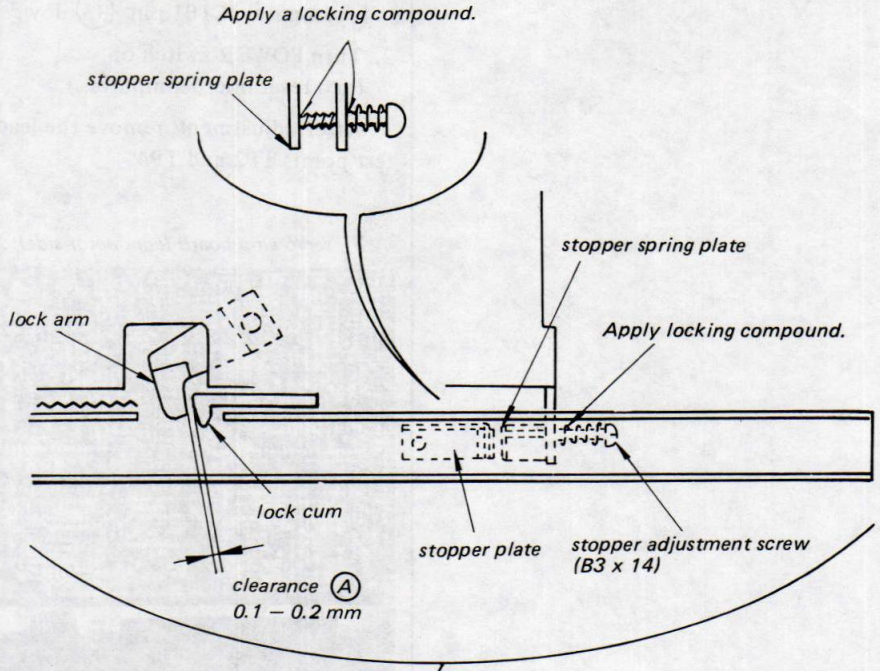


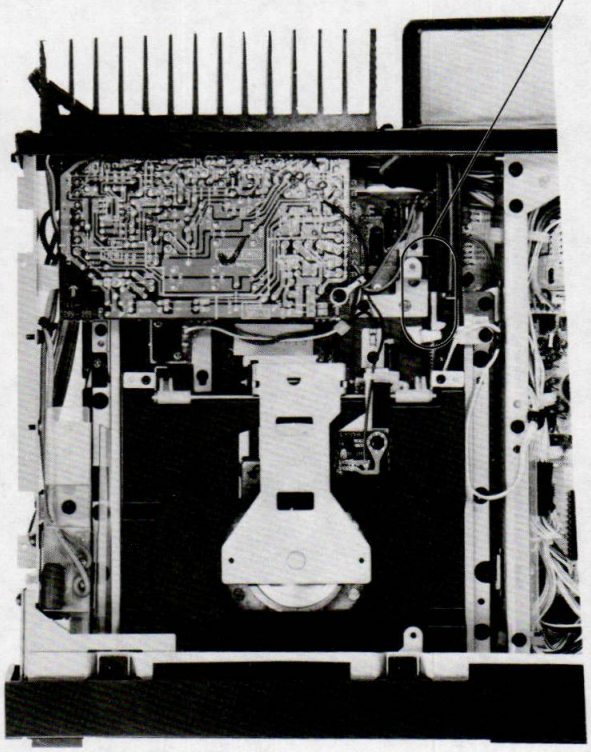


1. Press OPEN/CLOSE button to open the disc table.
2. Loosen the screw (BVTT2.6 x 5).
3. Insert a blade screwdriver into the space between the left rail and guide plate, push in the direction of the arrow so that it touches the mech board surface lightly, and tighten the screw.
4. Open and close the disc table 2-3 times, and confirm that the guide plate does not rub the mech board surface (section).

Disc Table Stopper Adjustment

This adjustment is to prevent the disc table from coming forward due to loading gear backrush when the disc table is closed and chucking completed.





Adjust with the stopper adjustment screw so that clearance (A) is 0.1–0.2 mm when the disc table is closed.

After adjustment, lock the stopper spring plate and stopper adjustment screw. (Do not get lock on the stopper plate.)

3-2. ELECTRICAL ADJUSTMENTS

1. Perform adjustments in the order given.
2. Use YEDS-1 disc unless otherwise indicated.
3. Set the unit horizontal.

Adjustment Mode

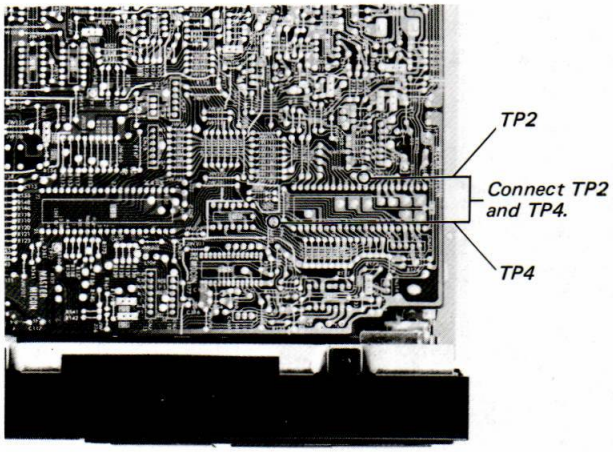
1. Connect servo amp board test points TP2 and TP4.

   (This is to prevent the disc table from opening even though pits are not read, by making microcomputer IC101 pin (33) low.)

2. Turn POWER switch on.
   (To reset microcomputer.)

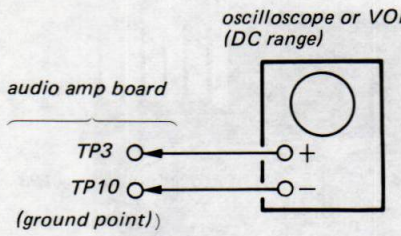
After adjustment, remove the lead wire connecting test points TP2 and TP4.

servo amp board (conductor side)



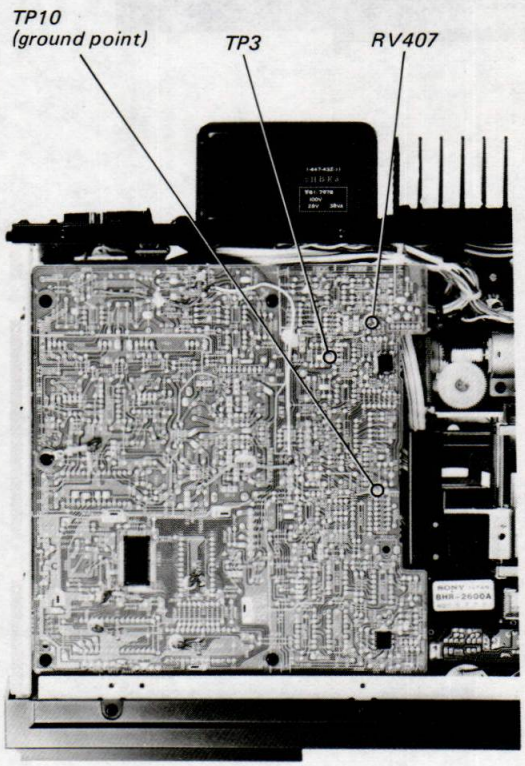
RF Offset Adjustment

Procedure:



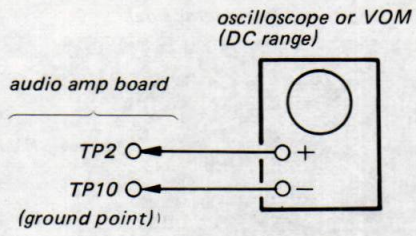
1. Turn POWER switch on. (STOP mode)
2. Connect oscilloscope or VOM to audio amp board test point TP3 and TP10 (ground point).
3. Adjust RV407 so that oscilloscope or VOM reading is DC 1.35 ± 0.1 V.

Adjustment Location: Audio amp board



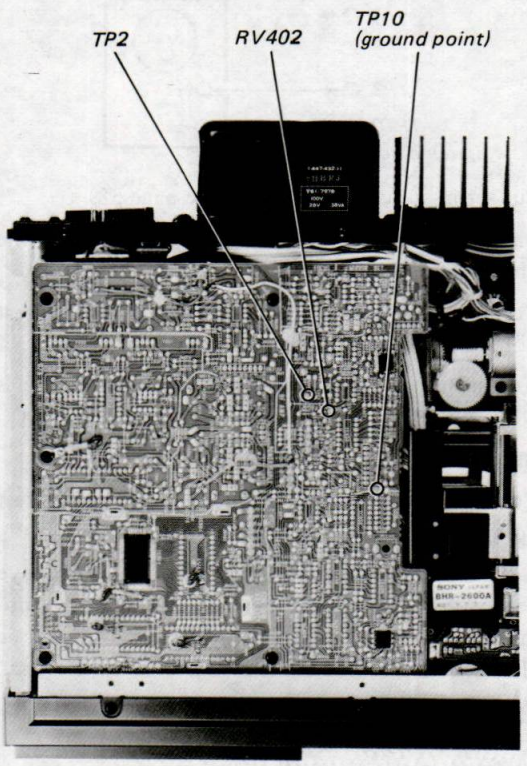
Tracking Offset Adjustment

Procedure:



1. Turn POWER switch on. (STOP mode)
2. Connect oscilloscope or VOM to audio amp board test point TP2 and TP10 (ground point).
3. Adjust RV402 so that oscilloscope or VOM reading is DC 0 ± 0.1 V.

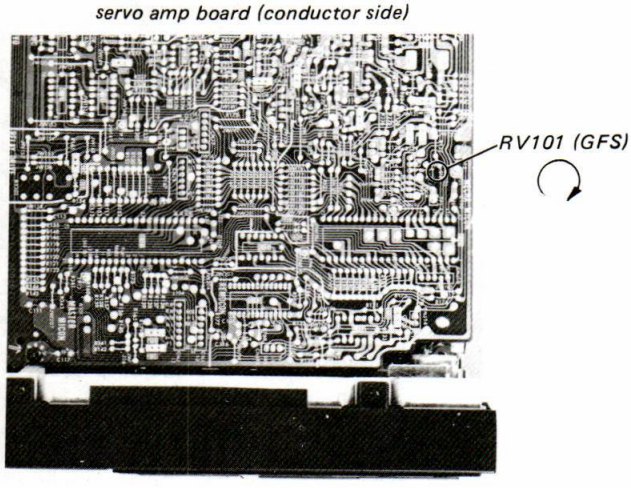
Adjustment Location: Audio amp board

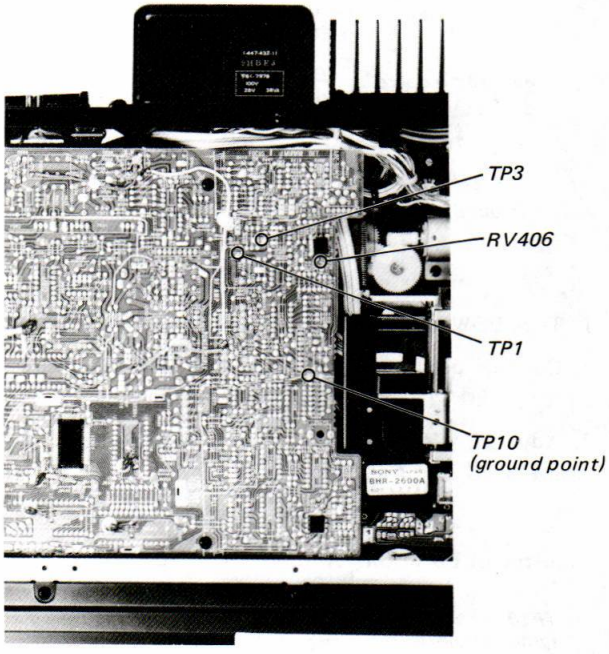


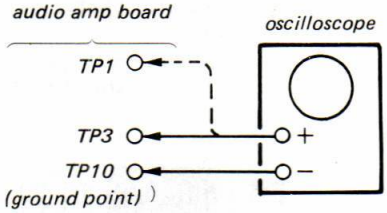
Focus Bias Adjustment

Adjustment Location: Audio amp board

Procedure:

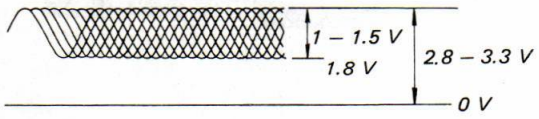






1. Put set in adjustment mode. (see page 38)
2. Turn RV101 (GFS) fully in the direction of the arrow. (see above)
3. Connect oscilloscope to audio amp board test point TP1 and TP10 (ground point).
4. Adjust tentatively so that oscilloscope reading is DC 0 V.
5. Insert disc (YEDS-1) and press ▷PLAY button.
6. Connect oscilloscope to audio amp board test point TP3 and TP10 (ground point).
7. Adjust RV406 for an optimum waveform eye pattern or so that the peak is maximum. Optimum eye pattern means that the shape "◇" can be clearly distinguished at the center of the waveform.

RF signal waveform



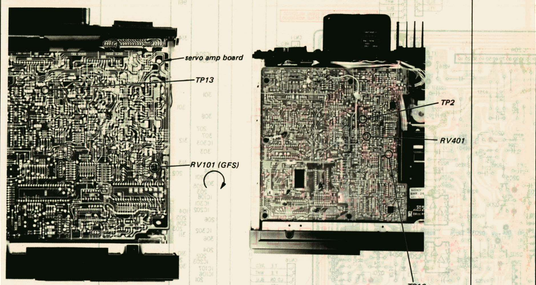
When observing the eye pattern, set the oscilloscope for AC range and raise the vertical sensitivity.

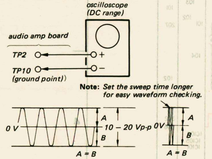
8. After adjustment, return RV101 to the original setting.

Tracking Balance Adjustment

Procedure:

Adjustment Location: Audio amp board





1. Put set in adjustment mode. (see page 38)
2. Ground servo amp board test point TP13.
3. Turn RV101 (GFS) fully in the direction of the arrow. (see above.)
4. Insert disc (YEDS-1) and press ▷PLAY button.
5. Connect oscilloscope to audio amp board test point TP2, TP10 (ground point).
6. Adjust RV401 so that the oscilloscope waveform is symmetrical above and below, relative to 0 V.
7. After adjustment, remove the lead wire which grounded audio amp board test point TP13. Return RV101 to the original setting.

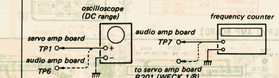
Sometimes when a compact disc is loaded, the disc table is automatically ejected in about 10 seconds. This can sometimes be corrected by adjusting the RF PLL and making some other alignments.

RF PLL Adjustment

This is done to adjust the free-run frequency of the VCO to the optimum point. It is also done to set (at the time when the disc spin servo is not engaged) the disc revolution to the right speed which will be obtained when the servo is engaged. If this is not adjusted properly, the servo loop will not close at the disc spin start and the unit will fail to read the data from the disc. Then the disc table will be ejected.

In this adjustment, three variables are involved. Two of them are for VCO adjustment and the other one is to determine the disc speed in case the servo loop is open.

Procedure:



1. Put set into adjustment mode. (see page 38)
2. Turn RV101 (GFS) fully clockwise. (Refer to adjustment location.)
3. Insert disc (YEDS-1) and press ▷PLAY button.
4. Connect oscilloscope to servo amp board test point TP1.
5. Confirm that the oscilloscope waveform is "H" as shown in the figure below.

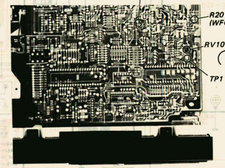
- Confirm the following items when the waveform is as shown above. If it is not, perform the adjustments in steps 6-15.
  When the specification is met, perform the step 15.
  A. Connect oscilloscope to audio amp board test point TP6 and read the voltage value. Reading: DC 0 ±0.1 V.
  B. Connect frequency counter to audio amp board test point TP7 and read frequency. Reading: 4.3218 ±0.01 MHz.
6. Momentarily ground pin 15 of IC101 on the servo amp board. The optical block will move towards the music area from the area of TOC (Table of Contents).
7. Press the PLAY button and turn RV202 fully clockwise. The disc speed will slow. This is to prevent the VCO signal from getting locked with the RF signal coming from the data reading circuit while the adjustment is being made.
8. Connect a frequency counter to test point TP7 and an oscilloscope to TP6 on the audio amp board.
9. Make a short connection between pins 1 and 2 of IC408. Make sure that the pin 1 (TP6) voltage becomes the same voltage as at pin 3, which is a ground potential (0 V) due to the 100% feedback to pin 2.
10. Adjust T401 so that frequency counter reading is 4.3218 ±0.01 MHz.
11. Remove the short circuit installed in step 9.
12. Adjust RV405 so that the osilloscope reading becomes 0 ±0.1V.

TP6 oscilloscope waveform

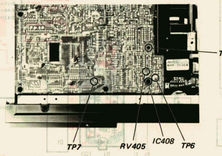
13. Connect the frequency counter to R201 (not the side of the Q201 collector) to monitor 1/8 WFCK.
    Also connect the oscilloscope to TP1 to observe the GFS voltage.
14. Adjust RV202 and look for an area where the GFS voltage at TP1 goes high (+3.6 V). Then tune to the point at which the frequency counter indicates 918 Hz (918 ±5 Hz) and at the same time the GFS voltage remains high.
15. Turn RV101 back fully counterclockwise.

Adjustment Locations:

– Servo Amp Board –

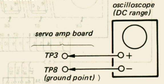


– Audio Amp Board –

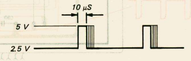


IC201 Phase Lock Adjustment

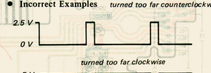
Procedure:



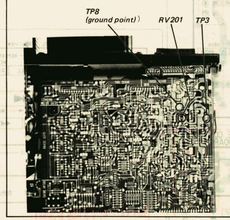
1. Put set in adjustment mode. (see page 38)
2. Insert disc (YEDS-1) and press ▷PLAY button.
3. Connect oscilloscope to servo amp board test point TP3 and TP8 (ground point).
4. Adjust RV201 so that the waveform is as shown in the figure below.



- Incorrect Examples *turned too far counterclockwise*

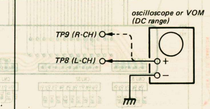


Adjustment Location: Servo amp board



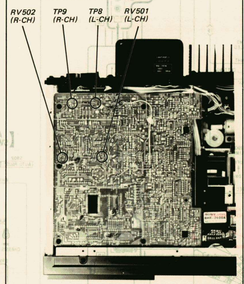
AF Offset Adjustment

Procedure:



1. Turn POWER switch on. (STOP mode)
2. Connect oscilloscope or VOM to audio amp board test points TP8 (L-CH) and TP9 (R-CH).
3. Adjust RV501 (L-CH) and RV502 (R-CH) so that the oscilloscope or VOM reading is DC 0 V.

Adjustment Location: Audio amp board



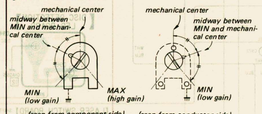
REFERENCE

Focus/Tracking Gain Adjustment

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

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

Normally, RV205 and RV301 are set in the positions shown below.



Focus/tracking gain determines the pick-up follow-up (vertical and horizontal) relative to mechanical noise and mechanical shock when the 2-axis device operates.

However, as these reciprocate, the adjustment is at the point where both are satisfied.

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

When gain adjustment is off, the symptoms below appear.

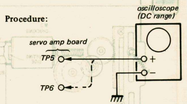
Symptoms \ Gain	Focus	Tracking
• The time until music starts becomes longer for STOP →▷PLAY or automatic selection (⏮⏭ buttons pressed. (Normally takes about 2 seconds.)	low	low or high
• Music does not start and disc continues to rotate for STOP → ▷PLAY or automatic selection (⏮⏭ buttons pressed.)	–	low
• Disc table opens shortly after STOP → ▷PLAY.	low or high	—
• Susceptible to mechanical shock. Even with anti-shock switch on, display and sound skip when a light shock is given.	–	low
• Sound is interrupted during PLAY. Or time counter display stops progressing.	–	low
• More noise during 2-axis device operation.	high	high

The following is a simple adjustment method.

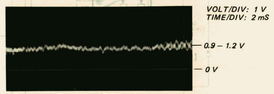
– Simple Adjustment –

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

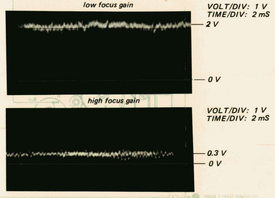
Procedure:



1. Keep the set horizontal.
   If the set is not horizontal, this adjustment cannot be performed due to the gravity against the 2 axis device.
2. Put set in adjustment mode. (see page 38)
3. Insert disc (YEDS-1) and press ▷ PLAY button.
4. Connect oscilloscope to servo amp board TP5.
5. Adjust RV205 so that the waveform is as shown in the figure below. (focus gain adjustment)



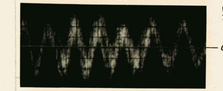
- Incorrect Examples (DC level changes more than on adjusted waveform)



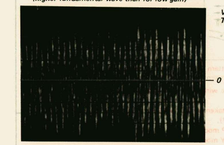
6. Connect oscilloscope to servo amp board TP6.
7. Adjust RV301 so that the waveform is as shown in the figure below. (tracking gain adjustment)

- Incorrect Examples (fundamental wave appears)

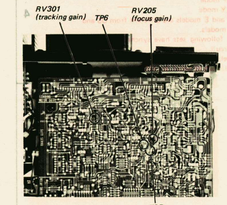
low tracking gain



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



Adjustment Location: Servo amp board



SECTION 4
DIAGRAMS

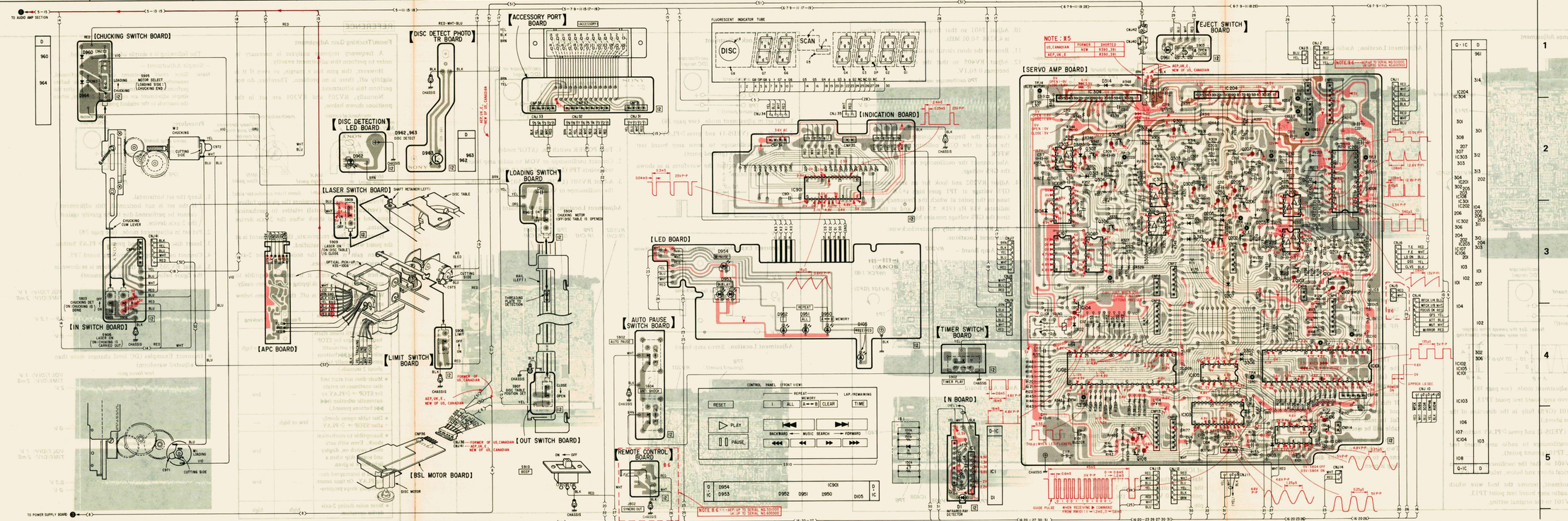
4-1. MOUNTING DIAGRAM — *Servo Amp Section* —

- See page 66 for Semiconductor Lead Layouts
- See page 67 for IC Block Diagrams

Note:

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

- : B+ pattern
- : B- pattern
- Voltages are dc with respect to ground unless otherwise noted.
- Readings are taken under no-signal conditions with a VOM (50 kΩ/V).
  no mark: STOP mode
  ( ): PLAY mode
- Waveforms are taken with respect to ground with oscilloscope.
  no mark: STOP mode
  ( ): PLAY mode
- ※5: AEP, UK and E models are different from US and Canadian models.
- ※6: Only the following sets have synchronized remote control circuit.
  AEP model: up to Serial No. 501,000
  UK model: up to Serial No. 600,300



Note:

- All capacitors are in μF unless otherwise noted. pF : μμF 50WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in ohms, 1/6 W unless otherwise noted. kΩ : 1000 Ω, MΩ : 1000 kΩ
- Switch: See page 56.
- ➡ : signal path
- ▭ : adjustment for repair.
- ——— : 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 kΩ/V).
  no mark: STOP mode
  ( ): PLAY mode
- Waveforms are taken with respect to ground with oscilloscope.
  no mark: STOP mode
  ( ): PLAY mode
- ※ 5: AEP, UK and E models are different from US and Canadian models.
- ※ 6: Only the following sets have synchronized remote control circuit.
  AEP model: up to Serial No. 501,000
  UK model: up to Serial No. 600,300

Note: Voltages are measured with a VOM (50kΩ/V).

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

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

4-3. MOUNTING DIAGRAM — *Audio Amp Section* —

● See page 66 for Semiconductor Lead Layouts

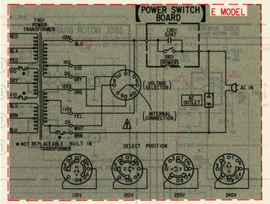
Ref No.	Switch	Position
S801	POWER	OFF
S802	AUTO PAUSE	OFF
S803	CHUCKING DETECT	ON
S804	ANTI SHOCK	OFF
S901	▷ PLAY	OFF
	▯▯ PAUSE	OFF
	⏮ ⏭ AUTOMATIC MUSIC SENSOR	OFF
	⏪	OFF
	◀◀	OFF
	▶▶	OFF
	⏩	OFF
	RESET	OFF
	1	OFF
	ALL	OFF
	A ⇔ B	OFF
	CLEAR	OFF
	TIME	OFF
S902	TIMER PLAY	OFF
S903	OPEN/CLOSE	OFF
S904	CHUCKING MOTOR	ON
S905	MOTOR SELECT	CHUCKING
S906	LASER ON (CHUCKING SIDE)	ON
S907	DISC TABLE POSITION DETECT	CLOSE
S908	LIMIT	ON
S909	LASER ON (LOADING SIDE)	ON
S910	REMOTE CONTROL RECEPTING SOUND(BEEP)	OFF

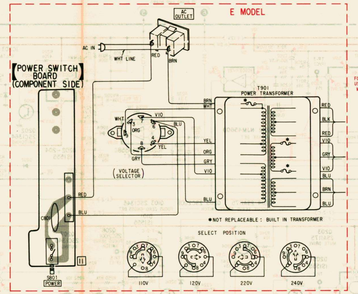
REPEAT

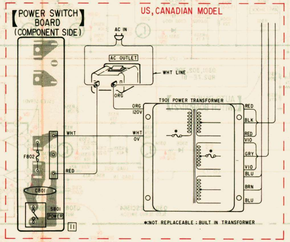
Note:

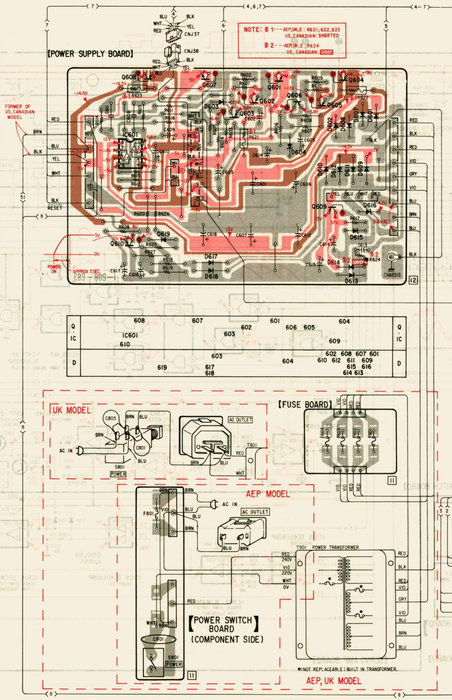
- Color code of sleeving over the end of the jacket.

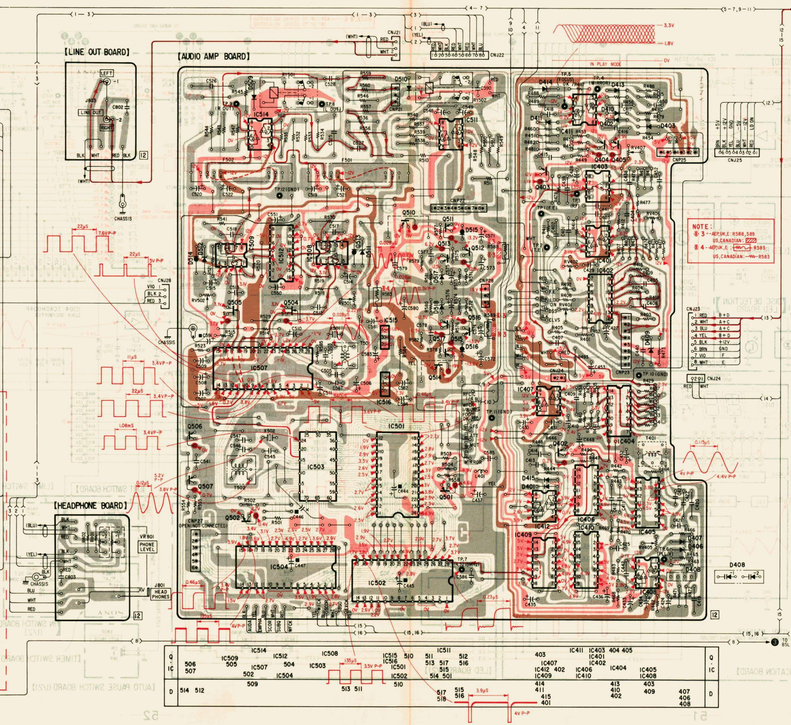
- : B+ pattern
- : B− pattern
- : signal path
- : L-CH signal path
- : R-CH signal path
- Voltages are dc with respect to ground unless otherwise noted.
- Readings are taken under no-signal conditions with a VOM (50 kΩ/V).
  no mark: STOP mode
  ( ): PLAY mode
- Waveforms are taken with respect to ground with oscilloscope.
  no mark: STOP mode
  ( ): PLAY mode
- ※1 to 4: AEP, UK and E models are different from US and Canadian models.

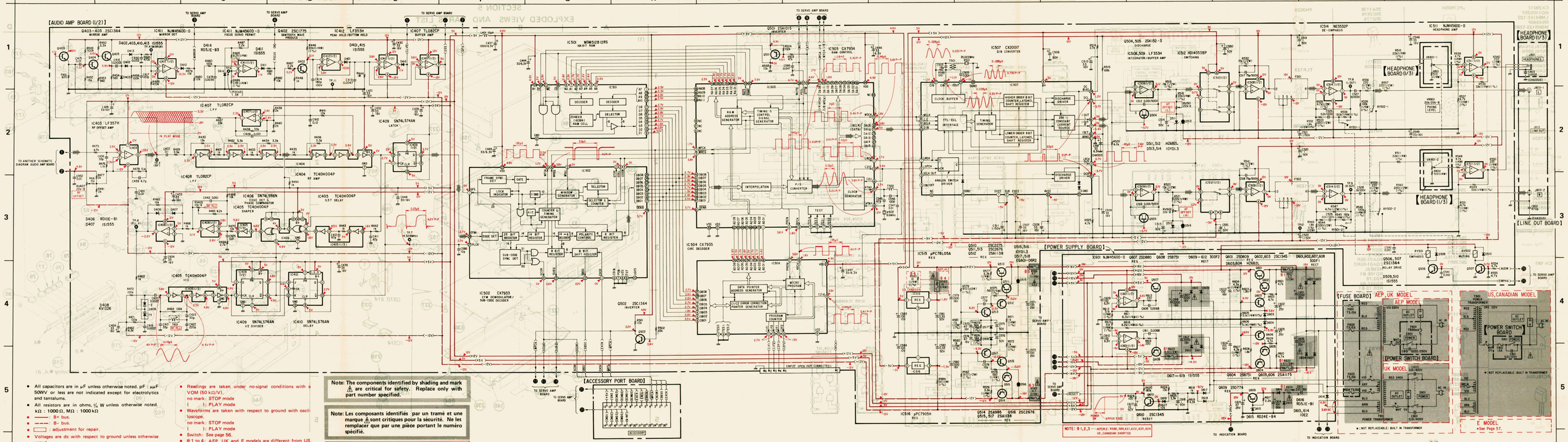












- All capacitors are in μF unless otherwise noted. pF : μμF
  50WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in ohms, ¼ W unless otherwise noted.
  kΩ : 1000 Ω, MΩ : 1000 kΩ
- ——: B+ bus.
- —— ——: B− bus.
- ▭: adjustment for repair.
- Voltages are dc with respect to ground unless otherwise noted.
- ▨: signal path

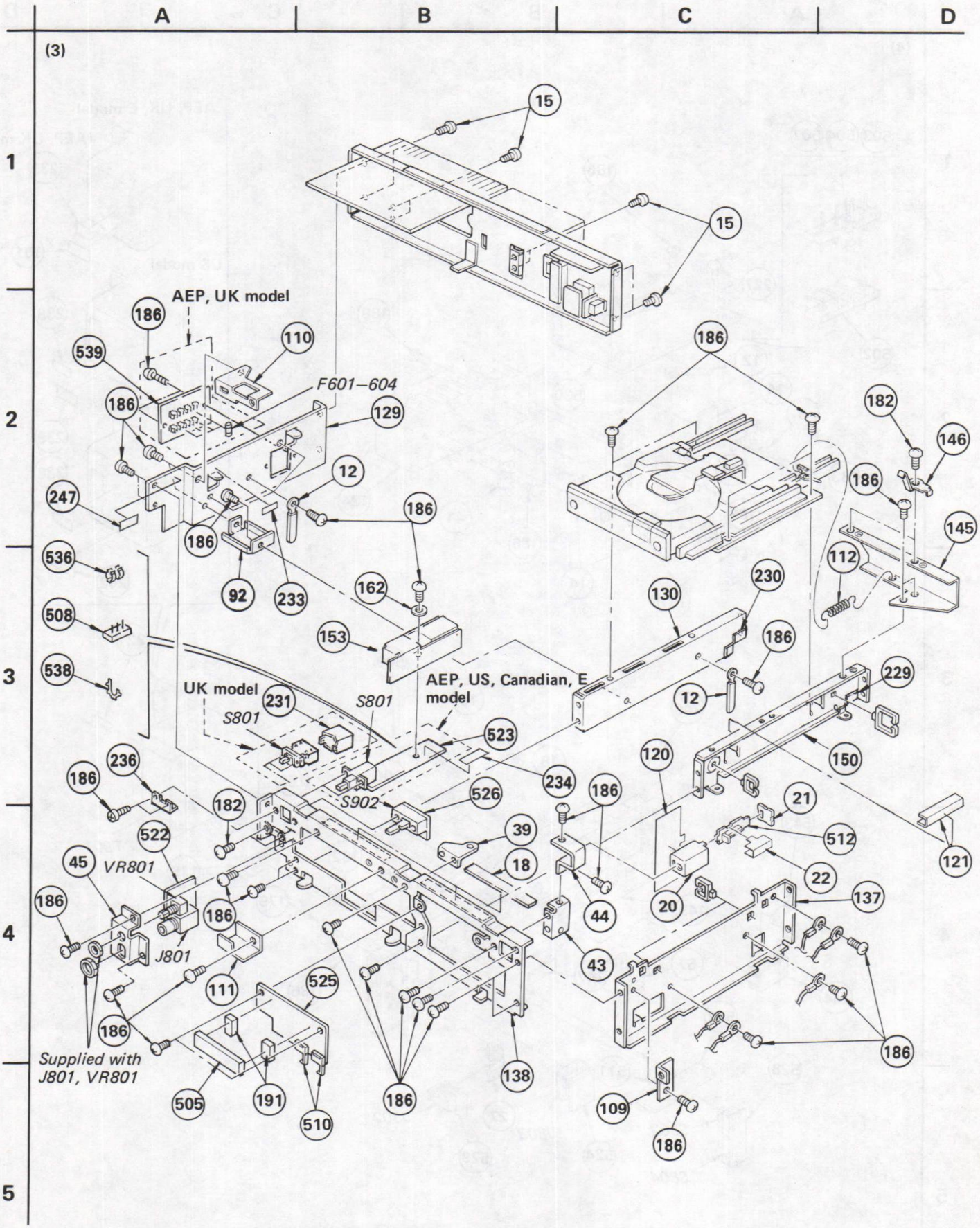
- Readings are taken under no-signal conditions with a VOM (50 kΩ/V).
  no mark : STOP mode
  ( ) : PLAY mode
- Waveforms are taken with respect to ground with oscilloscope.
  no mark : STOP mode
  ( ) : PLAY mode
- Switch : See page 56.
- ✻1 to 4 : AEP, UK and E models are different from US and Canadian models.

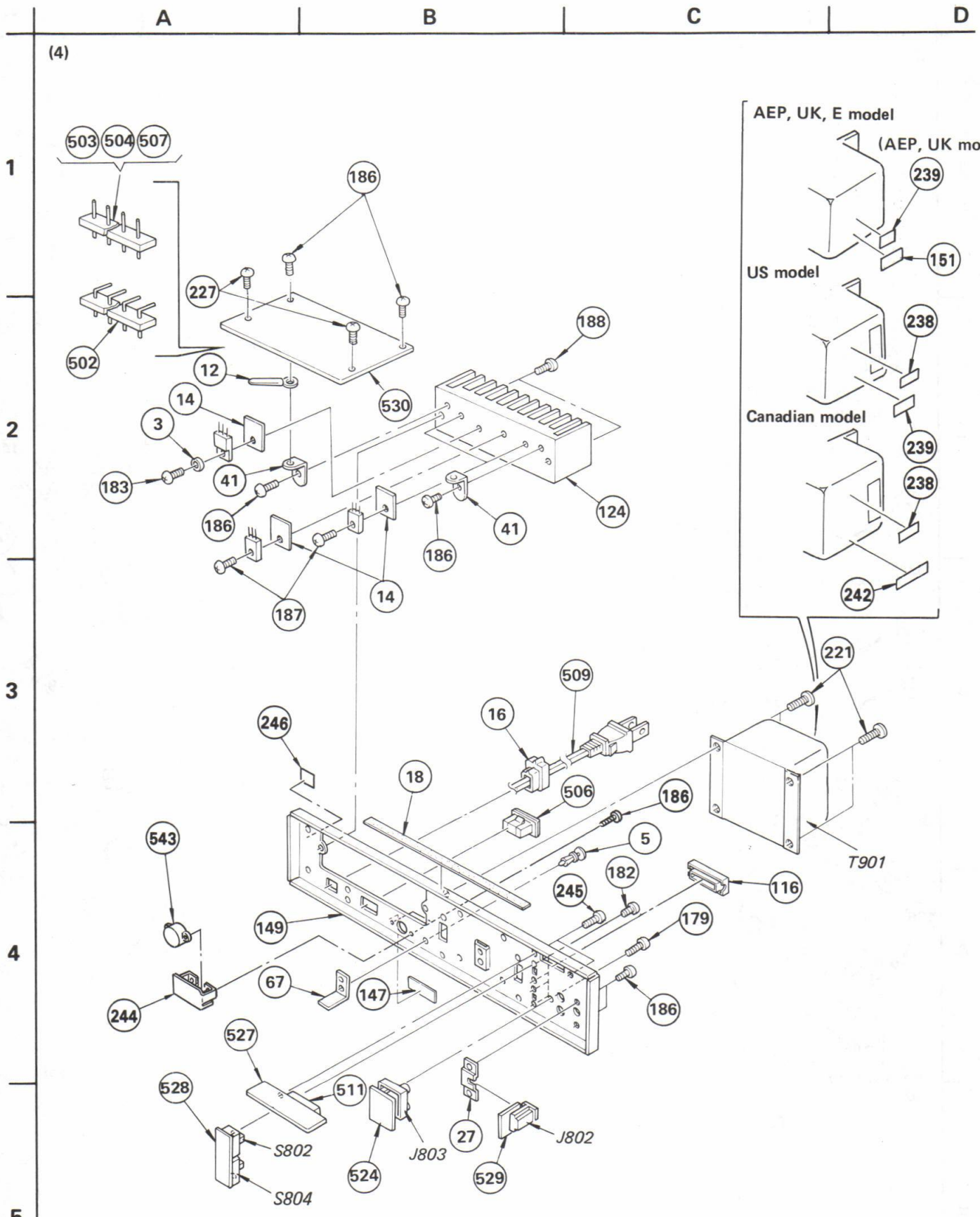
Note: The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

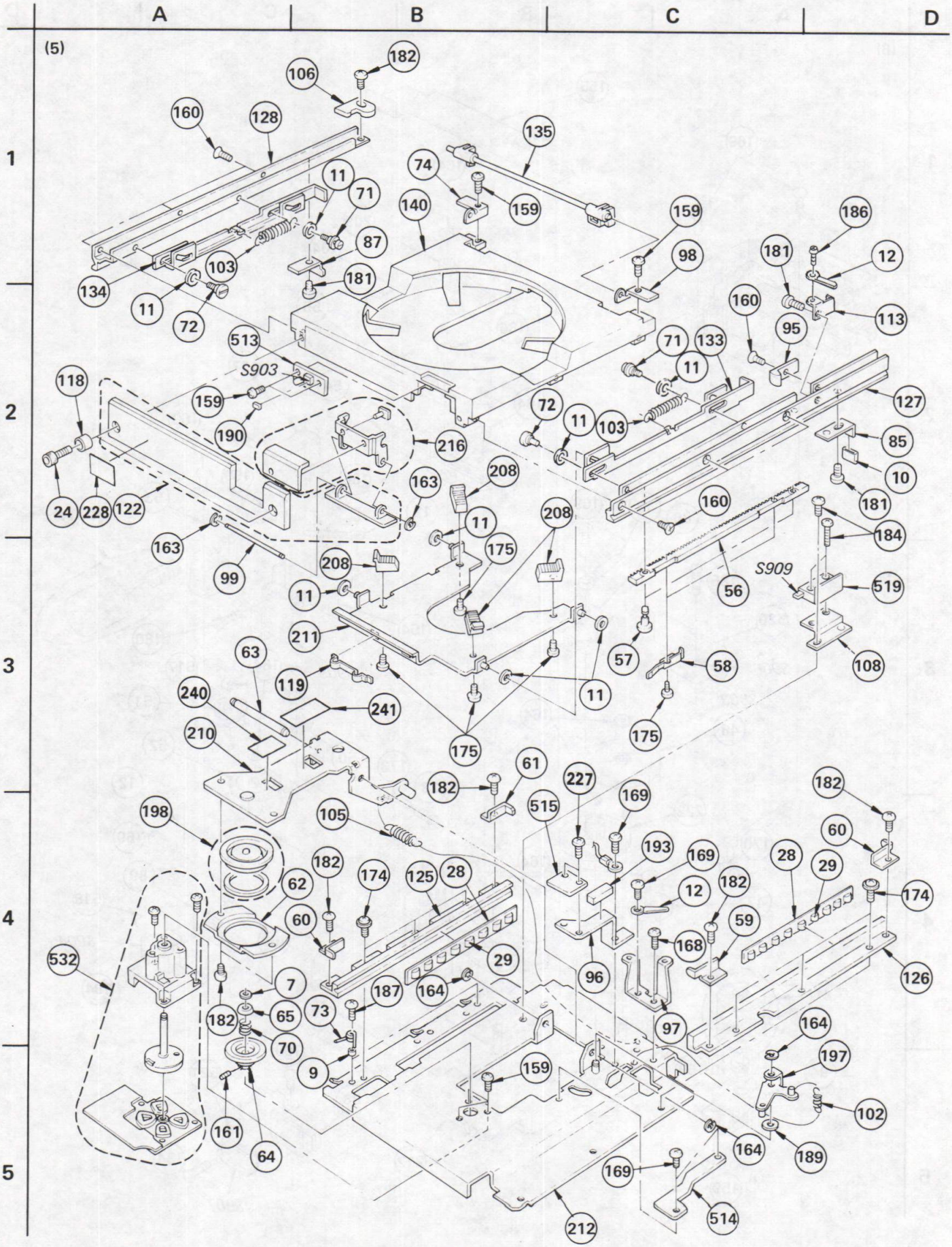
Note: Les composants identifiés par un tramé et une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

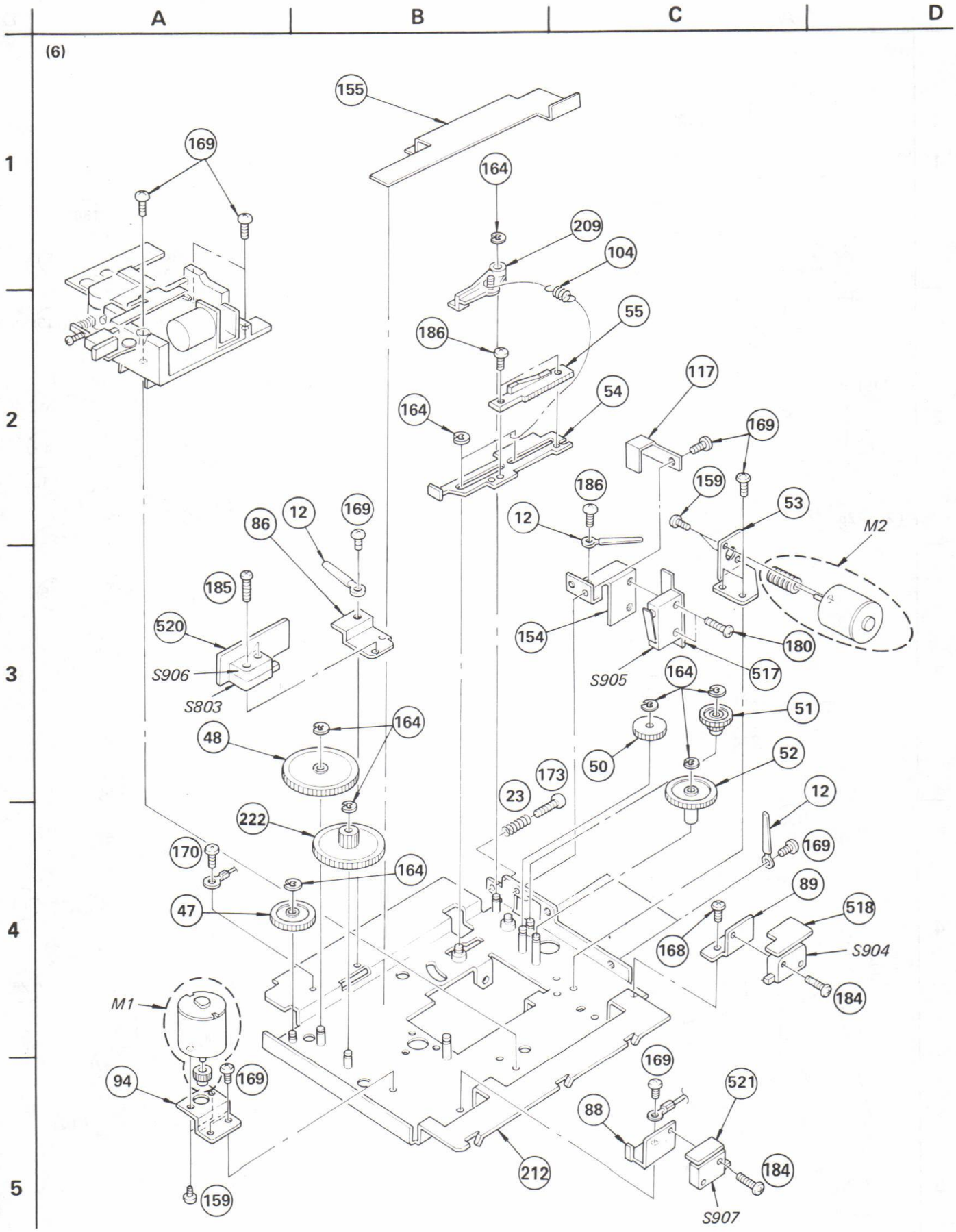
Note: Voltages are measured with a VOM (50kΩ/V).

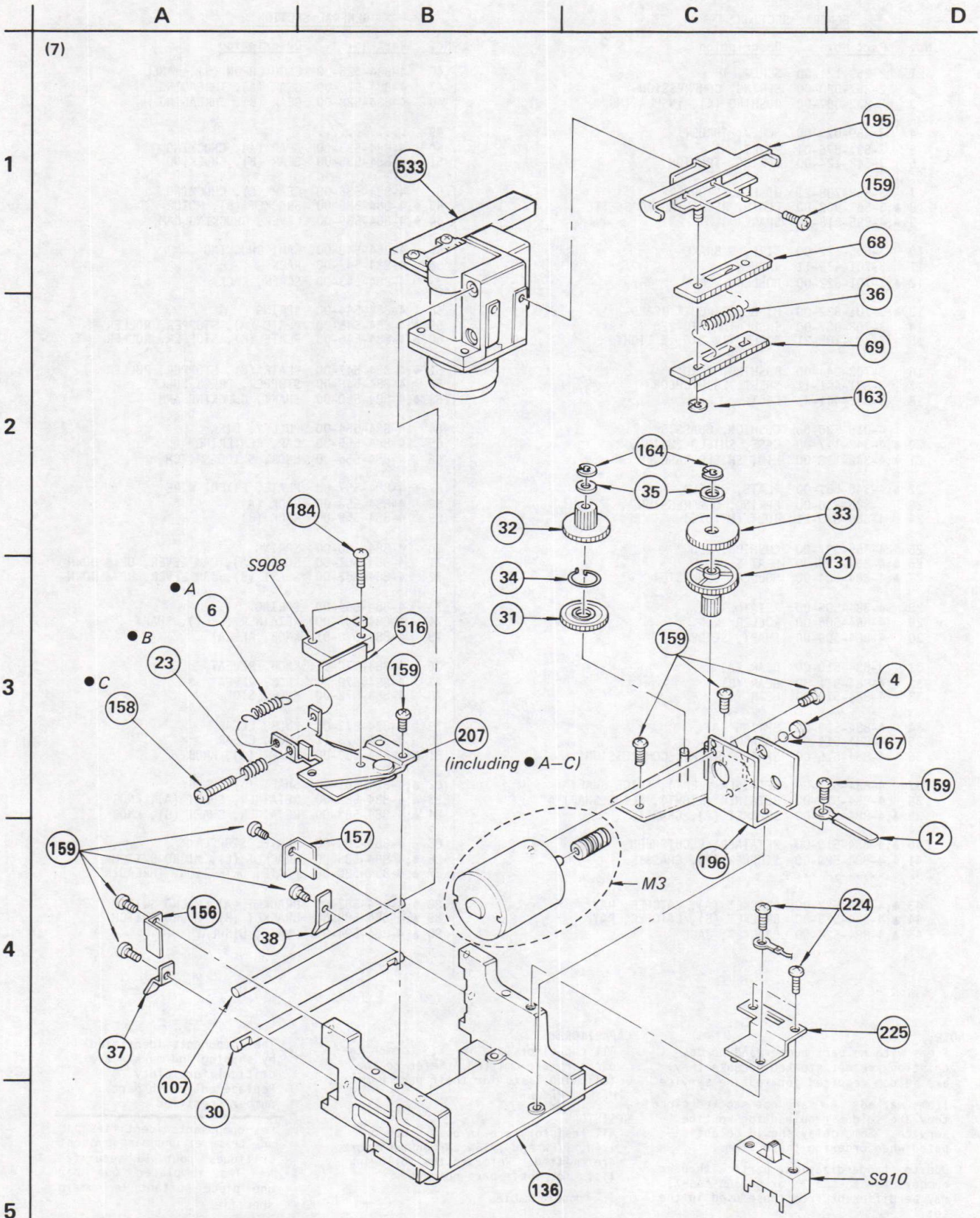
NOTE: ✻1,2,3 ---AEP,UK : D588,589,621,622,623,624
US,CANADIAN : SHORTED











GENERAL SECTION

No.	Part No.	Description
1	2-259-121-00	SCREW, TR
2	2-267-020-00	SPRING, COMPRESSION
3	2-832-007-00	BUSHING (K), INSULATING
4	3-489-073-00	SCREW, THRUST
5	3-531-576-01	RIVET
6	3-548-124-00	SPRING, TENSION
7	3-558-708-21	WASHER, STOPPER
8 ♦	3-561-902-00	CLOTH, RETAINING, CASSETTE
9 ♦	4-885-818-00	SPACER
10	3-655-122-00	TIRE, S BRAKE
11	3-701-439-11	WASHER
12 ♦	3-701-822-00	HOLDER, WIRE
13 ♦	3-701-832-00	HINGE, CIRCUIT BOARD
14	3-703-037-00	INSULATOR, TO-220
15	3-703-108-21	SCREW +BV 3X6, S TIGHT
16	3-703-244-00	BUSHING, CORD
17	3-831-441-11	SHEET, ESCUTCHEON
18	3-831-441-XX	FELT
19	4-015-736-00	CUSHION, CHASSIS
20 ♦	4-342-117-00	CASE, SHIELD (MAIN), R
21 ♦	4-342-118-00	LID, SHIELD CASE, R
22 ♦	4-348-551-00	PLATE, SHIELD
23	4-836-836-00	SPRING, COMPRESSION
24	4-885-829-21	BOLT (M2.6X6)
25	4-866-397-00	CUSHION, LED
26 ♦	4-854-790-00	HEAT SINK
27 ♦	4-884-504-00	HOLDER, CONNECTOR
28	4-884-505-00	RETAINER
29	4-884-506-00	ROLLER
30	4-884-509-00	SHAFT, SLIDE
31	4-884-510-00	GEAR (A)
32	4-884-511-00	GEAR (B)
33	4-884-512-00	GEAR (D)
34	4-884-513-00	SPRING (A)
35	4-884-514-00	WASHER
36	4-884-515-00	SPRING (RACK), COMPRESSION
37	4-884-516-00	RETAINER (LEFT), SLIDE SHAFT
38	4-884-517-00	RETAINER (RIGHT), SLIDE SHAFT
39 ♦	4-884-518-00	BRACKET (A), CHASSIS
40 ♦	4-884-519-00	RETAINER, ESCUTCHEON
41 ♦	4-884-520-00	STOPPER (D), CHASSIS
42	.....	
43 ♦	4-884-522-00	BRACKET (A), CATCHER, RAY
44 ♦	4-884-523-00	BRACKET (B), CATCHER, RAY
45 ♦	4-884-524-00	BRACKET, JACK

GENERAL SECTION

No.	Part No.	Description
46	4-884-525-00	ESCUTCHEON (B), PANEL
47	4-884-526-00	GEAR (A), THREADING
48	4-884-528-00	GEAR (B), THREADING
49	.....	
50	4-884-533-00	GEAR (A), CHUCKING
51	4-884-535-00	GEAR (B), CHUCKING
52	4-884-536-00	GEAR (C), CHUCKING
53 ♦	4-884-538-00	BRACKET (B), MOTOR
54 ♦	4-884-539-00	LEVER, CHUCKING CAM
55	4-884-540-00	CAM, CHUCKING
56	4-884-542-00	RACK
57	4-884-543-00	SCREW, RACK
58	4-884-544-00	SPRING
59 ♦	4-884-545-00	PLATE (A), STOPPER, ROLLER
60 ♦	4-884-546-00	PLATE (B), STOPPER, ROLLER
61 ♦	4-884-547-00	PLATE (C), STOPPER, ROLLER
62	4-884-548-00	STOPPER, PRESS PULLEY
63 ♦	4-884-550-00	SHAFT, CHUCKING ARM
64	4-884-554-00	PULLEY, DISK
65	4-884-555-00	CAP, CENTERING
66	4-884-556-00	KNOB, SLIDE SWITCH
67 ♦	4-884-557-00	PLATE, FIXED, WIRE
68	4-884-558-00	RACK (A)
69	4-884-559-00	RACK (B)
70	4-884-560-00	SPRING
71	4-884-561-00	SHAFT (A), CAM LEVER, UP & DOWN
72	4-884-562-00	SHAFT (B), CAM LEVER, UP & DOWN
73	4-884-564-00	SPRING
74	4-884-567-00	RETAINER (LEFT), SHAFT
75	4-884-570-01	KNOB, REPEAT
76	4-884-570-11	KNOB, REPEAT
77	4-884-570-21	KNOB, REPEAT
78	4-884-572-00	KNOB, STOP
79	4-884-573-01	KNOB, CLEAR
80	4-884-573-11	KNOB, CLEAR
81 ♦	4-884-580-00	SHAFT (A), KNOB
82 ♦	4-884-581-00	SHAFT (B), KNOB
83 ♦	4-884-582-00	RETAINER, SHAFT (A), KNOB
84 ♦	4-884-583-00	RETAINER, SHAFT (B), KNOB
85	4-884-584-00	PLATE, STOPPER
86 ♦	4-884-585-00	BRACKET (C), MICRO SWITCH
87 ♦	4-884-586-00	PLATE, DETECTION, THREADING
88 ♦	4-884-587-00	BRACKET (A), MICRO SWITCH
89 ♦	4-884-588-00	BRACKET (B), MICRO SWITCH
90 ♦	4-884-594-00	PLATE, DISPLAY

NOTE:

- Items with no part number and no description are not stocked because they are seldom required for routine service.
- Items marked " ♦ " are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- Due to standardization, parts with part numbers (Δ-ΔΔΔ-ΔΔΔ-XX or Δ-ΔΔΔΔ-ΔΔΔ-X) may be different from those used in the set.

CAPACITORS:

- All capacitors are in μF. Common capacitors are omitted. Refer to the following lists for their part numbers. MF:μF, PF:μμF.

RESISTORS

- All resistors are in ohms. Common 1/4W, 1/8W and 1/16W carbon resistors are omitted. Refer to the following lists for their part numbers.
- F : nonflammable

COILS

- MMH : mH, UH : μH

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.

SEMICONDUCTORS

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

GENERAL SECTION

No.	Part No.	Description
91 ♦	;4-884-595-00	FILTER
92 ♦	;4-884-596-00	ANGLE, SIDE PLATE
93	4-884-597-00	KNOB, CONTROL
94 ♦	;4-884-598-00	BRACKET (A), MOTOR
95	4-884-599-00	CAM, LOCK
96 ♦	;4-884-601-00	PLATE, DETECTION, DISK
97 ♦	;4-884-602-00	STOPPER (B), CHASSIS
98	4-884-610-00	PLATE (RIGHT), BEARING
99 ♦	;4-884-611-00	SHAFT, EJECT KNOB
100 ♦	;4-884-613-00	HEAT SINK (SMALL)
101 ♦	;4-884-614-00	HOLDER, IC
102	4-884-615-00	SPRING
103	4-884-616-00	SPRING
104	4-884-617-00	SPRING
105	4-884-618-00	SPRING
106	4-884-620-00	PLATE, GUIDE
107	4-884-621-00	SHAFT (2), SLIDE
108 ♦	;4-884-622-00	BRACKET (E), MICRO SWITCH
109 ♦	;4-884-623-00	REINFORCEMENT (A)
110 ♦	;4-884-624-00	REINFORCEMENT (D)
111 ♦	;4-884-625-00	REINFORCEMENT (B)
112	4-884-626-00	SPRING
113 ♦	;4-884-627-00	STOPPER, CORD
114	.....	
115	4-884-631-00	COVER (C), LED
116	4-884-633-00	COVER, CONNECTOR
117	4-884-634-00	PLATE, SPRING, STOPPER
118	4-884-635-00	BASE, ORNAMENTAL
119	4-884-636-00	PLATE, GUIDE, D.P
120 ♦	;4-884-637-00	SHEET (C), INSULATING
121	4-884-640-00	COVER, CORD
122	X-4901-709-1	PLATE ASSY, ORNAMENTAL, FRAME
123	4-884-643-00	ESCUTCHEON (A), PANEL
124	4-884-644-00	HEAT SINK
125 ♦	;4-884-646-00	RAIL (LEFT), FIXED
126 ♦	;4-884-647-00	RAIL (RIGHT), FIXED
127	4-884-648-00	RAIL (RIGHT)
128	4-884-649-00	RAIL (LEFT)
129 ♦	;4-884-651-00	PLATE (LEFT), SIDE
130 ♦	;4-884-652-00	BRACKET (LEFT), FRAME
131	4-884-654-00	GEAR (C)
132 ♦	;4-884-656-00	RETAINER, FUNCTION PANEL
133 ♦	;4-884-657-00	PLATE (RIGHT), CAM, UP & DOWN
134 ♦	;4-884-658-00	PLATE (LEFT), CAM, UP & DOWN
135	4-884-660-00	LEVER, FUNCTION

GENERAL SECTION

No.	Part No.	Description
136	4-884-664-00	BASE, OP
137 ♦	;4-884-665-00	PLATE (RIGHT), SIDE
138 ♦	;4-884-667-00	PANEL, SUB
139	4-884-669-00	BASE, FUNCTION PANEL
140	4-884-672-00	TABLE, DISK
141	4-884-675-00	SHAFT, SEESAW
142 ♦	;4-884-676-00	SPRING, RETAINER
143 ♦	;4-884-677-00	LEVER, SEESAW
144	4-884-678-00	PANEL, FRONT
145 ♦	;4-884-682-00	REINFORCEMENT (E)
146	4-884-683-00	LEAF, SPRING, GROUND
147	4-885-825-00	(US,Canadian)..LABEL, MODEL NUMBER (U,CND)
147	4-885-827-00	(UK).....LABEL, MODEL NUMBER (UK)
147	4-885-828-00	(AEP:UP TO SERIAL No. 503000) .....LABEL, MODEL NUMBER (AEP1)
147	4-885-841-00	(AEP:SERIAL No.503001 AND LATER,G-AEP) .....LABEL, MODEL NUMBER (AEP2)
148 ♦	;4-884-686-00	PLATE, BOTTOM
149	4-884-687-11	(US).....PLATE, JACK
149	4-884-687-22	(E).....PLATE, JACK
149	4-884-687-31	(AEP:UP TO SERIAL No. 501000)...PLATE, JACK
149	4-884-687-32	(AEP:SERIAL No. 501001 AND LATER,G-AEP) ...PLATE, JACK
149	4-884-687-41	(UK:UP TO SERIAL No. 600300)....PLATE, JACK
149	4-884-687-42	(UK:SERIAL No. 600301 AND LATER) ...PLATE, JACK
149	4-884-687-51	(Canadian)...PLATE, JACK
150 ♦	;4-884-688-00	BRACKET (RIGHT), FRAME
151 ♦	;4-884-689-00	(AEP,UK,G-AEP,E)...LABEL, OS
152	4-884-693-00	PLATE, TRANSPARENT
153 ♦	;4-884-694-00	(US,Canadian,E)...COVER, POWER
153 ♦	;4-885-824-00	(AEP,G-AEP).....COVER, POWER
154 ♦	;4-884-696-00	BRACKET (D), MICRO SWITCH
155 ♦	;4-884-697-00	COVER
156	4-884-698-00	RETAINER(LOWER)(2), SLIDE SHAFT
157	4-884-699-00	RETAINER(LOWER)(1), SLIDE SHAFT
158	4-885-829-00	BOLT (M2.6X12)
159	7-621-284-10	SCREW +P 2.6X5
160	7-621-592-00	SCREW +K 2.6X6
161	7-621-734-09	SET-SCT, HEX. 2.6X3
162	7-623-924-11	WASHER 3.0, NYLONE
163	7-624-104-04	STOP RING 2.0, TYPE -E
164	7-624-106-04	STOP RING 3.0, TYPE -E
165	.....	
166	7-624-190-81	STOP RING 2, TYPE-CS
167	7-671-156-01	BALL, STENLESS
168	7-682-144-01	SCREW +P 3X3

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- Due to standardization, parts with part numbers (Δ-ΔΔΔ-ΔΔΔ-XX or Δ-ΔΔΔΔ-ΔΔΔ-X) may be different from those used in the set.

CAPACITORS:

- All capacitors are in μF. Common capacitors are omitted. Refer to the following lists for their part numbers. MF:μF, PF:μμF.

RESISTORS

- All resistors are in ohms. Common 1/4W, 1/8W and 1/16W carbon resistors are omitted. Refer to the following lists for their part numbers.
- F : nonflammable

COILS

- MMH : mH, UH : μH

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.

SEMICONDUCTORS

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

GENERAL SECTION

No.	Part No.	Description
169	7-682-145-09	SCREW +P 3X4
170	7-682-146-01	SCREW +P 3X5
171	.....	
172	7-682-545-09	SCREW +B 3X4
173	7-682-551-09	SCREW +B 3X14
174	7-682-948-09	SCREW +PSW 3X8
175	7-685-102-29	SCREW +P 2X4 TYPE2 SLIT
176	7-685-133-11	SCREW +P 2.6X6 TYPE2 SLIT
177	7-685-534-19	SCREW +BTP 2.6X8 TYPE2 N-S
178	7-685-535-14	SCREW +BTP 2.6X10 TYPE2 N-S
179	7-685-646-19	SCREW +BVTP 3X8 TYPE2 N-S
180	7-685-855-09	SCREW +BVTT 2X10 (S)
181	7-685-860-01	SCREW +BVTT 2.6X4 (S)
182	7-685-861-09	SCREW +BVTT 2.6X5 (S)
183	7-685-863-01	SCREW +BVTT 2.6X8 (S)
184	7-685-864-01	SCREW +BVTT 2.6X10 (S)
185	7-685-867-09	SCREW +BVTT 2.6X16 (S)
186	7-685-871-09	SCREW +BVTT 3X6 (S)
187	7-685-872-01	SCREW +BVTT 3X8 (S)
188	7-685-874-09	SCREW +BVTT 3X12 (S)
189	7-688-004-11	W 4, MIDDLE
190	9-911-815-01	CUSHION
191	9-911-838-XX	CUSHION, INDICATION TUBE
192	9-911-840-XX	CUSHION, RUBBER
193	9-911-841-XX	CUSHION (B), RUBBER
194	X-4875-503-2	FOOT ASSY, MF
195	X-4884-501-0	HOLDER ASSY, RACK
196 ♦	X-4884-502-0	HOLDER ASSY, MOTOR
197	X-4884-503-0	LEVER ASSY, UP & DOWN
198	X-4884-529-0	PULLEY ASSY, PRESS
199	X-4884-505-0	KNOB ASSY (A), F.F
200	X-4884-506-0	KNOB ASSY (B), F.F
201	X-4884-507-0	KNOB ASSY (C), F.F
202	X-4884-508-0	KNOB ASSY (D), F.F
203	X-4884-509-0	KNOB ASSY (A), N
204	X-4884-510-0	KNOB ASSY (B), N
205	X-4884-511-0	KNOB ASSY, PAUSE
206	X-4884-512-0	KNOB ASSY, FWD
207 ♦	X-4884-513-0	HOLDER ASSY, SWITCH
208	X-4884-514-0	RETAINER ASSY, DISK
209	X-4884-515-0	ARM ASSY, LOCK
210	X-4884-516-0	ARM ASSY, CHUCKING
211 ♦	X-4884-517-0	PLATE ASSY, DISK
212 ♦	X-4884-518-0	CHASSIS ASSY, MECHANICAL
213	X-4884-521-0	ESCUTCHEON ASSY, POWER KNOB

GENERAL SECTION

No.	Part No.	Description
214	X-4884-522-0	KNOB ASSY, POWER
215	X-4884-525-1	PANEL ASSY
216	X-4884-524-1	EJECT KNOB ASSY
217	X-4884-519-1	CASE ASSY
218	2-242-926-00	CUSHION, SIDE PLATE
219	2-269-798-01	HEAT SINK, OPERATION AMPLIFIER (IC508,509)
220	4-884-679-00	(E).....LABEL, CAUTION
220	4-885-831-00	(AEP,G-AEP,UK,US,Canadian) ....LABEL, CAUTION
221	4-885-801-01	SCREW (CLAW), S TIGHT, +BV4
222	4-885-816-00	GEAR (D), LOADING
223 ♦	4-885-810-00	HOLDER (B), IC (IC514)
224	7-621-775-10	SCREW +B 2.6X4
225 ♦	4-885-802-00	HOLDER, B. SWITCH
226 ♦	4-885-832-00	LABEL
227	7-685-871-01	SCREW +BVTT 3X6 (S)
228	3-703-709-00	STICKER, SONY SYMBOL (15)
229 ♦	4-885-822-00	SHEET, EDGE (B)
230 ♦	4-885-823-00	SHEET, EDGE (A)
231	3-559-001-00	(UK)...COVER, POWER SWITCH
232	3-701-690-00	(UK).....LABEL (MADE IN JAPAN)
233	3-701-948-11	(AEP,G-AEP).....LABEL, FUSE
233 ♦	3-703-044-26	(US,Canadian)...LABEL, CAUTION
234 ♦	3-701-946-22	(US,Canadian)...LABEL, FUSE
235	3-703-043-21	(UK).....LABEL, CAUTION, MAIN
235	3-703-619-01	(US,Canadian)...LABEL, MAIN CAUTION
236 ♦	4-885-830-00	(AEP,G-AEP).....COVER (LOWER), POWER
237	.....	
238	3-703-082-21	(US,Canadian)...LABEL, CAUTION
239	2-362-383-00	(US).....LABEL
239	4-885-838-00	(AEP,G-AEP,UK)....LABEL, CLASS 1
240	3-667-648-00	(Canadian)....LABEL, LASER MARK
240	4-885-839-00	(AEP,G-AEP,UK)....LABEL, APERTURE
241	4-884-503-01	(US).....LABEL, CAUTION, LASER
241	4-885-833-01	(Canadian)...LABEL (CSA), CAUTION, LASER
241	4-885-843-02	(AEP).....LABEL, CAUTION, LASER
242 ♦	4-884-680-00	(Canadian)...LABEL
243	4-885-826-00	(E)....LABEL, MODEL NUMBER
244 ♦	4-885-847-00	(E)....COVER, SELECTOR
245	7-685-146-19	SCREW, +PTP 3X8
246	4-885-842-00	(Canadian)...LABEL, MARKER, LASER
247 ♦	4-885-844-00	(UK)...COVER, INSULATING

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RESISTORS
- All resistors are in ohms. Common 1/4W, 1/8W and 1/16W carbon resistors are omitted. Refer to the following lists for their part numbers.
- F : nonflammable

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

ACCESSORY & PACKING MATERIAL

No.	Part No.	Description
251	1-528-027-11	BATTERY, NEW SUPER (SUM-3)(NS)
252	1-551-315-00	CORD, CONNECTION (RK-112)
253 ⚠	1-564-085-00	(UK)...ADAPTOR, AC PLUG
254	2-375-012-00	BAG, PROTECTION (FOR RM-101 SET)
255	3-701-619-00	BAG, POLYETHYLENE, STANDARD
256	3-701-630-00	BAG, POLYETHYLENE
257	3-773-174-11	(AEP:UP TO SERIAL No. 501000, UK:UP TO SERIAL No. 600300)...MANUAL, INSTRUCTION
257	3-773-174-12	(AEP:SERIAL No. 501001, AND LATER UK:SERIAL No. 600301, AND LATER,G-AEP,E) ...MANUAL, INSTRUCTION
257	3-773-174-21	(US,Canadian)...MANUAL, INSTRUCTION
258	3-773-174-31	(Canadian).....MANUAL, INSTRUCTION
259	3-773-174-41	(AEP:UP TO SERIAL No. 501000) ....MANUAL, INSTRUCTION
259	3-773-174-42	(AEP:SERIAL No. 501001 AND LATER) ....MANUAL, INSTRUCTION
260	4-884-695-00	CLEANER, DISK
261	4-885-812-00	CUSHION (RIGHT), UPPER
262	4-885-813-00	CUSHION (LEFT), UPPER
263	4-885-814-00	CUSHION (RIGHT), LOWER
264	4-885-815-00	CUSHION (LEFT), LOWER
265	4-885-820-00	BAG, PROTECTION (FOR CDP-101 SET)
266	4-885-834-00	SHEET, PROTECTION (FOR RM-101 SET)
267	4-885-835-00	SPACER
268	4-885-811-00	(US,Canadian).....INDIVIDUAL CARTON
268	4-885-836-00	(AEP,G-AEP,UK,E)...INDIVIDUAL CARTON
269	4-885-840-00	LABEL, COMPACT DISC
270	3-703-390-01	(US)...INSTRUCTION
271 ⚠	1-526-565-00	(E1)...AC PLUG ADAPTOR
272	3-795-629-11	(AEP,G-AEP)....INSTRUCTION

ELECTRICAL PARTS

Ref.No.	Part No.	Description
501	.....	
502	♦;1-508-806-13	U TYPE BASE POST
503	♦;1-508-809-00	BASE POST (14MM) 2P
504	♦;1-508-811-00	BASE POST (14MM) 4P
505	1-519-275-00	INDICATOR TUBE, FLUORESCENT
506	⚠.1-526-609-00	(US,E).....OUTLET, AC
506	⚠.1-526-694-00	(AEP,G-AEP)...OUTLET, AC
506	⚠.1-526-751-00	(UK).....OUTLET, AC
506	⚠.1-526-882-00	(Canadian)....OUTLET, AC
507	♦;1-535-120-00	TERMINAL
508	♦;1-535-136-00	(AEP)...BASE POST 14MM (10MM PITCH) 3P
509	⚠.1-555-386-00	(E).....CORD, POWER
509	⚠.1-555-701-00	(US,Canadian)...CORD, POWER
509	⚠.1-555-795-00	(AEP,G-AEP).....CORD, POWER
509	⚠.1-556-035-00	(UK).....CORD, POWER
510	1-561-852-00	SOCKET, CONNECTOR 5P
511	1-562-042-00	SOCKET, CONNECTOR 26P
512	♦;1-603-976-00	PC BOARD, N
513	♦;1-608-664-00	PC BOARD, EJECT SWITCH
514	♦;1-608-665-00	PC BOARD, DISC DETECT PHOTO TR
515	♦;1-608-666-00	PC BOARD, DISC DETECTION LED
516	♦;1-608-667-00	PC BOARD, LIMIT SWITCH
517	♦;1-608-668-00	PC BOARD, CHUCKING SWITCH
518	♦;1-608-669-00	PC BOARD, LOADING SWITCH
519	♦;1-608-670-00	PC BOARD, LASER SWITCH
520	♦;1-608-671-00	PC BOARD, IN SWITCH
521	♦;1-608-672-00	PC BOARD, OUT SWITCH
522	♦;1-608-674-00	PC BOARD, HEADPHONE
523	♦;1-608-675-00	(E).....PC BOARD, POWER SWITCH
523	♦;1-608-899-00	(AEP,G-AEP,US,Canadian) .....PC BOARD, POWER SWITCH
524	♦;1-608-676-00	PC BOARD, LINE OUT
525	♦;1-608-678-00	PC BOARD, INDICATION
526	♦;1-608-679-00	PC BOARD, TIMER SWITCH
527	♦;1-608-680-00	PC BOARD, ACCESSORY PORT
528	♦;1-608-681-00	PC BOARD, AUTO PAUSE SWITCH
529	♦;1-608-682-00	(AEP:UP TO SERIAL No. 501000, UK:UP TO SERIAL No. 600300) ...PC BOARD, REMOTE CONTROL
530	♦;1-608-683-00	PC BOARD, POWER SUPPLY
531	♦;1-608-684-00	PC BOARD, LED
532	8-838-039-01	MOTOR, DC (DHR-2600A)
533	X-4884-531-1	T-TYPE OPTICAL PICK-UP BLOCK, KSS-100A
534	♦;1-608-677-00	PC BOARD, SERVO AMP
535	♦;1-608-673-00	PC BOARD, AUDIO AMP
536	⚠.1-533-131-00	(AEP,G-AEP,UK,US,Canadian) ....HOLDER, FUSE
537	♦;1-535-117-00	(AEP,G-AEP,UK).....TERMINAL
538	♦;1-535-416-00	(AEP,G-AEP,US,Canadian)...TERMINAL
539	♦;1-609-503-00	(AEP,G-AEP,UK)...PC BOARD, FUSE

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

ELECTRICAL PARTS

Ref.No.	Part No.	Description			
540 ♦	;A-4618-090-A	(US,Canadian,E).MOUNTED PCB,POWER SUPPLY			
540 ♦	;A-4618-096-A	(UK,AEP,G-AEP)..MOUNTED PCB,POWER SUPPLY			
541 ♦	;A-4619-187-A	(US,Canadian)...MOUNTED PCB, SERVO AMP			
541 ♦	;A-4619-196-A	(AEP,G-AEP,UK,E)..MOUNTED PCB, SERVO AMP			
542 ♦	;A-4646-119-A	(US,Canadian)...MOUNTED PCB, AUDIO AMP			
542 ♦	;A-4646-139-A	(AEP,G-AEP,UK,E)..MOUNTED PCB, AUDIO AMP			
543 ⚠	.1-526-576-41	(E)....SELECTOR, POWER VOLTAGE			
1B1	1-232-004-00	COMPOSITION CIRCUIT BLOCK			
B101	1-529-016-00	BUZZER, PIEZOELECTRIC			
C1	1-123-617-00	ELECT	10MF	20%	16V
C2	1-123-617-00	ELECT	10MF	20%	16V
C3	1-123-617-00	ELECT	10MF	20%	16V
C4	1-161-019-00	CERAMIC	0.033MF	10%	25V
C5	1-108-567-00	MYLAR	0.0033MF	5%	50V
C101	1-102-106-00	CERAMIC	100PF	10%	50V
C102	1-102-106-00	CERAMIC	100PF	10%	50V
C103	1-161-317-00	CERAMIC	330PF	10%	50V
C104	1-102-110-00	CERAMIC	220PF	10%	50V
C105	1-102-110-00	CERAMIC	220PF	10%	50V
C106	1-123-493-00	ELECT	47MF	20%	16V
C107	1-130-628-00	FILM	0.047MF	5%	50V
C108	1-161-323-00	CERAMIC	0.001MF	10%	50V
C109	1-123-356-00	ELECT	10MF	20%	16V
C110	1-123-356-00	ELECT	10MF	20%	16V
C111	1-101-004-00	CERAMIC	0.01MF		50V
C112	1-161-315-00	CERAMIC	220PF	10%	50V
C113	1-161-315-00	CERAMIC	220PF	10%	50V
C115	1-123-356-00	ELECT	10MF	20%	16V
C116	1-123-356-00	ELECT	10MF	20%	16V
C117	1-131-386-00	TANTALUM	33MF	20%	6.3V
C201	1-130-188-00	FILM	0.01MF	5%	100V
C202	1-130-626-00	FILM	0.033MF	5%	50V
C203	1-130-620-00	FILM	0.01MF	5%	50V
C204	1-123-380-00	ELECT	1MF	20%	50V
C205	1-130-624-00	FILM	0.022MF	5%	50V
C206	1-130-620-00	FILM	0.01MF	5%	50V
C207	1-123-307-00	ELECT	100MF	20%	6.3V
C208	1-123-317-00	ELECT	22MF	20%	16V
C210	1-161-319-00	CERAMIC	470PF	10%	50V
C211	1-130-632-00	FILM	0.1MF	5%	50V
C212	1-123-305-00	ELECT	33MF	20%	10V
C213	1-123-306-00	ELECT	47MF	20%	10V
C214	1-123-231-00	ELECT(NONPOLAR)	3.3MF	20%	50V
C215	1-130-626-00	FILM	0.033MF	5%	50V
C216	1-161-259-00	CERAMIC	10PF	5%	50V

ELECTRICAL PARTS

Ref.No.	Part No.	Description			
C219	1-123-493-00	ELECT	47MF	20%	16V
C220	1-123-493-00	ELECT	47MF	20%	16V
C221	1-123-307-00	ELECT	100MF	20%	6.3V
C222	1-123-493-00	ELECT	47MF	20%	16V
C223	1-123-493-00	ELECT	47MF	20%	16V
C224	1-123-306-00	ELECT	47MF	20%	10V
C301	1-108-577-00	MYLAR	0.0082MF	5%	50V
C302	1-161-271-00	CERAMIC	100PF	5%	50V
C303	1-108-555-00	MYLAR	0.001MF	5%	50V
C304	1-130-624-00	FILM	0.022MF	5%	50V
C305	1-123-608-00	ELECT	0.22MF	20%	50V
C306	1-130-623-00	FILM	0.018MF	5%	50V
C307	1-106-188-00	MYLAR	0.0047MF	5%	100V
C308	1-161-494-00	CERAMIC	0.022MF	30%	25V
C309	1-123-231-00	ELECT(NONPOLAR)	3.3MF	20%	50V
C310	1-161-263-00	CERAMIC	22PF	5%	50V
C312	1-161-323-00	CERAMIC	0.001MF	10%	50V
C313	1-161-323-00	CERAMIC	0.001MF	10%	50V
C314	1-130-636-00	FILM	0.22MF	5%	50V
C315	1-130-620-00	FILM	0.01MF	5%	50V
C316	1-130-628-00	FILM	0.047MF	5%	50V
C317	1-130-620-00	FILM	0.01MF	5%	50V
C401	1-161-265-00	CERAMIC	33PF	5%	50V
C402	1-161-265-00	CERAMIC	33PF	5%	50V
C403	1-161-259-00	CERAMIC	10PF	5%	50V
C404	1-161-259-00	CERAMIC	10PF	5%	50V
C405	1-161-264-00	CERAMIC	27PF	5%	50V
C406	1-161-264-00	CERAMIC	27PF	5%	50V
C407	1-130-632-00	FILM	0.1MF	5%	50V
C409	1-161-323-00	CERAMIC	0.001MF	10%	50V
C410	1-130-633-00	FILM	0.12MF	5%	50V
C411	1-161-267-00	CERAMIC	47PF	5%	50V
C412	1-161-267-00	CERAMIC	47PF	5%	50V
C413	1-108-234-00	MYLAR	0.0047MF	10%	50V
C414	1-107-306-00	MICA	180PF	5%	100V
C415	1-161-330-00	CERAMIC	0.01MF	30%	25V
C416	1-161-327-00	CERAMIC	0.0033MF	30%	50V
C417	1-161-271-00	CERAMIC	100PF	5%	50V
C418	1-108-354-00	MYLAR	0.0039MF	10%	50V
C419	1-161-375-00	CERAMIC	0.0022MF	20%	50V
C420	1-161-375-00	CERAMIC	0.0022MF	20%	50V
C421	1-102-645-00	CERAMIC	33PF	5%	50V
C422	1-161-315-00	CERAMIC	220PF	10%	50V
C423	1-102-645-00	CERAMIC	33PF	5%	50V
C424	1-123-318-00	ELECT	33MF	20%	16V

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ELECTRICAL PARTS

Ref.No.	Part No.	Description			
C425	1-130-620-00	FILM	0.01MF	5%	50V
C427	1-123-318-00	ELECT	33MF	20%	16V
C428	1-123-318-00	ELECT	33MF	20%	16V
C429	1-123-318-00	ELECT	33MF	20%	16V
C430	1-123-318-00	ELECT	33MF	20%	16V
C431	1-123-318-00	ELECT	33MF	20%	16V
C432	1-123-318-00	ELECT	33MF	20%	16V
C433	1-123-318-00	ELECT	33MF	20%	16V
C434	1-123-318-00	ELECT	33MF	20%	16V
C435	1-123-318-00	ELECT	33MF	20%	16V
C436	1-123-318-00	ELECT	33MF	20%	16V
C437	1-123-299-00	ELECT	1000MF	20%	6.3V
C438	1-161-265-00	CERAMIC	33PF	5%	50V
C439	1-161-255-00	CERAMIC	4.7PF	10%	50V
C440	1-161-330-00	CERAMIC	0.01MF	30%	25V
C441	1-161-330-00	CERAMIC	0.01MF	30%	25V
C442	1-161-323-00	CERAMIC	0.001MF	10%	50V
C444	1-131-386-00	TANTALUM	33MF	20%	6.3V
C445	1-131-386-00	TANTALUM	33MF	20%	6.3V
C446	1-131-386-00	TANTALUM	33MF	20%	6.3V
C447	1-131-386-00	TANTALUM	33MF	20%	6.3V
C448	1-123-318-00	ELECT	33MF	20%	16V
C450	1-130-626-00	FILM	0.033MF	5%	50V
C452	1-101-004-00	CERAMIC	0.01MF		50V
C453	1-123-465-00	ELECT	220MF	20%	6.3V
C503	1-102-953-00	CERAMIC	18PF	5%	50V
C505	1-102-074-00	CERAMIC	0.001MF	10%	50V
C506	1-131-450-00	TANTALUM	1MF	20%	50V
C507	1-123-318-00	ELECT	33MF	20%	16V
C508	1-123-318-00	ELECT	33MF	20%	16V
C509	1-123-318-00	ELECT	33MF	20%	16V
C510	1-123-318-00	ELECT	33MF	20%	16V
C511	1-131-450-00	TANTALUM	1MF	20%	50V
C512	1-104-231-00	POLYSTYRENE	0.001MF	5%	500V
C513	1-104-231-00	POLYSTYRENE	0.001MF	5%	500V
C514	1-131-450-00	TANTALUM	1MF	20%	50V
C515	1-131-450-00	TANTALUM	1MF	20%	50V
C517	1-107-167-00	MICA	75PF	5%	500V
C518	1-107-167-00	MICA	75PF	5%	500V
C519	1-131-450-00	TANTALUM	1MF	20%	50V
C520	1-131-450-00	TANTALUM	1MF	20%	50V
C521	1-131-450-00	TANTALUM	1MF	20%	50V
C522	1-131-450-00	TANTALUM	1MF	20%	50V
C525	1-130-960-00	FILM	0.01MF	2%	100V
C526	1-130-960-00	FILM	0.01MF	2%	100V

ELECTRICAL PARTS

Ref.No.	Part No.	Description			
C527	1-124-336-00	ELECT(NONPOLAR)	10MF	20%	100V
C528	1-124-336-00	ELECT(NONPOLAR)	10MF	20%	100V
C541	1-102-074-00	CERAMIC	0.001MF	10%	50V
C545	1-101-880-00	CERAMIC	47PF	5%	50V
C546	1-102-106-00	CERAMIC	100PF	10%	50V
C547	1-101-004-00	CERAMIC	0.01MF		50V
C548	1-123-318-00	ELECT	33MF	20%	16V
C549	1-123-318-00	ELECT	33MF	20%	16V
C550	1-131-450-00	TANTALUM	1MF	20%	50V
C551	1-131-450-00	TANTALUM	1MF	20%	50V
C571	1-123-693-00	ELECT	100MF	20%	25V
C572	1-123-693-00	ELECT	100MF	20%	25V
C573	1-123-681-00	ELECT	47MF	20%	16V
C574	1-123-681-00	ELECT	47MF	20%	16V
C575	1-131-450-00	TANTALUM	1MF	20%	50V
C576	1-131-450-00	TANTALUM	1MF	20%	50V
C577	1-102-947-00	CERAMIC	10PF	5%	50V
C578	1-102-947-00	CERAMIC	10PF	5%	50V
C579	1-123-324-00	ELECT	1000MF	20%	16V
C580	1-123-324-00	ELECT	1000MF	20%	16V
C581	1-123-609-00	ELECT	0.33MF	20%	50V
C582	1-123-609-00	ELECT	0.33MF	20%	50V
C583	1-123-474-00	ELECT	100MF	20%	10V
C584	1-123-474-00	ELECT	100MF	20%	10V
C585	1-130-628-00	FILM	0.047MF	5%	50V
C586	1-102-947-00	CERAMIC	10PF	5%	50V
C590	1-102-074-00	CERAMIC	0.001MF	10%	50V
C591	1-131-386-00	TANTALUM	33MF	20%	6.3V
C601 ⚠	1-123-338-00	ELECT	2200MF	20%	25V
C602	1-123-493-00	ELECT	47MF	20%	25V
C603	1-123-484-00	ELECT	100MF	20%	16V
C604	1-123-484-00	ELECT	100MF	20%	16V
C605	1-123-493-00	ELECT	47MF	20%	25V
C606 ⚠	1-123-338-00	ELECT	2200MF	20%	25V
C607 ⚠	1-123-489-00	ELECT	2200MF	20%	16V
C608	1-161-329-00	CERAMIC	0.0068MF	30%	25V
C609	1-123-307-00	ELECT	100MF	20%	6.3V
C610	1-123-307-00	ELECT	100MF	20%	6.3V
C611	1-161-329-00	CERAMIC	0.0068MF	30%	25V
C612 ⚠	1-123-489-00	ELECT	2200MF	20%	16V
C613 ⚠	1-123-505-00	ELECT	220MF	20%	35V
C614 ⚠	1-123-513-00	ELECT	100MF	20%	50V
C615	1-123-493-00	ELECT	47MF	20%	25V
C616	1-123-380-00	ELECT	1MF	20%	50V
C617	1-123-356-00	ELECT	10MF	20%	50V
C618 ⚠	1-123-489-00	ELECT	2200MF	20%	16V

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- Items marked " ♦ " are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- Due to standardization, parts with part numbers (Δ-ΔΔΔ-ΔΔΔ-XX or Δ-ΔΔΔΔ-ΔΔΔ-X) may be different from those used in the set.

CAPACITORS:
- All capacitors are in μF. Common capacitors are omitted. Refer to the following lists for their part numbers. MF:μF, PF:μμF.

RESISTORS
- All resistors are in ohms. Common 1/4W, 1/8W and 1/16W carbon resistors are omitted. Refer to the following lists for their part numbers.
- F : nonflammable

COILS
- MMH : mH, UH : μH

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.

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

ELECTRICAL PARTS

Ref.No.	Part No.	Description			
C801 ⚠	1-130-456-00	(AEP,G-AEP).....FILM	0.022MF	20%	250V
C801 ⚠	1-161-744-00	(UK).....CERAMIC	10000PF		400V
C801 ⚠	1-161-749-00	(US,Canadian)...CERAMIC	10000PF		125V
C801 ⚠	1-129-737-00	(E).....FILM	0.047MF	20%	630V
C802	1-102-114-00	CERAMIC	470PF	10%	50V
C803	1-102-121-00	CERAMIC	0.0022MF	10%	50V
C805 ⚠	1-161-744-00	(UK)...CERAMIC	10000PM		400V
C901	1-161-323-00	CERAMIC	0.001MF	10%	50V
C961	1-130-640-00	FILM	0.47MF	5%	50V
C962	1-101-005-00	CERAMIC	0.022MF		50V
C963	1-101-005-00	CERAMIC	0.022MF		50V
C971	1-101-003-00	CERAMIC	0.0047MF		50V
C972	1-101-003-00	CERAMIC	0.0047MF		50V
C973	1-101-003-00	CERAMIC	0.0047MF		50V
CNP1 ♦	1-560-065-00	PIN, CONNECTOR 8P			
CNP2 ♦	1-560-062-00	PIN, CONNECTOR 4P			
CNP3 ♦	1-560-060-00	PIN, CONNECTOR 2P			
CNP4 ♦	1-560-338-00	PIN, CONNECTOR 7P			
CNP5 ♦	1-560-060-00	PIN, CONNECTOR 2P			
CNP6 ♦	1-560-063-00	PIN, CONNECTOR 5P			
CNP7 ♦	1-560-064-00	PIN, CONNECTOR 6P			
CNP8 ♦	1-560-061-00	PIN, CONNECTOR 3P			
CNP9 ♦	1-560-064-00	PIN, CONNECTOR 6P			
♦CNP10	1-560-063-00	PIN, CONNECTOR 5P			
♦CNP11	1-560-061-00	PIN, CONNECTOR 3P			
♦CNP12	1-560-064-00	PIN, CONNECTOR 6P			
♦CNP13	1-560-338-00	PIN, CONNECTOR 7P			
♦CNP14	1-560-060-00	PIN, CONNECTOR 2P			
♦CNP21	1-560-061-00	PIN, CONNECTOR 3P			
♦CNP22	1-560-065-00	PIN, CONNECTOR 8P			
♦CNP23	1-560-065-00	PIN, CONNECTOR 8P			
♦CNP24	1-560-060-00	PIN, CONNECTOR 2P			
♦CNP25	1-560-064-00	PIN, CONNECTOR 6P			
♦CNP27	1-508-880-00	BASE POST, MCD CONNECTOR 6P			
♦CNP28	1-560-061-00	PIN, CONNECTOR 3P			
♦CNP31	1-560-062-00	PIN, CONNECTOR 4P			
♦CNP32	1-560-339-00	PIN, CONNECTOR 9P			
♦CNP33	1-560-063-00	PIN, CONNECTOR 5P			
♦CNP34	1-560-073-00	PIN, CONNECTOR			
♦CNP35	1-560-071-00	PIN, CONNECTOR			
♦CNP41	1-560-063-00	PIN, CONNECTOR 5P			
D1	8-719-100-32	DIODE PH302B			
D101	8-719-815-55	DIODE 1S1555			
D102	8-719-815-55	DIODE 1S1555			
D103	8-719-815-55	DIODE 1S1555			
D104	8-719-815-55	DIODE 1S1555			
D105	8-719-922-28	DIODE PG2222SY-B1			

ELECTRICAL PARTS

Ref.No.	Part No.	Description
D202	8-719-815-55	DIODE 1S1555
D203	8-719-815-55	DIODE 1S1555
D204	8-719-815-55	DIODE 1S1555
D205	8-719-815-55	DIODE 1S1555
D206	8-719-127-07	DIODE RD2.7E
D207	8-719-127-07	DIODE RD2.7E
D301	8-719-127-07	DIODE RD2.7E
D302	8-719-127-07	DIODE RD2.7E
D303	8-719-815-55	DIODE 1S1555
D306	8-719-127-07	DIODE RD2.7E
D310	8-719-815-55	DIODE 1S1555
D311	8-719-815-55	DIODE 1S1555
D312	8-719-815-55	DIODE 1S1555
D313	8-719-815-55	DIODE 1S1555
D314	8-719-815-55	DIODE 1S1555
D401	8-719-815-55	DIODE 1S1555
D402	8-719-815-55	DIODE 1S1555
D403	8-719-815-55	DIODE 1S1555
D406	8-719-100-56	DIODE RD10E-B1
D407	8-719-815-55	DIODE 1S1555
D408	8-719-912-27	DIODE KV1226
D409	8-719-100-29	DIODE RD5.1E-B1
D410	8-719-815-55	DIODE 1S1555
D411	8-719-815-55	DIODE 1S1555
D413	8-719-815-55	DIODE 1S1555
D414	8-719-100-31	DIODE RD5.1E-B3
D415	8-719-815-55	DIODE 1S1555
D509	8-719-815-55	DIODE 1S1555
D510	8-719-815-55	DIODE 1S1555
D511	8-719-910-65	DIODE HZ6B2L
D512	8-719-910-65	DIODE HZ6B2L
D513	8-719-201-11	DIODE 10YG1.1
D514	8-719-201-11	DIODE 10YG1.1
D515	8-719-201-11	DIODE 10YG1.1
D516	8-719-201-11	DIODE 10YG1.1
D517	8-719-936-06	DIODE EQA01-06R
D518	8-719-936-06	DIODE EQA01-06R
D601 ⚠	8-719-230-01	DIODE 30DF-1
D602 ⚠	8-719-230-01	DIODE 30DF-1
D603	8-719-910-65	DIODE HZ6B2L
D604	8-719-910-65	DIODE HZ6B2L
D607 ⚠	8-719-230-01	DIODE 30DF-1
D608 ⚠	8-719-230-01	DIODE 30DF-1
D609 ⚠	8-719-210-12	DIODE 10DF2
D610 ⚠	8-719-210-12	DIODE 10DF2

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- Due to standardization, parts with part numbers (Δ-ΔΔΔ-ΔΔΔ-XX or Δ-ΔΔΔΔ-ΔΔΔ-X) may be different from those used in the set.

CAPACITORS:
- All capacitors are in μF. Common capacitors are omitted. Refer to the following lists for their part numbers. MF:μF, PF:μμF.

RESISTORS
- All resistors are in ohms. Common 1/4W, 1/8W and 1/16W carbon resistors are omitted. Refer to the following lists for their part numbers.
- F : nonflammable

COILS
- MMH : mH, UH : μH

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.

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

ELECTRICAL PARTS

Ref.No.	Part No.	Description
D611 ⚠	8-719-210-12	DIODE 10DF2
D612 ⚠	8-719-210-12	DIODE 10DF2
D613 ⚠	8-719-200-02	DIODE 10E-2
D614 ⚠	8-719-200-02	DIODE 10E-2
D615	8-719-100-92	DIODE RD24E-B4
D616	8-719-100-29	DIODE RD5.1E-B1
D617	8-719-815-55	DIODE 1S1555
D618	8-719-815-55	DIODE 1S1555
D619	8-719-815-55	DIODE 1S1555
D950	8-719-922-28	DIODE PG2222SY-B1
D951	8-719-922-28	DIODE PG2222SY-B1
D952	8-719-922-28	DIODE PG2222SY-B1
D953	8-719-901-66	DIODE LT9200N
D954	8-719-907-80	DIODE AA5535S
D960	8-719-200-02	DIODE 10E-2
D961	8-719-812-31	DIODE TLR123
D962	8-719-812-31	DIODE TLR123
D963	8-719-110-21	DIODE PH102
D964	8-719-200-02	DIODE 10E-2
F501	1-235-174-00	FILTER, LOW PASS
F502	1-235-174-00	FILTER, LOW PASS
F601 ⚠	1-532-237-00	(AEP,G-AEP,UK).FUSE,TIME-LAG, 3.15A 250V
F602 ⚠	1-532-237-00	(AEP,G-AEP,UK).FUSE,TIME-LAG, 3.15A 250V
F603 ⚠	1-532-237-00	(AEP,G-AEP,UK).FUSE,TIME-LAG, 3.15A 250V
F604 ⚠	1-532-237-00	(AEP,G-AEP,UK).FUSE,TIME-LAG, 3.15A 250V
F801 ⚠	1-532-279-00	(AEP,G-AEP).....FUSE, TIME-LAG, 0.5A
F802 ⚠	1-532-555-00	(US,Canadian)...FUSE, GLASS TUBE 1.6A
IC1	8-759-113-73	IC UPC1373H
IC101	8-759-906-11	IC MB8841-1061K
IC102	8-759-906-10	IC MB8841-1060K
IC103	8-759-800-34	IC LM6416E-123
IC104	8-759-220-04	IC TC40H004P
IC105	8-759-240-69	IC TC4069UBP
IC106	8-759-240-11	IC TC4011BP
IC107	8-759-240-11	IC TC4011BP
IC108	8-759-240-30	IC TC4030BP
IC201	8-751-930-00	IC CX-193
IC202	8-759-745-60	IC NJM4560D
IC203	8-759-145-58	IC UPC4558C
IC204	8-749-969-22	IC STK6922
IC301	8-759-145-58	IC UPC4558C
IC302	8-759-745-60	IC NJM4560D
IC303	8-759-145-58	IC UPC4558C
IC304	8-749-969-22	IC STK6922
IC401	8-759-990-82	IC TL082CP

ELECTRICAL PARTS

Ref.No.	Part No.	Description
IC402	8-759-220-04	IC TC40H004P
IC403	8-759-903-55	IC LF357H
IC404	8-759-220-04	IC TC40H004P
IC405	8-759-220-04	IC TC40H004P
IC406	8-759-900-86	IC SN74LS86N
IC407	8-759-990-82	IC TL082CP
IC408	8-759-990-82	IC TL082CP
IC409	8-759-900-74	IC SN74LS74AN
IC410	8-759-900-76	IC SN74LS76AN
IC411	8-759-745-61	IC NJM4560D-D
IC412	8-759-993-53	IC LF353H
IC501	8-759-901-28	IC MSM5128-12RS
IC502	8-759-905-50	IC CX7933
IC503	8-759-905-52	IC CX7934
IC504	8-759-905-53	IC CX7935
IC507	8-752-001-70	IC CX20017
IC508	8-759-993-53	IC LF353H
IC509	8-759-993-53	IC LF353H
IC511	8-759-745-61	IC NJM4560D-D
IC512	8-759-340-53	IC HD14053BP
IC514	8-759-900-72	IC NE5532P
IC515	8-759-108-05	IC UPC78L05A
IC516	8-759-179-05	IC UPC7905H
IC601	8-759-745-61	IC NJM4560D-D
IC901	8-759-600-35	IC M54940P
J801	1-507-659-00	JACK
J802	1-507-688-21	(AEP:UP TO SERIAL No. 501000, UK:UP TO SERIAL No. 600300)...JACK (STEREO PLUG)
J803	1-507-731-21	JACK, PIN 2P
L1	1-404-310-00	COIL
L101	1-407-157-XX	MICRO INDUCTOR 10UH
L102	1-407-157-XX	MICRO INDUCTOR 10UH
L103	1-407-157-XX	MICRO INDUCTOR 10UH
L104	1-407-157-XX	MICRO INDUCTOR 10UH
L301	1-407-157-XX	MICRO INDUCTOR 10UH
L401	1-407-157-XX	MICRO INDUCTOR 10UH
M1	X-4884-526-1	MOTOR ASSY, LOADING
M2	X-4884-527-1	MOTOR ASSY, CHUCKING
M3	X-4884-527-1	MOTOR ASSY, SLED
Q101	8-729-334-58	(AEP:UP TO SERIAL No. 501000, UK:UP TO SERIAL No. 600300)...TRANSISTOR 2SC1345
Q102	8-729-334-58	(AEP:UP TO SERIAL No. 501000, UK:UP TO SERIAL No. 600300)...TRANSISTOR 2SC1345
Q103	8-729-334-58	TRANSISTOR 2SC1345
Q104	8-729-663-47	TRANSISTOR 2SC1364
Q106	8-729-663-47	TRANSISTOR 2SC1364

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CAPACITORS:

- All capacitors are in μF. Common capacitors are omitted. Refer to the following lists for their part numbers. MF:μF, PF:μμF.

RESISTORS

- All resistors are in ohms. Common 1/4W, 1/8W and 1/16W carbon resistors are omitted. Refer to the following lists for their part numbers.
- F : nonflammable

COILS

- MMH : mH, UH : μH

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.

SEMICONDUCTORS

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

ELECTRICAL PARTS

Ref.No.	Part No.	Description
Q107	8-729-602-67	TRANSISTOR 2SA1026-7
Q108	8-729-334-58	TRANSISTOR 2SC1345
Q201	8-729-663-47	TRANSISTOR 2SC1364
Q202	8-729-663-47	TRANSISTOR 2SC1364
Q203	8-729-117-54	TRANSISTOR 2SA1175
Q204	8-729-117-54	TRANSISTOR 2SA1175
Q205	8-729-100-13	TRANSISTOR 2SC2001
Q206	8-729-100-13	TRANSISTOR 2SC2001
Q207	8-729-334-58	TRANSISTOR 2SC1345
Q301	8-729-100-13	TRANSISTOR 2SC2001
Q302	8-729-100-13	TRANSISTOR 2SC2001
Q303	8-729-334-58	TRANSISTOR 2SC1345
Q304	8-729-663-47	TRANSISTOR 2SC1364
Q306	8-729-334-58	TRANSISTOR 2SC1345
Q307	8-729-334-58	TRANSISTOR 2SC1345
Q308	8-729-663-47	TRANSISTOR 2SC1364
Q402	8-729-307-58	TRANSISTOR 2SC1775A
Q403	8-729-663-47	TRANSISTOR 2SC1364
Q404	8-729-663-47	TRANSISTOR 2SC1364
Q405	8-729-663-47	TRANSISTOR 2SC1364
Q501	8-729-201-52	TRANSISTOR 2SA1015
Q502	8-729-663-47	TRANSISTOR 2SC1364
Q504	8-765-423-00	TRANSISTOR 2SK152-3
Q505	8-765-423-00	TRANSISTOR 2SK152-3
Q506	8-729-663-47	TRANSISTOR 2SC1364
Q507	8-729-663-47	TRANSISTOR 2SC1364
Q510	8-729-107-53	TRANSISTOR 2SC2275A
Q511	8-729-167-62	TRANSISTOR 2SC2676
Q512	8-729-113-82	TRANSISTOR 2SA1138
Q513	8-729-167-62	TRANSISTOR 2SC2676
Q514	8-729-190-53	TRANSISTOR 2SA985A
Q515	8-729-113-82	TRANSISTOR 2SA1138
Q516	8-729-167-62	TRANSISTOR 2SC2676
Q517	8-729-113-82	TRANSISTOR 2SA1138
Q601	8-729-180-93	TRANSISTOR 2SD809
Q602	8-729-334-58	TRANSISTOR 2SC1345
Q603	8-729-334-58	TRANSISTOR 2SC1345
Q604	8-729-173-13	TRANSISTOR 2SB731
Q605	8-729-117-54	TRANSISTOR 2SA1175
Q606	8-729-117-54	TRANSISTOR 2SA1175
Q607	8-729-288-02	TRANSISTOR 2SD880
Q608	8-729-173-13	TRANSISTOR 2SB731
Q609	8-729-177-43	TRANSISTOR 2SD774
Q610	8-729-334-58	TRANSISTOR 2SC1345

ELECTRICAL PARTS

Ref.No.	Part No.	Description
R101	1-247-863-00	CARBON 22K 5% 1/6W
R102	1-247-847-00	CARBON 4.7K 5% 1/6W
R103	1-247-863-00	CARBON 22K 5% 1/6W
R104	1-247-863-00	CARBON 22K 5% 1/6W
R105	1-247-847-00	CARBON 4.7K 5% 1/6W
R106	1-247-839-00	CARBON 2.2K 5% 1/6W
R107	1-247-863-00	CARBON 22K 5% 1/6W
R108	1-247-863-00	CARBON 22K 5% 1/6W
R109	1-247-847-00	CARBON 4.7K 5% 1/6W
R110	1-247-847-00	CARBON 4.7K 5% 1/6W
R111	1-247-847-00	CARBON 4.7K 5% 1/6W
R112	1-247-855-00	CARBON 10K 5% 1/6W
R113	1-247-863-00	CARBON 22K 5% 1/6W
R114	1-247-863-00	CARBON 22K 5% 1/6W
R115	1-247-863-00	(AEP:UP TO SERIAL No.501000, UK:UP TO SERIAL No.600300)..CARBON 22K 5% 1/6W
R116	1-247-863-00	(AEP:UP TO SERIAL No.501000, UK:UP TO SERIAL No.600300)..CARBON 22K 5% 1/6W
R117	1-247-863-00	CARBON 22K 5% 1/6W
R118	1-247-863-00	CARBON 22K 5% 1/6W
R119	1-247-863-00	CARBON 22K 5% 1/6W
R120	1-247-863-00	CARBON 22K 5% 1/6W
R121	1-247-863-00	CARBON 22K 5% 1/6W
R122	1-247-863-00	CARBON 22K 5% 1/6W
R123	1-247-863-00	CARBON 22K 5% 1/6W
R124	1-247-847-00	CARBON 4.7K 5% 1/6W
R125	1-247-847-00	CARBON 4.7K 5% 1/6W
R126	1-247-863-00	CARBON 22K 5% 1/6W
R127	1-247-863-00	CARBON 22K 5% 1/6W
R128	1-247-851-00	(AEP:UP TO SERIAL No.501000, UK:UP TO SERIAL No.600300)..CARBON 6.8K 5% 1/6W
R129	1-247-839-00	(AEP:UP TO SERIAL No.501000, UK:UP TO SERIAL No.600300)..CARBON 2.2K 5% 1/6W
R130	1-247-855-00	CARBON 10K 5% 1/6W
R131	1-247-847-00	CARBON 4.7K 5% 1/6W
R132	1-247-807-00	CARBON 100 5% 1/6W
R133	1-247-903-00	CARBON 1M 5% 1/6W
R135	1-247-879-00	CARBON 100K 5% 1/6W
R136	1-247-863-00	CARBON 22K 5% 1/6W
R137	1-247-863-00	CARBON 22K 5% 1/6W
R138	1-247-863-00	CARBON 22K 5% 1/6W
R139	1-247-863-00	CARBON 22K 5% 1/6W
R140	1-247-863-00	CARBON 22K 5% 1/6W
R141	1-247-863-00	CARBON 22K 5% 1/6W
R142	1-247-863-00	CARBON 22K 5% 1/6W
R143	1-247-887-00	CARBON 220K 5% 1/6W

NOTE:
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- Due to standardization, parts with part numbers (Δ-ΔΔΔ-ΔΔΔ-XX or Δ-ΔΔΔΔ-ΔΔΔ-X) may be different from those used in the set.

CAPACITORS:
- All capacitors are in μF. Common capacitors are omitted. Refer to the following lists for their part numbers. MF:μF, PF:μμF.

RESISTORS
- All resistors are in ohms. Common 1/4W, 1/8W and 1/16W carbon resistors are omitted. Refer to the following lists for their part numbers.
- F : nonflammable

COILS
- MMH : mH, UH : μH

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.

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

ELECTRICAL PARTS

Ref.No.	Part No.	Description			
R144	1-247-863-00	CARBON	22K	5%	1/6W
R145	1-247-863-00	CARBON	22K	5%	1/6W
R146	1-247-863-00	CARBON	22K	5%	1/6W
R147	1-247-863-00	CARBON	22K	5%	1/6W
R148	1-247-863-00	CARBON	22K	5%	1/6W
R149	1-247-863-00	CARBON	22K	5%	1/6W
R150	1-247-863-00	CARBON	22K	5%	1/6W
R151	1-247-863-00	CARBON	22K	5%	1/6W
R152	1-247-863-00	CARBON	22K	5%	1/6W
R153	1-247-863-00	CARBON	22K	5%	1/6W
R154	1-247-863-00	CARBON	22K	5%	1/6W
R155	1-247-863-00	CARBON	22K	5%	1/6W
R156	1-247-819-00	CARBON	330	5%	1/6W
R157	1-247-819-00	CARBON	330	5%	1/6W
R158	1-247-811-00	CARBON	150	5%	1/6W
R159	1-247-811-00	CARBON	150	5%	1/6W
R160	1-247-811-00	CARBON	150	5%	1/6W
R161	1-247-847-00	CARBON	4.7K	5%	1/6W
R162	1-247-903-00	CARBON	1M	5%	1/6W
R163	1-247-863-00	CARBON	22K	5%	1/6W
R164	1-247-863-00	CARBON	22K	5%	1/6W
R165	1-247-863-00	CARBON	22K	5%	1/6W
R166	1-247-863-00	CARBON	22K	5%	1/6W
R167	1-247-863-00	CARBON	22K	5%	1/6W
R168	1-247-879-00	CARBON	100K	5%	1/6W
R169	1-247-903-00	CARBON	1M	5%	1/6W
R170	1-247-811-00	CARBON	150	5%	1/6W
R171	1-247-903-00	CARBON	1M	5%	1/6W
R172	1-247-855-00	CARBON	10K	5%	1/6W
R173	1-247-819-00	CARBON	330	5%	1/6W
R175	1-247-817-00	CARBON	270	5%	1/6W
R176	1-247-879-00	CARBON	100K	5%	1/6W
R177	1-247-855-00	CARBON	10K	5%	1/6W
R179	1-247-847-00	CARBON	4.7K	5%	1/6W
R201	1-247-863-00	CARBON	22K	5%	1/6W
R202	1-247-855-00	CARBON	10K	5%	1/6W
R203	1-214-779-00	METAL	120K	1%	1/4W
R204	1-247-877-00	CARBON	82K	5%	1/6W
R205	1-247-859-00	CARBON	15K	5%	1/6W
R206	1-247-871-00	CARBON	47K	5%	1/6W
R207	1-247-855-00	CARBON	10K	5%	1/6W
R208	1-247-859-00	CARBON	15K	5%	1/6W
R209	1-247-859-00	CARBON	15K	5%	1/6W
R210	1-247-855-00	CARBON	10K	5%	1/6W
R211	1-247-875-00	CARBON	68K	5%	1/6W

ELECTRICAL PARTS

Ref.No.	Part No.	Description			
R212	1-247-855-00	CARBON	10K	5%	1/6W
R213	1-247-851-00	CARBON	6.8K	5%	1/6W
R214	1-247-869-00	CARBON	39K	5%	1/6W
R215	1-244-852-00	CARBON	130	5%	1/2W
R217	1-247-869-00	CARBON	39K	5%	1/6W
R218	1-247-879-00	CARBON	100K	5%	1/6W
R219	1-214-757-00	METAL	15K	1%	1/4W
R220	1-247-895-00	CARBON	470K	5%	1/6W
R221	1-214-737-00	METAL	2.2K	1%	1/4W
R222	1-247-835-00	CARBON	1.5K	5%	1/6W
R223	1-247-855-00	CARBON	10K	5%	1/6W
R225	1-247-839-00	CARBON	2.2K	5%	1/6W
R226	1-247-867-00	CARBON	33K	5%	1/6W
R227	1-247-855-00	CARBON	10K	5%	1/6W
R228	1-247-831-00	CARBON	1K	5%	1/6W
R229	1-247-831-00	CARBON	1K	5%	1/6W
R230	1-247-873-00	CARBON	56K	5%	1/6W
R231	1-247-863-00	CARBON	22K	5%	1/6W
R232	1-214-741-00	METAL	3.3K	1%	1/4W
R233	1-214-759-00	METAL	18K	1%	1/4W
R234	1-247-903-00	CARBON	1M	5%	1/6W
R235	1-247-859-00	CARBON	15K	5%	1/6W
R236	1-247-855-00	CARBON	10K	5%	1/6W
R240	1-247-855-00	CARBON	10K	5%	1/6W
R241	1-247-863-00	CARBON	22K	5%	1/6W
R242	1-247-855-00	CARBON	10K	5%	1/6W
R243	1-247-867-00	CARBON	33K	5%	1/6W
R244	1-247-882-00	CARBON	130K	5%	1/6W
R245	1-247-865-00	CARBON	27K	5%	1/6W
R246	1-247-855-00	CARBON	10K	5%	1/6W
R247	1-247-813-00	CARBON	180	5%	1/6W
R250	1-247-877-00	CARBON	82K	5%	1/6W
R251	1-247-855-00	CARBON	10K	5%	1/6W
R252	1-247-855-00	CARBON	10K	5%	1/6W
R255	1-247-855-00	CARBON	10K	5%	1/6W
R256	1-247-823-00	CARBON	470	5%	1/6W
R257	1-247-855-00	CARBON	10K	5%	1/6W
R258	1-247-883-00	CARBON	150K	5%	1/6W
R269	1-247-861-00	CARBON	18K	5%	1/6W
R303	1-247-847-00	CARBON	4.7K	5%	1/6W
R304	1-247-863-00	CARBON	22K	5%	1/6W
R305	1-247-879-00	CARBON	100K	5%	1/6W
R306	1-247-877-00	CARBON	82K	5%	1/6W
R307	1-247-855-00	CARBON	10K	5%	1/6W
R308	1-247-855-00	CARBON	10K	5%	1/6W

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- Due to standardization, parts with part numbers (Δ-ΔΔΔ-ΔΔΔ-XX or Δ-ΔΔΔΔ-ΔΔΔ-X) may be different from those used in the set.

CAPACITORS:
- All capacitors are in μF. Common capacitors are omitted. Refer to the following lists for their part numbers. MF:μF, PF:μμF.

RESISTORS
- All resistors are in ohms. Common 1/4W, 1/8W and 1/16W carbon resistors are omitted. Refer to the following lists for their part numbers.
- F : nonflammable

COILS
- MMH : mH, UH : μH

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.

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

ELECTRICAL PARTS

Ref.No.	Part No.	Description			
R309	1-247-855-00	CARBON	10K	5%	1/6W
R310	1-247-855-00	CARBON	10K	5%	1/6W
R311	1-247-835-00	CARBON	1.5K	5%	1/6W
R312	1-247-863-00	CARBON	22K	5%	1/6W
R313	1-247-855-00	CARBON	10K	5%	1/6W
R314	1-247-841-00	CARBON	2.7K	5%	1/6W
R315	1-247-875-00	CARBON	68K	5%	1/6W
R316	1-247-863-00	CARBON	22K	5%	1/6W
R317	1-247-881-00	CARBON	120K	5%	1/6W
R318	1-247-871-00	CARBON	47K	5%	1/6W
R319	1-247-871-00	CARBON	47K	5%	1/6W
R320	1-247-867-00	CARBON	33K	5%	1/6W
R321	1-247-863-00	CARBON	22K	5%	1/6W
R322	1-247-863-00	CARBON	22K	5%	1/6W
R323	1-247-867-00	CARBON	33K	5%	1/6W
R324	1-247-843-00	CARBON	3.3K	5%	1/6W
R325	1-247-843-00	CARBON	3.3K	5%	1/6W
R326	1-247-903-00	CARBON	1M	5%	1/6W
R327	1-247-859-00	CARBON	15K	5%	1/6W
R328	1-247-855-00	CARBON	10K	5%	1/6W
R329	1-247-863-00	CARBON	22K	5%	1/6W
R330	1-247-875-00	CARBON	68K	5%	1/6W
R331	1-247-863-00	CARBON	22K	5%	1/6W
R332	1-247-875-00	CARBON	68K	5%	1/6W
R333	1-247-867-00	CARBON	33K	5%	1/6W
R334	1-247-877-00	CARBON	82K	5%	1/6W
R335	1-247-871-00	CARBON	47K	5%	1/6W
R336	1-247-855-00	CARBON	10K	5%	1/6W
R337	1-247-847-00	CARBON	4.7K	5%	1/6W
R338	1-247-839-00	CARBON	2.2K	5%	1/6W
R339	1-247-875-00	CARBON	68K	5%	1/6W
R340	1-247-885-00	CARBON	180K	5%	1/6W
R341	1-247-871-00	CARBON	47K	5%	1/6W
R342	1-247-885-00	CARBON	180K	5%	1/6W
R343	1-247-871-00	CARBON	47K	5%	1/6W
R344	1-247-881-00	CARBON	120K	5%	1/6W
R345	1-247-861-00	CARBON	18K	5%	1/6W
R346	1-247-881-00	CARBON	120K	5%	1/6W
R347	1-247-861-00	CARBON	18K	5%	1/6W
R348	1-247-827-00	CARBON	680	5%	1/6W
R349	1-247-839-00	CARBON	2.2K	5%	1/6W
R350	1-247-863-00	CARBON	22K	5%	1/6W
R351	1-247-887-00	CARBON	220K	5%	1/6W
R352	1-247-839-00	CARBON	2.2K	5%	1/6W
R353	1-247-887-00	CARBON	220K	5%	1/6W
R354	1-247-855-00	CARBON	10K	5%	1/6W

ELECTRICAL PARTS

Ref.No.	Part No.	Description			
R390 ⚠	1-212-950-00	(AEP,G-AEP,UK,E,NEW OF US,Canadian) ...FUSE	4.7	5%	1/2W
R391 ⚠	1-212-950-00	(AEP,G-AEP,UK,E,NEW OF US,Canadian) ...FUSE	4.7	5%	1/2W
R401	1-247-888-00	CARBON	240K	5%	1/6W
R402	1-247-885-00	CARBON	180K	5%	1/6W
R403	1-247-855-00	CARBON	10K	5%	1/6W
R404	1-247-855-00	CARBON	10K	5%	1/6W
R405	1-247-855-00	CARBON	10K	5%	1/6W
R406	1-247-855-00	CARBON	10K	5%	1/6W
R407	1-247-855-00	CARBON	10K	5%	1/6W
R408	1-247-855-00	CARBON	10K	5%	1/6W
R409	1-247-847-00	CARBON	4.7K	5%	1/6W
R410	1-247-847-00	CARBON	4.7K	5%	1/6W
R411	1-247-888-00	CARBON	240K	5%	1/6W
R412	1-247-903-00	CARBON	1M	5%	1/6W
R413	1-247-903-00	CARBON	1M	5%	1/6W
R414	1-247-891-00	CARBON	330K	5%	1/6W
R415	1-247-855-00	CARBON	10K	5%	1/6W
R416	1-247-859-00	CARBON	15K	5%	1/6W
R417	1-247-848-00	CARBON	5.1K	5%	1/6W
R429	1-247-845-00	CARBON	3.9K	5%	1/6W
R430	1-247-858-00	CARBON	13K	5%	1/6W
R431	1-247-831-00	CARBON	1K	5%	1/6W
R432	1-247-843-00	CARBON	3.3K	5%	1/6W
R433	1-247-831-00	CARBON	1K	5%	1/6W
R434	1-247-843-00	CARBON	3.3K	5%	1/6W
R435	1-247-831-00	CARBON	1K	5%	1/6W
R436	1-247-843-00	CARBON	3.3K	5%	1/6W
R437	1-247-867-00	CARBON	33K	5%	1/6W
R438	1-247-867-00	CARBON	33K	5%	1/6W
R439	1-247-838-00	CARBON	2K	5%	1/6W
R440	1-247-838-00	CARBON	2K	5%	1/6W
R441	1-247-855-00	CARBON	10K	5%	1/6W
R442	1-247-831-00	CARBON	1K	5%	1/6W
R443	1-247-831-00	CARBON	1K	5%	1/6W
R444	1-247-903-00	CARBON	1M	5%	1/6W
R446	1-214-761-00	METAL	22K	1%	1/4W
R447	1-247-839-00	CARBON	2.2K	5%	1/6W
R448	1-247-831-00	CARBON	1K	5%	1/6W
R449	1-247-879-00	CARBON	100K	5%	1/6W
R450	1-247-843-00	CARBON	3.3K	5%	1/6W
R451	1-247-829-00	CARBON	820	5%	1/6W
R452	1-247-859-00	CARBON	15K	5%	1/6W
R453	1-247-825-00	CARBON	560	5%	1/6W
R454	1-247-825-00	CARBON	560	5%	1/6W

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- Due to standardization, parts with part numbers (Δ-ΔΔΔ-ΔΔΔ-XX or Δ-ΔΔΔΔ-ΔΔΔ-X) may be different from those used in the set.

CAPACITORS:
- All capacitors are in μF. Common capacitors are omitted. Refer to the following lists for their part numbers. MF:μF, PF:μμF.

RESISTORS
- All resistors are in ohms. Common 1/4W, 1/8W and 1/16W carbon resistors are omitted. Refer to the following lists for their part numbers.
- F : nonflammable

COILS
- MMH : mH, UH : μH

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.

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

ELECTRICAL PARTS

Ref.No.	Part No.	Description			
R456	1-247-879-00	CARBON	100K	5%	1/6W
R460	1-247-879-00	CARBON	100K	5%	1/6W
R462	1-247-846-00	CARBON	4.3K	5%	1/6W
R463	1-247-831-00	CARBON	1K	5%	1/6W
R464	1-247-879-00	CARBON	100K	5%	1/6W
R465	1-247-855-00	CARBON	10K	5%	1/6W
R466	1-247-831-00	CARBON	1K	5%	1/6W
R468	1-247-855-00	CARBON	10K	5%	1/6W
R469	1-247-841-00	CARBON	2.7K	5%	1/6W
R470	1-247-855-00	CARBON	10K	5%	1/6W
R471	1-247-879-00	CARBON	100K	5%	1/6W
R472	1-247-879-00	CARBON	100K	5%	1/6W
R473	1-246-461-00	CARBON	330	5%	1/4W
R474	1-247-848-00	CARBON	5.1K	5%	1/6W
R475	1-247-847-00	CARBON	4.7K	5%	1/6W
R476	1-247-832-00	CARBON	1.1K	5%	1/6W
R477	1-247-838-00	CARBON	2K	5%	1/6W
R478	1-247-848-00	CARBON	5.1K	5%	1/6W
R479	1-247-859-00	CARBON	15K	5%	1/6W
R480	1-247-855-00	CARBON	10K	5%	1/6W
R481	1-247-859-00	CARBON	15K	5%	1/6W
R482	1-247-855-00	CARBON	10K	5%	1/6W
R483	1-247-853-00	CARBON	8.2K	5%	1/6W
R485	1-247-895-00	CARBON	470K	5%	1/6W
R486	1-247-895-00	CARBON	470K	5%	1/6W
R487	1-247-839-00	CARBON	2.2K	5%	1/6W
R488	1-214-154-00	METAL	8.2K	1%	1/4W
R489	1-214-738-00	METAL	2.4K	1%	1/4W
R490	1-247-831-00	CARBON	1K	5%	1/6W
R491	1-247-838-00	CARBON	2K	5%	1/6W
R492	1-247-901-00	CARBON	820K	5%	1/6W
R493	1-246-441-00	CARBON	47	5%	1/4W
R501	1-247-855-00	CARBON	10K	5%	1/6W
R502	1-247-863-00	CARBON	22K	5%	1/6W
R503	1-247-871-00	CARBON	47K	5%	1/6W
R504	1-247-879-00	CARBON	100K	5%	1/6W
R510	1-214-761-00	METAL	22K	1%	1/4W
R511	1-214-761-00	METAL	22K	1%	1/4W
R514	1-247-841-00	CARBON	2.7K	5%	1/6W
R515	1-247-875-00	CARBON	68K	5%	1/6W
R518	1-214-761-00	METAL	22K	1%	1/4W
R519	1-214-892-00	METAL	15K	1%	1/2W
R520	1-214-892-00	METAL	15K	1%	1/2W
R521	1-214-761-00	METAL	22K	1%	1/4W
R523	1-247-847-00	CARBON	4.7K	5%	1/6W

ELECTRICAL PARTS

Ref.No.	Part No.	Description			
R529	1-247-847-00	CARBON	4.7K	5%	1/6W
R530	1-214-892-00	METAL	15K	1%	1/2W
R532	1-214-870-00	METAL	1.8K	1%	1/2W
R533	1-214-852-00	METAL	330	1%	1/2W
R534	1-214-781-00	METAL	150K	1%	1/4W
R535	1-214-880-00	METAL	4.7K	1%	1/2W
R536	1-214-777-00	METAL	100K	1%	1/4W
R537	1-214-745-00	METAL	4.7K	1%	1/4W
R538	1-214-745-00	METAL	4.7K	1%	1/4W
R539	1-214-765-00	METAL	33K	1%	1/4W
R540	1-214-713-00	METAL	220	1%	1/4W
R541	1-214-893-00	METAL	16K	1%	1/2W
R543	1-214-870-00	METAL	1.8K	1%	1/2W
R544	1-214-852-00	METAL	330	1%	1/2W
R545	1-214-781-00	METAL	150K	1%	1/4W
R546	1-214-777-00	METAL	100K	1%	1/4W
R547	1-214-880-00	METAL	4.7K	1%	1/2W
R548	1-214-745-00	METAL	4.7K	1%	1/4W
R549	1-214-765-00	METAL	33K	1%	1/4W
R550	1-214-713-00	METAL	220	1%	1/4W
R551	1-214-745-00	METAL	4.7K	1%	1/4W
R554	1-247-847-00	CARBON	4.7K	5%	1/6W
R555	1-247-847-00	CARBON	4.7K	5%	1/6W
R556	1-214-848-00	METAL	220	1%	1/2W
R557	1-214-848-00	METAL	220	1%	1/2W
R558	1-247-855-00	CARBON	10K	5%	1/6W
R559	1-214-848-00	METAL	220	1%	1/2W
R560	1-214-848-00	METAL	220	1%	1/2W
R571	1-214-729-00	METAL	1K	1%	1/4W
R572	1-214-729-00	METAL	1K	1%	1/4W
R573	1-214-771-00	METAL	56K	1%	1/4W
R574	1-214-771-00	METAL	56K	1%	1/4W
R575	1-214-723-00	METAL	560	1%	1/4W
R576	1-214-723-00	METAL	560	1%	1/4W
R577	1-214-741-00	METAL	3.3K	1%	1/4W
R578	1-214-741-00	METAL	3.3K	1%	1/4W
R579	1-214-863-00	METAL	910	1%	1/2W
R580	1-214-864-00	METAL	1K	1%	1/2W
R581	1-214-864-00	METAL	1K	1%	1/2W
R582	1-214-863-00	METAL	910	1%	1/2W
R583	1-214-681-00	(US,Canadian).....METAL	10	1%	1/4W
R583 ⚠	1-212-857-00	(AEP,G-AEP,UK,E)...FUSE	10	1%	1/4W
R584	1-214-833-00	METAL	51	1%	1/2W
R585	1-247-807-00	CARBON	100	5%	1/6W
R588 ⚠	1-212-849-00	(AEP,G-AEP,UK,E)...FUSE	4.7	5%	1/4W

NOTE:
- Items with no part number and no description are not stocked because they are seldom required for routine service.
- Items marked " ♦ " are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- Due to standardization, parts with part numbers (Δ-ΔΔΔ-ΔΔΔ-XX or Δ-ΔΔΔΔ-ΔΔΔ-X) may be different from those used in the set.

CAPACITORS:
- All capacitors are in μF. Common capacitors are omitted. Refer to the following lists for their part numbers. MF:μF, PF:μμF.

RESISTORS
- All resistors are in ohms. Common 1/4W, 1/8W and 1/16W carbon resistors are omitted. Refer to the following lists for their part numbers.
- F : nonflammable

COILS
- MMH : mH, UH : μH

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.

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

ELECTRICAL PARTS

Ref.No.	Part No.	Description
R589 ⚠	1-212-849-00	(AEP,G-AEP,UK,E)...FUSE 4.7 5% 1/4W
R601	1-247-847-00	CARBON 4.7K 5% 1/6W
R602	1-247-847-00	CARBON 4.7K 5% 1/6W
R603	1-247-837-00	CARBON 1.8K 5% 1/6W
R604	1-214-744-00	METAL 4.3K 1% 1/4W
R605	1-214-746-00	METAL 5.1K 1% 1/4W
R606	1-214-746-00	METAL 5.1K 1% 1/4W
R607	1-214-744-00	METAL 4.3K 1% 1/4W
R608	1-247-837-00	CARBON 1.8K 5% 1/6W
R609	1-247-847-00	CARBON 4.7K 5% 1/6W
R610	1-247-847-00	CARBON 4.7K 5% 1/6W
R611	1-214-154-00	METAL 8.2K 1% 1/4W
R612	1-214-770-00	METAL 51K 1% 1/4W
R613	1-247-815-00	CARBON 220 5% 1/6W
R614	1-247-815-00	CARBON 220 5% 1/6W
R615	1-214-770-00	METAL 51K 1% 1/4W
R616	1-214-154-00	METAL 8.2K 1% 1/4W
R617	1-247-839-00	CARBON 2.2K 5% 1/6W
R618	1-247-831-00	CARBON 1K 5% 1/6W
R619	1-247-846-00	CARBON 4.3K 5% 1/6W
R620	1-247-885-00	CARBON 180K 5% 1/6W
R621 ⚠	1-212-946-00	(AEP,G-AEP,UK,E)...FUSE 3.3 5% 1/2W
R622 ⚠	1-212-946-00	(AEP,G-AEP,UK,E)...FUSE 3.3 5% 1/2W
R623 ⚠	1-212-946-00	(AEP,G-AEP,UK,E)...FUSE 3.3 5% 1/2W
R624 ⚠	1-202-857-00	(AEP,G-AEP,UK,E)...SOLID 33 1/4W
R625	1-247-843-00	CARBON 3.3K 5% 1/6W
R626	1-247-855-00	CARBON 10K 5% 1/6W
R627	1-247-855-00	CARBON 10K 5% 1/6W
R628	1-247-807-00	CARBON 100 5% 1/6W
R801	1-246-466-00	CARBON 510 5% 1/4W
R802	1-246-466-00	CARBON 510 5% 1/4W
R961	1-247-807-00	CARBON 100 5% 1/6W
RV101	1-226-241-00	RES, ADJ, CARBON 500K
RV201	1-224-255-XX	RES, ADJ, METAL GLAZE 100K
RV202	1-224-252-XX	RES, ADJ, METAL GLAZE 10K
RV205	1-226-236-00	RES, ADJ, CARBON 10K
RV301	1-226-236-00	RES, ADJ, CARBON 10K
RV401	1-224-255-XX	RES, ADJ, METAL GLAZE 100K
RV402	1-224-253-XX	RES, ADJ, METAL GLAZE 22K
RV405	1-224-252-XX	RES, ADJ, METAL GLAZE 10K
RV406	1-224-252-XX	RES, ADJ, METAL GLAZE 10K
RV407	1-224-253-XX	RES, ADJ, METAL GLAZE 22K
RV501	1-224-253-31	RES, ADJ, METAL GLAZE 22K
RV502	1-224-253-31	RES, ADJ, METAL GLAZE 22K

ELECTRICAL PARTS

Ref.No.	Part No.	Description
RY101	1-529-021-00	BUZZER
RY501	1-515-323-00	RELAY
RY502	1-515-323-00	RELAY
S801 ⚠	1-553-318-00	(AEP,G-AEP,E)...SWITCH, PUSH (AC POWER)
S801 ⚠	1-553-447-00	(UK).....SWITCH, PUSH (AC POWER)
S801 ⚠	1-553-319-00	(US,Canadian)...SWITCH, PUSH (AC POWER)
S802	1-516-576-00	SLIDE SWITCH, AUTO PAUSE
S803	1-554-205-00	SWITCH, SLIDE, CHUCKING DET
S804	1-516-576-00	SLIDE SWITCH, ANTI SHOCK
S901	1-554-296-00	SWITCH, KEY BOARD
S902	1-552-808-00	SWITCH, SLIDE, TIMER PLAY
S903	1-553-856-00	SWITCH, KEY BOARD, OPEN/CLOSE
S904	1-554-205-00	SWITCH, SLIDE, CHUCKING MOTOR
S905	1-553-636-00	SWITCH, MICR, MOTOR SELECT
S906 ⚠	1-554-205-00	SWITCH, SLIDE, LASER ON
S907	1-554-205-00	SWITCH, SLIDE, DISK TABLE POSITION DET
S908	1-554-205-00	SWITCH, SLIDE, LIMIT
S909 ⚠	1-554-205-00	SWITCH, SLIDE, LASER ON
S910	1-516-777-XX	SLIDE SWITCH, BEEP
T401	1-407-569-00	COIL, VARIABLE 10UH
T501	1-426-090-00	TRANSFORMER, RF
T502	1-426-090-00	TRANSFORMER, RF
T901 ⚠	1-447-430-00	(E).....TRANSFORMER, POWER
T901 ⚠	1-447-431-00	(AEP,G-AEP).....TRANSFORMER, POWER
T901 ⚠	1-447-564-00	(UK).....TRANSFORMER, POWER
T901 ⚠	1-447-429-00	(US,Canadian)...TRANSFORMER, POWER
VR801	1-226-980-00	RES, VAR, CARBON 20K/20K
X101	1-527-380-21	CRYSTAL, OSC
X102	1-527-895-00	OSCILLATOR, CERAMIC
X501	1-527-948-12	VIBRATOR, CRYSTAL
X502	1-527-999-00	OSCILLATOR, CRYSTAL

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- Due to standardization, parts with part numbers (Δ-ΔΔΔ-ΔΔΔ-XX or Δ-ΔΔΔΔ-ΔΔΔ-X) may be different from those used in the set.

CAPACITORS:
- All capacitors are in μF. Common capacitors are omitted. Refer to the following lists for their part numbers. MF:μF, PF:μμF.

RESISTORS
- All resistors are in ohms. Common 1/4W, 1/8W and 1/16W carbon resistors are omitted. Refer to the following lists for their part numbers.
- F : nonflammable

COILS
- MMH : mH, UH : μH

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.

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

MEMO

MEMO

RM-101

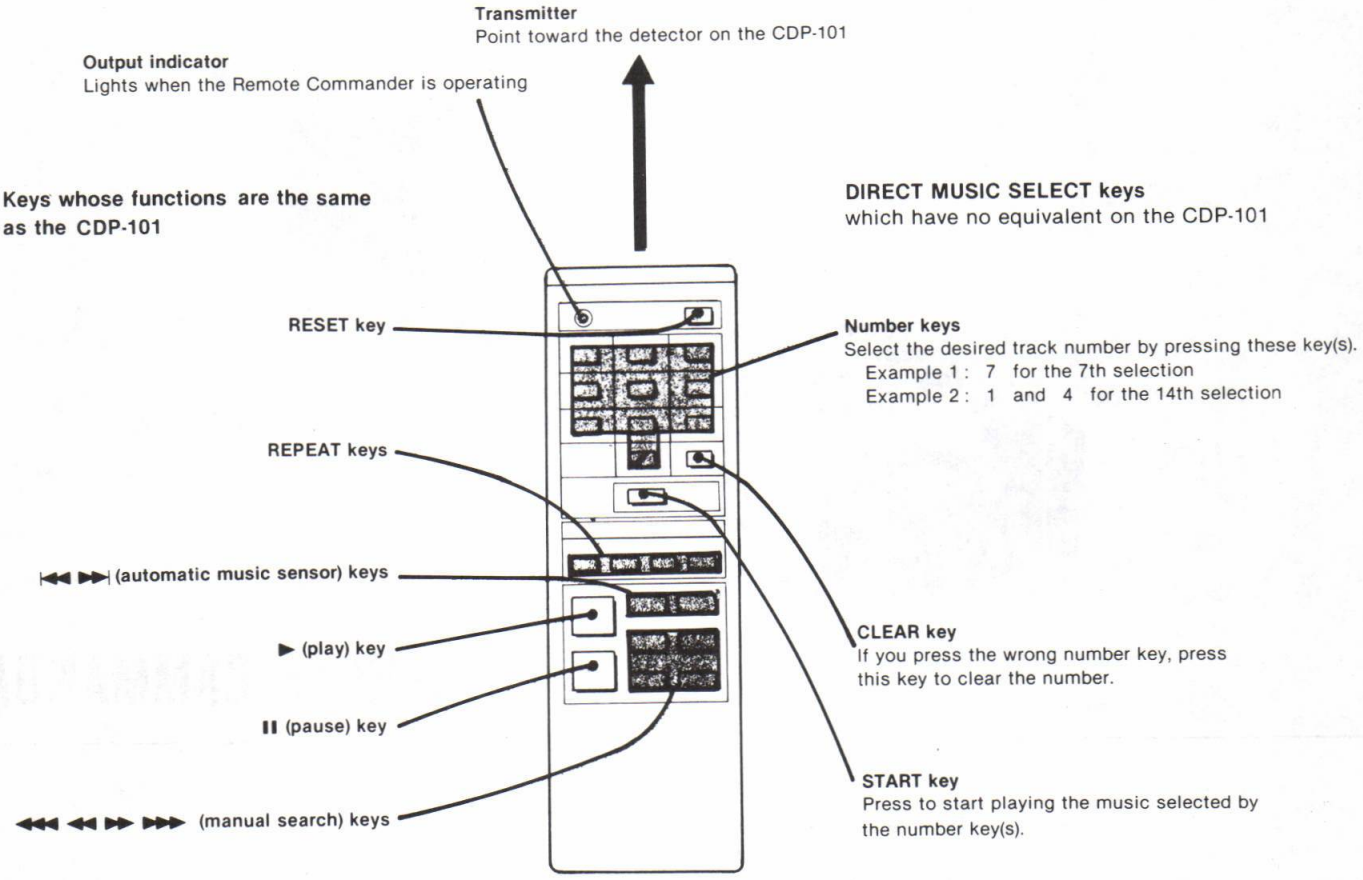
REMOTE COMMANDAR

SPECIFICATIONS

Remote control system	Infrared control
Power requirements	3 V dc with two batteries IEC designation R6 (size AA)
Dimensions	Approx. 55 × 175 × 26 mm (w/h/d) ($2^1/_4 \times 7 \times 1^1/_{16}$ inches) incl. projecting parts and controls
Weight	Approx. 150 g (5.3 oz)

1. OPERATIONS

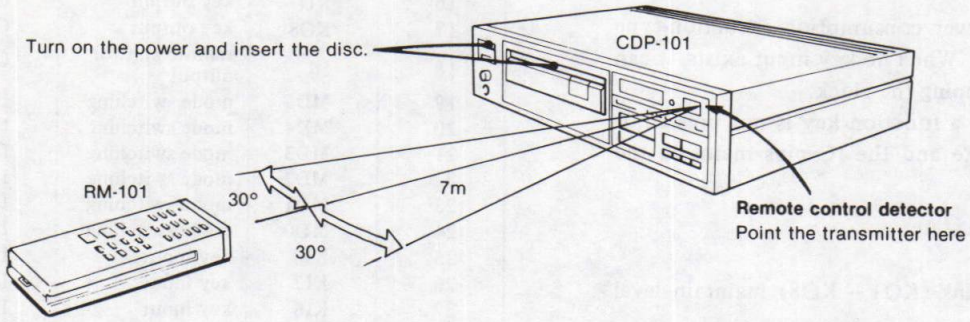
Function of keys on the Remote Commander



Notes on DIRECT MUSIC SELECT keys operation

- After you select the track number with the number keys, press the START key immediately.
  If you do not press the START key within a few seconds, or if you press any other key, the selected number is automatically cancelled.
- If you select a track number which is not available on the disc, the selected number is cancelled when the START keys is pressed.
- When the AUTO PAUSE switch is set to ON, the player will be in the pause mode after playing each selection. The auto pause mode is released when the START key on the Remote Commander is pressed.

Range of the remote control



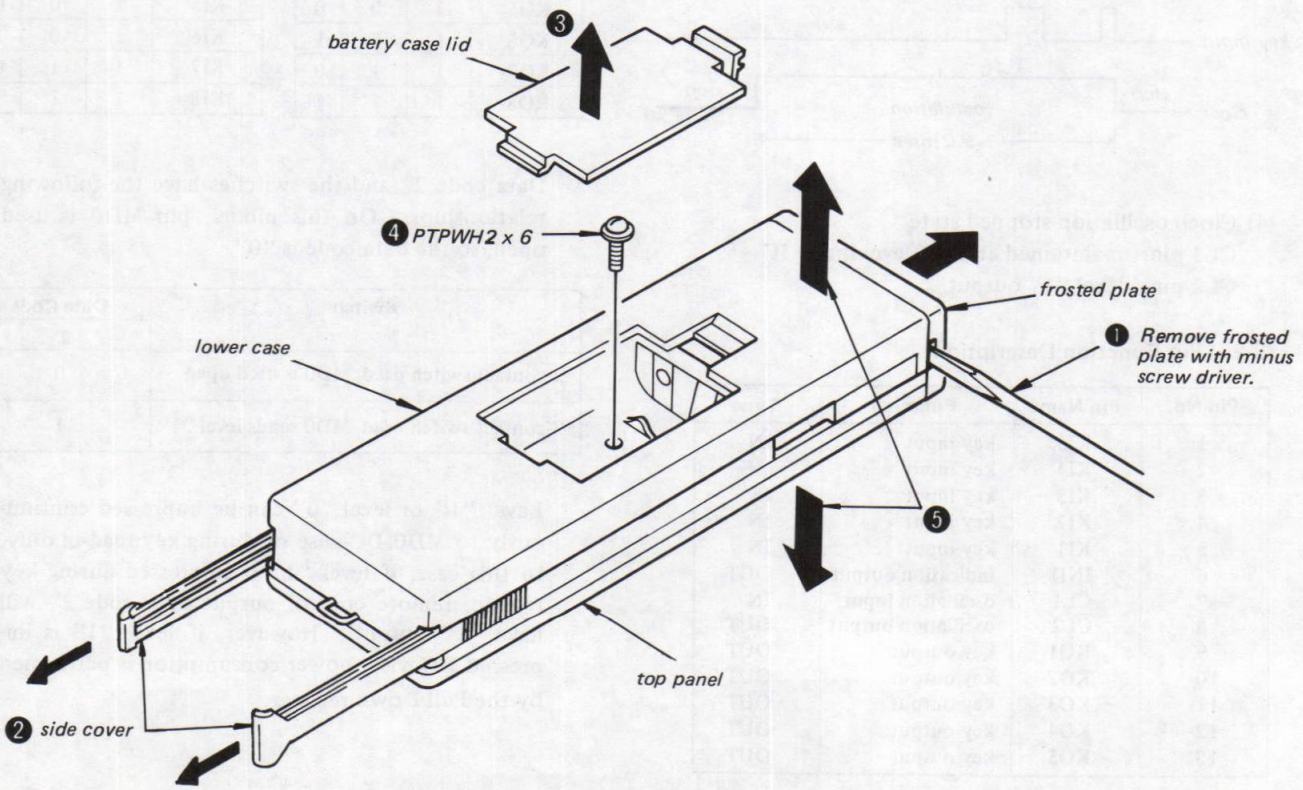
The shorter the distance between the Commander and the detector, the wider the angle within which the player can be controlled.

Notes on the Remote Commander

- In normal operation, battery life is up to half a year. When the battery is exhausted, the Remote Commander will not operate the unit. In this case, replace the batteries with new ones.
- When the Commander is not to be used for a long period of time, remove the batteries to avoid damage from possible battery leakage.
- Keep the Commander away from extremely hot or humid places.
- Avoid dropping any foreign objects into the Commander cabinet, particularly when replacing batteries.
- To avoid a malfunction, do not simultaneously depress two or more keys.
- If the output indicator does not light when any of the function keys are pressed, replace all the batteries.

2. DISASSEMBLY

- Follow the disassembly procedure in the numerical order given.



3. CIRCUIT DESCRIPTION

- **CX7947**

3-1. Summary

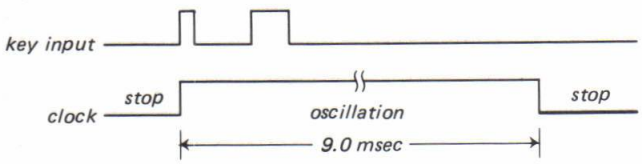
CX7947 is a power consumption reduction-type remote control LSI. When no key input exists, it can be initialized by stopping the clock.

On this model, if a function key is not pressed, it is in the initial state and the IC pins maintain the following states.

1) IC state for initial state
   - ○ clock stopped
   - ○ key output pins (KO1 – KO8) maintain level "1"
   - ○ remote control output (IR) pins maintain level "0"
   - ○ indication output (IND) pins maintain level "1"

2) Release of initial state
   The initial state is immediately released when there is input to the key input pins.

3) Clock on/off
   The clock oscillation is stopped for initial state only. When a switch is turned on from initial state, the clock begins oscillating within 10 msec.
   Once oscillation begins, even if key input stops right away, oscillation continues for 9.0 ms, then it returns to initial state and oscillation stops.
   Oscillation continues while key input continues or during remote control output.



4) Clock oscillation stopped state
   CL1 pin: maintained at VDD level inside IC
   CL2 pin: level "1" output

3-2. Pin Function Description

Pin No.	Pin Name	Function	Type
1	KI5	key input	IN
2	KI4	key input	IN
3	KI3	key input	IN
4	KI2	key input	IN
5	KI1	key input	IN
6	IND	indication output	OUT
7	CL1	oscillation input	IN
8	CL2	oscillation output	OUT
9	KO1	key output	OUT
10	KO2	key output	OUT
11	KO3	key output	OUT
12	KO4	key output	OUT
13	KO5	key output	OUT
14	VSS	GND	–
15	KO6	key output	OUT
16	KO7	key output	OUT
17	KO8	key output	OUT
18	IR	remote control output	OUT
19	MD5	mode switching	IN
20	MD4	mode switching	IN
21	MD3	mode switching	IN
22	MD2	mode switching	IN
23	MD1	mode switching	IN
24	MD0	mode switching	IN
25	KI8	key input	IN
26	KI7	key input	IN
27	KI6	key input	IN
28	VDD	power supply	–

3-3. Data Code

○ Each switch is connected to one pin of the key matrix output pins (KO1 – KO8) and one pin of the key matrix input pins (KI1 – KI8). The data codes for each switch have the following relationships depending on to which pin each switch is connected.

Key output	Data code 2^5	2^4	2^3
KO1	0	0	0
KO2	0	0	1
KO3	0	1	0
KO4	0	1	1
KO5	1	0	0
KO6	1	0	1
KO7	1	1	0
KO8	1	1	1

Key input	Data code 2^2	2^1	2^0
KI1	0	0	0
KI2	0	0	1
KI3	0	1	0
KI4	0	1	1
KI5	1	0	0
KI6	1	0	1
KI7	1	1	0
KI8	1	1	1

○ Data code 2^6 and the switches have the following relationships. On this model, pin MD0 is used open, so the data code is "0".

Switch	Data Code 2^6
2-contact switch used, MD0 is used open	0
3-contact switch used, MD0 sends level "1"	1

Level "1" or level "0" can be impressed continuously to MD0 DC-wise or during key read-in only. In this case, if level "1" is impressed during key read-in, remote control output data code 2^6 will have "1" output. However, if level "1" is impressed DC-wise, power consumption is performed by the Pull Down register.

3-4. Mode Switching Pins and Word Code

Mode Switching Pin Name	MD1	MD2	MD3	MD4	MD5
Word Code	2^7	2^8	2^9	2^{10}	2^{11}

When MDn is at level "1", data code 2^{n+6} becomes data "1".

This model's word code is 10001.

3-5. Transmission Codes

$(2^7 - 2^{11})$

- Word Code: 10001
- Data code

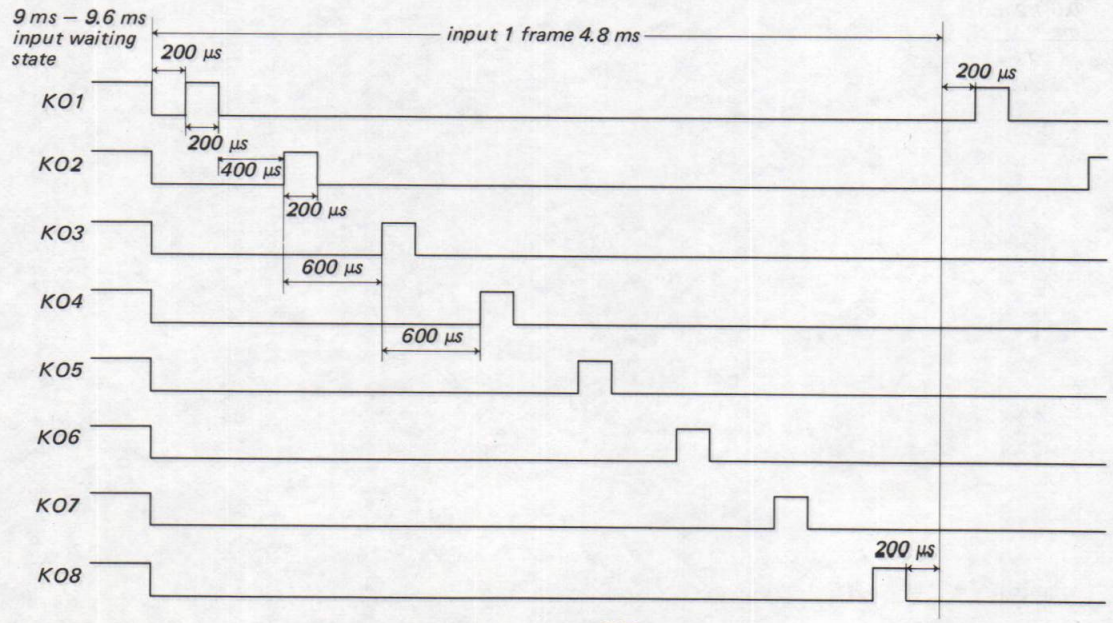
(LSB – MSB) 2^0 – 2^6	Command
0 0 0 0 0 0 0	1
1 0 0 0 0 0 0	2
0 1 0 0 0 0 0	3
1 1 0 0 0 0 0	4
0 0 1 0 0 0 0	5
1 0 1 0 0 0 0	6
0 1 1 0 0 0 0	7
1 1 1 0 0 0 0	8
0 0 0 1 0 0 0	9
1 0 0 1 0 0 0	0
1 1 1 1 0 0 0	CLEAR
0 0 1 1 1 0 0	START
0 0 0 1 0 1 0	▶▶
1 0 0 1 0 1 0	◀◀
1 1 0 1 0 1 0	REPEAT CLEAR
0 0 1 1 0 1 0	REPEAT ALL
1 0 1 1 0 1 0	REPEAT 1
0 0 0 0 1 1 0	⏮
1 0 0 0 1 1 0	⏭
0 1 0 0 1 1 0	▶
1 1 0 0 1 1 0	◀◀◀
0 0 1 0 1 1 0	▶▶▶
0 0 0 1 1 1 0	RESET
1 0 0 1 1 1 0	II

3-6. Key Matrix Output Pins Output Waveforms

1) Initial State and Input Waiting State
"1" is output constantly. In other words, no matter which switch is turned on, the information is transmitted directly to the key input pin.

2) Key Read-in State
From the end of input waiting state, 200 μsec wide pulses are output with 600 μsec time difference to KO1 – KO8, in that order.
The input frame is 4.8 msec (0.6 sec x 8 Pins) and with 1 frame as the unit, is output continuously until an abnormality is detected in key read-in.

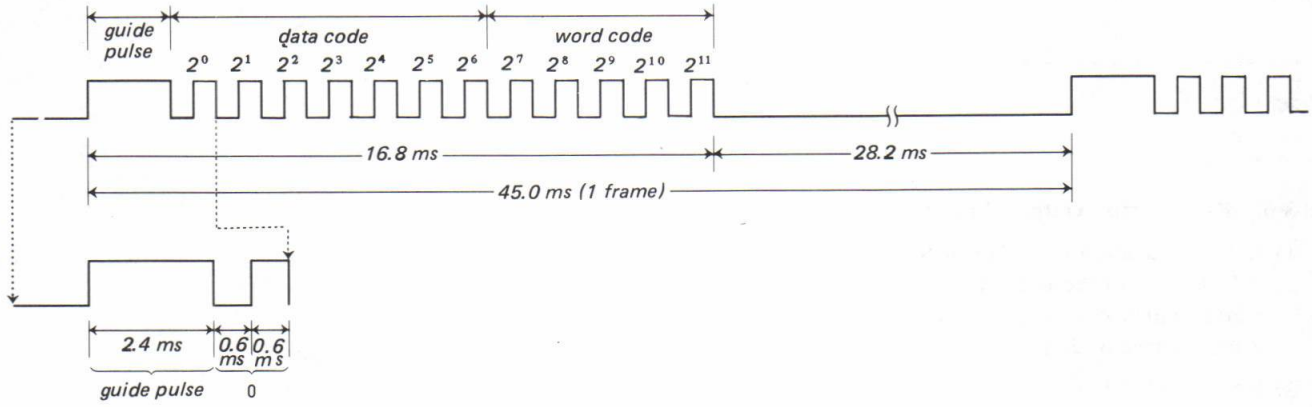
K01 – K08 output waveforms



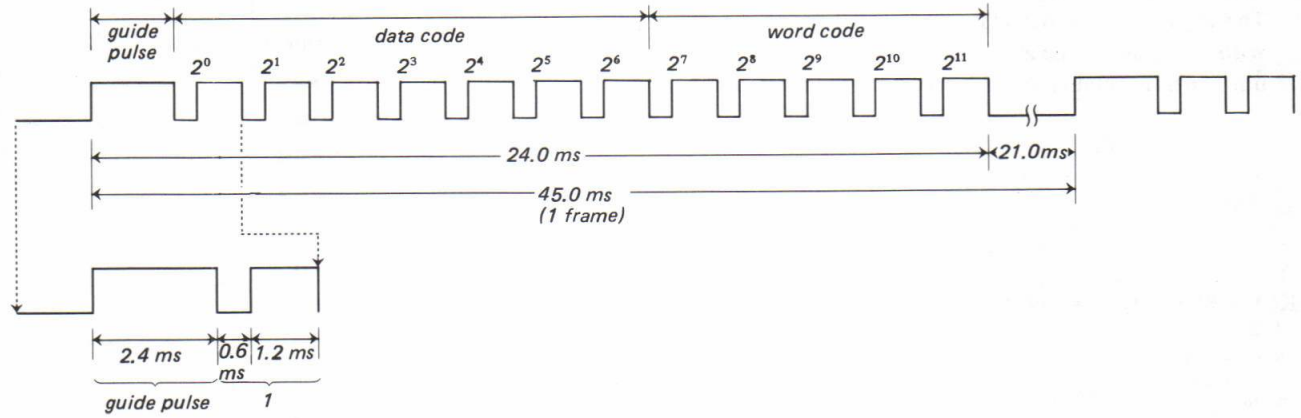
3-7. Output Waveforms

- The order for sending out of each data is:
  1) guide pulse
  2) data code (from 2^0 to 2^6)
  3) word code (from 2^7 to 2^{11})
- Even if the content of each data bit changes, the output frame interval (tf) remains 45 ms.

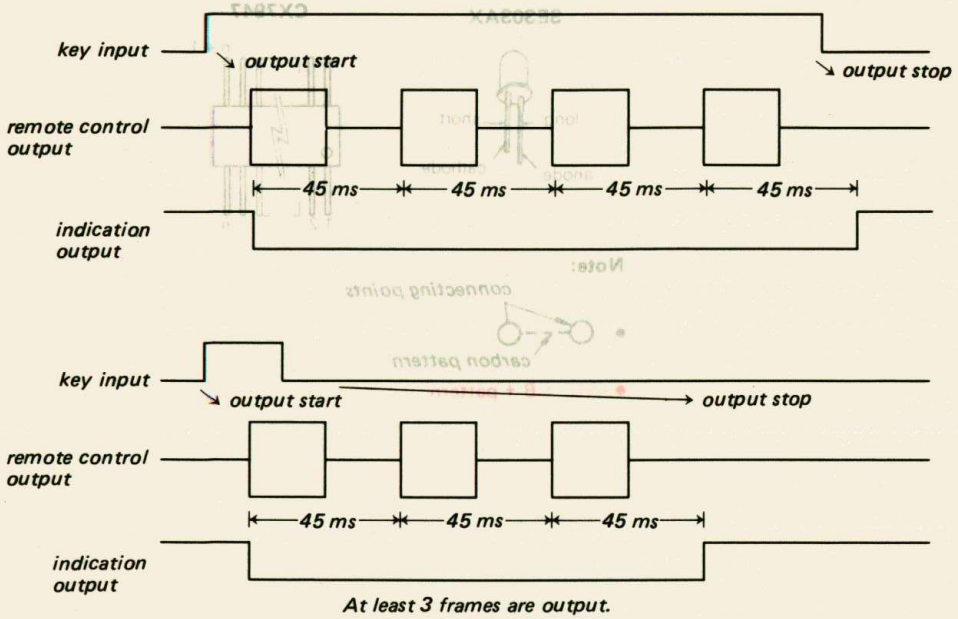
a) Time when data are all '0".



b) Time when data are all "1".

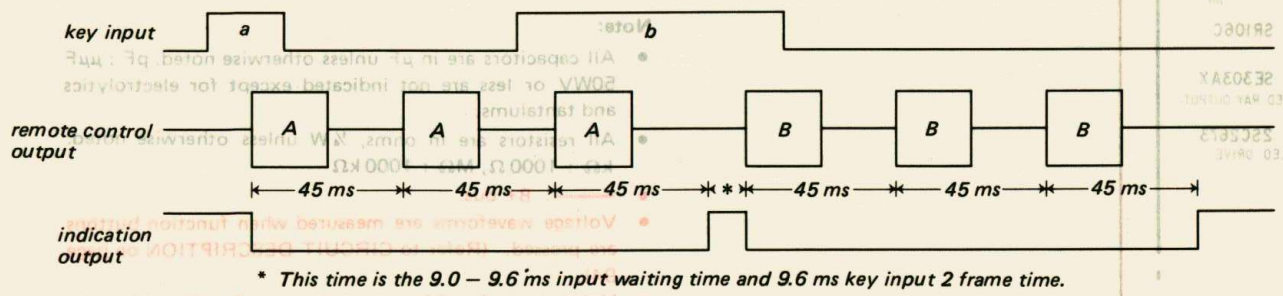


- The output waveform continues to be output while the key input data are continuously input normally. When it is detected that key input data are no longer input (switch off), output stops at the end of the output frame being output at that time.
  However, when there are less than 3 output frames at that point, output stops after 3 frames are continuously output.



At least 3 frames are output.

- During remote control output, for the following key input:
  If the next switch (b) is pressed before output of data (A) by the first switch (a) on ends, b switch key input is not accepted until A data output ends. After A data ends, there is a 9.0 –9.6 ms input waiting state (to remove chattering), and B data output begins from the point where the equality of the first two key input frames is confirmed.



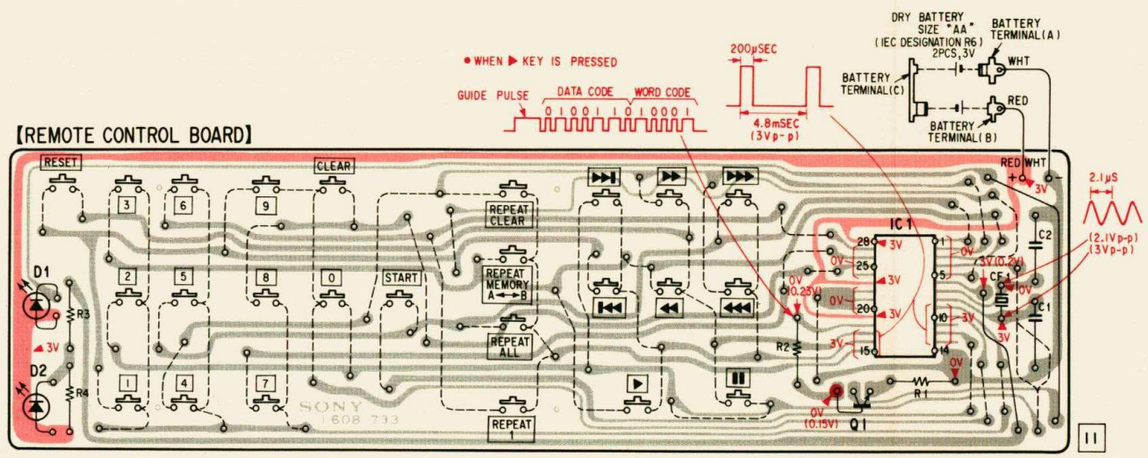
** This time is the 9.0 – 9.6 ms input waiting time and 9.6 ms key input 2 frame time.*

3-8. Indication Output

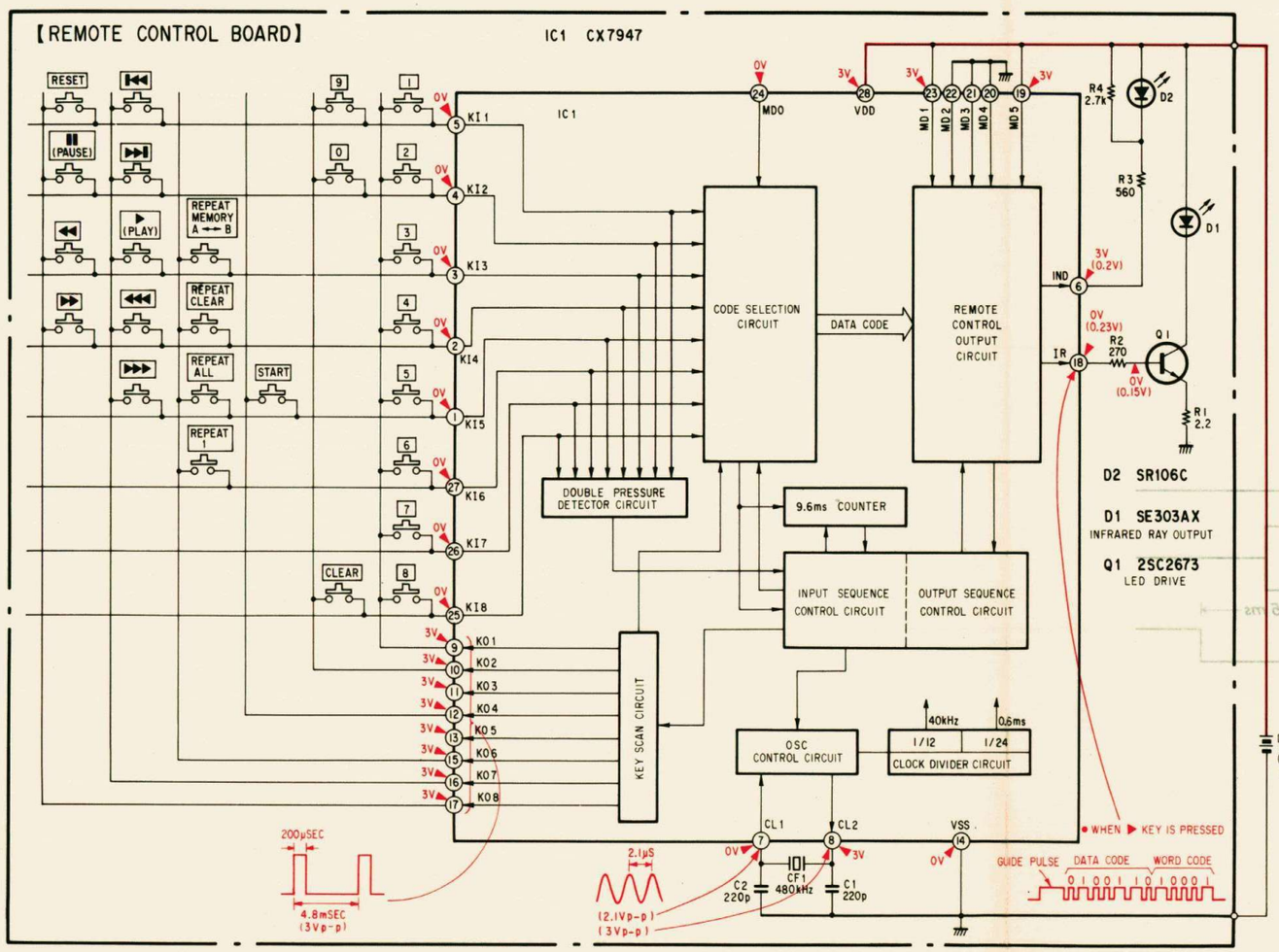
"0" Level is output during the remote control output signal, and level "1" is output when remote control output is stopped. Remote control output signal output indicates the output frame (45 msec) time of the remote control output.

The output timing of the remote control output signal and indication output signal has a time difference of within 1 msec.

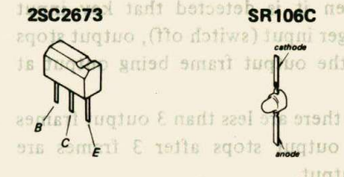
4. MOUNTING DIAGRAM



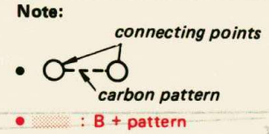
5. SCHEMATIC DIAGRAM



• Semiconductors Lead Layouts



Note:



Note:

- All capacitors are in μF unless otherwise noted. pF : μμF 50WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in ohms, ¼W unless otherwise noted. kΩ : 1000Ω, MΩ : 1000kΩ
- ——— : B+ bus.
- Voltage waveforms are measured when function buttons are pressed. (Refer to CIRCUIT DESCRIPTION on page 94).
- Voltage are dc with respect to ground unless otherwise noted.
- Readings are taken with a VOM (50 kΩ/V) under the following conditions.
  no mark: Function buttons are not pressed.
  ( ) : Function buttons are pressed.
- Voltage variations may be noted due to normal production tolerances.

Note: Voltages are measured with a VOM (50kΩ/V).

CDP-101

SERVICE MANUAL

SUPPLEMENT

File this supplement with the service manual.

Subject: CHANGE OF LOWPASS FILTERS (F501, F502)

AEP Model
UK Model
US Model
Canadian Model
E Model

No. 1
September, 1983

Applicable Serial No. :

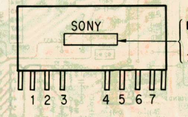
US Model: 805,201 and later
Canadian Model: 700,401 and later
AEP Model: 528,301 and later
UK Model: 607,301 and later
E1 Model: 304,501 and later
E2 Model: 400,601 and later

Lowpass filters have been changed as follows. Take care that the output terminal and the earth terminal are reversed for new part from former one.

Due to this change, one part of the audio board is changed. So there are two kinds of lowpass filters. Take care when replacing F501 and F502.

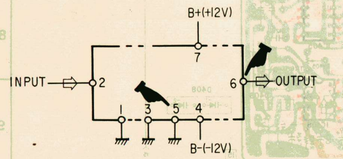
Ref. No.	Former Type	New Type
F501, 502	1-235-174-00 lowpass filter	1-464-273-00 lowpass filter

- **Identification between a new lowpass filter and former one.**

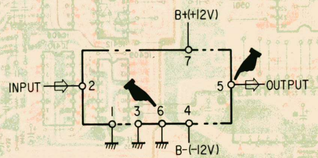


Part No.:
174-□□ . . . . former type
273-□□ . . . . new type

[Former Circuit]



[New Circuit]



COMPACT DISC PLAYER

SONY

AUD

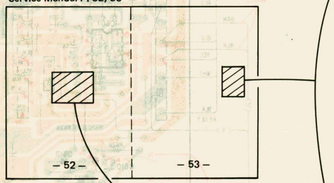
1. CHANGED PARTS

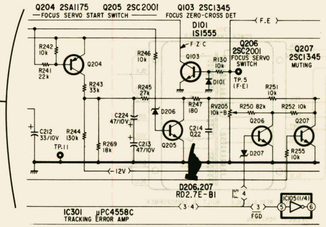
Ref. No.	FORMER Part No.	Descriptions				NEW Part No.	Descriptions				Remarks
C101	1-102-106-00	CERAMIC	100 pF	10 %	50 V	1-101-880-00	CERAMIC	47 pF	5 %	50 V	Changed
C102	1-102-106-00	CERAMIC	100 pF	10 %	50 V	1-101-880-00	CERAMIC	47 pF	5 %	50 V	Changed
C214	1-123-231-00	ELECT (NONPOLAR)	3.3 μF	20 %	50 V	1-130-636-00	FILM	0.22 μF	5 %	50 V	Changed
C507	1-123-318-00	ELECT	33 μF	20 %	16 V	1-124-080-00	ELECT	33 μF	20 %	25 V	Changed
C508	1-123-318-00	ELECT	33 μF	20 %	16 V	- - - - -					Omitted
C509	1-123-318-00	ELECT	33 μF	20 %	16 V	1-124-080-00	ELECT	33 μF	20 %	25 V	Changed
C510	1-123-318-00	ELECT	33 μF	20 %	16 V	1-124-080-00	ELECT	33 μF	20 %	25 V	Changed
C545	1-101-880-00	CERAMIC	47 pF	5 %	50 V	1-102-959-00	CERAMIC	22 pF	5 %	50 V	Changed
C581	1-123-609-00	ELECT	0.33 μF	20 %	50 V	1-123-380-00	ELECT	1 μF	20 %	50 V	Changed
C582	1-123-609-00	ELECT	0.33 μF	20 %	50 V	1-123-380-00	ELECT	1 μF	20 %	50 V	Changed
C583	1-123-474-00	ELECT	100 μF	20 %	10 V	1-124-069-00	ELECT	100 μF	20 %	10 V	Changed
C584	1-123-474-00	ELECT	100 μF	20 %	10 V	1-124-069-00	ELECT	100 μF	20 %	10 V	Changed
F501	1-235-174-00	LOWPASS FILTER				1-464-273-00	LOWPASS FILTER				Changed
F502	1-235-174-00	LOWPASS FILTER				1-464-273-00	LOWPASS FILTER				Changed
R514	1-247-841-00	CARBON	2.7 kΩ	5 %	1/6 W	1-214-739-00	METAL	2.7 kΩ	1 %	1/4 W	Changed
R523	1-247-847-00	CARBON	4.7 kΩ	5 %	1/6 W	1-214-745-00	METAL	4.7 kΩ	1 %	1/4 W	Changed
R529	1-247-847-00	CARBON	4.7 kΩ	5 %	1/6 W	1-214-745-00	METAL	4.7 kΩ	1 %	1/4 W	Changed
R626	1-247-855-00	CARBON	10 kΩ	5 %	1/6 W	1-247-852-00	CARBON	7.5 kΩ	5 %	1/6 W	Changed

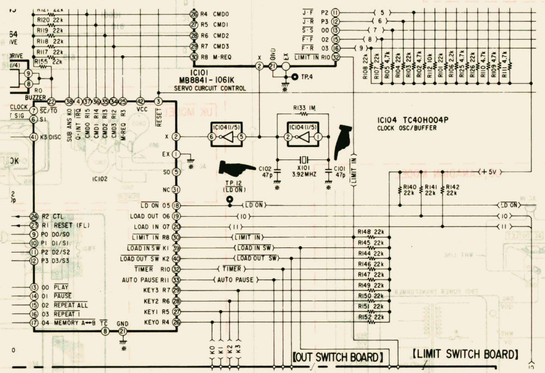
2. CHANGED PORTIONS IN THE SERVO AMP SECTION

: new type changed portion

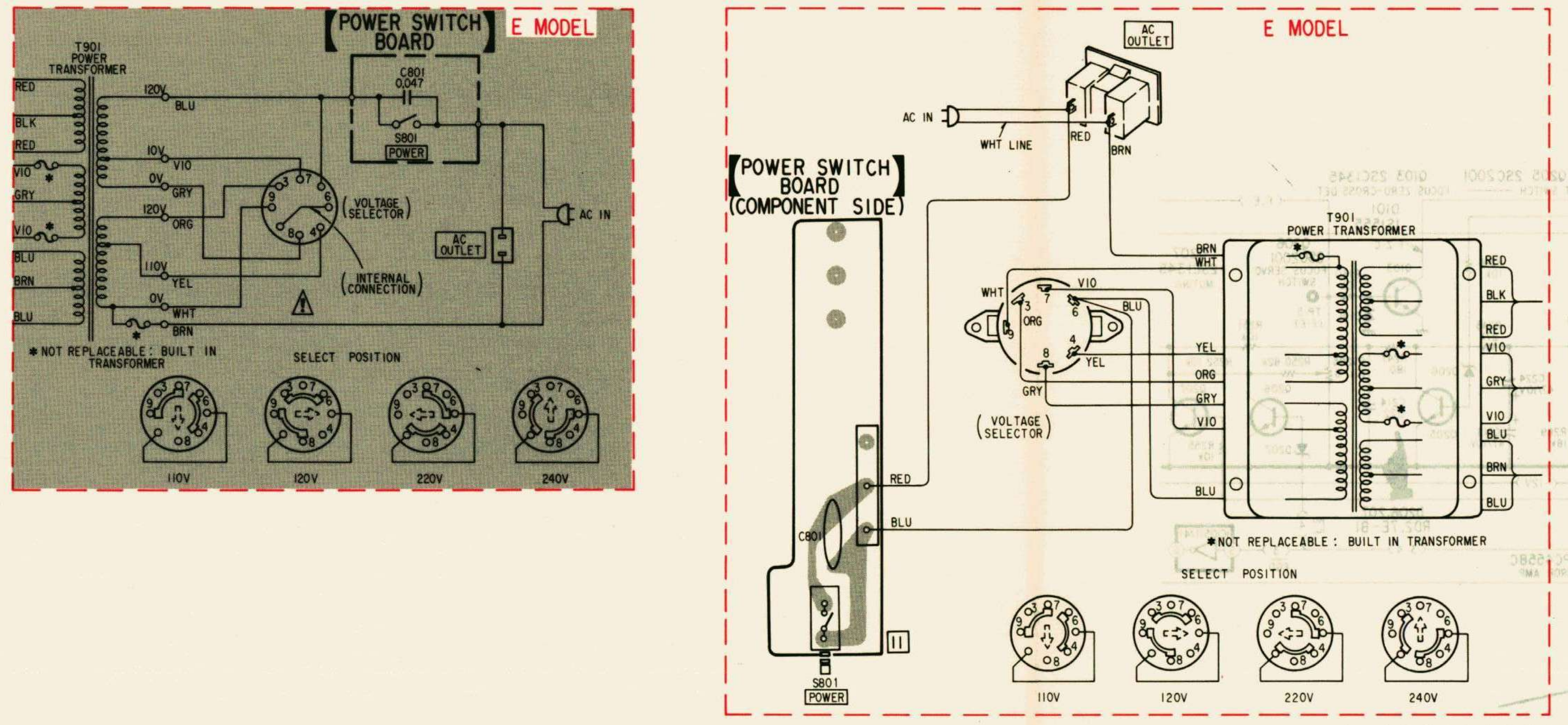
Service Manual P. 52, 53

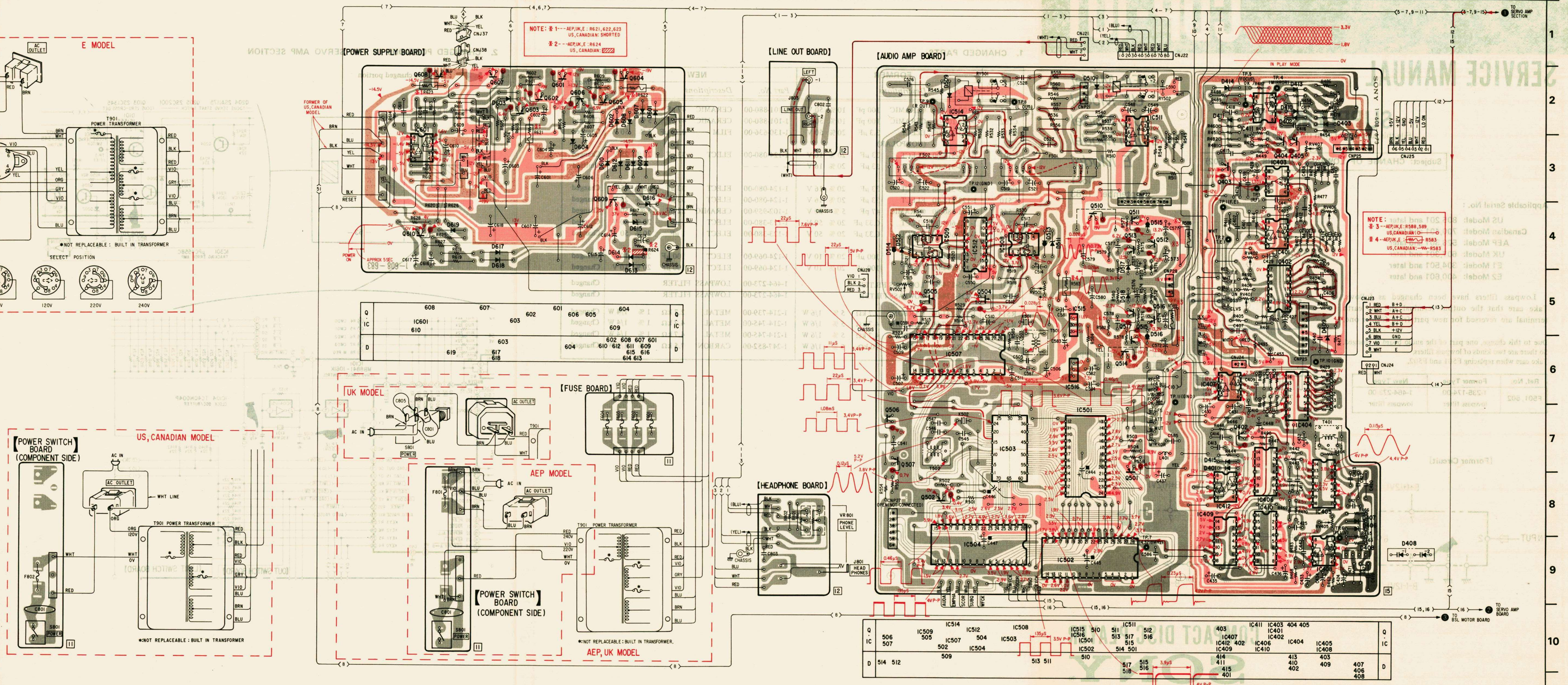






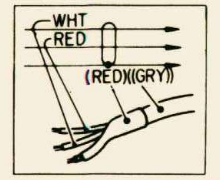
3. MOUNTING DIAGRAM — *Adudio Amp Section* —





Note:

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



- ○—: parts extracted from the component side.
- ●—: parts extracted from the conductor side.
- : B+ pattern
- : B- pattern
- : signal path
- : L-CH signal path
- : R-CH signal path
- Voltages are dc with respect to ground unless otherwise noted.
- Readings are taken under no-signal conditions with a VOM (50 kΩ/V).
  no mark: STOP mode
  ( ): PLAY mode
- Waveforms are taken with respect to ground with oscilloscope.
  no mark: STOP mode
  ( ): PLAY mode
- ※1 to 4: AEP, UK and E models are different from US and Canadian models.

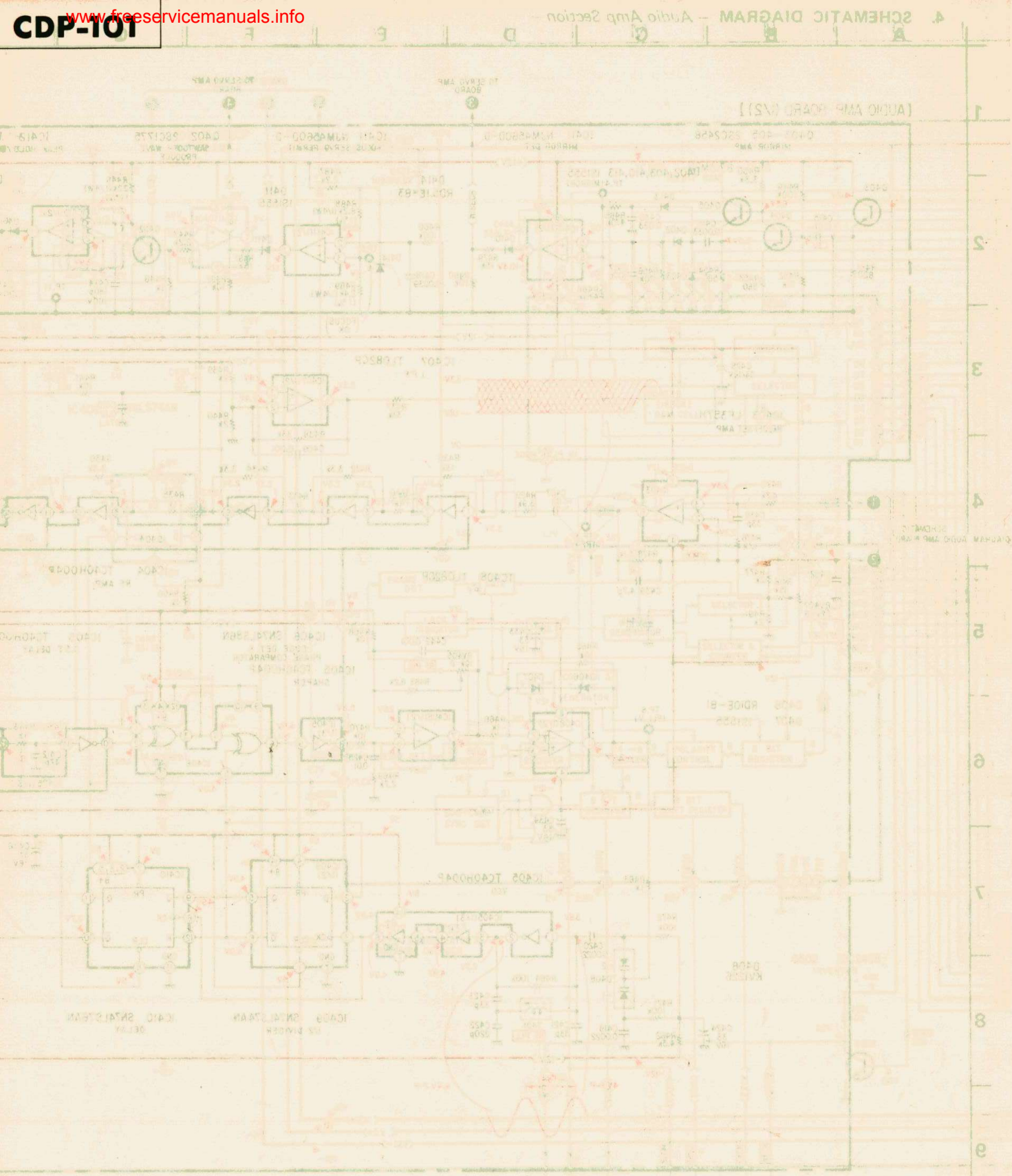
- All capacitors are in μF unless otherwise noted. pF : μμF 50WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in ohms, 1/6 W unless otherwise noted. kΩ : 1000 Ω, MΩ : 1000 kΩ
- ——— : B+ bus.
- – – – : B– bus.
- ▭ : adjustment for repair.
- Voltages are dc with respect to ground unless otherwise noted.
- ➡ : signal path

- Readings are taken under no-signal conditions witn a VOM (50 kΩ/V).
  no mark : STOP mode
  ( ) : PLAY mode
- Waveforms are taken with respect to ground with oscilloscope.
  no mark : STOP mode
  ( ) : PLAY mode
- ※1 to 4 : AEP, UK and E models are different from US and Canadian models.

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

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

Note: Voltages are measured with a VOM (50kΩ/V).



English
8610507-5
Printed in Japan

9-951-028-82

Sony Corporation

CDP-101

SERVICE MANUAL

US Model
Canadian Model
AEP Model
UK Model
E Model

CORRECTION

File this Correction with the Service Manual.

No. 1
June, 1984

Subject: DISC EJECT AND RF PLL ADJUSTMENT

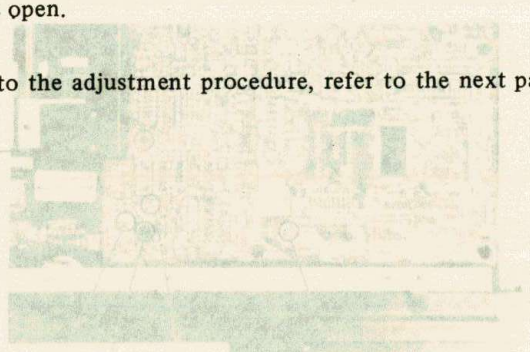
Sometimes when a compact disc is loaded, the disc table is automatically ejected in about 10 seconds. This can sometimes be corrected by adjusting the RF PLL and making some other alignments mentioned on pages 38 through 45 of the service manual. Since the description of the RF PLL adjustment is not correct, please refer to the procedures described below.

RF PLL Adjustment

This is done to adjust the free-run frequency of the VCO to the optimum point. It is also done to set (at the time when the disc spin servo is not engaged) the disc revolution to the right speed which will be obtained when the servo is engaged. If this is not adjusted properly, the servo loop will not close at the disc spin start and the unit will fail to read the data from the disc. Then the disc table will be ejected.

In this adjustment, three variables are involved. Two of them are for VCO adjustment and the other one is to determine the disc speed in case the servo loop is open.

– As to the adjustment procedure, refer to the next page. –



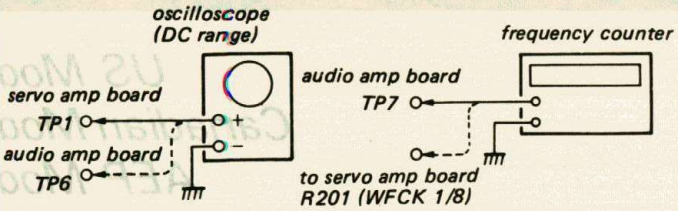
COMPACT DISC PLAYER

SONY®

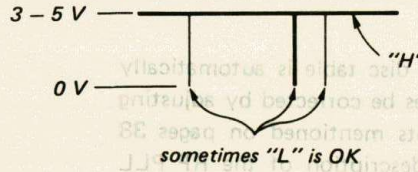
AUD

RF PLL Adjustment

Procedure:



1. Put set into adjustment mode. (see page 38)
2. Turn RV101 (GFS) fully clockwise.
   (Refer to adjustment location.)
3. Insert disc (YEDS-1) and press ▷PLAY button.
4. Connect oscilloscope to servo amp board test point TP1.
5. Confirm that the oscilloscope waveform is "H" as shown in the figure below.



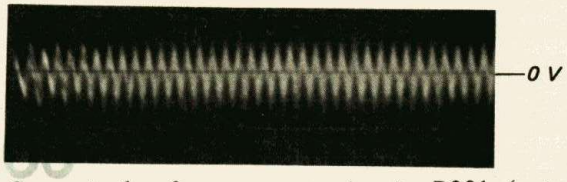
- Confirm the following items when the waveform is as shown above. If it is not, perform the adjustments in steps 6-15.
  When the specification is met, perform the step 15.

  A. Connect oscilloscope to audio amp board test point TP6 and read the voltage value.
  Reading: DC 0 ±0.1 V.

  B. Connect frequency counter to audio amp board test point TP7 and read frequency.
  Reading: 4.3218 ±0.01 MHz.

6. Momentarily ground pin 15 of IC101 on the servo amp board.
   The optical block will move towards the music area from the area of TOC (Table of Contents).
7. Press the PLAY button and turn RV202 fully clockwise.
   The disc speed will slow.
   This is to prevent the VCO signal from getting locked with the RF signal coming from the data reading circuit while the adjustment is being made.
8. Connect a frequency counter to test point TP7 and an oscilloscope to TP6 on the audio amp board.
9. Make a short connection between pins 1 and 2 of IC408.
   Make sure that the pin 1 (TP6) voltage becomes the same voltage as at pin 3, which is a ground potential (0 V) due to the 100% feedback to pin 2.
10. Adjust T401 so that frequency counter reading is 4.3218 ±0.01 MHz.
11. Remove the short circuit installed in step 9.
12. Adjust RV405 so that the osilloscope reading becomes 0 ±0.1V.

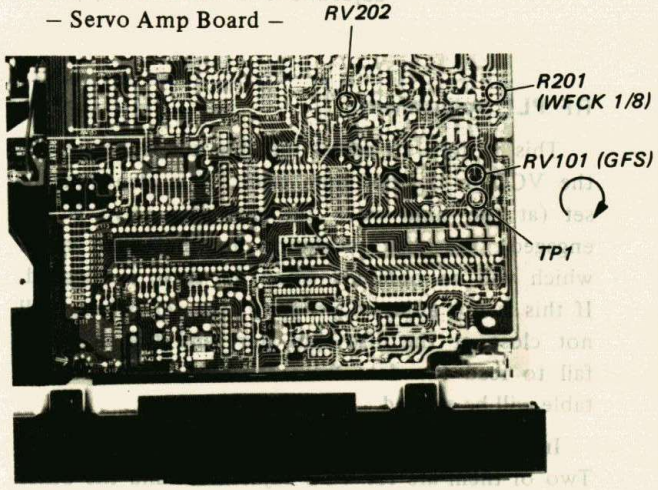
TP6 oscilloscope waveform



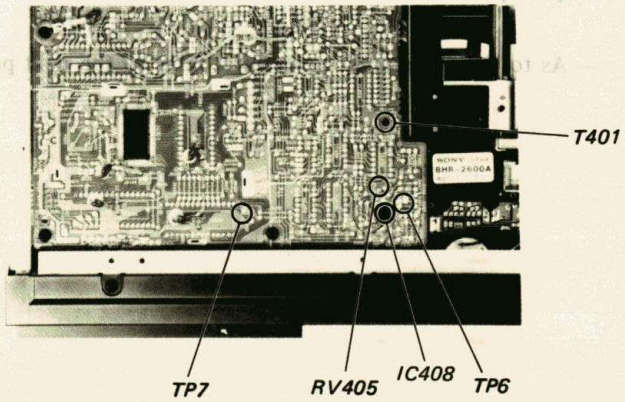
13. Connect the frequency counter to R201 (not the side of the Q201 collector) to monitor 1/8 WFCK.
    Also connect the oscilloscope to TP1 to observe the GFS voltage.
14. Adjust RV202 and look for an area where the GFS voltage at TP1 goes high (+3.6 V). Then tune to the point at which the frequency counter indicates 918 Hz (918 ±5 Hz) and at the same time the GFS voltage remains high.
15. Turn RV101 back fully counterclockwise.

Adjustment Locations:

– Servo Amp Board –



– Audio Amp Board –



SONY®

Service Bulletin

Date	Ref. N°	Model
16 FEB 1984	DA-00184	CDP-101

Subject: Disc Eject and RF PLL Adjustment
Ejection du disque et réglage RF PLL
Herausfahrender Disc-Teller und Einstellung des HF-PLL-Kreises
Ajuste de la expulsión del disco y de la RF PLL

English

Sometimes when a compact disc is loaded, the disc table is automatically ejected in about 10s. This can sometimes be corrected by adjusting the RF PLL and making some other alignments mentioned on pages 38 through 45 of the service manual. Since the description of the RF PLL adjustment is not correct, please refer to the procedures Manner 1 or Manner 2 described below.

RF PLL Adjustment

This is done to adjust the free-run frequency of the VCO to the optimum point. It is also done to set (at the time when the disc spin servo is not engaged) the disc revolution to the right speed which will be obtained when the servo is engaged. If this is not adjusted properly, the servo loop will not close at the disc spin start and the unit will fail to read the data from the disc. Then the disc table will be ejected.

In this adjustment, three variables are involved. Two of them are for VCO adjustment and the other one is to determine the disc speed in case the servo loop is open. There are two manners in which to achieve this adjustment. One is to alternately align the two controls for the VCO adjustment, and the other one is to align them one at a time. These adjustments are described below as Manner 1 and Manner 2 respectively.

Manner 1 is the correction of alignment procedure mentioned in the service manual. Manner 2 is the optional method.

MANNER 1

1. Connect test points TP2 and TP4 to each other in the servo amp board.
2. Turn RV101 (GFS) fully clockwise.

Français

Il se peut que la table de lecture s'éjecte 10 s après l'insertion du disque compact. Afin d'y remédier, il y a lieu d'appliquer le réglage RF PLL ainsi que les alignements mentionnés aux pages 38-45 du manuel de service. La description du réglage RF PLL étant erronée, il y a lieu de consulter les deux techniques de réglage reprises ci-dessous

Réglage RF PLL

Ce réglage sert à optimaliser la fréquence à oscillation libre du VCO. Il sert également à régler la vitesse de rotation du disque lorsque l'asservissement de rotation est engagé. S'il est mal ajusté, le circuit d'asservissement ne se fermera pas lors du démarrage du mouvement rotatif et les données du disque ne seront pas lues. Par conséquent, la table de lecture sera éjectée.

Dans ce réglage, trois variables se présentent. Les deux premières concernent le réglage du VCO, la troisième sert à déterminer la vitesse rotative lorsque le circuit d'asservissement est ouvert. Il existe deux façons à effectuer ce réglage, notamment en alignant les deux régulateurs VCO soit alternativement soit successivement. Voir les techniques de réglage 1 et 2 reprises ci-dessous.

La première technique remplace le réglage erroné mentionné dans le manuel de service. La seconde représente la méthode facultative.

TECHNIQUE DE REGLAGE 1

1. Raccorder les points de mesure TP2 et TP4 de la platine ampli-servo.
2. Tourner RV101 (GFS) complètement à droite.

Deutsch

Manchmal fährt der Plattenteller ca. 10 s nach Einlegen eines Compact-Disc wieder heraus. Diesem Fehler kann man manchmal durch Einstellung des HF-PLL-Kreises und andere auf Seite 38-45 der Kundendienstanleitung angegebene Einstellungen abhelfen. Das beschriebene HF-PLL-Einstellverfahren ist aber inkorrekt. Die folgenden Einstellverfahren vermitteln genauere Angaben.

HF-PLL-Einstellung

Diese Einstellung dient der Optimierung der Freischwingfrequenz des spannungsgesteuerten Oszillators. Sie dient ebenfalls der Einstellung der Drehgeschwindigkeit beim Ansprechen der Umdrehungsservofunktion. Bei einer fehlerhaften Einstellung schließt sich die Servoschleife nicht beim Ansprechen der Drehbewegung, so daß die Daten nicht abgelesen werden können. Schließlich fährt der Plattenteller heraus.

In dieser Einstellung kommen drei Variablen vor, von denen zwei der VCO-Einstellung und eine der Drehgeschwindigkeitseinstellung bei offener Servoschleife dient. Die Einstellung läßt sich auf zwei Weisen durchführen: die beiden VCO-Regler abwechselnd oder einzeln abgleichen. Die folgenden Einstellverfahren vermitteln jeweils genauere Angaben.

Einstellverfahren 1 ersetzt das in der Kundendienstanleitung fehlerhaft angegebene Verfahren. Einstellverfahren 2 stellt die fakultative Methode dar.

EINSTELLVERFAHREN 1

1. Meßpunkte TP2 und TP4 der Servoverstärkerplatine miteinanderverbinden.
2. RV101 (GFS) bis zum Anschlag nach rechts drehen.

Español

Algunas veces, al colocar un disco compacto, la tabla porta-discos es automaticamente expulsada en unos 10 segundos. A veces, esto puede corregirse ajustando la RF PLL y efectuando algunos de los otros ajustes mencionados en las páginas 38 a 45 del Manual de Servicio. Puesto que la descripción del ajuste RF PLL no es correcto, véanse los procedimientos (Manera 1) (Manera 2) descritos a continuación.

Ajuste RF PLL

Se efectúa para ajustar la frecuencia libre del VCO a su punto óptimo. Se realiza también para fijar (en el momento en que el servo de giro del disco no está actuando) la revolución del disco a la velocidad adecuada, la cual se obtendrá cuando el servo esté actuando. Si no está correctamente ajustado, el lazo del servo no se cerrará al inicio del giro del disco y el aparato no podrá leer la información del disco. Entonces, el porta discos (tabla porta-discos) será expulsada.

En este ajuste están implicadas tres variables. Dos de ellas son para el ajuste del VCO y la otra es para determinar la velocidad del disco en caso de que el lazo del servo esté abierto. Hay dos formas de efectuar este ajuste. Una es ajustar alternativamente los dos controles de ajuste del VCO y la otra es ajustarlos uno cada vez. Estos ajustes se describen a continuación como Manera 1 y Manera 2, respectivamente.

La Manera 1 es la corrección del proceso de ajuste mencionado en el Manual de Servicio. La Manera 2 es el sistema óptimo.

MANERA 1

1. Interconectar los puntos de prueba TP2 y TP4 en la placa amp servo.
2. Girar la RV101 (GFS) totalmente a la derecha (en el sentido de las agujas

3. Load the disc YEDS-1 (P/N 3-703-696-01).

3. Insérer le disque YEDS-1 (n° de pièce 3-703-696-01).

3. Platte YEDS-1 (ET-Nr. 3-703-696-01) einlegen.

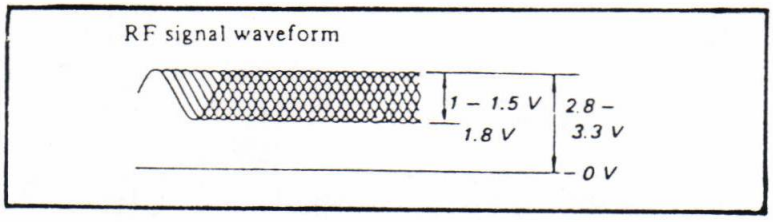
3. Introducir el YEDS-1 (N/C 3-703-696-01).

4. When the waveform at TP3 in the audio amp board does not look as shown in the figure, ground pin 15 of IC101 for a moment. The optical block will move towards the music area from the area of TOC (Table of Contents).

4. Si la forme d'onde à TP3 de la platine ampli-audio ne correspond pas à celle de la figure, il y a lieu de mettre la broche 15 de l'IC101 temporairement à la masse. Le bloc optique se déplacera du plan info au plan musique.

4. Entspricht die Kurvenform an TP3 der NF-Verstärkerplatine nicht der Darstellung vom Bild, Pin 15 von IC101 zeitweise nach Masse verbinden. Der Abtastblock bewegt sich von der Info- zu der Musikebene.

4. Cuando la forma de onda en TP3 en la placa amp de audio no es como la que se indica en la figura, poner a masa el terminal 15 del IC101 momentaneamente. El bloque óptico se moverá hacia el área de música desde el área de TOC (Tabla de Contenidos).

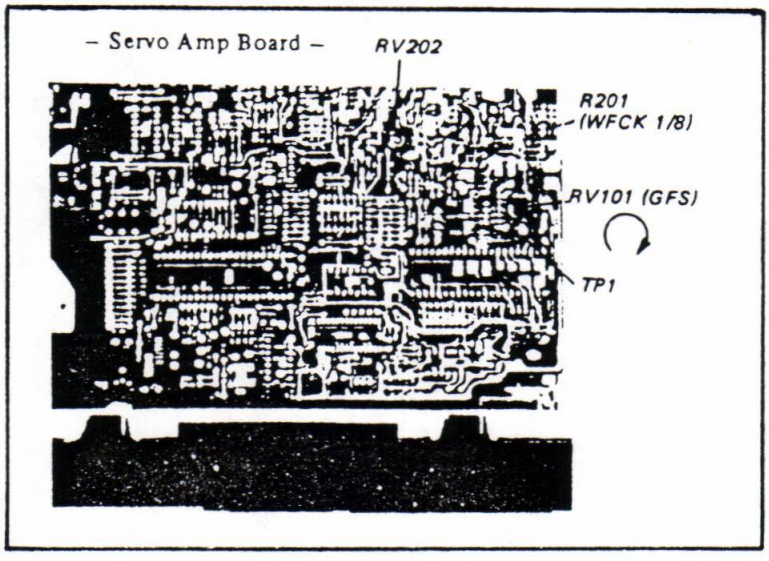


5. Press the PLAY button and turn RV202 fully clockwise. The disc speed will be slower. This is to prevent the VCO signal from getting locked with the RF signal coming from the data reading circuit while the adjustment is being made.

5. Enfoncer la touche PLAY et tourner RV202 complètement à droite. La vitesse de rotation se ralentira, ce afin que le signal VCO ne s'accouple pas au signal RF provenant du circuit lecteur des données pendant le réglage.

5. PLAY-Taste drücken und RV202 bis zum Anschlag nach rechts drehen. Die Drehgeschwindigkeit nimmt ab, damit sich das VCO-Signal während der Einstellung nicht an das von der Datenableseschaltung kommende HF-Signal koppelt.

5. Pulsar el botón de PLAY y girar la RV202 totalmente a la derecha. La velocidad del disco disminuirá. Esto es para evitar que la señal VCO se mezcle con la señal de RF proveniente del circuito de lectura de datos mientras se efectúa el ajuste.

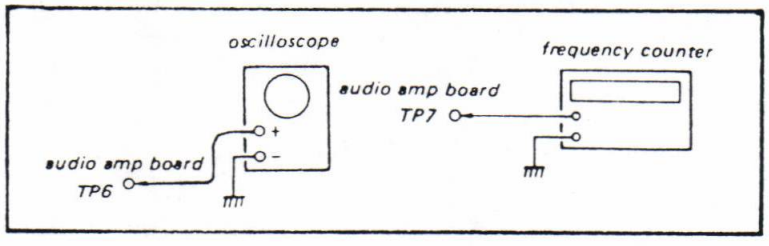


6. Connect an oscilloscope to TP6 and connect a frequency counter to TP7.

6. Raccorder un oscilloscope à TP6 et un compteur de fréquences à TP7.

6. Oszilloskop an TP6 und Frequenzzähler an TP7 anschließen.

6. Conectar un osciloscopio a TP6 y un frecuenciómetro en TP7.



7. Adjust RV405 to get as close to 0V as possible.

7. Régler RV405 afin d'obtenir approximativement 0 V.

7. RV405 auf ca. 0 V einstellen.

7. Ajustar RV405 para conseguir lo más posible 0 V.

8. Adjust T401 to read as

8. Régler T401 afin d'obte-

8. T401 auf ca. 4,3218 MHz

8. Ajustar T401 para obtener

9. Since the adjustment of RV405 and T401 interact, repeat steps 7 and 8 several times. Finally the voltage at TP6 and the frequency at TP7 should be as follows:

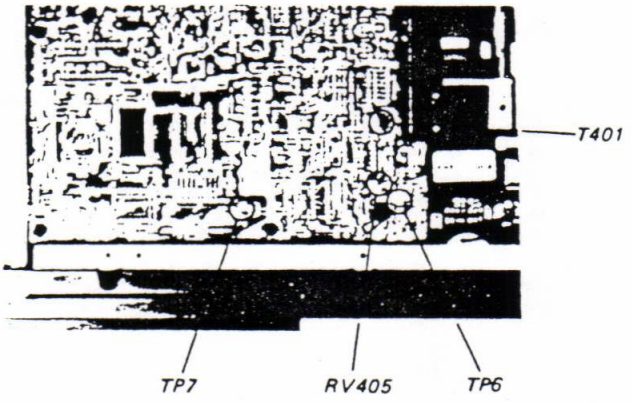
9. Etant donné que les réglages de RV405 et T401 s'influencent, il y a lieu de répéter les points 7 et 8 plusieurs fois. Finalement, la tension à TP6 et la fréquence à TP7 devraient être:

9. Da die Einstellung von RV405 die von T401 beeinflußt, müssen die Schritte 7 und 8 mehrmals wiederholt werden. An TP6 und TP7 soll schließlich die folgende Spannung bzw. Frequenz anliegen:

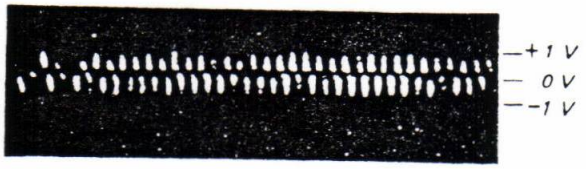
9. Puesto que los ajustes de RV405 y T401 se inter-relacionan, repetir los apartados 7 y 8 varias veces. Finalmente, la tensión en TP6 y la frecuencia en TP7 deben ser las siguientes:

TP6	0 V + 0.05 V
TP7	4.3218 MHz ± 0.01 MHz

– Audio Amp Board –



TP6 oscilloscope waveform

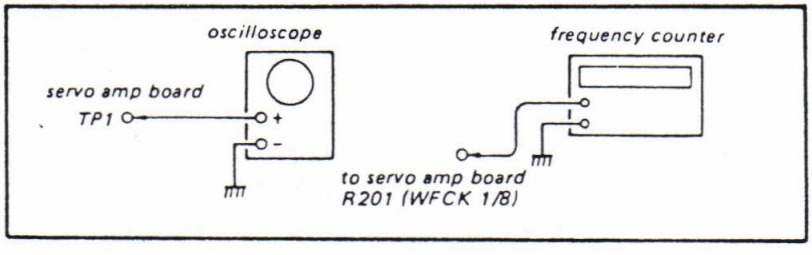


10. Connect the frequency counter to R201 (not the side of the Q201 collector) to monitor 1/8 WFCK. Also connect the oscilloscope to TP1 to observe the GFS voltage.

10. Raccorder le compteur de fréquences à R201 (pas du côté collecteur de Q201) afin de contrôler le 1/8 WFCK, et raccorder l'oscilloscope à TP1 afin de vérifier la tension GFS.

10. Frequenzzähler an R201 (keinesfalls bei der Kollektorseite von Q201) zur Prüfung der 1/8 WFCK und Oszilloskop an TP1 zur Beobachtung der GFS-Spannung anschließen.

10. Conectar el frecuenciómetro en R201 (no en el lado del colector de Q201) para leer 1/8 WFCK. También, conectar el osciloscopio a TP1 para ver la tensión GFS.



11. Adjust RV202 and look for an area where the GFS voltage at TP1 goes high (+ 3.6V). Then tune to the point at which the frequency counter indicates 918Hz + 5Hz and at the same time the GFS voltage remains high.

11. Régler RV202 jusqu'à ce qu'une tension GFS de + 3,6 V à TP1 soit obtenue. Puis, sintoniser le point jusqu'à ce que le compteur de fréquences affiche 918 Hz + 5 Hz, tandis que la tension GFS reste élevée.

11. RV202 einstellen, bis die GFS-Spannung an TP1 + 3,6 V beträgt. Weiter einstellen, bis der Frequenzzähler 918 Hz + 5 Hz bei hoher GFS-Spannung anzeigt.

11. Ajustar RV202 y buscar una zona en la que la tensión GFS en TP1 sea alta (+ 3,6 V). Entonces sintonizar el punto en el cual el frecuenciómetro indica 918 Hz ± 5 Hz y al mismo tiempo, la tensión de GFS permanece alta.

12. Turn RV101 back fully counterclockwise.

12. Tourner RV101 complètement à gauche.

12. RV101 bis zum Anschlag wieder nach links drehen.

12. Girar RV101 totalmente en el sentido contrario a las agujas del reloj.

MANNER 2

Follow steps 1 through 5 as in Manner 1.

6. Connect a frequency counter to TP7 and connect an oscilloscope to TP6.

TECHNIQUE DE REGLAGE 2

Appliquer les points 1-5 de la Technique 1.

6. Raccorder un compteur de fréquences à TP7 et un oscilloscope à TP6.

EINSTELLVERFAHREN 2

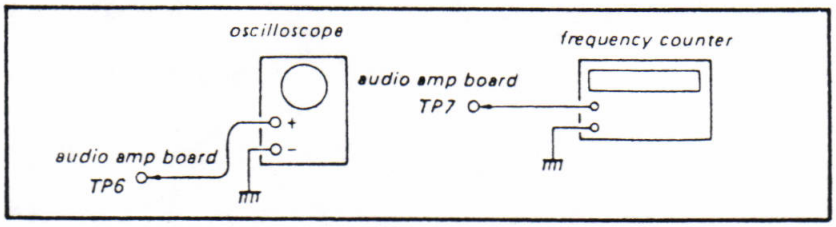
Schritte 1-5 des Einstellverfahrens 1 durchführen.

6. Frequenzzähler an TP7 und Oszilloskop an TP6 anschließen.

MANERA 2

Seguir los pasos del 1 al 5 de la Manera 1.

6. Conectar un frecuenciómetro en TP7 y un osciloscopio en TP6.



7. Make a short connection between pins 1 and 2 of IC408. Make sure that the pin 1 (TP6) voltage becomes the same voltage as at pin 3, which is a ground potential (0V) due to the 100% feedback to pin 2.

8. Adjust T401 to read 4.3218MHz ± 0.01MHz at TP7.

9. Remove the short circuit at IC408 and adjust RV405 to get 4.3218MHz + 0.01MHz at TP7. At this time, the voltage at TP6 becomes 0V.

After this, follow steps 10 through 12 as in Manner 1.

7. Mettre les broches 1 et 2 de l'IC408 en court-circuit. Vérifier si la tension à la broche 1 (TP6) est identique à celle à la broche 3. Cette dernière est le potentiel de masse (0 V) produit par la réaction totale à la broche 2.

8. Régler T401 afin d'obtenir 4,3218 MHz ± 0,01 MHz à TP7.

9. Enlever le court-circuit de l'IC408 et régler RV405 afin d'obtenir 4,3218 MHz ± 0,01 MHz à TP7. A cet instant, la tension à TP6 est de 0 V.

Ensuite, appliquer les points 10-12 de la Technique 1.

7. Pin 1 und 2 von IC408 kurzschließen. Prüfen, ob die Spannung an Pin 1 (TP6) gleich der Spannung an Pin 3 ist. Die an Pin 3 anliegende Spannung ist durch vollständige Rückkopplung nach Pin 2 entstandenes Massepotential (0 V).

8. T401 auf 4,3218 MHz ± 0,01 MHz an TP7 einstellen.

9. Kurzschluß an IC408 aufheben und RV405 auf 4,3218 MHz ± 0,01 MHz an TP7 einstellen. Jetzt beträgt die Spannung an TP6 0 V.

Anschließend Schritte 10-12 des Einstellverfahrens 1 durchführen.

7. Efectuar un corto circuito entre los terminales 1 y 2 del IC408. Asegurarse de que la tensión en el terminal 1 (TP6) sea la misma que la del terminal 3, el cual está al potencial de masa (0 V) debido al 100 % de realimentación del terminal 2.

8. Ajustar T401 para leer 4,3218 MHz ± 0,01 MHz en TP7.

9. Desmontar el corto circuito en IC408 y ajustar RV405 para obtener 4,3218 MHz ± 0,01 MHz en TP7. En este momento, la tensión en TP6 debe ser 0 V.

Después de esto, seguir los pasos del 10 al 12 de la Manera 1.