


ONKYO® SERVICE MANUAL

COMPACT DISC PLAYER MODEL DX-5500

Black model

| | |
|------------|------------------------------|
| BUDN, BUD | 120V AC, 60 Hz |
| BUG | 220V AC, 50Hz |
| BUU, BUUX | 110/120/220/240V AC, 50/60Hz |
| BUQA, BUQB | 240V AC, 50 Hz |

SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY MARK  ON THE SCHEMATIC DIAGRAM AND IN THE PARTS LIST ARE CRITICAL FOR RISK OF FIRE AND ELECTRIC SHOCK. REPLACE THESE COMPONENTS WITH ONKYO PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL.

MAKE LEAKAGE-CURRENT OR RESISTANCE MEASUREMENTS TO DETERMINE THAT EXPOSED PARTS ARE ACCEPTABLY INSULATED FROM THE SUPPLY CIRCUIT BEFORE RETURNING THE APPLIANCE TO THE CUSTOMER.

SPECIFICATIONS

| | |
|----------------------------|--|
| Signal readout system: | Optical non-contact |
| Reading rotation: | About 500~200 r.p.m. (constant linear velocity) |
| Linear velocity: | 1.2~1.4m/s |
| Error correction system: | Cross interleave readsolomon code |
| Decoded bits: | 18 bits linear |
| Sampling frequency: | 176.4kHz (four-times oversampling) |
| Number of channels: | 2 (stereo) |
| Frequency response: | 5Hz~20kHz |
| Total harmonic distortion: | 0.003% (at 1kHz) |
| Dynamic range: | 96dB |
| Signal to noise ratio: | 96dB |
| Channel separation: | 96dB (at 1kHz) |
| Wow and Flutter: | Below threshold of measurability |
| Power consumption: | 15 watts |
| Output level: | 2 volts r.m.s. |
| Dimensions (W×H×D): | 435×131×365 mm 17-1/8"×5-1/8"×14-7/16" |
| Weight: | 8kg, 17.6 lbs. |

Specifications are subject to change without notice.

ONKYO
AUDIO COMPONENTS

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SERVICE PROCEDURES

1. How to Release the Transport Lock

To protect the optical assembly including the laser pickup from vibration related damage during shipping, this unit is equipped with a transport lock lever located on the base.

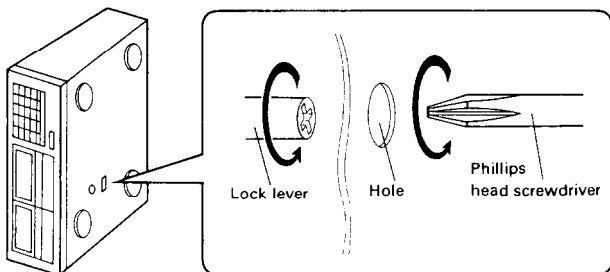


Fig. 1

- Use a screwdriver to turn the lock lever (about 90°) in the round hole in the direction of arrow (⤵).
- Before transporting the unit again, stand it with its left side facing down, and turn on the power. Wait 2-3 seconds and then turn the lock lever in the opposite direction of the arrow.

2. Safety-check out

After correcting the original service problem, perform the following safety check before releasing the set to the customer:

Connect the insulating-resistance tester between the plug of power supply cable and chassis.

Specifications: more than 10Mohm at 500V.

3. Procedures for replacement of flat packaged ICs

1. Tools to be used:

- (1) **Soldering iron** Grounded soldering iron or soldering iron with leak resistance of 10 Mohms or more.

Form of soldering iron's tip:

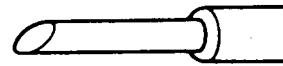


Fig. 2

- (2) **Magnifying glass** . . . for checking of finished works
- (3) **Tweezers** for handling of IC and forming of leads
- (4) **Grounding ring** Countermeasure for electrostatic breakdown
- (5) **Nipper** for removing defective IC
- (6) **Small brush** for application of flux

2. Work Procedures:

(1) Remove the defective IC

Cut all leads of the defective IC one by one using a nipper and remove the IC.

(2) Clean the pattern surface of the PC board.

Get rid of the remaining leads and solder.

(3) Check and form the leads of the new flat packaged IC to be installed.

From every lead on the new IC using a pair of tweezers, so that all of them are aligned neatly without being risen, twisted or inclined toward one side. Especially the rising portion of every lead must be formed with greatest care.

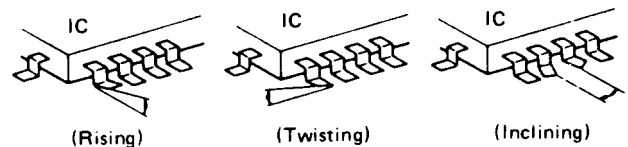


Fig. 3

(4) Apply flux to the PC board.

Apply flux to the pattern surface of the PC board which has been cleaned, as shown in the illustration. The area to be applied with flux is the portion of about 2.5mm in width where the IC's leads are to be soldered.

Be careful to apply minimum amount of flux required so as not to smear it on unwanted areas.

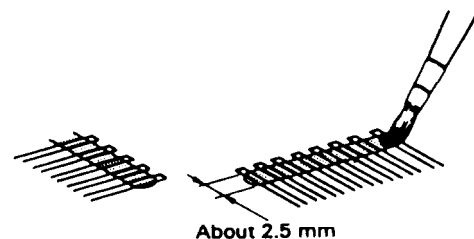


Fig. 4

(5) Temporarily tighten the IC

Carefully align the pattern and IC's leads, so that the IC will be temporarily tightened to the pattern on the four leads at the corners. At this time, soldering is required, but no need to apply soldering material.

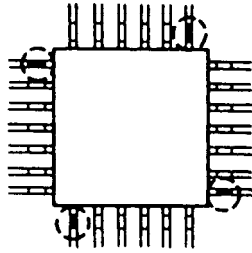


Fig. 5

(6) Apply flux to IC's leads

Apply flux to the areas of IC's leads where soldering is to be performed. Be careful not to smear flux on the root portion of any lead or the body of IC.

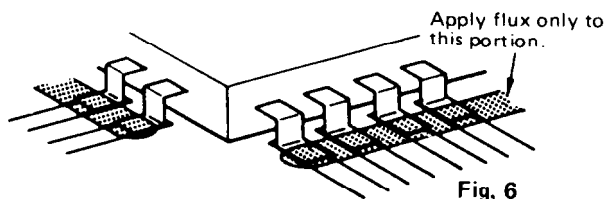


Fig. 6

(7) Soldering

While attaching the tip of the soldering iron to the soldering point as shown in the illustration, feed 2–5mm of soldering wire. Then, slowly move the iron in the direction indicated by the arrow in the illustration, so that the leads will be soldered to the pattern. Move the iron in the rate of approximately 1cm in 5sec. Proceed with your work while confirming a clean fillet of solder is formed on each lead, subsequent to the melting of flux.

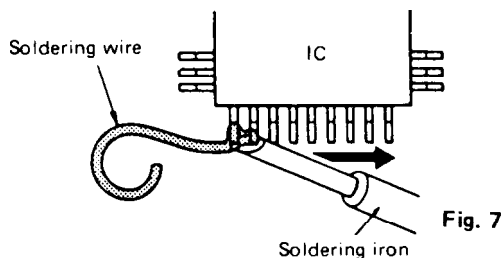


Fig. 7

CAUTION

- 1) If you move the iron too quickly, loose soldering is likely to result.
- 2) Be especially careful when soldering the first lead where loose soldering is most liable to be formed.

(8) Check the results

When soldering of all leads is finished, check the soldered portion on every lead with a magnifying glass. A tester must not be used or checking of any soldered position

NOTE ON COMPACT DISC**• Holding Compact Discs**

Hold Compact Discs by the edges so that you do not touch

the surface of disc. Remember that the side of the disc with the "rainbow" reflection is the side containing the audio information.

Do not attach tape or paper to the label side of the disc and always be careful not to leave fingerprints on the side that is played.

• Storing Compact Discs

Store Compact Discs in a location protected from direct sunlight, high heat and humidity and extremely high and low temperatures. Discs should never be left in the trunk or interior of an automobile in the sun since the temperature can become very high in such a closed environment.

Always store Compact Discs in the holders in which they were sold. Never leave a disc in the player's disc holder for a long period of time.

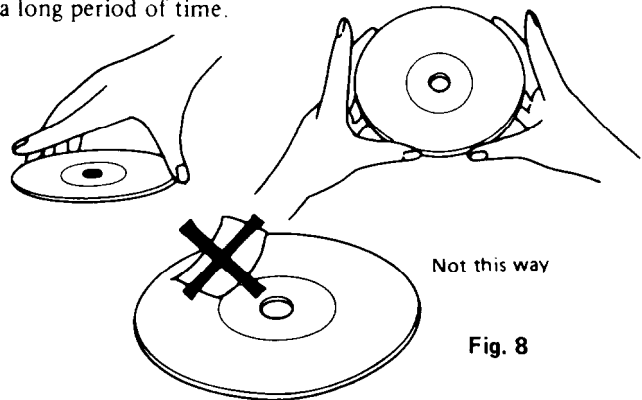


Fig. 8

• Cleaning Compact Discs

Before playing a disc wipe off the playing surface with a soft cloth to remove dust and other soil. Wipe the surface in straight lines from the center of the disc outward, not in a circular motion as you would with a phonograph record.

Do not use benzene, chemical cleansers or phonograph record cleaning solutions to clean Compact Discs. Also avoid static electricity prevention solutions since they can damage the surface of Compact Discs.



Fig. 9

Problems Caused by Dew

Dew can form inside a Compact player when it is brought from a cold environment into a warm room, when a room is rapidly heated and if a player is left in a humid environment.

This dew can prevent the laser pickup from reading the data contained in the pits in the disc surface. If the player does not operate properly because of dew, remove the disc and leave the player's power switch on for about one hour to remove all moisture.

PROTECTION OF EYES FROM LASER BEAM DURING SERVICING

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

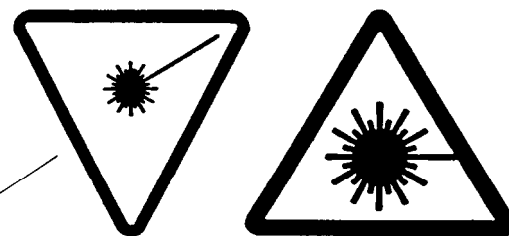
WARNING!!

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

LASER WARNING LABEL

The label shown below are affixed.

1. Warning label



DANGER —INVISIBLE LASER RADIATION WHEN OPEN AND INTERLOCK FAILED OR DEFEATED. AVOID DIRECT EXPOSURE TO BEAM

CAUTION —HAZARDOUS LASER AND ELECTROMAGNETIC RADIATION WHEN OPEN AND INTERLOCK DEFEATED.

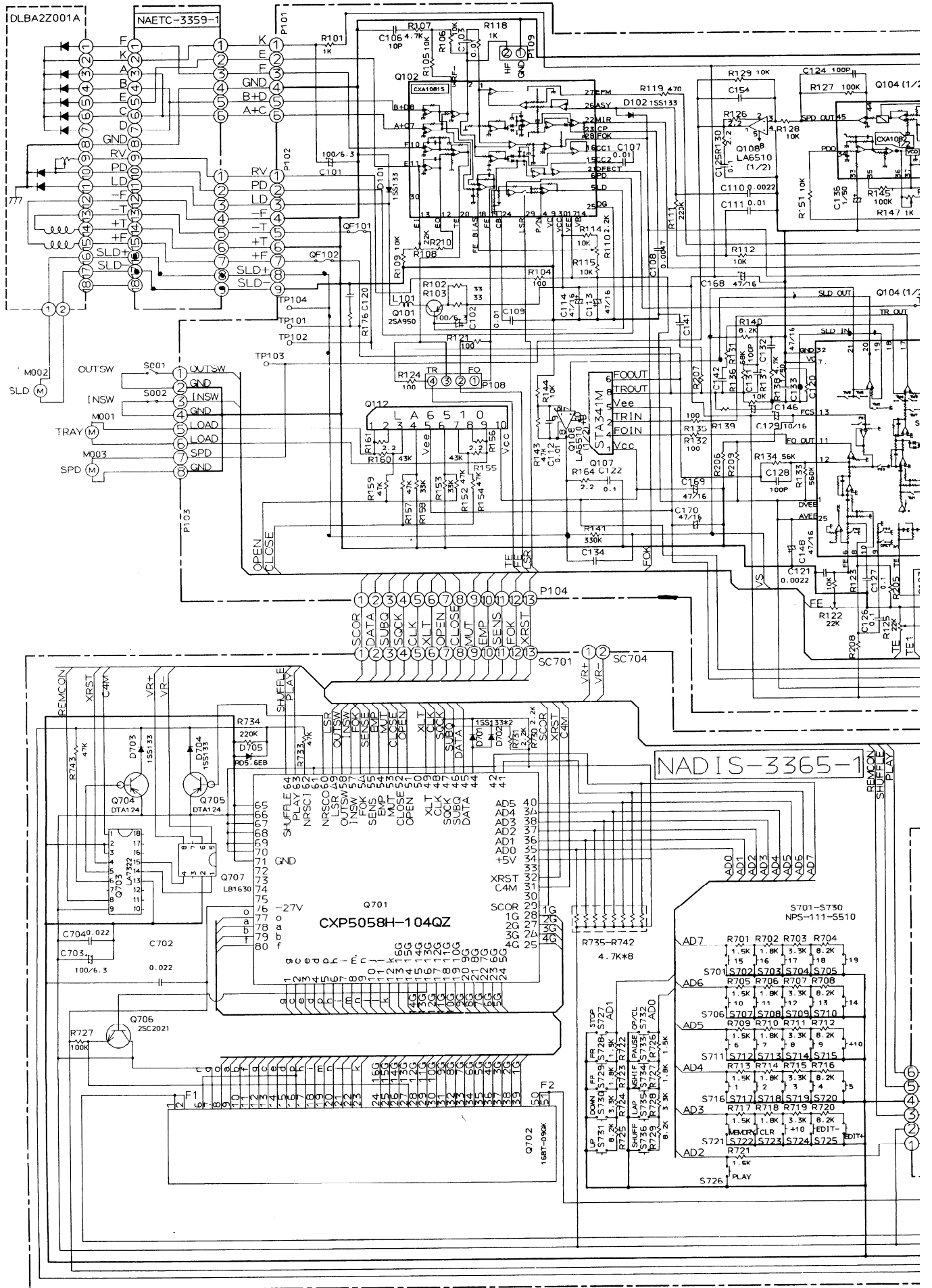
ATTENTION —RAYONNEMENT LASER ET ELECTROMAGNETIQUE DANGEREUX SI OUVERT AVEC L'ECLANCHEMENT DE SECURITE ANNULE. SN29360911

ADVARSEL: USYNLIG LASERSTRÅLING VED ÅBNING, NÅR SIKKERHEDSAFBRYDER ER UDE AF FUNKTION. UNDGÅ UDSÆTTELSE FOR STRÅLING.

Photo 1

SCHEMATIC DIAGRAM

A
B
C
D
E
F
T



SCHEMATIC DIAGRAM

A

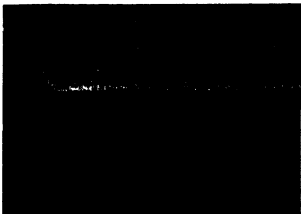
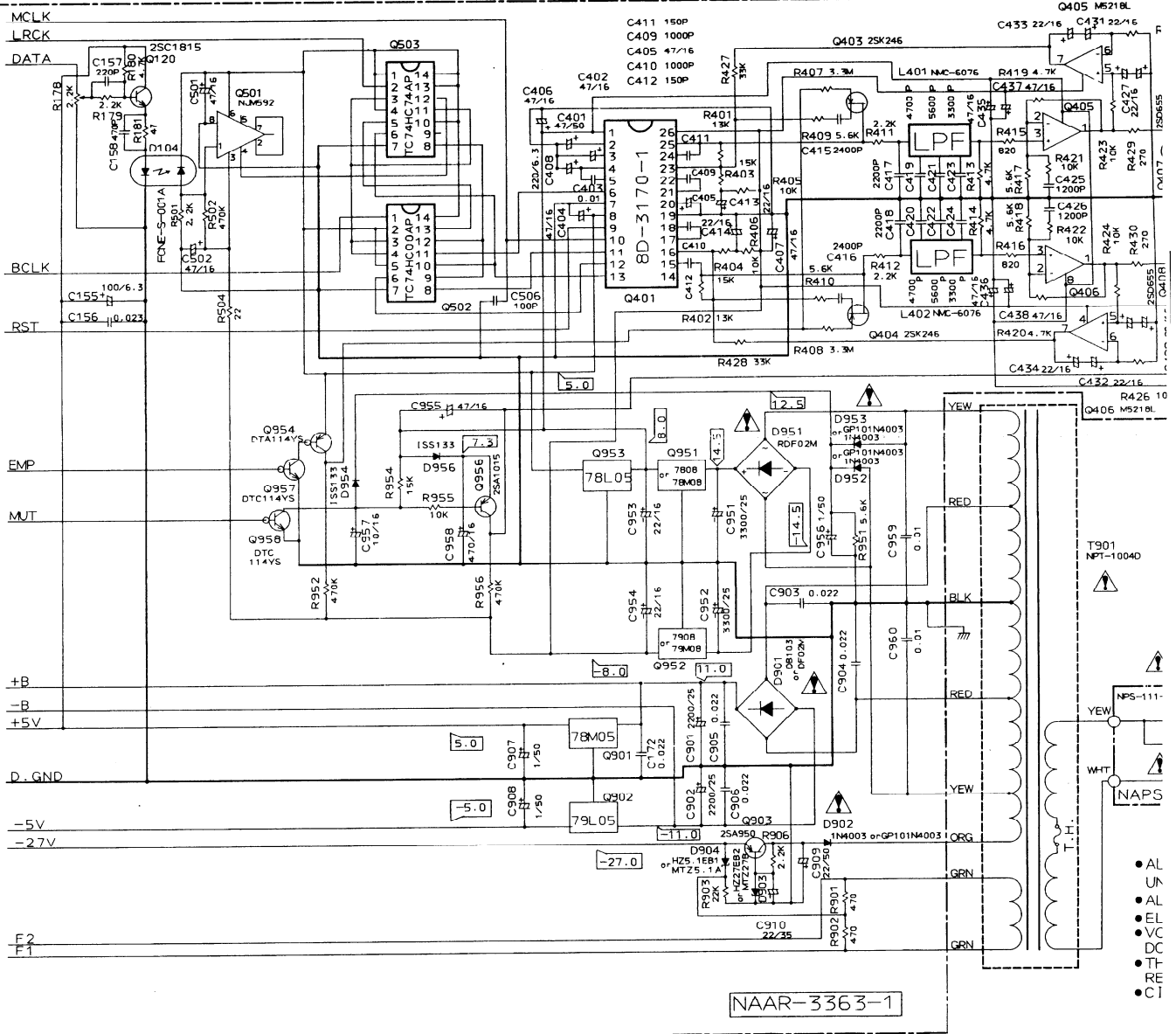
B

C

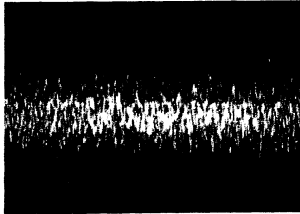
D

E

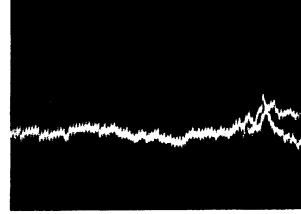
F



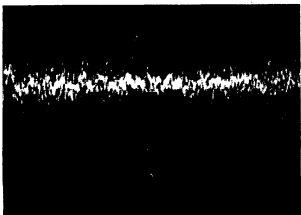
TP RF (RF signal)
Vertical : 1V/div.
Horizontal : 1 ms/div.
DC, Ground: Center



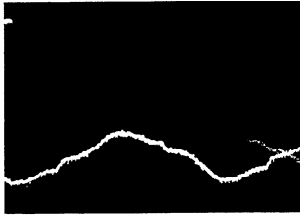
TP TO (Tracking out)
Vertical : 0.2V/div.
Horizontal : 0.5 ms/div.
DC, Ground: Center



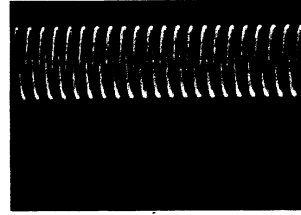
TP SPD (Spindle out)
Vertical : 1V/div.
Horizontal : 5 ms/div.
DC, Ground: Center



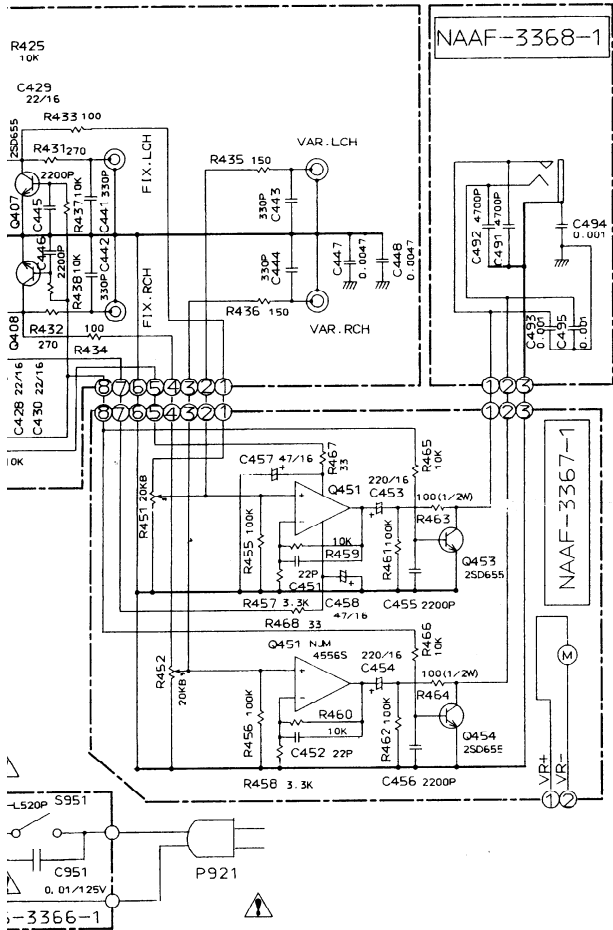
TP FO (Focus out)
Vertical : 0.5V/div.
Horizontal : 0.5 ms/div.
DC, Ground: Center



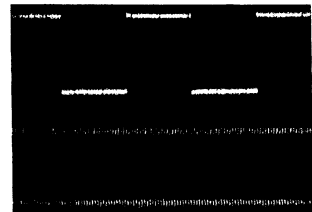
TP SLD (Slide out)
Vertical : 2V/div.
Horizontal : 20 ms/div.
Top : Real
Bottom : Storage



P110 PLCK
Vertical : 0.5V/div.
Horizontal : 0.2 μs/div.
DC, Ground: Center



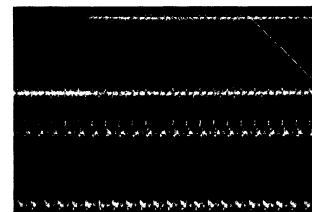
ALL RESISTORS ARE IN OHMS 1/4WATT UNLESS OTHERWISE NOTED.
 ALL CAPACITORS ARE IN $\mu\text{F}/50\text{V}$ UNLESS OTHERWISE NOTED.
 ELECTROLYTIC CAPACITORS (#) ARE IN $\mu\text{F}/\text{WV}$.
 VOLTAGE (MEASURED WITH V.T.V.M) MEASURED WITH \square V IS DC VOLTAGE. (NO INPUT)
 THE COMPONENTS IDENTIFIER \triangle ARE CRITICAL FOR SAFETY. REPLACE ONLY WITH PART NUMBER SPECIFIED.
 THE CIRCUIT IS SUBJECT TO CHANGE FOR IMPROVEMENT.



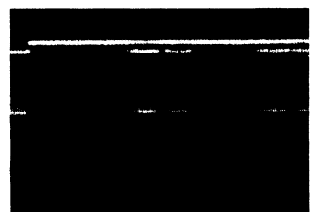
DAC UNIT Pins 13/12
 Vertical : 2V/div.
 Horizontal : 5 $\mu\text{s}/\text{div}$.
 AC



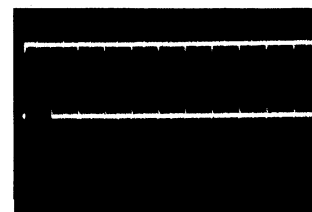
XLT
 Vertical : 2V/div.
 Horizontal : 0.5 ms/div.



DAC UNIT Pins 13/12
 Vertical : 2V/div.
 Horizontal : 1 $\mu\text{s}/\text{div}$.
 AC



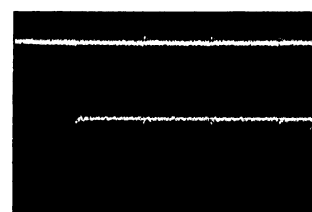
CLK
 Vertical : 2V/div.
 Horizontal : 50 $\mu\text{s}/\text{div}$.
 DC, Ground: Center



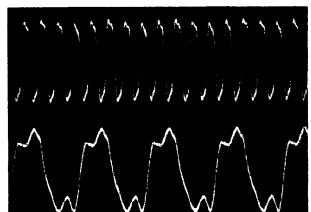
DAC Pins 11/6
 Vertical : 2V/div.
 Horizontal : 0.5 ms/div.
 DC, Ground: Center



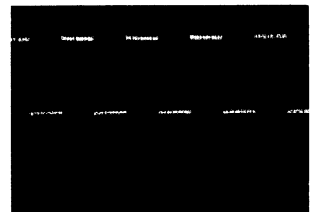
MLCK (Q117 Pin 10/Q123 Pin 8)
 Vertical : 5V/div.
 Horizontal : 0.1 $\mu\text{s}/\text{div}$.



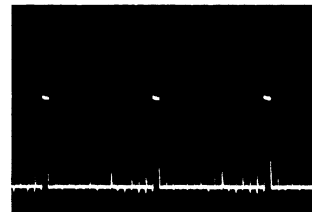
DAL
 Vertical : 2V/div.
 Horizontal : 0.2 $\mu\text{s}/\text{div}$.
 DC, Ground: Center



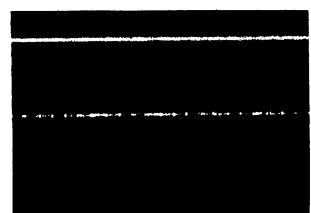
Vertical : 2V/div.
 Horizontal: 0.1 $\mu\text{s}/\text{div}$.
 X'tal (Q118 Pin 4)/C4M (R164)
 AC



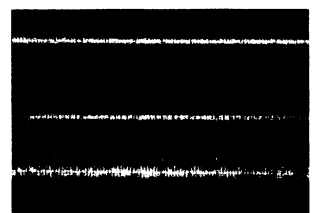
LRCK (Q109 Pin 80)
 Vertical : 2V/div.
 Horizontal : 10 $\mu\text{s}/\text{div}$.
 DC, Ground: Center



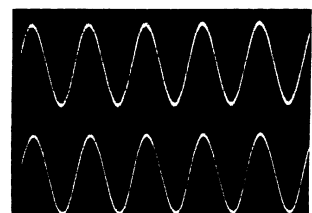
Grid
 Vertical : 10V/div.
 Horizontal : 1 ms/div.
 DC, Ground: Center



DATA (Microprocessor)
 Vertical : 2V/div.
 Horizontal : 0.5 ms/div.
 DC, Ground: Center



Q503 Pin 2/Pin 11
 Vertical : 2V/0.5V
 Horizontal : 0.5 $\mu\text{s}/\text{div}$.



DAC OUT Pins 14/25
 V: 2V
 H: 0.5 ms

2. Certification label (UD: 120V model)

This label is located on the back panel.



Photo 2

3. Class 1 label (Other models)

This label is located on the back panel.

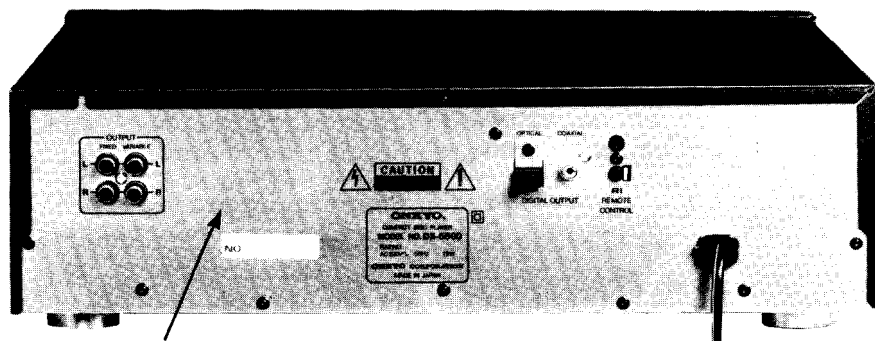


Photo 3

ADVARSEL

"CLASS 1 LASER
PRODUCT"

Denne mærkning er anbragt på apparatets højre side og indikerer, at apparatet arbejder med laserstråler af klasse 1, hvilket betyder, at der anvendes laserstråler af svageste klasse, og at man ikke på apparatets yderside kan blive udsat for utilladelig kraftig stråling.

APPARATET BØR KUN ÅBNES AF FAGFOLK MED SÆRLIGT KENDSKAB TIL APPARATER MED LASERSTRÅLER!

Indvendigt i apparatet er anbragt den her gengivne advarselsmærkning, som advarer imod at foretage sådanne indgreb i apparatet, at man kan komme til at udsætte sig for laserstråling.

ADVARSEL USYNLIG LASERSTRÅLING
VED ÅBNING, NÅR SIKKERHEDSAF
BRYDER ER UDE AF FUNKTION
UNDGÅ UDSÆTTELSE FOR STRÅLING

VAROITUS! Laitte sisältää laserdiodin, joka lähettää (näkymätöntä) silmille vaarallista lasersäteilyä.

Fig. 10

CAUTION ON REPLACEMENT OF PICKUP

The laser diode in the optical pick-up block is so sensitive to static electricity, surge current and etc. that the components are liable to be broken down or its reliability remarkably deteriorated.

During repair, carefully take the following precautions. (The following precautions are included in the service parts).

PRECAUTIONS

1. Ground for the work-desk.

Place a conductive sheet such as a sheet of copper (with impedance lower than $10^6 \Omega$) on the work-desk and place the set on the conductive sheet so that the chassis.

2. Grounding for the test equipment and tools.

Test equipments and toolings should be grounded in order that their ground level is the same the ground of the power source.

3. Grounding for the human body.

Be sure to put on a wrist-strap for grounding whose other end is grounded.

Be particularly careful when the workers wear synthetic fiber clothes, or air is dry.

4. Select a soldering iron that permits no leakage and have the tip of the iron well-grounded.

5. Do not check the laser diode terminals with the probe of a circuit tester or oscilloscope.

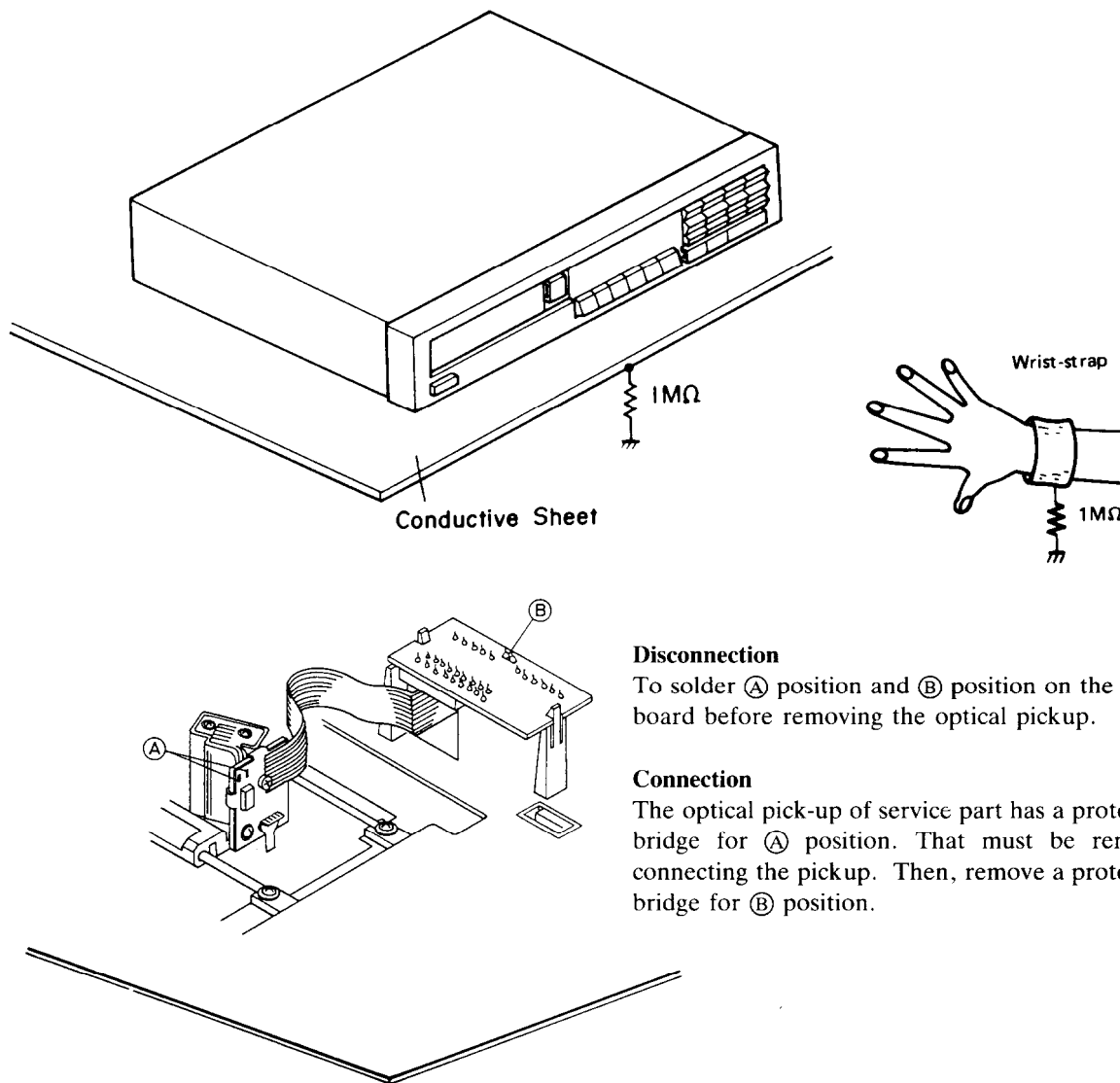


Fig. 11

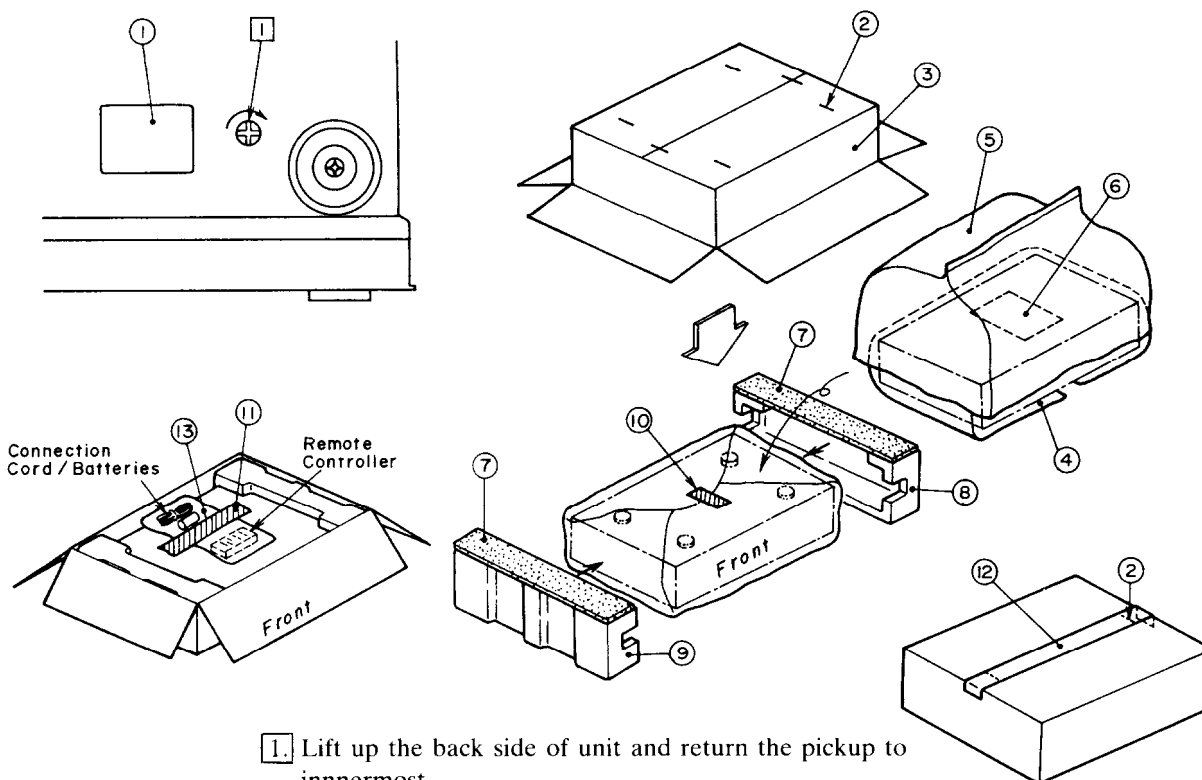
Disconnection

To solder (A) position and (B) position on the terminal PC board before removing the optical pickup.

Connection

The optical pick-up of service part has a protective solder bridge for (A) position. That must be removed after connecting the pickup. Then, remove a protective solder bridge for (B) position.

PACKING VIEW

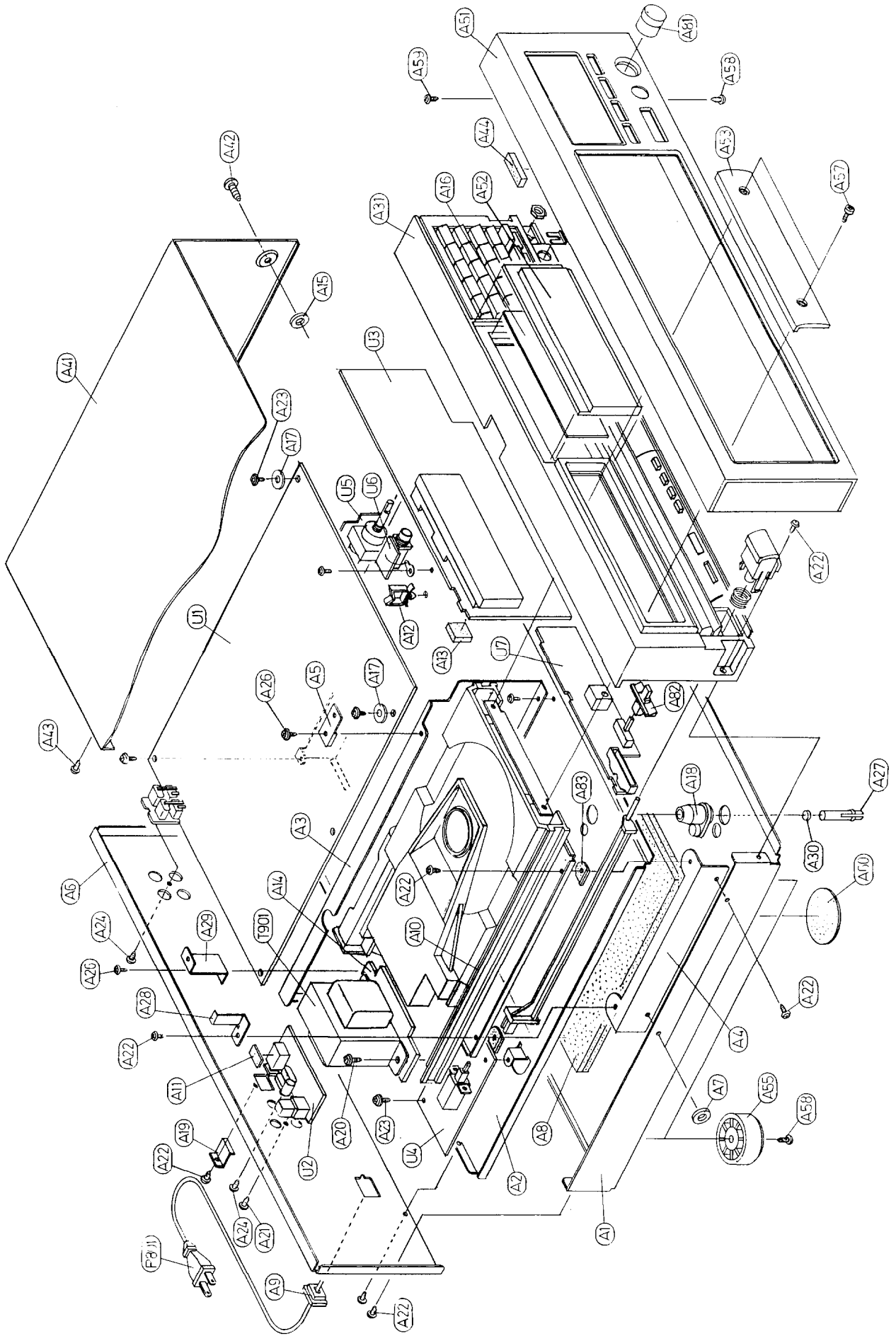


1. Lift up the back side of unit and return the pickup to innermost.
Use a screwdriver to turn the lock lever (about 90°) in the round hole in the direction of arrow. (Clockwise)

| REF. NO. | PART NO. | DESCRIPTION |
|----------|------------|-----------------------------|
| 1 | 29361123 | Label |
| 2 | 282301 | Sealing hook |
| 3 | 29051748 | Master carton box |
| | 29051758A | Master carton box (PX) |
| 4 | 29095012-1 | 500×800mm, Protection sheet |
| 5 | 29100105 | 550×680mm, Poly-vinyl bag |
| 6 | 29361047 | Label, sheet |
| 7 | 29095572 | Sheet |
| 8 | 29091264A | Pad L |
| 9 | 29091265A | Pad R |
| 10 | 261504 | Adhesive tape |
| 11 | 29110071 | Damplon tape |
| 12 | 260012 | Damplon tape |
| 13 | | Accessary bag ass'y |
| | 29341301 | Instruction manual (D/PX) |
| | 29341348 | Instruction manual (G/U) |
| | 2010097 | Connection cord |
| | 24140028 | RC-122C, Remote controller |
| | 3010054 | UM-3, Two batteries |
| | 2010169 | Cord RI |
| | 29365019 | Warranty card (N) |
| | 29365021 | Warranty card (PX) |
| | 29358002F | Service station list (N/PX) |
| | 25055040 | CV-K-2, Conversion plug (U) |
| | 25055251 | CV-CP, Conversion plug (PX) |
| | 29100097 | Poly-vinyl bag |
| | 29091309 | Pad, tray panel |

NOTE: (D): Only 120V model
(G): Only 220V/240V models
(U): Only worldwide model
(PX): Only PX model
(N): Only U.S.A. model

CHASSIS-EXPLODED VIEW



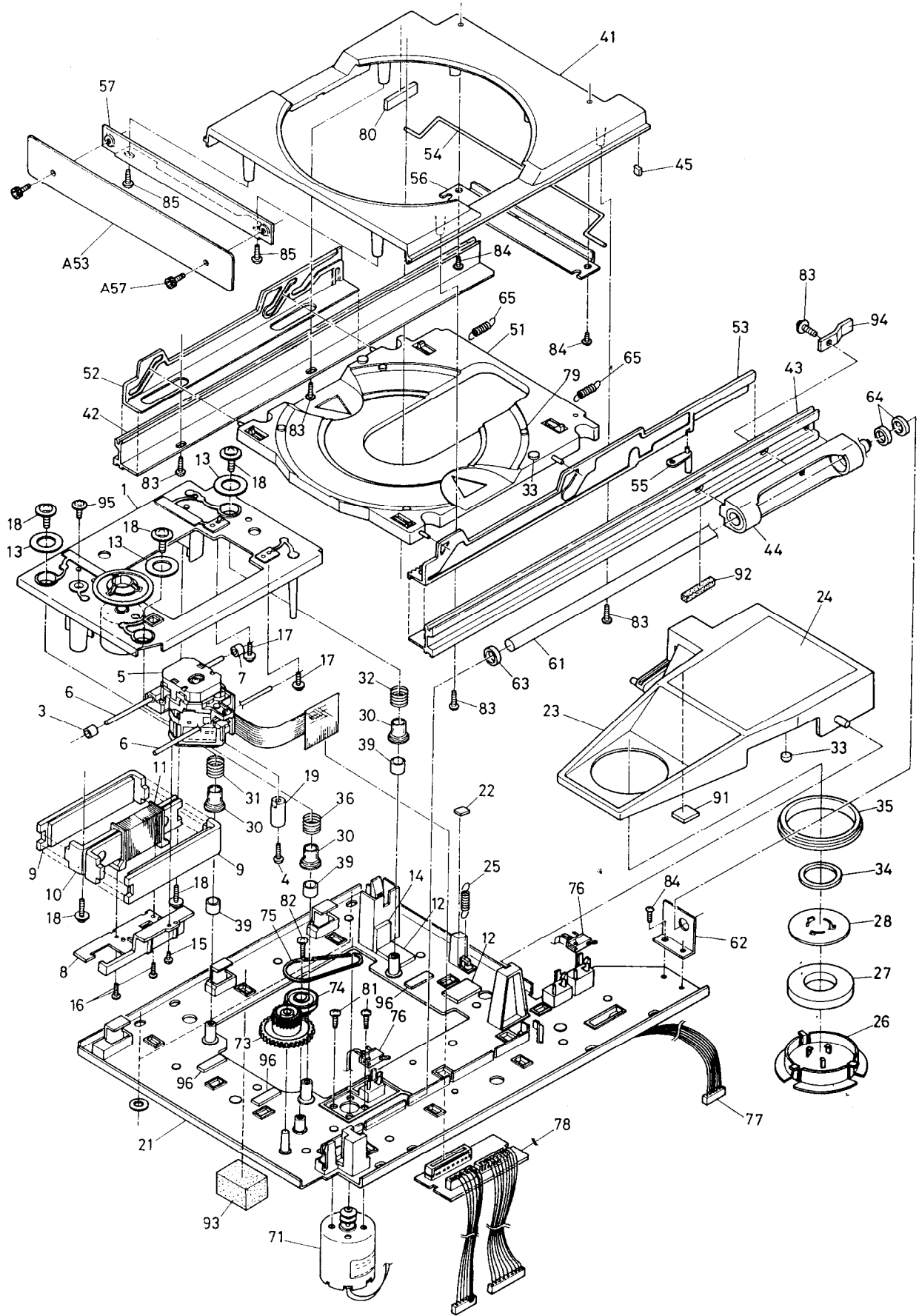
PARTS LIST

| REF. NO. | PART NO. | DESCRIPTION | REF. NO. | PART NO. | DESCRIPTION |
|----------|------------|------------------------------|----------|---------------------|--|
| A1 | 27100170A | Chassis | P801 | 253112A | AS-UC-4# 18, Power supply cord (D/PX) |
| A2 | 27100169A | Chassis U | | 253148 or 253150 | AS-CEE 250V 2.5A, Power supply cord (G/W) |
| A3 | 27130542 | Bracket C | | 253118 | AS-SAA, Power supply cord (OA) |
| A4 | 27130543B | Bracket L | S902 | 253104 25065168 | Power supply cord (OB) HXW0131-01-060, Voltage selector switch (W) |
| A5 | 27141311 | Bracket T | T901 | 2300341 | NPT-1004D, Power transformer (D) |
| A6 | 27121162 | Back panel (D) | | 2300342 | NPT-1004G, Power transformer (G) |
| | 27121163 | Back panel (G) | | 2300343 | NPT-1004ADGO, Power transformer (W/PX) |
| | 27121164 | Back panel (W/PX) | | 2300344 | NPT-1004Q, Power transformer (QA/OB) |
| | 27121205 | Back panel (QA/OB) | | 1H048563-1 | NAAR-3363-1, Main circuit pc board ass'y (D) |
| A7 | 27175011C | Leg (Cushion) | | 1H048563-1A | NAAR-3363-1A, Main circuit pc board ass'y (G/W/QA/OB/PX) |
| A8 | 28140873 | Cushion | U1 | 1H048564-1 | NADG-3364-1, Opto./digital output pc board ass'y |
| A9 | 27300750 | Strainrelief | | 1H048565-1 | NADIS-3365-1, Display circuit pc board ass'y |
| A10 | 27273101A | Joint, power | | 1H048566-1 | NAPS-3366-1, Power switch pc board ass'y |
| A11 | 27270278 | Spacer | | 1H048567-1 | NAAF-3367-1, Headphone amplifier pc board ass'y |
| A12 | 27300833 | WS-2NS, Clamper | | 1H048568-1 | NAAF-3368-1, Headphone terminal pc board ass'y |
| A13 | 28140903 | Cushion | | 1H048569-1 | NASW-3369-1, Switch pc board ass'y |
| A14 | 27270214A | Spacer | | 260208 | Binder |
| A15 | 27270212 | Spacer | | | |
| A16 | 28133202 | Back plate | | | |
| A17 | 870060 | W3×15, Flat washer | | | |
| A18 | 27267558-1 | Guide | | | |
| A19 | 27141281 | Bracket | | | |
| A20 | 830440109 | 4TTT+10C (BH), Tapping screw | | | |
| A21 | 8343430108 | 3TTS+10B (BC), Tapping screw | | | |
| A22 | 8343430088 | 3TTS+8B (BC), Tapping screw | | | |
| A23 | 831130088 | 3TTW+8B, Tapping screw | | | |
| A24 | 834230108 | 3TTS+10B (Ni), Nickel screw | | | |
| A25 | 8343430068 | 3TTS+6B (BC), Tapping screw | | | |
| A26 | 8384330088 | 3TTB+8B (BC), Tapping screw | | | |
| A27 | 27301184 | Lock pin | | | |
| A28 | 27141310 | Bracket, rail | | | |
| A29 | 27141309A | Bracket | | | |
| A30 | 28140918 | Cushion | | | |
| A31 | 27110433 | Front bracket ass'y | | | |
| A41 | 28184401 | Top cover — | | | |
| A42 | 8384440089 | 4TTB+8C (BC), Tapping screw | | | |
| A43 | 8344330088 | 3TTS+8B (BC), Tapping screw | | | |
| A44 | 28140408 | t3×10×36, Cushion | | | |
| A51 | 1H048121 | Front panel ass'y | | | |
| A52 | 28191477 | Clear plate | | | |
| A53 | 27210987 | Panel, door (Tray panel) | | | |
| A55 | 27175153 | Leg | | | |
| A57 | 84643008 | 3HSB×8FN (BC), Special bolt | | | |
| A58 | 8344330088 | 3TTS+8B (BC), Tapping screw | | | |
| A59 | 8334330080 | 3TTP+8P (BC), Tapping screw | | | |
| A60 | 27270255 | Spacer | | | |
| A81 | 28323433 | Knob | | | |
| A82 | 28323152 | Knob MODE | | | |
| A83 | 27301187 | Cushion L | | | |

NOTE: (D): Only 120V model
(G): Only 220V model
(W): Only Worldwide model
(PX): Only PX model
(QA): Only Australian model
(OB): Only British model

NOTE: THE COMPONENTS IDENTIFIED BY MARK
▲ ARE CRITICAL FOR RISK OF FIRE AND
ELECTRIC SHOCK. REPLACE ONLY WITH
PART NUMBER SPECIFIED.

MECHANISM-EXPLODED VIEW



PARTS LIST

| REF. NO. | PART NO. | DESCRIPTION | REF. NO. | PART NO. | DESCRIPTION |
|----------|---------------------|-----------------------------|----------|------------|---------------------------------------|
| 1 | 1H048901 | Spindle motor ass'y | 42 | 27301135 | Rail L |
| 3 | 27270264-1 | Spacer | 43 | 27301136 | Rail R |
| 4 | 82542010 | 2B+10F(BC), Binding screw | 44 | 27301126 | Guide bearing |
| 5 | (24110003) | DLBA2Z2001A, Optical pickup | 45 | 28140892 | Cushion T |
| 6 | 27260286 | Shaft | 51 | 27301137B | Disc plate |
| 7 | 27270264-1 | Spacer | 52 | 27301138 | Cam plate L |
| 8 | 27301129B | Plate | 53 | 27301139A | Cam plate R |
| 9 | 28181020 | Magnet ass'y | 54 | 27260280A | Shaft |
| 10 | 27301152 | York ass'y | 55 | 27301140A | Stopper |
| 11 | 24502236A | Coil | 56 | 27301141A | Plate |
| 12 | 28140912 | Cushion A | 57 | 27141275 | Bracket |
| 13 | 28140913 | Cushion B | 61 | 27260281A | Shaft |
| 14 | 28140914 | Cushion C | 62 | 27141274 | Bracket |
| 15 | 82542006 | 2B+6F(BC), Binding screw | 63 | 27270265A | Spacer |
| 16 | 833420068 | 2TTP+6B(BC), Tapping screw | 64 | 27270276 | Spacer |
| 17 | 831430100 | 3TTW+10P(BC), Tapping screw | 65 | 27180418 | Spring |
| 18 | 801414 | Special screw | 71 | 1H048902 | Disc motor ass'y |
| 19 | 27301179 | Weight PU | 73 | 27301142 | Pulley gear |
| 21 | 27100166C | Chassis L | 74 | 27301143A | Flat wheel |
| 22 | 28140891 | Cushion A | 75 | 27301162 | Rubber belt |
| 23 | 27301131B | Arm | 76 | 25065322 | NMS-1214, Microswitch |
| 24 | 29360911 | Label LASER 3 | 77 | 2000888 | Socket ass'y |
| 25 | 27180402 | Spring | 78 | 1H048559-1 | NAETC-3359-1, Terminal pc board ass'y |
| 26 | 27301132A | Cap CH | 79 | 27301180 | Cushion |
| 27 | 28181019A | Magnet CH | 81 | 82143004 | 3P+4FN(BC), Pan head screw |
| 28 | 27301133 | York CH | 82 | 831126060 | 2.6TTW+6P, Tapping screw |
| 30 | 27301134 | Cushion rubber | 83 | 838430088 | 3TTB+8B(BC), Tapping screw |
| 31 | 27180403A | Spring F | 84 | 834430068 | 3TTS+6B(BC), Tapping screw |
| 32 | 27180404B | Spring R | 85 | 834430088 | 3TTS+8B(BC), Tapping screw |
| 33 | 28140860 | Cushion | 91 | 28140908 | Cushion K |
| 34 | 27270277 | Spacer | 92 | 28140909 | Cushion L |
| 35 | 27301172 | Cushion rubber | 93 | 28140910 | Cushion F |
| 36 | 28180417 | Spring G | 94 | 27141317 | Bracket, switch |
| 37 | 27301182 | Cushion L | 95 | 834440168 | 4TTS+16B(BC), Tapping screw |
| 39 | 28140917 | Tube | 96 | 28140911 | Cushion P |
| 41 | 27301124 | Disc tray | | | |

DISASSEMBLING PROCEDURES

Top cover

Remove a screw holding the back panel and top cover.
Remove the four screws holding the top cover and chassis.

Main circuit PC board

Remove the top cover.
Remove the eight screws holding the back panel and chassis.
Remove a screw holding the bracket C and opto./digital output PC board.
Remove four screws holding the main PC board and chassis.

Tray panel

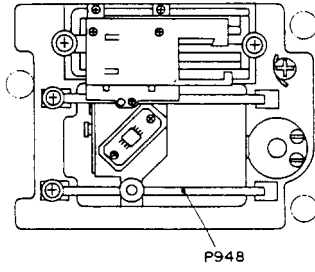
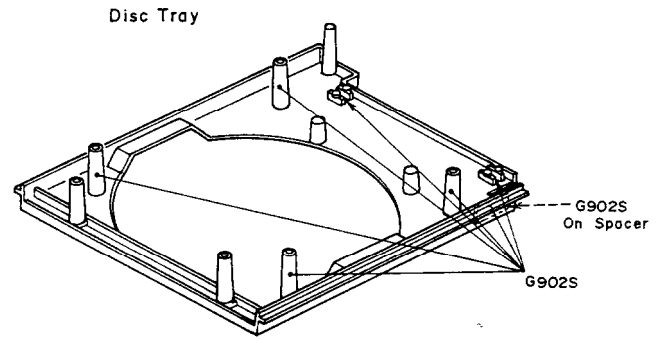
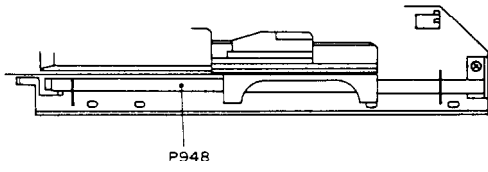
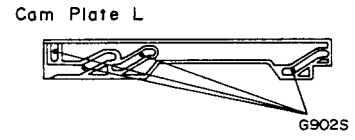
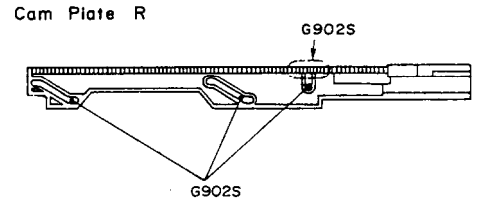
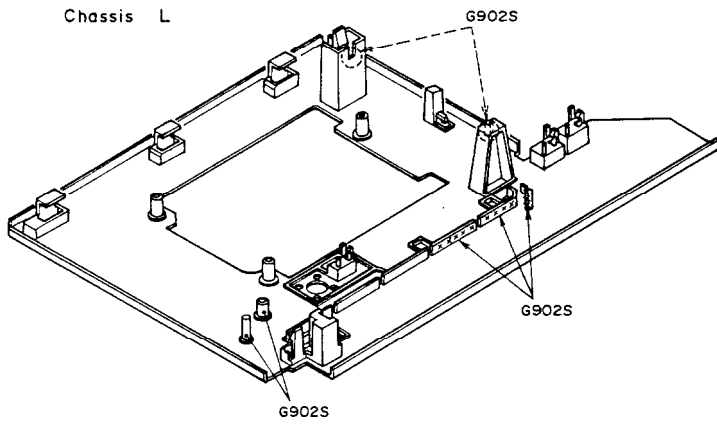
Use a hexagon wrench (2.5mm), remove the two hexagon bolt holding the tray panel and mechanical chassis.

Mechanism ass'y

Remove the tray panel.
Remove the four screws holding the mechanism and chassis.

Caution: When disconnect the sockets P101 and P102 on the main circuit PC board, solder the B point on the terminal PC board or the A point on the pickup. (Refer page 6) After remove the flexible PC board of pickup from terminal PC board, remove the terminal PC board.

LUBRICATION



ADJUSTMENT PROCEDURES

Instruments required

Dual trace oscilloscope, Frequency counter, AF oscillator, Test disc (SONY YEDS-18), AC voltmeter, Jitter meter, and Socket P4(Part no. 25050138)

1. VCO frequency adjustment

Connect the frequency counter to terminal P110.

Turn the power switch to ON.(No load the disc.)

Adjust R147 until the frequency counter reading becomes $4322 \pm 5\text{kHz}$.

After adjustment, disconnect the frequency counter.

2. Focus offset adjustment

Load the test disc YEDS-18 on the tray and play the track 2.

Connect the oscilloscope or jitter meter to terminal P109.
(Oscilloscope)

Adjust R110 until a clear trace of waveform pattern as shown photo 1 appear on the oscilloscope.

When the amount of jitter is broad, set R110 to mechanical center.

(Jitter meter)

Adjust R110 until the jitter meter reading becomes minimum.(Less than 10ns.)

After adjustment, disconnect the oscilloscope or jitter meter.

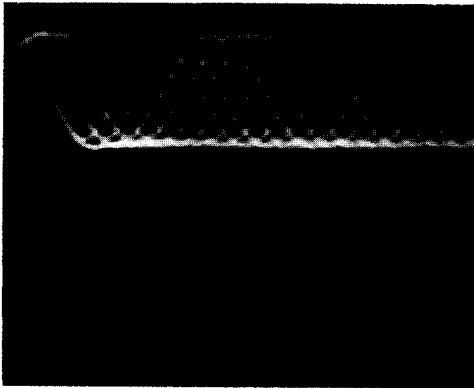
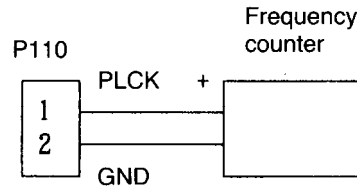
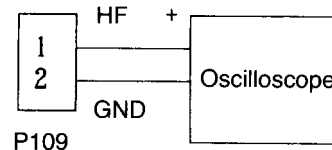
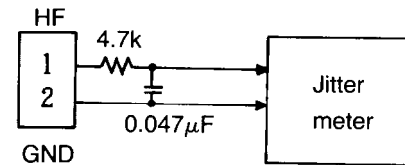


Photo 1



Oscilloscope range
Vertical : 0.5V/div.
Horizontal : 0.2 $\mu\text{s}/\text{div}$.
DC, Ground: Center



3. Tracking offset adjustment

Connect the short clip between TP105 and Ground of digital section.

Turn R125 to minimum position.(Counter clockwise)

Connect the oscilloscope between pin 3 (TR) of P108 and pin 2 (GND) of P109.

Adjust R108 until the center of tracking error signal on the oscilloscope becomes GND level.

Turn R125 to the mechanical center.

After adjustment, disconnect the oscilloscope and short clip.

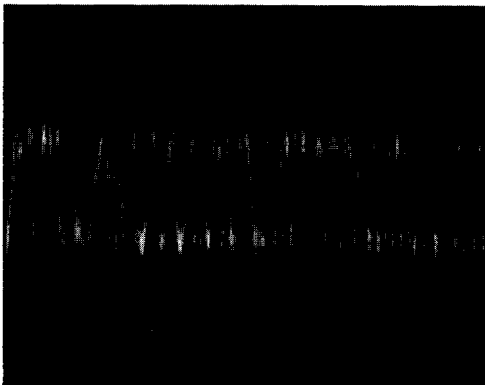
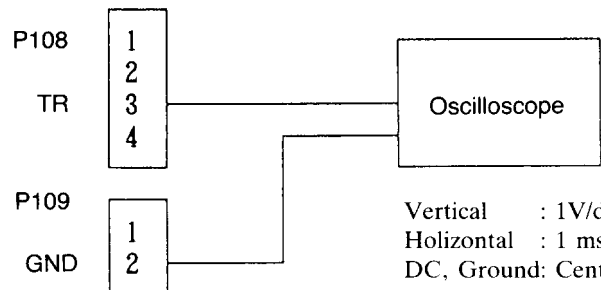


Photo 2



Vertical : 1V/div.
Horizontal : 1 ms/div.
DC, Ground: Center

4. Focus gain adjustment

Set the output of AF oscillator to 800Hz, 1~1.5Vp-p.

Play the track 2 of test disc.

Connect the oscilloscope and the AF oscillator as shown below.

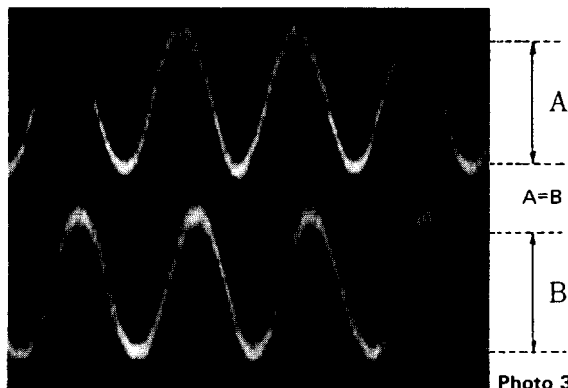
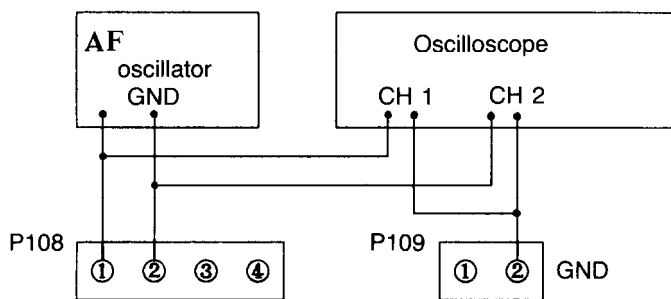


Photo 3

Adjust R122 until 800Hz components of channels 1 and 2 on oscilloscope become same level.

After adjustment, disconnect the AF oscillator and the oscilloscope.



Vertical : 0.5V/div.
Horizontal: 0.5 ms/div.

5. Tracking gain adjustment

Set the output of AF oscillator to 1.2kHz, 1~1.5Vp-p.

Play the track 2 of test disc.

Connect the oscilloscope and the AF oscillator as shown below.

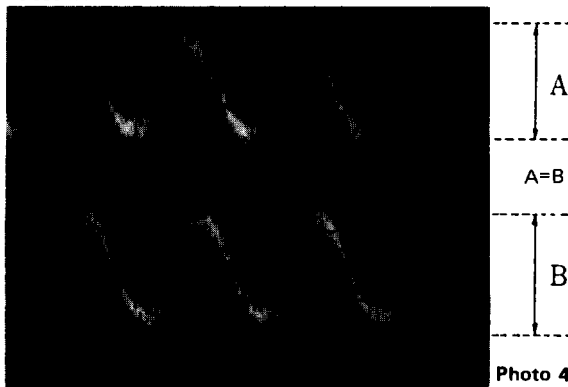
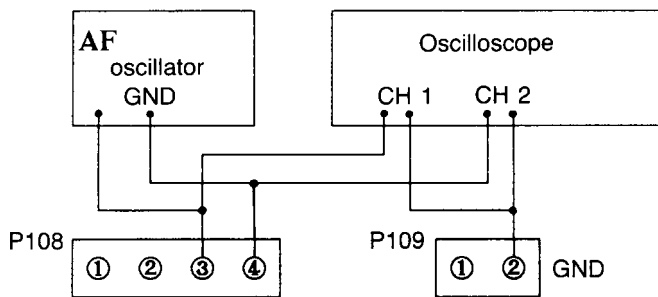


Photo 4

Adjust R125 until 1.2kHz components of channels 1 and 2 on oscilloscope become same level.

After adjustment, disconnect the AF oscillator and the oscilloscope.



Vertical : 0.5V/div.
Horizontal: 0.2 ms/div.

6. Opto. transmitter system adjustment

Connect the oscilloscope to test point TP401.

Play the track 2 of test disc.

Adjust R178 until the cross point of data waveform as shown photo 5 becomes on the top side.

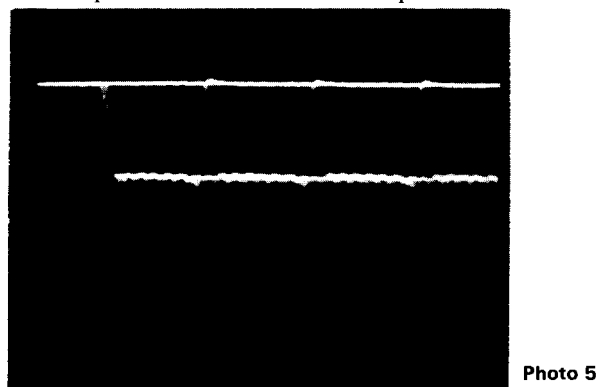
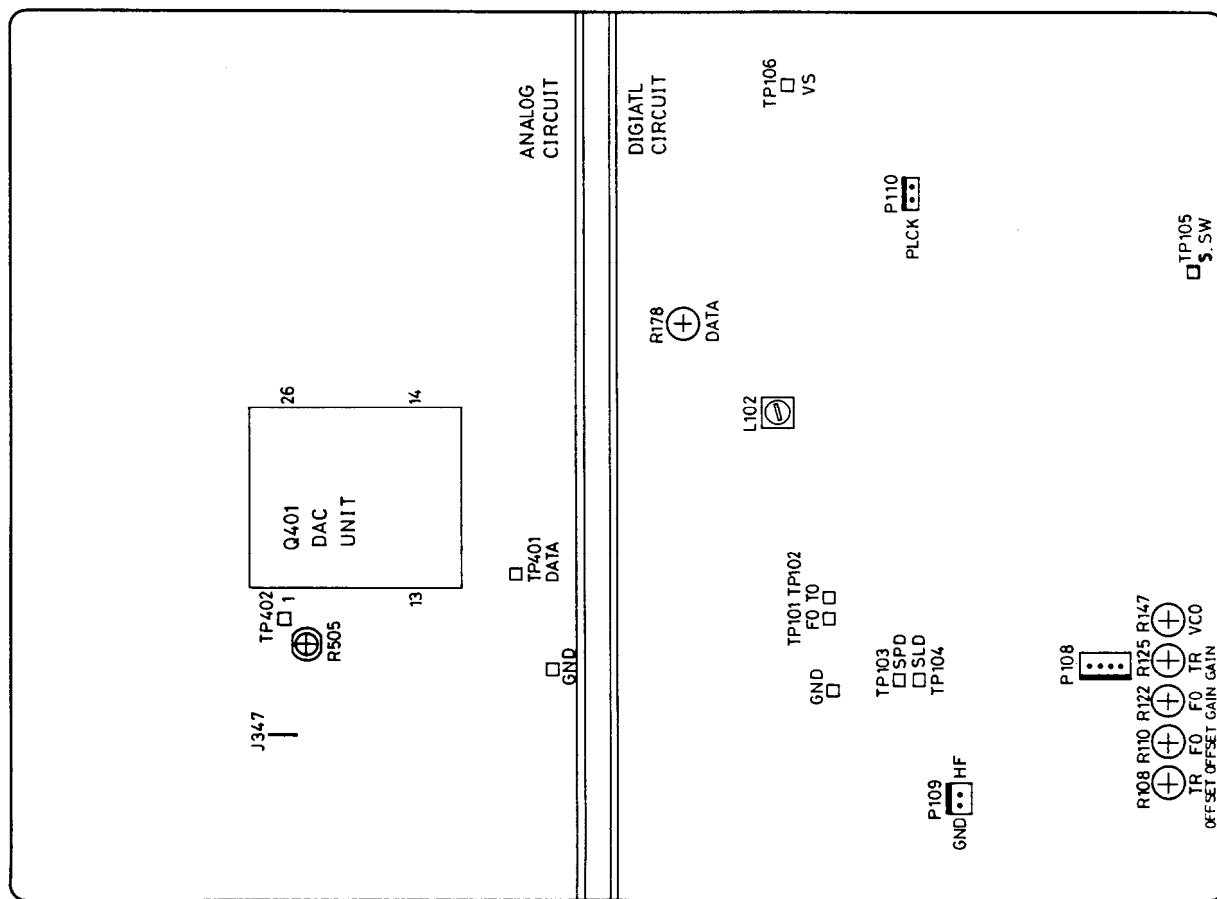


Photo 5

Vertical : 2V/div.
Horizontal : 0.2 μ s/div.
DC, Ground: Center



Adjustment point

7. DAC power supply voltage adjustment

Connect the DC voltmeters to J347 and TP402.

(Connect the DC voltmeter to the leg of semi-fixed resistor when TP402 is not on the pc board.)

(Refer adjustment point)

Adjust R505 until the voltage discrepancy between TP402 and J347 is 0.1V.(TP402>J347)

PRINTED CIRCUIT BOARD-PARTS LIST

MAIN CIRCUIT PC BOARD (NAAR-3363-1/1A)

| CIRCUIT NO. | PART NO. | DESCRIPTION | CIRCUIT NO. | PART NO. | DESCRIPTION |
|-------------|---------------------------|----------------------------------|-------------|-----------|--------------------------------------|
| | | | | | Capacitors |
| | | | C101, C102 | 354721019 | 100 μ F, 6.3V, Elect. |
| | | | C103, C107 | 371121034 | 0.01 μ F \pm 5%, 50V, Mylar |
| | | | C108 | 371124724 | 4700pF \pm 5%, 50V, Mylar |
| | | | C109 | 371121034 | 0.01 μ F \pm 5%, 50V, Mylar |
| | | | C110 | 371122224 | 2200pF \pm 5%, 50V, Mylar |
| | | | C111, C112 | 371121034 | 0.01 μ F \pm 5%, 50V, Mylar |
| | | | C113, C114 | 354721019 | 100 μ F, 6.3V, Elect. |
| | | | C121 | 371122224 | 2200pF \pm 5%, 50V, Mylar |
| | | | C122 | 371121044 | 0.1 μ F \pm 5%, 50V, Mylar |
| | | | C123 | 371122234 | 0.022 μ F \pm 5%, 50V, Mylar |
| | | | C125-C127 | 371121044 | 0.1 μ F \pm 5%, 50V, Mylar |
| | | | C129 | 354741009 | 10 μ F, 16V, Elect. |
| | | | C130 | 371123334 | 0.033 μ F \pm 5%, 50V, Mylar |
| | | | C132 | 354744709 | 47 μ F, 16V, Elect. |
| | | | C133 | 354780339 | 3.3 μ F, 50V, Elect. |
| | | | C135 | 371121034 | 0.01 μ F \pm 5%, 50V, Mylar |
| | | | C136 | 354780109 | 1 μ F, 50V, Elect. |
| | | | C138 | 354744709 | 47 μ F, 16V, Elect. |
| | | | C139 | 354782299 | 0.22 μ F, 50V, Elect. |
| | | | C140, C180 | 371121034 | 0.01 μ F \pm 5%, 50V, Mylar |
| | | | C142 | 371121044 | 0.1 μ F \pm 5%, 50V, Mylar |
| | | | C146 | 354780229 | 2.2 μ F, 50V, Elect. |
| | | | C148 | 354721019 | 100 μ F, 6.3V, Elect. |
| | | | C149 | 354781099 | 0.1 μ F, 50V, Elect. |
| | | | C150 | 371122234 | 0.022 μ F \pm 5%, 50V, Mylar |
| | | | C151 | 371122224 | 2200pF \pm 5%, 50V, Mylar |
| | | | C152, C155 | 354721019 | 100 μ F, 6.3V, Elect. |
| | | | C162 | 352942206 | 22 μ F, 16V, Non-polar elect. |
| | | | C166 | 354744709 | 47 μ F, 16V, Elect. |
| | | | C168-C171 | 354744709 | 47 μ F, 16V, Elect. |
| | | | C173, C175 | 354744709 | 47 μ F, 16V, Elect. |
| | | | C177 | 354744709 | 47 μ F, 16V, Elect. |
| | | | C179 | 354780479 | 4.7 μ F, 50V, Elect. |
| | | | C401 | 354721019 | 100 μ F, 6.3V, Elect. |
| | | | C402 | 354744709 | 47 μ F, 16V, Elect. |
| | | | C403 | 371121034 | 0.01 μ F \pm 5%, 50V, Mylar |
| | | | C404, C405 | 354744709 | 47 μ F, 16V, Elect. |
| | | | C406, C407 | 391242217 | 220 μ F, 16V, Elect. |
| | | | C408 | 354722219 | 220 μ F, 6.3V, Elect. |
| | | | C409, C410 | 373301024 | 1000pF \pm 5%, 125V, PP |
| | | | C411, C412 | 373301514 | 150pF \pm 5%, 125V, PP |
| | | | C413, C414 | 354742209 | 22 μ F, 16V, Elect. |
| | | | C415, C416 | 371122424 | 2400pF \pm 5%, 50V, Mylar |
| | | | C417, C418 | 371122224 | 2200pF \pm 5%, 50V, Mylar |
| | | | C419, C420 | 371124724 | 4700pF \pm 5%, 50V, Mylar |
| | | | C421, C422 | 371125624 | 5600pF \pm 5%, 50V, Mylar |
| | | | C423, C424 | 371123324 | 3300pF \pm 5%, 50V, Mylar |
| | | | C425, C426 | 371121224 | 1200pF \pm 5%, 50V, Mylar |
| | | | C427-C434 | 391242207 | 22 μ F, 16V, Elect. |
| | | | C435-C438 | 354744709 | 47 μ F, 16V, Elect. |
| | | | C441-C444 | 373303314 | 330pF \pm 5%, 125V, PP |
| | | | C445, C446 | 371122224 | 2200pF \pm 5%, 50V, Mylar |
| | | | C447, C448 | 371124724 | 4700pF \pm 5%, 50V, Mylar |
| | | | C501-C503 | 354744709 | 47 μ F, 16V, Elect. |
| | | | C505 | 354762219 | 220 μ F, 35V, Elect. |
| | | | C901, C902 | 352752229 | 2200 μ F, 25V, Elect. |
| | | | C907, C908 | 354780109 | 1 μ F, 50V, Elect. |
| | | | C909 | 354782209 | 22 μ F, 50V, Elect. |
| | | | C910 | 354762209 | 22 μ F, 35V, Elect. |
| | | | C911, C961 | 375101045 | 0.1 μ F \pm 10%, 125V, Plastic |
| | | | C951, C952 | 352753329 | 3300 μ F, 25V, Elect. |
| | | | C953, C954 | 354742219 | 220 μ F, 16V, Elect. |
| | | | C955, C956 | 354780109 | 1 μ F, 50V, Elect. |
| | | | C957 | 354741009 | 10 μ F, 16V, Elect. |
| | | | C958 | 354744719 | 470 μ F, 16V, Elect. |
| | | | C959, C960 | 379121035 | 0.01 μ F \pm 10%, 50V, Plastic |
| | | | | | |
| Q102 | 22240180 | CXA1081S | | | |
| Q103 | 22240018 | M51943ASL | | | |
| Q104 | 22240181 | CXA1082AS | | | |
| Q107 | 22240168 | STA341M-L | | | |
| Q108 | 22240034 | LA6510 | | | |
| Q109 | 22240129 | CXD1125QZ | | | |
| Q110 | 22240178 or 22240118 | CXK5816SPS-15L or LC3517AS-15 | | | |
| Q112 | 22240034 | LA6510 | | | |
| Q114 | 222956 | NJM2068DD | | | |
| Q115 | 222850381 | HD14538BP | | | |
| Q116 | 222740745 | 74HC74P | | | |
| Q117 | 222740865 | 74HC86P | | | |
| Q118 | 222755 | 74HCU04P | | | |
| Q121, Q122 | 222740745 | 74HC74P | | | |
| Q123 | 222740005 | 74HC00P | | | |
| Q401 | 222076A | 8D-3170-1(DAC unit) | | | |
| Q405, Q406 | 222652 | M5218L | | | |
| Q501 | 22240035 | NJM592D8 | | | |
| Q502 | 222740005 | 74HC00P | | | |
| Q503 | 222740745 | 74HC74P | | | |
| Q901 | 222780052 | 78M05 | | | |
| Q902 | 222790053 | 79L05 | | | |
| Q951 | 222780085MIT | M5F78M08L | | | |
| Q952 | 222790085MIT | M5F79M08L | | | |
| Q953 | 222780053 | 78L05 | | | |
| | | Transistors | | | |
| Q101 | 2211503 or 2211504 | 2SA950-O or 2SA950-Y | | | |
| Q119, Q120 | 2211254 or 2211255 | 2SC1815-Y or 2SC1815-GR | | | |
| Q129 | 221281 | DTC114YS | | | |
| Q403, Q404 | 2212304 or 2211945 | 2SK381-D or 2SK246-GR | | | |
| Q407, Q408 | 2211705 or 2211706 | 2SD655-E or 2SD655-F | | | |
| Q903 | 2211503 or 2211504 | 2SA950-O or 2SA950-Y | | | |
| Q954 | 2213090 | DTA114YS | | | |
| Q956 | 2211454 or 2211455 | 2SA1015-Y or 2SA1015-GR | | | |
| Q957, Q958 | 221281 | DTC114YS | | | |
| | | Diodes | | | |
| D101-D103 | 223163 | 1SS133 | | | |
| D105 | 223163 | 1SS133 | | | |
| D901 | 22380018 or 223892 | DB103 or DF02M | | | |
| D902, D952 | 223880 or | GP101N4003 or | | | |
| D953 | 223896 | 1N4003F | | | |
| D903 | 224652702 or 224452702 | HZ27EB2 or MTZ27B | | | |
| D904 | 224650511 or 224450511 | HZ5.1EB1 or MTZ5.1A | | | |
| D951 | 22380013 | RDF02M | | | |
| D954, D956 | 223163 | 1SS133 | | | |
| | | Photo coupler | | | |
| D104 | 24120005 or 24120006 | FCNE-S-001A or FCNE-S-001B | | | |
| | | X'tal | | | |
| X101 | 3010112 | KD6586FFB | | | |
| | | Coils | | | |
| L101 | 231023 | NCH-1062 | | | |
| L102 | 232136 or 232143 | NSRF-2046 or NSRF-2047 | | | |
| L401, L402 | 232151 | NMC-6076 | | | |

| CIRCUIT NO. | PART NO. | DESCRIPTION |
|--------------|-----------------------|---|
| | Resistors | |
| R108 | 5210066 | N06HR22KBD, Semi-fixed |
| R110 | 5210060 | N06HR2.2KBD, Semi-fixed |
| R122, R125 | 5210066 | N06HR22KBD, Semi-fixed |
| R147 | 5210058 | N06HR1KBD, Semi-fixed |
| R178 | 5210060 | N06HR2.2KBD, Semi-fixed |
| R505 | 5210061 or 5210117 | N06HR3.3KBD or N06HR3KBC, Semi-fixed |
| | Plugs | |
| P101 | 25055136 | NPLG-6P120 |
| P102 | 25055139 | NPLG-9P123 |
| P103 | 25055154 | NPLG-10P138 |
| P104 | 25055157 | NPLG-13F141 |
| P105 | 25055190 | NPLG-9P174 |
| P106 | 25055146 | NPLG-2P130 |
| P107 | 25055150 | NPLG-6P134 |
| P108 | 25055045 | NPLG-4P33 |
| P109, P110 | 25055038 | NPLG-2P29 |
| P402 | 25055152 | NPLG-8P136 |
| | Terminal | |
| P401 | 25045236 | NPJ-4PDBL110 |
| | Radiators | |
| | 27160176 | RAD56 |
| | 27160145 | RAD51 |
| | Socket | |
| J5 | 2000939 | NSAS-2P891 |
| | Fuses | |
| QF101, QF102 | 252112 | △ ICPN15, IC protector<G> |

NOTE: <G>:Only 220V / 240V / Worldwide models

OPTO./DIGITAL OUTPUT PC BOARD(NADG-3364-1)

| CIRCUIT NO. | PART NO. | DESCRIPTION |
|-------------|----------|--|
| Q191 | 24120014 | DF-1111/T, Photo coupler |
| P191 | 25045239 | NPJ-1PORG-113, Terminal, Opto. output |
| P192 | 25045172 | HSJ1003-01-020, Terminal RI |
| SC191 | 2000929 | NSAS-12P882, Socket |

DISPLAY CIRCUIT PC BOARD(NADIS-3365-1)

| CIRCUIT NO. | PART NO. | DESCRIPTION |
|-------------|---------------------------|------------------------------------|
| | ICs | |
| Q701 | 22240179 | CXP5058H-104OZ |
| Q703 | 22240173 | LC6527H-3722 |
| Q707 | 222963 | LB1630 |
| | Fluorescent tube | |
| Q702 | 212059 | 16BT-09GK |
| | Transistors | |
| Q704, Q705 | 2212600 | DTA124ES |
| Q706 | 2212132 or 2212133 | 2SC2021-R or 2SC2021-S |
| | Diodes | |
| D701-D704 | 223163 | 1SS133 |
| D705 | 224650562 or 224450562 | HZ5.6EB2 or MTZ5.6B |
| | Capacitors | |
| C701, C703 | 354721019 | 100 μ F, 6.3V, Elect. |
| | Resistors | |
| R735-R742 | 49163472408 | 4.7kohm \times 8, 1/10W, Network |
| | Switches | |
| S701-S736 | 25035548 | NPS-111-S510 |
| | Sockets | |
| SC701 | 2000891 | NSAS-26P847 |
| SC702 | 2000883 | NSAS-18P839 |
| SC703 | 2000732 | NSAS-4P688 |
| SC704 | 2000755 | NSAS-4P711 |
| SC705 | 2000892 | NSAS-12P848 |

| CIRCUIT NO. | PART NO. | DESCRIPTION |
|-------------|---------------|-------------|
| | Holder | |
| | 27190656A | Display |

POWER SWITCH PC BOARD(NAPS-3366-1)

| CIRCUIT NO. | PART NO. | DESCRIPTION |
|-------------|----------|---------------------------------|
| C941 | 3500065A | △ DE7150FZ103PCSA, Capacitor IS |
| P941 | 25035558 | △ NPS-111-L520P, Power switch |

HEADPHONE AMPLIFIER PC BOARD(NAAF-3367-1)

| CIRCUIT NO. | PART NO. | DESCRIPTION |
|-------------|-----------------------|--|
| Q451 | 222887 | NJM4556S, IC |
| Q453, Q454 | 2211705 or 2211706 | 2SD655-E or 2SD655-F, Transistors |
| C453, C454 | 354742219 | 220 μ F, 16V, Elect. capacitors |
| C455, C456 | 371122224 | 2200pF \pm 5%, 50V, Mylar capacitors |
| C457, C458 | 354744709 | 47 μ F, 16V, Elect. capacitors |
| R451 | 5104242 | N16RGM20KB30F, Variable resistor |
| R463, R464 | 442521014 | 100ohm, 1/2W, Metal oxide film resistors |
| P451 | 25055183 | NPLG-2P167, Plug |
| SC451 | 2000917 | NSAS-16P870, Socket |

HEADPHONE TERMINAL PC BOARD(NAAF-3368-1)

| CIRCUIT NO. | PART NO. | DESCRIPTION |
|-------------|----------|------------------------------------|
| P491 | 25045139 | HLJ0540-01-010, Headphone terminal |

SWITCH PC BOARD(NASW-3369-1)

| CIRCUIT NO. | PART NO. | DESCRIPTION |
|-------------|-----------|-------------------------------------|
| U751 | 241068 | BX-1407, IC |
| D751, D752 | 225142 | SEL2913K, LEDs |
| C751 | 354721019 | 100 μ F, 6.3V, Elect. capacitor |
| S751 | 25065325 | NSS-23128, Slide switch |
| S752-S755 | 25035548 | NPS-111-S510, Push switches |
| P701 | 25055187 | NPLG-6P171, Plug |
| | 27190499A | Holder |

TERMINAL PC BOARD(NAETC-3359-1)

| CIRCUIT NO. | PART NO. | DESCRIPTION |
|-------------|----------|---------------------|
| P001 | 25050361 | NSCT-18P188, Socket |
| SC001 | 2000890 | NSAS-12P846, Socket |
| SC002 | 2000873 | NSAS-18P829, Socket |

NOTE: THE COMPONENTS IDENTIFIED BY MARK △ ARE CRITICAL FOR RISK OF FIRE AND ELECTRIC SHOCK. REPLACE ONLY WITH PART NUMBER SPECIFIED.

BLOCK DIAGRAM

