


# ONKYO® SERVICE MANUAL

## COMPACT DISC PLAYER MODEL DX-5700

### 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:	352.8kHz (Eight-times oversampling)
Number of channels:	2 (stereo)
Frequency response:	2Hz~20kHz
Total harmonic distortion:	0.0025% (at 1kHz)
Dynamic range:	100dB
Signal to noise ratio:	110dB
Channel separation:	103dB (at 1kHz)
Wow and Flutter:	Below threshold of measurability
Power consumption:	18 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:	8.2kg, 18.1lbs

Specifications are subject to change without notice.

**ONKYO**  
**AUDIO COMPONENTS**

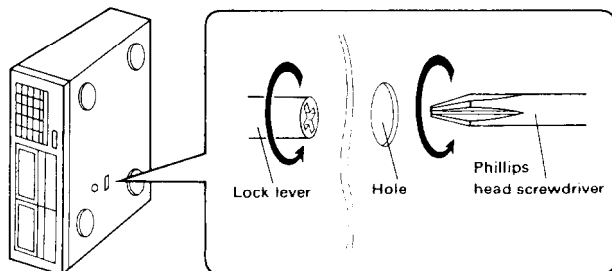
## TABLE OF CONTENTS

Specifications .....	1
Service procedures .....	2
Note on compact disc .....	3
Protection of eyes from laser beam during servicing ..	4
Laser warning label .....	4
Caution on replacement of pickup .....	6
Packing view .....	7
Chassis-exploded view .....	8
Parts list .....	9
Mechanism-exploded view .....	10
Parts list .....	11
Disassembling procedures .....	11
Lubrication .....	12
IC block diagram and descriptions .....	13
Adjustment procedures .....	22
Printed circuit board view from bottom side	
Main circuit .....	25
Other pc boards .....	29
Printed circuit board-parts list .....	27
Block diagram .....	31

## 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.



- Use a screwdriver to turn the lock lever (about 90°) in the round hole in the direction of arrow ( G ).
- 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.

Fig. 1

### 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:

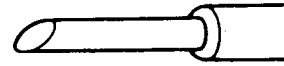


Fig. 2

- (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 from 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.

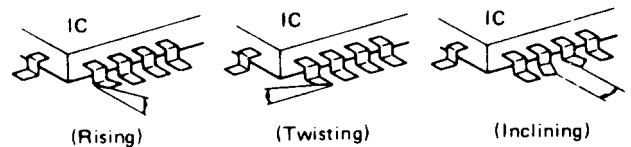


Fig. 3

##### (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.

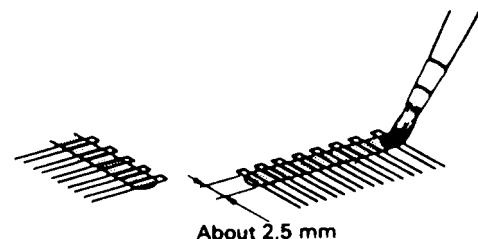


Fig. 4

**(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.

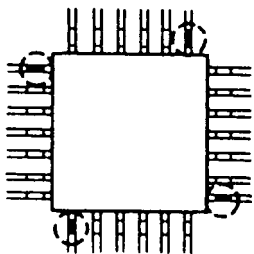


Fig. 5

**(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.

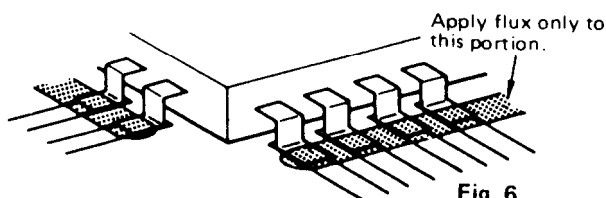


Fig. 6

**(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.

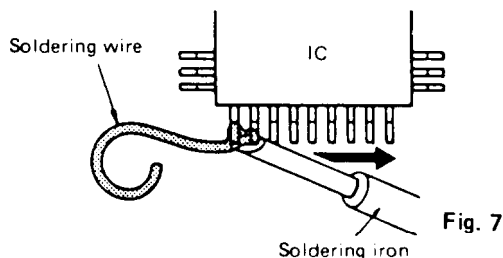


Fig. 7

**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.

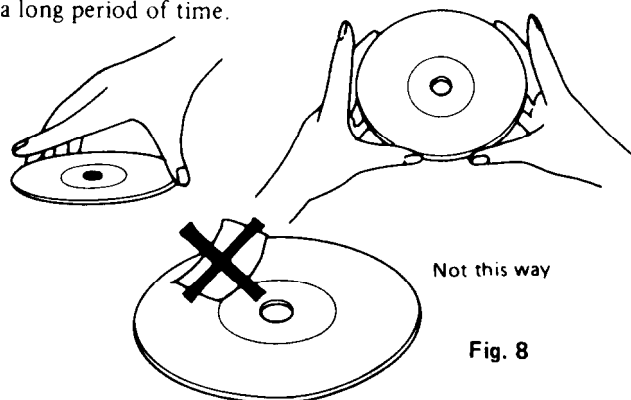


Fig. 8

**• 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.

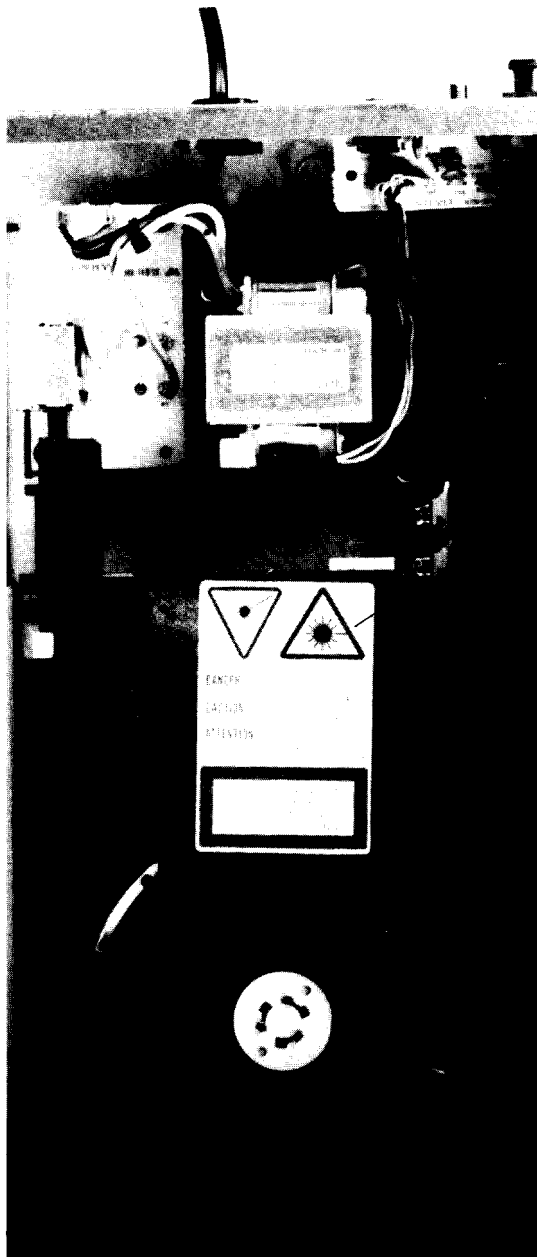
## WARNING!!

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.

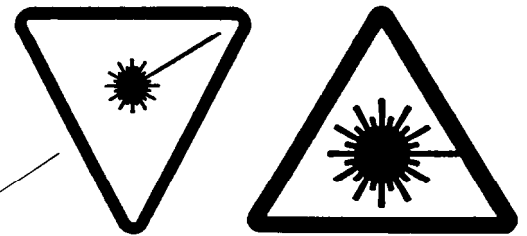
### 1. Warning label



### Laser Diode Properties

- Material: GaAS/GaAlAs
- Wavelength: 780nm
- Emission Duration: continuous
- Laser output: max. 0.5mW\*

\*This output is the value measured at a distance about 1.8mm from the objective lens surface on the Optical Pick-up Block.



**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

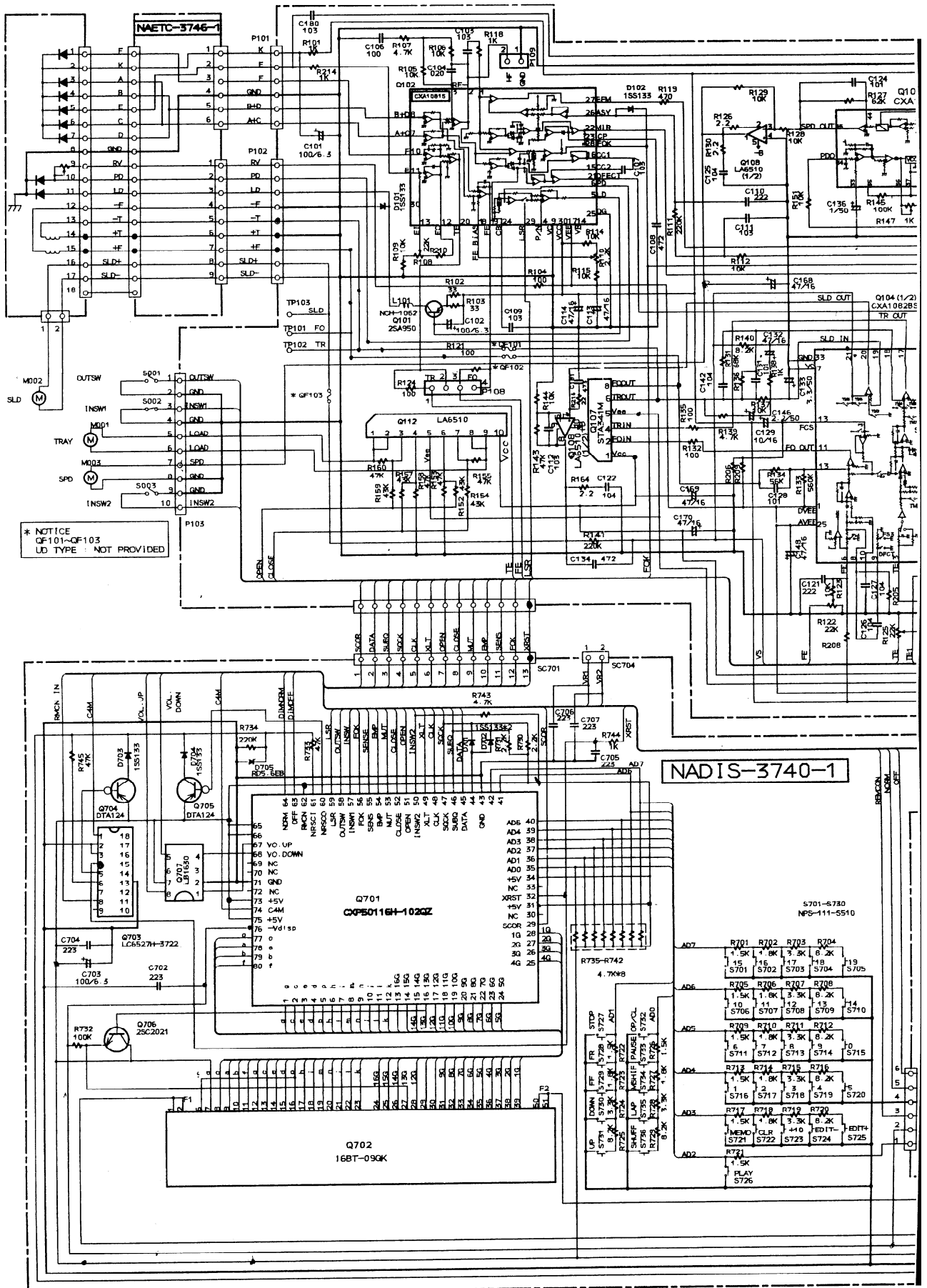
B

C

D

E

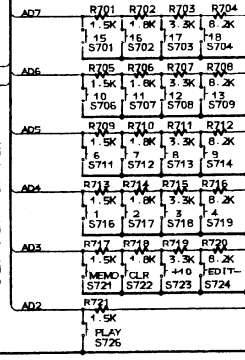
F

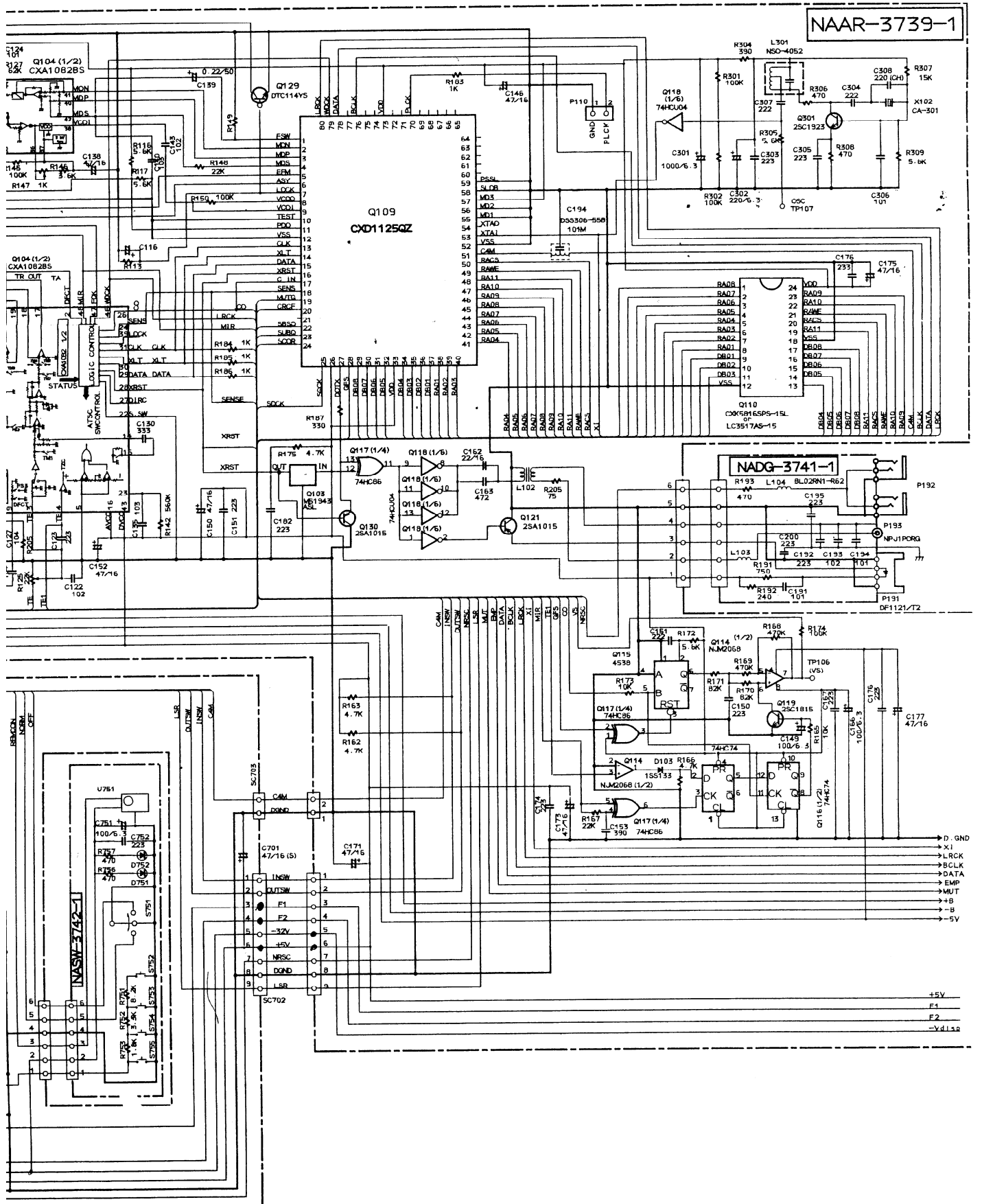


\* NOTICE  
QF101-QF103  
LD TYPE : NOT PROVIDED

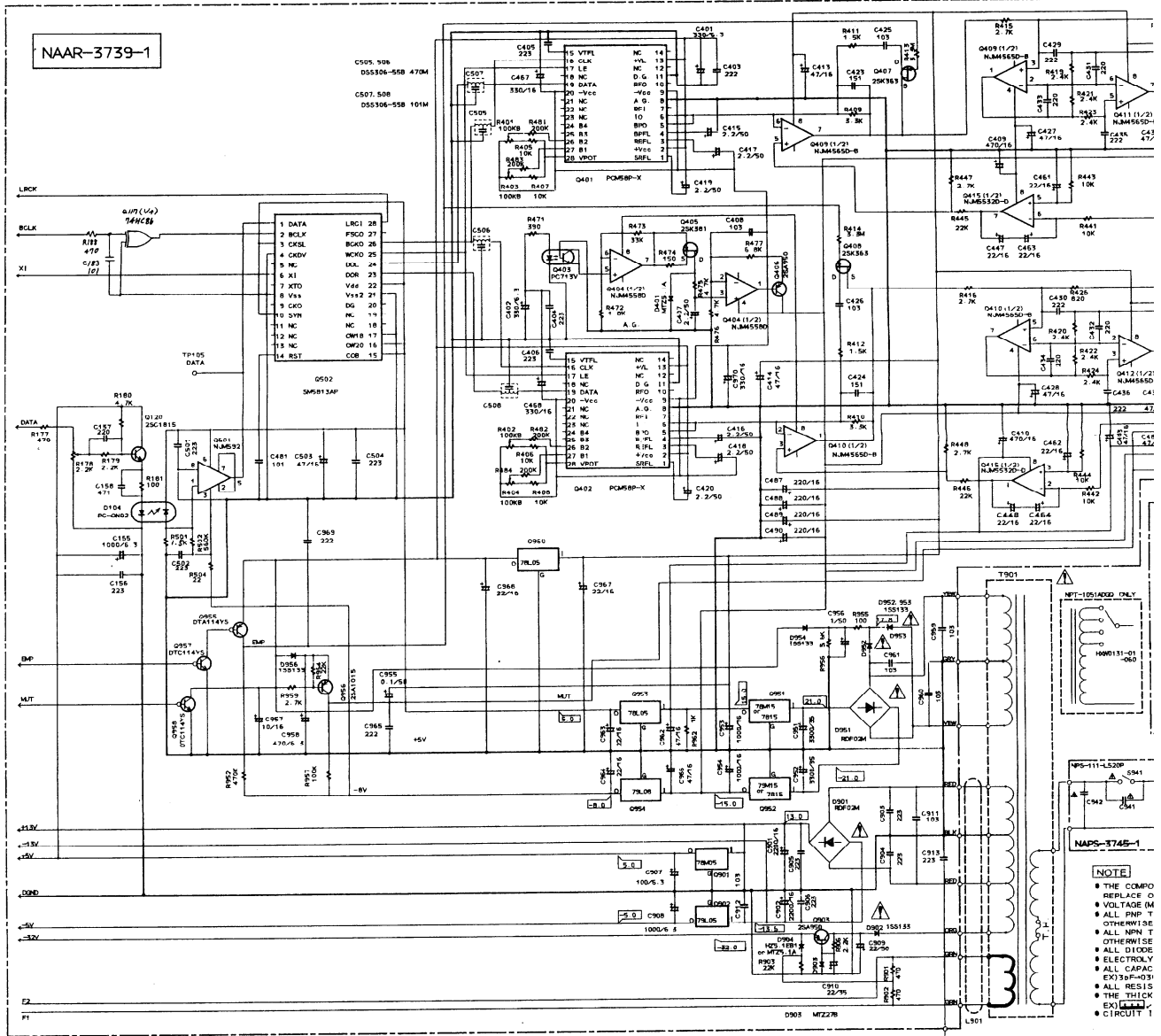
**NADIS-3740-1**

5701-5730  
NPS-111-5510

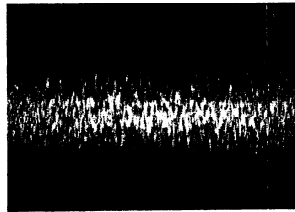




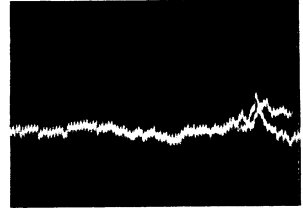
# SCHEMATIC DIAGRAM



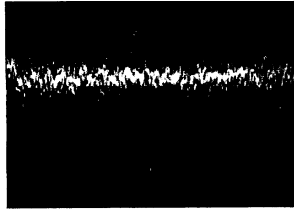
TP RF (RF signal)  
Vertical : 1V/div.  
Horizontal : 1 ms/div.  
DC, Ground: Center



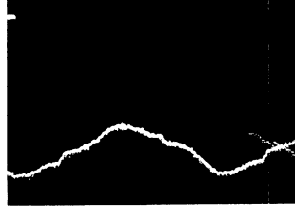
TP TO (Tracking out)  
Vertical : 0.2V/div.  
Horizontal : 0.5 ms/div.  
DC, Ground: Center



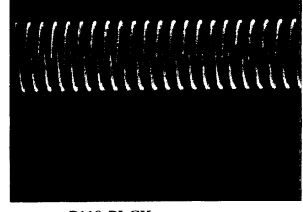
TP SPD (Spindle out)  
Vertical : 1V/div.  
Horizontal : 5 ms/div.  
DC, Ground: Center



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.



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

A

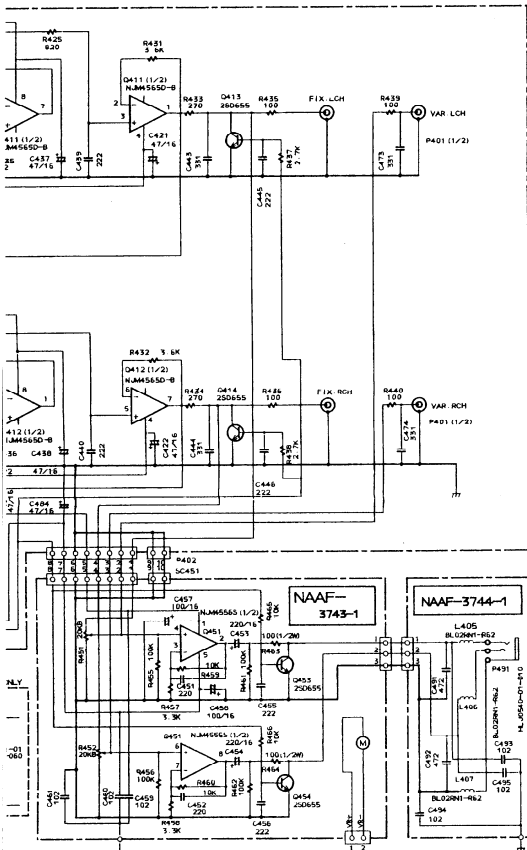
B

C

D

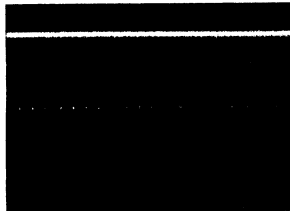
E

F

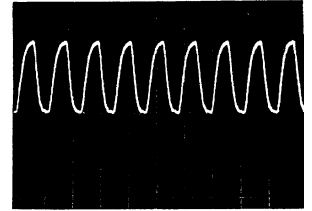


REF ID	TRG	Q101-103	P321	C341	C342	
LD	AC120V/50Hz	NPT-1051D	WITHOUT	AS-LS-4 B18	0.21/1.25V	0.0047/1.25V
LD	AC120V/50Hz	NPT-1051G	WITH	AS-CBE	0.21/4.00V	0.0047/4.00V
LD	AC120V/50V/50/60Hz	NPT-1051AD02	WITH	AS-CBE	0.01/4.00V	0.0047/4.00V
LD	AC240V/50Hz	NPT-1051Q	WITH	AS-SAA	0.21/4.00V	0.0047/4.00V

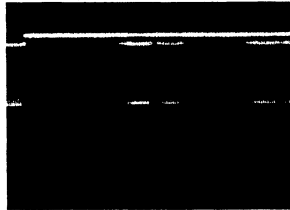
COMPONENTS IDENTIFIED BY MARK  $\Delta$  ARE CRITICAL FOR SAFETY. USE ONLY WITH PART NUMBER SPECIFIED.  
 VAGE (MEASURED WITH VOLTMETER) C IS DC VOLTAGE (NO INPUT SIGNAL).  
 PNP TRANSISTORS ARE EQUIVALENT TO 2SA1015-OR UNLESS OTHERWISE NOTED.  
 NPN TRANSISTORS ARE EQUIVALENT TO 2SC1815-OR UNLESS OTHERWISE NOTED.  
 DIODES ARE EQUIVALENT TO 1SS133 UNLESS OTHERWISE NOTED.  
 ELECTROLYTIC CAPACITORS (E) ARE IN  $\mu$ F/VV.  
 CAPACITORS ARE IN pF/50V UNLESS OTHERWISE NOTED.  
 RESISTORS ARE IN OHMS 1/4 WATTS UNLESS OTHERWISE NOTED.  
 THICK LINES IN PCB BOARD ARE THE PRINTING SIDE OF THE PARTS.  
 PRINTING SIDE  
 DUT IS SUBJECT TO CHANGE FOR IMPROVEMENT.



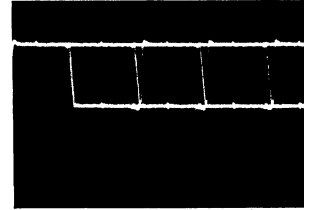
**XLT**  
 Vertical : 2V/div.  
 Horizontal: 0.5 ms/div.



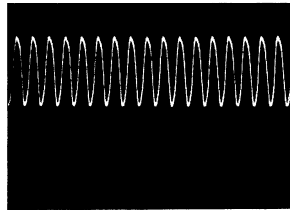
**BCKO (Q502 Pin 26)**  
 Vertical : 2V/div.  
 Horizontal: 0.1  $\mu$ s/div.  
 AC



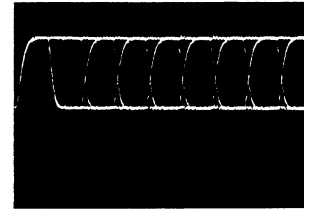
**CLK**  
 Vertical : 2V/div.  
 Horizontal: 50  $\mu$ s/div.  
 DC, Ground: Center



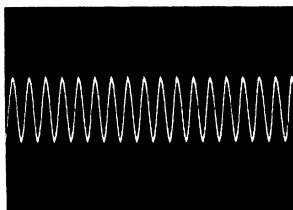
**TP105 DATA**  
 Vertical : 2V/div.  
 Horizontal : 0.2  $\mu$ s/div.  
 DC, Ground: Center



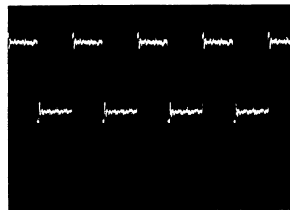
**XI (Q401/Q402 Pin 16)**  
 Vertical : 2V/div.  
 Horizontal: 0.1  $\mu$ s/div.



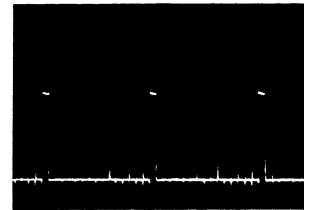
**DATA (Q502 Pin 24)**  
 Vertical : 2V/div.  
 Horizontal : 0.1  $\mu$ s/div.  
 DC, Ground: Center



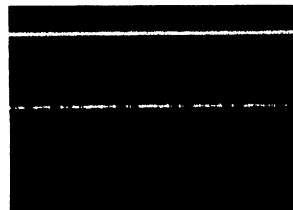
**X'tal (TP107)**  
 Vertical : 100mV/div.  
 Horizontal: 0.1  $\mu$ s/div.



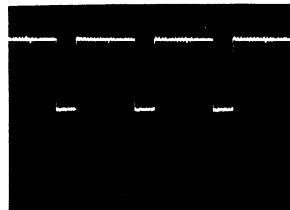
**BCLK (Q502 Pin 2)**  
 Vertical : 2V/div.  
 Horizontal : 0.2  $\mu$ s/div.  
 DC, Ground: Center



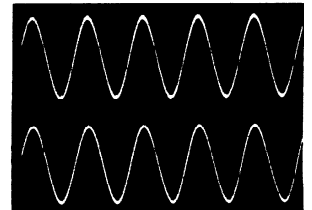
**Grid**  
 Vertical : 10V/div.  
 Horizontal : 1 ms/div.  
 DC, Ground: Center



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



**WCKO (Q502 Pin 25)**  
 Vertical : 2V/div.  
 Horizontal: 1  $\mu$ s/div.

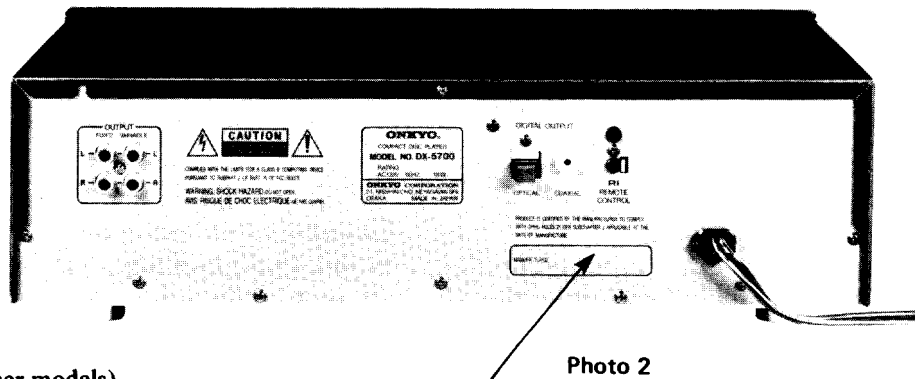


**DAC OUT Pins 14/25**  
 V: 2V  
 H: 0.5 ms



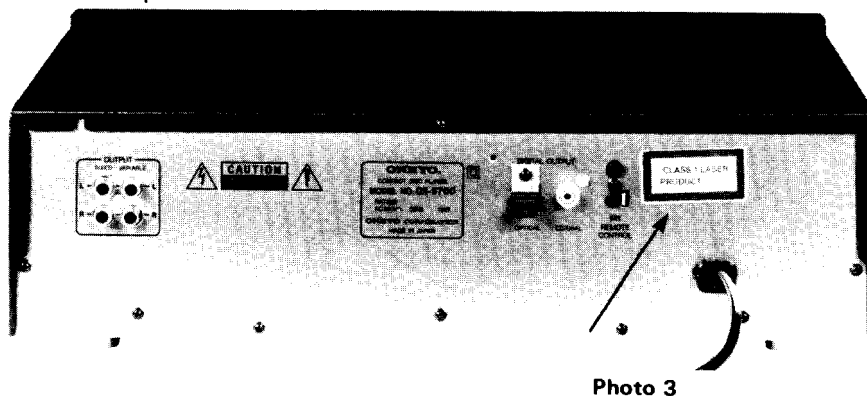
## 2. Certification label (UD: 120V model)

This label is located on the back panel.



## 3. Class 1 label (Other models)

This label is located on the back panel.



### 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 advarselmærkning, 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!** Laite 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.

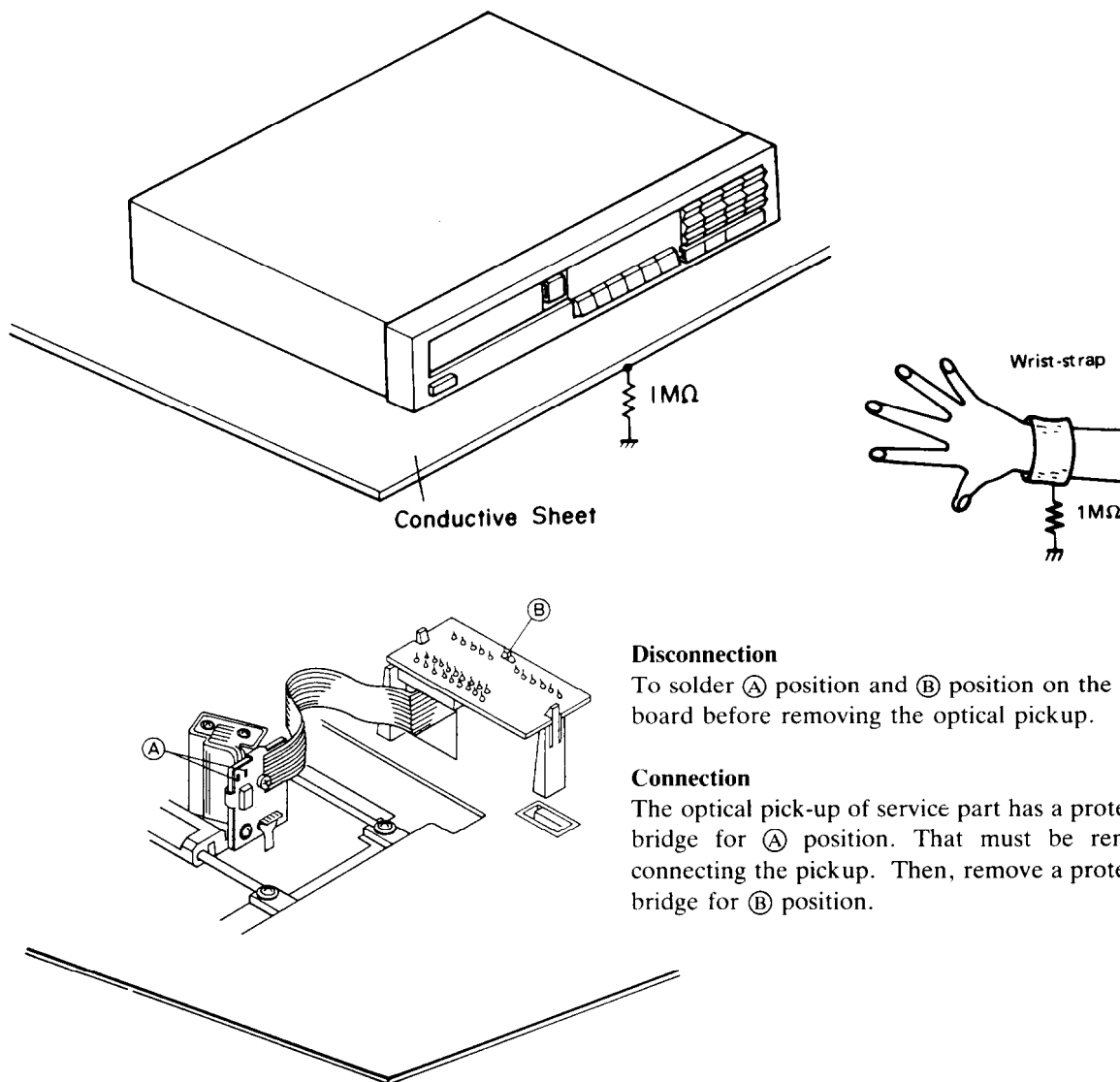


Fig. 11

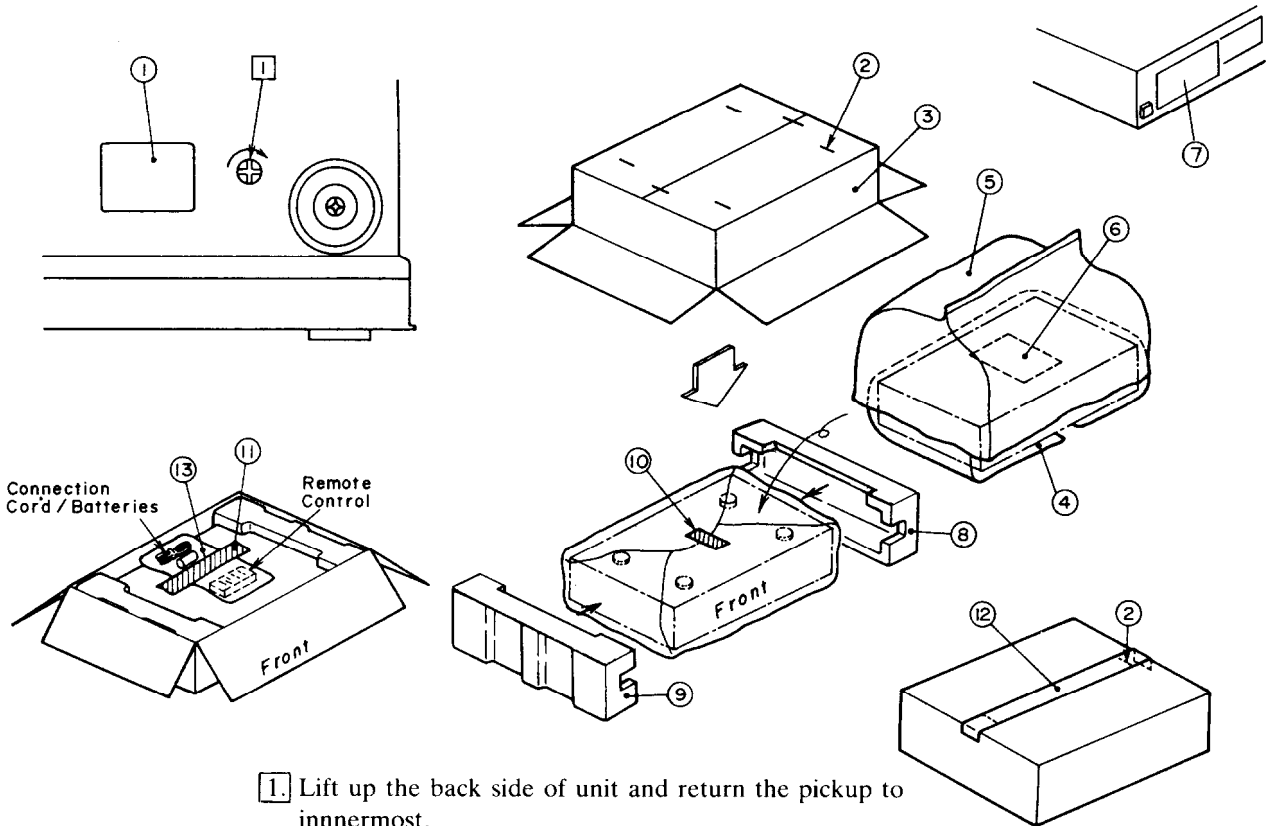
#### Disconnection

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

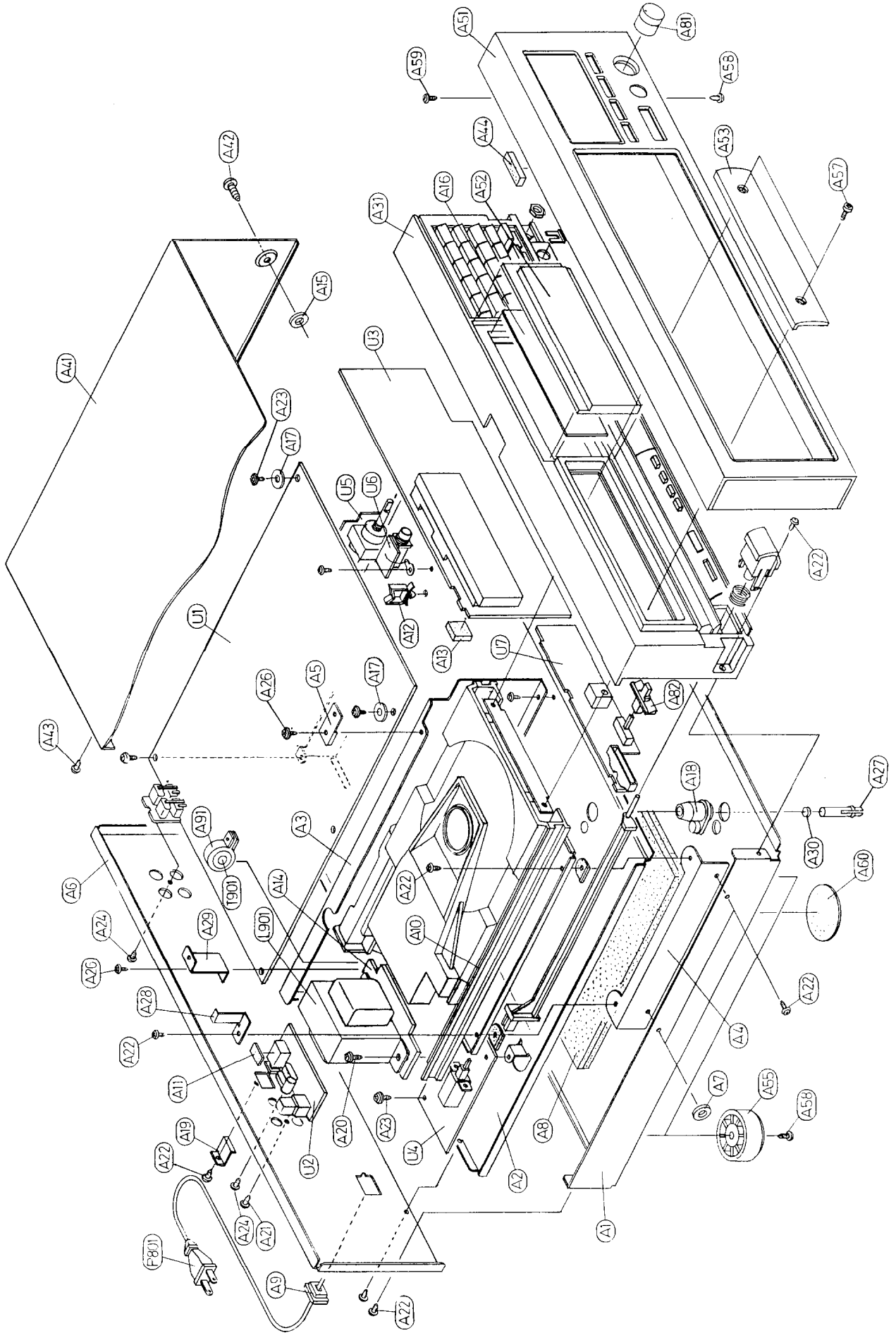


1. Lift up the back side of unit and return the pickup to innermost.  
Use a screwdriver to turn the lock lever (about 90°) in the round hole in the direction of arrow. (Clockwise)

REF. NO.	PART NO.	DESCRIPTION
1	29361123	Label
2	282301	Sealing hook
3	29052006A	Master carton box
4	29095012-1	500 × 800mm, Protection sheet
5	29100105	550 × 680mm, Poly-vinyl bag
6	29355153	Caution sheet
7	29095571	Sheet, door
	29355152	Caution sheet
8	29091363B	Pad L
9	29091364B	Pad R
10	261504	Adhesive tape
11	29110071	Damplon tape
12	29110071-1	Damplon tape
13	Accessory bag ass'y	
	29341474	Instruction manual <D>
	29341475	Instruction manual <G/U>
	2010097	Connection cord, audio
	2010200	Connection cord RI
	2050022A	Connection cord, optical
	24140028	RC-122C, Remote control unit
	3010054	UM-3, Two batteries
	29365019	Warranty card <N>
	29358002G	Service station list <N>
	25055040	CV-K-2, Conversion plug <U>
	29100097	Poly-vinyl bag

NOTE: <D>: Only 120V model  
<G>: Only 220V/240V models  
<U>: Only worldwide model

CHASSIS-EXPLODED VIEW

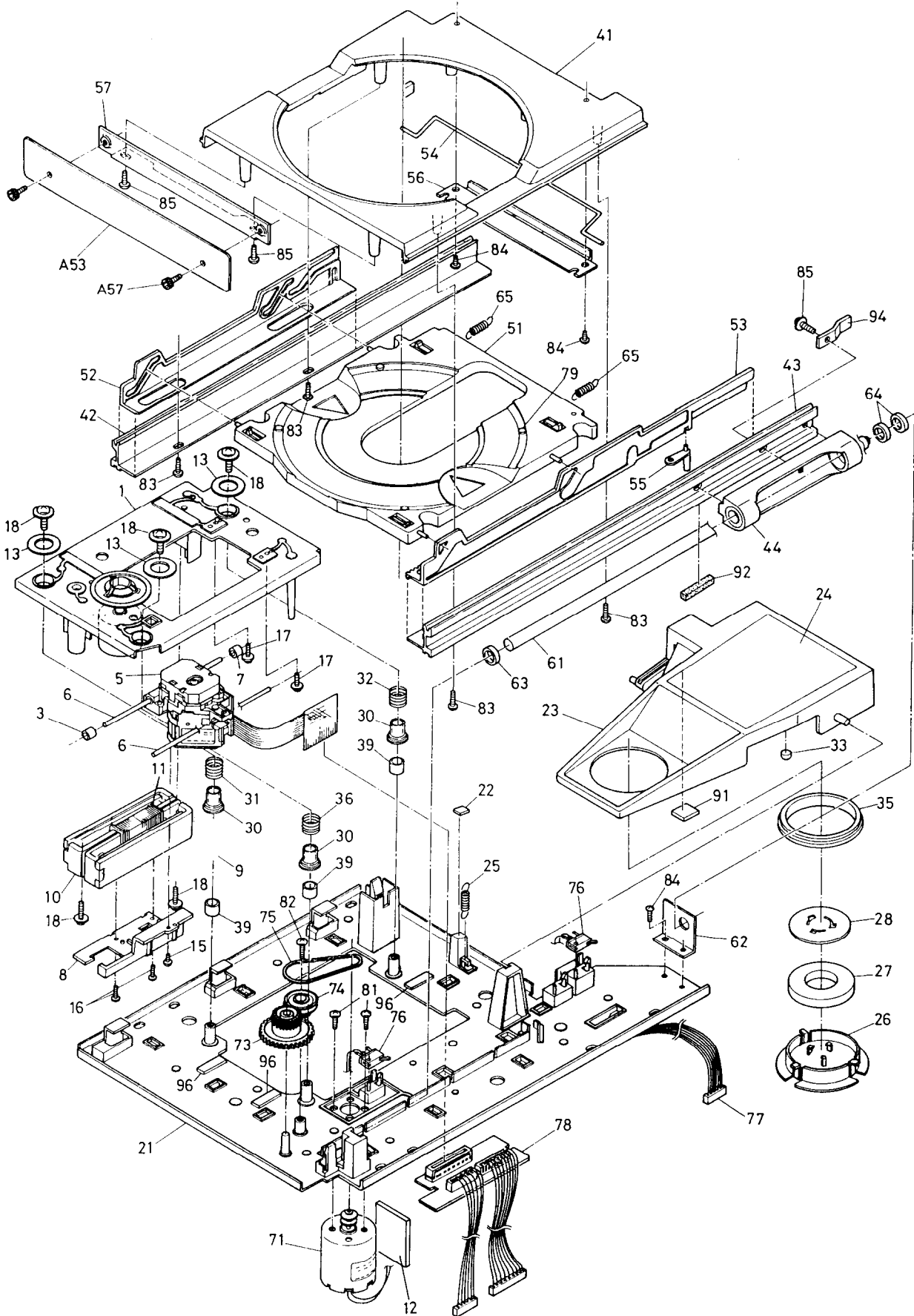


## PARTS LIST

REF. NO.	PART NO.	DESCRIPTION			
A1	27100170B	Chassis	A81	28323433	Knob
A2	27100169B	Chassis U	A82	28323152-1	Knob MODE
A3	27130542A	Bracket C	A91	260223	Clamp for L901 <D>
A4	27130596	Bracket L		260221	Clamp for L901 <G/O/W>
A5	27141311	Bracket T	L901	230908	△ TR-23-11-14, Core <D>
A6	27121312	Back panel <D>	P801	230907	△ TR-16-8-16, Core <G/O/W>
	27121312-1	Back panel <G>		253112A	△ AS-UC-4#18, Power supply cord <D>
	27121312-2	Back panel <W>			△ AS-CEE 250V 2.5A, Power supply cord <G/W>
A7	27121312-4	Back panel <QA>		253148 or	
A8	27175011C	Leg (Cushion)		253150	
A9	28141007	18×20×40, Cushion			
A10	27300750	△ Bushing (Strainrelief)		253118	△ AS-SAA, Power supply cord <QA>
A11	27273101A	Joint, power		25065168	△ HXW0131-01-060, Voltage selector switch <W>
A12	27270278	Spacer	S902		
A13	27300833	WS-2NS, Clamp		2300501	△ NPT-1051D, Power transformer <D>
A14	28140903	Cushion	T901	2300502	△ NPT-1051G, Power transformer <G>
A15	27270214A	Spacer		2300503	△ NPT-1051ADGO, Power transformer <W>
A16	27270212	Spacer		2300504	△ NPT-1051Q, Power transformer <QA>
A17	28133202	Back plate		1H100539-1	NAAR-3739-1, Main circuit pc board ass'y <D>
A18	870060	W3×15, Flat washer	U1	1H100539-1A	NAAR-3739-1A, Main circuit pc board ass'y <G/W/QA>
A19	27267558-1	Guide		1H100541-1	NADG-3741-1, Opto./digital output pc board ass'y
A20	27141281A	Bracket		1H100540-1	NADIS-3740-1, Display circuit pc board ass'y
	830440109	4TTT+10C (BC), Self-tapping screw	U3	1H100545-1	NAPS-3745-1, Power switch pc board ass'y
A22	834430088	3TTS+8B (BC), Self-tapping screw	U4	1H100543-1	NAAF-3743-1, Headphone amplifier pc board ass'y
A23	831130088	3TTW+8B, Self-tapping screw	U5	1H100544-1	NAAF-3744-1, Headphone terminal pc board ass'y
A24	834230108	3TTS+10B (Ni), Nickel screw	U6	1H100542-1	NASW-3742-1, Switch pc board ass'y
A25	834430068	3TTS+6B (BC), Self-tapping screw		260208	Binder
A26	838440089	4TTB+8C (BC), Self-tapping screw			NOTE: <D>: Only 120V model <G>: Only 220V model <W>: Only Worldwide model <QA>: Only Australian model
A27	27301184	Lock pin			
A28	27141310	Bracket, rail			
A29	27141309A	Bracket			
A30	28140918	Cushion			
A31	27110534A	Front bracket ass'y			
A32	838430088	3TTB+8B (BC), Self-tapping screw			
A41	28184401	Top cover			
A42	838440089	4TTB+8C (BC), Self-tapping screw			
A43	834430088	3TTS+8B (BC), Self-tapping screw			
A44	28140408	t3×10×36, Cushion			
A45	27190755	SPLS-8U, Holder			
A46	27130597	Bracket PC			
A51	1H100121	Front panel ass'y			
A52	28191477	Clear plate			
A53	27210987	Panel, door (Tray panel)			
A55	27175153-1	Leg			
A57	84643008	3HSB×8FN (BC), Special bolt			
A58	834430088	3TTS+8B (BC), Self-tapping screw			
A59	833430080	3TTP+8P (BC), Self-tapping screw			
A60	27270255	Spacer			
A71	801230	3STS+8BQ (BC), Self-tapping screw			

**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	51	27301137C	Disc plate
3	27270264-1	Spacer	52	27301138	Cam plate L
5	24110003	DLBA2Z2001A, Optical pickup	53	27301139A	Cam plate R
6	27260287	Shaft	54	27260280A	Shaft
7	27270264-1	Spacer	55	27301140A	Stopper
8	27301129B	Plate	56	27301141A	Plate
10	24502250	Linear motor ass'y	57	27141275	Bracket
11	24502236A	Coil	61	27260293	Shaft
12	28140916	Cushion E	62	27141374	Bracket
13	28140913	Cushion B	63	27270265A	Spacer
15	82542006	2B+6F (BC), Binding screw	64	27270276	Spacer
16	833420068	2TTP+6B (BC), Self-tapping screw	65	27180418	Spring
17	831430100	3TTW+10P (BC), Self-tapping screw	71	1H048902	Disc motor ass'y
18	801414	Special screw	73	27301142	Pulley gear
21	27100166D	Chassis L	74	27301143A	Flat wheel
22	28140891	Cushion A	75	27301162	Rubber belt
23	27301131C	Arm	76	25065322	NMS-1214, Microswitch
24	29360911	Label LASER 3	77	2009990026	Socket ass'y
25	27180402	Spring	78	1H100546-1	NAETC-3746-1, Terminal pc board ass'y
26	27301132B	Cap CH	79	27301180A	Cushion
27	28181019A	Magnet CH	81	82143004	3P+4FN (BC), Pan head screw
28	27301133	York CH	82	831126060	2.6TTW+6P, Self-tapping screw
30	27301134	Cushion rubber	83	838430088	3TTB+8B (BC), Self-tapping screw
31	27180403A	Spring F	84	834430068	3TTS+6B (BC), Self-tapping screw
32	27180404B	Spring R	85	834430088	3TTS+8B (BC), Self-tapping screw
33	28140860	Cushion	91	28140908	Cushion K
35	27301172	Cushion rubber	92	28140909	Cushion L
36	27180417	Spring G	94	27141317	Bracket, switch
39	28140917	Tube	96	28140911	Cushion P
41	27301124	Disc tray			
42	27301135A	Rail L			
43	27301136	Rail R			
44	27301126	Guide bearing			

## 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

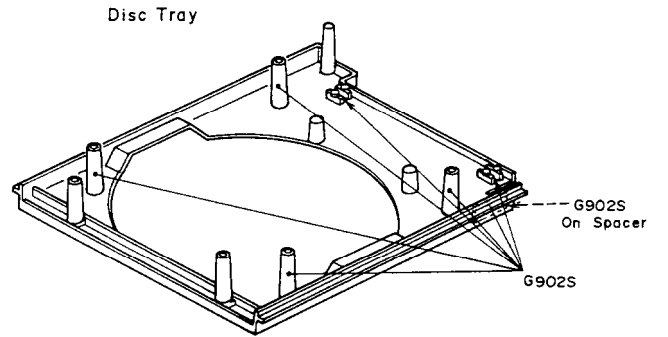
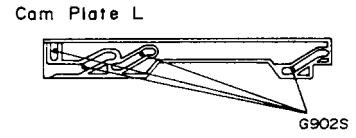
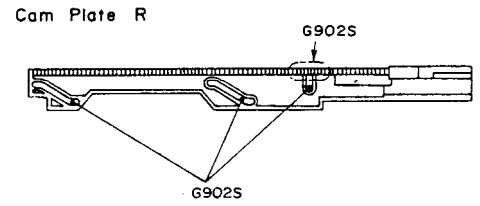
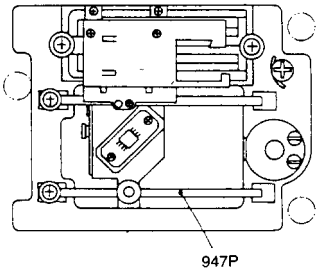
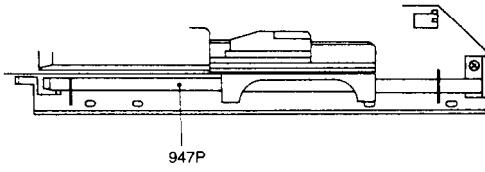
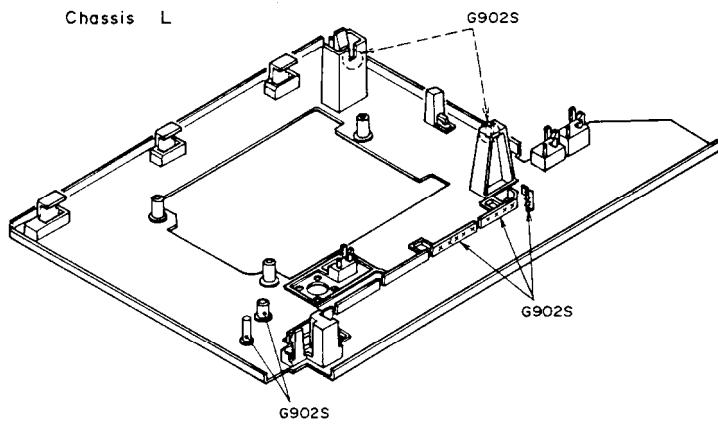
Use a hexagon wrench (2.5mm), remove the two hexagon bolt holding the tray panel and mechanical chassis.

### 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



**PART NO.**

947P 260448

G902S 260447



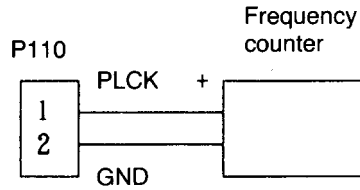
# ADJUSTMENT PROCEDURES

## 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.

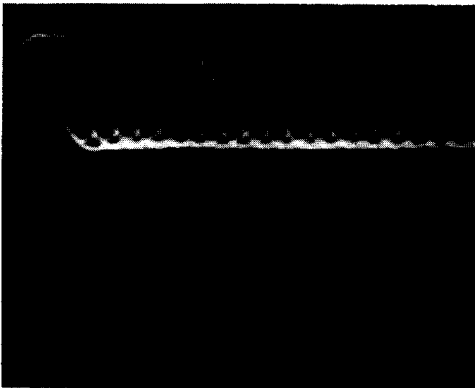
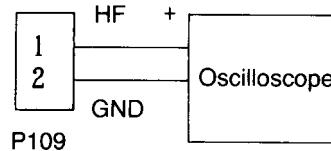
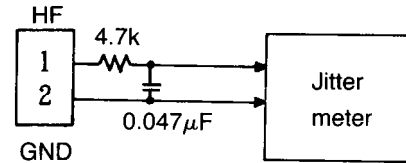


Photo 1



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.

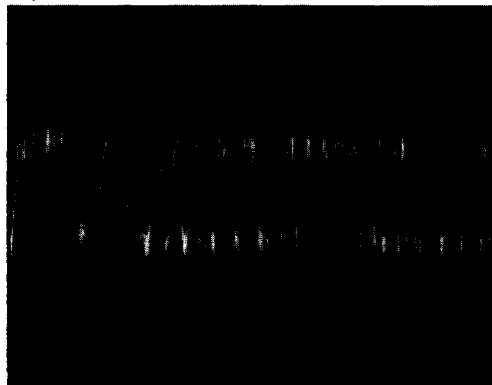
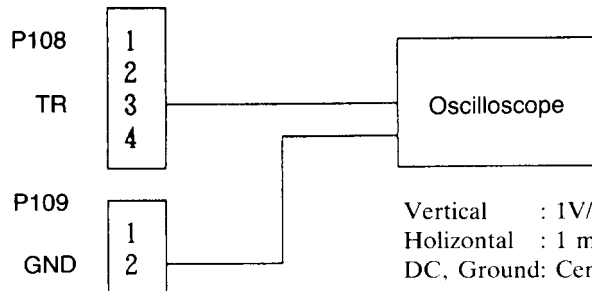


Photo 2



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.

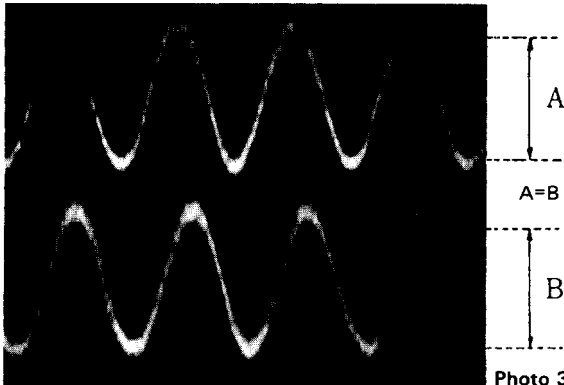
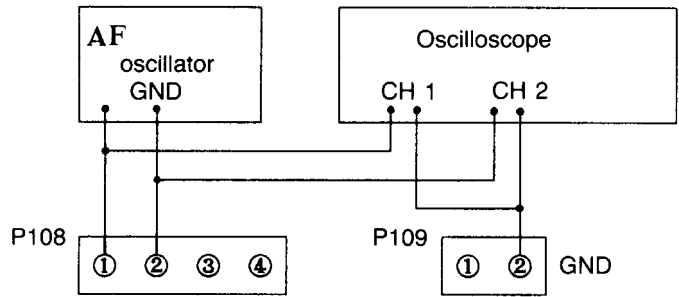


Photo 3

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.

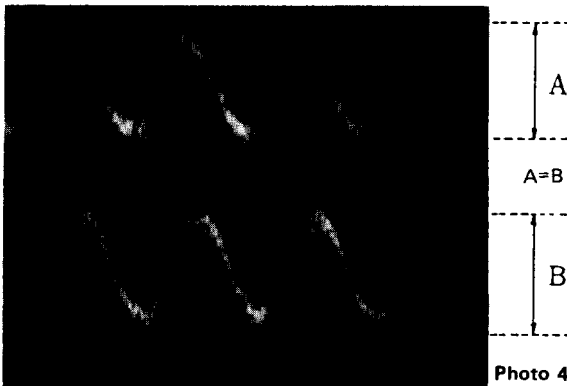
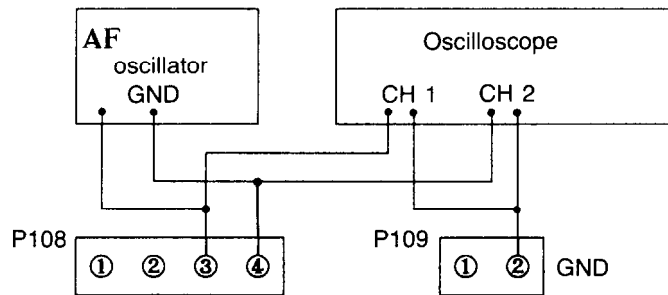


Photo 4

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. Oscillator circuit level adjustment

Connect the oscilloscope to the test point TP107. Adjust L301 until the level of waveform on the oscilloscope becomes 250mV.

Note: Use the high impedance probe 10:1.

#### 7. Opto. transmitter system adjustment

Connect the oscilloscope to the test point TP105. Play the track 2 of test disc.

(When R501 is 1.5k ) < After modification >

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

(When R501 is 4.7k ) < before modification >

Adjust R178 until the cross point of data waveform as shown photo 6 becomes on the top side.

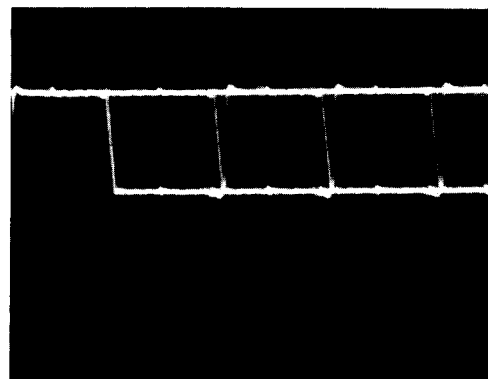
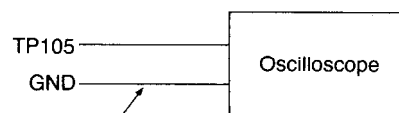


Photo 5

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



Use the high impedance probe. 10:1.

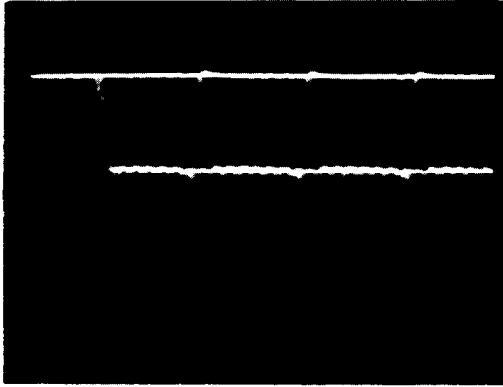
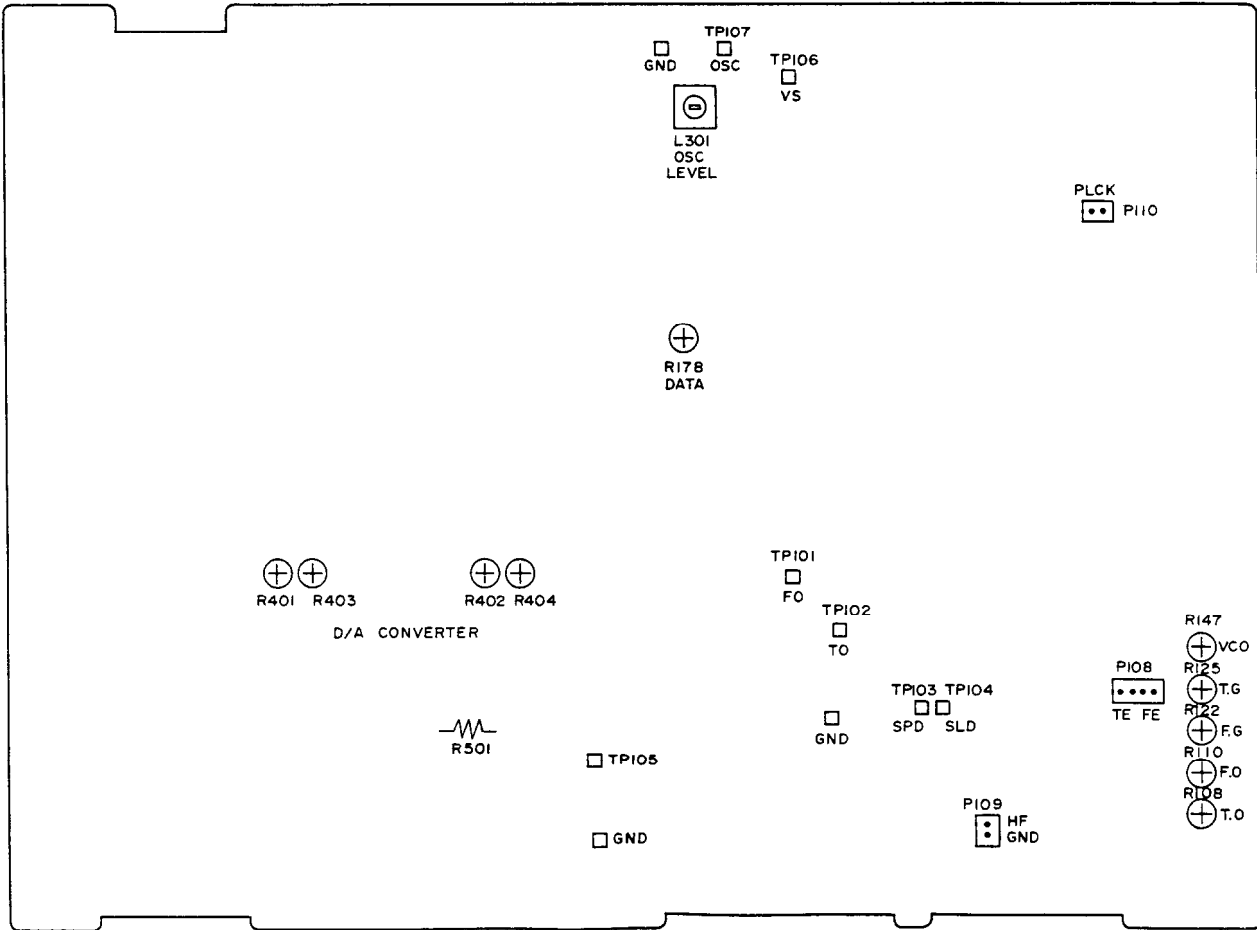


Photo 6

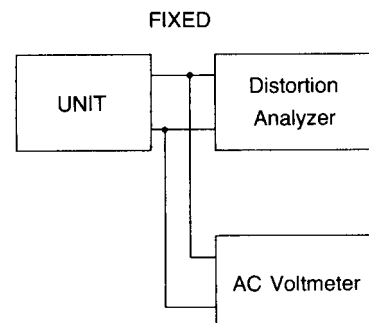
Vertical : 2V/div.  
Horizontal : 0.2  $\mu$ s/div.  
DC, Ground: Center



Adjustment point

### 8. DA converter circuit adjustment

1. Connect the distortion analyzer and the AC voltmeter until to the terminal FIXED. (Output)  
Play the track 2 of test disc.
2. Adjust R403 (R404) until the indication of distortion analyzer becomes minimum.
3. Adjust R401 (R402) until the indication of distortion analyzer becomes minimum.
4. Repeat the steps 2 and 3 until no further adjustment is necessary.
5. Read the output level and regard it as 0dB.
6. Play the track 17.
7. Adjust R403 (R404) until the output level becomes -60dB.



# PRINTED CIRCUIT BOARD-PARTS LIST

## MAIN CIRCUIT PC BOARD (NAAR-3739-1/1A)

CIRCUIT NO.	PART NO.	DESCRIPTION	CIRCUIT NO.	PART NO.	DESCRIPTION
<b>ICs</b>			C505, C506	3030001	DSS306-55B-470M
Q102	22240180	CXA1081S	C507, C508	3030002	DSS306-55B-101M
Q103	22240018	M51943ASL	<b>Capacitors</b>		
Q104	22240263	CXA1082BS	C101, C102	354721019	100 $\mu$ F, 6.3V, Elect.
Q107	22240168	STA341M-L	C103, C107	371121034	0.01 $\mu$ F $\pm$ 5%, 50V, Mylar
Q108	22240034	LA6510	C108, C134	371124724	4700pF $\pm$ 5%, 50V, Mylar
Q109	22240130	CXD1125Q	C109	371121034	0.01 $\mu$ F $\pm$ 5%, 50V, Mylar
Q110	22240178 or 22240118	CXK5816SPS-15L or LC3517AS-15	C110	371122224	2200pF $\pm$ 5%, 50V, Mylar
Q112	22240034	LA6510	C111, C112	371121034	0.01 $\mu$ F $\pm$ 5%, 50V, Mylar
Q114	222956	NJM2068DD	C113, C114	354721019	100 $\mu$ F, 6.3V, Elect.
Q115	222850381	HD14538BP	C121	371122224	2200pF $\pm$ 5%, 50V, Mylar
Q116	222740745	74HC74P	C122	371121044	0.1 $\mu$ F $\pm$ 5%, 50V, Mylar
Q117	222740865	74HC86P	C123	371122234	0.022 $\mu$ F $\pm$ 5%, 50V, Mylar
Q118	222755	74HCU04P	C125-C127	371121044	0.1 $\mu$ F $\pm$ 5%, 50V, Mylar
Q401, Q402	22240287	PCM58P-X	C129	354741009	10 $\mu$ F, 16V, Elect.
Q403	24120012	PC713V	C130	371123334	0.033 $\mu$ F $\pm$ 5%, 50V, Mylar
Q404	222465	NJM4558D	C132	354744709	47 $\mu$ F, 16V, Elect.
Q409-Q412	22240201	NJM4565D-B	C133	354780339	3.3 $\mu$ F, 50V, Elect.
Q415	222902	NJM5532D-D	C135	371121034	0.01 $\mu$ F $\pm$ 5%, 50V, Mylar
Q501	22240035	NJM592D8	C136	354780109	1 $\mu$ F, 50V, Elect.
Q502	22240288	SM5813AP	C138	354744709	47 $\mu$ F, 16V, Elect.
Q901	222780052	78M05	C139	354782299	0.22 $\mu$ F, 50V, Elect.
Q902	222790053	79L05	C140, C180	371121034	0.01 $\mu$ F $\pm$ 5%, 50V, Mylar
Q951	222780154MIT or 222780155MIT	M5F7815L or M5F78M15L	C142	371121044	0.1 $\mu$ F $\pm$ 5%, 50V, Mylar
Q952	222790154MIT or 222790155MIT	M5F7915L or M5F79M15L	C146	354780229	2.2 $\mu$ F, 50V, Elect.
Q953, Q960	222780053	78L05	C148	354721019	100 $\mu$ F, 6.3V, Elect.
Q954	222790083	79L08	C149	354781099	0.1 $\mu$ F, 50V, Elect.
<b>Transistors</b>			C150	371122234	0.022 $\mu$ F $\pm$ 5%, 50V, Mylar
Q101, Q406	2211503 or	2SA950-O or	C151	371122224	2200pF $\pm$ 5%, 50V, Mylar
Q903	2211504	2SA950-Y	C152	354721019	100 $\mu$ F, 6.3V, Elect.
Q119	2211183,	2SC1740-R,	C155	354721029	1000 $\mu$ F, 6.3V, Elect.
	2211254 or	2SC1815-Y or	C162	352942206	22 $\mu$ F, 16V, Non-polar elect.
	2211255	2SC1815-GR	C166, C177	354744709	47 $\mu$ F, 16V, Elect.
Q120	2211254 or	2SC1815-Y or	C168-C171	354744709	47 $\mu$ F, 16V, Elect.
	2211255	2SC1815-GR	C173, C175	354744709	47 $\mu$ F, 16V, Elect.
Q121	2211454 or	2SA1015-Y or	C181	371124734	0.047 $\mu$ F $\pm$ 5%, 50V, Mylar
Q956	2211455	2SA1015-GR	C301	354721029	1000 $\mu$ F, 6.3V, Elect.
Q129	221281	DTC114YS	C302	354722219	220 $\mu$ F, 6.3V, Elect.
Q130	2213074,	2SA933-K,	C401, C402	354723319	330 $\mu$ F, 6.3V, Elect.
	2211454 or	2SA1015-Y or	C403-C406	371122234	0.022 $\mu$ F $\pm$ 5%, 50V, Mylar
	2211455	2SA1015-GR	C407	391280227	2.2 $\mu$ F, 50V, Elect. (MUSE)
Q301	2211723	2SC1923-O	C408	371121034	0.01 $\mu$ F $\pm$ 5%, 50V, Mylar
Q405	2212303 or 2212304	2SK381-C or 2SK381-D	C409, C410	354744719	470 $\mu$ F, 16V, Elect.
Q407, Q408	2212524 or 2212525	2SK363-GR or 2SK363-BL	C413, C414	354744709	47 $\mu$ F, 16V, Elect.
Q413, Q414	2211705 or 2211706	2SD655-E or 2SD655-F	C415-C420	391280227	2.2 $\mu$ F, 50V, Elect. (MUSE)
Q955	2213090	DTA114YS	C421, C422	354744709	47 $\mu$ F, 16V, Elect.
Q957, Q958	221281	DTC114YS	C423, C424	372121514	150pF $\pm$ 5%, 50V, Styrol
<b>Diodes</b>			C425, C426	371121034	0.01 $\mu$ F $\pm$ 5%, 50V, Mylar
D101-D103	223163	1SS133	C427, C428	354744709	47 $\mu$ F, 16V, Elect.
D401	224650511 or 224450511	HZ5.1EB1 or MTZ5.1A	C429, C430	373302224	2200pF $\pm$ 5%, 125V, PP
D901	22380013	RDF02M	C435, C436	373302224	2200pF $\pm$ 5%, 125V, PP
D902	223163	1SS133	C437, C438	354744709	47 $\mu$ F, 16V, Elect.
D903	224652702 or 224452702	HZ27EB2 or MTZ27B	C439, C440	373632224	2200pF $\pm$ 5%, 125V, KP
D904	224650511 or 224450511	HZ5.1EB1 or MTZ5.1A	C443, C444	373633314	330pF $\pm$ 5%, 125V, KP
D951	22380013	RDF02M	C445, C446	371122224	2200pF $\pm$ 5%, 50V, Mylar
D952-D954	223163	1SS133	C447, C448	391242207	22 $\mu$ F, 16V, Elect. (MUSE)
D956	223163	1SS133	C461-C464	391242207	22 $\mu$ F, 16V, Elect. (MUSE)
<b>Photo coupler</b>			C467, C468	354743319	330 $\mu$ F, 16V, Elect.
D104	24120025	PC0N02	C471, C472	372123314	330pF $\pm$ 5%, 50V, Styrol
<b>X'tal</b>			C473, C474	373303314	330 pF $\pm$ 5%, 125V, PP
X102	3010156	CA301	C483, C484	354744709	47 $\mu$ F, 16V, Elect.
<b>Coils</b>			C487-C490	354742219	220 $\mu$ F, 16V, Elect.
L101	231023	NCH-1062	C503	354744709	47 $\mu$ F, 16V, Elect.
L102	232136	NSRF-2046	C901, C902	354742229	2200 $\mu$ F, 16V, Elect.
L301	232153	NSO-4052	C907	354721019	100 $\mu$ F, 6.3V, Elect.
<b>Filters</b>			C908	354721029	1000 $\mu$ F, 6.3V, Elect.
C197, C198	3030002	DSS306-55B-101M	C909	354782209	22 $\mu$ F, 50V, Elect.
			C910	354762209	22 $\mu$ F, 35V, Elect.
			C911	375101045	0.1 $\mu$ F $\pm$ 10%, 125V, Plastic
			C912	379121035	0.01 $\mu$ F $\pm$ 10%, 50V, Plastic
			C951, C952	354763329	3300 $\mu$ F, 35V, Elect.
			C953, C954	354741029	1000 $\mu$ F, 16V, Elect.
			C955	354781099	0.1 $\mu$ F, 50V, Elect.
			C956	354780109	1 $\mu$ F, 50V, Elect.
			C957	354741009	10 $\mu$ F, 16V, Elect.
			C958	354724719	470 $\mu$ F, 6.3V, Elect.
			C959-C961	375101045	0.1 $\mu$ F $\pm$ 10%, 125V, Plastic
			C962	354744709	47 $\mu$ F, 16V, Elect.

CIRCUIT NO.	PART NO.	DESCRIPTION
C963, C964	354742209	22 $\mu$ F, 16V, Elect.
C965	371122224	2200pF $\pm$ 5%, 50V, Mylar
C966	354744709	47 $\mu$ F, 16V, Elect.
C967, C968	354742209	22 $\mu$ F, 16V, Elect.
C969	371122224	2200pF $\pm$ 5%, 50V, Mylar
C970	354743319	330 $\mu$ F, 16V, Elect.
<b>Resistors</b>		
R108	5210066	N06HR22KBD, Semi-fixed
R110	5210060	N06HR2.2KBD, Semi-fixed
R122, R125	5210066	N06HR22KBD, Semi-fixed
R147	5210058 or 5210213	N06HR1KBD, Semi-fixed
R178	5210060	N06HR2.2KBD, Semi-fixed
R401-R404	5210070 or 5210221	N06HR100KBD, Semi-fixed
<b>Plugs</b>		
P101	25055136	NPLG-6P120
P102	25055139	NPLG-9P123
P103	25055154	NPLG-10P138
P104	25055158	NPLG-14P142
P105	25055190	NPLG-9P174
P106	25055146	NPLG-2P130
P107	25055150	NPLG-6P134
P108	25055045	NPLG-4P33
P109, P110	25055038	NPLG-2P29
P402	25055154	NPLG-10P138
<b>Terminal</b>		
P401	25045267	NPJ-4PDBL134
<b>Radiators</b>		
	27160220	RAD51 (B)
<b>Socket</b>		
	2009990067	NSAS-2P0103
<b>Fuses</b>		
QF101-QF103	252112	$\Delta$ ICPN15, IC protector <G>
<b>Holder</b>		
	27190751	

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

#### OPTO/DIGITAL OUTPUT PC BOARD (NADG-3741-1)

CIRCUIT NO.	PART NO.	DESCRIPTION
Q191	24120028	DF-1121/T2, Photo coupler
P191	25045239	NPJ-1PDORG-113, Terminal, Opto. output
P192	25045172	HSJ1003-01-020, Terminal RI
SC191	2009990028A	NSAS-14P0058, Socket
L103, L104	230905	BL02RN-R26, Ferrite beads

#### DISPLAY CIRCUIT PC BOARD (NADIS-3740-1)

CIRCUIT NO.	PART NO.	DESCRIPTION
<b>ICs</b>		
Q701	22240286	CXP50116H-102QZ
Q703	22240173	LC6527H-3722
Q707	222963	LB1630
<b>Fluorescent tube</b>		
Q702	212059	16BT-09GK
<b>Transistors</b>		
Q704, Q705	2212600	DTA124ES
Q706	2212132 or 2212133	2SC2021-R or 2SC2021-S
<b>Diodes</b>		
D701-D704	223163	1SS133
D705	224650562 or 224450562	HZ5.6EB2 or MTZ5.6B
<b>Capacitors</b>		
C701	355744709	47 $\mu$ F, 16V, Elect.
C703	354721019	100 $\mu$ F, 6.3V, Elect.
<b>Resistors</b>		
R735-R742	49163472408	4.7k $\Omega$ $\times$ 8, 1/10W, Network
<b>Switches</b>		
S701-S736	25035548	NPS-111-S510

CIRCUIT NO.	PART NO.	DESCRIPTION
<b>Sockets</b>		
SC701	2002342810	NSAS-28P0051
SC702	2000883	NSAS-18P839
SC703	2000903	NSAS-4P859
SC704	2000755	NSAS-4P711
SC705	2000892	NSAS-12P848
<b>Holder</b>		
	27190656	Display

#### POWER SWITCH PC BOARD (NAPS-3745-1)

CIRCUIT NO.	PART NO.	DESCRIPTION
C941	3500065A	$\Delta$ DE7150FZ103PAC400V/125V, Capacitor IS
C942	3500077	$\Delta$ DE7150F472M, Capacitor IS
P941	25035558	$\Delta$ NPS-111-L520P, Power switch

#### HEADPHONE AMPLIFIER PC BOARD (NAAF-3743-1)

CIRCUIT NO.	PART NO.	DESCRIPTION
Q451	222887	NJM4556S, IC
Q453, Q454	2211705 or 2211706	2SD655-E or 2SD655-F, Transistors
C453, C454	354742219	220 $\mu$ F, 16V, Elect. capacitors
C455, C456	371122224	2200pF $\pm$ 5%, 50V, Mylar capacitors
C457, C458	354741019	100 $\mu$ F, 16V, Elect. capacitors
R451	5104242	N16RGM20KB30F, Variable resistor
R463, R464	442521014	100 $\Omega$ , 1/2W, Metal oxide film resistors
P451	25055183	NPLG-2P167, Plug
SC451	2009990030A	NSAS-20P060, Socket

#### HEADPHONE TERMINAL PC BOARD (NAAF-3744-1)

CIRCUIT NO.	PART NO.	DESCRIPTION
P491	25045139	HLJ0540-01-010, Headphone terminal
L405-L407	230905	BL02RN1-R62, Ferrite beads

#### SWITCH PC BOARD (NASW-3742-1)

CIRCUIT NO.	PART NO.	DESCRIPTION
U751	24130003	GPU1U50XS, Sensor, remote control
D751, D752	225142	SEL2913K, LEDs
C751	354721019	100 $\mu$ 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-3746-1)

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  $\Delta$  ARE CRITICAL FOR RISK OF FIRE AND ELECTRIC SHOCK. REPLACE ONLY WITH PART NUMBER SPECIFIED.

BLOCK DIAGRAM

