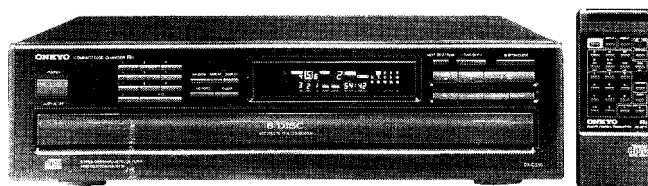


ONKYO SERVICE MANUAL

COMPACT DISC PLAYER

MODEL DX-C110**MODEL DX-C210****Black model**

BHUD, BHUDN	120V AC, 60Hz
BHUP, BHUPV	230V AC, 50Hz
BHUW	120/220V AC, 50/60Hz
BHUQA	240V AC, 50Hz

BHUD, BHUDN	120V AC, 60Hz
-------------	---------------

SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY MARK $\triangle$ 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 reedsolomon code
Decoded bits:	1 BIT PWM/ACCUPULSE D/A CONVERTER
Sampling frequency:	352kHz (8 times oversampling)
Number of channels:	2 (Stereo)
Frequency response:	2Hz~20kHz
Total harmonic distortion:	0.004% (at 1kHz)
Dynamic range:	96dB (at 1kHz)
Signal to noise ratio:	96dB (at 1kHz)
Channel separation:	90dB (at 1kHz)
Wow and Flutter:	Below threshold of measurability
Power consumption:	12 watts
Output level:	2 volts r.m.s.
Dimensions (W×H×D):	455×120×426mm 17-15/16"×4-3/4"×16-13/16"
Weight:	7.7kg, 17.0lbs.

Specifications are subject to change without notice.

ONKYO.
AUDIO COMPONENTS

TABLE OF CONTENTS

Specifications.....	1
Service procedures.....	2
Caution on replacement of optical pickup.....	2
Protection of eyes from laser beam.....	3
Laser warning labels.....	3
IC block diagrams and descriptions.....	4
Packing view.....	9
Mechanism-exploded view.....	10
Changer mechanism.....	10
Pick-up drive unit.....	12
Chassis-exploded view.....	13
Parts list.....	15
Block diagram.....	17
Adjustment procedures.....	19
Printed circuit board view from bottom side..	21
Printed circuit board-parts list.....	23
Disassembling procedures.....	25

SERVICE PROCEDURES

1. 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 cord and chassis.

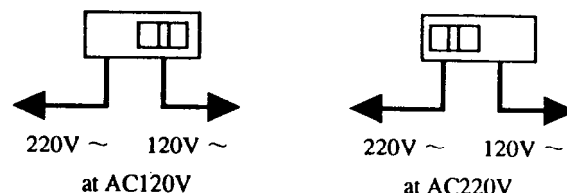
Specifications: More than 10M Ω at 500V.

2. Voltage Selector (Back panel)

Worldwide models are equipped with a voltage selector to conform with local power supplies. Be sure to set this switch to match the voltage of the power supply in user's area before turning the power switch on.

Voltage is changed by sliding the groove in the switch with a screw driver to the right or left.

Confirm that the switch has been moved all the way to the right or left before turning the power switch on.



CAUTION ON REPLACEMENT OF OPTICAL PICKUP

The laser diode in the optical pickup 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 10M Ω) 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.

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.

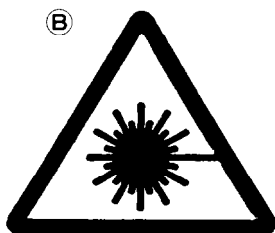
LASER WARNING LABEL

These labels are located on the mechanism.

1. Warning label

This label is located on the arm of mechanism.

(A)
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'ECLenchement DE SECURITE ANNULE.



(C)

ADVARSEL: USYNLIG LASERSTRÅLING VED ÅBNING, NÅR SIKKERHEDSÅF-BRYDER ER UDE AF FUNKTION. UNNGÅ UDSÆTTELSE FOR STRÅLING.

(D)

VARO!
 AVATTAESSA JA SUOJALUKITUS OHITETTAESSA OLET ALLTINNA NÄKYMÄTTÖMÄLLE LASERSÄTEILYLLE. ÄLÄ KATSO SÄTEESEEN.

(E)

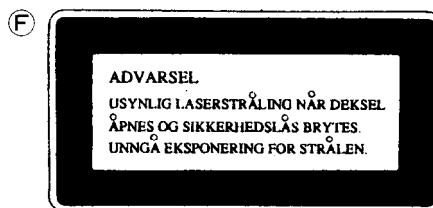
VARNING
 OSYNLIG LASERSTRÅLING NÅR DENNA DEL ÄR ÖPPNAD OCH SPÄRREN ÄR URKOPPLAD. BETRakta EJ STRÅLEN.

- (A) : Danger label
 (B) : Except 120V model
 (C) : Except 120V model
 (D),(E),(F) : Only 230V model

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.



2. Certification label (120V model)

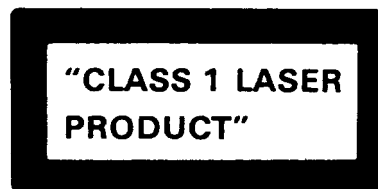
This label is located on the back panel.

PRODUCT IS CERTIFIED BY THE MANUFACTURER TO COMPLY WITH DHHS RULES 21 CFR SUBCHAPTER J APPLICABLE AT THE DATE OF MANUFACTURE



3. Class 1 label (Except 120V model)

This label is located on the back panel.



LUOKAN 1
 LASERLAITE

KLASS 1
 LASER APPARAT

ADVARSEL

Denna mækning 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 utilsladelig kraftig stråling.

APPARATET BØ/R KUN ÅBNES AF FAGFOLK MED SÉ RLIGT 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.

VAROITUS! LAITTEEN KÄYTTÄMINEN MUULLA KUIN TÄSSÄ KÄYTTÖOHJEESSA MAINTULLA TAVALLA SAATTAA ALTISTAA KÄYTTÄJÄN TURVALLISUUSLUOKAN 1 YLITÄVÄLLE NÄKYMÄTTÖMÄLLE LASERSÄTEILYLLE.

CXP50116-383Q (Microprocessor)

No.	Symbol	I/O	Description
1	P5	O	H
2	P6	O	H
3	P7	O	H
4	P8	O	H
5	P9	O	H
6	P10	O	H
7	P11	O	H
8	P12	O	H
9	P13	O	H
10	P14	O	H
11	P15	O	H
12	P16	O	H
13	NC		
14	NC		
15	NC		
16	NC		
17	NC		
18	NC		
19	NC		
20	1G	O	H
21	2G	O	H
22	3G	O	H
23	4G	O	H
24	5G	O	H
25	6G	O	H
26	7G	O	H
27	8G	O	H
28	9G	O	H
29	SCOR	I	↑
30	TX	O	Not used.
31	TEX	I	Not used.
32	XRST	I/O	Reset signal
33	NC		
34	VDD		
35	AD0	I	6
36	AD1	I	6
37	AD2	I	6
38	AD3	I	6
39	AD4	I	6
40	AD5	I	6
41	AD6	I	6
42	LOAD SW	I	6
43	EC	I	Not used.
44	SOCK	O	↑
45	FOK	I	H
46	SQSO	I	H
47	IDATA	O	H
48	CLK	O	H

Segment output terminals for fluorescent indicator tube

Digit output terminals for fluorescent indicator tube

A/D port for key input

Detector switch for tray position

Not used.

Serial transfer clock of sub code Q

Focus OK signal

Serial data of sub code Q

Serial data of command of signal processing IC

Serial transfer clock of command of signal processing IC

No.	Symbol	I/O	Description
49	MODEL	I	Model selection terminal
50	SENS	I	Sense signal from signal processing IC
51	DFT.SW	O	H
52	NC		
53	LSR	O	H
54	XLT	O	↑
55	CH.OPEN	O	L
56	CH.LOAD	O	L
57	LD.CLOSE	O	L
58	LD.OPEN	O	L
59	MUT	O	H
60	NRSC.OUT	O	L
61	NRSC.IN	I	H
62	RMCN	I	L
63	LD.HI	O	H
64	ROT.HI	O	H
65	ROT.R	O	L
66	ROT.L	O	L
67	CH.IN.SW	I	L
68	CH.OUT.SW	I	L
69	ROT.POS	I	↑
70	ROT.STOP	I	H
71	VSS		
72	XTAL	O	
73	NC		
74	EXTAL	I	
75	VREF	I	
76	VFD.P	I	
77	P1	O	H
78	P2	O	H
79	P3	O	H
80	P4	O	H

H: Operation at the high level

L: Operation at the low level

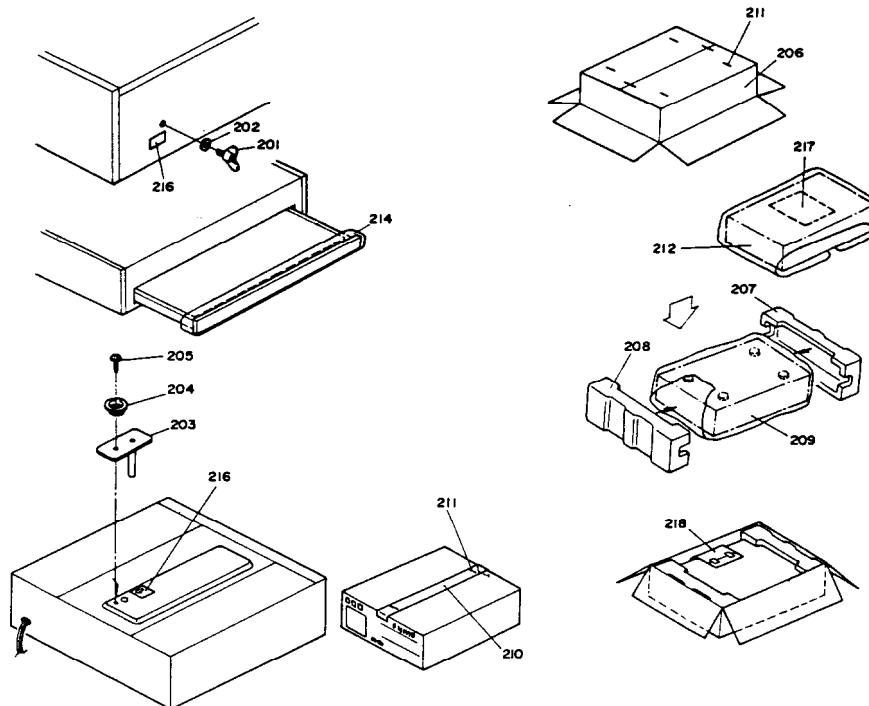
6: A/D converter input

↑: Operation at leading pulse

↓: Operation at trailing pulse

Segment output for fluorescent indicator tube

PACKING VIEW



PARTS LIST

REF.NO.	PART NO.	DESCRIPTION	PART NO.	DESCRIPTION
201	800306	M5×20,Wing screw		Accessory bag ass'y
202	27270357	15×5×0.5,Spacer	2010098A	Connection cord
203	24822012	Bracket,pin	2010200	Remote control cord
204	27265155A	Ring,cover	24140227	RC-227C,Remote control unit <DX-C206>
205	834430088	3TTS+8B(BC),Self-tapping screw	3010054	UM-3,Two batteries <DX-C206>
206	29052400	Master carton box <DX-C106>	29341725	Instruction manual <D>
	29052401	Master carton box <DX-C206>	29341726	Instruction manual <P/W/Q/C>
207	29091562A	Pad L	29365019A	Warranty card <N>
208	29091563A	Pad R	29365020H	Warranty card <V>
209	29100038A	Styrene bag	29358002J	Service station list <N>
210	29110071	Damplon tape	25055040	CV-K-2,Conversion plug <W>
211	282301	Sealing hook	29100097	350×250,Styrene bag
212	29095019-1	0.5×600×800,Protection sheet	29100094B	Styrene bag for warranty card
214	29095654	Protection sheet		
216	29361434	Label		
217	29361433	Label		

NOTE: <D>:120V model only
 <P>:230V model only
 <W>:Worldwide model only
 <Q>:240V model only
 <N>:U.S.A. model only
 <V>:Germany model only
 <C>:Canadian model only

DX-C110(BH)UWX-D and DX-C110(BH)UWX-G types are same as DX-C110(BH)UW with the exception of the following section.

Page	REF. NO.	PART NAME	UWX-D/G	UW
			PART NO.	PART NO.
9	206	Master carton box	29052618	29052617A
9		Warranty card	29365021	Not used
9		Service station list	29358002J	Not used

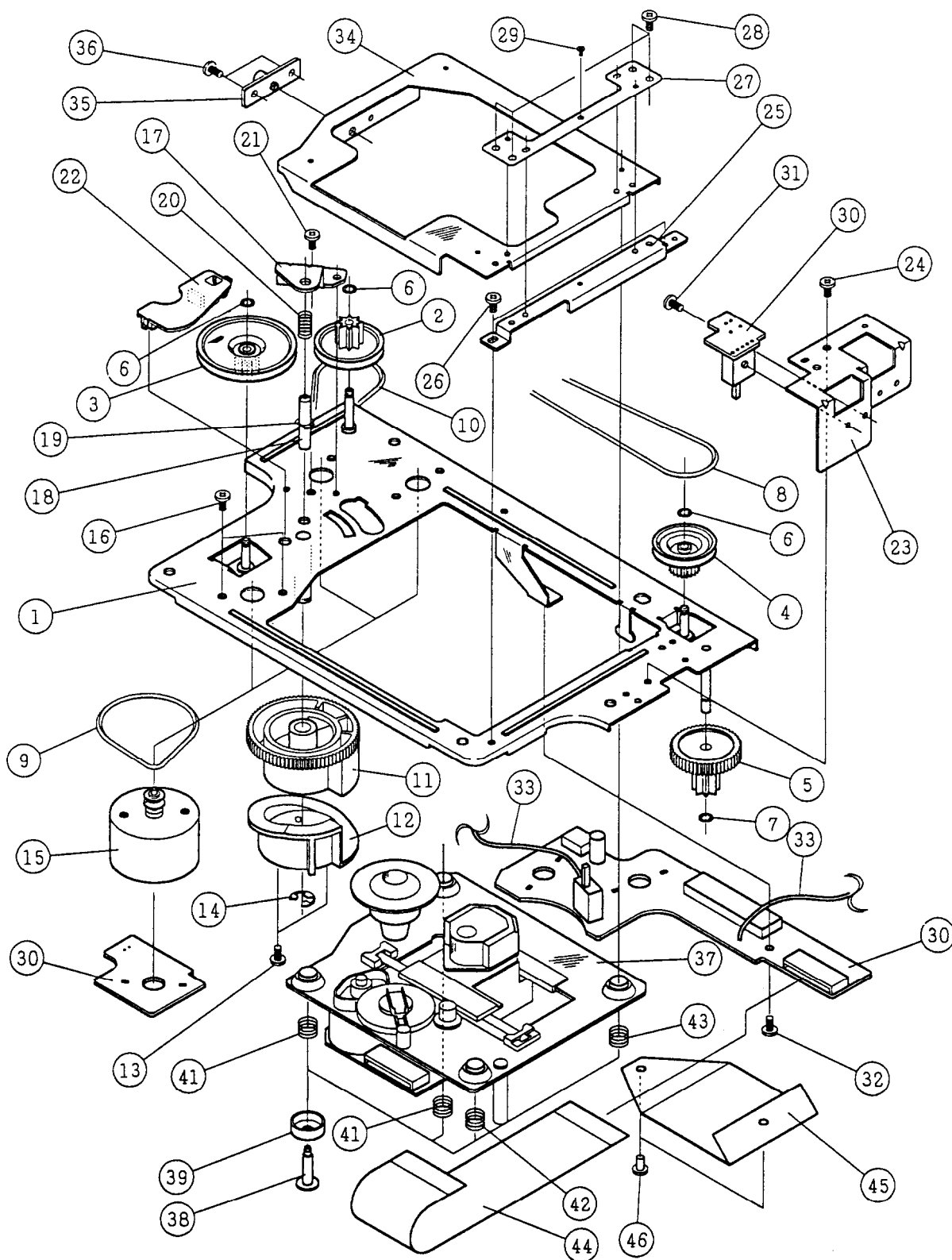
CAUTION:

How to lock the transport screw (when the tray opens)

- 1.Press the memory button.
- 2.Press the close button to close the tray.
- 3.Turn the power switch off after more than 3 seconds.

MECHANISM-EXPLODED VIEW

CHANGER MECHANISM(CMC-B)



PARTS LIST

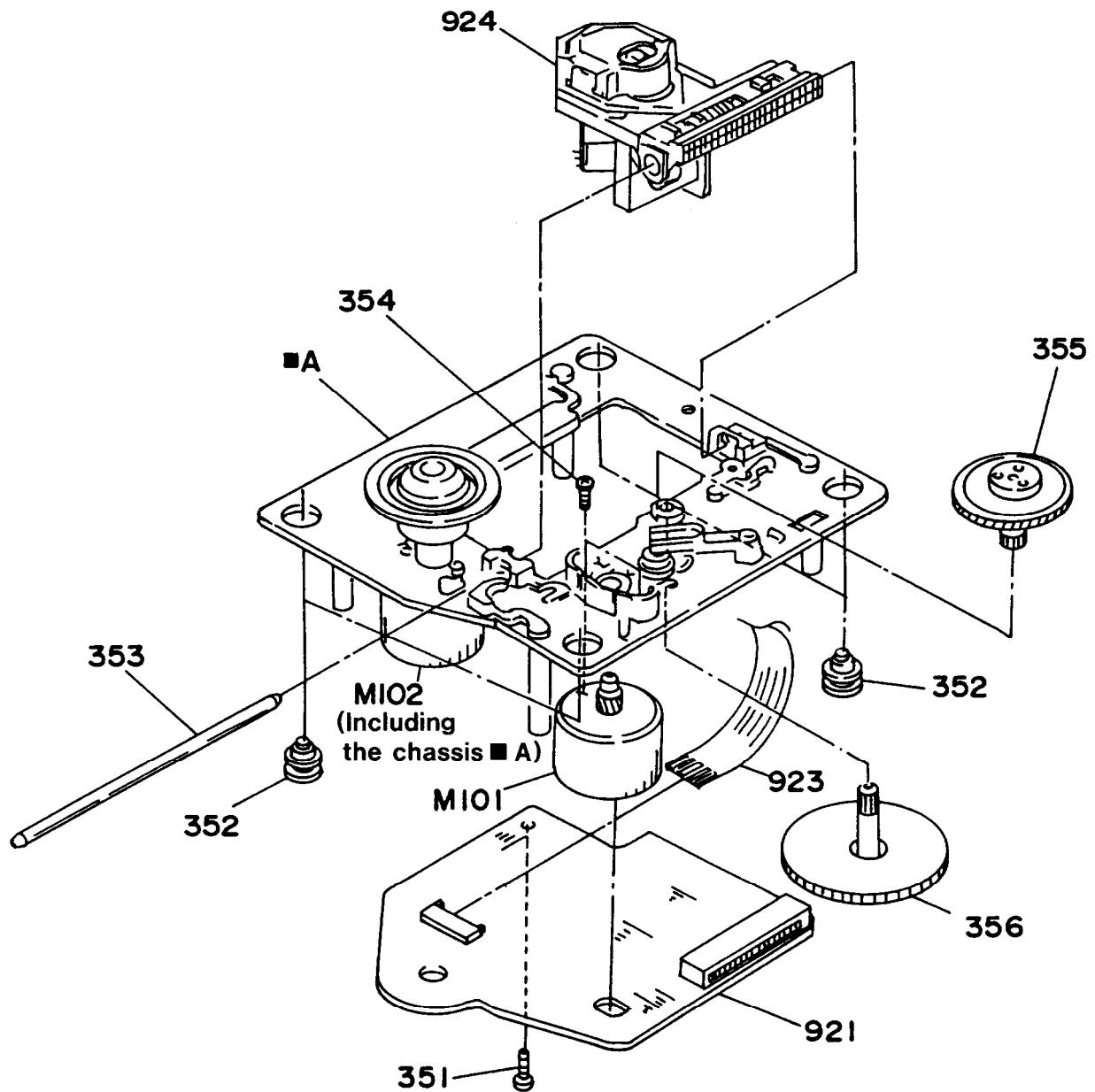
CMC-B

REF.NO.	PART NO.	DESCRIPTION
1	24802004	Chassis ass'y
2	24810007	Gear A
3	24810008	Gear B
4	24810009	Gear C
5	24810010	Gear D
6	24834003	Washer
7	24840019	E ring
8	24816003	Belt
9	24816004	Belt
10	24816005	Belt
11	24810011	Gear cam A
12	24810012	Gear cam B
13	801502	Self-tapping screw
14	24840020	E ring
15	24804005	Motor ass'y
16	801503	Pan head screw
17	24822006	Plate holder
18	24828004	Shaft
19	24840021	E ring
20	24820004	Spring
21	801504	Pan head screw
22	24814002	Arm switch
23	24822007	Plate switch
24	801505	Screw
25	24822008	Plate B
26	801506	Screw
27	24822009	Plate
28	801507	Screw
29	801508	Screw
30	24840009	Connector pc board ass'y
	25065375	NMS-1219,Switch
CN101	24840022	Connector
CN102	24840012	Connector
CN103	24840011	Connector
31	801506	Screw
32	801509	Screw
33	24840013	Wire
34	24802005	Sub chassis
35	24840014	Lift lever
36	801505	Screw
37	24506980	BU-5BD3,Pickup drive unit
38	801510	Screw
39	24840015 B	Bush
41	24820006	Spring
42	24820007	Spring
43	24820008	Spring
44	24840016	Flexible wire
45	24840017 A	Vinyl sheet
46	24840018	Nylon rivert

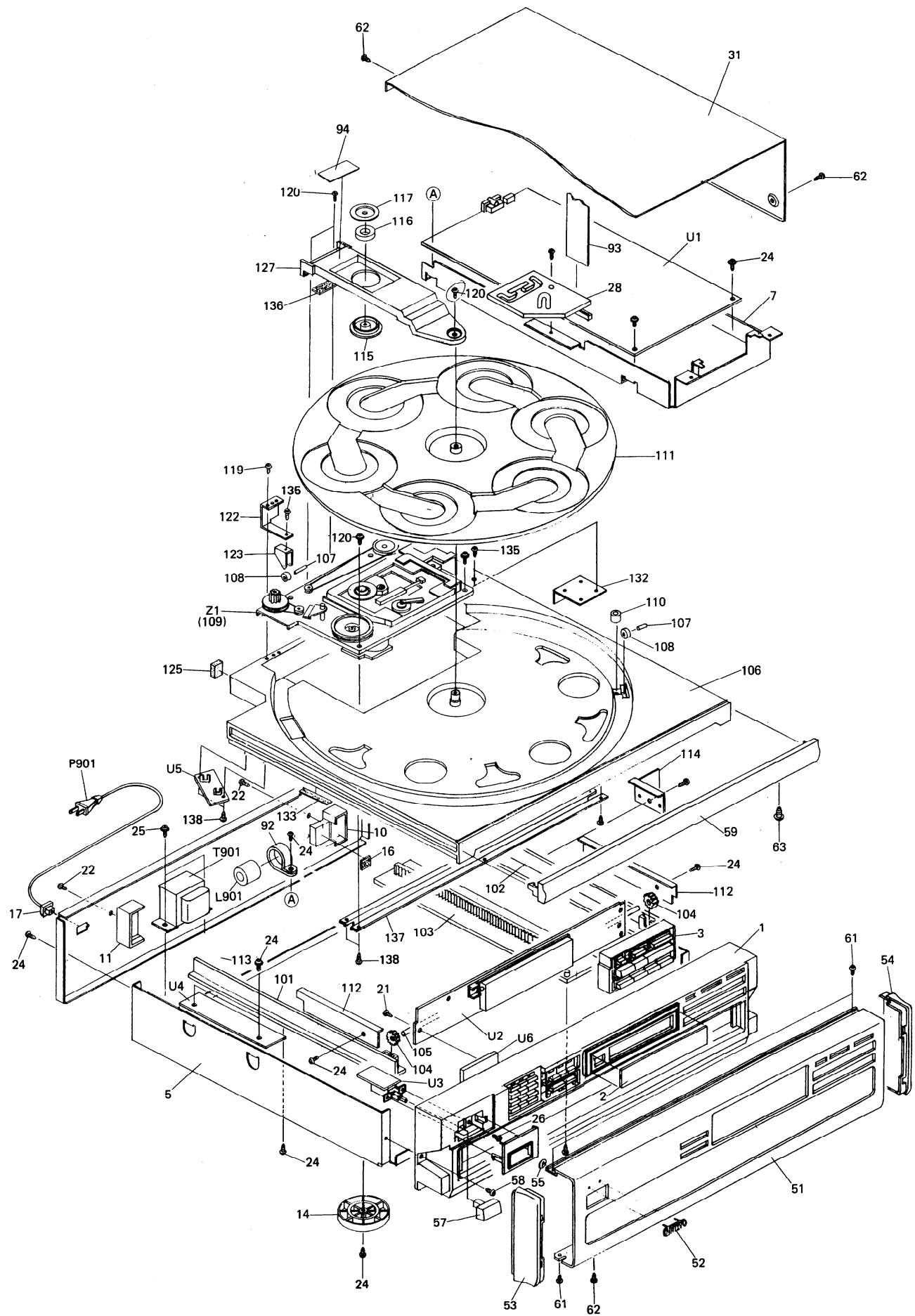
BU-5BD3

REF. NO.	PART NO.	DESCRIPTION
351	838426088	2.6TTB+8B(BC),Self-tapping screw
352	24818001	Insulator A
353	24828001	Sled shaft
354	82142003	2P+3F(BC),Pan head screw
355	24810004	Wheel
356	24810005	Wheel
921	24505321	AR-AS-1,RF/Servo pc board ass'y
923	2043120010	Flexible cable
924	24110011	KSS-240A,Optical pickup
M101	24804002	Sled motor ass'y
M102	24804003	Spindle motor ass'y
S101	25065446	NLF-11022,Leaf switch

PICK-UP DRIVE UNIT(BU-5BD3)



EXPLODED VIEW



DX-C110/DX-C210

DX-C110/DX-C210

PARTS LIST

MODEL DX-C210

REF.NO.	PART NO.	DESCRIPTION	REF.NO.	PART NO.	DESCRIPTION	REF.NO.	PART NO.	DESCRIPTION
1	27110769	Front bracket	91	260208	Binder	101	27301472A	Guide rail L
2	28191656	Clear plate	92	260221	NK-10N,Clamper	102	27301473	Guide rail R
3	28324836A	Knob,play	93	2047294012 or 2041294010	NCFC7-294012 or NCFC1-294010,Flat cable	103	27301476A	Rack
5	27100257	Chassis	94	29360807	Label,danger	104	27301470	Gear <P/W/Q>
6	27121737A	Rear panel				105	27260309	Shaft,gear <P/W/Q>
7	27130684A	Bracket PC	L901	230907	TR-16-8-16,Core	106	27301461C	Tray
10	27190899	Holder	P901	253168 or 253146	AS-UC-6#18, Power supply cord	107	27260308	Shaft,roller
11	27190874	Holder				108	27301465A	Roller
13	27190882	K103G,Holder	T901	2300789A	NPT-1142D,Power transformer	109	24506981D	CMC-B,Changer mechanism
14	27175292	Leg	U1	1H220577-4	NAAR-4477-4,Main circuit pc board ass'y		24506980	BU-5BD3,Pickup drive unit
16	24836009	Cushion	U2	1H220578-4	NADIS-4478-4,Display circuit pc board ass'y		24834001	Tube
17	27300750	Bushing,cord	U3	1H220579-4	NASW-4479-4,Power switch pc board ass'y		27301460A	Carousel
21	833426060	2.6TTP+6P(BC),Self-tapping screw	U4	1H220580-4	NAPS-4480-4,Power supply circuit pc board ass'y	111	27267767A	Side plate F
22	833430080	3TTP+8P(BC),Self-tapping screw	U5	1H220581-4	NASW-4481-4,Disc sensor pc board ass'y	112	27267800	Side plate RR
24	831130088	3TTW+8B,Self-tapping screw	U6	1H220582-4	NASW-4482-4,Operation switch pc board ass'y	114	27267800	Cap CH
25	830440089	4TTC+8C(BC),Self-tapping screw				115	27301474	Magnet CH
26	82143006	3P+6FN(BC),Pan head screw				116	28181019A	Yoke CH
28	28175204-1	Isolation plate				117	27301475	3TTP+8P(BC),Self-tapping screw
31	28184513	Top cover				119	833430080	3TTW+10P(BC),Self-tapping screw
51	27211519A	Front panel				120	831430100	3TTS+8B(BC),Self-tapping screw
52	28135199	Badge				121	834430088	3TTS+8B(BC),Self-tapping screw
53	28125248Y	End cap L				122	24822002	Bracket A
54	28125249Y	End cap R				123	24822003	Bracket B
55	8910301	CS-3(SUS),Ring				125	24836006	Cushion,Tray
57	28324140	Knob,power				127	24814001	Arm
58	27267775Y	Guide				132	24822010	Bracket BT
59	27211414A	Tray panel				133	29110082	Adhesive tape
61	833430080	3TTP+8P(BC),Self-tapping screw				135	831130088	3TTW+8B,Self-tapping screw
62	834430088	3TTS+8B(BC),Self-tapping screw				136	24836007	Cushion
63	833440120	4TTP+12P(BC),Self-tapping screw				137	24822011A	Bracket UT
						138	833430060	3TTP+6P(BC),Self-tapping screw

MODEL DX-C110

REF.NO.	PART NO.	DESCRIPTION	REF.NO.	PART NO.	DESCRIPTION
1	27110694AY	Front bracket	91	260208	Binder
2	28191656	Clear plate	92	260221	NK-10N,Clamper
3	28324836A	Knob,play	93	2047294012 or	NCFC7-294012 or
5	27100257	Chassis	2041294010		NCFC1-294010,Flat cable
6	27121738A	Rear panel <D>	94	29360807	Label,danger
	27121739A	Rear panel <P>	L901	230907	△ TR-16-8-16,Core
	27121740A	Rear panel <W>	P901	253168 or	△ AS-UC-6#18,
	27121742A	Rear panel <Q>		253146	△ Power supply cord <D>
7	27130684A	Bracket PC		253149	△ AS-CEE 250V 2.5A,Power supply cord <P/W>
10	27190899	Holder		253118 or	△ AS-SAA,Power supply cord <Q>
11	27190874	Holder		253170	△
13	27190882	K103G,Holder <D/P/Q>	S902	25065123	△ NSS-1258P,Voltage selector switch <W>
	27141525	Retainer <W>	T901	2300789A	△ NPT-1142D,Power transformer <D>
14	27175292	Leg <D>		2300790A	△ NPT-1142P,Power transformer <P>
	27175254	Leg <P/W/Q>		2300791A	△ NPT-1142DG,Power transformer <W>
16	24836009	Cushion		2300792A	△ NPT-1142Q,Power transformer <Q>
17	27300750	Bushing,cord	U1	1H221577-3	NAAR-4477-3,Main circuit pc board ass'y
21	833426060	2.6TTP+6P(BC),Self-tapping screw	U2	1H221578-3	NADIS-4478-3,Display circuit pc board ass'y
22	833430080	3TTP+8P(BC),Self-tapping screw	U3	1H221579-3	NASW-4479-3,Power switch pc board ass'y
24	831130088	3TTW+8B,Self-tapping screw	U4	1H221580-3	NAFS-4480-3,Power supply circuit pc board ass'y
25	830440089	4TTC+8C(BC),Self-tapping screw			<D/P/Q>
26	82143006	3P+6FN(BC),Pan head screw		1H221580-3B	NAFS-4480-3B,Power supply circuit pc board ass'y
28	28175204-1	Isolation plate			<W>
31	28184513	Top cover	U5	1H221581-3	NASW-4481-3,Disc sensor pc board ass'y
51	27211520A	Front panel		29361507	Label NOR <P>
52	28135199	Badge		29361218	Label LASER <P/W/Q>
53	28125248Y	End cap L		29360811A	Label <P>
54	28125249Y	End cap R		29361298A	Label SEM <P>
55	8910301	CS-3(SUS),Ring		29361342A	Label SEM-FIN <P>
57	28324140	Knob,power		29360687	Label CLASS 1 <P/W/Q>
58	27267775Y	Guide			
59	27211414A	Tray panel			
61	833430080	3TTP+8P(BC),Self-tapping screw			
62	834430088	3TTS+8B(BC),Self-tapping screw			
63	833440120	4TTP+12P(BC),Self-tapping screw			

NOTE: <D>:120V model only

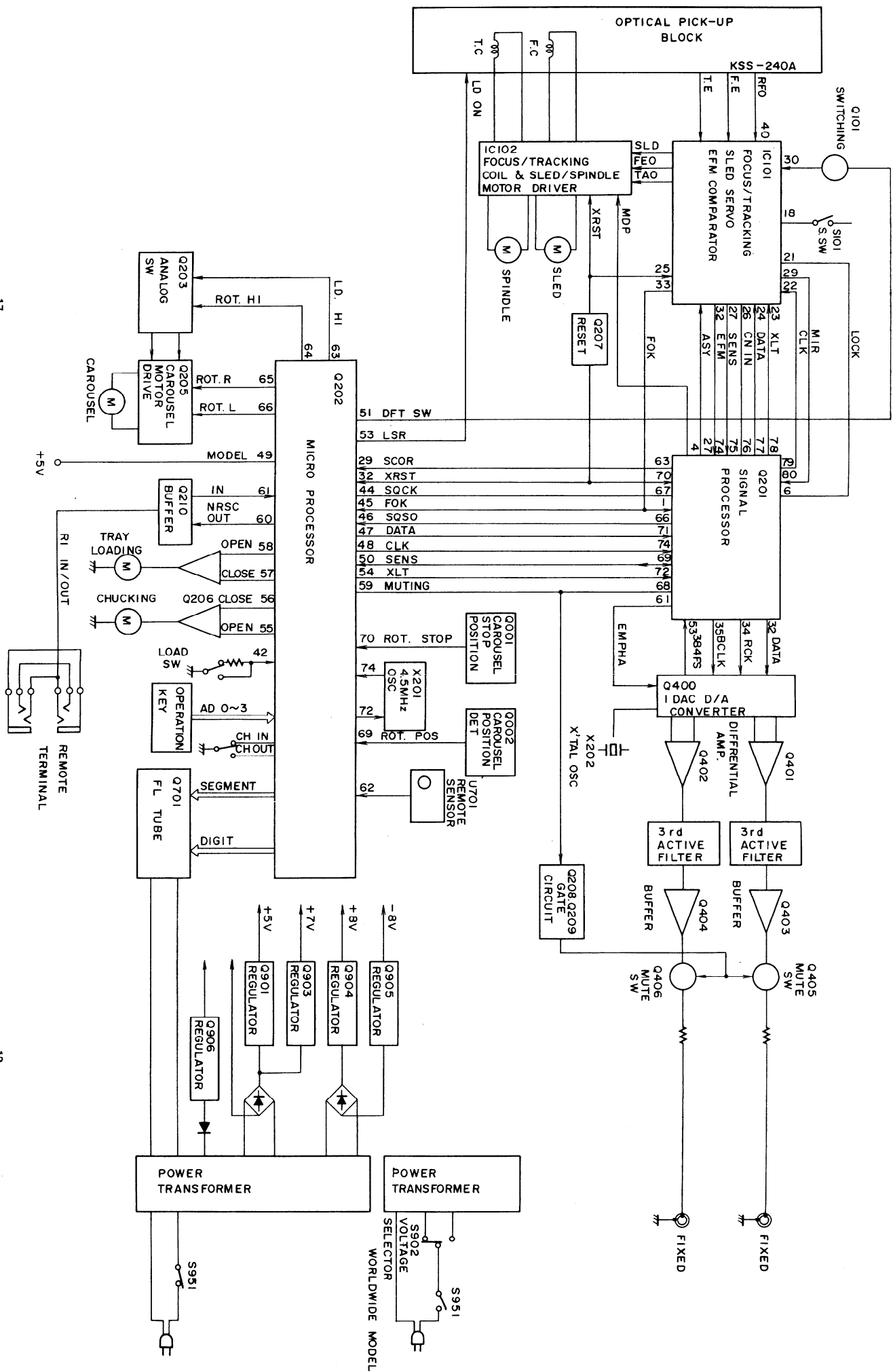
<P>:230V model only

<W>:Worldwide model only

<Q>:240V model only

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

BLOCK DIAGRAM



ADJUSTMENT PROCEDURES

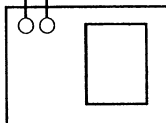
It is not necessary to perform the adjustment of optical pickup.

This confirmation should be made when replacing the optical pickup.

1). Connect the oscilloscope to test points RF and VC.

Oscilloscope

DC range



Mechanism pcb

TP(RF)

TP(VC)

2). Turn the power switch on.

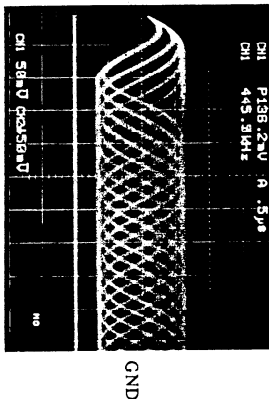
3). Load the test disc YEDS-18 on the tray and press the play button.

4). Confirm that the waveform on the oscilloscope is optimum eye

pattern and optimum level as shown photo 1.

Optimum eye pattern means that shape "◇" can be clearly

distinguished at the center of the waveform.



REFERENCE

Focus/Tracking Gain Adjustment

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

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

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

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

• When gain is raised, the noise when the 2-axis device operates increases.

• When gain is lowered, it is more susceptible to mechanical shock and skipping occurs more easily.

• When gain adjustment is off, the symptoms below appear.

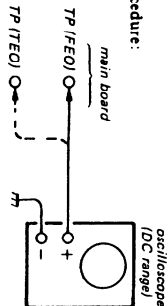
Symptoms	Gain	Focus	Tracking
• The time until music starts become longer for STOP → D-PLAY or automatic selection (◀▶ buttons pressed. (Normally takes about 2 seconds)	low	low or high	low
• Music does not start and disc continues to rotate for STOP → D-PLAY or automatic selection (◀▶ buttons pressed)	low	low	low
• Disc table opens shortly after STOP → D-PLAY.	low or high	low	low
• Sound is interrupted during PLAY. Or time counter display stops progressing.	low	low	low
• More noise during 2-axis device operation	high	high	high

The following is a simple adjustment method.

– Simple Adjustment –

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

Procedure:

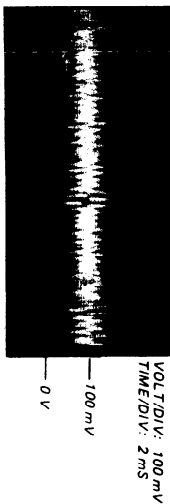


1. Keep the set horizontal.
(If the set is not horizontal, this adjustment cannot be performed due to the gravity against the 2 axis device.)

2. Insert disc (YEDS-18) and press D-PLAY button.

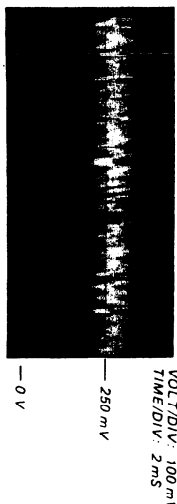
3. Connect oscilloscope to RF/Servo board TP (FE).

4. Adjust RV102 so that the waveform is as shown in the figure below. (focus gain adjustment)

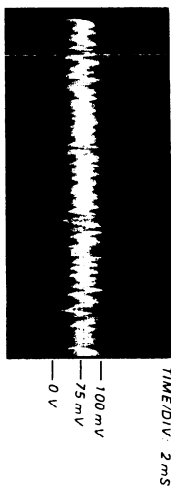


• Incorrect Examples (DC level changes more than on adjusted waveform)

low focus gain



high focus gain



5. Connect oscilloscope to RF/Servo board TP (TE).

6. Adjust RV101 so that the waveform is as shown in the figure below. (tracking gain adjustment)

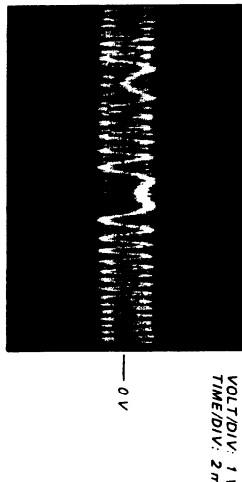


• Incorrect Examples (fundamental wave appears)

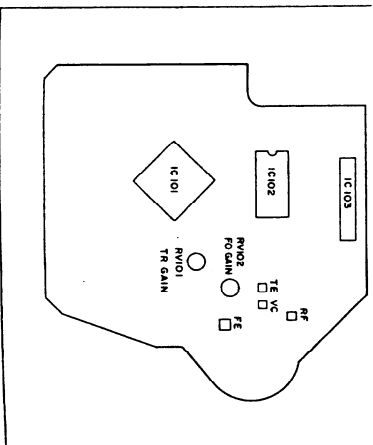
low tracking gain

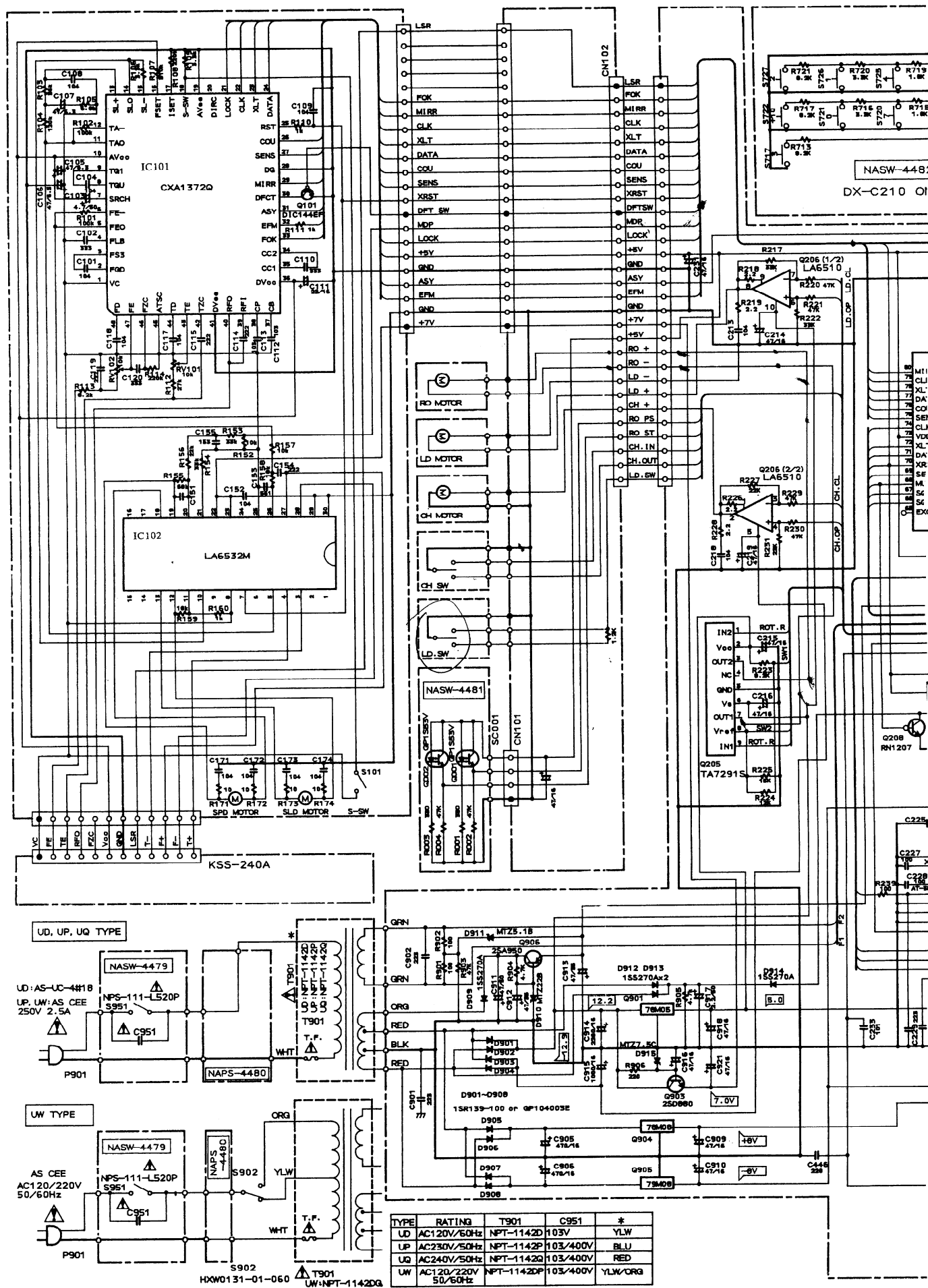


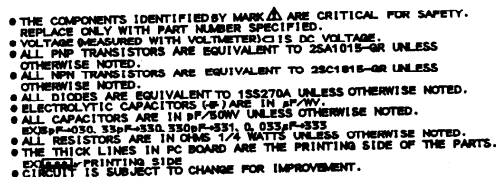
high tracking gain
(higher fundamental wave than for low gain)



Adjustment Location: RF/Servo board







PRINTED CIRCUIT BOARD – PARTS LIST

MAIN CIRCUIT PC BOARD(NAAR-4477-3/4)

CIRCUIT NO.	PART NO.	DESCRIPTION	CIRCUIT NO.	PART NO.	DESCRIPTION
	ICs			Capacitors	
Q201	22240487 or	CXD2500AQ or	C221	354780479	4.7 μ F,50V,Elect.
	22240487A	CXD2500BQ	C222	354724719	470 μ F,6.3V,Elect.
Q202	22240591A	CXP50116-383Q	C223	354782299	0.22 μ F,50V,Elect.
Q203	222840661TOS	4066B	C230	354721019	100 μ F,6.3V,Elect.
Q205	22240239	TA7291S	C231	354744709	47 μ F,16V,Elect.
Q206	22240034	LA6510	C403,C404	374721044	0.1 μ F $\pm$ 5%,50V,Plastic
Q207	22240018	M51943ASL	C413-C416	374722224	2200pF $\pm$ 5%,50V,Plastic
Q400	22240535	TC9237BN	C419,C420	374721824	1800pF $\pm$ 5%,50V,Plastic
Q401-Q404	222579	NJM4560D	C427,C428	393184707	47 μ F,50V,Elect.
Q901	222780055MIT	M5F78M05	C429,C430	374722734	0.027 μ F $\pm$ 5%,50V,Plastic
Q904	222780085MIT	M5F78M08L	C431,C432	374722224	2200pF $\pm$ 5%,50V,Plastic
Q905	222790085MIT	M5F79M08L	C441-C444	393142217	220 μ F,16V,Elect.
	Transistors		C905,C906	354744719	470 μ F,16V,Elect.
Q208	2213570	RN1207	C909,C910	393144707	47 μ F,16V,Elect.
Q209	2211454 or	2SA1015-Y or	C911	354784709	47 μ F,50V,Elect.
	2211455	2SA1015-GR	C912,C913	354764709	47 μ F,35V,Elect.
Q210	2213590	RN2207	C914	354742229	2200 μ F,16V,Elect.
Q405,Q406	2211705 or	2SD655-E or	C915	354741029	1000 μ F,16V,Elect.
	2211706	2SD655-F	C916	354744709	47 μ F,16V,Elect.
Q903	2201074 or	2SD880-Y or	C917	354780229	2.2 μ F,50V,Elect.
	2201073	2SD880-O	C918,C921	393144707	47 μ F,16V,Elect.
Q906	2211504 or	2SA950-Y or		Resistor	
	2211503	2SA950-O	R216	49163472408	4.7kohm $\times$ 8,1/10W,Array
	Diodes			Socket	
D201,D202	223205	1SS270A	P101	25050969 or	NSCT-29P756 or
D203	224450562	MTZ5.6B		25050861	NSCT-29P656
D901-D908	22380032 or	1SR139-100 or		Terminals	
	22380035	GP104003E	P401	25045361	NPJ-2PDBL207,Output
D909	223205	1SS270A	P102	25045362	LGY6502-0102,RI
D910	224452202	MTZ22B		Radiator	
D911	224450512	MTZ5.1B		27160176	RAD56
D912-D914	223205	1SS270A		Pan head screw	
D915	224450753	MTZ7.5C		82143006	3P+6FN(BC)
	Resonators			Holder	
X201	3010188	CTS4.50MGW040,Ceramic		27190751	
X202	3010159	AT-38-169			
	Capacitors				
C202	374724734	0.047 μ F $\pm$ 5%,50V,Plastic			
C203,C209	354721019	100 μ F,6.3V,Elect.			
C205	374721034	0.01 μ F $\pm$ 5%,50V,Plastic			
C206	354781099	0.1 μ F,50V,Elect.			
C207	354762209	22 μ F,35V,Elect.			
C213,C218	374721044	0.1 μ F $\pm$ 5%,50V,Plastic			
C214-C216	354744709	47 μ F,16V,Elect.			
C219	354744709	47 μ F,16V,Elect.			

DISPLAY CIRCUIT PC BOARD(NADIS-4478-3/4)

MARK	CIRCUIT NO.	PART NO.	DESCRIPTION
	Q701	212110	9-BT-109GK,FL tube
	S701-S716	25035548	NPS-111-S510,Push switch
	U701	24130007	GP1U571X,Remote sensor
	C701	353744709	47 μ F,16V,Elect. capacitor
		27190884AY	Holder,display

POWER SWITCH PC BOARD(NASW-4479-3/4)

MARK	CIRCUIT NO.	PART NO.	DESCRIPTION
Δ	C951	3500065A	DE7150FZ103PAC400V/ 125V,Capacitor IS
Δ	S951	25035558	NPS-111-L520P, Power switch

DISC SENSOR PC BOARD(NASW-4481-3/4)

MARK	CIRCUIT NO.	PART NO.	DESCRIPTION
	Q001,Q002	24190037 or 24190038	GP1S53V or GP1S53,Photo interruptor
	SC001	2002390815	NSAS-8P0309,Socket

OPERATION SWITCH PC BOARD(NASW-4482-4)

MARK	CIRCUIT NO.	PART NO.	DESCRIPTION
$\odot$	S717-S726	25035548	NPS-111-S510

RF/SERVO PC BOARD

MARK	CIRCUIT NO.	PART NO.	DESCRIPTION
	IC101	22240394	CXA1372Q,IC
	IC102	22240551	LA6532M,IC
	Q101	2214290	DTC144EF,Transistor
	CN101	25050669	NSCT-22P473,Connector
	CN102	25050670	NSCT-12P474,Connector
	S101	25065446	NLF-11022,Leaf switch

MARK: $\odot$:DX-C210 only

NOTE:

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

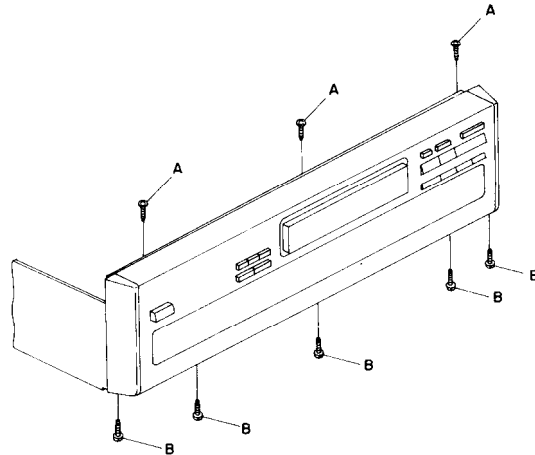
DISASSEMBLING PROCEDURES

1. Front Panel

Remove the top cover.

Remove the three screws A and the five screws B.

Remove the two end caps and the front panel.



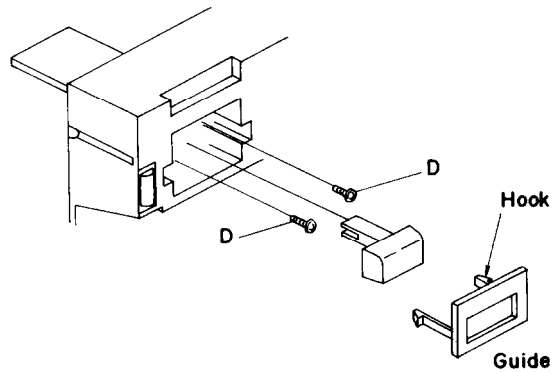
2. Power switch pc board

Remove the top cover and the front panel.

Press the hook of guide and remove the guide.

Pull the power knob.

Remove the two screws D to remove the power switch pc board.



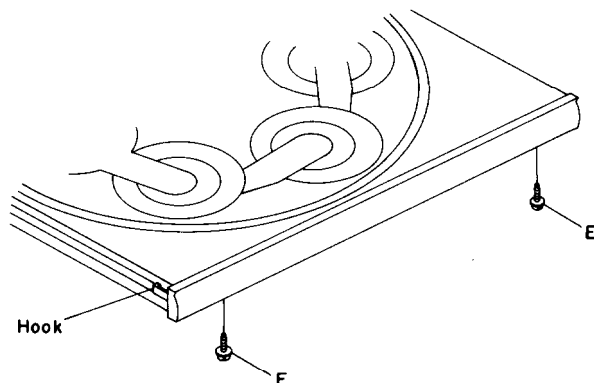
3. Tray panel

Remove the top cover.

Pull the tray ass'y to the front direction.

Remove the two screws E.

Remove the hook of tray to remove the tray panel.



4.Front Bracket

Remove the front panel,the power switch pc board, and the tray panel.

Remove the nine screws holding the front bracket and the chassis.(top:2 bottom:2 front:5)

5.Mechanism ass'y

Remove the front bracket.(Procedures:1→2→3→4)

Remove the two screws F from the left and right sides.

Pull the tray ass'y to the front direction and lift up the mechanism ass'y.

