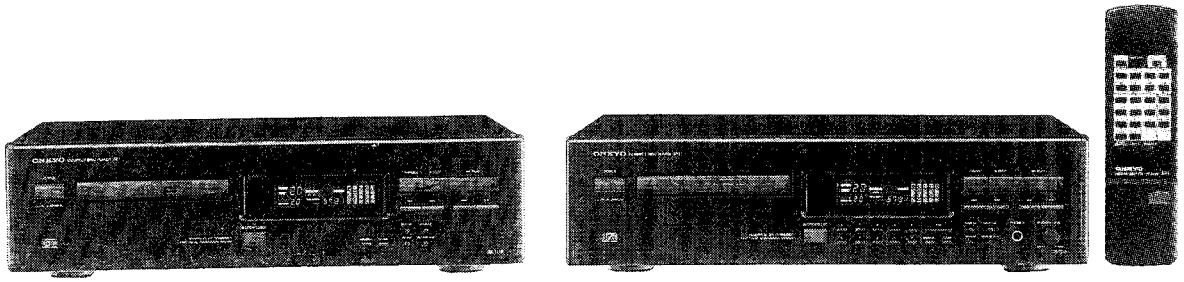
Ref. No. 0M3496

ONKYO® SERVICE MANUAL

COMPACT DISC PLAYER

MODEL DX-7110/7210



Black and Silver (only DX-7210) model

BMP,SMP		230V AC, 50Hz
BMD	only DX-7210B	120V AC, 60HZ
BMW	only DX-7210B	120/220V AC, 50/60Hz

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 PARTS 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

Compact Disc Player Model DX-730

Signal readout system:	Optical non-contact
Reading rotation:	About 500 – 200 r.p.m. (constant linear velocity)
Linear velocity:	1.2 –1.4 m/s
Error correction system:	Cross Interleave Reed Solomon code
D/A converter:	1 bit PWM ACCUPULSE D/A CONVERTER
Sampling frequency:	352.8 kHz (Eight-times oversampling)
Number of channels:	2 (stereo)
Frequency response:	5 Hz – 20 kHz
Total harmonic distortion:	0.004% (at 1 kHz)
Dynamic range:	96 dB
Signal to noise ratio:	100 dB
Channel separation:	90 dB (at 1 kHz)
Wow and Flutter:	Below threshold of measurability
Output level:	2 volts r.m.s.
Power consumption:	12 watts
Power supply rating:	U.K. and Australian models: AC 240V, 50Hz European model: AC 230V, 50Hz (Except U.K.) USA & Canadian models: AC 120V, 60Hz Worldwide model: AC 120V and 220V switchable 50/60Hz
Dimensions (W × H × D):	455 × 120 × 308 mm
Weight:	4.8 kg, 10.6 lbs.

Specifications and external appearance are subject to change without notice because of product improvements.

ONKYO AUDIO COMPONENTS

TABLE OF CONTENTS

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.

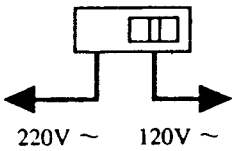
Specifications:More than 10Mohm at 500V.

2. Voltage Selector (Back panel)

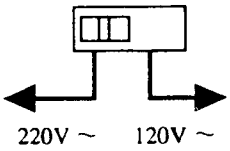
Worldwide models are equipped with a voltage selector to conform with local power supplies.Be sure to set this switch to match the voltage of the power supply in user's area before turning the power switch on.

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.



at AC120V



at AC220V

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,carefulley 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 inpedance lower than 10MΩ) 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 EMMISION, BE SURE TO OBSERVE FROM A DISTANCE OF MORE THAN 30cm FROM THE SURFACE OF THE OBJECTIVE LENS ON THE OPTICAL PICK-UP BLOCK.

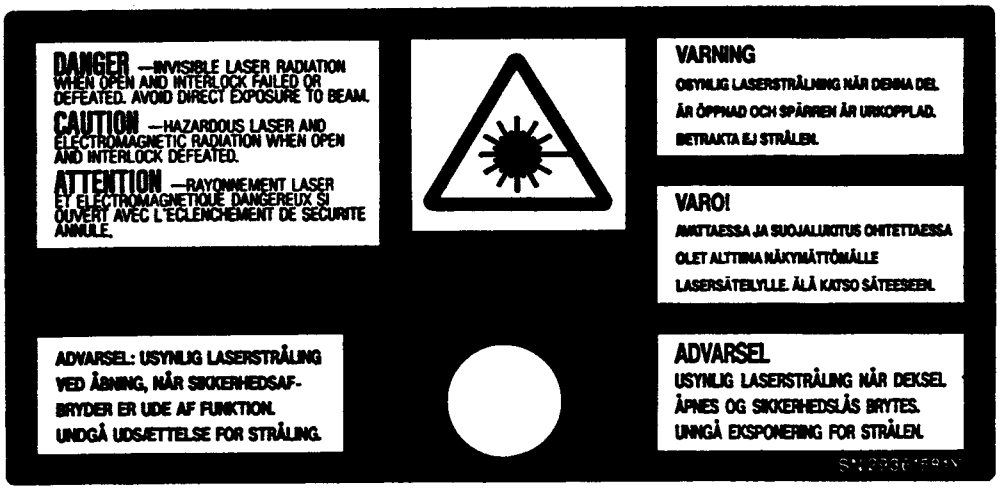
Laser Diode Properties

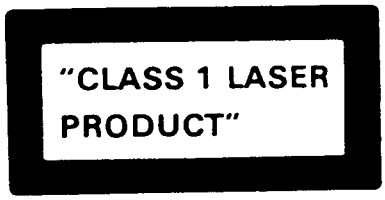
- Material: GaAlAs
- Wavelemgth: 760 ~800nm
- Emission Duration: continuous
- Laser output: 0.5mW*

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

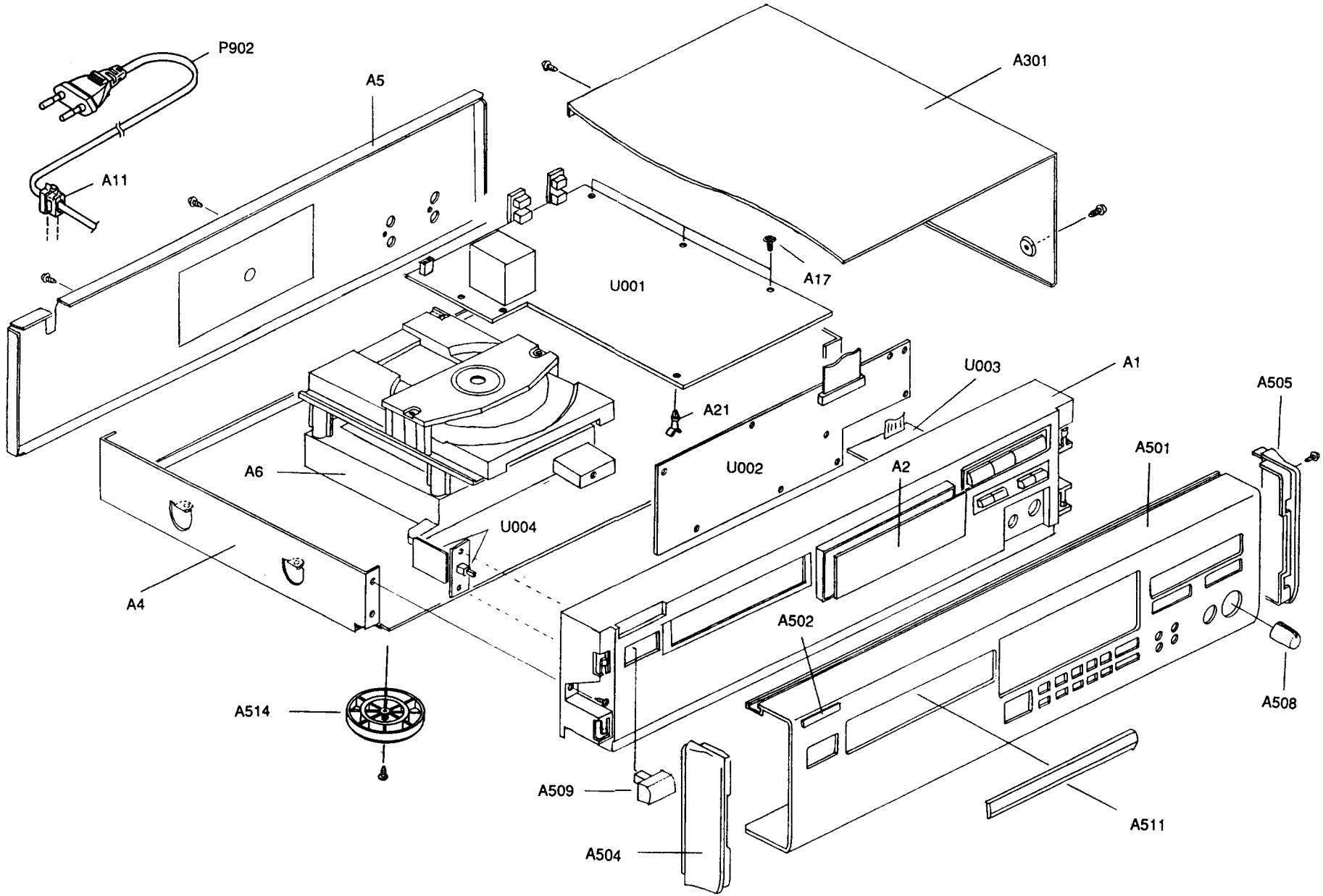
LASER WARNING LABELS

The label shown below are affixed.





EXPLODED VIEW



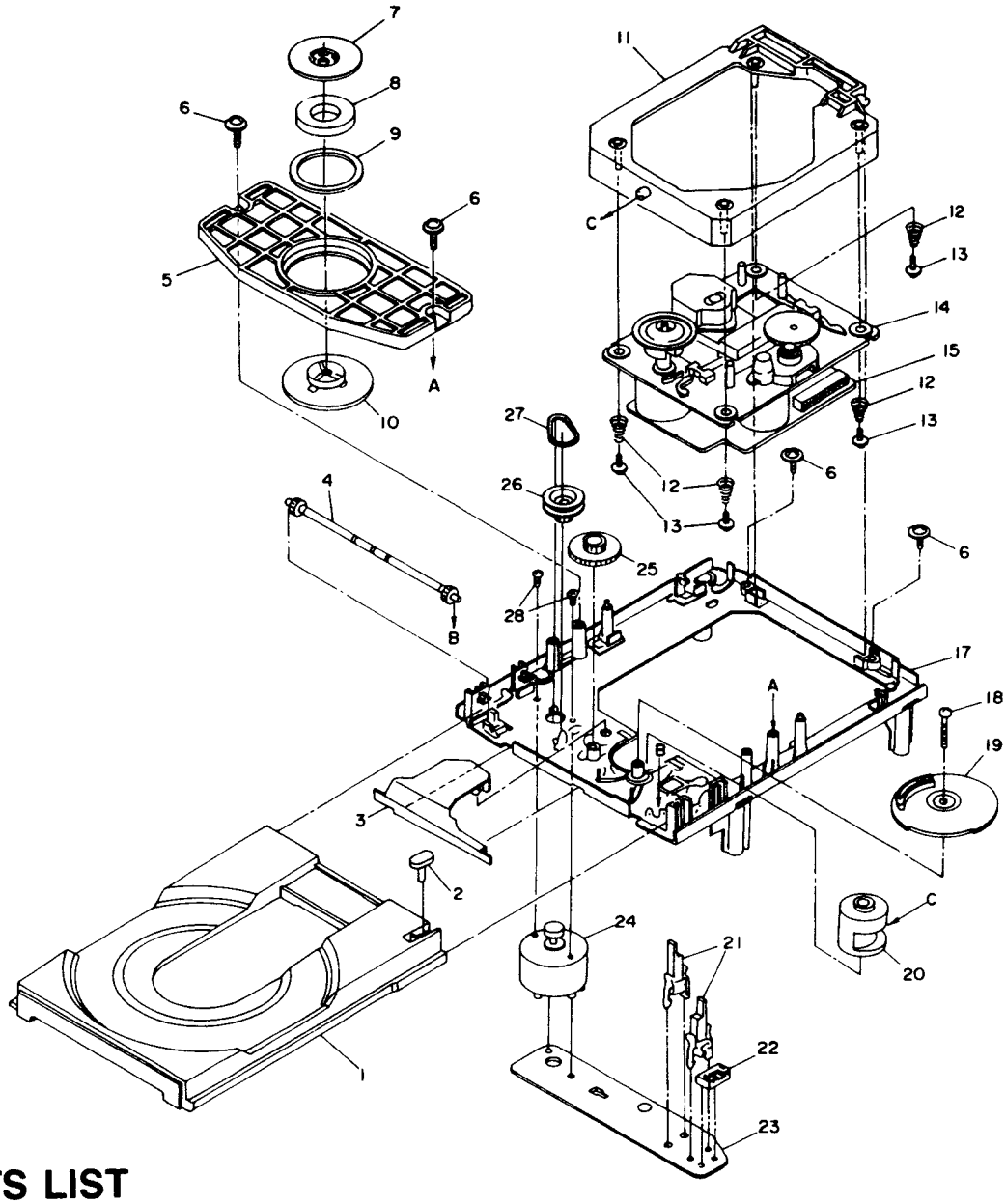
PARTS LIST

REF. NO.	PAERS NO.	DESCRIPTION
A1	27110829AY	FRONT BRACKET, Black model
	27110830Y	FRONT BRACKET, Silver model
A2	28191697Y	CLEAR PLATE
A4	27100227DY	CHASSIS
A5	27121969Y	REAR PANEL, DX-7210B
	27121965Y	REAR PANEL, DX-7110B
	27121966Y	REAR PANEL, DX-7210S
	27122035Y	REAR PANEL, DX-7210B, <PT>
A6	27190950Y	HOLDER (ME)
A7	27190951Y	HOLDER (PC)
A11	27300750	CORD BUSHING
A13	838130088Y	3TTB+8B, SCREW
A14	82143006Y	3P+6FN (BC) , SCREW
A17	833430080Y	3TTP+8P (BC) , SCREW
A18	833130087Y	3TTP+8S, SCREW
A19	831430100Y	3TTW+10P (BC) , SCREW
A20	834430108Y	3TTS+10B (BC) , SCREW
A21	27190524-1Y	LSR-14R, HOLDER
A301	28184479AY	COVER, DX-7210B/7110B
	28184601Y	COVER, DX-7210S
A501	27211657Y	FRONT PANEL, DX-7110S
	27211655Y	FRONT PANEL, DX-7210B
	2711656Y	FRONT PANEL, DX-7210S
A502	28135199Y	BADGE
A503	8910301	CS-3 (SUS) , CS RING
A504	28125248-6Y	END CAP (L) , DX-7210B/7110B
	28125283Y	END CAP (L) , DX-7210S
A505	28125249-6Y	END CAP (R) , DX-7210B/7110B
	28125284Y	END CAP (R) , DX-7210S
A508	28324845BY	KNOB (LEVEL) , DX-7210B/7110B
	28325054Y	KNOB (LEVEL) , DX-7210S
A509	28324140Y	KNOB (POWER) , DX-7210B/7110B
	28324974Y	KNOB (POWER) , DX-7210S
A511	28148301Y	DOOR, DX-7210B/7110B
	28148302Y	DOOR, DX-7210S
A514	27175292Y	LEG ASS'Y
A518	833430080Y	3TTP+8P (BC) , SCREW
A519	838430088Y	3TTB+8B (BC) , SCREW

REF. NO.	PAERS NO.	DESCRIPTION
A520	838130088Y	3TTB + 8B, SCREW
P902	253192HITY	AS-UC-6#18, AC CORD,<D>
	253193HITY	AS-CEE, AC CORD,<V,W>
	251397HIT	AS-SAA, AC CORD, <PA>
	2047381512Y	NCFC7-381512, FFC
	24800009CY	NCD-130S, CDP M
	2047222012Y	NCFC7-222012, FFC
	2061112100UL	CRIMP AS,<D>
	29360687Y	LABEL (CLASS1) , <V,WT,PT,PA>
	29361581Y	LABEL (ALL) ,<D>
	29360117Y	LABEL (CSA) , <DC>
	29361786Y	LABEL, B, <PT>
	29361759Y	LABEL (CUL) , <D, DC>
U001	1H252595-1	NAAR-5095-1, AR-AS,DX-7110
	1H252595-1A	NAAR-5095-1A, AR-AS,DX-7110
	1H252595-1B	NAAR-5095-1B, AR-AS,DX-7110
	1H254595-2	NAAR-5095-2, AR-AS,<D>,DX-7210
	1H254595-2A	NAAR-5095-2A, AR-AS,<V>,DX-7210
	1H254595-2B	NAAR-5095-2B, AR-AS,<W>,DX-7210
U002	1H252596-1	NADIS-5096-1, DIS-AS,DX-7110
	1H254596-2	NADIS-5096-2, DIS-AS,DX-7210
U003	1H254597-2	NAAF-5097-2, AF-AS,DX-7210
U004	1H252598-1	NAPS-5098-1, PS-AS,DX-7110
	1H254598-2	NAPS-5098-2, PS-AS,DX-7210

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

MECHANISM-EXPLODED VIEW

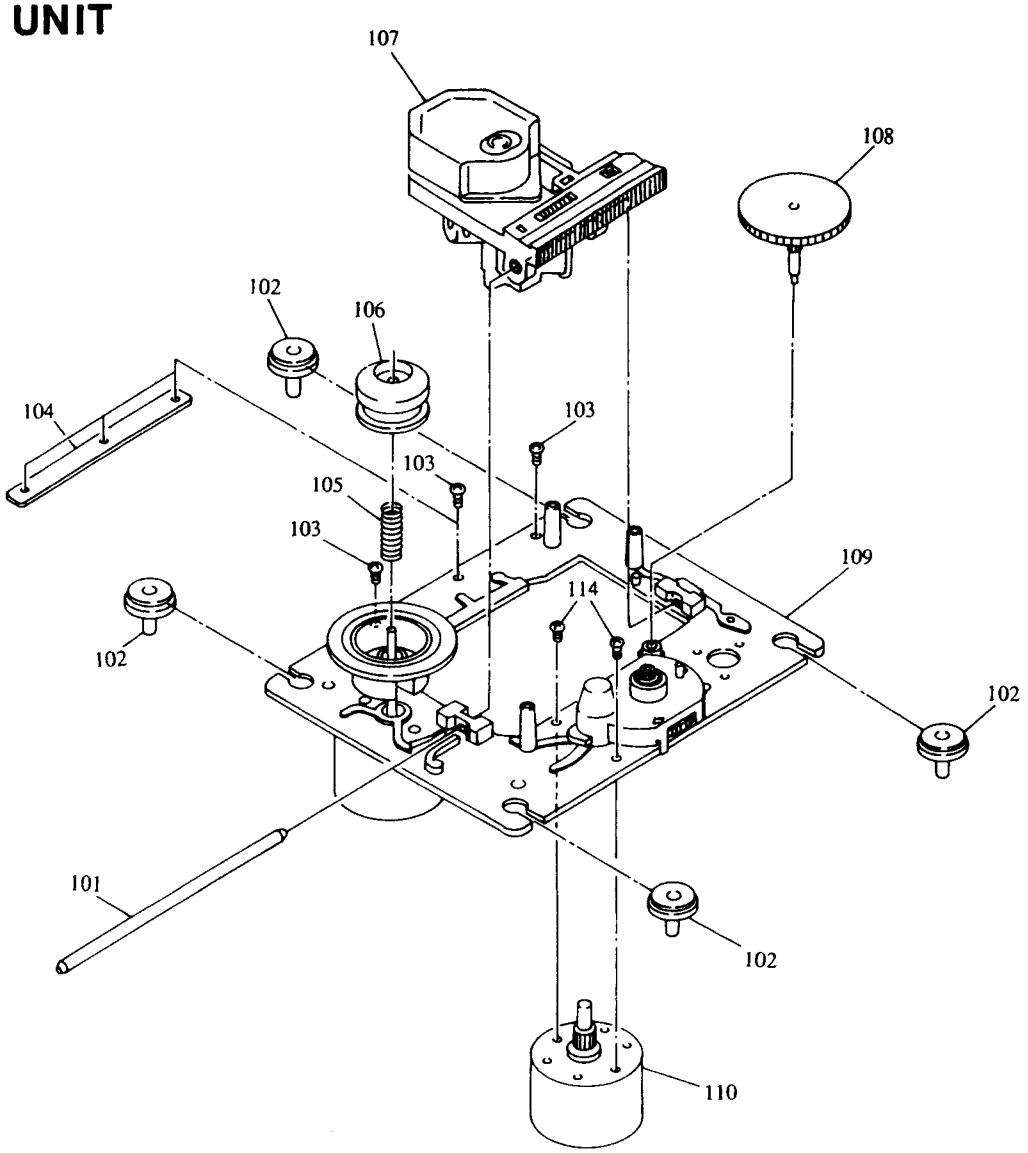


PARTS LIST

REF.NO.	PART NO.	DESCRIPTION
1	24840060	Tray
2		Stopper
3	24822014	Gear cover
4	24810020	Tray gear
5	24840061	Chucking plate
6		2.6TTW+7B,Self-tapping screw
7	24830003	Chucking yoke
8	24832004	Magnet
9	24836013	Damper
10	24810024	Chucking P
11	24802012	Sub chassis
12	24820023	Spring
13	24840062	Screw with washer
14		KSM-2401,Pickup drive unit
15	24840075	CD servo pc board ass'y
17	24802013	Main chassis
18		2.6TTW+16B,Self-tapping screw
19	24810021	Drive gear
20	24840063	Control cam

REF.NO.	PART NO.	DESCRIPTION
21	24840064	Leafswitch
22	25055369	NPLG-5P352,Plug
23	24840066	Loading motor pc board
24	24840067	Loading motor
25	24810022	Middle gear
26	24810025	Loading
27	24816008	Belt
28		2.6B+2.5F,Screw
101	24828006	Sled shaft
102	24836014	Insulator
103	24840068	2×5,Special screw
104	24822015	Plate S
105	24820024	Spring
106	24824003	Center ring
107	24110011	KSS-240A,Optical pickup
108	24810023	Wheel
109	24802014	Chassis
110	24804012	Motor gear ass'y
114	82112003	2P+3FN,Pan head screw

DRIVE UNIT



REMOVEMENT OF TRAY ASS'Y

Remove the top cover.

Turn the locked screw to the clockwise to release the lock of gear.(Refer fig.1)

Pull out the tray ass'y.

Remove the stopper.(Refer fig.2)

Press the tray stopper to the arrow mark direction and remove the tray ass'y.

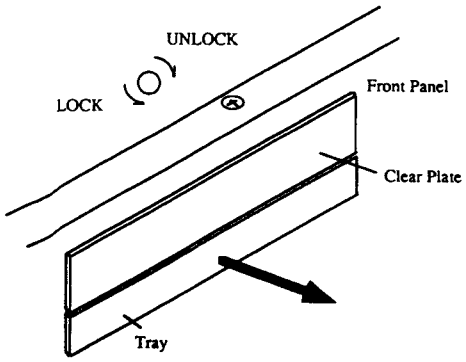


fig.1

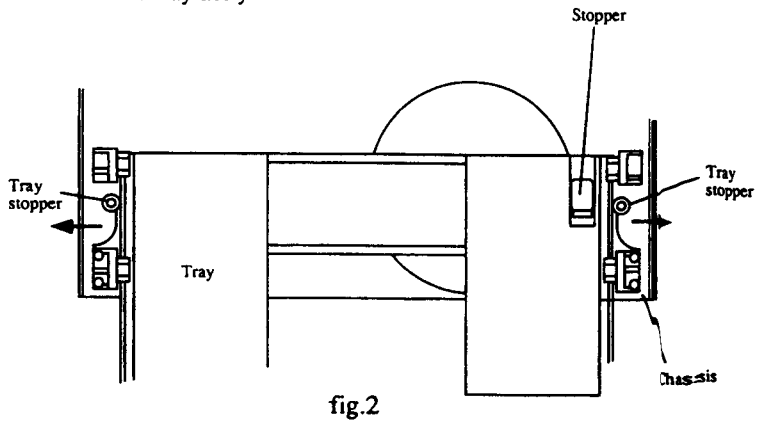
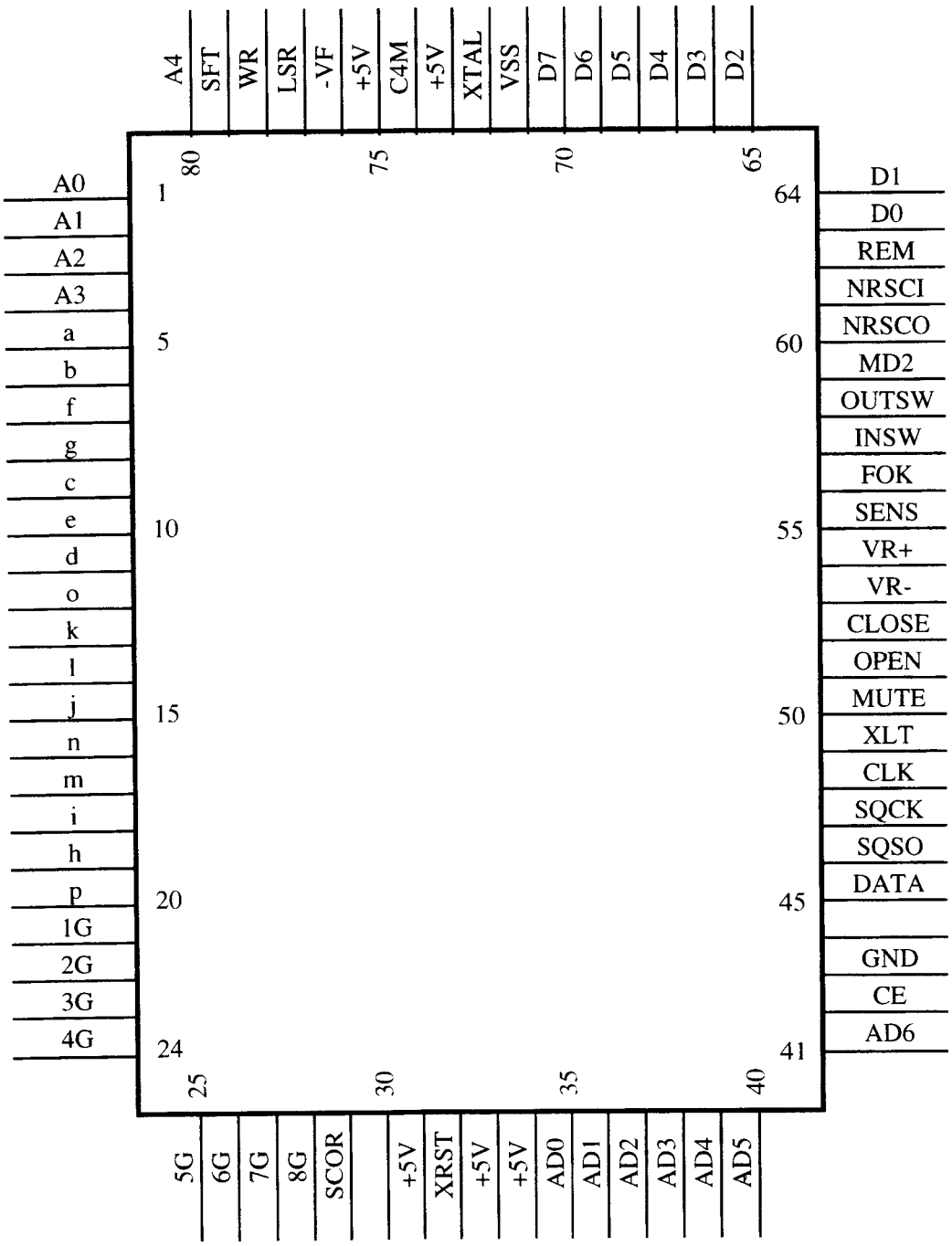


fig.2

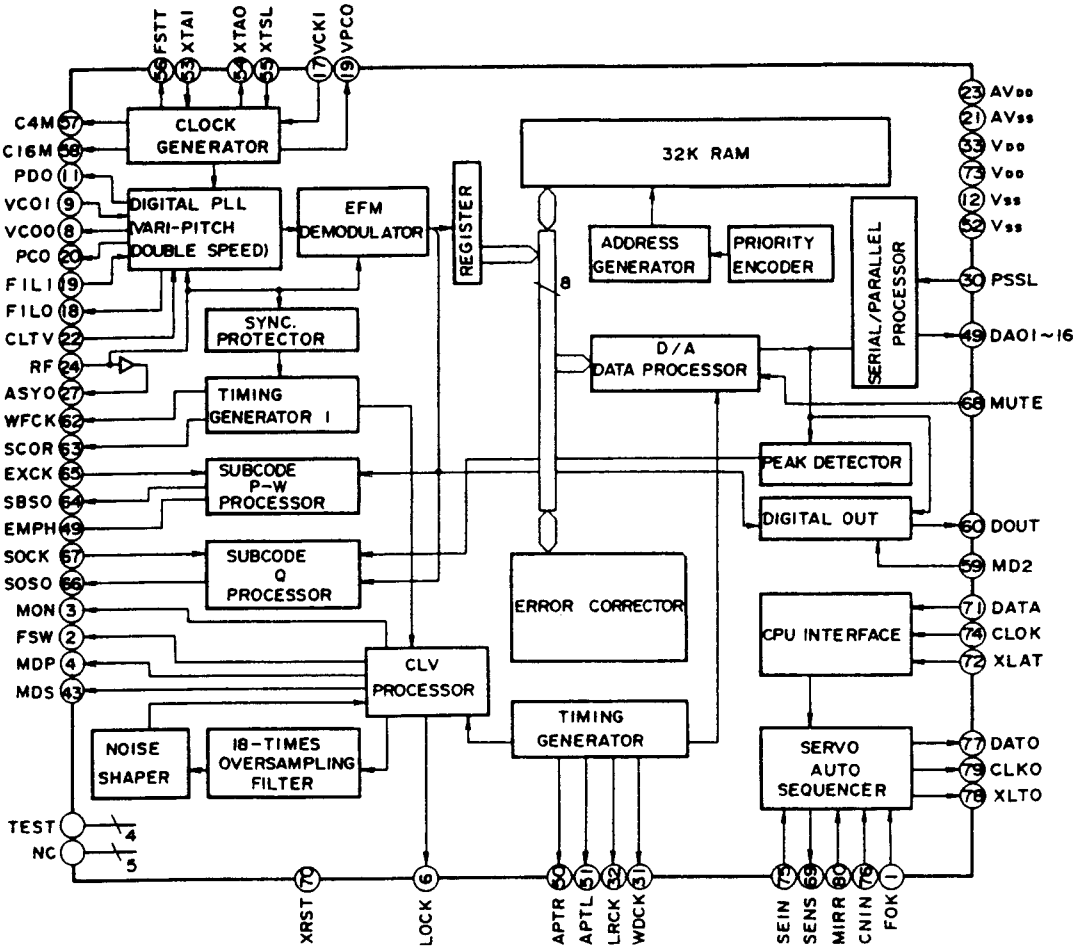
MICROPROCESSOR CONNECTION DIAGRAM

CXP50116-546Q (Microprocessor)



Pin No.	Symbol	I/O	Logic	Description
1~4	A0~A3	O	H	Music file address signal
5~20	a~p	O	H	FL tube segment frive output terminals
21~28	1G~8G	O	H	FL tube grid drive output terminals
29	SCOR	I	Neg	Synchrnizing signal detection input terminal of sub code frame
30		O		Not used (Open)
31	+5V	I		Not used (+5V)
32	XRST	I/O	L	Reset input terminal
33				
34	+5V	I	L	Positive power supply
35~41	AD0Å'6	I	6 value	A/D port for operation keys
42	CE	I	L	Chip enable terminal for Music file
43	GND	I	Neg	Not used (Ground)
44		O	Neg	Clock supply terminal for serial transport
45	DATA	O	H	Serial data output terminal
46	SQSO	I	H	Subcode Q input terminal
47	SQCK	O	Neg	Subcode Q read clock input/output terminal
48	CLK	O	Neg	Serial data transmission clock output terminal
49	XLT	O	L	Command execution output terminal
50	MUT	O	H	Muting ON/OFF control output terminal / H=ON
51	OPEN	O	L	Tray open control output / H=STOP H=CLOSE L=OPEN L=disable
52	CLOSE			H L H L
53	VR-	O	L	Volume control output / H=STOP H=UP L=DOWN L=disable
54	VR+			H L H L
55	SENS	I	H/L	Interface of signal processor and microprocessor ICs
56	FOK	I	H	Focus OK input terminal / H=Focus OK
57	INSW	I	L	Tray close setection input terminal
58	OUTSW	I	L	Tray open selection input terminal
59	DOFF	O	H	Digital output control output / H=OFF
60	NRSCO	O	L	Remote control signal (RI) output terminal
61	NRSCI	I	H	Remote control signal (RI) input terminal
62	RMCN	I	L	Remote control signal input terminal
63	D0	I/O	H	Music file data signal & type control / H=USA L=Europe
64~70	D1~7			Music file data signal
71	VSS	I		Negative power supply
72	XTAL	O	CLK	Clock output terminalÅiUnusedÅAOpenÅj
73	+5V			
74	C4M	I	CLK	System clock input terminal
75	+5V	I		Reference power supply terminal to check
76	-V	I		Negative power supply terminal for FL tube
77	LSR	O	L	Optical pickup control output terminal / L=ON
78	WR	O	L	Write signal for music file RAM
79	SFT .	O	Neg	Shift clock of shift-resister for music file RAM address-bus
80	A4	O	H	Address-bus for music file RAM & Shift data for shift resister

CXD2500BQ (Digital Signal Processor)

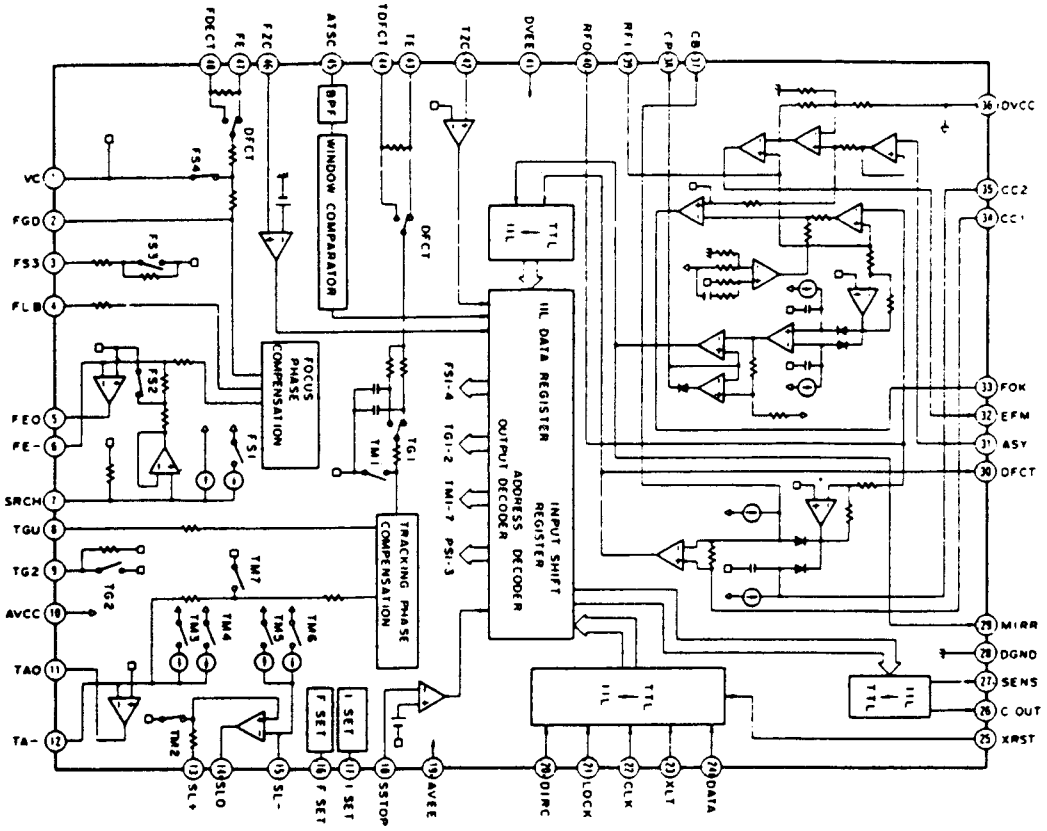


NO.	SYMBOL	I/O	DESCRIPTION	
1	FOK	I	Foucs Ok input	
2	FSW	O	Output filter changeover output for spindle motor	
3	MON	O	Spindle motor control output	
4	MDP	O	Spindle motor servo control	
5	MDS	O	Spindle motor servo control	
6	LOCK	O	H when GFS is the high level	
7	NC			
8	VCOO	O	Oscillation circuit output for analog EFM PLL.	
9	VCOI	I	Oscillation circuit input for analog EFM PLL. (8.6436MHz)	
10	TEST	I	Test terminal	
11	PDO	O	Charge pump output analog EFM PLL	
12	Vss		Ground terminal	
13-15	NC			
16	VPCO	O	PLL charge pump output for variable pitch	
17	VCKI	I	Clock input for variable pitch from VCO (16.934MHz)	
18	FILO	O	Filter output for master PLL.	
19	FILI	I	Filter input for master PLL.	
20	PCO	O	Charge pump output of master PLL	
21	AVss		Analog ground	
22	CLTV	I	VCO control voltage input for master	
23	AVDD		Analog section power supply (+5V)	
24	RF	I	EFM signal input	
25	BIAS	I	Asymmetry circuit constant current input	
26	ASYI	I	Asymmetry comparator voltage input	
27	ASYO	O	EFM full swing output	
28	ASYE	I	Asymmetry control circuit	
29	NC			
30	PSSL	O	Audio data output mode changeover input Serial data at L and paraller data at H.	
31	WDCK	I	D/A interface for 48 bits slot. Word clock f=2Fs.	
32	LRCK	I	D/A interface for 48 bits slot. LR clock f=Fs.	
33	VDD		Power supply terminal (+5V)	
34-49			Data output terminals	
			PSSL=1	PSSL=0
34	DA16	O	DA16	Serial data of 48 bits slot
35	DA15	O	DA15	Bit clock of 48 bits slot
36	DA14	O	DA14	Serial data of 64 bits slot
37	DA13	O	DA13	Bit clock of 68 bits slot
38	DA12	O	DA12	LR clock of 68 bits slot
39	DA11	O	DA11	GTOP output
40	DA10	O	DA10	XUGF output
41	DA09	O	DA09	XPLCK output

NO.	SYMBOL	I/O	DESCRIPTION	
42	DA08	O	DA08	GFS output
43	DA07	O	DA07	RFCK output
44	DA06	O	DA06	C2P0 output
45	DA05	O	DA05	XRAOF output
46	DA04	O	DA04	MNT 3 output
47	DA03	O	DA03	MNT 2 output
48	DA02	O	DA02	MNT 1 output
49	DA01	O	DA01	MNT 0 output
50	APTR	O	Control output for aperture correction. H when R ch.	
51	APTL	O	Control output for aperture correction. H when L ch.	
52	Vss		Ground terminal	
53	XTAI	I	Crystal oscillation circuit input of 16.9344MHz or 33.8688MHz input.	
54	XTAO	O	Crystal oscillation circuit output of 16.9344MHz.	
55	XTSL	I	Crystal selection input terminal. L when 16.9344MHz. H when 33.8688MHz.	
56	FSTT	O	2/3 divided output of pins 53 and 54.	
57	C4M	O	4.2336 MHz output	
58	C16M	O	16.9344 MHz output	
59	MD2	I	Digital output control input. On at high level.	
60	DOUT	O	Digital output	
61	EMPH	O	Emphasis control output. Active high.	
62	WFCK	O	Write frame clock output	
63	SCOR	O	Sub-code detection output. H when is detected SO or SI.	
64	SBSO	O	Serial output of sub-code (P~W)	
65	EXCK	I	Clock input for read out SQSO.	
66	SQSO	O	Sub Q 80 bits, PCM peak, and level data 16 bits output.	
67	SQCK	I	Clock input for read out SQSO	
68	MUTE	O	Muting control output. Active H.	
69	SENS		Sens output. Output to the microprocessor	
70	XRST	I	System reset. Reset at the low level.	
71	DATA	I	Serial data input from the microprocessor.	
72	XLTA	I	Latch input from the microprocessor. Latch the serial data at the trailing.	
73	VDD		Power supply treminal	
74	CLOK	I	Serial data transfer clock input from microprocessor	
75	SEIN	I	Sens input from SSP	
76	CNCI	I	Track jump numbers count signal input	
77	DATO	O	Serial data output to SSP	
78	XLTO	O	Serial data latch output to SSP. Latch at trailing.	
79	CLKO	O	Serial data transfer clock output to SSP.	
80	MIRR	I	Mirror signal input	

Note: SSP: IC101 CXA1372Q

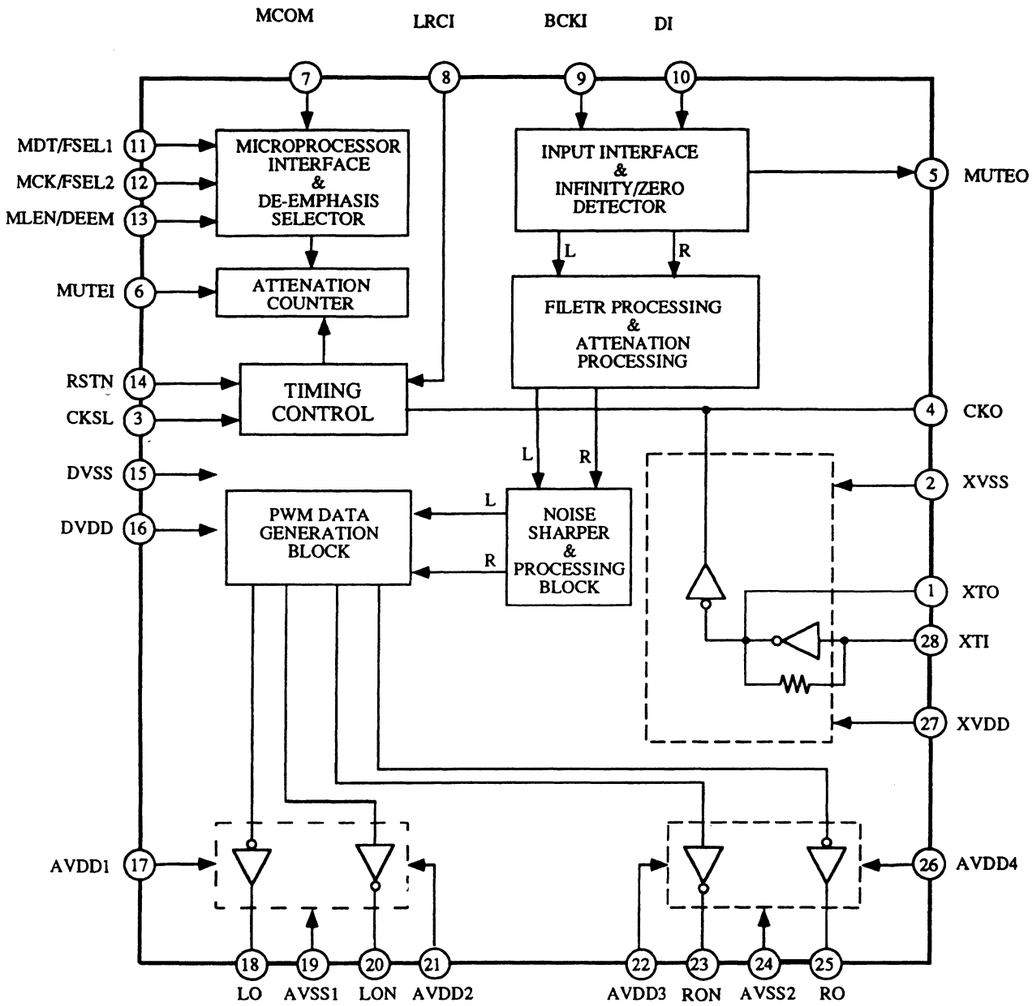
CXA1372Q (Servo Signal Processor)



PIN NO.	SYMBOL	I/O	DESCIRPION
1	VC	I	Mid-point voltage input terminal.
2	FGD	I	Connect the capacitor between FS3 and this pin when the high frequency gain focus servo is dropped.
3	FS3	I	Focus servo high frequency gain changeover input terminal.
4	FLB	I	Input terminal for the low frequency boost of focus servo.
5	FEO	O	Focus drive output terminal.
6	FE-	I	Inversion input terminal of focus amplifier.
7	SRCH	I	Time constant terminal to make the focus search waveform.
8	TGU	I	Tracking high frequency changeover input terminal.
11	TAO	O	Tracking drive output terminal.
12	TA-	I	Inversion input terminal of tracking amplifier.
13	SL+	I	No-inversion input terminal of sled amplifier.
14	SLO	O	Sled drive output terminal.
15	SL-	I	Inversion input terminal of sled amplifier.
16	FSET	I	Peak setting input of phase correction of focus tracking.
17	ISET	I	This terminal is flowed the current so that the focus search,tarcking jump,and sled kick height is decided.
18	SSTOP	I	Inner switch selection input terminal.
20	DIRC	I	This terminal is used when track jump.
21	LOCK	I	The sled runaway prevention circuit operates at the low level.
22	CLK	I	Serial data transfer clock input from microprocessor.

PIN NO.	SYMBOL	I/O	DESCIRPION
23	XLT	I	Latch input terminal for microprocessor.
24	DATA	I	Serial data input terminal for microprocessor.
25	XRST	I	Reset input terminal.Active low.
26	C.OUT	O	Signal output to count the track numbers.
27	SENS	O	This terminal outputs FZC,and SSTOP to according command from the microprocessor.
29	MIRR	O	Mirror comparator output terminal.
30	DFCT	O	Defect comparator output terminal.
31	ASY	I	Auto asymmetry control input terminal.
32	EFM	O	EFM comparator output terminal.
33	FOK	O	Focus OK comparator output terminal.
34	CC1	O	Defect bottom hold output terminal.
35	CC2	I	Defect bottom hold input terminal from CC1.
37	CB	I	Defect bottom hold capacitor connection terminal.
38	CP	I	Mirror hold capacitor connection terminal.
39	RFI	I	RF summing amplifier input terminal.
40	RFO	O	RF summing amplifier output terminal.
42	TZC	I	Tracking zero-cross comparator input terminal.
43	TE	I	Tracking error input terminal.
44	TDFCT	I	Capacitor connection terminal for time constant when defect.
45	ATSC	I	Window comparator input terminal for ATSC detection.
46	FZC	I	Focos zero-cross comparator input terminal.
47	FE	I	Focus error input terminal.
48	FDFCT	I	Capacitor connection terminal for time constant when defect.

SM5872CN (D/A Converter)



Pin No.	Terminal	I/O	Function	Pin No.	Terminal	I/O	Function
1	XTO	O	Resonator section	28	XTI	I	Resonator section
2	XVSS		Ground for resonator system	27	XVDD		5V for resonator system
3	CKSL	I		26	AVDD4		5V for analog section
4	CKO	O	Output clock of resonator section: 384fs	25	RO	O	R ch PWM output (+)
5	MUTEO	O	Infinity zero detector output	24	AVSS2		Ground for analog section
6	MUTEI	I	Muting output	23	RON	O	R ch PWM output (-)
7	MCOM	I	Interface switching control	22	AVDD3		5V for analog section
8	LRCI	I	Sampling rate clock of input data: H=L ch, L=R ch	21	AVDD2		5V for analog section
9	BCKI	I	Bit clock of input data	20	LON	O	L ch PWM output (+)
10	DI	I	Input data	19	AVSS1		Ground for analog section
11	FSEL1	I	Sampling frequency=44.1 kHz	18	LO	O	L ch PWM output (-)
12	FSEL2	I	When FSEL1.FSEL2, and MCOML are the low level.	17	AVDD1		5V for analog section
13	DEEM	I	De-emphasis control input	16	DVDD		5V for digital section
14	RSTN		System reset: L=Reset	15	DVSS		Ground for digital section

DISASSEMBLING PROCEDURES

1. Tray ass'y

Remove the top cover.
Remove the holder T and the retainer M.
Turn the power switch to ON.
Press the OPEN/CLOSE button to open the tray ass'y.
Remove the chucking ass'y.
Remove the stopper.
Press the tray stopper to the arrow mark direction and remove the tray ass'y.

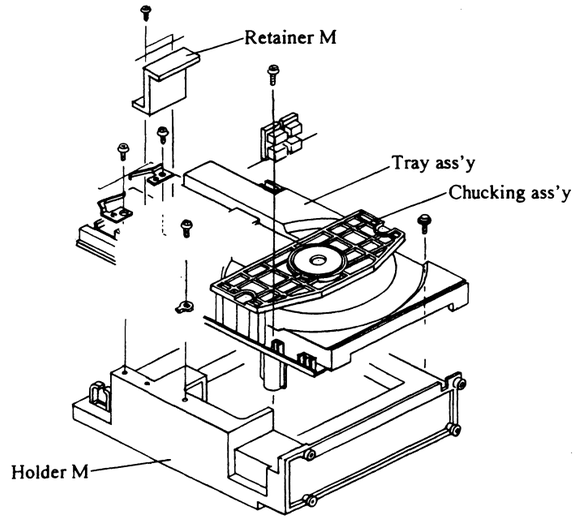


fig.1

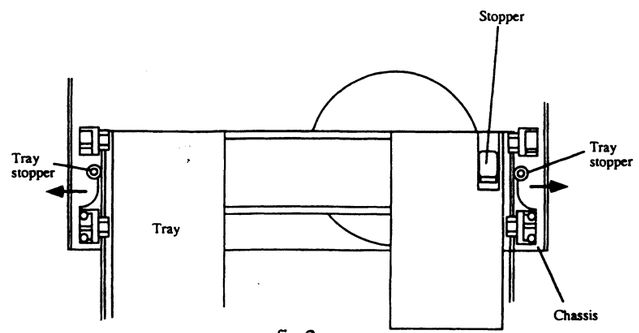


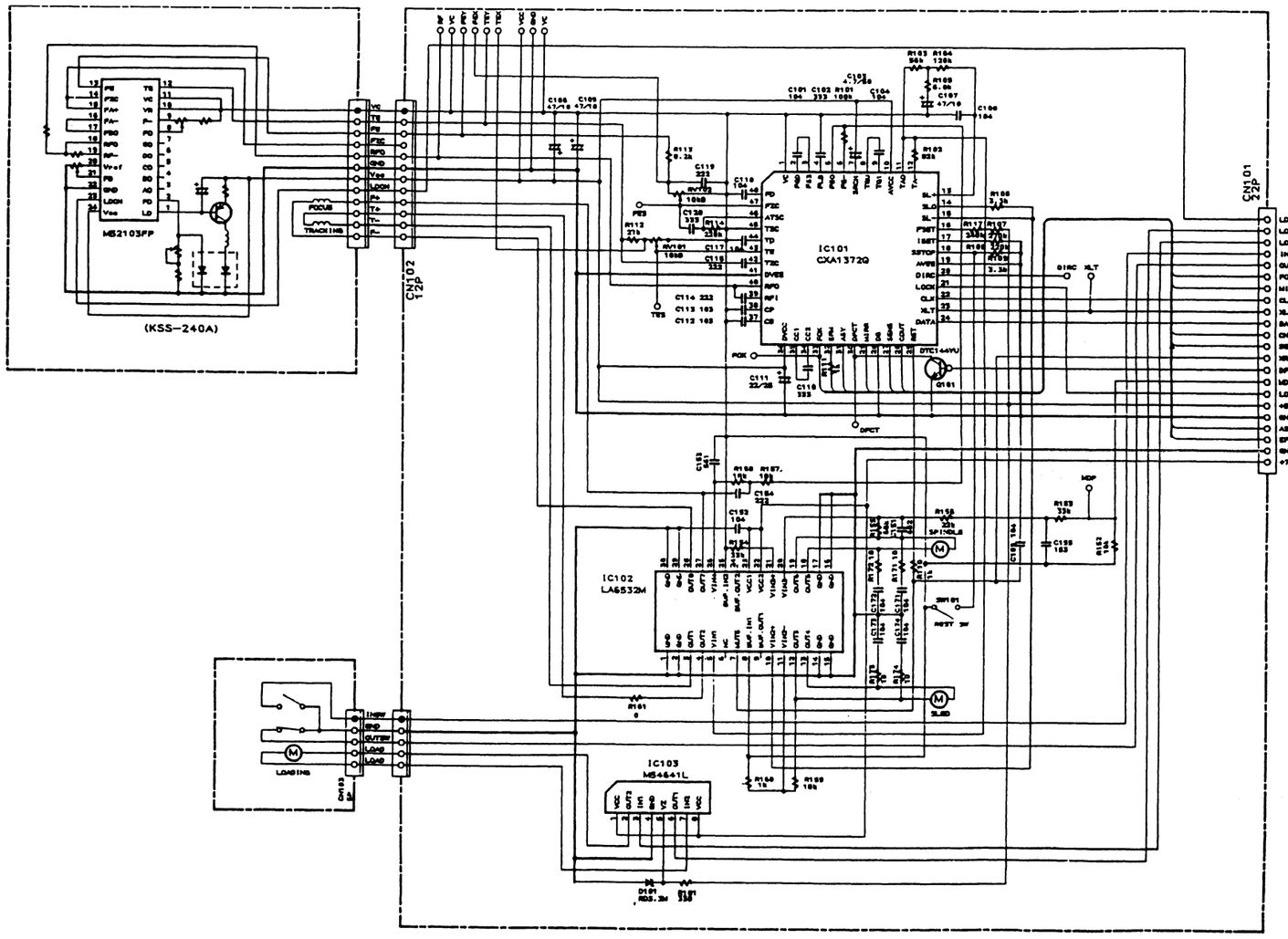
fig.2

2. CD mechanism ass'y

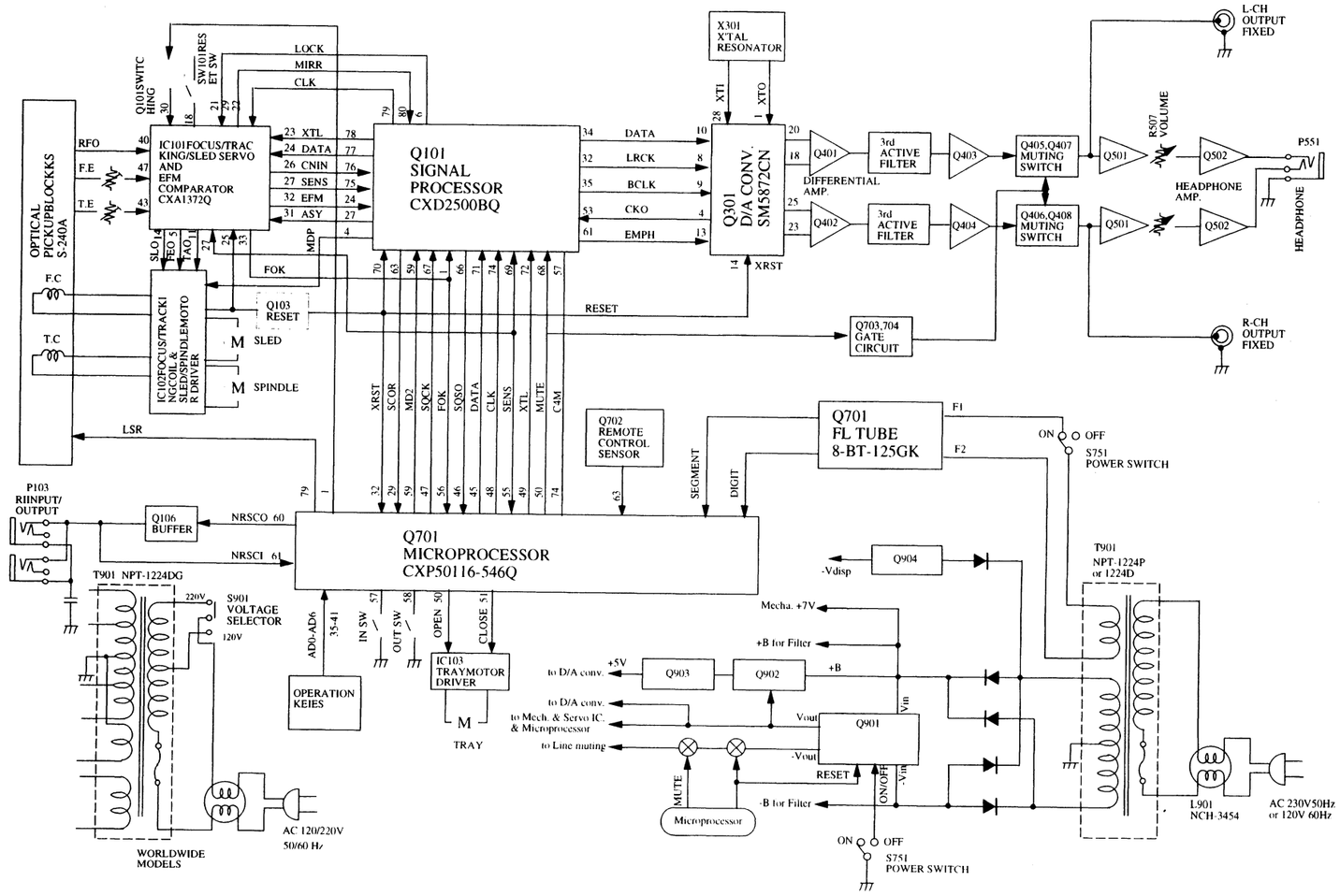
Remove the tray ass'y.
Remove the four screws holding the mechanism and the holder M.

SCHEMATIC DIAGRAM

MECHANISM BLOCK



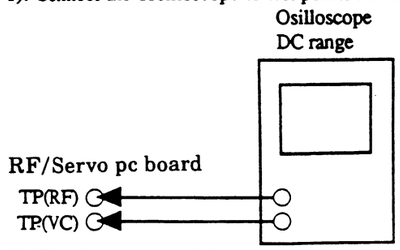
BLOCKDIAGRAM



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.



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.

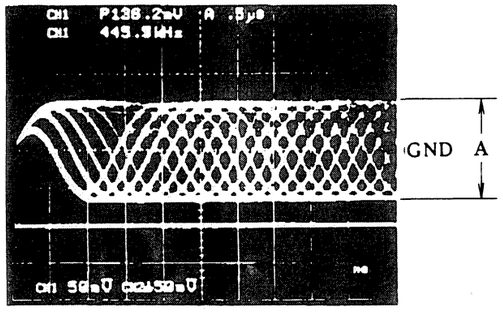


Photo 1

A=1.2±0.3Vp-p

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.

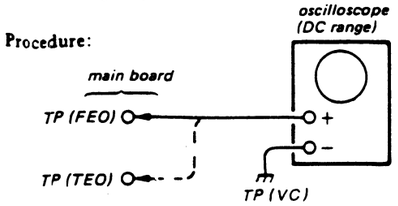
Symptoms \ Gain	Focus	Tracking
• The time until music starts becomes longer for STOP →▷PLAY or automatic selection (⏮ ⏭ buttons pressed. (Normally takes about 2 seconds.)	low	low or high
• Music does not start and disc continues to rotate for STOP→▷PLAY or automatic selection (⏮ ⏭ buttons pressed.)	–	low
• Sound is interrupted during PLAY. Or time counter display stops progressing.	–	low
• More poise during 2-axis device operation.	high	high

The following is a simple adjustment method.

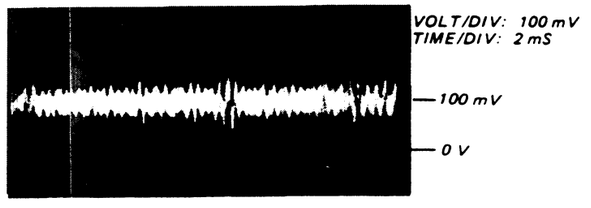
– Simple Adjustment –

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



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

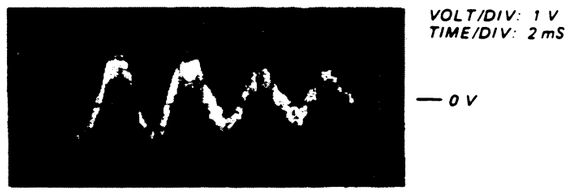
low focus gain

high focus gain

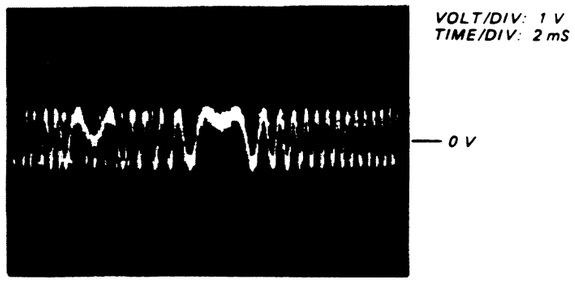
5. Connect oscilloscope to RF/Servo board TP (TE).
6. Adjust RV101 so that the waveform is as shown in the figure below. (tracking gain adjustment)

- Incorrect Examples (fundamental wave appears)

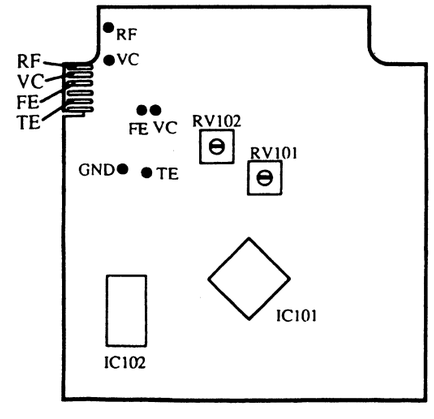
low tracking gain



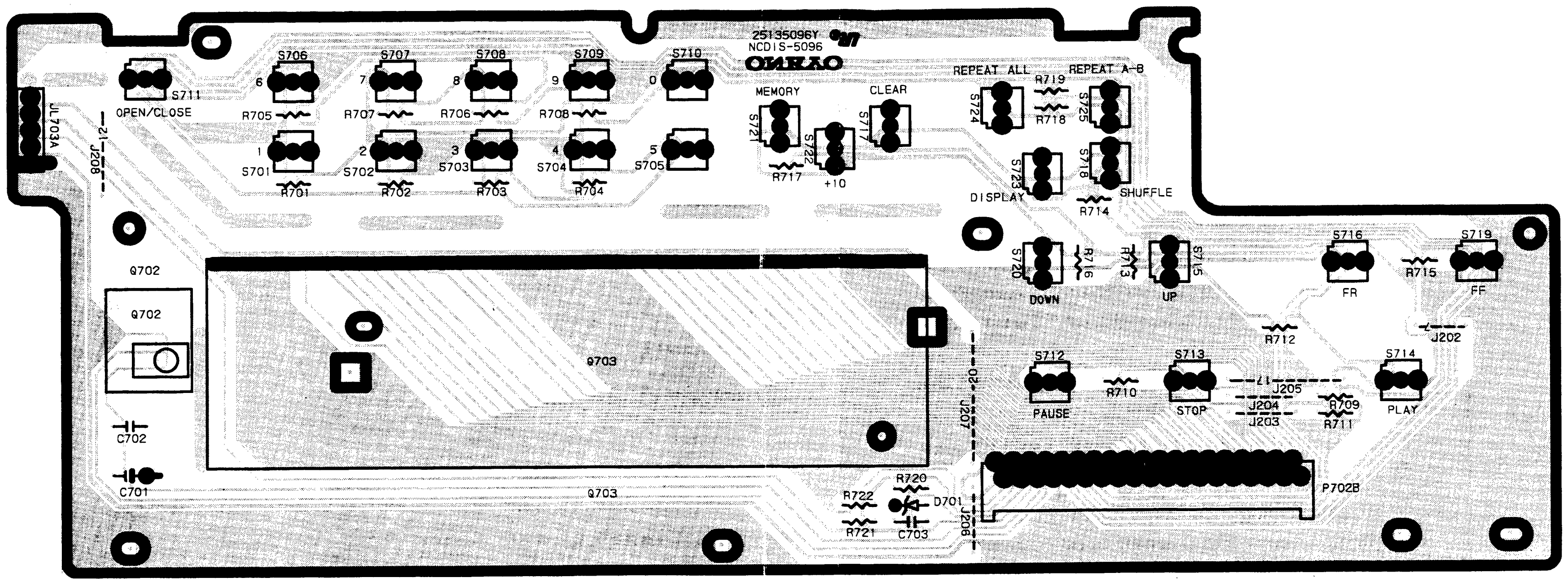
high tracking gain
(higher fundamental wave than for low gain)



Adjustment Location: RF/Servo board

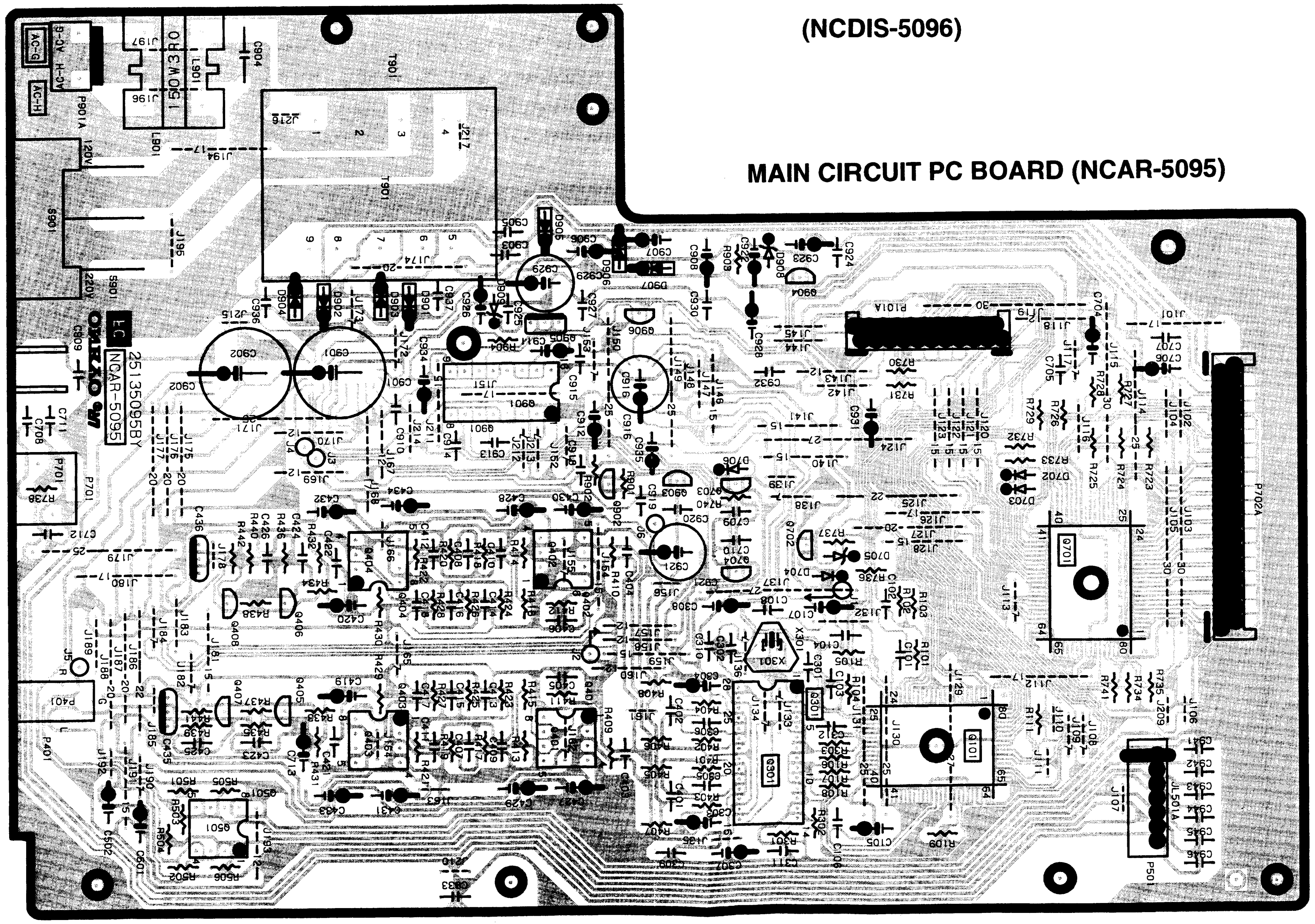


PRINTED CIRCUIT BOARD VIEW FROM BOTTOM SIDE

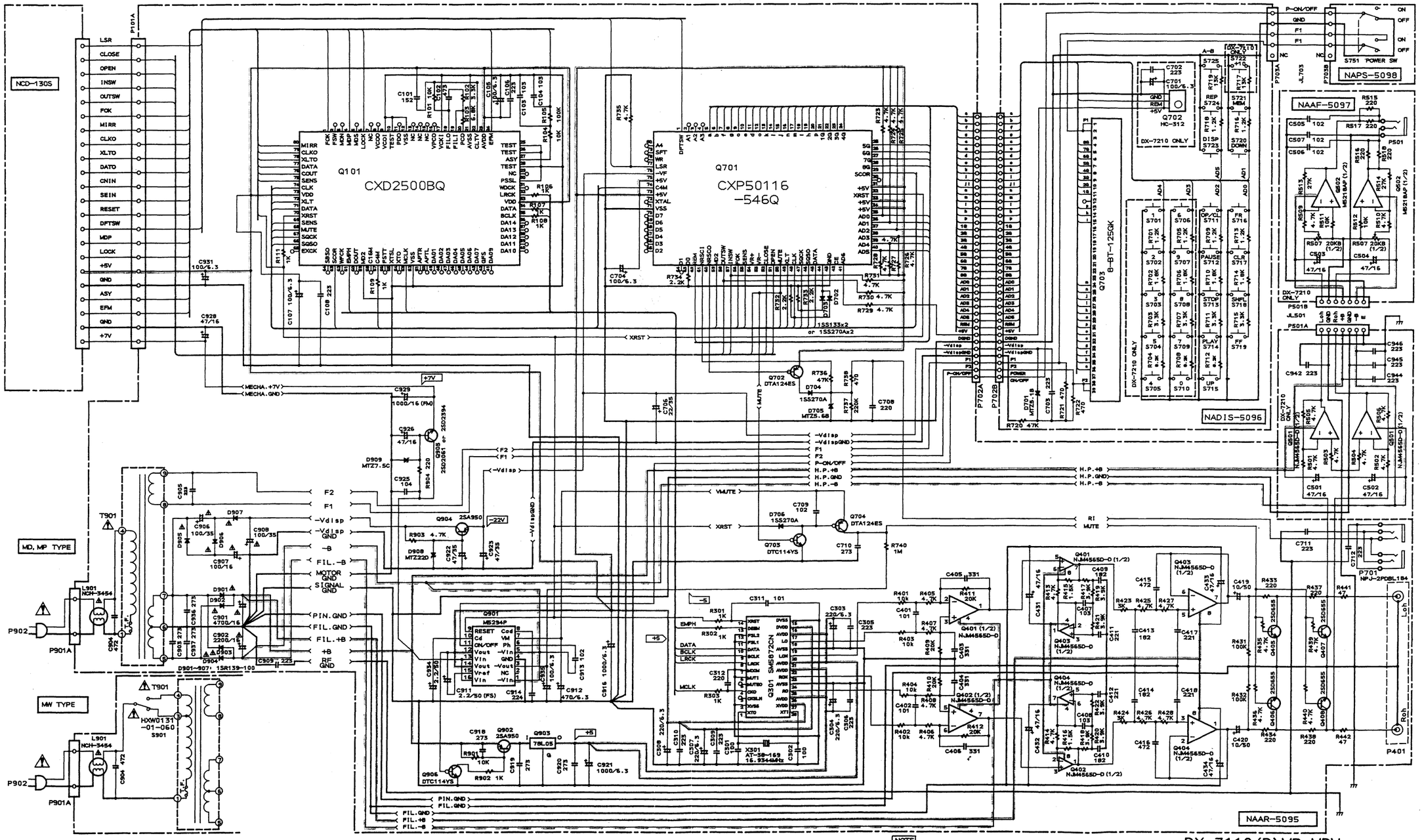


DISPLAY CIRCUIT PC BOARD (NCDIS-5096)

MAIN CIRCUIT PC BOARD (NCAR-5095)



SCHEMATIC DIAGRAM



TYPE	RATING	T901	P951
MD	AC120V/60Hz	NPT-1224D	AS-UC-6 #18
MP	AC230V/50Hz	NPT-1224P	AS-CEE 250V 2.5A
MW	AC120/220V 50/60Hz	NPT-1224DG	AS-CEE 250V 2.5A

NOTE
- THE COMPONENTS IDENTIFIED BY MARK ⚠ ARE CRITICAL FOR SAFETY. REPLACE ONLY WITH PART NUMBER SPECIFIED.
- VOLTAGE (MEASURED WITH VOLTMETER) CIS DC VOLTAGE (NO INPUT SIGNAL)
- ALL PNP TRANSISTORS ARE EQUIVALENT TO 2SA1015-GR UNLESS OTHERWISE NOTED.
- ALL NPN TRANSISTORS ARE EQUIVALENT TO 2SC1815-GR UNLESS OTHERWISE NOTED.
- ALL DIODES ARE EQUIVALENT TO 1SS133 UNLESS OTHERWISE NOTED.
- ELECTROLYTIC CAPACITORS (μF) ARE IN μF/50V.
- ALL CAPACITORS ARE IN pF/50WV UNLESS OTHERWISE NOTED. EX) 3pF=03D, 33pF=330, 330pF=331, 0.033μF=333
- ALL RESISTORS ARE IN OHMS 1/4 WATTS UNLESS OTHERWISE NOTED.
- THE THICK LINES IN PC BOARD ARE THE PRINTING SIDE OF THE PARTS. EX) [ ] : PRINTING SIDE
- CIRCUIT IS SUBJECT TO CHANGE FOR IMPROVEMENT.

DX-7110 (B) MP, MPV
DX-7210 (B) MD, MP, MPV
MWT, MGK, MPA
DX-7210 (S) MP, MPV

RC-202279

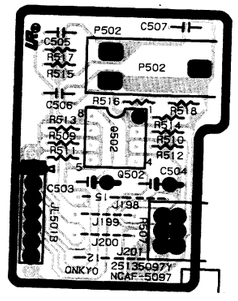
ONKYO CORPORATION

PRINTED CIRCUIT BOARD-PARTS LIST

CIRCUIT NO.	PART NO.	DESCRIPTION
pc board ass'y (NAAR-5095)		
	ICs	
Q101	22240487AY	CXD2500BQ
Q301	22240726	SM5872CN
Q401,402, 403,404	22240191	NJM4565D-D
Q405,406, 407,408	2211706T or 2211705T	2SD655-F or 2SD655-E
Q501	22240191	NJM4565D-D
Q701	22240753Y	CXP50116-546Q
	Transistors	
Q702,704	2212600TY	DTA124ES
Q703	221281TY	DTC114YS
Q901	22240391	M5294P
Q902,904	2211504TY or 2211503TY	2SA950-Y or 2SA950-O
Q903	222780053	78L05
Q905	2202115Y or 2202706Y	2SD2061-E or 2SD2394-F
Q906	221281TY	DTC114YS
D702-704, 706	223222TY or 223163TY or 223205TY	WG713A or 1SS133 or 1SS270A
D705	224450562TY	MTZ5.6B, Zener
D901-907	22380032TY	1SR139-100
D908	224452204TY	MTZ22D, Zener
D909	224450753TY	MTZ7.5C, Zener
	Power Transformer	
T901	2301052Y	NPT-1224D, <D>
T901	2301053Y	NPT-1224P, <P>
T901	2301054Y	NPT-1224DG, <W>
	Switches	
S901	25065437Y	NSS-22157P,SLIDE SW
	Resonator	
X301	3010159	AT-38-169, CRYSTAL
	Coil	
L901	231222Y	NCH-3454, CHOKE COIL
	Capacitors	
C101	374721524TY	ECQ-B50V, 152J, TF C
C102	374724734TY	ECQ-V50V, 473J, TF C
C103,104	374721034TY	ECQ-B50V, 103J, TF C
C105,107	354721019TY	CE04W6.3V, 100M, ELECT C
C303,304	354722219TY	CE04W6.3V, 220M, ELECT C
C305,306	374721044TY	ECQ-V50V, 104J, TF C
C307,308	354722219TY	CE04W6.3V, 220M, ELECT C
C407,408	374721034TY	ECQ-B50V, 103J, TF C
C409,410	374721824TY	ECQ-B50V, 182J, TF C
C411,412	345022214TY	CC45SL50V, 221J, CERA C
C413,414	374721824TY	ECQ-B50V, 182J, TF C
C415,416	374724724TY	ECQ-B50V, 472J, TF C
C419,420	354781009TY	CE04W50V, 10M, ELECT C
C431-434	354744709TY	CE04W16V, 47M, ELECT C
C501	354744709TY	CE04W16V, 47M, ELECT C
C502	354744709TY	CE04W16V, 47M, ELECT C
C704	354721019TY	CE04W6.3V, 100M, ELECT C
C706	354762209TY	CE04W35V, 22M, ELECT C
C709	374721024TY	ECQ-B50V, 102J, TF C
C710	374722734TY	ECQ-V50V, 273J, TF C
C901	393344727S	CE04W16V, 4700M, VX C
C902	393142227S	CE04W16V, 2200M, FM C
C903	374724734TY	ECQ-V50V, 473J, TF C
C904	3500077Y	DE7150F, 472M, IS C
C906,908	354761019TY	CE04W35V, 100M, ELECT C
C907	354741019TY	CE04W16V, 100M, ELECT C
C911	391680227T	CE04W50V, 2.2M, FS C
C912	354724719TY	CE04W6.3V, 470M, ELECT C
C913	374721024TY	ECQ-B50V, 102J, TF C
C914	374722244TY	ECQ-V50V, 224J, TF C
C916	354721029TY	CE04W6.3V, 1000M, ELECT C
C918	374722734TY	ECQ-V50V, 273J, TF C
C921	354721029TY	CE04W6.3V, 1000M, ELECT C
C922,923	354764709TY	CE04W35V, 47M, ELECT C
C925	374721044TY	ECQ-V50V, 104J, TF C
C926,928	354744709TY	CE04W16V, 47M, ELECT C
C929	393141027S	CE04W16V, 1000M, FM C
C931,935	354721019TY	CE04W6.3V, 100M, ELECT C
C934	354780229TY	CE04W50V, 2.2M, ELECT C
C936,937	374722734TY	ECQ-V50V, 273J, TF C
	Sockets	
P101A	25050854Y or 25050962Y	NSCT-22P649 or NSCT-22P749
	Jacks	
P401	25045418	NPJ-2PDBL243
P701	25045330	NPJ-2PDBL184
pc board ass'y (NADIS-5096-2)		
	Remote Sensor	
Q702	24130010Y	HC-312
	FL Tube	
Q703	212109	8-BT-125GK
	Diode	
D701	224450512TY	MTZ5.1B, Zener
	Capacitor	
C701	355721019TY	CE04W6.3V, 100M, ELECT
	Switches	
S701-725	25035652TY	NPS-111-S604, P SW
	Sockets	
P702B	25051229Y or 25050944Y	NSCT-38P1019 or NSCT-38P731

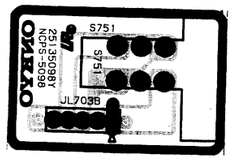
PRINTED CIRCUIT BOARD-PARTS LIST

P702A	25051225Y or 25050978Y	NSCT-38P1015 or NSCT-38P765
	Holder	
	27190754AY	HOLDER(FL)
	Others	
P901A	25055675	NPLG-2P631, PLUG
	25065425	SCREW TRMM3
	27301216	C COVER
pc board ass'y (NAAF-5097-2)		
	IC	
Q502	22240369	M5218AP
	Capacitor	
C503,504	354744709TY	CE04W16V, 47M, ELECT
	Resistor	
R507	5104301Y	N09RGL20KB20F,VARIABLE
	Jack	
P502	25045255	YKB26-5009
pc board ass'y (NAPS-5098-2)		
S751	25035481Y	NPS-122-L443, PUSH SW



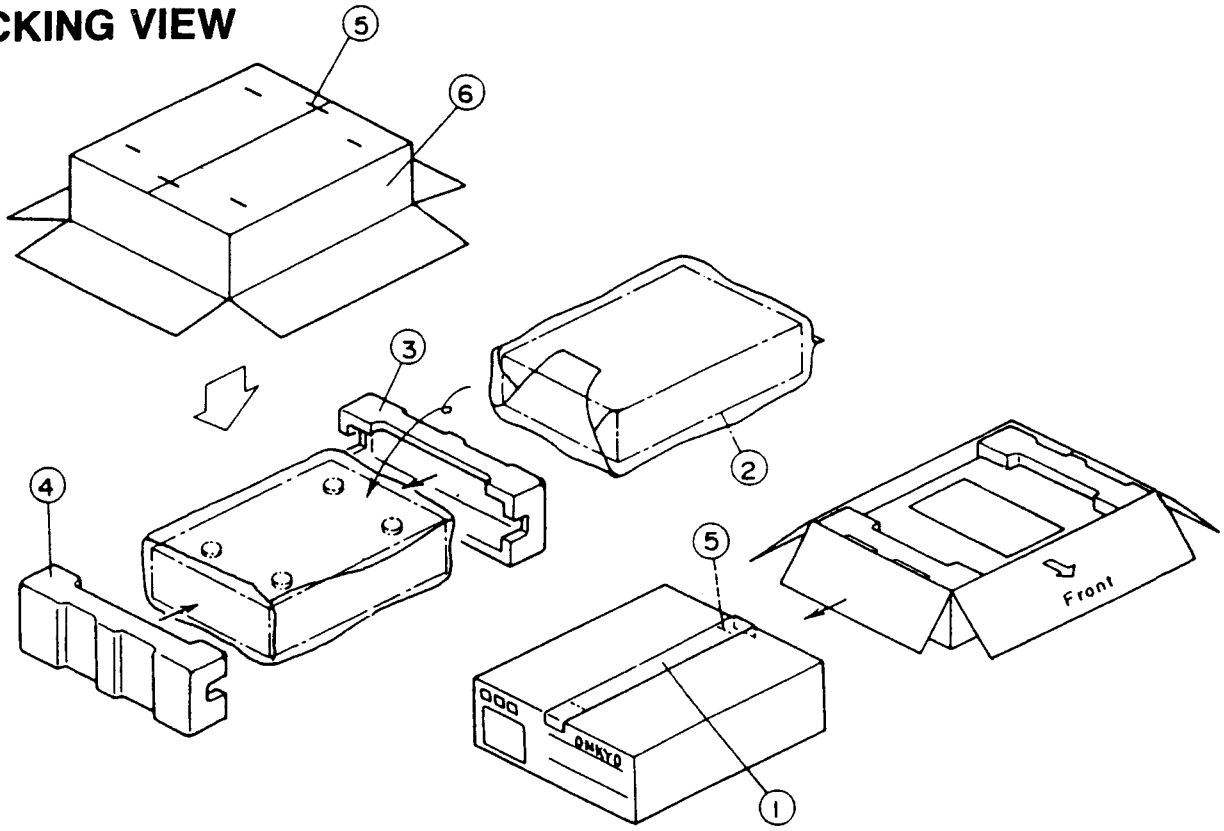
NCAF-5097

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



POWER SWITCH PC BOARD
NC PS-5098

PACKING VIEW



PARTS LIST

REF. NO.	PART NO.	DESCRIPTION
1	29110071Y	W50, PP TAPE
2	29100037-1Y	650 X 500, POLY BAG
3	29091637-1BY	PAD(R)
4	29091636-1BY	PAD(L)
5	282301	Staple
6	29052813Y	CARTON, DX-7210B
	29052814Y	CARTON, DX-7210S
	29052815Y	CARTON, DX-7110B
	29360840Y	LABEL(SHEET), <DN,DC>

NOTE : <P> 230V Model only
<W> Worldwide model only

REF. NO.	PART NO.	DESCRIPTION
	Accessory bag ass'y	
	29100097-1Y	350 X 250, POLY BAG
	29342031Y	E, INS MANUAL,<DN,DC,P,W>
	29342032Y	U6, INS MANUAL,<P>
	29342034Y	U3, INS MANUAL,<W,DC,T>
	29342033Y	V, INS MANUAL,<V>
	2010244Y or	PIN CORD AS or
	2010326Y	PIN CORD AS
	2010200Y	3.5MINI PLUG, CORD AS
	24140279Y	RC-279C, REMO CON
	3010165Y	UM-3, BATTERY
	25055040	CV-K-2, CV PLUG,<W>
	29365019BY	WARRANTY CARD,<DN>
	29365042	WARRANTY CARD,<PA>
	29358002KY	SS LIST, <DN>
	29361770Y	UPC LABEL, <DN,DC>
	29365020L	WARRANTY CARD,<V>
	29100094B	PORY BAG, <V>