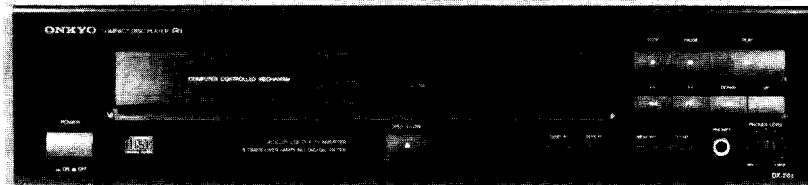


ONKYO® SERVICE MANUAL


COMPACT DISC PLAYER MODEL DX-701



Black and Silver models

BHMD,BHMDN,BHMDC	120V AC, 60Hz
BHMP,BHMPF,MP,MPF	230V AC, 50Hz
BHMW	120/220V AC, 50/60Hz
BHMQA	240V AC,50Hz

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

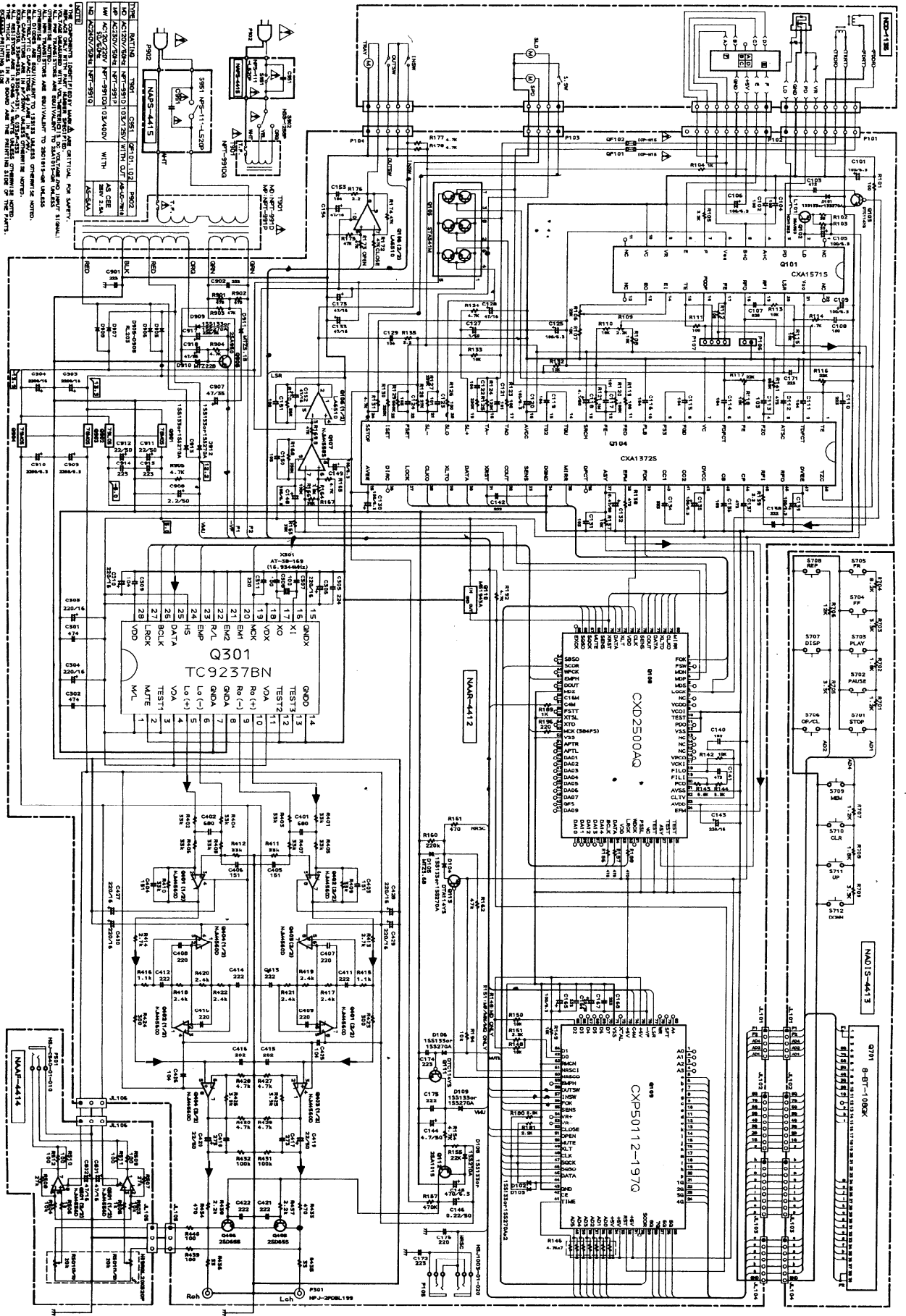
Signal readout system:	Optical non-contact
Reading rotation:	About 500~200 r.p.m. (constant linear velocity)
Linear velocity:	1.2~1.4m/s
Error correction system:	Cross interleave readsolomon code
D/A converter:	1 bit PWM/Accu Pulse D/A converter
Sampling frequency:	352.8kHz (8 times oversampling)
Number of channels:	2 (Stereo)
Frequency response:	5Hz~20kHz
Total harmonic distortion:	0.004% (at 1kHz)
Dynamic range:	96dB
Signal to noise ratio:	100dB
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):	455×110×305mm 18"×4-3/8"×12"
Weight:	4.9kg, 10.8 lbs.

Specifications are subject to change without notice.

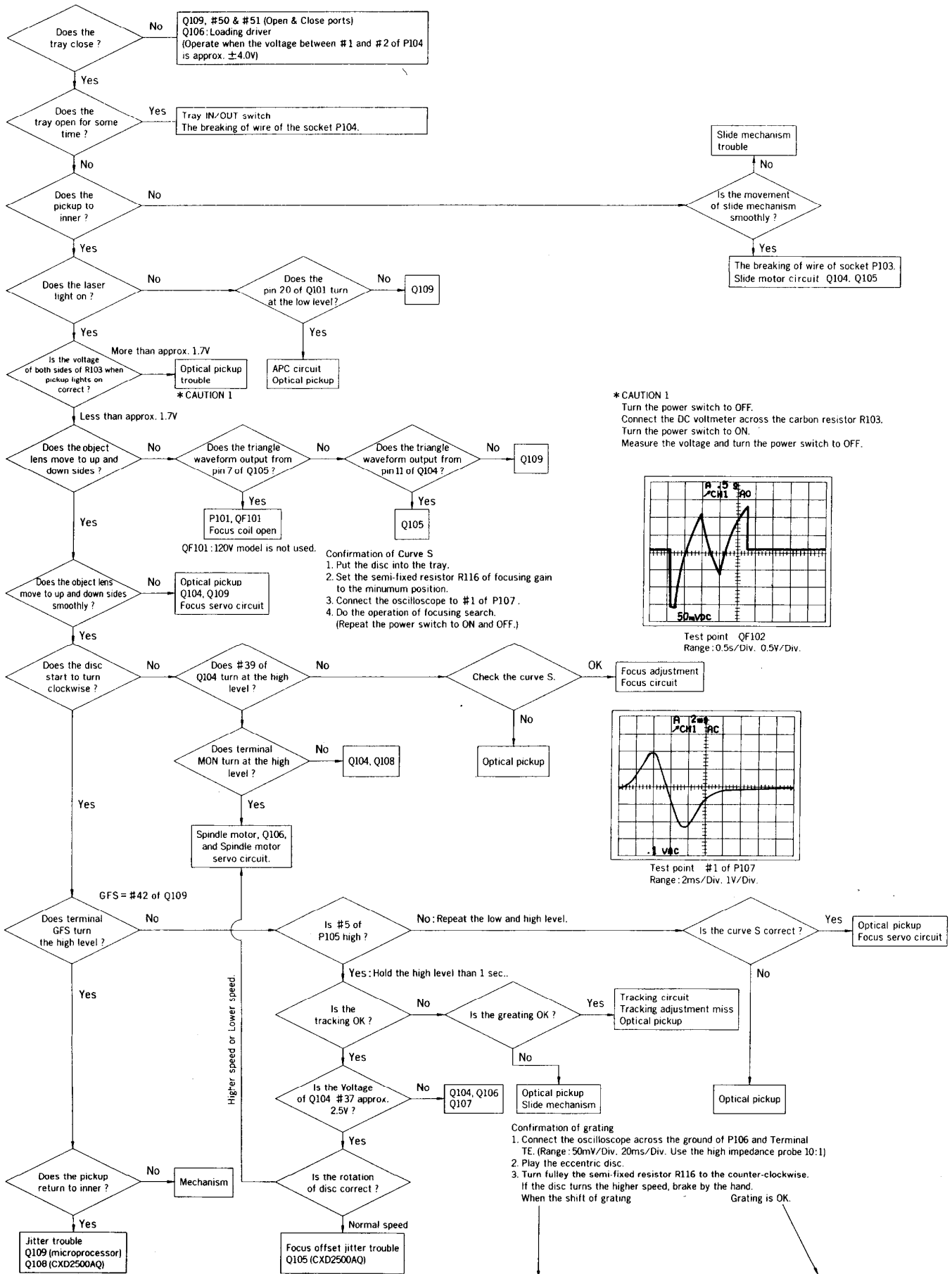


SCHEMATIC DIAGRAM

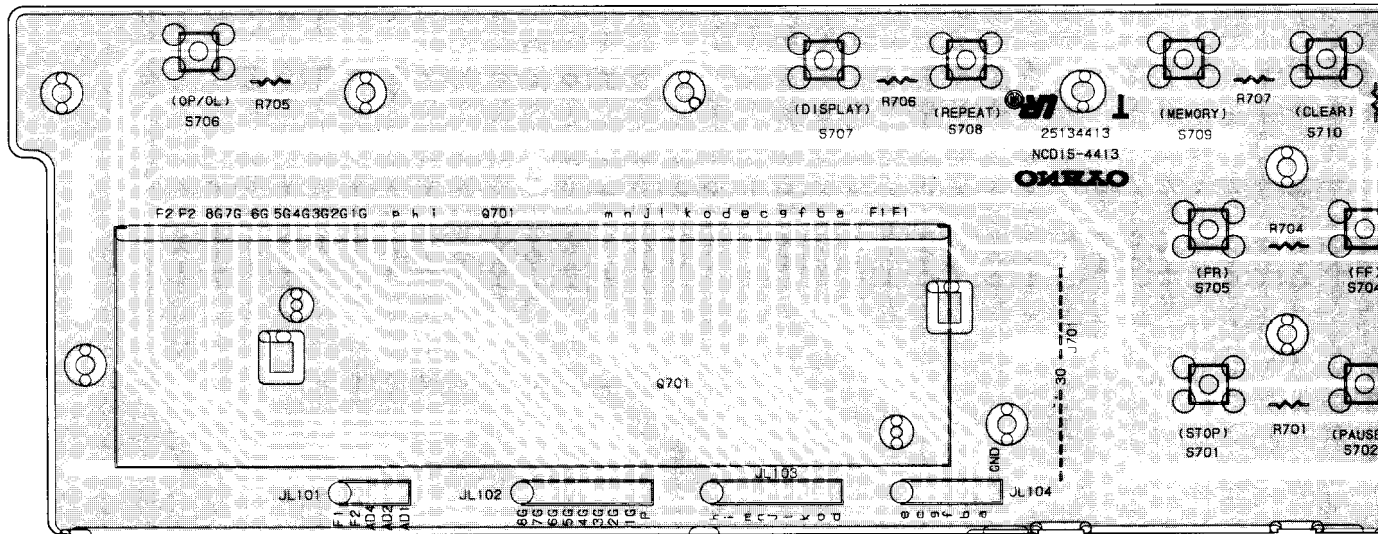
A B C D E F G H



TROUBLESHOOTING GUIDE



PRINTED CIRCUIT BOARD VIEW FROM BOTTOM SIDE



DISPL

CIRCUIT NO.	PART NO.	DESCRIPTION	CIRCUIT NO.	PART NO.	DESCRIPTION
	Capacitors			Capacitors	
C101,C105	354721019	100 μ F,6.3V,Elect.	C152,C154	354744709	47 μ F,16V,Elect.
C103,C137	374724724	4700pF \pm 5%,50V,Plastic	C165	354721019	100 μ F,6.3V,Elect.
C106,C109	354721019	100 μ F,6.3V,Elect.	C167	354762209	22 μ F,35V,Elect.
C110	374722234	0.022 μ F \pm 5%,50V,Plastic	C173	354744709	47 μ F,16V,Elect.
C111	374721044	0.1 μ F \pm 5%,50V,Plastic	C301,C302	374724744	0.47 μ F \pm 5%,50V,Plastic
C112,C141	374724734	0.047 μ F \pm 5%,50V,Plastic	C303,C304	354742219	220 μ F,16V,Elect.
C113,C124	374721034	0.01 μ F \pm 5%,50V,Plastic	C305	374722244	0.22 μ F \pm 5%,50V,Plastic
C114-C116	374721044	0.1 μ F \pm 5%,50V,Plastic	C306	354742219	220 μ F,16V,Elect.
C118,C144	354780479	4.7 μ F,50V,Elect.	C309	374721044	0.1 μ F \pm 5%,50V,Plastic
C119,C122	374721044	0.1 μ F \pm 5%,50V,Plastic	C310	354742219	220 μ F,16V,Elect.
C120,C125	354721019	100 μ F,6.3V,Elect.	C403-C406	373301514	150pF \pm 5%,125V,PP
C127	354780109	1 μ F,50V,Elect.	C411-C414	374722224	2200pF \pm 5%,50V,Plastic
C128,C133	354744709	47 μ F,16V,Elect.	C415,C416	374722024	2000pF \pm 5%,50V,Plastic
C129,C153	374721044	0.1 μ F \pm 5%,50V,Plastic	C417,C418	374722734	0.027 μ F \pm 5%,50V,Plastic
C130,C135	354721019	100 μ F,6.3V,Elect.	C419,C420	354782209	22 μ F,50V,Elect.
C131,C136	374721034	0.01 μ F \pm 5%,50V,Plastic	C421,C422	374722224	2200pF \pm 5%,50V,Plastic
C132	354784799	0.47 μ F,50V,Elect.	C425,C426	374721044	0.1 μ F \pm 5%,50V,Plastic
C134	374723334	0.033 μ F \pm 5%,50V,Plastic	C427-C430	354742219	220 μ F,16V,Elect.
C138,C175	374722224	2200pF \pm 5%,50V,Plastic	C903,C904	354742229	2200 μ F,16V,Elect.
C139	354721019	100 μ F,6.3V,Elect.	C907,C918	354764709	47 μ F,35V,Elect.
C140	374721524	1500pF \pm 5%,50V,Plastic	C908	354780229	2.2 μ F,50V,Elect.
C143	354742219	220 μ F,16V,Elect.	C909,C910	354722229	2200 μ F,6.3V,Elect.
C145	354724719	470 μ F,6.3V,Elect.	C911,C912	354782209	22 μ F,50V,Elect.
C146	354782299	0.22 μ F,50V,Elect.	C917	354762219	220 μ F,35V,Elect.
C148,C149	354721019	100 μ F,6.3V,Elect.			
C150	374721034	0.01 μ F \pm 5%,50V,Plastic			

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Exploded view	8
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Pc board-parts list	22
Schematic diagram	23
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NOTE ON COMPACT DISC

• Holding Compact Discs

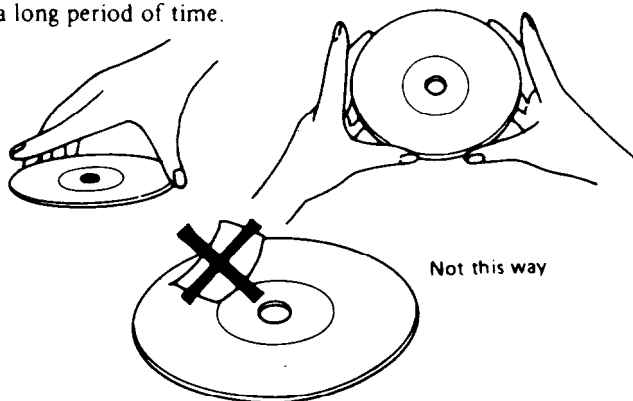
Hold Compact Discs by the edges so that you do not touch the surface of disc. Remember that the side of the disc with the "rainbow" reflection is the side containing the audio information.

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.



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.

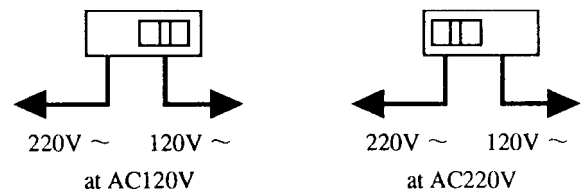
Specifications: More than 10Mohm at 500V.

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.



• 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 LABELS

The label shown below are affixed.

1. Warning lable

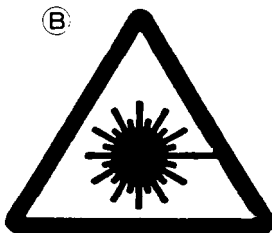
This label is located on the arm of mechanism.

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'ECLANCHEMENT DE SECURITE ANNULE.



C

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

D

VARO!
AVATTAESSA JA SUOJALUKITUS OHTETTAESSA OLET ALLTIINA NÄKYMÄTTÖMÄLLE LASERSÄTEILYLLE. ÄLÄ KATSO SÄTEESEEN.

E

VARNING
OSYNLIG LASERSTRÅLNING NÅR DENNA DEL ÅR ÖPPNAD OCH SPÄRREN ÅR URKOPPLAD. BETRakta EJ STRÅLEN.

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

Laser Diode Properties

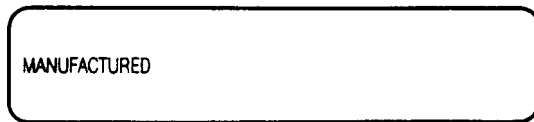
- Material: GaAS/GaAlAs
- Wavelength: 780nm
- Emission Duration: continuous
- Laser output: max. 0.5mW*

*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)

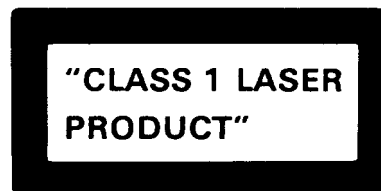
This label is located on the back panel.

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 utilsadelig kraftig stråling.

APPARATET BØ/R 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.

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

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 $10M\Omega$) 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.

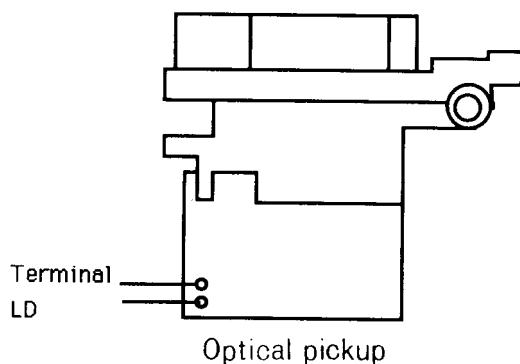
4. Select a soldering iron that permits no leakage and have the tip of the iron well-grounded.

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

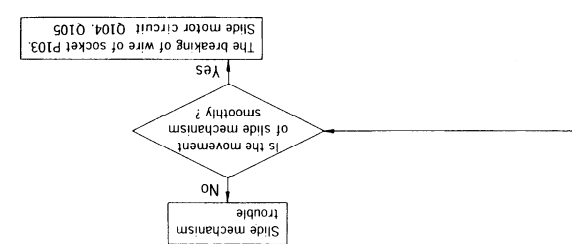
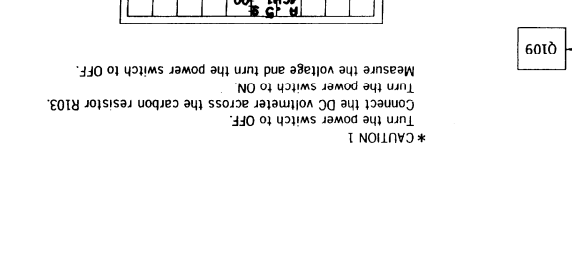
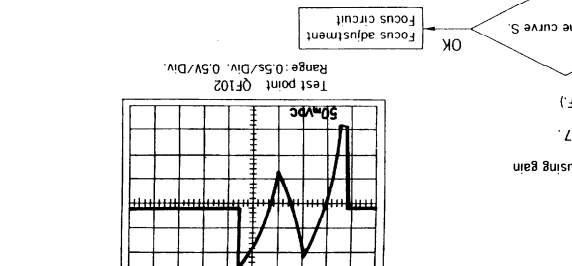
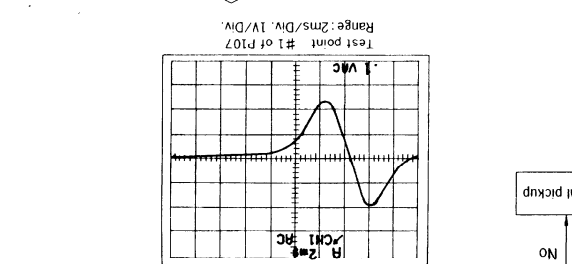
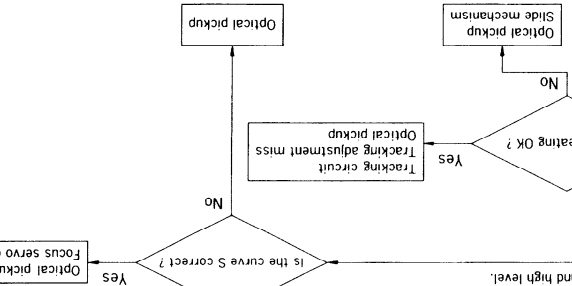
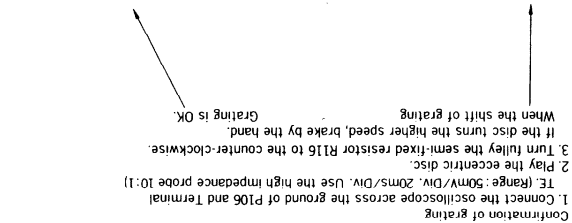
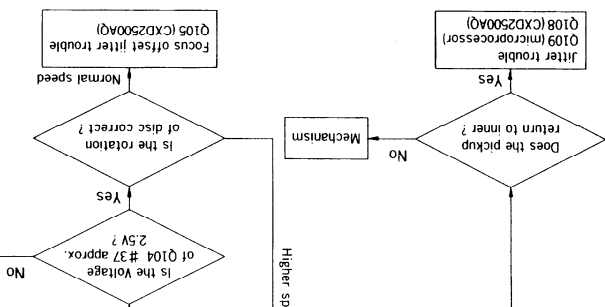
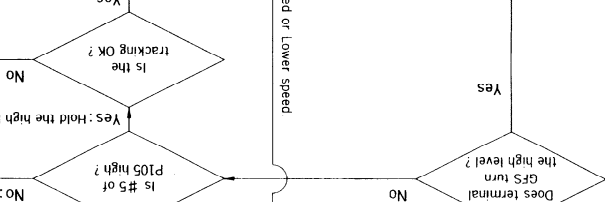
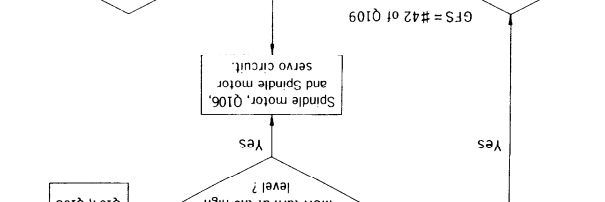
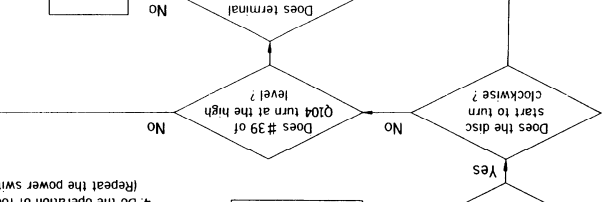
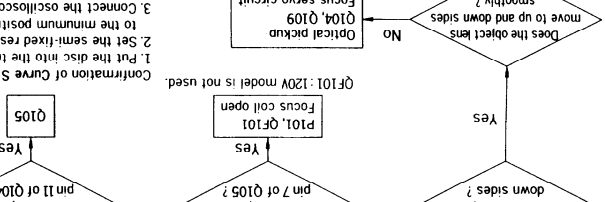
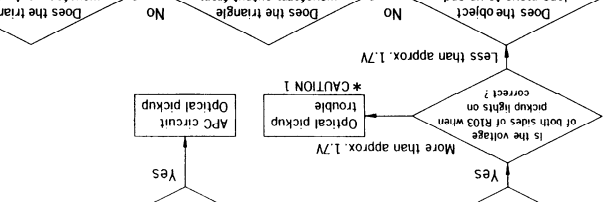
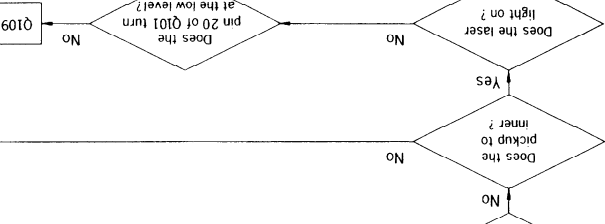
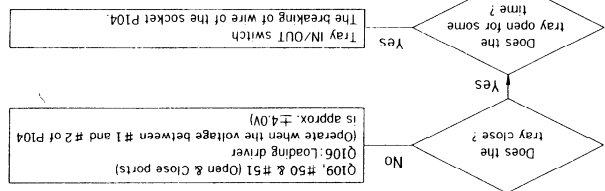
Care Should be taken with the optical pickup.

The optical pickup is sensitive to static electricity, surge currents, and other high electrical noise, and because there is the possibility of damage to performance, in the handling of the pickup, the utmost care must be taken, particularly with regard to static electricity.

1. When checking the laser terminal, avoid making connections using the probes of a tester or oscilloscope, or an ordinary power supply.
2. When replacing the optical pickup, first short the LD terminals and remove the connector. Also, when attaching the new optical pickup, after attaching the connector, unsolder the LD terminals.



TROUBLESHOOTING GUIDE

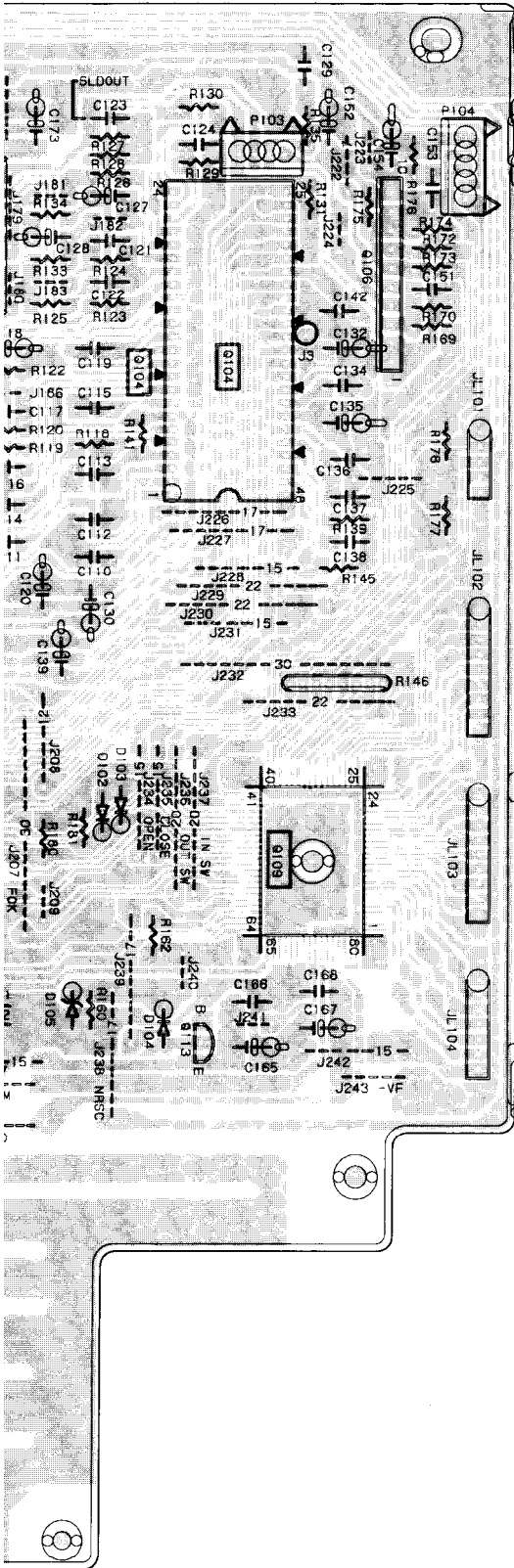


PARTS LIST

MAIN CIRCUIT PC BOARD(NAAR-4412-1/1A)

CIRCUIT NO.	PART NO.	DESCRIPTION
		ICs
Q101	22240404	CXA1571S
Q104	22240366	CXA1372S
Q106	22240034	LA6510
Q107	222736	NJM4558S
Q108	22240487	CXD2500AQ
Q109	22240405	CXP50112-197Q
Q110	22240018	M51943A
Q301	22240535	TC9237BN
Q401-Q404	222570	NJM4560D-X
Q901,Q903	222780055MIT	M5F78M05L
Q902	222790053	79L05
Q904	222790055MIT	M5F79M05L
		Transistors
Q102,Q905	2211503 or 2211504	2SA950-O or 2SA950-Y
Q103	221281	DTC114YS
Q105	22240168	STA341M-L
Q111	221281	DTC114YS
Q112	2211455	2SA1015-GR
Q113	2213090	DTA114YS
Q405,Q406	2211705 or 2211706	2SD655-E or 2SD655-F
		IC protectors
QF101,QF102	252112	▲ ICP-N15 <P>
		Diodes
D101-D104	223163 or	1SS133 or
D106	223205	1SS270A
D105	224450562	MTZ5.6B
D108,D109	223163 or	1SS133 or
D909	223205	1SS270A
D905-D908	22380045	RL203
D910	224452202	MTZ22B
D911	224450512	MTZ5.1B
D912,D913	223163 or 223205	1SS133 or 1SS270A
		X'tal
X301	3010159	AT-38-169
		Coil
L101	233411K100	NCH-1383

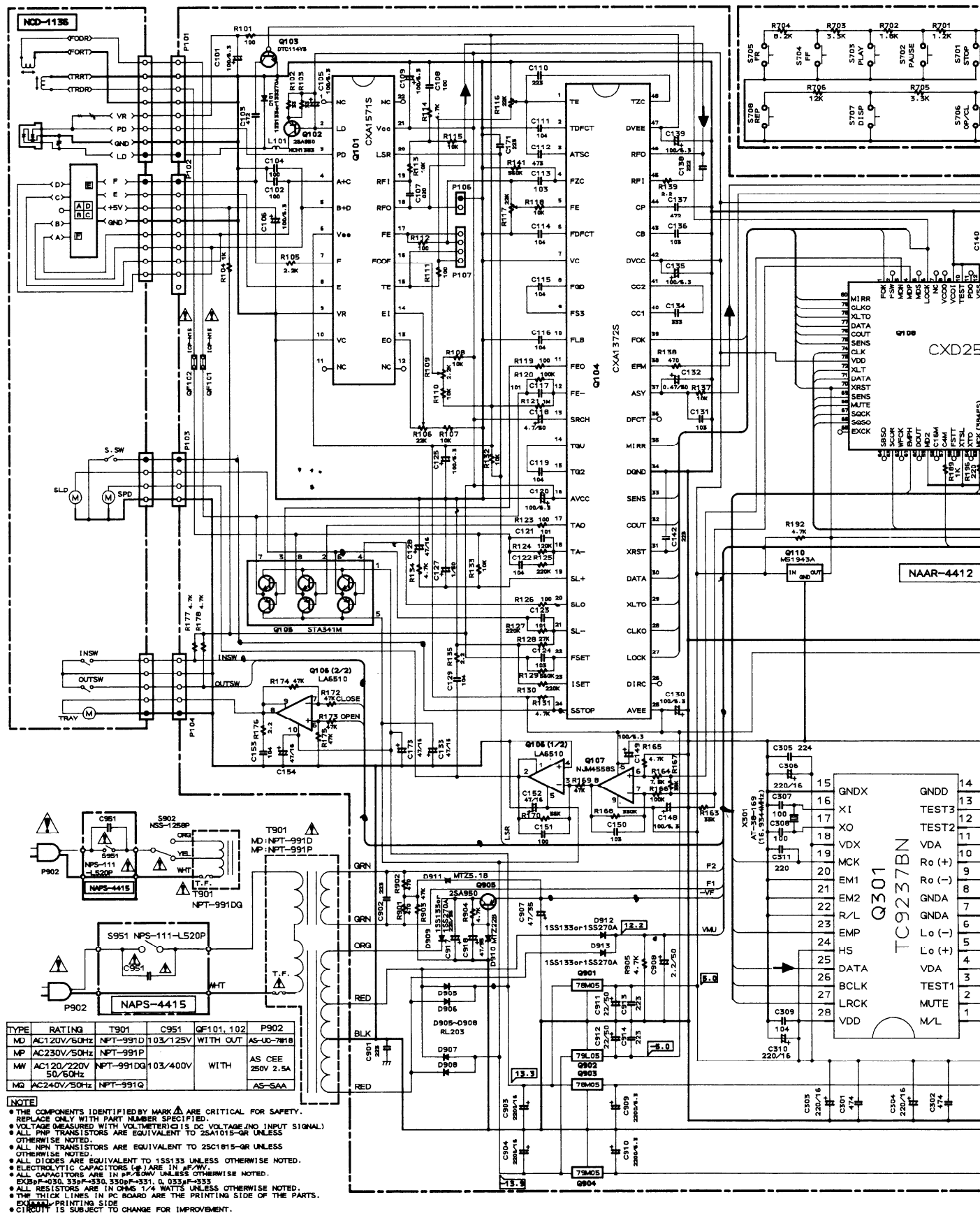
<P>:Except 120V model



MAIN CIRCUIT PC BOARD

SCHEMATIC DIAGRAM

1
2
3
4
5
6



TYPE	RATING	T901	C951	QF101, 102	P902
MD	AC120V/60Hz	NPT-991D	103/125V	WITH OUT	AS-UC-7818
MP	AC230V/50Hz	NPT-991P			AS CEE
MW	AC120/220V/50/60Hz	NPT-991DG	103/400V	WITH	250V 2.5A
MQ	AC240V/50Hz	NPT-991Q			AS-SAA

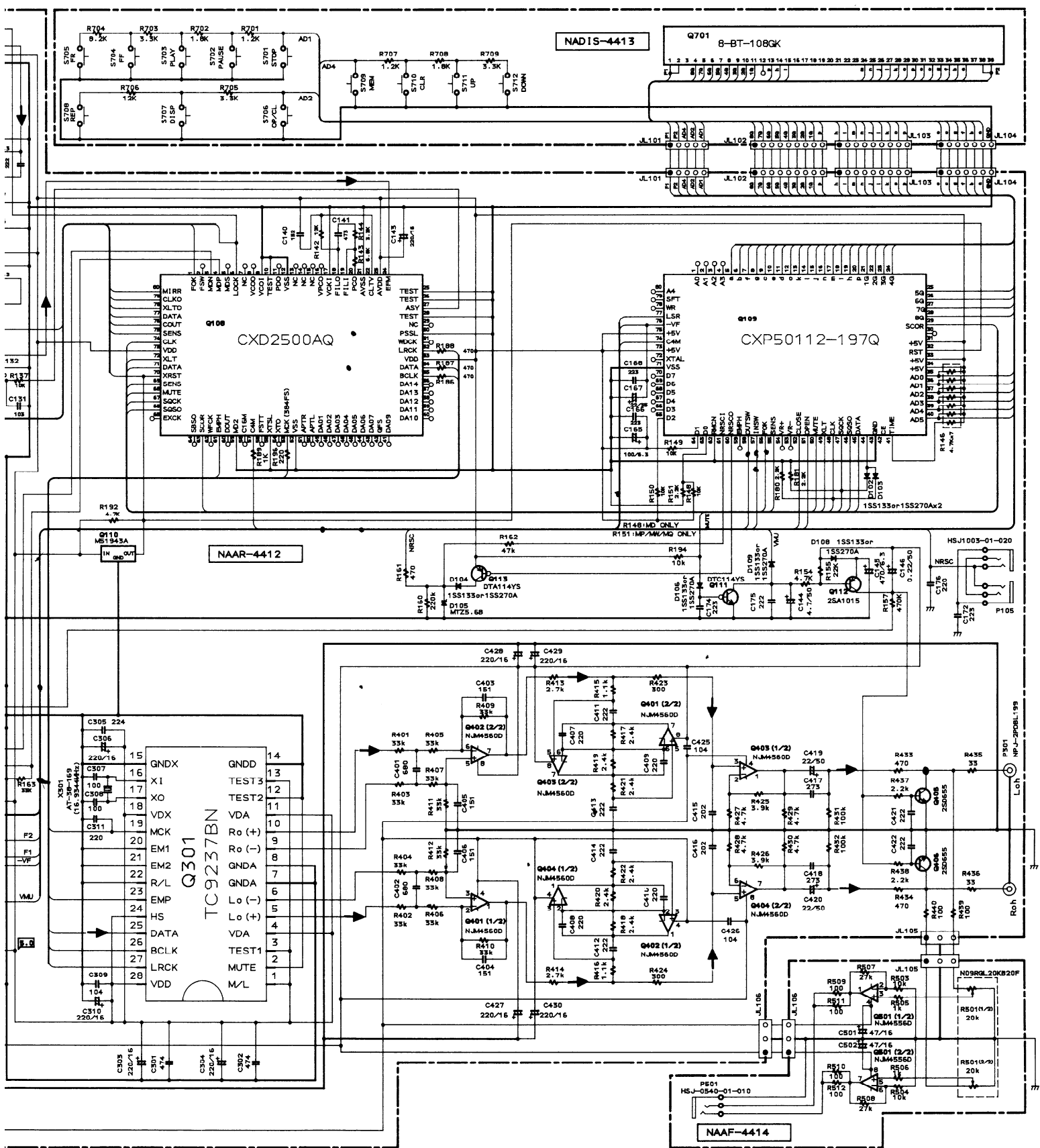
- NOTE**
- THE COMPONENTS IDENTIFIED BY MARK Δ ARE CRITICAL FOR SAFETY. REPLACE ONLY WITH PART NUMBER SPECIFIED.
 - VOLTAGE (MEASURED WITH VOLTMETER) C1'S DC VOLTAGE (NO INPUT SIGNAL).
 - ALL PNP TRANSISTORS ARE EQUIVALENT TO 2SA1015-QR UNLESS OTHERWISE NOTED.
 - ALL NPN TRANSISTORS ARE EQUIVALENT TO 2SC1015-QR UNLESS OTHERWISE NOTED.
 - ALL DIODES ARE EQUIVALENT TO 1SS133 UNLESS OTHERWISE NOTED.
 - ELECTROLYTIC CAPACITORS (E) ARE IN μ F/VV.
 - ALL CAPACITORS ARE IN pF/K Ω M UNLESS OTHERWISE NOTED.
 - EXEMPTED: 33pF-330, 330pF-331, 0.033pF-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.
 - EXEMPTED: PRINTING SIDE
 - CIRCUIT IS SUBJECT TO CHANGE FOR IMPROVEMENT.

D

E

F

G



NADIS-4413

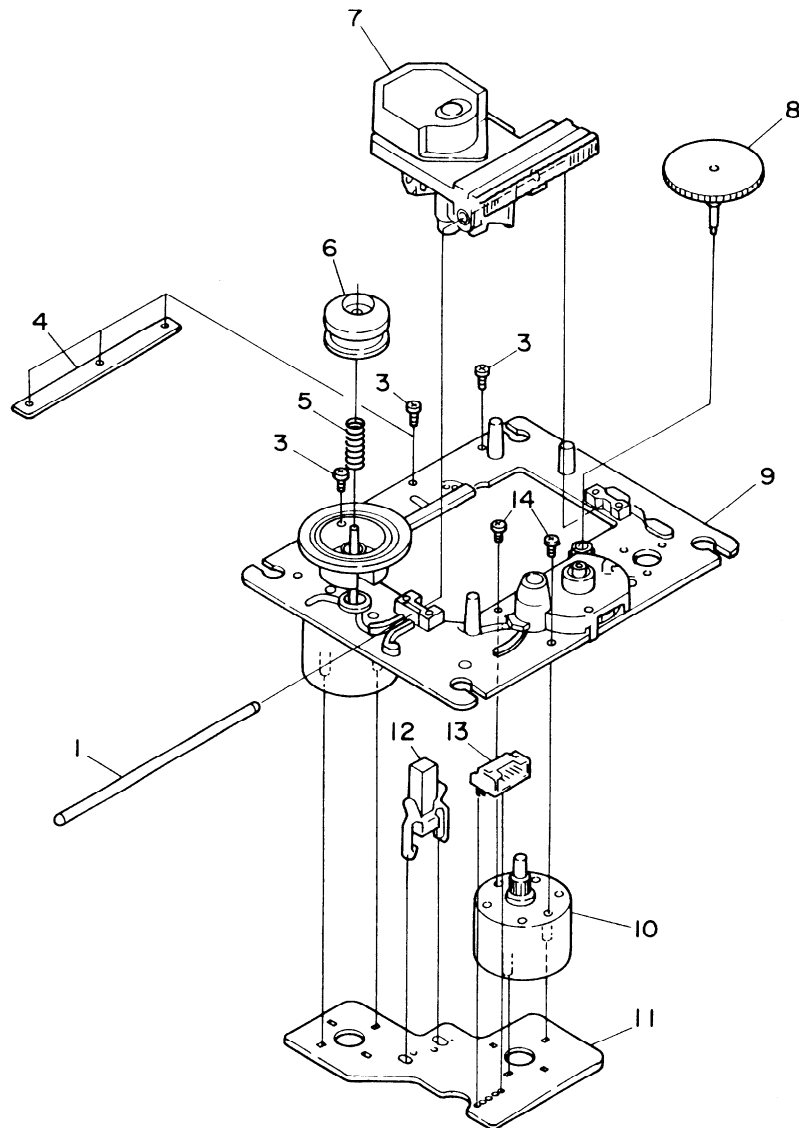
Q701 8-BT-108GK

NAAR-4412

NAAF-4414

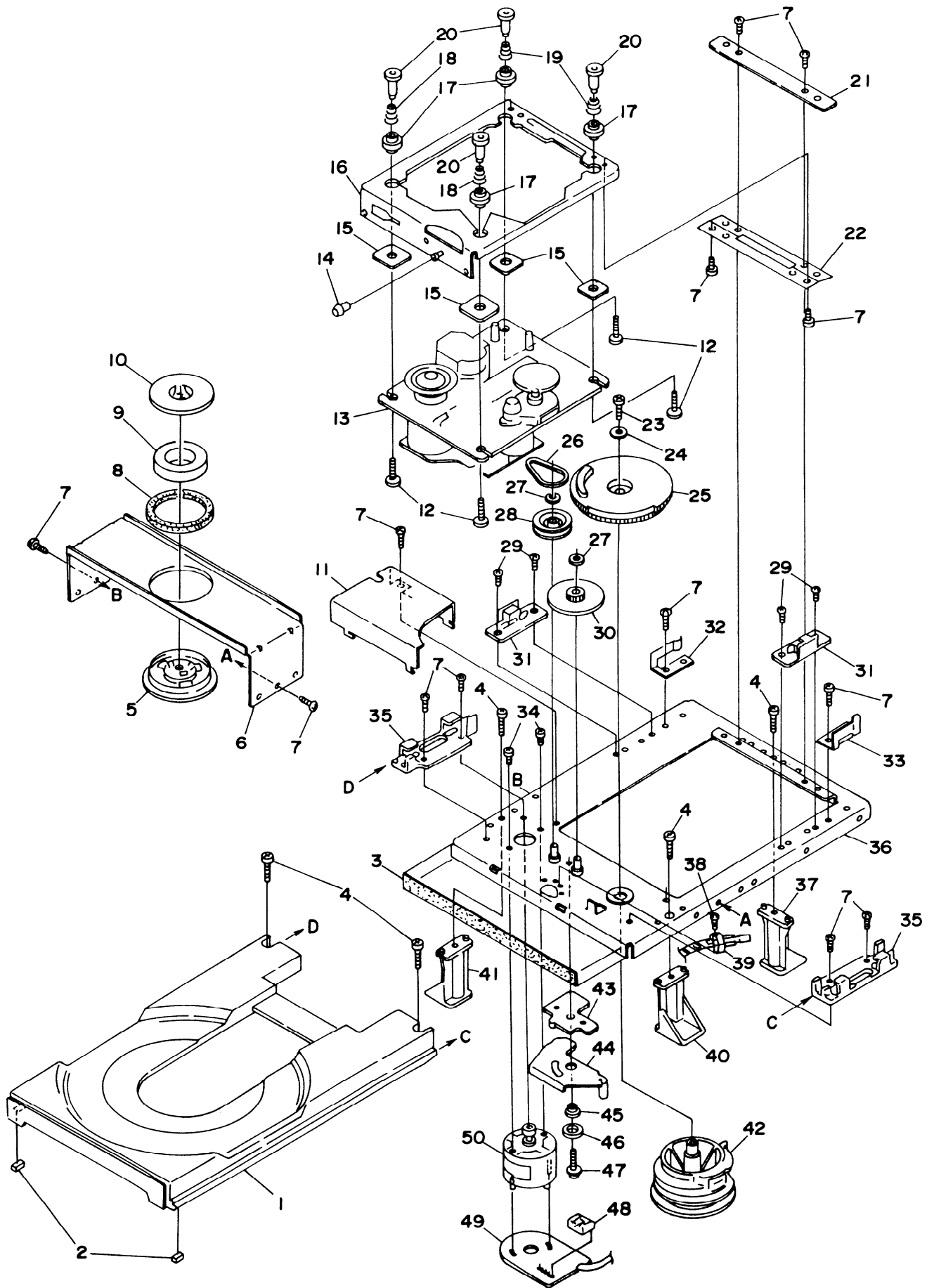
MECHANISM-EXPLODED VIEW

PICKUP DRIVE UNIT-EXPLOVED VIEW



PARTS LIST

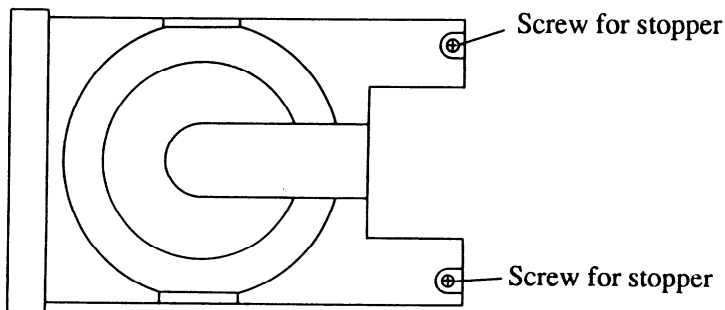
REF.NO.	PART NO.	DESCRIPTION	REF.NO.	PART NO.	DESCRIPTION
1	24828003	Sled shaft	8	24810006	Wheel
2			9	24802003	Turntable chassis
3	801425	2×5,Self-tapping screw	10	24804004	Motor gear
4	24822004	Plate	11	24840007	Motor pc board
5	24820003	Spring	12	24840008	Leafswitch
6	24822005	Center ring	13	25050396	NSCT-4P223,Connector
7	24110008	KSS-210A,Optical pickup	14	82142003	2P+3F(BC),Pan head screw



PARTS LIST

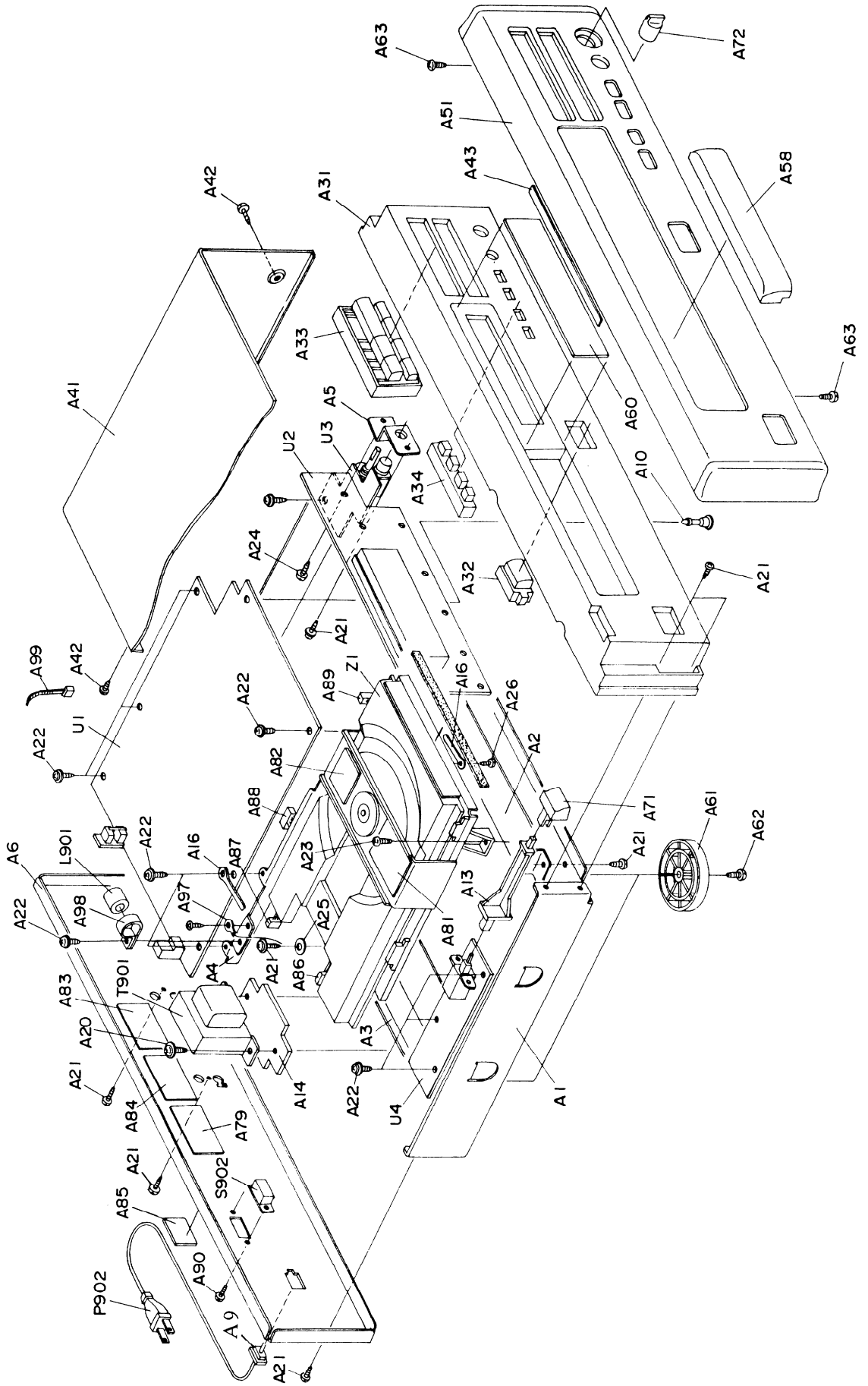
REF.NO.	PART NO.	DESCRIPTION	REF.NO.	PART NO.	DESCRIPTION
1	24506878	Tray	26	24602507	Belt
2	24506897	Damper	27	870144	Washer
3	28140980	Front tape	28	24506884	Loading pulley
4	838430108	3TTB+10B(BC),Self-tapping screw	29	833120047	2TTP+4S,Tapping screw
5	24506959	Chucking pulley	30	27301227	Middle gear
6	24506876	Chucking chassis	31	27301230	Tray holder
7	834126069	2.6TTS+6C,Self-tapping screw	32	24506888	Tray guide,left
8	24818004	Yoke damper	33	24506887	Tray guide,right
9	24832003	Magnet	34	838426038	2.6TTB+3C(BC),Self-tapping screw
10	24830001	Chucking yoke	35	27301228	Tray holder,front
11	24506879	Gear cover	36	27301224	Main chassis
12	801424	Screw with washer	37	24506890	Boss,back
13		KSM-2101AAM,Pickup drive unit	38	834120049	2TTS+4C,Self-tapping screw
14	24506870	Roller	39	25065402	Leafswitch
15	24506871	Plate	40	24506889	Boss,right
16	24506898	Sub chassis	41	24506890	Boss,left
17	24509401	Insulator	42	24506883	Control cam
18	27180442	Spring A	43	24506892	Link plate
19	27180441	Spring B	44	24506894	Stopper link
20		Shaft	45	24506893	Boss
21	24506864	Hinge holder	46	24506895	Spacer
22		Hinge	47	83112608	2.6TTW+8S,Self-tapping screw
23	838426108	2.6TTB+10B(BC),Self-tapping screw	48	25050393	Connector pin
24	8761301008	W3 × 10F,Washer	49	24505269	Motor pc board
25	24506882	Drive gear	50	24506886	Motor ass'y

REMOVEMENT OF DISC TRAY



1. Loosen the screw for stopper until the head of screw and the tray are the same height.
2. Turn POWER switch to on.
3. Press OPEN/CLOSE button to open the tray.
4. Turn POWER switch to off.
5. Remove the tray.

CHASSIS-EXPLODED VIEW



PARTS LIST

REF. NO.	PART NO.	DESCRIPTION	REF. NO.	PART NO.	DESCRIPTION
A1	27100227BY	Chassis	A81	29360807	Label DANGER
A2	27141520Y	Bracket F	A82	29361218Y	Label LASER <P/W/Q>
A3	27141521Y	Bracket R	A83	29360811AY	Label <P>
A4	27130642Y	Bracket C	A84	29361298A	Label SEM <P>
A5	27141519Y	Bracket HP	A85	29360687	Label CLASS1 <P/W/Q>
A6	27121558Y	Back panel <D>	A86	2000951	NSAS-8P903,Socket
	27121559Y	Back panel <P>	A87	2000952	NSAS-8P904,Socket
	27121561Y	Back panel <W>	A88	2002390810	NSAS-8P0120,Socket
	27121602Y	Back panel <Q>	A89	2002391020	NSAS-10P0119,Socket
A9	27300750	Bushing	A90	82143006	3P+6FN(BC),Pan head screw <W>
A10	27190524	KGLS-14R,Holder	A97	2061112100	Cord ass'y
A13	27273149Y	Joint,power	A98	260221	NK-10N,Clamp
A14	27270214B	Spacer	A99	260208	Binder
A16	27255004	CS-1U,Clip	L901	230907	TR-16-8-16,Core
A20	830440109	4TTC+10C(BC),Self-tapping screw	P902	253173Y	AS-UC-7#18,Power supply cord <D>
A21	834430088	3TTS+8B(BC),Self-tapping screw		253164Y or	AS-CEE250V2.5A,Power supply cord
A22	831130088	3TTW+8B,Self-tapping screw		253149	<P/W>
A24	833430080	3TTP+8P(BC),Self-tapping screw		253170	AS-SAA,Power supply cord <Q>
A25	87643010	W3 X 10F(BC),Washer	S902	25065123	NSS-1258P,Voltage selector switch
A26	834426068	2.6TTS+6B(BC),Self-tapping screw			<W>
A31	27110687Y	Front bracket ass'y 	T901	2300291	NPT-991D,Power transformer <D>
	27110688Y	Front bracket ass'y <S>		2300773Y	NPT-991P,Power transformer <P>
A32	28324562Y	Knob,open 		2300774Y	NPT-991DG,Power transformer <W>
	28324563A	Knob,open <S>		2300293Y	NPT-991Q,Power transformer <Q>
A33	28324568Y	Knob,play 	U1	1H186512-1	NAAR-4412-1,Main circuit pc board ass'y <D>
	28324569A	Knob,play <S>			
A34	28324566Y	Knob,memory 		1H186512-1A	NAAR-4412-1a,Main circuit pc board ass'y <P/W/Q>
	28324567Y	Knob,memory <S>	U2	1H186513-1	NADIS-4413-1,Display circuit pc board ass'y
A35	27150341	Shield plate,open <S>	U3	1H186514-1	NAAF-4414-1,Headphone amplifier pc board ass'y
A36	27150340	Shield plate,play <S>	U4	1H186515-1	NAPS-4415-1,Power switch pc board ass'y
A41	28184469Y	Top cover	Z1	24800001Y	NCD-113S,CD mechanism ass'y
A42	834430088	3TTS+8B(BC),Self-tapping screw			
A43	28140680	0.5 X 8 X 180,Cushion			
A51	1H186701K	Front panel ass'y 			
	1H188701K	Front panel ass'y <S>			
	28125222Y	End cap L			
	28125223Y	End cap R			
A58	27211396Y	Tray panel 			
	27211398	Tray panel <S>			
	28191622AY	Clear plate			
A60	27175254	Leg			
A61	27175254	Leg			
A62	834430088	3TTS+8B(BC),Self-tapping screw			
A63	833430080	3TTP+8P(BC),Self-tapping screw			
A71	28324140	Knob,power 			
	28324184	Knob,power <S>			
A72	28324564Y	Knob,level 			
	28324565Y	Knob,level <S>			
A79	29361342A	Label SEM/FIN <P>			

NOTE:<D>:120V model only

<P>:230V model only

<W>:Worldwide model only

<Q>:240V model only

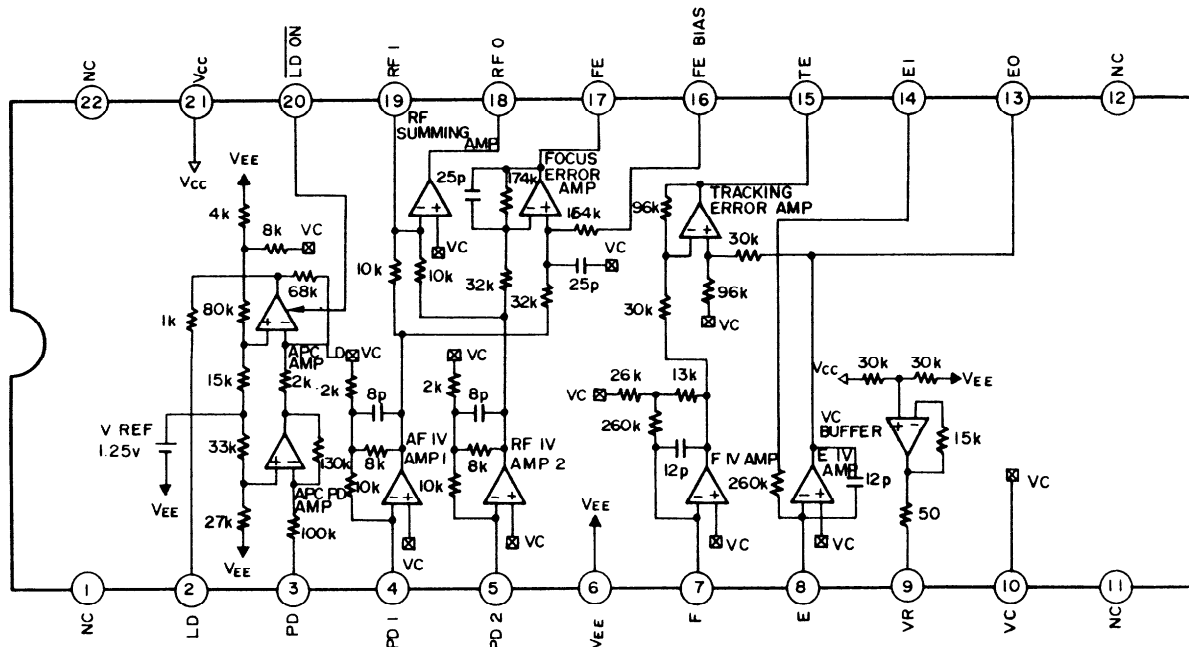
:Black model only

<S>:Silver model only

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

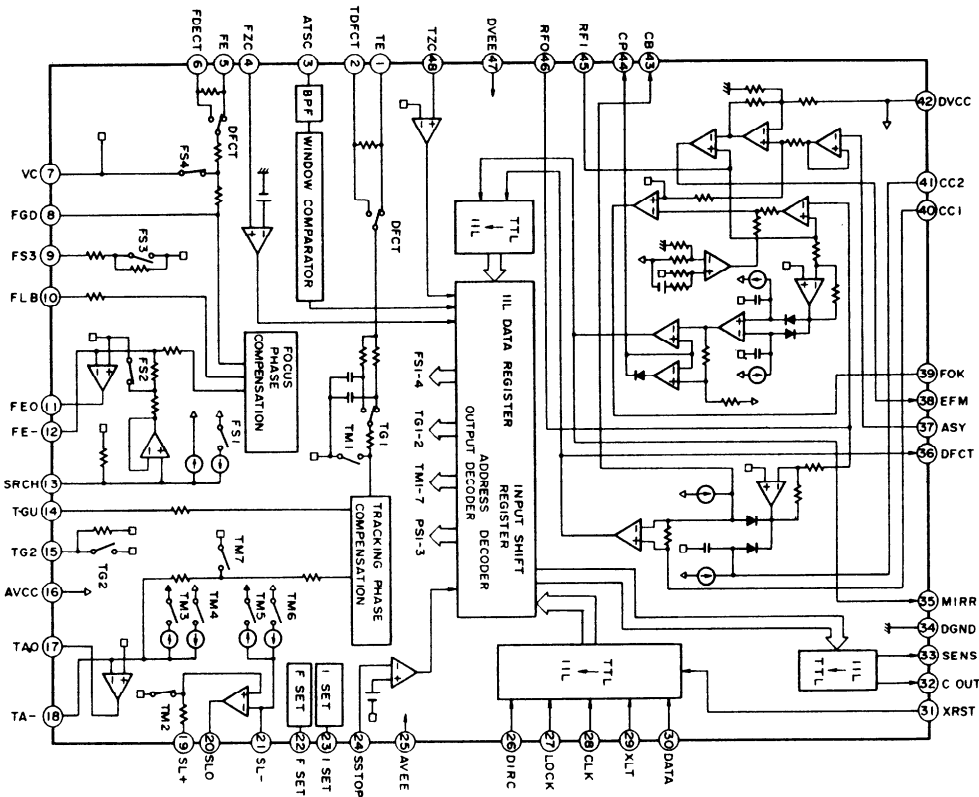
IC BLOCK DIAGRAM AND DESCRIPTIONS

CXA1571S (RF Amp)



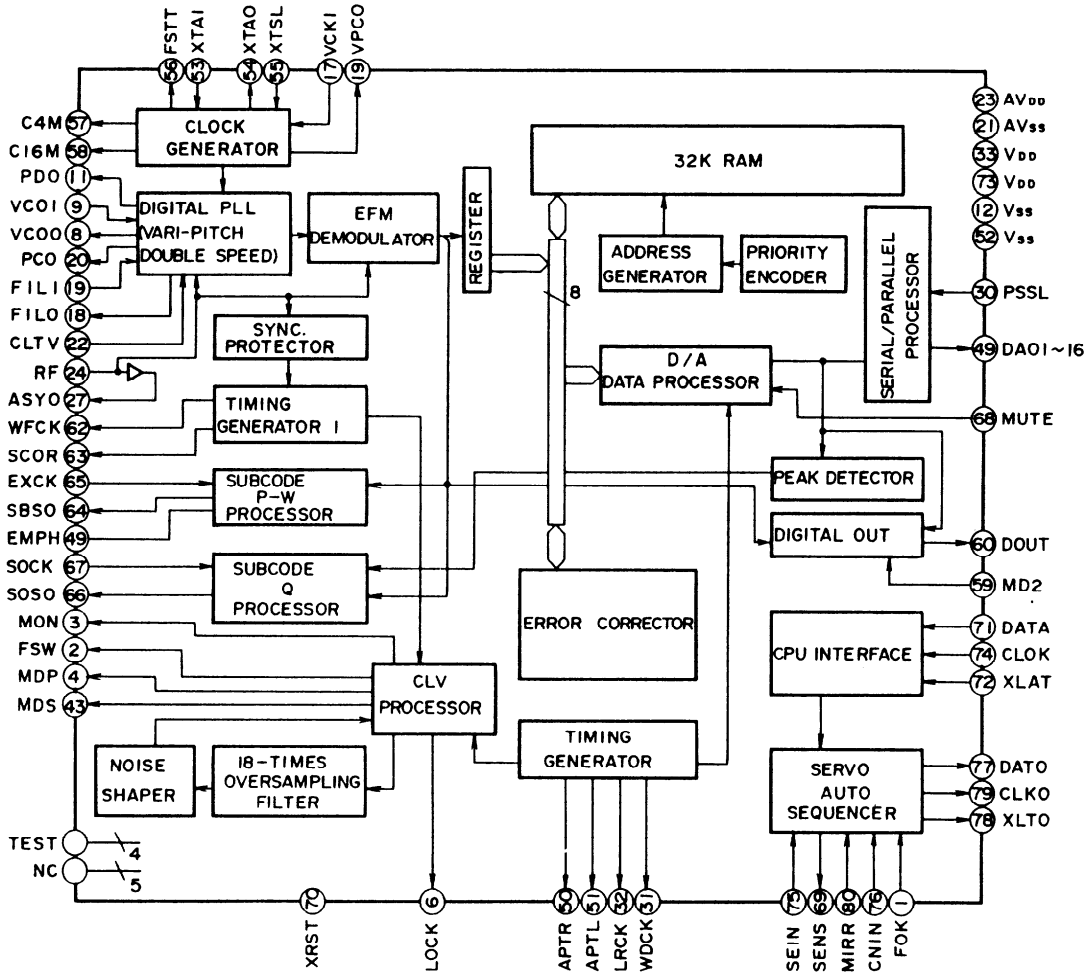
Pin No.	Symbol	I/O	Description
2	LD	O	Output terminal of APC amplifier.
3	PD	I	Input terminal of APC amplifier.
4	PD1	I	Inversion input terminal for RF I-V amplifier. Connect to photo diode A+C.
5	PD2	I	Inversion input terminal for RF I-V amplifier. Connect to photo diode B+D.
7	F-IN	I	Inversion input terminal for F I-V amplifier. Connect to photo diode F.
8	E-IN	I	Inversion input terminal for E I-V amplifier. Connect to photo diode E.
9	VR	O	DC voltage output of $(V_{CC} + V_{EE})/2$.
10	VC	I	Middle point voltage input terminal.
13	EO	O	Monitor output terminal for I-V amplifier E.
14	EI	-	Gain adjustment terminal for I-V amplifier E.
15	TE	O	Tracking error amplifier output terminal. The signal E-F is output from this terminal.
16	FE-BIAS	I	Bias adjustment terminal for non-inversion side of focus error amplifier.
17	FE	O	Focus error amplifier output terminal.
18	RFO	O	RF amplifier output terminal.
19	RFI	I	Inversion input terminal of RF amplifier.
20	LD-ON	I	Change-over terminal for APC amplifier.

CXA1372S (Servo Signal Processor)



PIN. NO.	SYMBOL	I/O	DESCRIPTION	PIN. NO.	SYMBOL	I/O	DESCRIPTION
1	TE	I	Tracking error input terminal.	22	FSET	I	Peak setting input of phase correction of focus tracking.
2	TDFCT	I	Capacitor connection terminal for time constant when defect.	23	ISET	I	This terminal is flowed the current so that the focus search, tracking jump, and sled kick height is decided.
3	ATSC	I	Window comparator input terminal for ATSC detection.	24	SSTOP	I	Inner switch selection input terminal.
4	FZC	I	Focus zero-cross comparator input terminal.	26	DIRC	I	This terminal is used when a track jump.
5	FE	I	Focus error input terminal.	27	LOCK	I	The sled runaway prevention circuit operates at the low level.
6	DFDCT	I	Capacitor connection terminal for time constant when defect.	28	CLK	I	Serial data transfer clock input from microprocessor.
7	VC	I	Mid-point voltage input terminal.	29	XLT	I	Latch input from microprocessor.
8	FGD	I	Connect the capacitor between pin 9 and this pin when the high frequency gain of focus servo is dropped.	30	DATA	I	Serial data input from microprocessor.
9	FS3	I	Focus servo high frequency gain changeover input terminal.	31	XRST	I	Reset input terminal. Active low.
10	FLB	I	Input terminal for the low frequency boost of focus servo.	32	C. OUT	O	Signal output to count the track numbers.
11	FEO	O	Focus drive output terminal.	33	SENS	O	This terminal outputs FZC, and SSTOP to according command from microprocessor.
12	FE-	I	Inversion input terminal of focus amplifier.	35	MIRR	O	Mirror comparator output terminal.
13	SRCH	I	Time constant terminal to make the focus search waveform.	36	DFCT	O	Defect comparator output terminal.
14	TGU	I	Tracking high frequency gain changeover input terminal.	37	ASY	I	Auto asymmetry control input terminal.
15	TG2	I	Tracking high frequency changeover input terminal.	38	EFM	O	EFM comparator output terminal.
17	TAO	O	Tracking drive output terminal.	39	FOK	O	Focus OK comparator output terminal.
18	TA-	I	Inversion input terminal of tracking amplifier.	40	CC1	O	Defect bottom hold output terminal.
19	SL+	I	No-inversion input terminal of sled amplifier.	41	CC2	I	Defect bottom hold input terminal from CCI.
20	SLO	O	Sled (slide) drive output terminal.	43	CB	I	Defect bottom hold capacitor connection terminal.
21	SL-	I	Inversion input terminal of sled amplifier.	44	CP	I	Mirror hold capacitor connection terminal.
				45	RFI	I	RF summing amplifier input terminal.
				46	RFO	O	RF summing amplifier output terminal.
				48	TZC	I	Tracking zero-cross comparator input terminal.

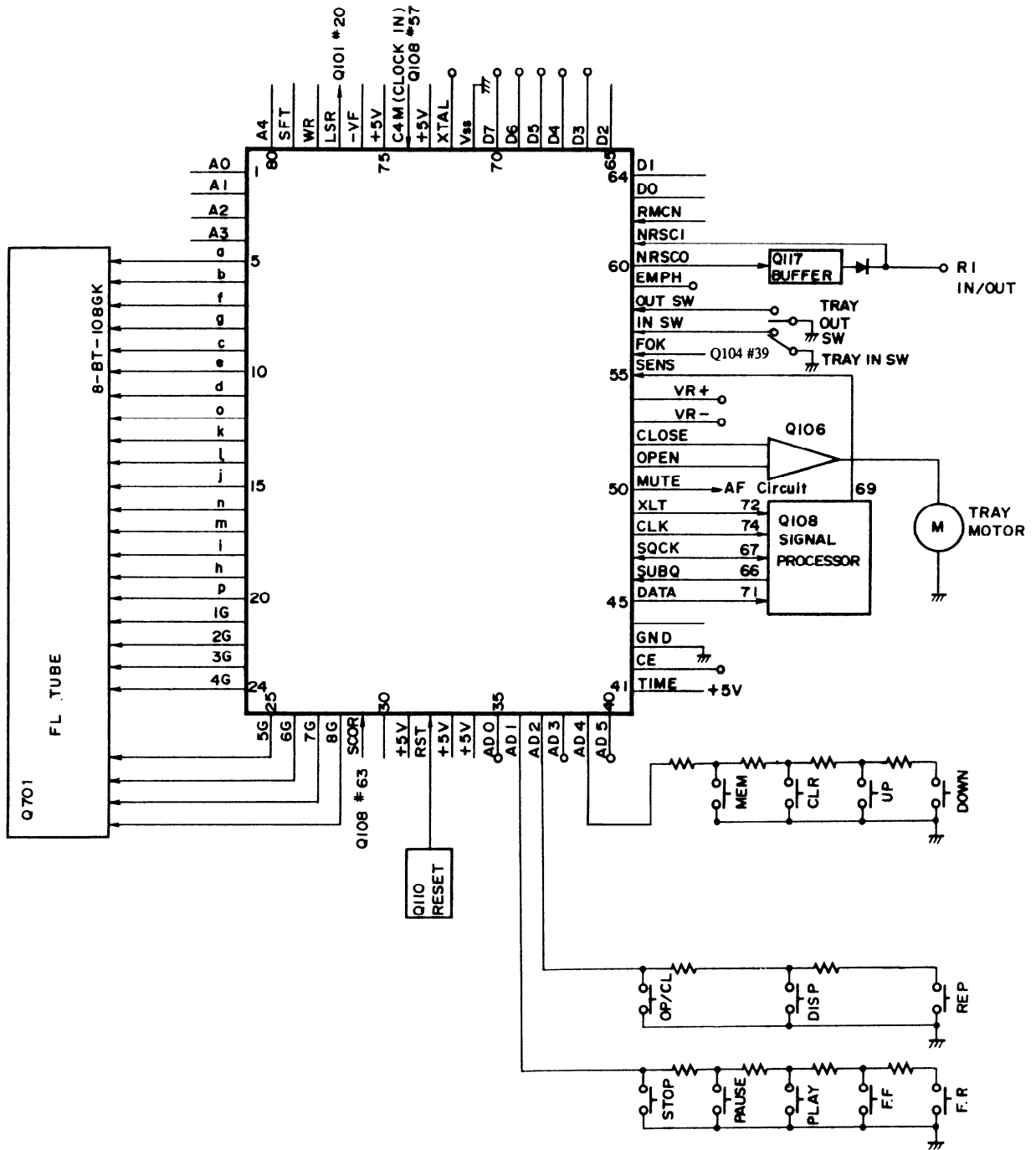
CXD2500AQ (Digital Signal Processor)



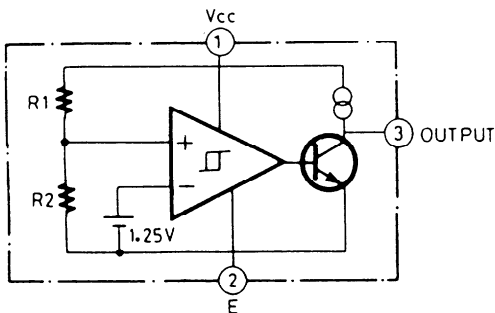
NO.	SYMBOL	I/O	DESCRIPTION	NO.	SYMBOL	I/O	DESCRIPTION
1	FOK	I	Focus OK input	42	DA08	O	DA08 GFS output
2	FSW	O	Output filter changeover output of spindle motor	43	DA07	O	DA07 RFCK output
3	MON	O	Spindle motor control output	44	DA06	O	DA06 C2P0 output
4	MDP	O	Spindle motor servo control	45	DA05	O	DA05 XRAOF output
5	MDS	O	Spindle motor servo control	46	DA04	O	DA04 MNT3 output
6	LOCK	O	H when GFS is high	47	DA03	O	DA03 MNT2 output
7	NC			48	DA02	O	DA02 MNT1 output
8	VCOO	O	Oscillation circuit output for analog FEM PLL	49	DA01	O	DA01 MNT0 output
9	VCOI	I	Oscillation circuit input for analog EFM PLL (8.6436MHz)	50	APTR	O	Control output for aperture correction. H when Reh.
10	TEST	I	Test terminal	51	APTI	O	Control output for aperture correction. H when Lch.
11	PDO	O	Charge pump output for analog EFM PLL	52	Vss		Ground
12	Vss		Ground terminal	53	XTA1	I	Crystal oscillation circuit input of 16.9344MHz or 33.8688MHz input
13-15	NC			54	XTAO	O	Crystal oscillation circuit output of 16.9344MHz
16	VPCO	O	PLL charge pump output for variable pitch	55	XTSL	I	Crystal selection input terminal. L when 16.9344MHz. H when 33.8688MHz.
17	VCKI	I	Clock input for variable pitch from VCO (16.934MHz)	56	FSTT	O	2/3 divided output of pins 53 & 54
18	FILO	O	Filter output for master PLL	57	C1M	O	4.2336MHz output
19	FILI	I	Filter input for master PLL	58	C16M	O	16.9344MHz output
20	PCO	O	Charge pump output for master PLL	59	MD2	I	Digital output control input. On at H & Off at L.
21	AVss		Analog ground	60	DOU	O	Digital output
22	CLTV	I	VCO control voltage input for master	61	EMPH	O	Emphasis control output. Active H.
23	AVDD		Analog section power supply (+5V)	62	WFCK	O	Write frame clock output
24	RF	I	EFM signal input	63	SCOR	O	Sub-code detection output. H when is detected S0 or S1.
25	TEST2	I	Connect to the ground.	64	SBSO	O	Serial output of sub code(P~W)
26	TEST3	I	Connect to the ground.	65	EXCK	I	Clock input for read out SBSO
27	ASYO	O	EFM full swing output	66	SQSO	O	Sub Q 80 bits. PCM peak. and level data 16 bits output
28	TEST4	I	Connect to the ground.	67	SQCK	I	Clock input for read out SQSO
29	NC			68	MUTE	O	Muting control output. Active H.
30	PSSL	I	Audio data output mode changeover input. Serial data at L and parallel data at H.	69	SENS	-	Sens output. Output to microprocessor
31	WDCK	O	D/A interface for 48 bits slot. Word clock f=2Fs.	70	XRST	I	System reset. Rest at low level.
32	LRCK	O	D/A interface for 48 bits slot. LR clock f=Fs.	70	DATA	I	Serial data input from microprocessor
33	VDD		Power supply terminal(+5V)	72	XLTA	I	Latch input from microprocessor. Latch the serial data at trailing
34-49			Data output terminals	73	VDD		Power supply
			PSSL=1	74	CLOK	I	Serial data transfer clock input from microprocessor
			PSSL=0	75	SEIN	I	Sens input from SSP
34	DA16	O	DA16 Serial data of 48 bits slot	76	CNCI	I	Track jump numbers count signal input
35	DA15	O	DA15 Bit clock of 48 bits slot	77	DATO	O	Serial data output to SSP
36	DA14	O	DA14 Serial data of 64 bits slot	78	XLTO	O	Serial data latch output to SSP. Latch at trailing.
37	DA13	O	DA13 Bit clock of 68 bits slot	79	CLKO	O	Serial data transfer clock output to SSP
38	DA12	O	DA12 LR clock of 68 bits slot	80	MIRR	I	Mirror signal input
39	DA11	O	DA11 GTOP output				
40	DA10	O	DA10 XUGF output				
41	DA09	O	DA09 XPLCK output				

Note:SSP:Q104 CXA1372S

CXP50112 -197Q (Microprocessor)

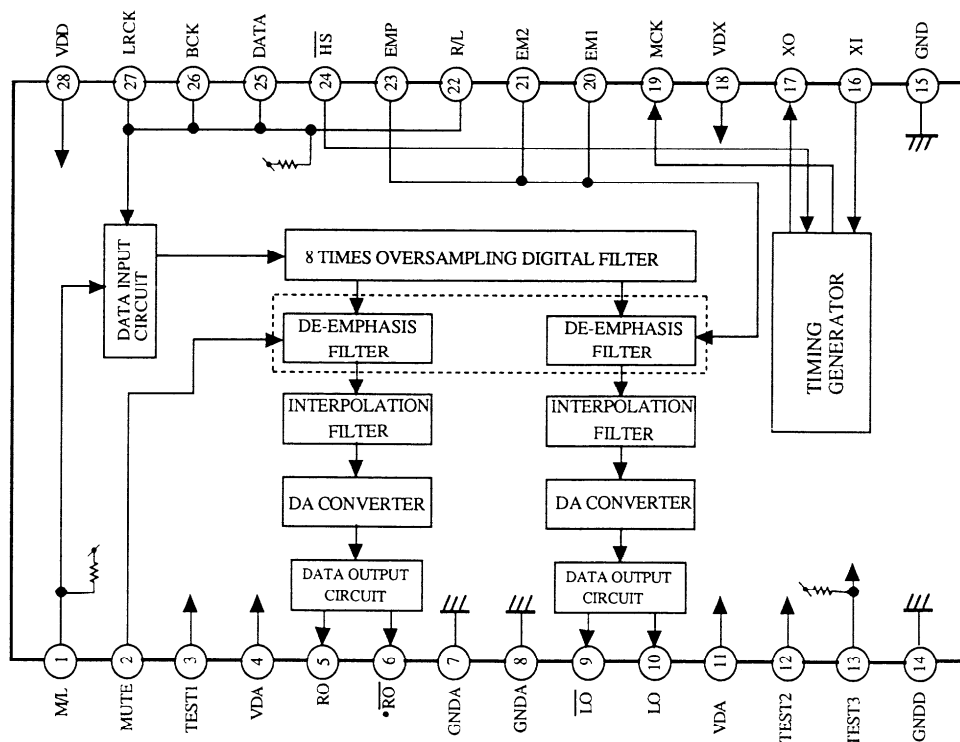


M51943ASL (Rest IC)



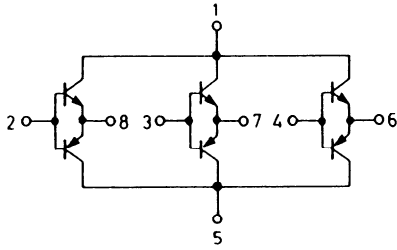
Pin No.	Symbol	Description
1~4	A0~A3	Music file control signal.Not used.
5~20	a~p	Fluorescent indicator tube segment drive output terminals.
21~28	1G~8G	Fluorescent indicator tube grid drive output terminals.
29	SCOR	Synchronizing signal detection input terminal of sub code frame.
31	5V	
32	RST	Reset input terminal.Reset at the low level.
33,34	5V	
35~40	AD0~AD5	AD input terminal.Connect to the operation key.
41	TIME	Timer switch connection terminal.Not used.
42	CE	Chip enable terminal.
43	GND	
45	DATA	Serial data output terminal.
46	SUBQ	Subcode Q input terminal.
47	SQCK	Subcode Q read clock input/output terminal.
48	CLK	Serial data transmission clock output terminal.
49	XLT	Command execution output terminal.
50	MUTE	Muting ON/OFF control output terminal.ON at the high level.
51	OPEN	Tray open control output terminal.Open at the low level.
52	CLOSE	Tray close control output terminal.Close at the low level.
53	VR-	Volume control output.Not used.
54	VR+	Volume control output.Not used.
55	SENS	Interface of signal processor and microprocessor ICs.
56	FOK	Focus OK input terminal.Focus OK at the high level.
57	INSW	Tray close detection input terminal.
58	OUTSW	Tray open detection input terminal.
59	EMPH	Emphasis ON/OFF control output terminal.On at the high level.
60	NRSCO	Remote control signal (RI signal) output terminal.
61	NRSCI	Remote control signal (RI signal) input terminal.
62	RMCN	Remote control signal input terminal.
63~70	D0~D7	Music file control signal.Not used.
71	Vss	Ground terminal.
72	XTAL	Clock output terminal.
73	5V	
74	C4M	System clock input terminal.
75	5V	
76	VF	Negative power supply terminal for fluorescent indicator tube.
77	LSR	Optical pickup control output terminal.On at the low level.
78	WR	Music file control signal.Not used.
79	SFT	Music file control signal.Not used.
80	A4	Music file control signal.Not used.

TC9237BN (D/A Converter)

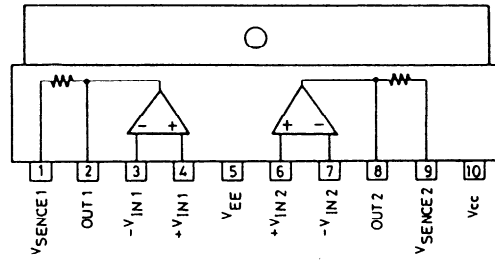


No.	Symbol	I/O	Description	No.	Symbol	I/O	Description															
1	M/L	I	Selection terminal for input data. MSB first at the high level and LSB first at the low level.	20	EM1	I	Selection terminal for de-emphasis filter mode. <table border="1" style="margin-left: 20px;"> <tr> <td>EM1</td> <td>L</td> <td>L</td> <td>H</td> <td>H</td> </tr> <tr> <td>EM2</td> <td>L</td> <td>H</td> <td>H</td> <td>L</td> </tr> <tr> <td>MODE</td> <td>44.1kHz</td> <td>32kHz</td> <td>48kHz</td> <td></td> </tr> </table>	EM1	L	L	H	H	EM2	L	H	H	L	MODE	44.1kHz	32kHz	48kHz	
EM1	L	L	H	H																		
EM2	L	H	H	L																		
MODE	44.1kHz	32kHz	48kHz																			
2	MUTE	I	Muting terminal.ON at the high level.	21	EM2	I																
3	TEST1	I	Test terminal	22	R/L	I	Selection terminal for channel data <table border="1" style="margin-left: 20px;"> <tr> <td>R/L</td> <td colspan="2">LRCK</td> </tr> <tr> <td>INPUT</td> <td>L</td> <td>H</td> </tr> <tr> <td>L</td> <td>R ch. data</td> <td>L ch. data</td> </tr> <tr> <td>R</td> <td>L ch. data</td> <td>R ch. data</td> </tr> </table>	R/L	LRCK		INPUT	L	H	L	R ch. data	L ch. data	R	L ch. data	R ch. data			
R/L	LRCK																					
INPUT	L	H																				
L	R ch. data	L ch. data																				
R	L ch. data	R ch. data																				
4	VDA	-	Analogue section power supply terminal for DA converter.(Right channel)	23	EMP	I	Changeover terminal for de-emphasis filter. ON at the high level and OFF at the low level.															
5	RO	O	Non inversion output terminal of right channel data.	24	HS	I	Speed mode selection terminal.Standard speed at the high level and twice speed at the low level.															
6	$\overline{\text{RO}}$	O	Inversion output terminal of right channel data.	25	DATA	I	Data input terminal															
7	GND _A	-	Ground terminal for DA converter.(Right channel)	26	BCK	I	Bit clock input terminal															
8	GND _A	-	Ground terminal for DA converter.(Left channel)	27	LRCK	I	LR clock input terminal															
9	$\overline{\text{LO}}$	O	Inversion output terminal of left channel data.	28	VDD	-	Power supply terminal for logic circuit															
10	LO	O	Non inversion output terminal of left channel data.																			
11	VDA	-	Analogue power supply for DA converter																			
12	TEST2	I	Test terminal																			
13	TEST3	I	Test terminal																			
14	GND	-	Ground terminal for logic section																			
15	GND _X	-	Ground terminal for oscillator section																			
16	XI	I	Crystal oscillation connection terminal.																			
17	XO	O																				
18	VDX	-	Power supply for oscillation section																			
19	MCK	O	System clock output terminal.(384fs)																			

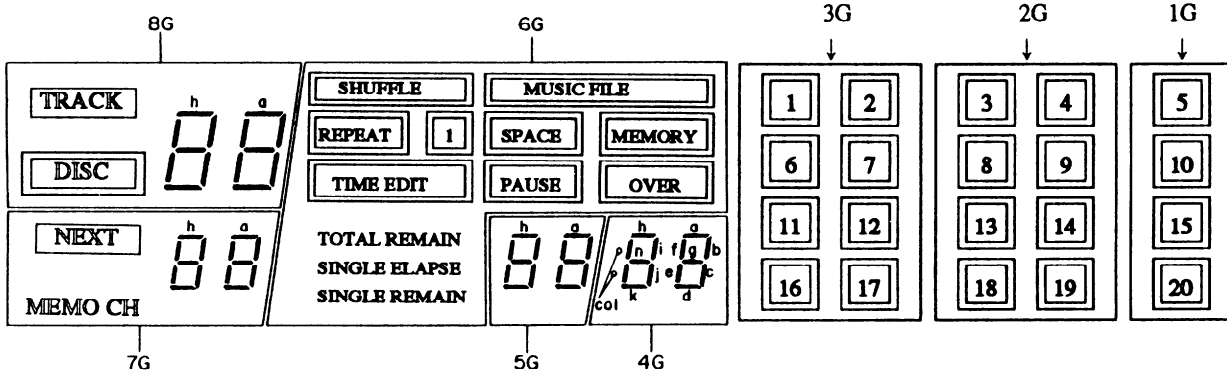
STA341M-L (Transistor Array)



LA6510 (Power OP Amp)



8-BT-108GK (FL tube)



Pin No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Connection	F1	F1	NP	8G	7G	6G	5G	4G	3G	2G	1G	NC	P16	P8	P9	NP	NP	NP	NP	NP
Pin No.	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	
Connection	NP	NP	NP	P13	P14	P10	P12	P11	P15	P4	P5	P3	P7	P6	P2	P1	NP	F2	F2	

NOTE: F1,F2---Filament, NP---No pin, NC---No connection, 1G-8G---Grid, P1-P16---Segment

	8G	7G	6G	5G	4G	3G	2G	1G
P1	a	a	REPEAT	a	a	1	3	5
P2	b	b	TIME EDIT	b	b	<1>	<3>	<5>
P3	c	c		c	c	6	8	10
P4	d	d		d	d	7	9	
P5	e	e	1	e	e	<6>	<8>	<10>
P6	f	f	MUSIC FILE	f	f	2	4	
P7	g	g	SPACER	g	g	<2>	<4>	
P8	h	h	PAUSE	h	h	<7>	<9>	
P9	i	i	MEMORY	i	i	11	13	15
P10	j	j	SHUFFLE	j	j	<12>	<14>	
P11	k	k	OVER	k	k	<16>	<18>	<20>
P12	l	l	SINGLE REMAIN	l	l	16	18	20
P13	m	m	SINGLE ELAPSE	m	m	<11>	<13>	<15>
P14	n	n		n	n	12	14	
P15	TRACK	NEXT	TOTAL REMAIN		:	17	19	
P16	DISC	MEMO CH				<17>	<19>	

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. 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 P106.

(Oscilloscope)

Adjust R109 until a clear trace of waveform pattern as shown photo 1 appear on the oscilloscope.

When the amount of jitter is broad, set R109 to mechanical center.

(Jitter meter)

Adjust R109 until the jitter meter reading becomes minimum.(Less than 10ns.)

After adjustment, disconnect the oscilloscope or jitter meter.

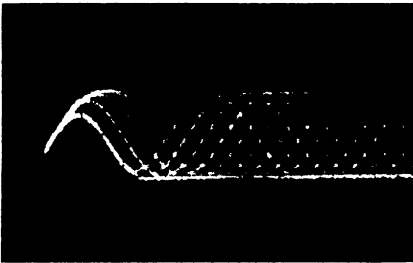
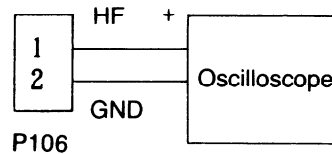
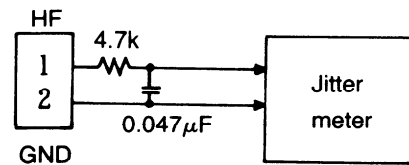


Photo 1



Oscilloscope range
Vertical : 0.5V/div.
Horizontal : 0.2 μ s/div.
DC, Ground: Center



2. Tracking offset adjustment

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

Turn R116 to minimum position.(Counter clockwise)

Connect the oscilloscope between pin 3 (TR) of P107 and pin 2 (GND) of P106.

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

Turn R116 to the mechanical center.

After adjustment, disconnect the oscilloscope.

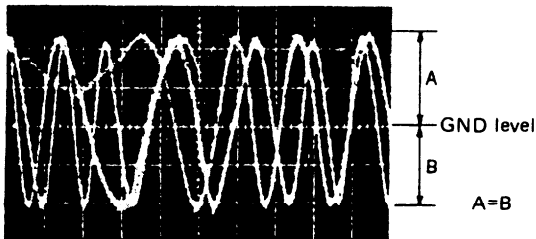
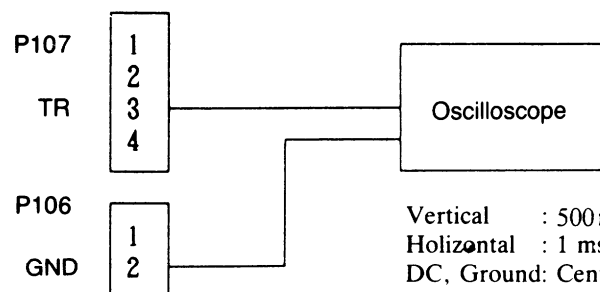
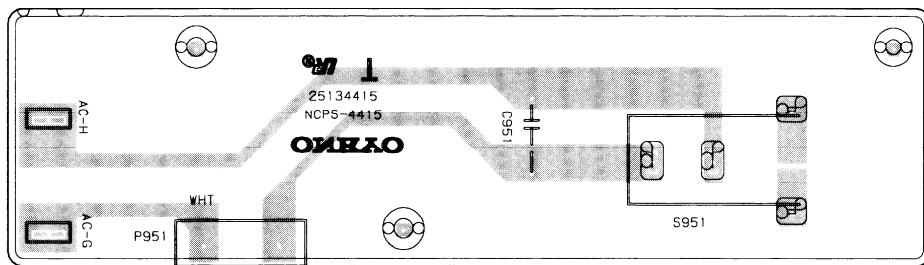


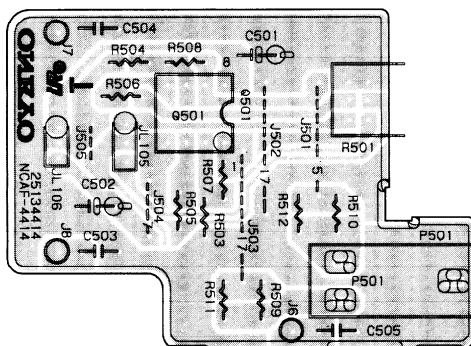
Photo 2



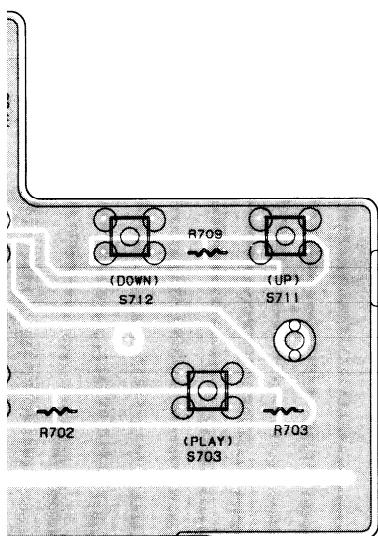
Vertical : 500mV/div.
Horizontal : 1 ms/div.
DC, Ground: Center



POWER SWITCH PC BOARD



HEADPHONE AMPLIFIER PC BOARD



Y CIRCUIT PC BOARD

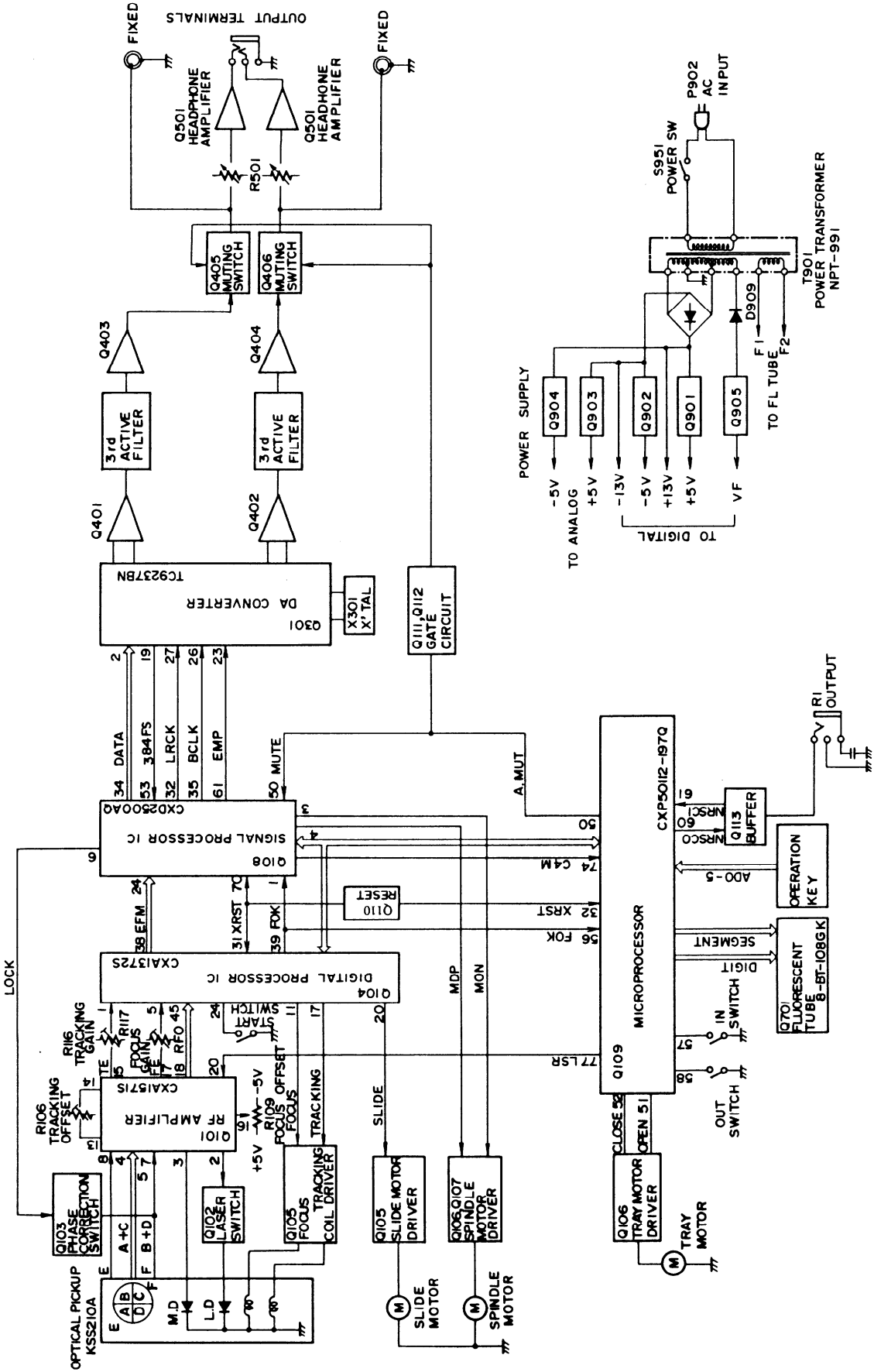
CIRCUIT NO.	PART NO.	DESCRIPTION
	Resistors	
R106	5210066	N06HR22KBD,Semi-fixed
R109	5210060	N06HR2.2KBD,Semi-fixed
R116,R117	5210066	N06HR22KBD,Semi-fixed
R146	49163472407	RM1/101J 4.7K×7,Array
	Plugs	
P101	25055152	NPLG-8P136
P102	25055153	NPLG-9P137
P103	25055148	NPLG-4P132
P104	25055149	NPLG-5P133
P106	25055038	NPLG-2P29
P107	25055045	NPLG-4P33
	Jack	
P105	25045172	HSJ1003-01-020
	Terminal	
P301	25045353	NPJ-2PDBL199,Output
	Holder	
	27190751	

DISPLAY CIRCUIT PC BOARD(NADIS-4413-1)		
CIRCUIT NO.	PART NO.	DESCRIPTION
	Push switches	
S701-S712	25035548	NPS-111-S510
	FL tube	
Q701	212092	8-BT-108GK
	Holder	
	27190754Y	FL
HEADPHONE AMPLIFIER PC BOARD(NAAF-4414-1)		
CIRCUIT NO.	PART NO.	DESCRIPTION
Q501	222654	NJM4556D,IC
C501,C502	354744709	47 μ F,16V,Elect. capacitors
R501	5104301Y	N09RGL20KB20F, Variable resistor
P501	25045139	HSJ-0540-01-010, Headphone jack

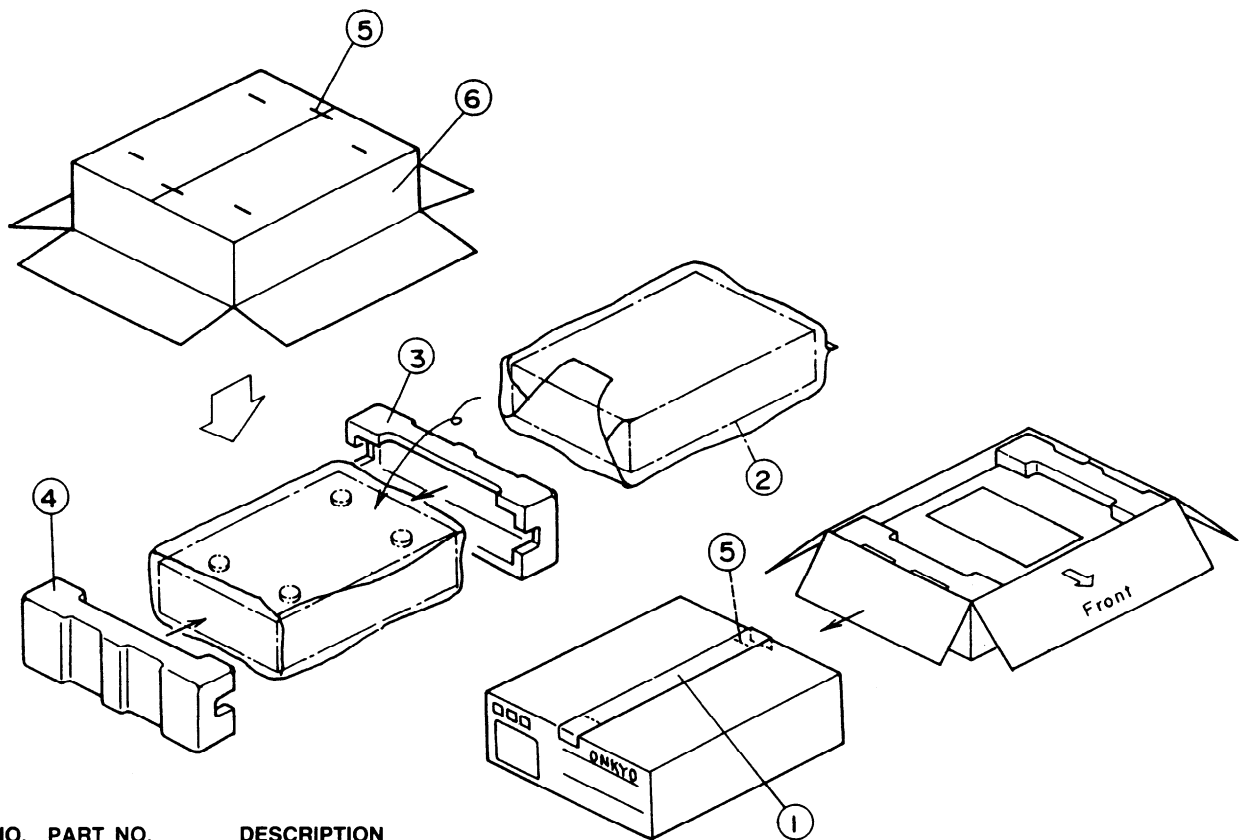
POWER SWITCH PC BOARD(NAPS-4415-1)		
CIRCUIT NO.	PART NO.	DESCRIPTION
C951	3500065A	△ DE7150FZ103PAC400V/ 125V,IS capacitor
S951	25035558	△ NPS-111-520P, Power switch

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

BLOCK DIAGRAM



PACKING VIEW



REF. NO.	PART NO.	DESCRIPTION
1	29110071	50×60cm,PP tape
2	29100037A	500×650cm,Styrene bag
3	29091434Y	Pad R
4	29091433Y	Pad L
5	282301	Sealing hook
6	29052358Y	Master carton box
	29052386Y	Master carton box <S>
		Accessary bag ass'y
	2010098A	Connection cord
	2010200	Remote control cord
	29341697Y	Instruction manual <D>
	29341699AY	Instruction manual <C/P/W/Q>
	25055040	CV-K-2,Conversion plug <W>
	29100097	350×250cm,Styrene bag
	29365019A	Warranty card <N>
	29365024A	Warranty card <F>
	29358002J	Service station list <N>
	29100107	Styrene bag for warranty card <F>

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

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