ONKYO® SERVICE MANUAL

COMPACT DISC PLAYER
MODEL C-200
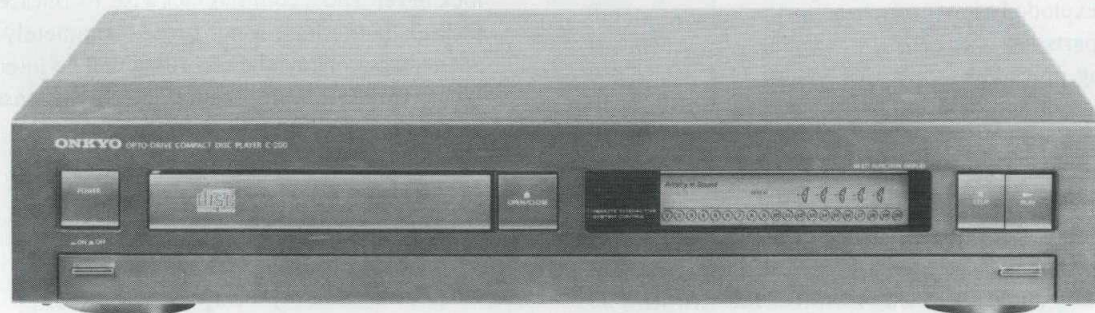
UG, UGV	220V AC, 50Hz
UU	110/120/220/240V AC, 50.60Hz
UQA, UQB	240 AC, 50Hz

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 MEA-SUREMENTS TO DETERMINE THAT EXPOSED PARTS ARE ACCEPTABLY INSULATED FROM THE SUPPLY CIRCUIT BEFORE RETURNING THE APPLIANCE TO THE CUSTOMER.

SPECIFICATIONS

Signal readout system:	Optical non-contact
Reading rotation:	About 500~200 r.p.m.
	(constant linear velocity)
Linear velocity:	1.2~1.4m/s
Error correction system:	Cross interleave readsolomon code
Decoded bits:	16 bits linear
Sampling frequency:	176.4kHz (four-times oversampling)
Number of channels:	2 (stereo)
Frequency response:	5Hz~20kHz
Total harmonic distortion:	0.003% (at 1kHz)
Dynamic range:	93dB
Signal to noise ratio:	100dB
Channel separation:	96dB (at 1kHz)
Wow and Flutter:	Below threshold of measurability
Power comsumption	20 watts
Output level:	2 volts r.m.s.
Dimensions (W×H×D):	435×87×332mm
	17-1/8″×3-7/16″×13-1/16″
Weight:	4.8kg, 10.6 lbs.

Specifications are subject to change without notice.

ONKYO
AUDIO COMPONENTS

TABLE OF CONTENTS

SERVICE PROCEDURES

1. Voltage selector (rear panel)

Worldwide models are equipped with a voltage selector to conform with local power supplies. Be sure to set this selector to match the voltage of the power supply in your area before turning the power switch on. Voltage is changed by turning the voltage selector with a screwdriver or similar instrument to the 110V, 120V, 220V or 240V position. Confirm that the selector has been set to the correct position before turning the power switch on. If there is no voltage selector switch on the unit you have purchased, it can only be used in areas where the power supply voltage is the same as that of the unit.

at AC 110V   at AC 120V   at AC 220V   at AC 240V
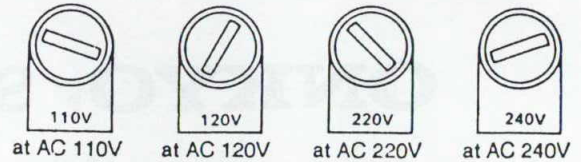
2. Regarding the lock for transport protection

For the protection of the laser and optical parts during transport, a lock is provided on the bottom surface of the machine. When using the machine, turn the transport lock lever 180° counterclockwise to release the optical pickup. If the lock is not turned completely, the section at the beginning of the recording will be interrupted. When this symptom occurs, check the position of the lock lever.

Transport screw

Bottom view
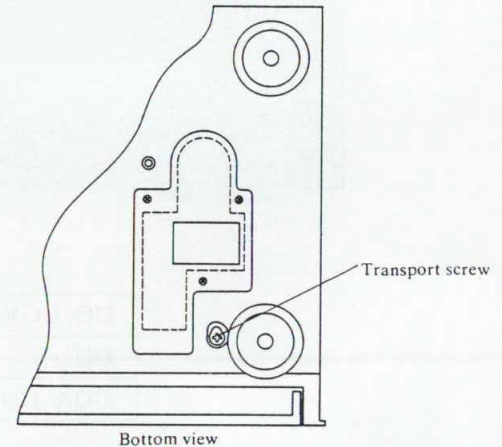
3. Replacing the lamp of LCD.

Turn 90° to counter-clockwise direction with the screw drive. (Part No. 210197).
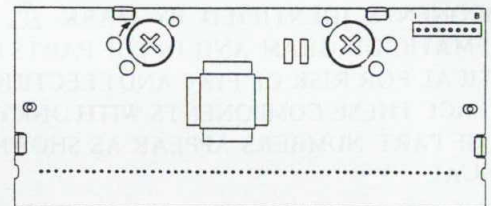
CAUTION ON REPLACEMENT OF PICKUP

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 impedance lower than $10^6\,\Omega$) on the work-desk and place the set on the conductive sheet so that the chassis.

2. **Grounding for the test equipment and tools.**
   Test equipments and toolings should be grounded in order that their ground level is the same the ground of the power source.

3. **Grounding for the human body.**
   Be sure to put on a wrist-strap for grounding whose other end is grounded.
   Be particularly careful when the workers wear synthetic fiber clothes, or air is dry.

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

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

SCHEMATIC DIAGRAM
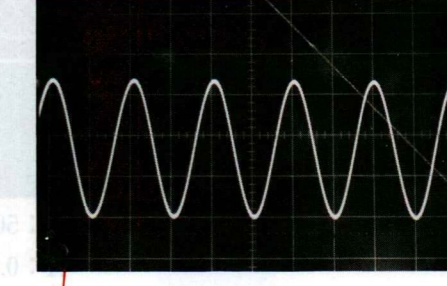
V : 0.2V/div
H : 0.05μS/div

V : 0.2V/div
H : 0.05μS/div

V : 0.2V/div
H : 1μS/div

V : 0.2V/div
H : 0.5mS/div

V : 0.2V/div
H : 0.5mS/div

V : 50mV/div
H : 0.5mS/div

Use the high impedance prove. (10:1)

NOTE
- THE COMPONENTS IDENTIFIED BY MARK ⚠ ARE CRITICAL FOR SAFETY. REPLACE ONLY WITH PART NUMBER SPECIFIED.
- VOLTAGE (MEASURED WITH VOLTMETER) ☐ IS DC VOLTAGE. (NO INPUT SIGNAL)
- ALL PNP TRANSISTORS ARE EQUIVALENT TO 2SA1015-GR UNLESS OTHERWISE NOTED.
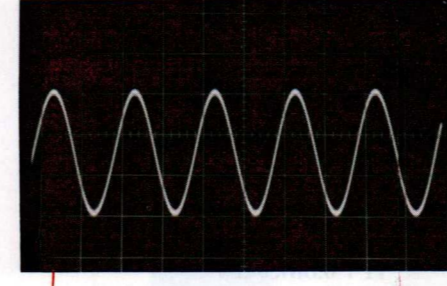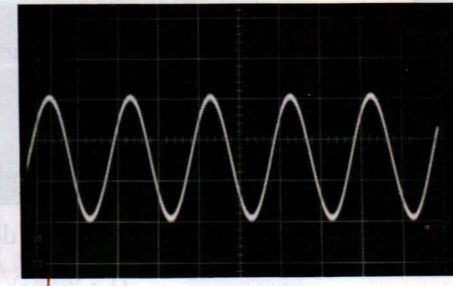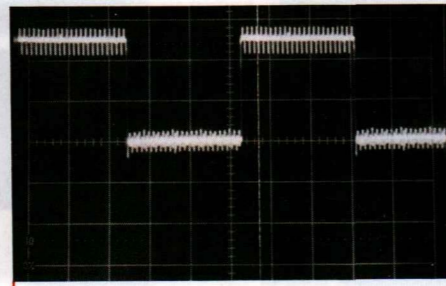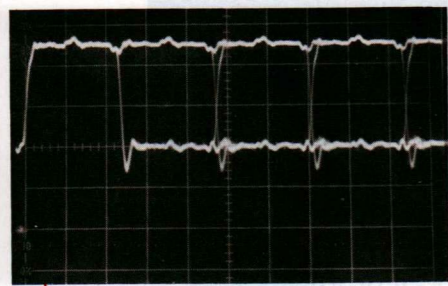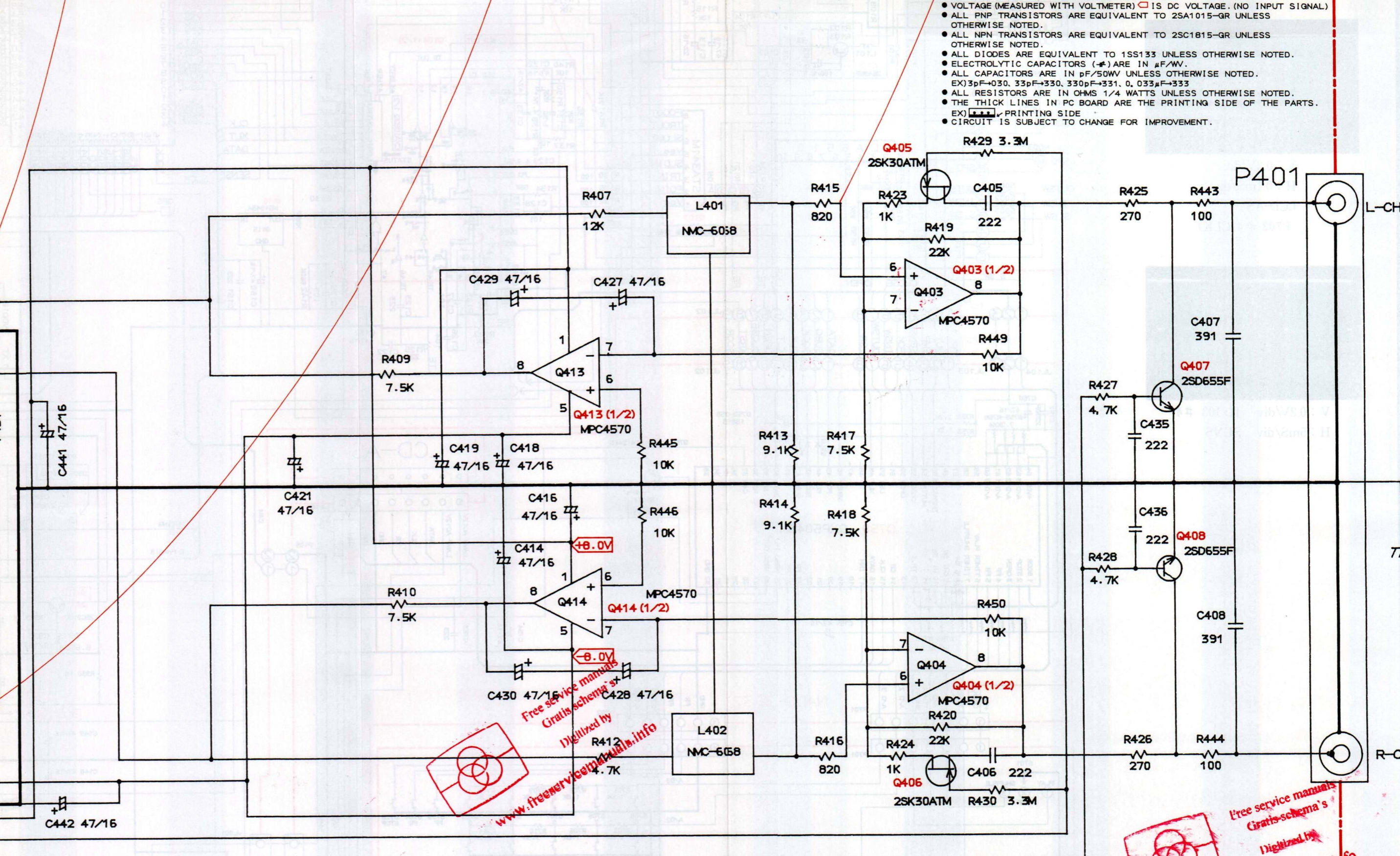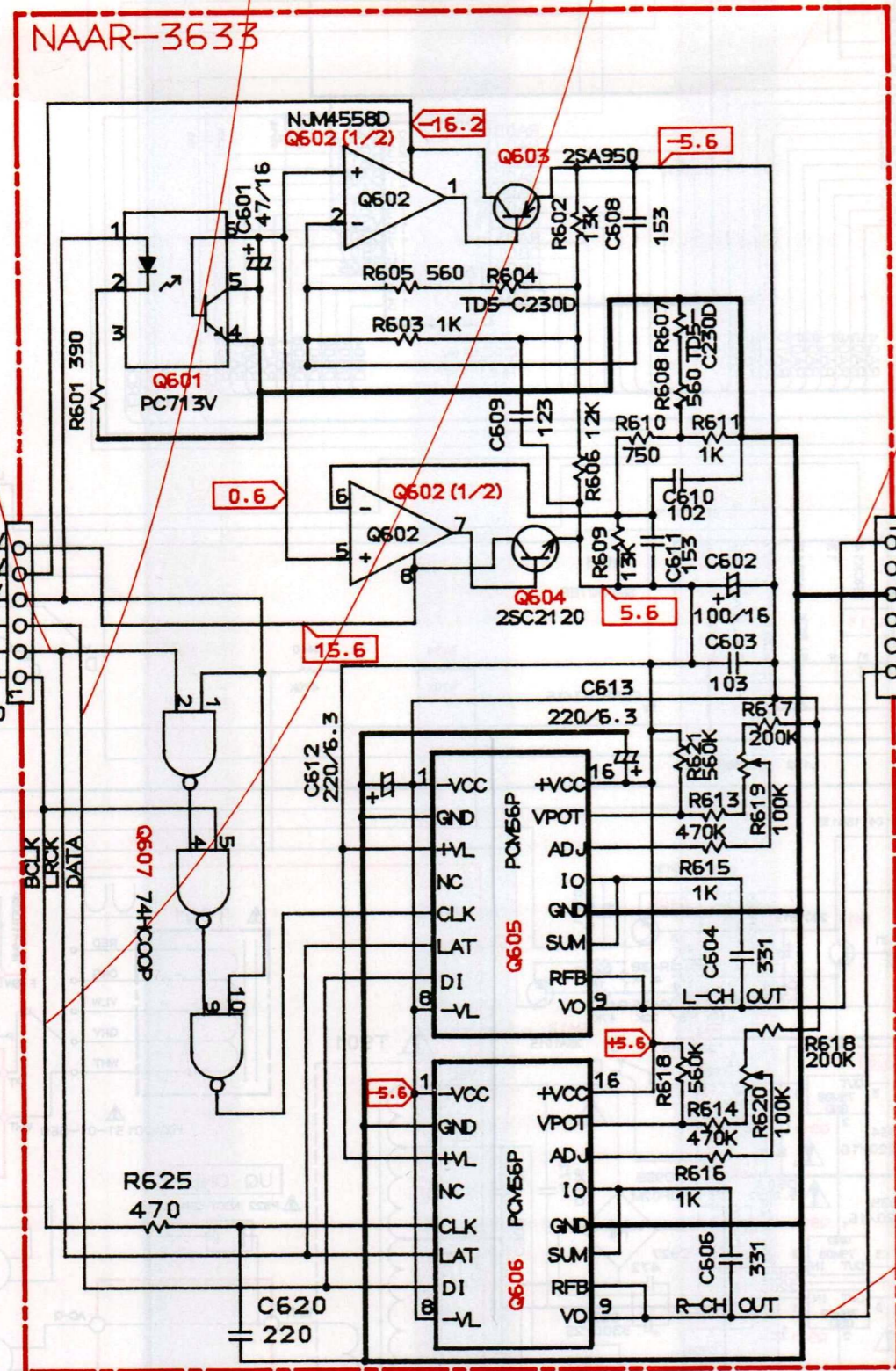- ALL NPN TRANSISTORS ARE EQUIVALENT TO 2SC1815-GR UNLESS OTHERWISE NOTED.
- ALL DIODES ARE EQUIVALENT TO 1SS133 UNLESS OTHERWISE NOTED.
- ELECTROLYTIC CAPACITORS (-A) ARE IN μF/WV.
- ALL CAPACITORS ARE IN pF/50WV UNLESS OTHERWISE NOTED. EX)3p→030, 33pF→330, 330pF→331, 0, 033μF→333
- ALL RESISTORS ARE 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.

NAAR-3633

NJM4558D
Q602 (1/2)   -16.2
Q603 2SA950   -5.6
Q602
R605 560 R604
R603 1K   TDS-C230D
Q601
PC713V
0.6
Q602 (1/2)
Q602
15.6
Q604
2SC2120   5.6

+15.6V
-16.2V
+5.0V
DATA
LRCK
BCKL
P450

Q607 74HC00P

R625 470
C620 220

C612 220/6.3
C613 220/6.3
Q605 PCM56P
VCC +VCC
GND VPOT
+VL ADJ
NC   IO
CLK GND
LAT SUM
DI   RFB
-VL VO   L-CH OUT

Q606 PCM56P
VCC +VCC
GND VPOT
+VL ADJ
NC   IO
CLK GND
LAT SUM
DI   RFB
-VL VO   R-CH OUT

-6V
ANALOG GND
+6V

EMPHASIS
MUTING

P451

C441 47/16

C442 47/16

R407 12K
L401 NMC-6058
R415 820
Q405 2SK30ATM
R429 3.3M
R423 1K
C405 222
R419 22K
Q403 (1/2)
Q403
MPC4570
R449 10K
R425 270
R443 100
P401
L-CH

C429 47/16
C427 47/16
R409 7.5K
Q413
Q413 (1/2)
MPC4570

C419 47/16 C418 47/16
R445 10K
R413 9.1K R417 7.5K

C421 47/16

C416 47/16
R446 10K
R414 9.1K R418 7.5K

C414 47/16   +8.0V
R410 7.5K
Q414
Q414 (1/2)
MPC4570
-8.0V

C430 47/16 C428 47/16
R412 4.7K
L402 NMC-6058
R416 820
R424 1K
Q406 2SK30ATM R430 3.3M

R450 10K
Q404
Q404 (1/2)
MPC4570
R420 22K
C406 222
R426 270
R444 100
R-CH

C407 391
Q407 2SD655F
R427 4.7K
C435 222

C436 222
Q408 2SD655F
R428 4.7K
C408 391

777

P401

NAAR-3654

ONKYO CORPORATION

SCHEMATIC DIAGRAM

Use the high impedance prove. (10 : 1)
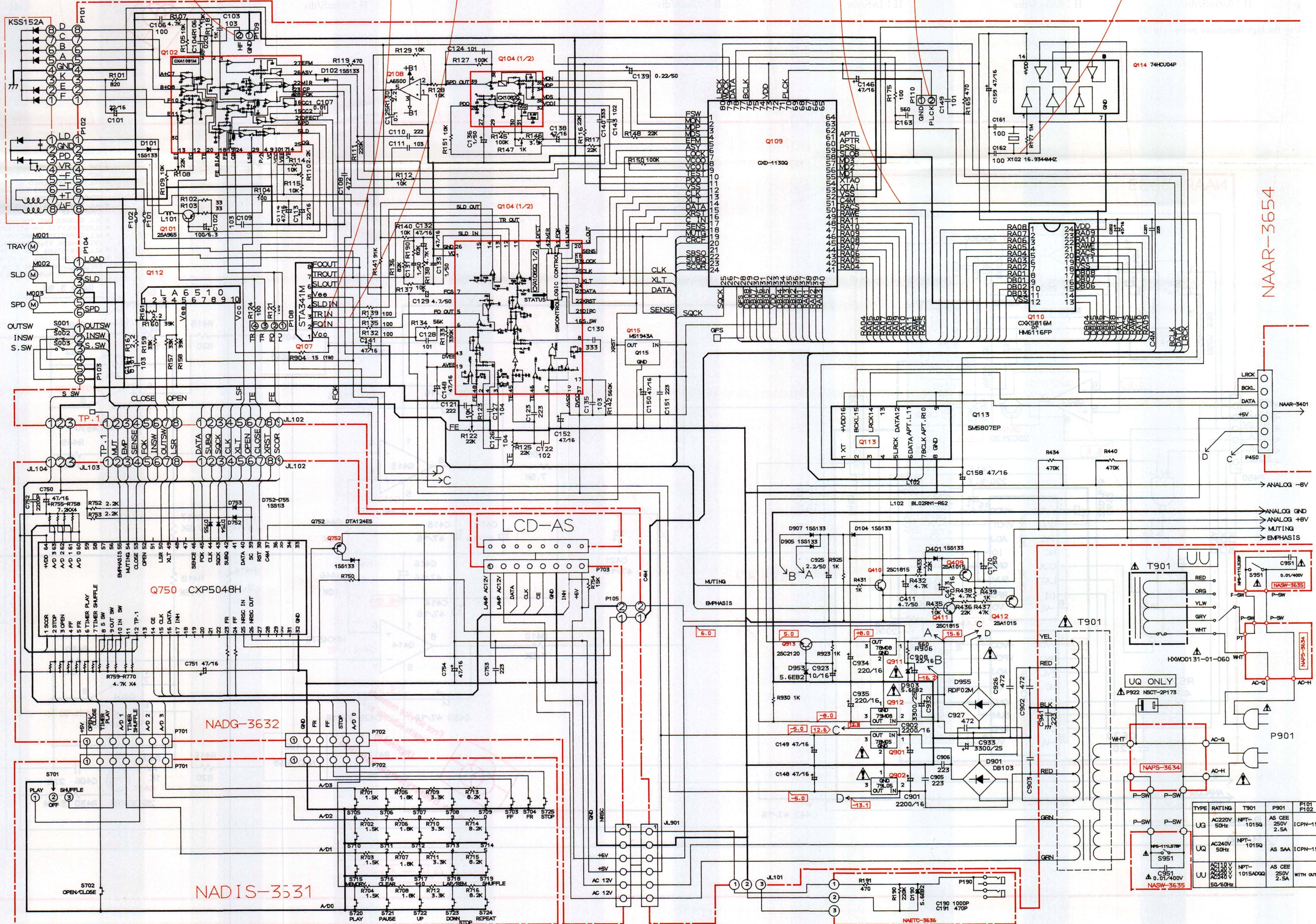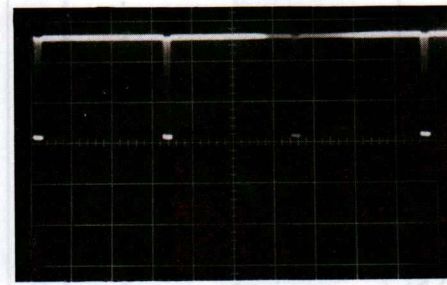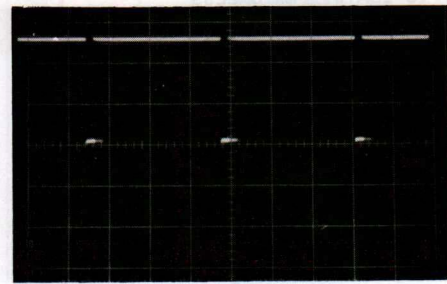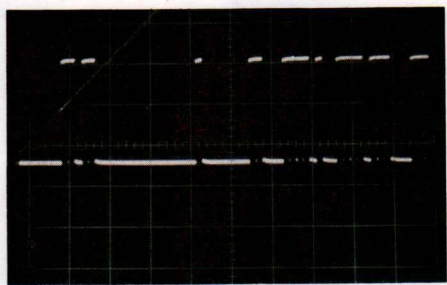
V : 50mV/div
H : 0.5µS/div

V : 50mV/div
H : 0.5mS/div

V : 0.1V/div
H : 0.5mV/div

V : 0.2V/div
H : 0.1µS/div

V : 0.2V/div
H : 0.1µS/div

V : 0.2V/div
H : 0.05µS/div

V : 0.2V/div
H : 2mS/div
LCD-AS
P703 #3(DATA)

V : 0.2V/div
H : 0.1mS/div
LCD-AS
P703 #4(CLK)

V : 0.2V/div   JL-103 #4
H : 5mS/div   SENS

NAAR-3654

NADIS-3531

NADG-3632

LCD-AS

ONKYO CORPORATION

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.
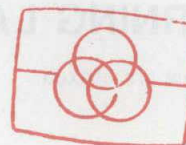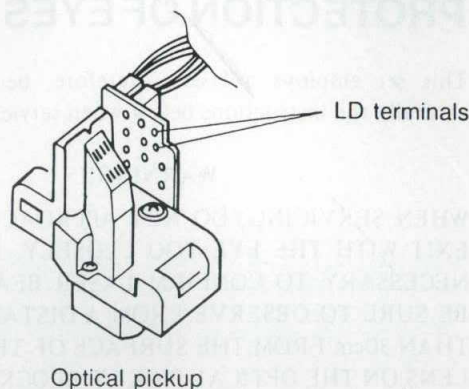
LD terminals

Optical pickup

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.

Not this way
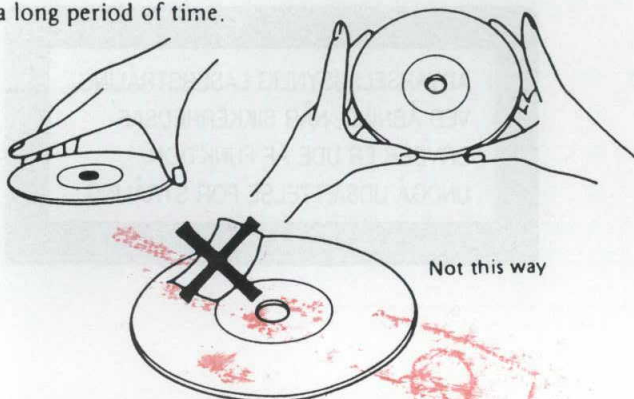
● **Cleaning Compact Discs**
Before playing a disc wipe off the playing surface with a soft cloth to remove dust and other soil. Wipe the surface in straight lines from the center of the disc outward, not in a circular motion as you would with a phonograph record.
Do not use benzene, chemical cleansers or phonograph record cleaning solutions to clean Compact Discs. Also avoid static electricity prevention solutions since they can damage the surface of Compact Discs.
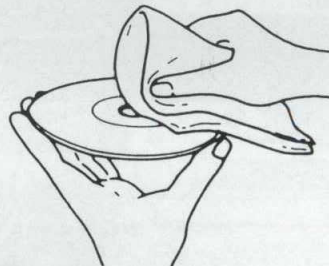
Problems Caused by Dew
Dew can form inside a Compact player when it is brought from a cold environment into a warm room, when a room is rapidly heated and if a player is left in a humid environment.
This dew can prevent the laser pickup from reading the data contained in the pits in the disc surface. 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 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 WARNING LABEL

The label shown below are affixed.

1. Warning lable

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.

Photo 1
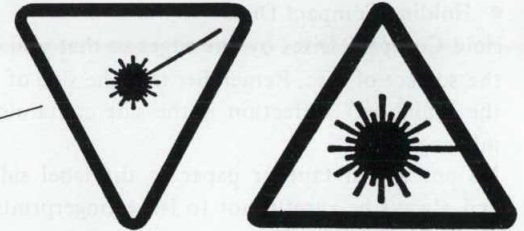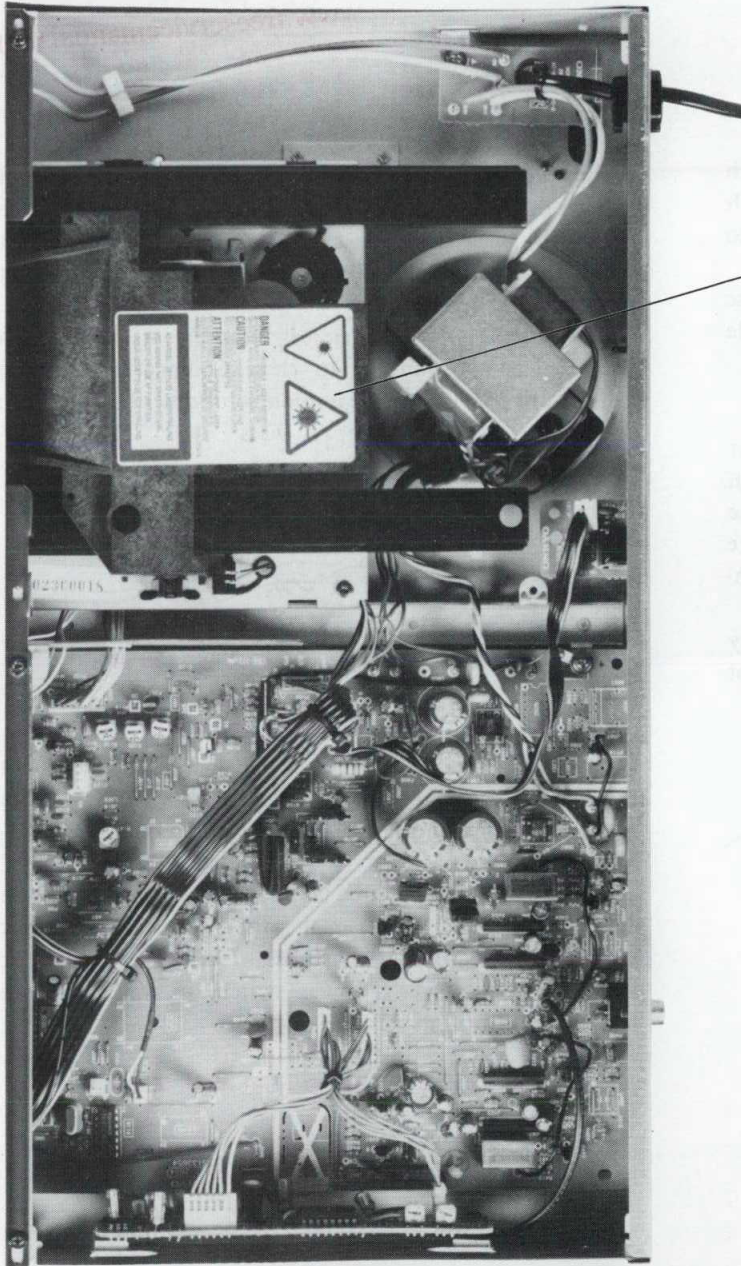
DANGER —INVISIBLE LASER RADIATION WHEN OPEN AND INTERLOCK FAILED OR DEFEATED. AVOID DIRECT EXPOSURE TO BEAM.

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.   SN29360911

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

-4-

2. Class 1 label

This label is located on the back panel.
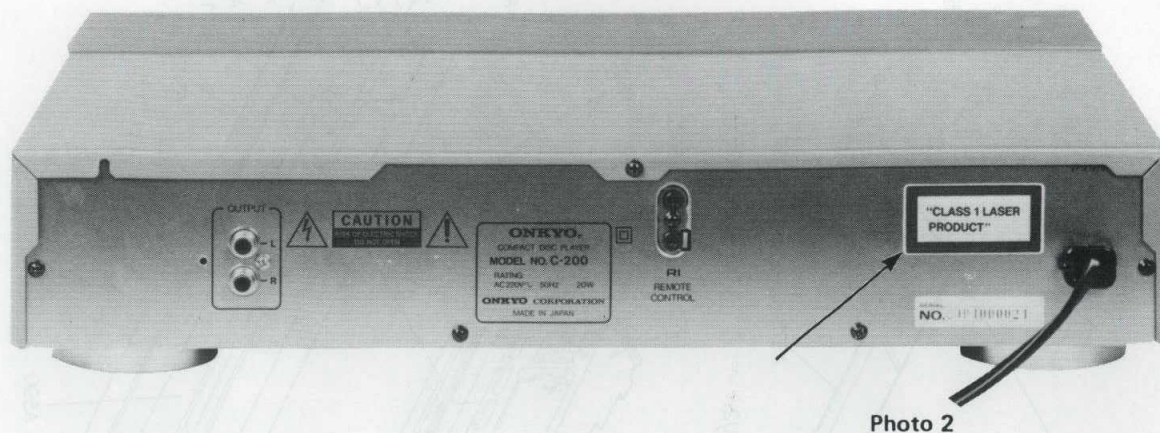
Photo 2

ADVARSEL

> "CLASS 1 LASER PRODUCT"

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

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

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

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

VAROITUS! Laite sisältää laserdiodin, joka lähettää (näkymä-töntä) silmille vaarallista lasersäteilyä.

2/17/2019

EXPLODED VIEW

EXPLODED VIEW – PARTS LIST

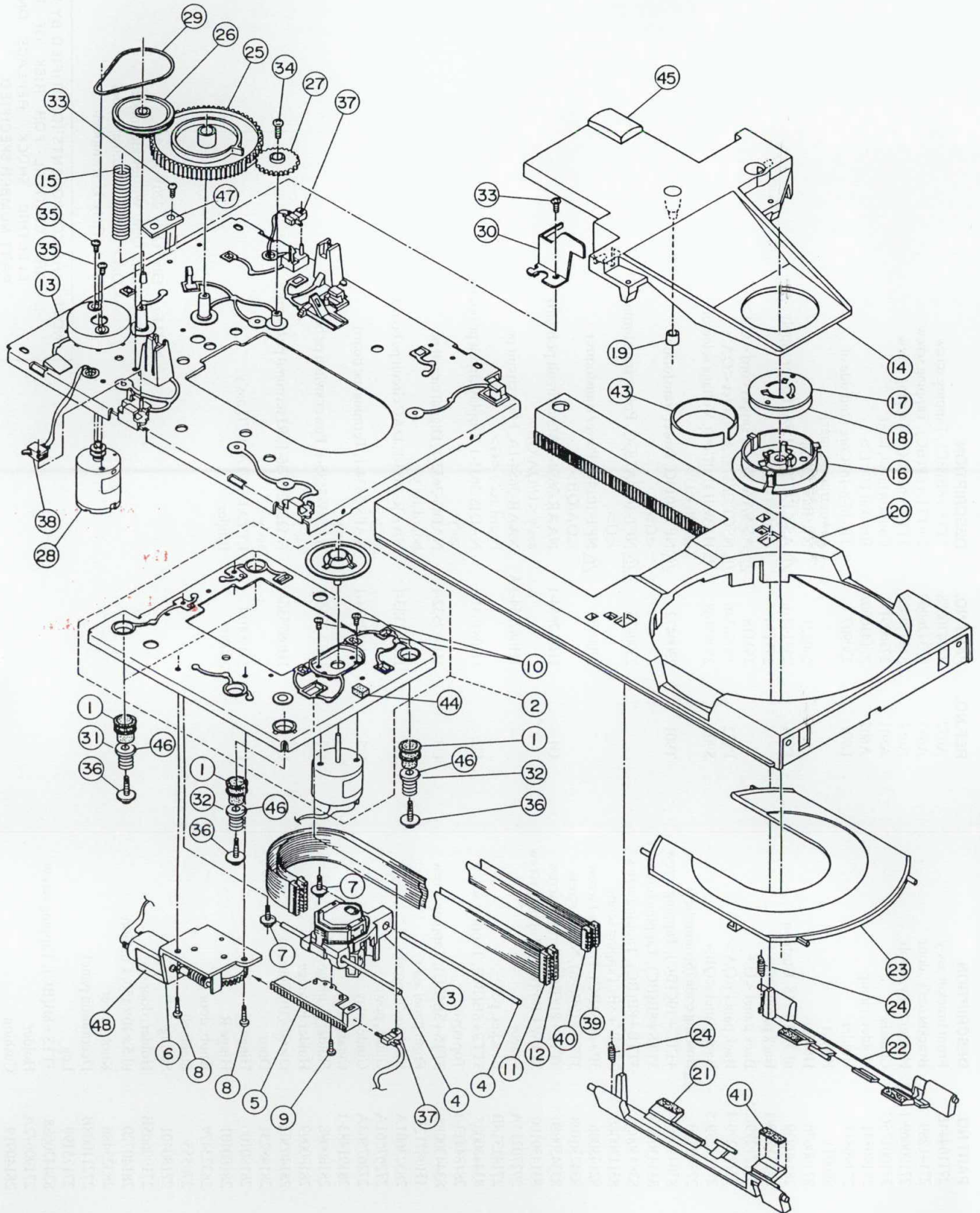| REF.NO.	PART NO.	DESCRIPTION
A1	27110444E	Front bracket ass'y
A2	27141289	Bracket ass'y, door
A5	27190669-1	Holder ass'y, knob
A20	27100175C	Chassis
A21	27190541	Holder, clamp
A30	27190511	Holder
A31	880011	Rivert
A32	27190676	Holder
A34	28140939	t0.3×10×18, Cushion
A40	27121279-1	Back panel <G>
	27121279-2A	Back panel <U>
	27121279-4	Back panel <QA>
	27121279-5	Back panel <QB>
A41	27300750	⚠ Bushing code (Strainrelief)
A100	830440109	4TTC+10C(BC), Tapping screw
A101	834430088	3TTS+8B(BC), Tapping screw
A102	834430088	3TTB+8B(BC), Tapping screw
A103	831130088	3TTW+8B, Tapping screw
A104	82143006	3P+6FN(BC), Pan head screw
A105	834230108	3TTS+10B(Ni), Nickel screw
A107	834430080	3TTP+8P(BC), Tapping screw
A108	831430100	3TTW+10P(BC), Tapping screw
A111	29270214A	Spacer
A120	27141318B	Bracket, pcb
A121	834430088	3TTS+8B(BC), Tapping screw
A301	28184413-1	Top cover
A302	834430088	3TTS+8B(BC), Tapping screw
A501	1H087121	Front panel ass'y
A502	28323601A	Knob ass'y, power
A503	27267561A	Guide, power
A550	27267563A	Guide, play
A551	28191483-1	Clear plate
A552	28180098	Holder L, hinge
A553	28180099	Holder R, hinge
A555	28140302	t3×60×10, Cushion
A560	28148231	Door
A561	28180100	Hinge L
A562	28180101	Hinge R
A563	28323479	Knob, door L
A565	270555	Steelball
A566	27180401	Spring
A570	27190665B	Holder, door
A575	28140720	t0.5×10×150, Cushion
A580	28323486	Knob, timer
A590	27211008B	Decoration panel
A600	27175190	Leg
A605	834430088	3TTS+8B(BC), Tapping screw
A610	27190672A	Holder
A611	28140919	Cushion
A650	833430080	3TTP+8P(BC), Tapping screw

REF.NO.	PART NO.	DESCRIPTION
A652	834430088	3TTS+8B(BC), Tapping screw
A653	833426060	2.6TTP+6P(BC), Tapping screw
A654	838430068	3TTB+6B(BC), Tapping screw
A801	29360911	Caution label, laser
A802	27141090A	Bracket U <U>
L901	230907	TR-16-8-16, Core (2nd side of power transformer)
	260221	NK-10N, Clamp
P921	253148 or	⚠ AS-CEE 250V 2.5A, Power supply cord <G/U/QB>
	253150	
	253118	⚠ AS-SAA, Power supply cord <QA>
P922	25050346	⚠ NSCT-2P173, AC outlet <QA>
S902	25065168	⚠ HXW0131-01-060, Voltage selector switch <U>
T901	2300472	⚠ NPT-1014G, Power transformer <G>
	2300473	⚠ NPT-1014ADGQ, Power transformer <U>
	2300483	⚠ NPT-1014Q, Power transfomrer <QA/QB>
U1	1H087554-1	NAAR-3654-1, Main circuit pc board ass'y <U/QA/QB>
	1H087554-1A	NAAR-3654-1A, Main circuit pc board ass'y <G>
U2	1H087531-1	NADIS-3631-1, Display circuit pc board ass'y
U3	1H087532-1	NADG-3632-1, Digital circuit pc board ass'y
U4	1H087533-1	NAAR-3633-1, DAC circuit pc board ass'y
U5	1H087534-1	NAPS-3634-1, Terminal pc board ass'y
U6	1H087535-1	NASW-3635-1, Power switch pc board ass'y
U7	1H087536-1	NAETC-3636-1, RI terminal pc board ass'y
U9	24190014	LTTAE6071A, LCD ass'y
	260208	Binder

NOTE: <G>: Only 220V model
<U>: Only Worldwide model
<QA>: Only Australia model
<QB>: Only U.K. model

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

MECHANISM-EXPLODED VIEW

PARTS LIST

REF.NO.	PART NO.	DESCRIPTION	REF.NO.	PART NO.	DESCRIPTION
1	27301158B	Cushion rubber	26	27300943	Pulley gear
2	1H057901	Spindle motor ass'y	27	27300944B	Gear
3	24110001	KSS-152A, Optical pickup	28	1H025901	Tray motor ass'y
4	27260287	Shaft	29	27301079	Rubber belt
5	27300939	Rack PU	30	27141230	Bracket, holder
6	1H025902	Slide motor ass'y	31	27180414A	Spring (Yellow)
7	831430100	3TTW+10P(BC), Tapping screw	32	27180413A	Spring
8	834430088	3TTS+8B(BC), Tapping screw	33	834430068	3TTS+6B(BC), Tapping screw
9	833420068	2TTP+6B(BC), Tapping screw	34	831126060	2.6TTW+6P, Tapping screw
10	82142003	2P+3F(BC), Pan head screw	35	82143004	3P+4FN(BC), Pan head screw
11	2000951	NSAS-8P903, Socket	36	801414	W=11, Special screw
12	2000952	NSAS-8P904, Socket	37	25065321	NMS-1113, Microswitch (Black)
13	27100174A	Chassis L	38	25065322	NMS-1214, Microswitch (Green)
14	27301154B	Arm	39	2000988	NSAS-6P689, Socket ass'y for tray motor
15	27180341A	Spring			
16	27301213B	Cap CH	40	2000734B	NSAS-6P690, Socket ass'y
17	27301133	York CH	42	27270282	Spacer
18	28181019A	Magnet CH	43	27270283	Spacer, cap
19	27301189	Cap, arm	44	28140931	Cushion PU
20~24, 41	27301215	Disc tray ass'y	45	28140991	Cushion, arm
21	27301114A	Disc lifter L	46	870145	Washer
22	27301115A	Disc lifter R	47	27180444	Spring, plate
23	27301151	Disc plate	48	28140941	Cushion , slide motor
24	27180400	Spring			
25	27300942C	Cam gear			
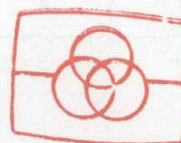
DISASSEMBLING PROCEDURES

Method for removing the tray

Chassis
Pulley gear
Cam gear
Lug
Gear — Disengaged
Disc tray
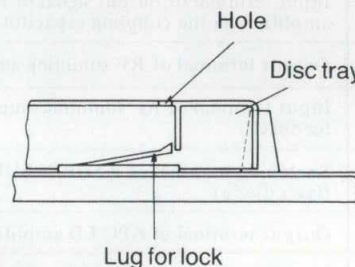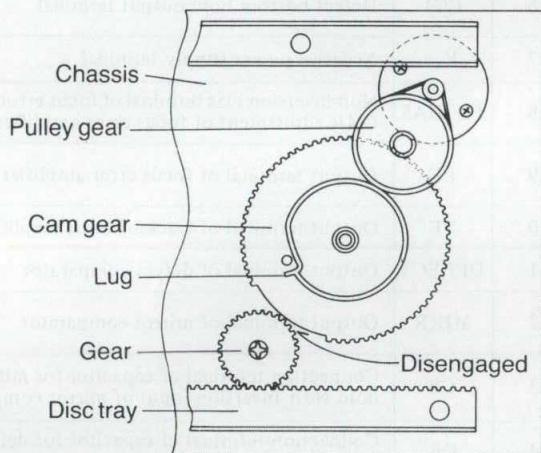
1. Set the position so that the cam gear and gear are disengaged.
2. Pull the tray to the front.

Hole
Disc tray
Lug for lock

3. Insert a small flat-bladed screw driver into the hole section of the right side of the back of the tray, and push the lug used for locking the tray to bring the tray to the front.

CAUTION: When inserting the tray, the cam gear and gear parts are not in the meashing position.

IC BLOCK DIAGRAM AND DESCRIPTIONS

Q102
CXA1081M (RF Amp)
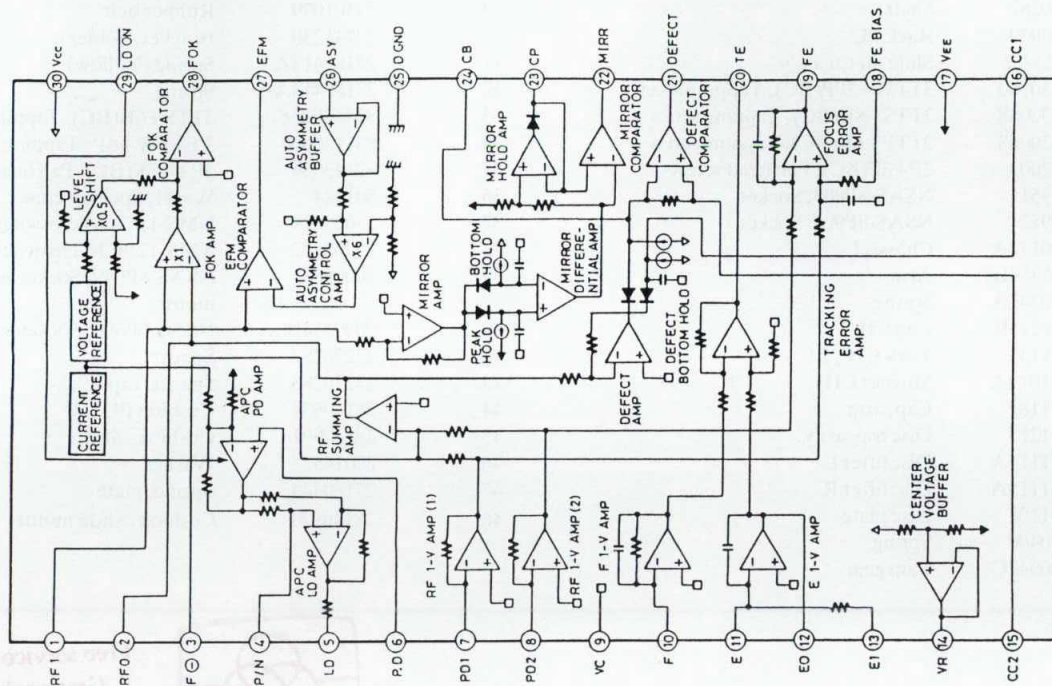
Pin No.	Symbol	Function	Pin No.	Symbol	Function
1	RF I	Input terminal of output signal of RF summing amplifier via the coupling capacitor	16	CC1	Defect bottom hold output terminal
2	RFO	Output terminal of RF summing amplifier	17	V_{EE}	Negative power supply terminal
3	RF−	Input terminal of RF summing amplifier feedback	18	FE BIAS	Non-inversion bias terminal of focus error amplifier CMR adjustment of focus error amplifier
4	P/N	Switching terminal of P-SUB/N-SUB of LD (laser diode)	19	FE	Output terminal of focus error amplifier
5	LD	Output terminal of APC LD amplifier	20	TE	Output terminal of tracking error amplifier
6	PD	Input terminal of APC PD (Pin diode) amplifier	21	DEFECT	Output terminal of defect comparator
7	PD1	Inversion input terminal of RF I-V amplifier (1) Connect to A+C of PIN diodes.	22	MIRR	Output terminal of mirror comparator
8	PD2	Inversion input terminal of RF I-V amplifier (2) Connect to B+D of PIN diodes.	23	CP	Connection terminal of capacitor for mirror hold Non-inversion input of mirror comparator
9	VC	Connect to GND.	24	CB	Connection terminal of capacitor for defect bottom hold
10	F	Inversion input terminal of F I-V amplifier Connect to F of PIN diode.	25	DGND	Connect to GND
11	E	Inversion input terminal of E I-V amplifier Connect to E of PIN diode.	26	ASY	Auto asymmetry control input terminal
12	E0	Output terminal of E I-V amplifier	27	EFM	Output terminal of EFM comparator
13	E1	Feedback input terminal of E I-V amplifier Gain adjustment of E I-V amplifier	28	FOK	Output terminal of FOK comparator
14	VR	DC voltage output terminal of $(V_{cc} + V_{EE})/2$	29	LD ON	ON/OFF switching terminal of laser diode
15	CC2	Input terminal from defect bottom hold output signal via the coupling capacitor	30	Vcc	Positive power supply

Q104
CXA1082BQ (Servo Signal Processor)
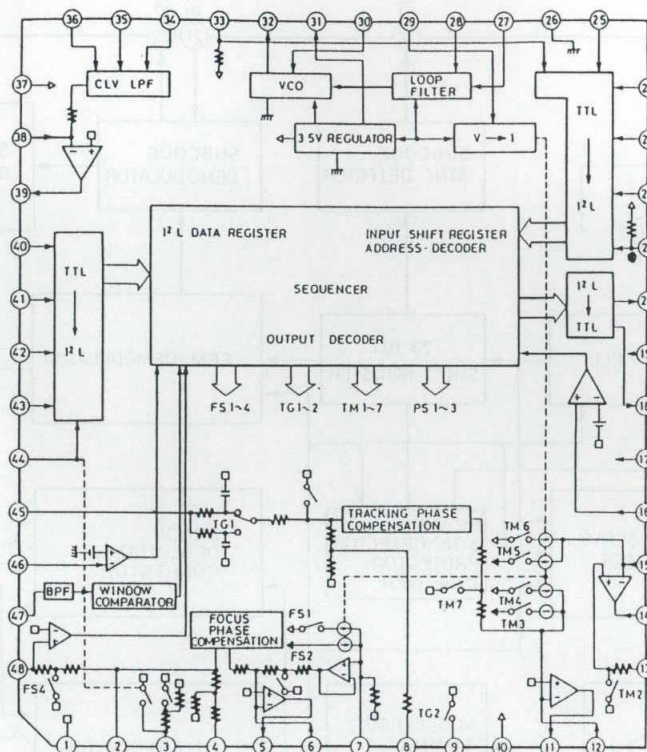
Pin No.	Symbol	Function	Pin No.	Symbol	Function
2	FGD	Insert the capacitor between this terminal and pin 3 when drop the high frequency gain of focus servo	28	PDI	Input terminal of phase comparator output PDO
3	FS3	Switching terminal of high frequency gain of focus servo	21 22 23 24 25 33	DIRCT XRST DATA XTL CLK LOCK	Input terminals for microcomputer and interface
4	FLB	Time constant switching terminal when raise the low frequency gain of focus servo			
5 11 14 39	FEO TAO SLO SPDLO	Operation amplifier output terminals for power transistor drive	29	ISET	Flow the current to decide the focus search, track jump, and kick height
			30	VCOP	VCO free run frequency is proportion to resistor value between pins 30 and 31
6	FE−	Inversion input terminal of focus amplifier	32	C864	VCO (8.64MHz) output terminal
7	SRCH	Time constant terminal to make the focus search waveform	34	MDP	Connection terminal to terminal MDP of CXD1130Q
8	TGU	Time constant terminal for high frequency gain switching of tracking	35	MON	Connection terminal to terminal MON of CXD1130O
9	TG2	Time constant terminal for high frequency gain switching of tracking	36	FSW	LPF time constant terminal of CLV servo error signal
12	TA−	Inversion input terminal of tracking amplifier	38	SPDL−	Inversion input terminal of spindle drive amplifier
13	SL+	Non-inversion input terminal of sled amplifier	40 41 42 44	WDCK FOK MIRR DFCT	Input terminals for microcomputer and interface
15	SL−	Inversion input terminal of sled amplifier			
16	SSTOP	Limit switch ON/OFF detector signal terminal for disc innermost position detector	45	TE	Tracking error signal input terminal
17	FSET	Terminal of peak of phase compensation of focus tracking and of setting of LPF	46	TZC	Tracking zero cross comparator input terminal
18 20	SENS C.OUT	Output terminals for microcomputer and interface	47	ATSC	Window comparator input terminal for ATSC detection
27	BW	Time constant terminal of loop filter	48	FE	Focus error signal input terminal

−11−

Q109
CXD1130Q (Digital Signal Processor)
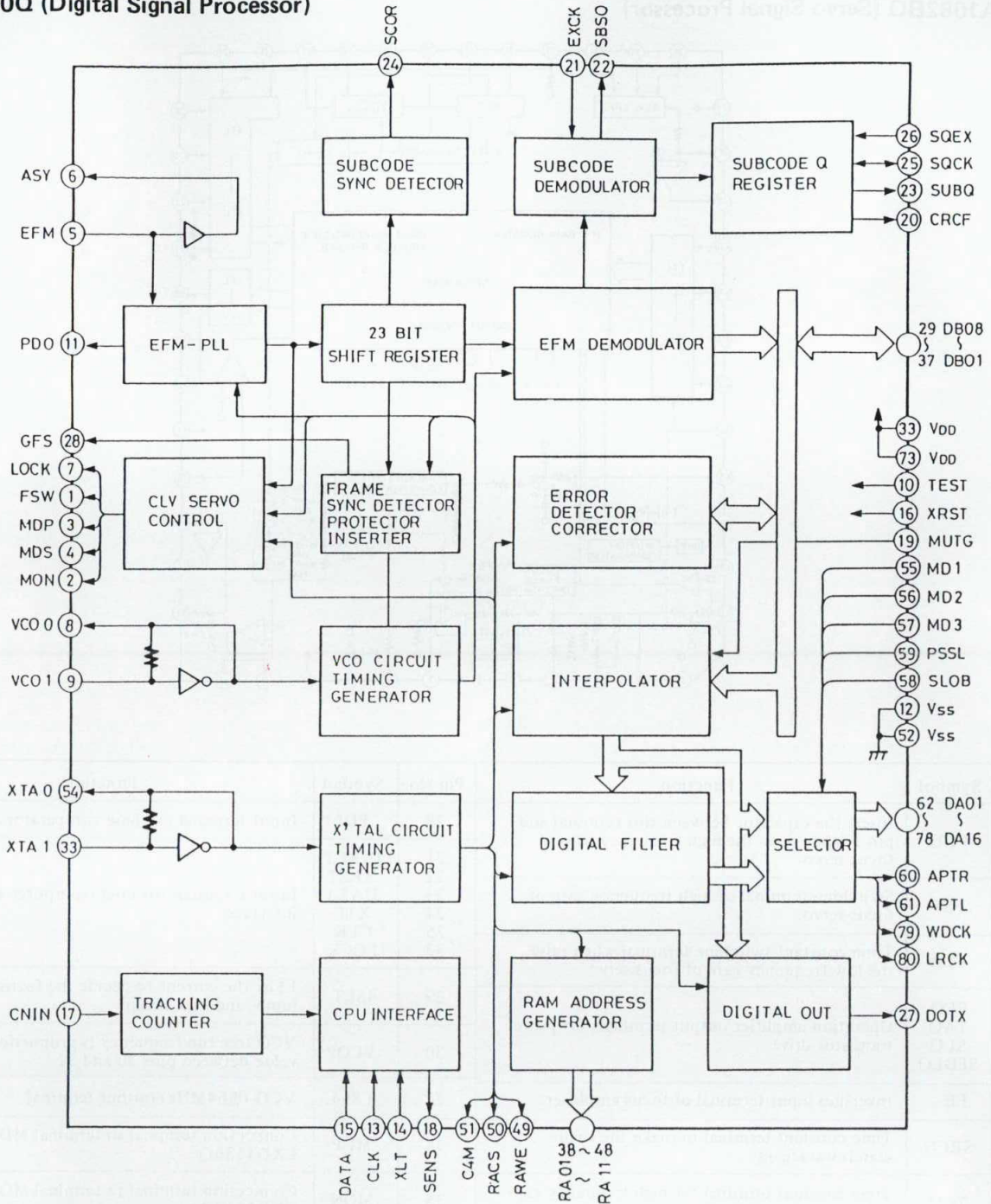
Q605, Q606
PCM-56P (D/A Converter)
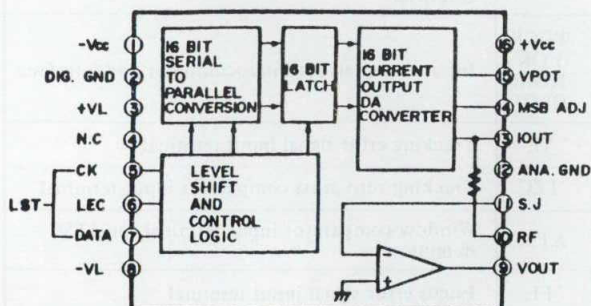
1	−Vcc	Analog power supply(−)	9	VOUT	Output
2	DIG. GND	Digital ground	10	RF	Feedback register
3	+VL	Logic voltage (+)	11	SJ	Operation amplifier input
4	N.C	Not used	12	ANA GND	Analog ground
5	CK	Clock input	13	IOUT	Current output
6	LEC	Latch enable input	14	MSB ADJ	MSB adjustment terminal
7	DATA	Data input	15	VPOT	Meter terminal
8	−VL	Logic voltage (−)	16	+Vcc	Analog power supply (+)

Q750
CXP5048H178S (Microprocessor)

Pin No.	Symbol mark	I/O	Description
1	SCOR	I	Sub code sink (SQ+SI) input terminal.
2~5	PA0~PA7	I	Input terminals from operation keies.
6	TIMER PLAY	I	Input terminal from timer play switch.
7	TIMER SHUFFLE	I	Input terminal from timer shuffle switch.
8	RESET SW	I	H when the pickup returns to innermost.
9	OUT SW	I	L when the tray opens.
10	IN SW	I	L when the tray closes.
12	MODE 1	I	Adjustment terminal. (not used.)
14~17	CE, CLK, DATA, $\overline{INH}$	I	LCD drive output terminals.
25	NRSC IN	I	RI (Serial code) signal input terminal.
26	NRSC OUT	O	RI signal output terminal.
32	V_{SS}		Ground terminal.
37	C4M	I	Divided input terminal of crystal oscillator. (4. 2336MHz)
38	RST	I	Reset terminal. Reset at high level when the power turns on.
40	DATA	O	Serial data output terminal for processor ICs.
42	SUBQ	I	Sub code input terminal from signal processor IC.
43	SQCK	I/O	Reading clock of sub code Q.
44	CLK	O	Serial data transmitter clock output terminal.
45	FOK	I	Focus OK input terminal.
46	SENSE	I	Interface to signal processor IC.
49	XLT	O	Interface to signal processor IC.
50	LSR	O	Pickup laser switching output terminal. ON at low level.
52	OPEN	O	L when the tray is openning.
53	CLOSE	O	L when the tray is closing.
54	MUT	O	Muting output.
55	EMP	O	Emphasis output.
60~63	AD0~AD3	I	Input terminals from operation keies.
64	V_{DD}		Power supply terminal. Connect to 5V.

Q107
STA341M-L (Transistor Array)
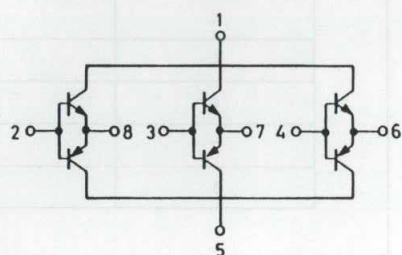
Q108
LA6500 (Power OP Amp)

Q112
LA6510 (Power OP Amp)

ADJUSTMENT PROCEDURES

Instruments required

Dual trace oscilloscope, Frequency counter, CR oscillator, Test disc (SONY YEDS-18), AC voltmeter, Sockets P109 & P110 (Part No. 25050089) P108 (Part No. 25050138)

1. VCO frequency adjustment

Connect the frequency counter to terminal P110.
Turn the power switch to ON.(No load the disc).
Adjust R147 until the frequency counter reading becomes 4322 ± 5kHz.
After adjustment, disconnect the frequency counter.

Use the high impedance probe. (10:1)
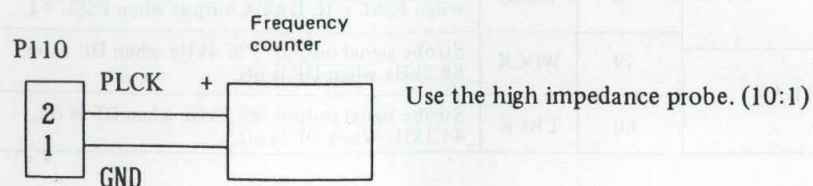
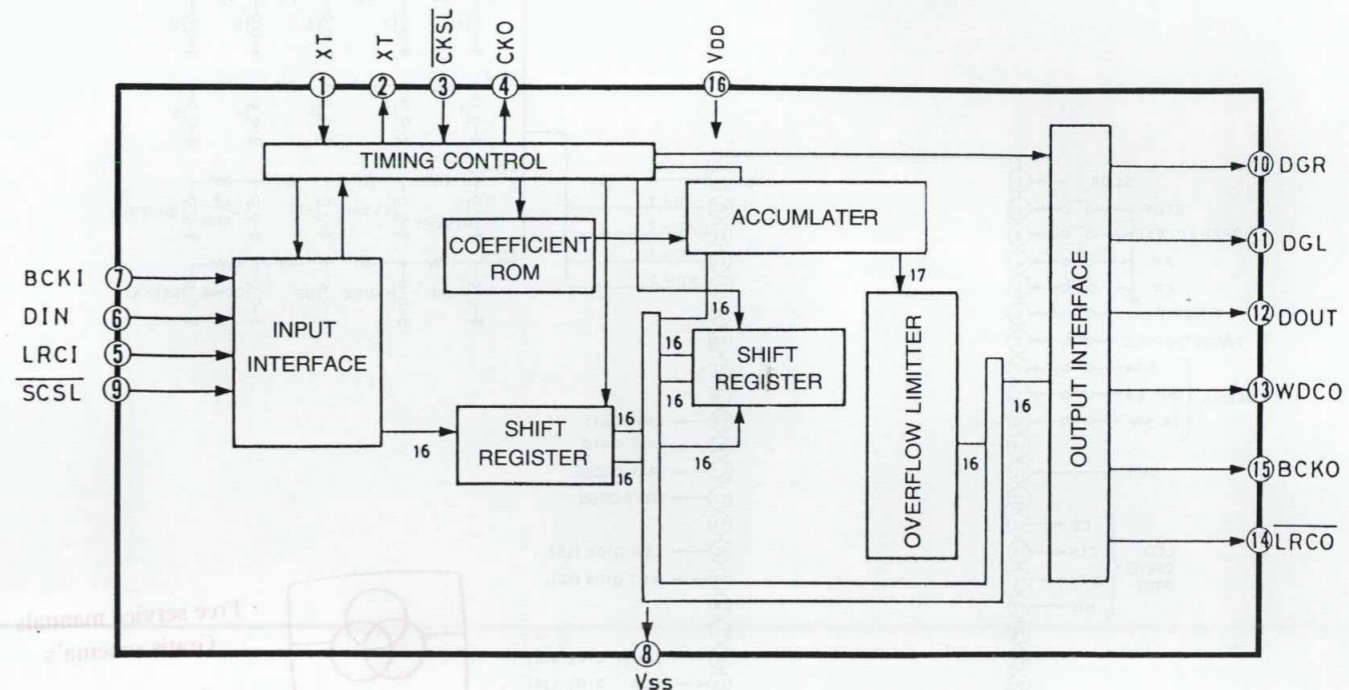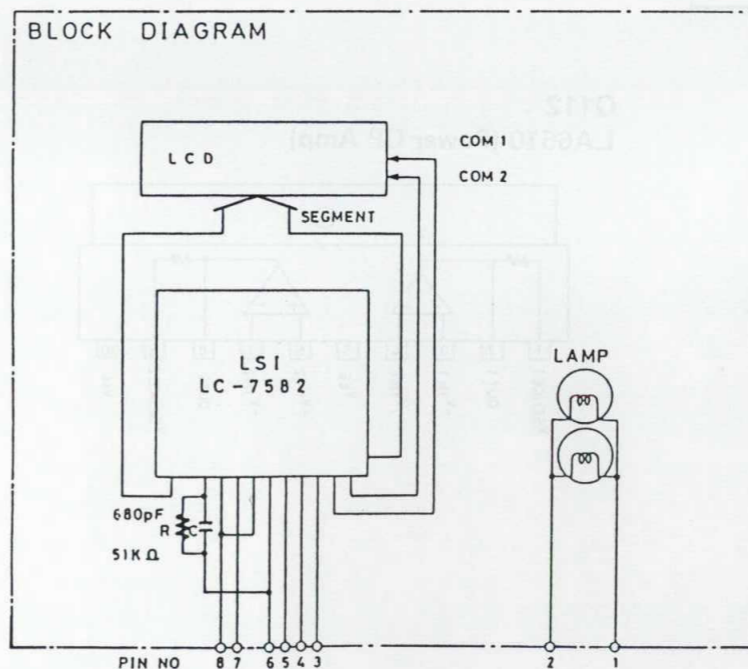| Pin No.	Symbol	Function	Pin No.	Symbol	Function
1	FSW	Time constant switching output terminal of output filter of spindle motor	49	RAWE	Write enable signal output to external RAM
2	MON	ON/OFF control output terminal of spindle motor	50	RACS	Chip selector signal output to external RAM
3	MDP	Drive output terminal of spindle motor. Rough control when mode CLV-S and phase control when mode CLV-P	51	C4M	Divider output of crystal. f=4.2336MHz
			52	Vss	Ground
4	MDS	Drive output terminal of spindle motor. Speed control when mode CLV-P	53	XTAI	Input terminal of crystal oscillator
			54	XTAO	Output terminal of crystal oscillator
5	EFM	EFM signal input terminal from RF amplifier	55 ~ 57	MD1 ~ MD3	Mode switching input terminals
6	ASY	Output terminal to control the slice level of EFM signal	58	SLOB	Code switching input of audio data output.
7	LOCK	GFS sampling terminal	59	PSSL	Mode switching input of audio data output. Serial output at low level. Parallel output at high level
8	VCOO	VCO output terminal. 8.6436MHz when lock to EFM signal			
9	VCOI	VCO input terminal	60	APTR	Control output for aperture correction. High level when Rch.
10	TEST	0V			
11	PDO	Phase comparator output terminal of EFM signal and VCO/2	61	APTL	Control output for aperture correction. High level when Lch.
12	Vss	Ground	62	DA01	DA01 (LSB of parallel sound output) output when PSSL = H. C1F1 output when PSSL = L
13	CLK	Serial data transmitter clock input terminal from microcomputer	63	DA02	DA02 output when PSSL = H. C1F2 output when PSSL = L.
14	XLT	Latch input terminal from microcomputer	64	DA03	DA03 output when PSSL = H. C2F1 output when PSSL = L.
15	DATA	Serial data input terminal from microcomputer	65	DA04	DA04 output when PSSL = H. C2F2 output when PSSL = L.
16	XRST	System rest input terminal. Reset at low level.	66	DA05	DA05 output when PSSL = H. C2FL output when PSSL = L.
17	CNIN	Tracking pulse input erminal	67	DA06	DA06 output when PSSL = H. C2PO output when PSSL = L.
18	SENS	Inner condition output terminal correspond to address			
19	MUTG	Muting input terminal	68	DA07	DA07 output when PSSL = H. RFCK output when PSSL = L.
20	CRCF	CRC check output terminal of subcode Q	69	DA08	DA08 output when PSSL = H. WFCK output when PSSL = L.
21	EXCK	Clock input terminal for serial output of subcode	70	DA09	DA09 output when PSSL = H. PLCK output when PSSL = L.
22	SBSO	Serial output terminal of subcode	71	DA10	DA10 output when PSSL = H. UGFS output when PSSL = L.
23	SUBQ	Subcode Q output terminal			
24	SCOR	Subcode sink S0 + S1 output terminal	72	DA11	DA11 output when PSSL = H. GTOP output when PSSL = L.
25	SQCK	Clock terminal to read the subcode Q	73	VDD	Power supply (5V)
26	SQEX	Selector input terminal of SQCK	74	DA12	DA12 output when PSSL = H. RAOV output when PSSL = L.
27	DOTX	Digital output terminal			
28	GFS	Indicator output of lock condition of frame sync	75	DA13	DA13 output when PSSL = H. C4LR output when PSSL = L.
29 ~ 32	DB08 ~ DB05	Data terminals of external RAM	76	DA14	DA14 output when PSSL = H. C210 output when PSSL = L.
33	VDD	+5V	77	DA15	DA15 output when PSSL = H. C210 output when PSSL = L.
34 ~ 37	DB04 ~ DB01	Data terminals of external RAM	78	DA16	DA16 (MSB of parallel sound output) output when PSSL = H. DATA output when PSSL = L
38 ~ 48	RA01 ~ RA11	Address output terminals of external RAM	79	WDCK	Strobe signal output. 176.4kHz when DF is on. 88.2kHz when DF is off.
			80	LRCK	Strobe signal output. 88.2kHz when DF is on. 44.1kHz when DF is off.

Q113
SM5807EP (4 TIMES OVERSAMPLING DIGITAL FILTER)

LCD-AS

BLOCK DIAGRAM

Pin No.	Function
1	LAMP AC12V
2	LAMP AC12V
3	DATA
4	CLK
5	CE
6	Vss
7	INH
8	VDD

-13-

-14-

PRINTED CIRCUIT BOARD VIEW FROM BOTTOM SIDE
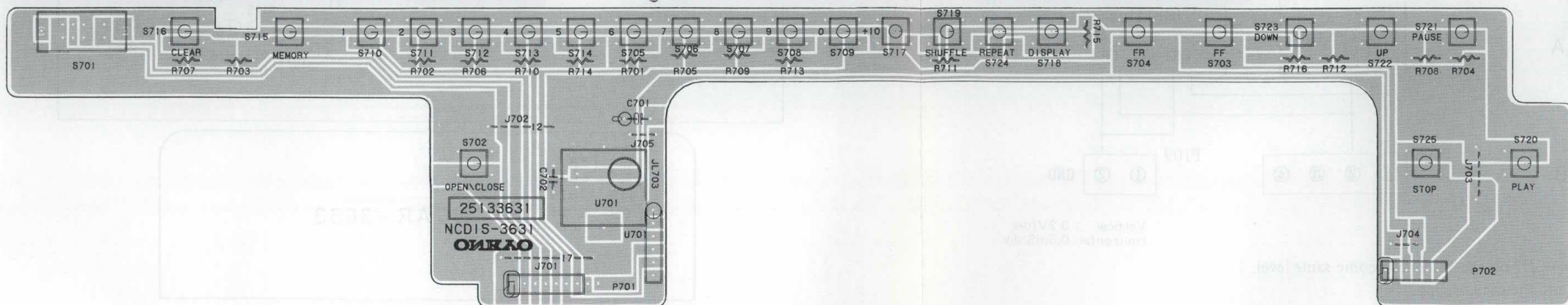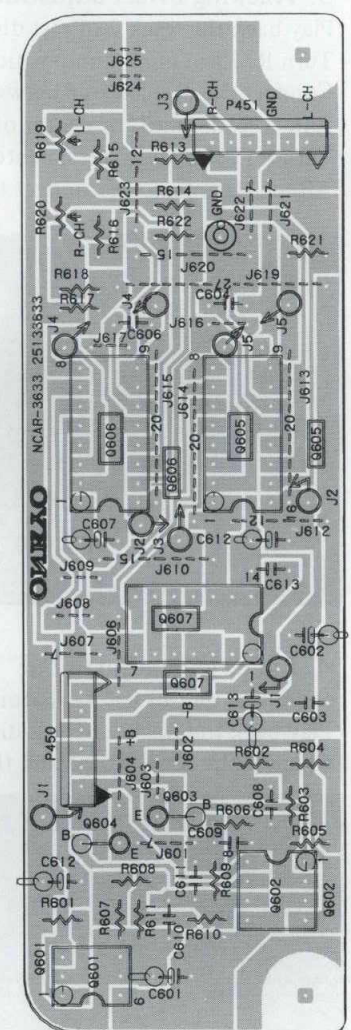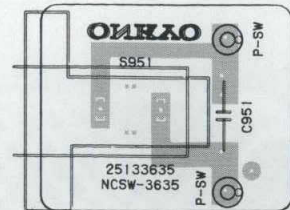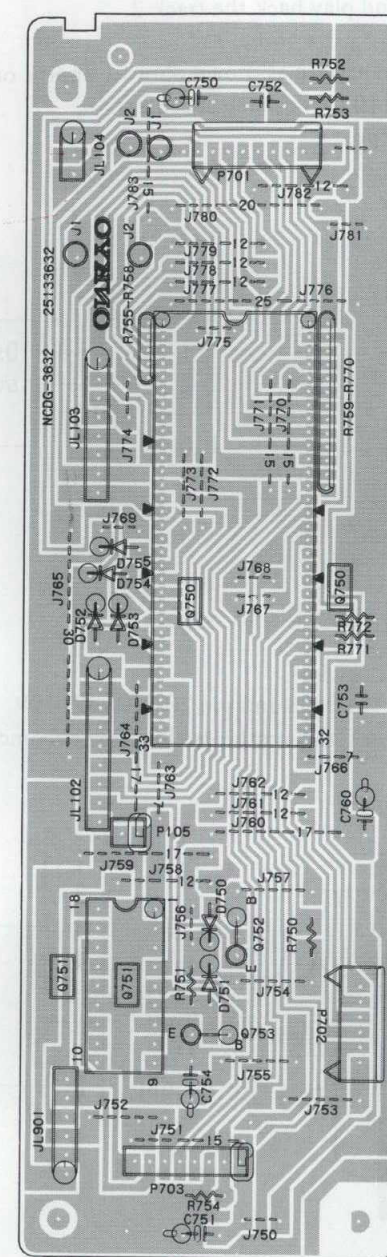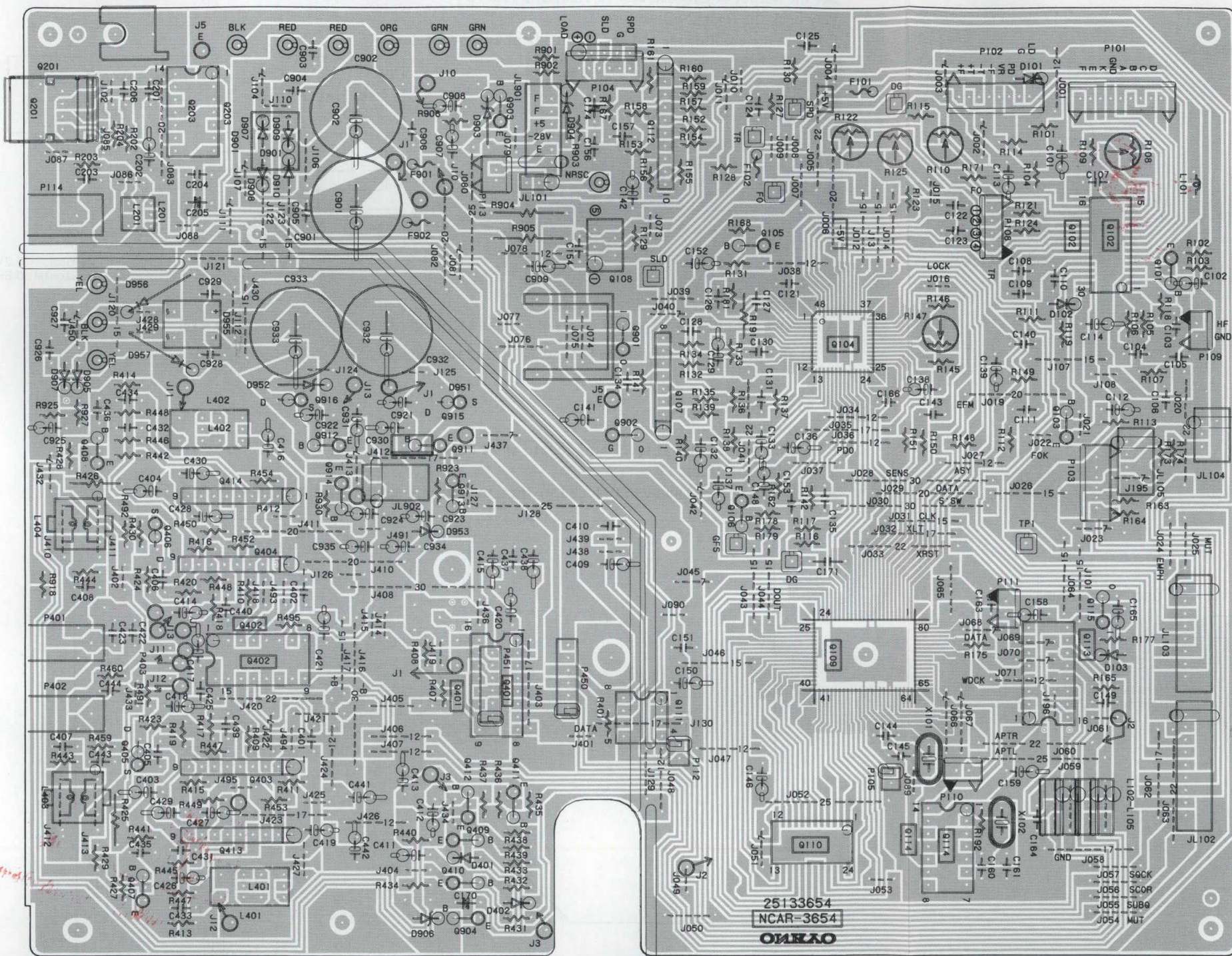
2. Focus offset adjustment

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

Connect the oscilloscope to terminal P109.

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

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

After adjustment, disconnect the oscilloscope.
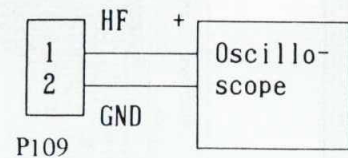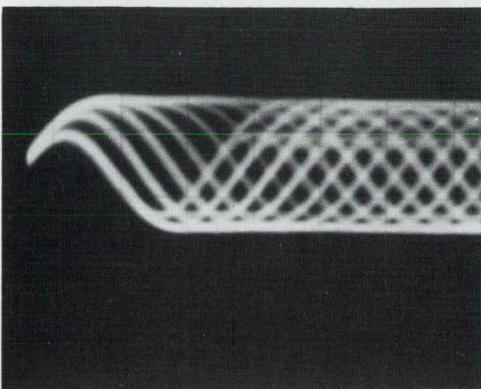
Oscilloscope range
Vertical: 0.2V/div
Holizontal: 0.2μS/div
Use the high impedance probe.

P109   HF +   → Oscillo-scope   GND

3. Tracking offset adjustment

Play back the track 2 of test disc.

Turn R125 to minimum position(counter-clockwise).

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

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

Turn R125 to mechanical center.

After adjustment, disconnect the oscilloscope.

A
GND level
B
A=B

P108   TR   1 2 3 4   → Oscilloscope
P109   GND 1 2
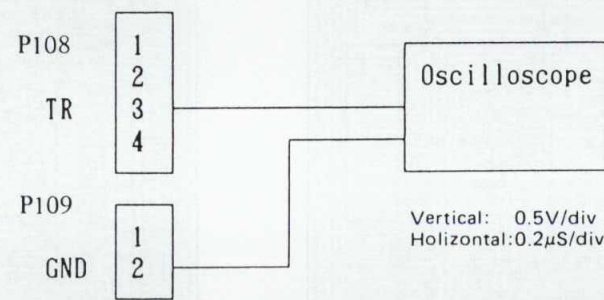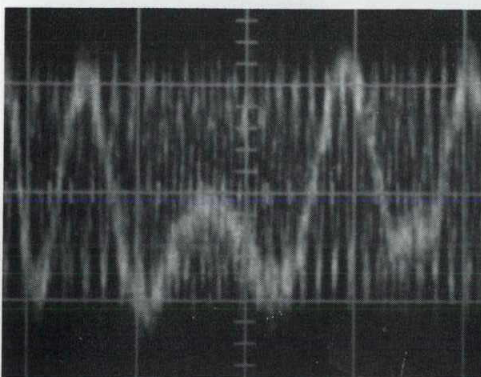
Vertical: 0.5V/div
Holizontal:0.2μS/div

4. Focus gain adjustment

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

Play back the track 2 of test disc.

Connect the oscilloscope and the CR oscillator as shown below.

A
B

CR oscillator GND   Oscilloscope CH1 CH2

P108   ① ② ③ ④
P109   ① ②   GND
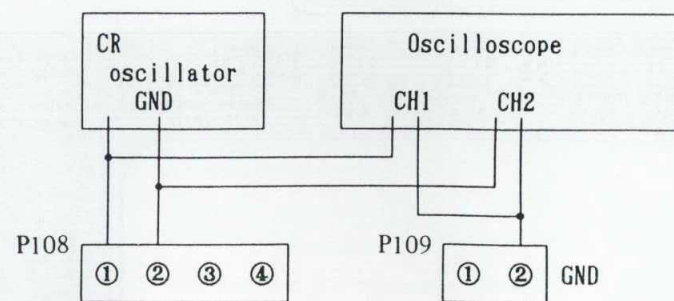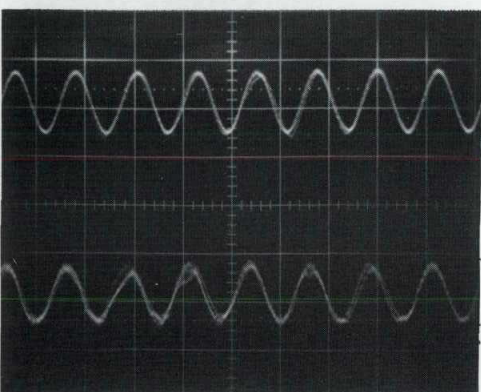
Vertical   : 0.2V/div
Holizontal: 0.5mS/div

Adjust R122 until 800Hz components of CH1 and CH2 on oscilloscope become same level.

After adjustment, disconnect the CR oscillator and the oscilloscope.

-17-

5. Tracking gain adjustment

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

Play back the track 2 of test disc.

Connect the oscilloscope and the CR oscillator as shown below.

A
B

CR oscillator GND   Oscilloscope CH1 CH2

P108   ① ② ③ ④
P109   ① ②   GND
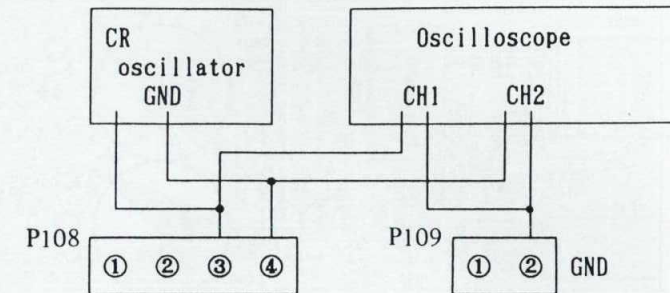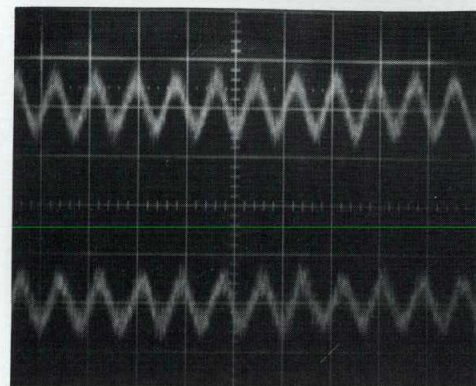
Vertical   : 0.2V/div
Holizontal: 0.5mS/div

Adjust R125 until 1.2kHz components of CH1 and CH2 on oscilloscope becomes same level.

After adjustment, disconnect the CR oscillator and the oscilloscope.

6. MSB adjustment

Play the track 2 of test disc.

Read the output signal level and regard it as 0dB.

Then play the track 17.

Adjust R619(L ch) and R620(R ch) so that the output signal level becomes −60dB.

NCAR-3654

P110

DG   TP-1
GFS

R147   P109
GND
HF

SLD

FO
R125   P108 FO TR 1 2 3 4
TR SPD   R108
R122   R110
DG

R619 R620
L CH R CH   NCAR-3633

-18-
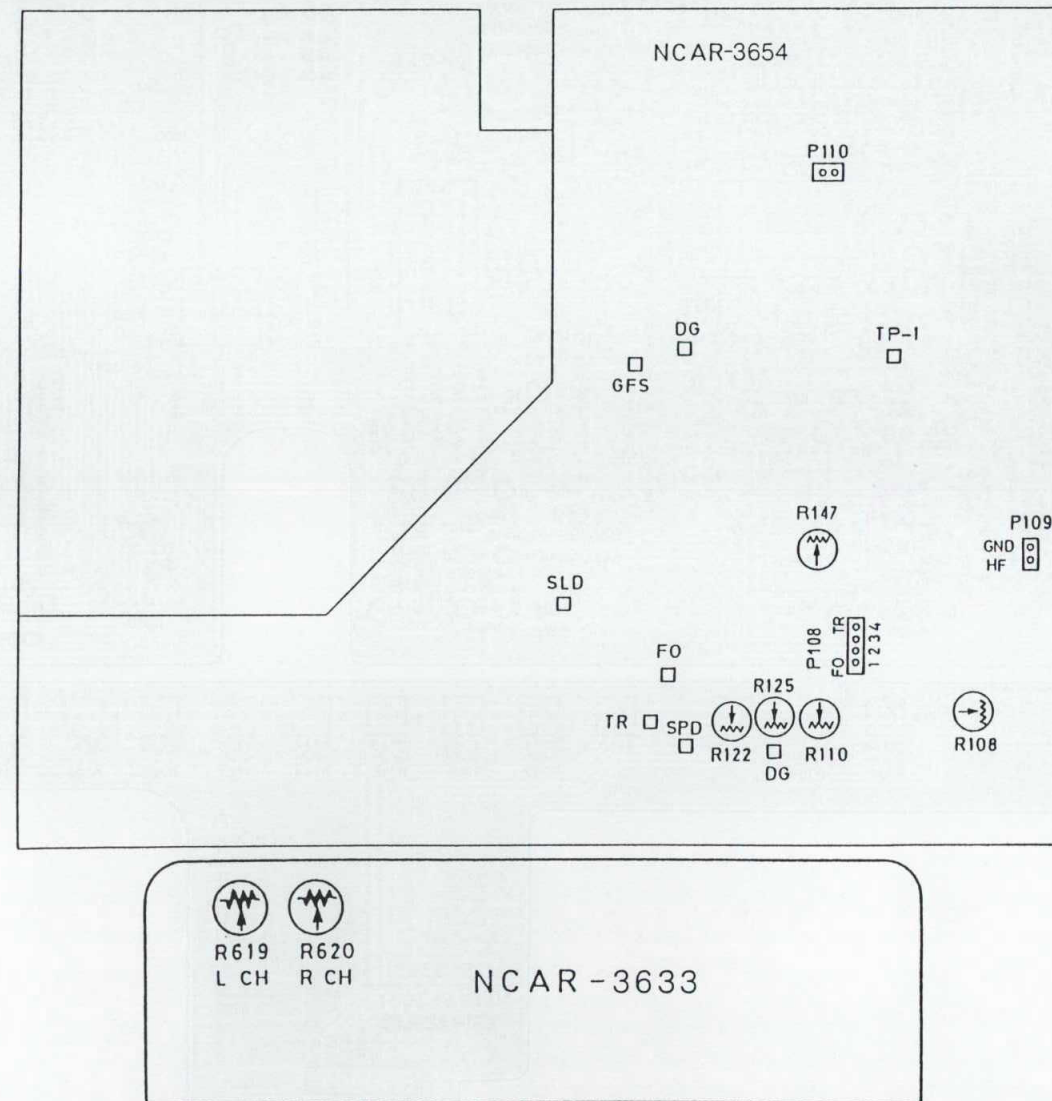
TROUBLESHOOTING GUIDE

Symptom: Defective reading (No RF signal emitted)

Load the disc on the tray, press OPEN/CLOSE key and close the tray. But, the total number of tunes are not indicated on the fluorescent indicator tube.
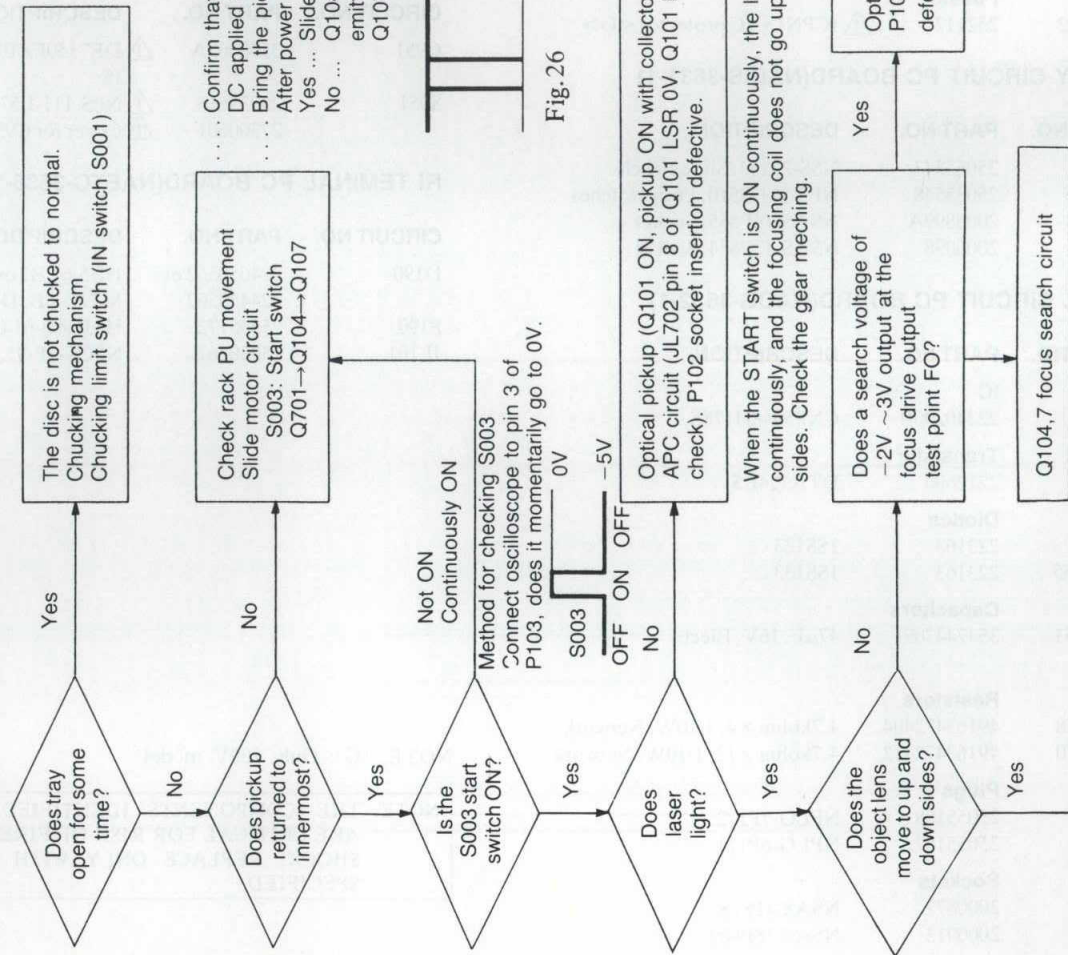
1. Remove the top cover.
2. Does the disc turn clockwise? . . . . Yes . . . . Next page
   No . . . . Remove the bracket holder and arm ass'y. Check the following when turning on power without the disc.

. . . . Refer to page 25.
Tray OPEN/CLOSE unsatisfactory

. . . . Confirm that the slide motor runs smoothly with the tester (ohm range) or 1V DC applied to both ends of the motor. (Refer Fig 6 on page 9)
. . . . Bring the pickup to the outermost circumference.
After power source is applied to SLD terminal, is the voltage −2V to 4V?
Yes . . . Slide motor defective
No . . . Q104 pin 14 (check at leads of R139): when low, Q104 is defective, if pulse emitted at CLK (J031), XTL (J032), DATA (J029) and when not emitted at Q104, Q107 is defective.

Flowchart (left):

- Does tray open for some time? — Yes → The disc is not chucked to normal. Chucking mechanism / Chucking limit switch (IN switch S001)
  - No →
- Does pickup returned to innermost? — No → Check rack PU movement / Slide motor circuit / S003: Start switch / Q701→Q104→Q107
  - Yes →
- Is the S003 start switch ON? — Not ON Continuously ON → Method for checking S003 / Connect oscilloscope to pin 3 of P103, does it momentarily go to 0V.
  - Yes →
- Does laser light? — No → Optical pickup (Q101 ON, pickup ON with collector at 2V APC circuit (JL702 pin 8 of Q101 LSR 0V, Q101 base low check). P102 socket insertion defective.
  - Yes →
- Does the object lens move to up and down sides? — Yes → Optical pickup defective / P102 socket insertion defective
  - No →

When the START switch is ON continuously, the laser is lit continuously, and the focusing coil does not go up and down sides. Check the gear meching.

- Does a search voltage of −2V ~3V output at the focus drive output test point FO? — No → Q104,7 focus search circuit
  - Yes →

Fig. 26

CLK (J031) STOP: 5V
XTL (J032) STOP: 5V

5V / GND
5V / GND
5V / GND
5V / GND

DATA (J029) STOP: 0V

Right side

Q109

24 / 80 / 1

J033 — XRST
J032 — XLT
J031 — CLK
— S. SW
J030 —
J029 — DATA
J028 — SENSE

Fig. 27 test point

NOTE: There is the possibility that the pickup lens is so dirty that it is impossible to read. Clean with a lens cleaner.

- Use the high impedance probe. (10:1)
- Play the track 2 of test disc. (YEDS-18)
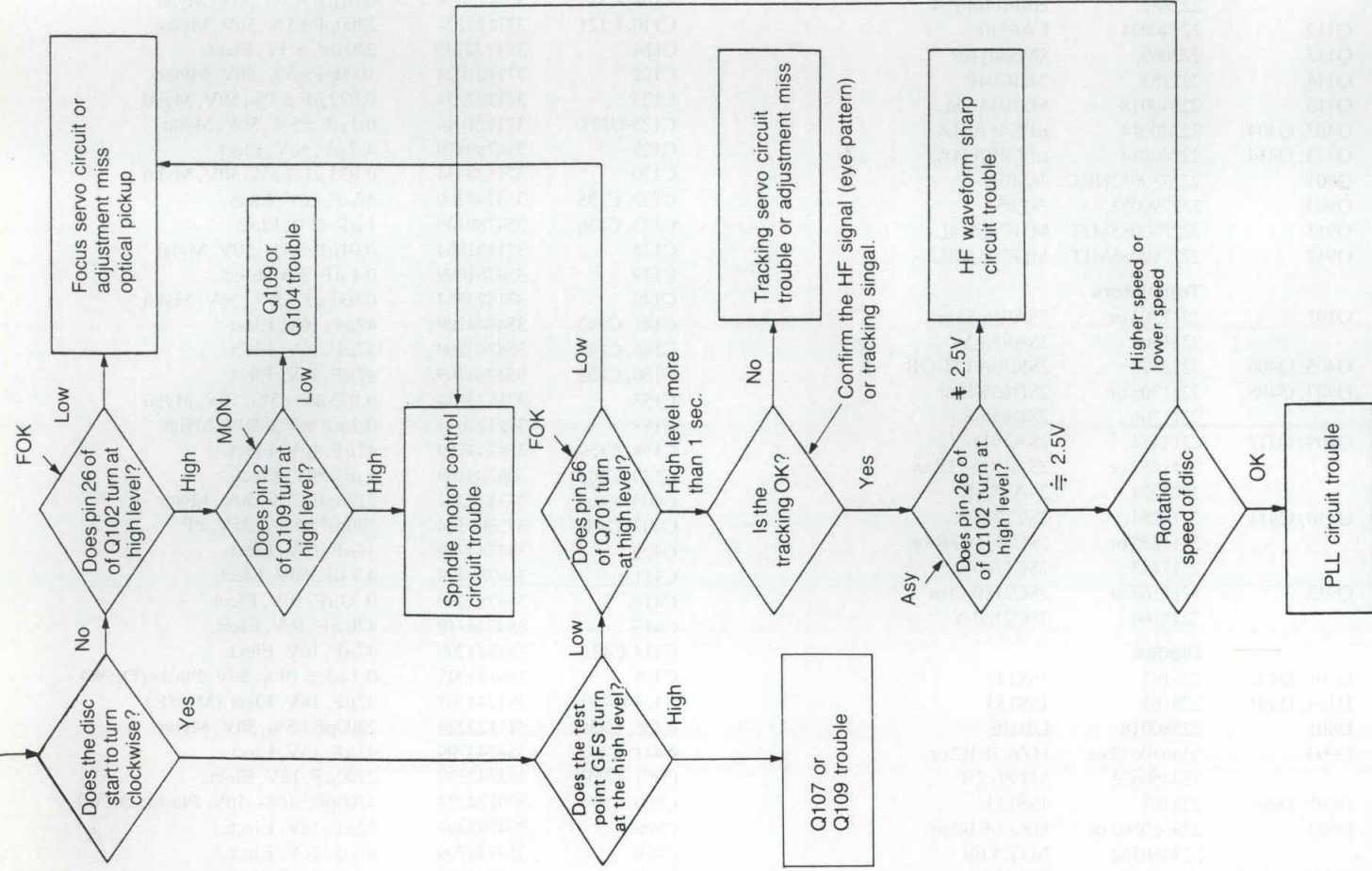
Tracking signal
P108 pin 4 (HF)
V: 20mV/div
H: 0.5mS/div

RF signal
P109 pin 2 (HF)
V: 50mV/div
H: 0.5μS/div

Flowchart (right / next page):

- Does the disc start to turn clockwise? — No → Focus servo circuit or adjustment miss / optical pickup
  - FOK / Low → Does pin 26 of Q102 turn at high level? — Low → Focus servo circuit or adjustment miss optical pickup
    - High / MON → Does pin 2 of Q109 turn at high level? — Low → Q109 or Q104 trouble
      - High → Spindle motor control circuit trouble
  - Yes →
- Does the rest point GFS turn at the high level? — Low → Q107 or Q109 trouble
  - High →
  - FOK / Low → Does pin 56 of Q701 turn at high level? — Low → Spindle motor control circuit trouble
    - High → High level more than 1 sec. → Is the tracking OK? — No → Tracking servo circuit trouble or adjustment miss / Confirm the HF signal (eye pattern) or tracking singal.
   - Yes →
- Confirm the HF signal (eye pattern) or tracking singal. → Does pin 26 of Q102 turn at high level? — ≒ 2.5V → HF waveform sharp circuit trouble
  - ≠ 2.5V / Asy →
  - ≒ 2.5V → Rotation speed of disc — Higher speed or lower speed
    - OK → PLL circuit trouble

−23−   −24−

PRINTED CIRCUIT BOARD – PARTS LIST

MAIN CIRUCIT PC BOARD (NAAR-3654-1/1A)

CIRCUIT NO.	PART NO.	DESCRIPTION
	ICs	
Q102	22240029	CXA1081M
Q104	22240223	CXA1082BQ
Q107	22240168	STA341M-L
Q108	22240033	LA6500
Q109	22240095	CXD1130Q
Q110	222990,	CXK5816M-15,
	22240142,	CXK5816MS-15,
	22240032,	LC3517AM-15,
	22240203,	LC5116N-15,
	22240233 or	LC3517BM-15 or
	222882	HM6116FP-4
Q112	22240034	LA6510
Q113	222069	SM5807EP
Q114	222755	74HC04P
Q115	22240018	M51943ASL
Q403, Q404	22240014	μPC4570HA
Q413, Q414	22240014	μPC4570HA
Q901	222780052NEC	78M05
Q902	222790053	79L05
Q911	222780085MIT	M5F78M08L
Q912	222790085MIT	M5F79M08L
	Transistors	
Q101	2211503 or	2SA950-O or
	2211504	2SA950-Y
Q405, Q406	2212375	2SK30ATM-GR
Q407, Q408	2211705 or	2SD655-E or
	2211706	2SD655-F
Q409, Q412	2211454,	2SA1015-Y,
	2211455 or	2SA1015-GR or
	2213074	2SA933-R
Q410, Q411	2211254,	2SC1815-Y,
	2211255 or	2SC1815-GR or
	2211183	2SC1740-R
Q913	2211163 or	2SC2120-O or
	2211164	2SC2120-Y
	Diodes	
D101, D102	223163	1SS133
D104, D401	223163	1SS133
D901	22380018	DB103
D903	224650622 or	HZ6.2EB2 or
	224450622	MTZ6.2B
D905, D907	223163	1SS133
D953	224650562 or	HZ5.6EB2 or
	224450562	MTZ5.6B
D955	22380013	RDF02M

CIRCUIT NO.	PART NO.	DESCRIPTION
	Crystal	
X102	3010112	KD6586FFB
	Coils	
L101	231023	NCH-1062
L102	233905	BL02RN1-R62
L401, L402	232142A	NMC-6068
	Capacitors	
C101, C113	354742209	22μF, 16V, Elect.
C102	354721019	100μF, 6.3V, Elect.
C103, C107	371121034	0.01μF ±5%, 50V, Mylar
C108	371124724	4700pF ±5%, 50V, Mylar
C109, C111	371121034	0.01μF ±5%, 50V, Mylar
C110, C121	371122224	2200pF ±5%, 50V, Mylar
C114	354722219	220μF, 6.3V, Elect.
C122	371121024	1000pF ±5%, 50V, Mylar
C123	371122234	0.022μF ±5%, 50V, Mylar
C125-C127	371121044	0.1μF ±5%, 50V, Mylar
C129	354780479	4.7μF, 50V, Elect.
C130	371123334	0.033μF ±5%, 50V, Mylar
C132, C138	354744709	47μF, 16V, Elect.
C133, C136	354780109	1μF, 50V, Elect.
C135	371121034	0.01μF ±5%, 50V, Mylar
C139	354781099	0.1μF, 50V, Elect.
C140	371123334	0.033μF ±5%, 50V, Mylar
C141, C142	354744709	47μF, 16V, Elect.
C146, C148	354744709	47μF, 16V, Elect.
C150, C152	354744709	47μF, 16V, Elect.
C153	371123334	0.033μF ±5%, 50V, Mylar
C157	371121044	0.1μF ±5%, 50V, Mylar
C158, C159	354744709	47μF, 16V, Elect.
C170, C203	354780109	1μF, 50V, Elect.
C405, C406	371122224	2200pF ±5%, 50V, Mylar
C407, C408	373303314	330pF ±5%, 125V, PP
C409	354744709	47μF, 16V, Elect.
C411	354780479	4.7μF, 50V, Elect.
C412	354783399	0.33μF, 50V, Elect.
C413	354744719	470μF, 16V, Elect.
C414-C421	354744709	47μF, 16V, Elect.
C425	379121045	0.1μF ±10%, 50V, Plastic(DEW)
C427-C430	391244707	47μF, 16V, Elect.(MUSE)
C435, C436	371122224	2200pF ±5%, 50V, Mylar
C441, C442	354744709	47μF, 16V, Elect.
C901, C902	354742229	2200μF, 16V, Elect.
C903, C904	379124725	4700pF ±10%, 50V, Plastic(DEW)
C908	354742209	22μF, 16V, Elect.
C909	354744709	47μF, 16V, Elect.
C923	354741009	10μF, 16V, Elect.

CIRCUIT NO.	PART NO.	DESCRIPTION
C925	354780229	2.2μF, 50V, Elect.
C926, C927	379124725	4700pF ±10%, 50V, Plastic(DEW)
C932, C933	354753329	3300μF, 25V, Elect.
C934, C935	354742219	220μF, 16V, Elect.
	Resistors	
R108, R122	5210066	N06HR22KBD, Semi-fixed
R110	5210060	N06HR2.2KBD, Semi-fixed
R125	5210066	N06HR22KBD, Semi-fixed
R147	5210058 or	N06HR1KBD, Semi-fixed
	5210213	
R904	441621504	15ohm, 1W, Metal oxide film
	Plugs	
P101	25055153	NPLG-9P137
P102	25055152	NPLG-8P136
P103, P104	25055150	NPLG-6P134
P105	25055146	NPLG-2P130
P108	25055045	NPLG-4P33
P109, P110	25055038	NPLG-2P29
	Sockets	
JL102	25050273	NSCT-9P101
JL103	25050272	NSCT-8P100
JL104	25050267	NSCT-3P95
JL901	25050270	NSCT-6P98
SC401	2000959	NSAS-2P911
SC450, SC451	2000900A	NSAS-12P856
	Terminal	
P401	25045260	NPJ-2PDBL129
	Radiator	
	27160211-1	RAD-68B
	Fuses	
F101, F102	252112	⚠ ICPN15, IC protector <G>

DISPLAY CIRCUIT PC BOARD(NADIS-3631-1)

CIRCUIT NO.	PART NO.	DESCRIPTION
S701	25065343	NSS-23133, Slide switch
S702-S725	25035548	NPS-111-S510, Push switches
SC701	2000899A	NSAS-14P855, Socket
SC702	2000898	NSAS-12P854, Socket

DIGITAL CIRCUIT PC BOARD(NADG-3632-1)

CIRCUIT NO.	PART NO.	DESCRIPTION
	IC	
Q750	22240200B	CXP5048H178S
	Transistor	
Q752	2212600	DTA124ES
	Diodes	
D750	223163	1SS133
D752-D755	223163	1SS133
	Capacitors	
C750, C751	354744709	47μF, 16V, Elect.
C754		
	Resistors	
R755-R758	49163472404	4.7kohm ×4, 1/10W, Network
R759-R770	49163472412	4.7kohm ×12, 1/10W, Network
	Plugs	
P701	25055188	NPLG-7P172
P702	25055187	NPLG-6P171
	Sockets	
SC105	2000872	NSAS-4P828
SC703	2000913	NSAS-16P869

DAC CIRCUIT PC BOARD(NAAR-3633-1)

CIRCUIT NO.	PART NO.	DESCRIPTION
	ICs	
Q601	24120012	PC713V
Q602	222465	NJM4558D
Q605, Q606	222988	PCM56P
Q607	222740005	74HC00P
	Transistos	
Q603	2211503 or	2SA950-O or
	2211504	2SA950-Y
Q604	2211163 or	2SC2120-O or
	2211164	2SC2120-Y
	Capacitors	
C601	354744709	47μF, 16V, Elect.
C602	391241019	100μF, 16V, Elect.(MUSE)
C603	379121035	0.01μF ±10%, 50V, Plastic(DEW)
C604, C606	373303314	330pF ±5%, 125V, PP
C608, C611	371121534	0.015μF ±5%, 50V, Mylar
C609	371121234	0.012μF ±5%, 50V, Mylar
C610	371121024	1000pF ±5%, 50V, Mylar
C612	354721019	100μF, 6.3V, Elect.
C614, C615	354722219	220μF, 6.3V, Elect.
	Themistors	
R604, R607	4000099	TD5-C230D
	Resistors	
R619, R620	5210145	N06HR100KBE, Semi-fixed
	Plugs	
P601, P602	25055136	NPLG-6P120

POWER SWITCH PC BOARD(NASW-3635-1)

CIRCUIT NO.	PART NO.	DESCRIPTION
C951	3500065A	⚠ DE7150FZ103PCSA, Capacitor IS
S951	25035616	⚠ NPS-111-L578P, Power switch
	27300601	⚠ Cover for C951

RI TEMINAL PC BOARD(NAETC-3636-1)

CIRCUIT NO.	PART NO.	DESCRIPTION
D190	224650562 or	HZ5.6EB2 or
	224450562	MTZ5.6B, Diode
P190	25045172	HSJ1003-01-020, Jack
JL101	25050267	NSCT-3P-95, Socket

NOTE: ⟨G⟩: Only 220V model

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

L ch

R ch

Q407 MUTE SW

Q408 MUTE SW

Q405

Q403 (1/2)

Q404 (1/2)

Q406

+5V

L401 L.P.F

Q413 SUPER SERVO

L402 L.P.F

Q414 SUPER SERVO

MUTING

Q601 PC713V PHOTO COUPLLER

Q403 (1/2)

Q404 (1/2)

EMPHASIS

Q409~Q410 GATE CIRCUIT

POWER-TRANSFORMER NPT-1014

AC12V LCD FILAMENT

AC INPUT

S951

Q602 2/2

Q602 1/2

Q603

Q604

+B(5V)

Q411~Q412 GATE CIRCUIT

D955

D901

-B(-5V)

Q605 PCM56P D/A CONVERTER

Q606 PCM56P D/A CONVERTER

Q911

Q912

Q901

Q902

DATA

Q607 SWITCHING

Q913

+5V

+8V

-8V

+12V

+5V

-12V

-5V

+12V

-12V

Q113 SM5807EP 4 TIMES OVERSAMPLING DIGITLL FILTER

CLOCK

Q110 CXR5816M 16K RAM

X102 16.9344

Q114 74HCU04P X'TAL OSC

Q109 CXD1130Q DIGITAL SIGNAL PROCESSOR

R147 VCO

Q104 CXA1082BQ SERVO SIGNAL PROCESSOR

Q108 LA6500 SPINDLE MOTOR DRIVE

SPINDLE MOTOR

M

Q750 CXP5048H-178S MICROPROCESSOR

LCD-AS INDICATOR

R125 TRACKING GAIN

R122 FOCUS GAIN

R108 TRACKING OFFSET

Q115 RESET

KEY MATRIX

EFM

Q102 CXA1081M RF AMP

Q107 STA341M FOCUS/TRACKING SLIDE MOTOR DRIVE

M SLIDE MOTOR

Q112 LA6510 TRAY MOTOR DRIVE

Q752 BUFFER

R110 FOCUS OFFSET

Q101 LASER DRIVE

M TRAY MOTOR

R1 OUT/IN

E
A B
D C
F

FOCUS COIL

TRACKING COIL

L.D

M.D

ONKYO CORPORATION

PACKING VIEW

Transport screw

Bottom view

REF. NO.	PART NO.	DESCRIPTION
1	29051940	Master carton box
2	29091284A	Pad L
3	29091285B	Pad R
4	29095505	Protection sheet
5	29100036A	Poly-vinyl bag
6	282301	Sealing hook
7	29110071-1	50×550mm, Damplon tape
8	261504	Adhesive tape
9	29361164	Label
10	29361110	Label
11		Accessary bag ass'y
	2010097	Connection cord
	2010200	Connection cord (RI)
	29341428	Instruction manual
	25055040	CV-K-2, Conversion plug <Worldwide model>
	29100097	350×250mm, Poly-vinyl bag
	29365020A	Warranty card <West Germany model>
	29100094A	Poly-vinyl bag for warranty card <West Germany model>
	29110069	Adhesive tape (Tray panel)