


# ONKYO® SERVICE MANUAL

## COMPACT DISC PLAYER MODEL DX-2800

### Black model

BUDN, BUD	120V AC, 60 Hz
BUG	220V AC, 50Hz
BUW	120/220V AC, 50/60Hz
BUQA, BUQB	240V AC, 50 Hz

### SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY MARK  ON THE SCHEMATIC DIAGRAM AND IN THE PARTS LIST ARE CRITICAL FOR RISK OF FIRE AND ELECTRIC SHOCK. REPLACE THESE COMPONENTS WITH ONKYO PARTS WHOSE PARTS NUMBERS APPEAR AS SHOWN IN THIS MANUAL.

MAKE LEAKAGE-CURRENT OR RESISTANCE MEASUREMENTS TO DETERMINE THAT EXPOSED PARTS ARE ACCEPTABLY INSULATED FROM THE SUPPLY CIRCUIT BEFORE RETURNING THE APPLIANCE TO THE CUSTOMER.

### SPECIFICATIONS

Signal readout system:	Optical non-contact
Reading rotation:	About 500 ~200r.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
Sampling frequency:	352.8kHz(8 times oversampling)
Number of channels:	2(Stereo)
Frequency response:	2Hz ~20kHz
Total harmonic distortion:	0.0035%(at 1kHz)
Dynamic range:	98dB
Signal to noise ratio:	106dB
Channel separation:	98dB(at 1kHz)
Wow and Flutter:	Below threshold of measurability
Power consumption:	16 watts
Output level:	2 volts r.m.s.
Dimensions(W×H×D):	435 ×118 ×312 mm 17-1/8" ×4-5/8"×12-1/4"
Weight:	5.1kg. 11.2lbs.

Specifications are subject to change without notice.



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## 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 120V or 220V 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.

## 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, carefully take the following precautions. (The following precautions are included in the service parts).

### PRECAUTIONS

#### 1. Ground for the work-desk.

Place a conductive sheet such as a sheet of copper (with impedance lower than  $10^6 \Omega$ ) on the work-desk and place the set on the conductive sheet so that the chassis.

#### 2. Grounding for the test equipment and tools.

Test equipments and toolings should be grounded in order that their ground level is the same the ground of the power source.

#### 3. Grounding for the human body.

Be sure to put on a wrist-strap for grounding whose other end is grounded.

Be particularly careful when the workers wear synthetic fiber clothes, or air is dry.

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

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

# PROTECTION OF EYES FROM LASER BEAM DURING SERVICING

This set employs a laser. Therefore, be sure to follow carefully the instructions below when servicing.

## WARNING!!

WHEN SERVICING, DO NOT APPROACH THE LASER EXIT WITH THE EYE TOO CLOSELY. IN CASE IT IS NECESSARY TO CONFIRM LASER BEAM EMISSION, BE SURE TO OBSERVE FROM A DISTANCE OF MORE THAN 30cm FROM THE SURFACE OF THE OBJECTIVE LENS ON THE OPTICAL PICK-UP BLOCK.

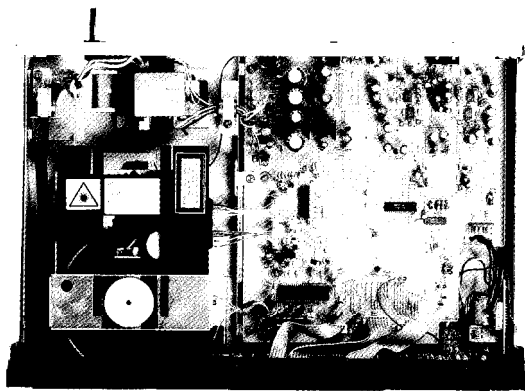
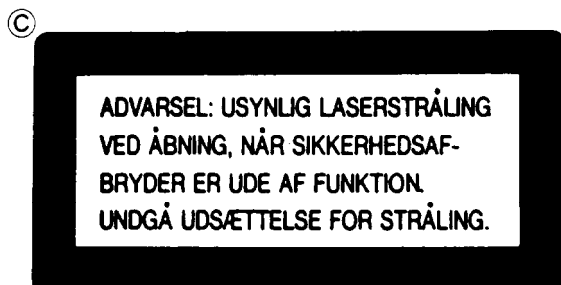
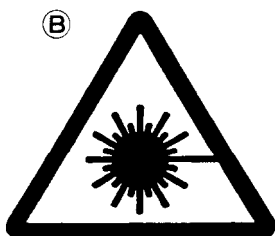
## LASER WARNING LABEL

The label shown below are affixed.

### 1. Warning lable

This label is located on the chassis of mechanism.

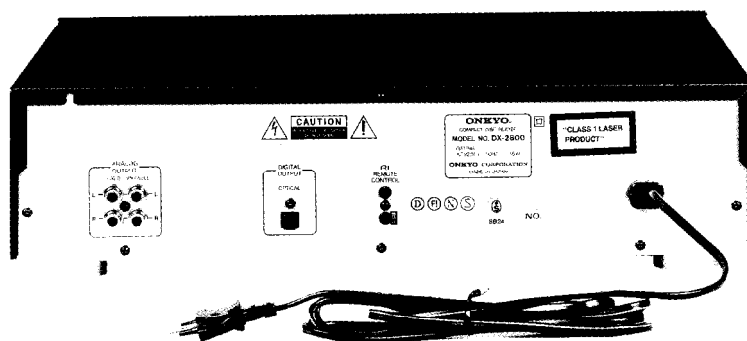
- (A) **DANGER** —INVISIBLE LASER RADIATION WHEN OPEN AND INTERLOCK FAILED OR DEFEATED. AVOID DIRECT EXPOSURE TO BEAM.
- CAUTION** —HAZARDOUS LASER AND ELECTROMAGNETIC RADIATION WHEN OPEN AND INTERLOCK DEFEATED.
- ATTENTION** —RAYONNEMENT LASER ET ELECTROMAGNETIQUE DANGEREUX SI OUVERT AVEC L'ECLenchEMENT DE SECURITE ANNULE.



### Laser Diode Properties

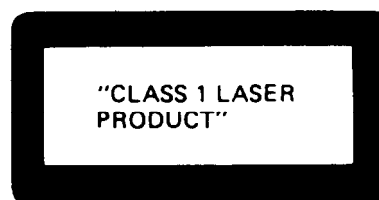
- Material: GaAS/GaAlAs
- Wavelength: 780nm
- Emission Duration: continuous
- Laser output: max. 0.5mW\*

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



### 2. Class 1 label

This label is located on the back panel.



### ADVARSEL

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

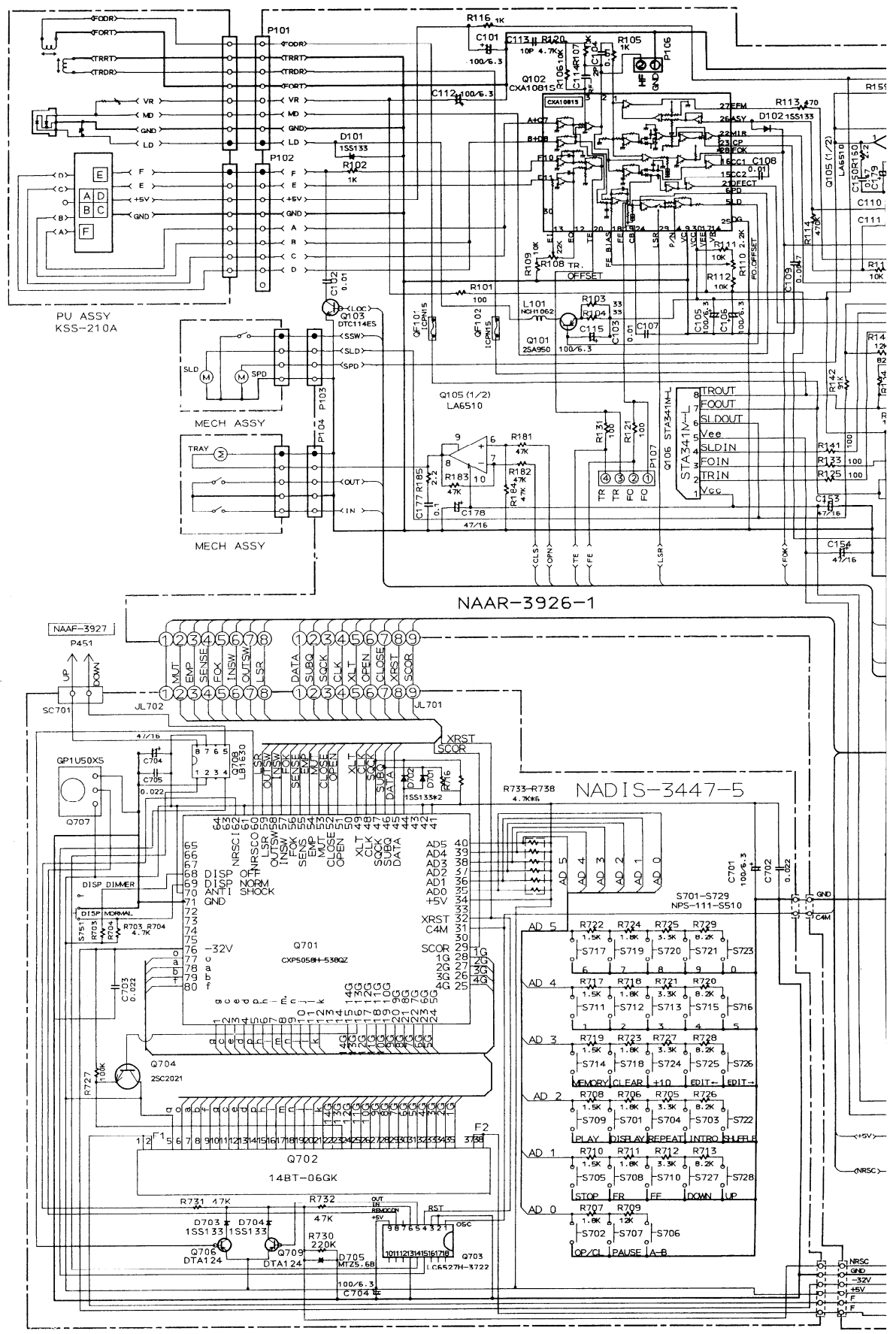
APPARATET BØR KUN ÅBNES AF FAGFOLK MED SÆRLIGT KENDSKAB TIL APPARATER MED LASERSTRÅLER!

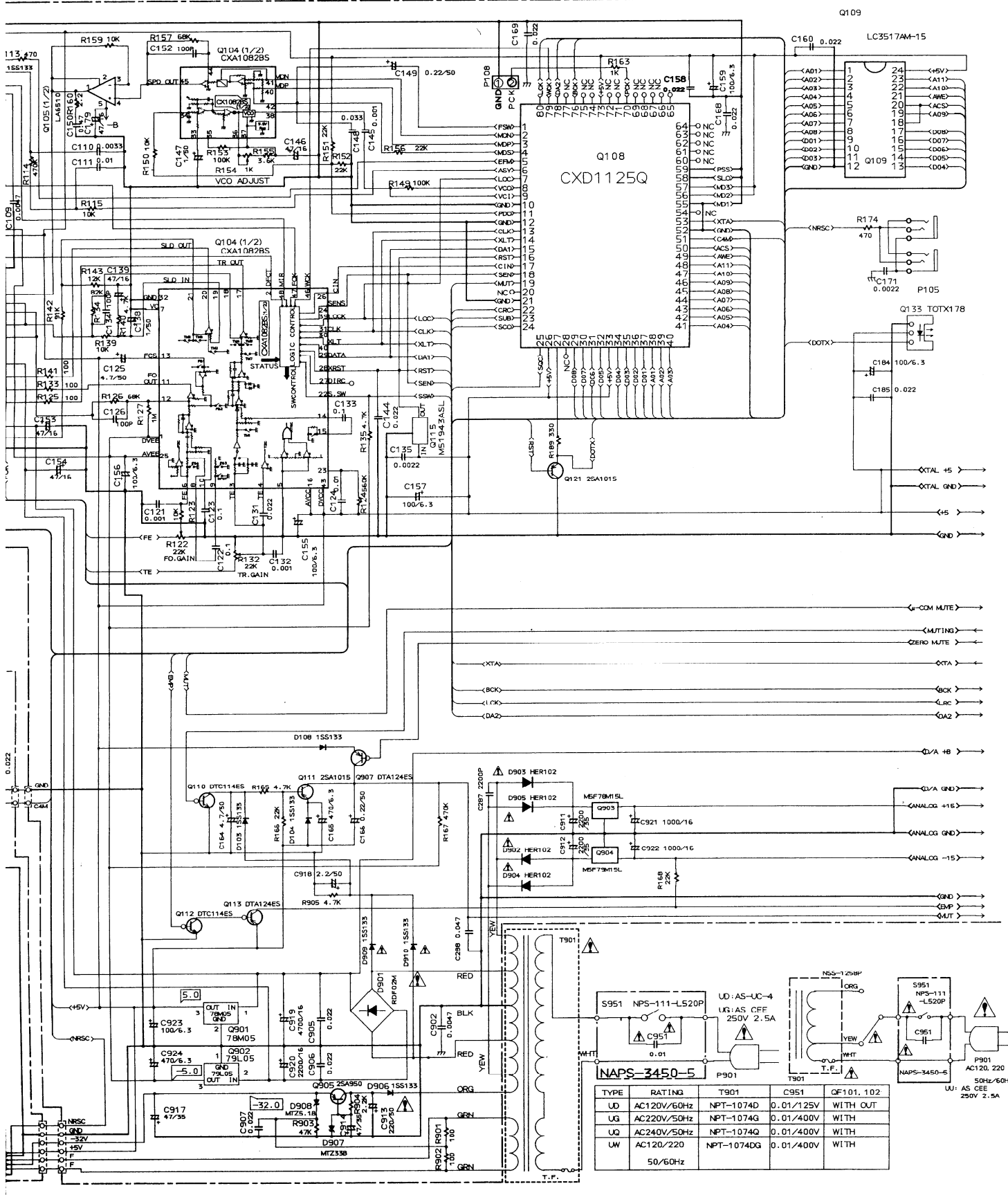
Indvendigt i apparatet er anbragt den her gengivne advarselmærkning, som advarer imod at foretage sådanne indgreb i apparatet, at man kan komme til at udsætte sig for laserstråling.

VAROITUS! Laite sisältää laserdiodin, joka lähettää (näkyväntöntä) silmille vaarallista lasersäteilyä.

**SCHEMATIC DIAGRAM**

A  
B  
C  
D  
E  
F





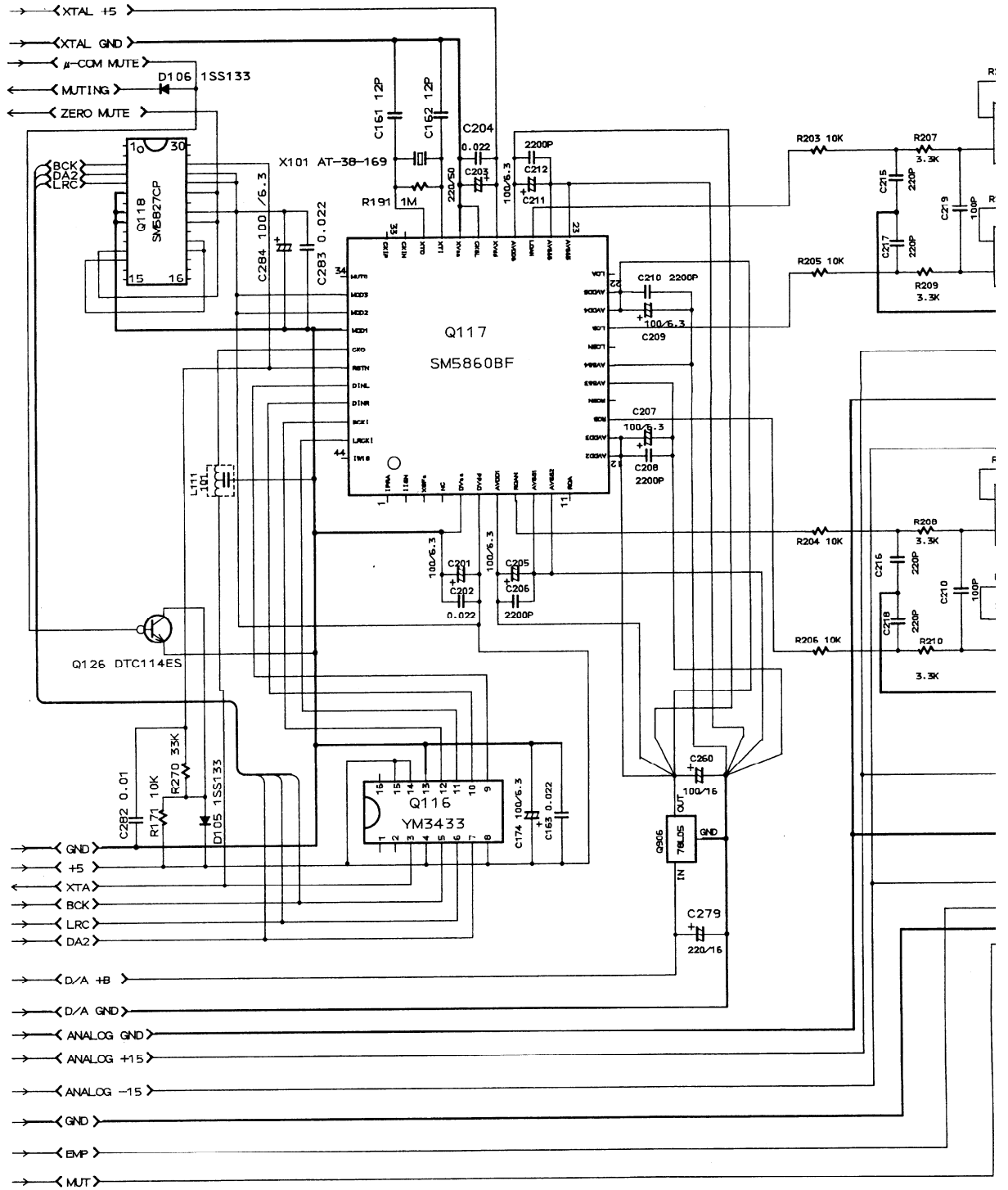
**NAPS-3450-5**

TYPE	RATING	T901	C951	QF101, 102
UD	AC120V/60Hz	NPT-1074D	0.01/125V	WITH OUT
UG	AC220V/50Hz	NPT-1074G	0.01/400V	WITH
UQ	AC240V/50Hz	NPT-1074Q	0.01/400V	WITH
UW	AC120/220	NPT-1074DG	0.01/400V	WITH

50/60Hz

1 2 3 4

**SCHEMATIC DIAGRAM**



**NOTE**

1. THE COMPONENTS IDENTIFIED BY MARK  $\Delta$  ARE CRITICAL FOR SAFETY. REPLACE ONLY WITH PART NUMBER SPECIFIED.
2. VOLTAGE (MEASURED WITH V.T.V.M.)  $\square$  V IS DC VOLTAGE. (NO INPUT SIGNAL)
3. ELECTROLYTIC CAPACITORS ( $\text{---}$ ) ARE IN  $\mu\text{F}/\text{WV}$ .
4. ALL CAPACITORS ARE IN  $\mu\text{F}/50\text{WV}$  UNLESS OTHERWISE NOTED.
5. ALL RESISTORS ARE IN OHMS 1/4 WATTS UNLESS OTHERWISE NOTED.
6. CIRCUIT IS SUBJECT TO CHANGE FOR IMPROVEMENT.

A

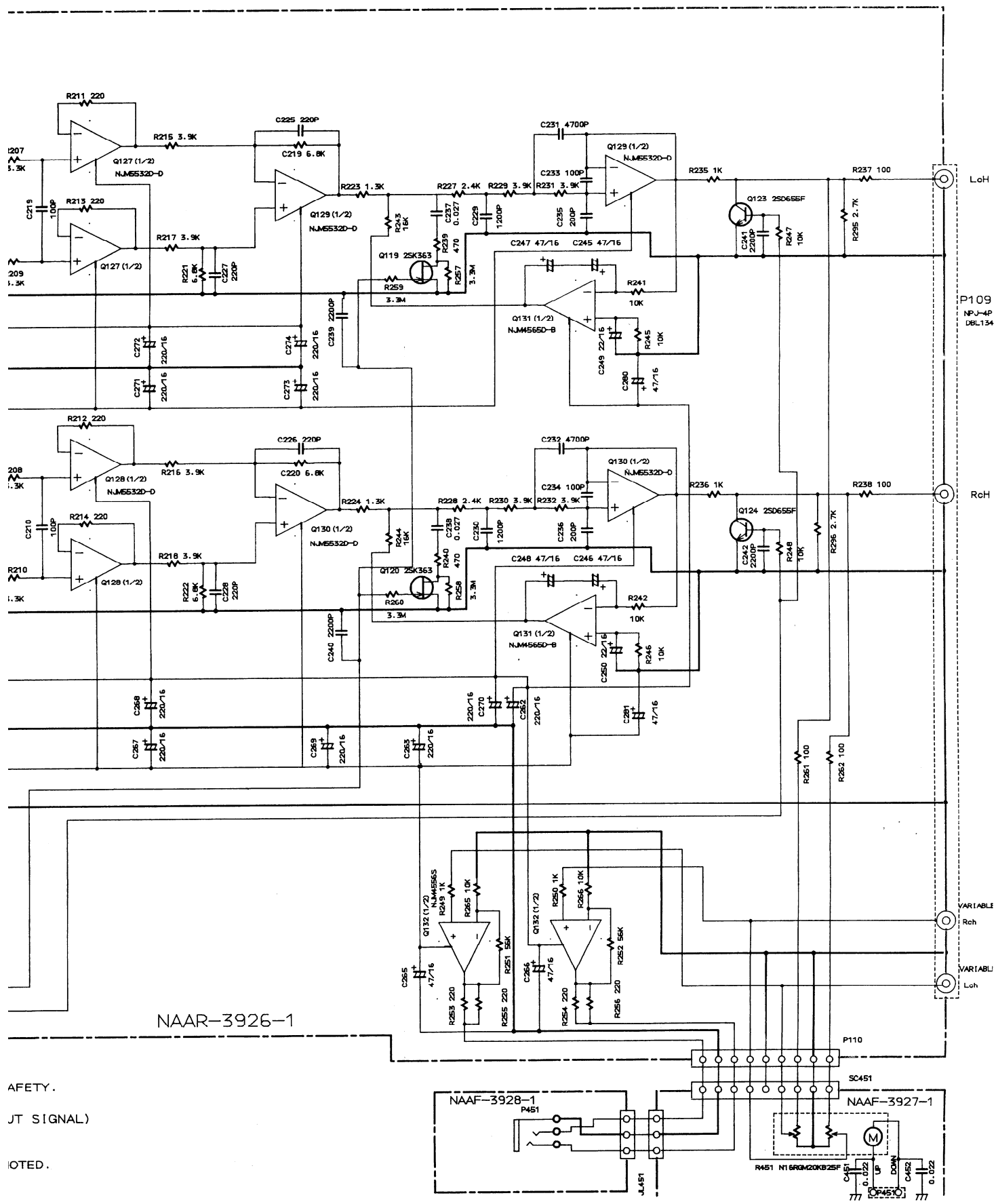
B

C

D

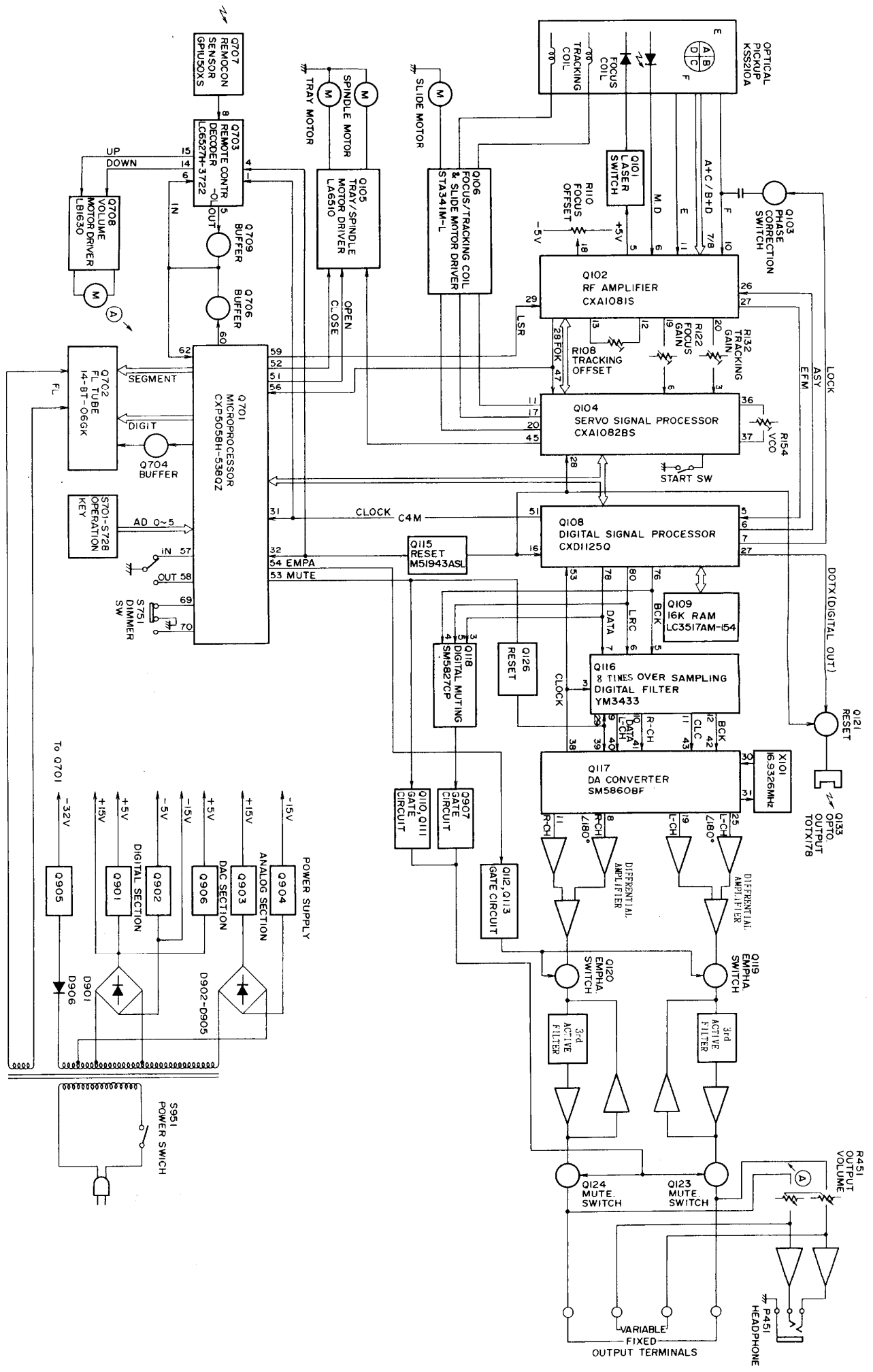
E

F



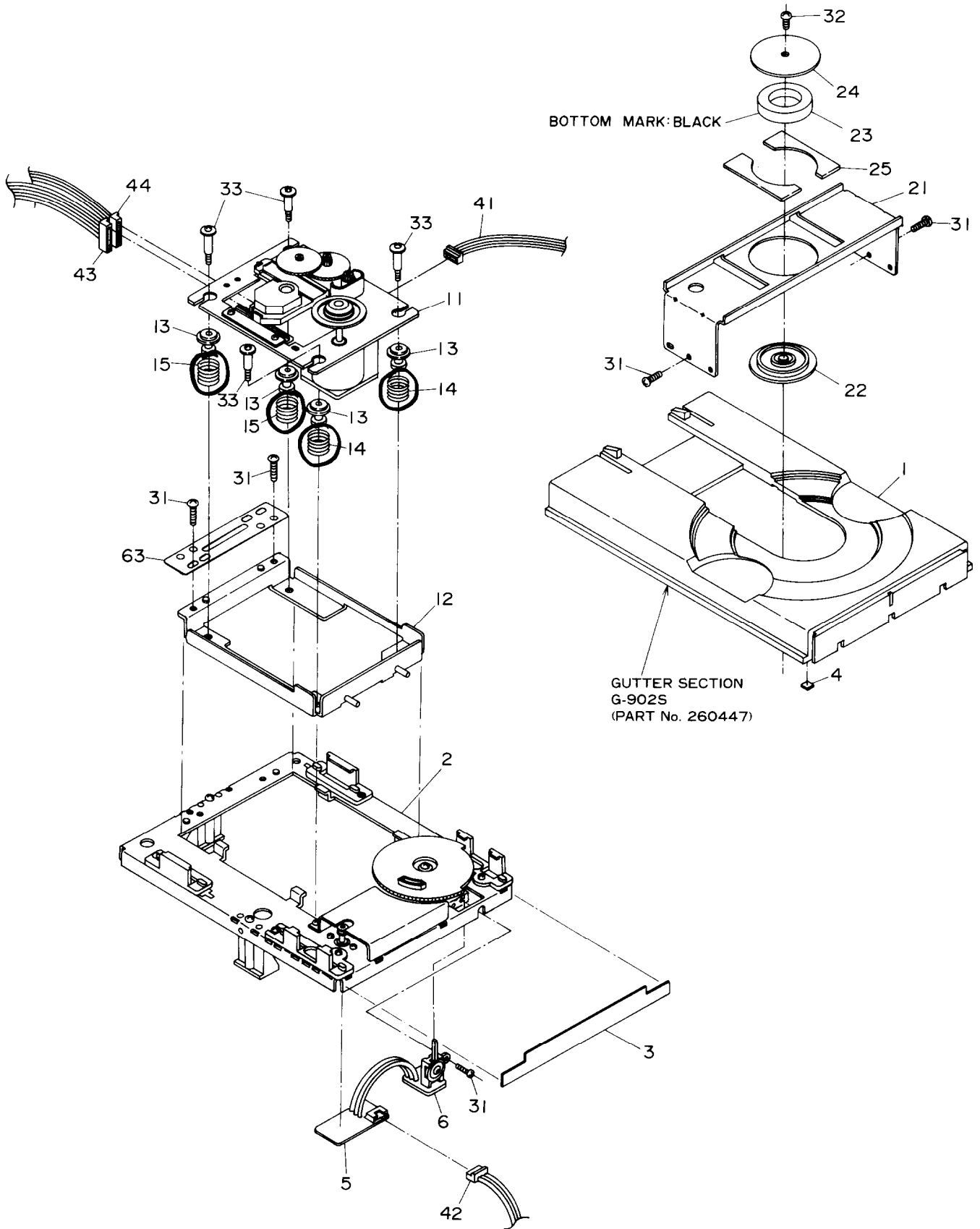
NAAR-3926-1

AFETY.  
JT SIGNAL)  
OTED.

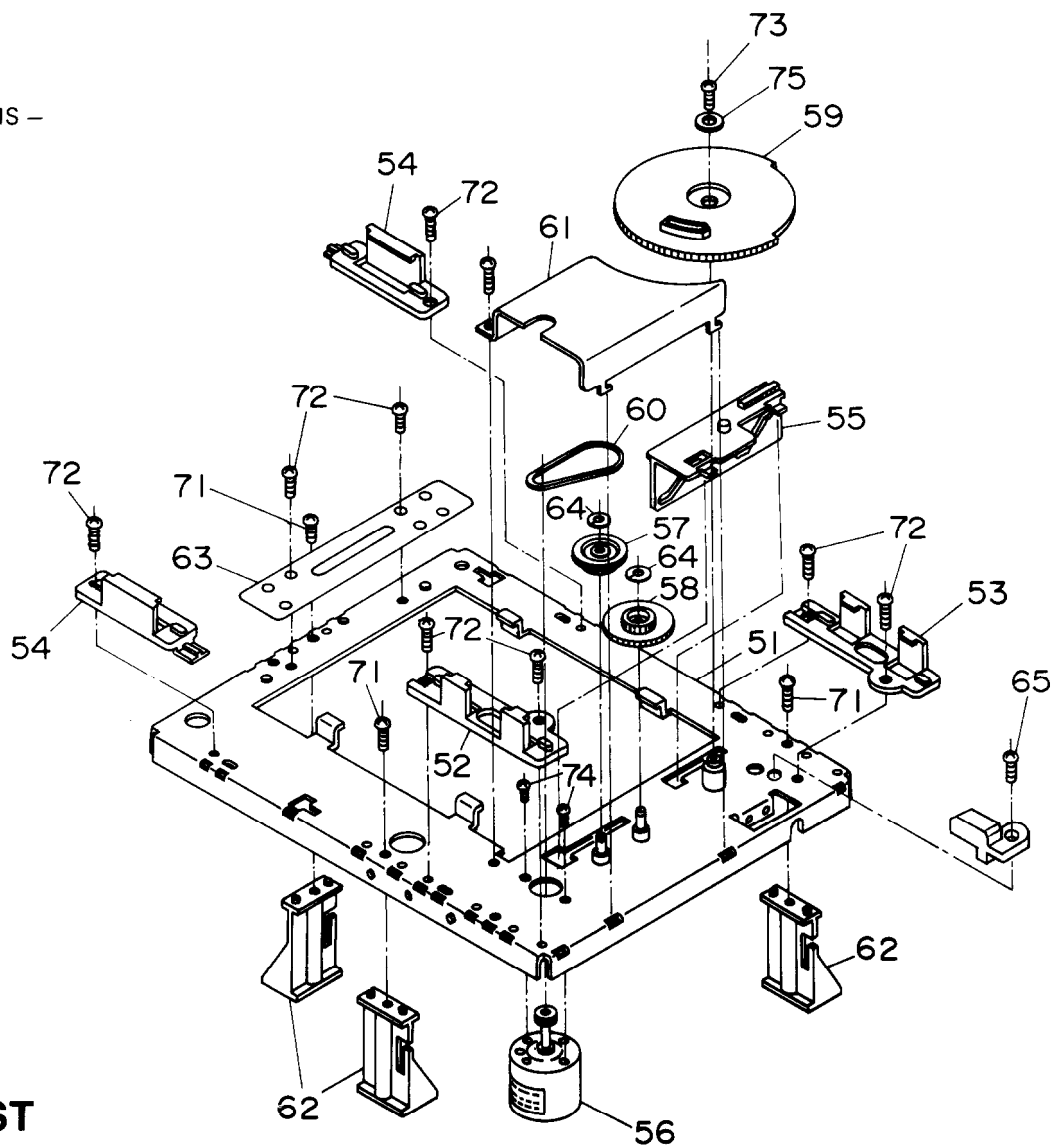




# MECHANISM EXPLODED VIEW



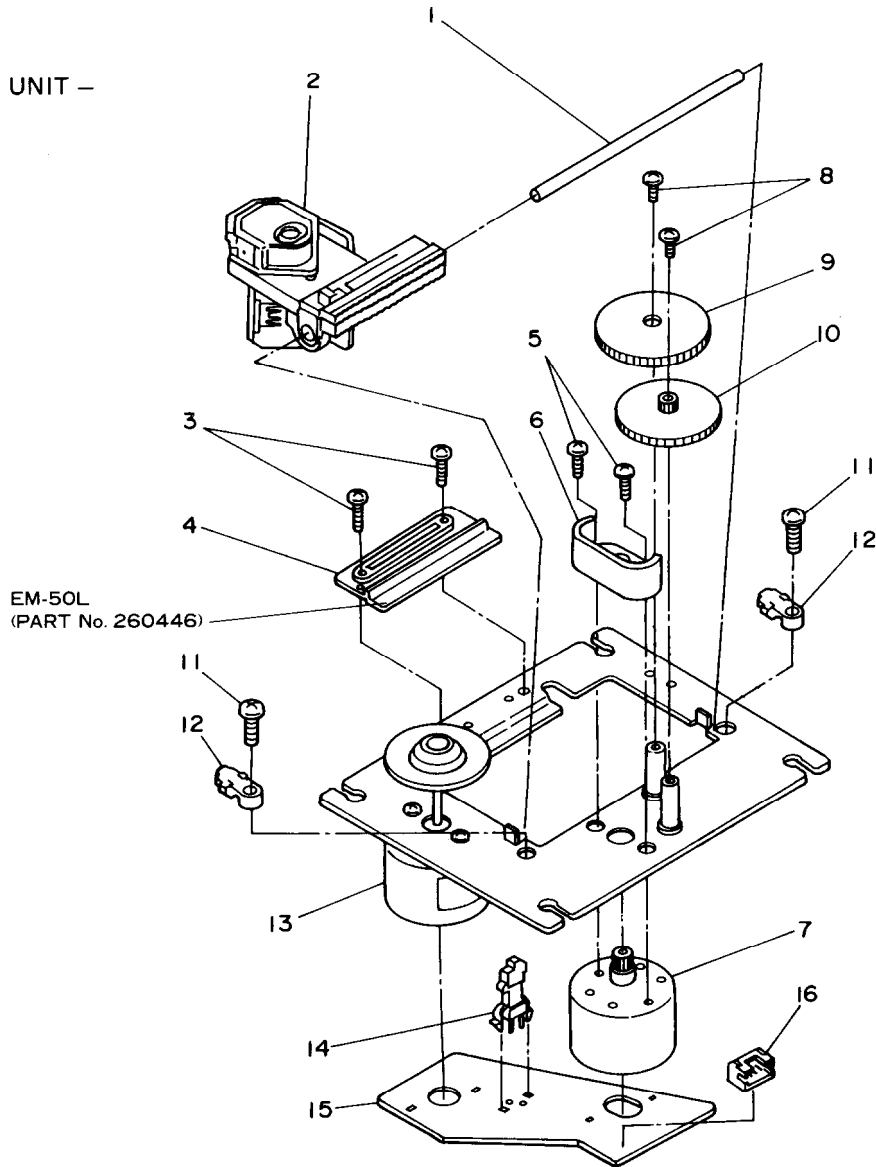
## - MAIN CHASSIS -



## PARTS LIST

REF.NO.	PART NO.	DESCRIPTION	REF.NO.	PART NO.	DESCRIPTION
1	27301236C	Disc tray	51	27100198B	Chassis, main
2	27100201C	Chassis ass'y, main	52	27301237A	Tray guide FL
3	27301289	Plate, decoration	53	27301238A	Tray guide FR
4	28141020	Cushion	54	27301242A	Tray guide R
5	1H093593-1	NAETC-3693-1, Tray motor pc board ass'y	55	27301239A	Cam plate
	25055369	NPLG-5P352, Plug	56	24502255	Tray motor ass'y
6	1H093594-1	NAETC-3694-1, Tray switch pc board ass'y	57	27301233	Pulley gear
	25065375	NMS-1219, Microswitch	58	27301234	Gear
11	242370	Pickup drive unit	59	27301235B	Cam gear
12	27100197	Chassis, sub	60	27301079	Rubber belt
13	27301232A	Cusion rubber	61	27301243	Cover
14	27180437A	Spring, front	62	27301244	Leg
15	27180438A	Spring, rear	63	27180436	Plate spring
21	27301240	Arm	64	870146	Special washer
22	27301241	Cap CH	65	27301302	Spacer
23	28181019A	Magnet CH	71	838430088	3TTB+8B(BC), Self-tapping screw
24	27301214-1	York CH	72	833425089	2.5TTP+8C(BC), Self-tapping screw
25	28140993	Cushion CH	73	82143006	3P+6FN(BC), Pan head screw
31	833425059	2.5TTP+5C(BC), Self-tapping screw	74	801430	2P+2.5F, Special screw
32	833426050	2.6TTP+5P(BC), Self-tapping screw	75	87613012	W3×12F, Flat washer
33	801428	Special screw			
41	2002390810	NSAS-8P0120, Socket			
42	2002391020	NSAS-10P0119, Socket			
43	2000951	NSAS-8P903, Socket			
44	2000952	NSAS-8P904, Socket			
63	27180436	Plate spring			

## - PICKUP DRIVE UNIT -



## PARTS LIST

REF.NO.	PART NO.	DESCRIPTION
1	24506900	Shaft
2	24110008	KSS-210A, Optical pickup
3	801425	S2×5, Special screw
4	24506901	Holder
5	82142004	2P+4F(BC), Pan head screw
6	24506902	Cover, gear
7	24502264	Motor ass'y, slide
8	801426	M1.7×3, Special screw
9	24506903	Wheel A
10	24506904	Wheel B
11	801427	+ STP2.6×8, Special screw
12	24506905	Clamp, shaft
13	24502253	Spindle motor ass'y (Including the chassis)
14	25065377	NLF-12018, Leaf switch
15	24505270	Pc board
16	25050396	NSCT-4P223, Connector

# DISASSEMBLING/ATTACHMENT PROCEDURES

## 1. Removement of the disc tray

### Procedures 1

- 1) Press the POWER switch to turn on the power.
- 2) Press the OPEN/CLOSE button to open the disc tray.
- 3) Press the POWER switch to turn off.
- 4) Push the disc tray slowly with the hand to close the disc tray.  
(The disc tray is free.)

- 5) Pull out the disc tray to the front side with the hand.

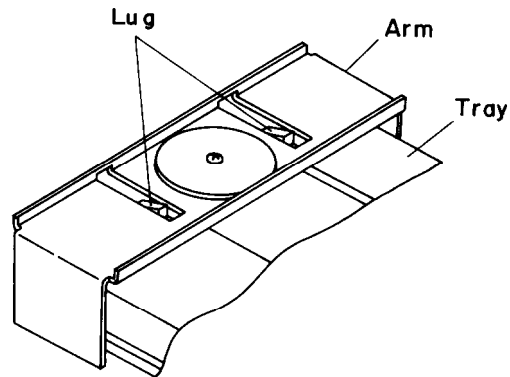
- 6) Press the lug of disc tray to remove the disc tray.

### Procedures 2

- 1) Push the cam plate slowly with the screw driver (–) from the hole of left side of chassis.

- 2) Pull out the disc tray to the front side with the hand.

- 3) Press the lug of disc tray to remove the disc tray.

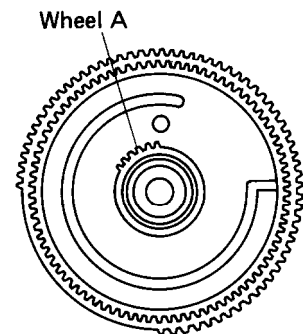
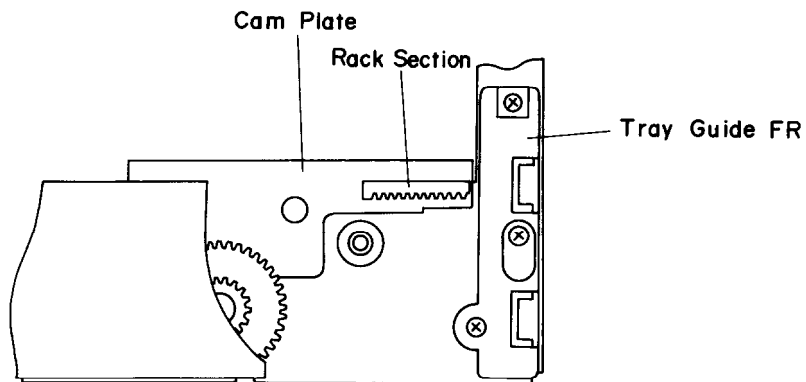


## 2. Attachment of the disc tray

- 1) Turn the cam gear to fully clockwise direction.
- 2) Insert the disc tray.
- 3) Turn the power on to lock the disc tray.

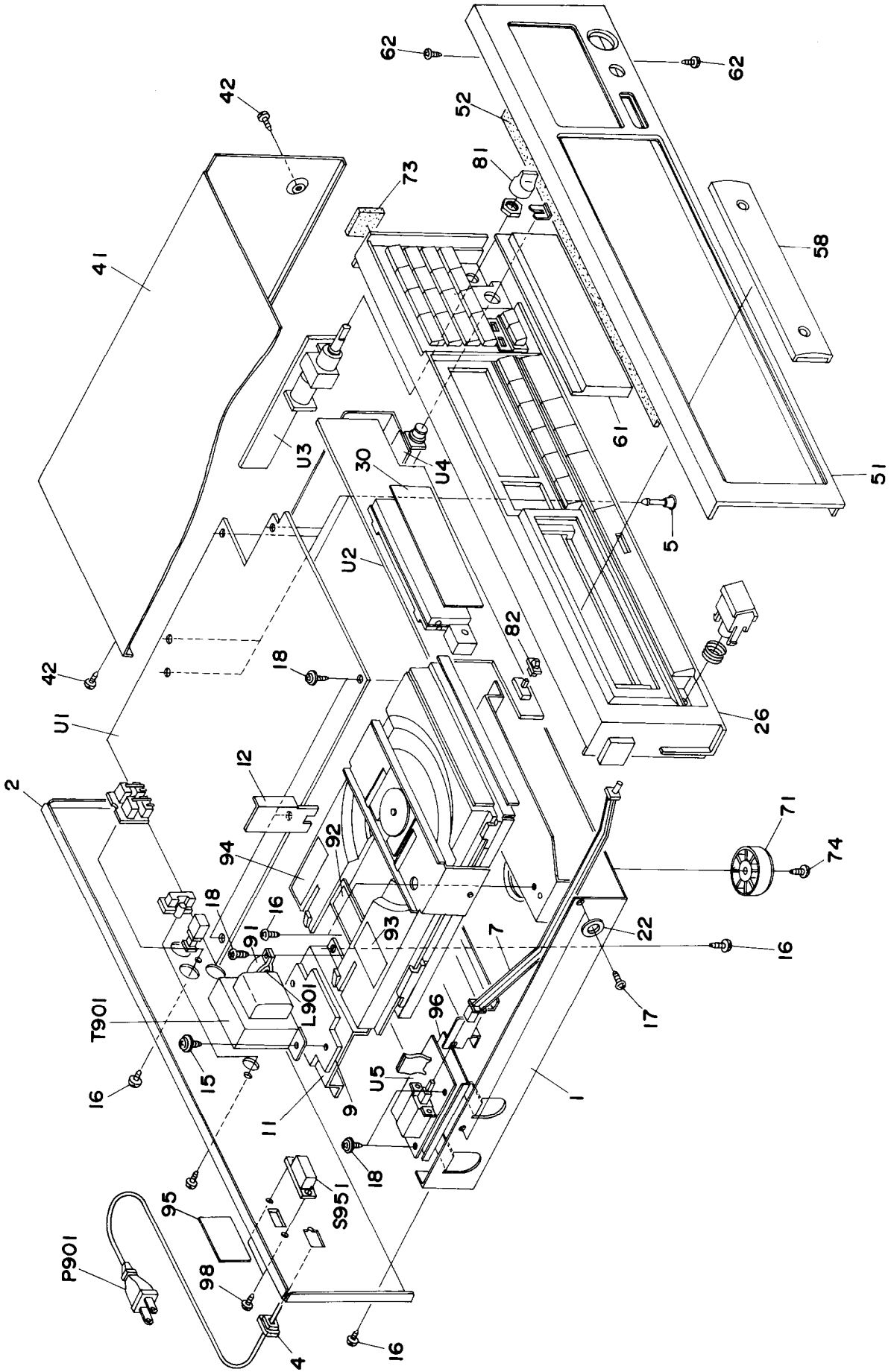
## 3. Attachment of the cam gear

- 1) Set the cam plate to the right side as shown below.
- 2) Attach the cam gear so that the rack of cam palte and the wheel A of cam gear are not engaged.



Bottom view of cam gear

**CHASSIS-EXPLODED VIEW**



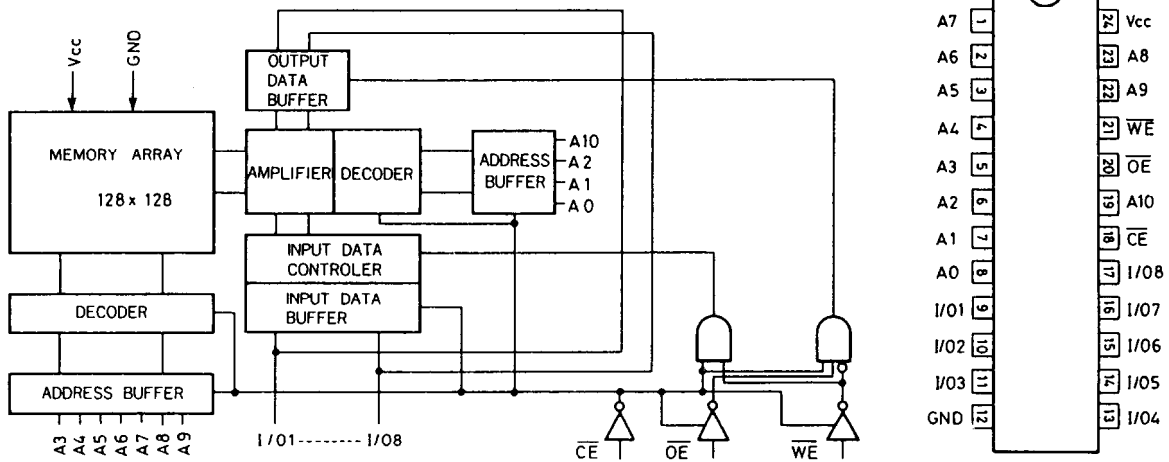
## PARTS LIST

REF.NO.	PART NO.	DESCRIPTION	REF.NO.	PART NO.	DESCRIPTION
1	27100215	Chassis	P901	253112A	△AS-US-4 # 18, Power supply cord <D>
2	27121364A	Back panel <D>		253148 or 253150	△AS-CEE 250V 2.5A, Power supply cord <G/W>
	27121365A	Back panel <G>		253118	△AS-SAA, Power supply cord <O>
	27121366A	Back panel <W>		25065123	△NSS-1258P, Voltage selector switch <W>
4	27121368A	Back panel <Q>	S951	2300564	△NPT-1074D, Power transformer <D>
5	27300750	△ Bushing <Strainrelief>	T901	2300565	△NPT-1074G, Power transformer <G>
7	27190524	KGLS-14R, Holder		2300567	△NPT-1074DG, Power transformer <W>
9	27273112A	Joint, power		2300566	△NPT-1074Q, Power transformer <Q>
	27270214B	Spacer		1H129526-1	NAAR-3926-1, Main circuit pc board ass'y <D>
11	27141405	Bracket, power transformer	U1	1H129526-1A	NAAR-3926-1A, Main circuit pc board ass'y <G/W/Q>
12	27141397	Bracket S		1H129547-5	NADIS-3447-5, Display circuit pc board ass'y
15	830440109	4TTC + 10C(BC), Self-tapping screw	U2	1H129527-1	NAAF-3927-1, Volume pc board ass'y
16	834430088	3TTS + 8B(BC), Self-tapping screw	U3	1H129528-1	NAAF-3928-1, Headphone terminal pc board ass'y
17	833430080	3TTP + 8P(BC), Self-tapping screw	U4	1H129550-5	NAPS-3450-5, Power switch pc board ass'y
18	831130088	3TTW + 8B, Self-tapping screw	U5	260208	Binder
22	27270212	Spacer			
26	27110578A	Front bracket			
30	28133216	Back plate			
41	28184429	Top cover			
42	834430088	3TTS + 8B(BC), Self-tapping screw			
51	1H129121	Front panel ass'y			
52	28140680	10.5 × 8 × 180, Cushion			
58	2721142A	Tray panel			
61	28191534	Clear plate			
62	833430080	3TTP + 8P(BC), Self-tapping screw			
71	27175153-1	Leg			
73	28140928	14 × 25 × 25, Cushion			
74	834430088	3TTS + 8B(BC), Self-tapping screw			
81	28323571	Knob, level			
82	28323152-1	Knob, mode			
91	260223	NK-16N, Clamp <D>			
	260221	NK-10N, Clamp <G/Q/W>			
92	29360807	Label, danger			
93	29361218	Label, laser <G/W/Q>			
94	29360811A	Label <G>			
95	29360687	Label, class 1 <G/W/Q>			
96	28175158A	Insulated plate <G/W/Q>			
L901	230908	△ TR-23-11-14, Core <D>			
	230907	△ TR-16-8-16, Core <G/W/Q>			

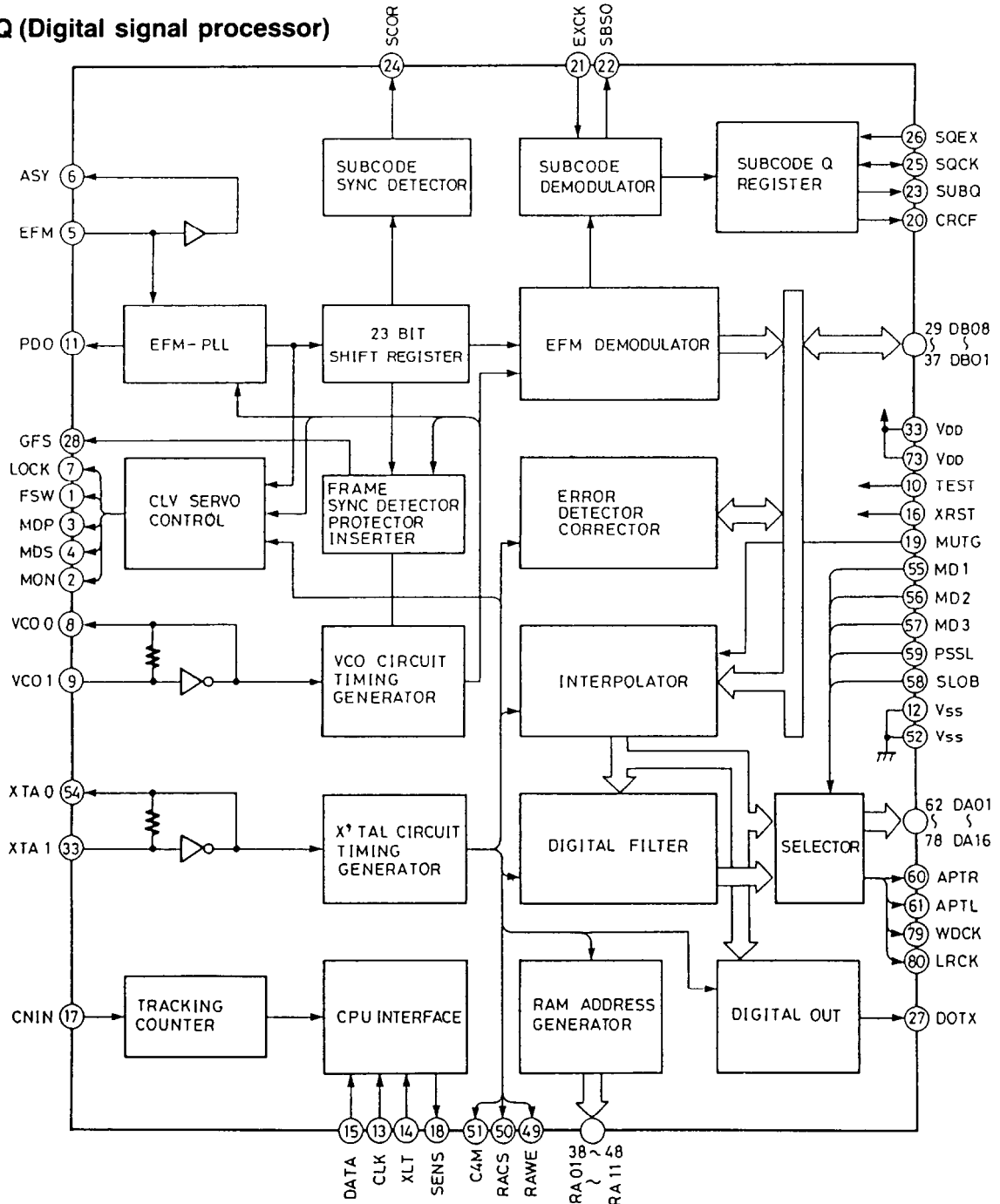
NOTE: <D>: Only 120V model  
 <G>: Only 220V model  
 <Q>: Only 240V model  
 <W>: Only Worldwide model

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

### LC3517AM-15 (RAM)



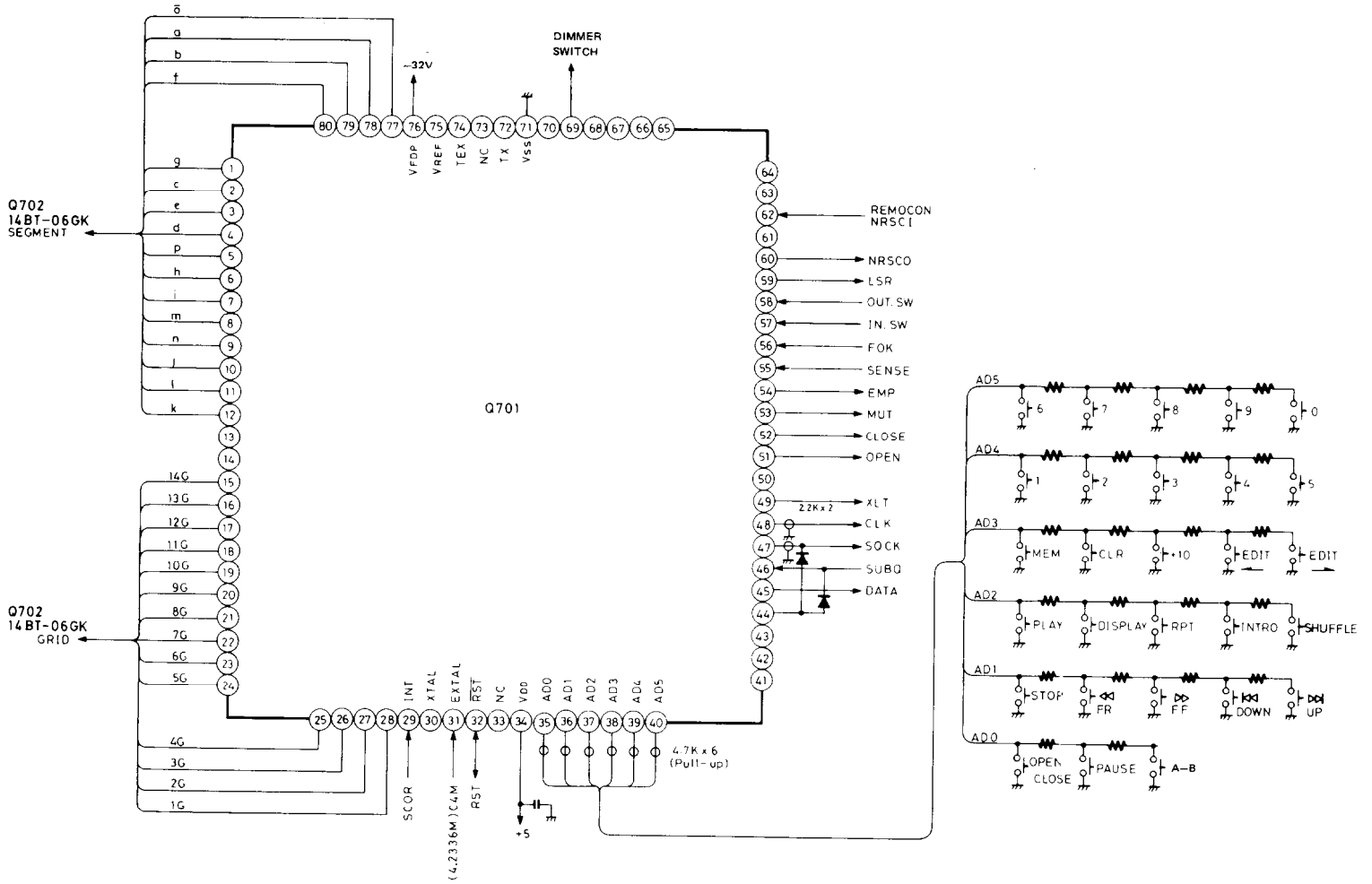
### CXD1125Q (Digital signal processor)



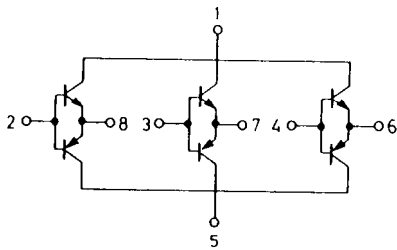
Pin No.	Symbol	Function	Pin No.	Symbol	Function
1	FSW	Time constant switching output terminal of output filter of spindle motor	49	RAWE	Write enable signal output to external RAM
2	MON	ON/OFF control output terminal of spindle motor	50	RACS	Chip selector signal output to external RAM
			51	C4M	Divider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



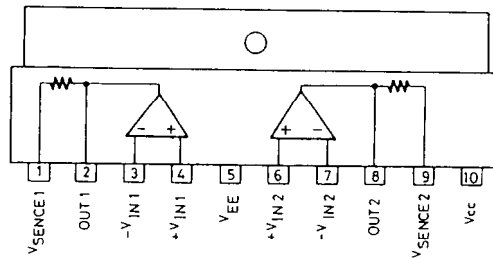
CX5058H-538QZ (Microprocessor)



STA341M-L (Transistor Array)



LA6510 (Power OP Amp)



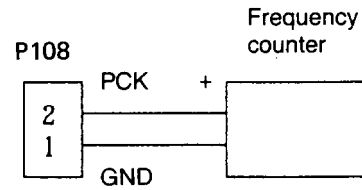
# ADJUSTMENT PROCEDURES

## Instruments required

Dual trace oscilloscope, Frequency counter, AF oscillator, Test disc (SONY YEDS-18), AC voltmeter, Jitter meter, and Socket P4(Part no. 25050138)

### 1. VCO frequency adjustment

Connect the frequency counter to terminal P108.  
Turn the power switch to ON.(No load the disc.)  
Adjust R154 until the frequency counter reading becomes  $4322 \pm 5\text{kHz}$ .



After adjustment, disconnect the frequency counter.

### 2. Focus offset adjustment

Load the test disc YEDS-18 on the tray and play the track 2.  
Connect the oscilloscope or jitter meter to terminal P106.

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

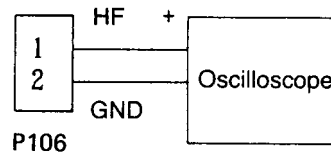
When the amount of jitter is broad, set R110 to mechanical center.

(Jitter meter)  
Adjust R110 until the jitter meter reading becomes minimum.(Less than 10ns.)

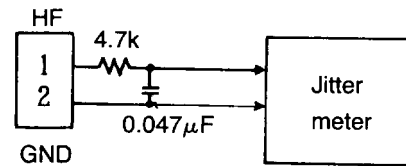
After adjustment, disconnect the oscilloscope or jitter meter.



Photo 1



Oscilloscope range  
Vertical : 0.5V/div.  
Horizontal : 0.2  $\mu\text{s}$ /div.  
AC



### 3. Tracking offset adjustment

Load the test disc YEDS-18 on the tray and play the track 2.  
Turn R132 to minimum position. (Counter clockwise)  
Connect the oscilloscope between pin 3 (TR) of P107 and TP101.(Ground)  
Adjust R108 until the center of tracking error signal on the oscilloscope becomes GND level.  
Turn R132 to the mechanical center.  
After adjustment, disconnect the oscilloscope.

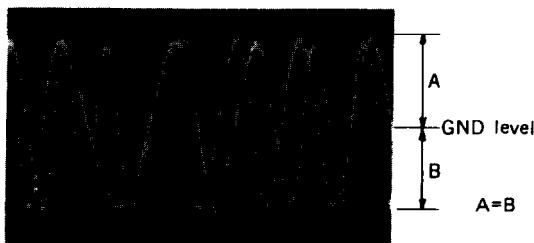
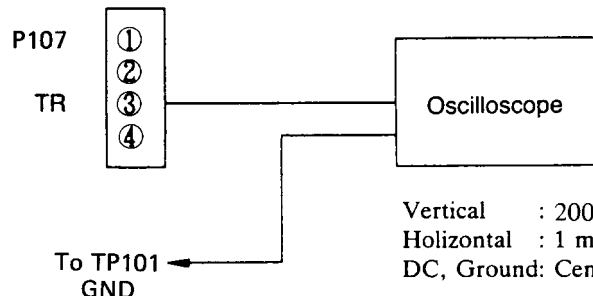


Photo 2



Vertical : 200mV/div.  
Horizontal : 1 ms/div.  
DC, Ground: Center

#### 4. Focus gain adjustment

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

Play the track 2 of test disc.

Connect the oscilloscope and the AF oscillator as shown below.

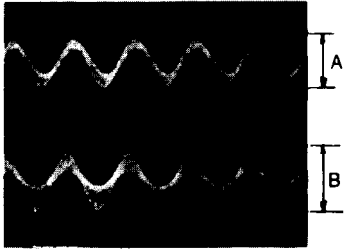


Photo 3

Adjust R122 until 800Hz components of channels 1 and 2 on oscilloscope become same level.

After adjustment, disconnect the AF oscillator and the oscilloscope.

#### 5. Tracking gain adjustment

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

Play the track 2 of test disc.

Connect the oscilloscope and the AF oscillator as shown below.

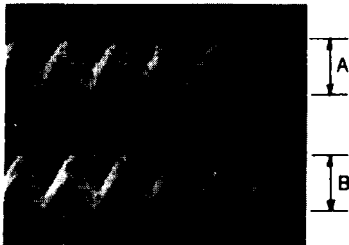
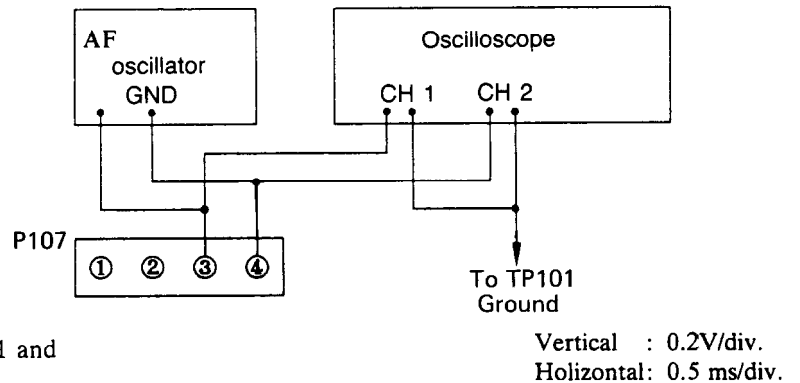
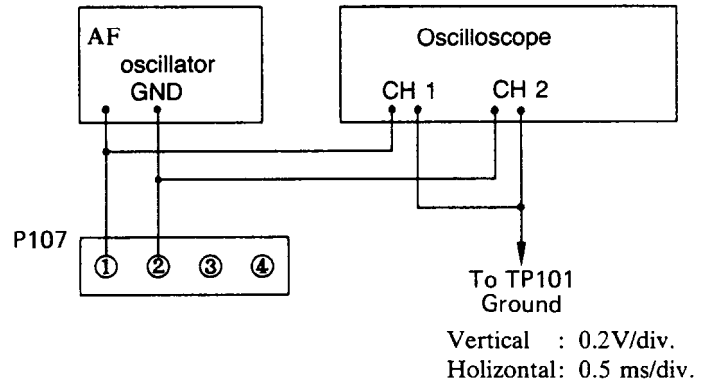


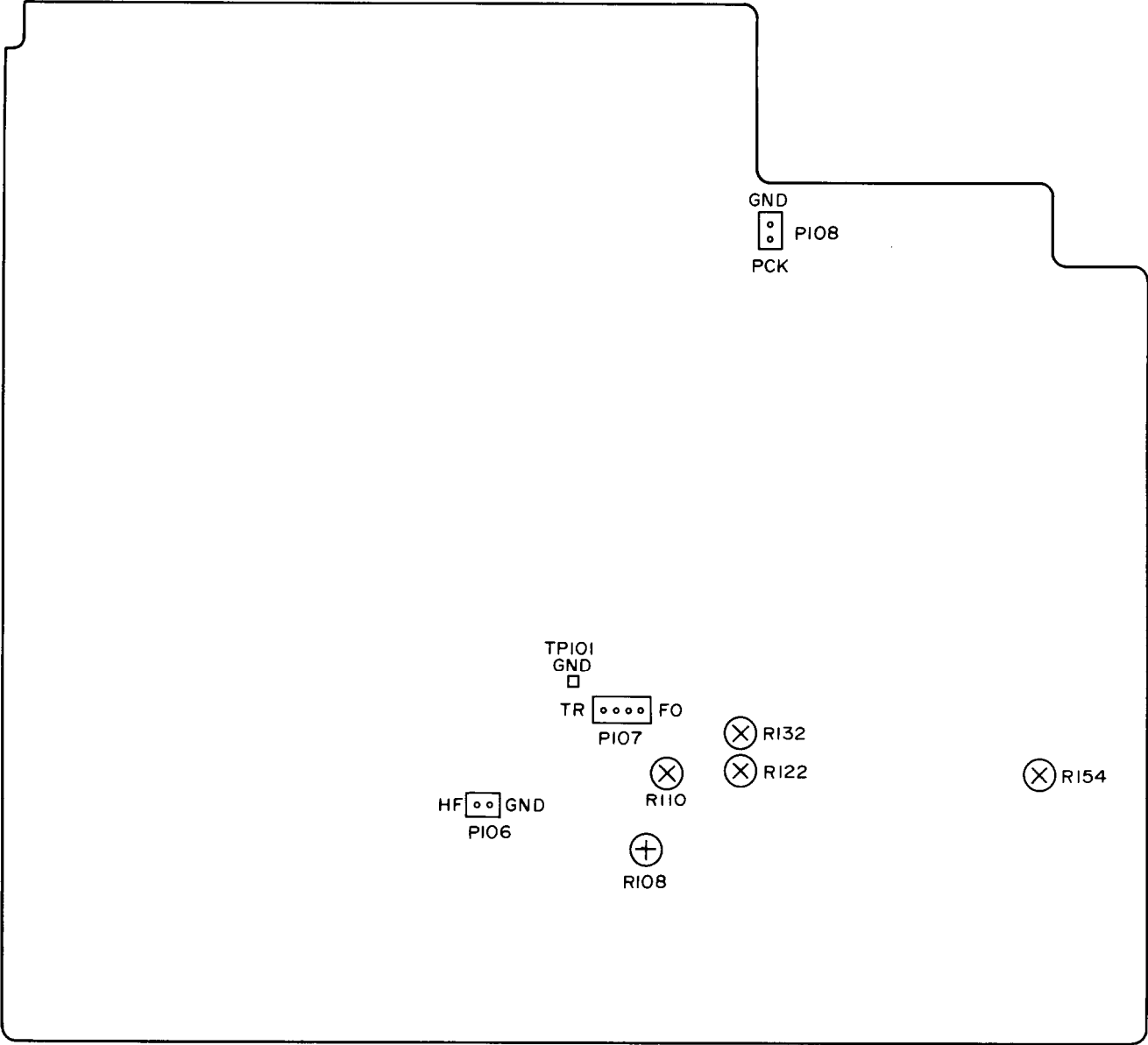
Photo 4

Adjust R132 until 1.2kHz components of channels 1 and 2 on oscilloscope become same level.

After adjustment, disconnect the AF oscillator and the oscilloscope.

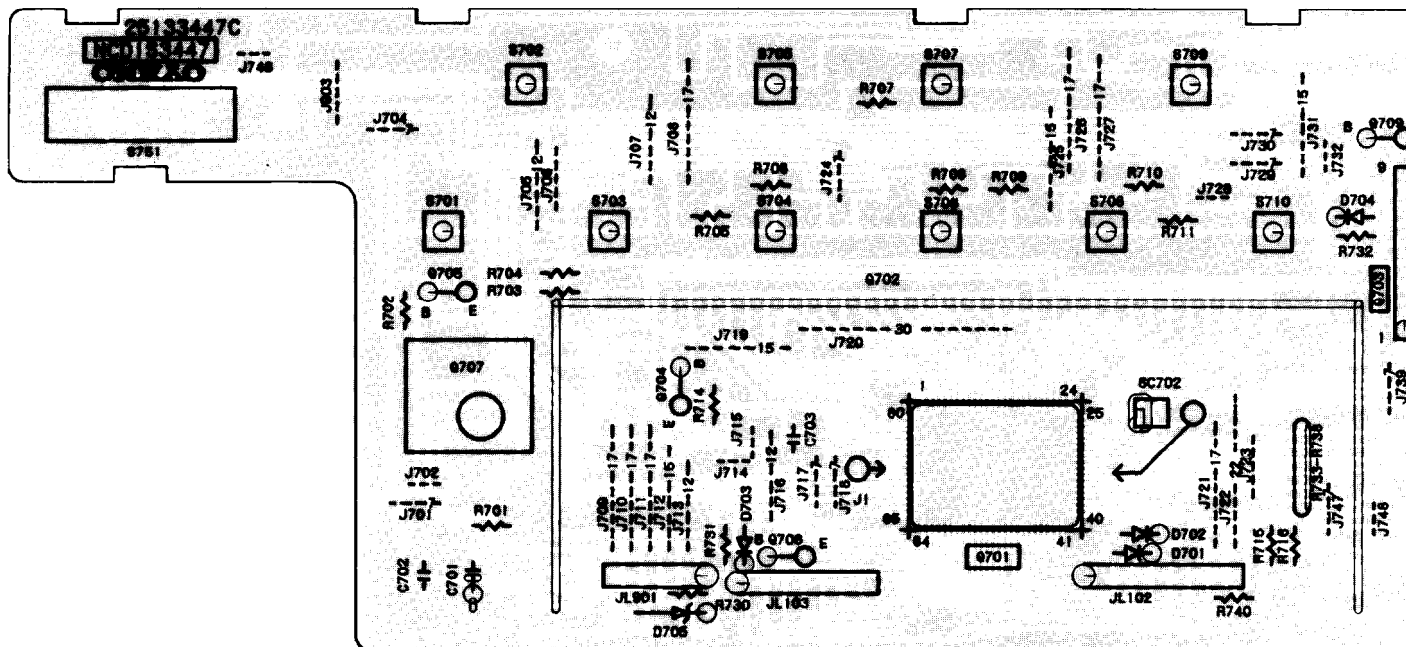
After adjustment, confirm that the center of tracking error signal becomes GND level.





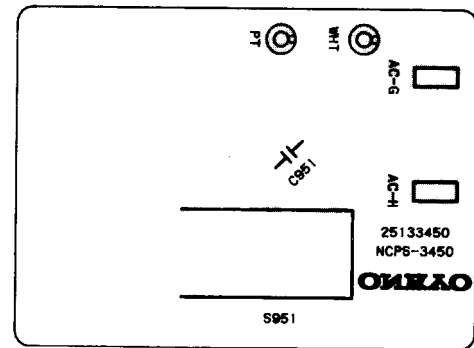
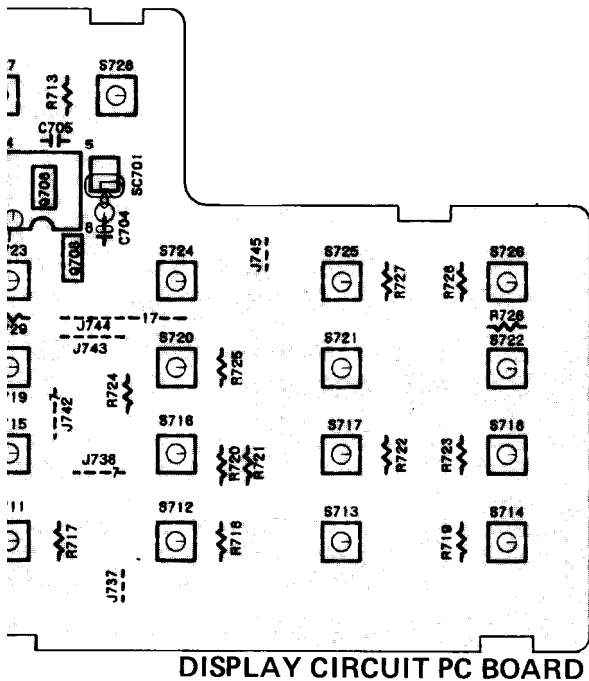
Adjustment point

# PRINTED CIRCUIT BOARD VIEW FROM BOTTOM SIDE



## MAIN CIRCUIT PC BOARD (NAAR-3926-1/1A)

CIRCUIT NO.	PART NO.	DESCRIPTION	CIRCUIT NO.	PART NO.	DESCRIPTION
	<b>ICs</b>			<b>X'tal</b>	
Q102	22240180	CXA1081S	X101	3010159	AT-38-169
Q104	22240263	CXA1082BS		<b>Coil</b>	
Q105	22240034	LA6510	L101	231023	NCH-1062
Q106	22240168	STA341M-L		<b>Ferrite beads</b>	
Q108	22240130	CXD1125Q	L102-L105	230906	BL02RN2-R62
Q109	22240032	LC3517AM-15	L107-L110	230906	BL02RN2-R62
Q115	22240018	M51943ASL		<b>Filters</b>	
Q116	22240321	YM3433	L106, L111	3030002	DSS-306-55B-101M
Q117	22240363	SM5860BR		<b>Capacitors</b>	
Q118	22240364	SM5827CP	C101	354721019	100 $\mu$ F, 6.3V, Elect.
Q127-Q130	222902	NJM5532D-D	C102	371124724	4700pF 5%, 50V, Mylar
Q131	22240201	NJM4565D-B	C104	371121034	0.01 $\mu$ F 5% 50V, Mylar
Q132	222887	NJM4556S	C105, C106	354721019	100 $\mu$ F, 6.3V, Elect.
Q901	222780052	78M05	C107, C108	371121034	0.01 $\mu$ F 5%, 50V, Mylar
Q902	222790053	79L05	C109	371124724	4700pF 5%, 50V, Mylar
Q903	222780155MIT	M5F78M15L	C110	371123324	3300pF 5%, 50V, Mylar
Q904	222790155MIT	M5F79M15L	C111	371121034	0.01 $\mu$ F 5%, 50V, Mylar
Q906	222780053	78L05	C112, C115	354721019	100 $\mu$ F, 6.3V, Elect.
	<b>Transistors</b>		C121	371121024	1000pF 5%, 50V, Mylar
Q101, Q905	2211503 or 2211504	2SA950-O or 2SA950-Y	C122, C123	371121044	0.1 $\mu$ F 5%, 50V, Mylar
Q103, Q110	2213290	DTC114ES	C124	371121034	0.01 $\mu$ F 5%, 50V, Mylar
Q111, Q121	2211454 or 2211455	2SA1015-GR or 2SA1015-GR	C125	354780479	4.7 $\mu$ F, 50V, Elect.
Q112, Q126	2213290	DTC114ES	C131	371122234	0.022 $\mu$ F 5%, 50V, Mylar
Q113, Q907	2212600	DTA124ES	C132	371121024	1000pF 5%, 50V, Mylar
Q119, Q120	2212524	2SK363-GR	C133	371121044	0.1 $\mu$ F 5%, 50V, Mylar
Q123, Q124	2211705 or 2211706	2SD655-E or 2SD655-F	C138	354780109	1 $\mu$ F, 50V, Elect.
	<b>Photo coupler</b>		C139	357444709	47 $\mu$ F, 16V, Elect.
Q133	24120031	TOTX178	C146	354744709	47 $\mu$ F, 16V, Elect.
	<b>Diodes</b>		C147	357480109	1 $\mu$ F, 50V, Elect.
D101-D106	223063	ISS133	C148	371123334	0.033 $\mu$ F 5%, 50V, Mylar
D109	223163	ISS133	C149	354782299	0.22 $\mu$ F, 50V, Elect.
D901	22380013	RDF02M	C150	374724744	0.47 $\mu$ F 5%, 50V, TA
D902-D905	22380029	HER102	C153, C154	354744709	47 $\mu$ F, 16V, Elect.
D906	223163	ISS133	C155, C157	354721019	100 $\mu$ F, 6.3V, Elect.
D907	224453302	MTZ33B	C159	354721019	100 $\mu$ F, 6.3V, Elect.
D908	224450512	MTZ5.1B	C164	354780479	4.7 $\mu$ F, 50V, Elect.
D909, D910	223163	ISS133	C165	354724719	470 $\mu$ F, 6.3V, Elect.
			C166	354782299	0.22 $\mu$ F, 50V, Elect.
			C174	354721019	100 $\mu$ F, 6.3V, Elect.
			C177	371121044	0.1 $\mu$ F 5%, 50V, Mylar



CIRCUIT NO.	PART NO.	DESCRIPTION
C178,C179	354744709	47 $\mu$ F,16V,Elect.
C180,C184	354721019	100 $\mu$ F,6.3V,Elect.
C201,C205	354721019	100 $\mu$ F,6.3V,Elect.
C203	354782219	220 $\mu$ F,.50V,Elect.
C206,C208	374722224	2200pF 5% .50V,TF
C207,C209	354721019	100 $\mu$ F,6.3V,Elect.
C210,C212	374722224	2200pF 5% .50V,TF
C211	354721019	100 $\mu$ F,6.3V,Elect.
C215-C218	373302214	220pF 5% .125V,PP
C219,C220	373301014	100pF 5% .125V,PP
C225-C228	373302214	220pF 5% .125V,PP
C229,C230	374721224	1200pF 5% .50V,TF
C231,C232	371124724	4700pF 5% .50V,Mylar
C233,C234	372121014	100pF 5% .50V,Styrole
C235,C236	372122014	200pF 5% .50V,Styrole
C237,C238	371122734	0.027 $\mu$ F 5% .50V,Mylar
C239,C240	371122224	2200pF 5% .50V,Mylar
C241,C242	374722224	2200pF 5% .50V,TF
C245-C248	391244707	47 $\mu$ F,16V,Elect.(MUSE)
C249,C250	391242207	22 $\mu$ F,16V,Elect.(MUSE)
C260	391241017	100 $\mu$ F,16V,Elect.(MUSE)
C261-C264	354742219	220 $\mu$ F,16V,Elect.
C265,C266	354744709	47 $\mu$ F,16V,Elect.
C267-C274	354742219	220 $\mu$ F,16V,Elect.
C279	354742219	220 $\mu$ F,16V,Elect.
C280,C281	354744709	47 $\mu$ F,16V,Elect.
C287	374722234	0.022 $\mu$ F 5% .50V,TF
C288	373734734	0.047 $\mu$ F 5% .100V,MKT
C911,C912	354762229	2200 $\mu$ F,35V,Elect.
C913	354782219	220 $\mu$ F,.50V,Elect.
C914,C917	354764709	47 $\mu$ F,35V,Elect.
C918	354780229	2.2 $\mu$ F,.50V,Elect.
C919	354744729	4700 $\mu$ F,16V,Elect.
C920	354742229	2200 $\mu$ F,16V,Elect.
C921,C922	354741029	1000 $\mu$ F,16V,Elect.
C923	354721019	100 $\mu$ F,6.3V,Elect.
C924	354724719	470 $\mu$ F,6.3V,Elect.

**Resistors**

R108	5210066	N06HR22KBD,Semi-fixed
R110	5210060	N06HR2.2KBD,Semi-fixed
R122,R132	5210066	N06HR22KBD,Semi-fixed

CIRCUIT NO.	PART NO.	DESCRIPTION
R154	5210058	N06HR1KBD,Semi-fixed
<b>Plugs</b>		
P101	25055152	NPLG-8P136
P102	25055153	NPLG-9P137
P103	25055148	NPLG-4P132
P104	25055149	NPLG-5P133
P106,P108	25055038	NPLG-2P29
P107	25055045	NPLG-4P33
P110	25055139	NPLG-9P123
P111	25055146	NPLG-2P130
<b>Terminals</b>		
P105	25045172	HSJ1003-01-020,RI output/input
P109	25045267	NPJ-4PDBL134,Output
<b>Sockets</b>		
JS101	25050273	NSCT-9P101
JS102	25050272	NSCT-8P100
JS103	25050270	NSCT-6P98
<b>Radiator</b>		
	27160176	RAD56
<b>Screw</b>		
	82143006	3P+6FN(BC),Pan head
<b>Holder</b>		
	27190751	
<b>IC protectors</b>		
QF901,QF902	252112	$\Delta$ ICP-N15<G>

NOTE: &lt;G&gt;: Except 120V model

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

# PRINTED CIRCUIT BOARD – PARTS LIST

## VOLUME PC BOARD(NAAF-3927-1)

CIRCUIT NO.	PART NO.	DESCRIPTION
	<b>Resistor</b>	
R451	5104247	N16RGM20KB25F,Variable
	<b>Plug</b>	
P451	25055146	NPLG-2P130
	<b>Socket</b>	
SC451	2009990077	NSAS-9P0114

## HEADPHONE TERMINAL PC BOARD(NAAF-3928-1)

CIRCUIT NO.	PART NO.	DESCRIPTION
P451	25045139	HSJ-0540-01-010

## DISPLAY CIRCUIT PC BOARD(NADIS-3447-5)

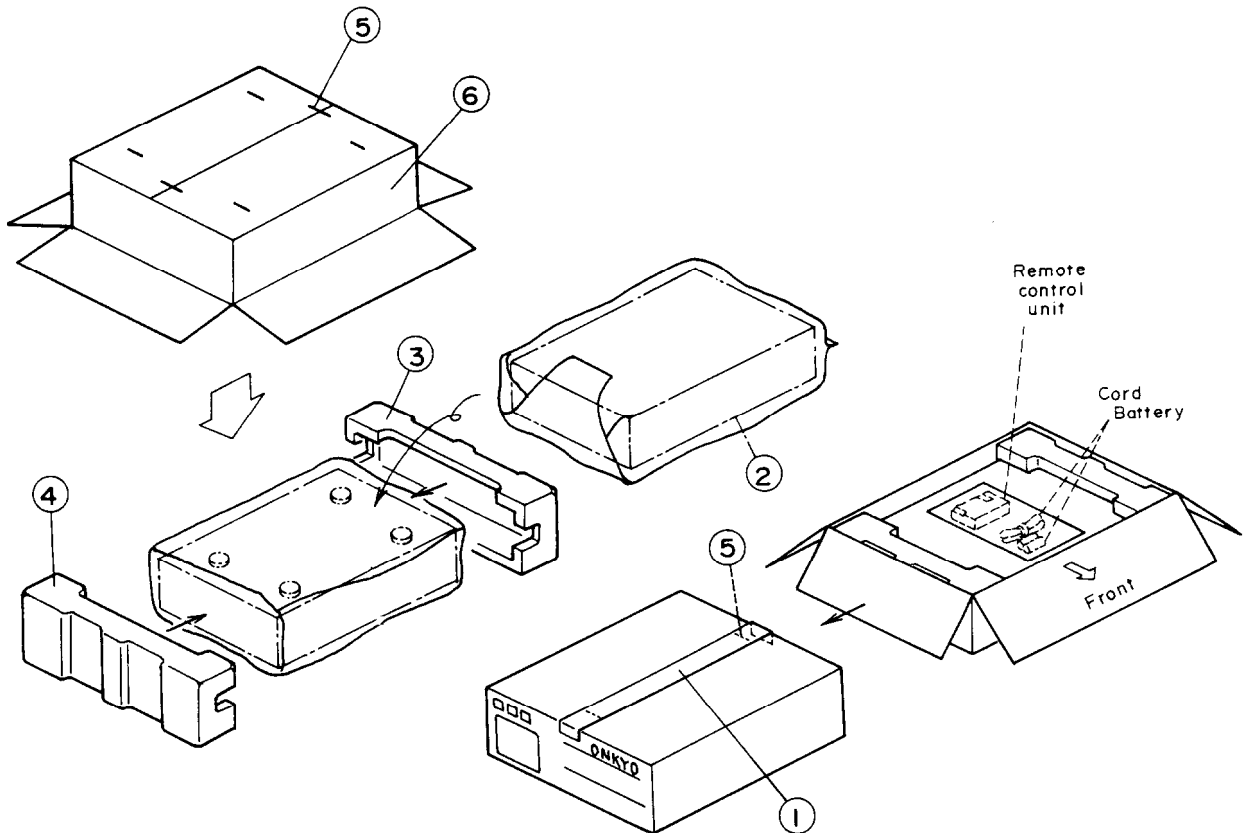
CIRCUIT NO.	PART NO.	DESCRIPTION
	<b>ICs</b>	
Q701	22240292	CXP5058H-538QZ
Q703	22240173	LC6527H-3722
Q708	222963	LB1630
	<b>Sensor</b>	
Q707	24130003	GP1U50XS,For remote control
	<b>Transistors</b>	
Q704	2212132 or 2212133	2SC2021-R or 2SC2021-S
Q706,Q709	2212600	DTA124ES
	<b>FL tube</b>	
Q702	212046	14-BT-06GK
	<b>Diodes</b>	
D701-D704	223163	
D705	224450562 or 224650562	MTZ5.6B or HZ5.6EB2
	<b>Capacitors</b>	
C701	354721019	100 $\mu$ F,6.3V,Elect.
C704	355744709	47 $\mu$ F,16V,Elect.
	<b>Resistor</b>	
R733	49163472406	4.7kohmk $\times$ 6.1/10W,Network
	<b>Switches</b>	
S701-S728	25035548	NPS-111-S510
S751	25065384	NSS-23146
	<b>Sockets</b>	
SC701	2000893	NASA-4P849
SC702	2000732	NASA-4P688
	<b>Holder</b>	
	27190567B	

## POWER SUPPLY PC BOARD (NAPS-3450-5)

CIRCUIT NO.	PART NO.	DESCRIPTION
C951	3500065A	$\Delta$ DE7150FZ103P AC400V/125V,Capacitor IS
S951	25035558	$\Delta$ NPS-111-L520P,Power switch

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

# PACKING VIEW



REF.NO.	PART NO.	DESCRIPTION	
1	29110071-1	50×600mm, Damplon tape	
2	29100037A	500 × 650mm, Poly-vinyl bag	
3	29091304	Pad R	
4	29091303A	Pad L	
5	282301	Sealing hook	
6	29052085	Master carton box	
<b>Accessory bag ass'y</b>			
<b>-120V models-</b>			
	2010097	Connection cord	<b>-220/240V models-</b>
	24140121	RC-121C, Remote control unit	2010097
	3010054	UM-3, Two batteries	24140121
	29341537	Instruction manual	3010054
	29100097	350 × 250mm, Poly-vinyl bag	29341539
	2010200	Connection cord for remote control	29100097
	29365019	Warranty card (Only U.S.A. model)	29100097
	29358002J	Service station list (Only U.S.A. model)	2010200
	29341539	Instruction manual(Only Canadian model)	25055040
			<b>-Worldwide models-</b>
			2010097
			24140121
			3010054
			29341539
			29100097
			2010200
			25055040

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