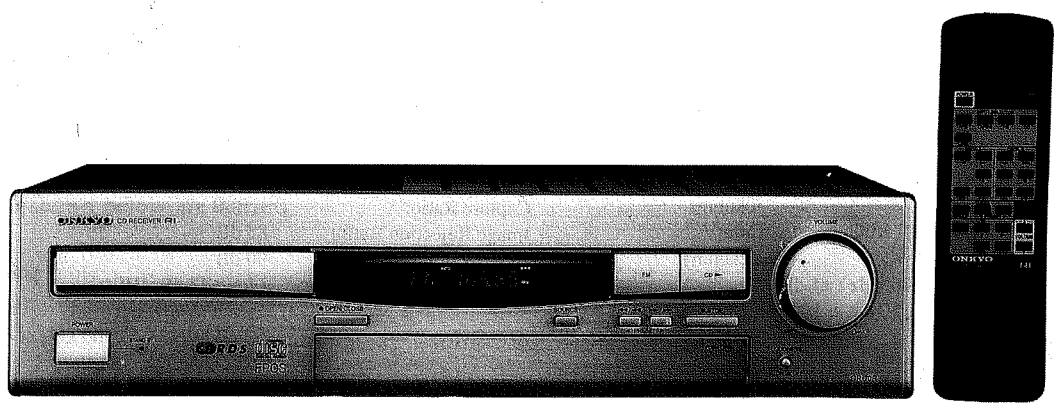


0365

0365

ONKYO® SERVICE MANUAL

COMPACT DISC RECEIVER MODEL CR-70R



Black and Silver models

UP	230V AC, 50Hz
UW	120/220V AC, 60/50Hz

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 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.

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SPECIFICATIONS

AMP SECTION

Power Output:	2 × 50 watts at 4 ohms 1 kHz DIN 2 × 37 watts at 8 ohms 1 kHz DIN
Continous Power output:	30 watts per channel min. RMS. at 8 ohms both channels driven from 20 Hz to 20kHz with no more than 0.08% THD.
Dynamic Power:	2 × 84 watts at 2 ohms 2 × 73 watts at 3 ohms 2 × 67 watts at 4 ohms 2 × 43 watts at 8 ohms
Total Harmonic Distortion:	0.08 % at Rated Power
IM Distortion:	0.08 % at Rated Power
Damping Factor:	50 at 8 ohms
Sensitivity and	TAPE-1, 2 LINE PLAY: 150mV , 50kohms
Impedance:	TAPE-1, 2 REC: 150mV , 2.2kohms
Frequency Response:	20 to 30,000 Hz : ±1 dB
Tone Control:	BASS : ± 10 dB at 100 Hz TREBLE : ± 10 dB at 10,000 Hz LOUDNESS: +7dB at 70Hz +5dB at 10kHz
Single to Noise Ratio:	LINE/TAPE: 100 dB (IHF A)
Muting:	∞ dB

CD SECTION

Signal readout system:	Optical non-contact
Reading rotation:	About 500 – 200 r.p.m. (constant linear velocity)
Linear velocity:	1.2 – 1.4 m / s
Error correction system:	Cross Interleave Read Solomon code
D / A converter:	1 bit
Digital filter:	352.8 kHz 8 times over sampling
Number of channels:	2 (stereo)
Frequency response:	5 Hz – 20 kHz

FM Tuner section

Tuning Range:	87.50 to 108.00 MHz (50 kHz steps)
Usable Sensitivity:	Mono 12.4 dBf, 1.2 μV (75 ohms IHF) 1.2 μV (75 ohms DIN) Stereo 19.2 dBf, 2.5μV (75 ohms IHF) 25.0μV (75ohms DIN)
50 dB Quieting:	Mono 18.2 dBf, 2.2μV (75 ohms)
Sensitivity:	Stereo 38.2 dBf, 22.0 μV (75 ohms)
Capture Ratio:	1.5 dB
Image Rejection Ratio:	85 dB
IF Rejection Ratio:	90 dB
Signal-to-Noise Ratio:	Mono 73 dB, IHF Stereo 67 dB, IHF
Selectivity:	50 dB DIN (+ / – 300 kHz at 40 kHz Devi.)
AM Suppression Ratio:	50dB
Harmonic Distortion:	Mono 0.25 % Stereo 0.50 %
Frequency Response:	30 to 15,000 Hz (+ / – 1.5 dB)
Stereo Separation:	40 dB at 1,000 Hz 30 dB at 100 to 10,000 Hz
Stereo Threshold:	17.2 dBf, 2.0 μV (75 ohms)

General

Power supply:	European model : AC 230V , 50Hz Worldwide model: AC 120V/220V switchable , 50/60Hz
Dimensions (W×H×D) :	455 × 110 × 330 mm (17-15/16" × 4-5/10" × 13")
Weight:	7.8 kg (17.2 lbs)

Specifications and features are subject to change without notice.

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

PRECAUTIONS

1. Ground for the work-desk.
Place a conductive sheet such as a sheet of copper (with inpedance lower than 10MΩ) on the work-desk and place the set on the conductive sheet so that the chassis.
2. Grounding for the test equipment and tools.
Test equipments and toolings should be grounded in order that their ground level is the same the ground of the power source.

3. Grounding for the human body.
Be sure to put on a wrist-strap for grounding whose other end is grounded.
Be particularly careful when the workers wear synthetic fiber clothes, or air is dry.
4. Select a soldering iron that permits no leakage and have the tip of the iron well-grounded.
5. Do not check the laser diode terminals with the probe of a circuit tester or oscilloscope.

PROTECTION OF EYES FROM LASER BEAM DURING SERVICING

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

WARNING!!

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

LASER WARNING LABELS

The label shown below are affixed.

1. Warning lable
This label is located on the chassis.

Ⓐ

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.

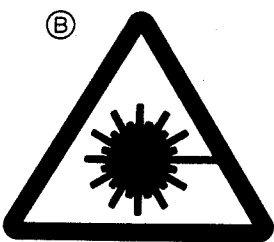
Ⓒ

VARNING
OSYNLIG LASERSTRÅLNING NÄR DENNA DEL ÄR ÖPPNAD OCH SPÄRREN ÄR URKOPPLAD. BETRÄKTA EJ STRÅLEN.
VARO!
AVATTAESSA JA SUOJALUKITUS OHITETTAESSA OLET ALTIINA NÄKYMÄTTÖMÄLLE LASERSÄTEILYLLE. ÄLÄ KATSO SÄTEESEEN.
ADVARSEL: USYNLIG LASERSTRÅLING VED ÅBNING, NÅR SIKKERHEDSAF-BRYDER ER UDE AF FUNKTION. UNDGÅ UDSÆTTELSE FOR STRÅLING.
ADVARSEL
USYNLIG LASERSTRÅLING NÄR DEKSEL ÄPNES OG SIKKERHEDSLÅS BRYTES. UNNGÅ EKSPONERING FOR STRÅLEN.

- Ⓐ : Danger label
- Ⓒ : Only 230V model

Laser Diode Properties

- Material: GaAlAs
- Wavelength: 760 ~ 800 nm
- 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 rear panel.

"CLASS 1 LASER PRODUCT"

LUOKAN 1 LASERLAITE
KLASS 1 LASER APPARAT

ADVARSEL

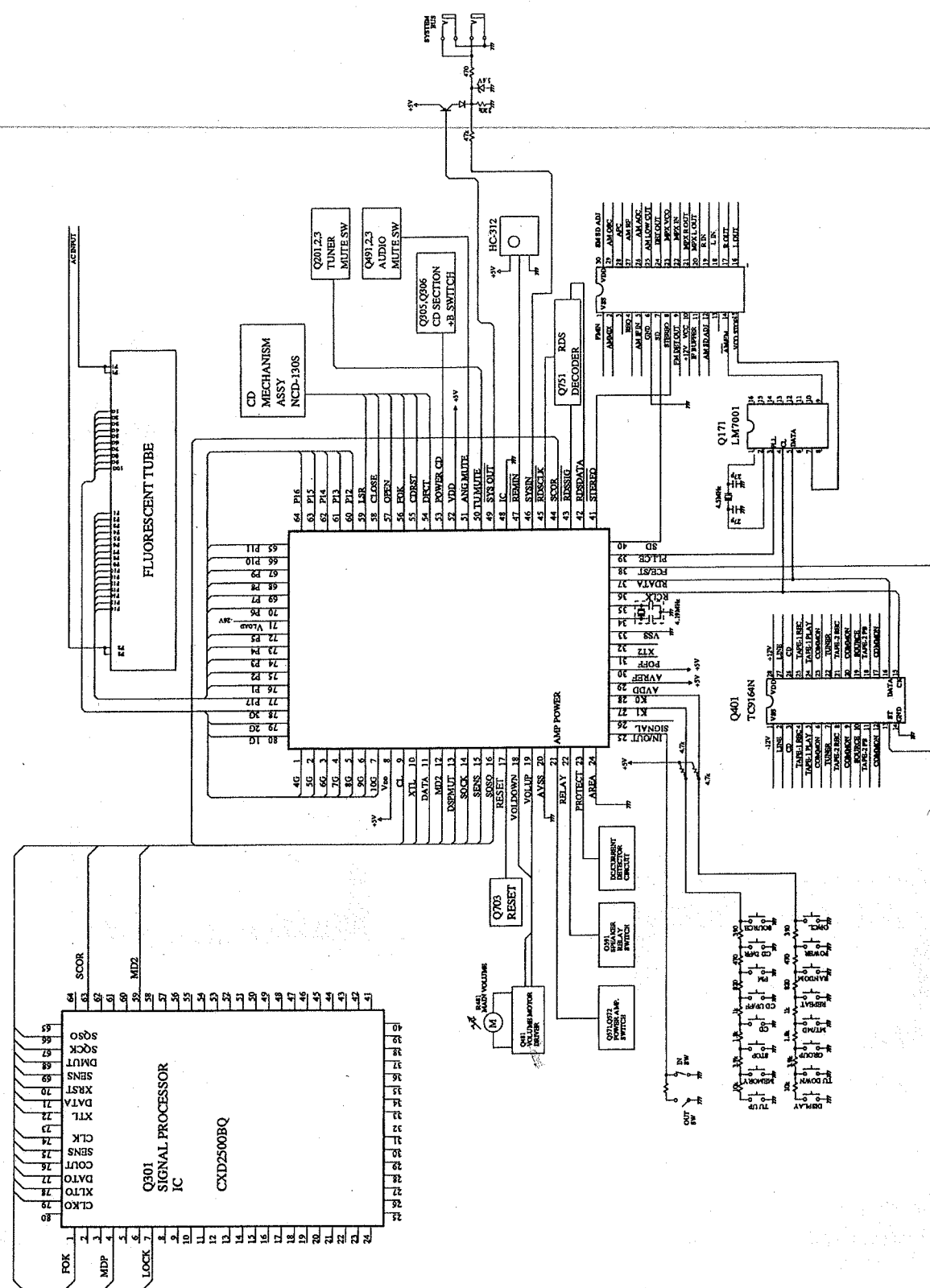
Denna mækning er anbragt på apparatets højre side og indikerer, at apparatet arbejder med laserstråler af klasse 1, hvilket betyder, at der anvendes laserstråler af svageste klasse, og at man ikke på apparatets yderside kan blive udsat for utilsadelig kraftig stråling.

APPARATET BØ/R KUN ÅBNES AF FAGFOLK MED SÉ RLIGT KENDSKAB TIL APPARATER MED LASERSTRÅLERI

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

VAROITUS! LAITTEEN KAYTTÄMINEN MUULLA KUIN TASSA KAYTTOOHJEESSA MAINTULLA TAVALLA SAATTAA ALTISTAA KAYTTAJAN TURVALLISUUSLUOKAN 1.YLITTAVALLE NÄKYMÄTTÖMÄLLE LASERSÄTEILYLLE.

μ PD78044AGF-123



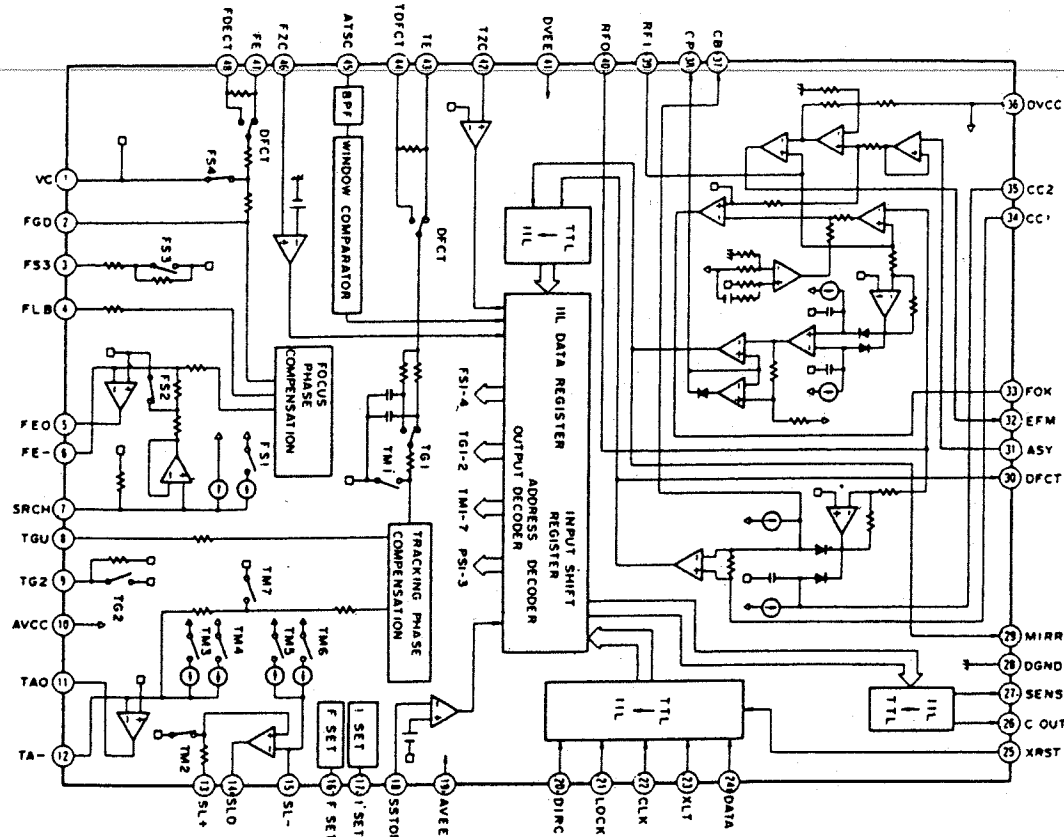
Pin No.	Function	Description
1~7	4G~10G	Grid output terminals.
8	VDD	Power supply terminal.
9	CCLK	Clock output terminal. Connect the terminal CCLK of signal processor IC.
10	XTL	Latch output terminal. Connect the terminal XLAT of signal processor IC.
11	CDDATA	Data output terminal. Connect the terminal DATA of signal processor IC.
12	MD2	Digital output control output terminal. Not used.
13	DSPMUT	Digital muting output terminal. Connect the terminal MUTE of signal processor IC.
14	SQCK	Clock output terminal for SQCK. Connect the terminal SQCK of signal processor IC.
15	SENS	Sense signal input terminal. Connect the terminal SENS of signal processor IC.
16	SQSO	Data input terminal from SQSO. Connect the terminal SQSO of signal processor IC.
17	RESET	System reset input terminal.
18	VOL DOWN	Volume control output terminals.
19	VOL UP	Refer the table 1.
20	AVSS	Ground terminal for D/A converter.
21	AMP POWER	Power amplifier switching signal output terminal.
22	RELAY	Speaker relay control output terminal.
23	PROTECT	Detection input terminal for protection circuit.
24	AREA	Initializing setting terminal for the Frequency range.
25	IN/OUT	Input terminal for tray open/close detection switches.
26	SIGNAL	Signal level input terminal for automatic memory.
27	K1	Operation key connection terminals.
28	K0	
29	AVDD	Analog power supply for D/A converter.
30	AVREF	Reference power supply for D/A converter.
31	POFF	Power stoppage detection terminal.
32	XT2	Crystal resonator connection terminal for sub system.
33	VSS	Ground terminal.
34	X1	Crystal resonator connection terminal for main system.
35	X2	Connect the 4.19MHz crystal resonator.
36	RCLK	Clock output terminal for PLL IC and the source selector IC.
37	RDATA	Data output terminal for PLL IC and the source selector IC.
38	FCE/ST	Strobe output terminal for the source selector IC and electric volume.
39	PLLCE	Chip enable terminal for PLL IC.
40	SD	Broadcast detection input terminal. L when received the broadcast more than muting level.
41	STEREO	Stereo broadcast detection input terminal. L when STEREO.
42	RDSDATA	Data input terminal from RDS decoder.
43	RDSSIG	RDS broadcast detection terminal.
44	SCOR	Sub code detection terminal. Connect the terminal SCOR of signal processor IC.
45	RDSSCK	Clock input terminal from RDS decoder.
46	SYSIN	System code input terminal.
47	REMIN	Remote control signal input terminal.
48	IC	Connect the ground terminal.
49	SYSOUT	System code output terminal.
50	TU MUTE	Muting output terminal for tuner section.
51	ANGMUT	Analog muting output terminal.
52	VDD	Positive power supply terminal.
53	CD POWER	Power supply terminal for CD mechanism.
54	DEFECT	Defect output pin for CD mechanism.
55	CD RESET	Reset output terminal for CD mechanism.
56	FOK	FOK input terminal from CD mechanism.
57	OPEN	CD tray open control output terminal.
58	CLOSE	CD tray close control output terminal.
59	LSR	Optical pickup control output terminal.
71	VLOAD	Pull-down resistor connection terminal for FL tube controller.
60~70	P12~P6	Segment output terminals.
72~77	P5~P1,P17	Segment output terminals.
78~80	1G~3G	Grid output terminals.

Operation	VOLUP output	VOLDOWN output
Stop	H	H
VOL UP	H	L
VOL DOWN	L	H

Table 1

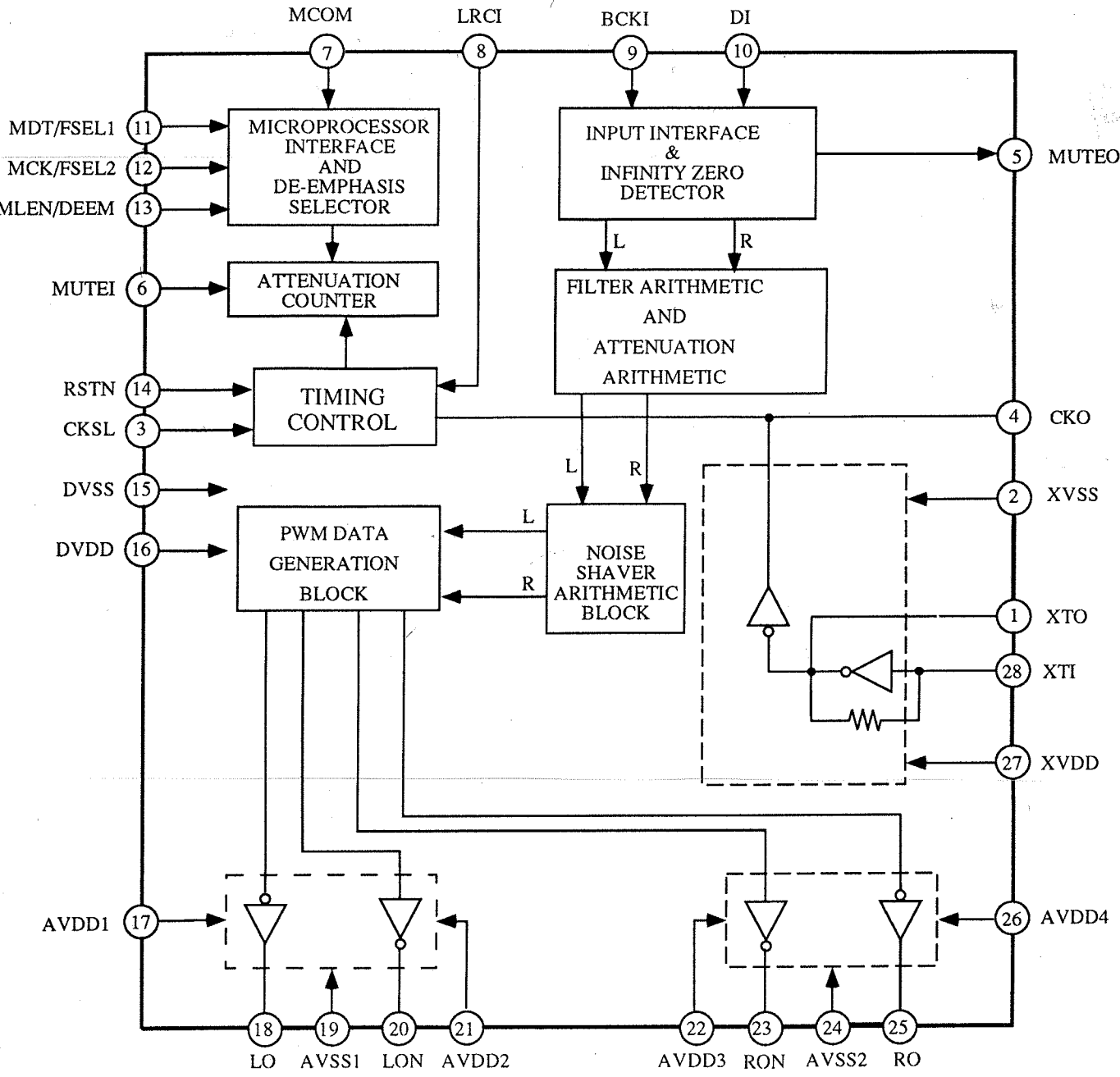
IC BLOCK DIAGRAM AND DESCRIPTIONS

CXA1372Q (Servo Signal Processor)



PIN NO.	SYMBOL	I/O	DESCRPTION	PIN NO.	SYMBOL	I/O	DESCRPTION
1	VC	I	Mid-point voltage input terminal.	23	XLT	I	Latch input terminal for microprocessor.
2	FGD	I	Connect the capacitor between FS3 and this pin when the high frequency gain focus servo is dropped.	24	DATA	I	Serial data input terminal for microprocessor.
3	FS3	I	Focus servo high frequency gain changeover input terminal.	25	XRST	I	Reset input terminal.Active low.
4	FLB	I	Input terminal for the low frequency boost of focus servo.	26	C.OUT	O	Signal output to count the track numbers.
5	FEO	O	Focus drive output terminal.	27	SENS	O	This terminal outputs FZC and SSTOP to according command from the microprocessor.
6	FE-	I	Inversion input terminal of focus amplifier.	29	MIRR	O	Mirror comparator output terminal.
7	SRCH	I	Time constant terminal to make the focus search waveform.	30	DFCT	O	Defect comparator output terminal.
8	TGU	I	Tracking high frequency changeover input terminal.	31	ASY	I	Auto asymmetry control input terminal.
11	TAO	O	Tracking drive output terminal.	32	EFM	O	EFM comparator output terminal.
12	TA-	I	Inversion input terminal of tracking amplifier.	33	FOK	O	Focus OK comparator output terminal.
13	SL+	I	No-inversion input terminal of sled amplifier.	34	CC1	O	Defect bottom hold output terminal.
14	SLO	O	Sled drive output terminal.	35	CC2	I	Defect bottom hold input terminal from CC1.
15	SL-	I	Inversion input terminal of sled amplifier.	37	CB	I	Defect bottom hold capacitor connection terminal.
16	FSET	I	Peak setting input of phase correction of focus tracking.	38	CP	I	Mirror hold capacitor connection terminal.
17	ISET	I	This terminal is flowed the current so that the focus search,tracking jump,and sled kick height is decided.	39	RFI	I	RF summing amplifier input terminal.
18	SSTOP	I	Inner switch selection input terminal.	40	RFO	O	RF summing amplifier output terminal.
20	DIRC	I	This terminal is used when track jump.	42	TZC	I	Tracking zero-cross comparator input terminal.
21	LOCK	I	The sled runaway prevention circuit operates at the low level.	43	TE	I	Tracking error input terminal.
22	CLK	I	Serial data transfer clock input from microprocessor.	44	TDFCT	I	Capacitor connection terminal for time constant when defect.
				45	ATSC	I	Window comparator input terminal for ATSC detection.
				46	FZC	I	Focos zero-cross comparator input terminal.
				47	FE	I	Focus error input terminal.
				48	FDFCT	I	Capacitor connection terminal for time constant when defect.

SM5872CN (DA CONVERTER)

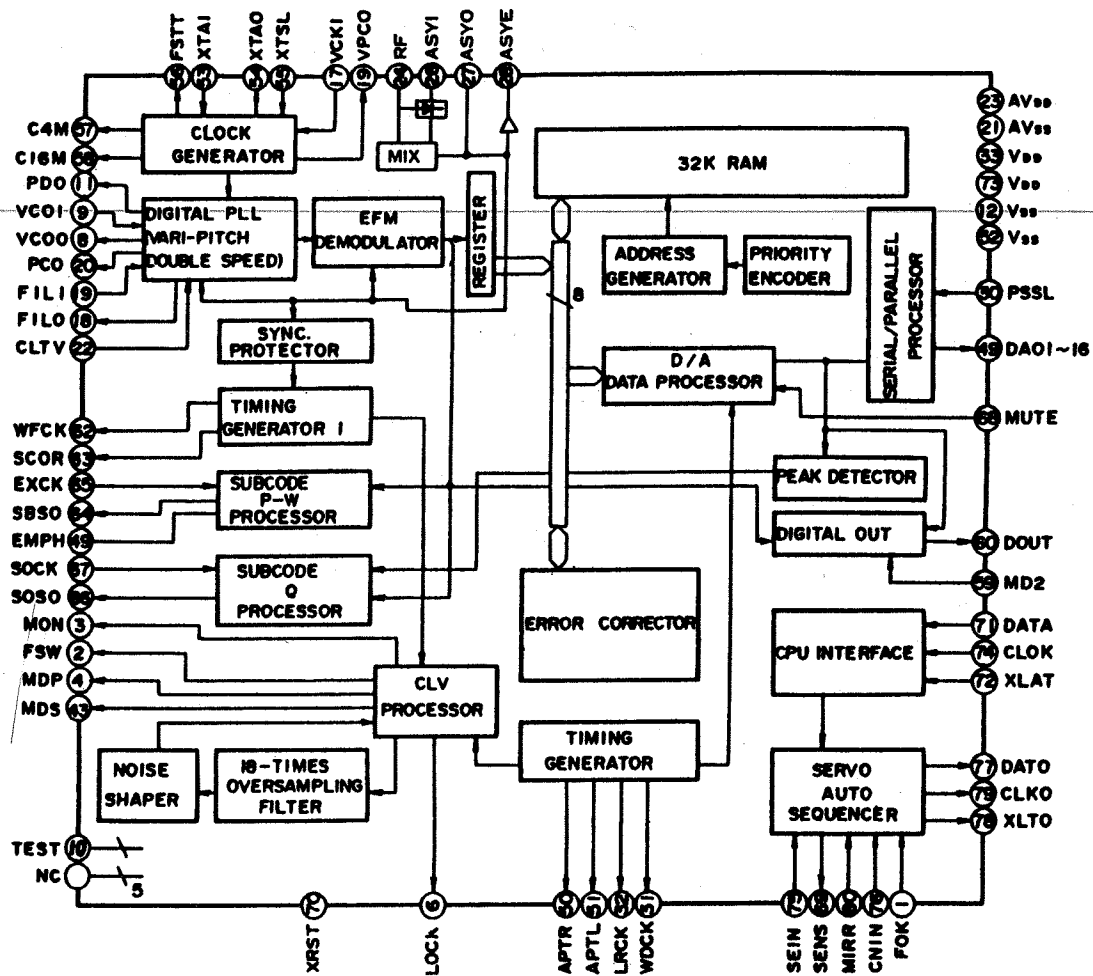


Pin No.	Terminal	I/O	Description	Pin No.	Terminal	I/O	Description
1	XTO	O	Resonator section output pin	28	XTI	I	Resonator section input pin:384fs
2	XVss		Ground for resonator system	27	XVDD		Power supply for resonator section
3	CKSL	I		26	AVDD4		Power supply for analog section
4	CKO	O	Output clock of resonator section:384fs	25	RO	O	PWM output pin of right channel
5	MUTEO	O	Infinity zero detector output	24	AVSS2		Ground pin for analog section
6	MUTEI	I	Muting input	23	RON	O	PWM output pin of right channel
7	MCOM	I	Interface switching control	22	AVDD3		Power supply for analog section
8	LRCI	I	Sampling rate clock for input data:H=L ch.L=R ch.	21	AVDD2		Power supply for analog section
9	BCKI	I	Bit clock input for input data	20	LON	O	PWM output pin of left channel
10	DI	I	Input data	19	AVSS1		Ground pin for analog section
11	MDT/FSEL1*	I	Microprocessor interface data when MCOM is H.	18	LO	O	PWM output pin of left channel
12	MCK/FSEL2*	I	Microprocessor interface clock when MCOM is H.	17	AVDD1		Power supply for analog section
13	MIEN/DEEM*	I	Microprocessor interface latch enable when MCOM is H	16	DVDD		Power supply for digital section
14	RSTN		System reset at the low level.	15	DVSS		Ground pin for digital section

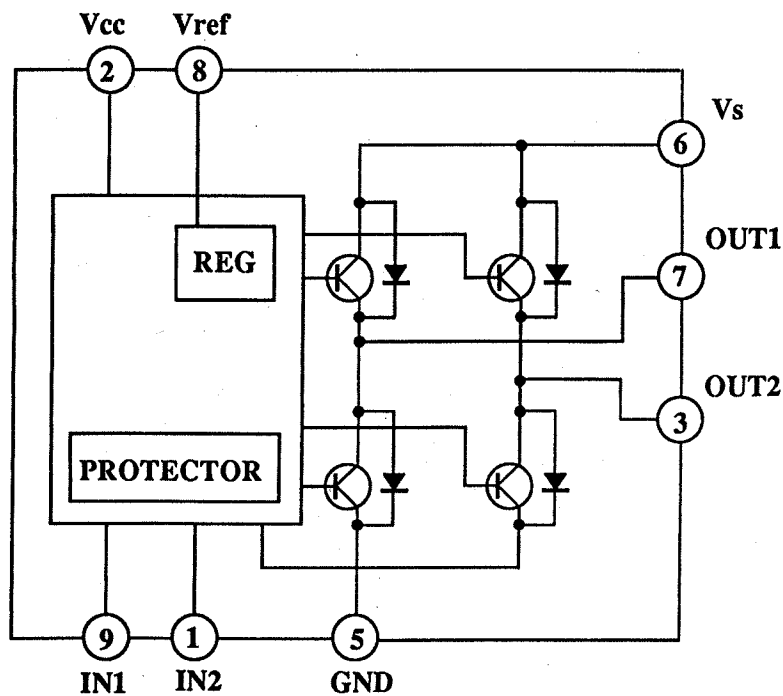
*NOTE:MCOM=L		FSEL2	
FSEL1	L	H	
L	44.1kHz	48.0kHz	
H	(44.1kHz)	32.0kHz	

#13: MCOM=L
DEEM:De-emphasis control

CXD2500BQ (Digital Signal Processor)



TA7291 (VOLUME MOTOR DRIVER)



INPUT		OUTPUT		MODE
IN1	IN2	OUT1	OUT2	
0	0	∞	∞	STOP
1	0	H	L	CW/CCW
0	1	L	H	CCW/CW
1	1	L	L	BRAKE

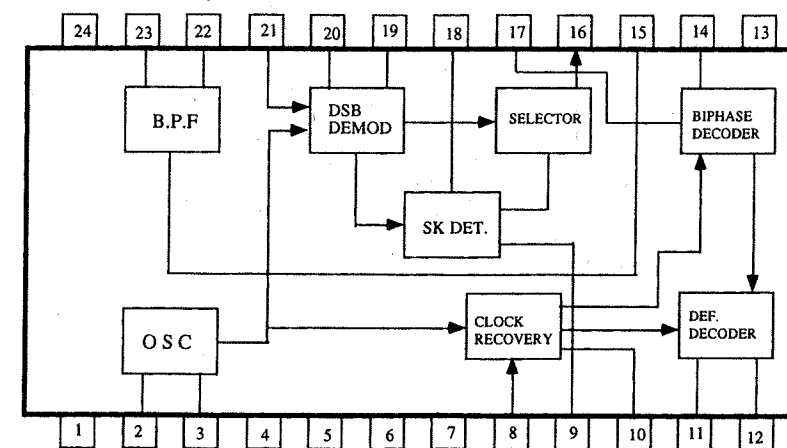
CCW:Counter clockwise direction
CW:Clockwise direction

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

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

Note: SSP:IC101 CXA1372Q

μPC1346CS (RDS DECODER)

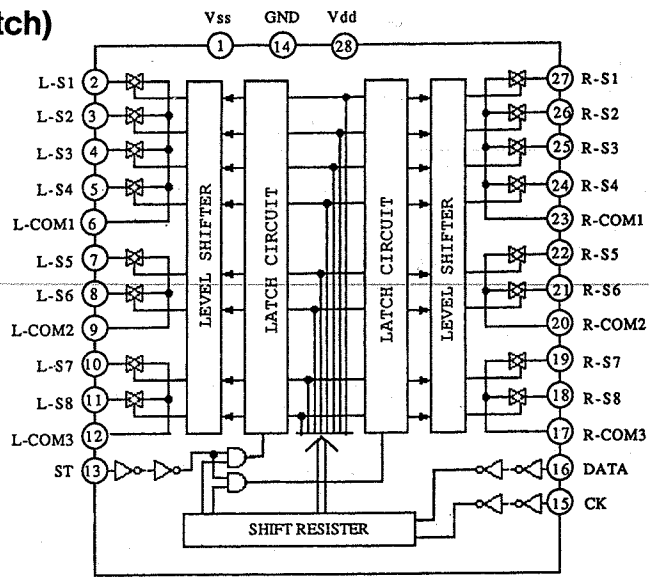


Pin No.	Terminal	Description
1	XOUT	Connect the 7.2MHz crystal resonator.
2	XIN	
3	CE	Chip enable terminal. Connect to the terminal PLLCE1 of microprocessor.
4	CL	Serial clock input terminal. Connect to the terminal PLLCL of microprocessor.
5	DATA	Serial data input terminal. Connect to the terminal PLLDATA of microprocessor.
6	SYN	Not used.
7	$\overline{\text{SAT/CANLE}}$	Power source control terminal for DSR. Cable at the high level and Satellite at low.
8	LPF	LPF selector output.
9	ANT	Antenna selector output. A at high level and B at low level.
10	AMIN	AM local oscillator input terminal.
11	FMIN	FM local oscillator input terminal.
12	VDD1	Power source terminal for back-up.
13	VDD2	Power source terminal.
14	PD1	Phase comparator output
15	PD2	Phase comparator output
16	Vss	Ground terminal

[illegible]

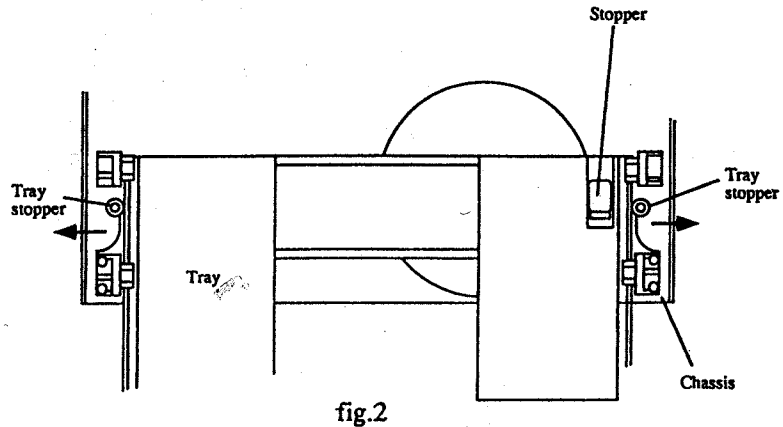
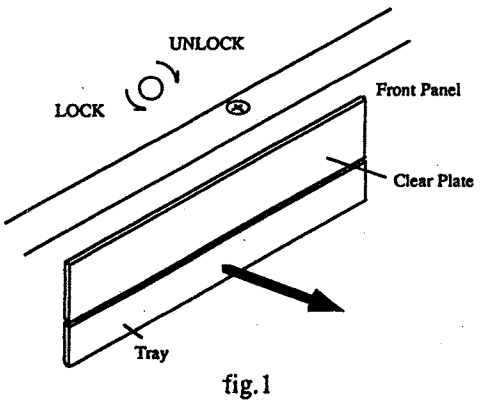
No.	Terminal Descriptions	No.	Terminal Descriptions
1	FM IF amplifier input terminal	13	Pilot filter and monaural selector terminal
2	Power supply terminal	14	FM Multiplex input terminal
3	FM tuning level adjustment terminal	15	AM detector signal input terminal
4	Ground terminal	16	FM/AM detector signal output terminal
5	FM discriminator terminal	17	AM AGC terminal
6	Tuning indicator terminal	18	AM IF input terminal
7	Stereo indicator terminal	19	AM mixer output terminal
8	IF request and Muting terminal	20	AM antenna terminal
9	IF signal terminal	21	FM band width adjustment terminal
10	Right channel output terminal	22	AM local oscillator connection terminal
11	Left channel output terminal	23	Reference voltage terminal
12	PLL filter/AM/FM band selector terminal	24	AM local oscillator output terminal

TC9164N (Analog Switch)

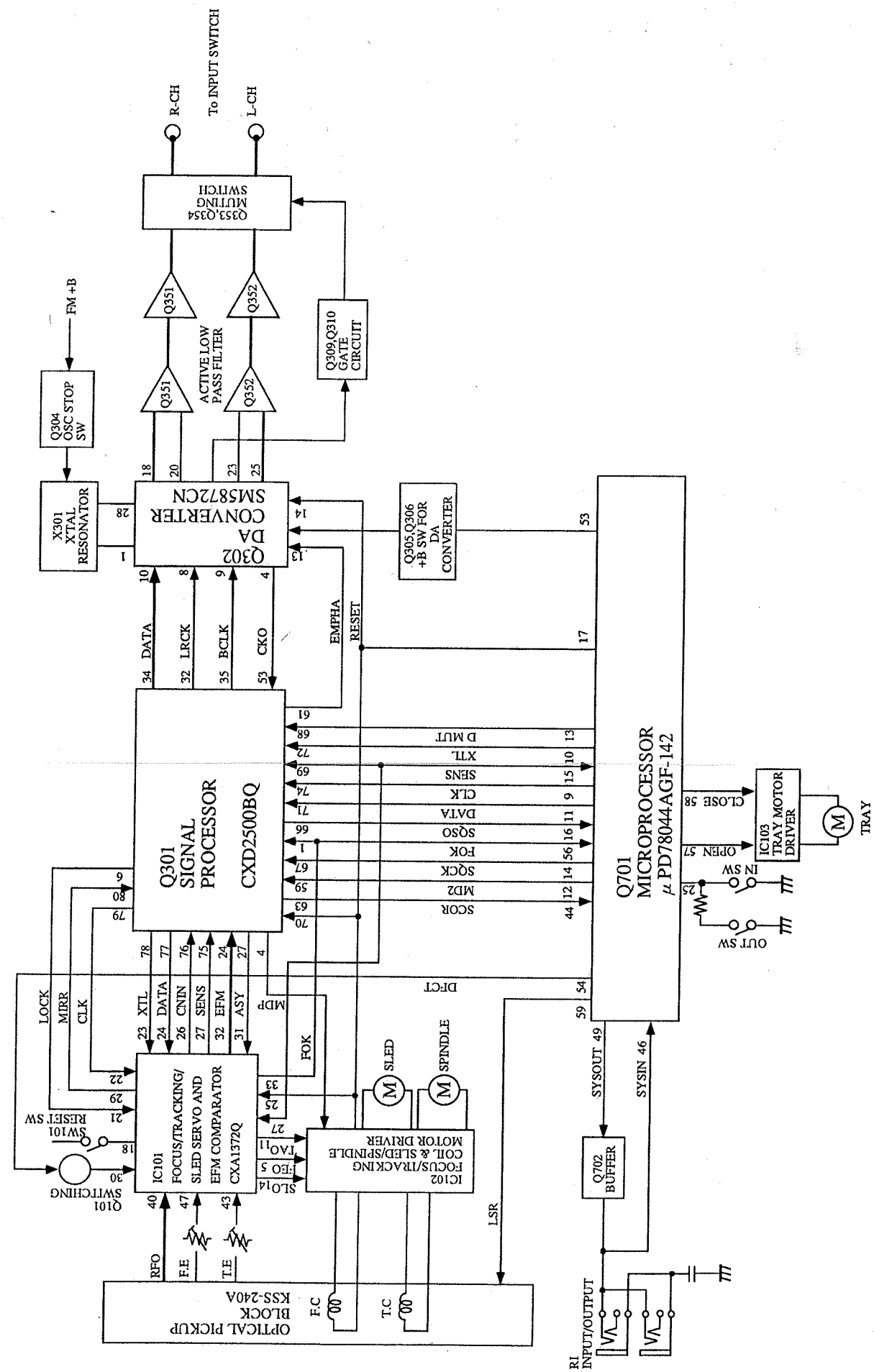


REMOVEMENT OF TRAY ASS'Y

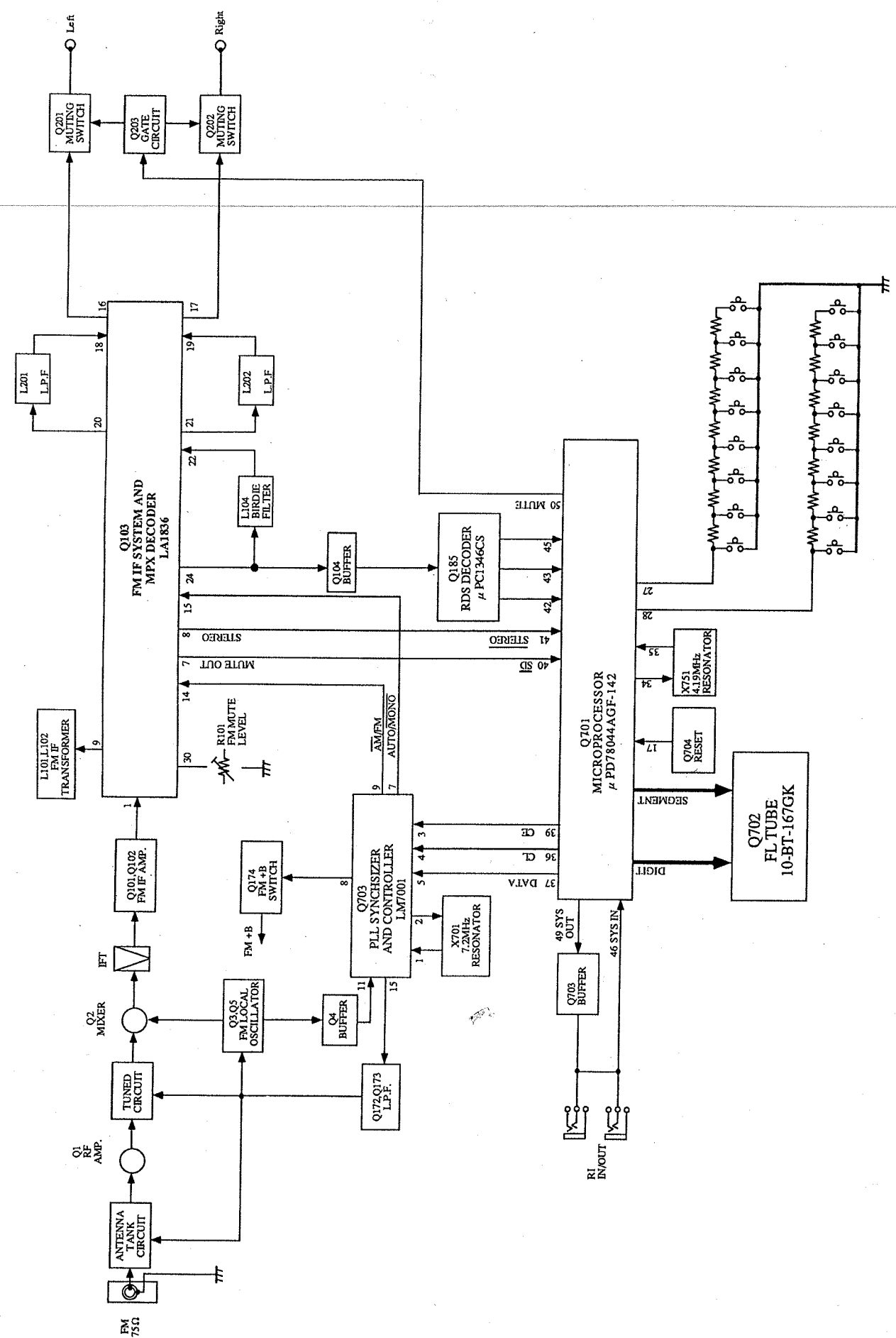
- Remove the top cover.
- Turn the locked screw to the clockwise to release the lock of gear.(Refer fig.1)
- Pull out the tray ass'y.
- Remove the stopper.(Refer fig.2)
- Press the tray stopper to the arrow mark direction and remove the tray ass'y.



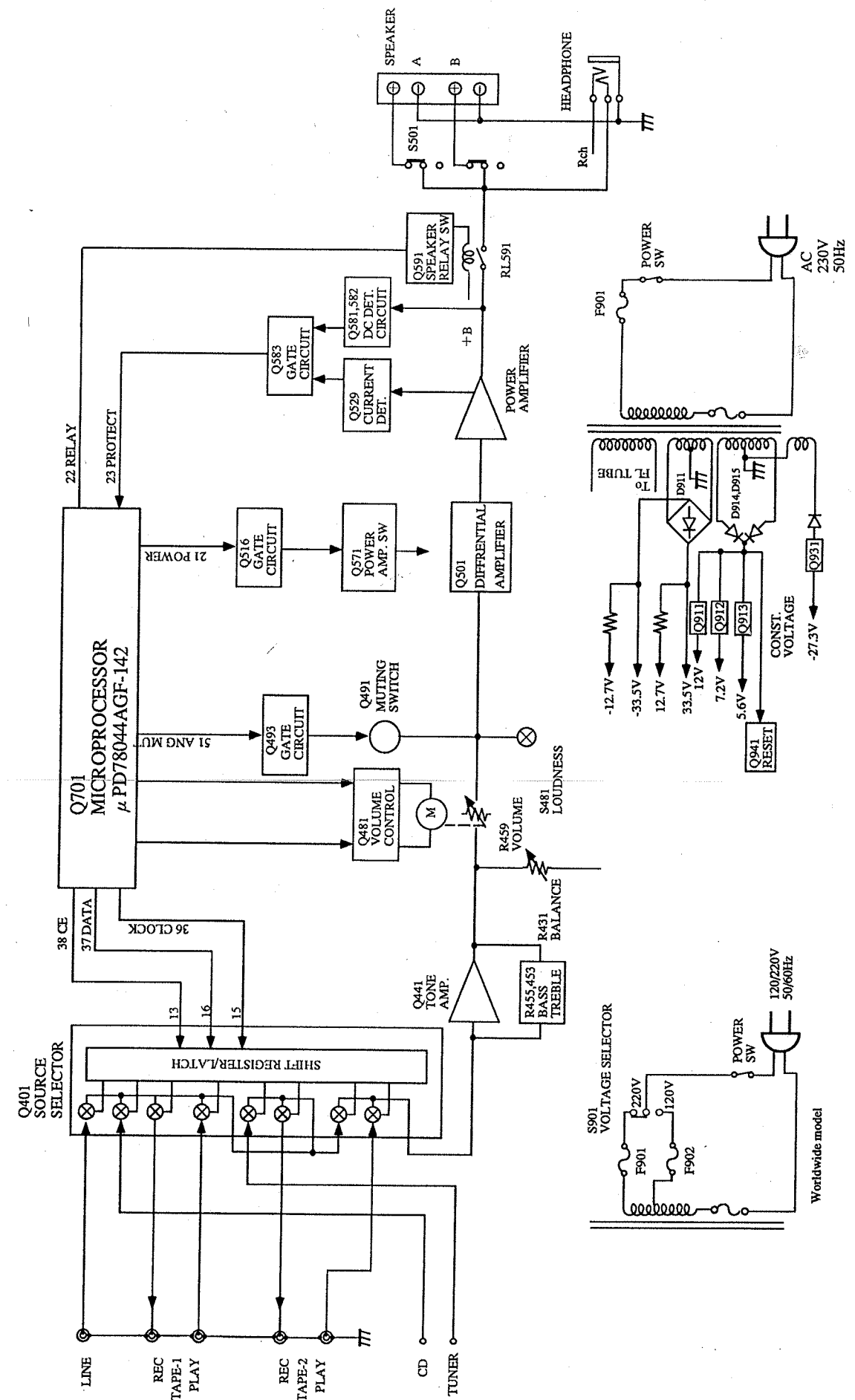
BLOCK DIAGRAM
- CD section -



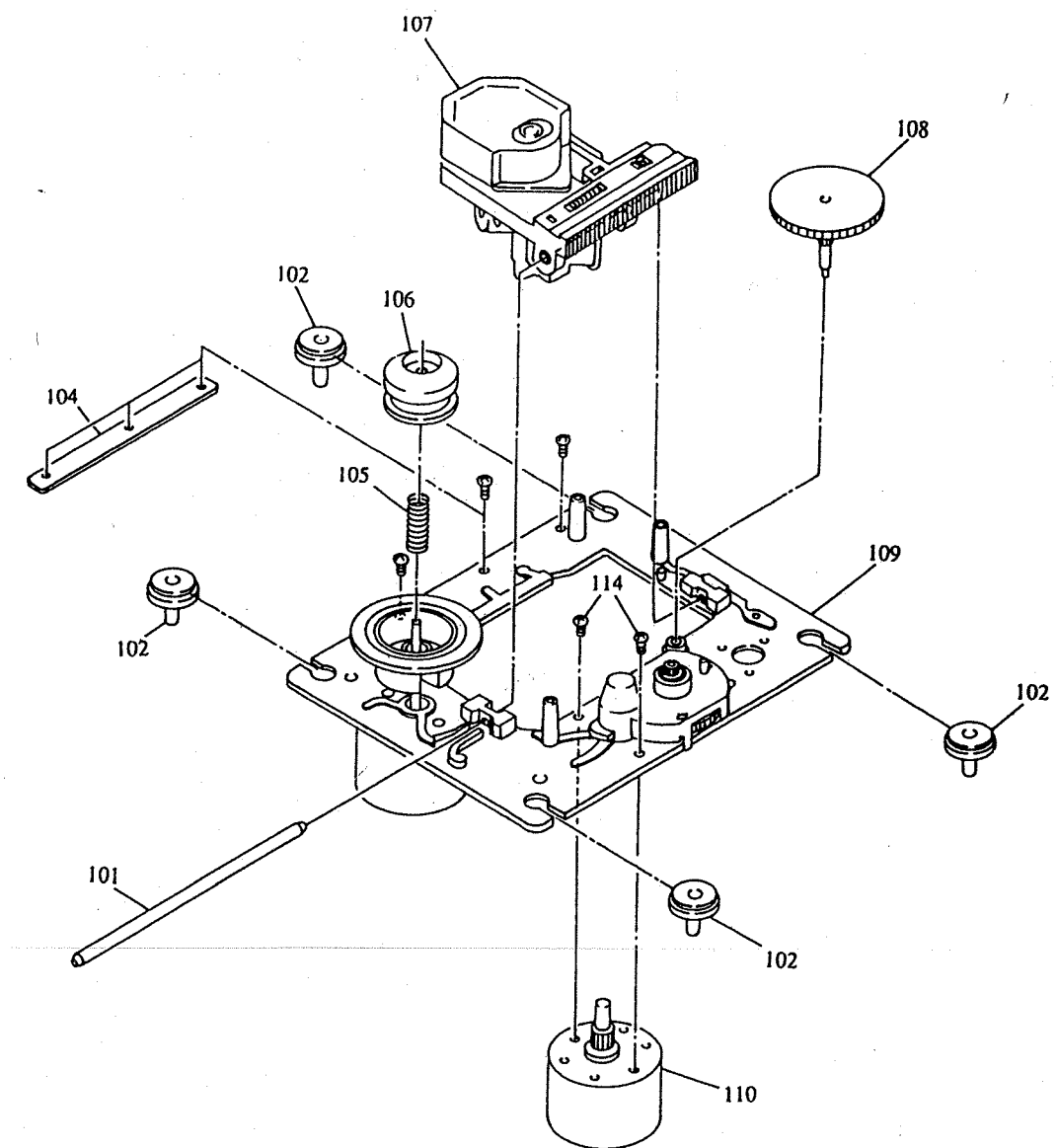
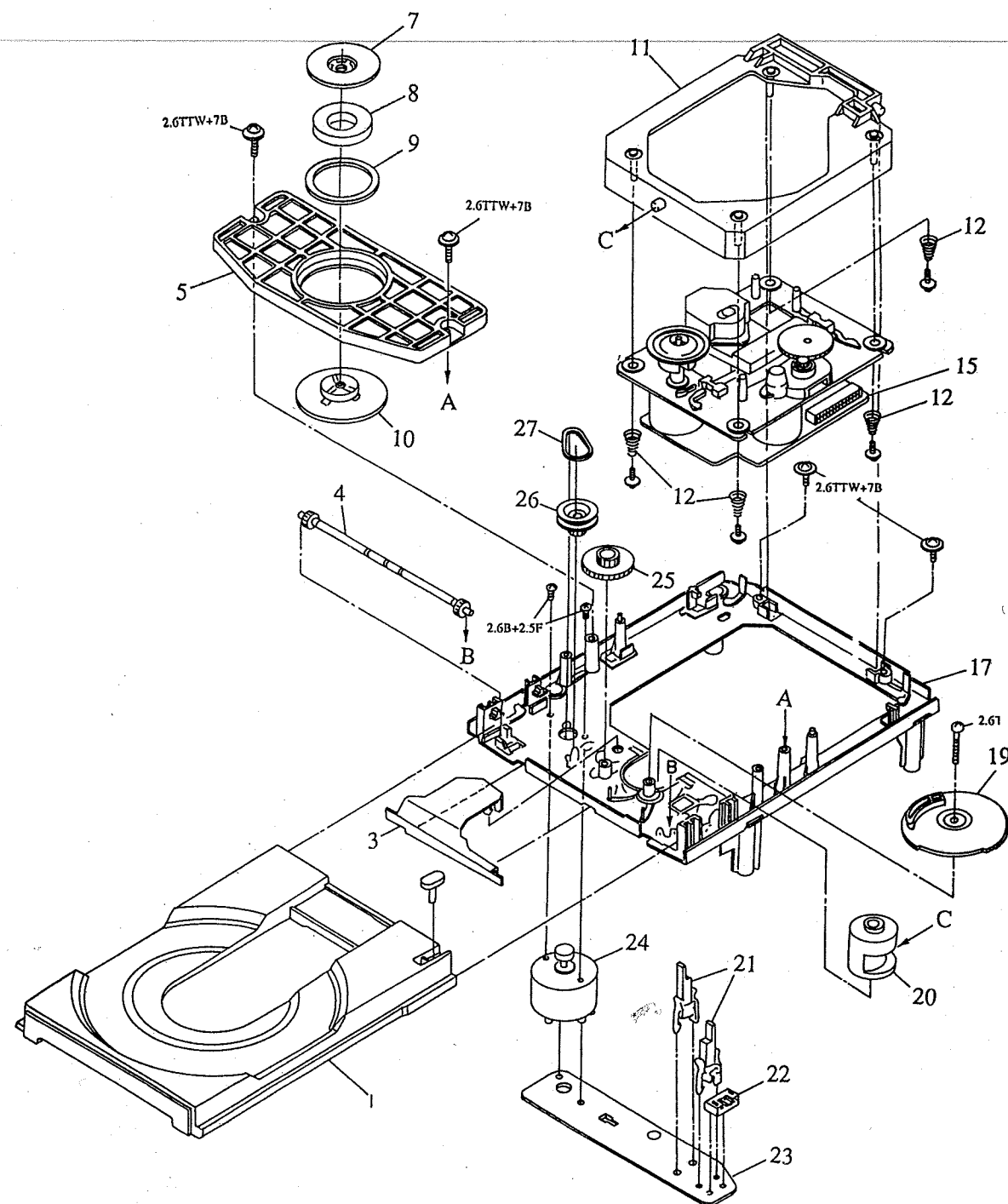
BLOCK DIAGRAM
— Tuner section —



— Amplifier section —



MECHANISM-EXPLODED VIEW



PARTS LIST

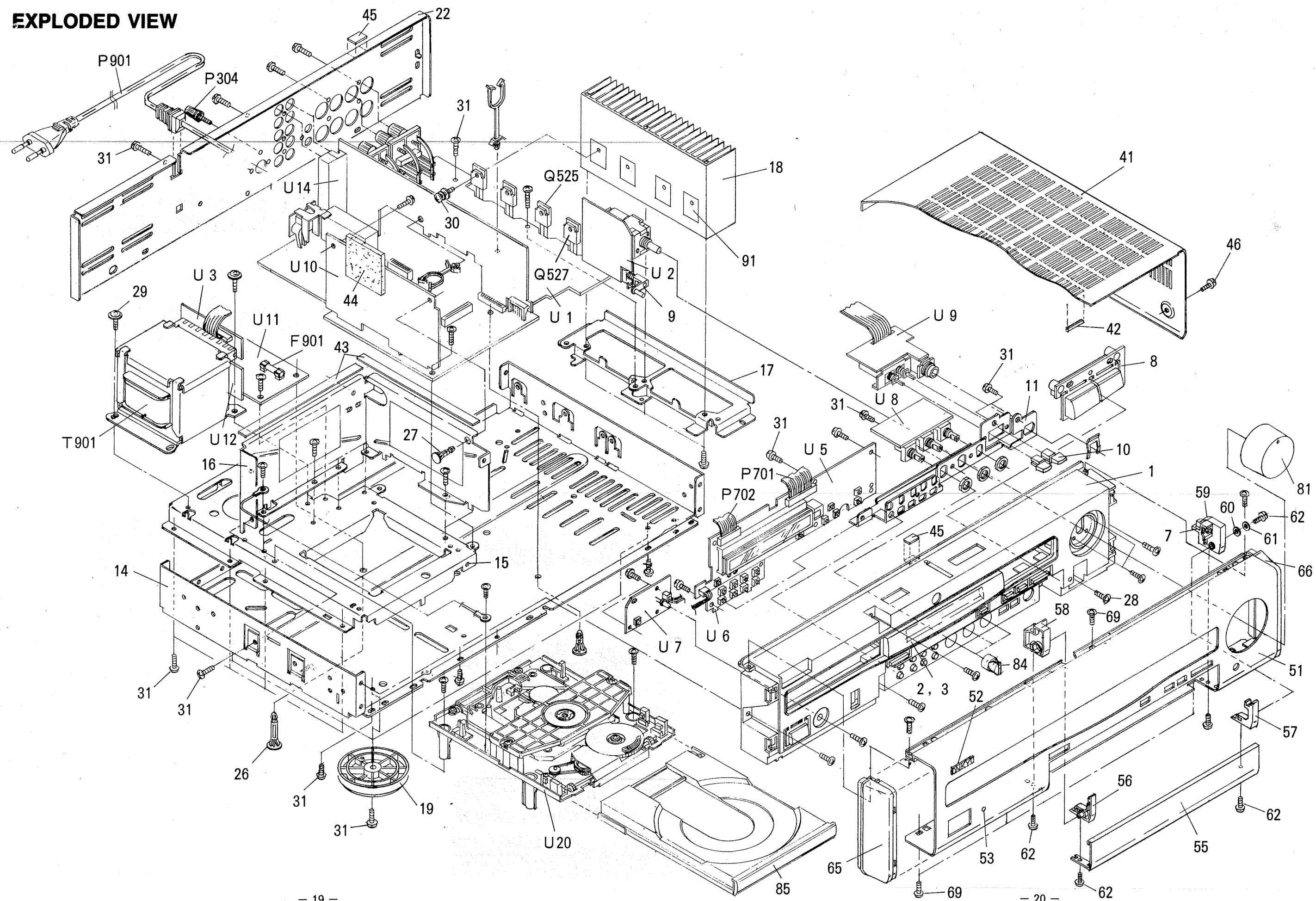
REF.NO.	PART NO.	DESCRIPTION	REF.NO.	PART NO.	DESCRIPTION
1	24840053	Tray	22	25055369	NPLG-5P352, Plug
3	24822014	Gear cover	23	24840066	Loading motor pc board
4	24810020	Tray gear	24	24840067	Loading motor
5	24840061	Chucking plate	25	24810022	Middle gear
7	24830003	Chucking yoke	26	24810025	Loading plate
8	24832004	Magnet	27	24816008	Belt
9	24836013	Damper	101	24828006	Sled shaft S
10	24810024	Chucking plate	102	24836014	Insulator S
11	24802012	Sub-chassis	104	24822015	Plate S
12	24820023	Spring	105	24820024	Spring
15	24840075	CD servo pcb ass'y	106	24824003	Center ring
17	24802013	Main chassis	107	24110011	KSS-240A, Optical pickup
19	24810021	Drive gear	108	24810023	Wheel
20	24840063	Control cam	109	24802014	Chassis
21	24840064	Leafswitch	110	24804012	Motor gear

PARTS LIST

REF.NO.	PART NO.	DESCRIPTION	REF.NO.	PART NO.	DESCRIPTION
1	27110876	Front bracket <S>	81	28325171	Knob, Volume <S>
	27110875	Front bracket 		28325172	Knob, Volume
2	28133338	Back plate	84	28325178	Knob, Selector <S>
3	28191721	Clear plate		28325157	Knob, Selector
4	27262594	Plate F <S>	85	28148313	Door, CD <S>
	27262595	Plate F 		28148312	Door, CD
7	27230025	Push latch	91	223021	TBM-51W-9043, Isolation sheet
8	28325163	Knob, Play <S>	F901	252073	△ 1.6A-SE-EAK, Primary fuse
	28325162	Knob, Play 	F902	252150	△ 3.15A-TSC, Primary fuse <W>
9	38325165	Knob, Loudness <S>	P303	2046221512	NCFC6-221512, Flexible flat cable
	38325166	Knob, Loudness 	P304	25060044	3×14, Terminal GND
10	28325168	Knob, Speaker <S>	P701	2047251512	NCFC7-251512, Flexible flat cable
	28325169	Knob, Speaker 	P702	2047171012	NCFC7-171012, Flexible flat cable
11	27130751	Bracket F	P901	253207AHIT	AS-CEE, Power supply cord
14	27100301	Chassis	Q525,Q526	2202923,	* 2SC5196-O,
15	27130752	Bracket M		2202922,	* 2SC5196-R,
16	27130753	Bracket L		2202373,	* 2SC4466-O,
17	27130754	Bracket H		2202374 or	* 2SC4466-Y or
18	27160355	Radiator		2202375	* 2SC4466-P, Transistor
19	27175292	Leg	Q527,Q528	2202913,	* 2SA1939-O,
22	27122115	Rear panel <P>		2202912,	* 2SA1939-R,
	27122116	Rear panel <W>		2202363,	* 2SA1693-O,
26	27190428A	KGLS-10RF,Holder		2202364 or	* 2SA1693-Y or
27	27190657	KGLS-18RF,Holder		2202365	* 2SA1693-P, Transistor
28	838430107	3TTB+10S(BC), Self-tapping strew	T901	2301127	△ NPT-1247P, Power transformer <P>
29	830440089	4TTC+8C(BC), Self-tapping screw		2301128	△ NPT-1247DG, Power transformer <W>
30	801433	3SMS8W.SW+14B(BC), Self-tapping screw	U20	24800009CY	NCD-130S, CD mechanism ass'y
31	838130088	3TTB+8B, Self-tapping screw	U1	1H270513-1	NAAR-5513-1, Main circuit pc board ass'y <P>
41	28184608	Top cover <S>		1H270513-1A	NAAR-5513-1A, Main circuit pc board ass'y <W>
	28184609	Top cover 	U2	1H270514-1	NAETC-5514-1, Volume pc board ass'y
42	28140302	3×60×10,Cushion	U3	1H270515-1	NAETC-5515-1, Secondary circuit pc board ass'y
43	28140720	0.5×150×10,Cushion	U5	1H270517-1	NADIS-5517-1, Display circuit pc board ass'y
44	28141313	3×20×3,Cushion	U6	1H270518-1	NASW-5518-1, Operation switch pc board ass'y <P>
45	28141288	0.8×10×15,Cushion		1H270518-1A	NASW-5518-1A, Operation switch pc board ass'y <W>
46	838230088	3TTB+8B(Ni), Self-tapping screw <S>			NASW-5519-1, Power switch pc board ass'y <P>
	838430088	3TTB+8B(BC), Self-tapping screw 	U7	1H270519-1	NASW-5519-1A, Power switch pc board ass'y <W>
51	1H270121	Front panel ass'y <S>		1H270519-1A	NAAF-5520-1, Tone circuit pc board ass'y
	1H271121	Front panel ass'y 	U8	1H270520-1	NAAF-5521-1, Headphone terminal pc board ass'y
52	28135199	Badge	U9	1H270521-1	NADG-5522-1, CD circuit pc board ass'y
53	28198777	Facet	U10	1H270522-1	NAPS-5523-1, Power supply circuit pc board ass'y <P>
55	28148315	Door <S>	U11	1H270523-1	NAPS-5523-1A, Power supply circuit pc board ass'y <W>
	28148315	Door 	U12	1H270524-1	NAETC-5524-1, Primary circuit pc board ass'y
56	28180115A	Hinge L <S>	U13	1H270525-1	NASW-5525-1, Voltage selector switch pc board ass'y <W>
	28180116A	Hinge L 	U14	1H270526-1	NAAF-5526-1, Input terminal pc board ass'y
57	28180117A	Hinge R <S>			
	28180118A	Hinge R 			
58	27190958	Holder L <S>			
	27190959	Holder L 			
59	27190961	Holder R <S>			
	27190960	Holder R 			
60	870148	WW-4, Wave washer			
61	87642607	W2.6×7F(BC), Washer			
62	838426088	2.6TTB+8B(BC), Self-tapping screw			
65	28125293	End cap L <S>			
	28125293	End cap L <S>			
66	28125296	End cap R <S>			
	28125296	End cap R <S>			
69	838130088	3TTB+8B,Self-tapping screw			

NOTE: <P>:230V model only
 <W>:Worldwide model only
 <S>:Silver model only
 :Black model only

EXPLODED VIEW



ADJUSTMENT PROCEDURES

It is not necessary to perform the adjustment of optical pickup.
This confirmation should be made when replacing the optical pickup.

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

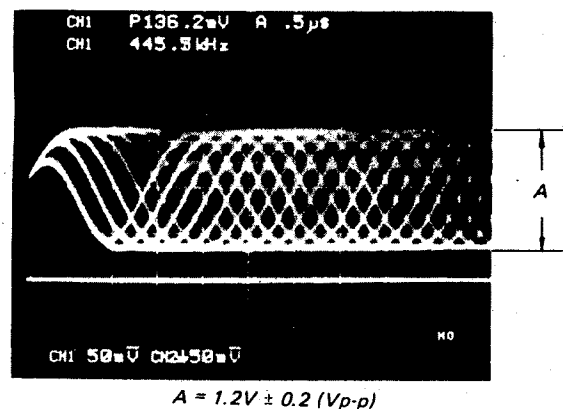
Oscilloscope
DC range

RF/Servo pc board

TP(RF)
TP(VC)

- 2). Turn the power switch on.
3). Load the test disc YEDS-18 on the tray and press the play button.
4). Confirm that the waveform on the oscilloscope is optimum eye pattern and optimum level as shown photo 1.
Optimum eye pattern means that shape "◇" can be clearly distinguished at the center of the waveform.

RF signal waveform



REFERENCE

Focus/Tracking Gain Adjustment

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

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

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

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

- When gain is raised, the noise when the 2-axis device operates increases.
- When gain is lowered, it is more susceptible to mechanical shock and skipping occurs more easily.
- When gain adjustment is off, the symptoms below appear.

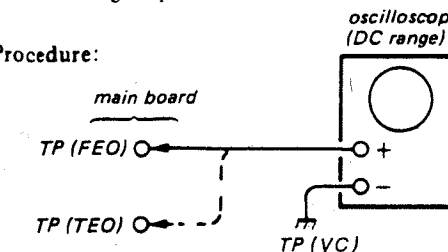
Symptoms	Gain	Focus	Tracking
The time until music starts becomes longer for STOP → PLAY or automatic selection (⏮ ⏭) buttons pressed. (Normally takes about 2 seconds.)		low	low or high
Music does not start and disc continues to rotate for STOP → PLAY or automatic selection (⏮ ⏭) buttons pressed.)		-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

The following is a simple adjustment method.

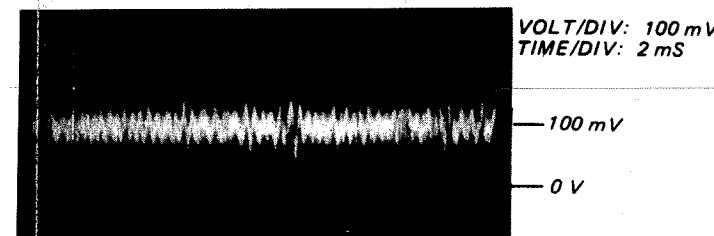
Simple Adjustment -

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

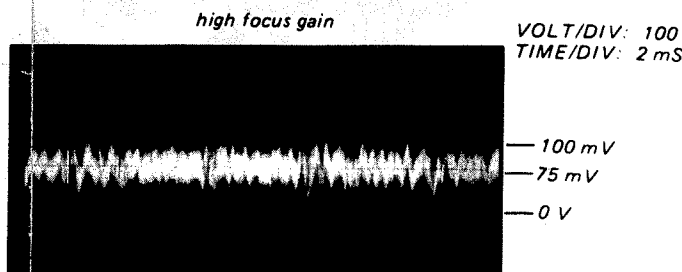
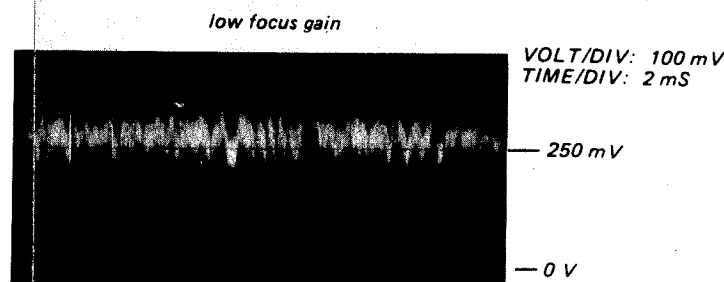
Procedure:



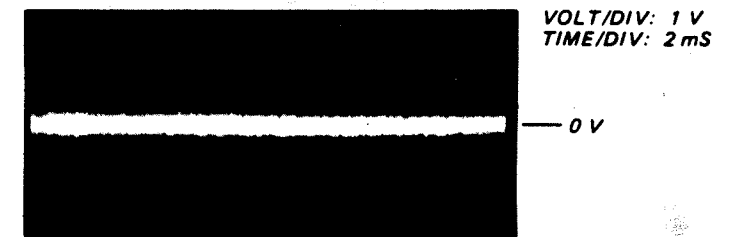
- Keep the set horizontal.
(If the set is not horizontal, this adjustment cannot be performed due to the gravity against the 2 axis device.)
- Insert disc (YEDS-18) and press ▷PLAY button.
- Connect oscilloscope to RF/ Servo board TP (FE).
- Adjust RV102 so that the waveform is as shown in the figure below. (focus gain adjustment)



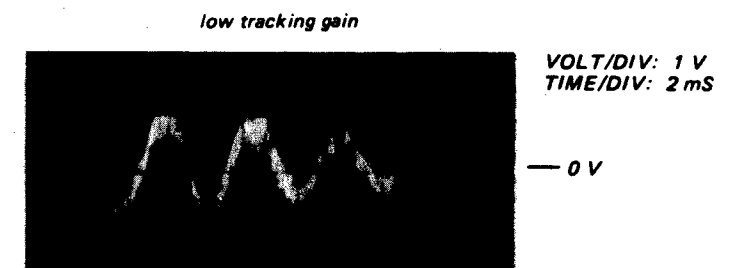
- Incorrent Examples (DC level changes more than on adjusted waveform)



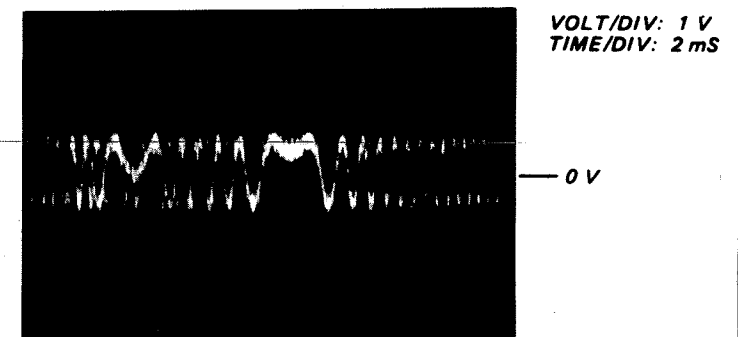
- Connect oscilloscope to RF/ Servo board TP (TE).
- Adjust RV101 so that the waveform is as shown in the figure below. (tracking gain adjustment)



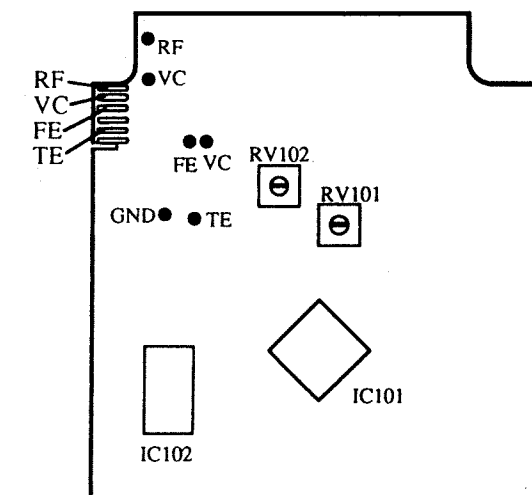
- Incorrect Examples (fundamental wave appears)



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



Adjustment Location: RF/ Servo board



Preparation

1. Input

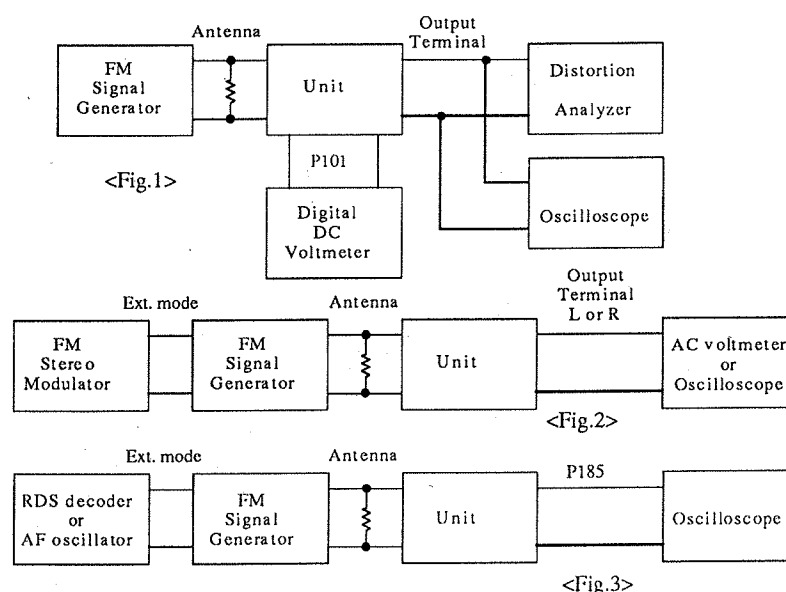
FM mono: 1kHz, 75kHz devi., 60dB/ μ V
 FM stereo: 1kHz, 67.5kHz devi., 60dB/ μ V
 Pilot signal 19kHz 7.5kHz devi.
 AM: 400Hz, 30% mod.

FM Adjustment

2. Outputs

Connect the non-inductive type resistor of 8 ohms
 to the all speaker terminals unless otherwise noted.

Item	Step	Connection of instrument	FM SG output	Stereo modulator output	Tuning frequency	Output indicator	Adjustment point	Adjust for	Remarks
FM IF/RF	1	Fig.1	99.0MHz 1kHz 75kHz devi. 65dB(60dB μ)	—	99.0MHz	DC voltmeter	L101	$0 \pm 20\text{mV}$	FM MUTE/MODE switch: OFF/MONO Repeat the steps 1 and 3 until no further adjustment is necessary.
	2					AC voltmeter	IFT on the front end	Maximum	
	3					Distortion analyzer	L102	Minimum	
Stereo Distortion		Fig.2	99.0MHz Ext. mod. 65dB(60dB)	Channel L or R 1kHz	99.0MHz	Distortion analyzer	IFT on the front end	Minimum	FM MUTE/MODE switch: ON/STEREO Don't turn more than $\pm 90^\circ$
Muting Level	1	Fig.1	99.0MHz 1kHz 22.5kHz devi. 19.2dB(14dB)	—	99.0MHz	Oscilloscope	R101	Signal output	FM MUTE/MODE switch: ON/STEREO
	2		99.0MHz 1kHz 22.5kHz devi. 18.2dB(13dB)					No signal	
RDS		Fig.3	99.0MHz Ext. mod. 60dB	RDS data or 57kHz 3% devi.	99.0MHz	Oscilloscope	R185	Maximum	



Idling Current Adjustment

Connect the DC voltmeter to the terminals P521, and P522 (Vct and IId) on the main circuit pc board. Adjust the trim resistors R531 and R532 so that the indicator of voltmeter becomes $7.5 \pm 1.5\text{V}$.
 NOTE: Adjust after switching on for 5 minutes.

Set Volume knob to the minimum position.

SERVICE PROCEDURES

1. Replacing the fuses

— This symbol located near the fuse indicates that the fuse used is fast operating type. For continued protection against fire hazard, replace with same type fuse. For fuse rating refer to the marking adjacent to the symbol.

— Ce symbole indique que le fusible utilise est a rapide. Pour une protection permanente, n'utiliser que des fusibles de meme type. Ce dernier est indique la qu le present symbol est appose.

CIRCUIT NO. PART NO. DESCRIPTION

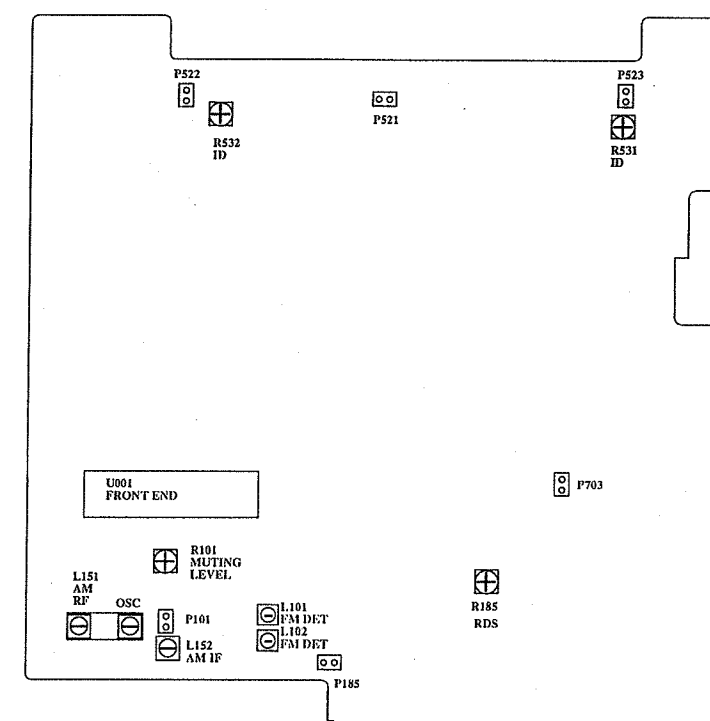
F901 252063 0.5A-SE-EAK, Primary
 F902 252150 3.15A-TSC, Primary
 (Worldwide model only)

2. To Initialize the unit

This device employs a microprocessor to perform various functions and operations. If interference generated by an external power supply, radio wave, or other electrical source results in accident which causes the specified operations and functions to operate abnormally.

To perform a result, please follow the procedure below.

1. Press and hold down the CD button, then press the POWER button.
2. Press the POWER button.
3. After "clear" is displayed, the preset memory and each mode stored in the memory, are initialized and will return to the factory settings.



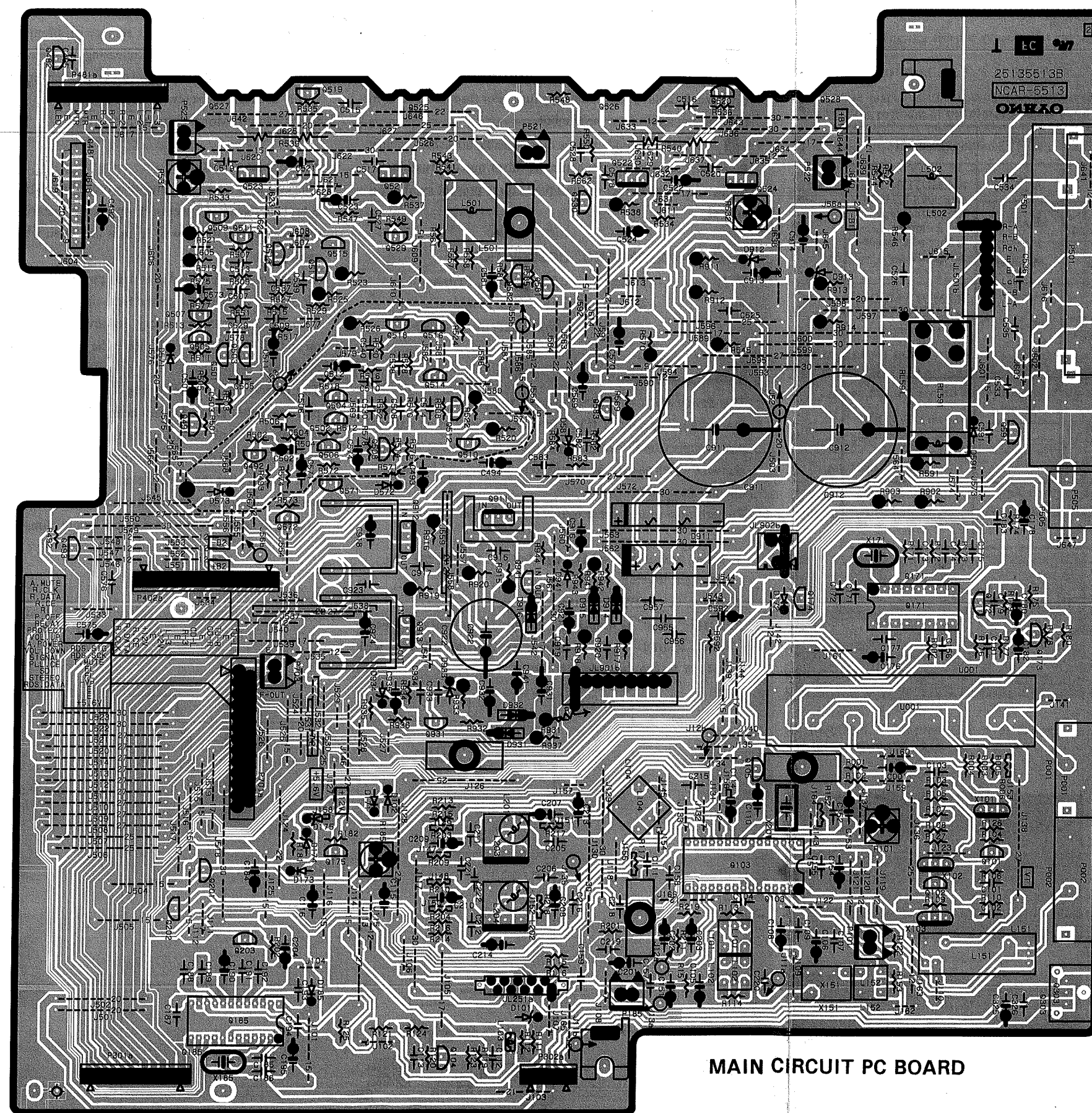
3. Safety-check out

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 the screw on the back panel. Specifications: More than 10 M Ω at 500V.

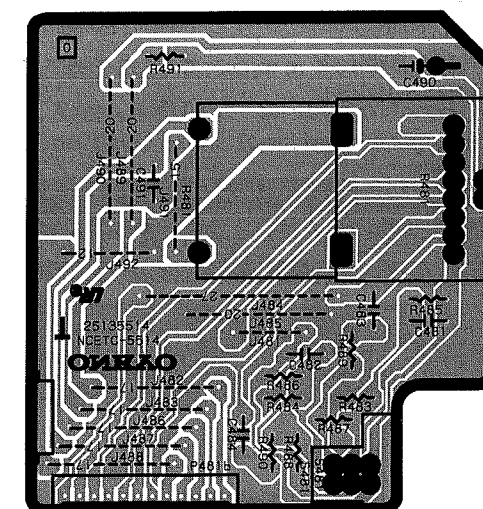
4. Memory preservation

This unit does not require memory preservation batteries. A built-in memory power back-up system preserves contents of the memory during power failures and even when the unit is unplugged. The unit must be plugged in and the power switch turned on and off once in order to charge the back-up system. Note that since this is not a permanent memory, the power switch must be turned on and off a few times each month the keep the back-up system operative. The period of the time during which memory contents are preserved after power has last been turned off varies depending on climate and placement of the unit. On the average, memory contents are protected over a period of 3 to 4 weeks (a minimum of 2 weeks) after the last time power has been turned off. This period is shortened when the unit is exposed to very high humidity or used in an area with an extremely humid climate.

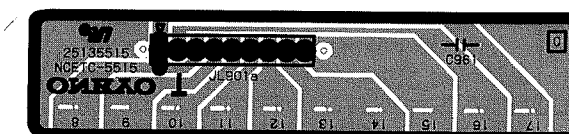
PC BOARD VIEW FROM BOTTOM SIDE



MAIN CIRCUIT PC BOARD



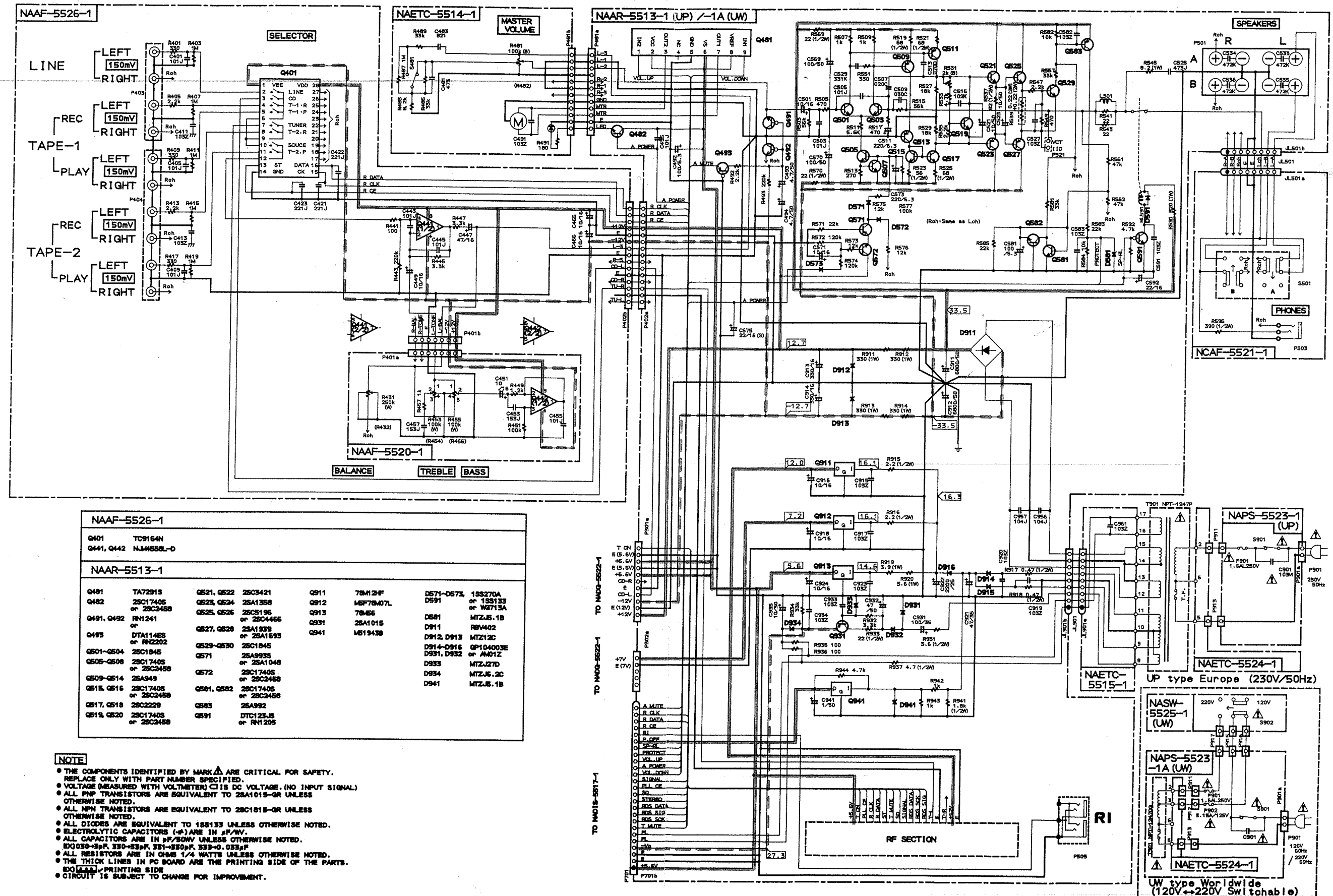
VOLUME PC BOARD



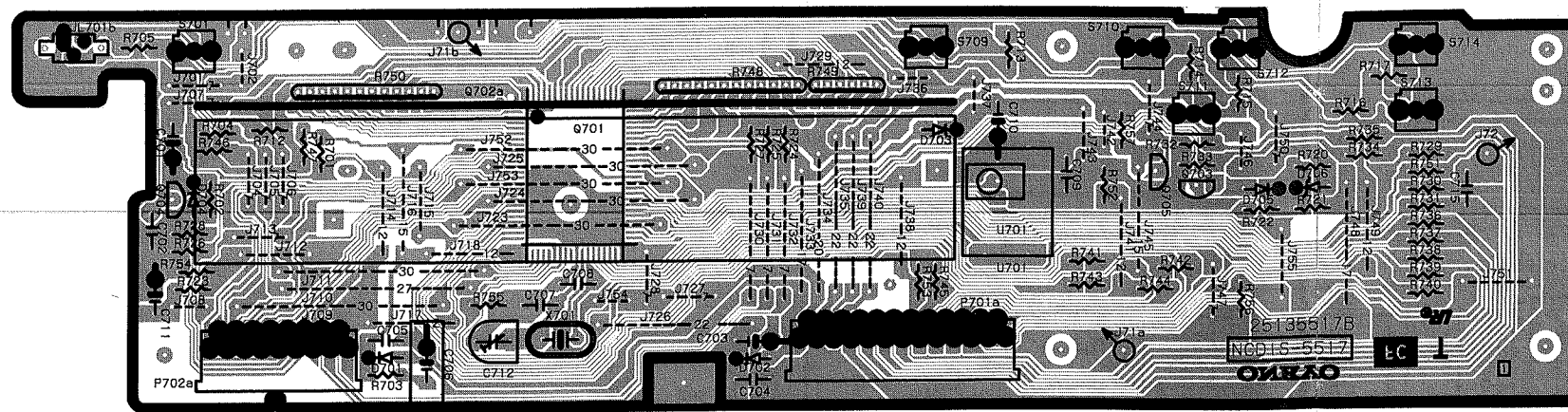
SECONDARY CIRCUIT PC BOARD

SCHEMATIC DIAGRAM

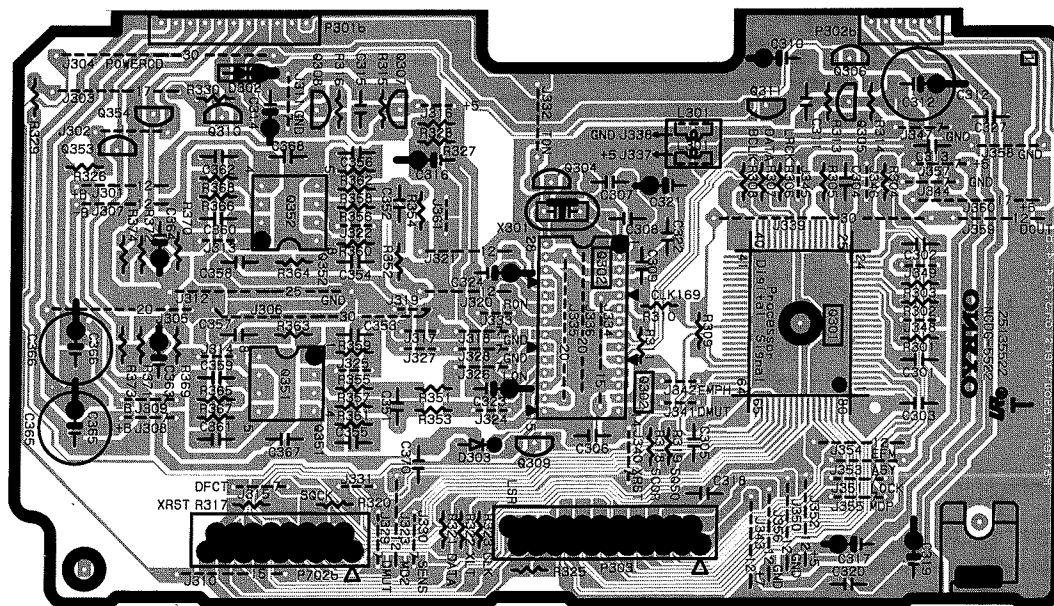
- Audio section -



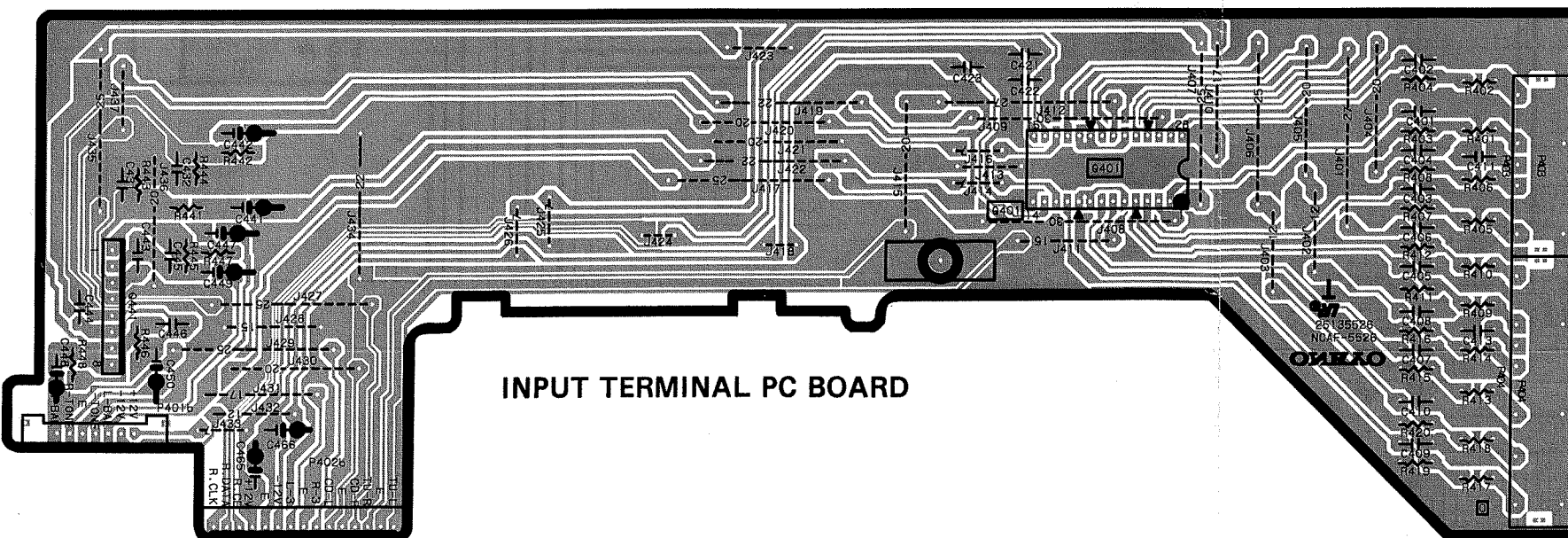
PC BOARD VIEW FROM BOTTOM SIDE



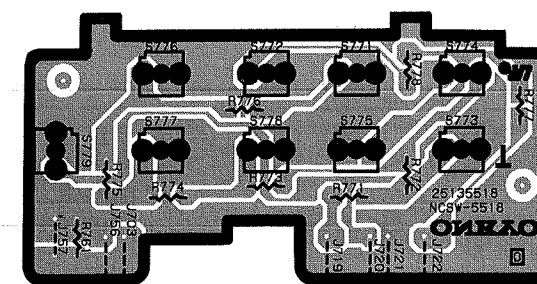
DISPLAY CIRCUIT PC BOARD



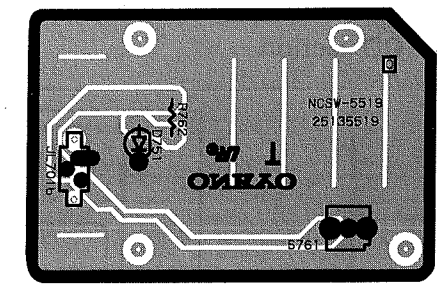
CD CIRCUIT PC BOARD



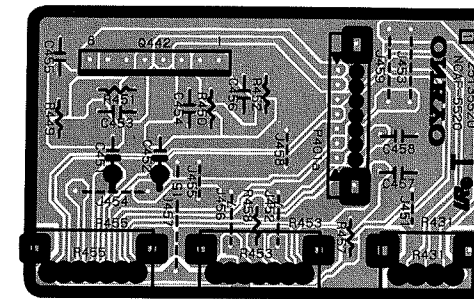
INPUT TERMINAL PC BOARD



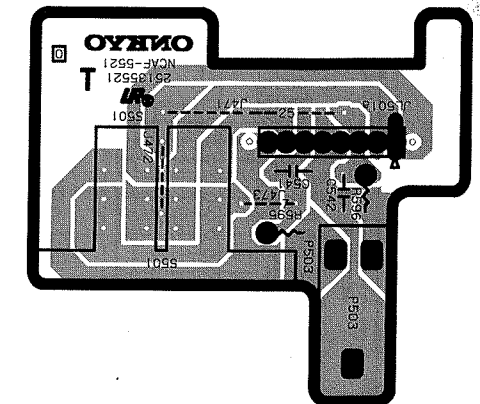
OPERATION SWITCH PC BOARD



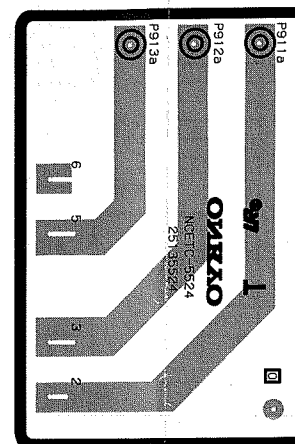
POWER SWITCH PC BOARD



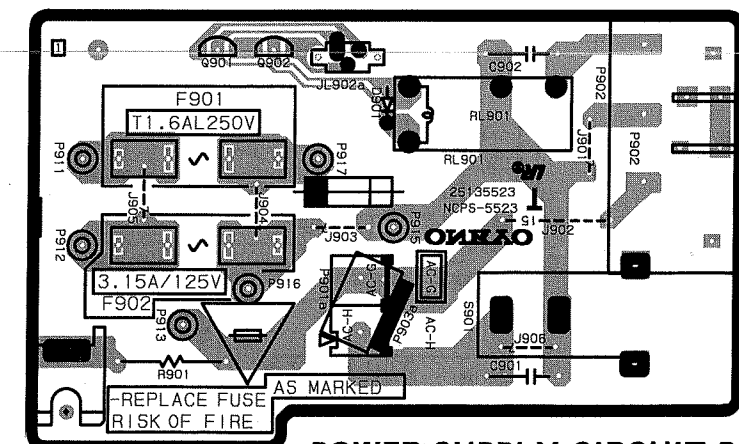
TONE CIRCUIT PC BOARD



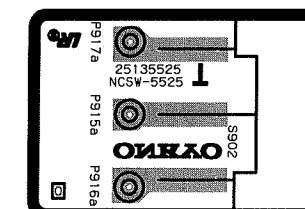
HEADPHONE TERMINAL PC BOARD



PRIMARY CIRCUIT PC BOARD



POWER SUPPLY CIRCUIT PC BOARD



VOLTAGE SELECTOR SWITCH PC BOARD

PRINTED CIRCUIT BOARD – PARTS LIST

MAIN CIRCUIT PC BOARD (NAAR-5513-1/1A)

CIRCUIT NO.	PART NO.	DESCRIPTION	CIRCUIT NO.	PART NO.	DESCRIPTION
Front end			Transistors		
U001	240089	FE415-G11	Q529,Q530	2211732 or 2211733	2SC1845-F or 2SC1845-E
Q103	22240890	LA1836	Q571	2212125 or 2213354	2SA1048-GR or 2SA933S-R
Q171	22240090	LM7001	Q572	2212115 or 2213284	2SC2458-GR or 2SC1740S-R
Q185	22240679	μ PC1346CS	Q581,Q582	2211793 or 2211792	2SA992-E or 2SA992-F
Q481	22240239	TA7291S	Q583	2213640 or 2214660	DTC123JS or RN1205
Q911	222780125NEC	78M12HF	Q591	2211455	2SA1015-GR
Q912	222780075MIT	M5F78M07L	Diodes		
Q913	222780565JRC	78M56	Q931	224470753	MTZJ7.5C
Q941	222951	M51943B	D101	223205 or 223163	1SS270A or 1SS133
Transistors			D171,D172	224470823	MTZJ8.2C
Q101	2210746	2SC945A-P	D174	223205 or 223163	1SS270A or 1SS133
Q102	2211723	2SC1923-O	D185	224470512	MTZJ5.1B
Q104,Q173	2212115 or 2213284	2SC2458-GR or 2SC1740S-R	D571,D573	223205 or 223163	1SS270A or 1SS133
Q172	2212445	2SK365-GR	D581,D941	22380022F or 22380271F	RBV402 or D3SBA20
Q174	2213510	DTA114ES	D591	224471203	MTZJ12C
Q201,Q202	2212794	2SD1468-R	D911	22380035 or 22380046	GP104003E or AM01Z
Q203	2213510	DTA114ES	D912,D913	224472704	MTZJ27D
Q482	2212115 or 2213284	2SC2458-GR or 2SC1740S-R	D914,D916	224470623	MTZJ6.2C
Q491,Q492	2213631 or 2213632	RN1241-A or RN1241-B	D931,D932	Ceramic filters	
Q493	2213510 or 2214350	DTA114ES or RN2202	D933	3010071	SFE10.7MA5
Q501~Q504	2211732 or 2211733	2SC1845-F or 2SC1845-E	D934	3010130	SFE10.7MZ2A
Q505~Q508	2212115 or 2213284	2SC2458-GR or 2SC1740S-R	Resonators		
Q515,Q516	2211353 or 2211354	2SA949-O or 2SA949-Y	X101,X102	3010141	XTL-7.2M,Crystal
Q509~Q514	2211633 or 2211634	2SC2229-O or 2SC2229-Y	X103	3010203	AF6146CG,Crystal
Q517,Q518	2212115 or 2213284	2SC2458-GR or 2SC1740S-R	X171	3010227	CSB456F15,Ceramic
Q519,Q520	2212653 or 2212654	2SC3421-O or 2SC3421-Y	X185	Transformers	
Q521,Q522	2212643 or 2212644	2SA1358-O or 2SA1358-Y	X201	L101	233457
Q523,Q524	2212643 or 2212644	2SA1358-O or 2SA1358-Y	L102	233458	NFIF-4081
Q525,Q526	2202923, 2202922, 2202373, 2202374 or 2202375	* 2SC5196-O, * 2SC5196-R, * 2SC4466-O, * 2SC4466-Y or * 2SC4466-P	L103	233454K220	NCH-1452
Q527,Q528	2202913, 2202912, 2202363, 2202364 or 2202365	* 2SA1939-O, * 2SA1933-R, * 2SA1693-O, * 2SA1693-Y or * 2SA1693-P	L104	233383	NMC-6070
			L201,L202	233355A	NMC-4059
			L501,L502	231176S	S-1.3C
			Capacitors		
			C001,C105	393341017	100 μ F,16V,Elect.
			C106,C108	393341007	10 μ F,16V,Elect.
			C110,C151	354780229	2.2 μ F,50V,Elect.
			C111	374721224	1200pF $\pm$ 5%,50V,Plastic
			C153	354744709	47 μ F,16V,Elect.
			C154	354780109	1 μ F,50V,Elect.

CURCUIT NO.	PART NO.	DESCRIPTION	CIRCUIT NO.	PART NO.	DESCRIPTION
Capacitors			Resistors		
C176,C195	354721019	100 μ F,6.3V,Elect.	R539,R540	4500027	MPC708-2WK0.22,Metal plate
C178	393341017	100 μ F,16V,Elect.	R545,R546	453630824	8.2 Ω $\pm$ 5%,1W,Metal
C179	374723334	0.033 μ F $\pm$ 5%,50V,Plastic	R569,R570	443522204	22 Ω $\pm$ 5%,1/2W,Metal oxide
C180,C190	354780229	2.2 μ F,50V,Elect.	R591	443628214	820 Ω $\pm$ 5%,1W,Metal oxide
C181,C188	374722234	0.022 μ F $\pm$ 5%,50V,Plastic	R911~R914	443623314	330 Ω $\pm$ 5%,1W,Metal oxide
C182	354782299	0.22 μ F,50V,Elect.	R915,R916	453530224	2.2 Ω $\pm$ 5%,1/2W,Metal
C187,C193	374724724	4700pF $\pm$ 5%,50V,Plastic	R917,R918	453534794	0.47 Ω $\pm$ 5%,1/2W,Metal
C189	374724734	0.047 μ F $\pm$ 5%,50V,Plastic	R919	453630394	3.9 Ω $\pm$ 5%,1W,Metal
C191,C192	374723324	3300pF $\pm$ 5%,50V,Plastic	R920	453630564	5.6 Ω $\pm$ 5%,1W,Metal
C201,C202	354780109	1 μ F,50V,Elect.	R931	443525604	56 Ω $\pm$ 5%,1/2W,Metal oxide
C203	354784799	0.47 μ F,50V,Elect.	R933	443522204	22 Ω $\pm$ 5%,1/2W,Metal oxide
C204	354780229	2.2 μ F,50V,Elect.	R937	453530474	4.7 Ω $\pm$ 5%,1/2W,Metal
C207~C210	393341007	10 μ F,16V,Elect.	R941	443521824	1.8k Ω $\pm$ 5%,1/2W,Metal oxide
C213,C214	393341007	10 μ F,16V,Elect.	Relay		
C215,C216	374721824	1800pF $\pm$ 5%,50V,Plastic <P>	RL591	25065485	NRL-2P2A
	374722224	2200pF $\pm$ 5%,50V,Plastic <W>	Terminals		
C492	354721019	100 μ F,6.3V,Elect.	P505	25045330	NPJ-2PDBL184
C493,C494	354780479	4.7 μ F,50V,Elect.	P001	25060231	NTM-1PD153
C501,C502	393341007	10 μ F,16V,Elect.	P002	25060117	NTM-2PDMLO51
C511,C512	393322217	220 μ F,6.3V,Elect.	P501	25060125	NTM-8PDMN058
C521~C524	393381007	10 μ F,50V,Elect.	Socket		
C525,C526	374724734	0.047 μ F $\pm$ 5%,50V,Plastic	P701b	25051503,	NSCT-25P1290,
C567,C568	393300107	1 μ F,160V,Elect.		25050965 or	NSCT-25P752 or
C569,C570	393381017	100 μ F,50V,Elect.		25050857	NSCT-25P652
C571	393341007	10 μ F,16V,Elect.	Wire traps		
C572	393341017	100 μ F,16V,Elect.	JL501b	25050272	NSCT-8P100
C573,C574	393322217	220 μ F,6.3V,Elect.	JL901b	25050273	NSCT-9P101
C575	355742209	22 μ F,16V,Elect.	Plugs		
C581	354721019	100 μ F,6.3V,Elect.	P101,P185	25055038	NPLG-2P29
C591	374721034	0.01 μ F $\pm$ 5%,50V,Plastic	P301a	25055707	NPLG-11P663
C592	354742209	22 μ F,16V,Elect.	P302a	25055701	NPLG-5P657
C911,C912	3504207	6800 μ F,50V,Elect.	P402a	25055711	NPLG-15P667
C913,C914	393343317	330 μ F,16V,Elect.	P481a	25055708	NPLG-12P664
C916,C918	393341007	10 μ F,16V,Elect.	P521,P522	25055038	NPLG-2P29
C921	354764709	47 μ F,35V,Elect.	Radiators		
C922	354753329	3300 μ F,25V,Elect.	Q912a	27160211Y	RAD-68
C924	393341007	10 μ F,16V,Elect.	Q913a	27160211-Y	RAD-68B
C931	354761019	100 μ F,35V,Elect.	VOLUME PC BOARD(NAETC-5514-1)		
C932	393381017	100 μ F,50V,Elect.	CIRCUIT NO. PART NO. DESCRIPTION		
C935	393381007	10 μ F,50V,Elect.	Capacitors		
C941	354780109	1 μ F,50V,Elect.	C481,C482	374724734	0.047 μ F $\pm$ 5%,50V,Plastic
C956,C957	374721044	0.1 μ F $\pm$ 5%,50V,Plastic	C483,C484	374728214	820pF $\pm$ 5%,50V,Plastic
Resistors			Resistor		
R101	5210261	N06HR5KBC,Trim	R481,R482	5104364	N16RQL100KBT20F,Variable
R185	5210263	N06HR20KBC,Trim	Socket		
R519~R522	443526804	68 Ω $\pm$ 5%,1/2W,Metal oxide	P481b	25051237	NSCT-12P1027
R523,R524	443525604	56 Ω $\pm$ 5%,1/2W,Metal oxide	Push switch		
R525,R526	443526804	68 Ω $\pm$ 5%,1/2W,Metal oxide	S481	25035609	NPS-122-L571
R531	5210259	N06HR2KBC,Trim			
R537,R538	443528204	82 Ω $\pm$ 5%,1/2W,Metal oxide			

SECONDARY CIRCUIT PC BOARD (NAETC-5515-1)		
CIRCUIT NO.	PART NO.	DESCRIPTION
JL901a	25051113	NSCT-9P900,Wire holder

DISPLAY CIRCUIT PC BOARD(NADIS-5517-1)		
CIRCUIT NO.	PART NO.	DESCRIPTION
IC		
Q701	22240917	MPD78044AGF-142
Fl tube		
Q702	212141	10-BT-167GK
Transitors		
Q703	2212600	DTA124ES
Q704	221282	DTC144ES
Q705	2213750	DTA144ES
Remote sensor		
U701	24130010	HC312
Diodes		
D701~D705	223205 or	1SS270A or
	223163	1SS133
D706	224470562	MTZJ5.6B
Resonator		
X701	3010224	XTAL-4.19MHz,Crystal
Capacitors		
C701,C711	353780229	2.2 μ F,50V,Elect.
C703,C710	353721019	100 μ F,6.3V,Elect.
C706	3000076	0.1F,5.5V,Super
Holder		
Q702a	27190754B	FL
Sockets		
P701a	25051523,	NSCT-25P1310,
	25050931 or	NSCT-25P718 or
	25050889	NSCT-25P684
P702a	25051515,	NSCT-17P1302,
	25050923 or	NSCT-17P710 or
	25050881	NSCT-17P676
Wire holder		
JL701a	25051087	NSCT-3P874
Push switches		
S701	25035652	NPS-111-S604
S709~S714	25035652	NPS-111-S604

OPERATION SWITCH PC BOARD(NASW-5518-1/1A)		
CIRCUIT NO.	PART NO.	DESCRIPTION
S771~S776	25035652	NPS-111-S604,Push switches
S777	25035652	NPS-111-S604,Push switch <P>
S778	25035652	NPS-111-S604,Push switch

POWER SWITCH PC BOARD (NASW-5519-1/1A)		
CIRCUIT NO.	PART NO.	DESCRIPTION
L.E.D		
D751	225291D	SEL4910D-D
Switch		
S761	25035652	Δ NPS-111-S604
Wire holder		
JL701b	25051087	NSCT-3P874
TONE CIRUCIT PC BOARD (NAAF-5520-1)		
CIRCUIT NO.	PART NO.	DESCRIPTION
IC		
Q442	22240293	NJM4558L-D
Capacitors		
C457,C458	374721534T	0.015 μ F $\pm$ 5%,50V, Plastic
C451,C452	393341007T	10 μ F,16V, Elect.
C453,C454	374721534T	0.015 μ F $\pm$ 5%,50V, Plastic
Resistors		
R431,R432	5104361	N11RGLC250KWT15Z, Variable
R453~R456	5104360	N14RGLC100KWT15Z, Variable
Socket		
P401a	25051535	NSCT-7P1322
HEADPHONE TERMINAL PC BOARD(NAAF-5521-1)		
CIRCUIT NO.	PART NO.	DESCRIPTION
Resistors		
R595,R596	443523914	390 Ω $\pm$ 5%,Metal oxide
Push switch		
S501	25035517	NPS-222-L479
Headphone jack		
P503	25045255	YKB21-5009
Wire holder		
JL501a	25051112	NSCT-8P899
CD CIRCUIT PC BOARD (NADG-5522-1/1A)		
CIRCUIT NO.	PART NO.	DESCRIPTION
ICs		
Q301	22240487A	CXD2500BQ
Q302	22240726	SM5872CN
Q351,Q352	22240191	NJM4565D-D
Transistors		
Q310	2211455	2SA1015-GR
Q305,Q307	2211504	2SA950-Y
Q311	2211504	2SA950-Y
Q304,Q306	221282	DTC144ES
Q308,Q309	221282	DTC144ES
Q353,Q354	221282	DTC144ES
Diodes		
D302	22380035 or	GP104003E or
D302or	22380046	AM01Z
D303	223205 or	1SS270A or
D303or	223163	1SS133

CIRCUIT NO. PART NO. DESCRIPTION			INPUT TERMINAL PC BOARD (NAAF-5526-1)		
Resonator			CIRCUIT NO. PART NO. DESCRIPTION	ICs	
X301	3010112	KD6586FFB,Crystal	Q401	22240800	TC9164AN
Capacitors			Q441,Q442	22240293	NJM4558L-D
C301	374724734	0.047 μ F $\pm$ 5%,50V, Plastic	Capacitors		
C302	374721524	1500pF $\pm$ 5%,50V, Plastic	C447,C448	393344707	47 μ F,16V, Elect.
C303,C304	374721034	0.01 μ F $\pm$ 5%,50V, Plastic	C449,C452	393341007	10 μ F,16V, Elect.
C310,C314	393321017	100 μ F,6.3V, Elect.	C465,C466	393341007	10 μ F,16V, Elect.
C311,C315	374721034	0.01 μ F $\pm$ 5%,50V, Plastic	Plug		
C312,C316	393324717	470 μ F,6.3V, Elect.	P401b	25055813	NPLG-7P769
C317,C321	393321017	100 μ F,6.3V, Elect.	Socket		
C319	393341017	100 μ F,16V, Elect.	P402b	25051240	NSCT-15P1030
C323,C324	393322217	220 μ F,6.3V, Elect.	Terminals		
C357,C358	374721824	1800pF $\pm$ 5%,50V, Plastic	P403	25045303	NPJ-4PDBL162
C359,C360	374724724	4700pF $\pm$ 5%,50V, Plastic	P404	25045300	NPJ-6PDBL159
C363,C364	393382207	22 μ F,50V, Elect.			
C365,C366	393342217	220 μ F,16V, Elect.			
Sockets					
P303	25051500,	NSCT-22P1287,			
	25050962 or	NSCT-22P749 or			
	25050854	NSCT-22P649			
P702	25051495,	NSCT-17P1282,			
	25050957 or	NSCT-17P744 or			
	25050849	NSCT-17P644			
P301b	25051236	NSCT-11P1026			
P302b	25051230	NSCT-5P1020			

POWER SUPPLY CIRCUIT PC BOARD(NAPS-5523-1/1A)

CIRCUIT NO.	PART NO.	DESCRIPTION
C901	3500191	Δ DE7150F103M,Capcitor 1S
S901	25035550	Δ NPS-111-L512,Push switch
P901a	25055713	NPLG-2P669,Plug
F901a	25050065	Δ YSH403T,Fusholder
F902a	25050065	Δ YSH403T,Fusholder
F901	252073	Δ 1.6A-SE-EAK,Fuse
F902	252150	Δ 3.15A-TSC,Fuse <W>

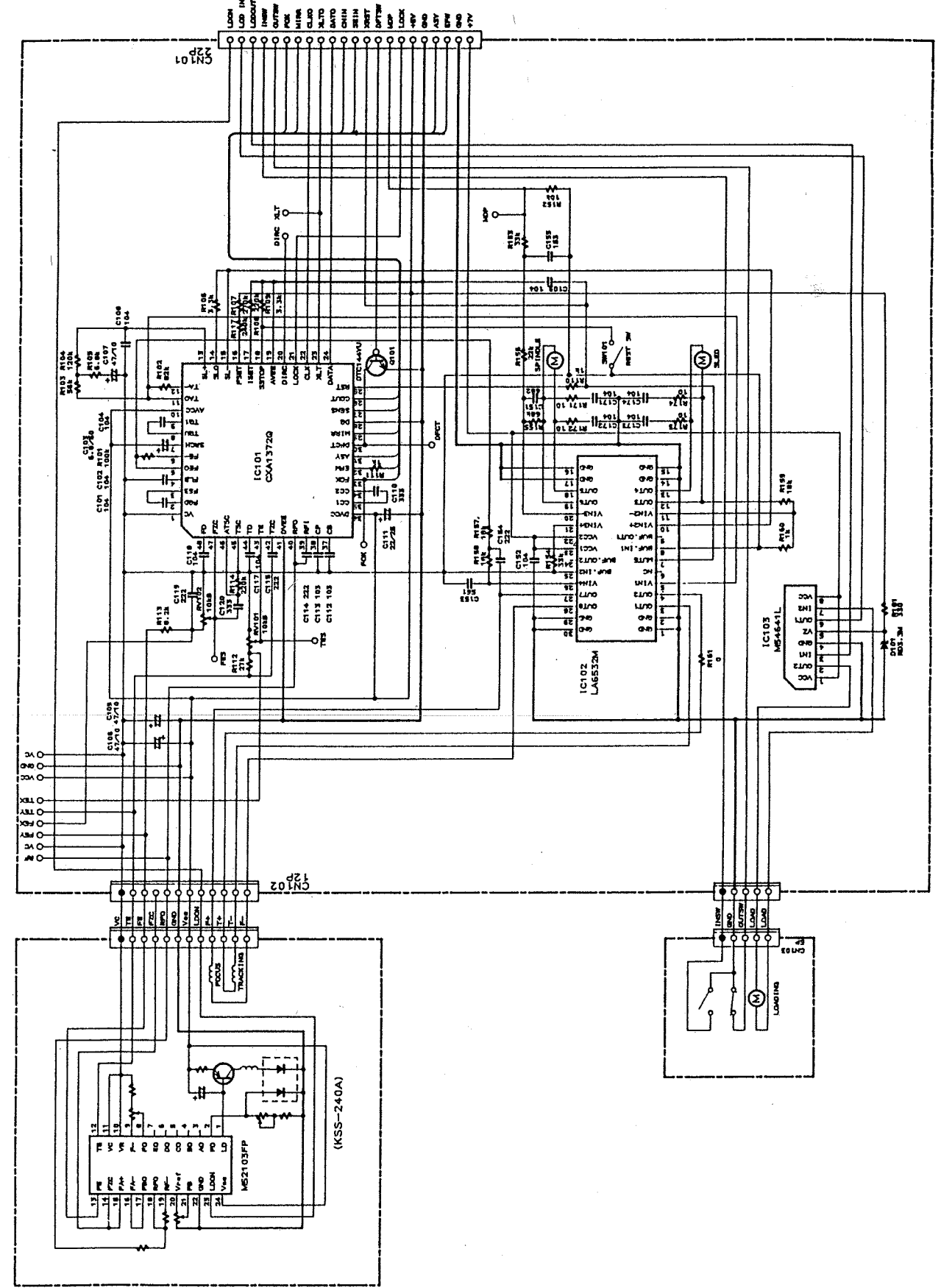
VOLTAGE SELECTOR SWITCH PC BOARD (NASW-5525-1)

CIRCUIT NO.	PART NO.	DESCRIPTION
S902	25065437	Δ NSS-22157P,Slide switch

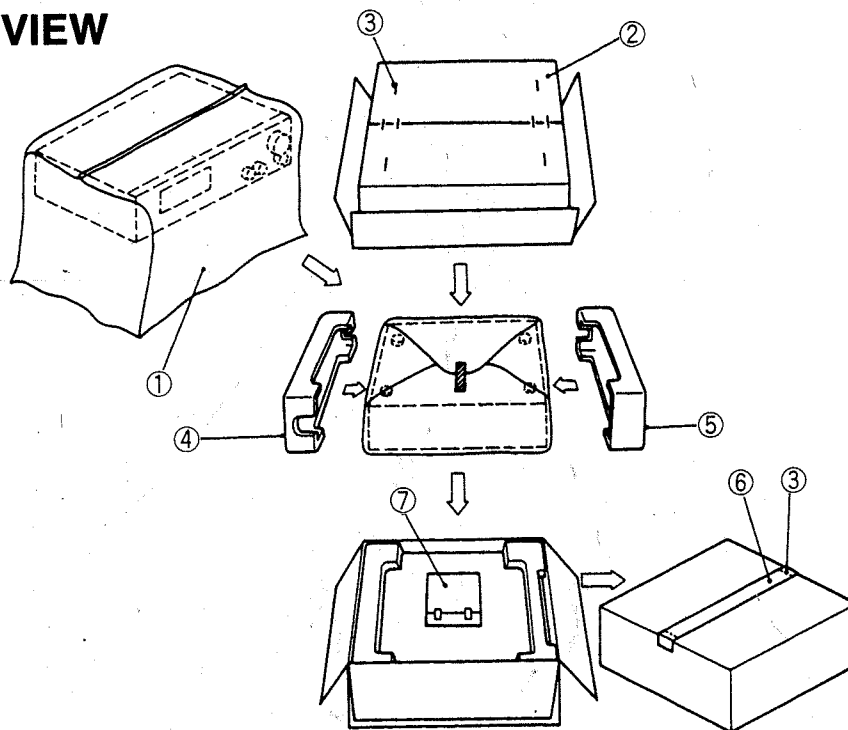
NOTE: THE COMPONENTS IDENTIFIED BY MARK Δ ARE CRITICAL FOR RISK OF FIRE AND ELECTRIC SHOCK. REPLACE ONLY WITH PART NUMBER SPECIFIED.

CAUTION: Replacement of the transistor of mark *, if necessary, must be made from the same beta group (Hrz) as the original type.

SCHEMATIC DIAGRAM
- CD section -



PACKING VIEW



REF.NO.	PART NO.	DESCRIPTION		
1	29100105	680 × 550, Styren bag	29361731A	Label
2	29052907	Carton box 	29361574	Label
	29052906	Carton box <S>	29360687	Label, Class 1
3	282301	Staple	24140302	RC-302S, Remote control transmitter
4	29091700	Pad F	29095746	Sheet
5	29091701	Pad B	29095745A	Sheet U7 <P>
6	29110071	PP tape	3010054	UM-3, Battery
	29100097-1Y	350 × 250, Styren bag	25065462	YA21-0237, FM adaptor <W>
	2010200	Cord RI		
	25055040	CV-K-2, Conversion plug <W>		
	292112Y	FM antenna		
	29342178	Instruction manual, English		
	29342179	Instruction manual U6 <P>		
	29342180	Instruction manual U3		
	29342182	Instruction manual U3 <W>		
	29355133A	Instruction sheet		

NOTE: <P>:230V model only
 <W>:Worldwide model only
 <S>:Silver model only
 :Black model only

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