SERIAL No. 3342

R-200

ONKYO SERVICE MANUAL

QUARTZ SYNTHESIZED TUNER AMPLIFIER MODEL R-200





UG, UGV	220V AC, 50Hz
UW	120/220V AC, 50/60Hz
UQA, UQB	240V AC, 50Hz

SAFETY-RELATED COMPONENT WARNING!!

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

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

AUDIO COMPONENTS

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SPECIFICATIONS

AMPLIFIER SECTION

IM Distortion:

40 watts per channel, min. RMS, at 8 ohms, Power Output: both channels driven, from 20Hz to 20kHz,

with no more than 0.025% THD

Musical Power Output: 2×140 watts at 4 ohms, 1kHz (DIN) 2×75 watts at 8 ohms, 1kHz (DIN)

Continuous Power Output: 2×65 watts at 4 ohms, 1kHz (DIN) 2×50 watts at 8 ohms, 1kHz (DIN)

Total Harmonic Distortion: 0.025% at rated power

0.025% at 1 watt output

0.025% at rated power 0.025% at 1 watt output

Damping Factor: 60 at 8 ohms

20 - 30,000Hz ± 0.5 dB Frequency Response: RIAA Deviation: 20 - 20,000Hz ± 0.5 dB

Sensitivity and Impedance: Phono: 2.5mV/50 kohms

> CD/Tape Play: 150mV/50 kohms TapeRec: 150mV/2.2 kohms (PHONO)

120mV RMS at 1kHz, 0.025% THD Phono Overload: 80dB (IHF A, 5mV input) Signal-to-Noise Ratio: Phono:

CD/Tape: 102dB (IHF A)

Tone (Vol-30dB): Tone-1: +6dB at 100Hz Tone-2: +9dB at 100Hz

+5dB at 10kHz

Muting: _00

TUNER SECTION

FM:

Tuning Range: 87.5 - 108.0 MHz (50kHz steps) 11.2dBf, 1.0µV, 70 ohms Usable Sensitivity: Mono:

0.9 µV (S/N 26dB, 40kHz Devi.)

75 ohms DIN

18.0dBf, 2.2µV, 75 ohms Stereo:

23µV (S/N 46dB, 40kHz Devi.)

75 ohms DIN

18.0dBf, 2.2µV, 75 ohms 50dB Quieting Sensitivity: Mono:

37.2dBf, 20µV, 75 ohms Stereo:

Capture Ratio: 1.5dB Image Rejection Ratio: 85dB IF Rejection Ratio: 90dB

Signal-to-Noise Ratio: 73dB Mono: 67dB Stereo:

Selectivity: 50dB DIN (±300kHz, 40kHz dev.) Mono:

AM Suppression Ratio: 50dB

Harmonic Distortion: Stereo: 0.25%

30 - 15,000Hz ± 1.5 dB Frequency response:

Stereo Separation: 45dB at 1kHz 30dB at 100 - 10,000Hz

AM:

Tuning Range: 522 - 1611kHz (9kHz steps)

Usable Sensitivity: $30\mu V$ 40dB Image Rejection Ratio: 40dB IF Rejection Ratio: Signal-to-Noise Ratio: 40dB Harmonic Distoriton: 0.7%

GENERAL

Power Supply: European models: AC220V, 50Hz

U.K & Australian models: AC 240V, 50Hz Worldwide models: 120 and 220V switchable.

50/60Hz

7.0 kg

Dimensions (W×H×D): 435×87×352mm

Weight:

Supplied Accessories

• Remote control transmitter RC-153S × 1

 UM-3/R6/AA batteries × 2 • AM loop antenna × 1

0.15%

• FM T-shaped antenna × 1

• RI remote control cable × 1

Specifications and features are subject to change without notice.

SERVICE PROCEDURES

1. Replacing the fuses

For continued protection against fire hazard, replace only with same type and same rating fuse.

G (220V) model

Circuit no. Part no. Description

2A-SE-EAK, Primary F901 252074 2A-SE-EAK, AC outlet F902 252074

Q (240V) model

Circuit no. Part no. Description

2A-SE-EAK, Primary F901 252074

W (Worldwide) model

Circuit no. Part no. Description

F901 252049 4A (ST-6), Primary F902 252074 2A-SE-EAK, Primary

2. Memory preservation

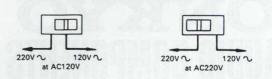
This unit does not require memory preservation batteries. A built-in memory power back-up system preserves contents of the memory during power failures and even when the unit is unpluggged. The unit must be plugged in and the power switch turned on and off once in order to charge the back-up system. Note that since this is not a permanent memory the power switch must be turned on and off a few times each month to keep the back-up system operative. The period of time during which memory contents are preserved after

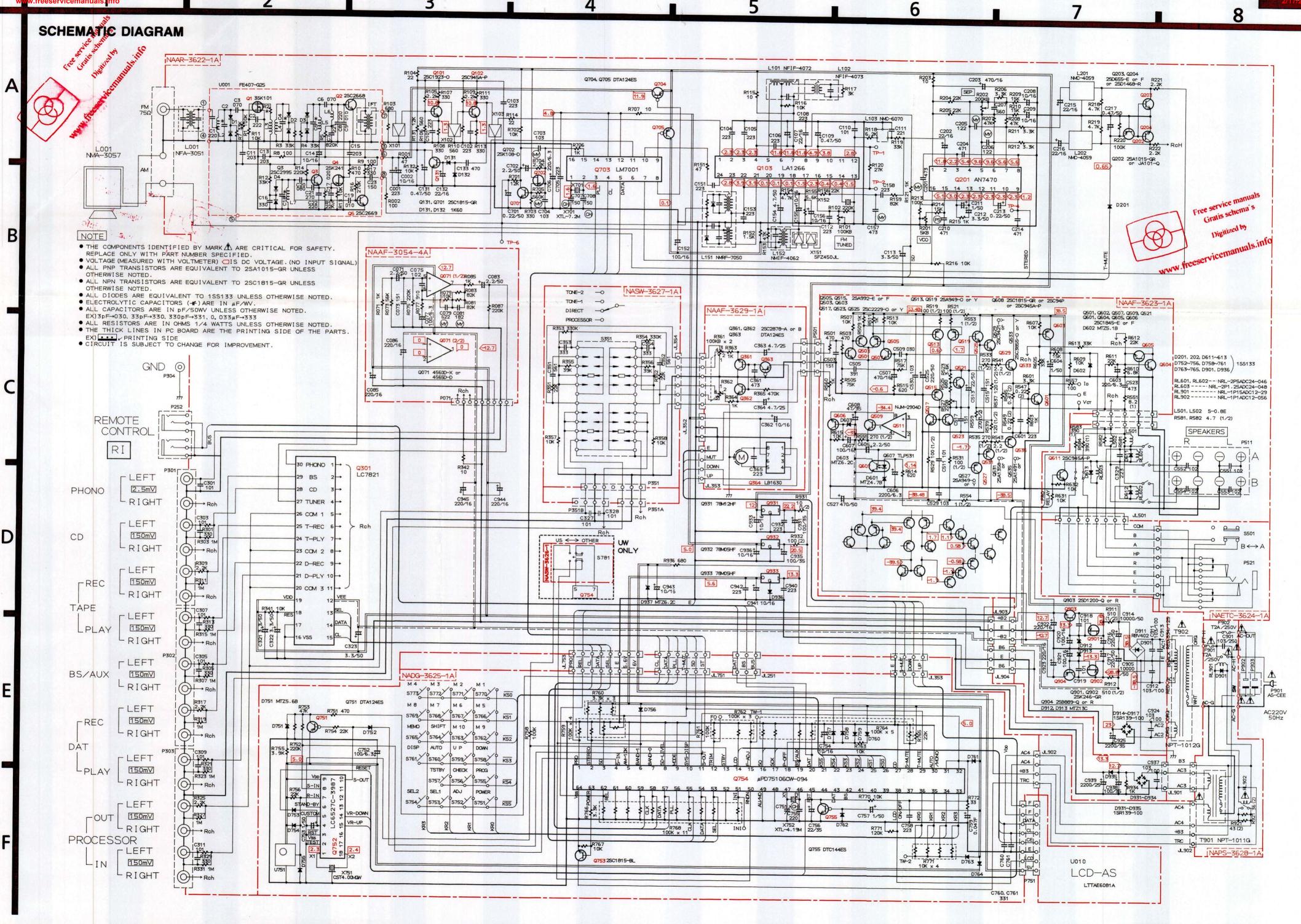
power has last been turned off varies depending on climate and placement of the unit. On the average, memory contents are protected over a period of 3 to 4 weeks (a minimum of 2 weeks) after the last time power has been turned off. This period is shorter when the unit is exposed to very high humidity or used in an area whith an extremely humid climate.

3. Change of voltage

Worldwide models are equipped with a voltage selector to conform with local power supplies. This switch is located on the back panel. Be sure to set this switch to match the voltage of the power supply in your area before turning the power switch on.

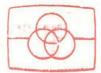
This switch is set to 220V at the factory, Voltage is changed by sliding the groove in the switch with the screw-driver to the right or left. Confirm that the switch has been moved all the way to the right or left before turning the power switch on.





4. How to Set the Current Time

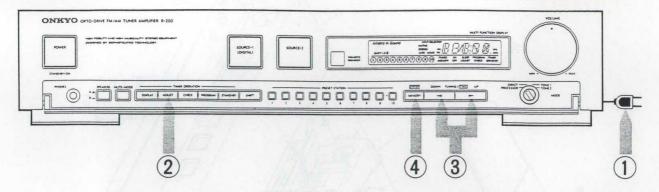
Make sure to adjust the time to the current time before setting the timer. Also do the same adjustment after a power failure has occurred or the power cord has been unplugged.



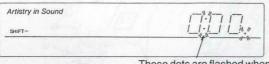
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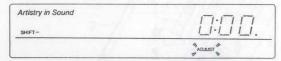


1) Plug the power cord to a power socket after completing all the connections between the components. The dots then flash.



These dots are flashed when the power stoppage is interrupted.

- (2) Press the ADJUST button.
 - The ADJUST indicator below the numbers flashes.



- 3 Adjust the time by pressing the UP ▶ or DOWN ■ button.
 - Each press of the UP ▶ or DOWN ◀ button increases or decreases the time by one minute. Pressing the buttons for more than 0.5 seconds changes the time fast. Pressing

5. Change of FM/AM band step.

With the exception of the UG and UQ models, a BAND STEP selector switch is not provided.

(FM)

BAND STEP	J762	J761
200kHz→ 50kHz	short	open
50kHz→200kHz	open	short

(AM)

BAND STEP	J758	J759
l0kHz→ 9kHz	short	open
9kHz→10kHz	open	short

-Worldwide model-

Worldwide models are equipped with a step band selector switch. This switch is located on the back panel. This switch is set to 50kHz (FM) and 9kHz (AM) at the factory, but may have to be reset to 200kHz and 10kHz depending on the area where the unit is used.

	De-emphasis	FM step	AM step
Europe:	$50 \mu\mathrm{sec}$	50kHz	9kHz
U.S.A.:	$75 \mu\mathrm{sec}$	200kHz	10kHz

the buttons for more than 3 seconds changes the time even faster.

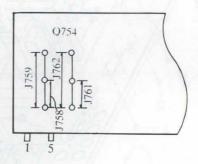
- The time is indicated in 24-hour display.
- 4 Press the ENTER button.
 - The ADJUST indicator goes out and the dots flash. The clock then starts. Pressing the ENTER button according to an announcement of time on the radio or TV enables an accurate time adjustment to the level of second.

SHIFT-	111.11%
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NOTE:

The time adjustment is also possible when the Power Switch is off.

The timer reservation cannot be set unless the current time has been set.



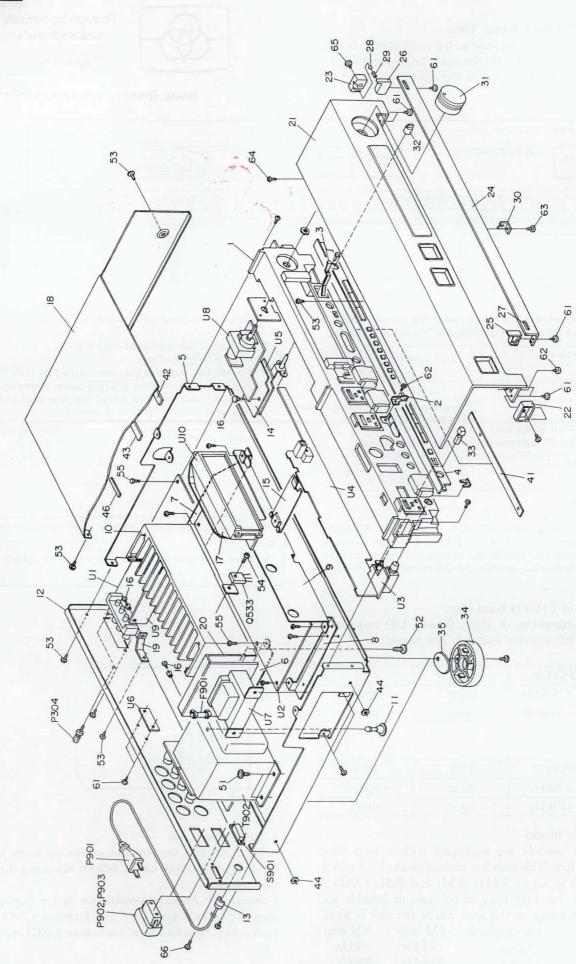
6. Safety-check out

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 terminal GND on the back panel. Specifications: more than $10M\Omega$ at 500V.

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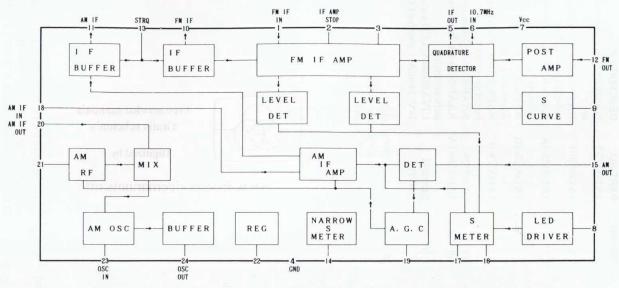
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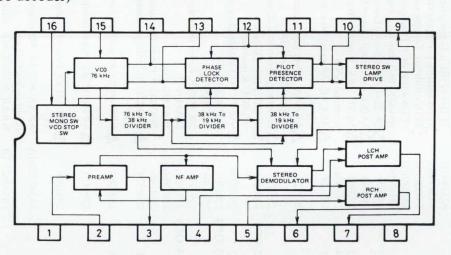
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/w.free	ese	rvi p	cer	naı	nua	als.	.inf	fo		, sc, v	er er																													
vw.free	DESCRIPTION	W-3627-1, Tone cir	ass y NASW-3626-1 Rand selector switch	pc board ass'v <w></w>	ver	board ass'y <g></g>	owers	board ass'y <w></w>	NAPS-3628-1C, Power supply pc	board ass y < Q > NA AF-3670-1 Volume no board ass'v	NAAF-3630-1A. Equalizer amplifier	pc board ass'y	LTTAE6081A, LCD ass'y	14V, 240mA, Lamp for LCD	nodel	wide model	nodel							×	7			F			vices			-	ls			THE COMPONENTS IDENTIFIED BY MARKA	ARE CRITICAL FOR RISK OF FIRE AND	SPECIFIED
	PART NO.	1A185527-1	1 4 185526-1	102000111	1A185528-1A		1A185528-1B		1A185528-1C	1 4 185579-1	1A185530-1A		24190013	210197	<g>: Only 220V model</g>	<w>: Only Worldwide model</w>	<q>: Only 240V model</q>					(, N	- n) w.	fre	ese	erv	E)igi	anı			nf	o			HE COMPONE	RE CRITICAL	BAPT NITMBED SPECIFIED
	REF.NO.	US	116		170					1.18	60		U10		NOTE: <		V																					NOTE: 1	A, D	40
	DESCRIPTION	4TTB+8C(BC), Tapping screw	3TTS+12B(BC), Tapping screw	3TTW+8B. Tapping screw	2.6TTP+6P(BC), Tapping screw	3TTP+8P(BC), Tapping screw	3TTB+6B(BC), Tapping screw	3TTS+10B(Ni), Tapping screw	3TTW+10P(BC), Tapping screw	A 24-SF-FAK Primary fuse / G/O>	A 4A(ST-6), Primary fuse <w></w>	A 2A-SE-EAK, Fuse <g w=""></g>	Terminal GND	AS-CEE, Power supply cable	A AS-SAA. Power supply cord	<australian model=""></australian>	A Power supply cord <u.k. model=""></u.k.>	A NSCT-2P164, AC outlet	<g models="" u.k="" w=""></g>	A NSCT-2P173 <australian model=""></australian>	25C3855-U,	2SC3855-P. Power transistor	2SA1491-O,	2SA1491-Y or	2SA1491-P, Power transistor	△ NSS-22113P, Voltage selector switch	↑ NPT-1012G Power transformer	<9>	ANPT-1012DG, Power transformer	A NIDT 10130 B	A INF 1-1012Q, FOWER transformer <0>					A NAAF-3623-1A, Main amplifier pc	NAFTC 3674.1 Headphone forming	not board ass'v		board ass'y <g q=""></g>
	PART NO.	838440089	834430128	831130088	833426060	833430080	838430068	834230108	831430100	252074	252049	252074	25060044	253149	253118		253104	25050337		25050346	2201/05,	2201706	2201693,	2201694 or	2201696	25065287	2300468		2300470	2200405	2300403	1A185522-1A		1A185522-1B		1A185523-1A	1 4 185524-1	147000141	1A185525-1A	
	REF.NO.	52	54	55	61	62	63	64	65	60 F901		F902	P304	P901				P902, P903	0004	P902	(222), (223 4		0535, 0536			S901	T902					UI				70	113	S	U4	
	DESCRIPTION	Front bracket ass'y	Compressive spring		Chassis	Bracket L	Bracket R	Bracket FL	Bracket F	Kaulator Holder	Back panel <g></g>	Back panel <w></w>		Back panel < U.K. model> A Bushing(strainrelief)	Insulating plate	Bracket K	Rivert	Shield case (LCD)	Top cover	Bracket, equalizer	Front panel ass'v	Holder L, hinge	Holder R, hinge	Door	Hinge L	Hinge R Knob DOOR	Stellball	Spring	Holder, door	Knob VOLEME	Knob SPEAKER	Leg	Cushion	t3×30×10, Cushion	Holder	Cushion t0 5× 150×10 Cushion	t2×90×4 Cushion	Spacer Spacer	t3×60×10, Cushion	$t2\times45\times4$, Cushion
PARTS LIST	PART NO.	27110443B	27180410	27190664-1A	27100172A	27141286	27141287A	27141288	2/130554	27190511	27121183-3	27121183-4	27121183-5A	27300750	28175153	27141290	880009	27225102	28184412	2/141344	1A185121	28180098	28180099	28148230	28180100	28180101	270555	27180401	27190667	28323473	28323475A	27175190	28140985	28140982	27190733	28140893	28140907	27270212	28140955	28140983
PART	REF.NO.	, 1	4 K	4	5	9	7	∞ ∘	9	11	12			13	14	15	16	17	18	70 20	20 21	22	23	24	25	26	28	29	30	31	33	34	35	37	38	41	43	44	45	46

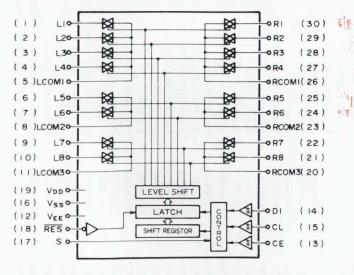
Q103 LA1266 (FM IF & AM radio system)

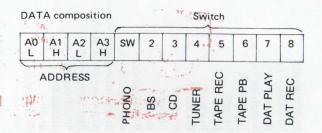


Q201 AN7470 (FM stereo decoder)



Q301 LC7821 (Analog switch)

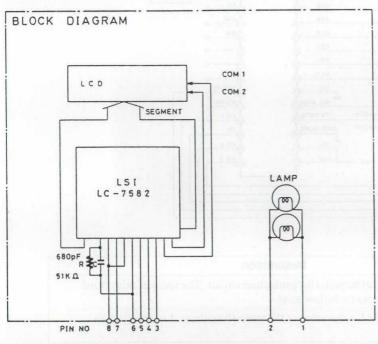




The source becomes ON when the bit of switch becomes high.

Pin No.	Terminal	Description	Pin No.	Terminal	Description
1	PHONO		16	Vss	Ground terminal.
2	BS CD		17	S	Selector terminal.
3 4 5 6 7 8	TUNER L COM 1 TAPE REC TAPE PLAY L COM 2	Input/output terminals of audio signal of right channel. Control to the inside analog switch at the serial data.	18	RES	Reset terminal. When power is turne ON, the condition of the analog switch is not determined, but when this terminal is "L", all analog switches are OFF.
9 10	DAT PLAY	The second secon	19	V _{DD}	Power supply terminal. (+V)
11	DAT REC L COM 3	T d max	20	R COM 3	
12	V _{SS}	Negative power supply terminal. (-15V)	21 22 23	DAT REC DAT PLAY R COM2	
13	CE	Chip enable terminal. Connect to SEL terminal µPD75106CW-094.	24 25	TAPE PB TAPE REC	Input/output terminals of audio signs of left channel. Control to the inside analog switch a
14	DI	Serial data input terminal. Connect to DATA terminal of µPD75106CW-094.	26 27 28	R COM 1 TUNER CD	the serial data.
15	CL	Serial clock input terminal. Connect to CLOCK terminal of μPD75106CW-094.	29 30	BS PHONO	

LCD-AS



Pin no.	Function
1	LAMP AC12V
2	LAMP AC 12 V
3	DATA
4	CLK
5	CE
6	Vss
7	INH
8	VDD

Vout1 Vout2

Q364 LB1630 (Motor drive)

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www.freeservicemanuals.info TRUTH TABLE

	T	T	T	
N 1	IN2	OUT 1	OUT 2	MOTOR
н	L	н	L	Normal
L	н	L	н	Reverse
н	н	OFF	OFF	Wait
L	L	OFF	OFF	Wait

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Q754 \(\mu\)PD75106CW-094 (Microprocessor)

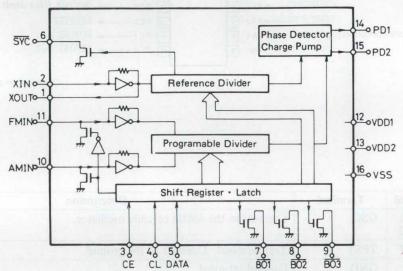
Pin No.	Symbol	Description					
1	PROTECT	This is the detection input terminal for protection circuit. The speaker relay turns off when this terminal goes to the low level.					
2	STEREO	This is the input terminal for detection of the stereo broadcast. Low level when stereo broadcast.					
3	SD	Auto stop signal input terminal. Auto tuning stops when this terminal goes to the high level.					
4 SYSIN		YS IN System code input terminal from the other product (Including the remote control High when active.					
5	AM10K AM band step setting input terminal .9kHz step at the low level.						
6 7	BAND 1 BAND 0 FM band step setting input terminal. Refer to initial setting terminal of						
8	SD LEVEL	Muting operation level setting input terminal. Muting level low at the low level.					
9	MODE	FM or TV mode setting input terminal. FM mode at the low level.					
10	SYSDIS	This is the operation setting input terminal for system code. Operation at the low level.					
11	SYSOUT	System code output terminal to other product. Active low.					
12	TRIM	Crystal oscillator frequency adjustment terminal.					
13	STBY	Stand-by output terminal .5V when the power turns on.					
14	LCD	Connect to the terminal CE of LCD driver LC7852.					

15	F. ADJ	Crystal oscillator adjustment mode when test points TW1 and TW2 are conne						
16	SO	Connect to the terminal DATA of LC7852.						
17	SCK	Connect to the terminal CLK of LC7852.						
18	P OFF	This is the input terminal for detection of the stoppage of electric current. "H when the stoppage of electric current.						
19	BS/AUX	BS/AUX video signal control output terminal. Not used.						
20	DAT	DAT video signal control output terminal.						
21 22 23 24 25 26	KS5 KS4 KS3 KS2 KS1 KS0	These are the auto scan output terminals. 5V when the operation switch is operated.						
27	CD	CD video signal control output terminal.						
28	SELMUTE	Muting output terminal when the source selector switch is operated.						
29	TUMUTE	Tuner muting output terminal.						
30	AUTO/MONO							
31	NC	No connection.						
32	VDD	This is the power supply terminal. Connect to 5V.						
33 34 35 36	KR3 KR2 KR1 KR0	These are the key scan input terminals. Low level when the source selector is PHONO. LCD lighting output terminal. Active high.						
37	PHONO	Low level when the source selector is PHONO.						
38	LCDON	LCD lighting output terminal. Active high.						
39 40 41	C 75V	Not used.						
42 43 44	BS DAT CD	Input selection indication output terminal for video. Active low.						
45	RESET	Reset input terminal. Active low.						
46 47	X2 X1	Connect to 4.19MHz crystal oscillator.						
48		Not used.						
49	AU-MO	Setting input terminal for AUTO/MONO operation of PLL IC LM7001. AUTO/MONO operation is operated at the low level.						
50	RNDM	Setting input terminal for station memory.						
51	INITON	Setting input terminal for condition when the power is turned on.						
52		Not used.						
53	SEL	Connect to the terminal CE of analog switch LC7821.						
54	DATAS	Connect to the terminal D1 of analog switch LC7821.						
55	CLKS	Connect to the terminal CL of analog switch LC7821.						
56		Not used.						
57	PLL	Connect to the terminal CE of PLL IC LM7001.						
58	DATAP	Connect to the terminal DATA of PLL IC LM7001.						
59	CLKP	Connect to the terminal CLK of PLL IC LM7001.						
60 61		Not used.						
62	RELAY	This is the control output terminal for speakers and headphone relaies. Active high.						
63	POWER	This is the control output terminal for AC outlet relay and LCD illuminatis setting relay. Active high.						

Initial setting terminal descriptions

Terminal		Function descriptions							
	AM band setting input terminal.								
	AM10K	Frequency range		Channel step	Reference frequency				
AM10K	L	522~	1611kHz	9kHz	9kHz				
	Н	530~1620kHz		10kHz	10kHz				
	FM band set	ting input t	erminal.	terx-					
	BAND0	BAND1	Frequency rang	ge Channel step	Reference frequency				
AM10K	Н	Н	87.50~108.00MI	Hz 50kHz	25kHz				
	Н	L	87.9 ~107.9 MI	Hz 200kHz	25kHz				

Q703 LM7001 (PLL SYNTHESIZER AND CONTROLLER)

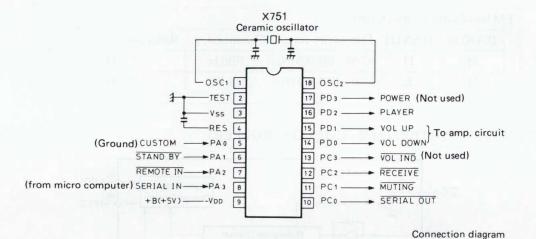


Pin No.	Terminal	Description						
1	XOUT	Connect to the 72 MHz arrests assillator						
2	XIN	Connect to the 7.2 MHz crystal oscillator.						
3	CE	Chip enable terminal. Connect to the PLL terminal of $\mu PD75106CW-094$.						
4	CL	Serial clock input terminal. Connect to the CLOCK terminal of µPD75106CW-094.						
5	DATA	Serial data input terminal. Connect to the DATA terminal of μ PD75106CW-094.						
6	SYN	Not used.						
7	BO1	AUTO/MONO selector output terminal. "L" when AUTO.						
8	BO2	FM control signal output terminal. "L" when FM.						
9	BO3	AM control signal output terminal. "L" when AM.						
10	AMIN	AM local oscillator input terminal.						
11	FMIN	FM local oscillator terminal.						
12	VDD 1	Power supply terminal for back-up.						
13	V _{DD} 2	Power supply terminal.						
14	PD1	Charge pump output of the phase detector which constitutes the PLL. High level is output when the divided local oscillator frequency is high than the reference frequency.						
15	PD2	In the opposite case, low level is output. Floating occurs when the frequencies matched. The output is applied to the variable capacitor diode in the local oscillator through the low pass filters.						
16	Vss	Ground terminal.						

Q752

LC6527C-3987 (REMOTE CONTROLLER)





Terminal No.	Symbol	Terminal	Description			
1 18	OSC1 OSC2	OSC	Connect to the 4MHz ceramic oscillator.			
2	TEST	TEST	Test terminal. Connect to the ground.			
3	Vss	GND	Ground terminal.			
4	RES	RES	Reset terminal.			
5	PA0	CUSTOM	The custom code for decode is selected at this terminal. For European model, the level is low.			
6	PA1	STANDBY	Terminal for STANDBY detection. During low input, only the POWE code is decoded.			
7	PA2	REMOTE IN	Signal input terminal for remote control preamp. Active low.			
8	PA3	SERIAL IN	Serial data input terminal from microprocessor.			
9	VDD	+B	Power supply terminal.(+5V)			
10	PC0	SERIAL OUT	Output at this terminal are the custom code (16 bit) remote control code input to REMOTE IN, data code (8 bit), and the serial code (12 bit) that has been converted corresponding to the decoded data code (8 bit.			
11	PC1	MUTING	At this terminal, the audio muting code that is input is inverted for each L/H. When power is ON, the level is high. (Not used)			
12	PC2	RECEIVE	This is the display output for remote control reception. Output is low when decoded code is being received. (Not used)			
13	PC3	VOL IND	During output of VOLUME UP/DOWN, a pulse (TTTT; T = 0.3ms) is output.(Not used)			
14	PD0	VOL DOWN	When the volume DOWN code is input, a high pulse of 120ms is output.			
15	PD1	VOL UP	When the volume UP code is input, a high pulse of 120ms is output.			
16	PD2	PLAYER	When the player PLAY/REJECT is input, a high pulse of 200ms is output. (Not used)			
17	PD3	POWER	The power code input inverts the L/H. Level is high for power being turned ON.			

ADJUSTMENT PROCEDURES

Preparation

• Input

FM mono: 1kHz, 75kHz devi., $60dB/\mu V$

FM stero: 1kHz, L+R 67.5kHz devi.: Pilot signal

19kHz 7.5kHz devi. AM: 400Hz, 30% mod.,

Output

Connect the non-inductive type resistor of 8 ohms to the speaker terminal A of left and right channels unless otherwise noted.

Amplifier section

Idling current adjustment

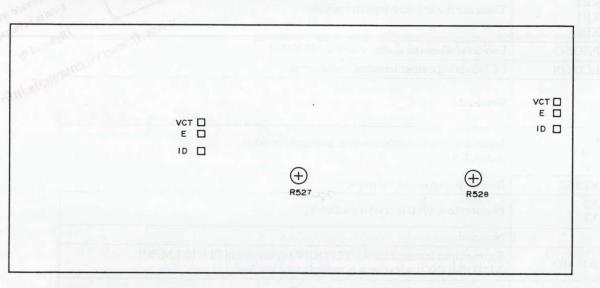
Connect the DC voltmeter to the terminals I_{ID} and V_{CT} on the power amplifier pc board.

Adjust the semi-fixed resistors R527 and R528 so that the indication of voltmenter is 3.5 ± 0.5 mV.

Notes: VOLUME Maximum, Open load, Adjust after switching on for 5 minutes.

• Standard knob position Input selector

The state of the s	
nput selector	CD
MUTING	OFF
MODE	DIRECT
VOLUME	
SPEAKER	A



Clock Frequency adjustment

Remove the top cover and front panel.

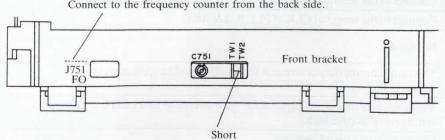
Set the input selector switch to FM.

Set the tuning to 98.00MHz.

Short between terminals TW1 and TW2 with the short clip, and connect the frequency counter to terminal FO(J751).

Adjust C751 so that the counter reading becomes $1,048,578 \pm 3$ Hz. After adjustment, disconnect the short clip and frequency counter.

Connect to the frequency counter from the back side.



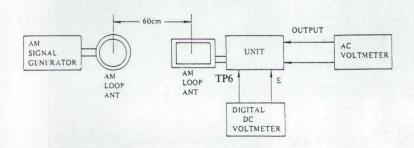
www.freeservicemanuals.info

FM section

M Section									31/11/12
Item	Step	Connection of instrument	FM SG output	Stereo modu- lator output	Turning dial setting	Output indicator	Adjustment	Adjust for	Remarks
FM	1		98.00MHz			DC voltmeter	L101	0V ± 30mV	Mode switch: MONO Repeat the steps 1 and 2 until no
IF	2	Fig. 1	1kHz, 75kHz devi. 65dBf (60dB)	- 98.00MHz	Distortion analyzer	L102	Minimum	further adjustment is necessary	
1 TUNED		98.00MHz 19.2dBf (14dB)		– 98,00MHz	TUNED indicator	R101	Light on	Remove R102 when this	
indicator level	2		98.00MHz 18.2dBf (12dB)		98.0014112	TONED indicator	RIUI	Light off	adjustment can not.
vco		Fig. 2	98.00MHz 1kHz, 75kHz devi. 65dBf (60dB)	-	98.00MHz	Frequency counter	R201	19kHz ± 10Hz	Mode switch STEREO
Stereo Distortion		Fig. 3	98.00MHz 65dB (60dB) Ext. modulation	L or Rch. 1kHz	98.00MHz	Distortion analyzer	IF on the front end	Minimum	Don't turn more than ±180°
Stereo	1		98.00MHz	Lch. 1kHz	00.000411-	Rch. AC voltmeter	R202	Minimum	Maximum and
Separation	2	Fig. 3	65dBf (60dB) Ext. modulation	Rch. 1kHz	98.00MHz	Lch. AC voltmeter	K202	Minimum	same separation

AM	section

Step	AM SG output	Tuned frequency	Output indicator	Adjustment point	Adjust for
1		522kHz	Digital DC voltmeter	OSC on RF block (L151)	1.3V ± 0.1V
2	603kHz 400Hz 30% mod. 60dB/m	603kHz	AC voltmeter	RF on RF block (L151)	Maximum
3	999kHz 400Hz 30% mod. 60dB/m	999kHz	AC voltmeter	L152	Maximum & TUNED indicator lights on



Reference specifications

FM Tuned voltages

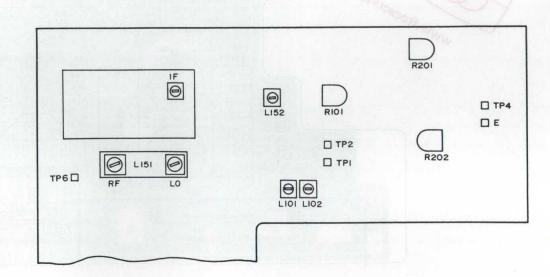
 $87.50 MHz \ 1.5 \pm 0.5 V$ $108.00 MHz \ 8.0 \pm 0.5 V$ AM: Less than 68 dB/mFM: Less than $16 \ dB\mu$

AM Tuned voltage

Auto stop level

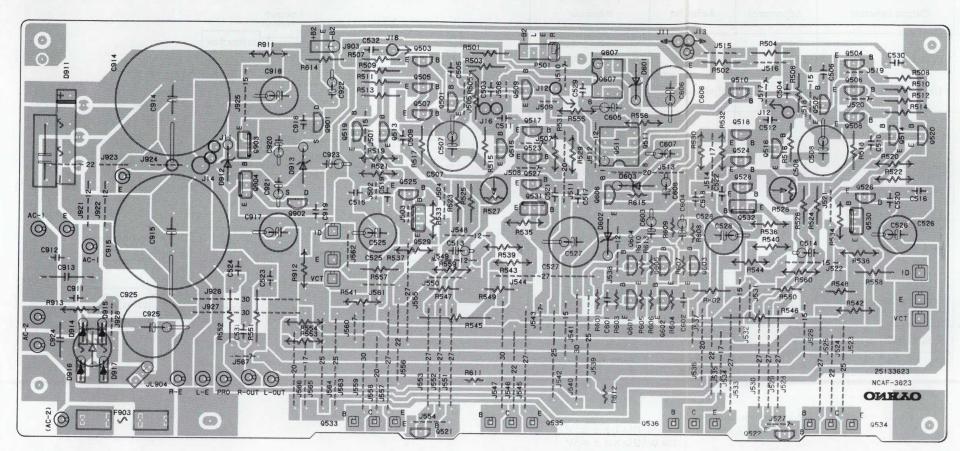
FM: Less than 16 dB μ 522kHz 1.3 \pm 0.5V 1611kHz 7.5 \pm 0.5V

OUTPUT ANT TERMINAL FM SIGNAL GENERATOR DISTORTION UNIT TP-1 TP-2 AC VOLTMETER DC MILLIVOLT METER Fig. 1 ANT AC Frequency SIGNAL GENERATOR UNIT voltmeter counter Use the high impedance probe. (10:1) Fig. 2 OUTPUT EXT. MODE FM SIGNAL GENERATOR STEREO DISTORTION UNIT MODULATOR ANALYZER ANT TERMINAL AC VOLTMETER OSCILLOSCOPE Fig. 3

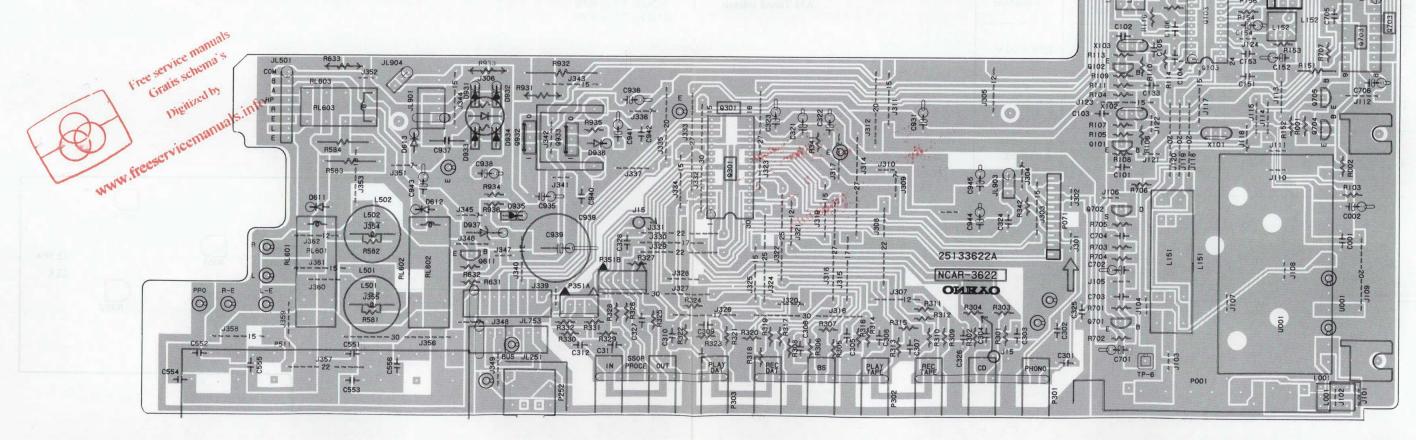


R-200

PRINTED CIRCUIT BOARD VIEW FROM BOTTOM SIDE



MAIN AMPLIFIER PC BOARD



MAIN CIRCUIT PC BOARD

PRINTED CIRCUIT BOARD-PARTS LIST

CIRCUIT NO.		(NAAR-3622-1A/1B) DESCRIPTION	CIRCUIT NO.	PART NO.	DESCRIPTION
Komoon no.	Front end		C213	354782299	$0.22\mu\text{F}$, 50V, Elect.
£1,1001	240074A	FE407-G25	C215, C216	354742209	22μF, 16V, Elect.
₩U001	240074A	FE407-G23	C217	354784799	0.47μ F, 50V, Elect.
	ICs		C301-C312	373301014	$100pF \pm 5\%, 125V, PP$
HQ103	22240039	LA1266	C321-C323	354780339	$3.3 \mu\text{F}$, 50V, Elect.
O O 201	22240242	AN7470		373301014	100pF ±5%, 125V, PP
^Φ Q301	22240079	LC7821	C327, C328		1000pF±5%,50V,DEW
[©] Q703	22240090	LM7001	C551-C554	379121024	•
Q931	222780125NEC	78M12HF	C701	354782299	$0.22\mu\text{F}$, 50V, Elect.
<q931 □ 0022</q931 	222780125NEC	78M05HF	C702	354780229	$2.2 \mu\text{F}$, 50V, Elect.
Q932, Q933	222780033NEC	/814103111	C703, C704	371121034	$0.01\mu F \pm 5\%, 50V, Mylar$
0 m Q101 DQ102	Transistors		C706	354722219	$220 \mu\text{F}, 6.3\text{V}, \text{Elect}.$
ี้ 0101	2211723	2SC1923-O	C931	354761019	$100 \mu\text{F}$, 35V, Elect.
C 0102	2210746	2SC945A-P	C933	354741009	10μF, 16V, Elect.
ධ Q131	2211255	2SC1815-GR	C935	354761019	100 μF, 35V, Elect.
ம் Q202	2211455 or	2SA1015-GR or	C936	354741009	10μF, 16V, Elect.
01 Q202	2212495	JA101-Q	C937	379131035	$0.01 \mu F \pm 10\%, 100 V, DEW$
H.			C938	354761019	$100 \mu\text{F}, 35\text{V}, \text{Elect}.$
₽ Q203, Q204	2212794	2SD1468-R			2200μF, 25V, Elect.
O Q611	2210746	2SC945A-P	C939	354752229	
Q701	2211255	2SC1815-GR	C941, C943	354741009	$10 \mu F$, $16V$, Elect.
NQ702	2212294	2SK108-D	C944, C945	354742219	$220 \mu\text{F}$, 16V, Elect.
Q704, Q705	2212600	DTA124ES		Resistors	
9	Diades		R101	5215047	N08HR100KBC, Semi-fixed
D 101 D 100	Diodes	11/40		5215044	N08HR5KBC, Semi-fixed
D131, D132	223132	1K60	R201		N08HR500KBC, Semi-fixed
D201	223163	1SS133	R202	5215049	
D611-D613	223163	1SS133	R581, R582	441520474	4.70hm, 1/2W, Metal oxide film
D931-D935	22380032	1SR139-100	R583, R584	441623914	390ohm, 1/2W, Metal oxide film
D936	223163	1SS133	R931	442521004	10ohm, 1/2W, Metal oxide film
D937	224450623	MTZ6.2C	R932	441721014	100ohm, 2W, Metal oxide film
	0-11-		R933	442522204	22ohm, 1/2W, Metal oxide film
STEVEN	Coils	NIE A 2051			<w></w>
L001	233312	NFA-3051			
L103	233383	NMC-6070		Relaies	VIDY 2054 D 624 046 S 1
L201, L202	233355A	NMC-4059	RL601, RL60		NRL-2P5A-DC24-046, Speaker
L501, L502	231134	S-0.8E	RL603	25065342	NRL-2P1.25A-DC24-048,
	Transformers				Headphone
7 101		NFIF-4072		Terminals	
L101	233401		D001		NTM-2PDMN31, Antenna
L102	233402	NFIF-4073	P001	25060087	
L152	232139	NMIF-4062	P252	25045172	HSJ1003-01-020
	RF block		P301	25045252	NPJ-6PDBL124
L151	232148	NMRF-7050	P302, P303	25045213	NPJ-6PDBL92
LIJI			P511	25060125	NTM-8PDMN058
	Ceramic filters			Plugs	
X101-X103	3010137	SFE10.7MMK	D251 A	25055133	NPLG-3P117
X151	3010123	SFZ450JL	P351A		
X152	3010076	BFU450C	P351B	25055134	NPLG-4P118
				Sockets	
	X'tal	NET 7 214	JL352	25050267	NSCT-3P-95
X701	3010141	XTL-7.2M	JL751	25050270	NSCT-6P-98
	Capacitors		JL753	25050272	NSCT-8P-100
C002	354741009	10μF, 16V, Elect.		25050267	NSCT-3P-95
C107, C132	354742209	$22\mu\text{F}$, 16V, Elect.	JL901	23030207	N3C1-31-93
		$0.47\mu\text{F}$, 50V, Elect.		Radiator	
C109, C131	354784799			27160211	RAD-68
C113	354780339	$3.3 \mu\text{F}$, 50V, Elect.			
C152	354741019	$100 \mu\text{F}$, 16V , Elect.		Screw	
C154	354780479	$4.7 \mu\text{F}$, 50V, Elect.		82143006	3P+6FN(BC), Pan head
C155, C156	354741009	10μ F, 16V, Elect.			
C157	371124734	$0.047 \mu\text{F} \pm 5\%$, 50V, Mylar			
C158	371122234	$0.022 \mu\text{F} \pm 5\%$, 50V, Mylar			
C201	371124734	$0.047 \mu \text{F} \pm 5\%$, 50V, Mylar			
C202	354742209	22μF, 16V, Elect.			
		$470 \mu\text{F}, 16\text{V}, \text{Elect}.$			
C203	354744719				
C205, C206	371121224	1200pF±5%, 50V, Mylar <g q=""></g>			
	371121524	1500pF±5%, 50V, Mylar <w></w>			
C208, C209	354741009	10μ F, 16V, Elect.			
C210	370134714	$470 \text{pF} \pm 5\%, 100 \text{V}, \text{APS}$			
		4			
C211	354780109	$1 \mu F$, 50V, Elect.			

MAIN AI	MPLIFIER	PC	BOARD	(NAAF-3623-1A)

MAIN AMPI	LIFIER PC BO	ARD(NAAF-3623-1A)			
CIRCUIT NO.	PART NO.	DESCRIPTION	CIRCUIT NO.	PART NO.	DESCRIPTION
	Transistors			Capacitors	
Q501, Q502	2211732 or	2SC1845-F or	C503, C504	373301514	$150pF \pm 5\%, 125V, PP$
Q301, Q302	2211733	2SC1845-E	C505, C506	373303914	$390pF \pm 5\%, 125V, PP$
O503-O506	2211792 or	2SA992-F or	C507, C508	392844715	$470 \mu\text{F} \pm 10\%$, 16V , LL
Q303-Q300	2211793	2SA992-E	C511, C512	373301014	$100pF \pm 5\%, 125V, PP$
Q507-Q510	2211732 or	2SC1845-F or	C513, C514	354782209	22μ F, 50V, Elect.
Q301 Q310	2211733	2SC1845-E	C515-C518	373301514	150pF ±5%, 125V, PP
Q513, Q514	2211353 or	2SA949-O or	C523, C524	379124734	$0.047 \mu\text{F} \pm 5\%$, 50V, DEW
Q010, Q011	2211354	2SA949-Y	C525, C526	354782219	$220 \mu\text{F}$, 50V , Elect.
Q515, Q516	2211792 or	2SA992-F or	C527	354784719	$470 \mu\text{F}$, 50V , Elect.
Q515, Q516	2211793	2SA992-E	C529, C530	379121034	$0.01\mu F \pm 5\%$, 50V, DEW
Q517, Q518	2211633 or	2SC2229-O or	C603	354722219	220 μF, 6.3V, Elect.
Q017, Q010	2211634	2SC2229-Y	C604	354780109	$1 \mu F$, 50V, Elect.
Q519, Q520	2211353 or	2SA949-O or	C605	354780229	$2.2 \mu\text{F}$, 50V, Elect.
Q213, Q220	2211354	2SA949-Y	C606	354722229	2200μF, 6.3V, Elect.
Q521, Q522	2211732 or	2SC1845-F or	C607	354741019	$100 \mu\text{F}$, 16V, Elect.
Q, Q	2211733	2SC1845-E	C608	354764709	47μ F, 35V, Elect.
O523-O526	2211633 or	2SC2229-O or	C911, C912	379131035	$0.01\mu F \pm 10\%, 100V, DEW$
2020 2020	2211634	2SC2229-Y	C913	374503345	$0.33\mu F \pm 10\%$, 125V, ME
Q527, Q528	2211353 or	2SA949-O or	C914, C915	3504200	$10000 \mu\text{F}, 50\text{V}, \text{Elect}.$
2	2211354	2SA949-Y	C916, C917	354782219	$220 \mu\text{F}$, 50V , Elect.
Q529, Q530	2212653 or	2SC3421-O or	C920, C921	354741019	$100 \mu\text{F}$, 16V , Elect.
2	2212654	2SC3421-Y	C922, C923	354742219	$220 \mu\text{F}, 16\text{V}, \text{Elect}.$
Q531, Q532	2212643 or	2SA1358-O or	C924	379131035	$0.01\mu F \pm 10\%, 100V, DEW$
	2212644	2SA1358-Y	C925	354762229	$2200\mu\text{F}, 35\text{V}, \text{Elect}.$
Q533, Q534	2201703,	2SC3855-O,		Resistors	
	2201704 or	2SC3855-Y or	R519-R522	442521014	100ohm, 1/2W, Metal oxide film
	2201706	2SC3855-P ☆	R527, R528	5210054 or	N06HR220BD or
Q535, Q536	2201693,	2SA1491-O,	1021,1020	5210210	N06HR200BD, Semi-fixed
	2201694 or	2SA1491-Y or	R529-R532	442521014	100ohm, 1/2W, Metal oxide film
	2201696	2SA1491-P ☆	R533-R536	442522714	270ohm, 1/2W, Metal oxide film
			R537-R540	442521214	120ohm, 1/2W, Metal oxide film
CAUTION:	Replacement for	or transistor of mark \$\pm\$, if necessary,	R541-R544	442520224	2.2ohm, 1/2W, Metal oxide film
		rom the same beta group(HFE) as the	R545, R546	441724794	0.47ohm, 2W, Metal oxide film
	original type.		R547-R550	4000059	0.22ohm, 2W, Metal plate
Ex. 2SC3	3855-O 2SA1	491- <u>O</u>	R551, R552	441620824	8.2ohm, 1W, Metal oxide film
		a malaumain alana	R553, R554	442520104	10hm, 1/2W, Metal oxide film
	Same beta g	roup	R555, R556	442522714	270ohm, 1/2W, Metal oxide film
Q601, Q602	2211732 or	2SC1845-F or	R559, R560	442522714	270ohm, 1/2W, Metal oxide film
	2211733	2SC1845-E	R911, R912	442525114	510ohm, 1/2W, Metal oxide film
Q603	2211792 or	2SA992-For	, , , , , , , , , , , , , , , , , , , ,		
	2211793	2SA992-E	D501	Socket	NSAS-8P850
Q604-Q606	2211732 or	2SC1845-F or	P501	2000894	143743-01 030
	2211733	2SC1845-E			
Q901, Q902	2211945	2SK246-GR			
0000	2201512	20D1200 O or			

2SD1200-Q or

2SD1200-R

2SB889-Q or

2SB889-R

NJM2904D

TLP531

MTZ4.7B

MTZ5.1B

MTZ6.2C

RBV402

MTZ13C

1SR139-100

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

Q903

Q904

Q511

Q607

D601

D602

D603

D911

D912, D913

D914-D917

2201512 or

2201502 or

2201513

2201503 IC

22240134 Photo coupler 226007

Diodes 224450472

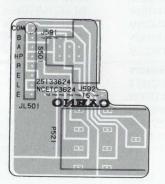
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224450623 22380022

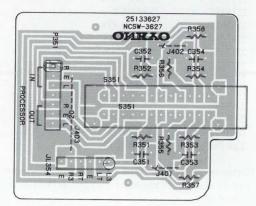
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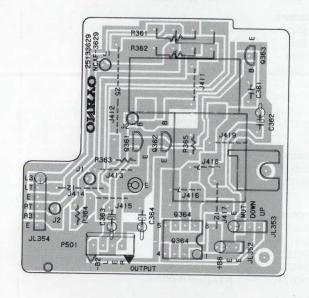
DIGITAL CIRCUIT PC BOARD



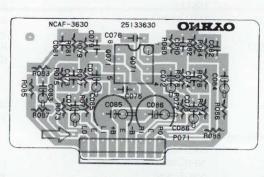
HEADPHONE TERMINAL PC BOARD



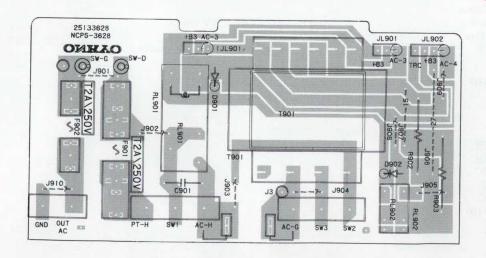
TONE CIRCUIT PC BOARD



VOLUME PC BOARD



EQUALIZER AMPLIFER PC BOARD



POWER SUPPLY PC BOARD



BAND SELECTOR SWITCH PC BOARD (Only Wolrdwide model)

PRINTED CIRCUIT BOARD PARTS LIST

CIRCUIT NO.	PART NO.	DESCRIPTION
S501	25035592	NPS-122-L554, Speaker switch
P521	25045135	HLJ4307-01-3010, Stereo
		headphone terminal
DICITAL CII	BOUT BO BO	ARD (NADG-3625-1A/1B)
CIRCUIT NO.		DESCRIPTION
	Remote senso	
U751 ·	24130003	GP1U501XS
	Transistors	
Q751	2212600	DTA124ES
O753	2211256	2SC1815-BL
Q755	221282	DTC144ES
	ICs	
Q752	22240243	LC6527C-3987
O754	22240193	μPD75106CW-094
D751	Diodes	MT75 6D
D751	224450562	MTZ5.6B
D752-D764	223163	1SS133
	Osc elements	
X751	3010150	CST4.00MGW, Ceramic
X752	3010121A	XTL-4.19M, X'tal
	Capacitors	
C751	3060024	NTC-30P21, Trimmer
C752	353721019	$100 \mu\text{F}$, 6.3V, Elect.
C753, C757	353780109	$1 \mu F$, 50V, Elect.
C754	353741009	$10\mu\text{F}$, 16V , Elect.
C756	354742209	22μF, 16V, Elect.
C759	3000051 or	0.047F, 5.5V
	3020027	Super
	Resistors	Auditoria.
R759	49163104404	100kohm ×4, 1/10W, Network
R760	49163104404	3.3kohm ×3, 1/10W, Network
R762	49163332403	100kohm ×3, 1/10W, Network
R764	49103104405	100kohm × 5, 1/10W, Network
R768	49121104403	100kohm × 11, 1/10W, Network
R771	49163103404	10kohm×4, 1/10W, Network
11/11		TOROIMIAT, 1/10 W, INCIWOIR
0751 0772	Switches	NDC 111 C510
S751-S773	25035548	NPS-111-S510
	Socket	
P751	2000608	NSAS-16P564
	ECTOR SWITO	CH PC BOARD(NASW-3626-1)
CIRCUIT NO.		DESCRIPTION
S781	25065267	NSS-22109
TONE CIRC	UIT PC BOAR	RD (NASW-3627-1)
CIRCUIT NO.	PART NO.	DESCRIPTION
C353, C354		$0.033 \mu\text{F} \pm 5\%$, 50V, Capacitor
C000, C00T	J1/12JJJT	DEW
S351	25030306	NRSF-144-20SS, Rotary switch,
	200000	MODE
P351	2000895	NSAS-14P851, Socket
DOWED CO	IDDL V DO DE	
		ARD (NAPS-3628-1A/1B/1C)
CIRCUIT NO.	PART NO.	DESCRIPTION

223163

2300467

1SS133, Diode

<G>

▲ NPT-1011G, Power transformer

D901

T901

	2300469	↑ NPT-1011DG, Power transformer <w></w>
	2300484	▲ NPT-1011Q, Power transformer <0>
C901	3500065A	△ DE7150FZ103P AC400V/125V, Capacitor IS
R902, R903	441723604	36ohm, 2W, Metal oxide film resistors
RL901	25065248	NRL-1P15A-DC-12-29, Relay
RL902	25065370	NRL-1P1A-DC12-056, Relay
F901A	250113	⚠ SN5051, Fuseholder <w></w>
	25050065	↑ YSH4037, Fuseholder < G/Q>
F902A	25050065	YSH4037, Fuseholder < G/W>
F901	252049	A4A(ST-6), Fuse, primary <w></w>
	252074	▲ 2A-SE-EAK, Fuse, primary <g o=""></g>
F902	252074	▲ 2A-SE-EAK, Fuse, primary <g w=""></g>
	28175137	Insulating plate

VOLUME PC BOARD (NAAF-3629-1)

CIRCUIT NO.	PART NO.	DESCRIPTION
	Transistors	
Q361, Q362	2212285 or	2SC2878-A or
	2212286	2SC2878-B
Q363	2212600	DTA124ES
	IC	
Q364	222963	LB1630
	Capacitors	
C361	371124734	$0.047 \mu F \pm 5\%, 50V, Mylar$
C362	354741009	$10\mu F$, 16V, Elect.
C363, C364	392850477	$4.7 \mu\text{F}, 25\text{V}, \text{LL}$
	Resistor	
R361, R362	5104243	N16RGM100KBTP25F,
		Variable, VOLUME
	Plug	
P501	25055134	NPLG-4P118

EQUALIZER AMPLIFIER PC BOARD (NAAF-3630-1A)

CIRCUIT NO.	PART NO.	DESCRIPTION
Q071	222570 or	NJM4560D-X or
	22240191	NJM4565D-D, IC
C071, C072	354780229	2.2 μF, 50V, Elect. capacitors
C073, C074	372121514	150 pF±5%, 50V, Styrol capacitors
C075, C076	372121024	1000pF±5%, 50V, Styrol capacitors
C077, C078	354721019	100 μF, 6.3V, Elect. capacitors
C079, C080	371126224	6200pF±5%, 50V, Mylar capacitors
C081, C082	371121824	1800pF±5%, 50V, Mylar capacitors
C083, C084	354780229	2.2 μF, 50V, Elect. capacitors
C085, C086	354742219	220 μF, 16V, Elect. capacitors
P071	25055334	NPLG-9P317, Plug
	Only 220V model Only 240V model	

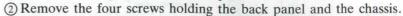
NOTE: THE COMPONENTS IDENTIFIED BY MARK ARE CRITICAL FOR RISK OF FIRE AND ELECTRIC SHOCK. REPLACE ONLY WITH PARTS NUMBER SPECIFIED.

<W> Only Worldwide model

DISASSEMBLING PROCEDURES

1. Checking the main circuit pc board

1) Remove the top cover and front panel.



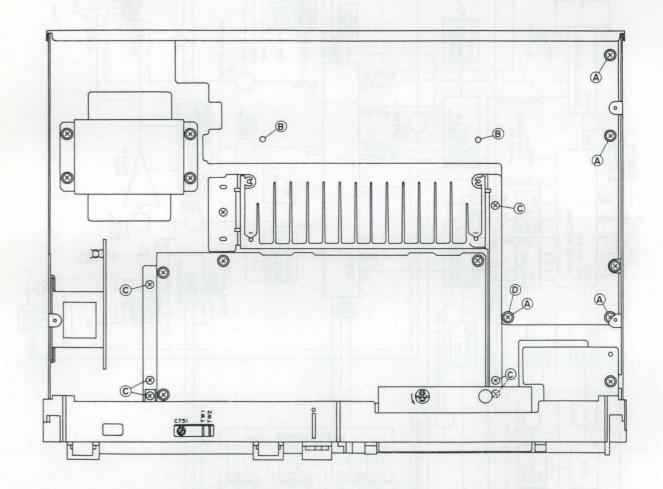
3 Remove the four screws A as shown below holding the chassis and the main pc board.

4 Remove the main pc board from two holder B.

3 Lift up the back panel and check the main pc board.

2. Checking the main amplifier pc board.

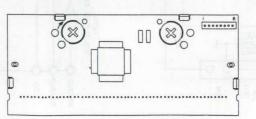
- (1) Remove the top cover and front panel.
- 2) Remove the six screws C as shown below.
- 3 Remove a screw D as shown below.
- 4 Cut the two binders of right side of radiator.
- 3 Lift up the main amplifier pc board.

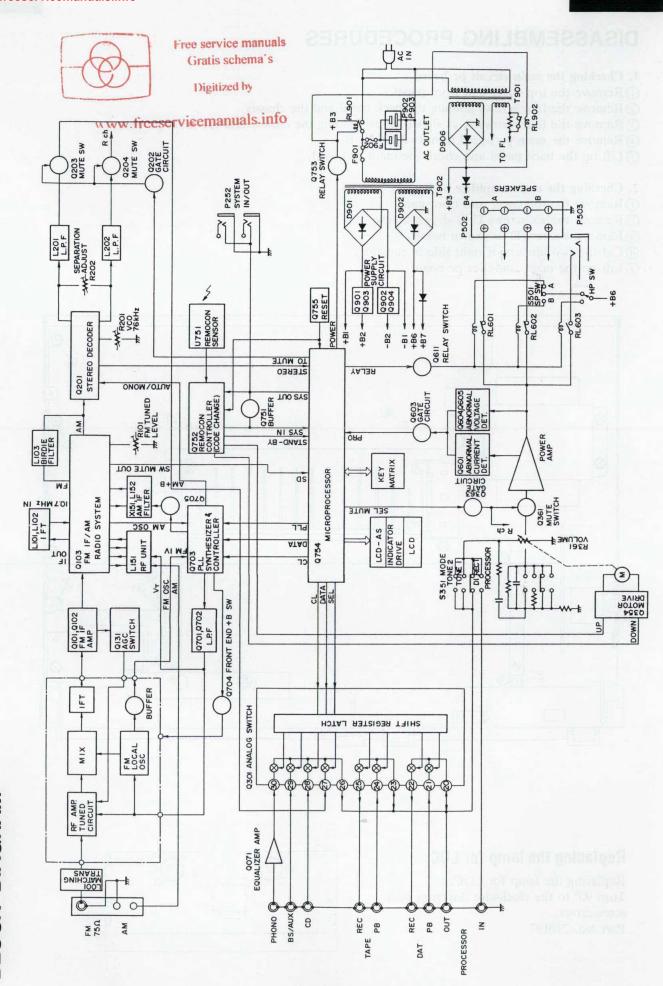


Replacing the lamp for LDC.

Replacing the lamp for LDC. Turn 90° to the clockwise direction with screwdriver.

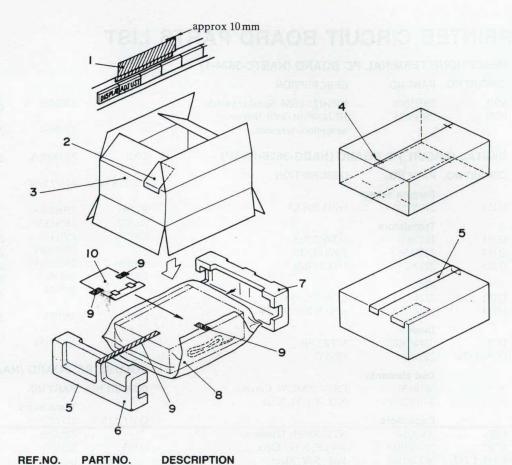
Part No. 210197







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2	29365020A	Warranty card < West Germany model>	
	29100094A	Poly-vinyl bag	
3	29051961	Master carton box	
4	282301	Sealing hook	
5	260012	Damplon tape	
6	29091285B	Pad R	
7	29091284A	Pad L	
8	29100036A	550 ×850, Poly-vinyl bag	
9	261504	Adhesive tape	
10	Accessary bag ass'y		
	24140153	RC-153S, Remote control transmitter	
	29341441A	instruction manual	
10030 . OX 14.5	292092	FM antenna	
Free service manuals	232140	NMA-3057, AM loop antenna	
Gratis schema's	3010054	UM-3×2, Battery	
	29100097	350 ×250, Poly-vinyl bag	
Digitized by	2010169	Connection cord for remote control	
	25055040	CV-K-2, Conversion plug	
ruicomonible in Co		<wolrdwide model=""></wolrdwide>	
rvicemanuals.info	25060123	FM antenna adaptor < Wolrdwide and	
		240V models>	
	250153	Four short pins for AUX/BS and DAT play terminals	

12×50, Fixed tape

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