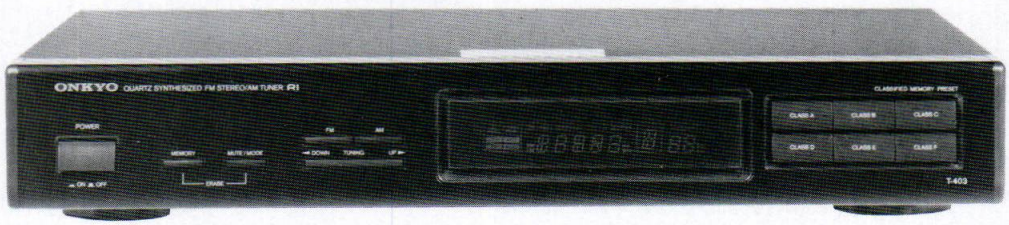
Ref. No. 3385

ONKYO SERVICE MANUAL

SYNTHESIZED
FM STEREO/AM TUNER
MODEL T-403



Black and Silver models

BHUDN, BHUD	120V AC, 60 Hz
BHUP, UP	230V AC, 50Hz
BHUW	120/220 V AC, 50/60Hz
BHUQA	240V AC, 50 Hz

SAFETY-RELATED COMPONENT WARNING!!
COMPONENTS IDENTIFIED BY MARK ⚠ ON THE SCHEMATIC DIAGRAM AND IN THE PARTS LIST ARE CRITICAL FOR RISK OF FIRE AND ELECTRIC SHOCK. REPLACE THESE COMPONENTS WITH ONKYO PARTS WHOSE 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.

TABLE OF CONTENTS

ONKYO
AUDIO COMPONENTS

SPECIFICATIONS

FM:

Tuning Range:	87.9-107.9MHz(200kHz steps: U.S.A model) 87.5-108.0MHz(50kHz steps: European model) 87.9-107.9MHz(200kHz steps) or 87.5-108.0MHz(50kHz steps) (Worldwide model)
Usable Sensitivity:	Mono: 11.2dBf, 1.0 μV IHF 0.9 μV 75ohms DIN Stereo: 2.0 μV 75ohms Mono: 11.2dBf, 2.0 μV IHF (120V model) Stereo: 17.2dBf, 4.0 μV (120V model)
50dB Quieting Sensitivity:	Mono: 1.7 μV 75ohms Stereo: 1.7 μV 75ohms Mono: 16.1dBf, 3.5 μV (120V model) Stereo: 36.1dBf, 35 μV (120V model)
Capture Ratio:	1.5dB
Image Rejection Ratio:	40dB (120V model) 80dB (Other models)
IF Rejection Ratio:	90dB
Signal-to-Noise Ratio:	Mono: 73dB Stereo: 66dB
Alternate Channel Attenuation:	50dB IHF (±400kHz) (120V model)
Selectivity:	55dB DIN (±300kHz, 40kHz dev.) (Other models)
AM suppression Ratio:	50dB
Total Harmonic Distortion:	Mono: 0.1% Stereo: 0.2%
Frequency Response:	30-15, 000Hz ±1.5dB
Stereo Separation:	40dB at 1kHz 30dB at 70-10,000Hz
Muting Level:	2.0 μV, 75ohm 17.2dBf, 4.0 μV
Output Voltage:	500mV (120V model) 750mV (Other models)

AM:

Tuning Range:	530-1710kHz(10kHz steps) (U.S.A. model) 522-1611kHz(9Hz steps) (European model) 530-1620kHz(10kHz steps) or 531-1602kHz(9kHz steps) (Worldwide model)
Usable Sensitivity:	25 μV
Image Rejection Ratio:	40dB
IF Rejection Ratio:	40dB
Signal-to-Noise Ratio:	40dB
Harmonic Distortion:	0.8%
Output voltage:	150mV

GENERAL:

Dimensions(W×H×D):	455 × 75.5 × 306mm 17-15/16" × 2-15/16" × 12-1/16"
Weight:	3.4kg., 7.5 lbs.

Specifications and features are subject to change without notice.

SERVICE PROCEDURES

1. Safety-check out

(Only U.S.A. model)

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 suuply cord and chassis.

Specifications: 3.3Mohm ±10% at 500V.

2. Memroy 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 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 with an extremely humid climate.

3. Voltage Selector (Back Panel)

W models are equipped with a voltage selector to conform with local power supplies. Be sure to set this switch to match the voltage of the power supply in 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 a screwdriver 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. Models without a voltage selector can only be used in areas where the power supply is the same as that of the unit.

4. Tuning Step Frequency Switch (Back Panel)

W models are equipped with a switch for the AM (9kHz/10kHz) and FM (50kHz/100kHz) bands. The switch should be set to the proper steps for the radio broadcast frequencies in your area.

5. Changing the band step

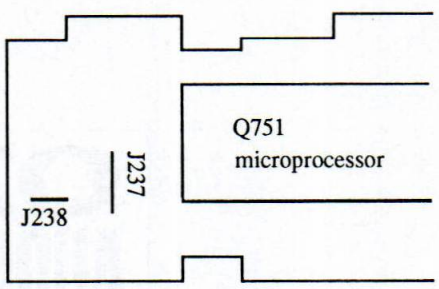
With the exception of the models below, a BAND STEP selector switch is not provided.

FM

MODEL	BAND STEP	J273
UD	200kHz → 50kHz	Open
UP/UQ	50kHz → 200kHz	Short

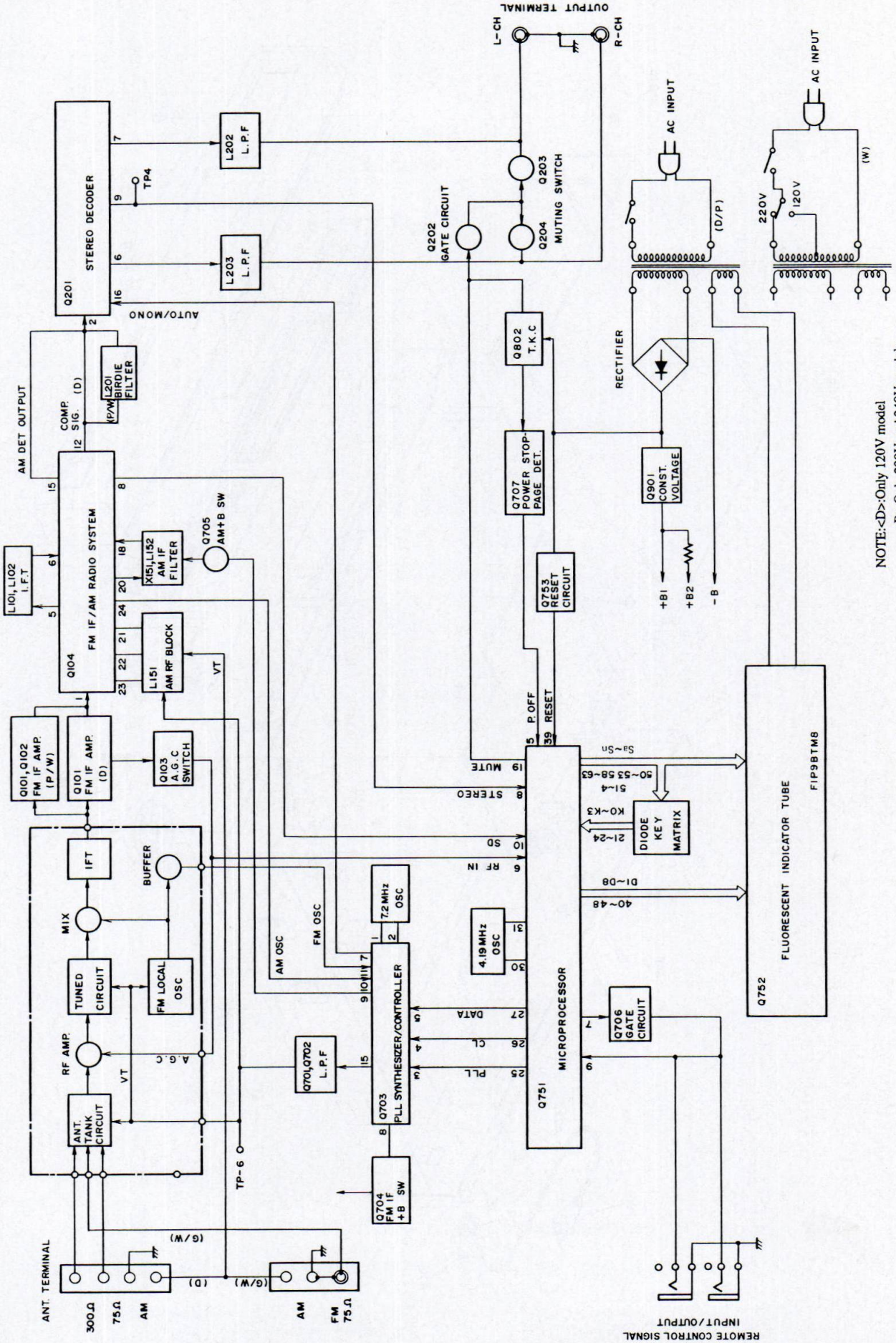
AM

MODEL	BAND STEP	J238
UD	10kHz → 9kHz	Short
UP/UQ	9kHz → 10kHz	Open



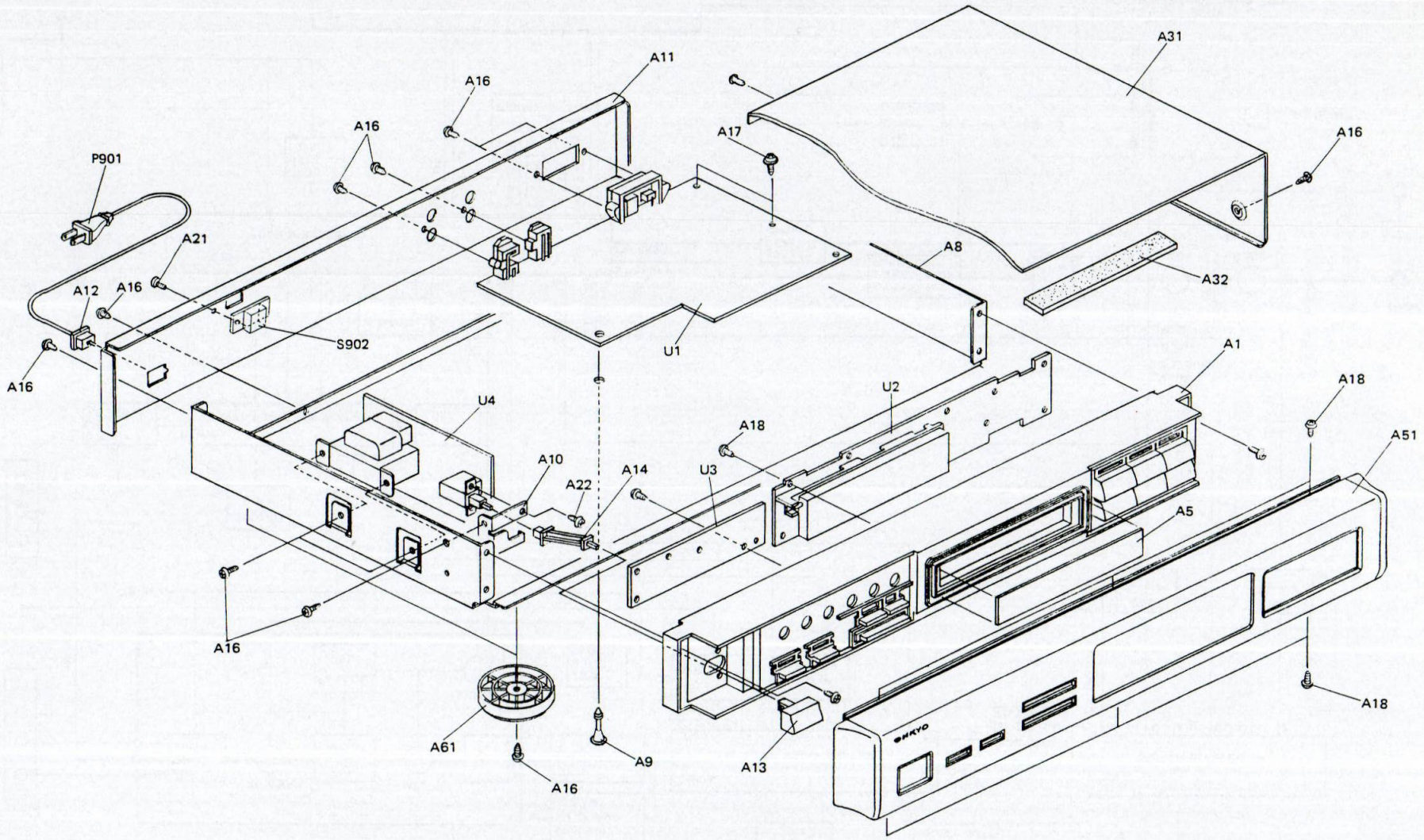
DISPLAY CIRCUIT PCB

BLOCK DIAGRAM



NOTE:<D>:Only 120V model
<P>:Only 230V and 240V models
<W>:Only Worldwide model

EXPLODED VIEW



PARTS LIST

REF. NO.	PART NO.	DESCRIPTION
A1	27110611A	Front bracket <B>
	27110612A	Front bracket <S>
A5	28191579A	Clear plate
A8	27100230	Chassis
A9	27190511	KGLS-16R,Holder
A10	27141468	Bracket,power
A11	27121410	Back panel <D>
	27121410-1	Back panel <P>
	27121410-3	Back panel <W>
	27121410-4	Back panel <Q>
A12	27300750	⚠ Bushing
A13	28324140	Knob,power <B>
	28324184	Knob,power <S>
A14	27260294	Joint,power
A16	834430088	3TTS+8B(BC),Self-tapping screw
A17	831130088	3TTW+8B,Self-tapping screw
A18	833430080	3TTP+8P(BC),Self-tapping screw
A19	838430088	3TTB+8B(BC),Self-tapping screw
A20	834230108	3TTS+10B(Ni),Self-tapping screw <P/Q>
A21	82143006	3P+6FN(BC),Pan head screw <W>
A22	82143006	3P+6FN(BC),Pan head screw
A31	28184474	Top cover
A32	28140837	0.9×250×10,Cushion
A51	1A258121	Front panel ass'y <B>
	1A259121	Front panel ass'y <S>
	28125230	End cap L
	28125231	End cap R
A61	27175254	Leg
P901	253142A	⚠ AS-UC-7 #18,Power supply cord <D>
	253148	⚠ AS-CEE,Power supply cord <P/W>
	253118	⚠ AS-SAA,Power supply cord <Q>
S902	25065123	⚠ NSS-1258P,Voltage selector switch <W>

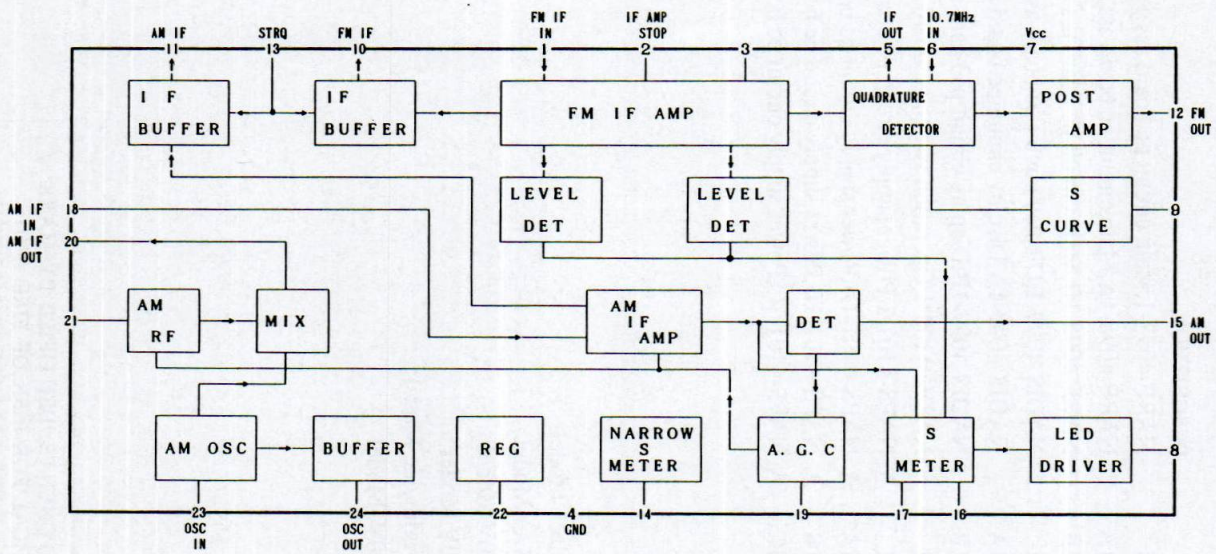
REF.NO.	PART NO.	DESCRIPTION
U1	1A258598-1	NARF-4098-1,Main circuit pc board ass'y<D>
	1A258598-1A	NARF-4098-1A,Main circuit pc board ass'y<P/Q>
	1A258598-1B	NARF-4098-1B,Main circuit pc board ass'y<W>
U2	1A258599-1	NADIS-4099-1,Display circuit pc board ass'y <D>
	1A258599-1A	NADIS-4099-1A,Display circuit pc board ass'y <P/Q>
	1A258599-1B	NADIS-4099-1B,Display circuit pc board ass'y <W>
U3	1A258500-1	NASW-4100-1,Operation switch pc board ass'y
U4	1A258501-1	⚠ NAPS-4101-1,Power supply circuit pc board ass'y <D>
	1A258501-1A	⚠ NAPS-4101-1A,Power supply circuit pc board ass'y <P>
	1A258501-1B	⚠ NAPS-4101-1B,Power supply circuit pc board ass'y <W>
	1A258501-1C	⚠ NAPS-4101-1C,Power supply circuit pc board ass'y <Q>

NOTE:<B>:Only Black Model
<S>:Only Silver Model
<D>:Only 120V Model
<P>:Only 230V Model
<W>:Only Worldwide Model
<Q>:Only 240V Model

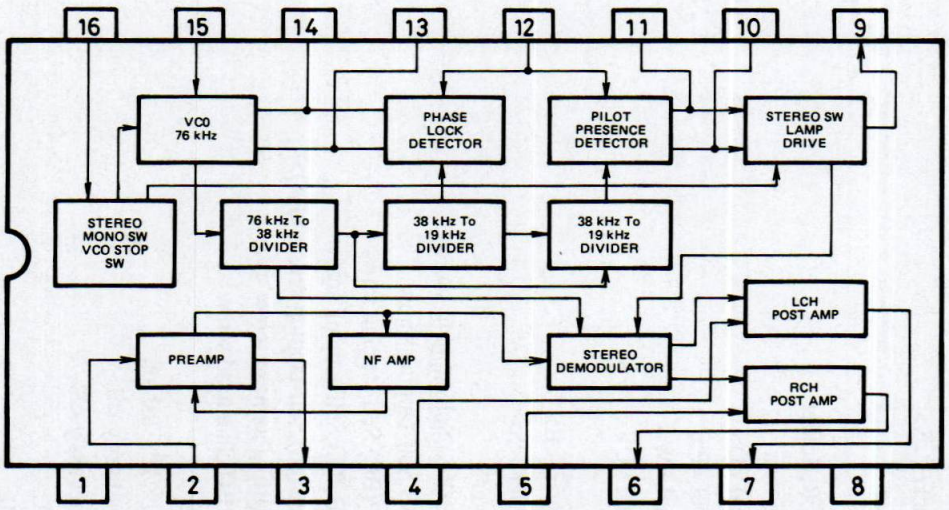
NOTE: THE COMPONENTS IDENTIFIED BY MARK ⚠ ARE CRITICAL FOR RISK OF FIRE AND ELECTRIC SHOCK. REPLACE ONLY WITH PART NUMBER SPECIFIED.

BLOCK DIAGRAM OF IC

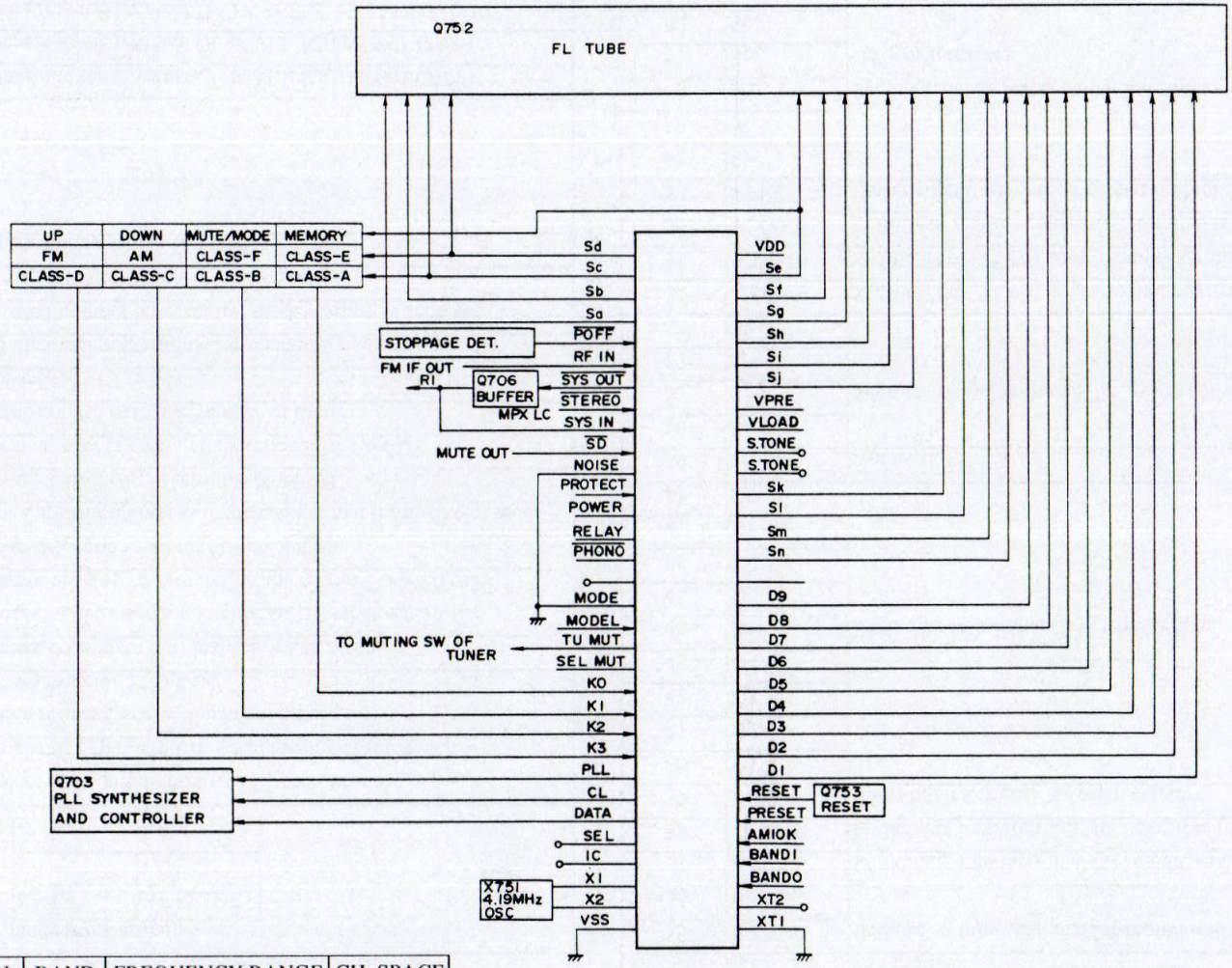
LA1266 (FM IF/AM radio system)



AN7470 (FM stereo decoder)



μPD75268CW-025 (Microprocessor)



BAND1	BAND0	REGION	BAND	FREQUENCY RANGE	CH. SPACE
0	0	U.S.A.	FM	87.50-108.00MHz	50kHz
			AM	530-1710kHz	10kHz
0	1	EUROPE 1	FM	87.50-108.00MHz	50kHz
			AM	522-1611kHz	9kHz
1	0	EUROPE 2	FM	87.50-108.00MHz	50kHz
			AM	531-1602kHz	9kHz
1	1	JAPAN	FM	76.0-90.0MHz	100kHz
			AM	522-1611kHz	9kHz

Terminal No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Electrode	F	F	NP	9G	NP	NP	NP	NP	NP	9G	NP	8G	NP	NP	8G	P(n)
Terminal No.	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	
Electrode	7G	7G	P(m)	6G	6G	P(l)	P(k)	5G	P(j)	P(i)	4G	P(h)	NP	4G	P(g)	
Terminal No.	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	
Electrode	3G	P(f)	P(e)	3G	P(a)	2G	2G	P(b)	1G	P(c)	P(d)	1G	NP	F	F	

Note: F:Filament
G:Grid
P:Anode
NP:No pin

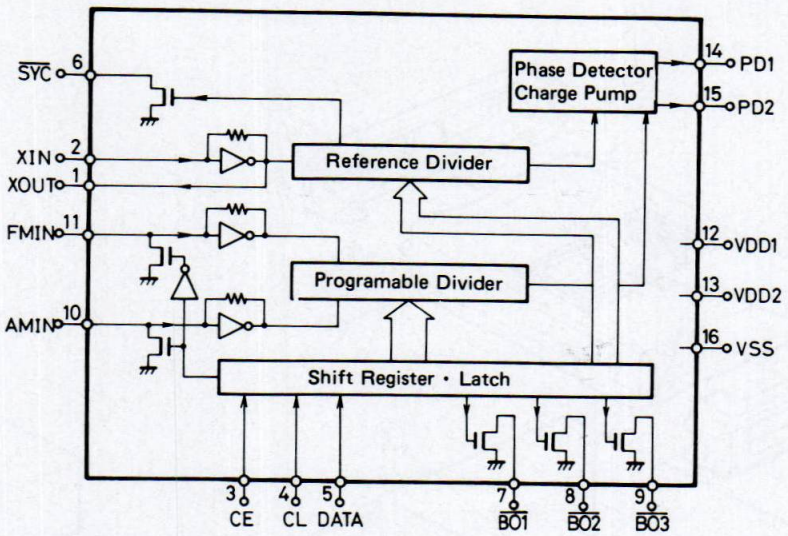
Terminal Descriptions

Pin No.	Symbol	Description
1	Sd	Segment and key scan output terminals. "H" when active.
2	Sc	
3	Sb	
4	Sa	
5	POFF	This is the input terminal for detection of the stoppage of electric current."L" when the stoppage of electric current.
6	RF IN	RF mode input terminal.
7	SYS OUT/ SYS EN	System code output terminal."L"when active. Initializing input terminal when the power turns on.
8	STEREO	Stereo broadcast detection input terminal. "L" when stereo broadcast.
9	SYS IN	System code input terminal."H" when active.
10	SD	Broadcast detection input terminal."L" when active. Control the stop of auto tuning and output TU MUT(#19).
11	NOISE	Noise detection input terminal.Not used.
12	PROTECT	Protection circuit operation detection input terminal.Not used.
13	POWER	Power control output terminal.Not used.
14	RELAY	Speaker relay control output terminal.Not used.
15	PHONO	Phono control output terminal.Not used.
16		Not used.
17	MODE	Initializing input terminal for operation mode setting.
18	MODEL	Initializing input terminal for model setting of receiver.
19	TU MUT	Muting output terminal."H" when active.
20	SEL MUT	Audio muting output terminal.Not used.
21	K0	Key scan input terminals. "H" when active.
22	K1	
23	K2	
24	K3	
25	PLL	Connect to the terminal CE of PLL IC(LM7001 Q703).
26	CL	Connect to the terminal CL of PLL IC(LM7001 Q703).
27	DATA	Connect to the terminal DATA of PLL IC(LM7001 Q703).
28	SEL	Not used.

RF IN	RF MODE
L	LOCAL
H	DX

Pin No.	Function	Description
29	IC	Internal connected.
30	X1	Ceramic oscillator connection terminal for main system clock.
31	X2	Connect to the 4.19MHz ceramic oscillator.
32	VSS	Ground terminal.
33	XT1	Ceramic oscillator connection terminal for sub system clock.
34	XT2	Not used.
35	BAND0	Initializing input terminal for region setting of FM band.
36	BAND1	
37	AM 10K	Initializing input terminal for region setting of AM band.
38	PRESET	Initializing input terminal for operation mode setting.
39	RESET	Reset input terminal."L"when active.
40	D1	Digit output terminals."H" when active.
41	D2	
42	D3	
43	D4	
44	D5	
45	D6	
46	D7	
47	D8	
48	D9	
49		Not used.
50	Sn	Segment output terminals."H" when active.
51	Sm	
52	Sl	
53	Sk	
54	S.TONE	SELECTIVE TONE indication output terminal.Not used.
55	S.TONE	SELECTIVE TONE control output terminal.Not used.
56	VLOAD	Pull-down resistor connection terminal of FIP controller/driver.
57	VPRE	Power supply terminal of output buffer of FIP controller/driver.
58	Sj	Segment and key scan output terminals. "H" when active.
59	Si	
60	Sh	
61	Sg	
62	Sf	
63	Se	
64	VDD	Power supply terminal.(+5V)

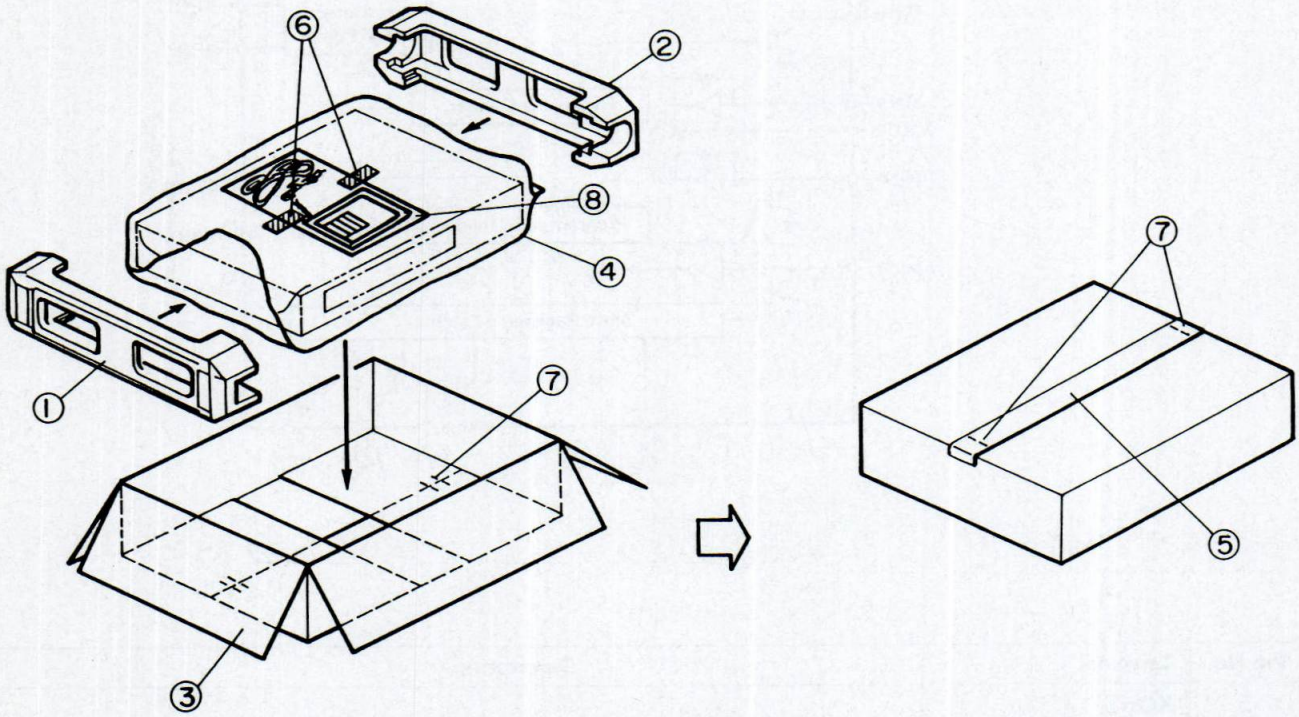
LM7001 (PLL frequency synthesizer)



Pin No.	Terminal	Description
1	XOUT	Connect to the 7.2 MHz crystal oscillator.
2	XIN	
3	CE	Chip enable terminal. Connect to the PLL terminal of microprocessor μPD75268CW-025.
4	CL	Serial clock input terminal. Connect to the CLOCK terminal of microprocessor μPD75268CW-025.
5	DATA	Serial data input terminal. Connect to the DATA terminal of microprocessor μPD75268CW-025.
6	SYN	Not used.
8	BAND1	Band selector output terminal.
9	BAND2	
7	BO1	This is the output terminal for AUTO/MONO. 'L' when AUTO.
10	AMIN	AM local oscillator input terminal.
11	FMIN	FM local oscillator input terminal.
12	VDD 1	Power supply terminal for back-up.
13	VDD 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. 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.
15	PD2	
16	Vss	Ground terminal.

BAND	BAND 1	BAND 2
FM	L	H
AM	H	L

PACKING VIEW



REF. NO.	PART NO.	DESCRIPTION
1	29091454	Pad L
2	29091455	Pad R
3	29052165	Master carton box <B>
	29052165-3	Master carton box <S>
4	29100037A	650×500mm,Styrene bag
5	29110071	Damplon tape
6	261504	Adhesive tape
7	282301	Sealing hook
8	Accessary bag ass'y	
	29341590A	Instruction manual <D>
	29341591	Instruction manual <P/W/Q>
	292064B	FM antenna <D/W>
	292092	FM antenna <P/Q>
	232140	NMA-3057,AM loop antenna
	2010098	Connection cord
	2010200	Remote control cord
	25060123	FM antenna adaptor <F/W/Q>
	25055018	CV-K-1,Conversion plug <W>
	29365019A	Warranty card <N>
	29365024	Warranty card <F>
	29358002J	Service station list <N>
	29100097	350×250mm,Styrene bag
	29100107	Styrene bag for warranty card <F>

NOTE:<B>:Only Black Model
<S>:Only Silver Model
<D>:Only 120V Model
<P>:Only 230V Model
<W>:Only Worldwide Model
<Q>:Only 240V Model
<N>:Only U.S.A. Model
<F>:Only French Model

ADJUSTMENT PROCEDURES

Preparation

• Input

FM mono: 1kHz, 75kHz devi., 60dB/μV (65dBf)
FM stereo: 1kHz, L+R 67.5kHz devi.: Pilot signal 19kHz 7.5kHz devi.
AM: 400Hz, 30% mod.,

Reference specifications

Tuned voltage	AM	530kHz(522kHz)	1.3±0.4V
		1710kHz(1611kHz)	7.6±0.5V(7.2±0.5V)
	FM	87.5MHz(87.9MHz)	1.6±0.5V
		108MHz(107.9MHz)	8.0±0.5V
Muting level			12±2dB
Muting width			35±10kHz
Auto stop level	AM		Less than 68dB/m
	FM		Less than 16dBμ
Stereo indicator level			12±4dBμ

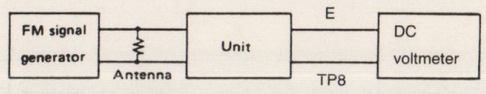
FM Section

Item	Step	Connection of instrument	FM SG output	Stereo modulator output	Tuned frequency	Output indicator	Adjustment point	Adjust	Remarks
Front end		Fig. 1	99.1MHz, 1kHz 75kHz devi. 25.2dBf (20dBμ)	———	99.1MHz	DC voltmeter	IF core on front end	Maximum	
FM IF	1	Fig. 2	99.1 MHz, 1 kHz 75 kHz devi. 65 dBf (60 dB μ)		99.1 MHz	DC voltmeter	L101	0 ± 20 mV	MUTE/MODE switch to OFF/MONO. Repeat the steps 1 and 2 until no further adjustment is necessary.
	2					Distortion analyzer	L102	Minimum	
Muting Level	1	Fig. 2	99.1 MHz, 1 kHz 75 kHz devi. 17.2 dBf (12 dB μ)	———	99.1 MHz	Oscilloscope	R101	Signal	
	2		16.2 dBf (11 dB μ)					No signal	
VCO		Fgi. 3	99.1 MHz, 1 kHz 75 kHz devi. 65 dBf (60 dB μ)		99.1 MHz	Frequency counter	R201	19,000 ± 10 Hz	MUTE/MODE switch to ON/STEREO
Stereo Distortion		Fig. 4	99.1 MHz, Ext. modulation 65 dBf (60 dB μ)	L + R 1 kHz, 67.5 kHz devi. Pilot signal 7.5 kHz devi.	99.1 MHz	Distortion analyzer	IF core on front end	Minimum	Don't turn more than 180°.

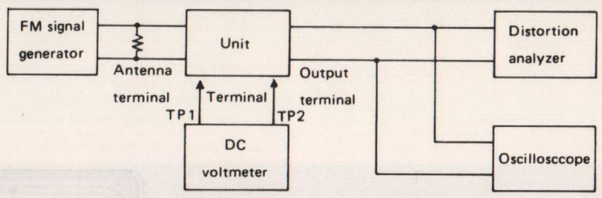
AM Section

Step	AM SG output	Tuned frequency	Output indicator	Adjust point	Adjust for
1		522 kHz (530 kHz)	Digital DC voltmeter	L151 OSC	1.3 ± 0.1V
2	603 kHz, 400 Hz 30% mod. 60 dB/m (600 kHz)	603 kHz (600 kHz)	AC voltmeter	L151 RF	Maximum
3	999 kHz, 400 Hz 30% mod. 60 dB/m (1000 kHz)	999 kHz (1000 kHz)	AC voltmeter	L152	Maximum

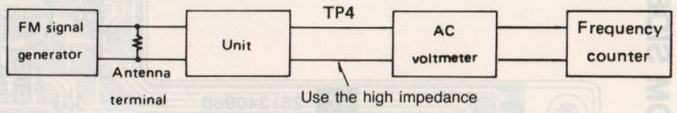
( ): 10 kHz step model



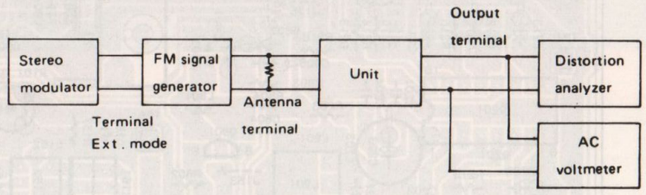
(fig. 1)



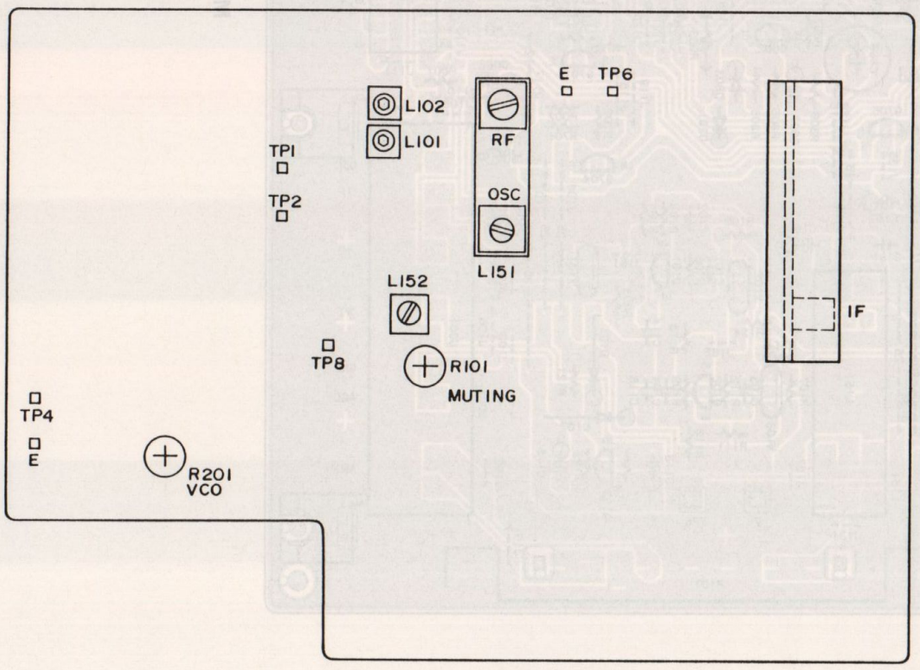
(fig. 2)

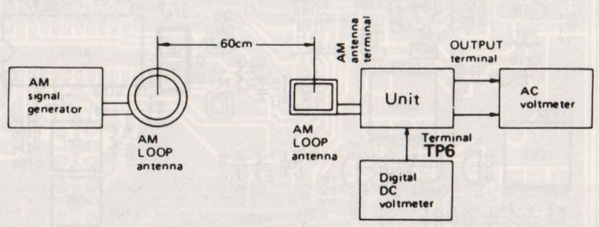


(fig. 3)



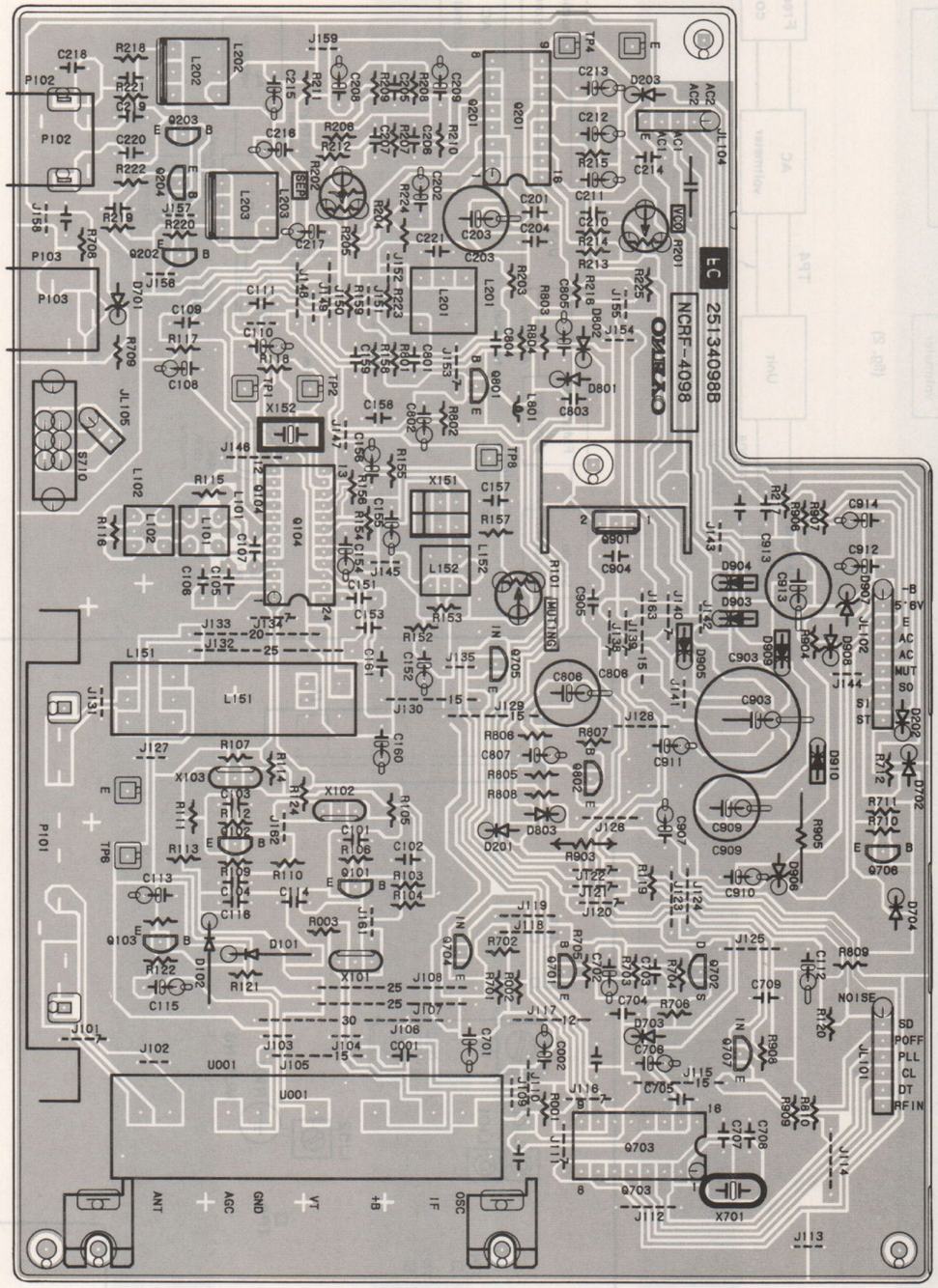
(fig. 4)





(AM)

PRINTED CIRCUT BOARD VIEW FROM BOTTOM SIDE



MAIN CIRCUIT PC BOARD

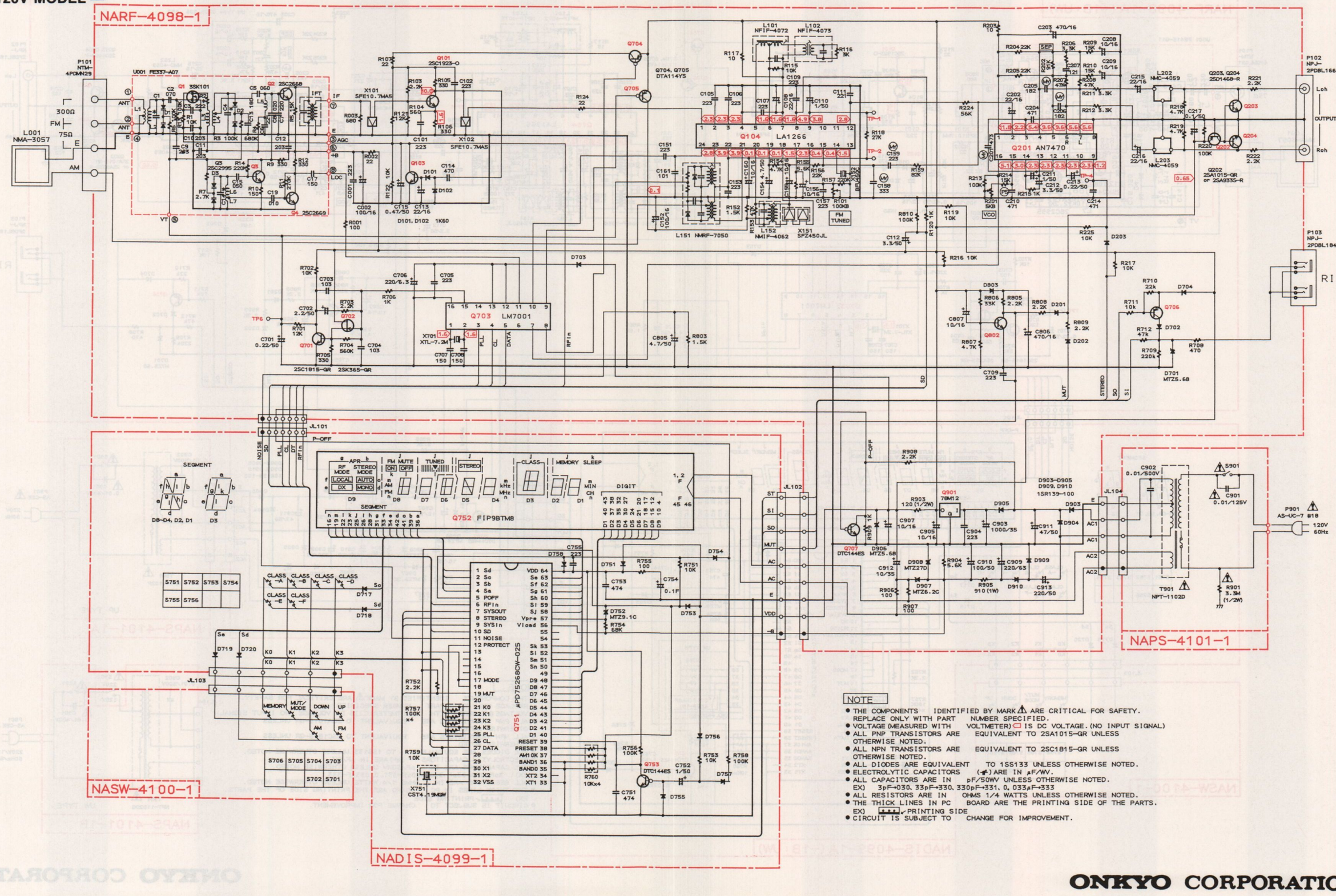
PRINTED CIRCUIT BOARD-PARTS LIST

MAIN CIRCUIT PC BOARD (NARF-4098-1/1A/1B)

CIRCUIT NO.	PART NO.	DESCRIPTION	CIRCUIT NO.	PART NO.	DESCRIPTION
	ICs			Capacitors	
Q104	22240039	LA1266	C155,C156	354741009	10 μ F,16V,Elect.
Q201	22240242	AN7470	C158	371123334	0.033 μ F,5%,50V,Mylar
Q703	22240090	LM7001	C159	371122234	0.022 μ F,5%,50V,Mylar
Q901	222780125NEC	78M12HF	C160	354741009	10 μ F,16V,Elect.
	Transistors		C201	371124734	0.047 μ F,5%,50V,Mylar
Q101	2211723	2SC1923-O	C202	354742209	22 μ F,16V,Elect.
Q102	2210746	2SC945A-P <P/W>	C203	354744719	470 μ F,16V,Elect.
Q103,Q802	2211255 or	2SC1815-GR or	C205,C206	371121824	1800pF,5%,50V,Mylar <D>
	2213284	2SC1740S-R		371121224	1200pF,5%,50V,Mylar <P>
Q202,Q706	2211455 or	2SA1015-GR or		371121524	1500pF,5%,50V,Mylar <W>
	2213354	2SA933S-R	C208,C209	354741009	10 μ F,16V,Elect.
Q203,Q204	2212794	2SD1468-R	C210	370134714	470pF,5%,100V,APS
Q701	2211255	2SC1815-GR	C211	354780109	1 μ F,50V,Elect.
Q702	2212445	2SK365-GR	C212	354780339	3.3 μ F,50V,Elect.
Q704,Q705	2213090	DTA114YS	C213	354782299	0.22 μ F,50V,Elect.
Q707	221282	DTC144ES	C215,C216	354742209	22 μ F,16V,Elect.
	Diodes		C217	354781099	0.1 μ F,50V,Elect.
D101,D102	223132	1K60	C701	354782299	0.22 μ F,50V,Elect.
D201-D203	223163	1SS133	C702	354780229	2.2 μ F,50V,Elect.
D701	224450562	MTZ5.6B	C703,C704	371121034	0.01 μ F,5%,50V,Mylar
D702-D704	223163	1SS133	C706	354722219	220 μ F,6.3V,Elect.
D803	223163	1SS133	C805	354780479	4.7 μ F,50V,Elect.
D903-D905	22380032	1SR139-100	C806	354744719	470 μ F,16V,Elect.
D906	224450562	MTZ5.6B	C807	354741009	10 μ F,16V,Elect.
D907	224450623	MTZ6.2C	C902	354781019	100 μ F,50V,Elect.
D908	224452704	MTZ27D	C903	354761029	1000 μ F,35V,Elect.
D909,D910	22380032	1SR139-100	C905,C907	354741009	10 μ F,16V,Elect.
	Coils & Transformers		C909	354772219	220 μ F,63V,Elect.
L101	233401	NMIF-4072	C910	354781019	100 μ F,50V,Elect.
L102	233402	NMIF-4073	C911	354784709	47 μ F,50V,Elect.
L151	232148	NMRF-7050	C912	354761009	10 μ F,35V,Elect.
L152	232139	NMIF-4062	C913	354782219	220 μ F,50V,Elect.
L201	233383	NMC-6070 <P/W>		Resistors	
L202.L203	233355A	NMC-4059	R101	5210070 or	N06HR100KBD or
	Front end			5210221	N06HR100KBD,Semi-fixed
U001	240088	FE337-A07 <D>	R201	5210062 or	N06HR4.7KBD or
	240089	FE415-G11 <P/W>		5210216	N06HR5KBD,Semi-fixed
	Ceramic filters		R903	442521214	120ohm,1/2W,Metal oxide film
X101,X102	3010071	SFE10.7MA5 <D>	R905	441629114	910ohm,1W,Metal oxide film
X101-X103	3010137	SFE10.7MMK <P/W>		Terminals	
X151	3010123	SFZ-450JL	P101	25060085	NTM-4PDMN29 <D>
X152	3010076	BFU-450C		25060117	NTM-2PDML051 <P/W>
	X'tal		P102	25045307	NPJ-2PDBL166 <D>
X701	3010141	XTL-7.2M		25045333	NPJ-2PDBL185 <P/W>
	Capacitors		P103	25045330	NPJ-2PDBL184
C002	354741019	100 μ F,16V,Elect.		Switch	
C108,C113	354742209	22 μ F,16V,Elect.	S710	25065286	NSS-22112,Band <W>
C110	354780109	1 μ F,50V,Elect.			
C112	354780339	3.3 μ F,50V,Elect.	NOTE:<D>:Only 120V model		
C115	354784799	0.47 μ F,50V,Elect.	<P>:Only 230V and 240V models		
C152	354741019	100 μ F,16V,Elect.	<W>:Only Worldwide model		
C154	354780479	4.7 μ F,50V,Elect.			

SCHEMATIC DIAGRAM

— 120V MODEL —

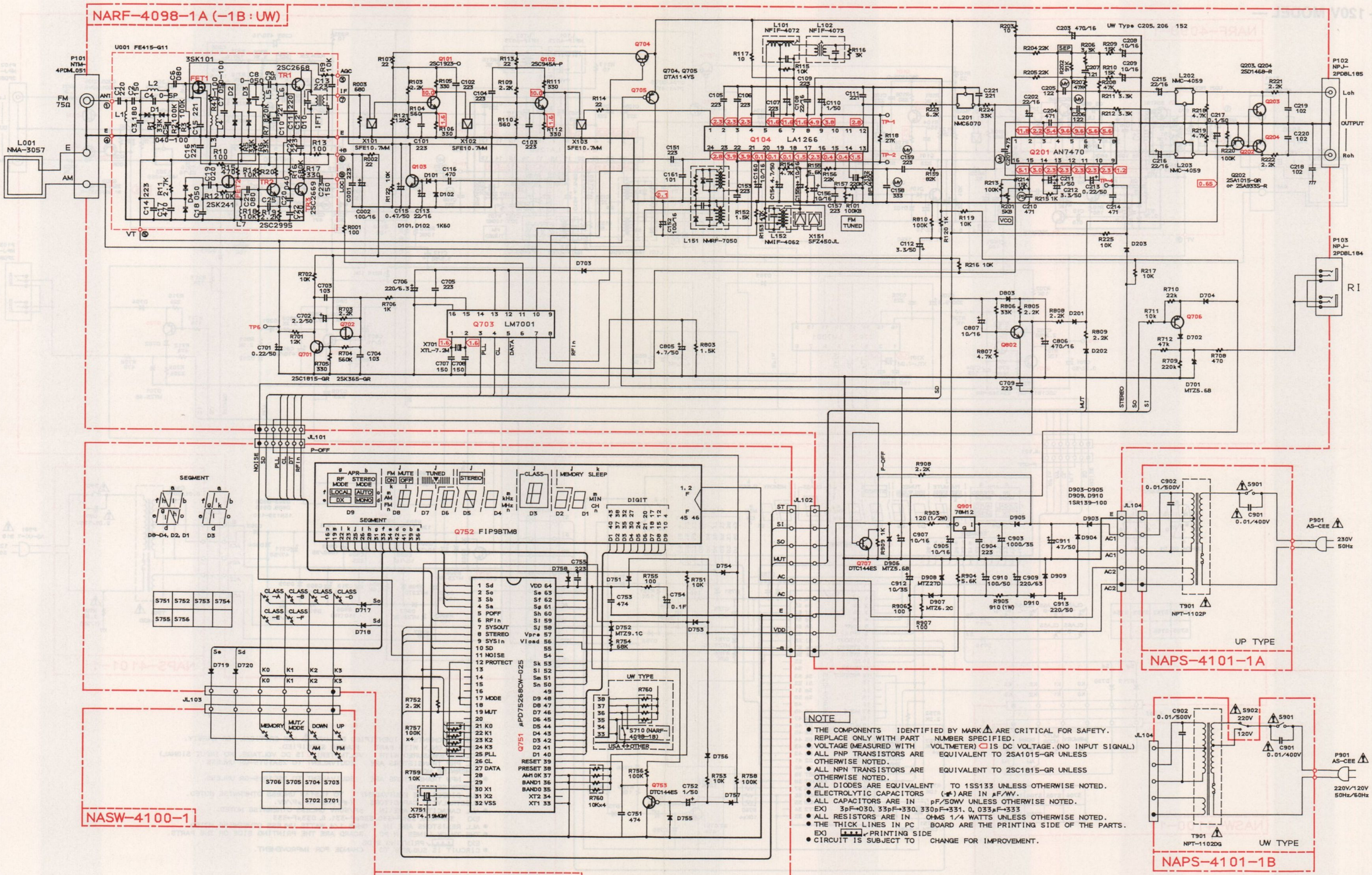


NOTE

- THE COMPONENTS IDENTIFIED BY MARK ⚠ ARE CRITICAL FOR SAFETY. REPLACE ONLY WITH PART NUMBER SPECIFIED.
- VOLTAGE (MEASURED WITH VOLTMETER) ☐ IS DC VOLTAGE. (NO INPUT SIGNAL)
- ALL PNP TRANSISTORS ARE EQUIVALENT TO 2SA1015-GR UNLESS OTHERWISE NOTED.
- ALL NPN TRANSISTORS ARE EQUIVALENT TO 2SC1815-GR UNLESS OTHERWISE NOTED.
- ALL DIODES ARE EQUIVALENT TO 1SS133 UNLESS OTHERWISE NOTED.
- ELECTROLYTIC CAPACITORS (-⏚-) ARE IN μF/WV.
- ALL CAPACITORS ARE IN pF/50WV UNLESS OTHERWISE NOTED.
  EX) 3pF→030, 33pF→330, 330pF→331, 0.033μF→333
- ALL RESISTORS ARE IN OHMS 1/4 WATTS UNLESS OTHERWISE NOTED.
- THE THICK LINES IN PC BOARD ARE THE PRINTING SIDE OF THE PARTS.
  EX) ▭ PRINTING SIDE
- CIRCUIT IS SUBJECT TO CHANGE FOR IMPROVEMENT.

SCHEMATIC DIAGRAM

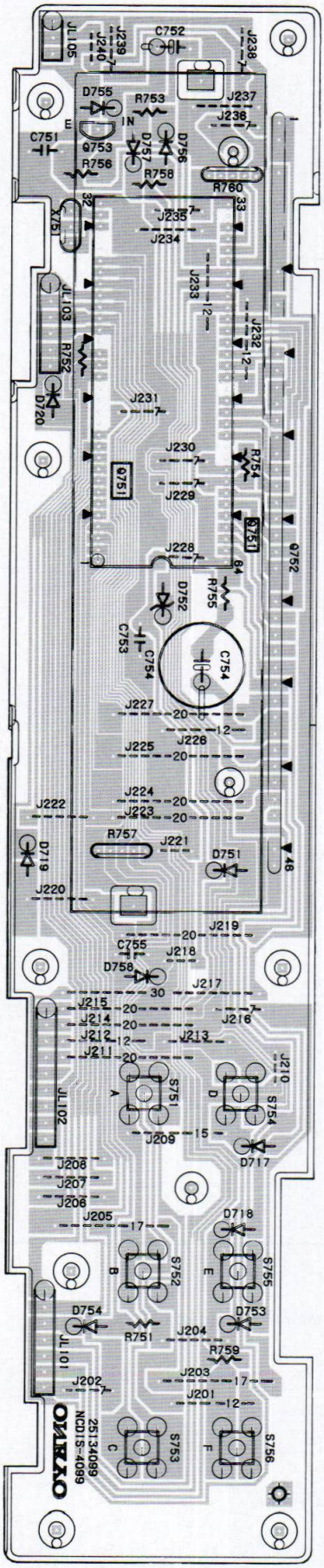
— OTHER MODELS —



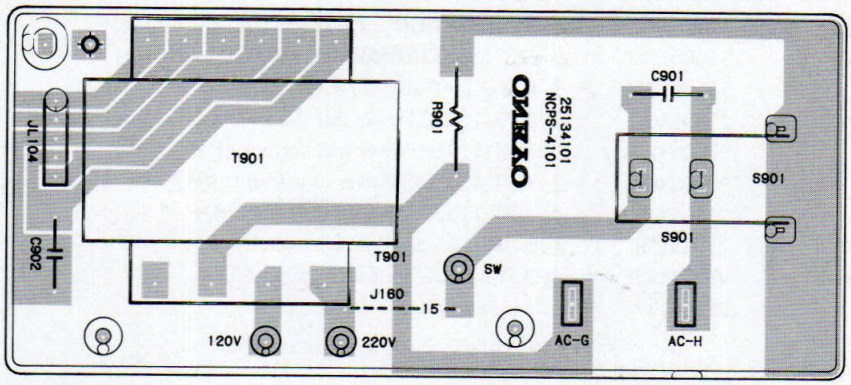
NOTE

- THE COMPONENTS IDENTIFIED BY MARK ⚠ ARE CRITICAL FOR SAFETY. REPLACE ONLY WITH PART NUMBER SPECIFIED.
- VOLTAGE (MEASURED WITH VOLTMETER) ⊐ IS DC VOLTAGE. (NO INPUT SIGNAL)
- ALL PNP TRANSISTORS ARE EQUIVALENT TO 2SA1015-GR UNLESS OTHERWISE NOTED.
- ALL NPN TRANSISTORS ARE EQUIVALENT TO 2SC1815-GR UNLESS OTHERWISE NOTED.
- ALL DIODES ARE EQUIVALENT TO 1SS133 UNLESS OTHERWISE NOTED.
- ELECTROLYTIC CAPACITORS (—) ARE IN μF/WV.
- ALL CAPACITORS ARE IN pF/50WV UNLESS OTHERWISE NOTED.
  EX) 3pF→030, 33pF→330, 330pF→331, 0.033μF→333
- ALL RESISTORS ARE IN OHMS 1/4 WATTS UNLESS OTHERWISE NOTED.
- THE THICK LINES IN PC BOARD ARE THE PRINTING SIDE OF THE PARTS.
  EX) ▭ ↙PRINTING SIDE
- CIRCUIT IS SUBJECT TO CHANGE FOR IMPROVEMENT.

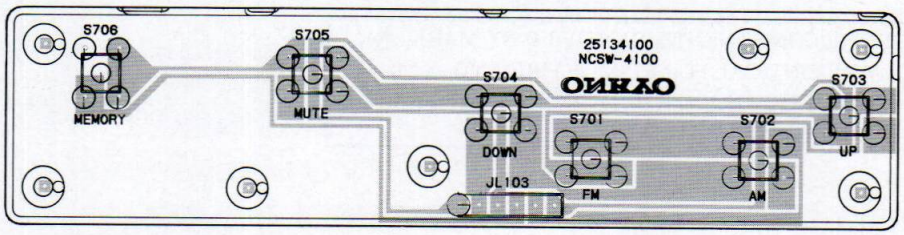
PRINTED CIRCUIT BOARD VIEW FROM BOTTOM SIDE



DISPLAY PC BOARD



POWER SUPPLY CIRCUIT PC BOARD



SWITCH PC BOARD

PRINTED CIRCUIT BOARD PARTS LIST

DISPLAY CIRCUIT PC BOARD(NADIS-4099-1/1A/1B)

CIRCUIT NO.	PART NO.	DESCRIPTION
Q751	22240406	μPD75268CW-025,IC
Q752	212093	FIP9BTM8,FL tube
Q753	221282	DTC144ES,Transistor
D717-D720	223163	1SS133,Diodes
D751	223163	1SS133,Diode
D752	224450913	MTZ9.1C,Zener diode
D753-D758	223163	1SS133,Diodes
C751	375524744	0.47μF,5%,50V,Plastic capacitor
C752	354780109	1μF,50V,Elect. capacitor
C753	375524744	0.47μF,5%,50V,Plastic capacitor
C754	3000057	0.1F,5.5V,Super capacitor
R757	49163104404	100kohm×4,1/10W,Network resistor
R760	49163103404	10kohm×4,1/10W,Network resistor
S751-S756	25035548	NPS-111-S510,Push switches
X751	3010163	CST4.19MGW,Ceramic oscillator
	27190818	Holder FL

OPERATION SWITCH PC BOARD(NASW-4100-1)

CIRCUIT NO.	PART NO.	DESCRIPTION
S701-S706	25035548	NPS-111-S510,Push switches

POWER SUPPLY CIRCUIT PC BOARD (NAPS-4101-1A/1B/1C)

CIRCUIT NO.	PART NO.	DESCRIPTION
C901	3500065A	⚠ DE7150FZ103PAC400V/125V,IS capacitor
	273001216	⚠ Cover for C901 <P/W/Q>
T901	2300636	⚠ NPT-1102D,Power transformer <D>
	2300637	⚠ NPT-1102P,Power transformer <P>
	2300638	⚠ NPT-1102DG,Power transformer <W>
	2300639	⚠ NPT-1102Q,Power transformer <Q>
S901	25035558	⚠ NPS-111-L520P,Power switch
R901	431523355	⚠ 3.3Mohm,1/2W,Solid resistor <D>
	28175137	Insulator plate

NOTE:<D>:Only 120V model
<P>:Only 230V model
<W>:Only Worldwide model
<Q>:Only 240V model

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

ONKYO CORPORATION
International Division: Onarimon Yusen Bldg., 23-5, Nishi-Shimbashi 3-chome, Minato-ku,
TOKYO 105, JAPAN Tel: 03-3432-6987 Fax: 03-3436-6979
ONKYO U.S.A CORPORATION
200 Williams Drive, Ramsey, N.J. 07446, U.S.A.
Tel: 201-825-7950 Fax: 201-825-8150
ONKYO Europe GmbH
Hellersbergstrasse 4, 4040 Neuss WEST GERMANY
Tel: 02101 12 00 75 Fax: 02101 10 33 06 TLX: 85 17 916 ONDU D
ONKYO FRANCE S.A.R.L.
Immeuble Le DIAMANT, Domaine Technologique De Saclay, 4 rue Rene Razel,
91892 SACLAY, FRANCE Tel: (1)69 41 35 10 Fax: (1)69 41 35 84

A102 Printed in Japan