Ref. No. 3592

ONKYO® SERVICE MANUAL

AUDIO VIDEO CONTROL RECEIVER MODEL TX-SV454

Black and Silver models

BMD	120V AC, 60Hz
BMP, BMPT, BMPA, SMP	230V AC, 50Hz
BMWT	120/220V AC, 50/60Hz

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.

ONKYO®
AUDIO COMPONENTS

TABLE OF CONTENTS

SPECIFICATIONS

AMPLIFIER SECTION

Power Output	
Stereo mode	
Front L/R channels:	**70 watts per channel, min. RMS at 8 ohms, both channels driven from 20 Hz to 20 kHz with no more than 0.08% total harmonic distortion.**
Continuous Power output:	2 × 80 watts at 8 ohms, 1 kHz (DIN)
Surround mode	
Front L/R and Center channels:	**60 watts per channel, min. RMS at 8 ohms, both channels driven from 20 Hz to 20 kHz with no more than 0.08% total harmonic distortion.**
Rear channels (Rear only driven):	**20 watts per channel, min. RMS at 8 ohms, both channels driven from 20 Hz to 20 kHz with no more than 0.3% total harmonic distortion.**
Total Harmonic Distortion:	0.08% at rated power (Front)
IM Distortion:	0.08% at rated power (Front)
Damping Factor:	60 at 8 ohms (Front)
Sensitivity and Impedance	
Phono:	2.5 mV/50 kohms
CD, Multi-CH, Tape Play:	150 mV/50 kohms
Tape Rec:	150 mV/2.2 kohms
Subwoofer Pre out:	2 V/2.2 kohms
Phono Overload:	120 mV RMS at 1 kHz, 0.5% T.H.D.
Frequency Response:	20 Hz to 30 kHz, ±1 dB
RIAA Deviation:	20 Hz to 20 kHz, ±0.8 dB
Tone Control	
Bass:	±10 dB at 100 Hz
Treble:	±10 dB at 10 kHz
Signal-to-Noise Ratio	
Phono:	80 dB (IHF A, 5 mV input)
CD/Tape:	100 dB (IHF A)

VIDEO SECTION

Signal sensitivity and impedance:	1 Vp-p, 75 ohms (VDP/VCR input, output)

TUNER SECTION

FM

Tuning Range:	87.5 — 108.0 MHz
Usable Sensitivity	
Mono:	11.2 dBf, 1.0 µV (75 ohms)
Stereo:	18.2 dBf, 2.2 µV (75 ohms)
50 dB Quieting Sensitivity	
Mono:	18.2 dBf, 2.2 µV (75 ohms)
Stereo:	39.2 dBf, 24 µV (75 ohms)
Capture Ratio:	1.5 dB
Image Rejection Ratio	
U.S.A. & Canadian models:	40 dB
Other area models:	85 dB
IF Rejection Ratio:	90 dB
Signal-to-Noise Ratio	
Mono:	73 dB
Stereo:	67 dB
Alternate Channel Attenuation:	55 dB
Selectivity:	50 dB (DIN)
AM Suppression Ratio:	50 dB
Total Harmonic Distortion	
Mono:	0.15%
Stereo:	0,25%
Frequency Response:	30 Hz — 15 kHz, ±1.5 dB
Stereo Separation:	45 dB at 1 kHz 30 dB at 100 Hz — 10 kHz

AM

Tuning Range	
U.S.A. & Canadian models:	530—1,710 kHz (10 kHz steps)
European & Australian models:	522—1,611 kHz (9 kHz steps)
Worldwide models:	531—1,602 kHz (9 kHz steps), 530—1,710 kHz (10 kHz steps)
Usable Sensitivity:	30 µV
Image Rejection Ratio:	40 dB
IF Rejection Ratio:	40 dB
Signal-to-Noise Ratio:	40 dB
Total Harmonic Distortion:	0.7%

GENERAL

Power Supply	
U.S.A. & Canadian models:	AC 120 V, 60 Hz
European & Australian models:	AC 230 V, 50 Hz
Worldwide models:	AC 220-230 V and 120 V switchable, 50/60 Hz
Power Consumption	
U.S.A. & Canadian models:	3.5 A (420 W)
Other area models:	250 W
Dimensions (W × H × D):	435 × 150 × 322 mm 17-1/8" × 5-7/8" × 12-11/16"
Weight:	9.6 kg, 21.2 lbs.

REMOTE CONTROL (RC-371M)

Transmitter:	Infrared
Signal range:	Approx. 5 meters, 16 ft.
Power supply:	Two "AAA" batteries (1.5 V × 2)
Dimensions (W × H × D):	53 × 22 × 197 mm 2-1/16" × 7/8" × 7-3/4"
Weight:	132 grams (4.7 oz.) (including batteries)

Specifications and features are subject to change without notice.

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 utlise est a rapide. Pour une protection permanente, n'utiliser que des fusibles de meme type. Ce darnier est indique la qu le present symbol est appose.

CIRCUIT NO.	PART NO.	DESCRIPTION
F901	252164Y	5A-UL/T-237,Primary 〈D/W〉
F902	252076	3.15A-SE-EAK ,Primary 〈P/W〉
F903	252075	2.5A-SE-EAK,Primary 〈P〉
F991, F992	252163Y	4A-UL/T-237,Secondary<D>
	252077	4A-SE-EAK,Secondary<P/W>

NOTE : <D> : 120V model only
<P> : 230V model only
<W> : Worldwide model

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. **Turn the power button "ON"**
2. **Press and hold down the Video 1 button, then press the SPEAKER A button.**
3. **After "clear" is displayed, the preset memory and each mode stored in the memory, such as surround, are initialized and will return to the factory settings.**

3. 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 supply cord and the screw on the back panel.

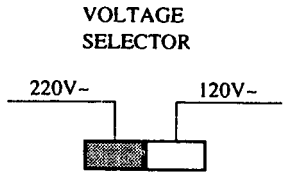
Specifications: 3.3 Mohm±10% at 500V.

4. Change of voltage

Worldwide models are equipment 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 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.



5. 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.

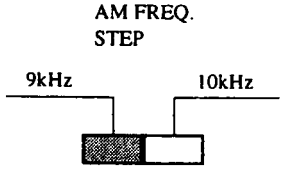
The unit must be plugged in and the power switch turned on and off once in order to charge the back-up system. Note that since this is not a permanent memory, the power switch must be turned on and off a few times each month the keep the back-up system operative.

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 shorted when the unit is exposed to very high humidity or used in an area with an extremely humid climate.

6. Setting the tuning step frequency

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

	AM band step
Europe:	9 kHz
U.S.A.:	10 kHz

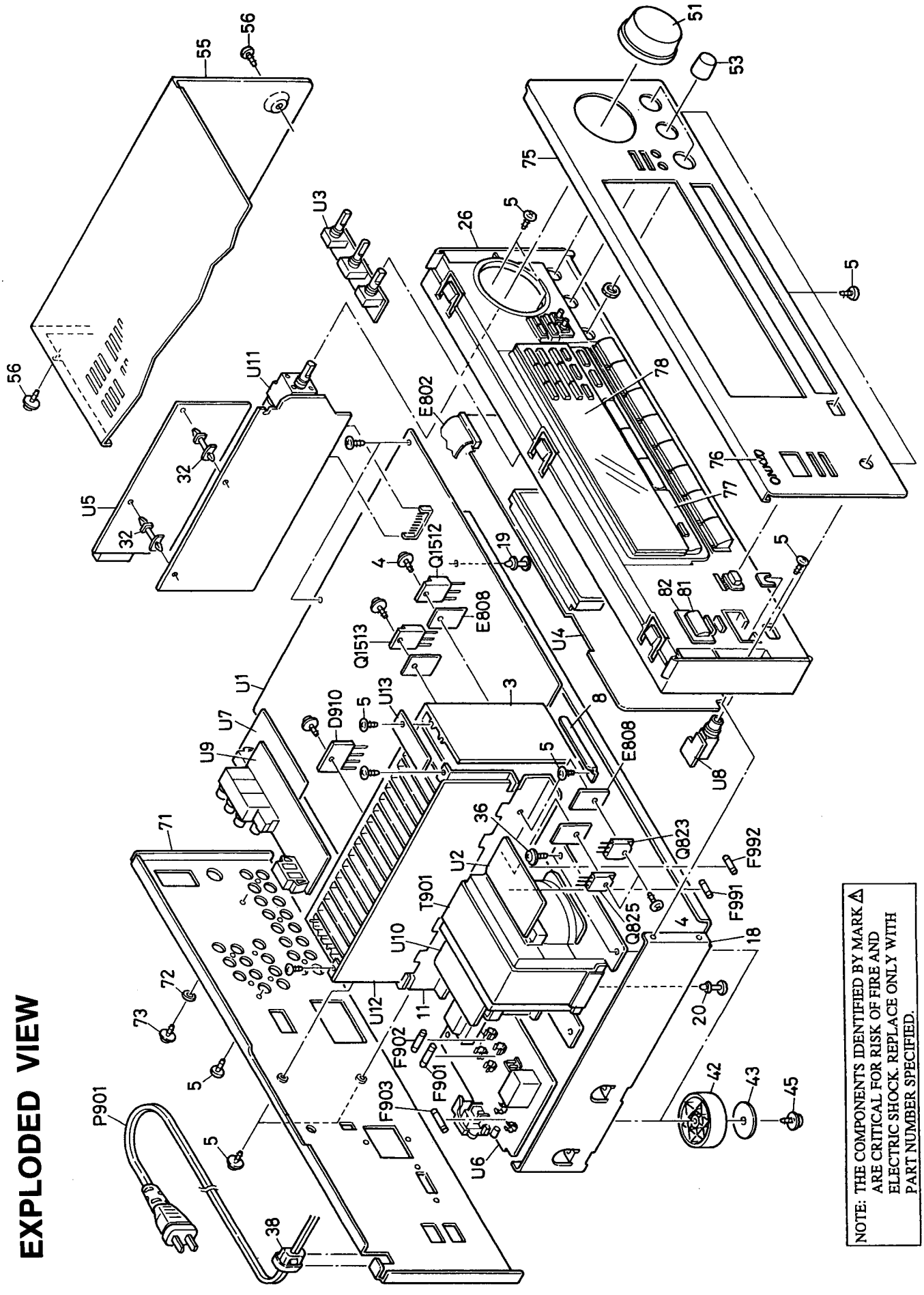


7. Changing the band step

With the exception of the worldwide models, a tuning step selector switch is not provided. When you change the band step, change the parts as shown below.

FM	To 100kHz	To 50kHz
AM	To 10kHZ	To 9kHz
R727	Open	Short
R724	3.3kohm	Remove

EXPLODED VIEW



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

PARTS LIST

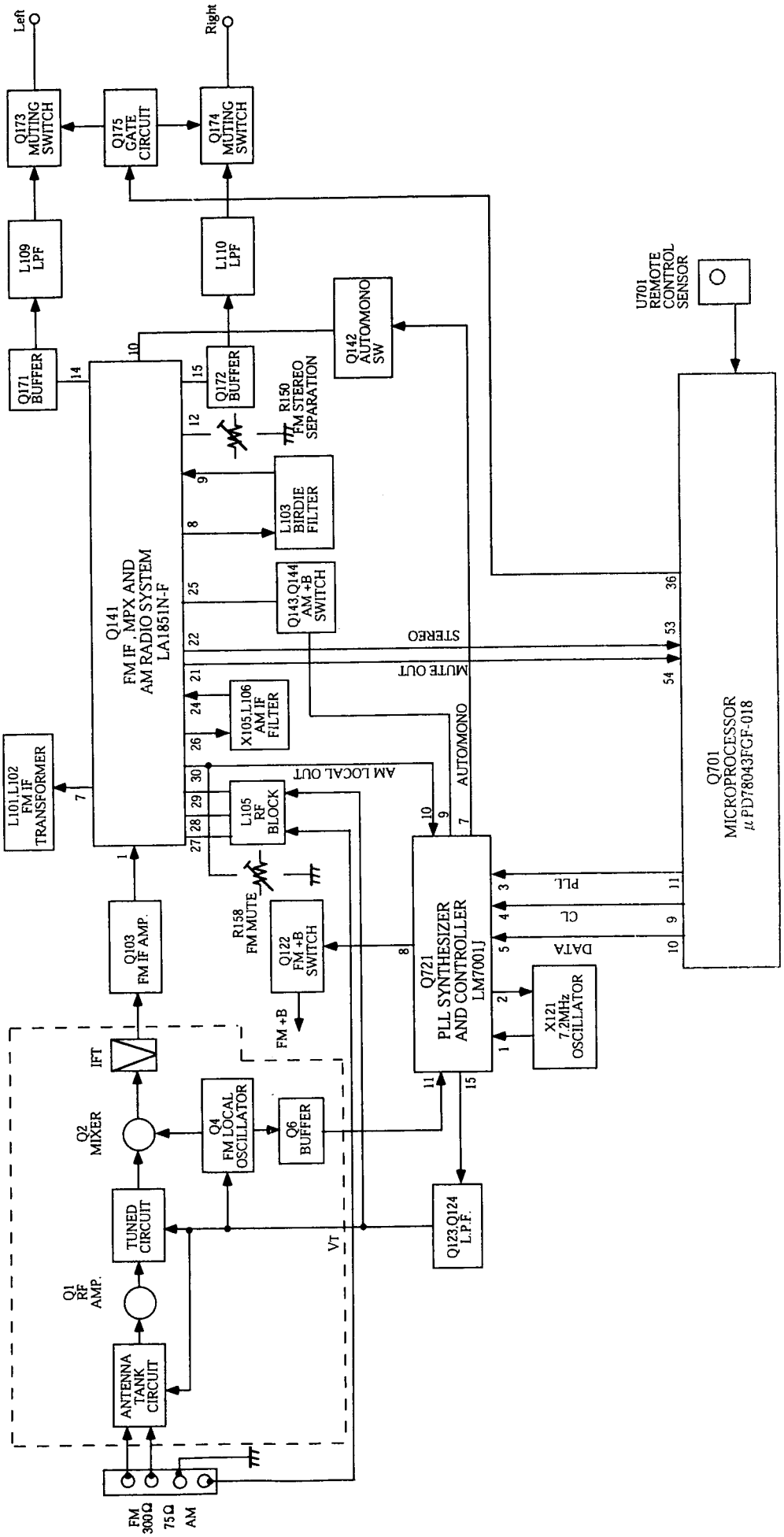
REF. NO.	PART NO.	DESCRIPTION
3	27160375	Heatsink
4	801433	3SMS8W,SW+14B(BC),Special screw
5	838130088	3TTB+8B,Self-tapping screw
8	27141671	Retainer
11	27160376	Heatsink S
17	27191044	KGPS-8RF,Holder
18	27100320B	Chassis
19	27190503A	KGLS-8RF,Holder
20	27190266	KGLS-12RF,Holder
24	28175225	Isolated plate
26	27111068	Front bracket <S>
	27110952	Front bracket <B>
32	27190896	KGLS-10S,Holder
36	830440089	4TTC+8C(BC),Self-tapping screw
38	27300750	⚠ #2271,Streinrelief
42	27175319A	Leg
43	28141332	Cushion
45	831430088	3TTW+8B(BC),Self-tapping screw
51	28325457	Knob, Volume <S>
	28325456	Knob, Volume <B>
53	28325455	Knob, Tone <S>
	28325454	Knob, Tone <B>
55	28184666	Top cover <S>
	28184663	Top cover <B>
56	838230088	3TTB+8B(NI),Nickel screw <S>
	838430088	3TTB+8B(BC),Self tapping screw <B>
71	27122450	Rear panel <D>
	27122451	Rear panel <P>
	27122454	Rear panel <T>
	27122452	Rear panel <W>
	27122453	Rear panel <A>
72	87643010	W3*10F(BC),Washer
73	838230088	3TTB+8B(NI),Nickel screw
75	27212001	Front panel <S>
	27211994	Front panel <D>
	27211995	Front panel <P/A>
	27211996	Front panel <T/W>
76	28135245	Badge <S>
	28135244	Badge <B>
77	27215302	Decorative frame <S>
	27215273	Decorative frame <B>
78	28191778	Clear plate <S>
	28191752A	Clear plate <B>
81	28325458	Knob, Power <S>
	28325451	Knob, Power <P/T/W/A>
82	27267956	Guide, Power <S>
	27267955	Guide, Power <P/T/W/A>
D910	22380274	⚠ RS603M or
D910 or	22380038	⚠ RBV602,Silicon diode
E801	260208	Binder
E802	2047352012	NCFC7-352012,Flat cable
E808	223024	⚠ AC238,Isolated sheet
F901	252164	⚠ 5A-UL/T-237,Fuse <D/W>
F902	252076	⚠ 3.15A-SE-EAK,Fuse <P/T/W/A>
F903	252075	⚠ 2.5A-SE-EAK,Fuse <P/T>
F991,F992	252077	⚠ 4A-SE-EAK,Fuse <P/T/W/A>
	252163	⚠ 4A-UL/T-237,Fuse <D>
P501a	880025-1	Plastic rivet
P901	253192HIT	⚠ AS-UC-6#18(SPT-2),Power supply cord <D>
	253193HIT	⚠ AS-CEE,Power supply cord <P/T>
	253233KAW	⚠ AS-CEE-2,Power supply cord <W>
	253197HIT	⚠ AS-SAA,Power supply cord <A>
P904,P905	25051570	⚠ NSCT-2P1357,AC outlet <A>

REF. NO.	PART NO.		DESCRIPTION
Q1512	2202843 or	*	2SC5242-O or
Q523,Q524	2202842	*	2SC5242-R,Transitor
Q1513	2202833 or	*	2SA1962-O or
Q525,Q526	2202832	*	2SA1962-R,Transistor
Q823,Q824	2202923 or	*	2SC5196-O or
Q823,Q824	2202922	*	2SC5196-R,Transistor
Q825,Q826	2202913 or	*	2SA1939-O or
Q825,Q826	2202912	*	2SA1939-R,Transistor
T901	2301323		⚠ NPT-1337D,Power transformer <D>
	2301324		⚠ NPT-1337P,Power transformer <P/T/A>
	2301325		⚠ NPT-1337DG,Power transformer <W>
U1	1A771533-1A		NAAR-6233-1A,Main circuit pc board ass'y <D>
	1A771533-1B		NAAR-6233-1B,Main circuit pc board ass'y <P>
	1A771533-1C		NAAR-6233-1C,Main circuit pc board ass'y <T/W/A>
U2	1A771534-1A		NAETC-6234-1A,Secondary circuit pc board ass'y <D>
	1A771534-1B		NAETC-6234-1B,Secondary circuit pc board ass'y <P>
	1A771534-1C		NAETC-6234-1C,Secondary circuit pc board ass'y <T/W/A>
U3	1A771535-1A		NAETC-6235-1A,Tone volume pc board ass'y <D>
	1A771535-1B		NAETC-6235-1B,Tone volume pc board ass'y <P>
	1A771535-1C		NAETC-6235-1C,Tone volume pc board ass'y <T/W/A>
U4	1A771536-1A		NADIS-6236-1A,Display circuit pc board ass'y <D>
	1A771536-1B		NADIS-6236-1B,Display circuit pc board ass'y <P>
	1A771536-1C		NADIS-6236-1C,Display circuit pc board ass'y <T>
	1A771536-1D		NADIS-6236-1D,Display circuit pc board ass'y <W>
	1A771536-1E		NADIS-6236-1E,Display circuit pc board ass'y <A>
U5	1A771537-1A		NARF-6237-1A,Tuner circuit pc board ass'y <D>
	1A771537-1B		NARF-6237-1B,Tuner circuit pc board ass'y <P>
	1A771537-1C		NARF-6237-1C,Tuner circuit pc board ass'y <T>
	1A771537-1D		NARF-6237-1D,Tuner circuit pc board ass'y <W>
	1A771538-1E		NARF-6237-1E,Tuner circuit pc board ass'y <A>
U6	1A771538-1A		NAPS-6238-1A,Primary circuit pc board ass'y <D>
	1A771538-1B		NAPS-6238-1B,Primary circuit pc board ass'y <P>
	1A771538-1C		NAPS-6238-1C,Primary circuit pc board ass'y <T>
	1A771538-1D		NAPS-6238-1D,Primary circuit pc board ass'y <W>
	1A771538-1E		NAPS-6238-1E,Primary circuit pc board ass'y <A>
U7	1A771539-1A		NAETC-6239-1A,Video terminal pc board ass'y <D>
	1A771539-1B		NAETC-6239-1B,Video terminal pc board ass'y <P>
	1A771539-1C		NAETC-6239-1C,Video terminal pc board ass'y <T>
	1A771539-1D		NAETC-6239-1D,Video terminal pc board ass'y <W>
	1A771539-1E		NAETC-6239-1E,Video terminal pc board ass'y <A>
U8	1A771540-1A		NAETC-6240-1A,Headphone terminal pc board ass'y <D>
	1A771540-1B		NAETC-6240-1B,Headphone terminal pc board ass'y <P>
	1A771540-1C		NAETC-6240-1C,Headphone terminal pc board ass'y <T>
	1A771540-1D		NAETC-6240-1D,Headphone terminal pc board ass'y <W>
	1A771540-1E		NAETC-6240-1E,Headphone terminal pc board ass'y <A>
U9	1A771541-1A		NAETC-6241-1A,Terminal pc board ass'y <D>
	1A771541-1B		NAETC-6241-1B,Terminal pc board ass'y <P>
	1A771541-1C		NAETC-6241-1C,Terminal pc board ass'y <T>
	1A771541-1D		NAETC-6241-1D,Terminal pc board ass'y <W>
	1A771541-1E		NAETC-6241-1E,Terminal pc board ass'y <A>
U10	1A771542-1A		NAETC-6242-1A,Transformer pc board ass'y <D>
	1A771542-1B		NAETC-6242-1B,Transformer pc board ass'y <P>
	1A771542-1C		NAETC-6242-1C,Transformer pc board ass'y <T>
	1A771542-1D		NAETC-6242-1D,Transformer pc board ass'y <W>
	1A771542-1E		NAETC-6242-1E,Transformer pc board ass'y <A>
U11	1A771594-4A		NAAF-5894-4A,Dolby circuit pc board ass'y <D>
	1A771594-4B		NAAF-5894-4B,Dolby circuit pc board ass'y <P/T/A>
	1A771594-4C		NAAF-5894-4C,Dolby circuit pc board ass'y <W>
U12	1A771595-4A		NAAF-5895-4A,Rear Amplifier pc board ass'y <D>
	1A771595-4B		NAAF-5895-4B,Rear Amplifier pc board ass'y <P/T/A>
	1A771595-4C		NAAF-5895-4C,Rear Amplifier pc board ass'y <W>
U13	25136243		NAETC-6243,Holder for lead wire

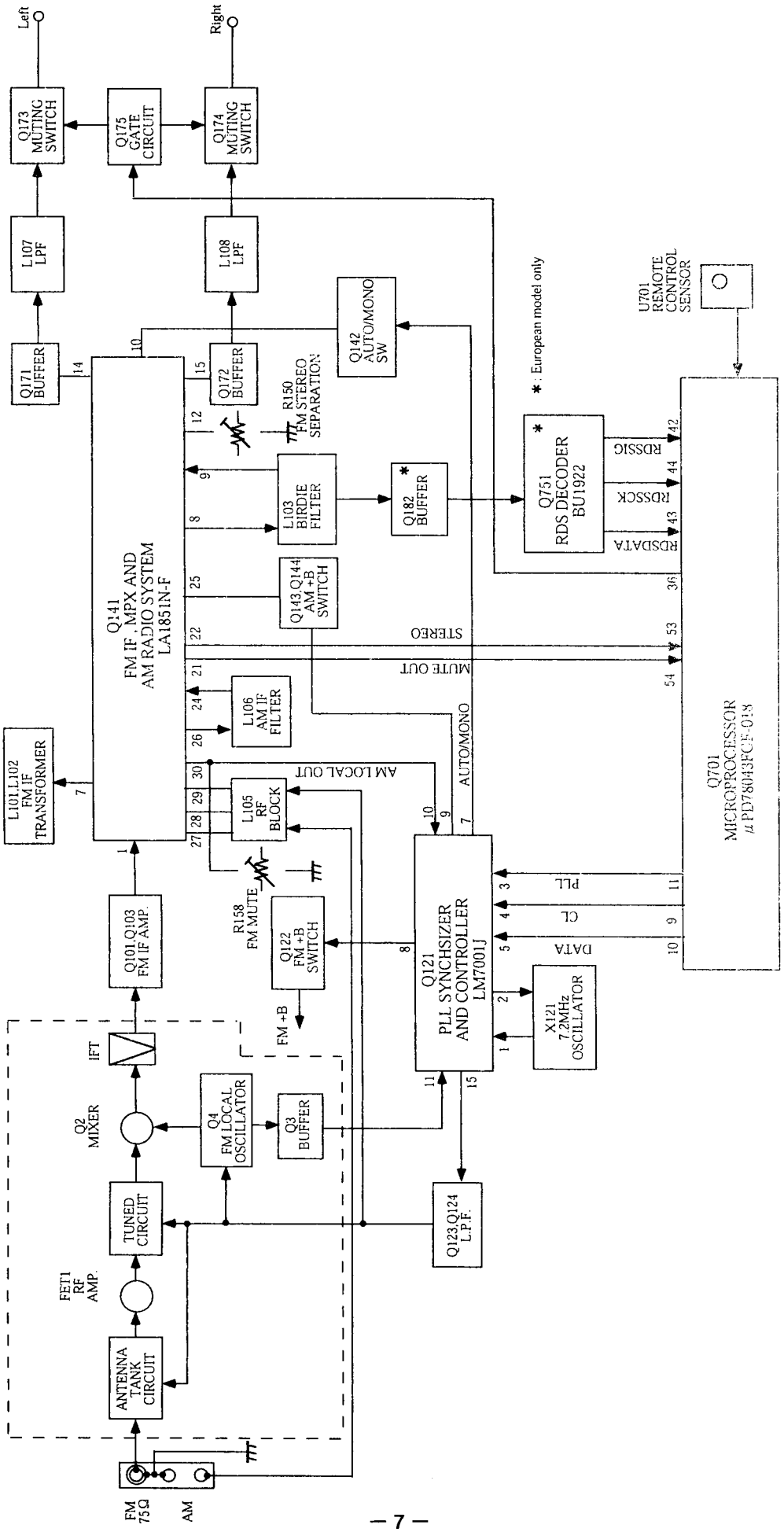
NOTE:
<D>:120V model only
<P>:230V model only
<W>:Taiwanese model only
<T>:Asian model only
<A>:Australian model only
<B>:Black model only
<S>:Silver model only

BLOCK DIAGRAM

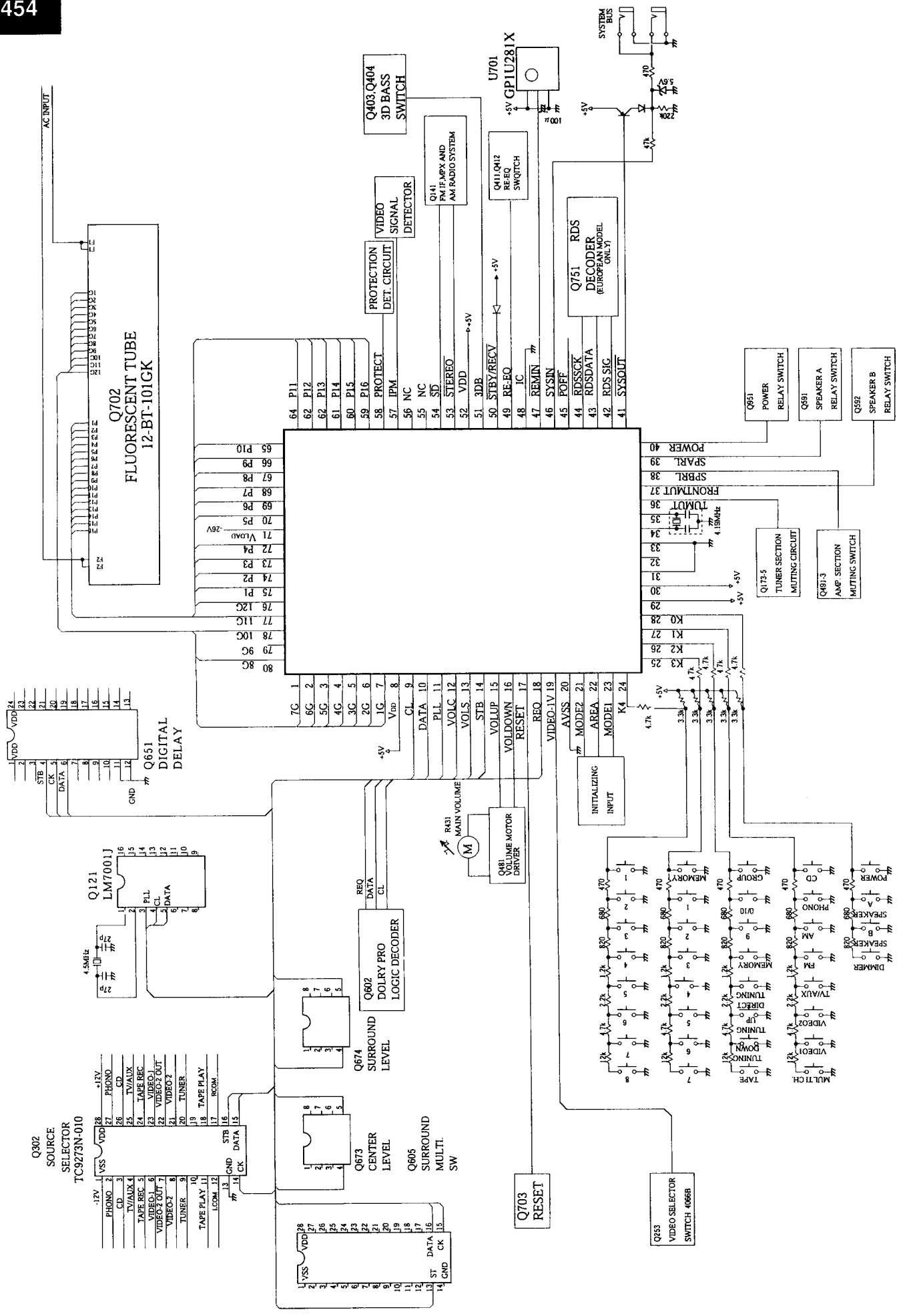
TUNER SECTION
120V MODEL



OTHER MODELS



MICROPROCESSOR CONNECTION DIAGRAM



MICROPROCESSOR TERMINAL DESCRIPTION

Pin No.	Function	Descriptions
1~7	7G~1G	Grid output terminals
8	VDD	Positive power supply terminal (+5V)
9	CL	Clock output terminal.
10	DATA	Data output terminal.
11	PLL	Chip enable output terminal for PLL IC
12	VOLC	Clock output terminal for electro volume of center channel.
13	VOLS	Clock output terminal for electro volume of surround channels.
14	STB	Strobe output terminal
15	VOLUP	Volume control output terminal
16	VOLDOWN	Volume control output terminal
17	$\overline{\text{RESET}}$	System reset input terminal
18	REQ	Request terminal for Digital delay and Dolby ICs
19	VIDEO-1V	Video signal selector terminal
20	AVSS	Ground terminal for A/D converter
21	MODE2	Initializing input terminal
22	AREA	Initializing input terminal for region of frequency range
23	MODE1	Initializing input terminal
24	K4~K0	Key input terminals
29	AVDD	Analog power supply terminal (+5V)
30	AVREF	Reference voltage input terminal for A/D converter
31	XT1	Crystal connection terminals for subsystem clock
32	XT2	Not used.
33	VSS	Ground terminal
34	X1	Crystal connection terminals for main system clock
35	X2	Connect the 4.19MHz ceramic oscillator.
36	TUMUT	Muting output terminal for tuner section
37	FRONTMUT	Muting output terminal for amplifier of front channels.
38	SPBRL	Speaker relay B control output terminal
39	SPARL	Speaker relay A control output terminal
40	POWER	Power source control output terminal
41	$\overline{\text{SYSOUT}}$	System code output terminal
42	$\overline{\text{RDSSIG}}$	Detection input terminal for RDS broadcast
43	RDSDATA	Data input terminal for RDS broadcast
44	$\overline{\text{RDSSCK}}$	Clock input terminal from RDS demodulator
42	DSPSCK	Clock output terminal for KARAOKE IC.
43	DSPDATA	Data output terminal for KARAOKE IC.

Pin No.	Function	Descriptions
44	DSPCS	Chip select output terminal for KARAOKE IC.
45	$\overline{\text{POFF}}$	Power failure detection input terminal
46	SYSIN	system code input terminal
47	$\overline{\text{REMIN}}$	Remote control signal input terminal
48	IC	Internal connection terminal
49	RE-EQ	RE-EQ control output terminal
50	$\overline{\text{STBY/RECV}}$	STANDBY/RECEIVED indication output terminal
51	$\overline{\text{3DB}}$	3-D bass control output terminal
52	VDD	Power supply terminal (+5V)
53	$\overline{\text{STEREO}}$	Stereo broadcast detection input terminal
54	$\overline{\text{SD}}$	Broadcast detection input terminal
55,56	NC	Not used.
57	IPM	Audio IPM operation input terminal
58	PROTECT	Detection input terminal for protection circuit
59	P16~P5	Segment output terminals
71	VLOAD	Pull-down resistor connection terminal for FIP controller and driver
72	P4~P1	Segment output terminals
76~80	12G~8G	Grid output terminals

Volume control output

	15	16
Stop	H	H
Up	H	L
Down	L	H

FM band

BAND1	BAND0	Region	Frequency Range	Channel space
0	0	Europe	87.50~108.00MHz	50kHz
0	1	Saudi	87.50~108.00MHz	50kHz
1	0	Japan	76.0~90.0MHz	100kHz
1	1	U.S.A	87.5~108MHz	100kHz

AM band

BAND1	BAND0	AM10K	Region	Frequency Range	Channel space
0	0	0	Europe	522~1611kHz	9 kHz
0	1	0	Saudi	531~1602kHz	9 kHz
1	0	0	Japan	522~1629kHz	9 kHz
1	1	0	U.S.A	522~1629kHz	9 kHz
1	1	1	U.S.A	530~1710kHz	10 kHz

PRINTED CIRCUIT BOARD PARTS LIST

MAIN CIRCUIT PC BOARD(NAAR-6233-1A/1B/1C)

CIRCUIT NO.	PART NO.	DESCRIPTION
	ICs	
Q281,Q401	22240293 or	NJM4558L-D or
Q402,Q405	22240247	BA15218N
Q301	222502	NJM4558D-X
Q302	22240881	TC9273N-010
Q407,Q409	222502	NJM4558D-X
Q410	222502	NJM4558D-X
Q411,Q412	22240025	LC4966
Q481	22240239	TA7291S
Q921	222780125NEC	MPC78M12HF
Q922	222790125	79M12HF
Q923	222780565JRC	NJM78M56FA
	Transistors	
Q1501-Q1503	2215116 or	2SC1775-F or
	2211732	2SC1845-F
Q1504,Q1505	2215843 or	KTA1024-O or
Q1507	2211353	2SA949-O
Q1506,Q1508	2215853 or	KTC3206-O or
Q1509	2211633	2SC2229-O
Q1510	2203010	2SC5171
Q1511	2203000	2SA1930
Q1512	2202843 or	* 2SC5242-O or
	2202842	* 2SC5242-R
Q1513	2202833 or	* 2SA1962-O or
	2202832	* 2SA1962-R
Q1514	2211733 or	2SC1845-E or
	2211732	2SC1845-F
Q1515	2215864 or	KTC3199-GR or
	2213284	2SC1740S-R
Q282	2215780 or	KRA103M or
	2212600	DTA124ES
Q283	2213816,	2SD1450-T,
	2212356 or	2SD1302-T or
	2213815	2SD1450-S
Q284	2215810 or	KRC103M or
	2213160	DTC124ES
Q285	2215800 or	KRA111M or
	2215240	DTA114TS
Q403,Q404	2211945	2SK246-GR
Q406	2211945	2SK246-GR
Q413,Q426	2215790 or	KRA107M or
	2213090	DTA114YS
Q423~Q425	2213631	RN1241-A
Q427	2215770 or	KRA102M or
	2213510	DTA114ES
Q501~Q506	2215116 or	2SC1775-F or
	2211732	2SC1845-F
Q507~Q510	2215843 or	KTA1024-O or
	2211353	2SA949-O
Q511,Q512	2215853 or	KTC3206-O or
Q515~Q518	2211633	2SC2229-O
Q513,Q514	2215843 or	KTA1024-O or
	2211353	2SA949-O
Q519,Q520	2203010	2SC5171
Q521,Q522	2203000	2SA1930
Q523,Q524	2202843 or	* 2SC5242-O or
	2202842	* 2SC5242-R
Q525,Q526	2202833 or	* 2SA1962-O or
	2202832	* 2SA1962-R
Q527,Q528	2211733 or	2SC1845-E or
	2211732	2SC1845-F
Q529,Q530	2215864 or	KTC3199-GR or
	2213284	2SC1740S-R
Q581,Q582	2215116 or	2SC1775-F or
	2211732	2SC1845-F

CIRCUIT NO.	PART NO.	DESCRIPTION
	Transistors	
Q583	2211792 or	2SA992-F or
	2211793	2SA992-E
Q591,Q592	2215830 or	KRC105M or
	2213640	DTC123JS
Q924	2214905 or	2PA1015-GR or
	2211455	2SA1015-GR
	Diodes	
D281,D282	223260 or	1N4148 or
D401~D403	223163	1SS133
D501~D504	22380260,	RL1N4003,
D915~D921	22380032	1SR139-100 or
	22380035	GP104003E
D591,D592	223260 or	1N4148 or
D912	223163	1SS133
D911	22380021	RS403L
D922	224473304	MTZJ33D
D923,D924	223260 or	1N4148 or
	223163	1SS133
	Capacitors	
C1501	354742209	22 μ F,16V,Elect.
C1502	374721015	100pF ± 10%,50V,Plastic
C1503	354741019	100 μ F,16V,Elect.
C1504,C1505	354781009	10 μ F,50V,Elect.
C1511	374721044	0.1 μ F ± 5%,50V,Plastic
C1512	354744709	47 μ F,16V,Elect.
C1513~C1517	354781009	10 μ F,50V,Elect.
C281~C283	354741009	10 μ F,16V,Elect.
C284	354780229	2.2 μ F,50V,Elect.
C285,C286	354741009	10 μ F,16V,Elect.
C303,C304	354741009	10 μ F,16V,Elect.
C307,C308	354721019	100 μ F,6.3V,Elect.
C309,C310	374726224	6200pF ± 5%,50V,Plastic
C311,C312	374721824	1800pF ± 5%,50V,Plastic
C313~C316	354741009	10 μ F,16V,Elect.
C391~C393	374721015	100pF ± 10%,50V,Plastic
C401,C402	354741009	10 μ F,16V,Elect.
C407~C410	374721044	0.1 μ F ± 5%,50V,Plastic
C413,C414	354741009	10 μ F,16V,Elect.
C415,C416	374721534	0.015 μ F ± 5%,50V,Plastic
C417,C418	374721015	100pF ± 10%,50V,Plastic
C427,C454	374721044	0.1 μ F ± 5%,50V,Plastic
C431,C432	354741009	10 μ F,16V,Elect.
C433~C436	374721224	1200pF ± 5%,50V,Plastic
C437,C438	354741009	10 μ F,16V,Elect.
C439,C440	374722224	2200pF ± 5%,50V,Plastic
C451,C457	354741009	10 μ F,16V,Elect.
C456,C462	374721044	0.1 μ F ± 5%,50V,Plastic
C458,C459	374721224	1200pF ± 5%,50V,Plastic
C460,C463	354741009	10 μ F,16V,Elect.
C461	374722224	2200pF ± 5%,50V,Plastic
C465~C467	354741009	10 μ F,16V,Elect.
C501,C502	354741009	10 μ F,16V,Elect.
C503,C504	374721015	100pF ± 10%,50V,Plastic
C505,C506	354742219	220 μ F,16V,Elect.
C507~C510	354781009	10 μ F,50V,Elect.
C519,C520	374721044	0.1 μ F ± 5%,50V,Plastic
C521,C522	354744709	47 μ F,16V,Elect.
C525~C528	354774719	470 μ F,63V,Elect.
C581	354721019	100 μ F,6.3V,Elect.
C910	354732219	220 μ F,10V,Elect.
C915,C916	3504339,	8200 μ F,56V,Elect.,
	3504280 or	8200 μ F,56V,Elect. or
	3504298	8200 μ F,56V,Elect. <D>

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

CIRCUIT NO.	PART NO.	DESCRIPTION
	Capacitors	
C915,C916	3504340,	1000 μ F,56V,Elect.,
	3504285 or	10000 μ F,56V,Elect. or
	3504299	10000 μ F,56V,Elect.<P/T/W/A>
C917	354753329	3300 μ F,25V,Elect.
C918	354761029	1000 μ F,35V,Elect.
C922,C923	354781009	10 μ F,50V,Elect.
C924,C925	3504314 or	4700 μ F,35V,Elect. or
	3504310	4700 μ F,35V,Elect.
C926	354781009	10 μ F,50V,Elect.
C928,C929	354781019	100 μ F,50V,Elect.
C932	354741009	10 μ F,16V,Elect.
	Resistors	
R1512,R1513	443526804	68Ω ± 5%,1/2W,Metal oxide
R1515	443525604	56Ω ± 5%,1/2W,Metal oxide
R1516	443526804	68Ω ± 5%,1/2W,Metal oxide
R1519	4500197 or	330Ω ± 5%,1/4W or
	4500107	330Ω ± 5%,1/4W,Metal
R1522,R1523	4500171 or	2.2Ω ± 5%,1/4W,Metal or
	4500055	2.2Ω ± 5%,1/4W,Metal
R1524	4000132	RGC55 0.22,Special
R1529	453630824	8.2Ω ± 5%,1W,Metal
R1532	5210259	N06HR2KBC,Trimming
R521～R524	443526804	68Ω ± 5%,1/2W,Metal oxide
R525,R526	443525604	56Ω ± 5%,1/2W,Metal oxide
R527,R528	443526804	68Ω ± 5%,1/2W,Metal oxide
R539～R542	4500171 or	2.2Ω ± 5%,1/4W or
R567～R570	4500055	2.2Ω ± 5%,1/4W,Metal
R543,R544	4500197 or	330Ω ± 5%,1/4W or
	4500107	330Ω ± 5%,1/4W,Metal
R547,R548	4000132	RGC55 0.22,Special
R555,R556	453630824	8.2Ω ± 5%,1W,Metal
R557,R558	443623914	390Ω ± 5%,1/2W,Metal oxide
R573,R574	5210259	N06HR2KBC,Trimming
R933	443524704	47Ω ± 5%,1/2W,Metal oxide
	Relays	
RL501,RL502	25065517	NRL-2P5A-DC24-098
	Terminals	
P301,P302	25045538,	NPJ-6PDWR362,
	25045300 or	NPJ-6PDBL159 or
	25045458	NPJ-6PDBL279
P303	25045537,	NPJ-4PDWR361,
	25045303 or	NPJ-4PDBL162 or
	25045460	NPJ-4PDBL281
P501	25060147	NTM-4PDMN075
P502	25060273 or	NTM-4PDML204 or
	25060161	NTM-4PDML087
	Plugs	
P1511	25055038	NPLG-2P29
P211a	25055709	NPLG-13P665
P511,P512	25055038	NPLG-2P29
P612a	25055706	NPLG-10P662
	Sockets	
P611a	25051752	NSCT-12P1539
P701b	25052044,	NSCT-35P1831,
	25050975 or	NSCT-35P762 or
	25051842	NSCT-35P1629
JL261a	25051088	NSCT-4P875
JL401a	25051093	NSCT-9P880
JL911a,JL912a	25051111	NSCT-7P898
JL914a	25051108	NSCT-4P895

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

SECONDARY CIRCUIT PC BOARD(NAETC-6234-1A/1B/1C)

CIRCUIT NO.	PART NO.	DESCRIPTION
	Fuseholders	
F991a,F992a	25052087 or	⚠ HTF-015 or
	25050065	⚠ YSH403T
	Fuses	
F991,F992	252077	⚠ 4A-SE-EAK,Fuse <P/T/W/A>
F991,F992	252163	⚠ 4A-UL/T-237,Fuse <D>
	Socket	
JL911b	25051111	NSCT-7P898
	Capacitors	
C992,C993	374721044	0.1 μ F ± 5%,50V,Plastic
C995,C996	374731044	0.1 μ F ± 5%,50V,Plastic
C997,C998	374721044	0.1 μ F ± 5%,50V,Plastic
	Resistors	
R991,R992	453530224	2.2Ω ± 5%,1/2W,Metal

TONE VOLUME PC BOARD(NAETC-6235-1A/1B/1C)

CIRCUIT NO.	PART NO.	DESCRIPTION
C411,C412	374721534	0.015 μ F ± 5%,50V,Plastic
R400	5131434 or	N12RLC250KWT20Z or
	5104288	N11RLC250KWT20Z,Variable
R419,R421	5132435 or	N14RGLC100KWT20Z or
	5104356	N14RLC100KWT20Z,Variable
JL401b	25051093	NSCT-9P880,Socket

DISPLAY CIRCUIT PC BOARD(NADIS-6236-1A/1B/1C/1D/1E)

CIRCUIT NO.	PART NO.	DESCRIPTION
	FL tube	
Q702	212156	12-BT-101GK
	Remote sensor	
U701	241305	GP1U281X
	ICs	
Q701	22241059	MPD78043FGF-018
Q751	22241124	BU1922 <P>
	Transistors	
Q703	2215820 or	KRC104M or
	221282	DTC144ES
Q705,Q706	2215864 or	KTC3199-GR or
	2213284	2SC1740S-R
Q707	2215770 or	KRA102M or
	2213510	DTA114ES
Q752	2215820 or	KRC104M or
	221282	DTC144ES <P>
	Diodes	
D701～D705	223260 or	1N4148 or
D708	223163	1SS133
D706,D707	224470562	MTZJ5.6B
D709	225290	SEL4110R
D710～D712	223260 or	1N4148 or
	223163	1SS133
D751	223260 or	1N4148 or
	223163	1SS133 <P>
	Coils	
L701～L703	233454K220 or	NCH-1452 220K or
	233526K220	NCH-1561 220K
	Oscillators	
X701	3010163	CST4.19MGW
X751	3010203	AF6146CG <P>
	Capacitors	
C701	3000075	EECS5R5T473,Super
C702	375524744	0.47 μ F ± 5%,50V,Plastic
C703,C709	355721019	100 μ F,6.3V,Elect.
C704	355780109	1 μ F,50V,Elect.
C706,C707	355780109	1 μ F,50V,Elect.
C711	355721019	100 μ F,6.3V,Elect.

CIRCUIT NO.	PART NO.	DESCRIPTION
	Capacitors	
C751	354721019	100 μ F,6.3V,Elect. <P>
C753	354780229	2.2 μ F,50V,Elect. <P>
C754	374725614	560pF ± 5%,50V,Plastic <P>
	Push switches	
S701～S704	25035652	NPS-111-S604
	25035652	NPS-111-S604
	25035652	NPS-111-S604
	25035652	NPS-111-S604
S707～S738	25035652	NPS-111-S604
S739	25035653	NPS-122-L605 <P/T/W/A>
	Sockets	
JL711a	25051090	NSCT-6P877
P701a	25052081,	NSCT-35P1868,
P701aor	25051879 or	NSCT-35P1666 or
P701aor	25050941	NSCT-35P728
	Holder	
Q702a	27190989	(FL)

TUNER CIRCUIT PC BOARD(NARF-6237-1A/1B/1C/1D/1E)

CIRCUIT NO.	PART NO.	DESCRIPTION
	Front end	
TU001	240098	ENV172D1G1 <D>
	240099	ENV172A0G1 <P/T/W/A>
	ICs	
Q121	22241076 or	LM7001J or
	22240090	LM7001
Q141	22240983	LA1851N-F
	Transistors	
Q101	**2210746**	2SC945A-P <P/T/W/A>
Q102	2211723	2SC1923-O
Q122,Q142	2215770,	KRA102M,
Q175	2213510 or	DTA114ES or
	2214350	RN2202
Q123	2212445	2SK365-GR
Q124,Q171	2215864,	KTC3199-GR,
Q172	2212115 or	2SC2458-GR or
	2213284	2SC1740S-R
Q143	2215820 or	KRC104M or
	221282	DTC144ES
Q144	2215830 or	KRC105M or
	2213640	DTC123JS
Q173,Q174	2215024	2SD1468S-R
Q182	2215864,	KTC3199-GR,
	2212115 or	2SC2458-GR or
	2213284	2SC1740S-R <P>
	Diode	
D165	224470512	MTZJ5.1B
	Transformers and coils	
L101	233457	NFIF-4081
L102	233458	NFIF-4082
L103	233471	NMC-6084 <P/T/W/A>
L104	233526K220 or	NCH-1561 220K or
	233454K220	NCH-1452 220K
L105	232174	NMRF-5077
L106	232176	NMIF-6094
L107,L108	233484	NMC-4085 <P/T/W/A>
L109,L110	231092	NCH-2140 <D>
	Ceramic filters	
X101,X103	3010071	SFE-10.7MA5 RED
X102	3010130	SFE10.7MZ2K <P/T/W/A>
X104	3010268	CSB456F23
	Oscillator	
X121	3010141	XTL-7.2M

CIRCUIT NO.	PART NO.	DESCRIPTION
	Capacitors	
C001	354741019	100 μ F,16V,Elect.
C109,C110	374722724	2700pF ± 5%,50V,Plastic<P/T/W/A>
C127	354721019	100 μ F,6.3V,Elect.
C130,C159	354780229	2.2 μ F,50V,Elect.
C131	374722234	0.022 μ F ± 5%,50V,Plastic
C132,C153	354783399	0.33 μ F,50V,Elect.
C133,C142	354741019	100 μ F,16V,Elect.
C145,C154	354741009	10 μ F,16V,Elect.
C146	374723324	3300pF ± 5%,50V,Plastic
C147	374721234	0.012 μ F ± 5%,50V,Plastic<P/T/W/A>
C147	374721834	0.018 μ F ± 5%,50V,Plastic <D>
C149	354780479	4.7 μ F,50V,Elect.
C151,C152	354780109	1 μ F,50V,Elect.
C155,C156	374721034	0.01 μ F ± 5%,50V,Plastic <D>
C155,C156	374724724	4700pF ± 5%,50V,Plastic <P/T/A>
C155,C156	374725624	5600pF ± 5%,50V,Plastic <W>
C160	354784799	0.47 μ F,50V,Elect.
C162,C166	354741009	10 μ F,16V,Elect.
C171,C172	354741009	10 μ F,16V,Elect.
C173,C174	374721024	1000pF ± 5%,50V,Plastic <D>
C177	354780229	2.2 μ F,50V,Elect.
C178	354741009	10 μ F,16V,Elect.
	Resistors	
R150	5210261	N06HR5KBC,Trimming
R158	5210264	N06HR30KBC,Trimming
	Terminals	
P101	25060117,	NTM-2PDML051,
	25060222 or	NTM-2PDML144 or
	25060270	NTM-2PDML201<P/T/W/A>
P101	25060195,	NTM-4PDML117,
	25060239 or	NTM-4PDML161 or
	25060272	NTM-4PDML203 <D>
	Socket	
P211b	25051238	NSCT-13P1028
	Plug	
TP101	25055038	NPLG-2P29
	Shield plate	
E856	27150397	<P/T/W/A>

PRIMARY CIRCUIT PC BOARD(NAPS-6238-1A/1B/1C/1D/1E)

CIRCUIT NO.	PART NO.	DESCRIPTION
	Transistor	
Q951	2213640 or	DTC123JS or
	2215830	KRC105M
	Diodes	
D951	22380260,	RL1N4003,
D953,D954	22380032 or	1SR139-100 or
	22380035	GP104003E <P/T/W/A>
D952	22380260,	RL1N4003,
	22380032 or	1SR139-100 or
	22380035	GP104003E
D955	223260 or	1N4148 or
	223163	1SS133
	Power transformer	
T902	2300670A or	⚠ NPT-1111D or
	2301258	⚠ NPT-1294D <D>
	2300671A	⚠ NPT-1111P <P/T/A>
	2300672A	⚠ NPT-1111DG <W>
	Fuses	
F901	252164	⚠ 5A-UL/T-237,Fuse <D/W>
F902	252076	⚠ 3.15A-SE-EAK,Fuse <P/T/W/A>
F903	252075	⚠ 2.5A-SE-EAK,Fuse <P/T>

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

CIRCUIT NO.	PART NO.	DESCRIPTION
	Fuseholders	
F901a	25052087 or	⚠ HTF-015 or
	25050065	⚠ YSH403T <D/W>
F902a	25052087 or	⚠ HTF-015 or
	25050065	⚠ YSH403T <P/T/W/A>
F903a	25052087 or	⚠ HTF-015 or
	25050065	⚠ YSH403T <P/T>
	Sockets	
JL961a	25051088	NSCT-4P875
P903	25051125	⚠ NSCT-4P912 <P/T/W>
	25051126	⚠ NSCT-4P913 <D>
	Plug	
P901a	25055675	⚠ NPLG-2P631
	Switch	
S901	25065437	⚠ NSS-22157P <W>
	Relay	
RL901	25065515 or	⚠ NRL-1P5A-DC12-096 or
	25065561	⚠ NRL-1P5A-DC12-127
	Capacitors	
C901	3500191	⚠ DE7150F-103M,IS
C952	354743319	330 μ F,16V,Elect.
	Resistors	
R901	431533355	⚠ 3.3MΩ,1/2W,Solid <D>
R951	453530824	8.2Ω ±5%,1/2W,Metal <P/T/W/A>

VIDEO TERMINAL PC BOARD(NAETC-6239-1A/1B/1C/1D/1E)

CIRCUIT NO.	PART NO.	DESCRIPTION
	IC	
Q253	222840661	4066B
	Transistors	
Q251,Q252	2215864 or	KTC3199-GR or
	2213284	2SC1740S-R
	Diode	
D251	223260 or	1N4148 or
	223163	1SS133
	Capacitors	
C251,C252	354721019	100 μ F,6.3V,Elect.
C255,C256	354724719	470 μ F,6.3V,Elect.
C257	354721019	100 μ F,6.3V,Elect.
C259	354741019	100 μ F,16V,Elect.
	Terminal	
P251	25045339 or	NPJ-4PDYE190 or
	25045539	NPJ-4PDYE363
	Plug	
JL261b	25055625	NPLG-4P587

TERMINAL PC BOARD(NAETC-6241-1A/1B/1C/1D/1E)

CIRCUIT NO.	PART NO.	DESCRIPTION
	Terminals	
P150i	25060271 or	NTM-2PDML202 or
	25060114	NTM-2PDML048
P805	25045537,	NPJ-4PDWR361,
	25045303 or	NPJ-4PDBL162 or
	25045460	NPJ-4PDBL281
	Terminals	
P806	25045536,	NPJ-2PDBL360,
	25045298 or	NPJ-2PDBL157 or
	25045456	NPJ-2PDBL277
P807	25045535,	NPJ-1PDBL359,
	25045302 or	NPJ-1PDBL161 or
	25045459	NPJ-1PDBL280
	Socket	
JL914b	25050281	NSCT-4P109
	Plug	
JL622b	25055631	NPLG-10P593

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

HEADPHONE TERMINAL PC BOARD(NAETC-6240-1A/1B/1C/1D/1E)

CIRCUIT NO.	PART NO.	DESCRIPTION
P503	25045255 or	YKB26-5009 or
	25045540	HTJ-064-11D,Terminal

DOLBY CIRCUIT PC BOARD(NAAF-5894-4A/4B/4C)

CIRCUIT NO.	PART NO.	DESCRIPTION
	ICs	
Q601,Q603	222502	NJM4558D-X
Q602	22241053	NJW1102AF
Q605	22240800	TC9164AN
Q651	22240995 or	NJU9702 or
	22240686	M65830P
Q671,Q672	222502	NJM4558D-X
Q673,Q674	22241054	M62429FP
	Transistors	
Q652	2215163	2SD667A-C
Q675	2213631	RN1241-A
Q677,Q678	2213631	RN1241-A
	Diodes	
D651	224470682	MTZJ6.8B
D652～D657	223260 or	1N4148 or
D659	223163	1SS133
	Oscillator	
X651	3010217	CST2.04MG040
	Capacitors	
C601,C602	354780229	2.2 μ F,50V,Elect.
C605,C606	354781009	10 μ F,50V,Elect.
C607～C610	374721044	0.1 μ F±5%,50V,Plastic
C611,C612	374726814	680pF±5%,50V,Plastic
C613,C614	354741009	10 μ F,16V,Elect.
C616,C619	354742209	22 μ F,16V,Elect.
C617	374724724	4700pF±5%,50V,Plastic
C618,C657	354744709	47 μ F,16V,Elect.
C620～C622	354741009	10 μ F,16V,Elect.
C623,C638	354781099	0.1 μ F,50V,Elect.
C624,C663	354741009	10 μ F,16V,Elect.
C625	354722219	220 μ F,6.3V,Elect.
C627	374725614	560pF±5%,50V,Plastic
C628	374721024	1000pF±5%,50V,Plastic
C629,C656	374725624	5600pF±5%,50V,Plastic
C630	374724734	0.047 μ F±5%,50V,Plastic
C631	354786899	0.68 μ F,50V,Elect.
C632,C633	354782299	0.22 μ F,50V,Elect.
C634,C635	354780479	4.7 μ F,50V,Elect.
C636,C637	354782299	0.22 μ F,50V,Elect.
C639,C640	374724734	0.047 μ F±5%,50V,Plastic
C641,C642	354781099	0.1 μ F,50V,Elect.
C643,C644	374722234	0.022 μ F±5%,50V,Plastic
C645	354781099	0.1 μ F,50V,Elect.
C647～C649	354741009	10 μ F,16V,Elect.
C650	354780479	4.7 μ F,50V,Elect.
C651	374722224	2200pF±5%,50V,Plastic
C652,C653	374725614	560pF±5%,50V,Plastic
C654,C655	374721044	0.1 μ F±5%,50V,Plastic
C658,C659	374724734	0.047 μ F±5%,50V,Plastic
C660	354781009	10 μ F,50V,Elect.
C661,C662	354721019	100 μ F,6.3V,Elect.
C664	354741019	100 μ F,16V,Elect.
C667,C668	354741009	10 μ F,16V,Elect.
C669,C670	354780229	2.2 μ F,50V,Elect.
C671～C673	354741009	10 μ F,16V,Elect.
C674	354780229	2.2 μ F,50V,Elect.
C676,C677	354741009	10 μ F,16V,Elect.
C685,C686	354721019	100 μ F,6.3V,Elect.
C687	354741009	10 μ F,16V,Elect.
C689～C691	354741009	10 μ F,16V,Elect.

CIRCUIT NO.	PART NO.	DESCRIPTION
	Resistor	
R696	5104392A	N16RFL50KA25F,Variable
	Sockets	
JL621a	25051087	NSCT-3P874
JL622a	25051094	NSCT-10P881
P612b	25051235	NSCT-10P1025
	Plug	
P611b	25055885	NPLG-12P841

REAR AMPLIFIER PC BOARD(NAAF-5895-4A/4B/4C)

CIRCUIT NO.	PART NO.	DESCRIPTION
	Transistors	
Q801,Q802	2215116 or	2SC1775-F or
Q809	2211732	2SC1845-F
Q803～Q806	2215843 or	KTA1024-O or
Q813,Q814	2211353	2SA949-O
Q807,Q808	2215853 or	KTC3206-O or
Q817,Q818	2211633	2SC2229-O
Q810	2215116 or	2SC1775-F or
Q827～Q830	2211732	2SC1845-F
Q811,Q812	2215864 or	KTC3199-GR or
Q815,Q816	2213284	2SC1740S-R
Q819,Q820	2215163	2SD667A-C
Q821,Q822	2215173	2SB647A-C
Q823,Q824	2202923 or	* 2SC5196-O or
	2202922	* 2SC5196-R
Q825,Q826	2202913 or	* 2SA1939-O or
	2202912	* 2SA1939-R
	Diodes	
D801,D802	22380260,	RL1N4003,
	22380032	1SR139-100 or
	22380035	GP104003E
	Capacitors	
C801,C802	354742209	22 μ F,16V,Elect.
C805,C806	354744709	47 μ F,16V,Elect.
C807,C808	354741019	100 μ F,16V,Elect.
C815,C816	354781009	10 μ F,50V,Elect.
C819,C820	354781009	10 μ F,50V,Elect.
C823,C824	374724734	0.047 μ F ± 5%,50V,Plastic
C827,C828	354764709	47 μ F,35V,Elect.
C831,C832	354762219	220 μ F,35V,Elect.
	Resistors	
R847,R848	4000131	RGC22-0.22 OHMK,Special
R823～R826	443526804	68Ω ± 5%,1/2W,Metal oxide
R833,R834	443525604	56Ω ± 5%,1/2W,Metal oxide
R835,R836	443526804	68Ω ± 5%,1/2W,Metal oxide
R841,R842	443521014	100Ω ± 5%,1/2W,Metal oxide
R843～R846	453530224	2.2Ω ± 5%,1/2W,Metal
R855,R856	453630824	8.2Ω ± 5%,1W,Metal
R859,R860	453530224	2.2Ω ± 5%,1/2W,Metal
	Switch	
S961	25065286	NSS-22112 <W>
	Terminals	
P801	25060161 or	NTM-4PDML087 or
	25060273	NTM-4PDML204
P961	25045439	NPJ-1PDBL263
	Socket	
JL912b	25050271	NSCT-7P99
	Plugs	
JL621b	25055624	NPLG-3P586
JL961b	25055625	NPLG-4P587
JL711b	25055627	NPLG-6P589

NOTES: <D>:120V Model only
<P>:European Model only
<T>:Asian Model only
<W>:Taiwanese Model only
<A>:Australian Model only

ADJUSTMENT PROCEDURES

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.

2. Outputs

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

1.IDLING CURRENT ADJUSTMENT

Before Idling adjustment, turn the trimming resistors R573, R574 and R1532 to counter clockwise.
Connect the DC voltmeter to sockets P511,P512 and P1511.
After turn POWER to ON, adjust the trimming resistors R573, R574 and R1532 so that the reading of voltmeter becomes 1.5±0.2mV.
After adjustment, attach the top cover.
Confirm the voltage of above points after five minutes.
When the voltage is less than 5mV, adjust the above resistors so that the voltage becomes 5.5±0.2mV.
When the voltage is 5mV to 7mV, adjust the above resistors so that the voltage becomes 5.7±0.2mV.
When the voltage is more than 7mV, adjust the above resistors so that the voltage becomes 5.9±0.2mV.

2.FM ADJUSTMENT

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. 65dBf(60dB)	———	99.0MHz	DC voltmeter	L101	0±20mV	FM MUTE/MODE switch:ON/AUTO 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.65dBf(60dB)	Channel L or R 1kHz	99.0MHz	Distortion analyzer	IFT on the front end	Minimum	FM MUTE/MODE switch:ON/AUTO Don't turn more than ±180°
Stereo Separation		Fig.2	99.0MHz Ext. mod.65dBf(60dB)	Channel L or R 1kHz	99.0MHz	Oscilloscope	R150	Maximum separation	
Muting Level		Fig.1	99.0MHz 19.2dBf(14dB)	———	99.0MHz	Oscilloscope	R158	Signal output	

3.AM ADJUSTMENT

120V model

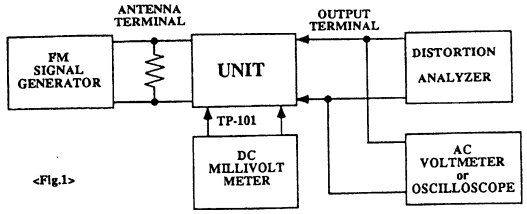
Step	AM SG output	Tuning Frequency	Output Indicator	Adjustment point	Adjust for
1		530kHz	Digital DC voltmeter	OSC coil on RF block L105	1.3±0.2V
2	600kHz 400Hz 30% mod. 60dB/m	600kHz	AC voltmeter	RF coil on RF block L105	Maximum
3	990kHz 400Hz 30% mod. 60dB/m	990kHz	AC voltmeter	L106	Maximum

Reference Specification
FM tuned voltage:87.50MHz～108.00MHz
More than 1.2V～Less than 10V
AM tuned voltage:530kHz～1710kHz
1.3±0.2～Less than 9.0V

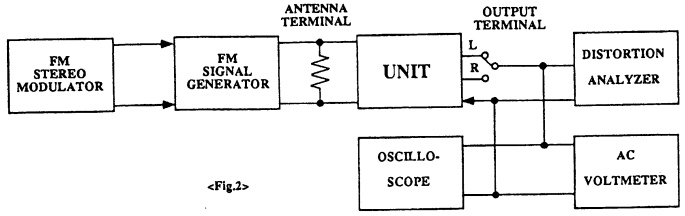
230V and Wolrdwide models

Step	AM SG output	Tuning Frequency	Output Indicator	Adjustment point	Adjust for
1		522kHz or 531kHz	Digital DC voltmeter	OSC coil on RF block L105	1.3±0.2V
2	603kHz 400Hz 30% mod. 60dB/m	603kHz	AC voltmeter	RF coil on RF block L105	Maximum
3	999kHz 400Hz 30% mod. 60dB/m	999kHz	AC voltmeter	L106	Maximum

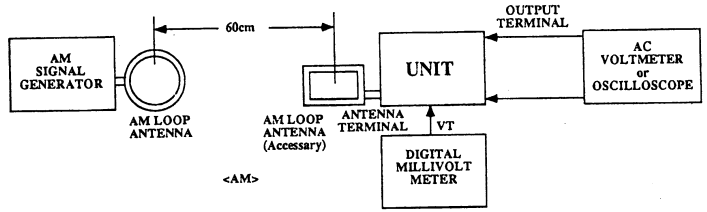
Reference Specification
FM tuned voltage:87.50MHz～108.00MHz
More than 1.2V～Less than 10V
AM tuned voltage:522kHz～1611kHz
1.3±0.2～Less than 9.0V
(230V model)
AM tuned voltage:531kHz～1602kHz
1.3±0.2～Less than 9.0V
(Worldwide model)



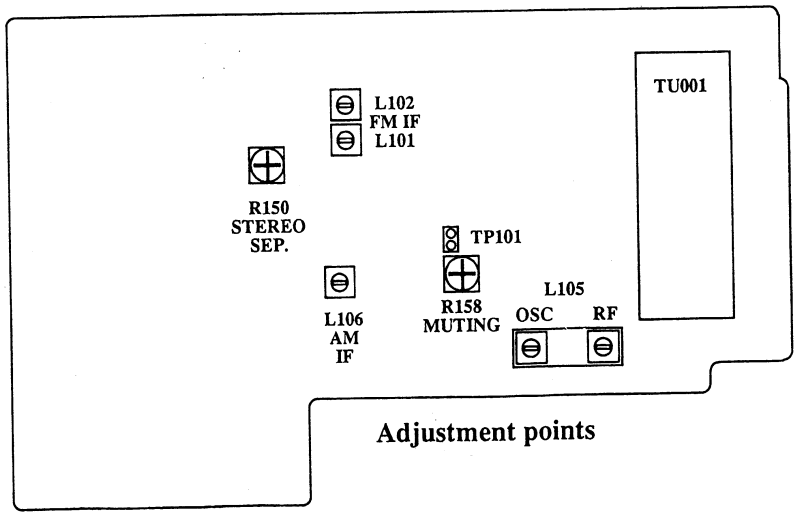
<Fig.1>



<Fig.2>

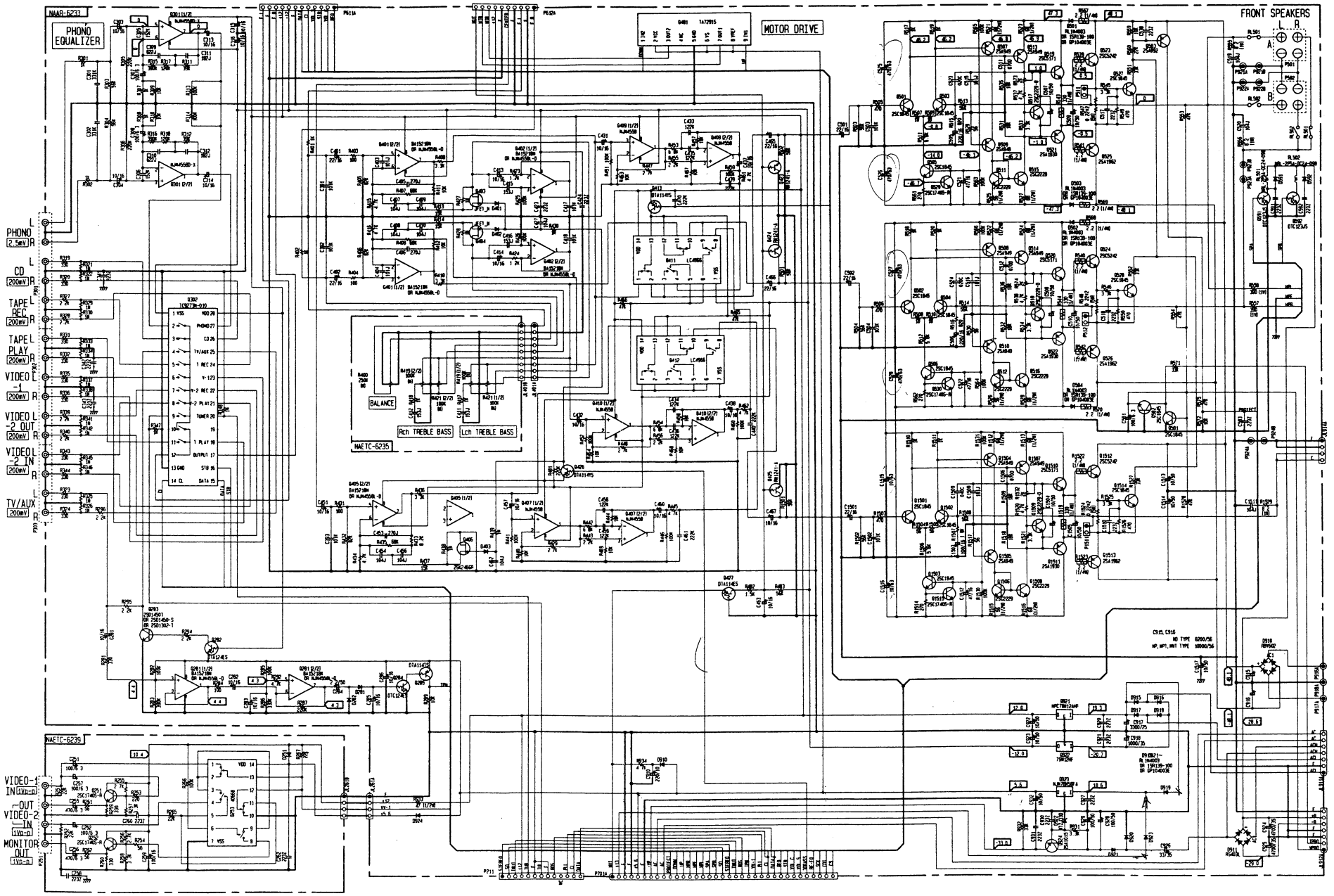


<AM>



Adjustment points

SCHEMATIC DIAGRAM



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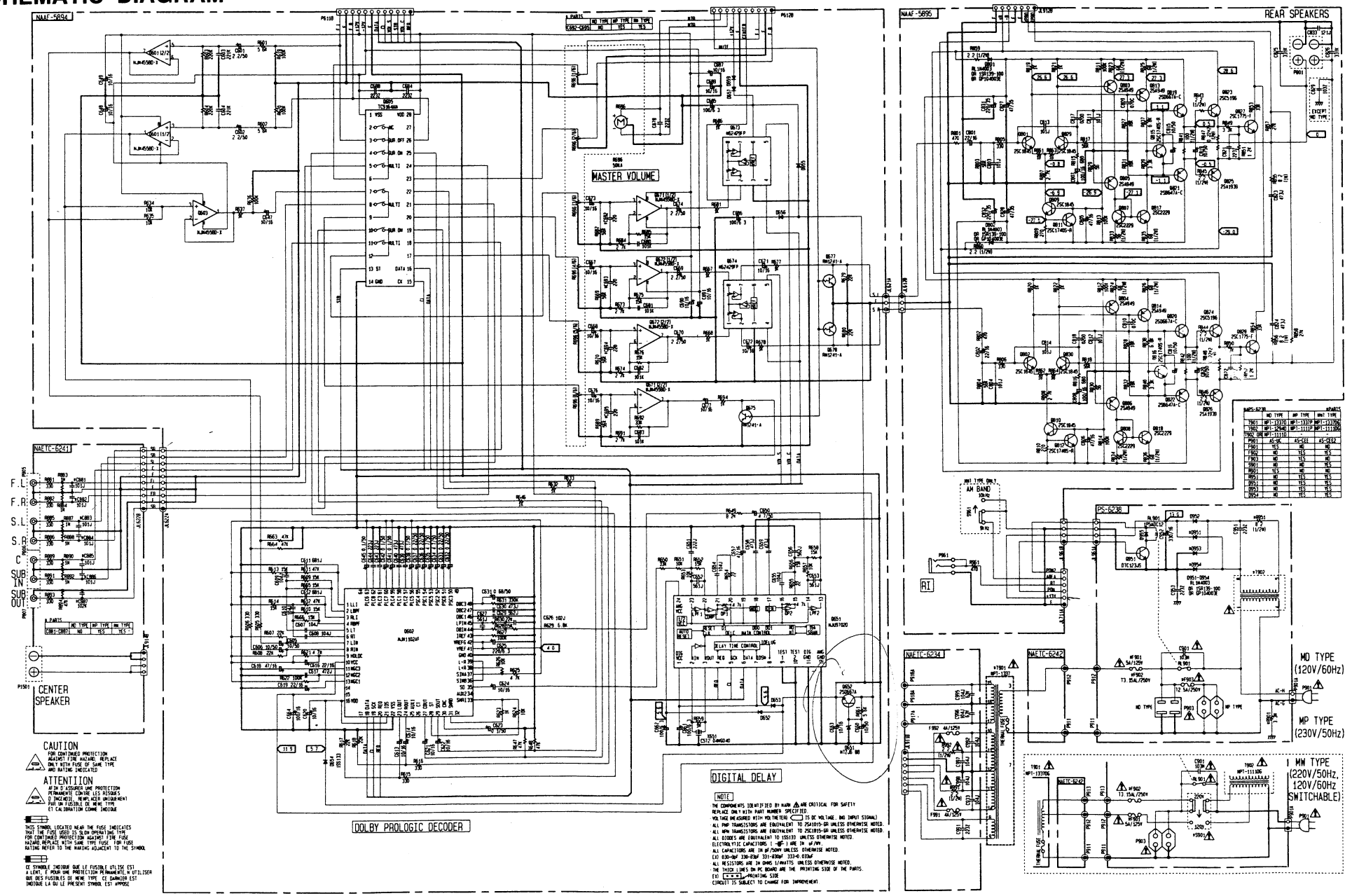

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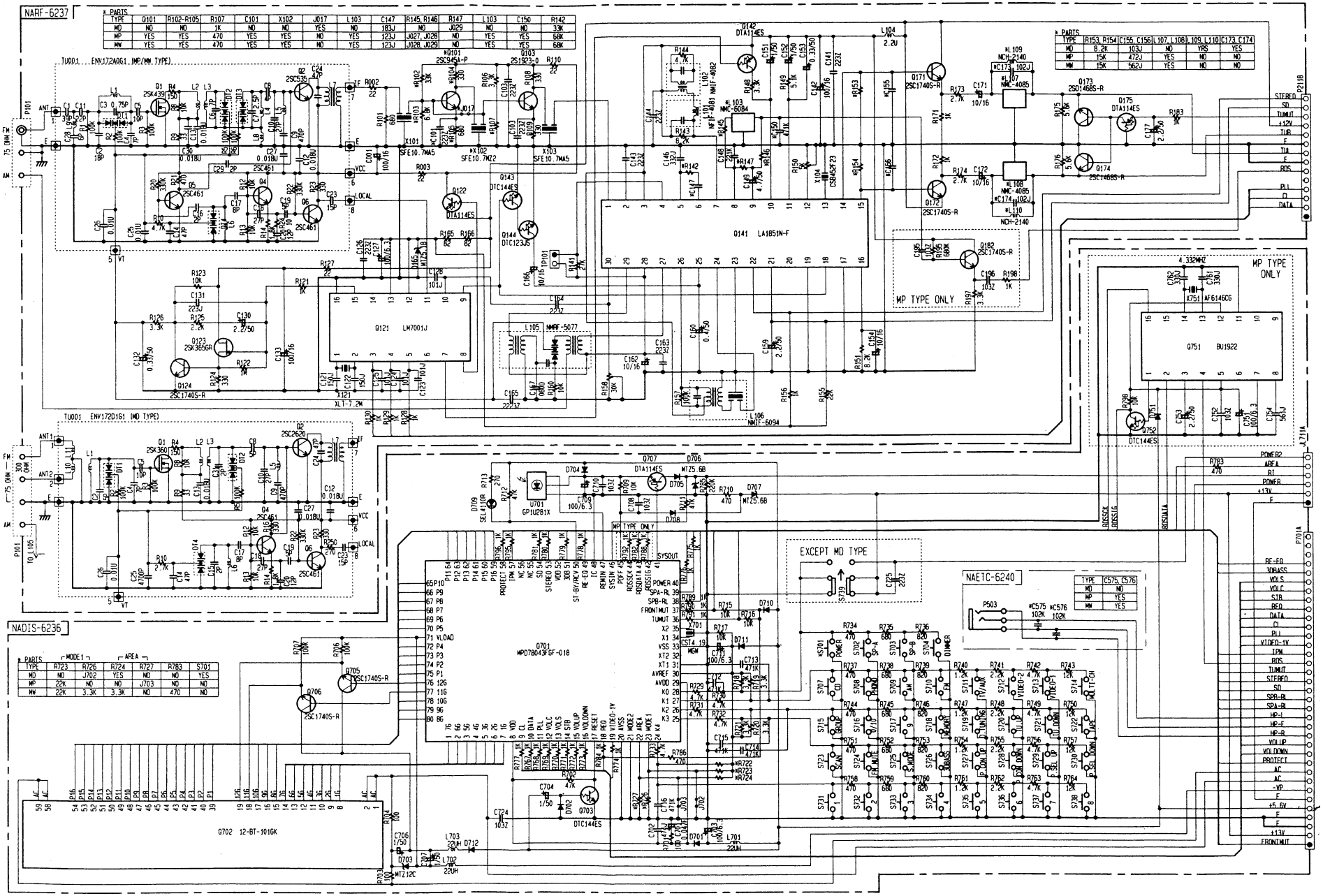
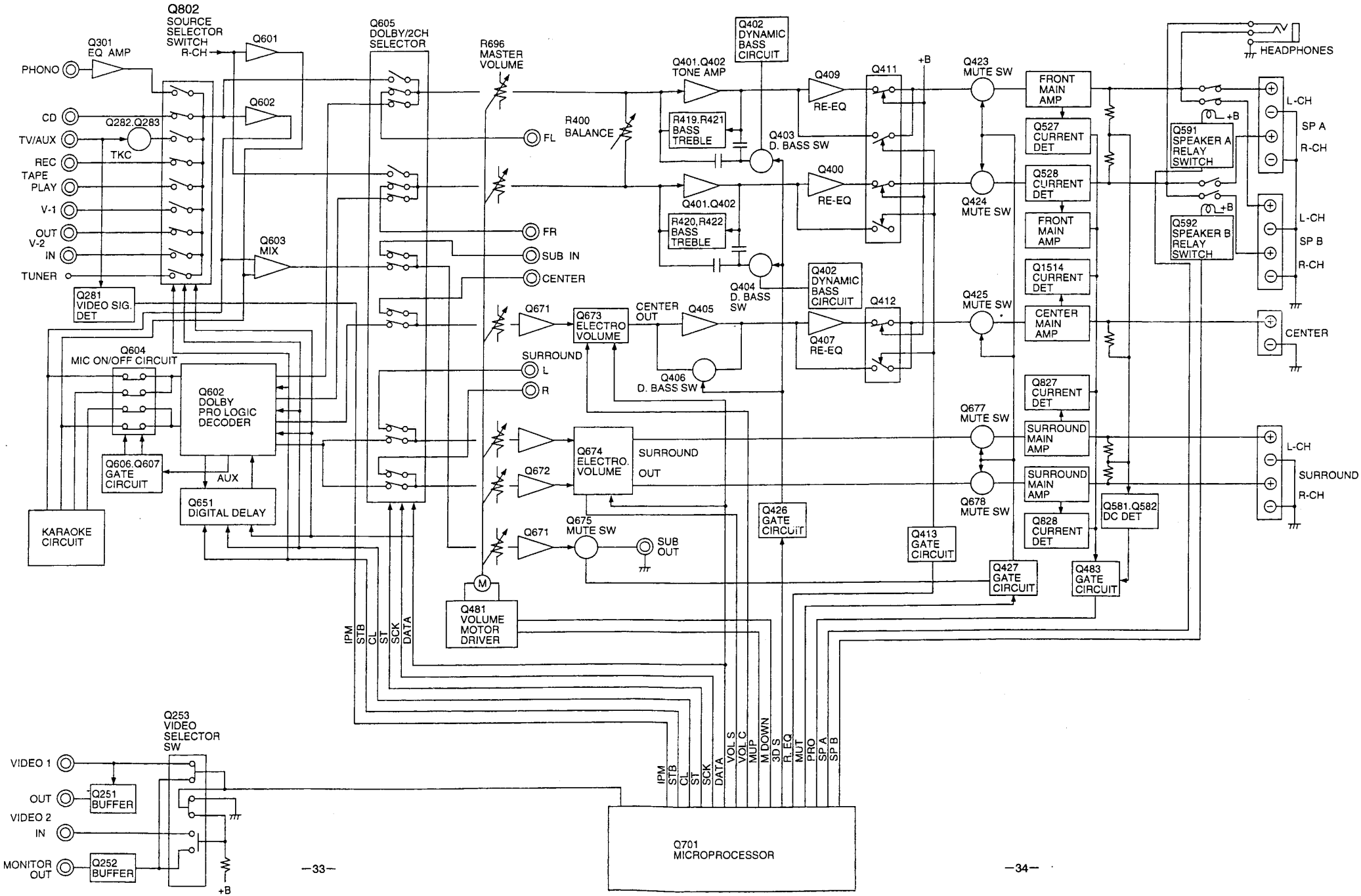
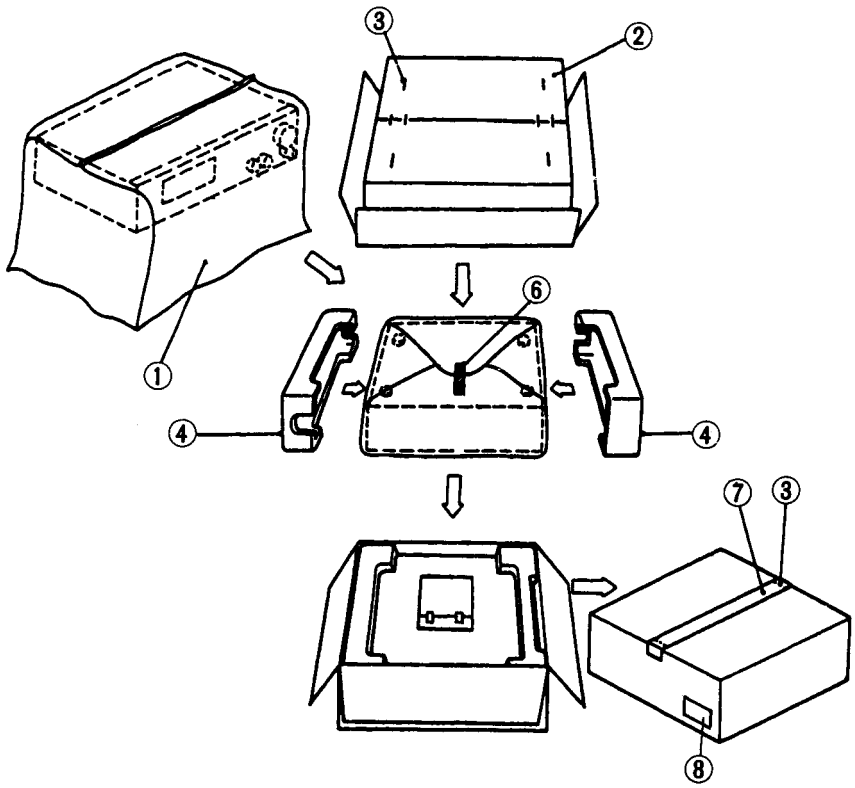


BLOCK DIAGRAM



PACKING VIEW



REF. NO.	PART NO.	DESCRIPTION
1	29100034-1A	850*650,Styren bag
2	29053280	Carton box <S>
2	29053266	Carton box <D>
2	29053268	Carton box <P>
2	29053267	Carton box <W/T/A>
3	282301	Staple
4	29091763A	Pad ass'y
6	261504	Paper tape
7	29110071	PP tape
8	29362276	Label EAN <P/T/W/A>
8	29362294	Label EAN <S>
8	29362275	Label UPC <D>
	Accessary bag ass'y	
	232140	NMA-3057,AM loop antenna
	24140371 —	RC-371M,Remote control
	25055018	CV-K-1,Conversion plug <W>
	25065462	YAE21-0237,FM antenna adaptor <T/W/A>
	29100097-1A	350*250,Styren bag
	292111	FM antenna <D>
	292112	FM antenna <P/T/W/A>
	29342556	Instruction manual E
	29342557	Instruction manual U3FSI <P>
	29342558 ←	Instruction manual U3GSWD <P>
	29342559	Instruction manual T <T/W>
	29358002K	Servie station list <D>
	29365019B	Warranty card <D>
	3010124	UM-4,Two batteries

NOTE: <D>:120V model only
<P>:230V model only
<W>:Taiwanese model only
<T>:Asian model only
<A>:Australian model only
<B>:Black model only
<S>:Silver model only

ONKYO CORPORATION

International Sales Div. : 31 Sankyo-bild. 3-8-5, Asakusabashi, Taito-ku, TOKYO 111, JAPAN
TEL : 03-5820-5865 FAX : 03-5820-5869

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 ELECTRONICS GmbH
Industriestrasse 18-20, 82110 Germering, GERMANY
TEL : 089 84 93 20 FAX : 089 84 93 226

ONKYO FRANCE
Immeuble Le Diamant, Domaine Technologique de Saclay, 4 Rue Rene Razel, 91892 SACLAY, FRANCE
TEL : (1) 69 33 14 00 FAX : (1) 69 41 35 84

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