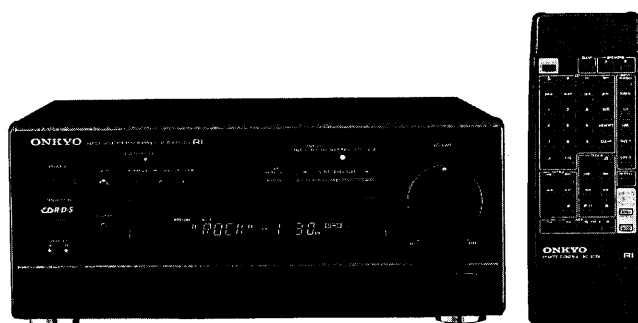


ONKYO SERVICE MANUAL

QUARTZ SYNTHESIZED TUNER AMPLIFIER MODEL R-811RDS



Black and Silver models

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

SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY MARK Δ 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.

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ONKYO
AUDIO COMPONENTS

SPECIFICATIONS

Amplifier section

Power Output:	2 × 50 watts at 4 ohms 1 kHz DIN 2 × 35 watts at 8 ohms 1 kHz DIN
Continuous Power Output:	32 watts per channel min. RMS. at 8 ohms both channels driven, from 20 Hz to 20 kHz with no more than 0.2% THD.
Dynamic power output	2 × 70 watts at 4 ohms 2 × 40 watts at 8 ohms
Total Harmonic Distortion:	0.2% at rated power 0.1% at 1 watt output
IM Distortion:	0.1% at rated output
Damping Factor:	40 at 8 ohms
Frequency Response:	20Hz to 30 kHz ± 1 dB
RIAA Deviation:	20Hz to 20 kHz ± 0.8 dB
Sensitivity and Impedance:	Phono: 2.5 mV/50 kohms; CD/Tape Play: 150 mV/50 kohms Tape Rec: 150 mV 2.2 kohms
Phono Overload:	100 mV RMS at 1 kHz, 100 mV 0.5% THD
Signal-to-Noise Ratio:	Phono: 80 dB (IHF A, 5 mV input); CD/Tape: 100 dB (IHF A)
Tone:	Bass: ±10 dB at 100 Hz; Treble: ±10 dB at 10 kHz Super Bass: 10 dB at 55 Hz
Muting:	-∞ dB

Tuner section

Tuning Range:	FM; European models 87.50-108.00 MHz (50 kHz steps) Worldwide models 87.50-108.00 MHz (50 kHz steps) 87.9-107.9 MHz (200 kHz steps)
	AM; European models: 522-1611 kHz (9 kHz steps) Worldwide models: 531-1602 kHz (9 kHz steps) 530-1710 kHz (10 kHz steps)
Usable Sensitivity:	FM; Mono: 11.2 dBf, 1.0μV, 75 Ohms IHF, 0.9μV 75 Ohms DIN Stereo: 17.2 dBf, 2.0μV, 75 Ohms IHF, 20μV 75 Ohms DIN AM; 25μV
50 dB Quieting Sensitivity:	FM; Mono: 16.1 dBf 1.7μV 75 ohms, Stereo: 36.1 dBf 17 μV 75 ohms
Capture Ratio:	FM; 1.5 dB
Image Rejection Ratio:	FM; 80 dB AM; 40 dB
IF Rejection Ratio:	FM; 90 dB AM; 40 dB
Signal-to-Noise Ratio:	FM; Mono: 73 dB IHF, Stereo: 66 dB IHF AM; 40 dB
Selectivity:	FM; 55 dB DIN (±300 kHz, 40 kHz dev.)
AM Suppression Ratio:	FM; 50 dB
Total Harmonic Distortion:	FM; Mono: 0.1%, Stereo: 0.2% AM; 0.8%
Frequency Response:	FM; 30-15,000 Hz (±1.5 dB)
Stereo Separation:	FM; 40 dB at 1 kHz, 30 dB at 70-10,000 Hz
Output Voltage:	FM; 0.75V AM; 150 mV

General

Power Supply:	European models (except U.K.): AC230V, 50 Hz Canadian models: AC120 V, 60 Hz U.K. & Australian models: AC240 V, 50 Hz Worldwide models: AC120 V and 220 V switchable, 50/60 Hz
Dimensions (W × H × D):	275 × 118 × 336 mm (10-7/8" × 4-11/16" × 13-7/32")
Weight:	5.5 kg, 12.1 lbs.

SERVICE PROCEDURES

1. Replacing the fuses

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

CircuitNo. PartNo. Description

F901	252150	3.15A-SE-EAK, Primary fuse <W>
F902	252073	6A-SE-EAK, Primary fuse
F903	252075	2.5A-SE-EAK, AC outlet fuse <P>

NOTE: <P> :Only 230V model

<W> :Only Worldwide model

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 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. 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.



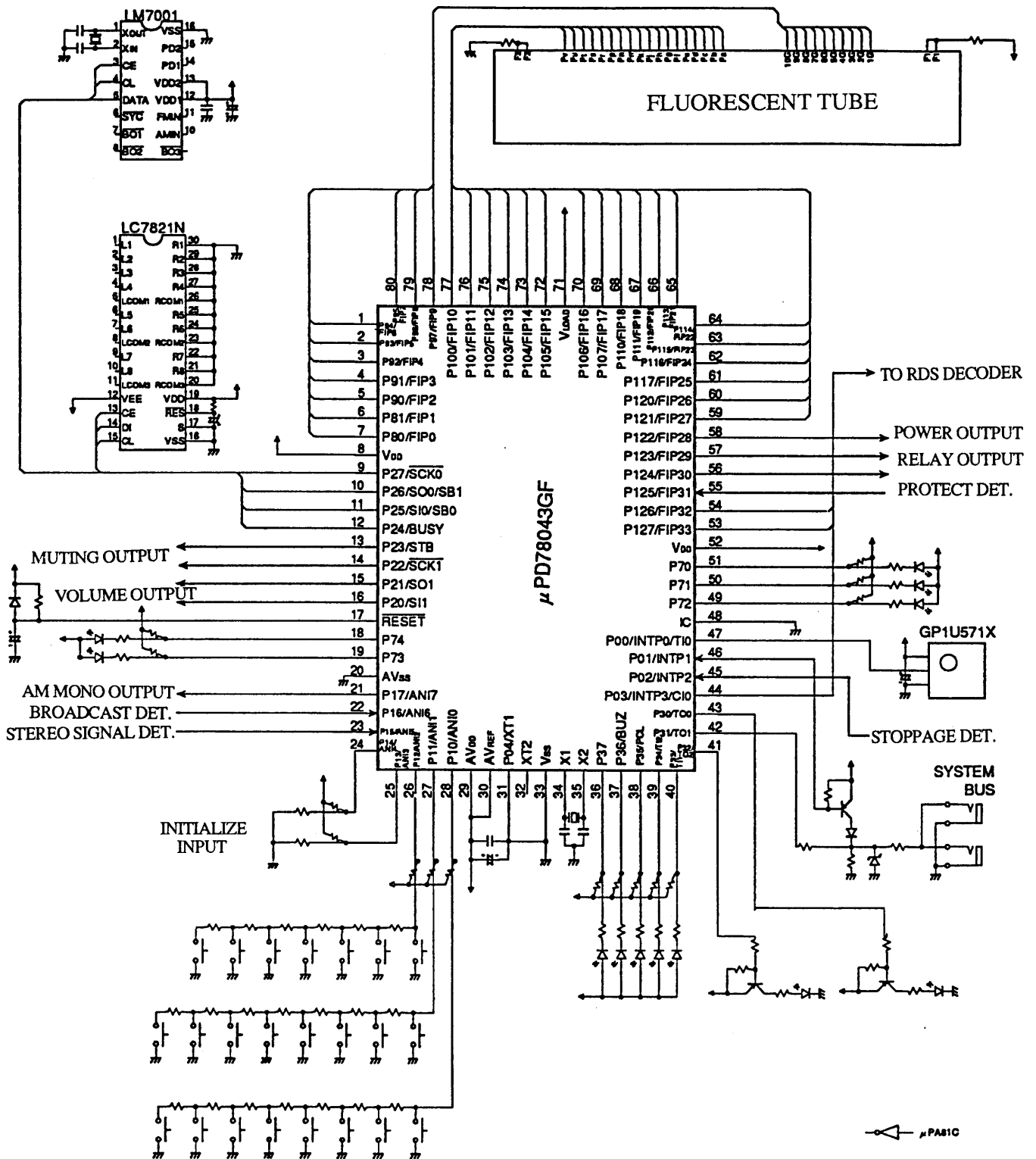
PARTS LIST

REF.NO.	PART NO.	DESCRIPTION	REF. NO.	PART NO.	DESCRIPTION
1	27110799	Front bracket 	82	28324880	Knob POWER
	27110800	Front bracket <S>		28324881	Knob POWER <S>
2	27130726A	Bracket L	84	28324873A	Knob TONE
3	27100281	Chassis		28324876B	Knob TONE <S>
5	27121852	Rear panel <P>	85	28324930	Knob VOLUME
	27121853	Rear panel <W>		28324931	Knob VOLUME <S>
9	27160333A	Radiator	91	260208	Wire tie
11	27300750	Bushing cord	F901	252150	3.15A-TSC,Fuse <W>
14	27190813	KGPS-10RF,Holder	F902	252073	1.6A-SE-EAK,Fuse
15	834430088	3TTS+8B(BC),Self-tapping screw	F903	252075	2.5A-SE-EAK,Fuse <P>
16	833430080	3TTP+8P(BC),Self-tapping screw	P304	25060044	Terminal GND
17	830044089	4TTC+8C(BC),Self-tapping screw	P701	2047152012	NCFC7-152012,Flexible flat cable
18	801433	3SMS8W_SW+14B(BC),Special screw	P901	253193HIT	AS-CEE,Power supply cord
19	831130088	3TTW+8B,Self-tapping screw	P902	25065466	NSS-0002,Power switch
20	834426068	2.6TTS+6B(BC),Self-tapping screw	Q521,Q522	2202375,	2SC4466-P,
22	801230	3TTS+8B(BC),Self-tapping screw		2202373,	2SC4466-O,
24	838426088	2.6TTB+8B(BC),Self-tapping screw		2202374,	2SC4466-Y,
28	27301815	Cover F		2202353 or	2SC3180N-O or
31	28184564A	Top cover 	Q523,Q524	2202352	2SC3180N-R, Transistors
	28184565A	Top cover <S>		2202365,	2SA1693-P,
33	834430088	3TTS+8B(BC),Self-tapping screw 		2202363,	2SA1693-O,
	834230108	3TTS+10B(NI),Self-tapping screw <S>		2202364,	2SA1693-Y,
34	28140555-1	3×36×10,Cushion		2202343 or	2SA1263N-O or
35	28141284	3×20×8,Cushion		2202342	2SA1263N-R, Transistors
51	1A513121	Front panel ass'y 	T901	2301012	NPT-1207P,Power transformer <P>
	1A514121	Front panel ass'y <S>		2301013	NPT-1207DG,Power transformer <W>
53	28135199	Badge	U1	1A513559-4A	NAAF-4959-4A,Main circuit pc board ass'y <P>
54	27267839	Guide VOL 		1A513559-4B	NAAF-4959-4B,Main circuit pc board ass'y <W>
	27267840	Guide VOL <S>	U2	1A513560-4A	NARF-4960-4A,Tuner circuit pc board ass'y <P>
55	28198797	Facet 7		1A513560-4B	NARF-4960-4B,Tuner circuit pc board ass'y <W>
56	28198795	Facet	U3	1A513561-4	NAETC-4961-4,Mono output terminal pc board ass'y
58	28133311	Back plate 	U4	1A513562-4	NAETC-4962-4,Headphone terminal pc board ass'y
	28133260	Back plate <S>	U5	1A513563-4	NAETC-4963-4,Pc board for power transformer
59	28191667	Clear plate	U6	1A513564-4A	NADIS-4964-4A,Display circuit pc board ass'y <P>
60	28191665	Clear plate		1A513564-4B	NADIS-4964-4B,Display circuit pc board ass'y <W>
61	28148279A	Door 	U8	1A513566-4	NAAF-4966-4,Tone circuit pc board ass'y
	28148280A	Door <S>	U9	1A513567-4	NAAF-4967-4,Main amplifier pc board ass'y
62	28180112	Hinge L	U10	1A513568-4A	NAPS-4968-4A,Power supply circuit pc board ass'y <P>
63	28180113	Hinge R		1A513568-4B	NAPS-4968-4B,Power supply circuit pc board ass'y
64	28180107A	Hinge HL	U11	1A513569-4	NAETC-4969-4,Volume pc board ass'y
65	28180108A	Hinge HR	U12	1A513570-4	NAETC-4970-4,Relay circuit pc board ass'y
66	27267832	Guide TONE 	U13	1A513571-4	NAETC-4971-4,Pc board for transformer
	27267833A	Guide TONE <S>	U14	1A513572-4	NAETC-4972-4,Voltage selector switch pc board ass'y <W>
67	28140860	Cushion			
68	27175294Y	Leg			
69	834430088	3TTS+8B(BC),Self-tapping screw			
70	28324914-1	Knob DOOR 			
	28323779-1	Knob DOOR <S>			
81	28324946	Knob SEL 			
	28324947	Knob SEL <S>			

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

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

MICROPROCESSOR CONNECTION DIAGRAM

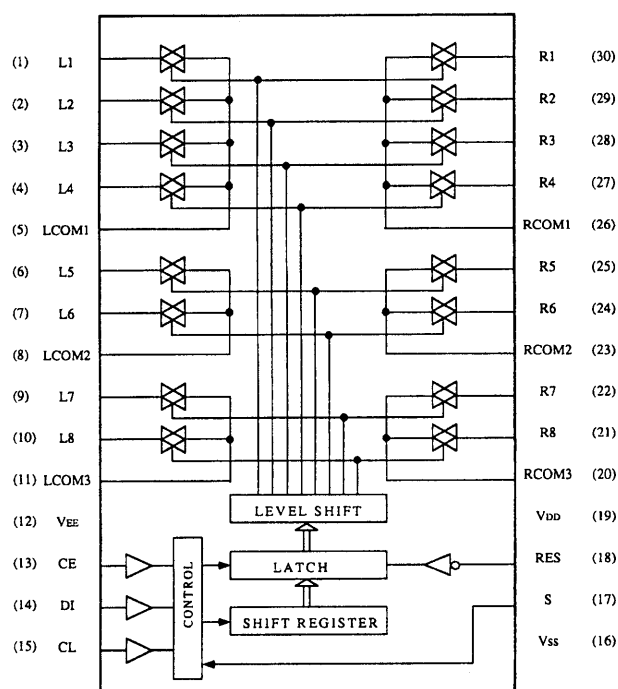


PIN NO.	TERMINAL	D E S C R I P T I O N
1~7	7G~1G	Grid output terminals. On when the high level.
8	VDD	Positive power source terminal (+5V)
9	CL	Clock output terminal. Connect to the terminal CL of source selector switch
10	DATA	LC7821N and terminal CL of PLL IC.
		Data output terminal. Connect to the terminal DI of source selector switch
11	CE	LC7821N and terminal DI of PLL IC.
12	PLL	Chip enable output terminal. Connect to the terminal CE of source selector switch.
13	TUMUT	Connect to the terminal CL of PLL IC.
14	INPUMUT	Muting output terminal for tuner section.
15	VOLUP	Muting output terminal for amplifier section.
16	VOLDOWN	Volume control output terminals.
17	RESET	System reset terminal
18	SPA	SPEAKER A indicator terminal
19	SPB	SPEAKER B indicator terminal
20	AVSS	Ground terminal of AD converter
21	AM MONO	Not used.
22	SD	Broadcast detection input terminal.
23	STEREO	Stereo broadcast detection input terminal.
24	AREA	Initialize input terminal of frequency range.
25	MODE	Initialize input terminal of operation.
26~28	K2~K0	Key input terminals.
29	AVDD	Analog power source terminal of A/D converter
30	AVREF	Reference power source terminal of A/D converter
31	XT1	Crystal connection terminal for sub system
32	XT2	Not used.
33	VSS	Ground terminal
34	X1	Resonator connection terminal for main system
35	X2	Connect the 4.19 MHz ceramic resonator.
36	PHONO	Input selector indicator terminal
37	TUNER	

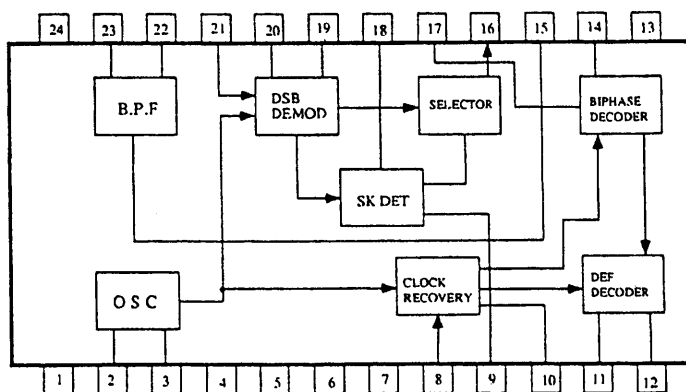
PIN NO.	TERMINAL	D E S C R I P T I O N
38	CD/FOUT	CD indicator output terminal. Signal output for adjustment when adjustment.
39	LINE	Input selector indicator terminal
40	TAPE-2	
41	TAPE-1	Input selector indicator terminal
42	YSOUT	System code output terminal
43	TAPE-1 MONITOR	TAPE-1 MONITOR indicator output terminal
44	RDSSCK	Clock output terminal for RDS decoder.
45	POFF	Voltage stoppage detection terminal.
46	SYNIN	System code input terminal
47	REMIN	Remote control signal input terminal
48	IC	Connect to the ground terminal.
49	PRESET	PRESET indicator terminal
50	TUNING	TUNING indicator terminal
51	NC	Not used.
52	VDD	Power source terminal +5V
53	RDSDATA	Data input terminal from RDS decoder.
54	RDSSIG	Signal input terminal from RDS decoder.
55	PROTECT	Protection circuit operation input
56	SPARL	SPEAKER A relay control output terminal
57	SPBRL	SPEAKER B relay control output terminal
58	POWER	Power source relay control output terminal
59~70	Pt~Pe	Segment output terminals
71	VLOAD	Pull down resistor connection terminal for FIP controller/driver
72~75	Pd~Pa	Segment output terminals
76~80	12G~8G	Grid output terminals.

IC BLOCK DIAGRAMS AND DESCRIPTIONS

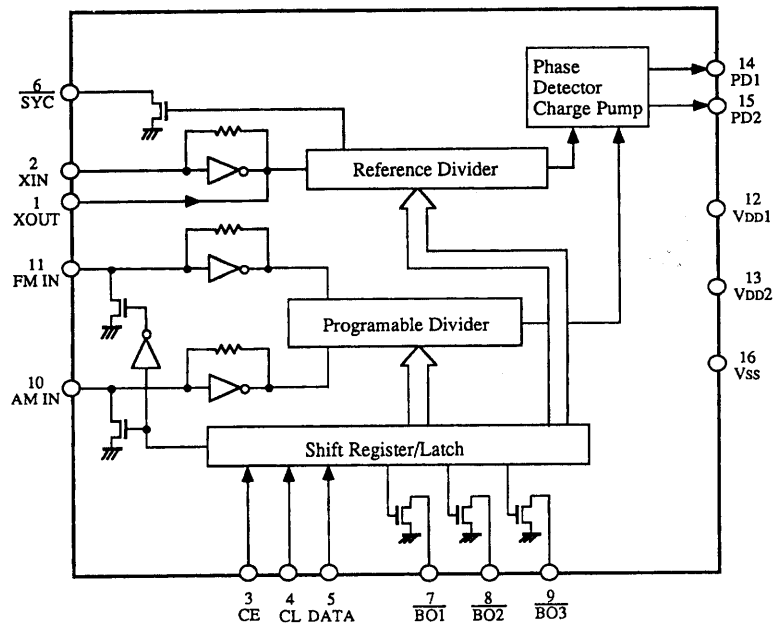
LC7821N (Analogue Switch)



μ PD1346CS (RDS Decoder)

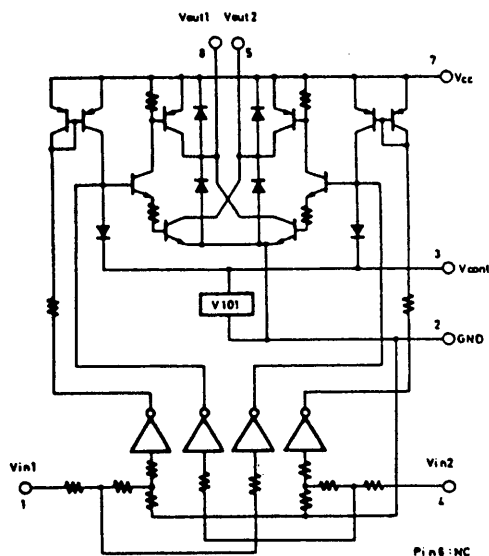


LM7001 (PLL Synthesizer and Controller)



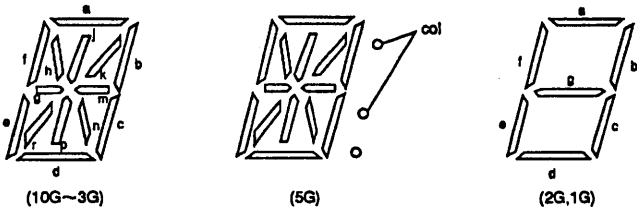
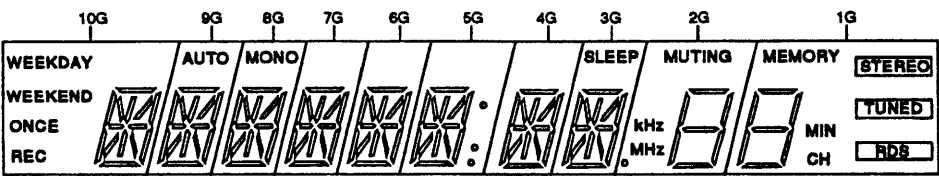
Pin No.	Terminal	Description
1	XOUT	Connect the 7.2MHz crystal resonator.
2	XIN	
3	CE	Chip enable terminal. Connect to the terminal PLL of the microprocessor.
4	CL	Serial clock input terminal. Connect to the terminal ACL of the microprocessor.
5	DATA	Serial data input terminal. Connect to the terminal ADA of the microprocessor.
6	SYN	Not used.
7	AUTO/MONO	AUTO/MONO selection terminal. Auto at the low level.
8	FM	FM selection terminal. FM at the low level.
9	AM	AM selection terminal. AM at the low level.
10	AMIN	AM local oscillator signal input terminal
11	FMIN	FM local oscillator signal input terminal
12	VDD1	Power supply terminal for back-up.
13	VDD2	Power supply terminal
14	PD1	Charge pump output terminal
15	PD2	Charge pump output terminal
16	VSS	Ground terminal

TA7291S (Motor Drive)



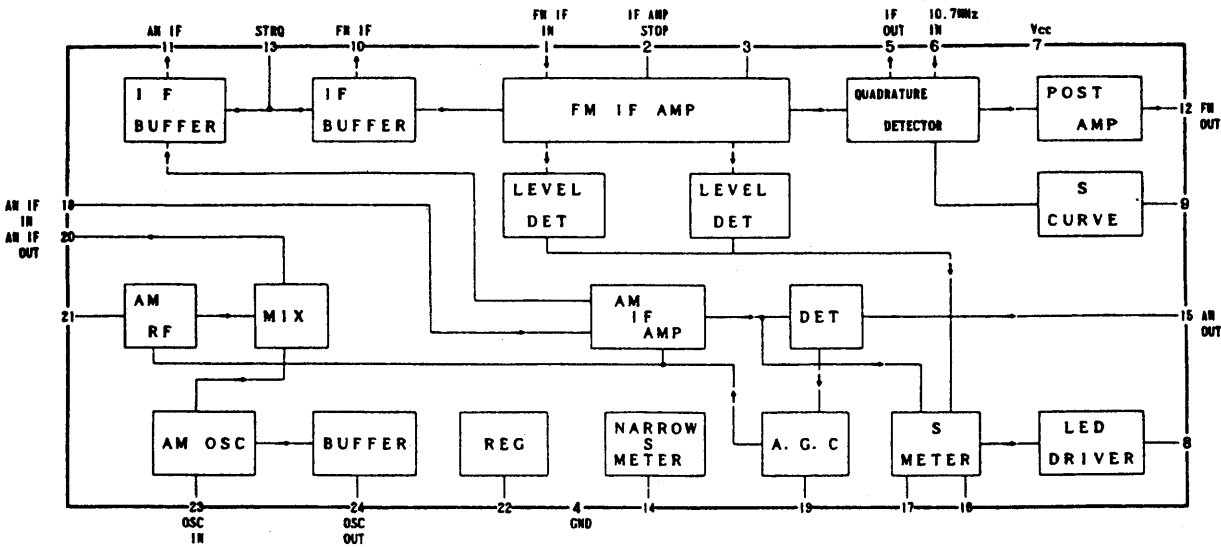
IN1	IN2	OUT1	OUT2	MOTOR
H	L	H	L	Normal
L	H	L	H	Reverse
H	H	OFF	OFF	Stop
L	L	OFF	OFF	Stop

10BT-136GK (FL Tube)

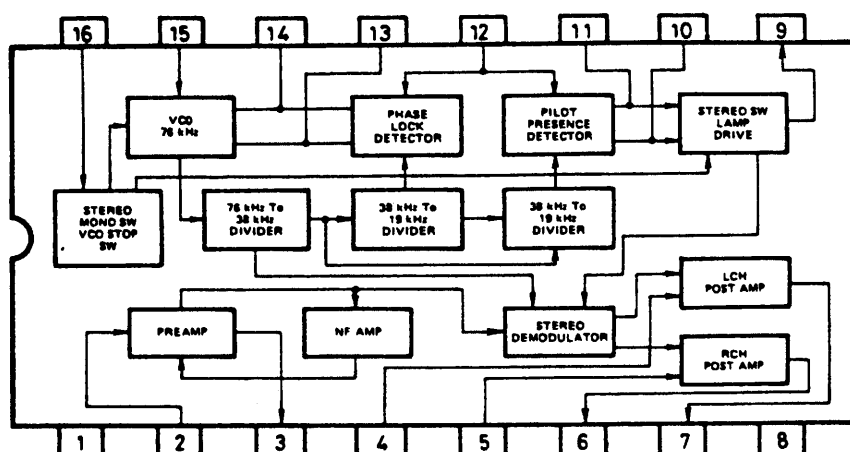


	10G	9G	8G	7G	6G	5G	4G	3G	2G	1G
P1	a	a	a	a	a	a	a	a	a	a
P2	b	b	b	b	b	b	b	b	b	b
P3	c	c	c	c	c	c	c	c	c	c
P4	d	d	d	d	d	d	d	d	d	d
P5	e	e	e	e	e	e	e	e	e	e
P6	f	f	f	f	f	f	f	f	f	f
P7	g	g	g	g	g	g	g	g	g	g
P8	h	h	h	h	h	h	h	h	-	-
P9	j	j	j	j	j	j	j	j	MUTING	MEMORY
P10	k	k	k	k	k	k	k	k	-	STEREO
P11	m	m	m	m	m	m	m	m	-	TUNED
P12	n	n	n	n	n	n	n	n	-	RDS
P13	p	p	p	p	p	p	p	p	-	-
P14	r	r	r	r	r	r	r	r	-	-
P15	WEEKDAY	AUTO	MONO	-	-	col	-	SLEEP	kHz	MIN
P16	WEEKEND	-	-	-	-	o	-	-	MHz	CH
P17	ONCE	-	-	-	-	-	-	-	o	-
P18	REC	-	-	-	-	-	-	-	-	-

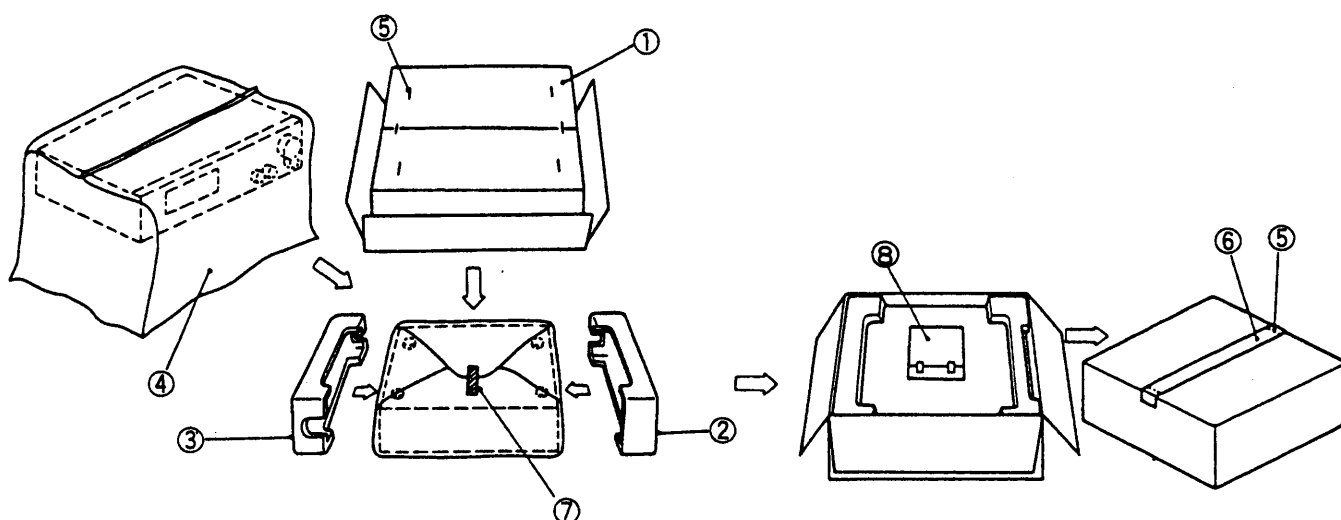
LA1266 (FM IF/AM Radio System)



AN7470 (Stereo Decoder)



PACKING VIEW



REF. NO.	PART NO.	DESCRIPTION
1	29052754	Carton box
	29052755	Carton box <S>
2	29091642B	Pad L
3	29091643B	Pad R
4	29100037-1Y	Styren bag
5	282301	Eight staples
6	29110071	PP tape
7	261504	Paper tape

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

REF. NO.	PART NO.	DESCRIPTION
		Accessory bag ass'y
	25055040	CV-K-2,Conversion plug
	292112Y	FM antenna
	29341934	Instruction manual <E/W>
	29341937	Instruction manual <E>
	29341935	Instruction manual <V>
	29341936	Instruction manual <W>
	29355133AY	Instruction sheet <V>
	232140	NMA-3057,AM loop antenna
	24140259	RC-259S,Remote control unit
	29100097-1Y	Styren bag
	29100094B	Styren bag for warranty card <V>
	3010054	UM-3,Two batteries
	29365020J	Warranty card <V>
	25065462	YA21-0237,FM antenna adaptor

ADJUSTMENT PROCEDURES

Preparation

• Input

FM mono: 1kHz, 75kHz devi., 60dB/ μ V

FM stereo: 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.

• Standard knob position

Input selector..... CD
VOLUME..... Maximum
BASS/TREBLE/S. BASS..... CENTER
BALANCE..... CENTER
SPEAKER A

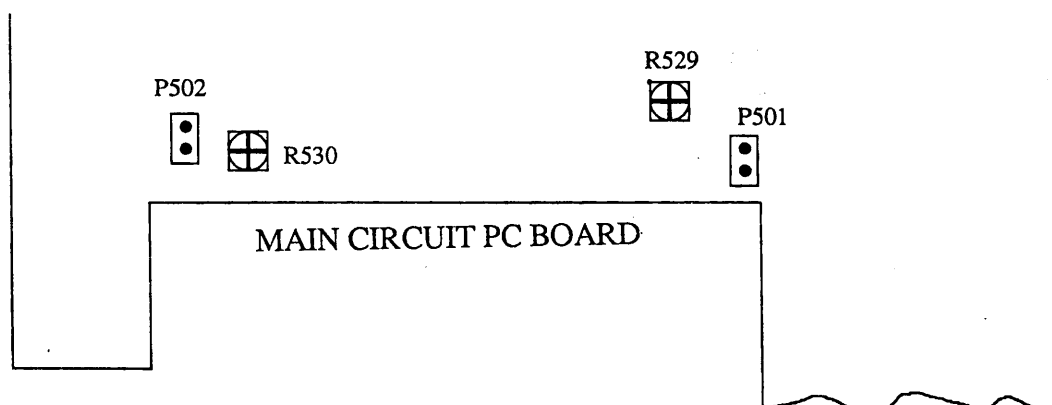
Idling Current Adjustment

Connect the DC voltmeter to the terminals P501, and P502 (VCT and IID) on the main circuit pc board.

Adjust the trim resistors R529 and R530 so that the indicator of voltmeter becomes $15 \pm 0.5\text{mV}$.

NOTE: Adjust after switching on for 5 minutes.

Set Volume knob to the minimum position.



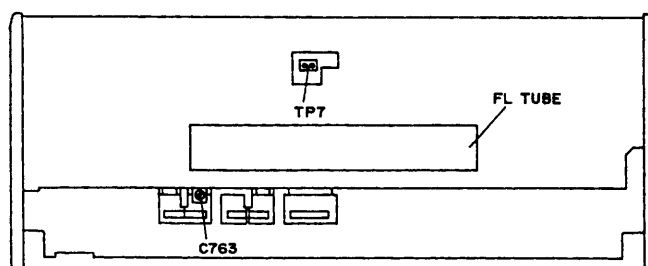
Clock adjustment

Connect the frequency counter to test point TP-7.

Press and hold down the MEMORY button, then press the KEY MODE button.

Adjust the trim capacitor C763 so that the indication of frequency counter becomes $524.288\text{kHz} \pm 1\text{Hz}$.

After adjustment, turn the POWER switch to OFF.

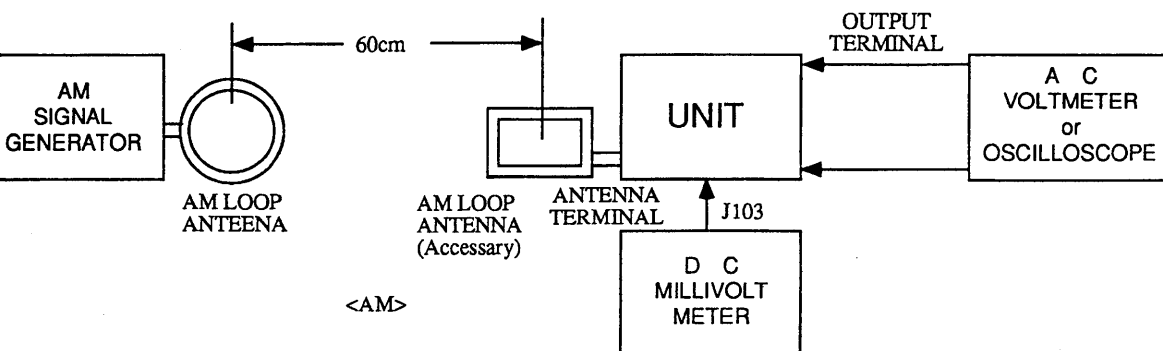


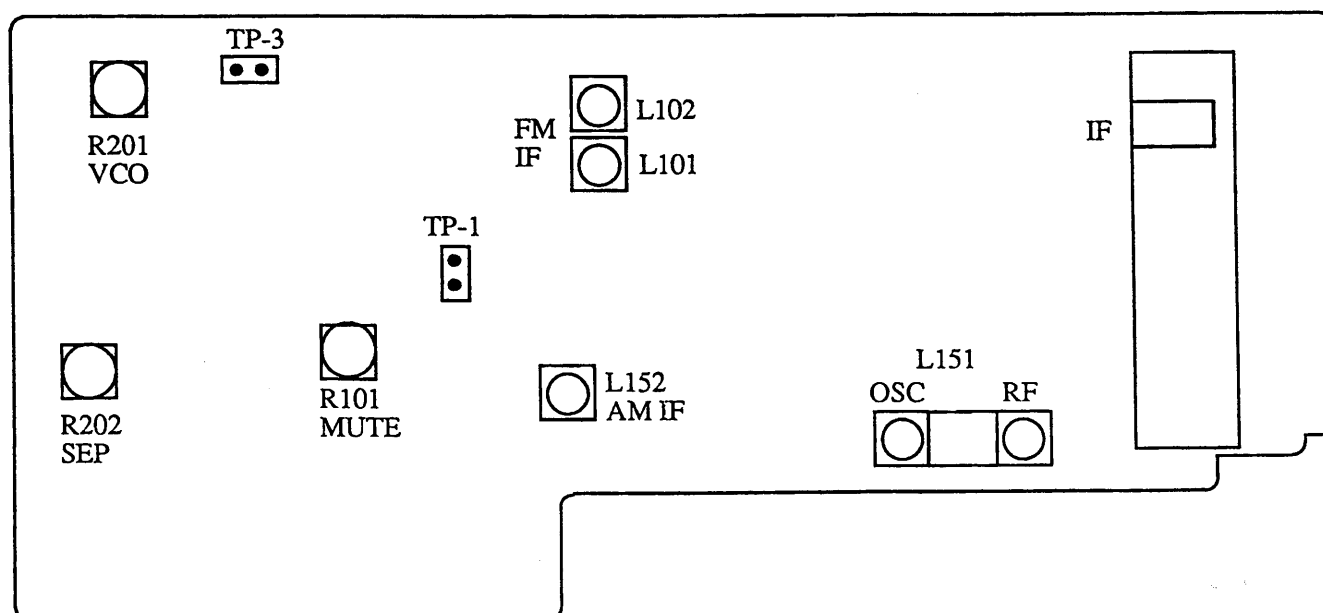
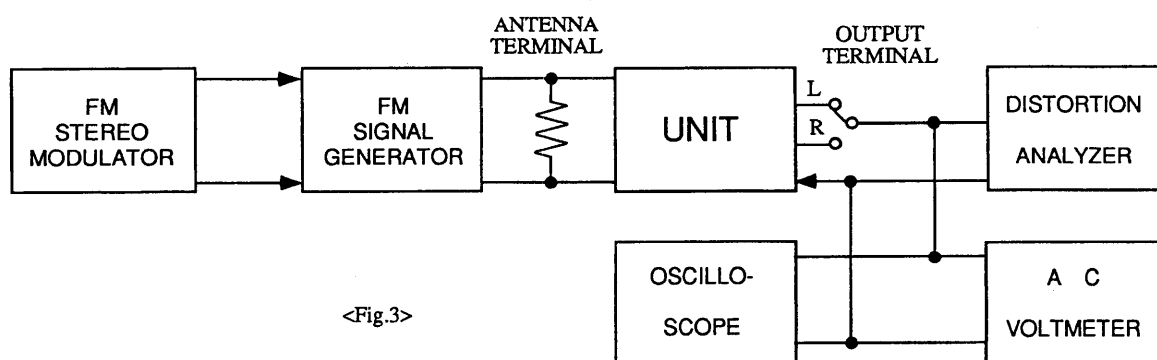
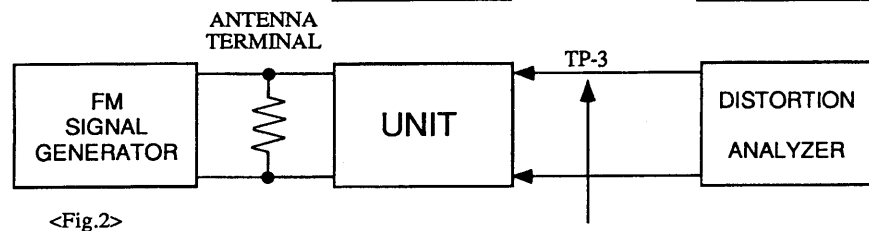
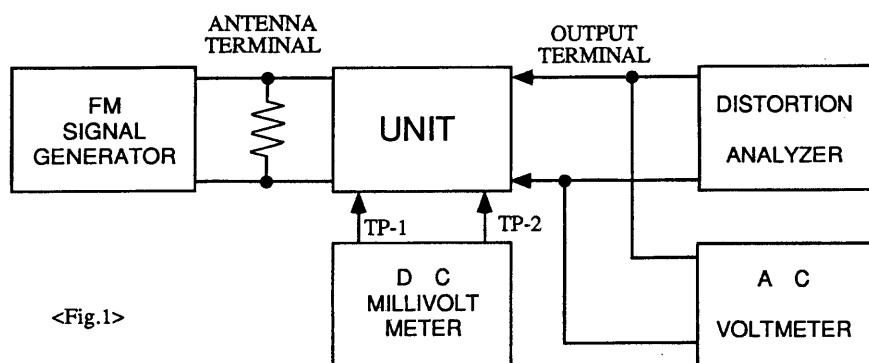
FM ADJUSTMENT

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	$0 \pm 20\text{mV}$	FM MUTE/MODE switch:OFF/MONO Repeat the steps 1 and 3 until no further adjustment is necessary.
	2					AC voltmeter	IFT on the front end	Maximum	
	3					Distortion analyzer	L102	Minimum	
VCO		Fig.2	99.0MHz 1kHz 75kHz devi. 65dBf(60dB)	—	99.0MHz	Frequency counter	R201	$19\text{kHz} \pm 10\text{Hz}$	FM MUTE/MODE switch:ON/STEREO
Stereo Distortion		Fig.3	99.0MHz Ext. mod.65dBf(60dB)	Channel L or R 1kHz	99.0MHz	Distortion analyzer	IFT on the front end	Minimum	Don't turn more than $\pm 180^\circ$
Stereo Separation	1	Fig.3	99.0MHz Ext. mod. 65dBf(60dB)	Channel L 1kHz	99.0MHz	Channel R AC voltmeter	R202	Minimum	Maximum and same separation
	2			Channel R 1kHz		Channel L AC voltmeter		Minimum	
Muting Level		Fig.3	99.0MHz 19.2dBf(14dB)	—	99.0MHz	Oscilloscope	R101	Signal output	
RDS		Fig.4	98.0MHz Ext. mod.60dB	RDS data or 57kHz 3% devi.	98.0MHz	Oscilloscope	R721	Maximum	

AM ADJUSTMENT

Step	AM SG output	Tuned Frequency	Output indicator	Adjustment point	Adjust for
1		522 kHz	DC millivolt meter	OSC coil on RF block L151	$1.5 \pm 0.1\text{V}$
2	603 kHz 400 Hz 30% mod. 60 dB/m	603 kHz	AC voltmeter	RF coil on RF block L151	Maximum
3	999 kHz 400 Hz 30% mod. 60 dB/m	999 kHz	AC voltmeter	L152	Maximum



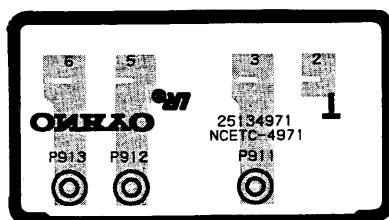


Initialize of unit

Press and hold down the MEMORY button, then press the POWER button.

Unplug the power supply cord from AC outlet.

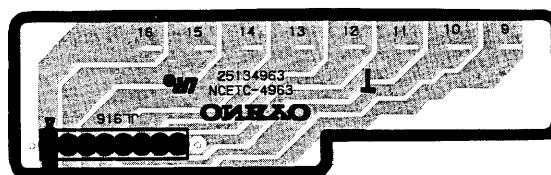
PRINTED CIRCUIT BOARD VIEW FROM BOTTOM SIDE



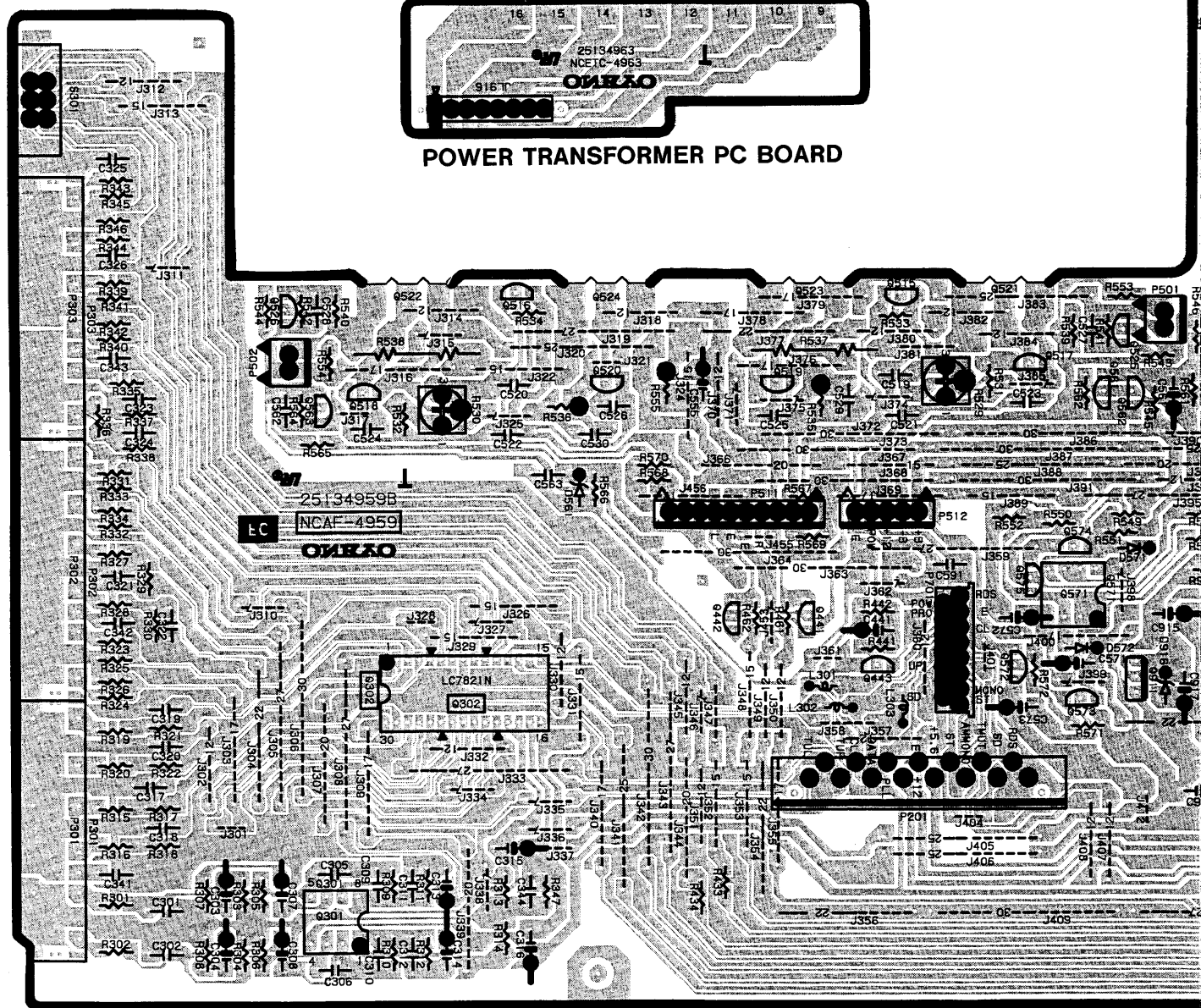
TRANSFORMER PC BOARD



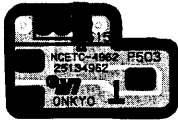
HEADPHONE TERMINAL PC BOARD



POWER TRANSFORMER PC BOARD

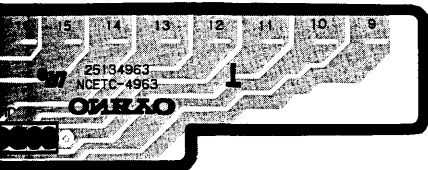


VIEW FROM BOTTOM SIDE

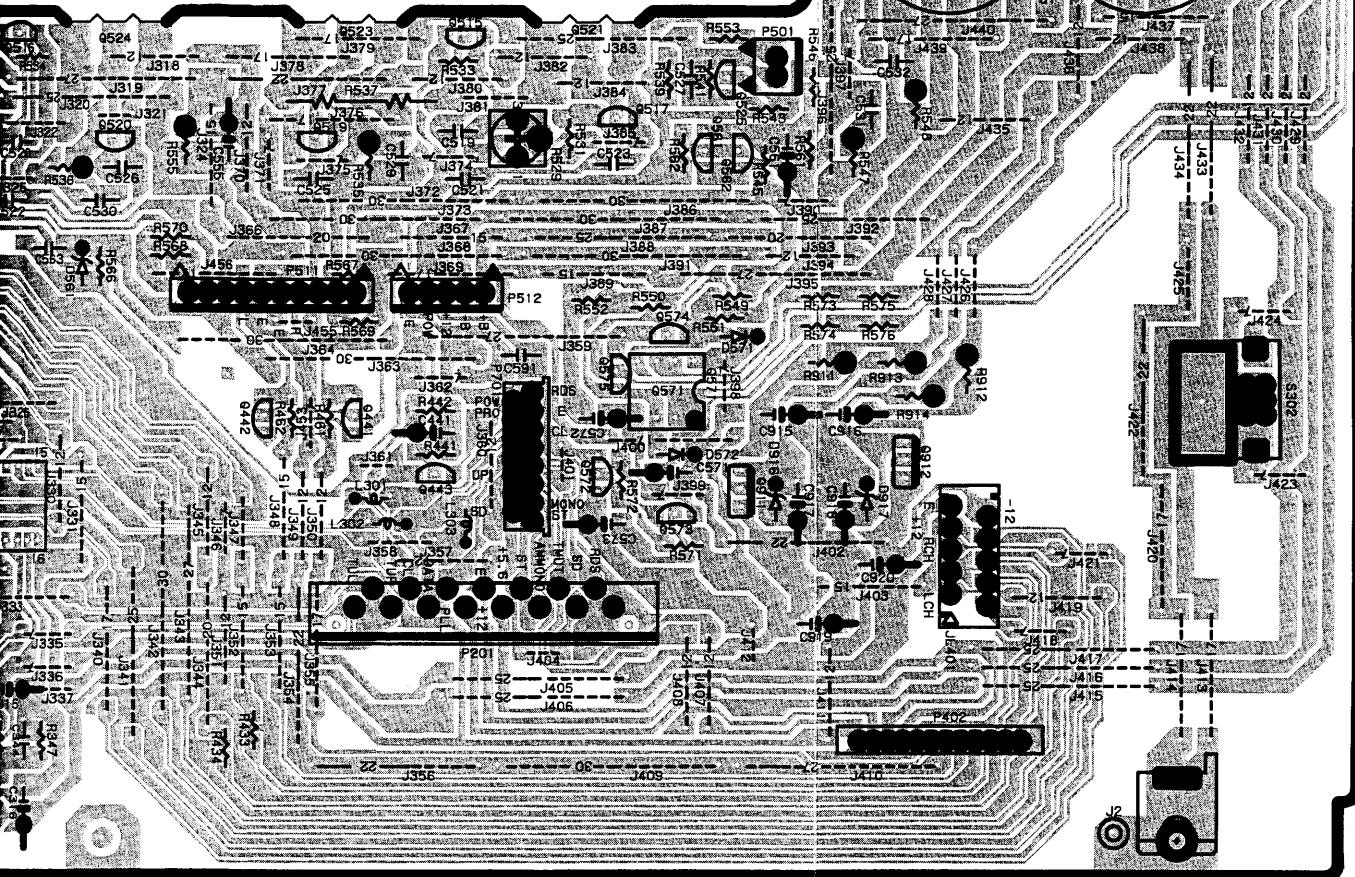


HEADPHONE TERMINAL PC BOARD

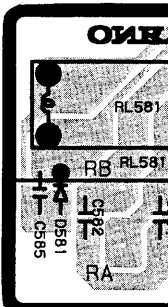
RD

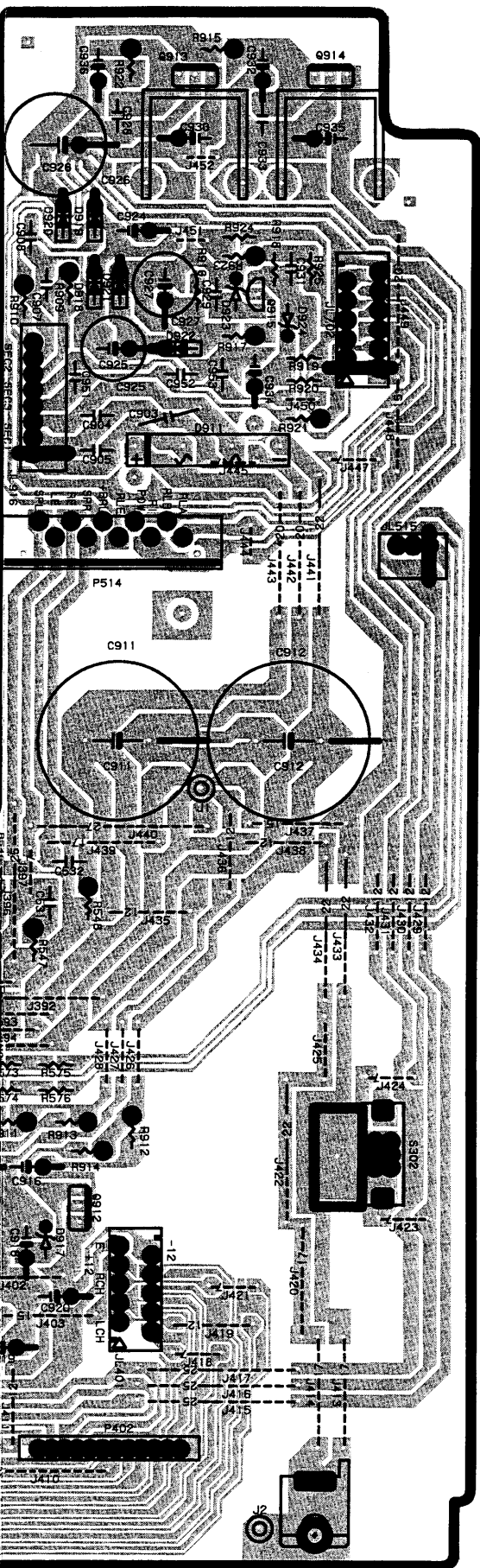


R TRANSFORMER PC BOARD



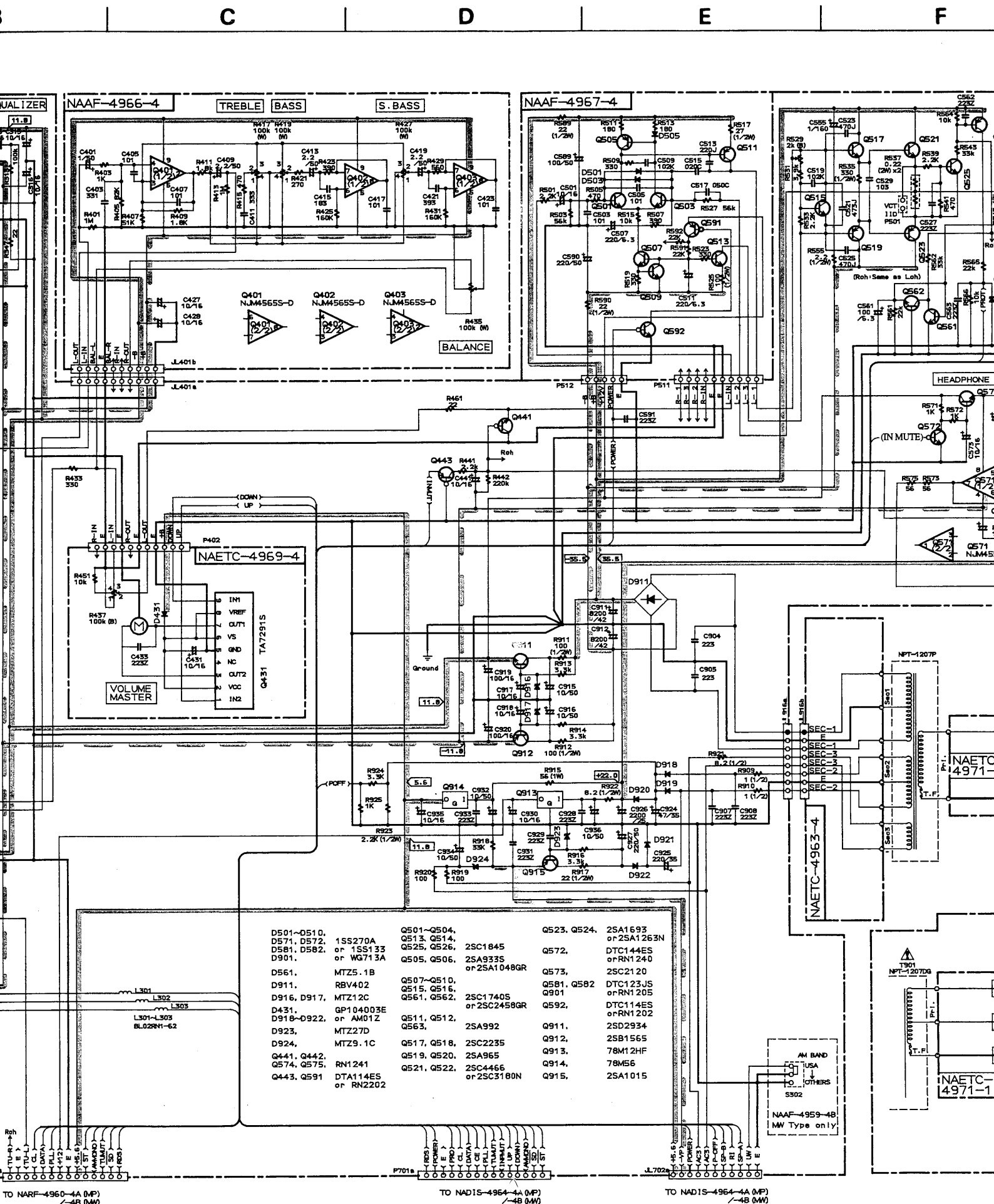
MAIN CIRCUIT PC BOARD





5

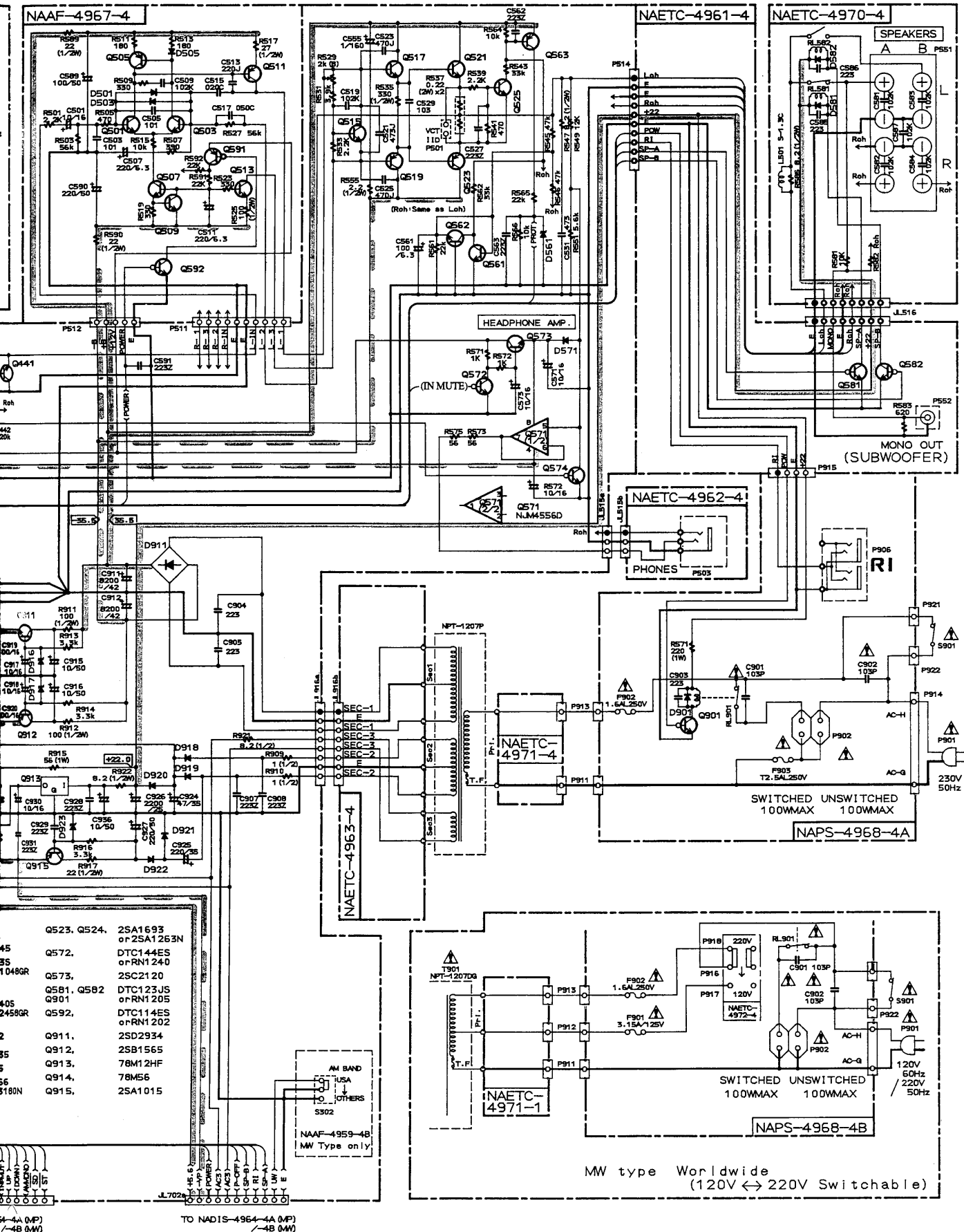




E

F

G



ONKYO CORPORATION

SCHEMATIC DIAGRAM

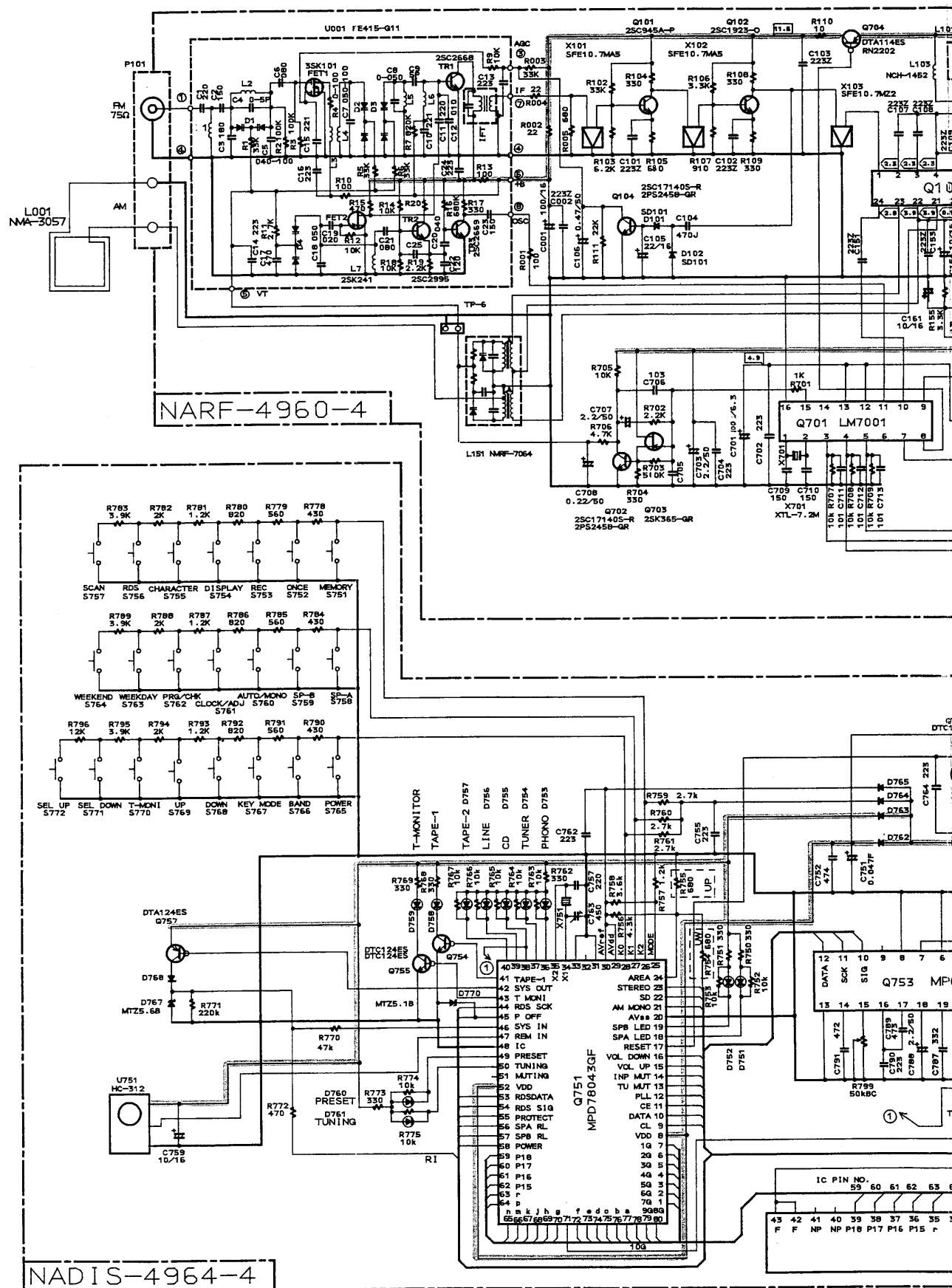
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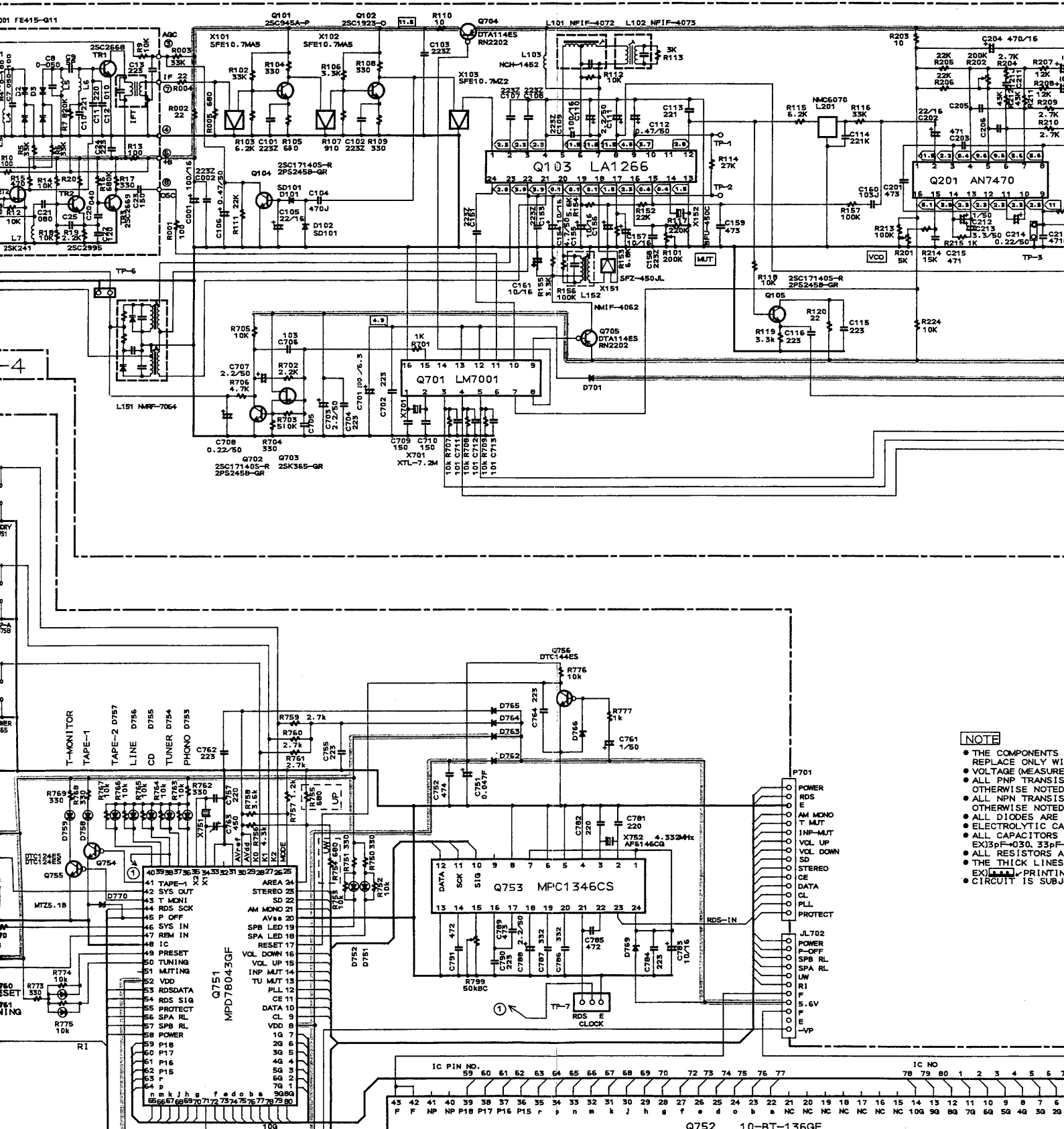
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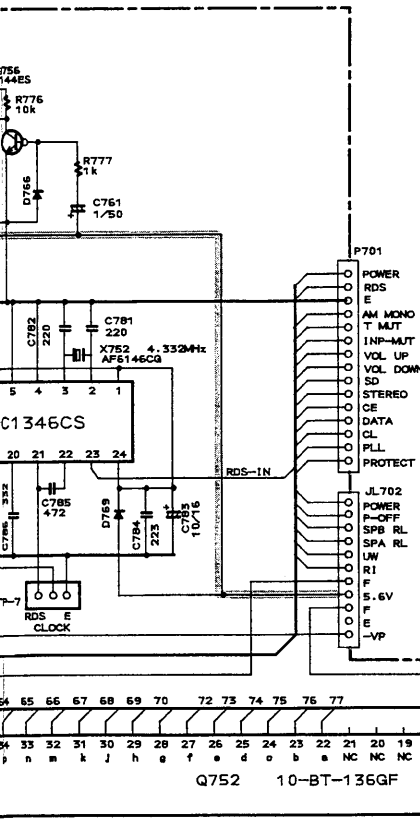
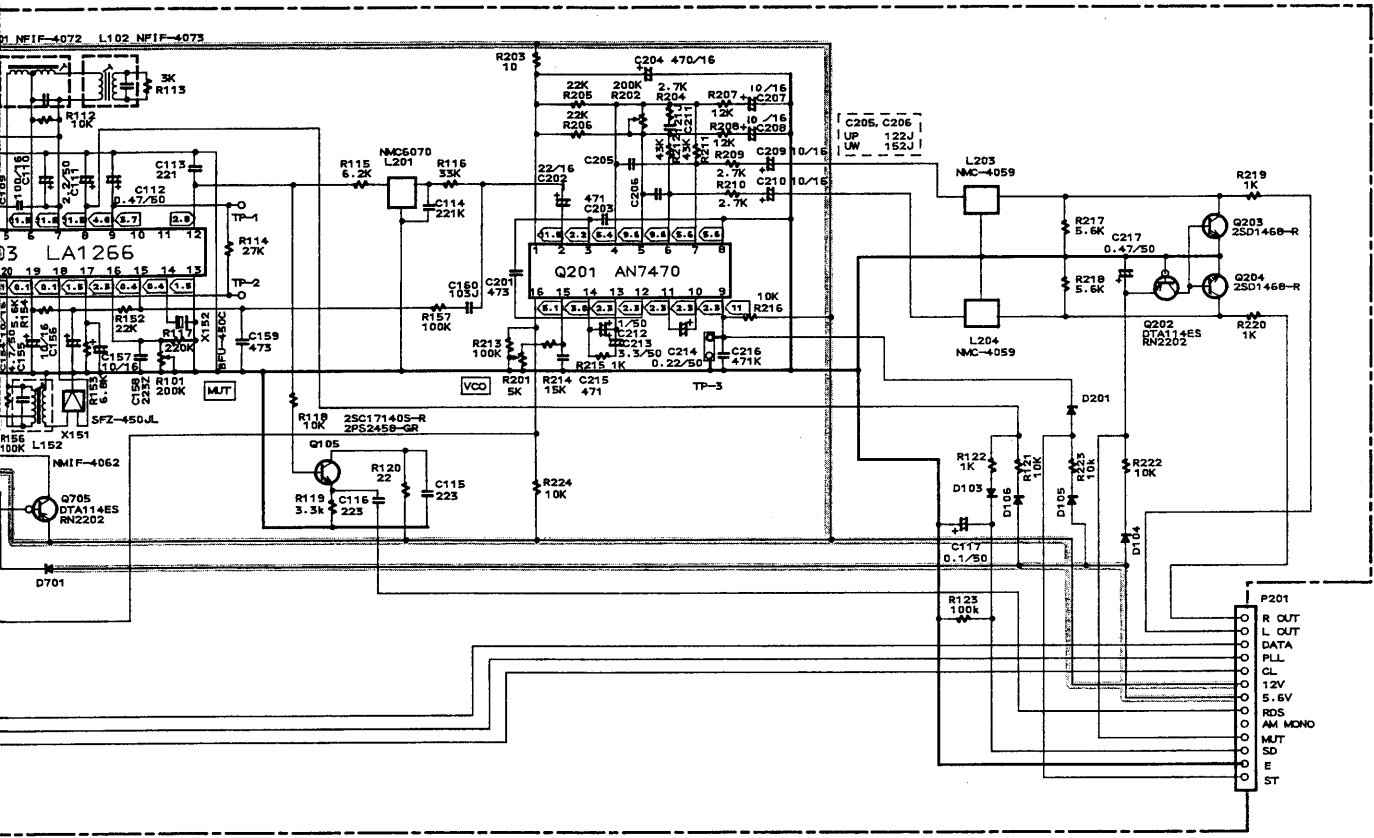
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5



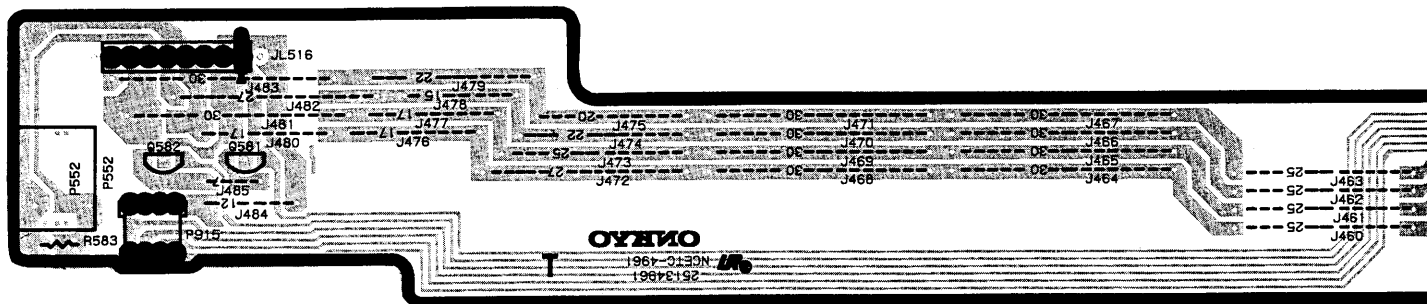
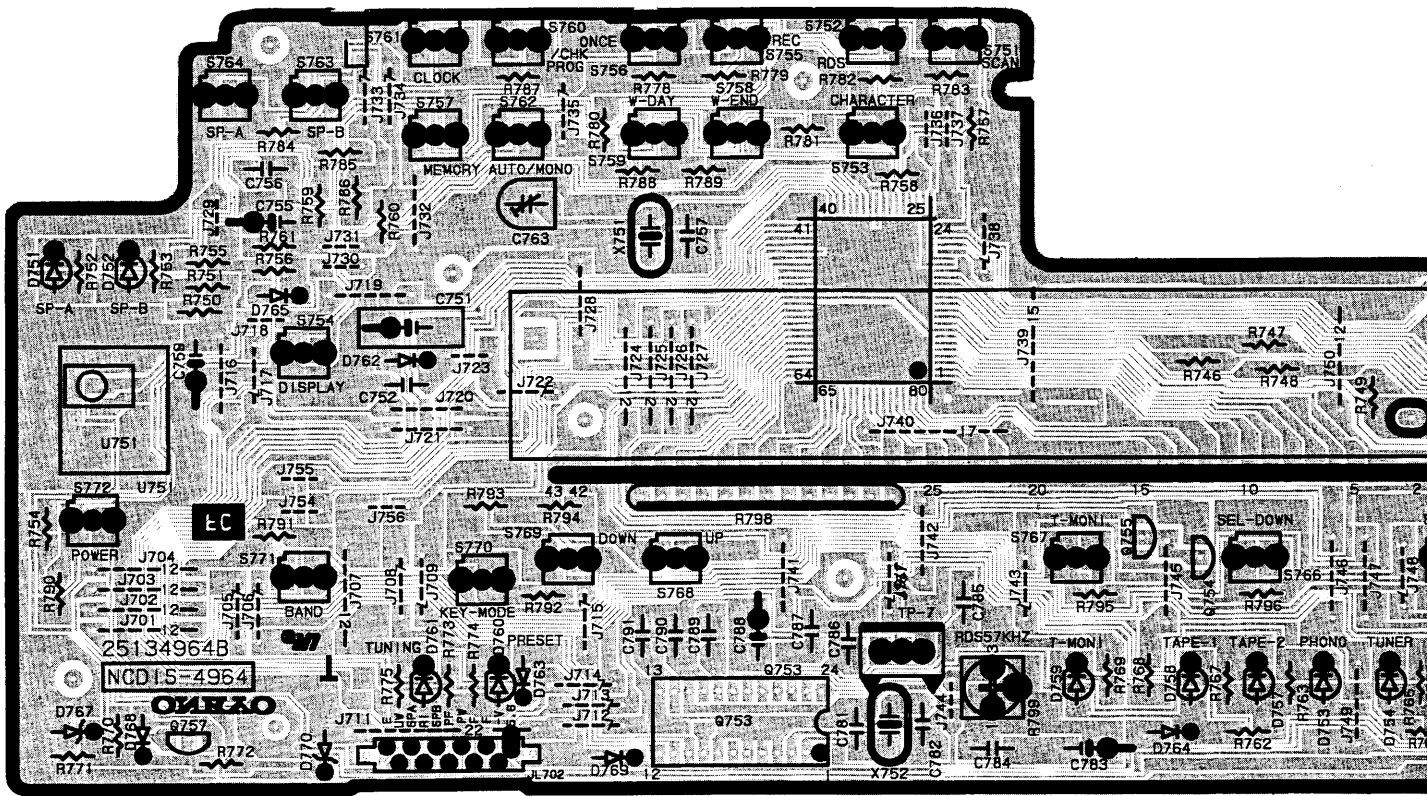




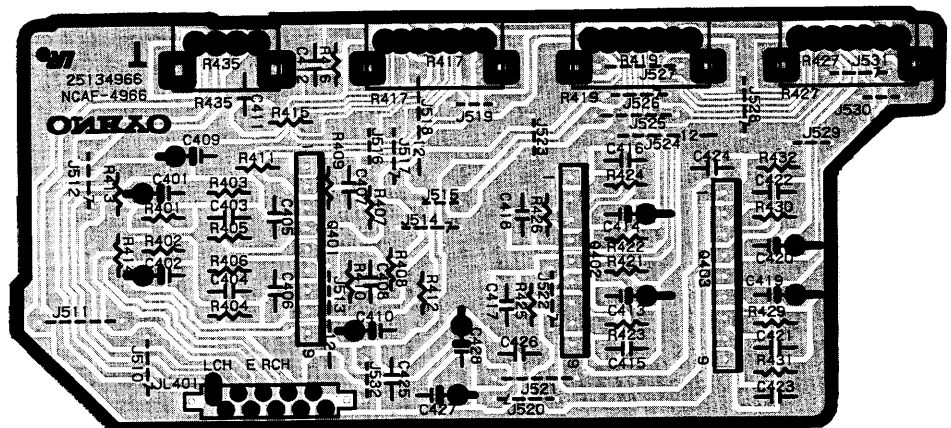
NOTE

- THE COMPONENTS IDENTIFIED BY MARK Δ ARE CRITICAL FOR SAFETY. REPLACE ONLY WITH PART NUMBER SPECIFIED.
- VOLTAGE (MEASURED WITH VOLTMETER) $\square$ 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 (μ) ARE IN μ F/VV.
- ALL CAPACITORS ARE IN pF/50WV UNLESS OTHERWISE NOTED.
- EX) 3pF=030, 33pF=330, 330pF=331, 0.033 μ F=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) Δ PRINTING SIDE
- CIRCUIT IS SUBJECT TO CHANGE FOR IMPROVEMENT.

PRINTED CIRCUIT BOARD VIEW FROM BOTTOM SIDE

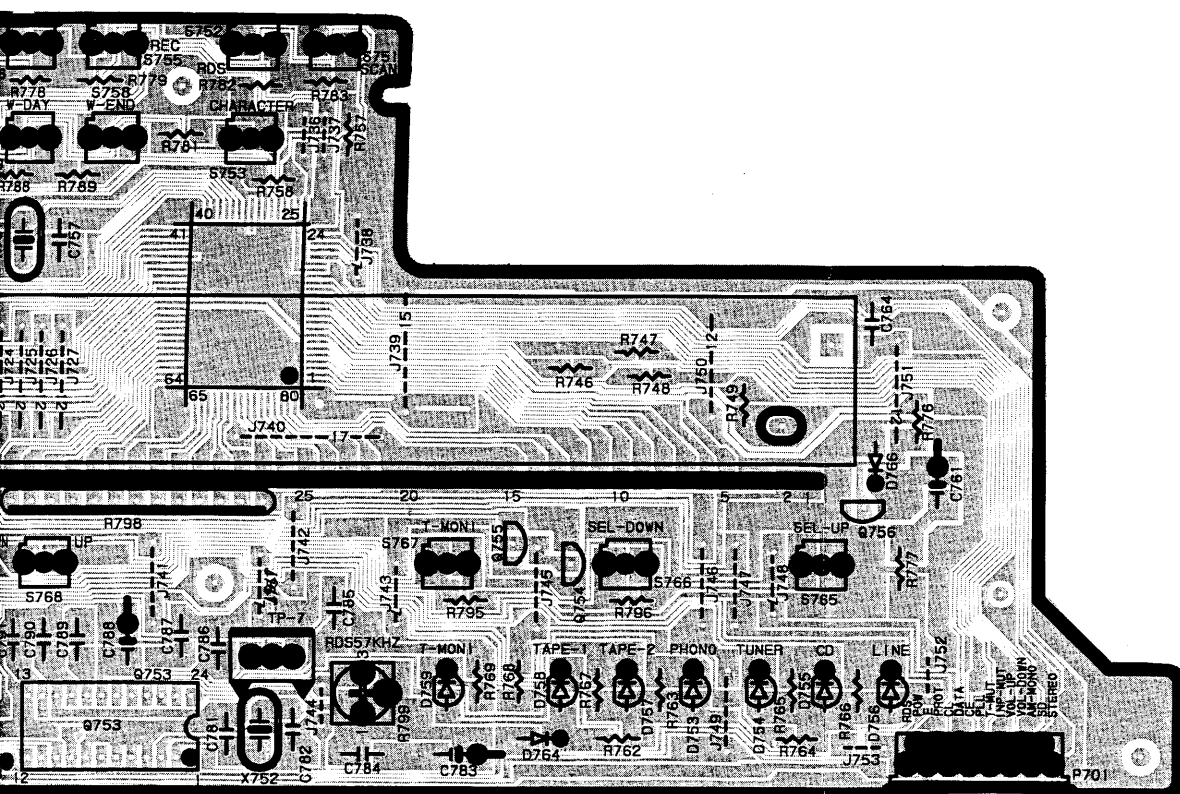


MONO OUTPUT TERMINAL PC BOARD

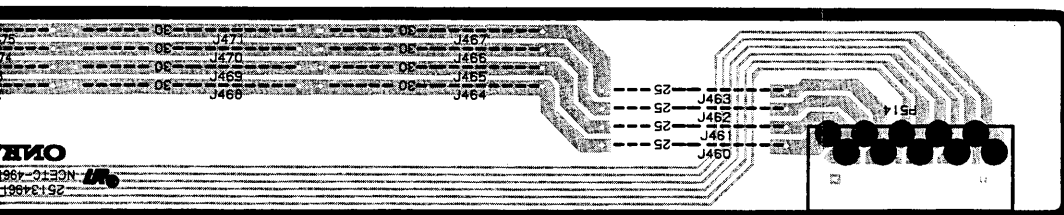


TONE CIRCUIT PC BOARD

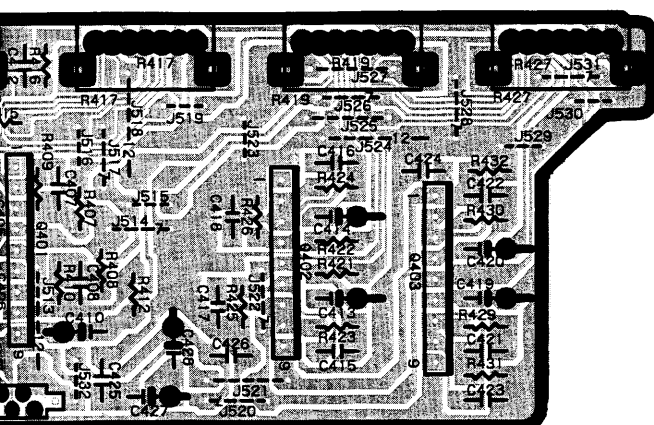
VIEW FROM BOTTOM SIDE

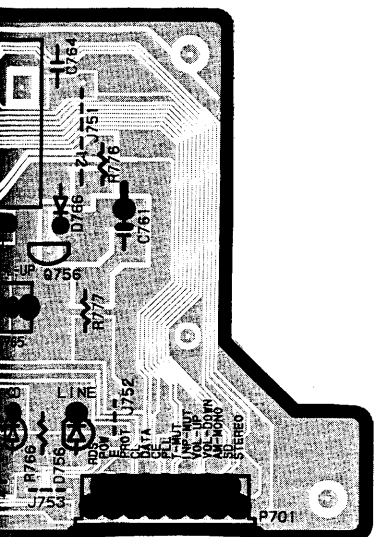


DISPLAY CIRCUIT PC BOARD

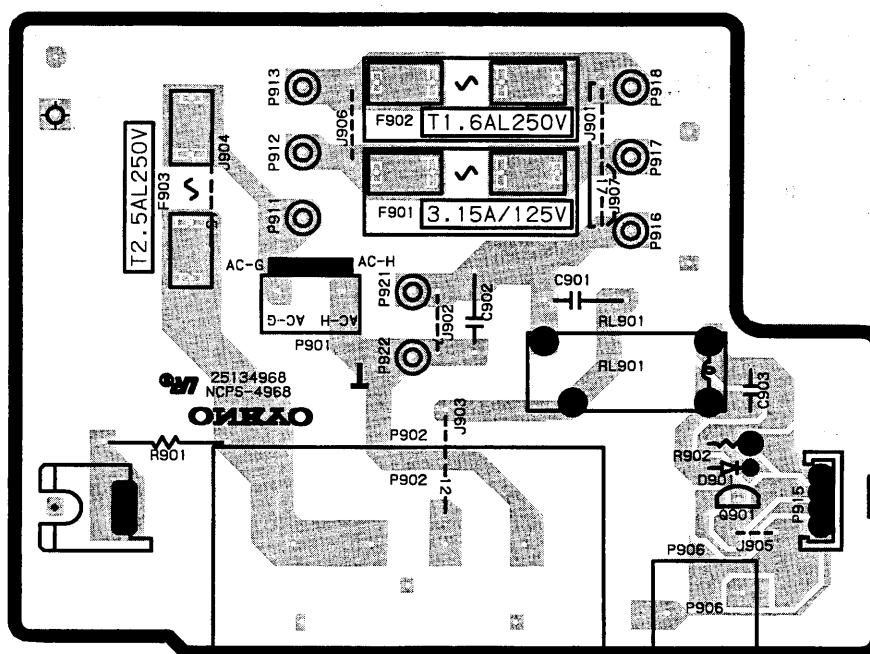
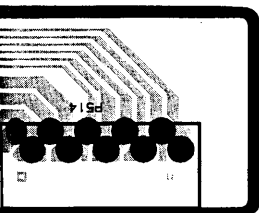


AUDIO OUTPUT TERMINAL PC BOARD

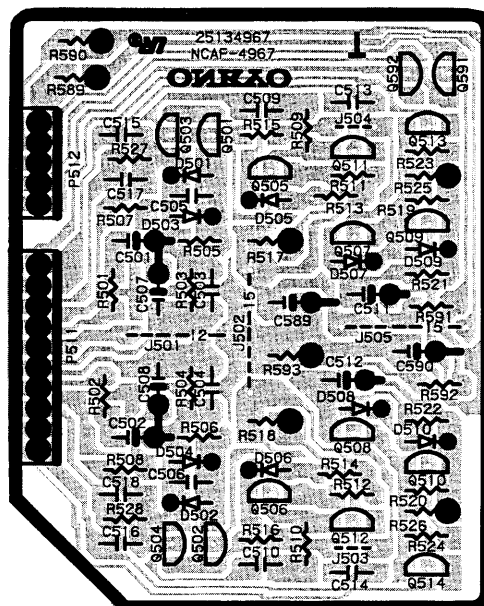




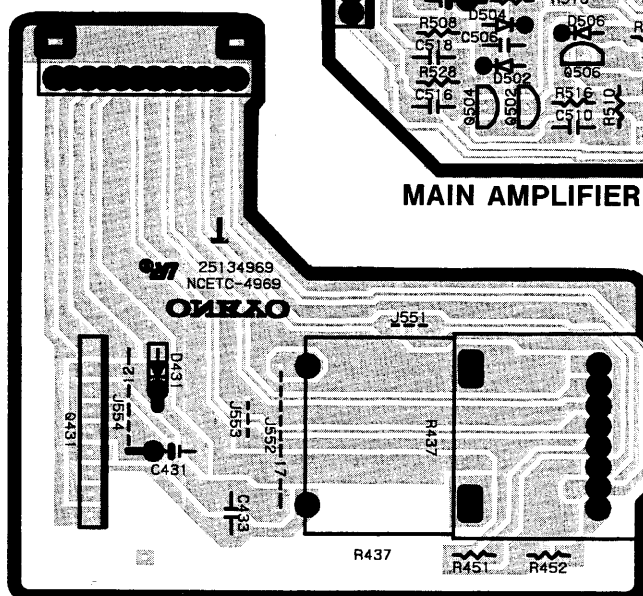
DISPLAY CIRCUIT PC BOARD



POWER SUPPLY CIRCUIT PC BOARD



MAIN AMPLIFIER PC BOARD



VOLUME PC BOARD

PRINTED CIRCUIT BOARD PARTS LIST

MAIN CIRCUIT PC BOARD (NAAF-4959-4A/4B)

CIRCUIT NO.	PART NO.	DESCRIPTION
	ICs	
Q301	22240191	NJM4565D-D
Q302	22240280	LC7821N
Q571	222654	NJM4556D
Q913	222780125NEC	78M12HF
Q914	222780565JRC	78M56
	Transistors	
Q441,Q442	2213631 or	RN1241-A or
Q574,Q575	2213632	RN1241-B
Q443	2213510 or	DTA114ES or
	2214350	RN2202
Q515,Q516	2213284 or	2SC1740S-R or
Q561,Q562	2212115	2SC2458-GR
Q517,Q518	2211654 or	2SC2235-Y or
	2211653	2SC2235-O
Q519,Q520	2211644 or	2SA965-Y or
	2211643	2SA965-O
Q525,Q526	2211733 or	2SC1845-E or
	2211732	2SC1845-F
Q563	2211792 or	2SA992-F or
	2211793	2SA992-E
Q572	221282 or	DTC144ES or
	2213560	RN1204
Q573	2211164	2SC2120-Y
Q911	2202706 or	2SD2394-F or
	2202705	2SD2394-E
Q912	2202716 or	2SB1565-F or
	2202715	2SB1565-E
Q915	2211455	2SA1015-GR
	Diodes	
D561	224450512	MTZ5.1B
D571,D572	223163,	1SS133,
	223205 or	1SS270A or
	223222	WG713A
D911	22380022F	RBV402
D916,D917	224451203	MTZ12C
D918-D922	22380035 or	GP104003E or
	22380046	AM01Z
D923	224452704	MTZ27D
D924	224450913	MTZ9.1C
	Cores	
L301-L303	230905	BL02RN1-R62
	Capacitors	
C303,C304	393341007	10 μ F,16V,Elect.
C307,C308	393341017	100 μ F,16V,Elect.
C309,C310	374726224	6200pF $\pm$ 5%,50V,Plastic
C311,C312	374721824	1800pF $\pm$ 5%,50V,Plastic
C313-C316	393341007	10 μ F,16V,Elect.
C441	393341007	10 μ F,16V,Elect.
C521,C522	374724734	0.047 μ F $\pm$ 5%,50V,Plastic
C529,C530	373731034	0.01 μ F $\pm$ 5%,100V,Plastic
C531,C532	374724734	0.047 μ F $\pm$ 5%,50V,Plastic
C555	354700109	1 μ F,160V,Elect.
C561	393321017	100 μ F,6.3V,Elect.
C571-C573	393341007	10 μ F,16V,Elect.

CIRCUIT NO.	PART NO.	DESCRIPTION
	Capacitors	
C904,C905	374722234	0.022 μ F $\pm$ 5%,50V,Plastic
C911,C912	3500184	8200 μ F,42V,Elect.
C915,C916	393381007	10 μ F,50V,Elect.
C917,C918	393341007	10 μ F,16V,Elect.
C919,C920	393341017	100 μ F,16V,Elect.
C924	393364707	47 μ F,35V,Elect.
C925	354762219	220 μ F,35V,Elect.
C926	354752229	2200 μ F,25V,Elect.
C927	354782219	220 μ F,50V,Elect.
C930	393341007	10 μ F,16V,Elect.
C932	393381007	10 μ F,50V,Elect.
C934,C936	393381007	10 μ F,50V,Elect.
C935	393341007	10 μ F,16V,Elect.
	Resistors	
R529,R530	5210259	N06HR2KBC,Trim
R535,R536	443523314	330 ohm,1/2W, Metal oxide
R537,R538	4500027	0.22 ohm,2W, Metal plate
R547,R548	453530824	8.2 ohm,1/2W,Metal
R555	453530224	2.2 ohm,1/2W,Metal
R909,R910	453530104	1 ohm,1/2W,Metal
R911,R912	443521014	100 ohm,1/2W,Metal oxide
R913,R914	443523324	3.3 kohm,1/2W,Metal oxide
R915	443625604	56 ohm,1W,Metal oxide
R917	453530824	8.2 ohm,1/2W,Metal
R921,R922	453530824	8.2 ohm,1/2W,Metal
R923	443522224	2.2 kohm,1/2W,Metal oxide
	Plugs	
P201a	25055664	NPLG-15P620
P402a	25055651	NPLG-12P607
P501,P502	25055038	NPLG-2P29
P514a	25055661	NPLG-10P617
	Terminals	
P301-P303	25045300	NPJ-6PDBL159
	Switches	
S301	25065286	NSS-22112
S302	25065414	NSS-2215S <W>
	Wire traps	
JL401a	25055631	NPLG-10P593
JL515a	25050267	NSCT-3P95
JL702a	25055632	NPLG-11P594
JL916a	25050272	NSCT-8P100
	Socket	
P701a	25050955	NSCT-15P742
	Radiators	
Q913a	27160211Y	RAD-68
Q914a	27160211Y	RAD-68

TUNER CIRCUIT PC BOARD (NARF-4960-4A/4B)

CIRCUIT NO.	PART NO.	DESCRIPTION
	Front end	
TU001	240089	FE415-G11
	ICs	
Q103	22240039	LA1266
Q201	22240242	AN7470
Q701	22240090	LM7001

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

CIRCUIT NO.	PART NO.	DESCRIPTION
	Transistors	
Q101	2211723	2SC1923-O
Q102	2210746	2SC945A-P
Q104,Q105	2213284 or	2SC1740S-R or
Q702	2212115	2SC2458-GR
Q202	2213510 or	DTA114ES or
Q704,Q705	2214350	RN2202
Q203,Q204	2212794	2SD1468-R
Q703	2212445	2SK365-GR
	Diodes	
D101,D102	223191	SD101
D103-D106	223163,	1SS133,
D201,D701	223205 or	1SS270A or
	223222	WG713A
	Transformers and coils	
L101	233401	NFIF-4072
L102	233402	NFIF-4073
L103	233454M022	NCH-1452 022M
L151	232162	NMRF-7064, RF block
L152	232139	NMIF-4062
L201	233383	NMC-6070
L203,L204	233355A	NMC-4059
	Ceramic filters	
X101,X102	3010071	SFE10.7MA5
X103	3010130	SFE10.7M22A
X151	3010123	SFZ-450JL
X152	3010076	BFU-450C
	Resonator	
X701	3010141	XTL-7.2M
	Capacitors	
C001	393341017	100 μ F,16V,Elect.
C105	354742209	22 μ F,16V,Elect.
C106,C112	354784799	0.47 μ F,50V,Elect.
C110	393341017	100 μ F,16V,Elect.
C111	354780229	2.2 μ F,50V,Elect.
C117	354781099	0.1 μ F,50V,Elect.
C154	393341007	10 μ F,16V,Elect.
C155	354780479	4.7 μ F,50V,Elect.
C156,C157	393341007	10 μ F,16V,Elect.
C159,C160	374724734	0.047 μ F $\pm$ 5%,50V,Plastic
C161	354741009	10 μ F,16V,Elect.
C201	374724734	0.047 μ F $\pm$ 5%,50V,Plastic
C202	393341007	10 μ F,16V,Elect.
C204	354744719	470 μ F,16V,Elect.
C205,C206	374721224	1200pF $\pm$ 5%,50V,Plastic <P>
C205,C206	374721524	1500pF $\pm$ 5%,50V,Plastic <W>
C207-C210	393341007	10 μ F,16V,Elect.
C212	354780109	1 μ F,50V,Elect.
C213	354780339	3.3 μ F,50V,Elect.
C214	354782299	0.22 μ F,50V,Elect.
C215	370134714	470pF $\pm$ 5%,100V,Plastic
C217	354784799	0.47 μ F,50V,Elect.
C701	393321017	100 μ F,6.3V,Elect.
C705,C706	374721034	0.01 μ F $\pm$ 5%,50V,Plastic
C707	353780229	2.2 μ F,50V,Elect.
C708	353782299	0.22 μ F,50V,Elect.

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

CIRCUIT NO.	PART NO.	DESCRIPTION
	Resistors	
R101	5210266	N06HR100KBC,Trim
R201	5210261	N06HR5KBC,Trim
R202	5210267	N06HR200KBC,Trim
	Terminal	
P101	25060117	NTM-4PDML051,Antenna
	Socket	
P201b	25051053	NSCT-15P840

MONO OUTPUT TERMINAL PC BOARD(NAETC-4961-4)

CIRCUIT NO.	PART NO.	DESCRIPTION
Q581,Q582	2213640 or	DTC123JS or
	2214660	RN1205,Transistors
JL516a	25051112	NSCT-8P899,Wire holder
P514b	25051050	NSCT-10P873,Socket
P552	25045302	NPJ-1PDBL161,Terminal
P915a	25050672	NSCT-4P476,Socket

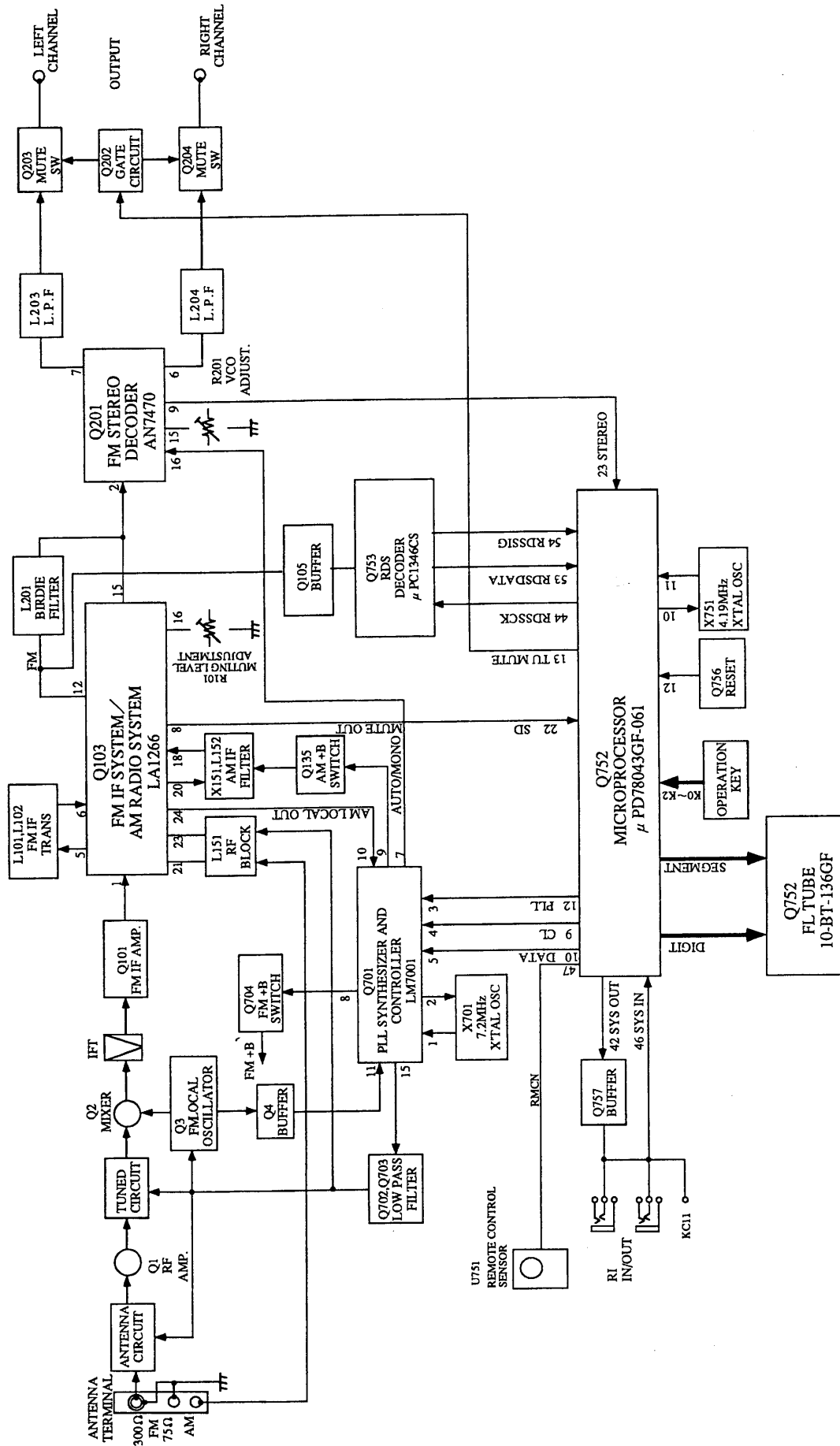
HEADPHONE TERMINAL PC BOARD(NAETC-4962-4)

CIRCUIT NO.	PART NO.	DESCRIPTION
P503	25045257	YKB26-5138,Headphone jack
JL515b	25051107	NSCT-3P894,Wire holder

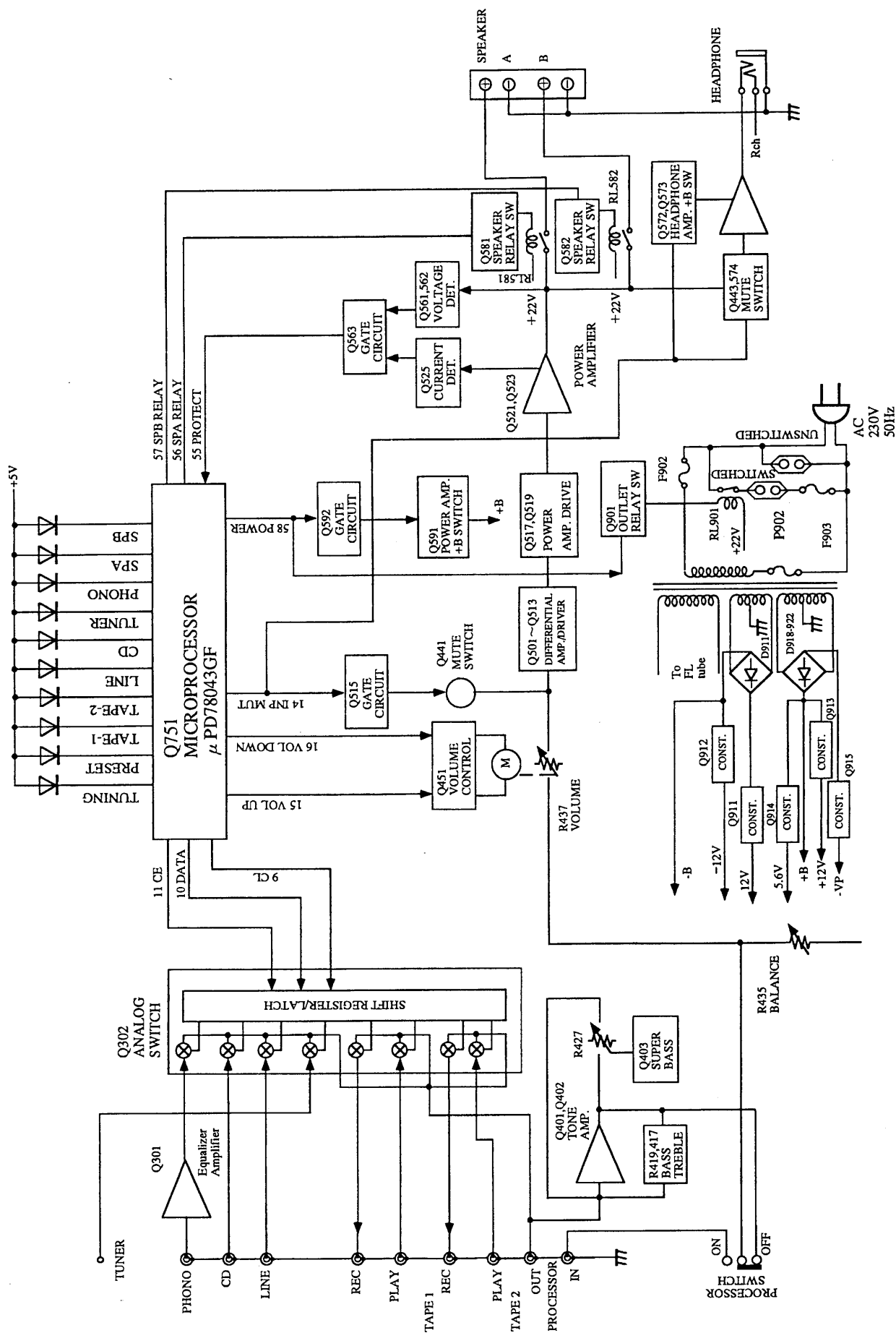
DISPLAY CIRCUIT PC BOARD (NADIS-4964-4A/4B)

CIRCUIT NO.	PART NO.	DESCRIPTION
	Remote control sensor	
U001	24130010	HC-312
	ICs	
Q751	22240769	μ PD78043GF-061
Q753	22240679	μ PC1346CS
	Fluorescent tube	
Q752	212131	10-BT-136GK
	Transistors	
Q754,Q755	2213160	DTC124ES
Q756	221282	DTC144ES
Q757	2212600	DTA124ES
	Diodes	
D751-D761	225291D	SEL4910D-D
D762-D766	223163,	1SS133,
D768,D769	223205 or	1SS270A or
	223222	WG713A
D767	224450562	MTZ5.6B
D770	224450512	MTZ5.1B
	Resonators	
X751	3010224	XTL4.19M
X752	3010203	AF6146CG
	Capacitors	
C751	3000075 or	EECS5R5T473
	3000074	DX5R5L473,Super
C752	375524744	0.47 μ F $\pm$ 5%,50V,Plastic
C755,C759	353741009	10 μ F,16V,Elect.
C761	353780109	1 μ F,50V,Elect.
C763	3060011	NTC-45P10,Trim
C783,C788	353780229	2.2 μ F,50V,Elect.
C785,C791	374724724	4700pF $\pm$ 5%,50V,Plastic

BLOCK DIAGRAM TUNER SECTION



AMPLIFIER SECTION



CIRCUIT NO.	PART NO.	DESCRIPTION
	Transistors	
Q591	2213510 or 2214350	DTA114ES or RN2202
Q592	2213290 or 2214230	DTC114ES or RN1202
	Diodes	
D505,D506	223163, 223205 or 223222	1SS133, 1SS270A or WG713A
	Capacitors	
C501,C502	393341007	10 μ F,16V,Elect.
C507,C508	393322217	220 μ F,6.3V,Elect.
C511,C512	393322217	220 μ F,6.3V,Elect.
C589	393381017	100 μ F,50V,Elect.
C590	393382217	220 μ F,50V,Elect.
	Resistors	
R517,R518	443522704	27 ohm,1/2W,Metal oxide
R525,R526	443521014	100 ohm,1/2W,Metal oxide
R589,R590	443522204	22 ohm,1/2W,Metal oxide
	Plugs	
P511	25055324	NPLG-10P307
P512	25055319	NPLG-5P302

POWER SUPPLY CIRCUIT PC BOARD (NAPS-4968-4A/4B)

CIRCUIT NO.	PART NO.	DESCRIPTION
	Transistor	
Q901	2213640 or 2214660	DTC123JS or RN1205
	Diode	
D901	223163, 223205 or 223222	1SS133, 1SS270A or WG713A
	Capacitors	
C901,C902	3500065A	Δ DE7150FZ103PAC400/125V,IS
	Resistor	
R902	443622214	220 ohm,1W,Metal oxide
	Terminal	
P906	25045330	NPJ-2PDBL184
	Relay	
RL901	25065483	Δ NRL-1P5A-DC12-084
	Fuseholders	
F901a	25050065	Δ YSH403T <W>
F902a	25050065	Δ YSH403T
F903a	25050065	Δ YSH403T <P>
	Fuse	
F901	252150	Δ 3.15A-TSC,Primary <W>
F902	252073	Δ 1.6A-SE-EAK,Primary
F903	252075	Δ 2.5A-SE-EAK,Primary <P>
	Plugs	
P914a	25055675	NPLG-2P631
P915b	25055406	NPLG-4P388
	AC outlet	
P902P	25051125	Δ NSCT-4P912

CIRCUIT NO.	PART NO.	DESCRIPTION
	Capacitors	
C786,C787	374723324	3300pF $\pm$ 5%,50V,Plastic
C789	374724734	0.047 μ F $\pm$ 5%,50V,Plastic
C790	374722234	0.022 μ F $\pm$ 5%,50V,Plastic
	Resistors	
R799	5210265	N06HR50KBC,Trim
	Switches	
S751-S772	25035652	NPS-111-S604
	Socket	
P701b	25050955	NSCT-15P742
	Wire holder	
JL702b	25051095	NSCT-11P882
	Holder	
	27190943	L.E.D

TONE CIRCUIT PC BOARD (NAAF-4966-4)

CIRCUIT NO.	PART NO.	DESCRIPTION
	ICs	
Q401-Q403	22240273	NJM4565S-D
	Capacitors	
C401,C402	393380107	1 μ F,50V,Elect.
C409,C410	393380227	2.2 μ F,50V,Elect.
C411,C412	374723334	0.033 μ F $\pm$ 5%,50V,Plastic
C413,C414	393380227	2.2 μ F,50V,Elect.
C415,C416	374721834	0.018 μ F $\pm$ 5%,50V,Plastic
C419,C420	393380227	2.2 μ F,50V,Elect.
C421,C422	374723934	0.039 μ F $\pm$ 5%,50V,Plastic
C427,C428	393341007	10 μ F,16V,Elect.
	Resistors	
R417-R420	5104328	N14RLC100KTW15Z,Tone
R427,R428	5104328	N14RLC100KTW15Z,S bass
R435	5104258	N11RGLC250KWT15Z,Balance
	Wire holder	
P401b	25051094	NSCT-10P881

MAIN AMPLIFIER PC BOARD (NAAF-4967-4)

CIRCUIT NO.	PART NO.	DESCRIPTION
	Transistors	
Q501-Q504	2211733 or	2SC1845-E or
Q513,Q514	2211732	2SC1845-F
Q505,Q506	2213354 or 2212125	2SA933S-R or 2SA1048-GR
Q507-Q510	2213284 or 2212115	2SC1740S-R or 2SC2458-GR
Q511,Q512	2211793 or 2211792	2SA992-E or 2SA992-F
Q521,Q522	2202375, 2202373, 2202374, 2202353 or 2202352	* 2SC4466-P, * 2SC4466-O, * 2SC4466-Y, * 2SC3180N-O or * 2SC3180N-R
Q523,Q524	2202365, 2202363, 2202364, 2202343 or 2202342	* 2SA1693-P, * 2SA1693-O, * 2SA1693-Y, * 2SA1263N-O or * 2SA1263N-R

VOLUME PC BOARD (NAETC-4969-4)

CIRCUIT NO.	PART NO.	DESCRIPTION
Q431	22240239	TA7291S,IC
D431	22380035 or 22380046	GP104003E or AM01Z,Diode
R437,R438	5104338	N16RQL100KBT25F,Volume
P402b	25050985	NSCT-12P772,Socket

RELAY CIRCUIT PC BOARD (NAETC-4970-4)

CIRCUIT NO.	PART NO.	DESCRIPTION
D581,D582	223163, 223205 or 223222	1SS133, 1SS270A or WG713A,Diodes
L501,L502	231176S	S-1.3C,Coils
C585,C586	374722234	0.022 μ F $\pm$ 5%,50V,Plastic capacitors
R585,R586	453530824	8.2 ohm, 1/2W,Metal resistors
RL581,RL582	25065485	NRL-2P2A-DC24-085,Relaies
P551	25060125	NTM-8PDMN058,Speaker terminal
JL514b	25050285	NSCT-8P113,Socket

VOLTAGE SELECTOR SWITCH PC BOARD (NAETC-4972-4)

CIRCUIT NO.	PART NO.	DESCRIPTION
S902	25065437	Δ NSS-22157P,Voltage selector switch <W>

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

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