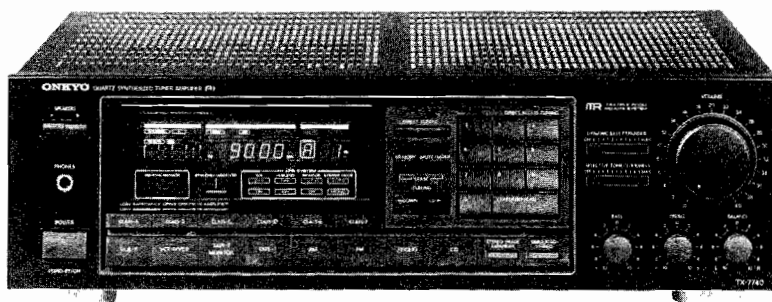


ONKYO SERVICE MANUAL

QUARTZ SYNTHESIZED TUNER AMPLIFIER MODEL TX-7740



Black model

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 PARTS NUMBERS APPEAR AS SHOWN IN THIS MANUAL.

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

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SPECIFICATIONS

AMPLIFIER SECTION

Power output:	70 watts per channel, min, RMS, at 8 ohms, both channels driven, from 20Hz to 20kHz, with no more than 0.04% total harmonic distortion.
Musical Power Output:	2×180 watts at 4 ohms, 1kHz (DIN) 2×120 watts at 8 ohms, 1kHz (DIN)
Continuous Power Output:	2×105 watts at 4 ohms, 1kHz (DIN) 2×77 watts at 8 ohms, 1kHz (DIN)
Total Harmonic Distortion:	0.04% at rated power 0.04% at 1 watts output
IM Distortion:	0.04% at rated power 0.04% at 1 watts output
Damping Factor:	60 at 8 ohms
Frequency Response:	20–30,000Hz ±1dB
RIAA Diviation:	20–20,000Hz ±0.8dB
Sensitivity and Impedance:	Phono: 2.5mV/50 kohms CD: 150mV/50 kohms Tape Play: 150mV/50 kohms Tape Rec: 150mV/3.5 kohms
Phono Overload (MM):	120mV RMS at 1kHz, 0.04% THD.
Signal-to-Noise Ratio:	Phono: 80dB (at 5mV input, IHF-A) CD/Tape: 102dB (IHF A)
Tone controls:	Bass: ±10dB at 100Hz Treble: ±10dB at 10kHz
Muting	–∞

TUNER SECTION

FM:

Tuning Range:	87.50–108.00MHz (50kHz steps)
Usable Sensitivity:	Mono: 11.2dBf, 1.0μV, 75 ohms 0.9μV (S/N 26dB, 40kHz Devi.) 75ohms DIN Stereo: 18.0dBf, 2.2μV, 75ohms 23μV (S/N 46dB, 40kHz Devi.) 75ohms DIN
50dB Quieting Sensitivity:	Mono: 18.0dBf, 2.2μV, 75ohms Stereo: 37.2dBf, 20μV, 75ohms
Capture Ratio:	1.5dB
Image Rejection Ratio:	85dB
IF Rejection Ratio:	90dB
Signal-to-Noise Ratio:	Mono: 73dB Stereo: 67dB
Selectivity:	50dB DIN (±300kHz, 40kHz, dev.)
AM suppression Ratio:	50dB
Harmonic Distortion:	Mono: 0.15% Stereo: 0.25%
Frequency Response:	30–15,000Hz ±1.5dB
Stereo Separation:	45dB at 1kHz 30dB at 100–10,000Hz
Muting Level:	17.2dBf, 4.0μV

AM:

Tuning Range:	522–1611kHz (9kHz steps)
Usable Sensitivity:	30μV
Image Rejection Ratio:	40dB
IF Rejection Ratio:	40dB
Signal-to-Noise Ratio:	40dB
Harmonic Distortion:	0.7%

GENERAL

Dimensions (W×H×D):	435×137×350mm 17-1/8"×5-3/8"×13-3/4"
Weight:	9.0kg., 19.8 lbs.

Specifications and features are subject to change without notice.

SERVICE PROCEDURES

1. Replacing the fuses

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

Circuit no.	Part no.	Description
F902	252075	2.5A-SE-EAK, Primary
F903	252075	2.5A-SE-EAK, AC outlet

2. Change of FM/AM band step.

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

(FM)

MODEL	BAND STEP	D761
UD	200kHz→50kHz	Additional
UG/UQ	50kHz→200kHz	Eliminated

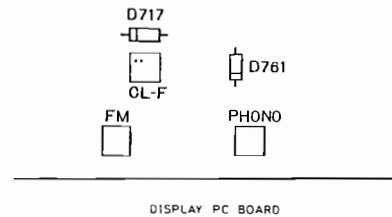
(AM)

BAND STEP	D717
10kHz→ 9kHz	Eliminated
9kHz→10kHz	Additional

In D761 and D717 ISS133 (Part No. 223163) are used.

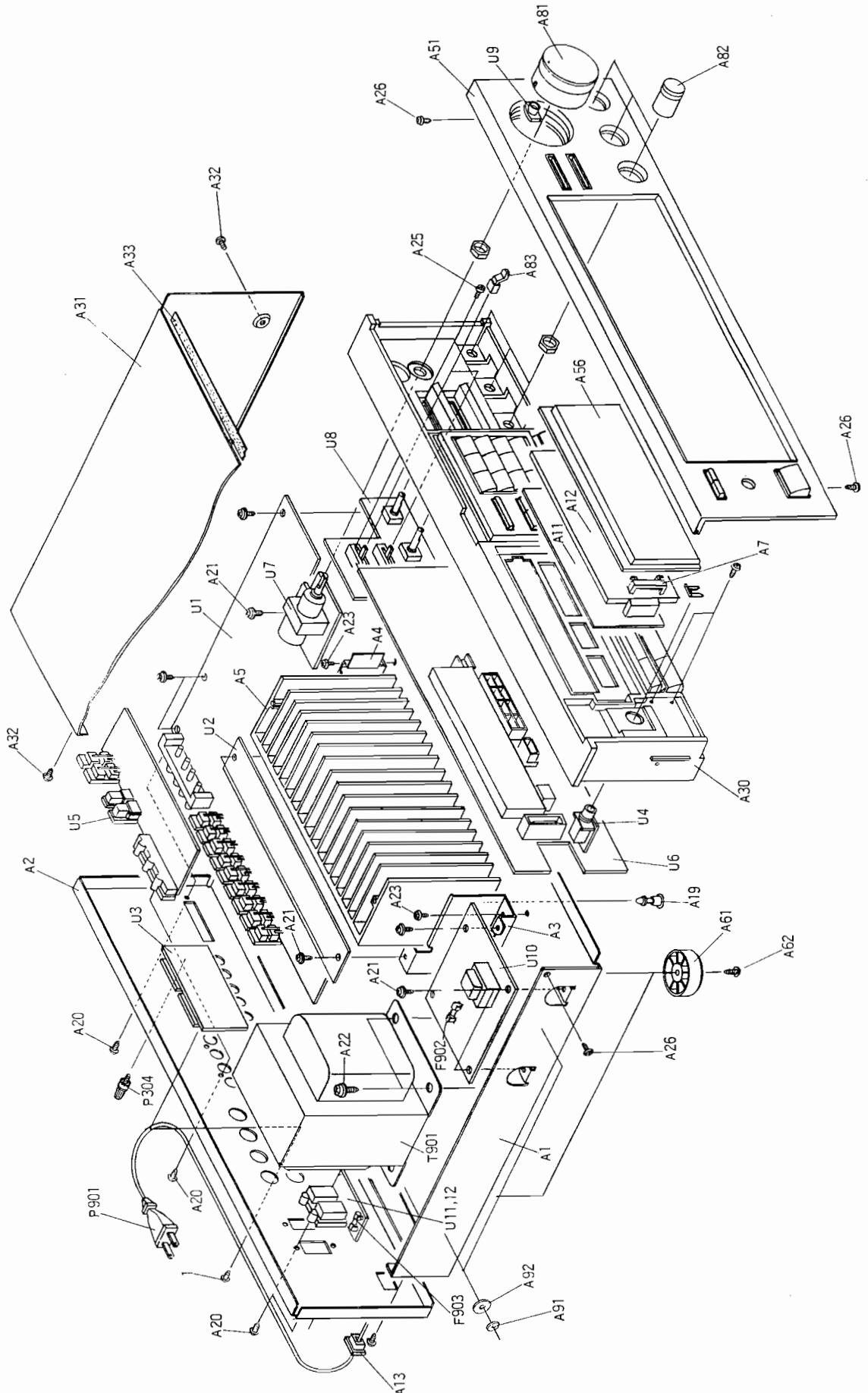
3. Memory preservation

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.

EXPLODED VIEW

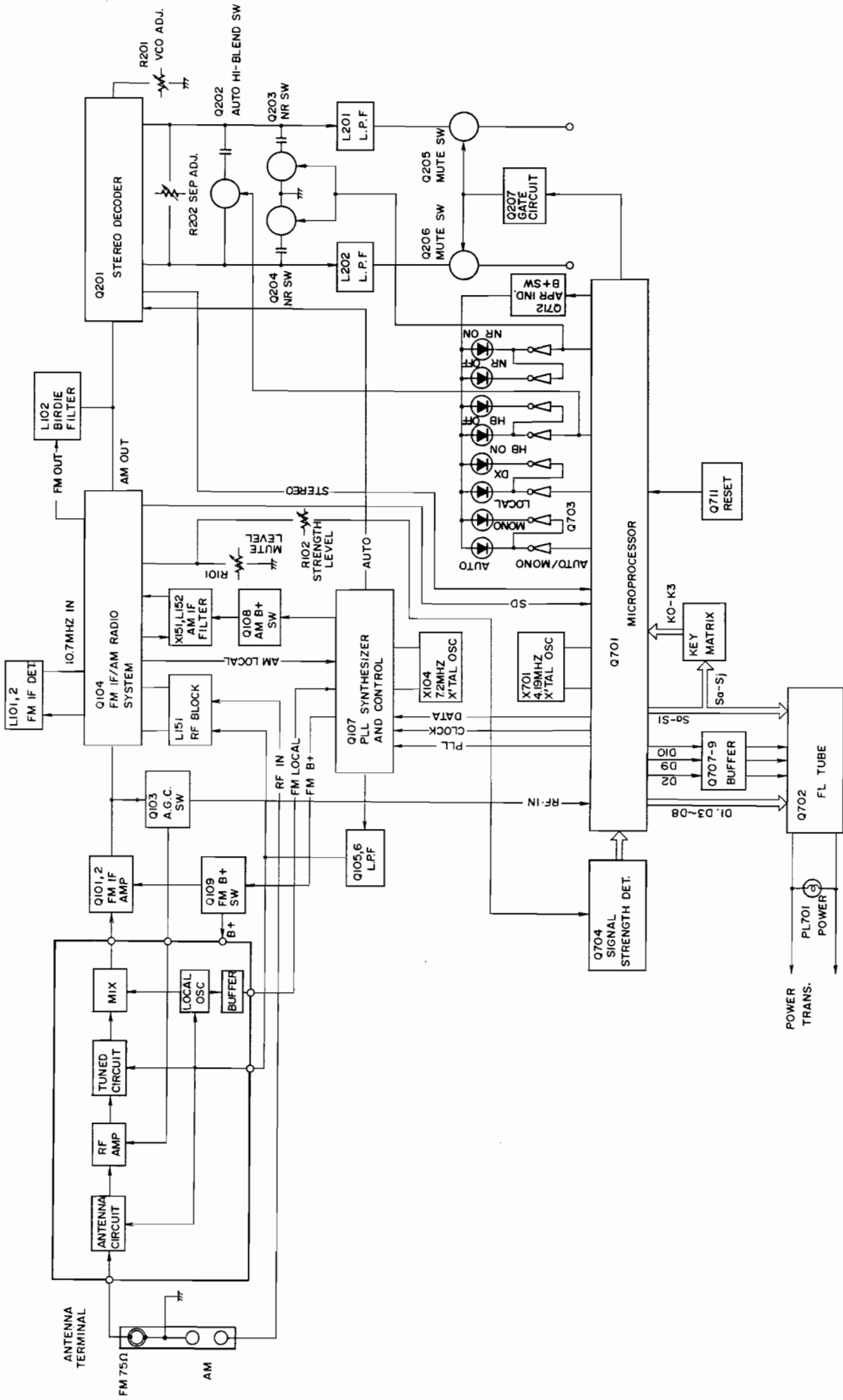


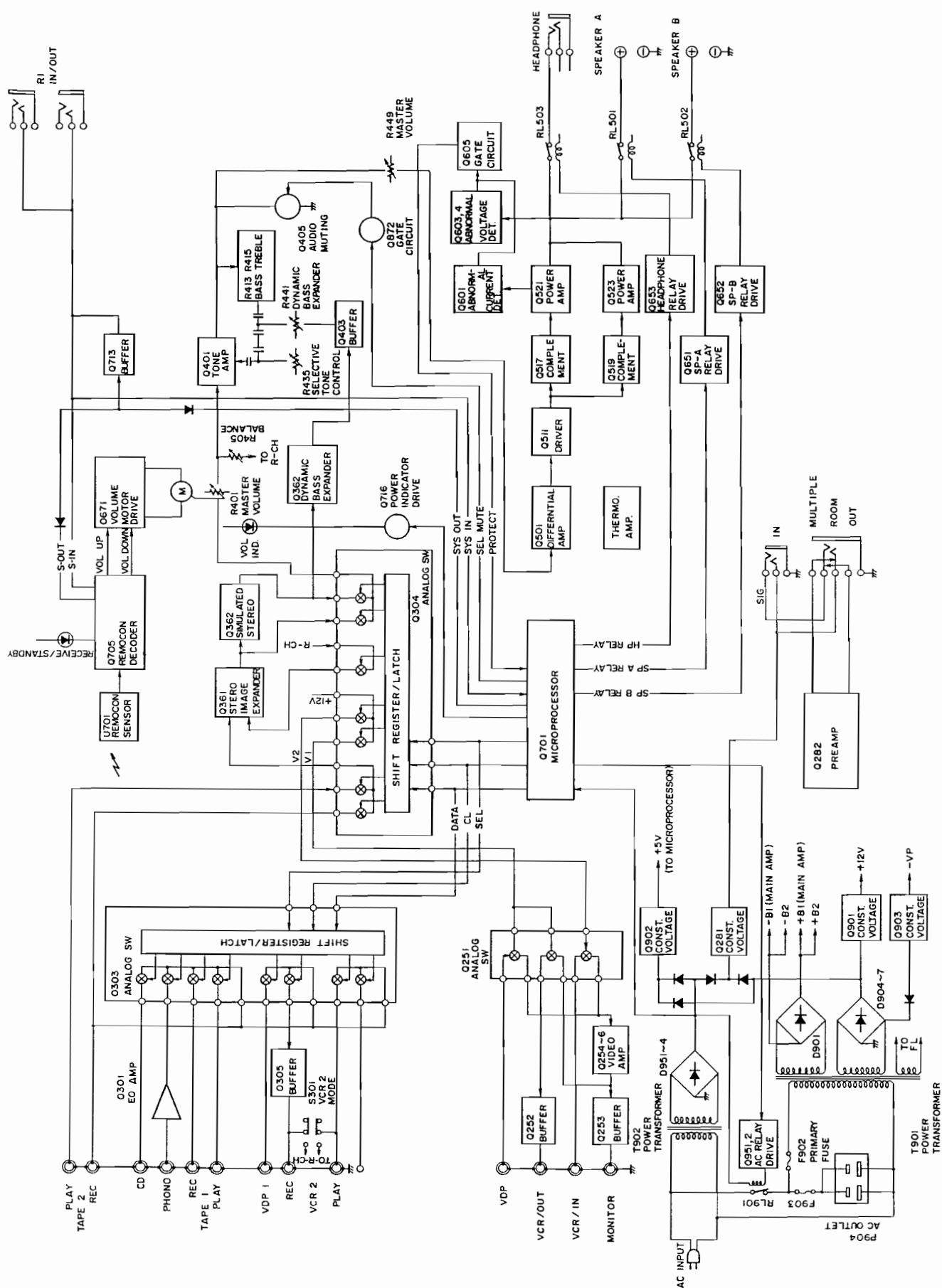
PARTS LIST

REF. NO.	PART NO.	DESCRIPTION	REF. NO.	PART NO.	DESCRIPTION
A1	27100163-2	Chassis	Q523, Q524	2201663,	2SA1492(O),
A2	27121347-2A	Back panel		2201664,	2SA1492(Y),
A3	27141391	Bracket LH		2201665,	2SA1492(P),
A4	27141392	Bracket RH		2202262 or	2SA1516(R) or
A5	27160257	Radiator		2202263	2SA1516(O), Power amplifier
A7	27190644	Holder, dial plate			transistors
A11	28133244	Back plate	T901	2300304	Δ NPT-992G, Power transformer
A12	28130260	Dial plate	U1	1A215569-1A	NAAAR-3869-1A, FM/AM tuner and
A13	27300750	Δ Strainrelief			selector circuit pc board ass'y
A19	27190524	KGLS-14R, Holder	U2	1A215570-1A	NAAF-3870-1A, Power amplifier pc
A20	834430088	3TTS+8B(BC), Self-tapping screw			board ass'y
A21	831130088	3TTW+8B, Self-tapping screw	U3	1A215571-1A	NAETC-3871-1A, Speaker terminal
A22	830440089	4TTC+8C(BC), Self-tapping screw			pc board ass'y
A23	834430108	3TTS+10B(BC), Self-tapping screw	U4	1A215572-1A	NAETC-3872-1A, Headphone
A25	82142004	2P+4F(BC), Pan head screw			terminal pc board ass'y
A26	833430080	3TTP+8P(BC), Self-tapping screw	U5	1A215573-1A	NAETC-3873-1A, Video terminal
A27	801433	3SMS10WSW+14B, Sems tapping screw			pc board ass'y
A30	27110560A	Front bracket ass'y	U6	1A215574-1A	NADIS-3874-1A, Display pc board
A31	28184394	Top cover			ass'y
A32	834430088	3TTS+8B(BC), Self-tapping screw	U7	1A215575-1A	NAAF-3875-1A, Volume pc board
A33	28140024	0.5t×10×390, Cushion			ass'y
A51	1A216121	Front panel ass'y	U8	1A215576-1A	NAAF-3876-1A, Preamplifier pc
A56	28191561A	Clear plate			board ass'y
A61	27175153-1	Leg	U9	1A215577-1	NADIS-3877-1, Volume indicator
A62	834430088	3TTS+8B(BC), Self-tapping screw			pc board ass'y
A81	28323365C	Knob VOLUME	U10	1A215578-1A	NAPS-3878-1A, Power supply
A82	28324034	Knob BALANCE			circuit pc board ass'y
A83	28322925	Knob SLIDE	U12	1A215580-1	NAETC-3880-1, AC outlet terminal
A91	870048	3 × 8 × t0.8, Washer, nylon			pc board ass'y
A92	27270212	Spacer			
F902	252075	2.5A-SE-EAK, Primary fuse			
F903	252075	2.5A-SE-EAK, AC outlet fuse			
P304	25060044	14×3mm, Terminal GROUND			
P901	253149 or	Δ AS-CEE, Power supply cord			
	253151				
Q521, Q522	2201653,	2SC3856(O),			
	2201654,	2SC3856(Y),			
	2201655,	2SC3856(P),			
	2202272 or	2SC3907(R) or			
	2202273	2SC3907(O), Power amplifier			
		transistors			

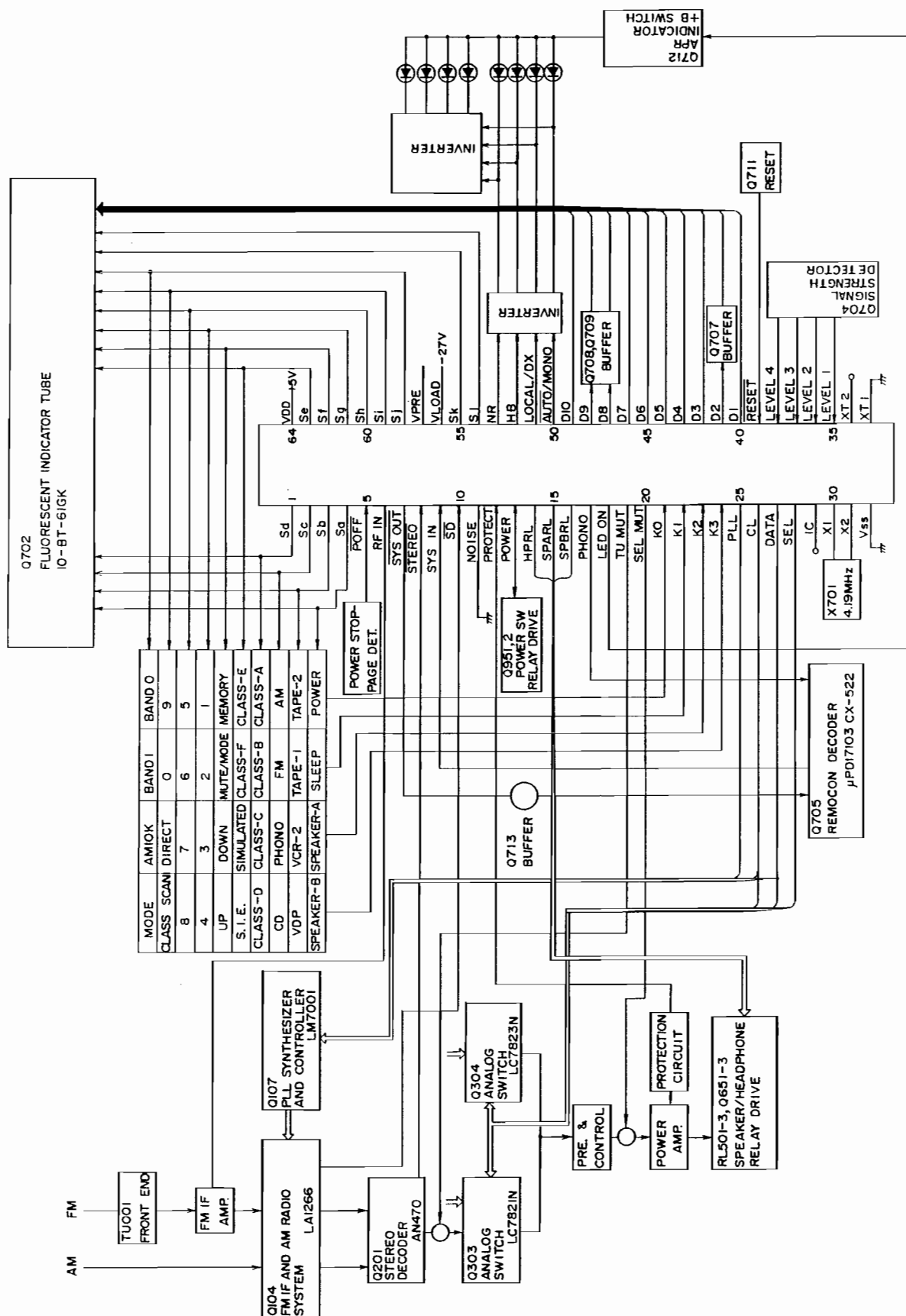
NOTE: THE COMPONENTS IDENTIFIED BY MARK Δ ARE CRITICAL FOR RISK OF FIRE AND ELECTRIC SHOCK. REPLACE ONLY WITH PARTS NUMBER SPECIFIED.

BLOCK DIAGRAM





CONNECTION DIAGRAM OF MICROPROCESSOR



Q701 μ PD75286CW-014 (MICROPROCESSOR)

Pin No.	Function	Description																																																								
1-4	Sd-Sa	Segment and key scan output terminals."H"when active.																																																								
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 Control the terminal LOCAL/DX as shown below. <table><tr><td>RF IN</td><td>LOCAL/DX</td></tr><tr><td>L</td><td>L</td></tr><tr><td>H</td><td>H</td></tr></table>	RF IN	LOCAL/DX	L	L	H	H																																																		
RF IN	LOCAL/DX																																																									
L	L																																																									
H	H																																																									
7	SYS OUT /SYS EN	System code output terminal."L"when active. The initial setting input terminal when the power turns on.																																																								
8	STEREO	Stereo broadcast detection input terminal."L"when stereo broadcast. Control of STEREO indicator.																																																								
9	SYS IN	System code input terminal."H"when active.																																																								
10	SD	Broadcast detection input terminal."L"when tuned. Control the stop of the auto tuning and the output TU MUT.																																																								
11	NOISE	Noise detection input terminal. "H" when active. Control the stop of the auto tuning.																																																								
12	PROTECT	Protect operation detection input terminal. "H"when active.																																																								
13	POWER	Relay control output terminal for power switch."H"when the power turns on.																																																								
14	HPRL	Relay control output terminal for headphone."H"when the relay turns on.																																																								
15	SPARL	Relay control output terminal for speaker A."H"when the relay turns on.																																																								
16	SPBRL	Relay control output terminal for speaker B."H"when the relay turns on.																																																								
17	PHONO	Phono control output terminal."L"when the selector switch is PHONO.																																																								
18	LED ON	APR indicator control output terminal. "L"when indicators light on.																																																								
19	TU MUT	Muting output terminal of tuner section. "H"when active.																																																								
20	SEL MUT	Muting output terminal when the selector switch operates."H"when active.																																																								
21-24	K0-K3	Key scan input terminals. "H"when active.																																																								
25	PLL	Output terminal to connect to the terminal CE of PLL IC(LM7001).																																																								
26	CL	Output terminal to connect to the terminal CL of function switches(LC7821N, LC7823N) and the terminal CL of PLL IC.																																																								
27	DATA	Output terminal to connect to the terminal DI of function switches(LC7821N, LC7823N) and the terminal DATA of PLL IC.																																																								
28	SEL	Output terminal to connect to the terminal CE of function switches.																																																								
29	IC	Internal connected																																																								
30	X1	Ceramic oscillator connection terminals for main system clock.																																																								
31	X2	Connect to the 4.19MHz ceramic oscillator.																																																								
32	GND	Ground terminal.																																																								
33	XT1	Crystal oscillator connection terminal for sub-system.																																																								
34	XT2	Not used.																																																								
35-38	LEVEL1- LEVEL4	Signal strength level input terminal. <table><tr><td></td><td></td><td colspan="4">Signal indicator</td><td colspan="2">Output</td></tr><tr><td></td><td>Input</td><td>1th</td><td>2nd</td><td>3th</td><td>4th</td><td>NR</td><td>HB</td></tr><tr><td>LEVEL 1</td><td>H</td><td>off</td><td>off</td><td>off</td><td>off</td><td>H</td><td>H</td></tr><tr><td>LEVEL 1</td><td>L</td><td>on</td><td>off</td><td>off</td><td>off</td><td>H</td><td>H</td></tr><tr><td>LEVEL 1/2</td><td>L</td><td>on</td><td>on</td><td>off</td><td>off</td><td>L</td><td>H</td></tr><tr><td>LEVEL 1-3</td><td>L</td><td>on</td><td>on</td><td>on</td><td>off</td><td>L</td><td>H</td></tr><tr><td>LEVEL 1-4</td><td>L</td><td>on</td><td>on</td><td>on</td><td>on</td><td>L</td><td>L</td></tr></table>			Signal indicator				Output			Input	1th	2nd	3th	4th	NR	HB	LEVEL 1	H	off	off	off	off	H	H	LEVEL 1	L	on	off	off	off	H	H	LEVEL 1/2	L	on	on	off	off	L	H	LEVEL 1-3	L	on	on	on	off	L	H	LEVEL 1-4	L	on	on	on	on	L	L
		Signal indicator				Output																																																				
	Input	1th	2nd	3th	4th	NR	HB																																																			
LEVEL 1	H	off	off	off	off	H	H																																																			
LEVEL 1	L	on	off	off	off	H	H																																																			
LEVEL 1/2	L	on	on	off	off	L	H																																																			
LEVEL 1-3	L	on	on	on	off	L	H																																																			
LEVEL 1-4	L	on	on	on	on	L	L																																																			
39	RESET	Reset input terminal."L"when active.																																																								
40-49	D1-D10	Digit output terminals."H"when active.																																																								

50	AUTO/MONO	AUTO/MONO indicator output terminal. "L" when FM mode is AUTO and "H" when FM mode is MONO.
51	LOCAL/DX	LOCAL/DX indicator output terminal. Control according input RF IN when FM.
52	HB	Hi-blend control and indicator output terminal. "H" when LEVEL4 is high and "L" when LEVEL4 is low.
53	NR	Noise reduction control and indicator output terminal. "H" when LEVEL2 is high and "L" when LEVEL2 is low.
54,55	Sl,Sk	Segment output terminal. "H" when active.
56	VLOAD	Pull down resistor connection terminal of FIP controller/driver.
57	VPRE	Power supply terminal for output buffer of FIP controller/driver.
58-63	Sj-Se	Segment and key scan signal output terminals. "H" when active.
64	VDD	Power supply terminal. (+5V)

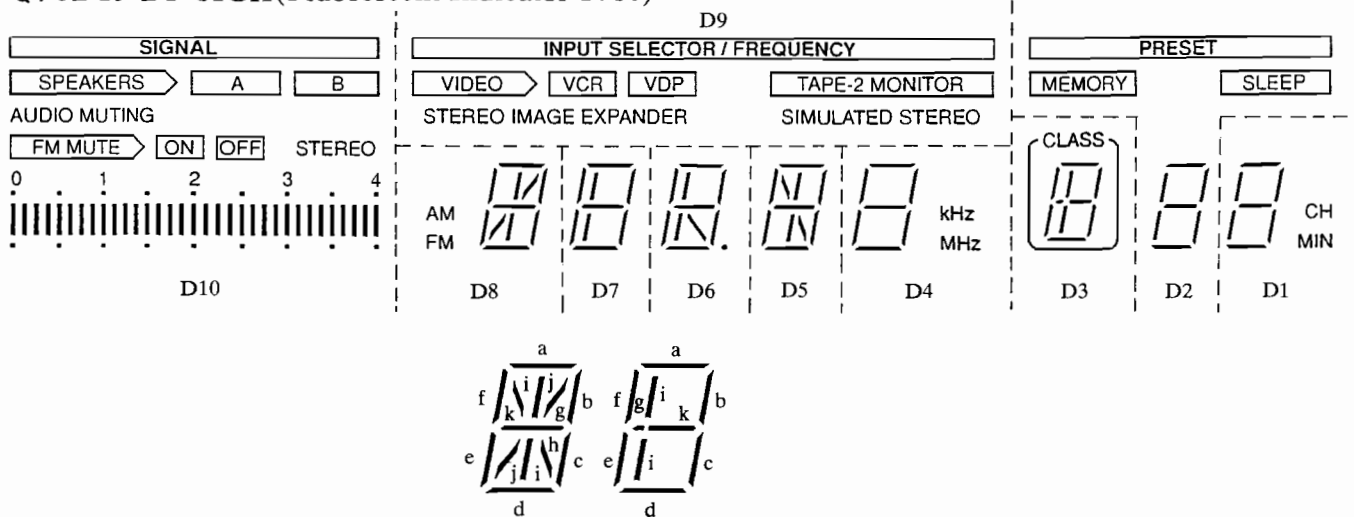
BAND1, BAND0 (FM band setting)

BAND1	BAND0	Region	Frequency range	Channel space	Reference frequency	IF frequency
0	1	Europe	87.50~108.00MHz	50kHz	25kHz	10.7MHz
0	0	U.S.A.	87.9 ~107.9 MHz	200kHz	25kHz	10.7MHz
1	X	Saudi Arabia	87.50~108.00MHz	50kHz	25kHz	10.7MHz

X: Don't care

AM10K

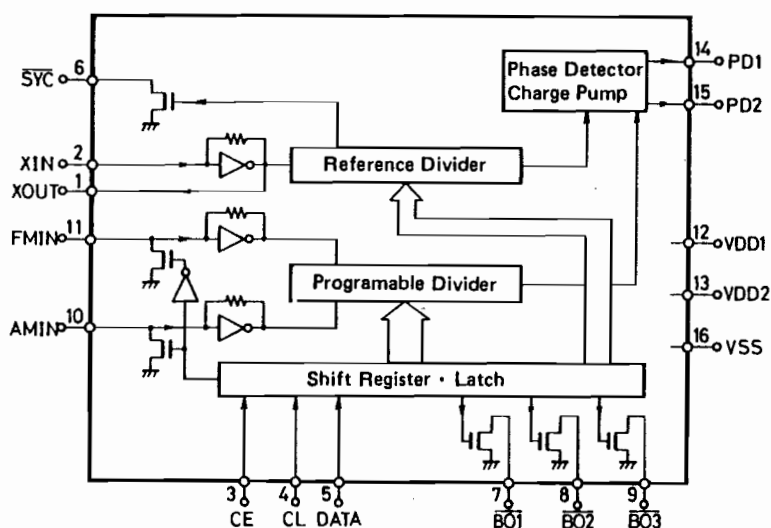
AM10K	Region	Frequency range	Channel space	Reference frequency	IF frequency
0	Europe	522~1611kHz	9kHz	9kHz	450kHz
1	U.S.A.	530~1710kHz	10kHz	10kHz	450kHz
0	Saudi Arabia	531~1602kHz	9kHz	9kHz	450kHz

Q702 10-BT-61GK (Fluorescent Indicator Tube)

	D10	D9	D8	D7	D6	D5	D4	D3	D2	D1
Sa	A	VIDEO	a	a	a	a	a	a	a	a
Sb	B	VCR	b	b	b	b	b	b	b	b
Sc	AUDIO MUT	VDP	c	c	c	c	c	c	c	c
Sd	STEREO	TAPE-2MONI	d	d	d	d	d	d	d	d
Se	II(LEVEL1)	SIMULATED	e	e	e	e	e	e	e	e
Sf	II(LEVEL2)	STEREO IM.	f	f	f	f	f	f	f	f
Sg	II(LEVEL3)		g	g	g	g	g	g	g	g
Sh	II(LEVEL4)				h	h				
Si	FM MUTE		i	i	i	i		i		
Sj	ON		j						MEMORY	
Sk	OFF		AM				kHz	k	SLEEP	CH
Sl	SIGNAL	INPUT SEL.	FM				MHz	CLASS	PRESET	MIN

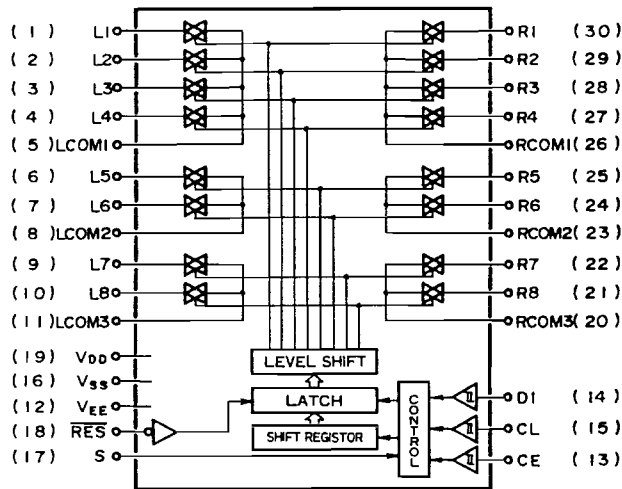
BLOCK DIAGRAMS OF IC

Q107 LM7001 (PLL SYNTHESIZER AND CONTROLLER)

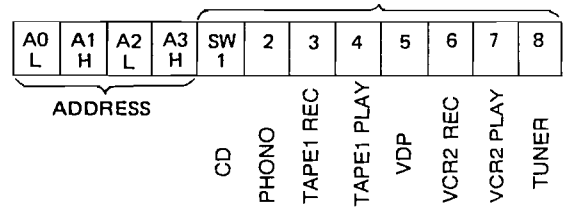


Pin No.	Terminal	Description
1	XOUT	Connect to the 7.2 MHz crystal oscillator.
2	XIN	
3	CE	Chip enable terminal. Connect to the PLL terminal of microprocessor μ PD75286CW-014.
4	CL	Serial clock input terminal. Connect to the CLOCK terminal of microprocessor μ PD75286CW-014.
5	DATA	Serial data input terminal. Connect to the DATA terminal of microprocessor μ PD75286CW-014.
6	$\overline{\text{SYN}}$	Not used.
7	$\overline{\text{BO1}}$	Auto/Mono control output terminal. "L" when Auto.
8	$\overline{\text{BO2}}$	FM control signal output terminal. "L" when FM.
9	$\overline{\text{BO3}}$	AM control signal output terminal. "L" when AM.
10	AMIN	AM local oscillator input terminal.
11	FMIN	FM local oscillator terminal.
12	VDD 1	Power supply terminal for back-up.
13	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.

Q303 LC7821N (Analog switch)



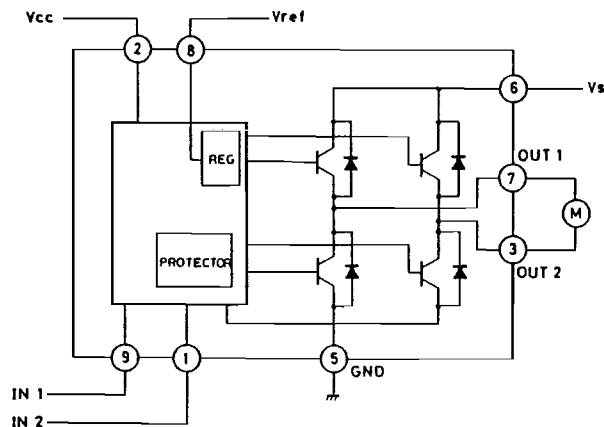
DATA composition



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

Pin No.	Terminal	Description	Pin No.	Terminal	Description
1	CD	Input/output terminals of audio signal of left channel. Control to the inside analog switch at the serial data.	16	Vss	Ground terminal.
2	PHONO		17	S	Selector terminal.
3	TAPE 1 REC		18	RES	Reset terminal. When power is turned ON, the condition of the analog switch is not determined, but when this terminal is "L", all analog switches are OFF.
4	TAPE 1 PLAY		19	VDD	Power supply terminal. (+15V)
5	L COM 1		20	R COM 3	Input/output terminals of audio signal of right channel. Control to the inside analog switch at the serial data.
6	VDP		21	TUNER	
7	VCR 2 REC		22	VCR 2 PLAY	
8	L COM 2		23	R COM 2	
9	VCR 2 PLAY		24	VCR 2 REC	
10	TUNER		25	VDP	
11	L COM 3		26	R COM 1	
12	Vss	Negative power supply terminal. (-15V)	27	TAPE 1 PLAY	
13	CE	Chip enable terminal. Connect to SEL terminal of microprocessor.	28	TAPE 1 REC	
14	D1	Serial data input terminal. Connect to DATA terminal of microprocessor.	29	PHONO	
15	CL	Serial clock input terminal. Connect to CLOCK terminal of microprocessor.	30	CD	

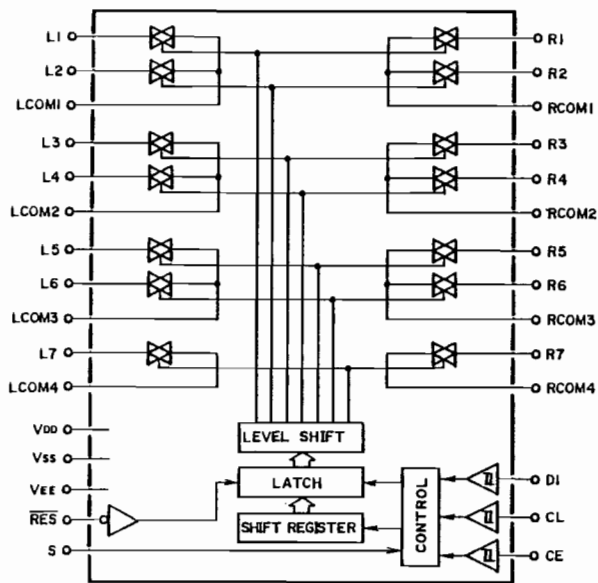
Q871 TA7291S (Volume Motor Drive)



INPUT		OUTPUT		MODE
IN 1	IN 2	OUT 1	OUT 2	
0	0	∞	∞	STOP
1	0	H	L	CW/CCW
0	1	L	H	CCW/CW
1	1	L	L	BRAKE

CCW: Counter clockwise direction
CW: Clockwise direction

Q304 LC7823N (ANALOG SWITCH)



DATA composition

Switch

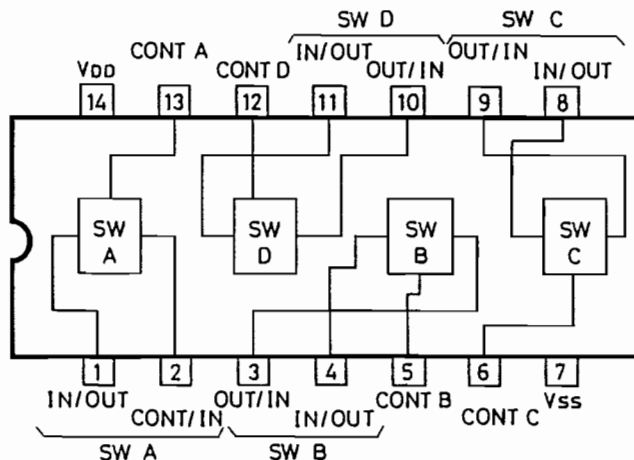
A0	A1	A2	A3	SW 1	2	3	4	5	6	7	8
L	H	H	H	1							
ADDRESS				TAPE 2 REC	TAPE 2 PB	VDP	VCR 2	SIMULATED	SIMULATED	S.I.E.	

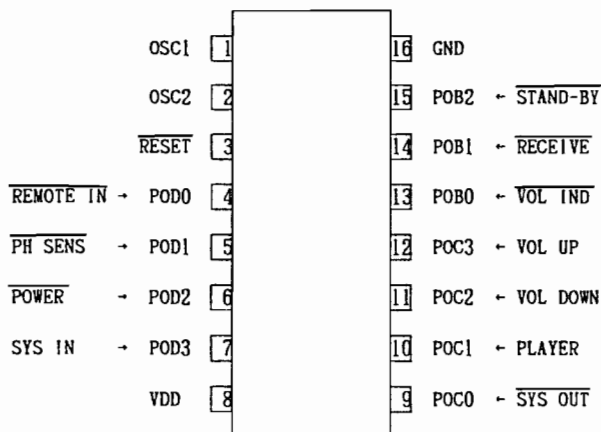
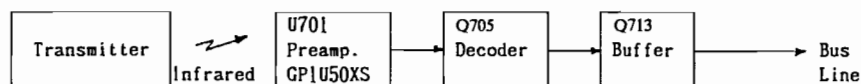
The source becomes ON when the bit of switch becomes high.

S. I. E. = Stereo Image Expander

Pin No.	Terminal	Description	Pin No.	Terminal	Description
1 (L1)	TAPE 2 REC	Input/output terminals of audio signal of left channel. Control to the inside analog switch at the serial data.	16	Vss	Ground terminal.
2 (L2)	TAPE 2 PB		17	S	Selector terminal.
3	L COM 1		18	RES	Reset terminal. When power is turned ON, the condition of the analog switch is not determined, but when this terminal is "L", all analog switches are OFF.
4 (L3)	VDP		19	VDD	Power supply terminal. (+15V)
5 (L4)	VCR 2		20	R COM 4	Input/output terminals of audio signal of right channel. Control to the inside analog switch at the serial data.
6	L COM 2		21 (R7)	S.I.E.	
7 (L5)	SIMULATED		22	R COM 3	
8 (L6)	SIMULATED		23 (R6)	SIMULATED	
9	L COM 3		24 (R5)	SIMULATED	
10 (L7)	S.I.E.		25	R COM 2	
11	L COM 4		26 (R4)	VCR 2	
12	VEE	Negative power supply terminal. (-15V)	27 (R3)	VDP	
13	CE	Chip enable terminal. Connect to SEL terminal of microprocessor.	28	R COM 1	
14	DI	Serial data input terminal. Connect to DATA terminal of microprocessor.	29 (R2)	TAPE 2 PB	
15	CL	Serial clock input terminal. Connect to CLOCK terminal of microprocessor.	30 (R1)	TAPE 2 REC	

Q251 4066B (ANALOG SWITCH)

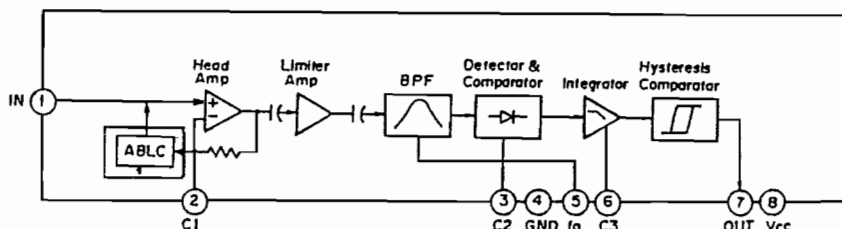


Q705 μ PD17103CX-51 (Remote Control Transmitter Decoder)

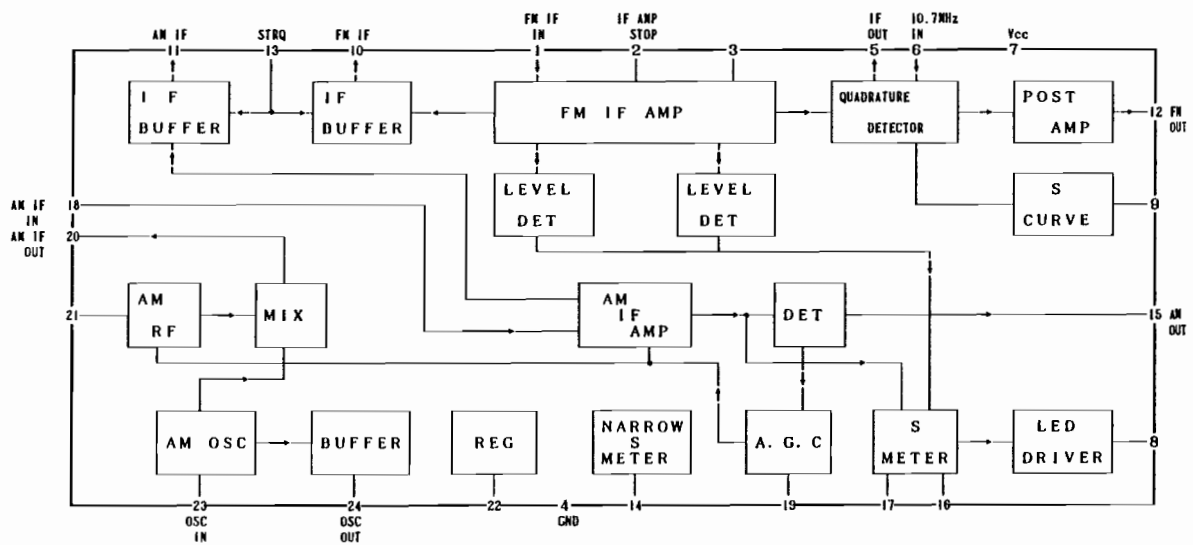
Pin No.	Symbol	Terminal	Description
1	OSC1	OSC	Connect to the 8.00MHz ceramic oscillator.
2	OSC2		
3	RES	RESET	System reset terminal. Active low.
4	POD0	REMOTE IN	Signal input terminal from preamp. for remote control. Active low.
5	POD1	PHONO SENSES	Phono detection input terminal. Active low.
6	POD2	POWER	Stand-by detection input terminal. During low input, only the POWER code is decoded.
7	POD3	SYS IN	System code input terminal.
8	V _{DD}	+B	Power supply terminal.
9	POC0	SYS OUT	Output at this terminal are the custom code (16bits) remote control code input to REMOTE IN, data code (8bits), and the serial code (12bits) that has been converted corresponding to the decoded data code (8bits)
10	POC1	PLAYER	When the player PLAY/REEJECT is input, a high pulse of 200ms is output.
11	POC2	VOL DOWN	When the volume DOWN code is input, a high pulse of 120ms is output.
12	POC3	VOL UP	When the volume UP code is input, a high pulse of 120ms is output.
13	POB0	VOL IND	During the output of VOLUME UP/DOWN, a pulse ($\sqrt{T} \sqrt{T} \sqrt{T} \sqrt{T}$ = 250ms) is output. (Not used.)
14	POB1	RECEIVE	This is the display output for remote control reception. Output is low when decoded code is being recieved.
15	POB2	STAND-BY	STAND-BY indication terminal.
16	V _{SS}	GND	Ground terminal.

Q282 XC20106A (REMOTE CONTROL PREAMPLIFIER)

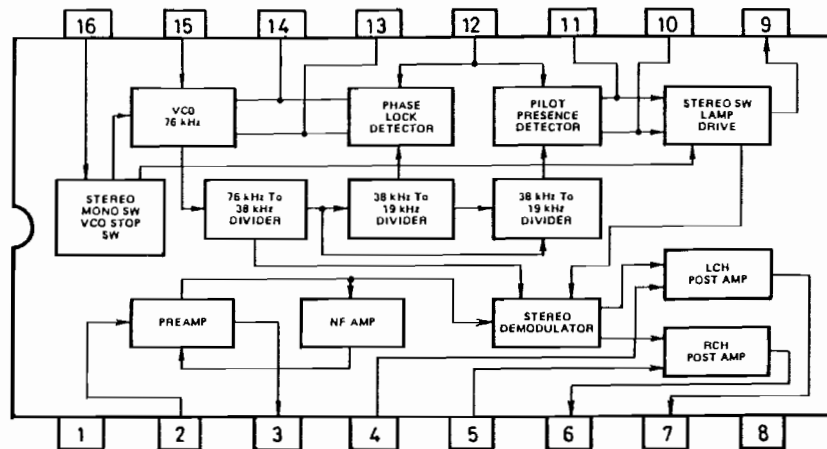
1. IN: Input terminal
2. C1: Frequency response and gain setting terminal of head amplifier
3. C2: Connect to the capacitor for detector
4. GND: Ground terminal
5. fo: Center frequency setting terminal of BPF
6. C3: Connect to the capacitor for integrator
7. OUT: Output terminal
8. V_{CC}: Power supply terminal



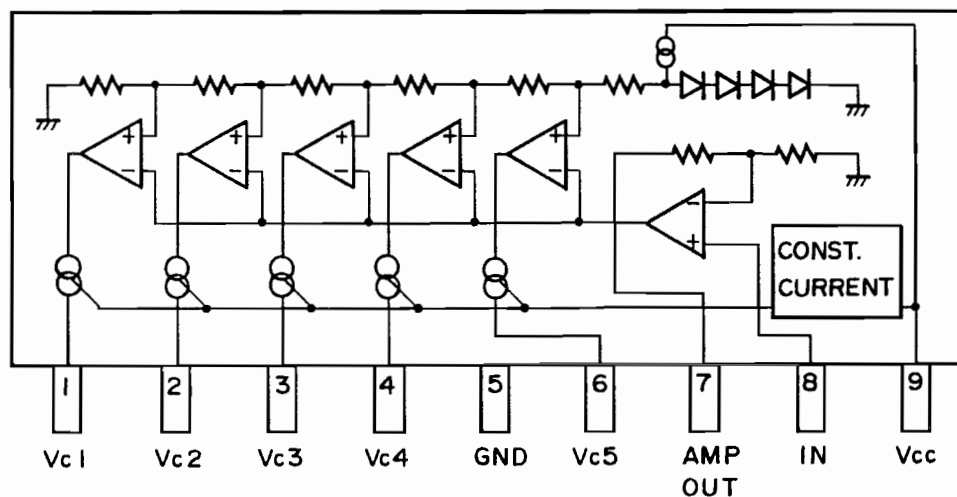
Q104 LA1266 (FM IF and AM Radio System)



Q201 AN7470 (FM Stereo Decoder)



Q704 BA6125 (Signal Strength Detector)



ADJUSTMENT PROCEDURES

Preparation

• Input

FM mono: 1kHz, 75kHz devi., 60dB/μV

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

TAPE MONITOR	SOURCE
VOLUME	Maximum
BASS/TREBLE/BALANCE	Center
VCR 2 MODE.	STEREO
SPEAKER	A
SIMULATED STEREO	OFF
DYNAMIC BASS EXPANDER	OFF
STEREO IMAGE EXPANDER	OFF
SELECTIVE TONE CONTROL	OFF

Amplifier section

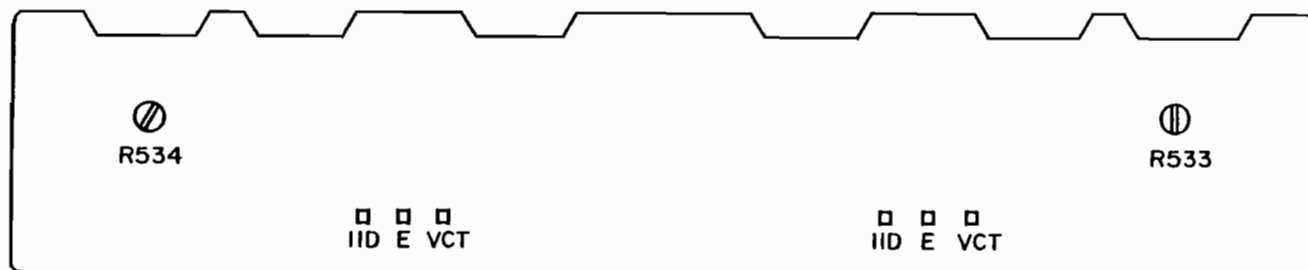
1. Idling current adjustment

Connect the DC voltmeter to the terminals IID and VCT on the power amplifier pc board.

Adjust the semi-fixed resistors R533 and R534 so that the indication of voltmeter is $7.5 \pm 1.5\text{mV}$.

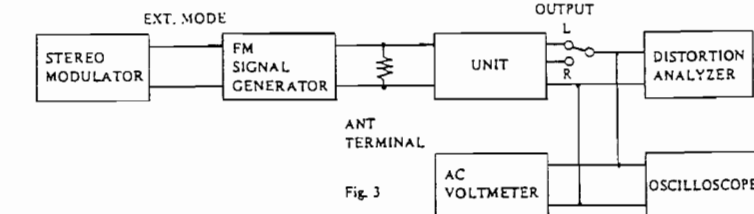
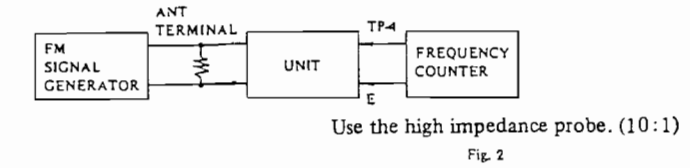
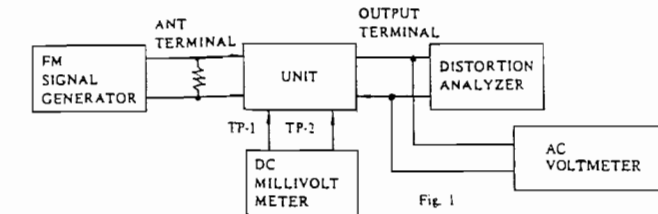
Notes: VOLUME Maximum, Open load, No input

Adjust after switching on for 5 minutes.



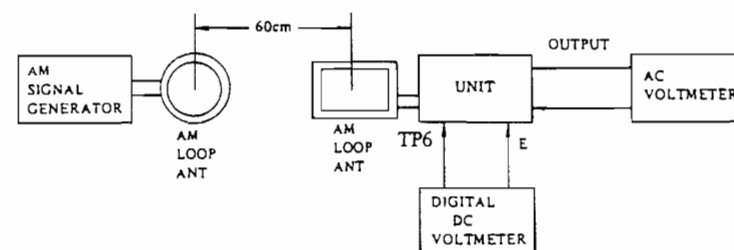
FM section

Item	Step	Connection of instrument	FM SG output	Stereo modulator output	Turning dial setting	Output indicator	Adjustment	Adjust for	Remarks
FM IF	1	Fig. 1	99.1MHz 1kHz, 75kHz devi. 65dBf (60dB)	—	99.1MHz	DC voltmeter	L101	$0V \pm 20mV$	Mode switch: MONO Repeat the steps 1 and 2 until no further adjustment is necessary
	2					Distortion analyzer	L102	Minimum	
VCO		Fig. 2	99.1MHz 1kHz, 75kHz devi. 65dBf (60dB)	—	99.1MHz	Frequency counter	R201	$19kHz \pm 10Hz$	
Stereo Distortion		Fig. 3	99.1MHz 65dBf (60dB) Ext. modulation	L or Rch. 1kHz	99.1MHz	Distortion analyzer	IF on the front end	Minimum	Mode switch: STEREO Don't turn more than $\pm 180^\circ$
Stereo Separation	1	Fig. 3	99.1MHz 65dBf (60dB) Ext. modulation	Lch. 1kHz	99.1MHz	Rch. AC voltmeter	R202	Minimum	Maximum and same separation
	2			Rch. 1kHz		Lch. AC voltmeter		Minimum	
Muting level		Fig. 3	99.1MHz 17.2dBf (12dB) 1kHz, 75kHz devi.	—	99.1MHz	AUTO indicator	R101	Light on	
Signal level		Fig. 3	99.1MHz 35.2dBf (30dB) 1kHz 75kHz devi.	—	99.1MHz	4th indicator of signal strength	R102	Light on	



AM section

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

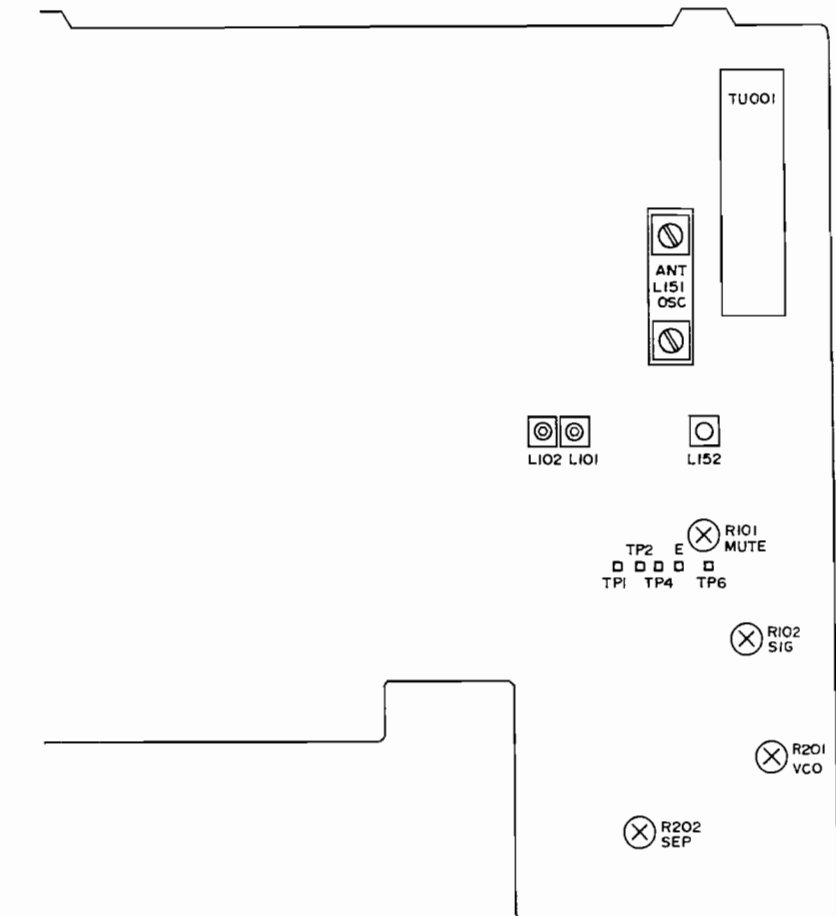


Reference specifications

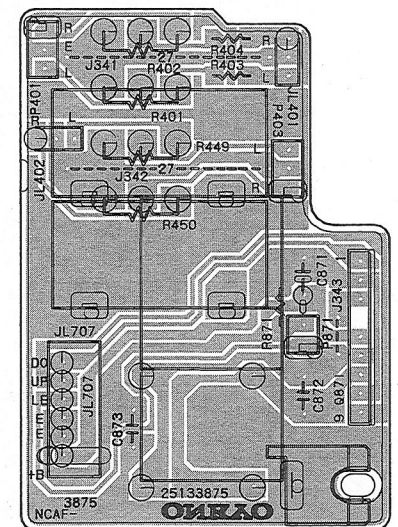
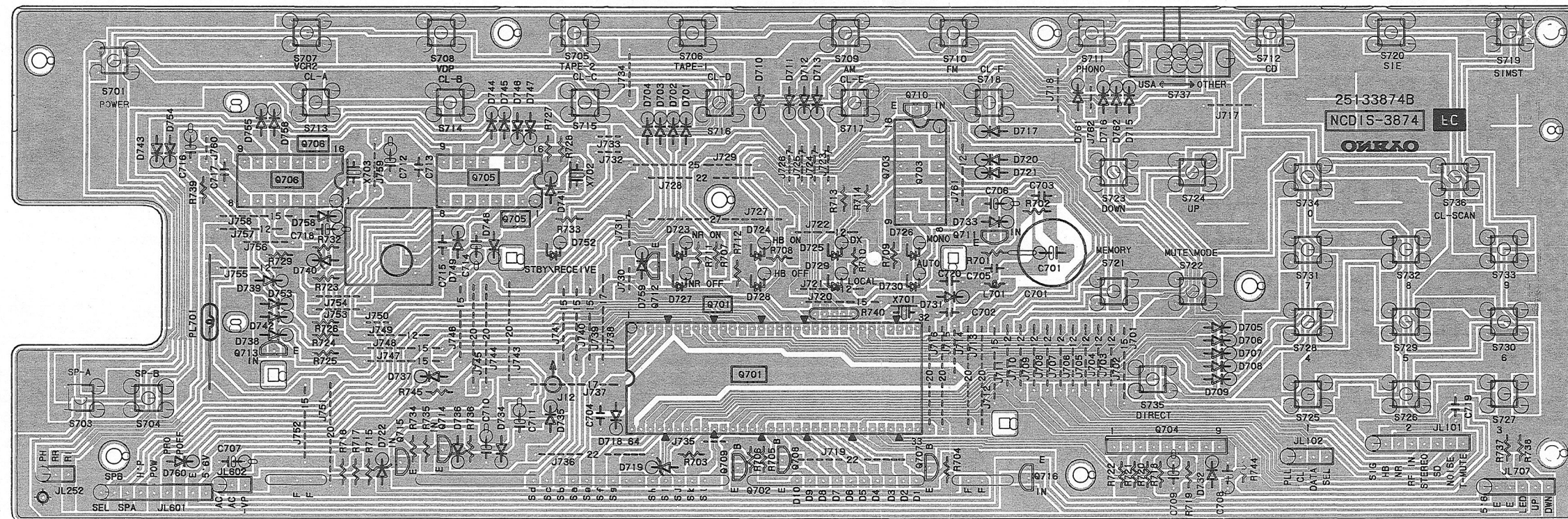
FM Tuned voltage
87.5MHz $1.6 \pm 0.5V$
108.0MHz $7.9 \pm 0.5V$

Auto stop level
AM: Less than 66dB/m
FM: Less than 19dB μ

AM Tuned voltage
522kHz $1.2 \pm 0.5V$
1611kHz $7.0 \pm 0.5V$



PRINTED CIRCUIT BOARD VIEW FROM BOTTOM SIDE



VOLUME PC BOARD

DISPLAY PC BOARD

PRINTED CIRCUIT BOARD PARTS LIST

DISPLAY PC BOARD(NADIS-3874-1A)

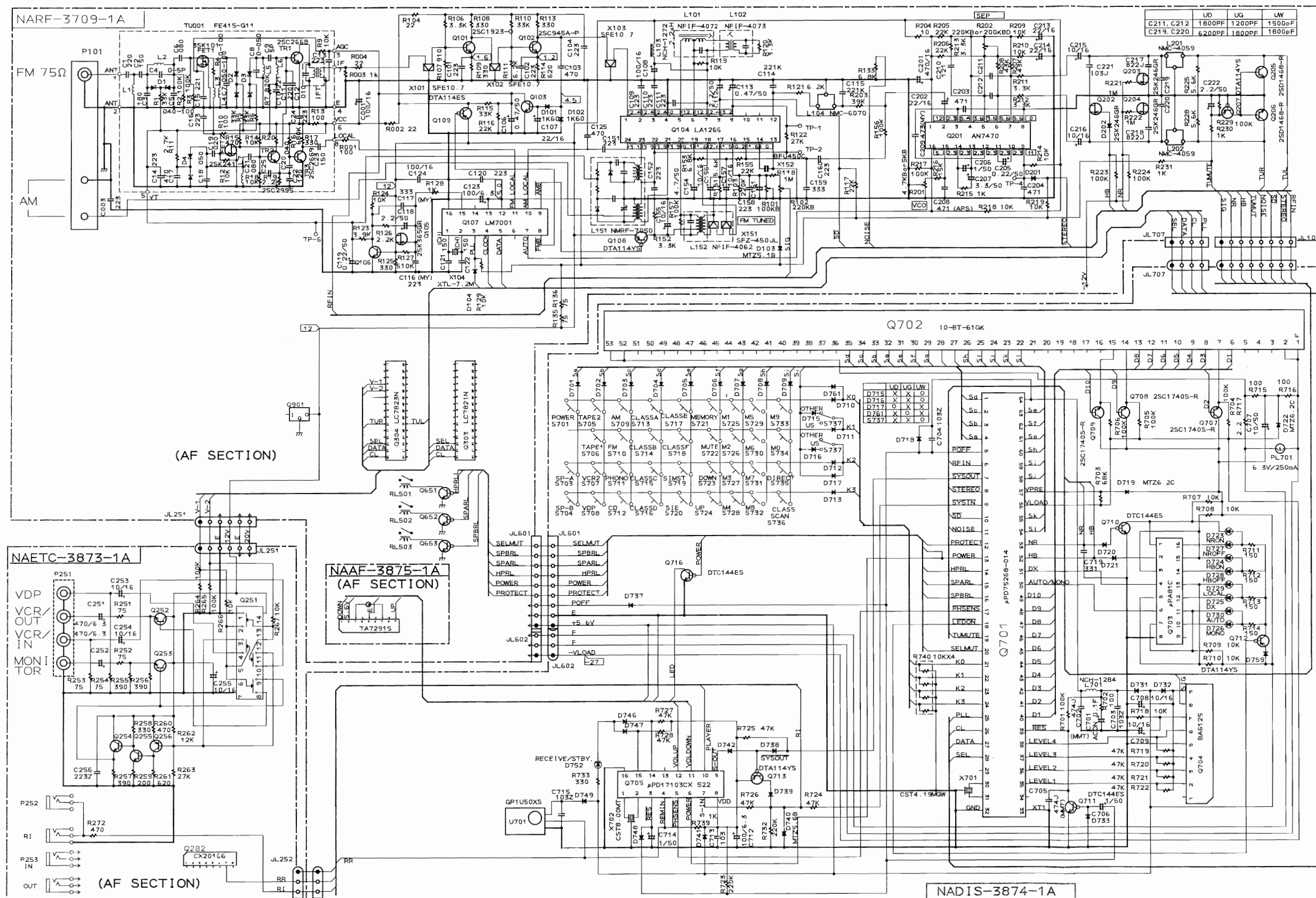
CIRCUIT NO.	PART NO.	DESCRIPTION	CIRCUIT NO.	PART NO.	DESCRIPTION
	Remocon sensor				
U701	24130003	GP1U50XS	D731-D733	223163	1SS133
	ICs		D737-D739	223163	1SS133
Q701	22240337	μ PD75286CW-014	D740	224450562	MTZ5.6B
Q703	222807	μ PA81C	D741, D742	223163	1SS133
Q704	22240341	BA6125	D746-D749	223163	1SS133
Q705	22240338	μ PD17103CX-522	D759, D760	223163	1SS133
	FL tube		D761	223163	1SS133
Q702	212083	10-BT-61GK		L.E.Ds	
	Transistors		D723-D726	225142	SEL2913K
Q707-Q709	2213284	2SC1740S-R	D727-D730	225137CG,	SEL2413E-CG
Q710, Q711	221282	DTC144ES		225137DG or	SEL2413E-DG or
Q712	2213710	DTA123JS		225137DY	SEL2413E-DY
Q713	2213510	DTA114ES		225141	SEL2213C
Q716	221282	DTC144ES		Coil	
	Lamp		L701	233409K220	NCH-1284
PL701	210064B	250mA, 6.3V		Ceraic oscillators	
	Diodes		X701	3010163	CST4.19MGW
D701-D713	223163	1SS133	X702	3010154	CST8.00MT
D718	223163	1SS133		Capacitors	
D719	224450623	MTZ6.2C	C701	3000057	0.1F, 5.5V, Super
D720, D721	223163	1SS133	C702, C705	375524744	0.47 μ F $\pm$ 5%, 50V, MMT
D722	224450623	MTZ6.2C	C706	353780109	1 μ F, 50V, Elect.
			C707	353781009	10 μ F, 50V, Elect.
			C708, C709	353741009	10 μ F, 16V, Elect.
			C712	353721019	100 μ F, 6.3V, Elect.

CIRCUIT NO.	PART NO.	DESCRIPTION
C714	353780109	1 μ F, 50V, Elect.
	Resistor	
R740	49163103404	10k $\times$ 4, 1/10W, Network
	Switches	
S701	25035548	NPS-111-S510, Push
S703-S736	25035548	NPS-111-S510, Push
	Holder	
	27190768	L.E.D

VOLUME PC BOARD(NAAF-3875-1A)

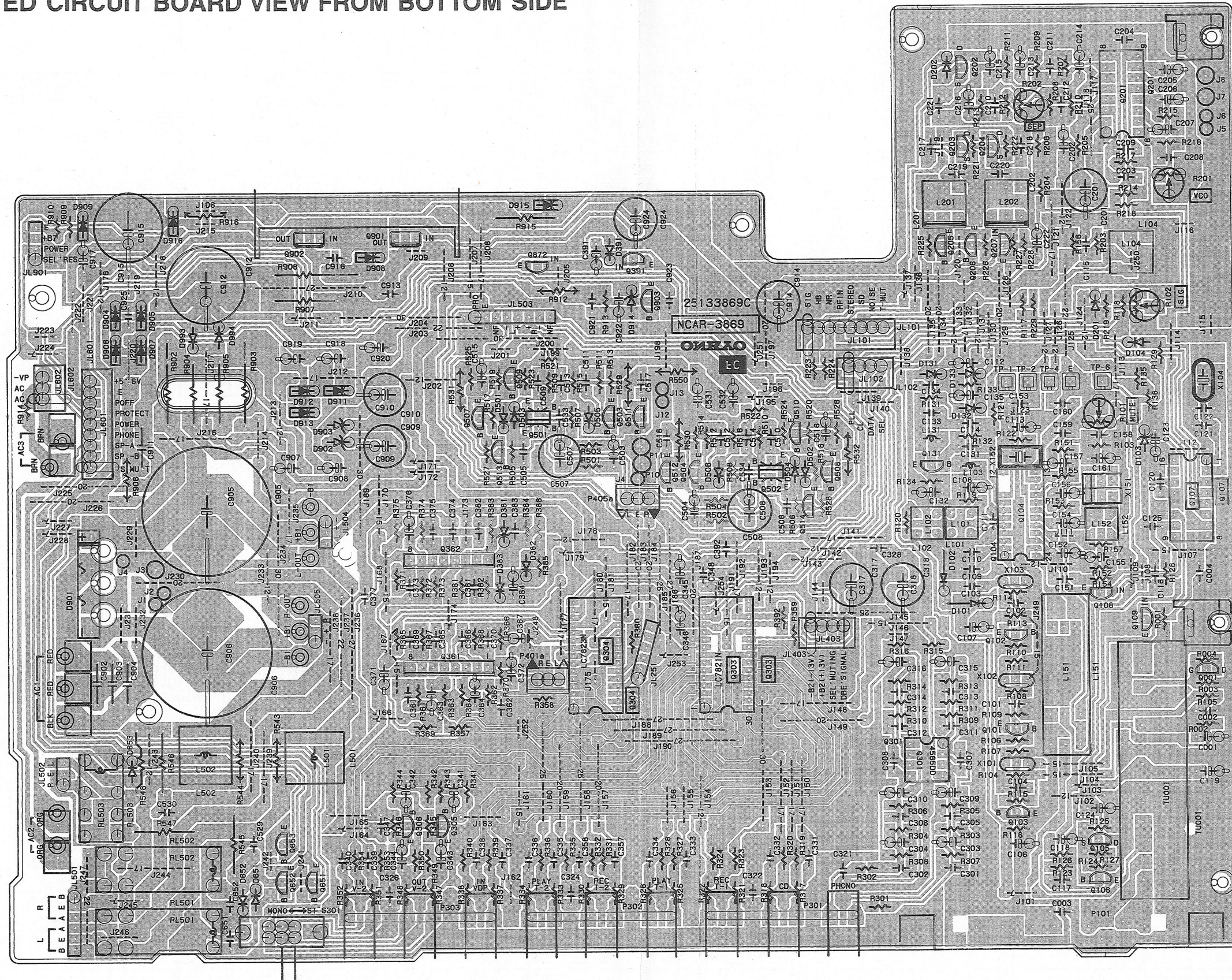
CIRCUIT NO.	PART NO.	DESCRIPTION
Q871	22240239	TA7291S, IC
C871	354721019	100 μ F, 6.3V, Elect. capacitor
R401, R402	5144009C	N16RGM50KA50KB30F,
R449, R450		Variable resistor
P401	2000809	NSAS-6P765, Socket
P403	2000624	NSAS-6P580, Socket
P871	2000635A	NSAS-4P591, Socket
	27141059	Bracket, ground

SCHEMATIC DIAGRAM - TUNER SECTION -



ONKYO CORPORATION

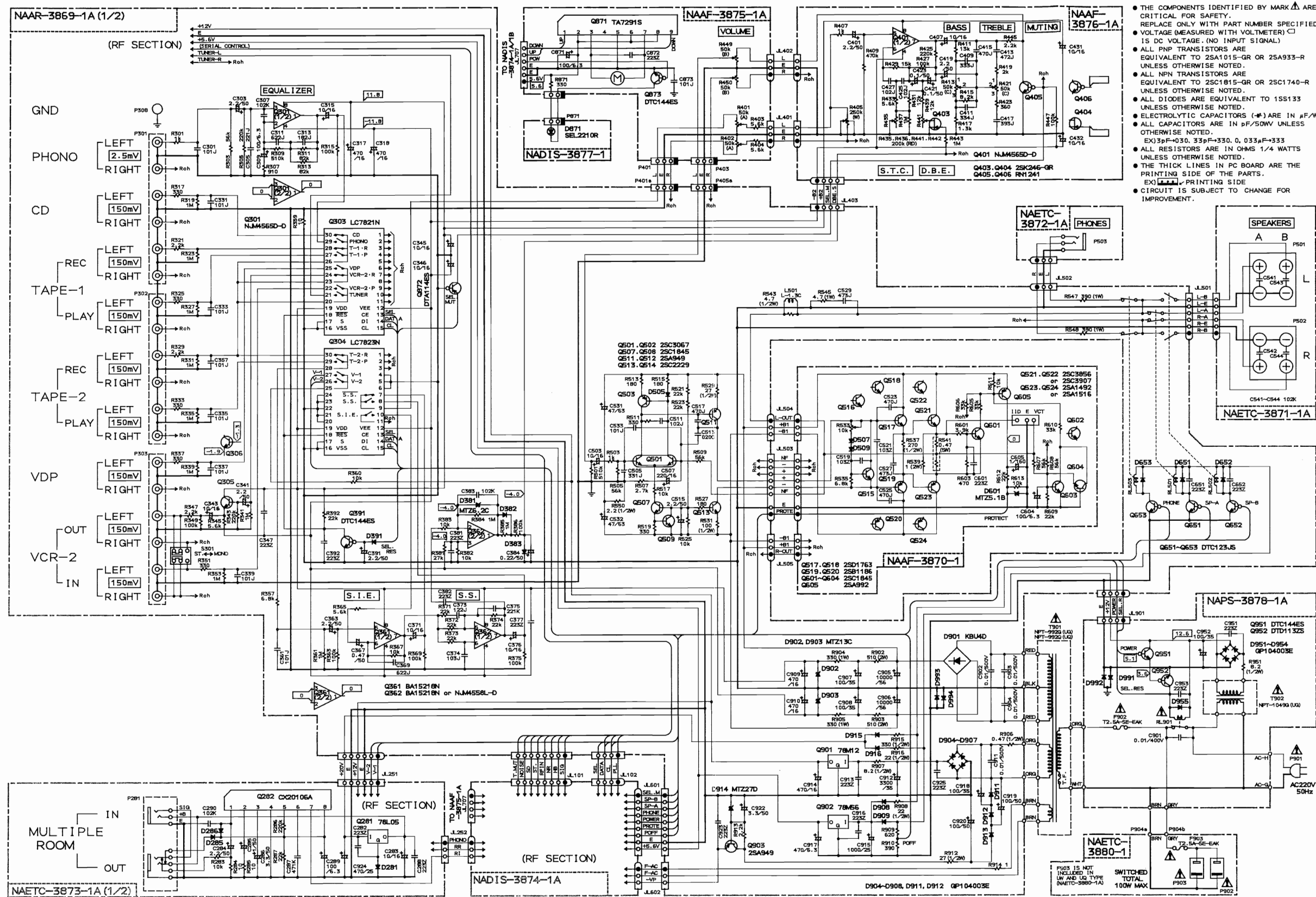
PRINTED CIRCUIT BOARD VIEW FROM BOTTOM SIDE



FM/AM TUNER AND SELECTOR CIRCUIT PC BOARD

SCHEMATIC DIAGRAM

- AMPLIFIER SECTION -



PRINTED CIRCUIT BOARD PARTS LIST

FM/AM TUNER AND SELECTOR CIRCUIT PC BOARD
(NAAR-3869-1A)

CIRCUIT NO.	PART NO.	DESCRIPTION
TU001	Front end	
	240089	FE415-G11
	ICs	
Q104	22240039	LA1266
Q107	22240090	LM7001
Q201	22240242	AN7470
Q301	22240191	NJM4565D-D
Q303	22240280	LC7821N
Q304	22240339	LC7823N
Q361	22240247	BA15218N
Q362	22240247 or 22240293	BA15218N or NJM4558L-D
Q901	222780122NEC	78M12
Q902	222780565JRC	78M56
Q101	Transistors	
	2211723	2SC1923-O
	2210746	2SC945A-P
Q102	2211183 or	2SC1740-R or
Q103, Q106	2211255	2SC1815-GR
Q105	2212445	2SK365-GR
Q108, Q109	2213510	DTA114ES
Q202-Q204	2211945	2SK246-GR
Q205, Q206	2212794	2SD1468-R
Q207	2213510	DTA114ES
Q305, Q306	2211183 or	2SC1740-R or
Q391	2211255	2SC1815-GR
	221282	DTC144ES
	2213676 or	2SC3067-F or
Q501, Q502	2213677	2SC3067-G
Q503, Q504	2213074 or	2SA933-R or
	2211455	2SA1015-GR
	2211732 or	2SC1845-F or
Q507, Q508	2211733	2SC1845-E
Q509, Q510	2211183 or	2SC1740-R or
	2211255	2SC1815-GR
	2211353 or	2SA949-O or
Q511, Q512	2211354	2SA949-Y
Q513, Q514	2211633 or	2SC2229-O or
	2211634	2SC2229-Y
	2213640	DTC123JS
Q651-Q653	2213510	DTA114ES
Q872	2213510	DTA114ES
Q903	2211353 or	2SA949-O or
D101, D102	2211354	2SA949-Y
	Diodes	
	223132	1K60
D103	224450512	MTZ5.1B
D104	223163	1SS133
D201, D202	223163	1SS133
D381	224450623	MTZ6.2C
D382, D383	223163	1SS133
D391	223163	1SS133
D505, D506	223163	1SS133
D651-D653	223163	1SS133
D901	22380024	KBU4D
D902, D903	224451303	MTZ13C
D904-D908	22380035	GP104003E
D909, D913	223163	1SS133
D911, D912	22380035	GP104003E
D914	224452704	MTZ27D
D915, D916	223163	1SS133
D993, D994	223163	1SS133
L101	Transformers	
	233401	NF1F-4072
	233402	NF1F-4073

CIRCUIT NO.	PART NO.	DESCRIPTION
L104	233383	NMC-6070
L152	232139	NMIF-4062
L103	Coils	
	233409M022	NCH-1272
	233355A	NMC-4059
L201, L202	231176	S-1.3C
L501, L502	RF block	
L151	232148	NMRF-7050
	Ceramic filters	
	3010137	SFE10.7MMK
X101-X103	3010123	SFZ-450JL
X151	3010076	BFU-450C
X152	X'tal	
X104	3010141	XTL-7.2M
	Capacitors	
	354741019	100 μ F, 16V, Elect.
C001, C108	354784799	0.47 μ F, 50V, Elect.
C106	354742209	22 μ F, 16V, Elect.
C107	391980227	2.2 μ F, 50V, Elect. (RA2)
C112	354784799	0.47 μ F, 50V, Elect.
C113	371122234	0.022 μ F $\pm$ 5%, 50V, Mylar
C116	371123334	0.033 μ F $\pm$ 5%, 50V, Mylar
C117	391980227	2.2 μ F, 50V, Elect. (RA2)
C118	354782299	0.22 μ F, 50V, Elect.
C119	391921017	100 μ F, 6.3V, Elect. (RA2)
C123	354741019	100 μ F, 16V, Elect.
C124	354780479	4.7 μ F, 50V, Elect.
C154	391941007	10 μ F, 16V, Elect. (RA2)
C155-C157	371123334	0.033 μ F $\pm$ 5%, 50V, Mylar
C159	371122234	0.022 μ F $\pm$ 5%, 50V, Mylar
C160	354744719	470 μ F, 16V, Elect.
C201	354742209	22 μ F, 16V, Elect.
C202	354782299	0.22 μ F, 50V, Elect.
C205	354780109	1 μ F, 50V, Elect.
C206	354780339	3.3 μ F, 50V, Elect.
C207	370134714	470pF $\pm$ 5%, 100V, APS
C208	374724734	0.047 μ F $\pm$ 5%, 50V, Plastic(TF)
C209	374721224	1200pF $\pm$ 5%, 50V, Plastic(TF)
C211, C212	354742209	22 μ F, 16V, Elect.
C213, C214	391941007	10 μ F, 16V, Elect. (RA2)
C215, C216	371128224	8200pF $\pm$ 5%, 50V, Mylar
C217, C218	374721824	1800pF $\pm$ 5%, 50V, Plastic(TF)
C219, C220	374721034	0.01 μ F $\pm$ 5%, 50V, Plastic(TF)
C221	391980227	2.2 μ F, 50V, Elect. (RA2)
C222	391980227	2.2 μ F, 50V, Elect. (RA2)
C303, C304	373302214	220pF $\pm$ 5%, 125V, PP
C305, C306	373301024	1000pF $\pm$ 5%, 125V, PP
C307, C308	391921017	100 μ F, 6.3V, Elect. (RA2)
C309, C310	374726224	6200pF $\pm$ 5%, 50V, Plastic(TF)
C311, C312	374721824	1800pF $\pm$ 5%, 50V, Plastic(TF)
C313, C314	391941007	10 μ F, 16V, Elect. (RA2)
C315, C316	354744719	470 μ F, 16V, Elect.
C317, C318	373301014	100pF $\pm$ 5%, 125V, PP
C331, C332	391980227	2.2 μ F, 50V, Elect. (RA2)
C341, C342	391941007	10 μ F, 16V, Elect. (RA2)
C343-C346	391980227	2.2 μ F, 50V, Elect. (RA2)
C363, C364	354784799	0.47 μ F, 50V, Elect.
C367		

CIRCUIT NO.	PART NO.	DESCRIPTION
C369, C370	374726224	6200pF $\pm$ 5%, 50V, Plastic(TF)
C371, C372	391941007	10 μ F, 16V, Elect. (RA2)
C373	374721224	1200pF $\pm$ 5%, 50V, Plastic(TF)
C374	374721034	0.01 μ F $\pm$ 5%, 50V, Plastic(TF)
C376	391941007	10 μ F, 16V, Elect. (RA2)
C377	374724734	0.047 μ F $\pm$ 5%, 50V, Plastic(TF)
C384	354782299	0.22 μ F, 50V, Elect.
C391	391980227	2.2 μ F, 50V, Elect. (RA2)
C503, C504	391941007	10 μ F, 16V, Elect. (RA2)
C505, C506	373303314	330pF $\pm$ 5%, 125V, PP
C507, C508	354742219	220 μ F, 16V, Elect.
C515, C516	391980227	2.2 μ F, 50V, Elect. (RA2)
C529, C530	374724734	0.047 μ F $\pm$ 5%, 50V, Plastic(TF)
C531, C532	354774709	47 μ F, 63V, Elect.
C533, C534	373301014	100pF $\pm$ 5%, 125V, PP
C651, C652	374724734	0.047 μ F $\pm$ 5%, 50V, Plastic(TF)
C905, C906	3504238	1, 0000 μ F, 56V, Elect.
C907, C908	354761019	100 μ F, 35V, Elect.
C909, C910	354744719	470 μ F, 16V, Elect.
C912	354763329	3300 μ F, 35V, Elect.
C914	354744719	470 μ F, 16V, Elect.
C915	354751029	1000 μ F, 25V, Elect.
C917	354724719	470 μ F, 6.3V, Elect.
C918	354761019	100 μ F, 35V, Elect.
C919, C920	354781019	100 μ F, 50V, Elect.
C922	354780339	3.3 μ F, 50V, Elect.
C924	354754719	470 μ F, 25V, Elect.
R101	Resistors	
	5210221 or	N06HR100KBD
	5210070	Semi-fixed
R102, R202	5210072 or	N06HR220KBD or
	5210222	N06HR200KBD, Semi-fixed
	5210216 or	N06HR5KBD or
R201	5210062	N06HR4.7KBD, Semi-fixed
	442522704	27ohm, 1/2W, Metal oxide film
	442521014	100ohm, 1/2W, Metal oxide film
R529, R530	442520474	4.7ohm, 1/2W, Metal oxide film
R531, R532	441620474	4.7ohm, 1W, Metal oxide film
R543, R544	441623914	390ohm, 1W, Metal oxide film
R545, R546	442520224	2.2ohm, 1/2W, Metal oxide film
R547, R548	441725114	510ohm, 2W, Metal oxide film
R550	441623314	330ohm, 1W, Metal oxide film
R902, R903	442524794	0.47ohm, 1/2W, Metal oxide film
R904, R905	442520824	8.2ohm, 1/2W, Metal oxide film
R906	442522204	22ohm, 1/2W, Metal oxide film
R907	442522704	27ohm, 1/2W, Metal oxide film
R908	442523314	330ohm, 1/2W, Metal oxide film
R912	442522204	22ohm, 1/2W, Metal oxide film
R915	442523314	330ohm, 1/2W, Metal oxide film
R916	442522204	22ohm, 1/2W, Metal oxide film
S301	Switch	
	25065286	NSS-22112, Slide, VCR-2
	Relaies	
RL501, RL502	25065339	NRL-2P5A-DC24-046, Speaker
	25065342	NRL-2P1.25A-DC24-048, Headphone
	RL503	
P101	Terminals	
	25060087	NTM-2PDMN31, Antenna
	25045252	NPJ-6PDBL124
P301	25045213	NPJ-6PDBL92
P302, P303		

CIRCUIT NO.	PART NO.	DESCRIPTION
P401a, P405a	Plugs	
	25055133	NPLG-3P117
	Sockets	
JL101	25050272	NSCT-8P100
JL102, JL403	25050268	NSCT-4P96
JL601	25050273	NSCT-9P101
JL602	25050267	NSCT-3P95
Q901a	Radiators	
	27160209	For Q901 and Q902
	27160166	For D901
D901a	Screws	
	82143006	3P+6FN(BC), For Q901a
	82143010	3P+10FN(BC), For D901a
D901a	Bracket	
	27141059	Ground

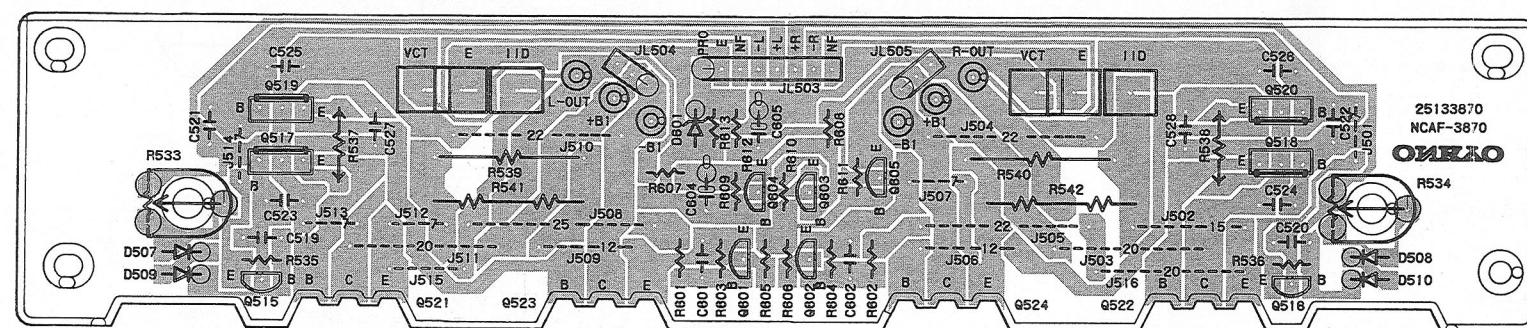
POWER AMPLIFIER PC BOARD(NAAF-3870-1A)

CIRCUIT NO.	PART NO.	DESCRIPTION
Q515, Q516	Transistors	
	2211183 or	2SC1740-R or
	2211255	2SC1815-GR
Q517, Q518	2201944 or	2SD1763-D or
	2201945	2SD1763-E
Q519, Q520	2201934 or	2SB1186-D or
	2201935	2SB1186-E
Q521, Q522	☆ 2201653,	2SC3856-O,
	☆ 2201654,	2SC3856-Y,
	☆ 2201655,	2SC3856-P,
Q523, Q524	☆ 2202272 or	2SC3907-R or
	☆ 2202273	2SC3907-O
	☆ 2201663,	2SA1492-O,
Q523, Q524	☆ 2201664,	2SA1492-Y,
	☆ 2201665,	2SA1492-P,
	☆ 2202262 or	2SA1516-R or
Q601-Q604	☆ 2202263	2SA1516-O
	2211732 or	2SC1845-F or
	2211733	2SC1845-E
Q605	2211792 or	2SA992-F or
	2211793	2SA992-E
D507-D510	Diodes	
	223163	1SS133
	224450512	MTZ5.1B
D601	Capacitors	
	374721034	0.01 μ F $\pm$ 5%, 50V, Plastic(TF)
	373734734	0.047 μ F $\pm$ 5%, 100V, MKT
C519-C522	354721019	100 μ F, 6.3V, Elect.
C527, C528	354700109	1 μ F, 160V, Elect.
C604		
C605		
R533, R534	Resistors	
	5215045	N08HR10KBC, Semi-fixed
	442522714	270ohm, 1/2W, Metal oxide film
R537, R538	441720104	1ohm, 2W, Metal oxide film
R539, R540	4500033	0.47ohm, 5W, Metal plate
R541, R542		

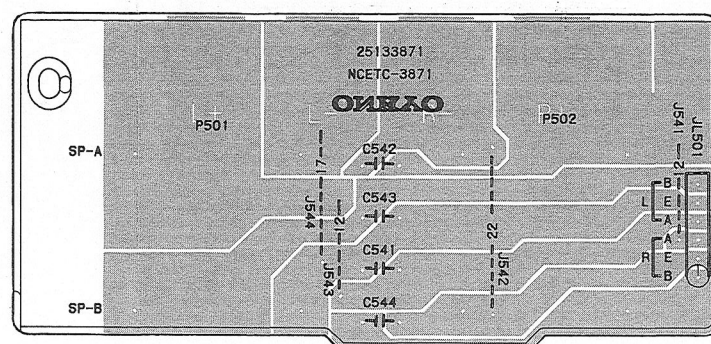
CAUTION: Replacement for transistor of mark ☆, if necessary, must be made from the same beta group (11F₆) as the original type.

Ex. 2SC3856(O) 2SA1492(O)
Same beta group

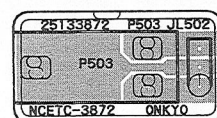
PRINTED CIRCUIT BOARD VIEW FROM BOTTOM SIDE



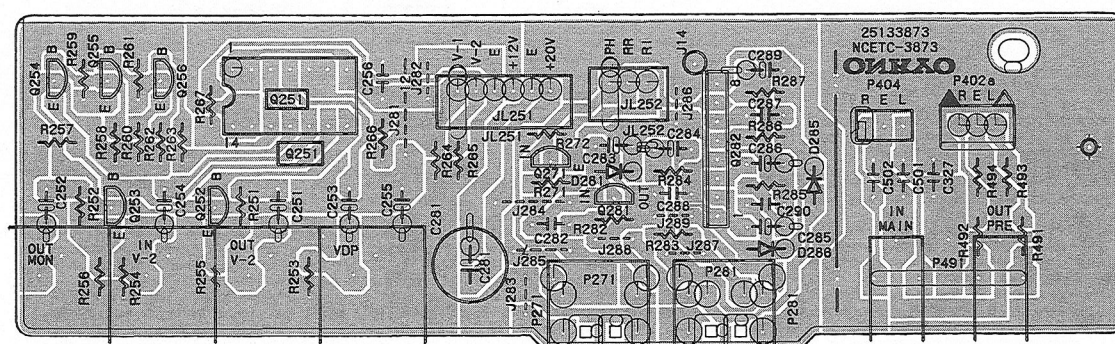
POWER AMPLIFIER PC BOARD



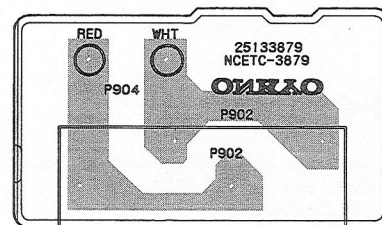
SPEAKER TERMINAL PC BOARD



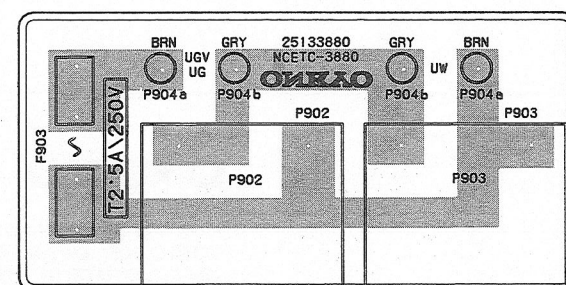
HEADPHONE TERMINAL PC BOARD



VIDEO TERMINAL PC BOARD

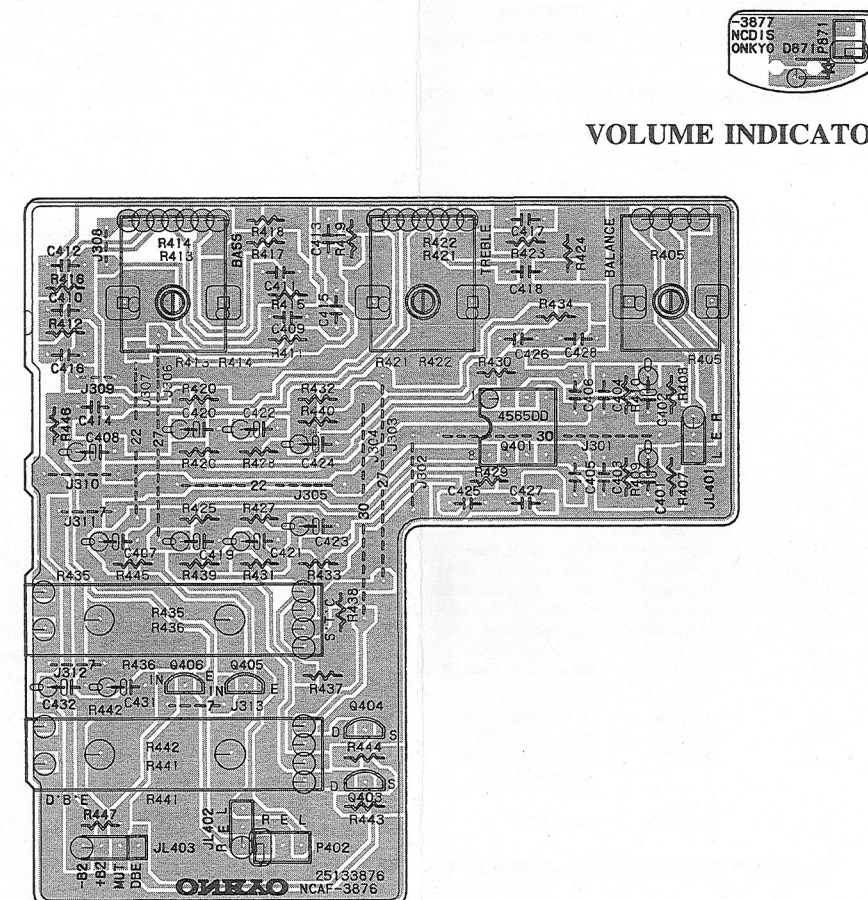


120V MODEL

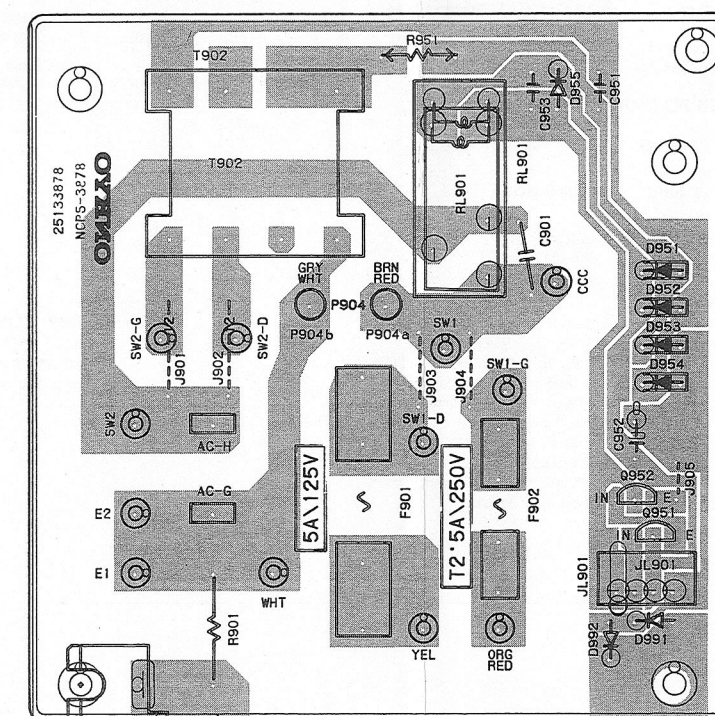


OTHER MODELS

AC OUTLET TERMINAL PC BOARD



PREAMPLIFIER PC BOARD



POWER SUPPLY CIRCUIT PC BOARD

PRINTED CIRCUIT BOARD PARTS LIST

SPEAKER TERMINAL PC BOARD (NAETC-3871-1A)

CIRCUIT NO.	PART NO.	DESCRIPTION
P501, P502	25060110	NTM-4PDMN44, Speaker terminals

HEADPHONE TERMINAL PC BOARD (NAETC-3872-1A)

CIRCUIT NO.	PART NO.	DESCRIPTION
P503	25045255	YKB21-5009, Headphone terminal

VIDEO TERMINAL PC BOARD (NAETC-3873-1A)

CIRCUIT NO.	PART NO.	DESCRIPTION
ICs		
Q251	222840661	4066B
Q281	222780053	78L05
Q282	22240345	CX20106A
Transistors		
Q252-Q255	2211183 or 2211255	2SC1740-R or 2SC1815-GR
Q256	2213074 or 2211455	2SA933-R or 2SA1015-GR
Diodes		
D281, D285	223163	ISS133
Capacitors		
C251, C252	354724719	470 μ F, 6.3V, Elect.
C253-C255	391941007	10 μ F, 16V, Elect. (RA2)
C283	391941007	10 μ F, 16V, Elect. (RA2)
C284	391980227	2.2 μ F, 50V, Elect. (RA2)
C285	354780109	1 μ F, 50V, Elect.
C286	354780339	3.3 μ F, 50V, Elect.
C289	391921017	100 μ F, 6.3V, Elect. (RA2)
Terminals		
P251	25045192	NPJ-4PDBL76, Video
P271	25045172	H5J-1003-01-020, RI
P281	25045293	H5J-1003-01-012, RR (Room to Room)
Socket		
JL252	25050267	NSCT-3P95

AC OUTLET TERMINAL PC BOARD (NAETC-3880-1)

CIRCUIT NO.	PART NO.	DESCRIPTION
P902, P903	25050410	Δ NSCT-2P235, AC outlet
P903a	25050065	Δ YS11-403T, Fuseholders
P903	252075	Δ 2.5A-SE-EAK, Primary for AC outlet
P904a	2065543341	Cord ass'y
P904b	2065543348	Cord ass'y

PREAMPLIFIER PC BOARD (NAAF-3876-1A)

CIRCUIT NO.	PART NO.	DESCRIPTION
IC		
Q401	22240191	NJM4565D-D
Transistors		
Q403, Q404	2211945	2SK246-GR
Q405, Q406	2213631 or 2213632	RN1241-A or RN1241-B
Capacitors		
C401, C402	391980227	2.2 μ F, 50V, Elect. (RA2)
C407, C408	391941007	10 μ F, 16V, Elect. (RA2)
C409, C410	374723334	0.033 μ F $\pm$ 5%, 50V, Plastic (TF)
C411, C412	374723344	0.33 μ F $\pm$ 5%, 50V, Plastic (TF)
C413, C414	374724724	4700 μ F $\pm$ 5%, 50V, Plastic (TF)
C417, C418	374723934	0.039 μ F $\pm$ 5%, 50V, Plastic (TF)
C419, C420	391980227	2.2 μ F, 50V, Elect. (RA2)
C421-C424	354781099	0.1 μ F, 50V, Elect.
C425-C428	374721024	1000 μ F $\pm$ 5%, 50V, Plastic (TF)
C431, C432	354744709	47 μ F, 16V, Elect.

CIRCUIT NO.	PART NO.	DESCRIPTION
Resistors		
R405	5104270	N11R11C250KWT25Z, Variable, BALANCE
R413, R414	5104269	N14R11C50KC25Z, Variable, BASS
R421, R422	5104269	N14R11C50KC25Z, Variable, TREBLE
R435, R436	6182006	N25LGL200KRD10Z, Slide, S.T.C.
R441, R442	6182006	N25LGL200KRD10Z, Slide, D.B.E.

VOLUME INDICATOR PC BOARD (NADIS-3877-1)

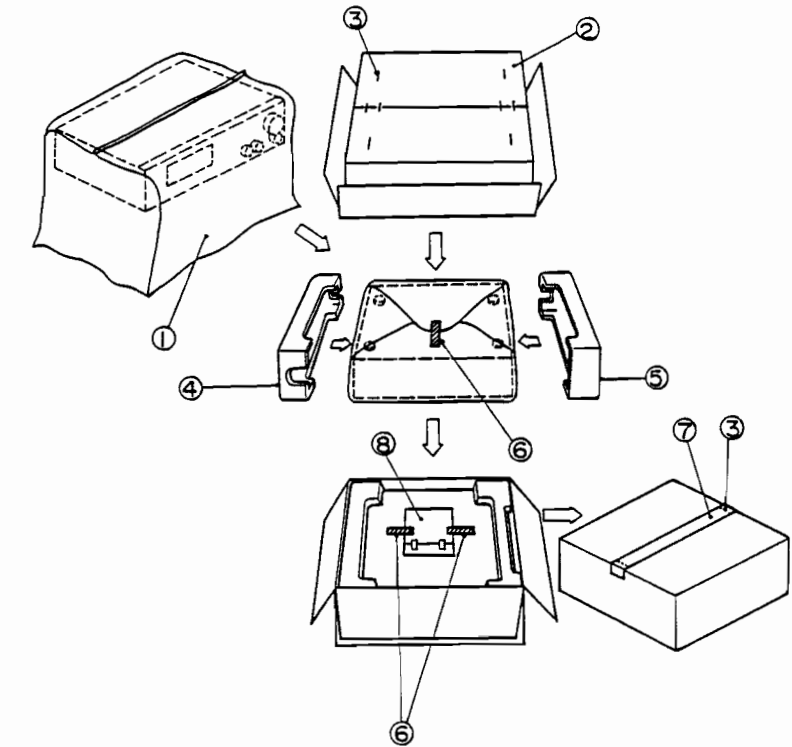
CIRCUIT NO.	PART NO.	DESCRIPTION
D871	225241 or 225242	SEL2210R-C or SEL2210R-D, L.E.D.
	27190545	Holder, LED

POWER SUPPLY PC BOARD (NAPS-3878-1A)

CIRCUIT NO.	PART NO.	DESCRIPTION
Transistors		
Q951	221282	DTC144ES
Q952	2213650	DTD113ZS
Diodes		
D951-D954	22380035	GP104K03E
D955	223163	ISS133
D991, D992	223163	ISS133
Transformer		
T902	2300494	Δ NPT-1049G, Power
Capacitors		
C901	3500065A	DE7150FZ103PAC400V/125V, IS
C952	354761019	Δ 100 μ F, 35V, Elect.
Resistors		
R951	442520824	8.2ohm, 1/2W, Metal oxide film
Relay		
RL901	25065248	Δ NRL-1P15A-DC12-29
Socket		
JL901	25050268	NSCT-4P96
Fuseholders		
F902a	25050065	Δ YS11403T
Fuse		
F902	252075	Δ 2.5A-SE-EAK, Primary

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

PACKING VIEW



REF. NO.	PART NO.	DESCRIPTION
1	29100034	850 x 650mm, Poly-vinyl bag
2	29052061-1	Master carton box
3	282320	Sealing hook
4	29091263A	Pad R
5	29091262C	Pad L
6	261504	Adhesive tape
7	29110071-1	Dampson tape
8	Accessory bag ass'y	
	29341517	Instruction manual
	292092	FM antenna
	232140	NMA-3057, AM loop antenna
	2010200	Connection cord for RI
	3010124	UM-4, Two batteries
	24140171	RC-171S, Remote control transmitter
	29100097	250 x 350mm, Poly-vinyl bag
	29365020A	Warranty card
	29100094A	Poly-vinyl bag for warranty card

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