

ONKYO SERVICE MANUAL

QUARTZ SYNTHESIZED TUNER AMPLIFIER MODEL TX-7800 MODEL TX-7820



Black and Silver models

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

	TX-7820
Power Output:	50 watts per channel, min. RMS, at 8 ohms, both channels driven, from 40Hz to 20kHz, with no more than 0.2% THD.
Musical Power Output:	2 X 120 watts at 4 ohms, 1kHz (DIN) 2 X 80 watts at 8 ohms, 1kHz (DIN)
Continuous Power Output:	2 X 65 watts at 4 ohms, 1kHz (DIN) 2 X 55 watts at 8 ohms, 1kHz (DIN)
Total Harmonic Distortion:	0.2% at rated power 0.1% at 30watt output
IM Distortion:	0.2% at rated power 0.1% at 30 watt output
Damping Factor:	50 at 8 ohms
Frequency Response:	20 — 30,000 Hz $\pm$ 1dB
RIAA Deviation:	20 — 20,000 Hz $\pm$ 0.8dB
Sensitivity and Impedance:	Phono: 2.5mV/50 kohms CD/Tape Play: 150mV/50 kohms Tape Rec: 150mV/3.5 kohms
Phono Overload:	120mV RMS at 1kHz, 0.2% TDH
Signal-to-Noise Ratio:	Phono: 80dB (at 5mV input, IHF-A) CD/Tape: 100dB (IHF-A)
Tone Controls:	Bass: $\pm$ 10dB at 100Hz Treble: $\pm$ 10dB at 10kHz
Muting:	— ∞

TUNER SECTION

FM:	
Tuning Range:	87.50—108.00MHz (50kHz steps)
Usable Sensitivity:	Mono: 12.4dBf, 1.2 μ V, 75ohms 1.2 μ V (S/N26dB, 40kHz Dev.) 75ohms DIN Stereo: 19.2dBf, 2.5 μ V, 75ohms 25 μ V (S/N 46dB, Dev.) 75ohms DIN
50dB Quieting Sensitivity:	Mono: 18.2dBf, 2.2 μ V, 75ohms Stereo: 38.2dBf, 22 μ V, 75ohms
Capture Ratio:	1.5dB
Image Rejection Ratio:	85dB
IF Rejection Ratio:	90dB
Signal-to-Noise Ratio:	Mono: 70dB Stereo: 65dB
Selectivity:	50dB DIN ($\pm$ 300kHz, 40kHz dev.)
AM suppression Ratio:	50dB
Harmonic Distortion:	Mono: 0.15% Stereo: 0.30%
Frequency Response:	30—15,000Hz $\pm$ 1.5dB
Stereo Separation:	40dB at 1kHz 30dB at 100—10,000Hz
Muting Level:	17.2dBf, 4 μ V
AM:	
Tuning Range:	522—1610kHz (9kHz steps) 522—1610kHz (9kHz steps) or 530—1710kHz (10kHz steps) (World wide model)
Usable Sensitivity:	30 μ V
Image Rejection Ratio:	40dB
IF Rejection Ratio:	40dB
Signal-to-Noise Ratio:	40dB
Harmonic Distortion:	0.8%

GENERAL

	TX-7820	TX-7800
Dimensions (W X H X D):	455 X 120 X 316mm 17-15/16" X 4-6/8" X 12-7/16"	455 X 120 X 316mm 17-15/16" X 4-6/8" X 12-7/16"
Weight:	7.8kg, 17.2 lbs.	7.0kg, 15.4 lbs.

	TX-7800
Power Output:	40 watts per channel, min. RMS, at 8 ohms, both channels driven, from 40kHz to 20kHz, with no more than 0.3% THD.
Musical Power Output:	2 X 95 watts at 4 ohms, 1kHz (DIN) 2 X 68 watts at 8 ohms, 1kHz (DIN)
Continuous Power Output:	2 X 55 watts at 4 ohms, 1kHz (DIN) 2 X 45 watts at 8 ohms, 1kHz (DIN)
Total Harmonic Distortion:	0.3% at rated power 0.1% at 30 watt output
IM Distortion:	0.3% at rated power 0.1% at 30 watt output
Damping Factor:	50 at 8 ohms
Frequency Response:	20 — 30,000 Hz $\pm$ 1dB
RIAA Deviation:	20 — 20,000 Hz $\pm$ 0.8dB
Sensitivity and Impedance:	Phono: 2.5mV/50 kohms CD/Tape Play: 150mV/50 kohms Tape Rec: 150mV/3.5 kohms
Phono Overload:	120mV RMS at 1kHz, 0.3% THD
Signal-to-Noise Ratio:	Phono: 80dB (at 5mV input, IHF-A) CD/Tape: 100dB (IHF-A)
Tone Controls:	Bass: $\pm$ 10dB at 100Hz Treble: $\pm$ 10dB at 10kHz
Muting:	—

Remote control transmitter RC-1845 (Only Model TX-7820)	
Transmitter:	Infrared
Signal range:	Approx. 5 meters (16ft. 4")
Power supply:	Two "AA" batteries(1.5V X 2)

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	252074	2A-SE-EAK,Primary
F951	252-74	2A-SE-EAK, AC outlet (Only model TX-7820)

2.Safety-check out

After correcting the original service problem,perform the following safety check before releasing the set to the customer.

Connect the insulating-resistance tester between the plug of power supply cord and nickel screw on the back panel.

Specifications: More than 10M Ω at 500V.

3.Changing the band step

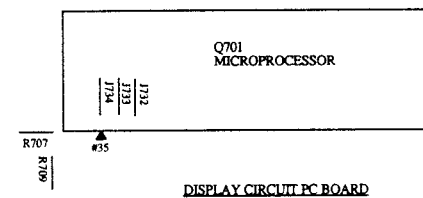
A BAND STEP selector switch is not provided.

(FM)

BAND STEP	R707(10k Ω)	J734
200kHz $\rightarrow$ 50kHz Add		Cut
50kHz $\rightarrow$ 200kHz		Shorted

(AM)

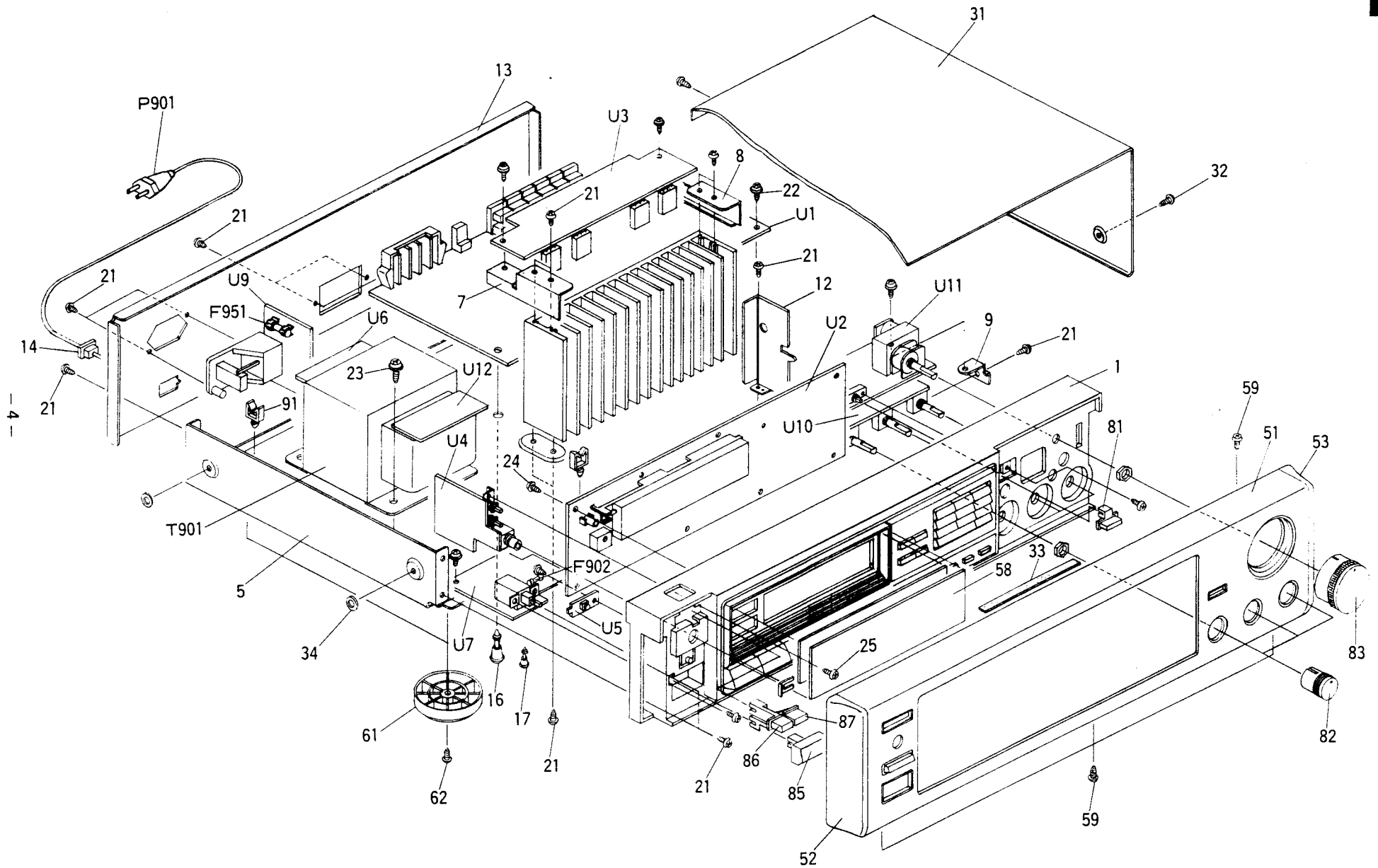
BAND STEP	R709(10k Ω)	J732
10kHz $\rightarrow$ 9kHz		Shorted
9kHz $\rightarrow$ 10kHz	Add	Cut



EXPLODED VIEW

MODEL TX-7820

TX-7820



PARTS LIST

REF. NO.	PART NO.	DESCRIPTION
1	27110604AY	Front bracket
	27110607AY	Front bracket <S>
4	28133254Y	Back plate
5	27100228Y	Chassis
6	27160272AY	Radiator
7	27141441Y	Bracket LH
8	27141442Y	Bracket RH
9	27141443Y	Bracket PC
12	27130643Y	Bracket,shield
13	27121406-2Y	Back panel
14	27300750	△ Bushing
16	27190524	KGLS-14R,Holder
17	27190266	KGLS-12R,Holder
21	834430088	3TTS+8B(BC),Self-tapping screw
22	831130088	3TTW+8B,Self-tapping screw
23	830440089	4TTC+8C(BC),Self-tapping screw
24	833430080	3TTP+8P(BC),Self-tapping screw
25	82143006	3P+6FN(BC),Pan head screw
26	801433	3SMS10W.SW+14B(BC),Sems self-tapping screw
31	28184471AY	Top cover
32	834430088	3TTS+8B(BC),Self-tapping screw
33	28140680	0.5×180×8,Cushion
34	27270212	Spacer
51	1A246121	Front panel ass'y
	1A247121	Front panel ass'y <S>
52	28125226AY	End cap L
53	28125227AY	End cap R
58	28191577Y	Clear plate
59	833430080	3TTP+8P(BC),Self-tapping screw
60	28135199	Badge
61	27175254Y	Leg
62	834430088	3TTS+8B(BC),Self-tapping screw
81	28324162Y	Knob LOUD
	28324177Y	Knob LOUD <S>
82	28324150-1Y	Knob LEV
	28324151Y	Knob LEV <S>
83	28324163	Knob VOL
	28324182	Knob VOL <S>
85	28324140Y	Knob POW
	28324184	Knob POW <S>
86	28324170Y	Knob SP A
	28324172Y	Knob SP A <S>

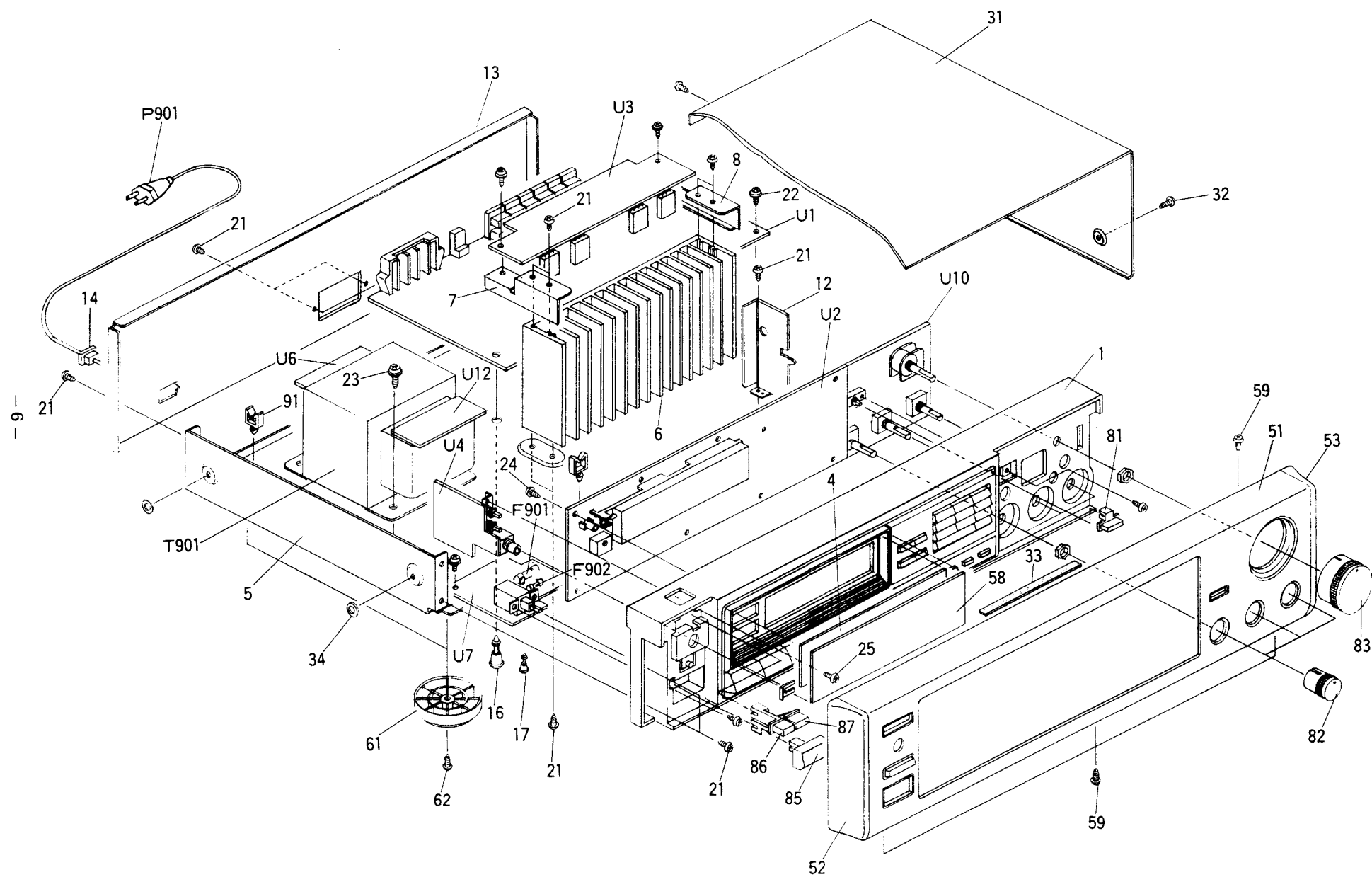
REF. NO.	PART NO.	DESCRIPTION
87	28324171Y	Knob SP B
	28324173Y	Knob SP B <S>
91	27300833	WS-2NS,Clamp
F902	252074	△ 2A-SE-EAK,Fuse
F951	252074	△ 2A-SE-EAK,Fuse
P901	253164Y	△ AS-CEE,Power supply cord
Q503,Q504	2202282,	2SA1265N-R,
	2202283,	2SA1265N-O,
	2201693,	2SA1491-O,
	2201694 or	2SA1491-Y or
	2201696	2SA1491-P,Power amplifier transistor
Q505,Q506	2202292,	2SC3182N-R,
	2202293,	2SC3182N-O,
	2201703,	2SC3855-O,
	2201704 or	2SC3855-Y or
	2201706	2SC3855-P,Power amplifier transistor
T901	2300616Y	△ NPT-1093P,Power transformer
U1	1A244536-1A	NARF-4036-1A,Tuner circuit pc board ass'y
U2	1A244537-1A	NADIS-4037-1A,Display circuit pc board ass'y
U3	1A244538-1A	NAAF-4038-1A,Power amplifier circuit pc board ass'y
U4	1A244539-1A	NASW-4039-1A,Headphone terminal pc board ass'y
U5	1A244540-1	NASW-4040-1,Power switch pc board ass'y
U6	1A244541-1	NAETC-4041-1,Terminal pc board ass'y
U7	1A244542-1A	NAPS-4042-1A,Power supply circuit pc board ass'y
U9	1A244544-1	NAETC-4044-1,AC outlet pc board ass'y
U10	1A244545-1A	NAAF-4045-1A,Tone control circuit pc board ass'y
U11	1A244546-1	NAETC-4046-1,Volume control pc board ass'y
U12	1A244596-1	NAETC-4096-1,Terminal pc board ass'y

NOTE: (B):Black Model
(S):Silver model

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

EXPLODED VIEW MODEL TX-7800

TX-7800



PARTS LIST

REF. NO.	PART NO.	DESCRIPTION
1	27110604AY	Front bracket
	27110607A	Front bracket <S>
4	28133255Y	Back plate
5	27100228Y	Chassis
6	27160274AY	Radiator
7	27141441Y	Bracket LH
8	27141442Y	Bracket RH
12	27130643Y	Bracket,shield
13	27121407-2Y	Back panel
14	27300750	△ Bushing
16	27190524	KGLS-14R,Holder
17	27190266	KGLS-12R,Holder
21	834430088	3TTS+8B(BC),Self-tapping screw
22	831130088	3TTW+8B,Self-tapping screw
23	830440089	4TTC+8C(BC),Self-tapping screw
24	833430080	3TTP+8P(BC),Self-tapping screw
25	82143006	3P+6FN(BC),Pan head screw
26	801433	3SMS10W.SW+14B(BC),Sems self-tapping screw
31	28184471AY	Top cover
32	834430088	3TTS+8B(BC),Self-tapping screw
33	28140680	0.5×180×8,Cushion
34	27270212	Spacer
51	1A250121	Front panel ass'y
	1A251121	Front panel ass'y <S>
52	28125226AY	End cap L
53	28125227AY	End cap R
58	28191577Y	Clear plate
59	833430080	3TTP+8P(BC),Self-tapping screw
60	28135199	Badge
61	27175254Y	Leg
62	834430088	3TTS+8B(BC),Self-tapping screw
81	28324162Y	Knob LOUD
	28324177Y	Knob LOUD
82	28324150-1	Knob LEV
	28324151	Knob LEV <S>
83	28324181	Knob VOL
	28324182	Knob VOL <S>
85	28324140Y	Knob POW
	28324184	Knob POW <S>
86	28324170Y	Knob SP A
	28324172Y	Knob SP A <S>

REF. NO.	PART NO.	DESCRIPTION
87	28324171Y	Knob SP B
	28324173Y	Knob SP B <S>
91	27300833	WS-2NS,Clamp
F902	252074	△ 2A-SE-EAK,Fuse
P901	253164Y	△ AS-CEE,Power supply cord
Q503,Q504	2202492,	2SA1264N-R,
	2202493,	2SA1264N-O,
	2202243,	2SA1694-O,
	2202244 or	2SA1694-Y or
	2202246	2SA1694-P,Power amplifier transistor
Q505,Q506	2202502,	2SC3181N-R,
	2202503,	2SC3181N-O,
	2202253,	2SC4467-O,
	2202254 or	2SC4467-Y or
	2202256	2SC4467-P,Power amplifier transistor
T901	2300624Y	△ NPT-1095P,Power transformer
U1	1A248536-2A	NARF-4036-2A,Tuner circuit pc board ass'y
U2	1A248537-2A	NADIS-4037-2A,Display circuit pc board ass'y
U3	1A248538-2A	NAAF-4038-2A,Power amplifier circuit pc board ass'y
U4	1A248539-2A	NASW-4039-2A,Headphone terminal pc board ass'y
U6	1A248541-2	NAETC-4041-2,Terminal pc board ass'y
U7	1A248542-2A	NAPS-4042-2A,Power supply circuit pc board ass'y
U10	1A248547-1A	NAAF-4047-1A,Tone control circuit pc board ass'y
U12	1A248596-2	NAETC-4096-2,Terminal pc board ass'y

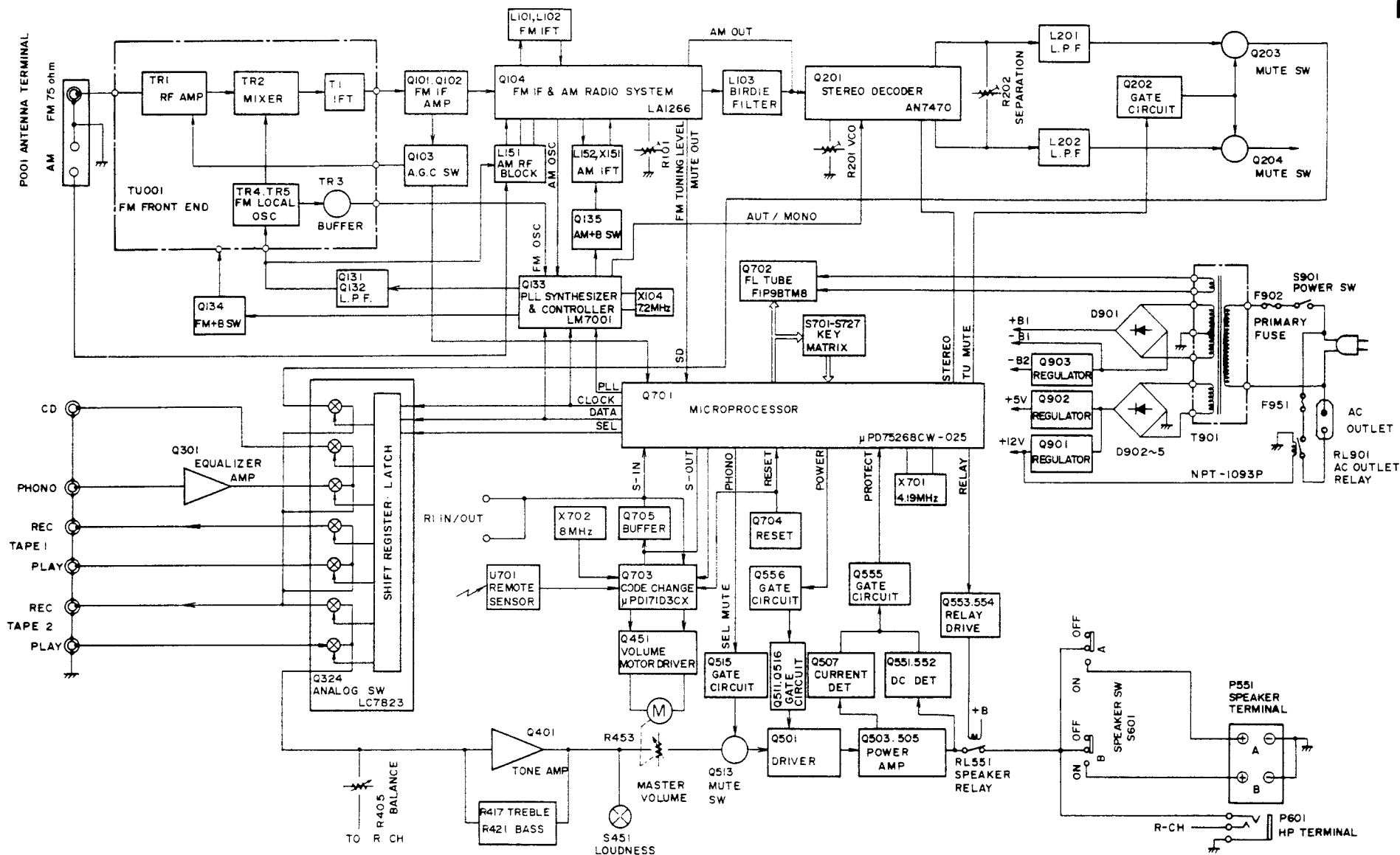
NOTE::Only Black model
<S>:Only Silver model

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

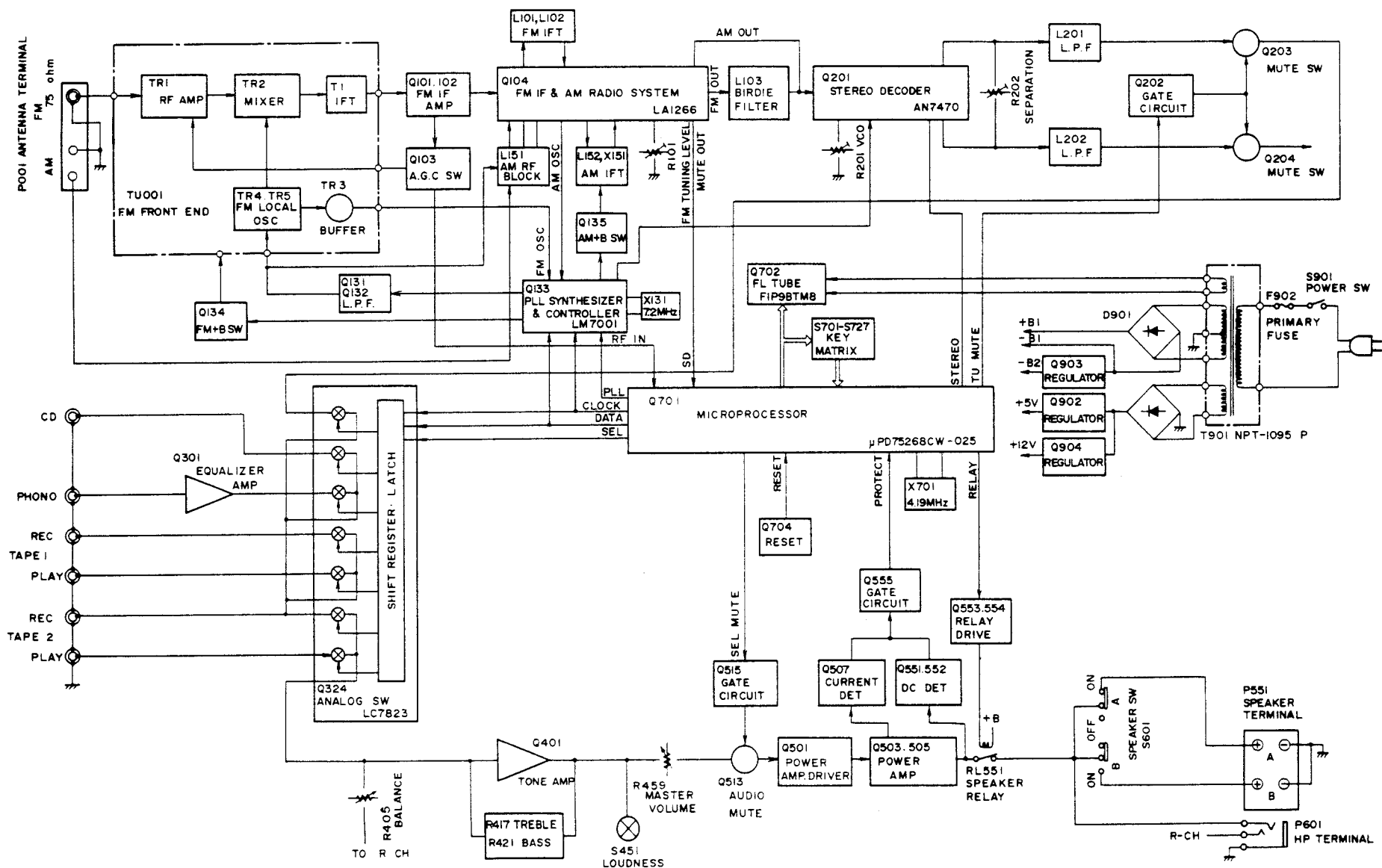
BLOCK DIAGRAM

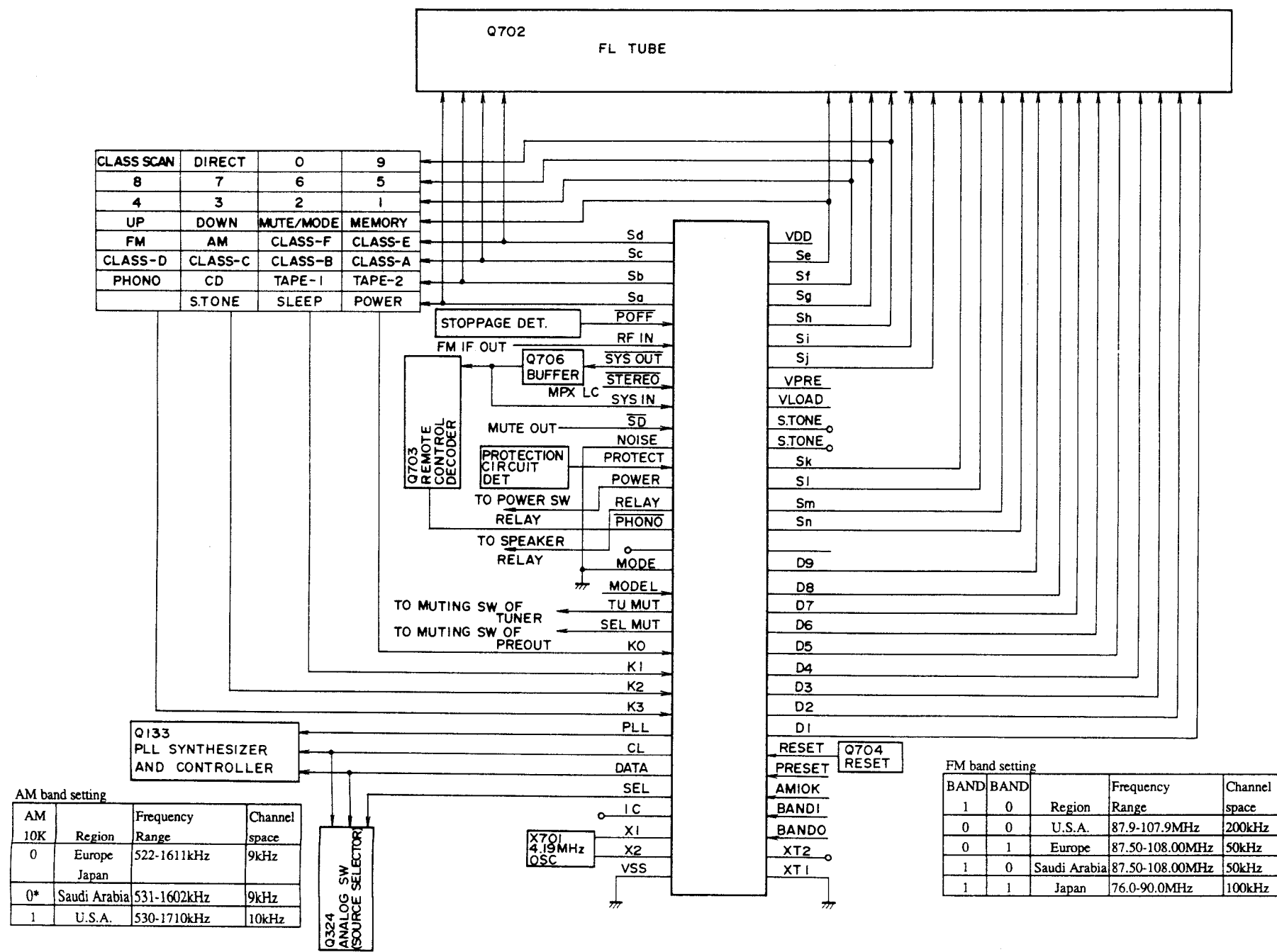
MODEL TX-7820

TX-7820



MODEL TX-7800



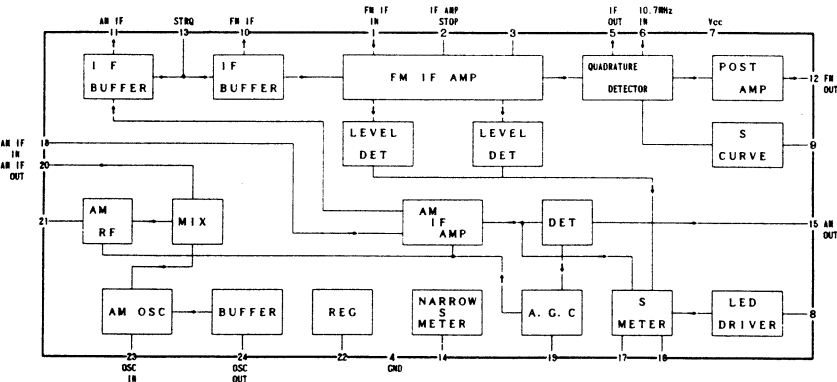
μ PD75268CW-025(Microprocessor)

TERMINAL DESCRIPTION

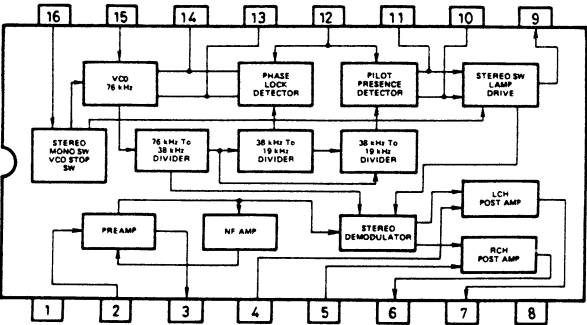
Pin No.	Symbol	Description						
1	Sd	Segment and key scan output terminals. "H" when active.						
2	Sc							
3	Sb							
4	Sa							
5	POFF	This is the input terminal for detection of the stoppage of electric current."L" when the stoppage of electric current.						
6	RF IN	RF mode input terminal. <table><tr><td>RF IN</td><td>RF MODE</td></tr><tr><td>L</td><td>LOCAL</td></tr><tr><td>H</td><td>DX</td></tr></table>	RF IN	RF MODE	L	LOCAL	H	DX
RF IN	RF MODE							
L	LOCAL							
H	DX							
7	SYS OUT/ SYS EN	System code output terminal."L" when active. Initializing input terminal when the power turns on.						
8	STEREO	Stereo broadcast detection input terminal. "L" when stereo broadcast.						
9	SYS IN	System code input terminal."H" when active.						
10	SD	Broadcast detection input terminal."L" when active. Control the stop of auto tuning and output TU MUT(#19).						
11	NOISE	Noise detection input terminal.Not used.						
12	PROTECT	Protection circuit operation detection input terminal.						
13	POWER	Power control output terminal.						
14	RELAY	Speaker relay control output terminal.						
15	PHONO	Phono control output terminal.						
16		Not used.						
17	MODE	Initializing input terminal for operation mode setting.						
18	MODEL	Initializing input terminal for model setting of receiver.						
19	TU MUT	Muting output terminal."H" when active.						
20	SEL MUT	Audio muting output terminal.Not used.						
21	K0	Key scan input terminals. "H" when active.						
22	K1							
23	K2							
24	K3							
25	PLL	Connect to the terminal CE of PLL IC (LM7001 Q133).						
26	CL	Connect to the terminal CL of PLL IC and analogue switch.						
27	DATA	Connect to the terminals DATA of PLL IC and analogue switch.						
28	SEL	Analog switch control output terminal. Connect to the terminal SEL of analogue switch(LC7823 Q324)						

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

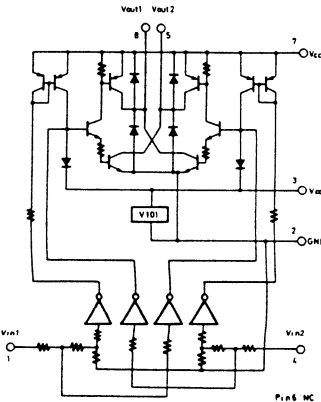
LA1266(FM IF and AM radio system)



AN7470(Stereo decoder)



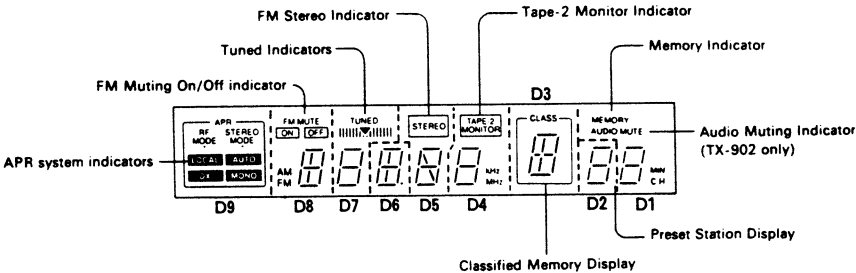
LB1630(Motor driver)



TRUTH TABLE

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

FIP9BTM8(Fluorescent tube)

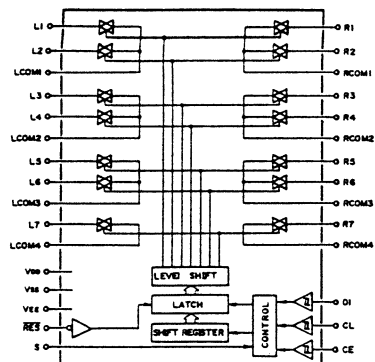


Terminal No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Electrode	F	F	NP	9G	NP	NP	NP	NP	9G	NP	8G	NP	NP	NP	8G	P(a)
Terminal No.	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	
Electrode	7G	7G	P(m)	6G	6G	P(l)	P(k)	5G	P(i)	P(i)	4G	P(h)	NP	4G	P(g)	
Terminal No.	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	
Electrode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

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

	D9	D8	D7	D6	D5	D4	D3	D2	D1
Sa	APR	a	a	a	a	a	a	a	a
Sb	STEREO MODE	b	b	b	b	b	b	b	b
Sc	AUTO	c	c	c	c	c	c	c	c
Sd	MONO	d	d	d	d	d	d	d	d
Se	DX	e	e	e	e	e	e	e	e
Sf	LOCAL	f	f	f	f	f	f	f	f
Sg	RF MODE	g	g	g	g	g	g	g	g
Sh					h				
Si		i		i			i		
Sj		FM MUTE	TUNED		STEREO	TAPE-2	CLASS		MEMORY
Sk		ON	▼ (TUNED)				k		SLEEP
Sl		OFF							AUDIO MUTE
Sm		AM				kHz			MIN
Sn		FM				MHz			CH

LC7823/LC7823N(Analog switch)



Serial Data Composition

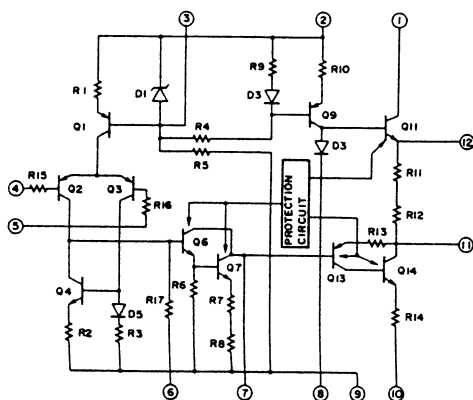
CIRCUIT NO.	PART NAME	A0	A1	A2	A3	SW1	SW2	SW3	SW4	SW5	SW6	SW7	SW8
Q310	LC7823-N	0	1	1	1								
Q312	LC7821-N	1	1	0	1								
Q313	LC7823-N	1	1	1	1								
Q693	LC7822-N	0	0	1	1								
Q694	LC7822-N	1	0	1	1								

SWITCH CHANGEOVER

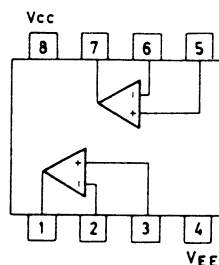
ADDRESS

Pin No.	Terminal	Description
1,30	CD	On when the input selector is CD.
2,29	PHONO	On when the input selector is PHONO.
3,28	LCOM1,RCOM1	Common terminal.
4,27	TAPE-1 REC	Off when the input selector is TAPE-1.
5,26	TAPE-1 PB	On when the input selector is TAPE-1.
6,25	LCOM2,RCOM2	Common terminal.
7,24	TAPE-2 REC	Off when the input selector is TAPE-2.
8,23	TAPE-2 PB	On when the input selector is TAPE-2.
9,22	LCOM3,RCOM3	Common terminal.
10,21	TUNER	On when the input selector is TUNER.
11,20	LCOM4,RCOM4	Common terminal.
12	VEE	Negative power supply terminal.(-15V)
13	CE	Chip enable terminal.Connect to the terminal FUNC of the microprocessor.
14	DI	Serial data input terminal.Connect to the terminal DATA of the microprocessor.
15	CL	Serial clock terminal.Connect to the terminal CL of the microprocessor.
16	Vss	Ground terminal.
17	S	Select terminal.
18	RES	Reset terminal.
19	VDD	Power supply terminal.(+5V)

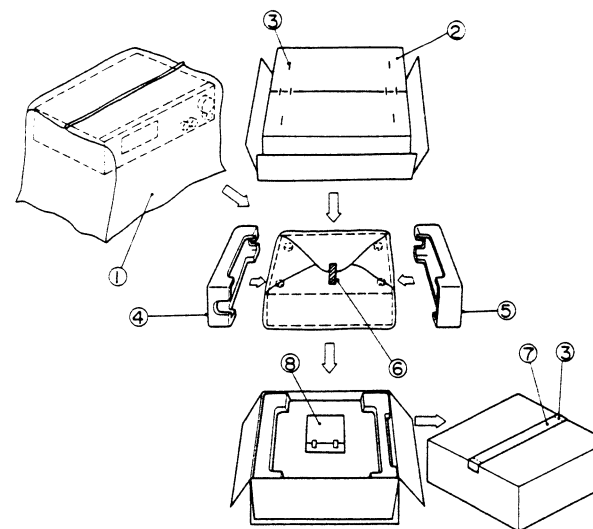
μPC1225H(Power amplifier driver)



NJM4558D-X(Operation amplifier)



PACKING VIEW



TX-7820

REF. NO.	PART NO.	DESCRIPTION
1	29052137-1Y	Master carton box
	29052137-2Y	Master carton box <S>
2	29091440AY	Pad L
3	29091441AY	Pad R
4	29100034A	850×650,Styrene bag
5	282301	Sealing hook
6	29110071	Damplon tape
7	261504	Adhesive tape
8	Accessory bag ass'y	
	29341584Y	Instruction manual
	29100097	350×250,Styrene bag
	292092	FM antenna
	232140	NMA-3057,AM loop antenna
	29365020B	Warranty card
	29100094A	Styrene bag for warranty card
	3010165Y	UM-3,Two batteries
	24140184Y	RC-184S,Remote control unit
	2010200	Cord RI

TX-7800

REF. NO.	PART NO.	DESCRIPTION
1	29052138-1Y	Master carton box
	29052138-2Y	Master carton box <S>
2	29091440AY	Pad L
3	29091441AY	Pad R
4	29100034A	850×650,Styrene bag
5	282301	Sealing hook
6	29110071	Damplon tape
7	261504	Adhesive tape
8	Accessory bag ass'y	
	29341584Y	Instruction manual
	29100097	350×250,Styrene bag
	292092	FM antenna
	232140	NMA-3057,AM loop antenna
	29365020B	Warranty card
	29100094A	Styrene bag for warranty card

NOTE::Only Black model
<S>:Only Silver model

ADJUSTMENT PROCEDURES

Preparation

1.Input

FM mono:1kHz,75kHz devi.,60dB/ μ V

FM stereo:1kHz,75kHz devi.,60dB/ μ V

Pilot signal 19kHz 7.5kHz devi.

AM:400Hz 30% mod.

2.Outputs

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

3.Standard Knob Position

VOLUME.....Maximum

BASS/TREBLE/BALANCE.....Center

MUTING/LOUDNESS.....Off

INPUT SELECTOR.....CD

SPEAKERS.....A

Confirming Operation

1.Protection circuit

a.Speaker relay

The speaker relay turns on after the power switch turned on for 5 minutes.

The speaker relay turns off immediately after the power switch turns off.

b. Over-voltage confirmation

The speaker relay is off immediately after DC voltage $\pm 6V$ is applied to the terminal CD.

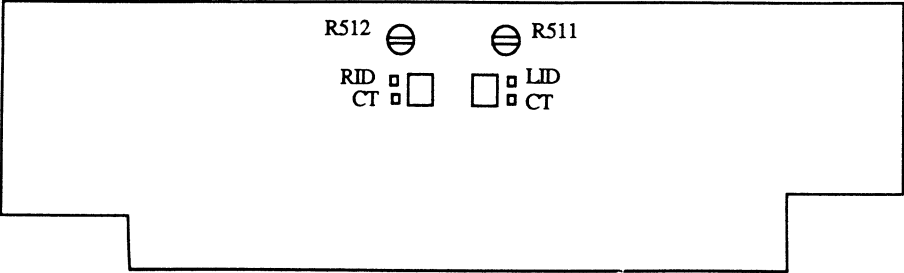
Amplifier section

Idling Current Adjustment

Connect the DC voltmeter to the terminals LID(RID) and CT on the power amplifier pc board.

Adjust the semi-fixed resistor R511(R512) so that the indication of voltmeter is $5 \pm 0.5mV$.

Note:():Right channel



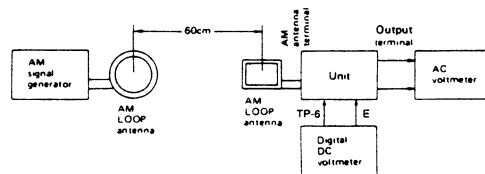
POWER AMPLIFIER PC BOARD
SOLDERING SIDE

FM section

Item	Step	Connection of instrument	FM SG output	Stereo modulator output	Tuned frequency	Output indicator	Adjustment point	Adjust for	Remarks
I F	1	Fig. 1	99.1MHz 1kHz, 75kHz devi. 65dBf(60dB)	—	99.1MHz	DC voltmeter	L101	$0 \pm 20\text{mV}$	Set the FM mode switch to MONO. Repeat the steps 1 and 2 until no further adjustment is necessary.
	2					Distortion analyzer	L102	Minimum	
V C O		Fig. 2	99.1MHz 1kHz, 75kHz devi. 65dBf(60dB)	—	99.1MHz	Frequency counter	R201	$19\text{kHz} \pm 10\text{Hz}$	Set the FM mode switch to AUTO.
Stereo distortion		Fig.3	99.1MHz Ext. modulation 65dBf(60dB)	L+R 1kHz 67.5kHz devi.	99.1MHz	Distortion analyzer	IF on front end	Minimum	
Stereo separation	1	Fig.3	99.1MHz Ext. modulation 65dBf(60dB)	Lch. 1kHz	99.1MHz	Rch. AC voltmeter	R202	Minimum	Maximum and same separation
	2			Rch. 1kHz		Lch. AC voltmeter		Minimum	
Tuned indicator level	1	Fig. 3	99.1MHz 1kHz, 75kHz devi. 17.2dBf(12dB)	—	99.1MHz	TUNED indicator	R101	Light on	
	2		99.1MHz 1kHz, 75kHz devi. 16.2dBf(11dB)					Light off	

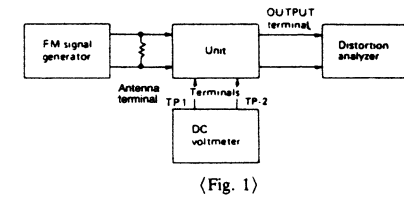
AM section

Step	AM SG output	Tuned Frequency	Output indicator	Adjustment point	Adjust for
1	—	522kHz	Digital DC voltmeter	OSC coil on RF block (L151)	$1.5\text{V} \pm 0.1\text{V}$
2	603kHz, 60dB/m 400Hz 30% mod.	603kHz	A C voltmeter	RF coil on RF block (L151)	Maximum
3	990kHz, 60dB/m 400Hz 30% mod.	990kHz	A C voltmeter	L152	Maximum

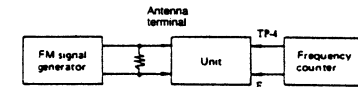


Reference specifications

Tuned voltage	AM	522kHz	$1.5 \pm 0.4\text{V}$
(Connet Digital		1611kHz	$7.5 \pm 0.5\text{V}$
DC voltmeter to FM		87.50MHz	$2.0 \pm 0.5\text{V}$
test point TP-6)		108.0MHz	$7.5 \pm 0.5\text{V}$

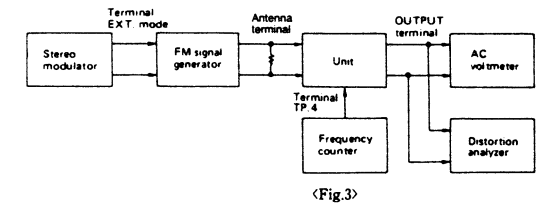
Muting width $35 \pm 10\text{kHz}$ Muting level FM $12 \pm 3\text{dB}$ Auto stop level AM Less than 68dB/m FM Less than $20\text{dB}\mu$ Stereo indicator level $14 \pm 4\text{dB}\mu$ 

(Fig. 1)

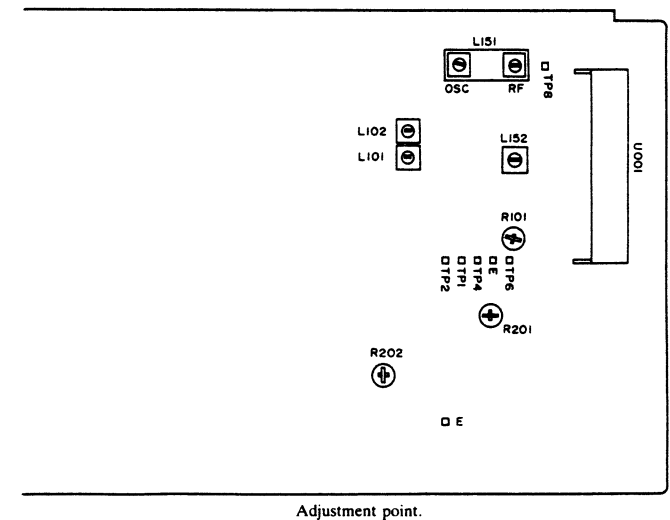


Use the high impedance probe. (10:1)

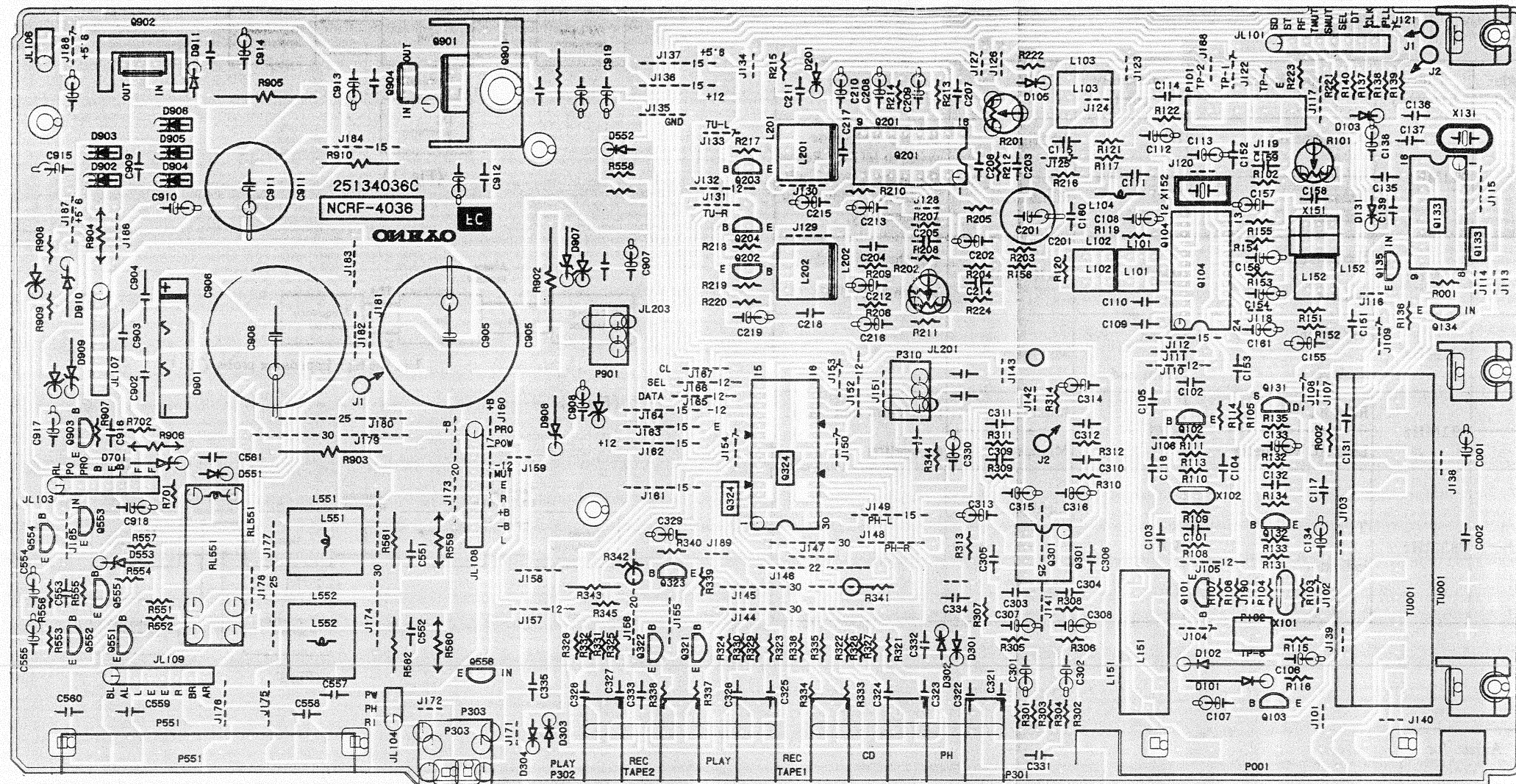
(Fig. 2)



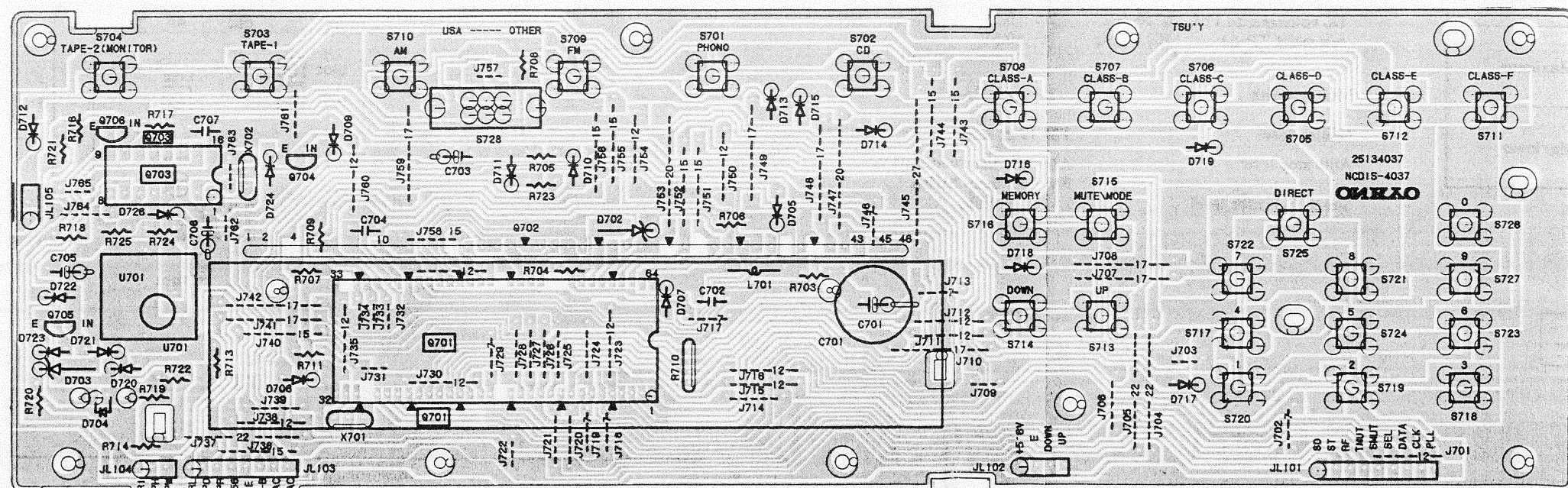
(Fig.3)



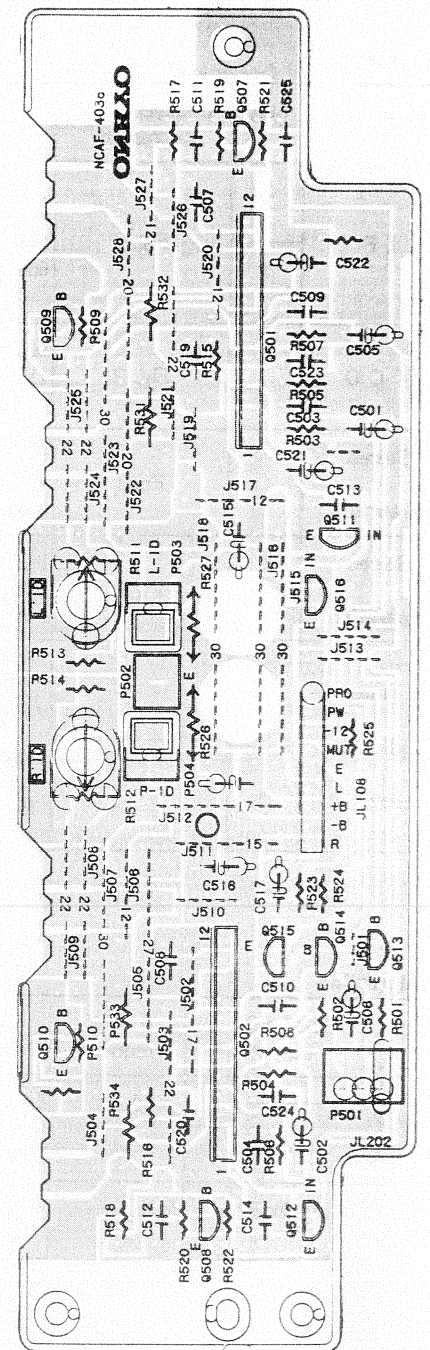
PRINTED CIRCUIT BOARD VIEW FROM BOTTOM SIDE



TUNER CIRCUIT PC BOAS

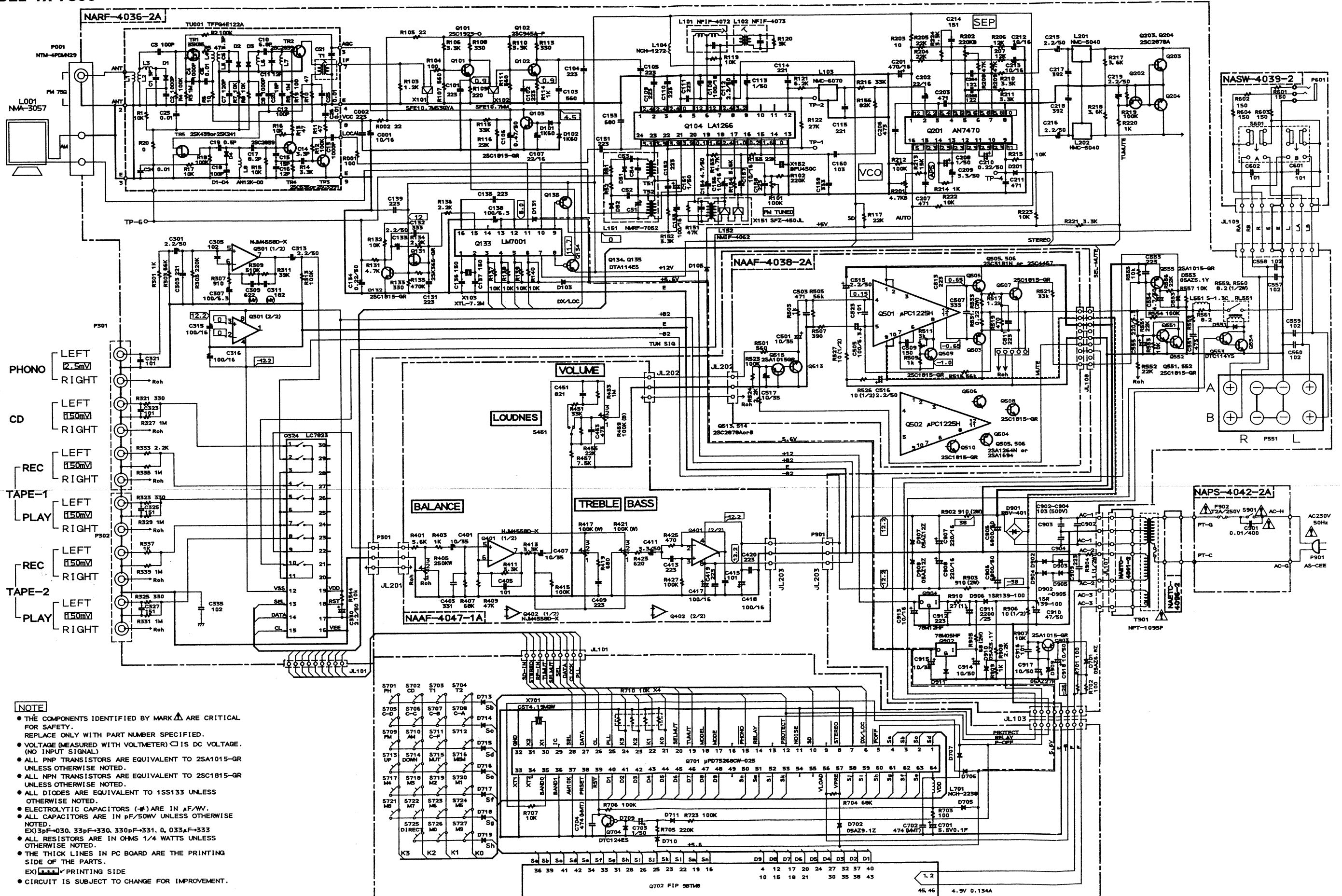


DISPLAY CIRCUIT PC BOARD

POWER AMPLIFIER
CIRCUIT PC BOARD

SCHEMATIC DIAGRAM

MODEL TX-7800

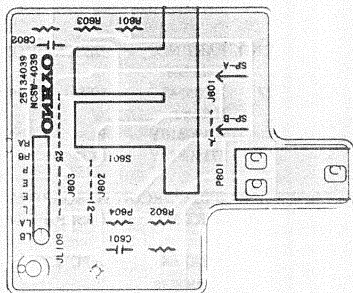


SCHEMATIC DIAGRAM

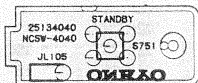
- NOTE**

 - 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 (Φ) ARE IN μ F/WV.
 - ALL CAPACITORS ARE IN pF/50WV UNLESS OTHERWISE NOTED.
 - 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 100 Δ PRINTING SIDE
 - CIRCUIT IS SUBJECT TO CHANGE FOR IMPROVEMENT.

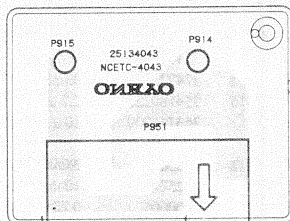
PRINTED CIRCUIT BOARD VIEW FROM BOTTOM SIDE



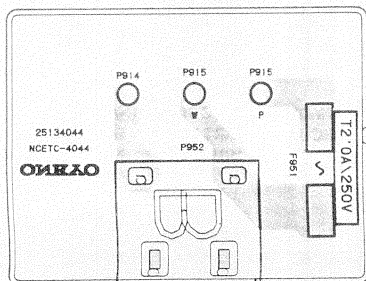
HEADPHONE TERMINAL PC BOARD



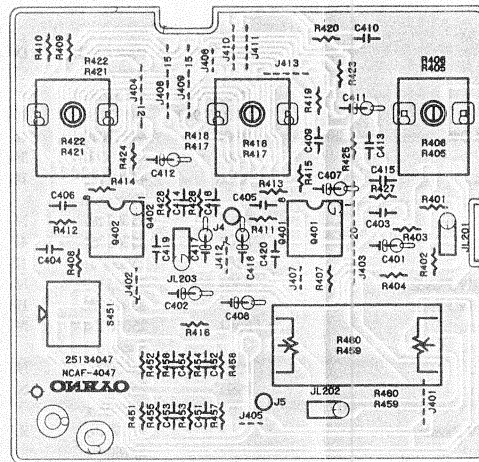
POWER SWITCH PC BOARD
(Only Model TX-7820)



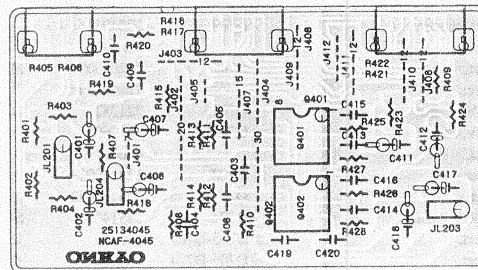
AC OUTLET PC BOARD



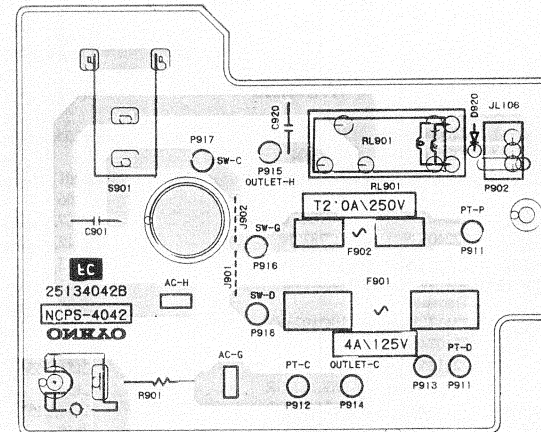
AC OUTLET PC BOARD



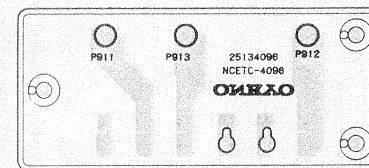
TONE CONTROL CIRCUIT PC BOARD
(Only Model TX-7300)



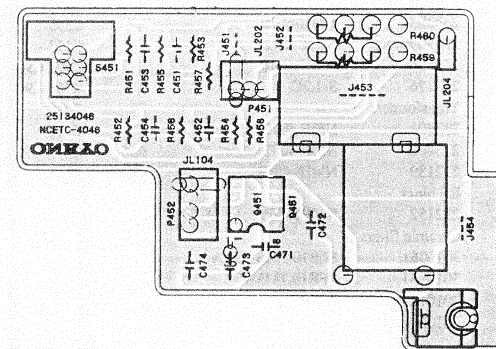
TONE CONTROL CIRCUIT PC BOARD
(Only Model TX-7820)



POWER SUPPLY CIRCUIT PC BOARD



TERMINAL PC BOARD



VOLUME CONTROL PC BOARD
(Only Model TX-7820)

PRINTED CIRCUIT BOARD-PARTS LIST

MODEL TX-7820

TUNER CIRCUIT PC BOARD (NARF-4036-1A)

CIRCUIT NO.	PART NO.	DESCRIPTION
TU001	Front end 240085	TFFG4E122A
	ICs	
Q104	22240039	LA1266
Q133	22240090	LM7001
Q201	22240242	AN7470
Q301	2225502	N7M4558D-X
Q324	22240158 or 22240339	LC7823 or LC7823N
Q901	222780126Y	L780S12
Q902	222780055	78M05HF
	Transistors	
Q101	2211723	2SC1923-O
Q102	2210746	2SC945A-P
Q103,Q132	2211255	2SC1815-GR
Q131	2212445	2SK365-GR
Q134,Q135	2213510	DTA114ES
Q202,Q555	2211455	2SA1015-GR
Q203,Q204	2212285	2SC2878-A
Q551,Q552	2211255	2SC1815-GR
Q553,Q556	221281	D7C114YS
Q554	2211255	2SC1815-GR
Q903	2211455	2SA1015-GR
	Diodes	
D101,D102	223132	1K60
D103,D105	223163	1SS133
D131,D201	223163	1SS133
D551,D552	223163	1SS133
D553	224150512	05AZ5.1Y
D701	224150683	05AZ6.8Z
D901	22380023	RBV401
D902-D906	22380032	1SR139-100
D907,D908	224151203	05AZ12Z
D909	224152704	05AZ27R
D910	224150512	05AZ5.1Y
D911	223163	1SS133
	Coils	
L103	233383	NMC-6070
L104	233409M022	NCH-1272
L201,L202	233294	NMC-5040
L551,L552	231176	S-1.3C
	Transformers	
L101	233401	NFIF-4072
L102	233402	NFIF-4073
L152	232139	NMIF-4062
	RF block	
L151	232152	NMRF-7052
	Ceramic filters	
X101	3010081	SFE10.7MS3GY
X102	3010137	SFE10.7MMK
X151	3010123	SFZ450JL
X152	3010076	BFU450C

CIRCUIT NO.	PART NO.	DESCRIPTION
X131	Crystal	
	3010158	XTL-7.2M
	Relay	
RL551	25065339	NRL-2P5ADC24-046
	Capacitors	
C001	354761009	10 μ F,35V,Elect.
C106	354784799	0.47 μ F,50V,Elect.
C107,C108	354742209	22 μ F,16V,Elect.
C112,C133	354780229	2.2 μ F,50V,Elect.
C113	354780109	1 μ F,50V,Elect.
C131	374722234	0.022 μ F $\pm$ 5%,50V,Plastic
C132,C159	374723334	0.033 μ F $\pm$ 5%,50V,Plastic
C134,C210	353782299	0.022 μ F,50V,Elect.
C138	354721019	100 μ F,6.3V,Elect.
C154,C554	354780479	4.7 μ F,50V,Elect.
C155	354741019	100 μ F,16V,Elect.
C156,C157	354761009	10 μ F,35V,Elect.
C160	374721034	0.01 μ F $\pm$ 5%,50V,Plastic
C161,C208	354780109	1 μ F,50V,Elect.
C201	354744719	470 μ F,16V,Elect.
C202	354742209	22 μ F,16V,Elect.
C204,C205	374721224	1200pF $\pm$ 5%,50V,Plastic
C206	374724734	0.047 μ F $\pm$ 5%,50V,Plastic
C207	370134714	470pF $\pm$ 5%,100V,Plastic
C209	354780339	3.3 μ F,50V,Elect.
C212,C213	354761009	10 μ F,35V,Elect.
C215,C216	354780229	2.2 μ F,50V,Elect.
C217,C218	374723924	3900pF $\pm$ 5%,50V,Plastic
C219	354780229	2.2 μ F,50V,Elect.
C301,C302	354780229	2.2 μ F,50V,Elect.
C307,C308	354721019	100 μ F,6.3V,Elect.
C309,C310	374726224	6200pF $\pm$ 5%,50V,Plastic
C311,C312	374721824	1800pF $\pm$ 5%,50V,Plastic
C313,C314	354780229	2.2 μ F,50V,Elect.
C315,C316	354741019	100 μ F,16V,Elect.
C330	354780229	2.2 μ F,50V,Elect.
C551,C552	374724734	0.047 μ F $\pm$ 5%,50V,Plastic
C555	354722219	220 μ F,6.3V,Elect.
C563	354780479	0.47 μ F,50V,Elect.
C905,C906	3504027	6800 μ F,50V,Elect.
C907,C908	354742219	220 μ F,16V,Elect.
C910	354784709	47 μ F,50V,Elect.
C911	354752229	2200 μ F,25V,Elect.
C913-C915	354761009	10 μ F,35V,Elect.
C917,C918	354781009	10 μ F,50V,Elect.
	Resistors	
R101	5210221 or 5210070	N06HR100KBD Semi-fixed
R201	5210216 or 5210062	N06HR5KBD or N06HR4.7KBD,Semi-fixed
R202	5210222 or 5210072	N06HR200KBD or N06HR220KBD,Semi-fixed

CIRCUIT NO.	PART NO.	DESCRIPTION
	Resistors	
R559,R560	442520824	8.2ohm,1/2W,Metal oxide film
R902,R903	441721024	1kohm,2W,Metal oxide film
R904	442520104	1ohm,1/2W,Metal oxide film
R905	441723904	39ohm,2W,Metal oxide film
R906	442521004	10ohm,1/2W,Metal oxide film
	Terminals	
P001	25060087	NTM-2PDMN31,Antenna
P101	25060064	4P-5
P102	25060061	1P-5
P301,P302	25045323Y	NPJ-6PDBL180
P303	25045172	HSJ1003-01-020
P551	25060158Y	NTM-8PDMLO84,Speaker
	Sockets	
P301,P310	25050267	NSCT-3P95
P901	25050267	NSCT-3P95
	Radiators	
	27160145	RAD-51
	27160166	
	27160176	RAD-56
DISPLAY CIRCUIT PC BOARD (NADIS-4037-1A)		
CIRCUIT NO.	PART NO.	DESCRIPTION
	Remote sensor	
U701	24130003	GP1U50XS
	ICs	
Q701	22240406Y	μ PD75268CW-025
Q703	22240376	μ PD17103CX-528
	FL tube	
Q702	212093Y	FIP9BTM8
	Transistors	
Q704	221282	DTC144ES
Q705	2212600	DTA124ES
	Diodes	
D702	224150913	05A29.1Z
D703	224150562	05A25.6Y
D704	225142	SEL2913K,L.E.D.
D705-D707	223163	1SS133
D709-D724	223163	1SS133
	Ceramic oscillators	
X701	3010163	CST4.19MGW
X702	3010154	CST8.00MT
	Coil	
L701	233400M220 or 233409K220	NCH-2238 or NCH-1284
	Capacitors	
C701	3000057	0.1F,5.5V,Super
C702,C704	375524744	0.47 μ F $\pm$ 5%,50V,Plastic
C703	353780229	2.2 μ F,50V,Elect.
C705	353744709	47 μ F,16V,Elect.
C706	353780109	1 μ F,50V,Elect.
	Resistor	
R710	49163103404	10kohm $\times$ 4,1/10W,Network

CIRCUIT NO.	PART NO.	DESCRIPTION
	Switches	
S701-S727	25035548	NPS-111-S510
	Holders	
	27190810Y	FL
	27190811Y	LED

POWER AMPLIFIER CIRCUIT PC BOARD(NAAF-4038-1A)

CIRCUIT NO.	PART NO.	DESCRIPTION
	ICs	
Q501,Q502	22240108	μ PC1225H
	Transistors	
Q503,Q504	2202282,	* 2SA1265N-R,
	2202283,	* 2SA1265N-O,
	2201693	* 2SA1491-O,
	2201694 or	* 2SA1491-Y or
	2201696	* 2SA1491-P
Q505,Q506	2202292,	* 2SC3182N-R,
	2202293,	* 2SC3182N-O,
	2201703	* 2SC3855-O,
	2201704 or	* 2SC3855-Y or
	2201706	* 2SC3855-P
Q507-Q510	2211255	2SC1815-GR
Q511,Q512	2212600	DTA124ES
Q513,Q514	2212285	2SC2878-A
Q515	2211455	2SA1015-GR
Q516	221282	DTC144ES
	Capacitors	
C501,C502	354761009	10 μ F,35V,Elect.
C505,C506	354741019	100 μ F,16V,Elect.
C507,C508	374723334	0.033 μ F $\pm$ 5%,50V,Plastic
C515,C516	354780229	2.2 μ F,50V,Elect.
C517	353761009	10 μ F,35V,Elect.
	Resistors	
R511,R512	5215061	N08HR3KBC,Semi-fixed
R526,R527	442521004	10ohm,1/2W,Metal oxide film
R531-R534	4500005	0.22ohm,2W,Metal plate
	Radiators	
	27160273Y	
	Plugs	
P503,P504	25055495	NPLG-2P470
HEADPHONE TERMINAL PC BOARD(NASW-4039-1A)		
CIRCUIT NO.	PART NO.	DESCRIPTION
S601	25035517	NPS-222-L479,Speaker switch
P601	25045255	YKB21-5009,Headphone terminal

HEADPHONE TERMINAL PC BOARD(NASW-4039-1A)

CIRCUIT NO.	PART NO.	DESCRIPTION
S601	25035517	NPS-222-L479, Speaker switch
P601	25045255	YKB21-5009, Headphone terminal

POWER SWITCH PC BOARD (NASW-4040-1)

CIRCUIT NO.	PART NO.	DESCRIPTION
S751	25035548	NPS-111-S510,Push switch

POWER SUPPLY CIRCUIT PC BOARD(NAPS-4042-1A)

CIRCUIT NO.	PART NO.	DESCRIPTION
D920	223163	1SS133,Diode
S901	25035550	△ NPS-111-L512P,Push switch
RL901	25065248	△ NRL-1P15A-DC12-29,Relay
C901,C920	3500065A	△ DE7150FZ103PAC400V/125V IS capacitors
P901	25050267	NSCT-3P95,Socket
F902	252074	△ 2A-SE-EAK,Fuse
F902a	25050065	△ YSH-403T,Fuseholder

AC OUTLET PC BOARD(NAETC-4044-1)

CIRCUIT NO.	PART NO.	DESCRIPTION
P951	252074	2A-SE-EAK,Fuse
P951a	25050065	YSH403T,Fuseholders
P952	25050410	NSCT-2P235,AC outlet

TONE CONTROL CIRCUIT PC BOARD (NAAF-4045-1A)

CIRCUIT NO.	PART NO.	DESCRIPTION
ICs		
Q401,Q402	222502	NJM4558D-X
Capacitors		
C401,C402	354761009	10 μ F,35V,Elect.
C407,C408	354761009	10 μ F,35V,Elect.
C409,C410	374722234	0.022 μ F $\pm$ 5%,50V,Plastic
C411,C412	354780339	3.3 μ F,50V,Elect.
C413,C414	374722234	0.022 μ F $\pm$ 5%,50V,Plastic
C417,C418	354741019	100 μ F,16V,Elect.
Resistors		
R405,R406	5104225	N11RGLC250KWT22Z,Balance
R417,R421	5104230	N14RLC100KWT22Z,Tone
R418,R422		

VOLUME CONTROL PC BOARD(NAETC-4046-1)

CIRCUIT NO.	PART NO.	DESCRIPTION
Q451	22240322	LB1639,IC
C453,C454	374724734	0.047 μ F $\pm$ 5%,50V,Plastic capacitors
C473	354741019	100 μ F,16V,Elect. capacitor
R459,R460	5104243	N16RGM100KBTP25F,Volume Variable resistor
P451	25050267	NSCT-3P95,Socket
P452	25050268	NSCT-4P96,Socket
S451	25035609	NPS-122-L571,Switch

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

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

PRINTED CIRCUIT BOARD-PARTS LIST

MODEL TX-7800

TUNER CIRCUIT PC BOARD (NARF-4036-2A)

CIRCUIT NO. PART NO. DESCRIPTION

CIRCUIT NO.	PART NO.	DESCRIPTION
TU001	Front end 240085 ICs	TFFG4E122A
Q104	22240039	LA1266
Q133	22240090	LM7001
Q201	22240242	AN7470
Q301	222502	NJM4558D-X
Q324	22240158 or 22240339	LC7823 or LC7823N
Q902	222780055	78M05HF
Q904	222780125Y	78M12HF
	Transistors	
Q101	2211723	2SC1923-O
Q102	2210746	2SC945A-P
Q103,Q132	2211255	2SC1815-GR
Q131	2212445	2SK365-GR
Q134,Q135	2213510	DTA114ES
Q202,Q555	2211455	2SA1015-GR
Q203,Q204	2212285	2SC2878-A
Q551,Q552	2211255	2SC1815-GR
Q553	221281	DTC114YS
Q554	2211255	2SC1815-GR
Q903	2211455	2SA1015-GR
	Diodes	
D101,D102	223132	1K60
D103,D105	223163	1SS133
D131,D201	223163	1SS133
D551	223163	1SS133
D553	224150512	05AZ5.1Y
D701	224150683	05AZ6.8Z
D901	22380023	RBV401
D902-D906	22380032	1SR139-100
D907,D908	224151203	05AZ12Z
D909	224152704	05AZ27R
D910	224150512	05AZ5.1Y
D911	223163	1SS133
	Coils	
L103	233383	NMC-6070
L104	233409M022	NCH-1272
L201,L202	233294	NMC-5040
L551,L552	231176	S-1.3C
	Transformers	
L101	233401	NFIF-4072
L102	233402	NFIF-4073
L152	232139	NMIF-4062
	RF block	
L151	232152	NMRF-7052
	Ceramic filters	
X101	3010081	SFE10.7MS3GYA
X102	3010137	SFE10.7MMK
X151	3010123	SFZ450JL
X152	3010076	BFU450C
	Crystal	
X131	3010158	XTL-7.2M

CIRCUIT NO. PART NO.

Relay

RL551 25065339

Capacitors

C001 354761009

C106 354784799

C107 354742209

C108 354741019

C112,C133 354780229

C113 354780109

C131 374722234

C132,C159 374723334

C134,C210 353782299

C138 354721019

C154,C554 354780479

C155 354741019

C156,C157 354761009

C160 374721034

C161,C208 354780109

C201 354744719

C202 354742209

C204,C205 374721224

C206 374724734

C207 370134714

C209 354780339

C212,C213 354761009

C215,C216 354780229

C217,C218 374723924

C219 354780229

C301,C302 354780229

C307,C308 354721019

C309,C310 374726224

C311,C312 374721824

C313,C314 354780229

C315,C316 354741019

C330 354780229

C551,C552 374724734

C555 354722219

C905,C906 3504207

C907,C908 354742219

C910 354784709

C911 354752229

C913-C915 354761009

C917,C918 354781009

Resistors

R101 5210221 or

5210070

R201 5210216 or

5210062

R202 5210222 or

5210072

R559,R560 442520824

R902,R903 441729114

R904 442520104

R905 441726804

DESCRIPTION

NRL-2P5ADC24-046

10 μ F,35V,Elect.0.47 μ F,50V,Elect.22 μ F,16V,Elect.100 μ F,16V,Elect.2.2 μ F,50V,Elect.1 μ F,50V,Elect.0.022 μ F $\pm$ 5%,50V,Plastic0.033 μ F $\pm$ 5%,50V,Plastic0.22 μ F,50V,Elect.100 μ F,6.3V,Elect.4.7 μ F,50V,Elect.100 μ F,16V,Elect.10 μ F,35V,Elect.0.01 μ F $\pm$ 5%,50V,Plastic1 μ F,50V,Elect.470 μ F,16V,Elect.22 μ F,16V,Elect.1200pF $\pm$ 5%,50V,Plastic0.047 μ F $\pm$ 5%,50V,Plastic470pF $\pm$ 5%,100V,Plastic3.3 μ F,50V,Elect.10 μ F,35V,Elect.2.2 μ F,50V,Elect.3900pF $\pm$ 5%,50V,Plastic2.2 μ F,50V,Elect.2.2 μ F,50V,Elect.100 μ F,6.3V,Elect.6200pF $\pm$ 5%,50V,Plastic1800pF $\pm$ 5%,50V,Plastic2.2 μ F,50V,Elect.100 μ F,16V,Elect.2.2 μ F,50V,Elect.0.047 μ F $\pm$ 5%,50V,Plastic220 μ F,6.3V,Elect.6800 μ F,50V,Elect.220 μ F,16V,Elect.47 μ F,50V,Elect.2200 μ F,25V,Elect.10 μ F,35V,Elect.10 μ F,50V,Elect.

Semi-fixed

N06HR100KBD

N06HR5KBD or

N06HR4.7KBD, Semi-fixed

N06HR200KBD or

N06HR220KBD, Semi-fixed

8.2ohm,1/2W,Metal oxide film

910ohm,2W,Metal oxide film

1ohm,1/2W,Metal oxide film

68ohm,2W,Metal oxide film

CIRCUIT NO. PART NO.

Resistors

R906 442521004

R910 441622704

Terminals

P001 25060087

P101 25060064

P102 25060061

P301,P302 25045323Y

P551 25060158Y

Sockets

P310,P901 25050267

NSCT-3P95

DISPLAY CIRCUIT PC BOARD (NADIS-4037-2A)

CIRCUIT NO. PART NO. DESCRIPTION

IC

Q701 22240406Y

FL tube

Q702 212093Y

Transistor

Q704 221282

Diodes

D702 224150913

D705-D707 223163

D709-D711 223163

D713-D720 223163

Ceramic oscillator

X701 3010163

Coil

L701 233400M220 or

233409K220

Capacitors

C701 3000057

C702,C704 375524744

C703 353780229

Resistor

R710 49163103404

Switches

S701-S727 25035548

Holder

27190810Y

FL

HEADPHONE TERMINAL PC BOARD (NASW-4039-2A)

CIRCUIT NO. PART NO. DESCRIPTION

S601 25035517

P601 25045255

NPS-222-L479,Speaker switch

YKB21-5009,Headphone terminal

POWER SUPPLY CIRCUIT PC BOARD (NAPS-4042-2A)

CIRCUIT NO. PART NO. DESCRIPTION

S901 25035550

C901 3500065A

 Δ NPS-111-L512P,Push switch Δ DE7150FZ103PAC400V/125V

IS capacitor

 Δ 2A-SE-EAK,Fuse Δ YSH-403T,Fuseholder

POWER AMPLIFIER CIRCUIT PC BOARD (NAAF-4038-2A)

CIRCUIT NO. PART NO. DESCRIPTION

ICs

Q501,Q502 22240108

Transistors

Q503,Q504 2202492,

2202493,

2202243

2202244 or

2202246

2202502,

2202503,

2202253

2202254 or

2202256

2211255

2212285

2211455

Capacitors

C501,C502 354761009

C505,C506 354741019

C507,C508 374723334

C515,C516 354780229

C517 353761009

Resistors

R511,R512 5215061

R526,R527 442521004

R531-R534 4500005

Plugs

P503,P504 25055495

Socket

P501 25050267

NSCT-3P95

TONE CONTROL CIRCUIT PC BOARD (NAAF-4047-1A)

CIRCUIT NO. PART NO. DESCRIPTION

ICs

Q401,Q402 222502

Capacitors

C401,C402 354761009

C407,C408 354761009

C409,C410 374722234

C411,C412 354780339

C413,C414 374722234

C417,C418 354744709

C453,C454 374724734

Resistors

R405,R406 5104228

R417,R421 5104229

R418,R422

R459,R460

N11RHC250KWT22Z,Balance

N14RHC100KWT22Z,Tone

N16RGP100KBTP25,Volume

Switch

S451 25035611

NPS-122-L573,Switch