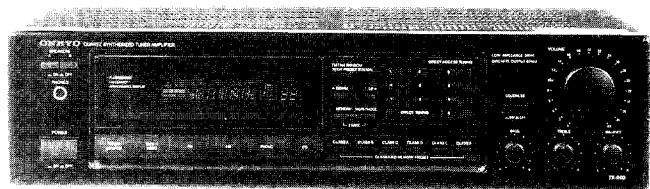
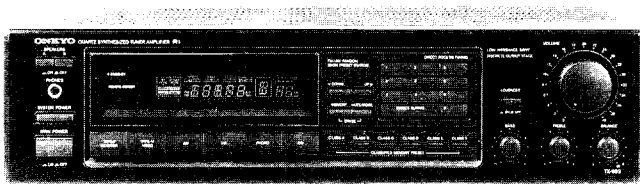


# ONKYO SERVICE MANUAL

## QUARTZ SYNTHESIZED TUNER AMPLIFIER MODEL TX-900 MODEL TX-902



### Black model

BHMD, BHMDN	120V AC, 60Hz
BHMP, BHMPF	230V AC, 50Hz
BHMW	120V or 220V AC, 50/60Hz
BHMQA	240V AC, 50Hz

### SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY MARK  $\Delta$  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-902	TX-900
<b>Power Output:</b>	50 watts per channel, min. RMS, at 8 ohms, both channels driven, from 40Hz to 20kHz, with no more than 0.2% THD.	40 watts per channel, min. RMS, at 8 ohms, both channels driven, from 40kHz to 20kHz, with no more than 0.3% THD.
<b>Musical Power Output:</b>	2 × 120 watts at 4 ohms, 1kHz (DIN) 2 × 80 watts at 8 ohms, 1kHz (DIN)	2 × 95 watts at 4 ohms, 1kHz (DIN) 2 × 68 watts at 8 ohms, 1kHz (DIN)
<b>Continuous Power Output:</b>	2 × 65 watts at 4 ohms, 1kHz (DIN) 2 × 55 watts at 8 ohms, 1kHz (DIN)	2 × 55 watts at 4 ohms, 1kHz (DIN) 2 × 45 watts at 8 ohms, 1kHz (DIN)
<b>Total Harmonic Distortion:</b>	0.2% at rated power 0.1% at 30a watt output	0.3% at rated power 0.1% at 30 watt output
<b>IM Distortion:</b>	0.2% at rated power 0.1% at 30 watt output	0.3% at rated power 0.1% at 30 watt output
<b>Damping Factor:</b>	50 at 8 ohms	50 at 8 ohms
<b>Frequency Response:</b>	20 — 30,000 Hz ± 1dB	20 — 30,000 Hz ± 1dB
<b>RIAA Deviation:</b>	20 — 20,000 Hz ± 0.8dB	20 — 20,000 Hz ± 0.8dB
<b>Sensitivity and Impedance:</b>	Phono: 2.5mV/50 kohms CD/Tape Play: 150mV/50 kohms Tape Rec: 150mV/3.5 kohms	Phono: 2.5mV/50 kohms CD/Tape Play: 150mV/50 kohms Tape Rec: 150mV/3.5 kohms
<b>Phono Overload:</b>	120mV RMS at 1kHz, 0.2% THD	120mV RMS at 1kHz, 0.3% THD
<b>Signal-to-Noise Ratio:</b>	Phono: 80dB (at 5mV input, IHF-A) CD/Tape: 100dB (IHF-A)	Phono: 80dB (at 5mV input, IHF-A) CD/Tape: 100dB (IHF-A)
<b>Tone Controls:</b>	Bass: ± 10dB at 100Hz Treble: ± 10dB at 10kHz	Bass: ± 10dB at 100Hz Treble: ± 10dB at 10kHz
<b>Muting:</b>	— ∞	—

## TUNER SECTION

	TX-902	TX-900
<b>FM:</b>	—220V/Worldwidemodels—	—120V model—
<b>Tuning Range:</b>	87.50—108.00MHz (50kHz steps) 87.5—108.00MHz (50kHz steps) or (200kHz steps) (Worldwide model)	87.9—107.9MHz (200kHz steps)
<b>Usable Sensitivity:</b>	Mono: 12.4dBf, 1.2 μV, 75ohms 1.2 μV (S/N 26dB, 40kHz Devi.) 75ohms DIN Stereo: 19.2dBf, 2.5 μV, 75ohms 25 μV (S/N 46dB, Devi.) 75ohms DIN	Mono: 12.4dBf, 2.3 μV Stereo: 18.2dBf, 4.5 μV
<b>50dB Quieting Sensitivity:</b>	Mono: 18.2dBf, 2.2 μV, 75ohms Stereo: 38.2dBf, 22 μV, 75ohms	Mono: 18.2dBf, 4.5 μV Stereo: 38.2dBf, 45 μV
<b>Capture Ratio:</b>	1.5dB	1.5dB
<b>Image Rejection Ratio:</b>	85dB	40dB
<b>IF Rejection Ratio:</b>	90dB	90dB
<b>Signal-to-Noise Ratio:</b>	Mono: 70dB Stereo: 65dB	Mono: 70dB Stereo: 65dB
<b>Alternate Channel Attenuation:</b>		55dB
<b>Selectivity:</b>	50dB DIN (±300kHz, 40kHz dev.)	50dB
<b>AM suppression Ratio:</b>	50dB	50dB
<b>Harmonic Distortion:</b>	Mono: 0.15% Stereo: 0.30%	Mono: 0.15% Stereo: 0.30%
<b>Frequency Response:</b>	30—15,000Hz ± 1.5dB	30—15,000Hz ± 1.5dB
<b>Stereo Separation:</b>	40dB at 1kHz 30dB at 100—10,000Hz	40dB at 1kHz 30dB at 100—10,000Hz
<b>Muting Level:</b>	17.2dBf, 4 μV	17.2dBf, 4 μV
<b>AM:</b>		
<b>Tuning Range:</b>	522—1610kHz (9kHz steps) 522—1610kHz (9kHz steps) or 530—1710kHz (10kHz steps) (Worldwide model)	530—1710kHz (10kHz steps)
<b>Usable Sensitivity:</b>	30 μV	30 μV
<b>Image Rejection Ratio:</b>	40dB	40dB
<b>IF Rejection Ratio:</b>	40dB	40dB
<b>Signal-to-Noise Ratio:</b>	40dB	40dB
<b>Harmonic Distortion:</b>	0.8%	0.8%

## GENERAL

	TX-902	TX-900
<b>Dimensions (W×H×D):</b>	455×120×316mm 17-15/16" × 4-6/8" × 12-7/16"	455×120×316mm 17-15/16" × 4-6/8" × 12-7/16"
<b>Weight:</b>	7.8kg, 17.2 lbs.	7.0kg, 15.4 lbs.

**Remote control transmitter RC-183S/RC-184S (Only Model TX-902)**

Transmitter: Infrared  
 Signal range: Approx. 5 meters (16ft. 4" )  
 Power supply: Two "AA" batteries(1.5V × 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.

D (120V) model

Circuit no.	Part no.	Description
F901	252049	4A(ST-6).Primary

P (230V) and Q (240V) models

Circuit no.	Part no.	Description
F902	252074	2A-SE-EAK,Primary
F951	252074	2A-SE-EAK,AC outlet (Only model TX-902)

W (Worldwide) model

Circuit no.	Part no.	Description
F901	252049	4A(ST-6).Primary
F902	252074	2A-SE-EAK.Primary

### 2.Safety-check out

(Only U.S.A. model)

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

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

Specifications: 3.3Mohm  $\pm$ 10% at 500V.

### 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 screwdriver to the right or left. Confirm that the switch has been moved all the way to the right or left before turning the power switch on.

### 4.Step band selector switch

Worldwide models are equipped with a step band selector switch. This switch is located on the back panel. This switch is set to 50kHz (FM) and 9kHz (AM) at the factory, but may have to be reset to 100kHz and 10kHz depending on the area where the unit is used.

De-emphasis	FM step	AM step
Europe: 50 $\mu$ sec	50kHz	9kHz
U.S.A.: 75 $\mu$ sec	200kHz	10kHz

### 5.Changing the band step

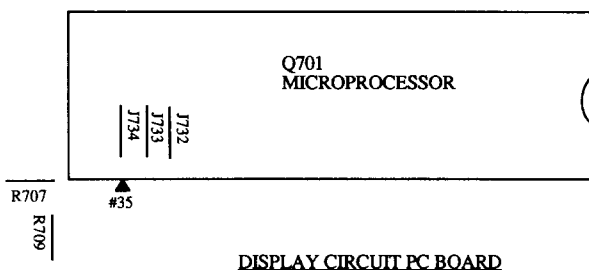
With the exception of the models below, a BAND STEP selector switch is not provided.

(FM)

MODEL	BAND STEP	R707(10k $\Omega$ )	J734
UD	200kHz $\rightarrow$ 50kHz	Add	Cut
UP/UQ	50kHz $\rightarrow$ 200kHz		Shorted

(AM)

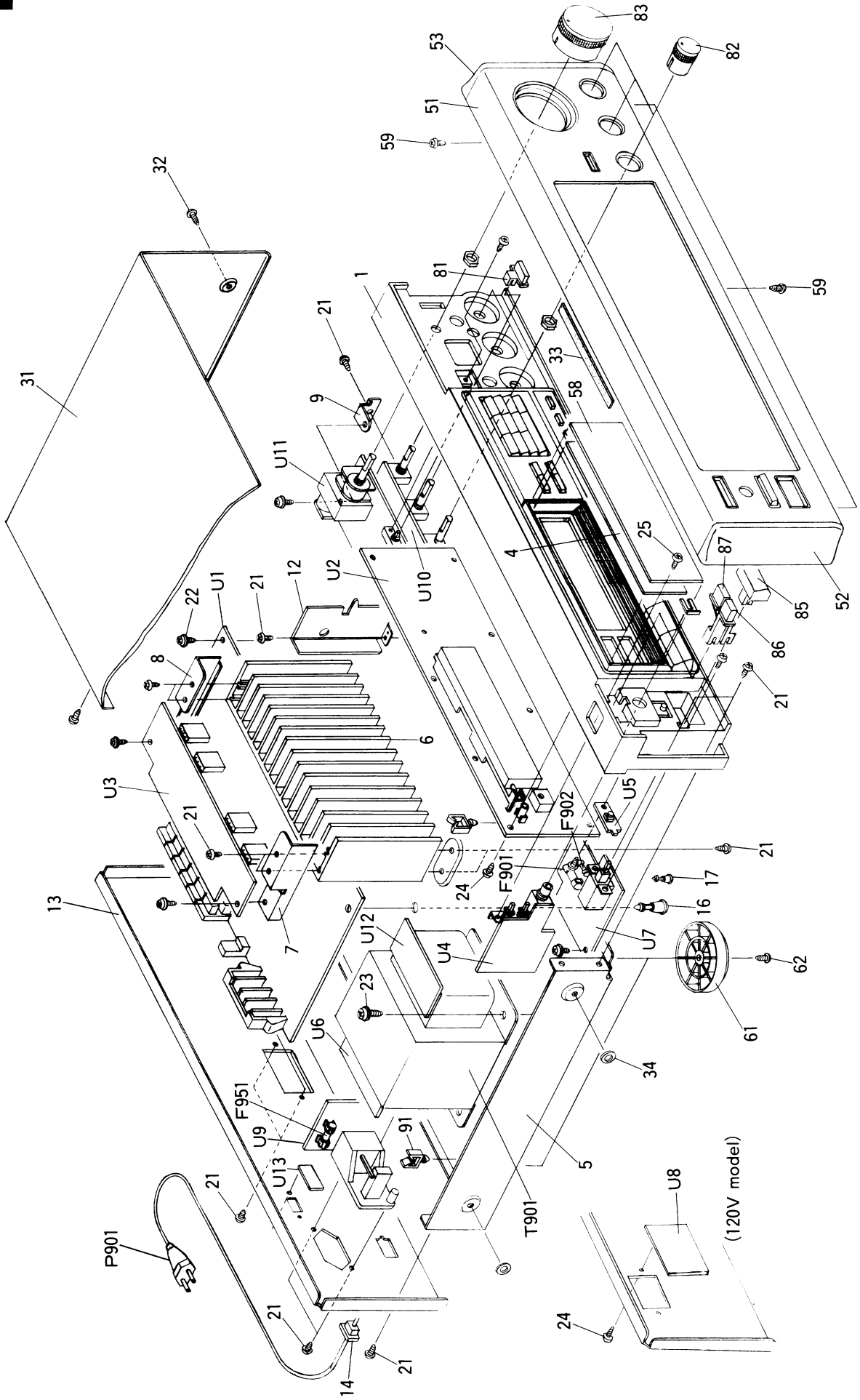
MODEL	BAND STEP	R709(10k $\Omega$ )	J732
UD	10kHz $\rightarrow$ 9kHz		Shorted
UP/UQ	9kHz $\rightarrow$ 10kHz	Add	Cut



### 6.Memroy preservation

This unit does not require memory preservation batteries. A built-in memory power back-up system preserves contents of the memory during power failures and even when the unit is unplugged. The unit must be plugged in and the power switch turned on and off once in order to charge the back-up system. Note that since this is not a permanent memory,the power switch must be turned on and off a few times each month to keep the back-up system operative. The period of time during which memory contents are preserved after power has last been turned off varies depending on climate and placement of the unit. On the average, memory contents are protected over a period of 3 to 4 weeks (a minimum of 2 weeks) after the last time power has been turned off. This period is shorter when the unit is exposed to very high humidity or used in an area with an extremely humid climate.

**EXPLODED VIEW**  
MODEL TX-902



## PARTS LIST

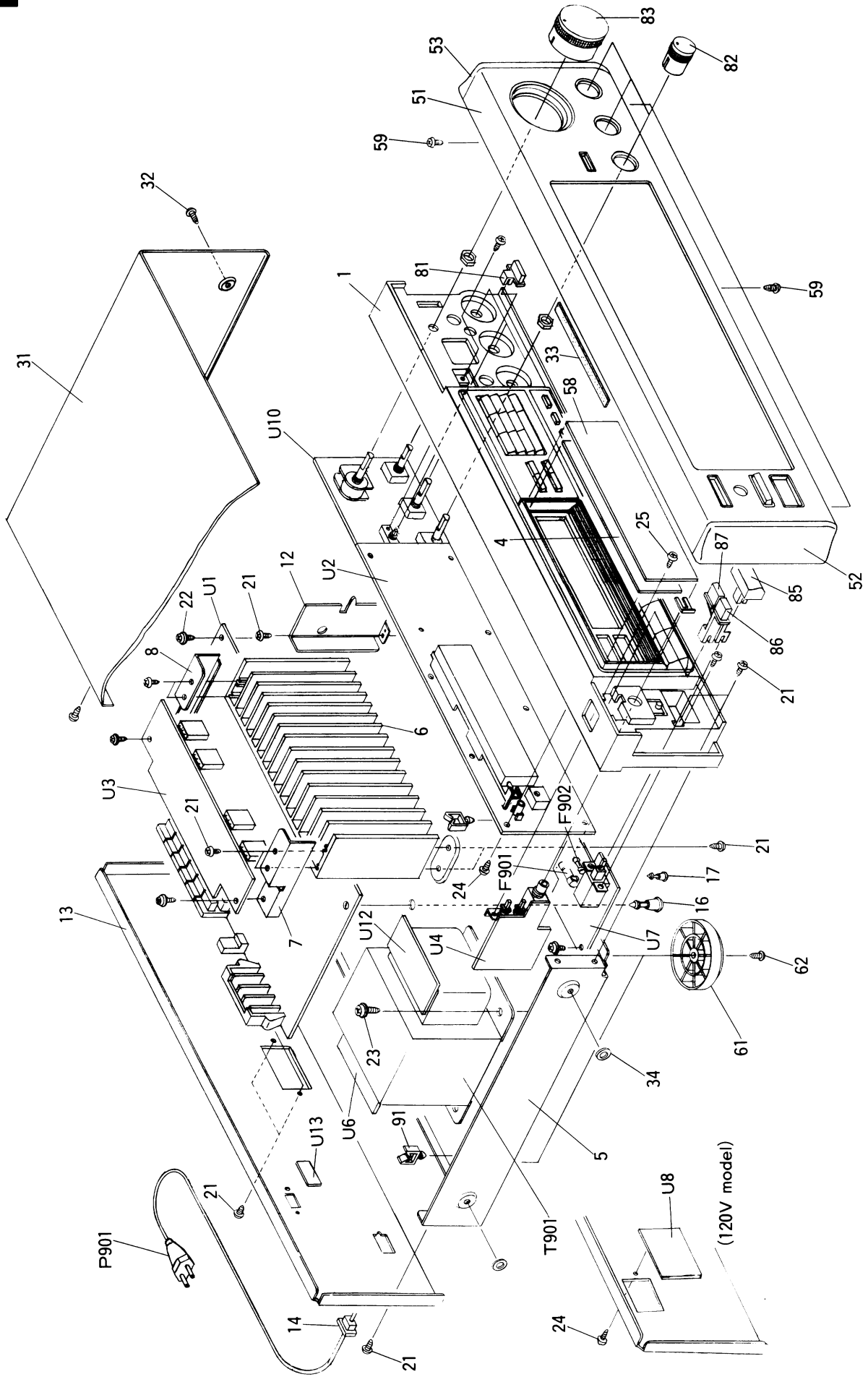
REF. NO.	PART NO.	DESCRIPTION	REF. NO.	PART NO.	DESCRIPTION	REF. NO.	PART NO.	DESCRIPTION
1	27110604AY	Front bracket	P901	253163Y	△ AS-UC-6 #18,Power supply cord <D>	U7	1A244542-1	NAPS-4042-1,Power supply circuit pc board ass'y <D>
4	28133254Y	Back plate		253164Y	△ AS-CBE,Power supply cord <P/W>			
5	27100228Y	Chassis	P951	253118	△ AS-SAA,Power supply cord <Q>		1A244542-1A	NAPS-4042-1A,Power supply circuit pc board ass'y <P>
6	27160272AY	Radiator	Q503,Q504	25050346	△ NSCT-2P173,AC outlet <Q>		1A244542-1B	NAPS-4042-1B,Power supply circuit pc board ass'y <W>
7	27141441Y	Bracket LH		2202282,	25A1265N-R,		1A244542-1C	NAPS-4042-1C,Power supply circuit pc board ass'y <Q>
8	27141442Y	Bracket RH		2202283,	25A1265N-O,			
9	27141443Y	Bracket PC		2201693,	25A1491-O,	U8	1A244543-1	NAETC-4043-1,AC outlet pc board ass'y <D>
12	27130643Y	Bracket,shield		2201694 or	25A1491-Y or			
13	27121406Y	Back panel <D>	Q505,Q506	2201696	25A1491-P,Power amplifier transistor	U9	1A244544-1	NAETC-4044-1,AC outlet pc board ass'y <P>
	27121406-1Y	Back panel <P>		2202292,	25C3182N-R,			
	27121406-3Y	Back panel <W>		2202293,	25C3182N-O,			
	27121406-4Y	Back panel <Q>		2201703,	25C3855-O,			
14	27300750	△ Bushing		2201704 or	25C3855-Y or			
16	27190524	KGLS-14R,Holder		2201706	25C3855-P,Power amplifier transistor		1A244544-1A	NAETC-4044-1A,AC outlet pc board ass'y <W>
17	27190266	KGLS-12R,Holder	T901	2300615Y	△ NPT-1093D,Power transformer <D>	U10	1A244545-1	NAAF-4045-1,Tone control circuit pc board ass'y <D>
21	834430088	3TTS+8B(BC),Self-tapping screw		2300616Y	△ NPT-1093P,Power transformer <P>			
22	831130088	3TTW+8B,Self-tapping screw		2300617Y	△ NPT-1093DG,Power transformer <W>		1A244545-1A	NAAF-4045-1A,Tone control circuit pc board ass'y <P/W/Q>
23	830440089	4TTC+8C(BC),Self-tapping screw		2300618Y	△ NPT-1093Q,Power transformer <Q>	U11	1A244546-1	NAETC-4046-1,Volume control pc board ass'y
24	833430080	3TTP+8P(BC),Self-tapping screw	U1	1A244536-1	NARE-4036-1,Tuner circuit pc board ass'y <D>			
25	82143006	3P+6FN(BC),Pan head screw		1A244536-1A	NARE-4036-1A,Tuner circuit pc board ass'y <P/Q>	U12	1A244596-1	NAETC-4096-1,Terminal pc board ass'y
26	801433	3SMS10W,SW+14B(BC),Sems self-tapping screw		1A244536-1B	NARE-4036-1B,Tuner circuit pc board ass'y <W>	U13	1A244597-1	NASW-4097-1,Voltage selector switch pc board ass'y <W>
31	28184471AY	Top cover	U2	1A244537-1	NADIS-4037-1,Display circuit pc board ass'y <D>			
32	834430088	3TTS+8B(BC),Self-tapping screw		1A244537-1A	NADIS-4037-1A,Display circuit pc board ass'y <P/Q>			
33	28140680	0.5 X 180 X 8,Cushion		1A244537-1B	NADIS-4037-1B,Display circuit pc board ass'y <W>			
34	27270212	Spacer <P/W/Q>		1A244538-1	NAAF-4038-1,Power amplifier circuit pc board ass'y <D>			
51	1A244121	Front panel ass'y		1A244538-1A	NAAF-4038-1A,Power amplifier circuit pc board ass'y <P/W/Q>			
52	28125226AY	End cap L		1A244539-1	NASW-4039-1,Headphone terminal pc board ass'y <D>			
53	28125227AY	End cap R		1A244539-1A	NASW-4039-1A,Headphone terminal pc board ass'y <P/W/Q>			
58	28191577Y	Clear plate	U3	1A244538-1	NAAF-4038-1,Power amplifier circuit pc board ass'y <D>			
59	833430080	3TTP+8P(BC),Self-tapping screw		1A244539-1	NASW-4039-1,Headphone terminal pc board ass'y <D>			
60	28135199	Badge		1A244539-1	NASW-4039-1,Headphone terminal pc board ass'y <D>			
61	27175254Y	Leg		1A244539-1A	NASW-4039-1A,Headphone terminal pc board ass'y <P/W/Q>			
62	834430088	3TTS+8B(BC),Self-tapping screw		1A244539-1	NASW-4039-1,Headphone terminal pc board ass'y <D>			
81	28324162Y	Knob LOUD	U4	1A244539-1	NASW-4039-1,Headphone terminal pc board ass'y <D>			
82	28324150-1Y	Knob LEV		1A244539-1A	NASW-4039-1A,Headphone terminal pc board ass'y <P/W/Q>			
83	28324163	Knob VOL		1A244540-1	NASW-4040-1,Power switch pc board ass'y			
85	28324140Y	Knob POW	U5	1A244540-1	NASW-4040-1,Power switch pc board ass'y			
86	28324170Y	Knob SP A		1A244541-1	NAETC-4041-1,Terminal pc board ass'y			
87	28324171Y	Knob SP B						
91	27300833	WS-2NS,Clamp	U6	1A244541-1	NAETC-4041-1,Terminal pc board ass'y			
F901	252049	△ 4A(ST-6),Fuse <D/W>						
F902	252074	△ 2A-SE-EAK,Fuse <P/W/Q>						
F951	252074	△ 2A-SE-EAK,Fuse <P/Q>						

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

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

# EXPLODED VIEW

MODEL TX-900



## PARTS LIST

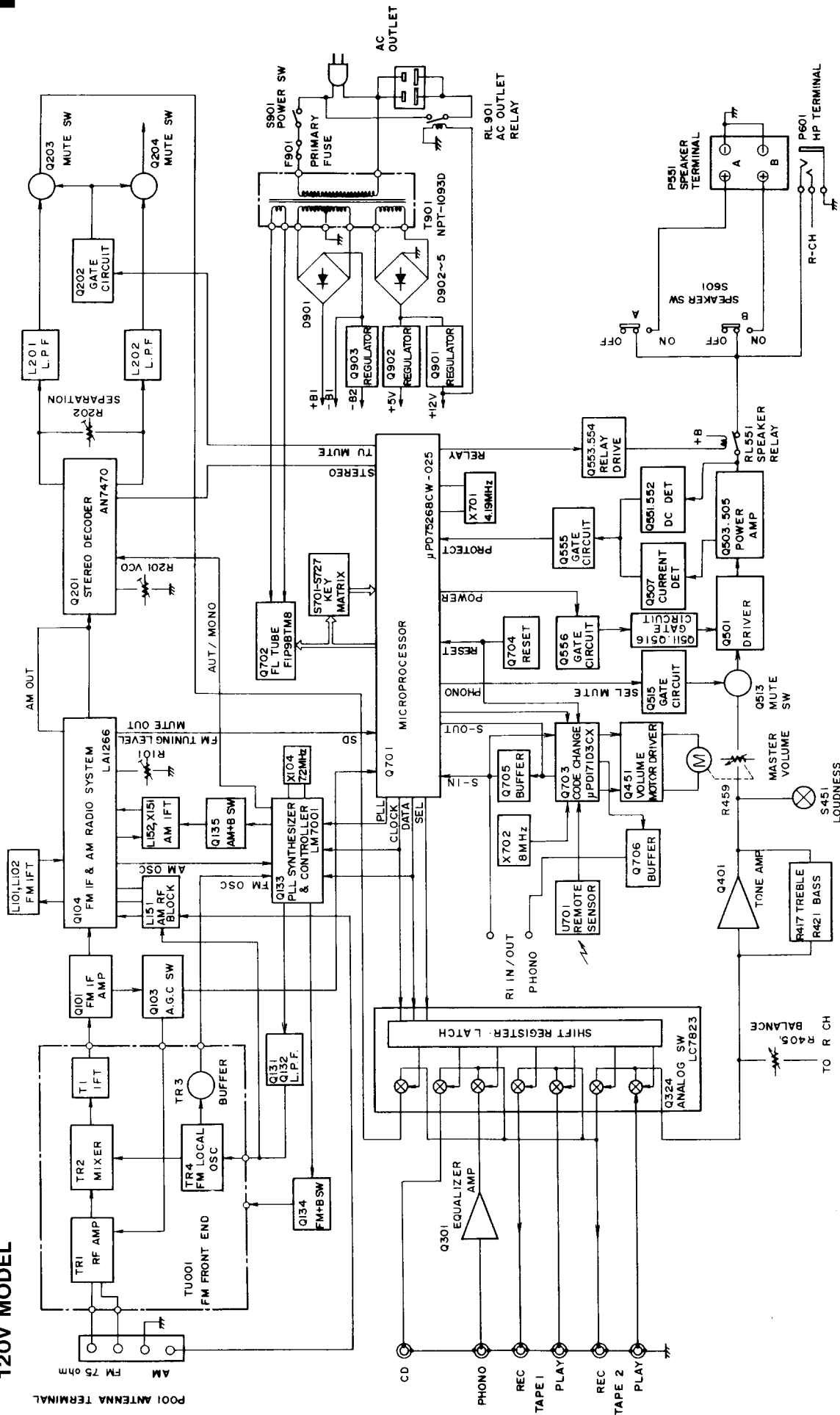
REF. NO.	PART NO.	DESCRIPTION	REF. NO.	PART NO.	DESCRIPTION	REF. NO.	PART NO.	DESCRIPTION
1	27110605AY	Front bracket	Q503-Q504	2202492,	2SA1263N-R,	U7	1A248542-2	NAPS-4042-2,Power supply circuit pc board ass'y <D>
4	2813325AY	Back plate		2202493,	2SA1265N-O,			board ass'y <D>
5	27100228Y	Chassis		2202243,	2SA1491-O,			NAPS-4042-2A,Power supply circuit pc board ass'y <P/Q>
6	27160274AY	Radiator		2202244 or	2SA1491-Y or			NAPS-4042-2B,Power supply circuit pc board ass'y <W>
7	27141441Y	Bracket LH	Q505,Q506	2202246	2SA1491-P,Power amplifier transistor	U10	1A248547-1	NAAF-4047-1,Tone control circuit pc board ass'y <D>
8	27141442Y	Bracket RH		2202502,	2SC3182N-R,			NAAF-4047-1A,Tone control circuit pc board ass'y <P/W/Q>
12	27130643Y	Bracket,shield		2202503,	2SC3182N-O,			NAETC-4096-2,Terminal pc board ass'y
13	27121407Y	Back panel <D>		2202253,	2SC3855-O,			NASW-4097-2,Voltage selector switch pc board ass'y <W>
	27121407-1Y	Back panel <P>		2202254 or	2SC3855-Y or			
	27121407-3Y	Back panel <W>	T901	2202256	2SC3855-P,Power amplifier transistor	U12	1A248596-2	
	27121407-4Y	Back panel <Q>		2300623Y	△ NPT-1093D,Power transformer <D>	U13	1A248597-2	
14	273000750	△ Bushing		2300624Y	△ NPT-1093P,Power transformer <P>			
16	27190524	KGLS-14R,Holder		2300625Y	△ NPT-1093DG,Power transformer <W>			
17	27190266	KGLS-12R,Holder	U1	1A248536-2	△ NARF-4036-2,Tuner circuit pc board ass'y <D>			
21	834430088	3TTS+8B(BC),Self-tapping screw		1A248536-2A	NARF-4036-2A,Tuner circuit pc board ass'y <P/Q>			
22	831130088	3TTW+8B,Self-tapping screw		1A248536-2B	NARF-4036-2B,Tuner circuit pc board ass'y <W>			
23	830440089	4TTC+8C(BC),Self-tapping screw	U2	1A248537-2	NADJS-4037-2,Display circuit pc board ass'y <D>			
24	833430080	3TTP+8P(BC),Self-tapping screw		1A248537-2A	NADJS-4037-2A,Display circuit pc board ass'y <P/Q>			
25	82143006	3P+6FN(BC),Pan head screw		1A248537-2B	NADJS-4037-2B,Display circuit pc board ass'y <W>			
26	801433	3SMS10W,.SW+14B(BC),Sems self-tapping screw	U3	1A248538-2	NAAF-4038-2,Power amplifier circuit pc board ass'y <D>			
31	28184471AY	Top cover		1A248538-2A	NAAF-4038-2A,Power amplifier circuit pc board ass'y <P/W/Q>			
32	834430088	3TTS+8B(BC),Self-tapping screw	U4	1A248539-2	NASW-4039-2,Headphone terminal board ass'y <D>			
33	28140680	0.5X180X8,Cushion		1A248539-2A	NASW-4039-2A,Headphone terminal board ass'y <P/W/Q>			
34	27270212	Spacer <P/W/Q>	U6	1A248541-2	NAETC-4041-2,Terminal pc board ass'y			
51	1A248121	Front panel ass'y	U7	1A248542-2	NAPS-4042-2,Power supply circuit pc board ass'y <D>			
52	28125226AY	End cap L		1A248542-2A	NAPS-4042-2A,Power supply circuit pc board ass'y <P>			
53	28125227AY	End cap R		1A248542-2B	NAPS-4042-2B,Power supply circuit pc board ass'y <W>			
58	28191577Y	Clear plate		1A248542-2C	NAPS-4042-2C,Power supply circuit pc board ass'y <Q>			
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						
82	28324150-1	Knob LEV						
83	28324181	Knob VOL						
85	28324140Y	Knob POW						
86	28324170Y	Knob SP A						
87	28324171Y	Knob SP B						
91	27300833	WS-2NS,Clamp						
F901	252049	△ 4A(ST-6),Fuse <D/W>						
F902	252074	△ 2A-SE-EAK,Fuse <P/W/Q>						
F951	252074	△ 2A-SE-EAK,Fuse <P/Q>						
P901	253163Y	△ AS-UC-6 #18,Power supply cord <D>						
	253164Y	△ AS-CEE,Power supply cord <P/W>						
	253118	△ AS-SAA,Power supply cord <Q>						

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

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

# BLOCK DIAGRAM

MODEL TX-902  
120V MODEL

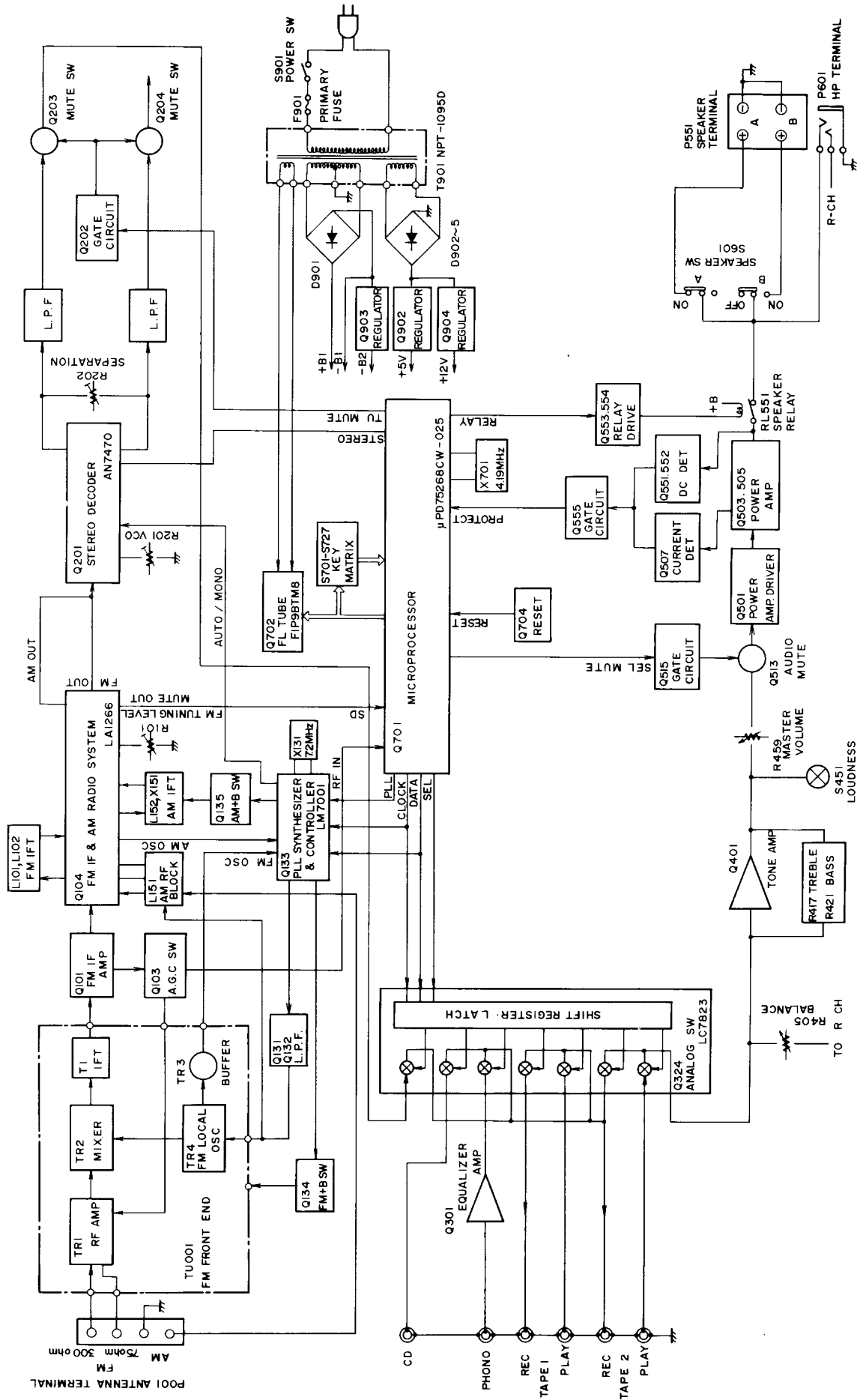




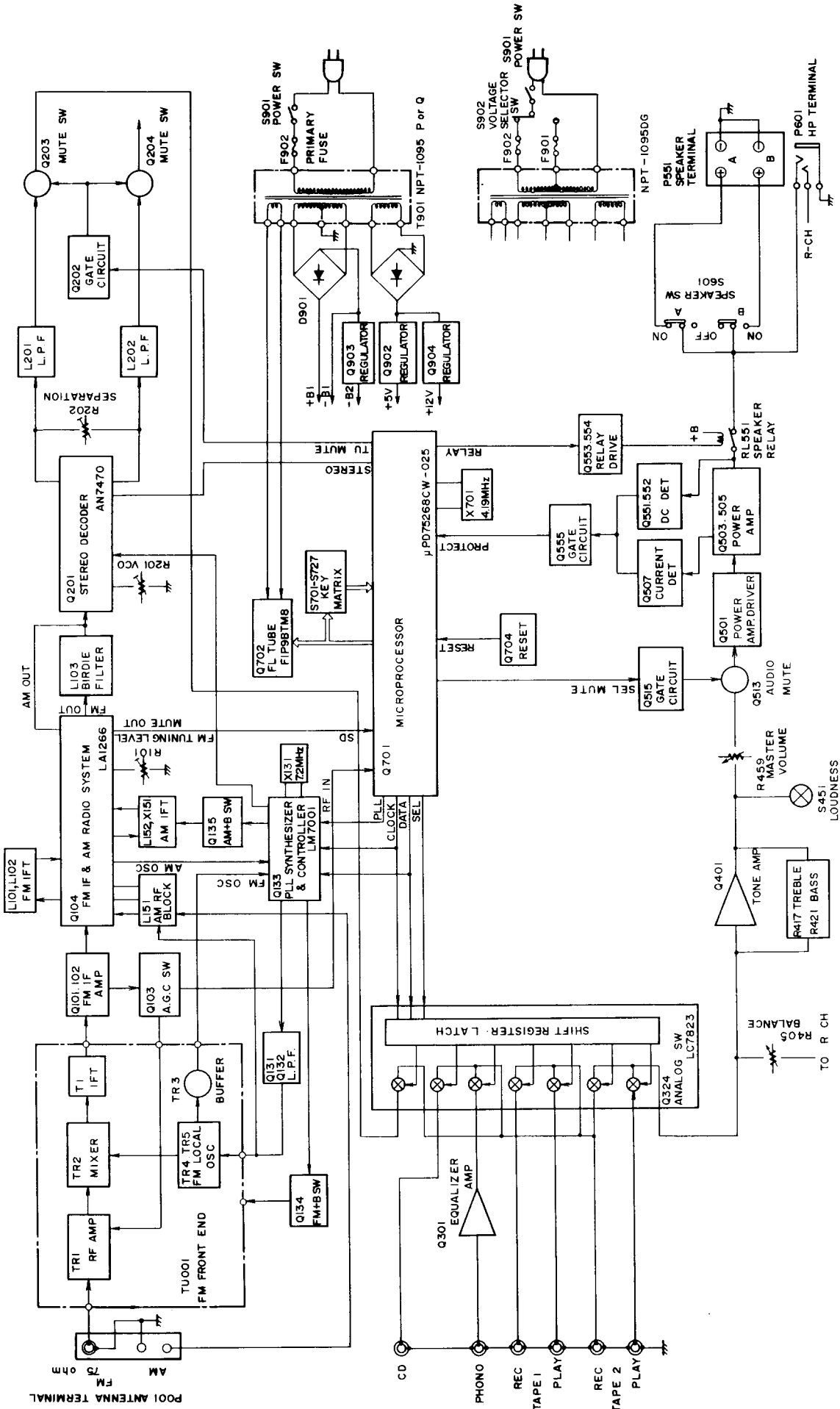


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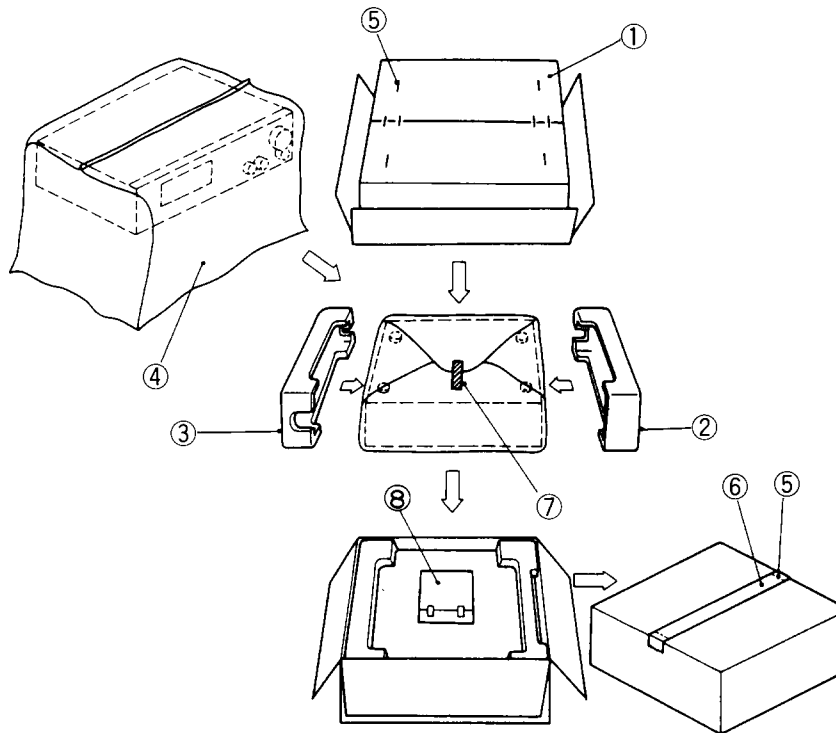
MODEL TX-900  
120V MODEL



OTHER MODELS



## PACKING VIEW



## TX-902

REF. NO.	PART NO.	DESCRIPTION
1	29052137Y	Master carton box
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	
	29341583Y	Instruction manual <D>
	29341585Y	Instruction manual <P/W/Q/C>
	29100097	350×250,Styrene bag
	292064B	FM antenna <D/W>
	292092	FM antenna <P/Q>
	25060123	YAE21-0120A,FM antenna adaptor <W/Q>
	232140	NMA-3057,AM loop antenna
	25055040	CV-K-2,Conversion plug <W>
	29365019A	Warranty card <N>
	29365024	Warranty card <F>
	29100107	Styrene bag for warranty card <F>
	29358002J	Service station list<N>
	3010165Y	UM-3,Two batteries
	24140183Y	RC-183S,Remote control unit
	24140184Y	RC-184S,Remote control unit
	2010200	Cord RI

## TX-900

REF. NO.	PART NO.	DESCRIPTION
1	29052138Y	Master carton box
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	
	29341583Y	Instruction manual <D>
	29341585Y	Instruction manual <P/W/Q/C>
	29100097	350×250,Styrene bag
	292064B	FM antenna <D/W>
	292092	FM antenna <P/Q>
	25060123	YAE21-0120A,FM antenna adaptor <W/Q>
	232140	NMA-3057,AM loop antenna
	25055040	CV-K-2,Conversion plug <W>
	29365019A	Warranty card <N>
	29365024	Warranty card <F>
	29100107	Styrene bag for warranty card <F>
	29358002J	Service station list<N>

NOTE: <D>:Only 120V model  
 <P>:Only 230V model  
 <W>:Only Worldwide model  
 <Q>:Only 240V model  
 <N>:Only U.S.A. model  
 <F>:Only French model  
 <C>:Only Canadian model

## ADJUSTMENT PROCEDURES

### Preparation

#### 1. Input

FM mono: 1kHz, 75kHz devi., 60dB/μV

FM stereo: 1kHz, 75kHz devi., 60dB/μV

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.

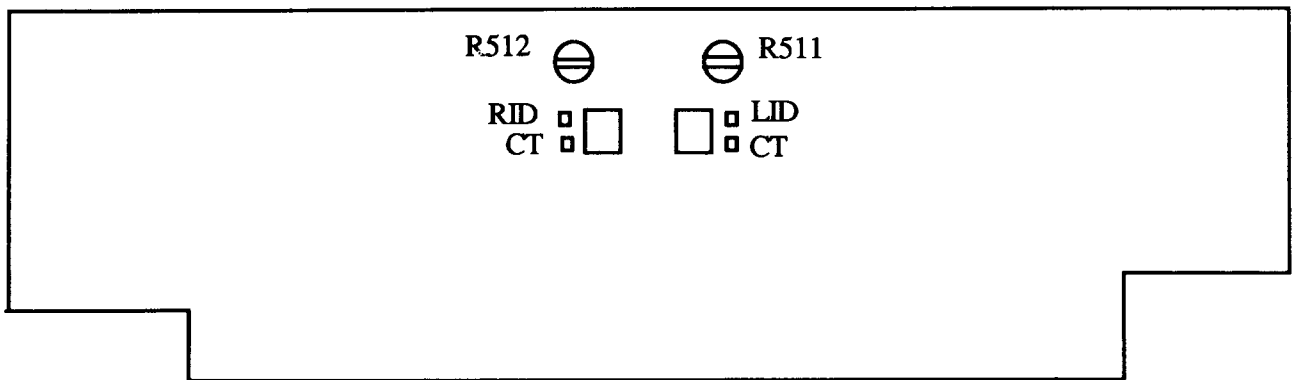
### Amplifier section

#### 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

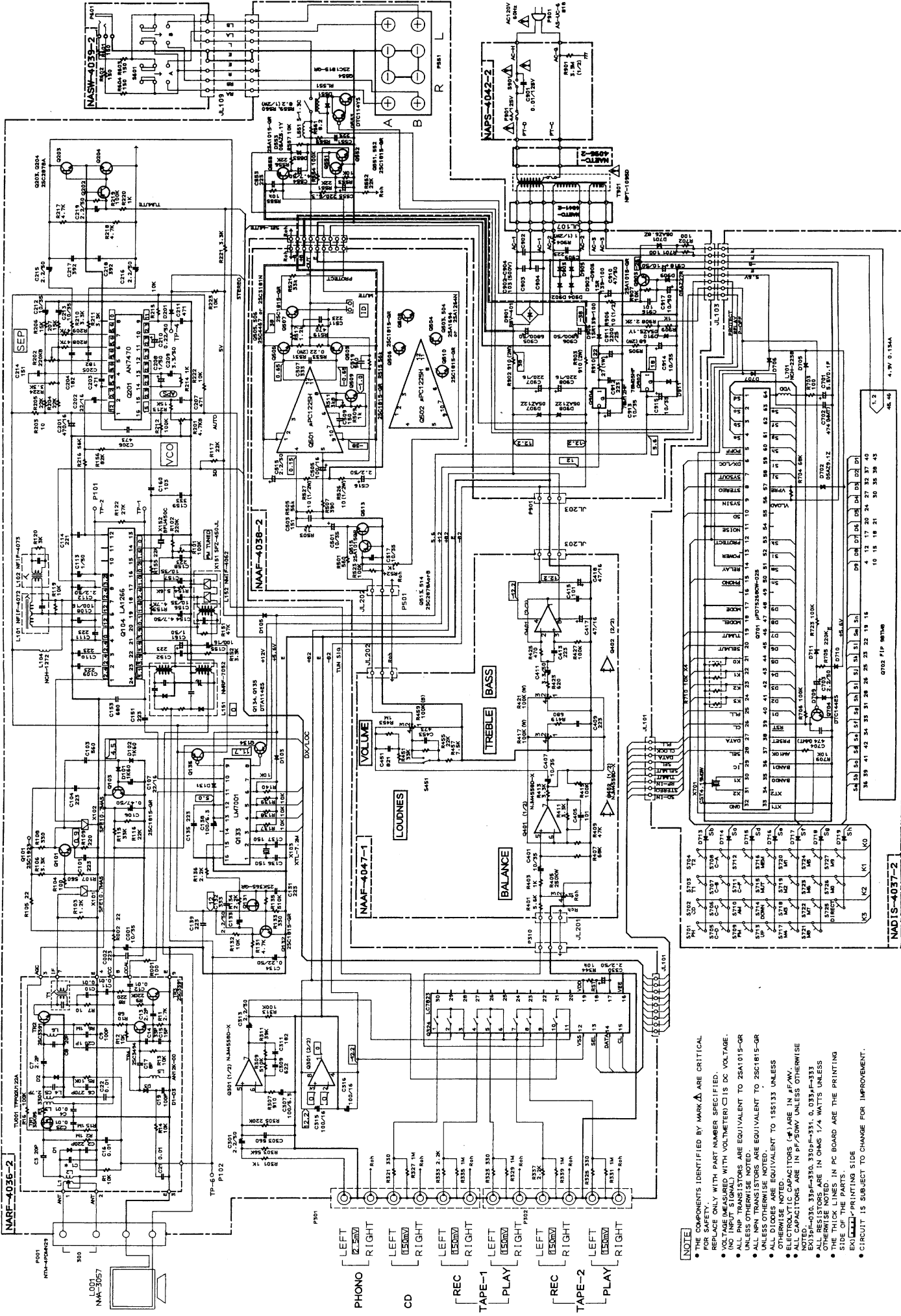


POWER AMPLIFIER PC BOARD

SOLDERING SIDE

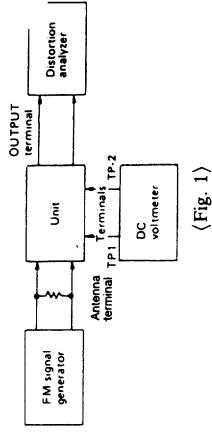
A B C D E F G

# SCHEMATIC DIAGRAM MODEL TX-900 (120V model)

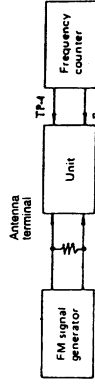


- NOTE**
- THE COMPONENTS IDENTIFIED BY MARK  $\Delta$  ARE CRITICAL FOR SAFETY.
  - REPLACE ONLY WITH PART NUMBER SPECIFIED.
  - VOLTAGE MEASURED WITH VOLTMETER C IS DC VOLTAGE.
  - ALL PNP TRANSISTORS ARE EQUIVALENT TO 2SA1015-S OR UNLESS OTHERWISE NOTED.
  - ALL NPN TRANSISTORS ARE EQUIVALENT TO 2SC1815-S OR UNLESS OTHERWISE NOTED.
  - RESISTORS ARE EQUIVALENT TO 155133 UNLESS OTHERWISE NOTED.
  - ELECTROLYTIC CAPACITORS ( $\Phi$ ) ARE IN  $\mu$ F/AV.
  - ALL CAPACITORS ARE IN P/F/50MV UNLESS OTHERWISE NOTED.
  - ALL RESISTORS ARE IN OHMS 1/4 WATTS UNLESS OTHERWISE NOTED.
  - THE SIDE OF THE PCB ARE THE PRINTING SIDE OF THE PARTS.
  - CIRCUIT IS SUBJECT TO CHANGE FOR IMPROVEMENT.



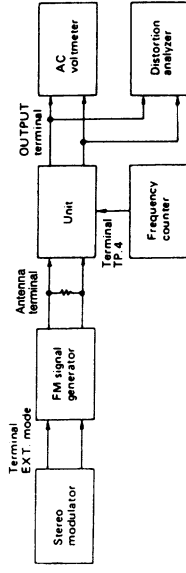


(Fig. 1)



Use the high impedance probe. (10:1)

(Fig. 2)



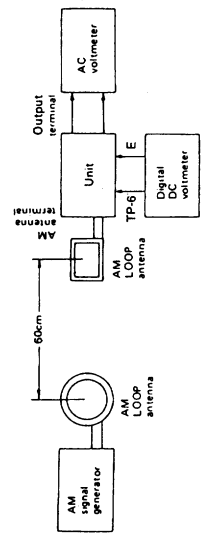
(Fig. 3)

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. 65dB(60dB)	—	99.1MHz	DC voltmeter	L101	0 ± 20mV	Set the FM mode switch to MONO. Repeat the steps 1 and 2 until no further adjustment is necessary.
	Distortion analyzer					L102	Minimum		
V C O	1	Fig. 2	99.1MHz 1kHz, 75kHz devi. 65dB(60dB)	—	99.1MHz	Frequency counter	R201	19kHz ± 10Hz	Set the FM mode switch to AUTO.
						Distortion analyzer	IF on front end	Minimum	
Stereo distortion	1	Fig. 3	99.1MHz Ext. modulation 65dB(60dB)	L+R 1kHz 67.5kHz devi.	99.1MHz	Distortion analyzer	R202	Minimum	Maximum and same separation
				Lch. 1kHz Rch. 1kHz					
Tuned indicator level	1	Fig. 3	99.1MHz 1kHz, 75kHz devi. 18.2dB(13dB) 11dB (other models)	—	99.1MHz	TUNED indicator	R101	Light on	
						—	Light off		

AM section

Step	AM SG output	Tuned Frequency	Output indicator	Adjustment point	Adjust for
1	—	522kHz (530kHz) (531kHz)	Digital DC voltmeter	OSC coil on RF block (L151)	1.5V ± 0.1V
2	603kHz/60dB/m (600kHz) 400Hz 30% mod.	603kHz (600kHz)	A C voltmeter	RF coil on RF block (L151)	Maximum
3	990kHz, 60dB/m (400Hz 30% mod.)	990kHz	A C voltmeter	L152	Maximum

Note: ( ) :120V model (10kHz step)  
< > : Worldwide model



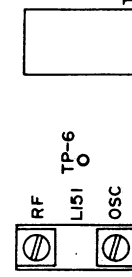
Reference specifications

Tuned voltage AM 530kHz (U.S.A. model) 1.5 ± 0.4V  
 522kHz (European model) 1.5 ± 0.4V  
 DC voltmeter to Digital 1710kHz (U.S.A. model) 8.0 ± 0.5V  
 test point (TP-6) 1611kHz (European model) 7.5 ± 0.5V  
 FM 87.9MHz (U.S.A. model) 2.0 ± 0.5V  
 87.50MHz (European model) 2.0 ± 0.5V  
 107.9MHz (U.S.A. model) 7.5 ± 0.5V  
 108.0MHz (European model) 7.5 ± 0.5V

Muting width 35 ± 10kHz

Muting level (U.S.A. model) FM 14 ± 3dB  
 (European model) FM 12 ± 3dB

Auto stop level  
 AM Less than 68dB/m  
 FM Less than 20dBμ

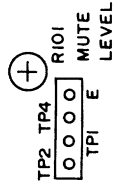


OSC

TP-6

LI51

RF





# PRINTED CIRCUIT BOARD-PARTS LIST

## Model TX-902

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

CIRCUIT NO.	PART NO.	DESCRIPTION	CIRCUIT NO.	PART NO.	DESCRIPTION
	Front end			Crystal	
TU001	240084	TFFG2U122A<D>	X131	3010158	XTL-7.2M
	240085	TFFG4E122A<P/W>		Relay	
	ICs		RL551	25065339	NRL-2P5ADC24-046
Q104	22240039	LA1266		Capacitors	
Q133	22240090	LM7001	C001	354761009	10 $\mu$ F,35V,Elect.
Q201	22240242	AN7470	C106	354784799	0.47 $\mu$ F,50V,Elect.
Q301	222502	NJM4558D-X	C107,C108	354742209	22 $\mu$ F,16V,Elect.
Q324	22240158 or	LC7823 or	C112,C133	354780229	2.2 $\mu$ F,50V,Elect.
	22240339	LC7823N	C113	354780109	1 $\mu$ F,50V,Elect.
Q901	222780126Y	L78OS12	C131	374722234	0.022 $\mu$ F $\pm$ 5%,50V,Plastic
Q902	222780055	78M05HF	C132,C159	374723334	0.033 $\mu$ F $\pm$ 5%,50V,Plastic
	Transistors		C134,C210	353782299	0.22 $\mu$ F,50V,Elect.
Q101	2211723	2SC1923-O	C138	354721019	100 $\mu$ F,6.3V,Elect.
Q102	2210746	2SC945A-P <P/W>	C154,C554	354780479	4.7 $\mu$ F,50V,Elect.
Q103,Q132	2211255	2SC1815-GR	C155	354741019	100 $\mu$ F,16V,Elect.
Q131	2212445	2SK365-GR	C156,C157	354761009	10 $\mu$ F,35V,Elect.
Q134,Q135	2213510	DTA114ES	C160	374721034	0.01 $\mu$ F $\pm$ 5%,50V,Plastic
Q202,Q555	2211455	2SA1015-GR	C161,C208	354780109	1 $\mu$ F,50V,Elect.
Q203,Q204	2212285	2SC2878-A	C201	354744719	470 $\mu$ F,16V,Elect.
Q551,Q552	2211255	2SC1815-GR	C202	354742209	22 $\mu$ F,16V,Elect.
Q553,Q556	221281	DTC114YS	C204,C205	374721824	1800pF $\pm$ 5%,50V,Plastic
Q554	2211255	2SC1815-GR			<D>
Q903	2211455	2SA1015-GR		374721224	1200pF $\pm$ 5%,50V,Plastic
	Diodes				<P/W>
D101,D102	223132	1K60	C206	374724734	0.047 $\mu$ F $\pm$ 5%,50V,Plastic
D103,D105	223163	1SS133	C207	370134714	470pF $\pm$ 5%,100V,Plastic
D131,D201	223163	1SS133	C209	354780339	3.3 $\mu$ F,50V,Elect.
D551,D552	223163	1SS133	C212,C213	354761009	10 $\mu$ F,35V,Elect.
D553	224150512	05AZ5.1Y	C215,C216	354780229	2.2 $\mu$ F,50V,Elect.
D701	224150683	05AZ6.8Z	C217,C218	374723924	3900pF $\pm$ 5%,50V,Plastic
D901	22380023	RBV401	C219	354780229	2.2 $\mu$ F,50V,Elect.
D902-D906	22380032	1SR139-100	C301,C302	354780229	2.2 $\mu$ F,50V,Elect.
D907,D908	224151203	05AZ12Z	C307,C308	354721019	100 $\mu$ F,6.3V,Elect.
D909	224152704	05AZ27R	C309,C310	374726224	6200pF $\pm$ 5%,50V,Plastic
D910	224150512	05AZ5.1Y	C311,C312	374721824	1800pF $\pm$ 5%,50V,Plastic
D911	223163	1SS133	C313,C314	354780229	2.2 $\mu$ F,50V,Elect.
	Coils		C315,C316	354741019	100 $\mu$ F,16V,Elect.
L103	233383	NMC-6070 <P/W>	C330	354780229	2.2 $\mu$ F,50V,Elect.
L104	233409M022	NCH-1272	C551,C552	374724734	0.047 $\mu$ F $\pm$ 5%,50V,Plastic
L201,L202	233294	NMC-5040 <P/W>	C555	354722219	220 $\mu$ F,6.3V,Elect.
L551,L552	231176	S-1.3C	C563	354780479	0.47 $\mu$ F,50V,Elect.
	Transformers		C905,C906	3504207	6800 $\mu$ F,50V,Elect.
L101	233401	NFIF-4072	C907,C908	354742219	220 $\mu$ F,16V,Elect.
L102	233402	NFIF-4073	C910	354784709	47 $\mu$ F,50V,Elect.
L152	232139	NMIF-4062	C911	354752229	2200 $\mu$ F,25V,Elect.
	RF block		C913-C915	354761009	10 $\mu$ F,35V,Elect.
L151	232152	NMRF-7052	C917,C918	354781009	10 $\mu$ F,50V,Elect.
	Ceramic filters			Resistors	
X101,X102	3010071	SFE10.7MA5 <D>	R101	5210221 or	N06HR100KBD
X101	3010081	SFE10.7MS3GYA <P/W>		5210070	Semi-fixed
X102	3010137	SFE10.7MMK <P/W>	R201	5210216 or	N06HR5KBD or
X151	3010123	SFZ450JL		5210062	N06HR4.7KBD ,Semi-fixed
X152	3010076	BFU450C	R202	5210222 or	N06HR200KBD or
				5210072	N06HR220KBD,Semi-fixed

CIRCUIT NO.	PART NO.	DESCRIPTION	CIRCUIT NO.	PART NO.	DESCRIPTION
	<b>Resistors</b>			<b>Resistor</b>	
R559,R560	442520824	8.2ohm,1/2W,Metal oxide film	R710	49163103404	10kohm×4,1/10W,Network
R902,R903	441721024	1kohm,2W,Metal oxide film		<b>Switches</b>	
R904	442520104	1ohm,1/2W,Metal oxide film	S701-S727	25035548	NPS-111-S510
R905	441723904	39ohm,2W,Metal oxide film	S728	25065286	NSS22112,Band <W>
R906	442521004	10ohm,1/2W,Metal oxide film		<b>Holders</b>	
	<b>Terminals</b>			27190810Y	FL
P001	25060085	NTM-4PDMN29,Antenna <D>		27190811Y	LED
	25060087	NTM-2PDMN31,Antenna <P/W>		<b>POWER AMPLIFIER CIRCUIT PC BOARD(NAAF-4038-1/1A)</b>	
P101	25060064	4P-5		<b>CIRCUIT NO. PART NO. DESCRIPTION</b>	
P102	25060061	1P-5		<b>ICs</b>	
P301,P302	25045323Y	NPJ-6PDBL180	Q501,Q502	22240108	μ PC1225H
P303	25045172	HSJ1003-01-020		<b>Transistors</b>	
P551	25060158Y	NTM-8PDML084,Speaker	Q503,Q504	2202282,	* 2SA1265N-R,
	<b>Sockets</b>			2202283,	* 2SA1265N-O,
P301,P310	25050267	NSCT-3P95		2201693	* 2SA1491-O,
P901	25050267	NSCT-3P95		2201694 or	* 2SA1491-Y or
	<b>Radiators</b>			2201696	* 2SA1491-P
	27160145	RAD-51	Q505,Q506	2202292,	* 2SC3182N-R,
	27160166			2202293,	* 2SC3182N-O,
	27160176	RAD-56		2201703	* 2SC3855-O,
	<b>DISPLAY CIRCUIT PC BOARD (NADIS-4037-1/1A/1B)</b>			2201704 or	* 2SC3855-Y or
	<b>CIRCUIT NO. PART NO. DESCRIPTION</b>			2201706	* 2SC3855-P
	<b>Remote sensor</b>		Q507-Q510	2211255	2SC1815-GR
U701	24130003	GP1U50XS	Q511,Q512	2212600	DTA124ES
	<b>ICs</b>		Q513,Q514	2212285	2SC2878-A
Q701	22240406Y	μ PD75268CW-025	Q515	2211455	2SA1015-GR
Q703	22240376	μ PD17103CX-528	Q516	221282	DTC144ES
	<b>FL tube</b>			<b>Capacitors</b>	
Q702	212093Y	FIP9BTM8	C501,C502	354761009	10 μ F,35V,Elect.
	<b>Transistors</b>		C505,C506	354741019	100 μ F,16V,Elect.
Q704	221282	DTC144ES	C507,C508	374723334	0.033 μ F±5%,50V,Plastic
Q705	2212600	DTA124ES	C515,C516	354780229	2.2 μ F,50V,Elect.
Q706	221282	DTC144ES <D>	C517	353761009	10 μ F,35V,Elect.
	<b>Diodes</b>			<b>Resistors</b>	
D702	224150913	05AZ9.1Z	R511,R512	5215061	N08HR3KBC,Semi-fixed
D703	224150562	05AZ5.6Y	R526,R527	442521004	10ohm,1/2W,Metal oxide film
D704	225142	SEL2913K,L.E.D.	R531-R534	4500005	0.22ohm,2W,Metal plate
D705-D707	223163	1SS133		<b>Radiators</b>	
D709-D724	223163	1SS133		27160273Y	
D726	223163	1SS133 <D>		<b>Plugs</b>	
	<b>Ceramic oscillators</b>		P503,P504	25055495	NPLG-2P470
X701	3010163	CST4.19MGW		<b>HEADPHONE TERMINAL PC BOARD(NASW-4039-1/1A)</b>	
X702	3010154	CST8.00MT		<b>CIRCUIT NO. PART NO. DESCRIPTION</b>	
	<b>Coil</b>		S601	25035517	NPS-222-L479,Speaker switch
L701	233400M220 or	NCH-2238 or	P601	25045255	YKB21-5009,Headphone terminal
	233409K220	NCH-1284		<b>POWER SWITCH PC BOARD (NASW-4040-1)</b>	
	<b>Capacitors</b>			<b>CIRCUIT NO. PART NO. DESCRIPTION</b>	
C701	3000057	0.1F,5.5V,Super	S751	25035548	NPS-111-S510,Push switch
C702,C704	375524744	0.47 μ F±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.			

## POWER SUPPLY CIRCUIT PC BOARD(NAPS-4042-1/1A/1B/1C)

CIRCUIT NO.	PART NO.	DESCRIPTION
D920	223163	1SS133,Diode
S901	25035550	△ NPS-111-L512P,Push switch
RL901	25065269	△ NRL-1P5A-DC12-36,Relay <D>
	25065248	△ NRL-1P15A-DC12-29,Relay <P/W>
R901	431523355	△ 3.3Mohm,1/2W,Solid resistor <D>
C901,C920	3500065A	△ DE7150FZ103PAC400V/125V IS capacitors
P901	25050267	NSCT-3P95,Socket
F901	252049	△ 4A(ST-6),Fuse <D/W>
F902	252074	△ 2A-SE-EAK,Fuse <P/W>
F901a	250113	△ SN5051,Fuseholder <D/W>
F902a	25050065	△ YSH-403T,Fuseholder <P/W>
	29360626-1	Fuse label <D>

## AC OUTLET PC BOARD(NAETC-4043-1)

(Only 120V model)

CIRCUIT NO.	PART NO.	DESCRIPTION
P951	25050409	NSCT-4P234,AC outlet

## AC OUTLET PC BOARD(NAETC-4044-1/1A)

(230V and Worldwide models)

CIRCUIT NO.	PART NO.	DESCRIPTION
F951	252074	2A-SE-EAK,Fuse <P>
F951a	25050065	YSH403T,Fuseholders <P>
P952	25050410	NSCT-2P235,AC outlet

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

CIRCUIT NO.	PART NO.	DESCRIPTION
		ICs
Q401,Q402	222502	NJM4558D-X
		Capacitors
C401,C402	354761009	10 $\mu$ F,35V,Elect.
C407,C408	354761009	10 $\mu$ F,35V,Elect.
C409,C410	374722234	0.022 $\mu$ F $\pm$ 5%,50V,Plastic
C411,C412	354780339	3.3 $\mu$ F,50V,Elect.
C413,C414	374722234	0.022 $\mu$ F $\pm$ 5%,50V,Plastic
C417,C418	354741019	100 $\mu$ 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 $\mu$ F $\pm$ 5%,50V,Plastic capacitors
C473	354741019	100 $\mu$ 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

## VOLTAGE SELECTOR SWITCH PC BOARD (NASW-4097-1)

(Only Worldwide model)

CIRCUIT NO.	PART NO.	DESCRIPTION
S921	25065287	△ NSS-22113P,Slide switch

NOTE:&lt;D&gt;:Only 120V model

&lt;P&gt;:Only 230V and 240V models

&lt;W&gt;:Only Worldwide model

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

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

# PRINTED CIRCUIT BOARD-PARTS LIST

## Model TX-900

### TUNER CIRCUIT PC BOARD (NARF-4036-2/2A/2B)

CIRCUIT NO.	PART NO.	DESCRIPTION	CIRCUIT NO.	PART NO.	DESCRIPTION
	Front end			Crystal	
TU001	240084	TFFG2U122A<D>	X131	3010158	XTL-7.2M
	240085	TFFG4E122A<P/W>		Relay	
	ICs		RL551	25065339	NRL-2P5ADC24-046
Q104	22240039	LA1266		Capacitors	
Q133	22240090	LM7001	C001	354761009	10 $\mu$ F,35V,Elect.
Q201	22240242	AN7470	C106	354784799	0.47 $\mu$ F,50V,Elect.
Q301	222502	NJM4558D-X	C107	354742209	22 $\mu$ F,16V,Elect.
Q324	22240158 or	LC7823 or	C108	354741019	100 $\mu$ F,16V,Elect.
	22240339	LC7823N	C112,C133	354780229	2.2 $\mu$ F,50V,Elect.
Q902	222780055	78M05HF	C113	354780109	1 $\mu$ F,50V,Elect.
Q904	222780125Y	78M12HF	C131	374722234	0.022 $\mu$ F $\pm$ 5%,50V,Plastic
	Transistors		C132,C159	374723334	0.033 $\mu$ F $\pm$ 5%,50V,Plastic
Q101	2211723	2SC1923-O	C134,C210	353782299	0.22 $\mu$ F,50V,Elect.
Q102	2210746	2SC945A-P <P/W>	C138	354721019	100 $\mu$ F,6.3V,Elect.
Q103,Q132	2211255	2SC1815-GR	C154,C554	354780479	4.7 $\mu$ F,50V,Elect.
Q131	2212445	2SK365-GR	C155	354741019	100 $\mu$ F,16V,Elect.
Q134,Q135	2213510	DTA114ES	C156,C157	354761009	10 $\mu$ F,35V,Elect.
Q202,Q555	2211455	2SA1015-GR	C160	374721034	0.01 $\mu$ F $\pm$ 5%,50V,Plastic
Q203,Q204	2212285	2SC2878-A	C161,C208	354780109	1 $\mu$ F,50V,Elect.
Q551,Q552	2211255	2SC1815-GR	C201	354744719	470 $\mu$ F,16V,Elect.
Q553	221281	DTC114YS	C202	354742209	22 $\mu$ F,16V,Elect.
Q554	2211255	2SC1815-GR	C204,C205	374721824	1800pF $\pm$ 5%,50V,Plastic
Q903	2211455	2SA1015-GR		374721224	1200pF $\pm$ 5%,50V,Plastic
	Diodes			<P/W>	
D101,D102	223132	1K60	C206	374724734	0.047 $\mu$ F $\pm$ 5%,50V,Plastic
D103,D105	223163	1SS133	C207	370134714	470pF $\pm$ 5%,100V,Plastic
D131,D201	223163	1SS133	C209	354780339	3.3 $\mu$ F,50V,Elect.
D551	223163	1SS133	C212,C213	354761009	10 $\mu$ F,35V,Elect.
D553	224150512	05AZ5.1Y	C215,C216	354780229	2.2 $\mu$ F,50V,Elect.
D701	224150683	05AZ6.8Z	C217,C218	374723924	3900pF $\pm$ 5%,50V,Plastic
D901	22380023	RBV401	C219	354780229	2.2 $\mu$ F,50V,Elect.
D902-D906	22380032	1SR139-100	C301,C302	354780229	2.2 $\mu$ F,50V,Elect.
D907,D908	224151203	05AZ12Z	C307,C308	354721019	100 $\mu$ F,6.3V,Elect.
D909	224152704	05AZ27R	C309,C310	374726224	6200pF $\pm$ 5%,50V,Plastic
D910	224150512	05AZ5.1Y	C311,C312	374721824	1800pF $\pm$ 5%,50V,Plastic
D911	223163	1SS133	C313,C314	354780229	2.2 $\mu$ F,50V,Elect.
	Coils		C315,C316	354741019	100 $\mu$ F,16V,Elect.
L103	233383	NMC-6070 <P/W>	C330	354780229	2.2 $\mu$ F,50V,Elect.
L104	233409M022	NCH-1272	C551,C552	374724734	0.047 $\mu$ F $\pm$ 5%,50V,Plastic
L201,L202	233294	NMC-5040 <P/W>	C555	354722219	220 $\mu$ F,6.3V,Elect.
L551,L552	231176	S-1.3C	C905,C906	3504207	6800 $\mu$ F,50V,Elect.
	Transformers		C907,C908	354742219	220 $\mu$ F,16V,Elect.
L101	233401	NFIF-4072	C910	354784709	47 $\mu$ F,50V,Elect.
L102	233402	NFIF-4073	C911	354752229	2200 $\mu$ F,25V,Elect.
L152	232139	NMIF-4062	C913-C915	354761009	10 $\mu$ F,35V,Elect.
	RF block		C917,C918	354781009	10 $\mu$ F,50V,Elect.
L151	232152	NMRF-7052		Resistors	
	Ceramic filters		R101	5210221 or	N06HR100KBD
X101,X102	3010071	SFE10.7MA5 <D>		5210070	Semi-fixed
X101	3010081	SFE10.7MS3GYA <P/W>	R201	5210216 or	N06HR5KBD or
X102	3010137	SFE10.7MMK <P/W>		5210062	N06HR4.7KBD ,Semi-fixed
X151	3010123	SFZ450JL	R202	5210222 or	N06HR200KBD or
X152	3010076	BFU450C		5210072	N06HR220KBD,Semi-fixed

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

CIRCUIT NO.	PART NO.	DESCRIPTION
		ICs
Q501,Q502	22240108	$\mu$ PC1225H
		Transistors
Q503,Q504	2202492,	* 2SA1264N-R,
	2202493,	* 2SA1264N-O,
	2202243	* 2SA1694-O,
	2202244 or	* 2SA1694-Y or
	2202246	* 2SA1694-P
Q505,Q506	2202502,	* 2SC3181N-R,
	2202503,	* 2SC3181N-O,
	2202253	* 2SC4467-O,
	2202254 or	* 2SC4467-Y or
	2202256	* 2SC4467-P
Q507-Q510	2211255	2SC1815-GR
Q513,Q514	2212285	2SC2878-A
Q515	2211455	2SA1015-GR
		Capacitors
C501,C502	354761009	10 $\mu$ F,35V,Elect.
C505,C506	354741019	100 $\mu$ F,16V,Elect.
C507,C508	374723334	0.033 $\mu$ F $\pm$ 5%,50V,Plastic
C515,C516	354780229	2.2 $\mu$ F,50V,Elect.
C517	353761009	10 $\mu$ 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
		Plugs
P503,P504	25055495	NPLG-2P470
		Socket
P501	25050267	NSCT-3P95
HEADPHONE TERMINAL PC BOARD(NASW-4039-2/2A)		
CIRCUIT NO.	PART NO.	DESCRIPTION
S601	25035517	NPS-222-L479,Speaker switch
P601	25045255	YKB21-5009,Headphone terminal
POWER SUPPLY CIRCUIT PC BOARD(NAPS-4042-2/2A/2B)		
CIRCUIT NO.	PART NO.	DESCRIPTION
S901	25035550	$\Delta$ NPS-111-L512P,Push switch
R901	431523355	$\Delta$ 3.3Mohm,1/2W,Solid resistor <D>
C901	3500065A	$\Delta$ DE7150FZ103PAC400V/125V IS capacitor
F901	252049	$\Delta$ 4A(ST-6),Fuse <D/W>
F902	252074	$\Delta$ 2A-SE-EAK,Fuse <P/W>
F901a	250113	$\Delta$ SN5051,Fuseholder <D/W>
F902a	25050065	$\Delta$ YSH-403T,Fuseholder <P/W>
	29360526-1	Fuse label <D>

CIRCUIT NO.	PART NO.	DESCRIPTION
		Resistors
R559,R560	442520824	8.2ohm,1/2W,Metal oxide film
R902,R903	441729114	910ohm,2W,Metal oxide film
R904	442520104	1ohm,1/2W,Metal oxide film
R905	441726804	68ohm,2W,Metal oxide film
R906	442521004	10ohm,1/2W,Metal oxide film
R910	441622704	27ohm,1W,Metal oxide film
		Terminals
P001	25060085	NTM-4PDMN29,Antenna <D>
	25060087	NTM-2PDMN31,Antenna <P/W>
P101	25060064	4P-5
P102	25060061	1P-5
P301,P302	25045323Y	NPJ-6PDBL180
P551	25060158Y	NTM-8PDM1084,Speaker
		Sockets
P310,P901	25050267	NSCT-3P95

## DISPLAY CIRCUIT PC BOARD (NADIS-4037-2/2A/2B)

CIRCUIT NO.	PART NO.	DESCRIPTION
		IC
Q701	22240406Y	$\mu$ PD75268CW-025
		FL tube
Q702	212093Y	FIP9BTM8
		Transistor
Q704	221282	DTC144ES
		Diodes
D702	224150913	05AZ9.1Z
D705-D707	223163	1SS133
D709-D711	223163	1SS133
D713-D720	223163	1SS133
		Ceramic oscillator
X701	3010163	CST4.19MGW
		Coil
L701	233400M220 or	NCH-2238 or
	233409K220	NCH-1284
		Capacitors
C701	3000057	0.1F,5.5V,Super
C702,C704	375524744	0.47 $\mu$ F $\pm$ 5%,50V,Plastic
C703	353780229	2.2 $\mu$ F,50V,Elect.
		Resistor
R710	49163103404	10kohm $\times$ 4,1/10W,Network
		Switches
S701-S727	25035548	NPS-111-S510
S728	25065286	NSS22112,Band <W>
		Holder
	27190810Y	FL

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

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

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

CIRCUIT NO.	PART NO.	DESCRIPTION
ICs		
Q401,Q402	222502	NJM4558D-X
Capacitors		
C401,C402	354761009	10 $\mu$ F,35V,Elect.
C407,C408	354761009	10 $\mu$ F,35V,Elect.
C409,C410	374722234	0.022 $\mu$ F $\pm$ 5%,50V,Plastic
C411,C412	354780339	3.3 $\mu$ F,50V,Elect.
C413,C414	374722234	0.022 $\mu$ F $\pm$ 5%,50V,Plastic
C417,C418	354744709	47 $\mu$ F,16V,Elect.
C453,C454	374724734	0.047 $\mu$ F $\pm$ 5%,50V,Plastic
Resistors		
R405,R406	5104228	N11RHC250KWT22Z,Balance
R417,R421	5104229	N14RHC100KWT22Z,Tone
R418,R422		
R459,R460	5142001	N16RGP100KBTP25,Volume
Switch		
S451	25035611	NPS-122-L573,Switch

## VOLTAGE SELECTOR SWITCH PC BOARD (NASW-4097-2)

(Only Worldwide model)

CIRCUIT NO.	PART NO.	DESCRIPTION
S921	25065287	$\Delta$ NSS-22113P,Slide switch

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