

# ONKYO SERVICE MANUAL

## QUARTZ SYNTHESIZED TUNER AMPLIFIER MODEL TX-910 MODEL TX-930

### Black and Silver models

BHMD, BHMDN	120V AC, 60Hz
BHMP, BHMPF, MP, MPF	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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## SPECIFICATIONS

## AMPLIFIER SECTION

## Power Output:

**TX-930**  
60 watts per channel, min. RMS, at 8 ohms, both channels driven, from 40Hz to 20kHz, with no more than 0.2% THD.

**TX-910**  
45 watts per channel, min. RMS, at 8 ohms, both channels driven, from 40kHz to 20kHz, with no more than 0.3% THD.

## Dynamic Power Output:

2 × 100 watts at 4 ohms  
2 × 75 watts at 8 ohms

2 × 80 watts at 4 ohms  
2 × 60 watts at 8 ohms

## Continuous Power Output:

2 × 80 watts at 4 ohms, 1kHz (DIN)  
2 × 65 watts at 8 ohms, 1kHz (DIN)

2 × 60 watts at 4 ohms, 1kHz (DIN)  
2 × 50 watts at 8 ohms, 1kHz (DIN)

## Total Harmonic Distortion:

0.2% at rated power  
0.1% at 30 watt output

0.3% at rated power  
0.1% at 30 watt output

## IM Distortion:

0.2% at rated power  
0.1% at 30 watt output

0.3% at rated power  
0.1% at 30 watt output

## Damping Factor:

50 at 8 ohms

50 at 8 ohms

## Frequency Response:

20 — 30,000 Hz ± 1dB

20 — 30,000 Hz ± 1dB

## RIAA Deviation:

20 — 20,000 Hz ± 0.8dB

20 — 20,000 Hz ± 0.8dB

## Sensitivity and Impedance:

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

## Phono Overload:

120mV RMS at 1kHz, 0.2% TDH

120mV RMS at 1kHz, 0.3% THD

## Signal-to-Noise Ratio:

Phono: 80dB (at 5mV input, IHF-A)  
CD/Tape: 100dB (IHF-A)

Phono: 80dB (at 5mV input, IHF-A)  
CD/Tape: 100dB (IHF-A)

## Tone Controls:

Bass: ± 10dB at 100Hz  
Treble: ± 10dB at 10kHz

Bass: ± 10dB at 100Hz  
Treble: ± 10dB at 10kHz

## Muting:

— ∞

— ∞

## LOUDNESS (−30dB):

+7dB at 70Hz, +5dB at 10kHz

+7dB at 70Hz, +5dB at 10kHz

## TUNER SECTION

## FM:

—230V/Worldwide models—

—120V model—

## Tuning Range:

87.50—108.00MHz (50kHz steps)  
87.5—108.00MHz (50kHz steps) or  
(200kHz steps) (Worldwide model)

87.9—107.9MHz (200kHz steps)

## Usable Sensitivity:

Mono: 12.4dBf, 1.2 μV, 75ohms  
1.2 μV (S/N 26dB, 40kHz Devi.)  
75ohms DIN

Mono: 12.4dBf, 2.3 μV

Stereo: 19.2dBf, 2.5 μV, 75ohms  
25 μV (S/N 46dB, Devi.)  
75ohms DIN

Stereo: 18.2dBf, 4.5 μV

## 50dB Quieting Sensitivity:

Mono: 18.2dBf, 2.2 μV, 75ohms  
Stereo: 38.2dBf, 22 μV, 75ohms

Mono: 18.2dBf, 4.5 μV  
Stereo: 38.2dBf, 45 μV

## Capture Ratio:

1.5dB

1.5dB

## Image Rejection Ratio:

85dB

40dB

## IF Rejection Ratio:

90dB

90dB

## Signal-to-Noise Ratio:

Mono: 70dB  
Stereo: 65dB

Mono: 70dB  
Stereo: 65dB

## Alternate Channel

## Attenuation:

50dB DIN (±300kHz, 40kHz dev.)

55dB

## Selectivity:

50dB

50dB

## AM suppression Ratio:

Mono: 0.15%

Mono: 0.15%

## Harmonic Distortion:

Stereo: 0.30%

Stereo: 0.30%

## Frequency Response:

30—15,000Hz ± 1.5dB

30—15,000Hz ± 1.5dB

## Stereo Separation:

40dB at 1kHz  
30dB at 100—10,000Hz

40dB at 1kHz  
30dB at 100—10,000Hz

## Muting Level:

17.2dBf, 4 μV

17.2dBf, 4 μV

## AM:

## Tuning Range:

522—1610kHz (9kHz steps)  
522—1610kHz (9kHz steps) or  
530—1710kHz (10kHz steps) (World wide model)

530—1710kHz (10kHz steps)

## Usable Sensitivity:

30 μV

30 μV

## Image Rejection Ratio:

40dB

40dB

## IF Rejection Ratio:

40dB

40dB

## Signal-to-Noise Ratio:

40dB

40dB

## Harmonic Distortion:

0.8%

0.8%

## GENERAL

## Dimensions (W×H×D):

**TX-930**  
455×120×316mm  
17-15/16" × 4-6/8" × 12-7/16"

**TX-910**  
455×120×316mm  
17-15/16" × 4-6/8" × 12-7/16"

## Weight:

8.0kg, 17.6 lbs.

7.2kg, 15.9 lbs.

**Remote control transmitter RC-223S**

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.

Circuit No.	Part No.	Description	Model	Type
F901	252049	4A(ST-6),Primary	TX-910	MD/MW
F901	252050	5A(ST-6),Primary	TX-930	MD/MW
F902	252073	1.6A-SE-EAK,Primary	TX-910	MP/MW/MQ
F902	252075	2.5A-SE-EAK,Primary	TX-930	MP/MW/MQ
F951	252074	2.2A-SE-EAK,AC outlet	TX-930	MP

## 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 ±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: 50μsec	50kHz	9kHz
U.S.A.: 75μsec	200kHz	10kHz

## 5.Changing the band step

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

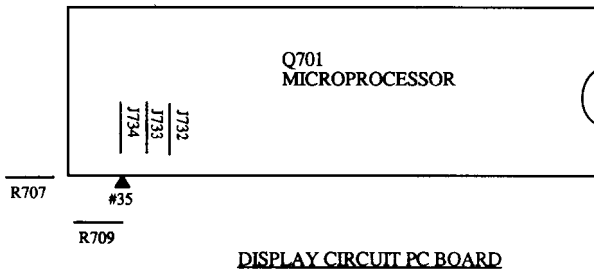
(FM)

MODEL	BAND STEP	R707(10kΩ)	J734
UD	200kHz→50kHz	Add	Cut
UP/UQ	50kHz→200kHz		Shorted

(AM)

MODEL	BAND STEP	R709(10kΩ)	J732
UD	10kHz→9kHz		Shorted
UP/UQ	9kHz→10kHz	Add	Cut

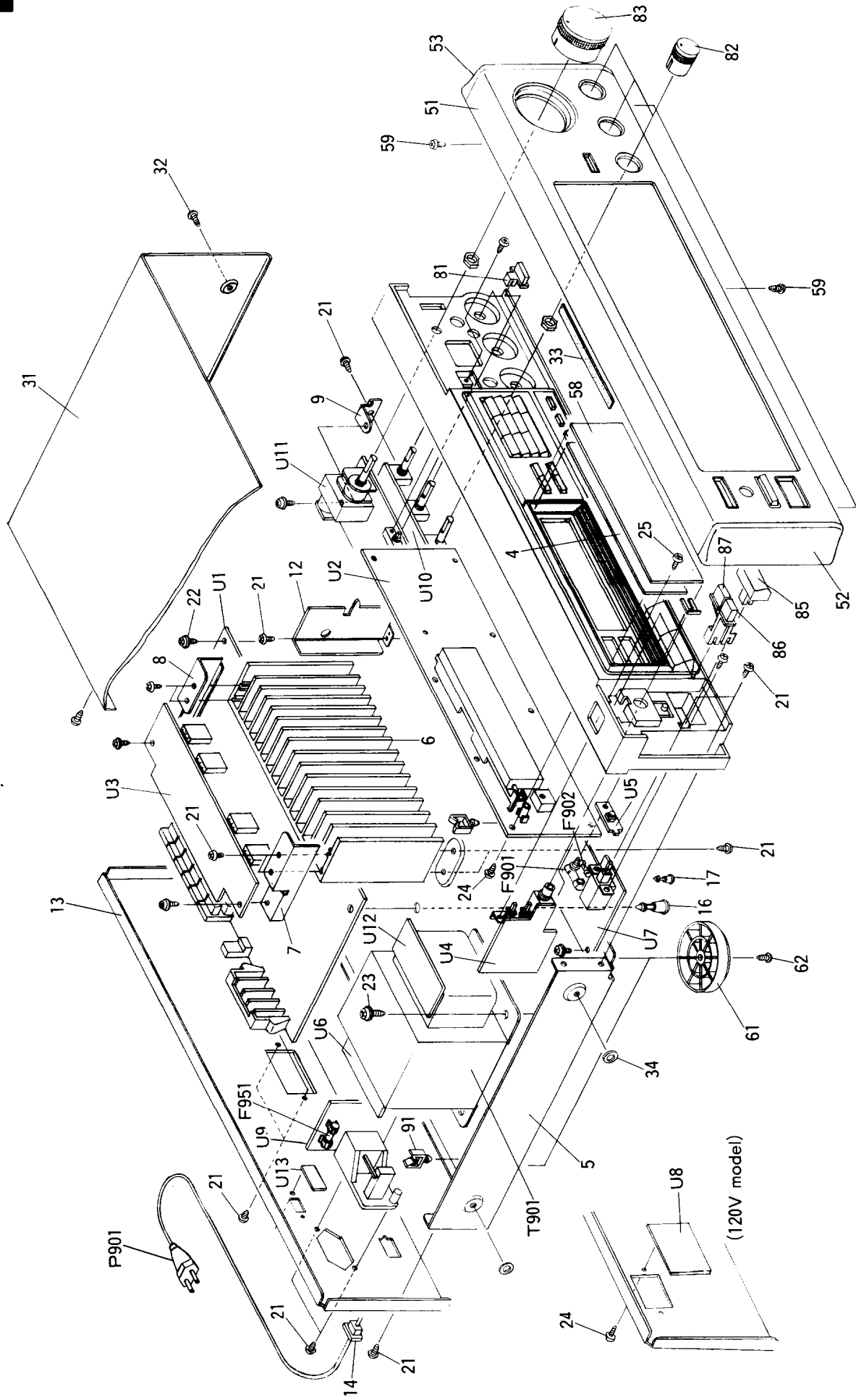
Refer to the page 23.



## 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-930

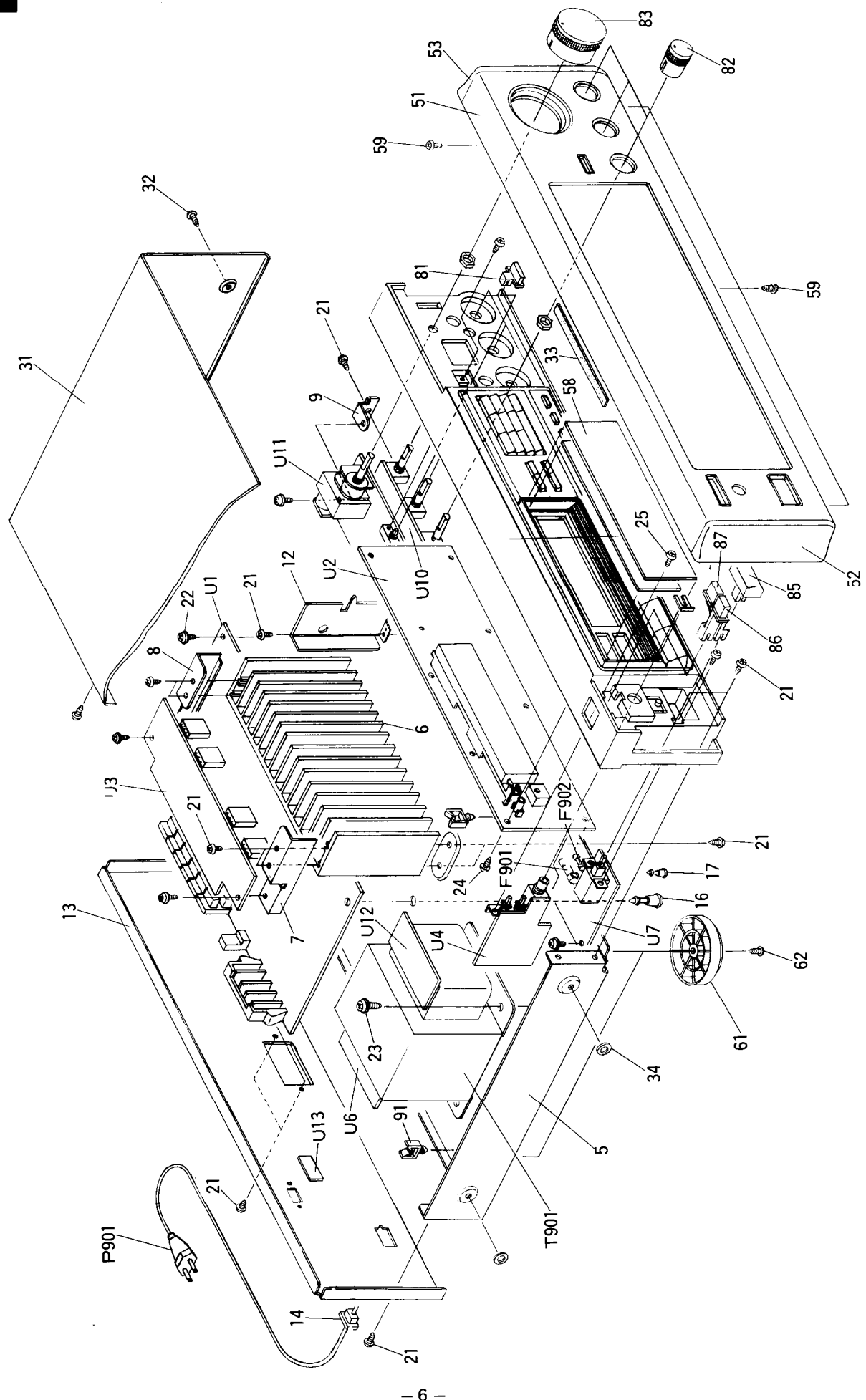


## PARTS LIST

REF. NO.	PART NO.	DESCRIPTION	REF. NO.	PART NO.	DESCRIPTION
1	27110749Y	Front bracket ass'y <B>	U3	1A415527-3	NAAF-4327-3,Power amplifier circuit
4	27110750Y	Front bracket ass'y <S>			pc board ass'y <D>
4	28133254Y	Back plate	1A415527-3A	NAAF-4327-3A,Power amplifier circuit	
5	27100228Y	Chassis		pc board ass'y <P/W/Q>	
6	27160293Y	Radiator	U4	1A415528-3	NASW-4328-3,Headphone terminal
7	27141441Y	Bracket LH		pc board ass'y <D>	
8	27141442Y	Bracket RH	1A415528-3A	NASW-4328-3A,Headphone terminal	
9	27141443Y	Bracket PC		pc board ass'y <P/W/Q>	
12	27130643AY	Bracket, shield	U5	1A415529-3	NASW-4329-3,Power switch
13	27121686Y	Rear panel <D>		pc board ass'y	
13	27121687Y	Rear panel <P>	U6	1A415530-3	NAETC-4330-3,Terminal pc board
	27121689Y	Rear panel <W>	U7	1A415531-3	NAPS-4331-3,Power supply circuit
	27121690Y	Rear panel <Q>		pc board ass'y <D>	
14	27300750	Bushing,cord	1A415531-3A	NAPS-4331-3A,Power supply circuit	
16	27190524	KGLS-14RT,Holder		pc board ass'y <P>	
17	27190266	KGLS-12RT,Holder	1A415531-3B	NAPS-4331-3B,Power supply circuit	
21	834430088	3TTS+8B(BC),Self-tapping screw		pc board ass'y <W>	
22	831130088	3TTW+8B,Self-tapping screw	1A415531-3C	NAPS-4331-3C,Power supply circuit	
23	830440089	4TTC+8C(BC),Self-tapping screw		pc board ass'y <Q>	
24	833430080	3TTP+8P(BC),Self-tapping screw	U8	1A415532-3	NAETC-4332-3,Outlet terminal
25	82143006	3P+6FN(BC),Pan head screw		pc board ass'y <D>	
26	801433	3SMS:10W.SW+14B(BC),Sems	U9	1A415533-3	NAETC-4333-3,Outlet terminal
		Self-tapping screw		pc board ass'y <P>	
31	28184471AY	Top cover	1A415533-3A	NAETC-4333-3A,Outlet terminal	
32	834430088	3TTS+8B(BC),Self-tapping screw		pc board ass'y <W>	
33	28140680	Cushion	U10	1A415534-3	NAAF-4334-3,Tone control circuit
34	27270212	Spacer <P/W/Q>		pc board ass'y <D>	
51	1A415701K	Front panel ass'y <B>	1A415534-3A	NAAF-4334-3A,Tone control circuit	
	1A416701K	Front panel ass'y <S>		pc board ass'y <P/W/Q>	
52	28125226BY	End cap L	U11	1A415535-3	NAETC-4335-3,Volume control circuit
53	28125227BY	End cap R		pc board ass'y	
58	28191617Y	Clear plate	U12	1A415537-3	NAETC-4337-3,Terminal pc board ass'y
59	833430080	3TTP+8P(BC),Self-tapping screw	U13	1A415538-3	NASW-4338-3,Voltage selector switch
61	27175254	Leg		pc board ass'y <W>	
62	834430088	3TTS+8B(BC),Self-tapping screw		NOTE: <B>:Black model only	
81	28324162Y	Knob, Loudness <B>		<S>:Silver model only	
	28324177Y	Knob, Loudness <S>		<D>:120V model only	
82	28324150-1A	Knob, Level <B>		<P>:230V model only	
	28324151	Knob, Level <S>		<W>:Worldwide model only	
83	28324163	Knob,Volume <B>		<Q>:240V model only	
	28324184	Knob,Volume <S>			
85	28324140	Knob,Power <B>			
	28324184	Knob,Power <S>			

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

**EXPLODED VIEW**  
MODEL TX-910



# PARTS LIST

REF. NO.	PART NO.	DESCRIPTION	REF. NO.	PART NO.	DESCRIPTION
1	27110763Y	Front bracket ass'y <B>	U2	1A419526-4	NADIS-4326-4, Display circuit pc board ass'y <D>
4	27110764Y	Front bracket ass'y <S>		1A419526-4A	NADIS-4326-4A, Display circuit pc board ass'y <P/Q>
5	28133254Y	Back plate		1A419526-4B	NADIS-4326-4B, Display circuit pc board ass'y <W>
6	27160228Y or 27160272AY or 27160290Y	Chassis Radiator	U3	1A419527-4	NAAF-4327-4, Power amplifier circuit pc board ass'y <D>
7	27141441Y	Bracket LH		1A419527-4A	NAAF-4327-4A, Power amplifier circuit pc board ass'y <P/W/Q>
8	27141442Y	Bracket RH	U4	1A419528-4	NASW-4328-4, Headphone terminal pc board ass'y <D>
9	27141443Y	Bracket PC		1A419528-4A	NASW-4328-4A, Headphone terminal pc board ass'y <P/W/Q>
12	27130643AY	Bracket, shield	U5	1A419529-4	NASW-4329-4, Power switch pc board ass'y
13	27121691Y	Rear panel <D>	U7	1A419531-4	NAPS-4331-4, Power supply circuit pc board ass'y <D>
14	27121692Y	Rear panel <P>		1A419531-4A	NAPS-4331-4A, Power supply circuit pc board ass'y <P>
16	27121694Y	Rear panel <W>		1A419531-4B	NAPS-4331-4B, Power supply circuit pc board ass'y <W>
17	27121695Y	Rear panel <Q>		1A419531-4C	NAPS-4331-4C, Power supply circuit pc board ass'y <Q>
18	27300750	Bushing, cord	U10	1A419534-4	NAAF-4334-4, Tone control circuit pc board ass'y <D>
16	27190524	KGLS-14RT, Holder		1A419534-4A	NAAF-4334-4A, Tone control circuit pc board ass'y <P/W/Q>
17	27190266	KGLS-12RT, Holder	U11	1A419535-4	NAETC-4335-4, Volume control pc board ass'y
21	834430088	3TTS+8B(BC), Self-tapping screw	U13	1A419538-4	NASW-4338-4, Voltage selector switch pc board ass'y <W>
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), Self-tapping screw			
31	28184471AY	Top cover			
32	834430088	3TTS+8B(BC), Self-tapping screw			
33	28140680	Cushion			
34	2720212	Spacer <P/W/Q>			
51	1A419701K	Front panel ass'y <B>			
	1A420701K	Front panel ass'y <S>			
52	28125226BY	End cap L			
53	28125227BY	End cap R			
58	28191617Y	Clear plate			
59	833430080	3TTP+8P(BC), Self-tapping screw			
61	27175254	Leg			
62	834430088	3TTS+8B(BC), Self-tapping screw			
81	28324162Y	Knob, Loudness <B>			
	28324177Y	Knob, Loudness <S>			
82	28324150-1	Knob, Level <B>			
	28324151A	Knob, Level <S>			

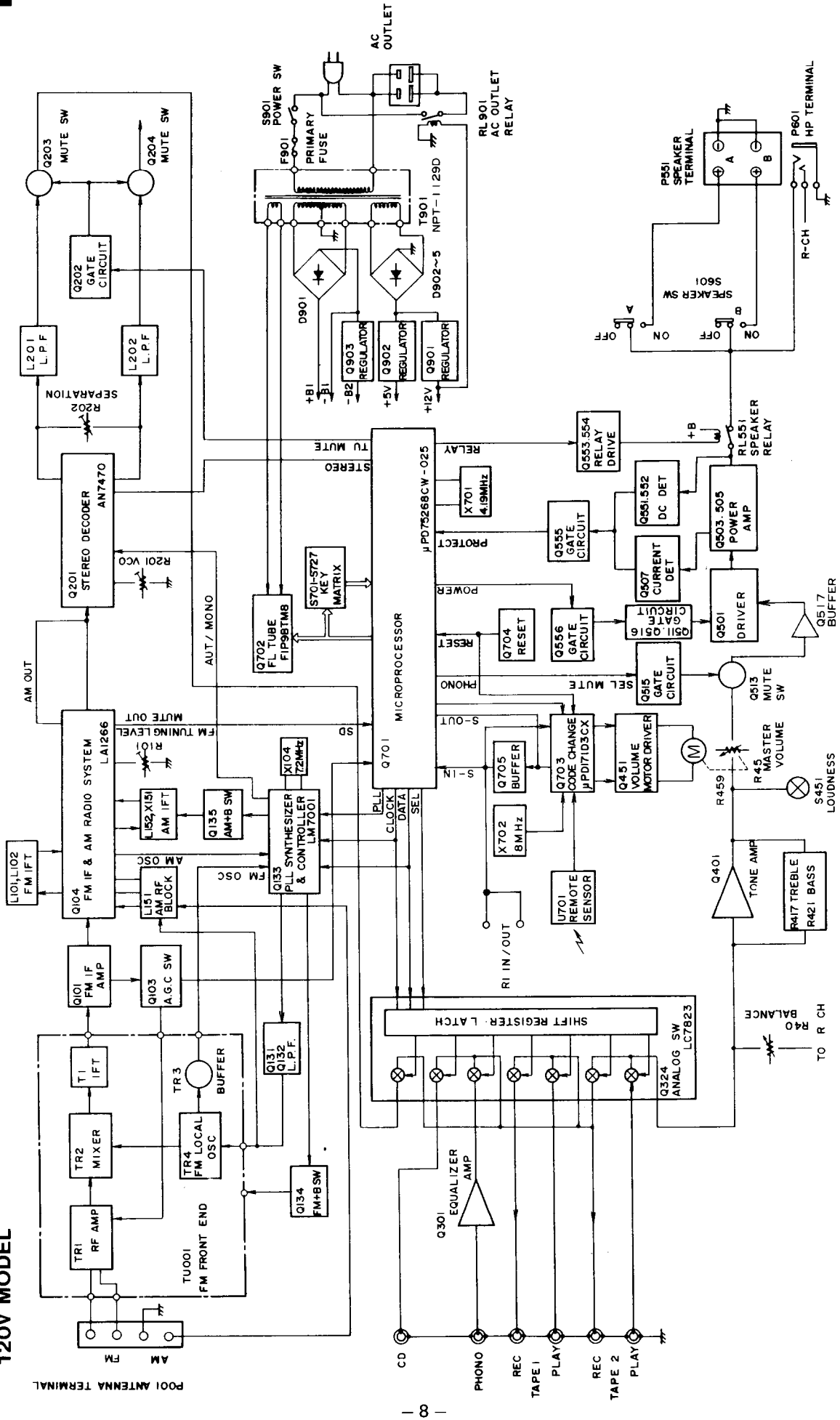
NOTE: THE COMPONENTS IDENTIFIED BY MARK  $\Delta$  ARE CRITICAL FOR RISK OF FIRE AND ELECTRIC SHOCK. REPLACE ONLY WITH PART NUMBER SPECIFIED.

NOTE: <B>-Black model only  
<S>-Silver model only  
<D>-120 V model only  
<P>-230 V model only  
<W>-Worldwide model only  
<Q>-240 V model only

# BLOCK DIAGRAM

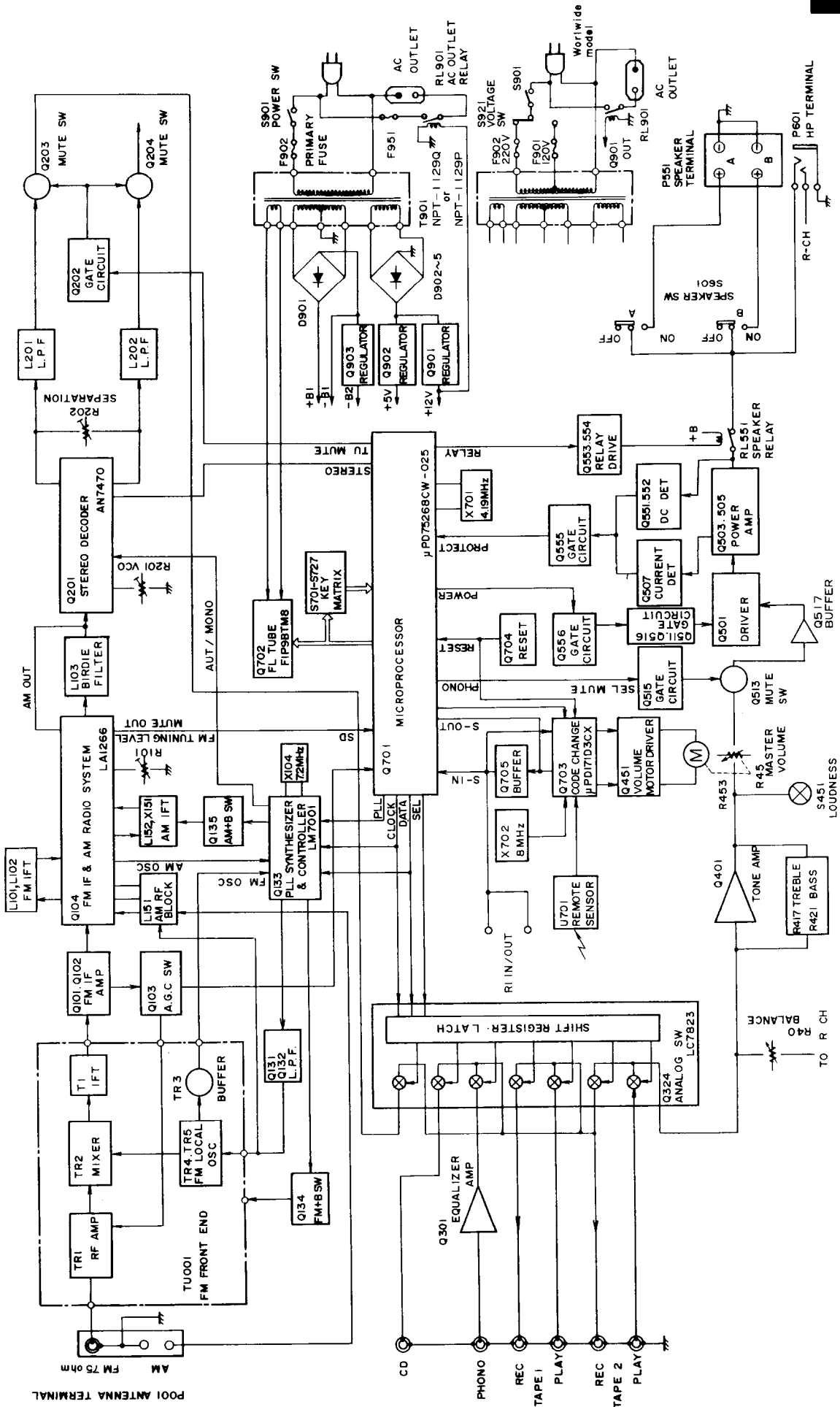
## MODEL TX-930

### 120V MODEL





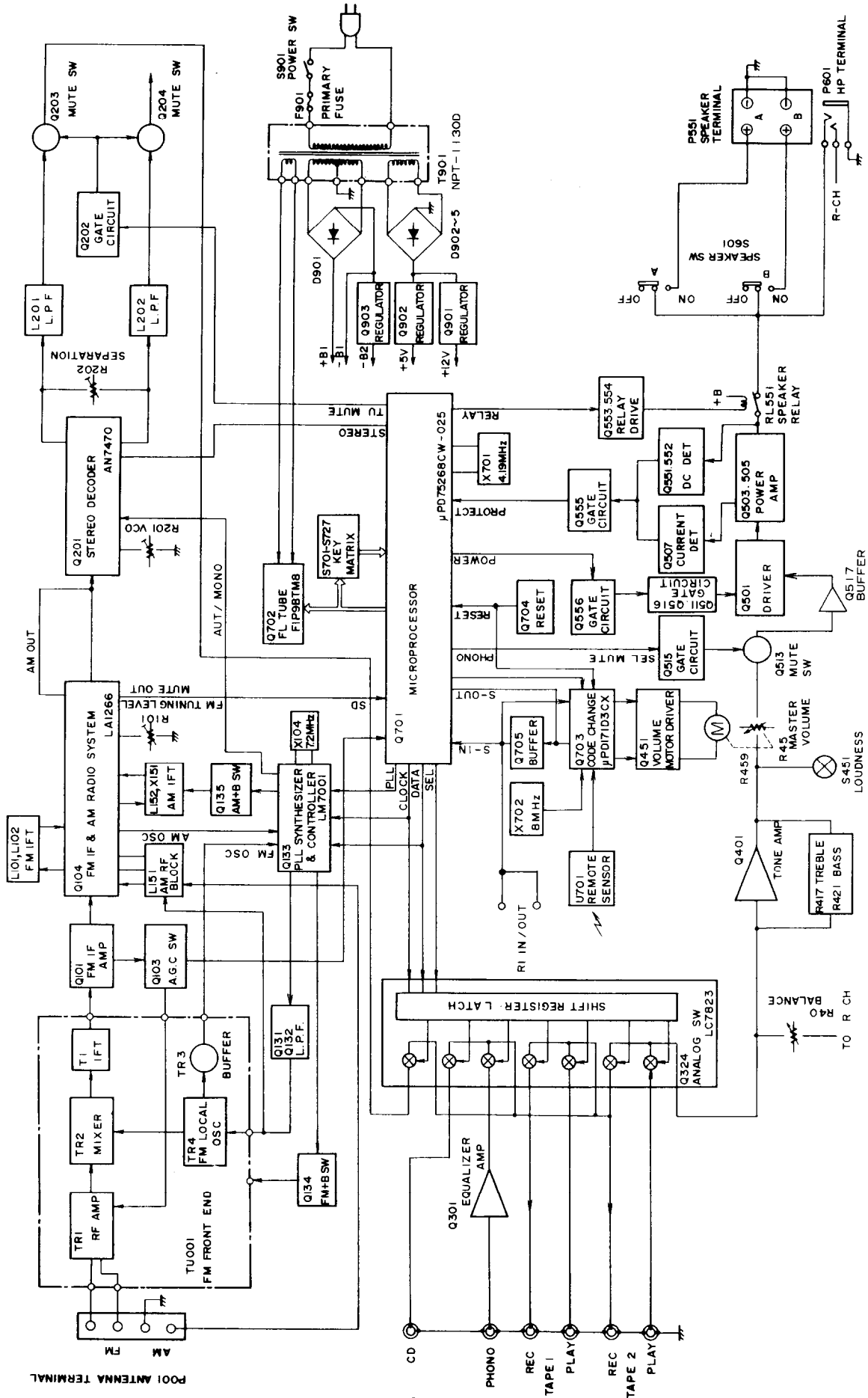
OTHER MODELS



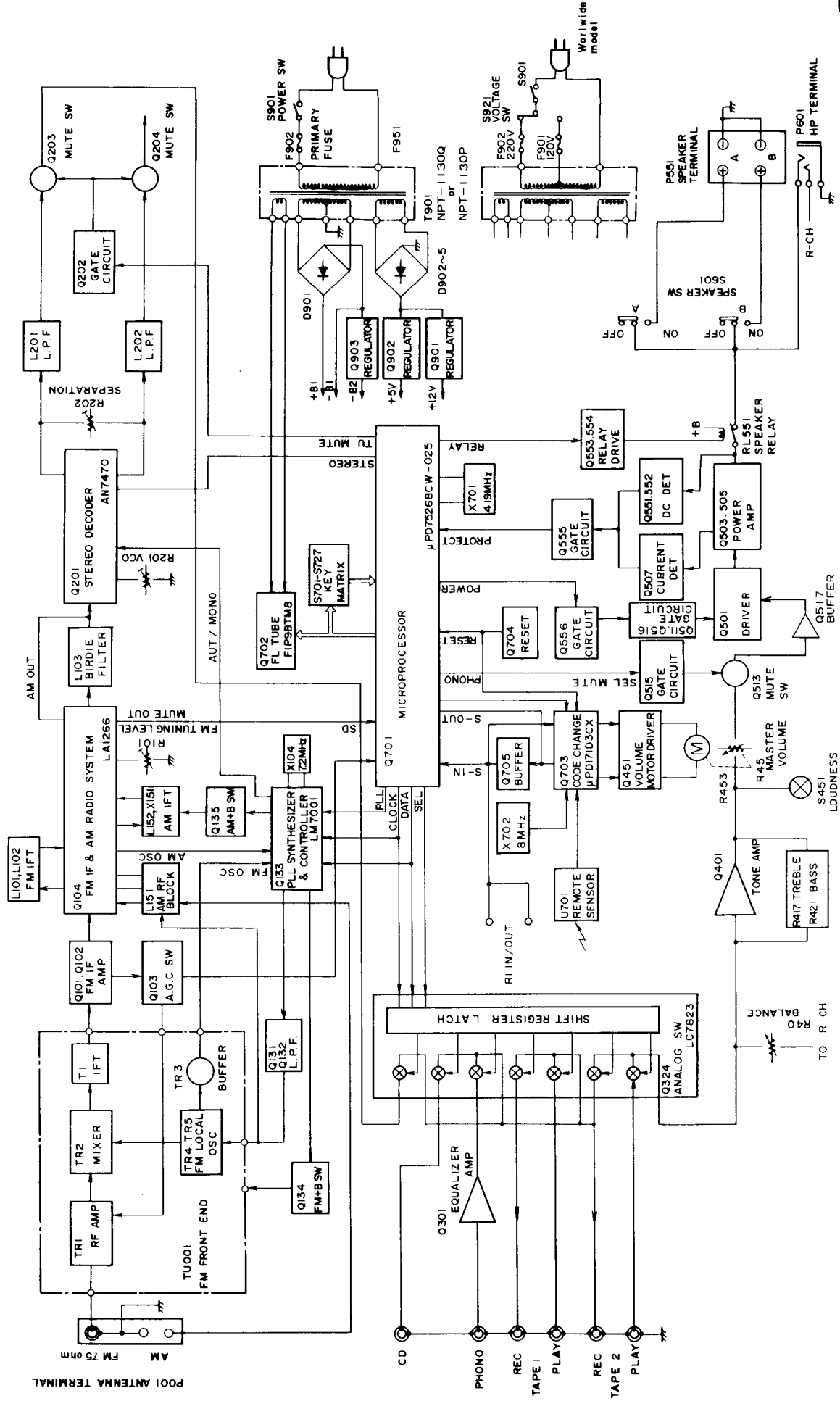
# BLOCK DIAGRAM

## MODEL TX-910

### 120V MODEL

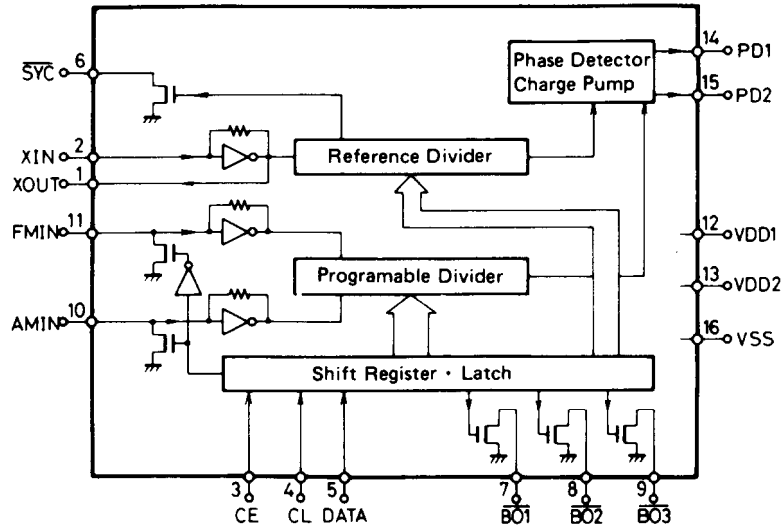


OTHER MODELS

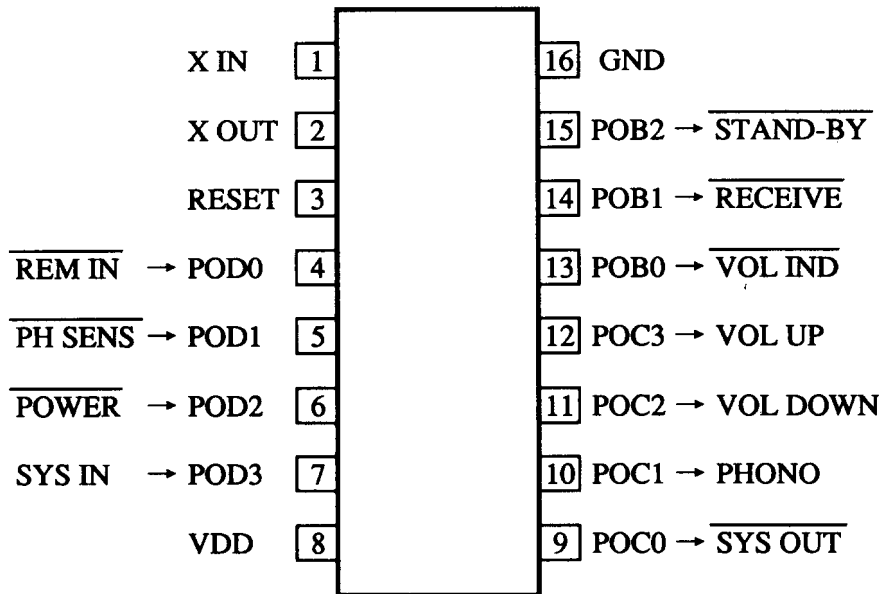
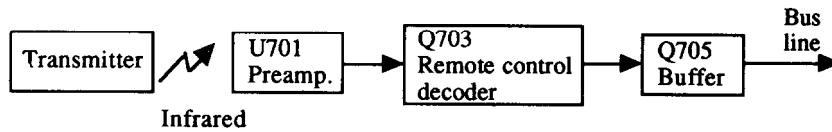


# IC BLOCK DIAGRAM AND DESCRIPTION

## LM7001(PLL synthesizer and controller)

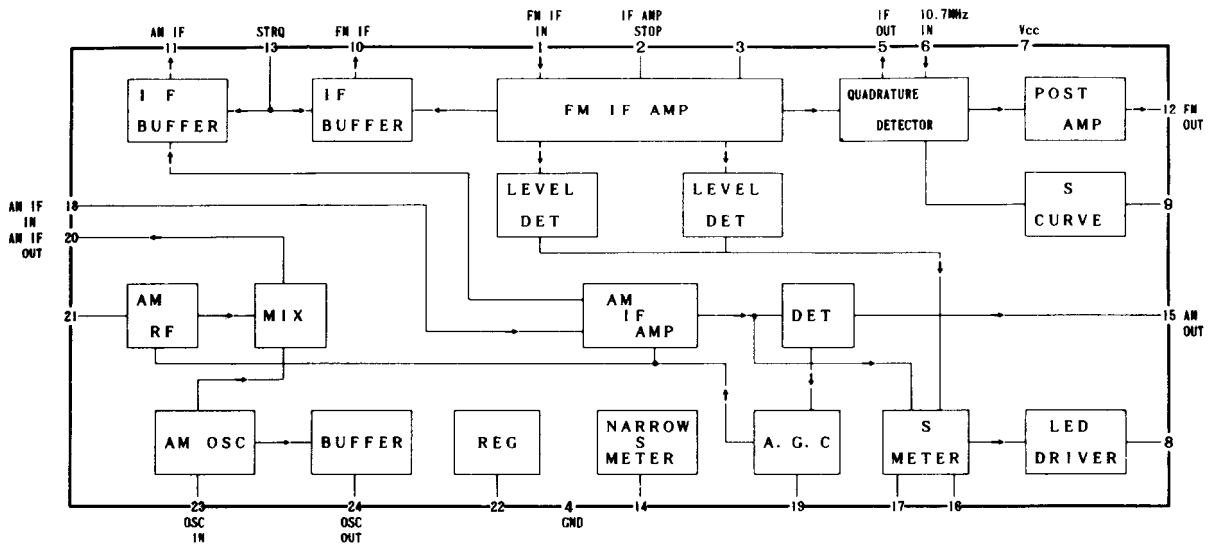


Pin No.	Terminal	Description
1	XOUT	Connect to the 7.2 MHz crystal oscillator.
2	XIN	
3	CE	Chip enable terminal. Connect to the PLL terminal of micro processor.
4	CL	Serial clock input terminal. Connect to the CLOCK terminal of micro processor.
5	DATA	Serial data input terminal. Connect to the DATA terminal of micro processor.
6	SYN	Not used.
7	AUTO/MONO	Auto/Mono control output terminal. "H" when Auto.
8	BO2	FM control signal output terminal. "L" when FM.
9	BO3	AM control signal output terminal. "L" when AM.
10	AMIN	AM local oscillator input terminal.
11	FMIN	FM local oscillator terminal.
12	VDD1	Power supply terminal for back-up.
13	VDD2	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.

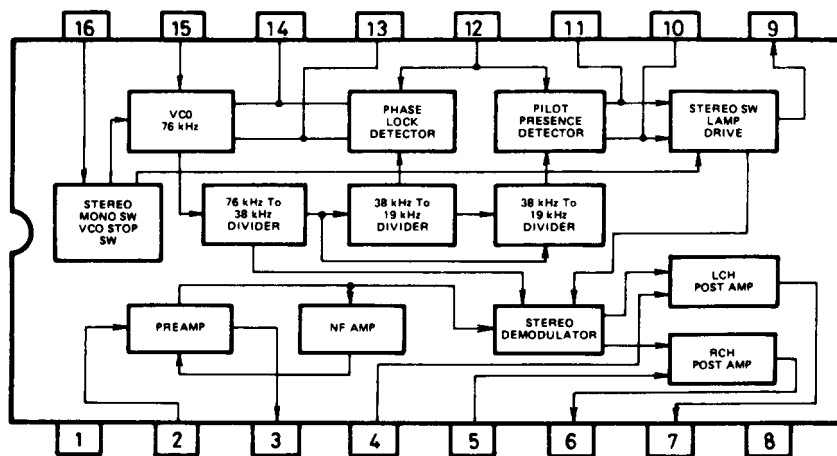
$\mu$ PD17103CX-528(Remote control decoder)

Pin No.	Symbol	Terminal	Description
1	XIN	OSC	Connect to the 8.00MHz ceramic oscillator.
2	XOUT		
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 SENS	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 <sub>DD</sub>	+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	PHONO	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 ( $\square$ T T T T $\square$ = 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 <sub>SS</sub>	GND	Ground terminal.

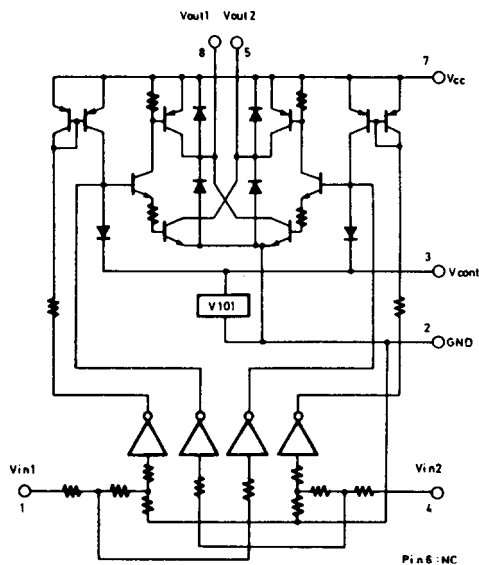
### LA1266(FM IF and AM radio system)



### AN7470(Stereo decoder)



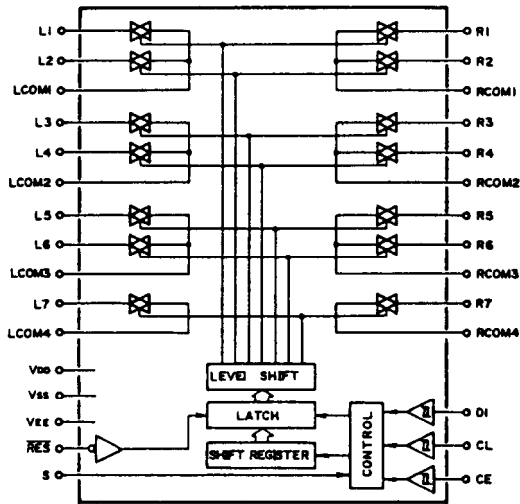
### LB1630 (Motor driver)



TRUTH TABLE

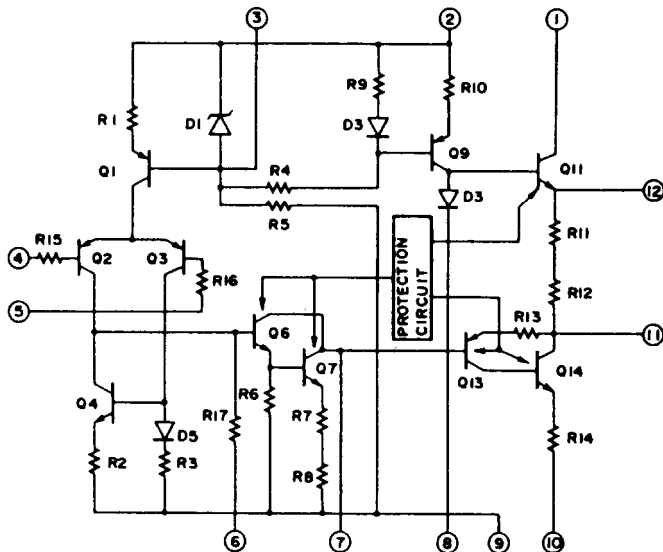
IN 1	IN 2	OUT 1	OUT 2	MOTOR
H	L	H	L	Normal
L	H	L	H	Reverse
H	H	OFF	OFF	Wait
L	L	OFF	OFF	Wait

**LC7823/LC7823N(Analog switch)**

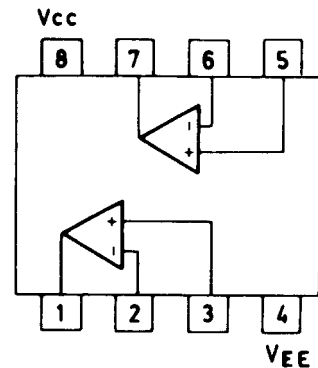


Pin No.	Terminal	Description
1,30	CD	On when the input selector is CD.
2,29	PHONO	On when the input selector is PHONO.
3,28	LCOM1,RCOM1	Common terminal.
4,27	TAPE-1 REC	Off when the input selector is TAPE-1.
5,26	TAPE-1 PB	On when the input selector is TAPE-1.
6,25	LCOM2,RCOM2	Common terminal.
7,24	TAPE-2 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)

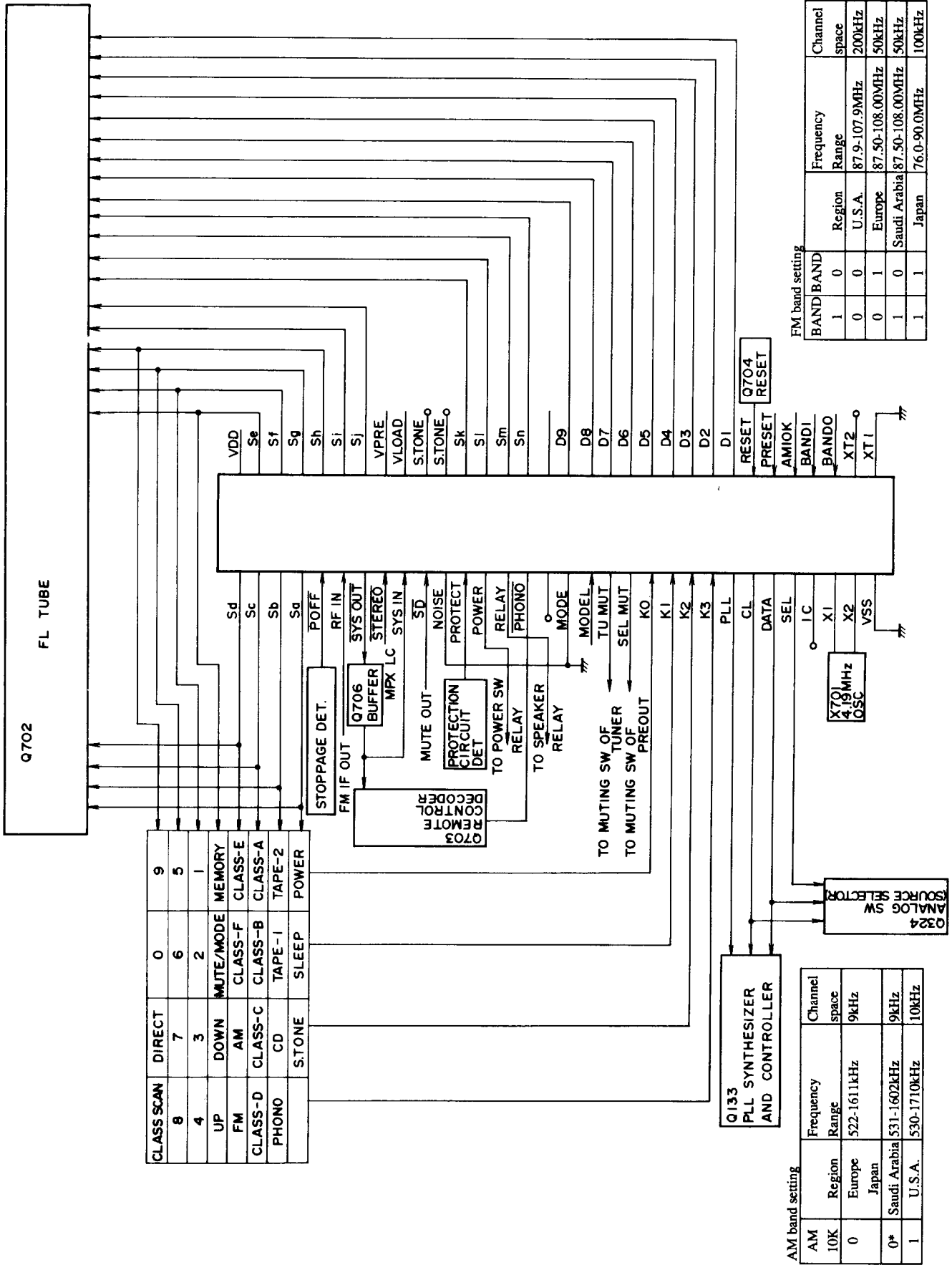
**μPC1225H(Power amplifier driver)**



**NJM4558D-X (Operation amplifier)**



μ PD75268CW-025(Microprocessor)

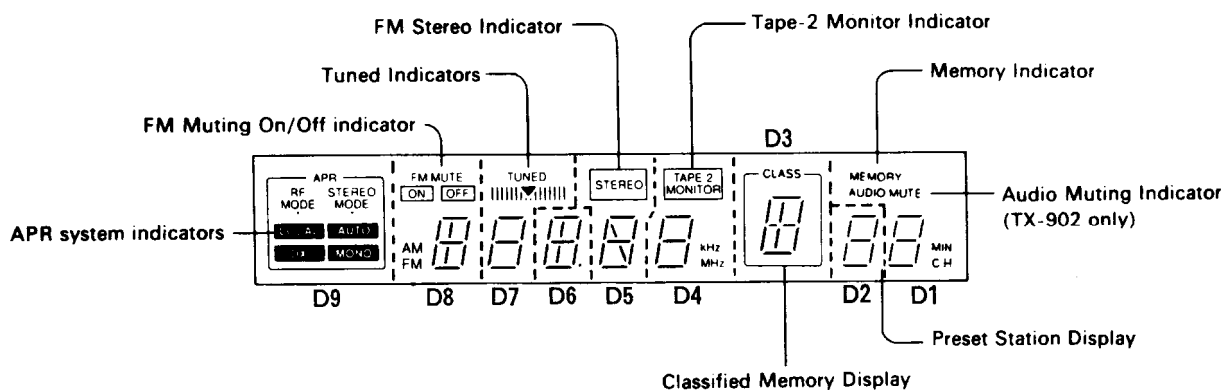




Pin No.	Symbol	Description						
1	Sd							
2	Sc	Segment and key scan output terminals. "H" when active.						
3	Sb							
4	Sa							
5	POFF	This is the input terminal for detection of the stoppage of electric current. "L" when the stoppage of electric current.						
6	RF IN	RF mode input terminal. <table border="1" style="margin-left: 20px;"> <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							
22	K1	Key scan input terminals.						
23	K2	"H" when active.						
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	Not used.
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	
41	D2	
42	D3	
43	D4	
44	D5	
45	D6	
46	D7	
47	D8	
48	D9	Digit output terminals. "H" when active.
49		Not used.
50	Sn	
51	Sm	Segment output terminals. "H" when active.
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	
59	Si	
60	Sh	Segment and key scan output terminals.
61	Sg	"H" when active.
62	Sf	
63	Se	
64	VDD	Power supply terminal.(+5V)

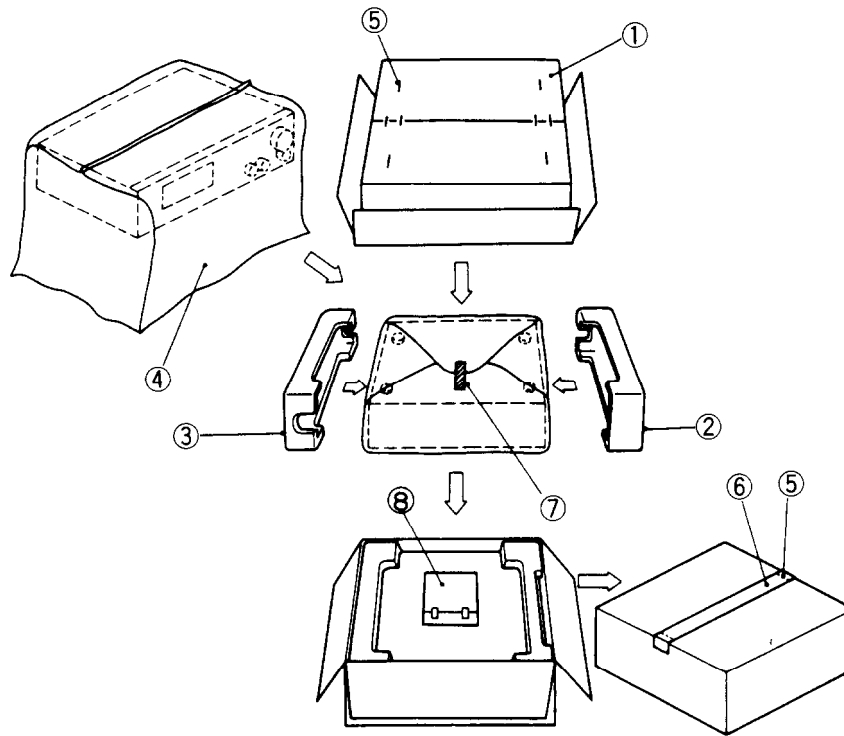
FIP9BTM8(Fluorescent tube)



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	NP	9G	NP	8G	NP	NP	8G	P(n)
Terminal No.	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Note: F:Filament G:Grid P:Anode NP:No pin
Electrode	7G	7G	P(m)	6G	6G	P(l)	P(k)	5G	P(j)	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	

	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

## PACKING VIEW



REF. NO.	PART NO.	Description
1	29052559Y	Master carton box <B> <TX-930>
	29052561Y	Master carton box <S> <TX-930>
	29052563Y	Master carton box <B> <TX-910>
	29052565Y	Master carton box <S> <TX-910>
2	29091440BY	Pad L
3	29091441BY	Pad R
4	29100034A	850×650,Styrene bag
5	282301	Staple
6	29110071	PP tape
7	261504	Adhesive tape
8	Accessory bag ass'y	
	29341795Y	Instruction manual <D>
	29341797Y	Instruction manual <P/W/Q/C>
	292111	FM antenna <D/W>
	292112	FM antenna <P/Q>
	29065462	FM antenna adaptor <W/Q>
	232140	NMA-3057,AM loop antenna
	25055040	CV-K-2,Conversion plug <W>
	3010054	UM-3,Two batteries
	24140223Y	RC-223S,Remote control transmitter
	2010200	Cord RI
	29100097	350×250,Styrene bag
	29365019A	Warranty card <N>
	28358002J	Service station list <N>
	29365024A	Warranty card <F>
	29100107	Styrene bag for warranty card <F>

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

## ADJUSTMENT PROCEDURES

### Preparation

#### 1.Input

FM mono:1kHz,75kHz devi.,60dB/  $\mu$  V

FM stereo:1kHz,75kHz devi.,60dB/  $\mu$  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.

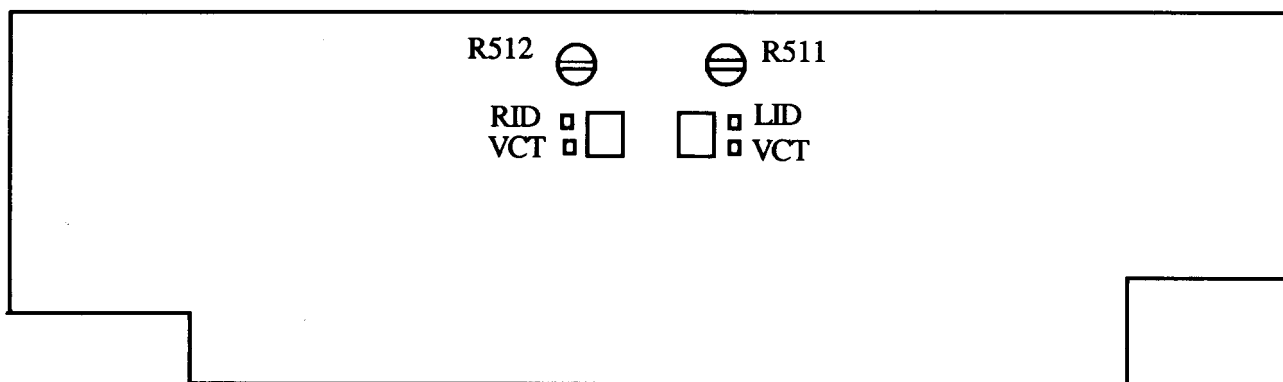
### Amplifier section

#### 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

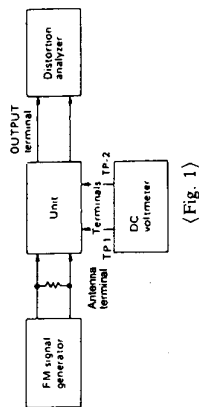


POWER AMPLIFIER PC BOARD

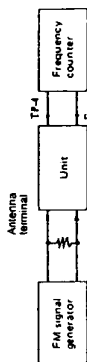
SOLDERING SIDE

**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. 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		
Tuned indicator level	1	Fig. 3	99.1MHz 1kHz, 75kHz devi. 18.2dB(13dB) 11dB (other models)	L+R 1kHz 67.5kHz devi.	99.1MHz	TUNED indicator	R101	Light on	
	2							Light off	

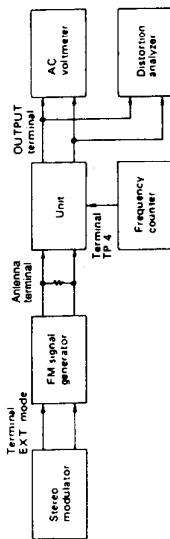


(Fig. 1)



(Fig. 2)

Use the high impedance probe. (10:1)

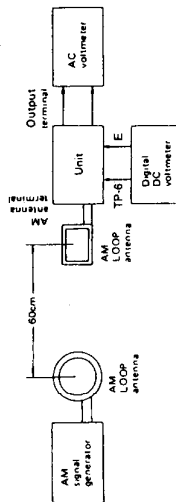


(Fig. 3)

**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 (900kHz) 30% mod.	990kHz	A C voltmeter	L152	Maximum

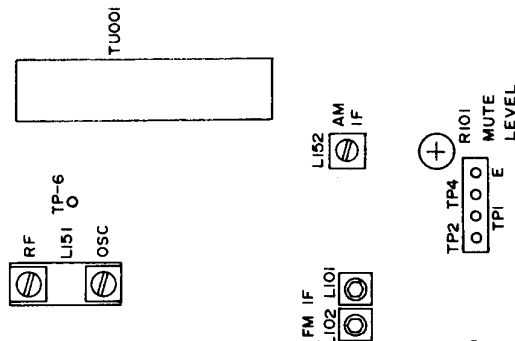
Note: ( ) : 120V model (10kHz step)  
< > : Worldwide model



**Reference specifications**  
 Tuned voltage AM 530kHz (U.S.A. model) 1.5 ± 0.4V  
 522kHz (European model) 1.5 ± 0.4V  
 DC voltmeter to 1710kHz (U.S.A. model) 8.0 ± 0.5V  
 test point TP-6 161kHz (European model) 7.5 ± 0.5V  
 FM 87.9MHz (U.S.A. model) 2.0 ± 0.5V  
 107.9MHz (European model) 2.0 ± 0.5V  
 108.0MHz (U.S.A. model) 7.5 ± 0.5V  
 108.0MHz (European model) 7.5 ± 0.5V

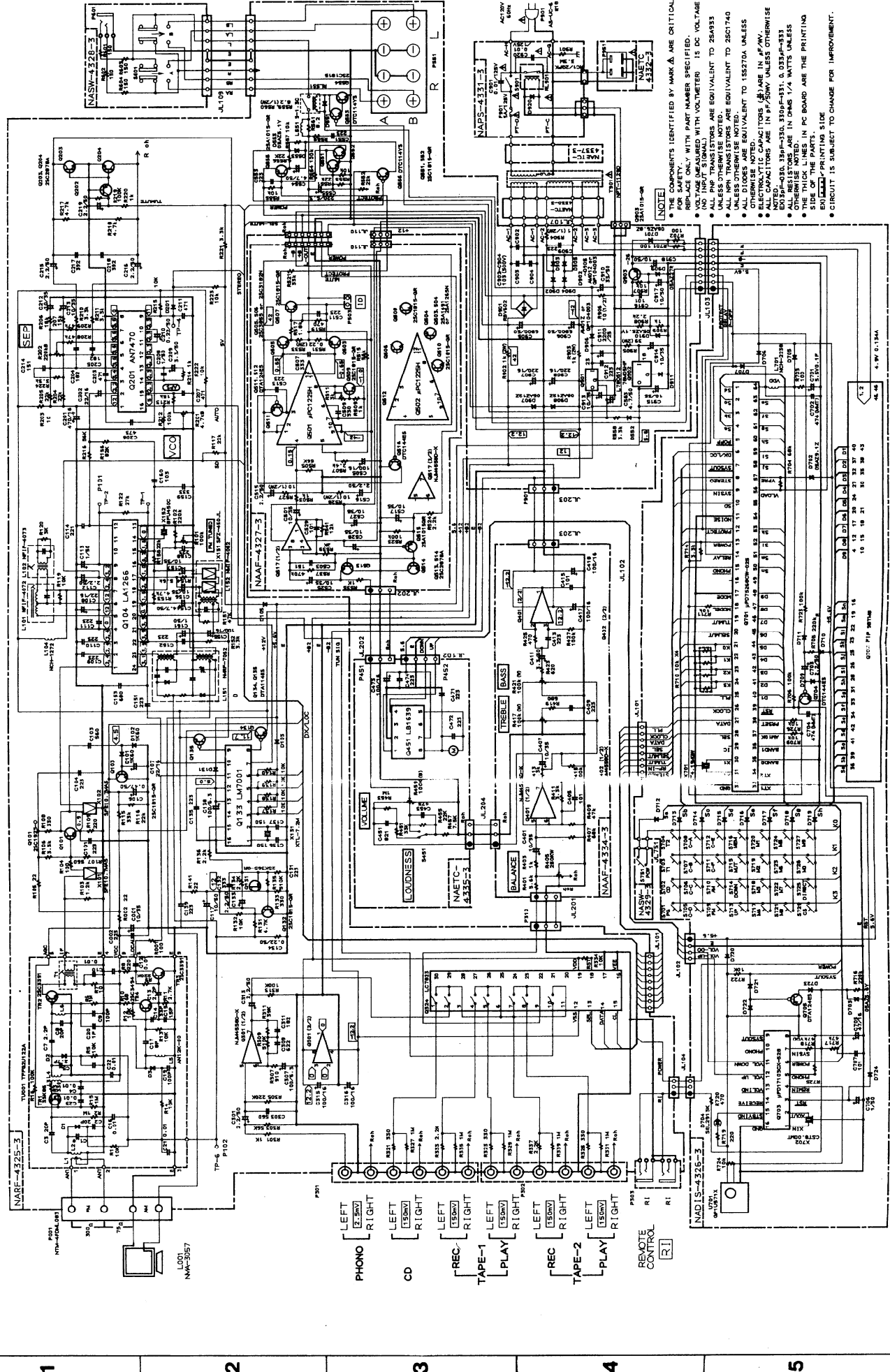
Muting width 35 ± 10kHz (U.S.A. model) FM 14 ± 3dB  
 Muting level (European model) FM 12 ± 3dB  
 AM Less than 68dB/m  
 FM Less than 20dB<sub>μ</sub>

Auto stop level



A B C D E F G

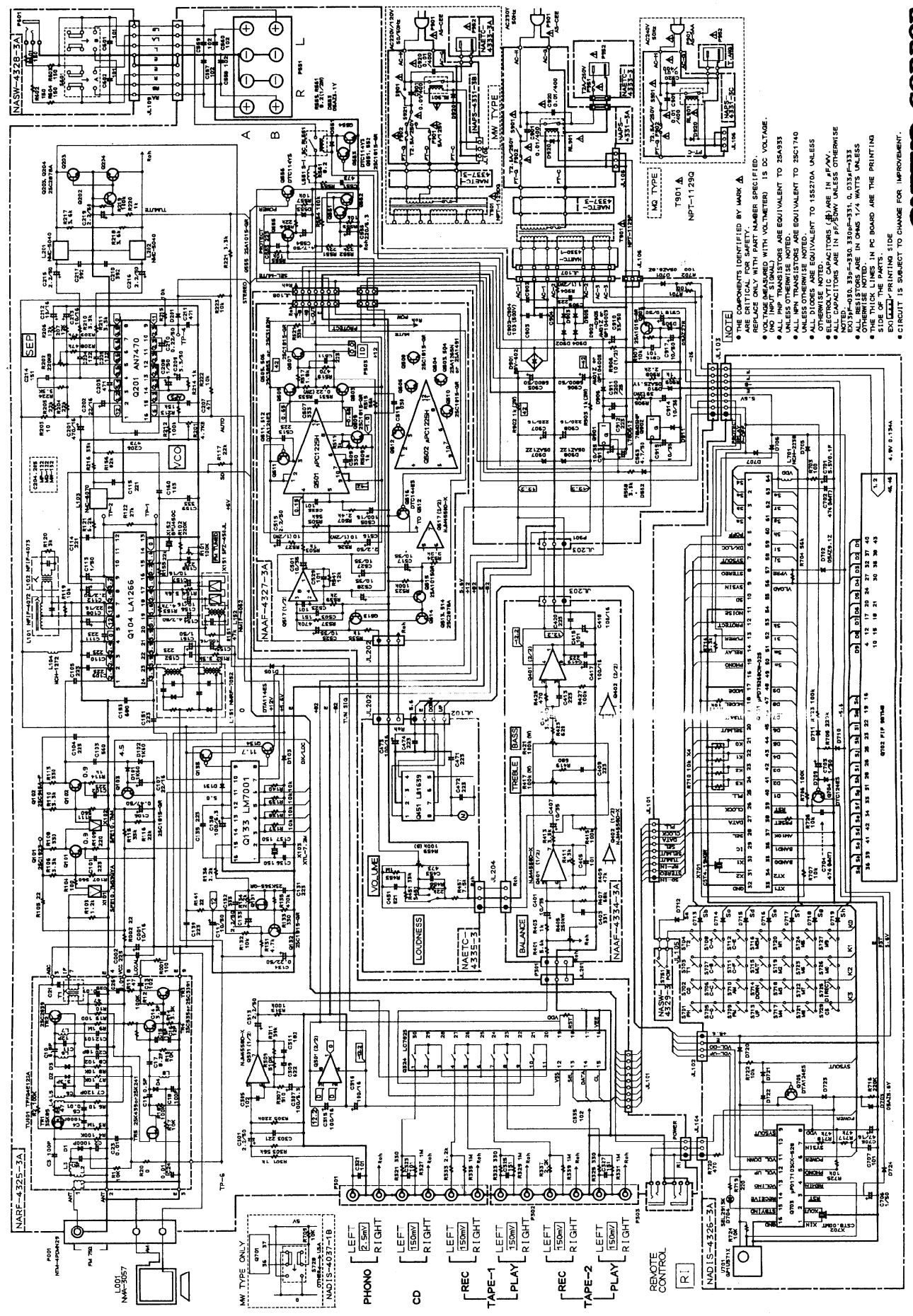
# SCHEMATIC DIAGRAM MODEL TX-930 (120V model)



TX-930

A B C D E F G

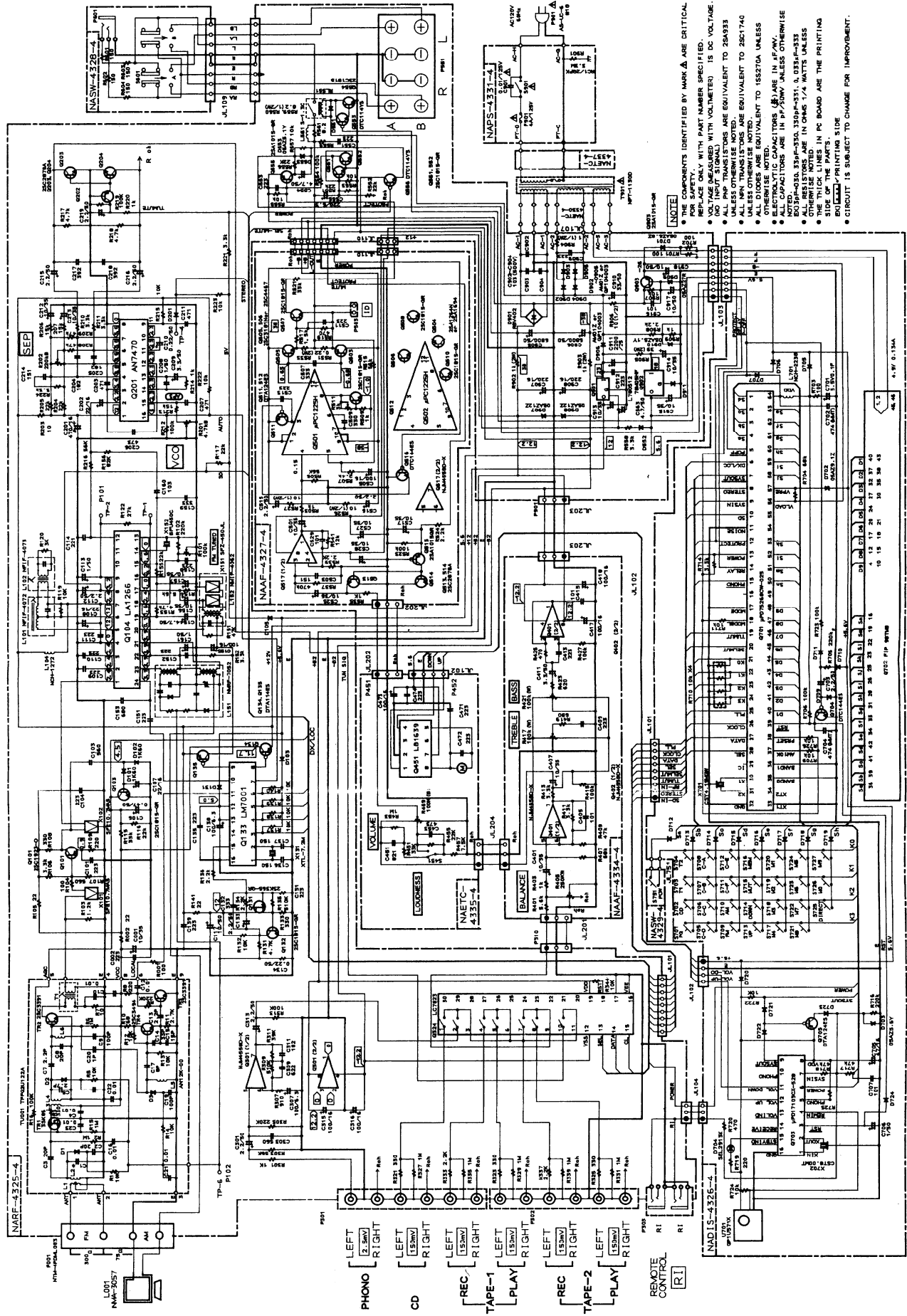
SCHEMATIC DIAGRAM  
MODEL TX-930 (Other models)



- NOTE
- COMPONENTS IDENTIFIED BY MARK Δ ARE CRITICAL FOR SAFETY.
  - REPLACE ONLY WITH PART NUMBER SPECIFIED.
  - VOLTAGE MEASURED WITH VOLTMETER. 15 DC VOLTAGE.
  - ALL PNP TRANSISTORS ARE EQUIVALENT TO 2SA933 UNLESS OTHERWISE NOTED.
  - ALL NPN TRANSISTORS ARE EQUIVALENT TO 2SC1740 UNLESS OTHERWISE NOTED.
  - ALL DIODES ARE EQUIVALENT TO 1SS270A UNLESS OTHERWISE NOTED.
  - ALL CAPACITORS ARE IN PPF/50V UNLESS OTHERWISE SPECIFIED.
  - ALL RESISTORS ARE IN OHMS 1/4 WATTS UNLESS OTHERWISE SPECIFIED.
  - THE THICK LINES IN PC BOARD ARE THE PRINTING SIDE OF THE PARTS.
  - CIRCUIT IS SUBJECT TO CHANGE FOR IMPROVEMENT.

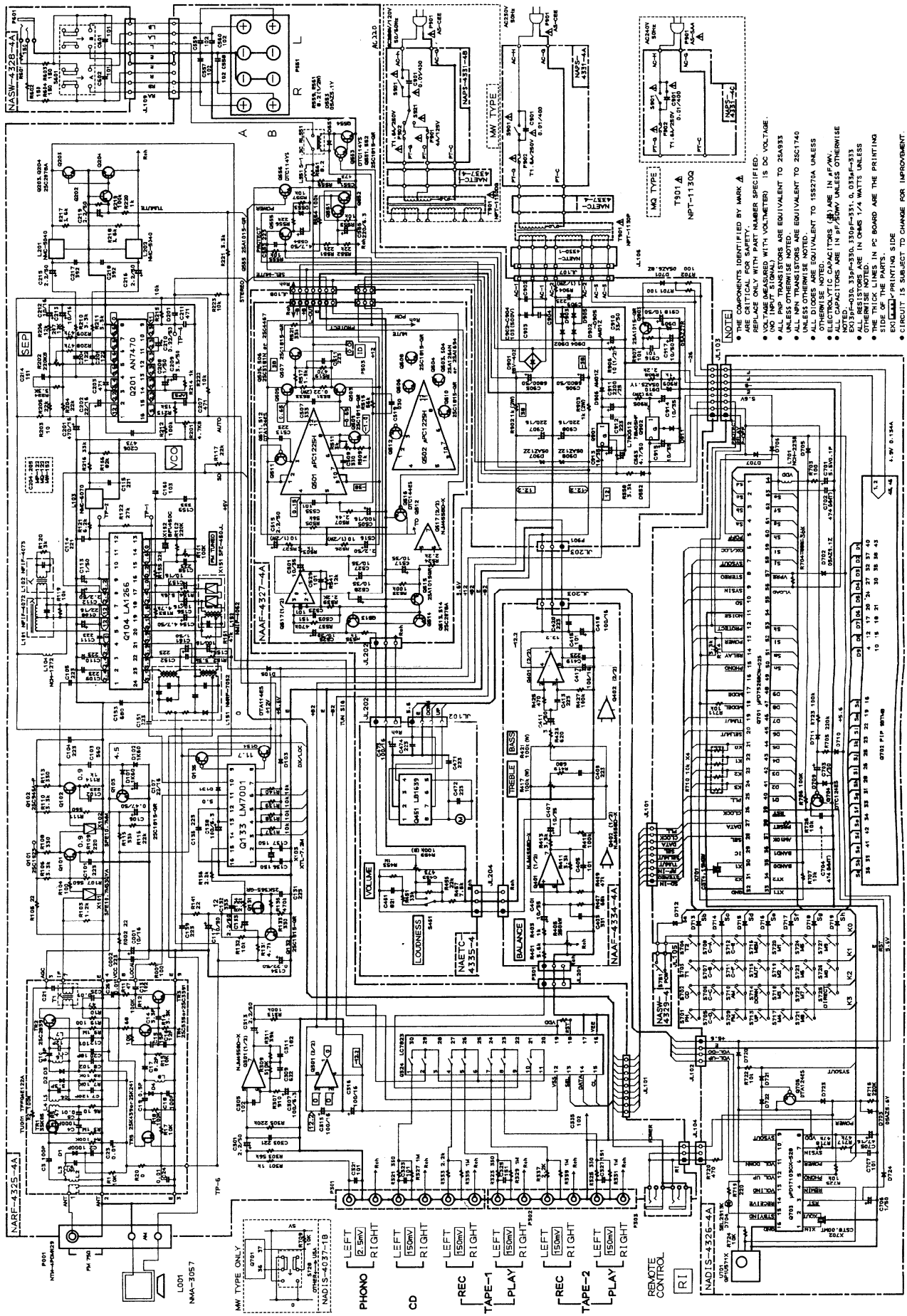
A B C D E F G

# SCHEMATIC DIAGRAM MODEL TX-910 (120V model)





**SCHEMATIC DIAGRAM**  
**MODEL TX-910 (Other models)**



- NOTE**
- THE COMPONENTS IDENTIFIED BY MARK **A** ARE CRITICAL FOR SAFETY. THESE SPECIFIED COMPONENTS MUST BE REPLACED WITH EQUIVALENTS (AND IDENTICAL) OF THE SAME TYPE.
  - ALL PNP TRANSISTORS ARE EQUIVALENT TO 2N4933
  - ALL NPN TRANSISTORS ARE EQUIVALENT TO 2N4174
  - ALL OTHER TRANSISTORS ARE EQUIVALENT TO 18577A UNLESS OTHERWISE NOTED.
  - OTHER TUBE TYPES ARE EQUIVALENT TO 6X4 UNLESS OTHERWISE NOTED.
  - ELECTROLYTIC CAPACITORS (E) ARE IN  $\mu$ F/WV UNLESS OTHERWISE NOTED.
  - ALL CAPACITORS ARE IN  $\mu$ F/50WV UNLESS OTHERWISE NOTED.
  - THE THICK LINES IN PC BOARD ARE THE PRINTING SIDE OF THE PARTS.
  - CIRCUIT IS SUBJECT TO CHANGE FOR IMPROVEMENT.

# PRINTED CIRCUIT BOARD-PARTS LIST

## MODEL TX-930

## TUNER CIRCUIT PC BOARD (NARF-4325-3/3A/3B)

CIRCUIT NO.	PART NO.	DESCRIPTION	CIRCUIT NO.	PART NO.	DESCRIPTION
	Front end				
TU001	240084	TFFG2U122A <D>	X101,X102	3010071	SFE10.7MA5 <D>
	240085	TFFG4E122A <P/W/Q>	X101	3010081	SFE10.7MS3GYA <P/W/Q>
	ICs		X102	3010137	SFE10.7MMK <P/W/Q>
Q104	22240039	LA1266	X151	3010123	SFZ450JL
Q133	22240090	LM7001	X152	3010076	BFU450C
Q201	22240242	AN7470		Capacitors	
Q301	222502	NJM4558D-X	C001	354761009	10 $\mu$ F,35V,Elect.
Q324	22240158 or	LC7823 or	C106	354784799	0.47 $\mu$ F,50V,Elect.
	22240339	LC7823N	C107,C108	354742209	22 $\mu$ F,16V,Elect.
Q901	222780126	L78OS12	C112	354780229	2.2 $\mu$ F,50V,Elect.
Q902	222780055	78M05HF	C113,C161	354780109	1 $\mu$ F,50V,Elect.
	Transistors		C117	354781009	10 $\mu$ F,50V,Elect.
Q101	2211723	2SC1923-O	C131	374722234	0.022 $\mu$ F $\pm$ 5%,50V,Plastic
Q102	2210746	2SC945A-P <P/W/Q>	C132	374723334	0.033 $\mu$ F $\pm$ 5%,50V,Plastic
Q103,Q132	2211255	2SC1815-GR	C133	354780229	2.2 $\mu$ F,50V,Elect.
Q131	2212445	2SK365-GR	C134	354782299	0.22 $\mu$ F,50V,Elect.
Q134,Q135	2213510	DTA114ES	C138	354721019	100 $\mu$ F,6.3V,Elect.
Q202	2211455	2SA1015-GR	C154	354780479	4.7 $\mu$ F,50V,Elect.
Q203,Q204	2212285	2SC2878-A	C155	354741019	100 $\mu$ F,16V,Elect.
Q551,Q552	2211255	2SC1815-GR	C156,C157	354761009	10 $\mu$ F,35V,Elect.
Q553,Q556	221281	DTC114YS	C159	374723334	0.033 $\mu$ F $\pm$ 5%,50V,Plastic
Q554	2211255	2SC1815-GR	C160	374721034	0.01 $\mu$ F $\pm$ 5%,50V,Plastic
Q555,Q903	2211455	2SA1015-GR	C201	354744719	470 $\mu$ F,16V,Elect.
	Diodes		C202	354742209	22 $\mu$ F,16V,Elect.
D101,D102	223132	1K60	C204,C205	374721824	1800pF $\pm$ 5%,50V,Plastic <D>
D103,D105	223205 or	1SS270A or		374721224	1200pF $\pm$ 5%,50V,Plastic <P/Q>
D131,D201	223163	1SS133		374721524	1500pF $\pm$ 5%,50V,Plastic <W>
D551,D552	223205 or	1SS270A or	C206	374724734	0.047 $\mu$ F $\pm$ 5%,50V,Plastic
D911	223163	1SS133	C207	370134714	470pF $\pm$ 5%,100V,Plastic
D553,D910	224150512	05AZ5.1Y	C208	354780109	1 $\mu$ F,50V,Elect.
D701	224150683	05AZ6.8Z	C209	354780339	3.3 $\mu$ F,50V,Elect.
D901	22380038	RBV602	C210	354782299	0.22 $\mu$ F,50V,Elect.
D902-D906	22380035 or	GP104003 or	C212,C213	354761009	10 $\mu$ F,35V,Elect.
	22380046	AM01Z	C215,C216	354780229	2.2 $\mu$ F,50V,Elect.
D907,D908	224151203	05AZ12Z	C217,C218	374723924	3900pF $\pm$ 5%,50V,Plastic
D909	224152704	05AZ27R	C219	354780229	2.2 $\mu$ F,50V,Elect.
	Coils and Transformers		C301,C302	354780229	2.2 $\mu$ F,50V,Elect.
L101	233401	NFIF-4072	C307,C308	354721019	100 $\mu$ F,6.3V,Elect.
L102	233402	NFIF-4073	C309,C310	374726224	6200pF $\pm$ 5%,50V,Plastic
L103	233383	NMC-6070 <P/W/Q>	C311,C312	374721824	1800pF $\pm$ 5%,50V,Plastic
L104	233409M022	NCH-1272	C313,C314	354780229	2.2 $\mu$ F,50V,Elect.
L151	232152	NMRF-7052,RF block	C315,C316	354741019	100 $\mu$ F,16V,Elect.
L152	232139	NMIF-4062	C551,C552	374724734	0.047 $\mu$ F $\pm$ 5%,50V,Plastic
L201,L202	233294	NMC-5040 <P/W/Q>	C554,C563	354780479	4.7 $\mu$ F,50V,Elect.
L551,L552	231176	S-1.3C	C555	354722219	220 $\mu$ F,6.3V,Elect.
	Resonator		C905,C906	3504207	6800 $\mu$ F,50V,Elect.
X103	3010158 or	XTL-7.2M or	C907,C908	354742219	220 $\mu$ F,16V,Elect.
	3010141	XTL-7.2M,Crystal	C910	354783309	33 $\mu$ F,50V,Elect.
			C911	354752229	2200 $\mu$ F,25V,Elect.
			C913-C915	354761009	10 $\mu$ F,35V,Elect.
			C917,C918	354781009	10 $\mu$ F,50V,Elect.

CIRCUIT NO.	PART NO.	DESCRIPTION	CIRCUIT NO.	PART NO.	DESCRIPTION
	<b>Resistors</b>			<b>Capacitors</b>	
R101	5210221 or 5210070	N06HR100KBD, Trim	C701	3000057 or 3000068	0.1F,5.5V or 0.047F,5.5V,Super
R201	5210216 or 5210062	N06HR5KBD or N06HR4.7KBD,Trim	C702,C704	375524744	0.47 $\mu$ F $\pm$ 5%,50V,Plastic
R559,R560	452530824	8.2 ohm $\pm$ 5%,1/2W,Metal	C703	353780229	2.2 $\mu$ F,50V,Elect.
R902,R903	441721024	1 kohm $\pm$ 5%,2W,Metal	C705	353744709	47 $\mu$ F,16V,Elect.
R904	452530104	1 ohm $\pm$ 5%,1/2W,Metal	C706	353780109	1 $\mu$ F,50V,Elect.
R905	441723904	39 ohm $\pm$ 5%,2W,Metal		<b>Resistor</b>	
R906	441721004	10 ohm $\pm$ 5%,1/2W,Metal	R710	49163103404	10 kohm $\times$ 4,1/10W,Array
	<b>Terminals</b>			<b>Switches</b>	
P001	25060157	NTM-4PDML083,Antenna <D>	S701-S727	25035548	NPS-111-S510
	25060117	NTM-2PDML051,Antenna <P/W/Q>	S728	25065286	NSS22112 <W>
P301,P302	25045323	NPJ-6PDBL180	S729	25035548	NPS-111-S510
P303	25045172	HSJ1003-01-020		<b>Holders</b>	
P551	25060158	NTM-8PDML084,Speaker		27190810	FL
	<b>Relay</b>			27190811	LED
RL551	25065339	NRL-2P5A-DC24-046			
	<b>Sockets</b>				
P310,P901	25050267	NSCT-3P95			
	<b>Radiators</b>				
R1	27160176	RAD56			
R2	27160145	RAD51			
R3	27160166				
<b>DISPLAY CIRCUIT PC BOARD (NADIS-4326-3/3A/3B)</b>					
CIRCUIT NO.	PART NO.	DESCRIPTION	CIRCUIT NO.	PART NO.	DESCRIPTION
	<b>Remote control sensor</b>				
U701	24130007	GP1U571X			
	<b>ICs</b>				
Q701	22240406	$\mu$ PD75268CW-025			
Q703	22240376	$\mu$ PD17103CX-528			
	<b>FL tube</b>				
Q702	212093	FIP9BTM8			
	<b>Transistors</b>				
Q704	221282	DTC144ES			
Q705	2212600	DTA124ES			
	<b>Diodes</b>				
D702	224150913	05AZ9.1Z			
D703	224150562	05AZ5.6Y			
D704	225142	SEL2913K,LED			
D705-D707	223163 or	ISS133 or			
D709-D724	223205	ISS270A			
	<b>Resonators</b>				
X701	3010163	CST4.19MGW,Ceramic			
X702	3010154 or 3010190	CST8.00MT or CST8.00HSW,Ceramic			
	<b>Coil</b>				
L701	233400M220 or 233409K220	NCH-2238 or NCH-1284			
<b>POWER AMPLIFIER CIRCUIT PC BOARD (NAAF-4327-3/3A)</b>					
CIRCUIT NO.	PART NO.	DESCRIPTION	CIRCUIT NO.	PART NO.	DESCRIPTION
	<b>ICs</b>				
Q501,Q502	22240108	$\mu$ PC1225H			
Q517	222502	NJM4558D-X			
	<b>Transistors</b>				
Q503,Q504	2201693, 2201694, 2201696, 2202282 or 2202283	* 2SA1491-O, * 2SA1491-Y, * 2SA1491-P, * 2SA1265N-R or * 2SA1265N-O			
Q505,Q506	2201703, 2201704, 2201706, 2202292 or 2202293	* 2SC3855-O, * 2SC3855-Y, * 2SC3812N-R or * 2SC3812N-O			
Q507-Q510	2211255	2SC1815-GR			
Q511,Q512	2212600	DTA124ES			
Q513,Q514	2212285	2SC2878-A			
Q515	2211455	2SA1015-GR			
Q516	221282	DTC144ES			
	<b>Capacitors</b>				
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	354761009	10 $\mu$ F,35V,Elect.			
C525-C528	354761009	10 $\mu$ F,35V,Elect.			
	<b>Resistors</b>				
R511,R512	5215061	N08HR3KBC,Trim			
R526,R527	442521004	10 ohm,1/2W,Metal oxide film			
R531-R534	4500005	BPR2FK-0.22,Metal plate			
	<b>Plugs</b>				
P503,P504	25055495	NPLG-2P470			

HEADPHONE TERMINAL PC BOARD (NASW-4328-3/3A)

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

POWER SWITCH PC BOARD (NASW-4329-3)

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

POWER SUPPLY CIRCUIT PC BOARD (NAPS-4331-3/3A/3B/3C)

CIRCUIT NO.	PART NO.	DESCRIPTION
D920	223163 or 223205	1SS133 or 1SS270A,Diode
C901,C920	3500065A	⚠ DE7150FZ103PAC400V/125V, Capacitor IS
C901A	27301216	⚠ Cover for C901 <P/W/Q>
R901	431523355	⚠ 3.3 Mohm,1/2W,Solid resistor <D>
S901	25035550	⚠ NPS-111-L512P,Power switch
F901	252050	⚠ 5A(ST-6),Primary fuse <D/W>
F901a	250113	⚠ SN5051,Fuseholders <D/W>
F902	252075	⚠ 2.5A-SE-EAK,Primary fuse <P/W/Q>
F902a	25050065	⚠ YSH403T,Fuseholders <P/W/Q>
RL901	25065269	⚠ NRL-1P5ADC12-36,Relay <D>
	25065248	⚠ NRL-1P15ADC12-29,Relay <P/W/Q>
P902	25050267	NSCT-3P95,Socket

AC OUTLET TERMINAL PC BOARD (NAETC-4332-3)

(120 V model only)

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

AC OUTLET TERMINAL PC BOARD (NAETC-4333-3/3A)

(230 V and Worldwide models only)

CIRCUIT NO.	PART NO.	DESCRIPTION
P952	25050410	⚠ NSCT-2P235,AC outlet
F951	252047	⚠ 2A-SE-EAK,Fuse <P>
F951a	25050065	⚠ YSH-403T,Fuseholders <P>

TONE CONTROL CIRCUIT PC BOARD (NAAF-4334-3/3A)

CIRCUIT NO.	PART NO.	DESCRIPTION
		IC
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,variable
R417,R418	5104230	N14RLC100KWT22Z,Treble,variable
R421,R422	5104230	N14RLC100KWT22Z,Bass,variable

VOLUME CONTROL CIRCUIT PC BOARD (NAETC-4335-3)

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

VOLTAGE SELECTOR SWITCH PC BOARD (NASW-4338-3)

(Worldwide model only)

CIRCUIT NO.	PART NO.	DESCRIPTION
S902	25065287	⚠ NSS-22113P,Voltage selector switch

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

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

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

# PRINTED CIRCUIT BOARD-PARTS LIST

## MODEL TX-910

### TUNER CIRCUIT PC BOARD (NARF-4325-4/4A/4B)

CIRCUIT NO.	PART NO.	DESCRIPTION	CIRCUIT NO.	PART NO.	DESCRIPTION
	Front end			Ceramic filters	
TU001	240084	TFFG2U122A <D>	X101,X102	3010071	SFE10.7MA5 <D>
	240085	TFFG4E122A <P/W/Q>	X101	3010081	SFE10.7MS3GYA <P/W/Q>
	ICs		X102	3010137	SFE10.7MMK <P/W/Q>
Q104	22240039	LA1266	X151	3010123	SFZ450JL
Q133	22240090	LM7001	X152	3010076	BFU450C
Q201	22240242	AN7470		Capacitors	
Q301	222502	NJM4558D-X	C001	354761009	10 $\mu$ F,35V,Elect.
Q324	22240158 or	LC7823 or	C106	354784799	0.47 $\mu$ F,50V,Elect.
	22240339	LC7823N	C107,C108	354742209	22 $\mu$ F,16V,Elect.
Q901	222780126	L78OS12	C112	354780229	2.2 $\mu$ F,50V,Elect.
Q902	222780055	78M05HF	C113,C161	354780109	1 $\mu$ F,50V,Elect.
	Transistors		C117	354781009	10 $\mu$ F,50V,Elect.
Q101	2211723	2SC1923-O	C131	374722234	0.022 $\mu$ F $\pm$ 5%,50V,Plastic
Q102	2210746	2SC945A-P <P/W/Q>	C132	374723334	0.033 $\mu$ F $\pm$ 5%,50V,Plastic
Q103,Q132	2211255	2SC1815-GR	C133	354780229	2.2 $\mu$ F,50V,Elect.
Q131	2212445	2SK365-GR	C134	354782299	0.22 $\mu$ F,50V,Elect.
Q134,Q135	2213510	DTA114ES	C138	354721019	100 $\mu$ F,6.3V,Elect.
Q202	2211455	2SA1015-GR	C154	354780479	4.7 $\mu$ F,50V,Elect.
Q203,Q204	2212285	2SC2878-A	C155	354741019	100 $\mu$ F,16V,Elect.
Q551,Q552	2211255	2SC1815-GR	C156,C157	354761009	10 $\mu$ F,35V,Elect.
Q553,Q556	221281	DTC114YS	C159	374723334	0.033 $\mu$ F $\pm$ 5%,50V,Plastic
Q554	2211255	2SC1815-GR	C160	374721034	0.01 $\mu$ F $\pm$ 5%,50V,Plastic
Q555,Q903	2211455	2SA1015-GR	C201	354744719	470 $\mu$ F,16V,Elect.
	Diodes		C202	354742209	22 $\mu$ F,16V,Elect.
D101,D102	223132	1K60	C204,C205	374721824	1800pF $\pm$ 5%,50V,Plastic <D>
D103,D105	223205 or	1SS270A or		374721224	1200pF $\pm$ 5%,50V,Plastic <P/Q>
D131,D201	223163	1SS133		374721524	1500pF $\pm$ 5%,50V,Plastic <W>
D551,D552	223205 or	1SS270A or	C206	374724734	0.047 $\mu$ F $\pm$ 5%,50V,Plastic
D911	223163	1SS133	C207	370134714	470pF $\pm$ 5%,100V,Plastic
D553,D910	224150512	05AZ5.1Y	C208	354780109	1 $\mu$ F,50V,Elect.
D701	224150683	05AZ6.8Z	C209	354780339	3.3 $\mu$ F,50V,Elect.
D901	22380022	RBV402	C210	354782299	0.22 $\mu$ F,50V,Elect.
D902-D906	22380035 or	GP104003 or	C212,C213	354761009	10 $\mu$ F,35V,Elect.
	22380046	AM01Z	C215,C216	354780229	2.2 $\mu$ F,50V,Elect.
D907,D908	224151203	05AZ12Z	C217,C218	374723924	3900pF $\pm$ 5%,50V,Plastic
D909	224152704	05AZ27R	C219	354780229	2.2 $\mu$ F,50V,Elect.
	Coils and Transformers		C301,C302	354780229	2.2 $\mu$ F,50V,Elect.
L101	233401	NFIF-4072	C307,C308	354721019	100 $\mu$ F,6.3V,Elect.
L102	233402	NFIF-4073	C309,C310	374726224	6200pF $\pm$ 5%,50V,Plastic
L103	233383	NMC-6070 <P/W/Q>	C311,C312	374721824	1800pF $\pm$ 5%,50V,Plastic
L104	233409M022	NCH-1272	C313,C314	354780229	2.2 $\mu$ F,50V,Elect.
L151	232152	NMRF-7052,RF block	C315,C316	354741019	100 $\mu$ F,16V,Elect.
L152	232139	NMIF-4062	C551,C552	374724734	0.047 $\mu$ F $\pm$ 5%,50V,Plastic
L201,L202	233294	NMC-5040 <P/W/Q>	C554,C563	354780479	4.7 $\mu$ F,50V,Elect.
L551,L552	231176	S-1.3C	C555	354722219	220 $\mu$ F,6.3V,Elect.
	Resonator		C905,C906	3504207	6800 $\mu$ F,50V,Elect.
X103	3010158 or	XTL-7.2M or	C907,C908	354742219	220 $\mu$ F,16V,Elect.
	3010141	XTL-7.2M,Crystal	C910	354783309	33 $\mu$ F,50V,Elect.
			C911	354752229	2200 $\mu$ F,25V,Elect.
			C913-C915	354761009	10 $\mu$ F,35V,Elect.
			C917,C918	354781009	10 $\mu$ F,50V,Elect.

CIRCUIT NO.	PART NO.	DESCRIPTION
	Resistors	
R101	5210221 or 5210070	N06HR100KBD, Trim
R201	5210216 or 5210062	N06HR5KBD or N06HR4.7KBD,Trim
R559,R560	452530824	8.2 ohm $\pm$ 5%,1/2W,Metal
R902,R903	441729114	910 ohm $\pm$ 5%,2W,Metal
R904	452530104	1 ohm $\pm$ 5%,1/2W,Metal
R905	441723904	39 ohm $\pm$ 5%,2W,Metal
R906	442531004	10 ohm $\pm$ 5%,1/2W,Metal
	Terminals	
P001	25060157 25060117	NTM-4PDML083,Antenna <D> NTM-2PDML051,Antenna <P/W/Q>
P301,P302	25045323	NPJ-6PDBL180
P303	25045172	HSJ1003-01-020
P551	25060158	NTM-8PDML084,Speaker
	Relay	
RL551	25065339	NRL-2P5A-DC24-046
	Sockets	
P310,P901	25050267	NSCT-3P95
	Radiators	
R1	27160176	RAD56
R2	27160145	RAD51
R3	27160166	

## DISPLAY CIRCUIT PC BOARD (NADIS-4326-4/4A/4B)

CIRCUIT NO.	PART NO.	DESCRIPTION
	Remote control sensor	
U701	24130007	GPIU571X
	ICs	
Q701	22240406	$\mu$ PD75268CW-025
Q703	22240376	$\mu$ PD17103CX-528
	FL tube	
Q702	212093	FIP9BTM8
	Transistors	
Q704	221282	DTC144ES
Q705	2212600	DTA124ES
	Diodes	
D702	224150913	05AZ9.1Z
D703	224150562	05AZ5.6Y
D704	225142	SEL2913K,LED
D705-D707	223163 or	1SS133 or
D709-D724	223205	1SS270A
	Resonators	
X701	3010163	CST4.19MGW,Ceramic
X702	3010154 or 3010190	CST8.00MT or CST8.00HSW,Ceramic
	Coil	
L701	233400M220 or 233409K220	NCH-2238 or NCH-1284

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

CIRCUIT NO.	PART NO.	DESCRIPTION
	Capacitors	
C701	3000057 or 3000068	0.1F,5.5V or 0.047F,5.5V,Super
C702,C704	375524744	0.47 $\mu$ F $\pm$ 5%,50V,Plastic
C703	353780229	2.2 $\mu$ F,50V,Elect.
C705	353744709	47 $\mu$ F,16V,Elect.
C706	353780109	1 $\mu$ F,50V,Elect.
	Resistor	
R710	49163103404	10 kohm $\times$ 4,1/10W,Array
	Switches	
S701-S727	25035548	NPS-111-S510
S728	25065286	NSS22112 <W>
	Holders	
	27190810	FL
	27190811	LED

## POWER AMPLIFIER CIRCUIT PC BOARD (NAAF-4327-4/4A)

CIRCUIT NO.	PART NO.	DESCRIPTION
	ICs	
Q501,Q502	22240108	$\mu$ PC1225H
Q517	222502	NJM4558D-X
	Transistors	
Q503,Q504	2202243, 2202244, 2202246, 2202492 or 2202493	* 2SA1694-O, * 2SA1694-Y, * 2SA1694-P, * 2SA1264N-R or * 2SA1264N-O
Q505,Q506	2202253, 2202254, 2202256, 2202502 or 2202503	* 2SC4467-O, * 2SC4467-Y, * 2SC4467-P, * 2SC3181N-R or * 2SC3181N-O
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 $\mu$ 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	354761009	10 $\mu$ F,35V,Elect.
C525-C528	354761009	10 $\mu$ F,35V,Elect.
	Resistors	
R511,R512	5215061	N08HR3KBC,Trim
R526,R527	442521004	10 ohm,1/2W,Metal oxide film
R531-R534	4500005	BPR2FK-0.22,Metal plate
	Plugs	
P503,P504	25055495	NPLG-2P470

NOTE: <D>:120 V model only

<P>:230 V model only

<W>:Worldwide model only

<Q>:240 V model only

## HEADPHONE TERMINAL PC BOARD (NASW-4328-4/4A)

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

## POWER SWITCH PC BOARD (NASW-4329-4)

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

## POWER SUPPLY CIRCUIT PC BOARD (NAPS-4331-4/4A/4B/4C)

CIRCUIT NO.	PART NO.	DESCRIPTION
C901	3500065A	△ DE7150FZ103PAC400V/125V, Capacitor IS
C901A	27301216	△ Cover for C901 <P/w/Q>
R901	431523355	△ 3.3 Mohm,1/2W,Solid resistor <D>
S901	25035550	△ NPS-111-L512P,Power switch
F901	252049	△ 4A(ST-6),Primary fuse <D/W>
F901a	250113	△ SN5051,Fuseholders <D/W>
F902	252073	△ 1.6A-SE-EAK,Primary fuse <P/W/Q>
F902a	25050065	△ YSH403T,Fuseholders <P/W/Q>

## TONE CONTROL CIRCUIT PC BOARD (NAAF-4334-4/4A)

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,variable
R417,R418	5104230	N14RLC100KWT22Z,Treble,variable
R421,R422	5104230	N14RLC100KWT22Z,Bass,variable

## VOLUME CONTROL CIRCUIT PC BOARD (NAETC-4335-4)

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

## VOLTAGE SELECTOR SWITCH PC BOARD (NASW-4338-4)

CIRCUIT NO.	PART NO.	DESCRIPTION
S902	25065287	△ NSS-22113P,Voltage selector switch <W>

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

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

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