

# NEC

Authentic series

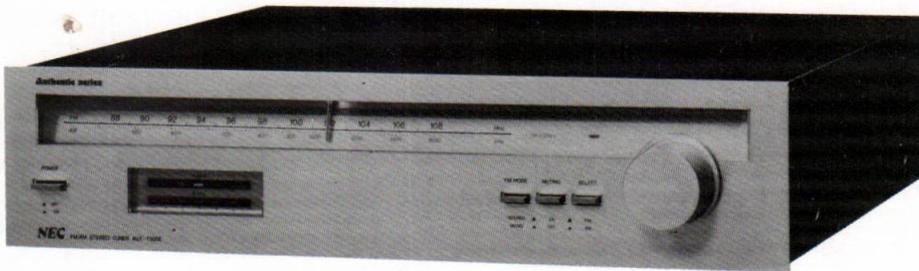
MODEL AUT-7300E (SG)

## STEREO TUNER SERVICE MANUAL

SER. NO. 4030



Better Service  
Better Reputation  
Better Profit



### SPECIFICATIONS

#### FM SECTION

	NOMINAL VALUE
Tuning Frequency Range . . . . .	87.5–108 MHz.
Usable Sensitivity . . . . .	10.8 dBf (1.9 $\mu$ V)
50dB Quieting Sensitivity	
Monaural . . . . .	17.3 dBf (4.0 $\mu$ V)
Stereo . . . . .	39.2 dBf (50 $\mu$ V)
Signal to Noise Ratio . . . . .	76 dB (Monaural)
Capture Ratio . . . . .	1.0 dB
Alternate Channel Selectivity . . . . .	.60 dB
Image Rejection Ratio . . . . .	.50 dB
I.F. Rejection Ratio . . . . .	.90 dB

Spurious Rejection Ratio . . . . .	75 dB
Total Harmonic Distortion	
Monaural . . . . .	0.1%
Stereo . . . . .	0.2%
Stereo Separation . . . . .	45 dB at 1kHz.

#### AM SECTION

	NOMINAL VALUE
Tuning Frequency Range . . . . .	525–1,605 kHz
Usable Sensitivity . . . . .	.250 $\mu$ V/m
Signal to Noise Ratio . . . . .	.50 dB
Selectivity . . . . .	.30 dB

#### OTHER SPECIFICATIONS:

Output Level/Impedance	
FM (1 kHz 100% modulation) . . .	0.7V/4.7k ohms
AM (400 Hz 30% modulation) . . .	0.2V/4.7k ohms
Power Supply	
Voltage (V AC)	110/120/220/240
Hertz	50/60
Dimensions . . . . .	450W x 100H x 340D (mm)
Weight . . . . .	Approximately 7.5 kgs.

Nippon Electric Co., Ltd.

TOKYO, JAPAN

## DISASSEMBLY INSTRUCTIONS

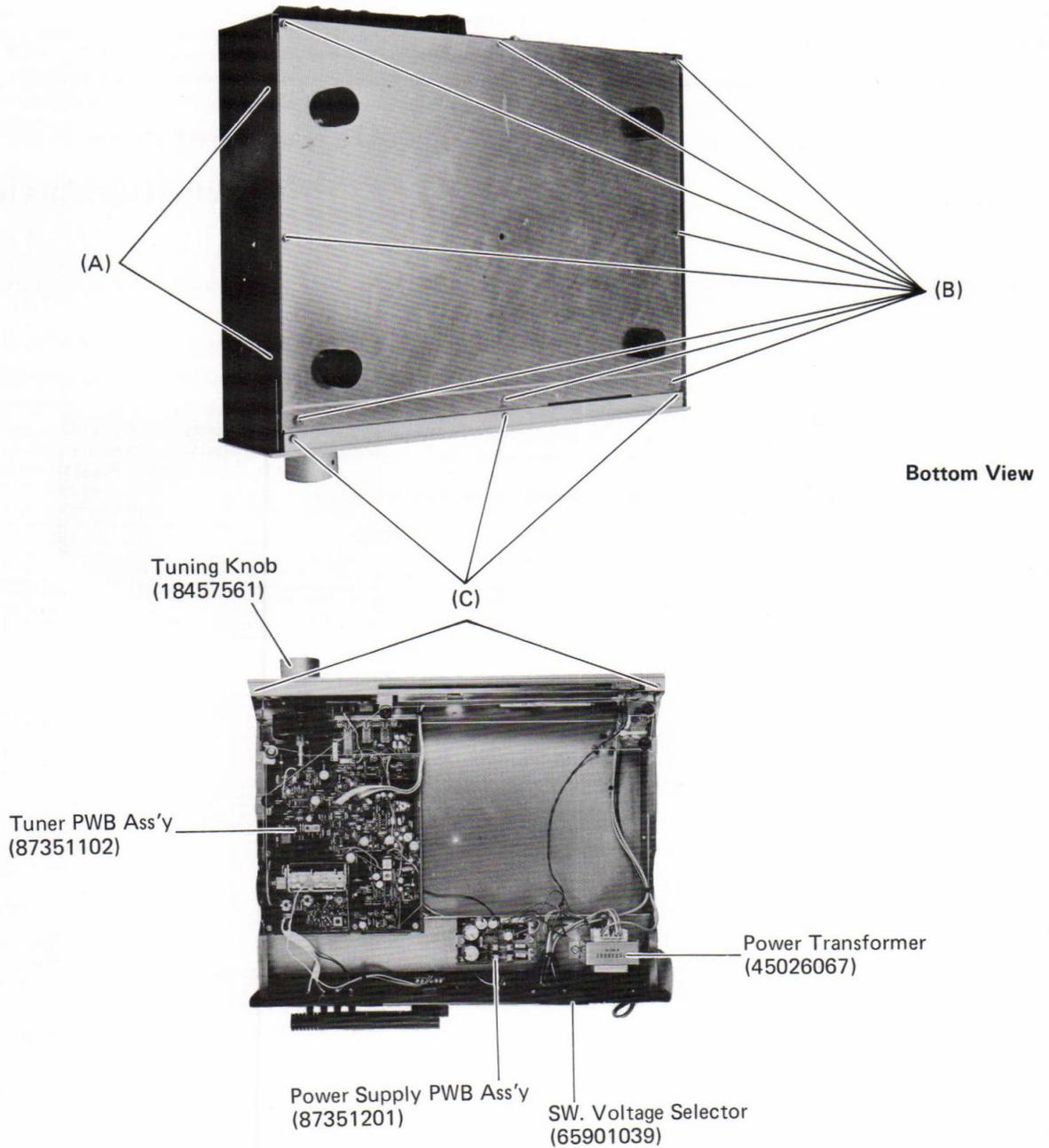


Fig. 1

Top View

### Removing cabinet top and bottom cover. See Fig. 1.

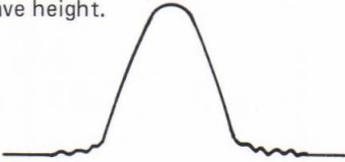
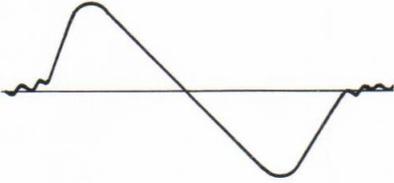
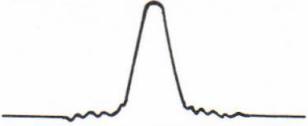
1. Remove four cabinet screws (A) from left and right sides and lift off cabinet.
2. Remove eight bottom cover screws (B) and lift off bottom cover.

### Removing front panel. See Fig. 1.

1. Remove five screws (C) from chassis and lift off front panel.

## ALIGNMENT METHOD

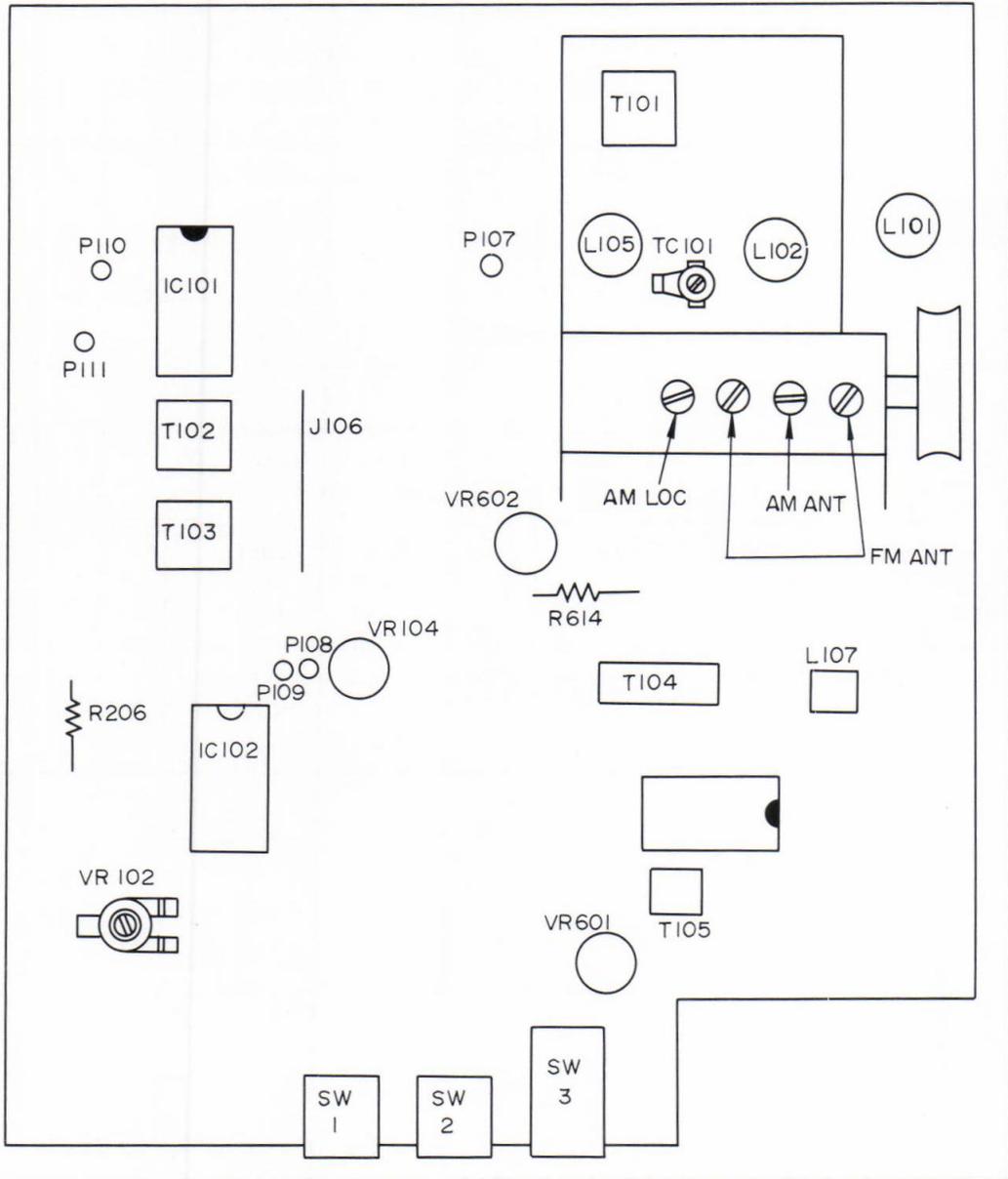
### IF adjustment

<b>NOTE:</b> Positions of switches ◎ indicates the switch in a depressed position. ○ indicates the switch not in a depressed position. Blank space means no designation.							
Item	Signal input point	Signal output point	Where to adjust	How to adjust	SW1	SW2	SW3
1. FM IF adjustment							
a) Amplitude characteristic	AM LOC trimmer	P107 (HOT)	T101	Adjust so as to symmetrize the wave form bilaterally maximizing the wave height. <div style="text-align: center; margin-top: 10px;">  </div>			○
	Shielding case (G)	Shielding case (G)		(Adjustment must be made with weak input.)			
b) S curve	No signal	J106  On the side of #101 of R614	T102	Connect a centerzero meter of high input impedance to both ends of T102 and determine the zero of the meter. <div style="text-align: center; margin-top: 10px;">  </div>			○
b') Same as above	AM LOC trimmer (HOT)	P111 (HOT)	T103	Adjust so as to make the upper wave form symmetrical with the lower one and also make the connecting line as close to straight as possible. <div style="text-align: center; margin-top: 10px;">  </div>			○
	Shielding case (G)	P110 (G)		(Adjustment must be made with weak input.)			
2. AM IF adjustment	Bar antenna	P106	T104, T105	Adjust so as to symmetrize the wave from bilaterally while maximizing the wave height. (Adjustment must be made with weak input.)			◎

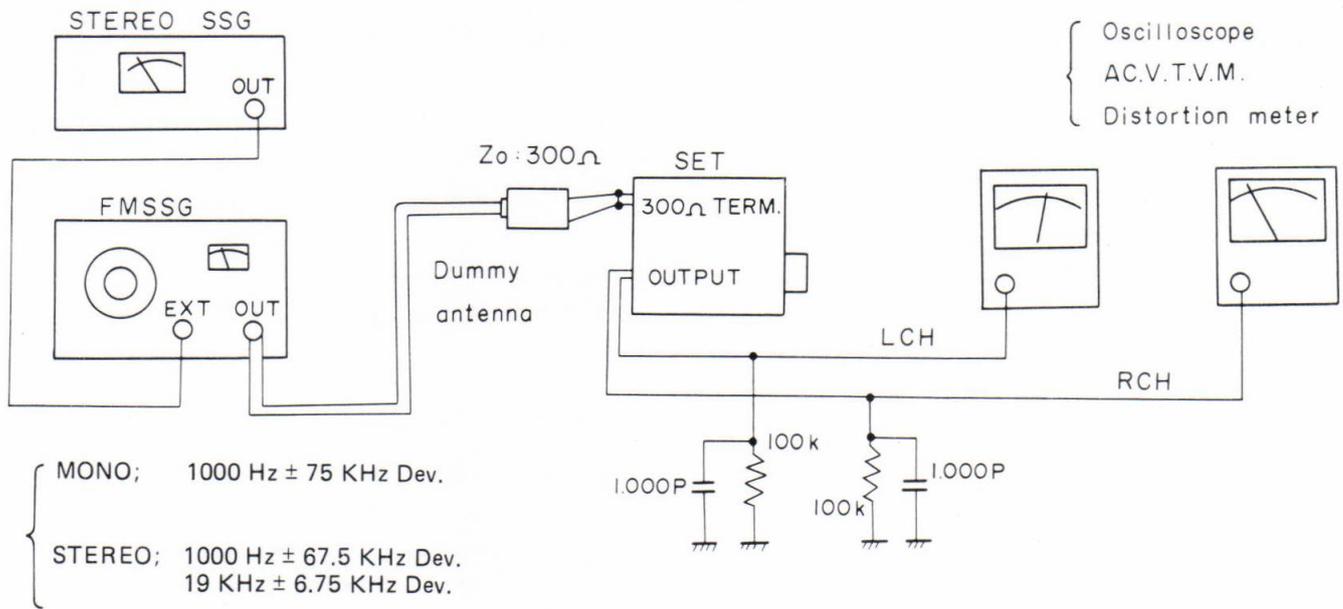
RF adjustment									
NOTE: Positions of switches									
◎ indicates the switch in a depressed position.									
○ indicates the switch not in a depressed position.									
Blank space means no designation.									
Item	VC position	SG frequency	SG output	Where to adjust	How to adjust	SW1	SW2	SW3	
1. FM cover adjustment		90.0MHz	10~20dB	L105	Maximize the output by setting the indicator at 90MHz.		◎	○	Perform operations 1 and 2 two or three times.
2. Same as above		106.0MHz	10~20dB	TC101	Maximize the output by setting the indicator at 106MHz.		◎	○	
3. FM sensitivity adjustment		90.0MHz	12dB	L101	Maximize the output by setting the indicator at 90MHz.		◎	○	Perform operations 3 and 4 two or three times.
4.		106.0MHz	12dB	FM ANT trimmer	Maximize the output by setting the indicator at 108MHz.		◎	○	
5. AM cover adjustment	C max.	515MHz	90~100dB	L107	Make adjustment so as to maximize the output.			◎	Perform the adjustments described to the left 2 or 3 times.
	C min.	1,700KHz	90~100dB	AM LOC trimmer	"				
6. Unicontrol of AM		600KHz	70~80dB	Bar Antenna	Set the indicator at 600KHz and make adjustment so as to maximize the output.			◎	Perform the adjustments described to the left 2 or 3 times.
		1400KHz	70~80dB	AM ANT trimmer	Set the indicator at 1400KHz and make adjustment so as to maximize the output.				
7. AM LED meter adjustment	1000KHz	1000KHz	110dB	VC601	Make the adjustment so as to enable 5 LEDs to light up.			◎	

Adjustment of FM section					NOTE: Positions of switches ◎ indicates the switch in a depressed position. ○ indicates the switch not in a depressed position. Blank space means no designation.				
Item	VC position	SG frequency	SG output	Where to adjust	How to adjust	SW1	SW2	Sw3	
1. Checking of tuning LED	98MHz	98MHz	15dB	T102	The LED at the center must light up when the maximum wave from of the output has been displayed on the synchroscope of the output terminal.		◎	○	Follow items 1 and 2 two or three times.
2. Adjust-ment of distortion factor	98MHz	98MHz	66dB	T103	Make adjustment so as to minimize THD.		◎	○	
3. VCO adjustment	Short-circuit both ends of R206 without signal.			VR104	Connect P108 and P109 through the buffer to the counter and make adjustment to enable 75.95~76.05 KHz to be generated.		◎	○	
4. Adjust-ment of separation	98MHz	98MHz	66dB	VR102	Make adjustment to enable the farthest separation of L from R.		◎	○	
5. FM LED meter ad-justment	98MHz	98MHz	25dB	VR602	Make adjustment so as to turn on the first LED.		◎	○	

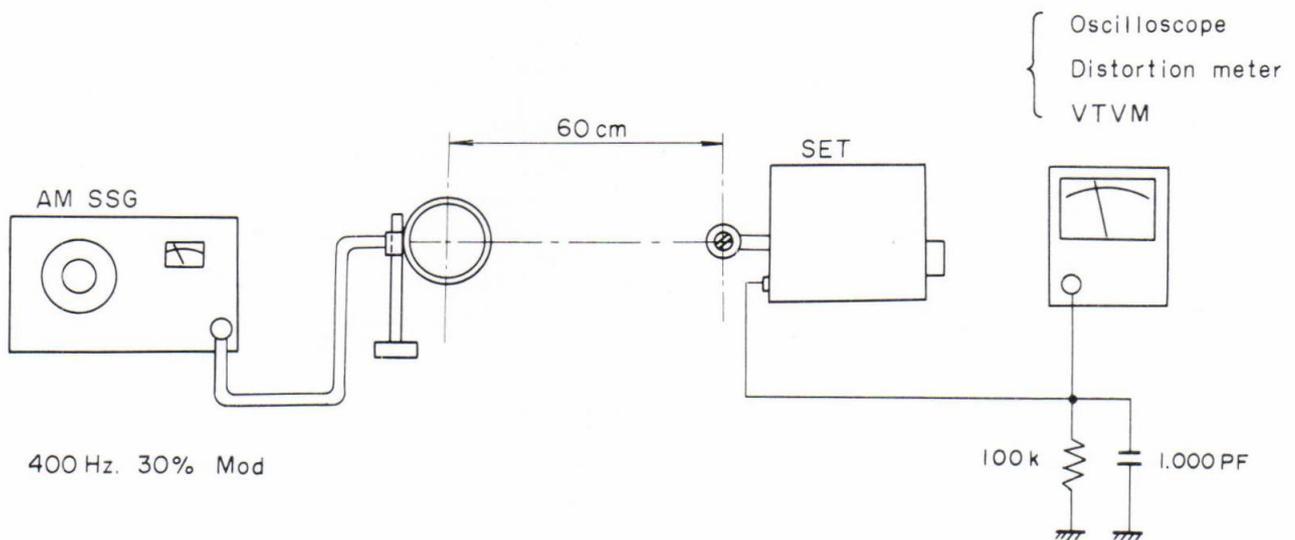
# ALIGNMENT POINT DIAGRAMS



## FM EQUIPMENT CONNECTION DIAGRAMS

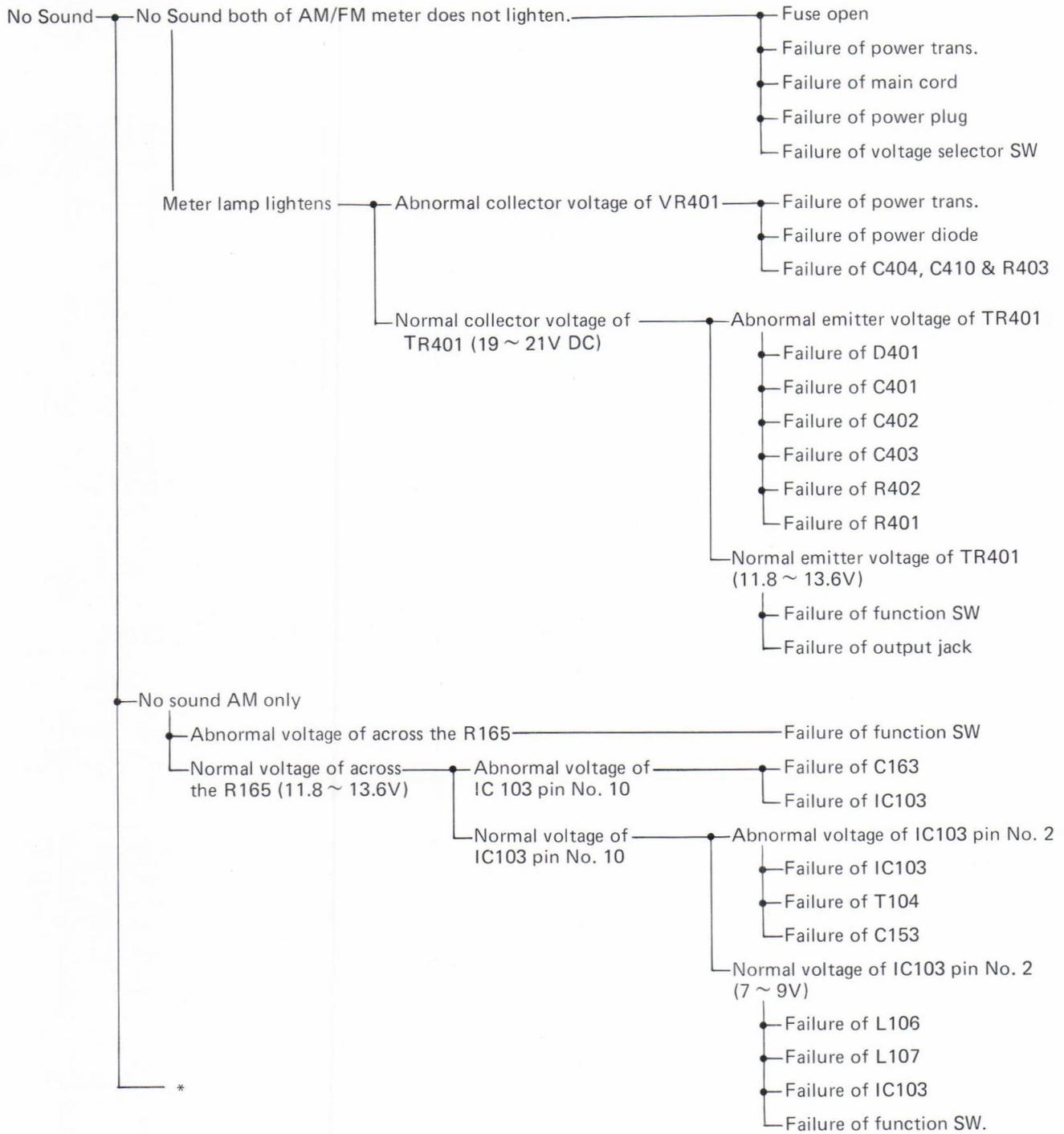


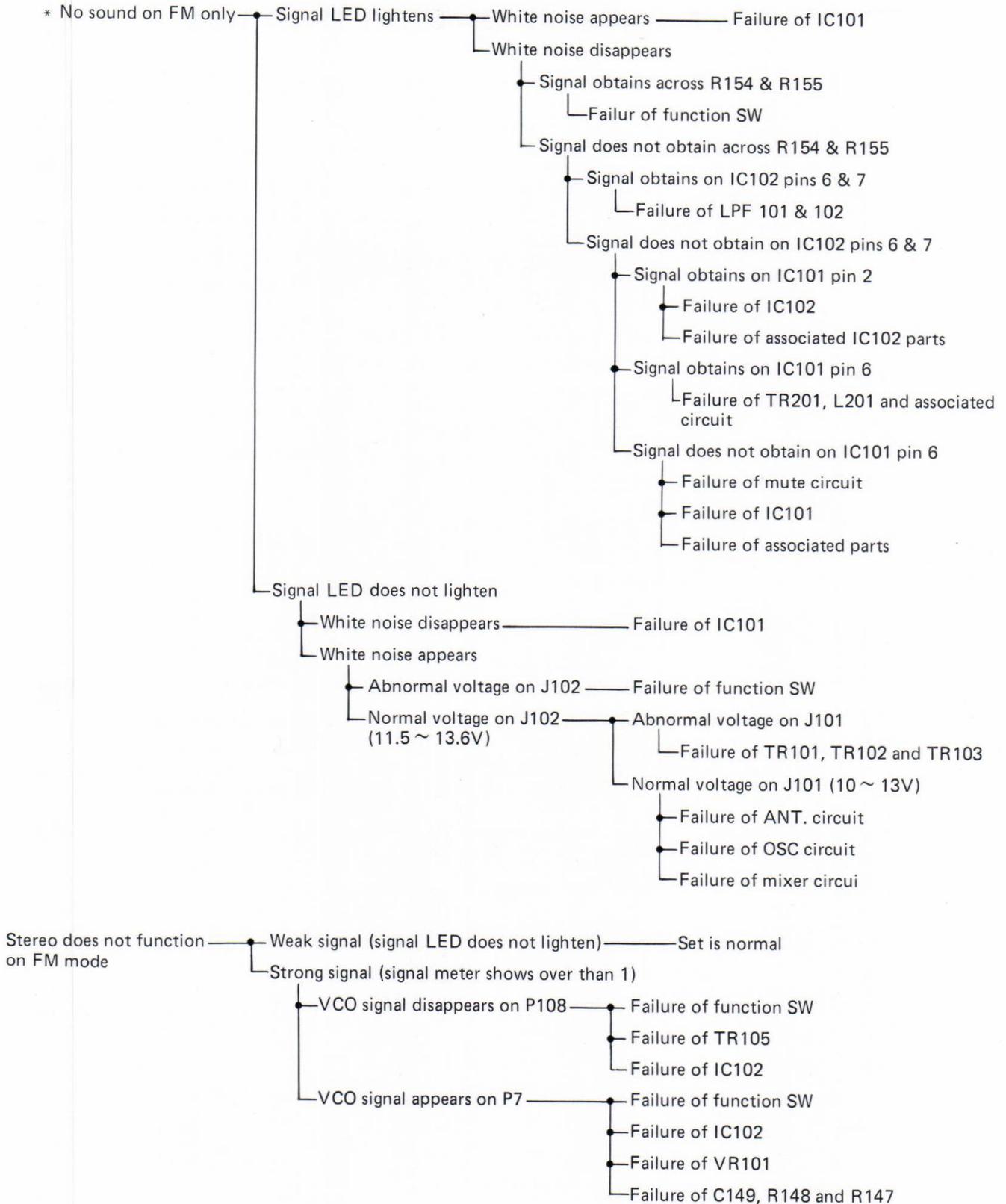
## AM EQUIPMENT CONNECTION DIAGRAMS OSCILLOSCOPE



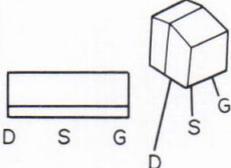
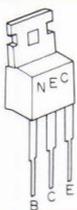
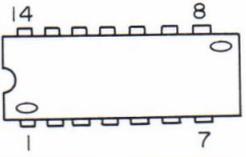
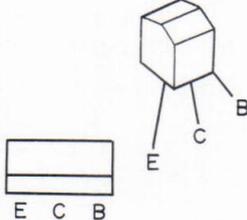
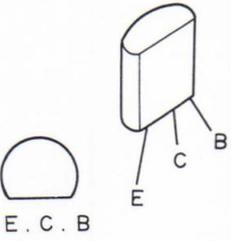
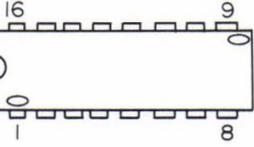
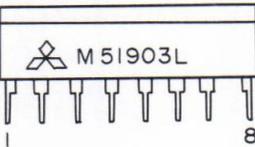
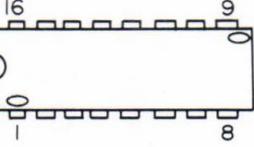
# TROUBLESHOOTING

## DIAGNOSIS METHOD

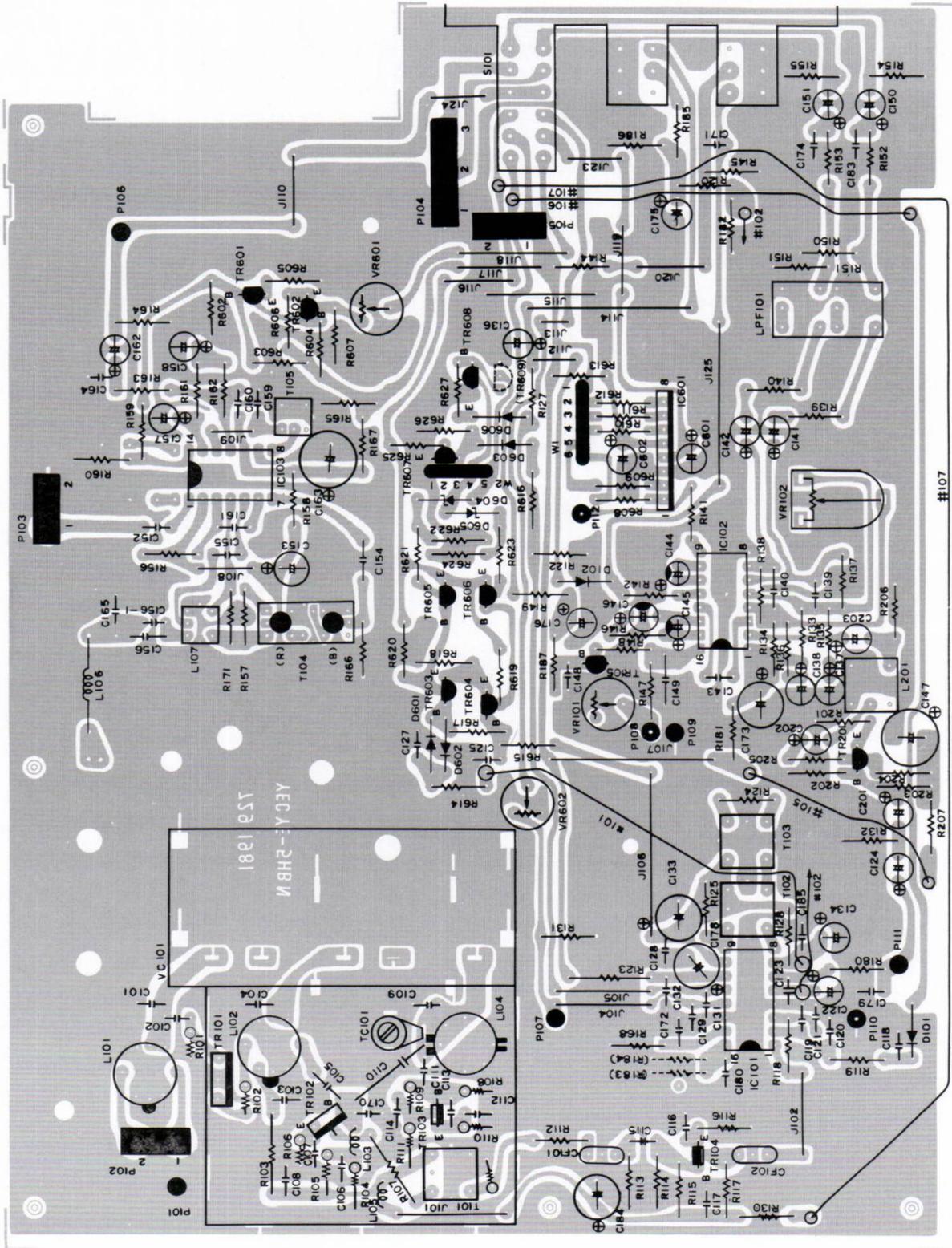




## TRANSISTOR & IC LEAD IDENTIFICATION

	<p>TR101 2SK-55D</p>		<p>TR401 2SD381L</p>	<p>HA-1151</p> 	<p>IC103</p>
	<p>TR102 2SC535B</p>		<p>TR201 2SC-1845B</p>	<p>HA-1125</p> 	<p>IC101</p>
	<p>TR602 TR605 TR606 2SA-999F</p>		<p>TR105 TR601 TR603 TR604 TR607 2SC-2320F</p>		
	<p>TR103 TR104 2SC461B</p>	<p>M51903L</p> 	<p>IC601</p>	<p>HA-1196</p> 	<p>IC102</p>

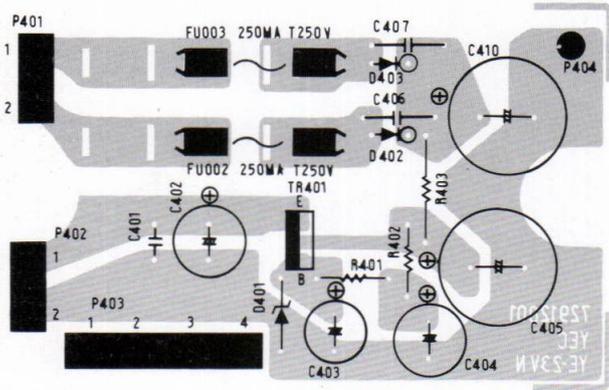
# TUNER PWB ASS'Y (Component Side)



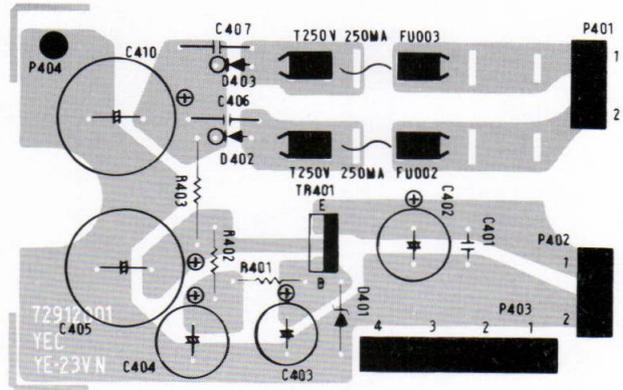


# POWER SUPPLY ASS'Y

(Component Side)

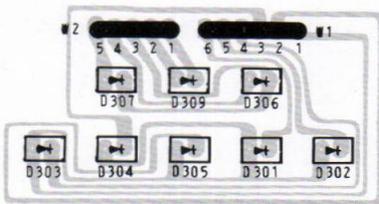


(Solder Side)

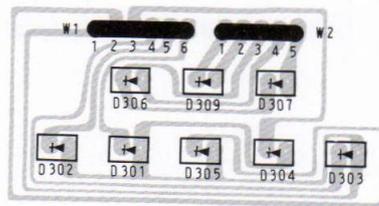


# LED PWB ASS'Y

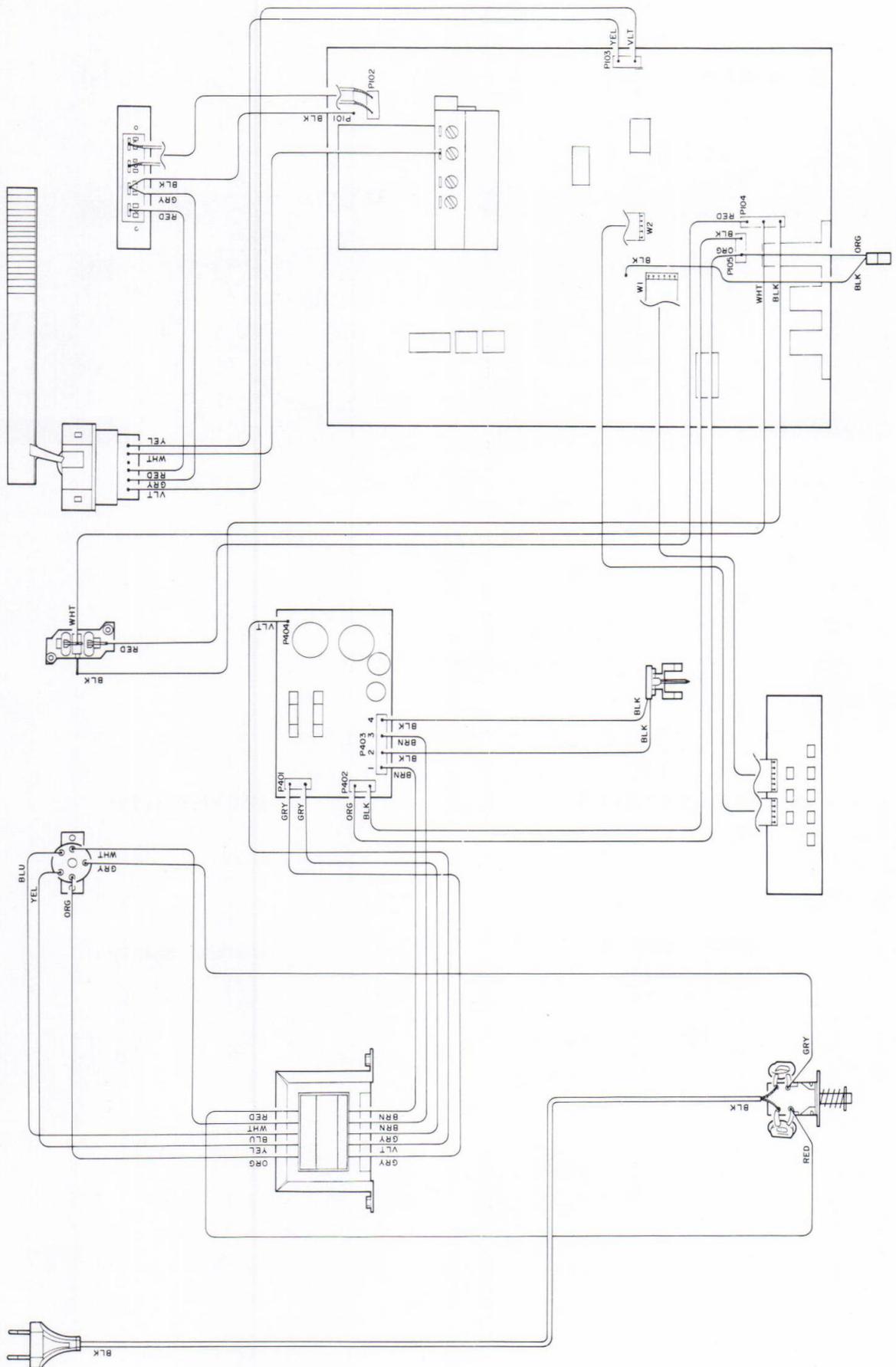
(Component Side)

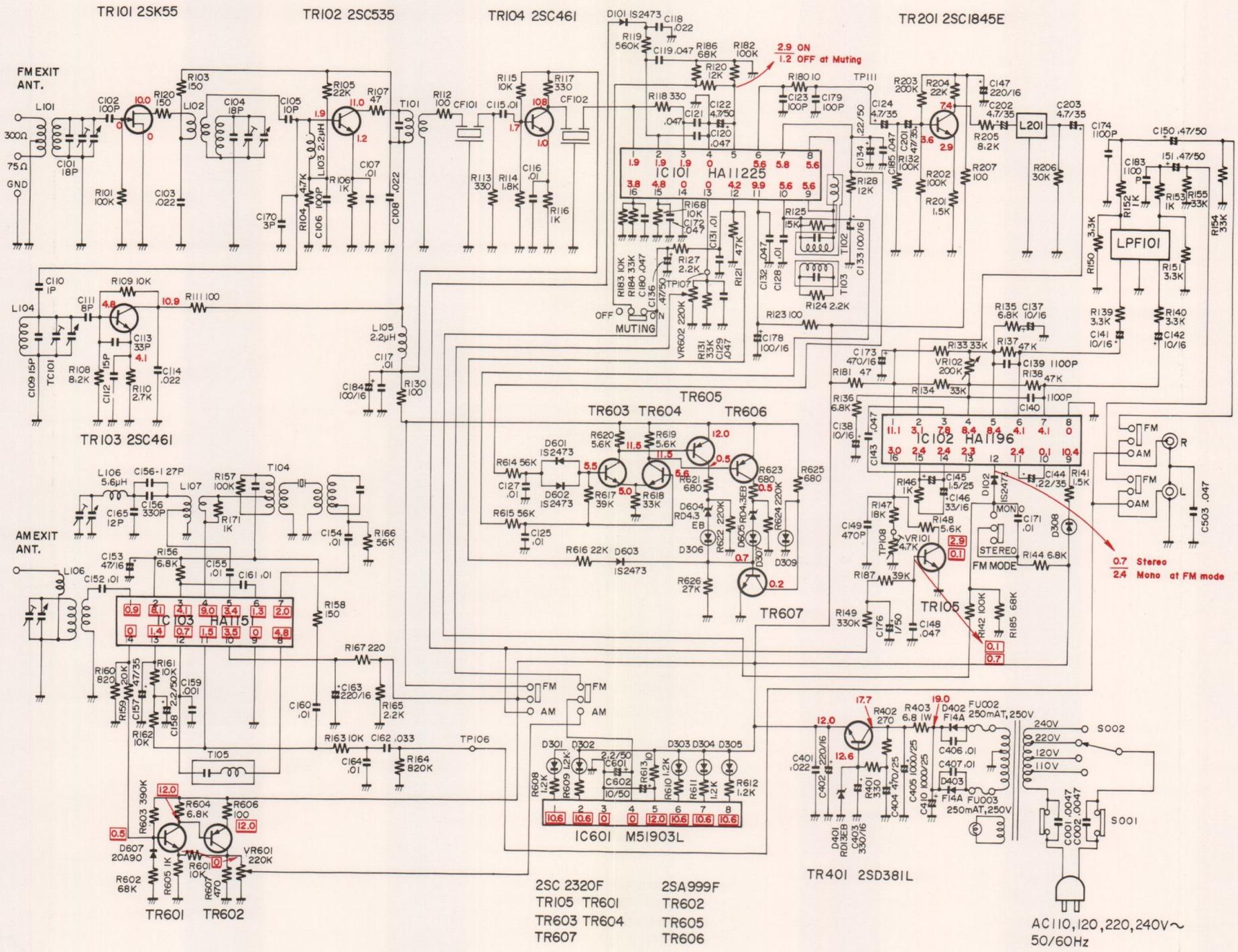


(Solder Side)



# WIRING DIAGRAM



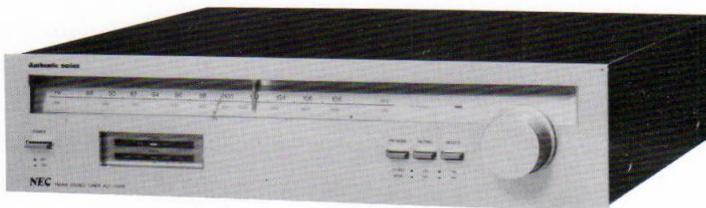


# REPLACEMENT PARTS LIST

FOR

# NEC

## STEREO TUNER



EXPLODED VIEW NO.	SYMBOL NO.	PART NO.	DESCRIPTION	Q'TY	REMARKS
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### Transistors

	TR602, 605, 606	35902106	Transistor, 2SA999F	3	
	TR103, 104	35944402	Transistor, 2SC461B	2	
	TR102	35944502	Transistor, 2SC535B	1	
	TR201	35947405	Transistor, 2SC1845E	1	
	TR105, 601, 603, 604, 607	35947506	Transistor, 2SC2320F	5	
	TR401	35963112	Transistor, 2SD381L (G-21)	1	
	TR101	35990704	FET 2SK55D	1	

### Diodes

	D101, 102, 601, 602, 603	36001009	Diode, Si. 1S-2473	5	
	D607	36002513	Diode, Ge. 20A90	1	
	D401	36003042	Diode, Zener RD13E-B	1	
	D604, 605	36003080	Diode, RD-4.3E(B)	2	
	D402, 403	36107065	Rectifier, Si. F14A	2	
	D301, 302, 303, 304, 305, 306, 307, 308	36904037	LED TLR205	8	
	D309	36904042	LED TLG205	1	

### ICs

	IC601	37901038	IC, M51903 L	1	
	IC102	37902012	IC, MA-1196	1	
	IC103	37902013	IC, HA-1151	1	
	IC101	37902021	IC, HA-11225	1	

EXPLODED VIEW NO.	SYMBOL NO.	PART NO.	DESCRIPTION	Q'TY	REMARKS
<b>Resistors</b>					
	R107	40102141	R, Carbon 47Ω 5% ¼W	1	
	R103	40102153	R, Carbon 150Ω 5% ¼W	1	
	R123	40102649	R, Carbon 100Ω 5% ¼W	1	
	R111	40112149	R, Carbon 100Ω 5% ¼W	1	
	R102	40112153	R, Carbon 150Ω 5% ¼W	1	
	R106	40112173	R, Carbon 1KΩ 5% ¼W	1	
	R110	40112183	R, Carbon 2.7KΩ 5% ¼W	1	
	R104	40112189	R, Carbon 4.7KΩ 5% ¼W	1	
	R108	40112195	R, Carbon 8.2KΩ 5% ¼W	1	
	R109	40112197	R, Carbon 10KΩ 5% ¼W	1	
	R105	40112205	R, Carbon 22KΩ 5% ¼W	1	
	R101	40112221	R, Carbon 100KΩ 5% ¼W	1	
	R403	40351121	R, Metal 6.8Ω 5% 1W	1	
	R613	40913125	R, Carbon 10Ω 5% ¼W	1	
	R181	40913141	R, Carbon 47Ω 5% ¼W	1	
	R130, 207	40913149	R, Carbon 100Ω 5% ¼W	2	
	R167	40913157	R, Carbon 220Ω 5% ¼W	1	
	R402	40913159	R, Carbon 270Ω 5% ¼W	1	
	R401	40913161	R, Carbon 330Ω 5% ¼W	1	
	R180	40982125	R, Carbon 10Ω 5% ¼W	1	
	R112, 606	40982149	R, Carbon 100Ω 5% ¼W	2	
	R158	40982153	R, Carbon 150Ω 5% ¼W	1	
	R113, 117, 118	40982161	R, Carbon 330Ω 5% ¼W	3	
	R607	40982165	R, Carbon 470Ω 5% ¼W	1	
	R621, 623, 625	40982169	R, Carbon 680Ω 5% ¼W	3	
	R160	40982171	R, Carbon 820Ω 5% ¼W	1	
	R116, 146, 152, 153, 171, 605	40982173	R, Carbon 1.0KΩ 5% ¼W	6	
	R608, 609, 610, 611, 612	40982175	R, Carbon 1.2KΩ 5% ¼W	5	
	R141, 148, 201	40982177	R, Carbon 1.5KΩ 5% ¼W	3	
	R114	40982179	R, Carbon 1.8KΩ 5% ¼W	1	
	R124, 127, 165, 204	40982181	R, Carbon 2.2KΩ 5% ¼W	4	
	R139, 140, 150, 151	40982185	R, Carbon 3.3KΩ 5% ¼W	4	
	R619, 620	40982191	R, Carbon 5.6KΩ 5% ¼W	2	
	R135, 136, 144, 156, 604	40982193	R, Carbon 6.8KΩ 5% ¼W	5	
	R205	40982195	R, Carbon 8.2KΩ 5% ¼W	1	
	R115, 161, 162, 163, 168, 183, 601	40982197	R, Carbon 10KΩ 5% ¼W	7	
	R120, 128	40982199	R, Carbon 12KΩ 5% ¼W	2	
	R125	40982201	R, Carbon 15KΩ 5% ¼W	1	

EXPLODED VIEW NO.	SYMBOL NO.	PART NO.	DESCRIPTION	Q'TY	REMARKS
	R147	40982203	R, Carbon 18K $\Omega$ 5% ¼W	1	
	R159	40982204	R, Carbon 20K $\Omega$ 5% ¼W	1	
	R616	40982205	R, Carbon 22K $\Omega$ 5% ¼W	1	
	R626	40982207	R, Carbon 27K $\Omega$ 5% ¼W	1	
	R206	40982208	R, Carbon 30K $\Omega$ 5% ¼W	1	
	R131, 133, 134, 154, 155, 184, 618	40982209	R, Carbon 33K $\Omega$ 5% ¼W	7	
	R187, 617	40982211	R, Carbon 39K $\Omega$ 5% ¼W	2	
	R122, 137, 138	40982213	R, Carbon 47K $\Omega$ 5% ¼W	3	
	R166, 614, 615	40982215	R, Carbon 56K $\Omega$ 5% ¼W	3	
	R186, 188, 602	40982217	R, Carbon 68K $\Omega$ 5% ¼W	3	
	R132, 147, 157, 182, 202	40982221	R, Carbon 100K $\Omega$ 5% ¼W	5	
	R203	40982228	R, Carbon 200K $\Omega$ 5% ¼W	1	
	R622, 624	40982229	R, Carbon 220K $\Omega$ 5% ¼W	2	
	R149	40982233	R, Carbon 330K $\Omega$ 5% ¼W	1	
	R603	40982235	R, Carbon 390K $\Omega$ 5% ¼W	1	
	R119	40982239	R, Carbon 560K $\Omega$ 5% ¼W	1	
	R164	40982243	R, Carbon 820K $\Omega$ 5% ¼W	1	
	VR101	41061008	R, Variable 4.7K $\Omega$ 0.15W	1	
	VR601, 602	41061010	R, Variable 220K $\Omega$ 0.15W	2	
	VR102	41950031	R, Variable 10p B200K $\Omega$	1	

### Capacitors

	C406, 407	42019575	C, Ceramic 500V 0.01 $\mu$ F	2	
	C159	41220413	C, Ceramic 50V 10000pF	1	
	C115, 116, 117, 125, 127, 128, 131, 152, 154, 160, 161, 164	42110425	C, Ceramic 50V 0.01 $\mu$ F	12	
	C118, 401	42110429	C, Ceramic 50V 0.022 $\mu$ F	2	
	C119, 120, 121, 129, 132, 148, 172, 180, 185	42110433	C, Ceramic 50V 0.047 $\mu$ F	9	
	C107	42110925	C, Ceramic 50V 0.01 $\mu$ F	1	
	C103, 108, 114	42110929	C, Ceramic 50V 0.022 $\mu$ F	3	
	C503	42110933	C, Ceramic 50V 0.047 $\mu$ F	1	
	C110	42331001	C, Ceramic 50V 10pF	1	
	C123, 179	42331045	C, Ceramic 50V 100pF	2	
	C156-1	42332031	C, Ceramic 50V 27pF	1	
	C170	42333010	C, Ceramic 50V 3pF	1	
	C111	42333015	C, Ceramic 50V 8pF	1	
	C105	42333017	C, Ceramic 50V 10pF	1	
	C165	42333025	C, Ceramic 50V 12pF	1	
	C112	42333027	C, Ceramic 50V 15pF	1	

EXPLODED VIEW NO.	SYMBOL NO.	PART NO.	DESCRIPTION	Q'TY	REMARKS
	C101, 104	42333029	C, Ceramic 50V 18pF	2	
	C113	42333035	C, Ceramic 50V 33pF	1	
	C102, 106	42333047	C, Ceramic 50V 100pF 5%	2	
	C109	42334025	C, Ceramic 50V 15pF	1	
	C149	42407145	C, Mica 50V 470pF 5%	1	
	C156	42407160	C, Mica 50V 330pF	1	
	C501, 502	42606007	C, Metalized Paper 250V 4700pF	2	
	C155, 171	42754063	C, Mylar 50V 0.01 $\mu$ F	2	
	C162	42754069	C, Mylar 50V 0.033 $\mu$ F	1	
	C143	42754071	C, Mylar 50V 0.047 $\mu$ F	1	
	C139, 140, 174, 183	42970038	C, Poly 50V 1100pF 5%	4	
	C146	43515052	C, Tantalum 16V 3.3 $\mu$ F	1	
	C145	43515059	C, Tantalum 25V 1.5 $\mu$ F	1	
	C144	43515067	C, Tantalum 35V 0.22 $\mu$ F	1	
	C134	43970028	C, Elec. 50V 0.22 $\mu$ F	1	
	C137, 138, 141, 142	43993024	C, Elec. 16V 10 $\mu$ F	4	
	C153	43993027	C, Elec. 16V 40 $\mu$ F	1	
	C133, 178, 184	43993028	C, Elec. 16V 100 $\mu$ F	3	
	C147, 163, 402	43993029	C, Elec. 16V 220 $\mu$ F	3	
	C403	43993030	C, Elec. 16V 330 $\mu$ F	1	
	C173	43993031	C, Elec. 16V 470 $\mu$ F	1	
	C404	43993044	C, Elec. 25V 470 $\mu$ F	1	
	C405, 410	43993045	C, Elec. 25V 1000 $\mu$ F	2	
	C122, 124, 157, 201, 202, 203	43993048	C, Elec. 35V 4.7 $\mu$ F	6	
	C602	43993049	C, Elec. 35V 10 $\mu$ F	1	
	C136, 150, 151	43993059	C, Elec. 50V 0.47 $\mu$ F	3	
	C176	43993060	C, Elec. 50V 1 $\mu$ F	1	
	C158, 601	43993061	C, Elec. 50V 2.2 $\mu$ F	2	

### Transformer and Coils

	LPF101	39907004	Filter	1	
	TC101	44208002	C, Elec.	1	
	VC101	44950019	Tuning C Air	1	
		45026067	Trans. Power	1	
	L106	61021002	Choke Coil	1	
	L103, 105	61052047	Coil, Filter 2.2 $\mu$ F	2	
	T105	61902023	IFT 455KHz	1	
	T101	61902024	IFT 10.7MHz	1	
	T102	61902037	DET Trans. 10.7MHz	1	
	T103	61902038	DET Trans. 10.7MHz	1	

EXPLODED VIEW NO.	SYMBOL NO.	PART NO.	DESCRIPTION	Q'TY	REMARKS
		61903028	Antenna	1	
	L107	61904280	AM OSC Coil	1	
	L101	61904282	FM Antenna Coil	1	
	L102	61904283	FM RF Coil	1	
	L104	61904284	FM OSC Coil	1	
	L201	61911100	Filter, Coil 114KHz	1	
	CF102A	61919005	Filter	1	
	T104	61919006	Filter	1	
	CF101A	61919016	Filter 10.7MHz (A)	1	

**Electrical Parts**

		62910005	Antenna, FM	1	
		65901039	SW, Voltage Selector	1	
	S502	65904049	SW, Power	1	
	S101	65904116	Push SW	1	
		66681003	Fuse, 0.25A	2	
		67920006	Pointer, Dial Ass'y	1	
		70599039	Connector-2P S-19118	1	
		70906056	Pin, Plug Cord 1.2PL	1	
		71205034	Fuse Holder	4	
		79759052	Line Cord	1	
		79799120	Bracket DIA20 L 27	2	
		87351102	Tuner PWB Ass'y	1	
		87351201	Power Supply PWB Ass'y	1	
		87351301	LED PWB Ass'y	1	

**Knobs**

12		18456811	Knob	1	
29		18457551	Push Knob	3	
3		18457561	Knob, Tuning	1	

**Cabinet Parts**

23		18286241	Foot UL	4	
24		18513571	Cover, Bottom	1	
35		18514211	Panel, Rear	1	
8		18710471	Dial, Filter	1	
9		18710621	Dial, Scale	1	
2		88351631	Front Panel S.ass'y	1	
1		19525881	Cabinet	1	

EXPLODED VIEW NO.	SYMBOL NO.	PART NO.	DESCRIPTION	Q'TY	REMARKS
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#### Packing Materials & Accessories

		18753101	Label	1	
		18756171	Fuse Label 250MA T	2	
		18801031	Bag, Polyethylene (1/12)	1	
		18805192	Display Box	1	
102		18805371	Filler, Carton	2	
		19800672	Bag-B, Polyethylene	1	
		19804261	Bag, Protection	1	
		23750891	Serial Number Label	1	
		78911571	Instruction Book	1	

#### Miscellaneous Parts

30		11403382	Spring	2	
31		18286002	Dial Drum	1	
14		18286011	Pully NIF	5	
		18289171	Winch	1	
16		18403321	LED, Holder (T)	1	
15		18403391	LED, Holder	1	
		18510522	Cover Shield	1	
36		18510842	Bracket, Switch Mount	1	
25		18513743	Chassis, Side L	1	
27		18513752	Chassis, Side R	1	
11		18513912	Sub, Chassis	1	
32		18513941	SW, Bracket	1	
26		18513971	Pully Bracket	1	
13		18514022	Bracket	1	
22		18514131	Bracket	1	
28		18514242	Chassis Pan	1	
18		18514301	Bracket	1	
19		18514311	Bracket	2	
		18514321	Bracket	1	
21		18515041	Tuning, Shaft	1	
17		18603551	Plate, Insulator	1	
37		18603671	Cushion Sheet	1	
33		18603771	Cushion Piece T	2	
20		18603801	LED Plate	1	
6		18710491	Filter A	1	
10		18710691	Plate, Ornamental	1	
4		18710931	Knob Ring	1	
112		18850871	Push Rivet	2	

EXPLODED VIEW NO.	SYMBOL NO.	PART NO.	DESCRIPTION	Q'TY	REMARKS
108		18851751	Special Nut	1	
107		18851761	Special Washer	1	
103		18852691	PT4*8*15BF	2	
115		18852741	Screw, Special	1	
109		18852771	Screw, Special	3	
110		18853791	Screw, Special	4	
7		19407191	Knob Collar (A)	1	
5		19407201	Knob Collar (B)	3	
		19604081	Cover	2	
104		23850871	Special Screw	8	
106		23850891	Special Screw	3	
34		24280261	Wire Clamper	1	
101		24851541	Screw, F.T*3*6*15BF	36	
114		24851971	Screw, W.M*3*8*15CF	3	
111		91013036	Screw, CPIMS*3*6*3KF	2	
113		91053032	Screw, CPIMS*3*6*15CF	2	
11G		91283031	Screw, #2CPTS*2*6*15BF	3	

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