The Harman Kardon Model TU912

Manual 105A

DIGITAL SYNTHESIZED QUARTZ-LOCK TUNER

Technical Manual

TU912

harman/kardon
240 Crossways Park West, Woodbury, N.Y. 11797
1112-3152105A9 P-088606 1850 Printed in Japan

SPECIFICATIONS

	Nominal	Limit
• FM SECTION		
Tuning Range	87.5 ~ 108.0MHz	
50dB Quieting Sensitivity		
Mono	15.2(21)dBf	≤ 19(25)dBf
Stereo	38(44)dBf	≤ 41(47)dBf
Usable Sensitivity	11(12)dBf	≤ 15(16)dBf
Image Ratio	41dB	≥ 36dB
IF Rejection	90dB	≥ 75dB
Spurious Response Rejection	77dB	≥ 60dB
Capture Ratio	1.4dB	≤ 2dB
Alternate Channel Selectivity	58(65)dB	≥ 50(55)dB
AM Rejection	57dB	≥ 45dB
Signal to Noise Ratio		
Mono	82(76)dB	≥ 75(70)dB
Stereo	74(68)dB	≥ 70(64)dB
Total Harmonic Distortion		
Mono	0.07%	≤ 0.3%
Stereo	0.08%	≤ 0.4%
Stereo Separation at 1kHz	49(45)dB	≥ 40(35)dB
Output Level/Impedance (Stereo)	750(360)mV/2.2kΩ	
• AM SECTION		
Tuning Range	520 ~ 1,710kHz	
Usable Sensitivity		
External Antenna	11μV	≤ 20μV
Loop Antenna	210μV/m	
Selectivity	39dB	≥ 33dB
Signal to Noise Ratio	53dB	≥ 48dB
Image Rejection	40dB	≥ 30dB
IF Rejection	64dB	≥ 50dB

• DIMENSIONS (W × H × D)	17-7/16" × 2-11/16" × 14-3/16" (443 × 68 × 360 mm)
• WEIGHT	7.3 lbs. (3.3kg)
• POWER SUPPLIES	
for U.S.A. model	AC 120V, 60Hz
for General model	AC 220/240V, 50/60Hz
• POWER CONSUMPTION	14W

The figures in the parentheses ( ) in the FM section are specifications for the General model.

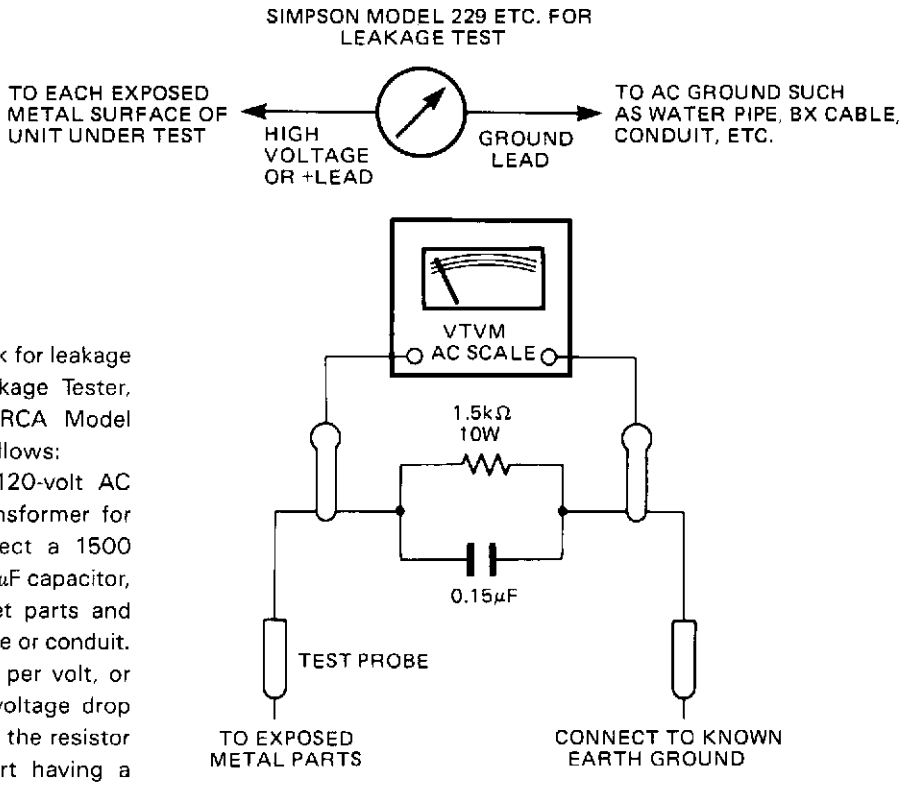
This specification is the target of servicing. But, there is a case that the specification is not applicable to the measurement condition and instrument.

Specifications and components subject to change without notice. Overall performance will be maintained or improved.

LEAKAGE TEST (FOR SERVICE ENGINEERS IN THE U.S.A.)

Before returning the unit to the user, perform the following safety checks:

1. Inspect all lead dress to make certain that leads are not pinched or that hardware is not lodged between the chassis and other metal parts in the unit.
2. Be sure that any protective devices such as nonmetallic control knobs, insulating fishpapers, cabinet backs, adjustment and compartment cover or shields, isolation resistor-capacity networks, mechanical insulators, etc. which were removed for servicing are properly reinstalled.
3. Be sure that no shock hazard exists; check for leakage current using Simpson Model 229 Leakage Tester, standard equipment item No. 21641, RCA Model WT540A or use alternate method as follows:
   Plug the power cord directly into a 120-volt AC receptacle (do not use an Isolation Transformer for this test). Using two clip leads, connect a 1500 Ohm, 10-watt resistor paralleled by a 0.15 μF capacitor, in series with all exposed metal cabinet parts and a known earth ground, such as a water pipe or conduit. Use a VTVM or VOM with 1000 Ohms per volt, or higher, sensitivity to measure the AC voltage drop across the resistor. (See Diagram.) Move the resistor connection to each exposed metal part having a return path to the chassis (antenna, metal, cabinet, screw heads, knobs and control shafts, escutcheon, etc.) and measure the AC voltage drop across the resistor. (This test should be performed with the power switch in both the On and Off positions.)
   A reading of 0.35 volt RMS or more is excessive and indicates a potential shock hazard which must be corrected before returning the unit to the owner.



CIRCUIT DESCRIPTION

■ FM TUNER SECTION

The FM signal which has entered through the antenna is high-frequncy amplified in Q101 at the front end, mixed with the output of the local oscillators Q103 and Q104 in Q102 and converted into the 10.7MHz intermediate frequency.
The 10.7MHz signal is amplified in the intermediate-frequency amplifying section which consists of Q201, CF201 and CF202 and fed to 1 pin of IC201. In IC201, the signal is transmitted through the IF amplifier in two steps, and after being detected in the quadrature, it is transmitted throught the post amplifier to 10 pin and then input to 2 pin of IC301. In IC301, the pilot signal is detected out of the signal which has been fed and 38kHz signal is produced. Then by this signal, stereo signal is demodulated, output from 4 pin for the left channel and from 7 pin for the right channel and transmitted through the low pass filters LPF301 (R ch) and LPF302 (L ch) to the amplifier.

■ AM TUNER SECTION

The AM signal which has entered through the antenna is transmitted through the tuning circuit consisting of L251 and TC251 to IC201. In IC201 it undergoes high-frequency amplification, local oscillation, intermediate-frequency amplification and detection, and then output from 12 pin. This signal is turned ON and OFF according to the signal from the input selector at Q252 and fed to 2 pin of IC301.

■ MUTING CIRCUIT

If FM is received out of tuning or in a very weak field intensity, 8 pin of IC201 becomes high level. This is fed to the base of Q351, whose collector then becomes low level and the collector of Q352 high level. As a result, Q355 (L ch) and Q356 (R ch) are conducted to mute the output.

■ SYTHESIZER SECTION

• FM

The local oscillation output at the front end is fed to 5 pin of the prescaler IC701 and after being frequency devided into 30 or 32, it is fed to 37 pin of the PLL synthesizer IC702. In IC702, the standard frequency is oscillated by the crystal oscillator, compared with the devided local oscillation output and output to 34 pin. This voltage is level converted at Q701, Q702 and Q703, and fed to the varicap diode at the front end.

• AM

The local oscillation output is fed from 22 pin of IC201 to 39 pin of IC702. IC702, the standard frequency is oscillated by the crystal oscillator, compared with the local oscillation output and output to 34 pin.

■ INDICATOR SECTION

• Frequency display

The output of 24 to 27 pins of the PLL synthesizer IC702 is fed to the frequency indicating driver IC703. The indicator tube is turned ON by the output decoded in IC703.

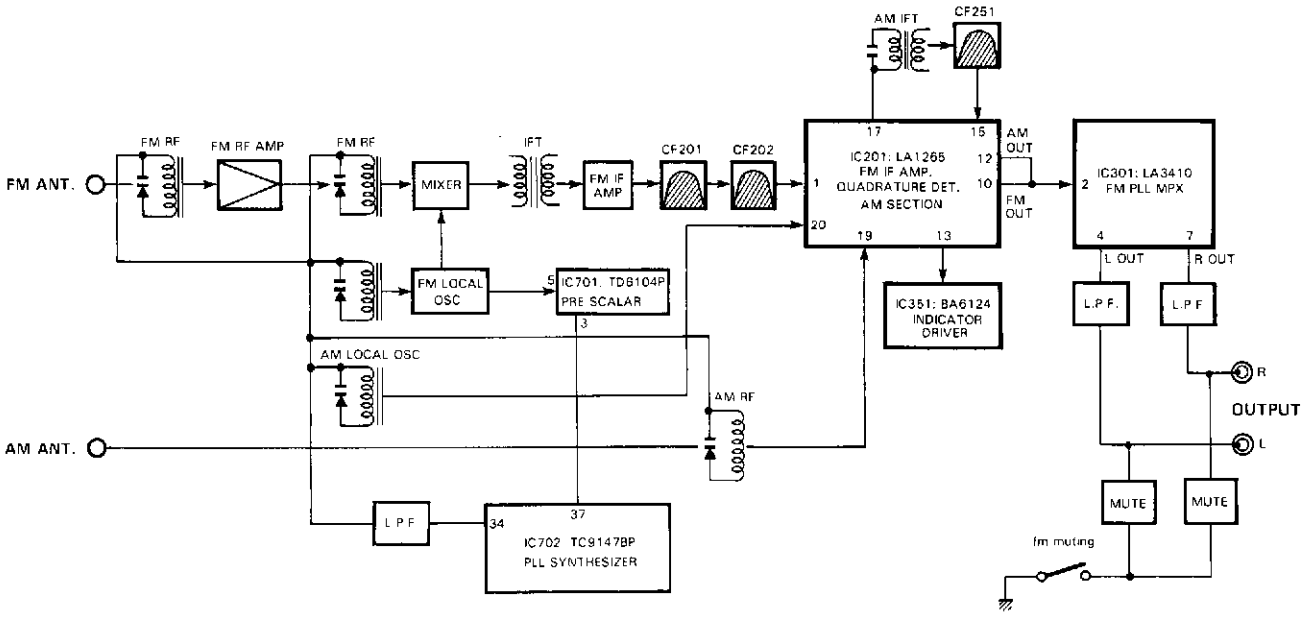
• Signal strength

The voltage corresponding to the signal level is output from 13 pin of IC201 and input into 8 pin of the level comparator IC351. D721, D722 and D723 of the signal strength indicator turn ON according to the signal level.

• Tuning

8 pin of IC201 becomes low level when tuned and the tuned indicator D724 connected there turns ON.

BLOCK DIAGRAM



DISASSEMBLY PROCEDURES (REFER TO PAGES 5 AND 12)

1 CABINET TOP (131) REMOVAL

Remove 6 screws Ⓐ and then remove the Cabinet Top (131).

2 CABINET BOTTOM (132) REMOVAL

Remove 4 screws Ⓑ and then remove the Cabinet Bottom (132).

3 FRONT PANEL ASSEMBLY (101) REMOVAL

1. Remove the Cabinet Top (131), referring to the previous step 1.
2. Remove 7 screws Ⓒ and then remove the Front Panel Assembly (101).

4 MAIN P. C. BOARD (PCB-1) REMOVAL

1. Remove the Cabinet Top (131), referring to the previous step 1.
2. Open the lid of connectors (CN1, CN2, CN4, CN6 and CN401) on the Main P. C. Board (PCB-1) and then disconnect the lead wires.
3. Disconnect the connector (CN5) from the connector (JL5) on the Station Display P. C. Board (PCB-2).
4. Open the lid of connector (CN3) on the Function P. C. Board (PCB-6) and then disconnect the lead wires.
5. Remove 2 screws Ⓓ and then remove the Bracket (183) from the Holder (196).
6. Remove 4 screws Ⓔ and then remove the Main P. C. Board (PCB-1).

5 STATION DISPLAY P. C. BOARD (PCB-2) REMOVAL

1. Remove the Front Panel Assembly (101), referring to the previous step 3.
2. Open the lid of connector (CN7) on the Station Display P. C. Board (PCB-2) and then disconnect the lead wires.
3. Disconnect the connector (JL5) from the connector (CN5) on the Main P. C. Board (PCB-1).
4. Open the lid of connector (CN401) on the Main P. C. Board (PCB-1) and then disconnect the lead wires.
5. Remove 2 screws Ⓕ and then remove the Station Display P. C. Board (PCB-2) with the LED Display Assembly (D901), Window (142) and Bracket (180).
6. Remove 2 screws Ⓖ and then remove the Bracket (180) with the LED Display Assembly (D901) and Window (142) from the Station Display P. C. Board (PCB-2).

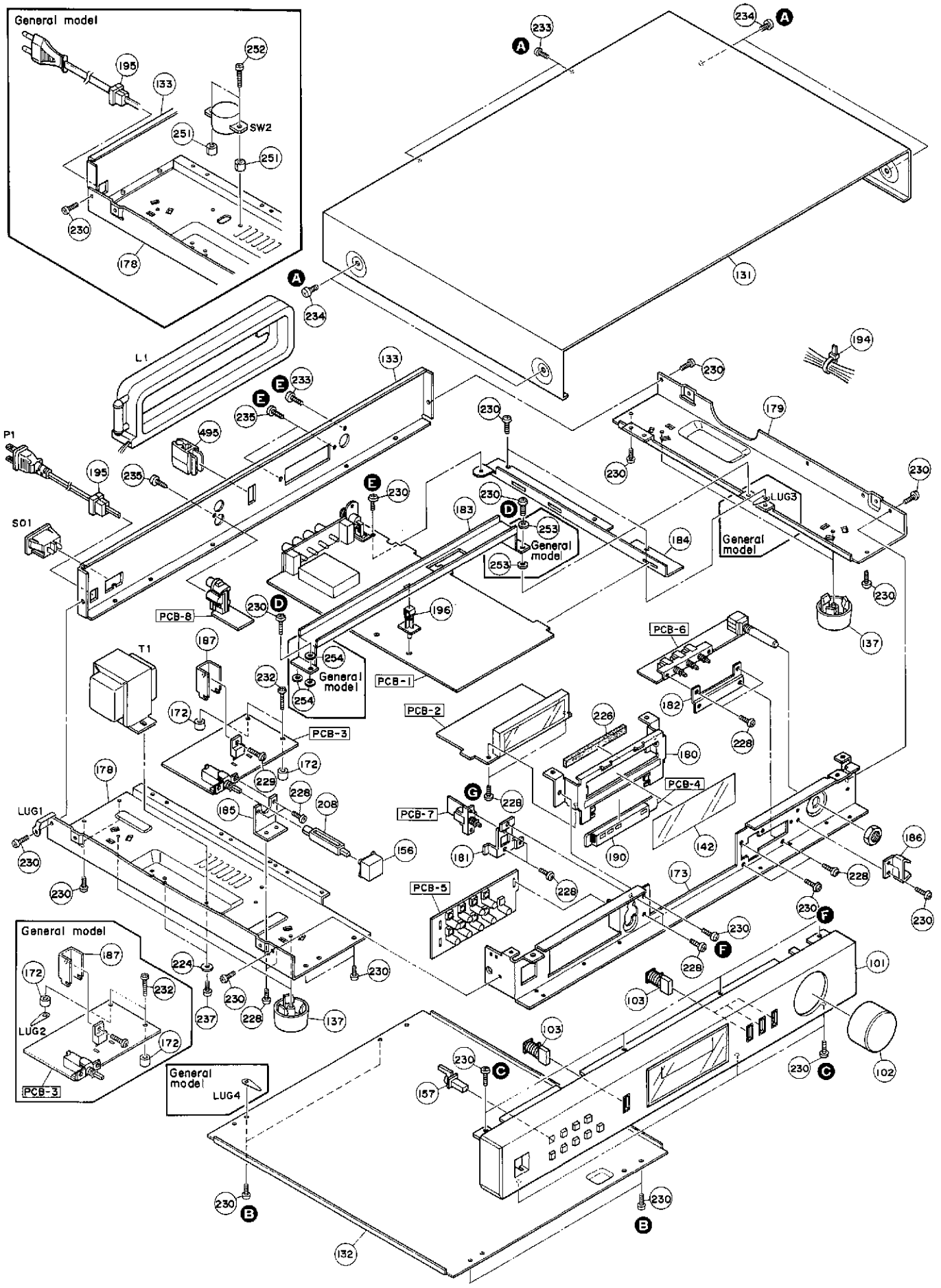
GENERAL UNIT PARTS LIST

Ref.No.	Part No.	Description
101	A443-TU912A	Front Panel Ass'y (U) (G)
101	A443-TU912B	Front Panel Ass'y (BK) (GB)
102	A630-TU912A	Knob Ass'y, Tuning (U) (G)
102	A630-TU912B	Knob Ass'y, Tuning (BK) (GB)
103	A662-TU912A	Push Button Ass'y, Mode, AM, FM, Tuning (U) (G)
103	A662-TU912B	Push Button Ass'y, Mode, AM, FM, Tuning (BK) (GB)
131	1414-02201	Cabinet Top
132	1424-13801	Cabinet Bottom
133	1424-18701	Cabinet Back (U) (BK)
133	1424-18801	Cabinet Back (G) (GB)
137	1319-0139	Foot
142	1531-09401	Window
156	1660-00401	Push Button, Power (U) (G)
156	1660-00403	Push Button, Power (BK) (GB)
157	1662-26701	Push Button, Preset, Memory
172	2132-01401	Spacer
173	2211-7278	Chassis
178	2219-7981	Bracket (U) (BK)
178	2219-8000	Bracket (G) (GB)
179	2219-7982	Bracket
180	2219-8001	Bracket
181	2219-8101	Bracket
182	2219-8102	Bracket
183	2219-8103	Bracket
184	2219-8104	Bracket
185	2219-7984	Bracket
186	2219-8128	Bracket
187	2222-7081	Heat Sink
190	2240-7265	Holder
194	2240-7120	Holder
195	2240-364	Bushing
196	2240-7280	Holder
208	2672-7018	Lever
224	2401-035	Washer
226	2111-11160	Felt
228	2327-300629	Screw (3×6mm)
229	2327-301029	Screw (3×10mm)
230	2347-300626	Screw (3×6mm)
232	2347-301426	Screw (3×14mm)
233	2347-300646	Screw (3×6mm)
234	2347-400646	Screw (4×6mm)
235	2347-301046	Screw (3×10mm)
237	2347-300827	Screw (3×8mm)
251	2132-7116	Spacer (G) (GB)
252	2347-301226	Screw (3×12mm)
253	2132-7136	Spacer (G) (GB)
254	2402-0374	Washer (G) (GB)
495	2240-7218	Holder, Antenna
	1111-J30239	Owner Guide (U)
	1111-J30240	Owner Guide (G)
	1222-7224	Packing Cushion
	1221-807147	Packing Box

* Part with the following marks are used only in the models intended for particular markets:

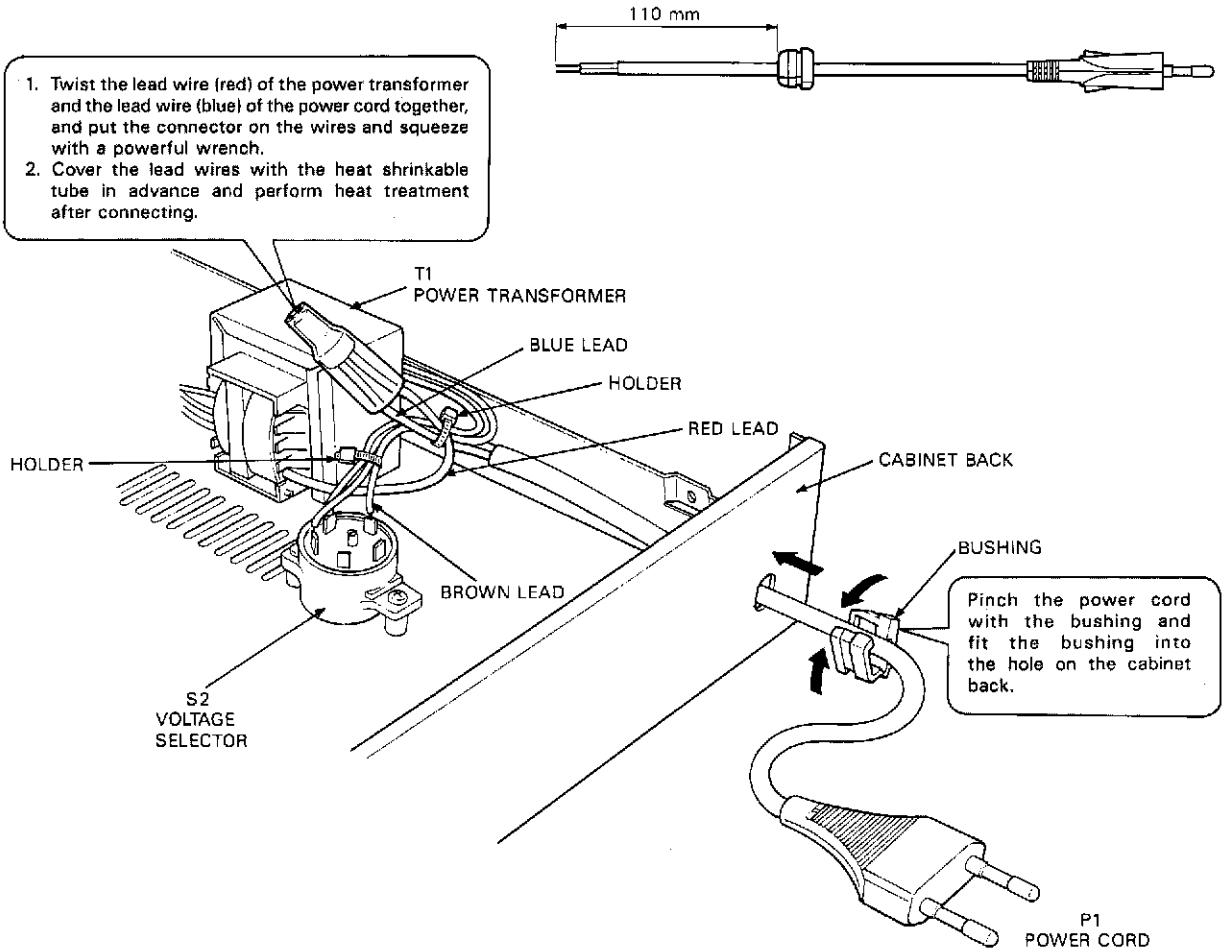
(U) : U.S.A. model
(BK) : U.S.A. model Black Version
(G) : General model
(GB) : General model Black Version

GENERAL UNIT EXPLODED VIEW



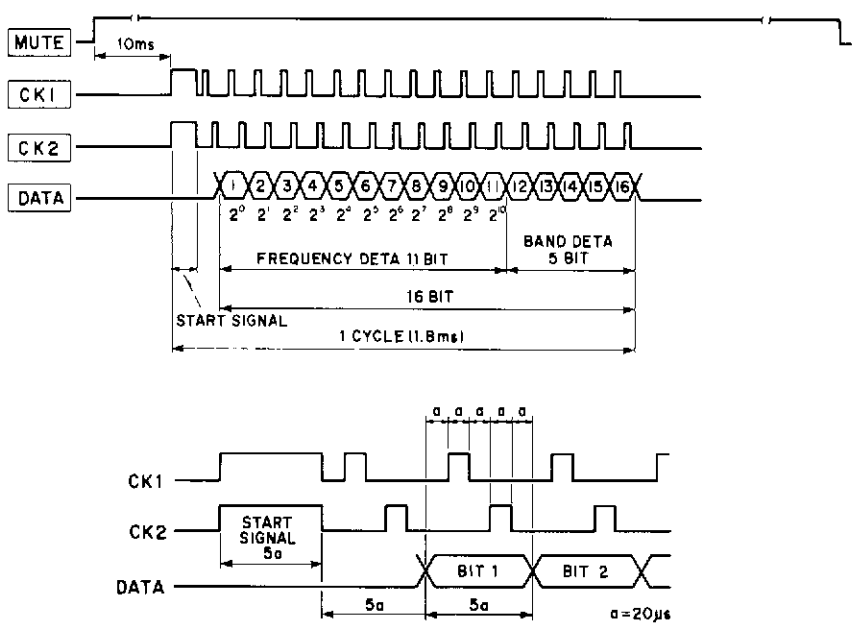
POWER CORD REPLACEMENT (FOR SERVICE ENGINEERS OTHER THAN NORTH AMERICA)

In order to prevent fire or shock hazard when replacing the power cord, follow the procedure below to replace the parts with the standard supply parts.



TIMING CHART

Frequency display timing chart of IC702 (TC9147BP)



ALIGNMENT PROCEDURES (REFER TO PAGES 13 and 14)

■ STANDARD FREQUENCY CHECK

Conditions: ● Press the "fm" switch.

Step	Connection Equipments	Station Display	For
1	● Connect the Frequency Counter to TP2 (+) and ground.	98.3MHz	109MHz ± 2kHz

■ AM ADJUSTMENT

Conditions: ● Press the "am" switch.
● Press the "mode" switch to the "mono" (button in) position.
● Standard modulation of the AM Signal Generator is 400Hz at 30%.

Step	Alignment	Connection Equipments	Measurement Frequency	Station Display	Adjustment	For
1	Tuning voltage	● Connect the DC Volt Meter to TP1 (+) and ground (−).		1710kHz	TC252	8V ± 0.5V
2	IF	● Connect the AM Test Loop Antenna cable into the output jack of AM Signal Generator. Place AM Test Loop Antenna close enough to couple signal into the AM Loop Antenna. ● Connect the VTVM and Oscilloscope to the Output jacks.	1400kHz	1400kHz	T251	Maximum output level and symmetrical curve on scope.
3	Tracking		1400kHz	1400kHz	TC251	Maximum output
4			600kHz	600kHz	L251	Maximum output
5			Repeat steps 3 and 4 for optimum sensitivity.			
6	Tuned indicator		1000kHz	1000kHz		Confirm the TUNED indicator lights at 74dBμV/m input.

■ FM ADJUSTMENT

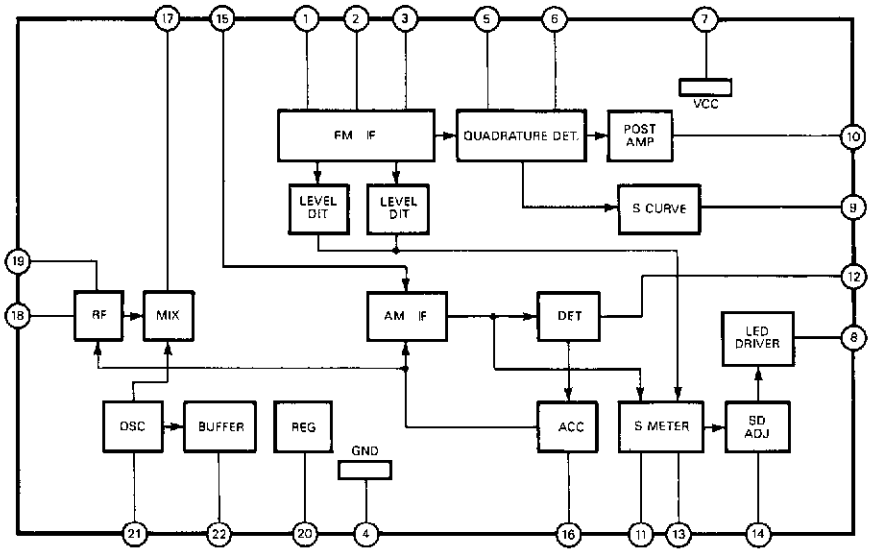
Conditions: ● After the POWER switch is pushed on, wait for 5 minutes before adjusting so that the most stable operation is obtained.
● Press the "fm" switch.
● Press the "mode" switch to the "mono" (button in) position.

	U.S.A. model	General model
FM Signal Generator	1kHz, 100% modulation	1kHz, 53% modulation
Stereo Modulator	L+R=45.5%, L−R=45.5%, 19kHz=9%	L+R=22.5%, L−R=22.5%, 19kHz=8%

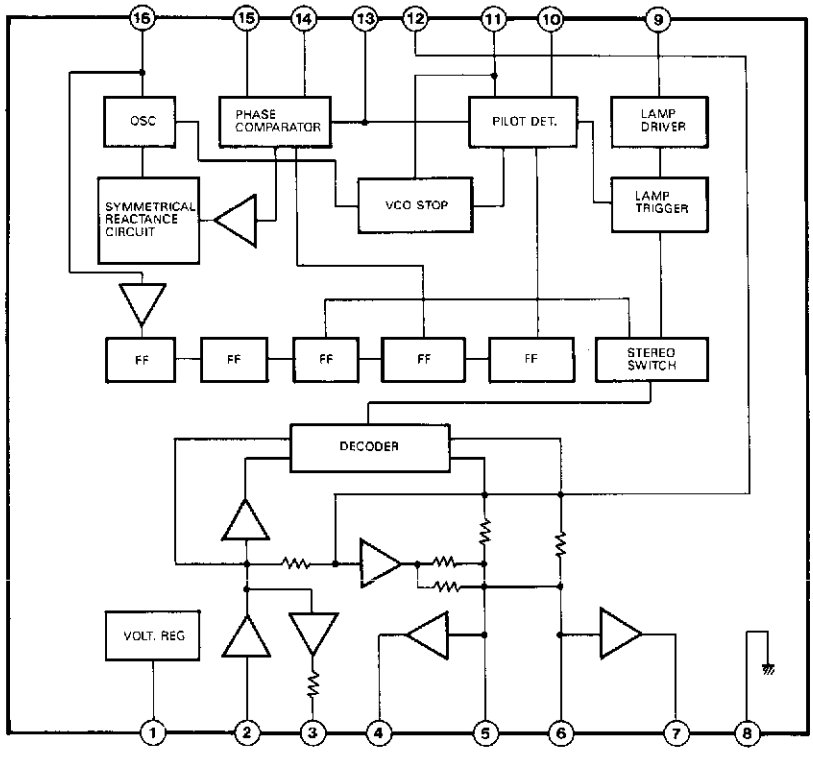
Step	Alignment	Connection Equipments	Measurement Frequency	Station Display	Adjustment	For
1	Discriminator	● Connect the FM Signal Generator to FM 300Ω BAL Antenna terminals through the 300Ω balanced dummy. ● Connect the Distortion meter and Oscilloscope to the OUTPUT jacks.	98.1MHz ±30 ~ 40kHz	98.1MHz	T201(A)	Adjust so that the TUNED indicator lights in the same range on both plus (+) and minus (−) sides of 98.1MHz.
2			98.1MHz	98.1MHz	T201(B)	Minimum distortion
3			Repeat steps 1 and 2 for optimum sensitivity.			
4	Tuned indicator			98.1MHz	VR201	Adjust so that the TUNED indicator lights at 20μV input.
5	Signal indicator				VR202	Adjust so that the three SIGNAL STRENGTH indicator lights at 50μV input.
6	Separation	● Connect the Stereo Modulator to FM Signal Generator. Connect FM Signal Generator to FM 300Ω BAL Antenna terminals through the 300Ω balanced dummy. ● Connect the VTVM and Oscilloscope to the OUTPUT jacks.	98.1MHz		VR301	Adjust so that the right channel output becomes minimum when only the left channel of the Stereo Modulator modulated.
					VR301	Adjust so that the left channel output becomes minimum when only the right channel of the Stereo Modulator modulated.

IC BLOCK DIAGRAM

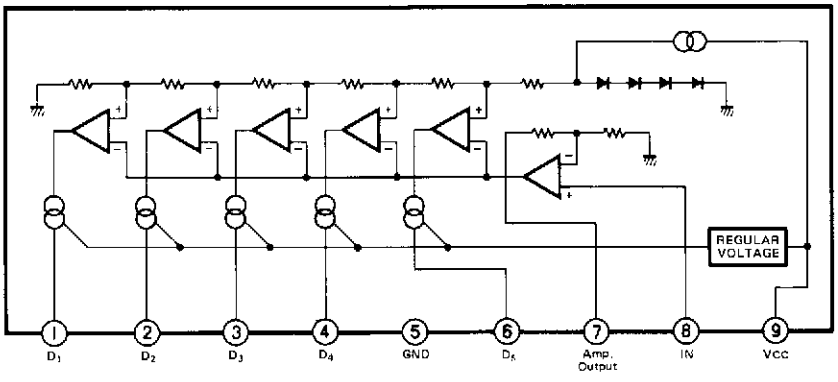
IC201: LA1265



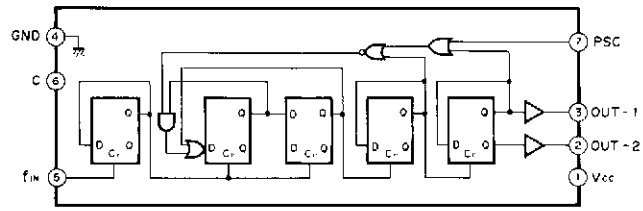
IC301: LA3410



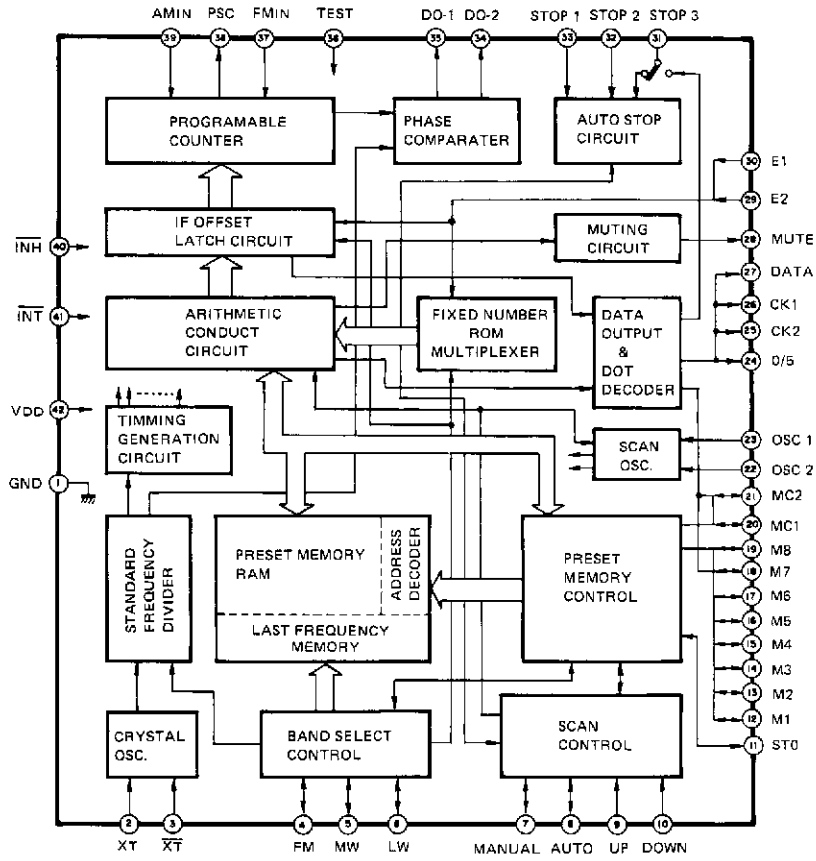
IC351: BA6124



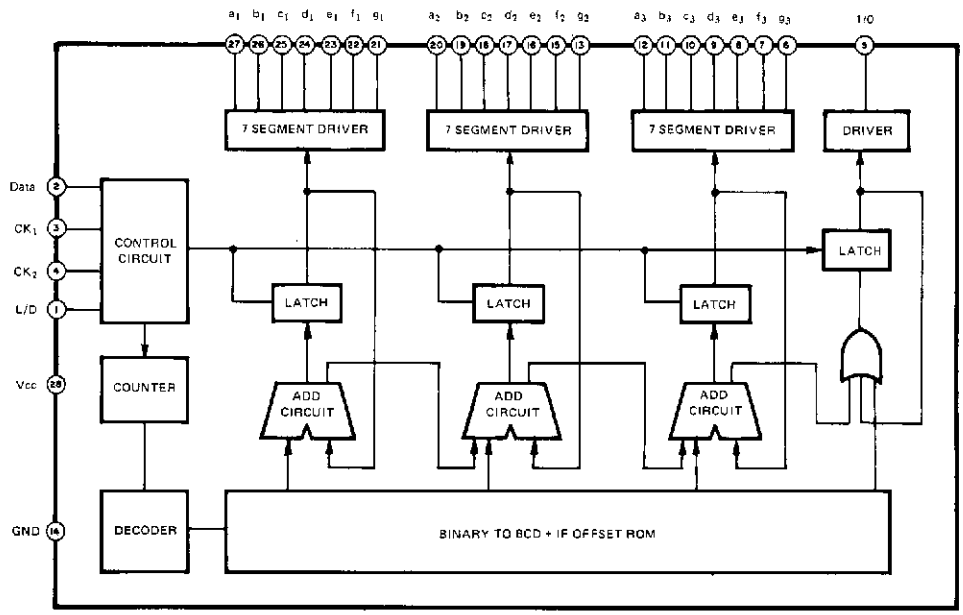
IC701: TD6104P



IC702: TC9147BP



IC703: TD6301AP



ELECTRICAL PARTS LIST

	Ref.No.	Part No.	Description
			CHASSIS MISCELLANEOUS
⚠	PI	4161-71147	Power Cord (U) (BK)
⚠	PI	4161-7256	Power Cord (G) (GB)
⚠	TI	5584-701477	Power Trans. (U) (BK)
⚠	TI	5584-702478	Power Trans. (G) (GB)
⚠	SOI	4474-164	AC Outlet, Unswitched (U) (BK)
⚠	COI	4443-712	Connector, Power Cord (G) (GB)
⚠	S2	4411-102729	Rotary Switch, Voltage Selector (G) (GB)
	LUGI	4211-4	Lug Terminal (U) (BK)
	LUG2	4211-4	Lug Terminal (G) (GB)
	LUG3	4211-4	Lug Terminal (G) (GB)
	LUG4	4211-4	Lug Terminal (G) (GB)
		5911-244	AM Loop Antenna
		4161-71184	Connection Cord (Accessory)
			PCB-1 MAIN P.C.BOARD
			RESISTORS
⚠	R211	5102-1014713	100Ω, 1/4W, FR
⚠	R373	5102-4R74713	4.7Ω, 1/4W, FR
⚠	R764	5102-2204713	22Ω, 1/4W, FR
			CONTROLS
	VR201	5101-20371920	20kΩB
	VR202	5101-10471920	100kΩB
	VR301	5101-10471920	100kΩB
			CAPACITORS
	C121	5345-105F041	1μF/50V, EC
	C205	5345-106C041	10μF/16V, EC
	C206	5359-101585I	100pF/100V, PC
	C211	5345-107C041	100μF/16V, EC
	C213	5345-225F041	2.2μF/50V, EC
	C215	5345-107C041	100μF/16V, EC
	C216	5345-106C041	10μF/16V, EC
	C252	5359-431585I	430pF/100V, PC
	C255	5345-106C041	10μF/16V, EC
	C258	5345-475D041	4.7μF/25V, EC
	C259	5345-335D041	3.3μF/25V, EC
	C260	5345-106C041	10μF/16V, EC
	C264	5345-226C0952	22μF/16V, EC
	C301	5345-226C0952	22μF/16V, EC
	C302	5345-107C041	100μF/16V, EC
	C303	5359-102585I	1000pF/100V, PC
	C304	5345-474F0952	0.47μF/50V, EC
	C305	5345-224F0952	0.22μF/50V, EC
	C306	5345-106C041	10μF/16V, EC
	C307	5359-471585I	470pF/100V, PC (U) (BK)
	C307	5359-271585I	270pF/100V, PC (G) (GB)
	C308	5359-471585I	470pF/100V, PC (U) (BK)
	C308	5359-271585I	270pF/100V, PC (G) (GB)
	C311	5345-225F0952	2.2μF/50V, EC
	C312	5345-225F0952	2.2μF/50V, EC
	C313	5345-225F0952	2.2μF/50V, EC
	C314	5359-101585I	100pF/100V, PC
	C351	5345-106C041	10μF/16V, EC
	C352	5345-106C041	10μF/16V, EC
	C353	5345-108C041	1000μF/16V, EC
	C354	5345-106C041	10μF/16V, EC
	C701	5345-228A041	2200μF/6.3V, EC
	C702	5345-227B041	220μF/10V, EC
	C703	5345-227B041	220μF/10V, EC
	C707	5345-476C041	47μF/16V, EC
	C714	5345-334F0951	0.33μF/50V, EC
	C715	5345-225F041	2.2μF/50V, EC
	C716	5345-225F041	2.2μF/50V, EC
	C723	5345-476C041	47μF/16V, EC
	C724	5345-107C041	100μF/16V, EC
	TC251	5371-93	Trimmer Capacitor
	TC252	5371-93	Trimmer Capacitor
			INTEGRATED CIRCUIT
	IC201	5653-LA1265	LA1265
	IC301	5653-LA3410	LA3410
	IC351	5652-BA6124	BA6124
	IC701	5654-TD6104P	TD6104P
	IC702	5654-TC9147BP	TC9147BP
			TRANSISTORS
	Q121	5613-2603(E)	2SC2603(E)or(F)
	Q122	5611-1115(E)	2SA1115(E)or(F)
	Q201	5613-380(R)	2SC380(R)
	Q251	5613-RN1203	RN1203
	Q252	5615-2SJ103(G)	F.E.T., 2SJ103(G)
	Q351	5613-2603(E)	2SC2603(E)or(F)
	Q352	5611-1115(E)	2SA1115(E)or(F)
	Q353	5611-1115(E)	2SA1115(E)or(F)
	Q354	5611-1115(E)	2SA1115(E)or(F)
	Q355	5613-2878(B)	2SC2878(B)
	Q356	5613-2878(B)	2SC2878(B)
	Q357	5613-RN1203	RN1203
	Q701	5616-2SK117(Y)	F.E.T., 2SK117(Y)
	Q702	5613-2240(BL)	2SC2240(BL)or(GR)
	Q703	5611-1115(E)	2SA1115(E)or(F)
	Q704	5613-RN1203	RN1203
	Q705	5613-RN1203	RN1203
	Q710	5613-2603(E)	2SC2603(E)or(F)
			DIODES
	D121	5631-1S2473	1S2473
	D122	5631-1S2473	1S2473
	D251	5633-1SV149	1SV149
	D252	5633-1SV149	1SV149
	D351	5631-1S2473	1S2473
	D352	5631-1S2473	1S2473
	D353	5631-1S2473	1S2473
	D354	5631-1S2473	1S2473
	D355	5631-1S2473	1S2473
	D356	5631-1S2473	1S2473
	D357	5631-1S2473	1S2473
	D358	5631-1S2473	1S2473
	D359	5631-1S2473	1S2473
	D701	5635-HZ7B2L	ZD, HZ7B2L
	D702	5631-1S2473	1S2473
	D703	5631-1S2473	1S2473
	D704	5635-HZ6B1L	ZD, HZ6B1L
	D705	5631-1S2473	1S2473
	D706	5631-1S2473	1S2473
	D707	5631-1S2473	1S2473
	D725	5635-HZ11A2L	ZD, HZ11A2L
			COILS
	L106	5995-701090	
	L201	5995-2R2M82	2.2μH
	L202	5995-2R2M82	2.2μH
	L203	5995-2R2M82	2.2μH
	L251	5933-70328	
	L252	5922-00112	
	L701	5995-2R2269	2.2μH
			TRANSFORMERS
	T201	5572-00103	
	T251	5552-70114	
			MISCELLANEOUS
	TU1	6114-7133	FM Tuner Ass'y
	CF201	5671-7120A	Ceramic Filter (U) (BK)
	CF201	5673-718A	Ceramic Filter (G) (GB)
	CF202	5671-7120A	Ceramic Filter (U) (BK)
	CF202	5673-718A	Ceramic Filter (G) (GB)
	CF251	5671-7138F	Ceramic Filter

Ref.No.	Part No.	Description
CF252	5671-7137C	Ceramic Filter
CF301	5693-CSB456F1	Ceramic Filter
LPF301	5214-87	LC Components
LPF302	5214-87	LC Components
LPF201	5214-36	LC Components G GB
LPF202	5214-78	LC Components G GB
TE101	4214-164	Terminal U BK
TE101	4214-167	Terminal G GB
TE102	4214-166	Terminal
X701	5691-00720022	Crystal, Osc.
CN1	4443-050185	Connector, 5 Pos.
CN2	4443-050185	Connector, 5 Pos.
CN4	4443-100185	Connector, 10 Pos.
CN5	4443-077114	Connector, 7 Pos.
CN6	4443-030185	Connector, 3 Pos.
CN404	4443-090185	Connector, 9 Pos.

PCB-2 STATION DISPLAY P.C.BOARD

CAPACITORS

C721	5345-476C041	47μF/16V, EC

INTEGRATED CIRCUIT

IC703	5654-TD6301AP	TD6301AP

TRANSISTORS

Q706	5613-2603(E)	2SC2603(E)or(F)
Q707	5613-RN1203	RN1203
Q708	5613-RN1203	RN1203
Q709	5611-1115(E)	2SA1115(E)or(F)

DIODES

D709	5635-HZ11A2L	ZD, HZ11A2L

MISCELLANEOUS

DSP1	5722-14	Frequency Display, FIP7F8S
RC701	5212-3	R Components
RC702	5212-3	R Components
RC703	5212-3	R Components
CN7	4443-040185	Connector, 4 Pos.
LCN5	4163-72296	CLW, 7 Pos.

PCB-3 POWER SWITCH P.C.BOARD

RESISTORS

⚠	R2	5102-2R25116	2.2Ω, 1/2W, FR
	R18	5171-12158	120Ω, 1W, MR
	R19	5171-12158	120Ω, 1W, MR

CAPACITORS

C1	5345-108C041	1000μF/16V, EC
C2	5345-337C041	330μF/16V, EC
C3	5345-228D045	2200μF/25V, EC
C8	5345-106C041	10μF/16V, EC
C9	5345-106D041	10μF/25V, EC
C10	5345-226C041	22μF/16V, EC
C11	5345-106C041	10μF/16V, EC
C12	5345-476D041	47μF/25V, EC

TRANSISTORS

Q1	5611-1305(Y)	2SA1305(Y)
Q2	5613-2603(E)	2SC2603(E)or(R)
Q3	5613-2603(E)	2SC2603(E)or(R)
Q4	5611-1115(E)	2SA1115(E)or(R)
Q5	5613-2603(E)	2SC2603(E)or(R)

DIODES

⚠	D1	5632-S5566B	S5566B
⚠	D2	5632-S5566B	S5566B
⚠	D3	5632-S5566B	S5566B
⚠	D4	5632-S5566B	S5566B

Ref.No.	Part No.	Description
D5	5635-HZ15L	ZD, HZ15L
D6	5635-HZ6A2L	ZD, HZ6A2L
D7	5635-HZ6A2L	ZD, HZ6A2L
D8	5631-1S2473	1S2473
D9	5631-1S2473	1S2473
D10	5631-1S2473	1S2473

MISCELLANEOUS

⚠	S1	4431-A02725	Push Switch, Power
	CN8	4443-030185	Connector, 3 Pos.

PCB-4 LED P.C.BOARD

DIODES

D721	5637-TLG121	L.E.D., TLG121, Green, Signal Strength 1
D722	5637-TLG121	L.E.D., TLG121, Green, Signal Strength 2
D723	5637-TLG121	L.E.D., TLG121, Green, Signal Strength 3
D724	5637-TLG121	L.E.D., TLG121, Green, Tuned

PCB-5 PRESET MEMORY SWITCHES P.C.BOARD

DIODES

D711	5637-GL5NG6	L.E.D., GL5NG6, Green, Memory
D712	5637-GL5NG6	L.E.D., GL5NG6, Green, Preset Memory 1
D713	5637-GL5NG6	L.E.D., GL5NG6, Green, Preset Memory 2
D714	5637-GL5NG6	L.E.D., GL5NG6, Green, Preset Memory 3
D715	5637-GL5NG6	L.E.D., GL5NG6, Green, Preset Memory 4
D716	5637-GL5NG6	L.E.D., GL5NG6, Green, Preset Memory 5
D717	5637-GL5NG6	L.E.D., GL5NG6, Green, Preset Memory 6
D718	5637-GL5NG6	L.E.D., GL5NG6, Green, Preset Memory 7
D719	5637-GL5NG6	L.E.D., GL5NG6, Green, Preset Memory 8

MISCELLANEOUS

S701	4431-A017169	Push Switch, Preset Memory 1
S702	4431-A017169	Push Switch, Preset Memory 2
S703	4431-A017169	Push Switch, Preset Memory 3
S704	4431-A017169	Push Switch, Preset Memory 4
S705	4431-A017169	Push Switch, Preset Memory 5
S706	4431-A017169	Push Switch, Preset Memory 6
S707	4431-A017169	Push Switch, Preset Memory 7
S708	4431-A017169	Push Switch, Preset Memory 8
S709	4431-A017169	Push Switch, Memory

PCB-6 FUNCTION P.C.BOARD

S301	4431-03067164	Push Switch, AM
S302	4431-03067164	Push Switch, FM
S303	4431-03067164	Push Switch, Auto/Manual
S304	4411-1027110	Rotary Switch, Tuning
CN9	4443-050185	Connector, 5 Pos.
CN10	4443-040185	Connector, 4 Pos.

Ref.No.	Part No.	Description
	PCB-7 MUTING P.C.BOARD	
S305	4431-A027235	Push Switch, Mode
	PCB-8 OUTPUT P.C.BOARD	
J1/J2	4482-0133	2 Pin Jack, Output

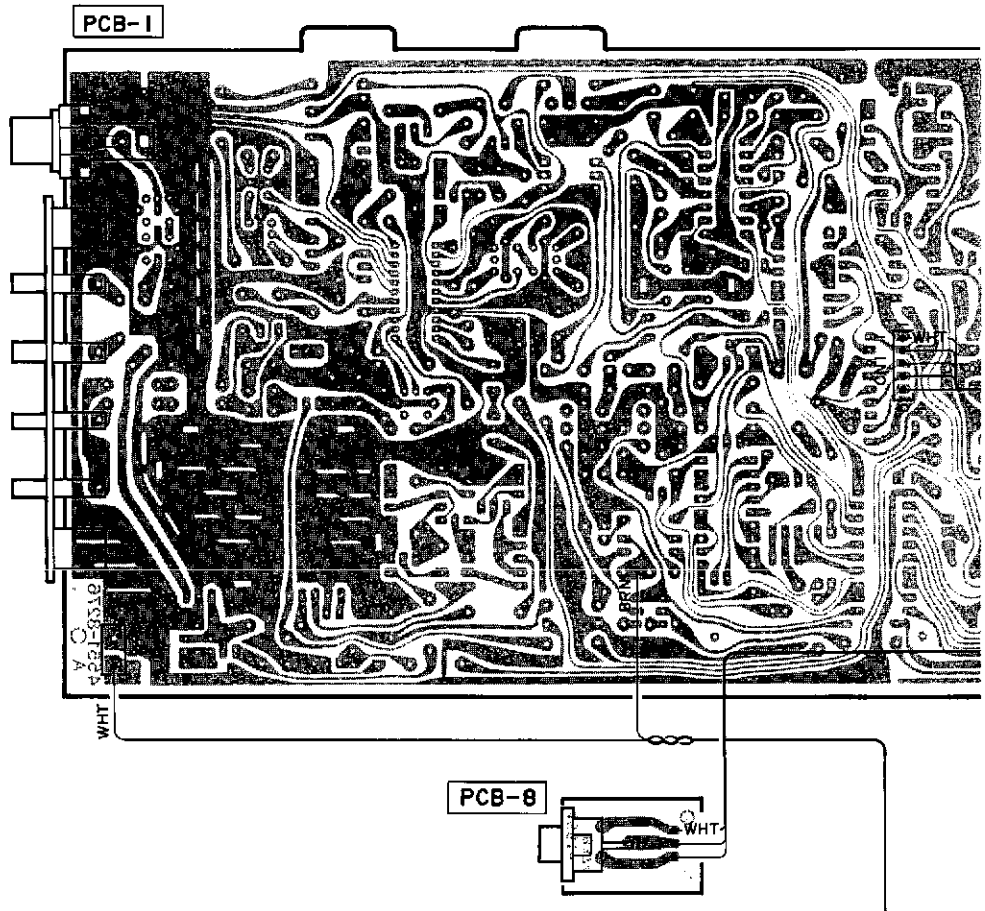
⚠ SAFETY RELATED COMPONENT. USE ONLY EXACT REPLACEMENT PART AS SPECIFIED.

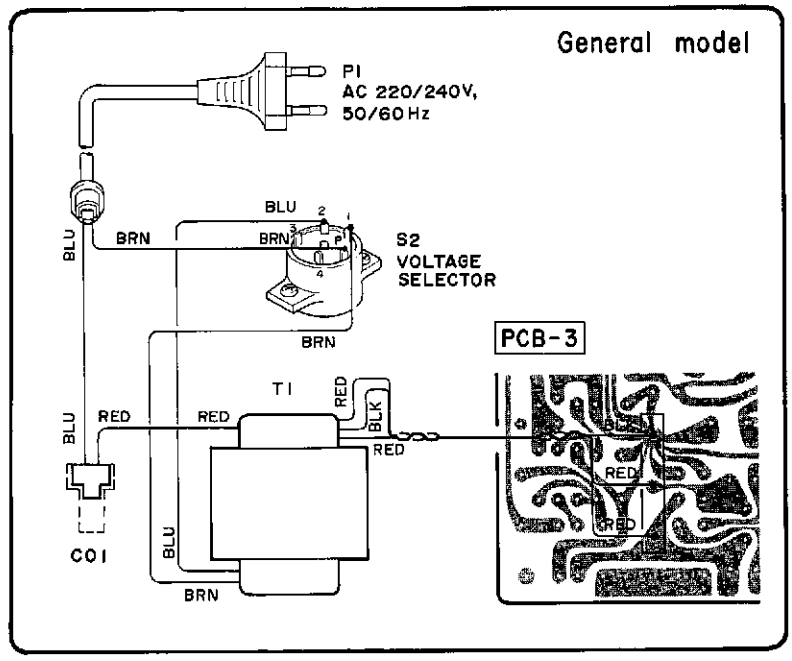
KEY TO ABBREVIATIONS

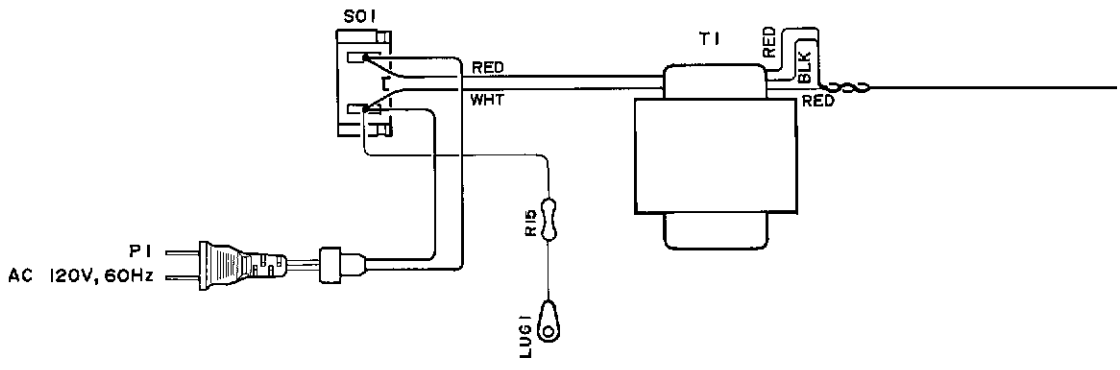
ER : Fuse Resistor
MR : Metal Resistor
CR : Cement Resistor
CAR: Carbon Resistor
EC : Electrolytic Capacitor
PC : Polypropylene Capacitor
MC : Mica Capacitor
CC : Ceramic Capacitor
MPC: Metalized Polyester Capacitor
ZD : Zener Diode
CLW: Connector with Lead Wire

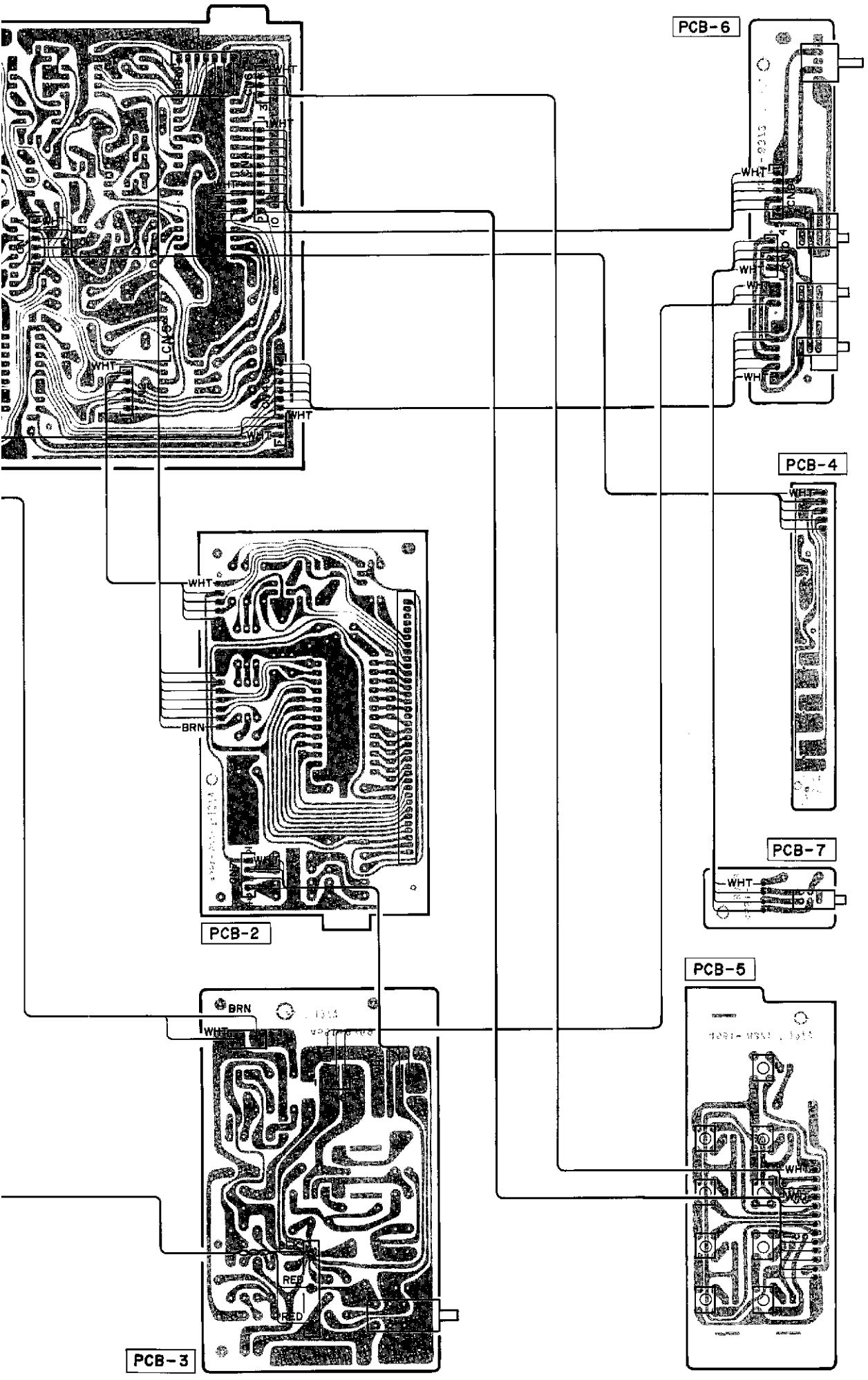
* Part with the following marks are used only in the models intended for particular markets:
  - (U) : U.S.A. model
  - (BK) : U.S.A. model Black Version
  - (G) : General model
  - (GB) : General model Black Version

WIRING DIAGRAM



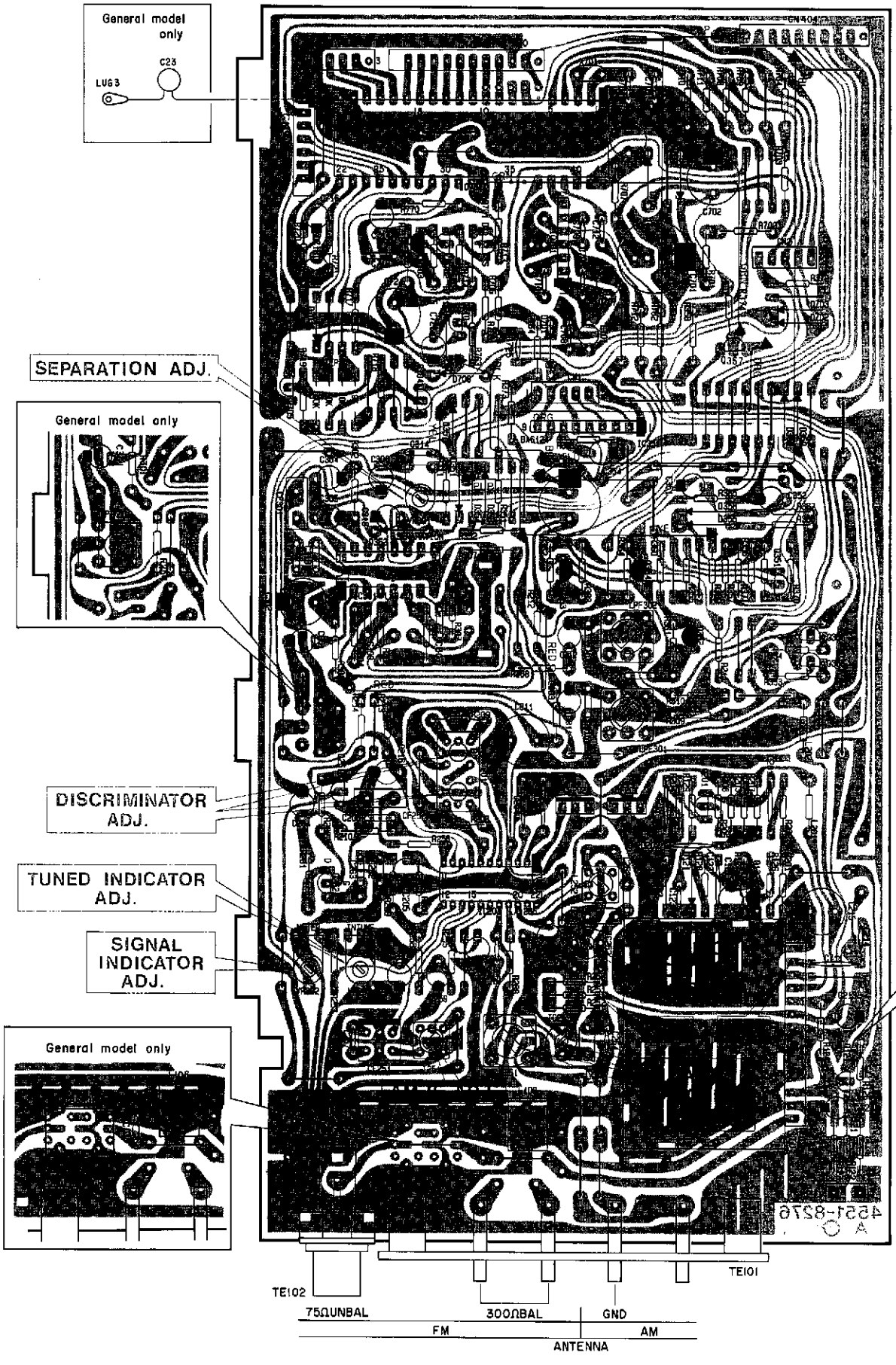




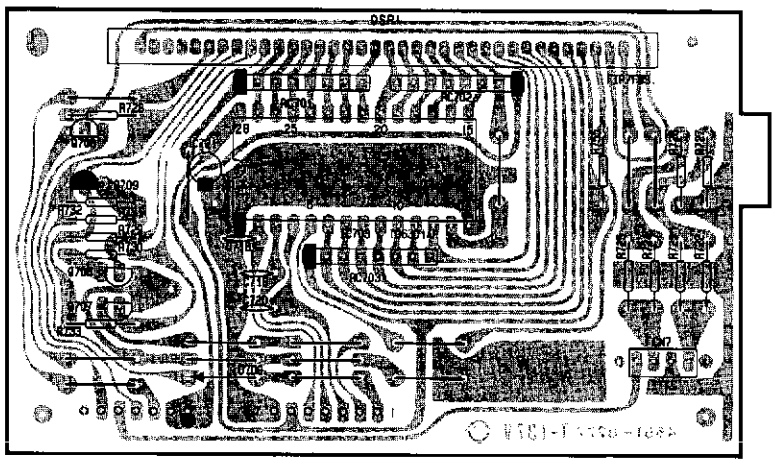

E
F
G
H
I
PCB-6
PCB-4
PCB-7
PCB-2
PCB-5
PCB-3
WHT
BRN
RED

P. C. BOARDS

PCB-1 **Main P. C. Board**

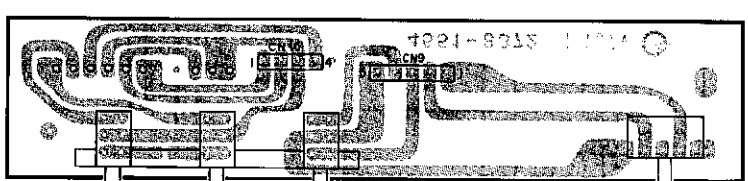


PCB-2 Station Display P. C. Board

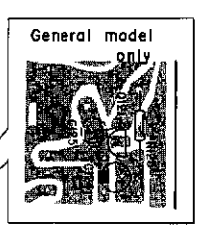


PCB-4 LED P. C. Board

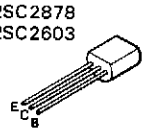
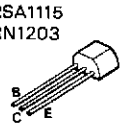
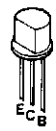
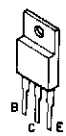
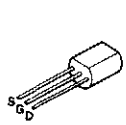
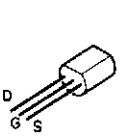
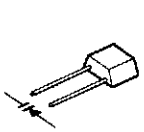
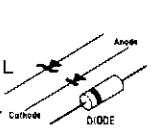
PCB-6 Function P. C. Board



General model only

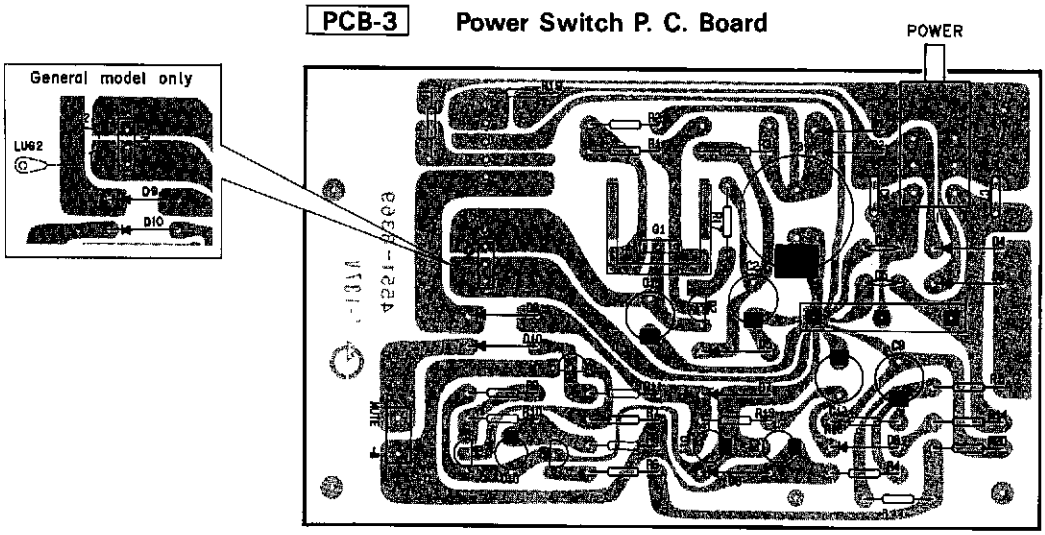


PIN CONNECTION DIAGRAM OF TRANSISTORS, DIODES AND ICS.

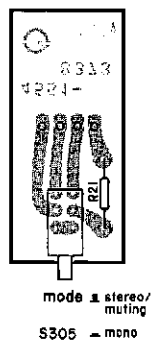
2SC2240 2SC2878 2SC2603	2SC2603 2SA1115 RN1203	2SC380	2SA1305	2SJ103	2SK117	1SV149	1S2473 S5566B HZ7B2L HZ6B1L HZ11A2L HZ15L HZ6A2L
							

	J	K	L	M	N

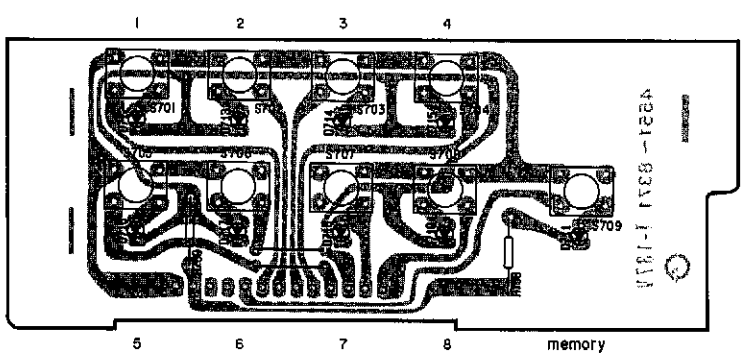
PCB-3 Power Switch P. C. Board



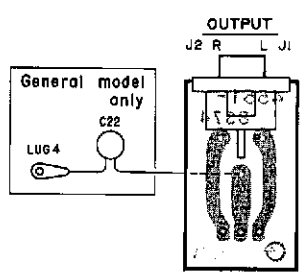
PCB-7 Muting P. C. Board



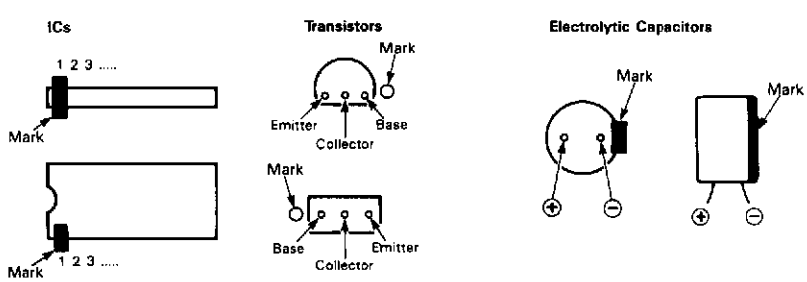
PCB-5 Preset Memory Switches P. C. Board

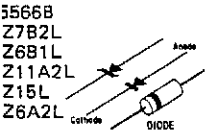
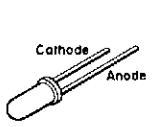
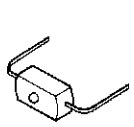
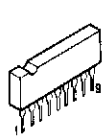
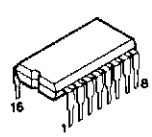
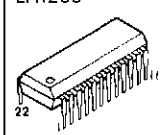
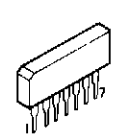
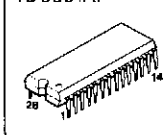
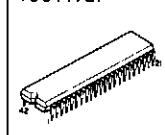


PCB-8 Output P. C. Board

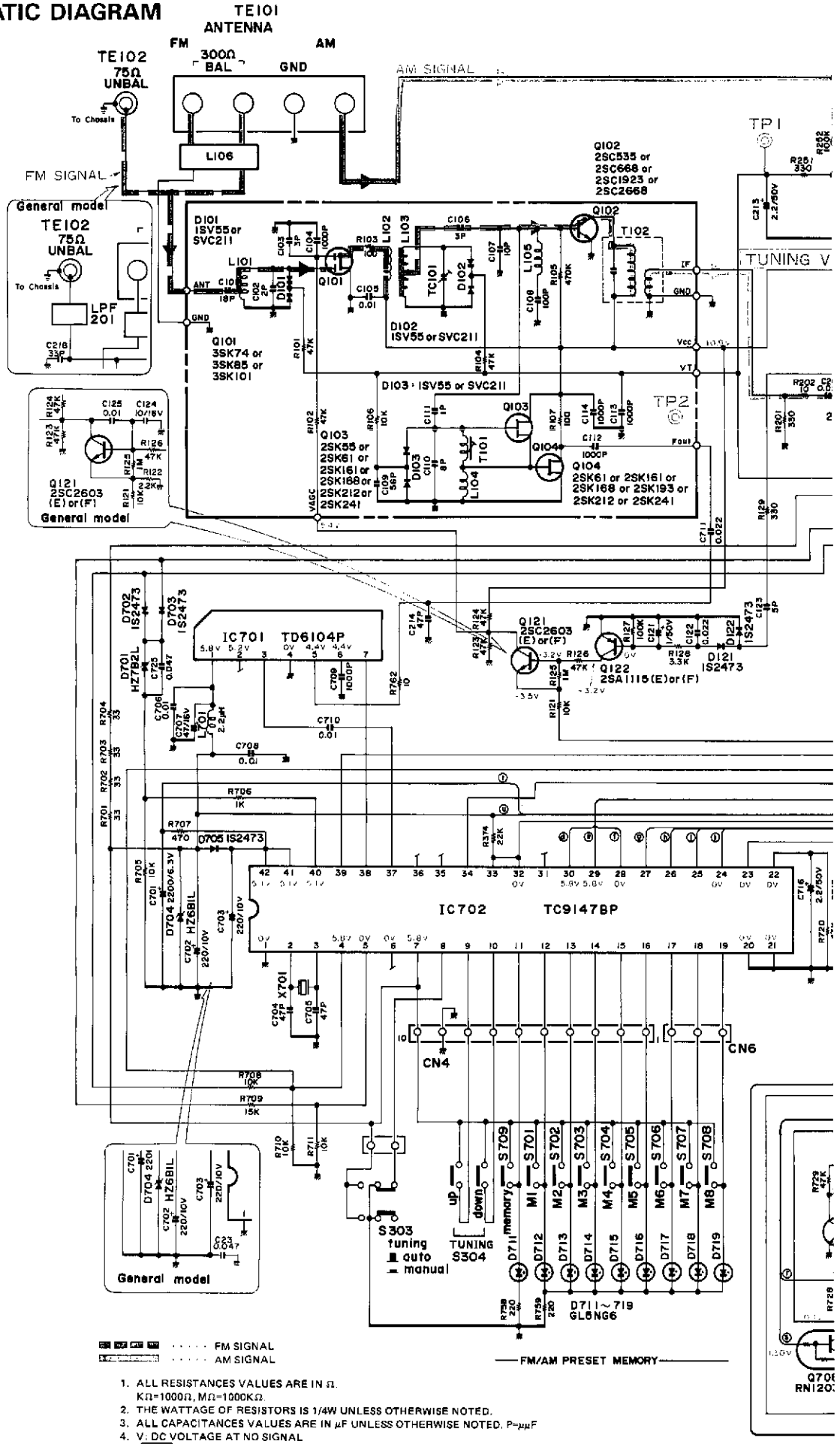


NOTE:
In the figures of the P. C. Boards, a mark is provided on the base side of the transistor.

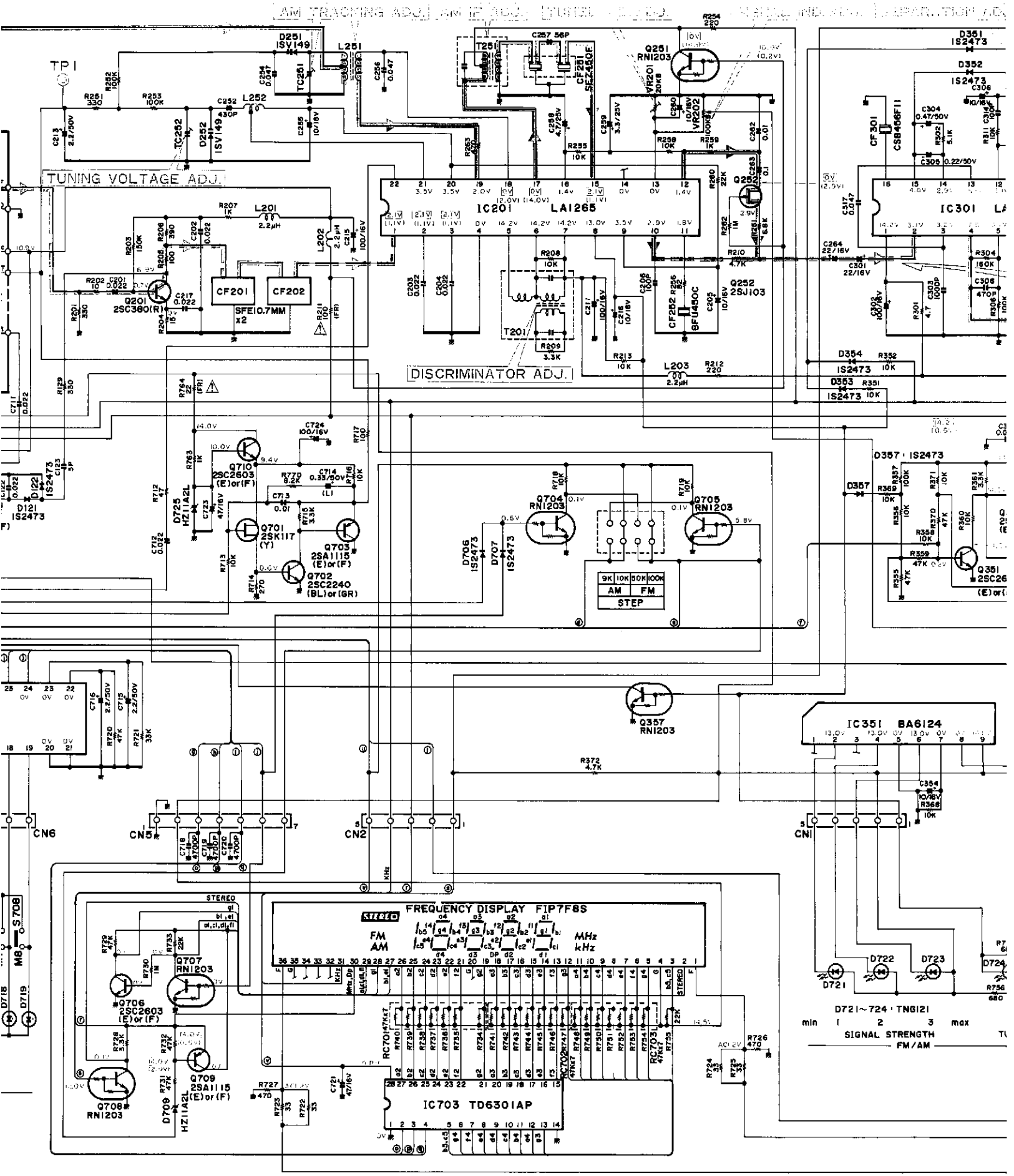


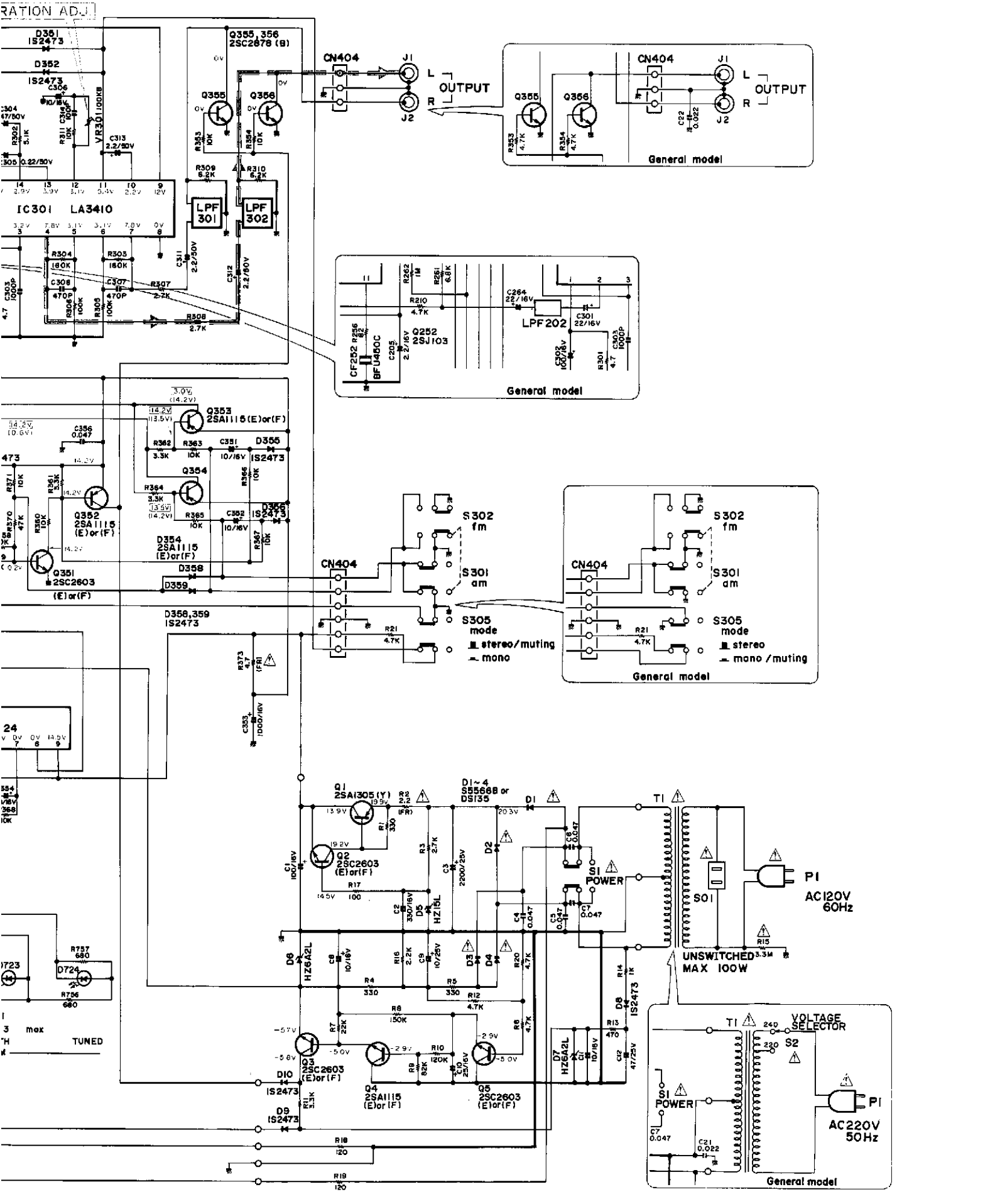
S2473 S566B Z7B2L Z6B1L Z11A2L Z15L Z6A2L	GL5NG6	TLG121	BA6124	LA3410	LA1265	TD6104P	TD6301AP	TC9147BP
								

SCHEMATIC DIAGRAM



1. ALL RESISTANCES VALUES ARE IN Ω.
   KΩ=1000Ω, MΩ=1000KΩ.
2. THE WATTAGE OF RESISTORS IS 1/4W UNLESS OTHERWISE NOTED.
3. ALL CAPACITANCES VALUES ARE IN μF UNLESS OTHERWISE NOTED. P=μμF
4. V: DC VOLTAGE AT NO SIGNAL
   [...V] FM POSITION
   (...V) AM POSITION
5. ⚠ SAFETY-REQUIREMENTS COMPONENTS IN ACCORDANCE WITH PRESENT SAFETY REGULATIONS, THESE COMPONENTS MUST ONLY BE REPLACED BY ORIGINAL PARTS


TUNING VOLTAGE ADJ.
DISCRIMINATOR ADJ.
IC201 LA1265
IC301
IC351 BA6124
IC703 TD6301AP
Q201 2SC380(R)
CF201
CF202
SFE10.7MM x2
Q701 2SK117 (Y)
Q702 2SC2240 (BL)or(GR)
Q703 2SA1115 (E)or(F)
Q704 RN1203
Q705 RN1203
Q706 2SC2603 (E)or(F)
Q707 RN1203
Q708 RN1203
Q709 2SA1115 (E)or(F)
Q710 2SC2603 (E)or(F)
Q251 RN1203
Q252 2SJ103
Q357 RN1203
D251 1SV149
D252 1SV149
D351 1S2473
D352 1S2473
D353 1S2473
D354 1S2473
D357 1S2473
D121 1S2473
D122 1S2473
D706 1S2473
D707 1S2473
D721
D722
D723
D724
D725 HZ11A2L
D709 HZ11A2L
T251
T201
TC251
TC252
L251
L252
L201
L202
L203
CF251 SFE450F
CF252 P256 BFU450C
CF301 CSB456F11
VR201 20KB
VR202 100KB
S706
M8
CN6
CN5
CN2
CN1
FREQUENCY DISPLAY FIP7F8S
STEREO
FM
AM
MHz
kHz
9K 10K 50K 100K
AM FM
STEP
D721~724 TNG121
min 1 2 3 max
SIGNAL STRENGTH
FM/AM


RATION ADJ
D351 IS2473
D352 IS2473
Q355, 356 2SC2878 (B)
Q355
Q356
CN404
J1
J2
L
R
OUTPUT
General model
IC301 LA3410
LPF 301
LPF 302
LPF 202
Q252 2SJ103
CF252
BFU450C
Q353 2SA1115(E)or(F)
Q354
Q352 2SA1115 (E)or(F)
Q351 2SC2603 (E)or(F)
D354 2SA1115 (E)or(F)
D355 IS2473
D358
D359
D358,359 IS2473
S302 fm
S301 am
S305 mode
stereo/muting
mono
stereo
mono /muting
Q1 2SA1305(Y)
Q2 2SC2603 (E)or(F)
D1~4 S5568B or DS135
D1
T1
S1 POWER
S01
P1
AC120V 60Hz
UNSWITCHED MAX 100W
D5 HZ15L
D6 HZ6A2L
D7 HZ6A2L
D8 IS2473
Q3 2SC2603 (E)or(F)
Q4 2SA1115 (E)or(F)
Q5 2SC2603 (E)or(F)
D10 IS2473
D9 IS2473
VOLTAGE SELECTOR
240
230
S2
AC220V 50Hz
D724
TUNED