

SERVICE **112**
MANUAL



marantz

model 112

Am/Fm Stereophonic Tuner

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1. INTRODUCTION

This service manual was prepared for use by Authorized Warranty Stations and contains service information for Marantz Model 112 Stereophonic Tuner.

Servicing information and voltage data included in this manual are intended for use by the knowledgeable and experienced technician only. All instructions should be read carefully. No attempt should be made to proceed without a good understanding of the operation of the tuner.

The parts list furnishes information by which replacement parts may be ordered from the Marantz Company. A brief description is included for parts which can be usually be obtained through local suppliers.

2. AM TUNER

The AM Tuner section of the Model 112 is contained in the AM/IF circuit package consisting of one IC H202 (AN217) and three transistors. The IC is shown in Figure 1 in the block diagram form. The respective three transistors serve as RF amplifier, IF amplifier for intensifying the gain of the IC, and audio amplifier for magnifying the detected audio signal.

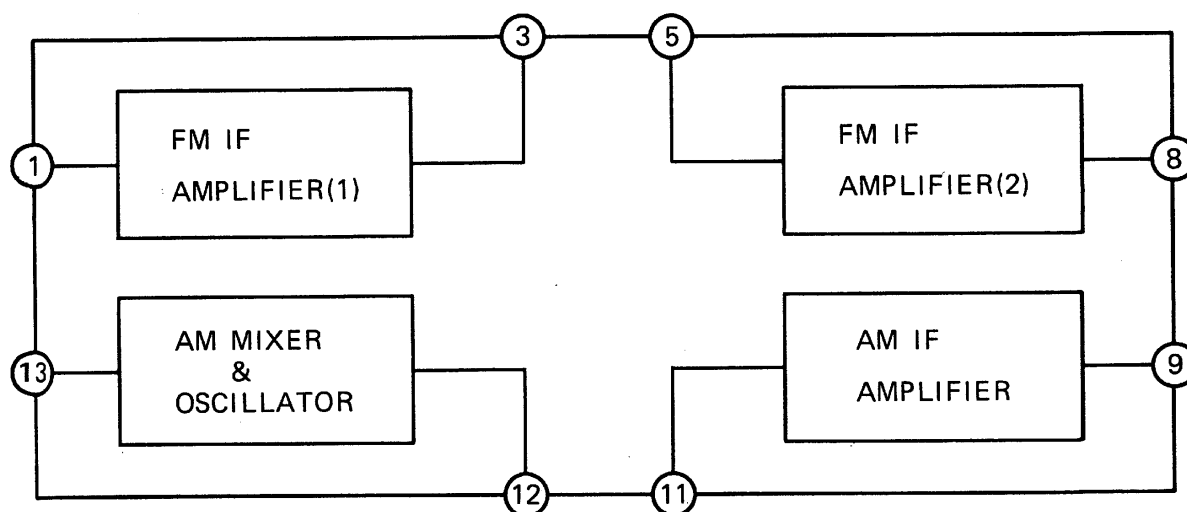


Figure 1. Block Diagram of the AN217

The IC includes an FM IF section and AM Tuner section, each of which comprises two functional blocks. The first block of the FM IF section is an FM IF amplifier (1), the input of which is fed from pin ①, and the output is led to pin ③. The second block is an FM IF amplifier (2), the input of which is fed from pin ⑤ and the output is led to pin ⑧.

The first block of the AM Tuner, on the other hand, is an AM mixer and oscillator, the input of which is fed from pin ⑬ and the output is led to pin ⑫. The second block is an AM IF amplifier, the input of which is fed from pin ⑪ and the output is led to the pin ⑨.

All components except the tuning capacitor and ferrite bar antenna are mounted on the printed circuit board P200.

An AM signal induced in the ferrite bar antenna is led to the base of the RF amplifier transistor (H209) and amplified to a level required for overcoming the conversion noises, thus giving good S/N performance. The tuned circuit inserted in each of the output and input circuits of the RF amplifier assures very high image and spurious rejection performance. Then, the amplified and selected AM signal is fed to one input (pin ⑬) of the Mixer section of the IC(H202) (pin ⑬). While the local oscillator voltage is injected to the other input (pin ⑭) of the section through the capacitor C244. Then, both AM signal and local oscillator signal are mixed and converted into 455kHz intermediate-frequency signal. The resulting IF signal is led to the first IF transformer L205 consisting of one ceramic filter and two tuned circuits.

The output of L205 is led to the additional IF amplifier (H210) for intensifying the AM IF gain. The output, in turn, is led through the coupling capacitor C253 to the input (pin ⑪) of the AM IF section in the IC(H202), where the output is amplified to a sufficient level to drive the detector. The fully amplified IF output derived from pin ⑨ is applied to the diode H228 to detect audible signal through the detector transformer L206. The detected audio signal is filtered and amplified, and the final audio output is obtained from the collector of H211 and applied to the output jacks through the function switch.

The DC component of the detected IF signal is used as an AGC voltage to control the emitter current of the IF amplifier H210 through the resistor R273 and R271, and then, the emitter voltage derived from transistor H210 controls the collector voltage of the RF amplifier H209.

A part of the IF signal output is also applied to the diode H229 through the capacitor C257 and is rectified to obtain DC current for energizing the AM signal strength meter M001.

2.1 Suggestions for Troubleshooting AM Tuner

Check for broken AM bar antenna, next try to tune a station by rotating the fly-wheel tuning knob slowly and observe the AM signal strength meter whether it deflects or not. If the signal strength meter gives a deflection at several frequencies received, no failure may exist in the stages at least preceding final IF transformer L206. Next connect an oscilloscope to the test point ④ or J218 and check for audio signals with the tuning meter deflected. If the signal strength meter does not deflect, check the local oscillator circuit. Normal oscillating voltage at the hot end of the oscillator tuning capacitor is about 1.5 or 3 volts, varying with tuning capacitor position. When measuring the oscillating voltage use an RF VTVM, no circuit tester gives correct indication. If the local oscillator voltage is normal, check all voltage distribution in the AM circuits by using a DC VTVM and compare the measured values with those given in the schematic diagram.

3. FM TUNER

The FM tuner section of the Model 112 consists of four functional blocks: FM Front End, IF Amplifier & Detector, Muting Control and MPX Stereo Decoding Circuit.

An FM signal induced by the FM antenna is led to the FM antenna coil L101 through the balun coil. The signal is then fed to the FET RF amplifier, which in turn feed its output to the next Mixer H102 through the double-tuned high-selective circuit. The Mixer converts its input signal into 10.7MHz intermediate-frequency signal and amplifies it at the same time. The H103 is a local oscillator and its output is injected into the base of the Mixer, the injection voltage is about 60mV. The 10.7MHz front end output is led to the next IF amplifier portion through the coaxial cable.

The IF section consists of five IF amplifier stages and one sub IF amplifier stage. The second and third stages of the five-stage IF amplifier, contained in the IC H202, serve as limiter. Three pieces of dual element ceramic filters are also used to obtain high selectivity, two IC limiter stages (H202) and a symmetrical diode limiter are also employed for the best limiting characteristics, improved capture ratio and good AM suppression.

A part of the IF amplifier H201 output is rectified by the diodes H220 and H221 and its DC output is fed back to the gate of the FET RF amplifier to decrease the gain with increase of the signal strength.

The IF signal sufficiently amplified through every IF amplifier stage is finally fed to the detector amplifier. The detected audio output is led to: (a) the Quadradial Jack on the rear panel through the resistor R233 and (b) the MPX stereo decoding IC H215 through R289 and H212.

3.1 Audio Muting and Stereo Mode Auto-Selecting Circuit

The muting circuit consisting of all solid-state electrical switching is incorporated in the Model 112.

The DC voltage obtained by rectifying the sub IF output signal from the H205 is applied to the base of H206 and turns on it, if the sub IF output is greater than predetermined level (muting threshold level).

When the H206 is turned on, the H207 is turned off, allowing the emitter-collector resistance to be increased and the collector voltage to be raised to about 9V. The raised collector voltage increases the gate bias voltage and turns on the switching FET H212, decreasing the sourcedrain resistance to near zero ohm and allowing the audio signal applied to the source to flow to the decoding IC pin ② through the source-drain path.

When the input signal is lower than predetermined level, the DC output obtained is small and can not turn on the H206, thus H206 keeps its turn-off state. This makes H207 turn on, decreasing the collector voltage and turning H212 off. Thus no audio signals can pass through the FET.

The transistor H208 also turns off when the transistor H207 turns on, and makes the transistor H213 turn on, which is connected to pin ⑧ on the MPX decoding IC. Therefore, pin ⑧ is equivalently grounded, and the operation of the IC becomes monaural. This prevents misoperation of stereo due to undesirable noises during deviation of tuning.

3.2 MPX Stereo Decoding Circuit

The stereo composite signal from the FM Detector undergoes phase compensation by R289 and C255, is led through the muting switching FET H212 to the input terminal pin ② of the MPX stereo decoding IC H215 on PLL (Phase Locked Loop) basis, and is decoded into the left and right stereo signals, which become available at pins ④ and ⑤ respectively. These decoded left and right stereo audio signals are introduced through the low pass filter consisting of L207 to L210 and C273 to C282 for elimination of undesirable residual switching signal and through the de-emphasis network consisting of R308, R309, C283 and C284, into the npn-pnp direct coupled audio amplifier, where the signals are amplified to a required level for the output from J226 and J227. From these jacks, the audio signals are led through the function switch and FM Dolby level preset resistors RS03 and RS04 to the output terminals on the rear panel. Figure 2 presents an internal block diagram showing the functions of the PLL basis MPX stereo decoding IC HA1156.

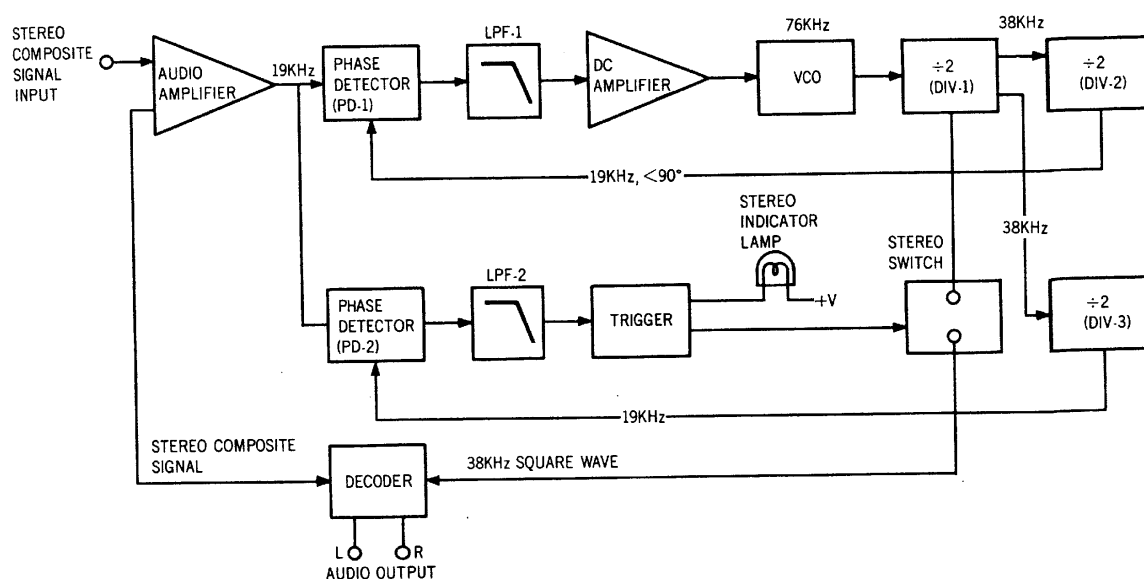


Figure 2. Block Diagram of the HA1156

The input stereo composite signal, amplified by the audio amplifier, is delivered to the phase detectors PD-1 and PD-2. A part of the stereo composite signal is also delivered to the stereo decoder section. The VCO (Voltage Control Oscillator) produces a free run oscillation in the neighborhood of 76kHz with the time constant determined by the capacitor C305 and resistors R311 and R312 set on the outside of pin ⑭. The VCO output has its frequency divided into 19kHz through the two frequency divider stages (DIV-1, DIV-2), and is reverted to the phase detector PD-1, which contains two input terminals designed to produce an output in proportion to the product of the two input signals. The signal led to PD-1 input one is a 19kHz square wave formed through frequency division of the 76kHz VCO output signal by the two frequency divider stages DIV-1 and DIV-2, and the 19kHz pilot signal included in the stereo composite signal as a reference signal is led to the other PD-1 input. Therefore, the output of the PD-1 which has passed through the low pass filter LPF-1 provides DC output voltage in proportion to the phase variance between the two inputs. This DC output voltage is amplified by the DC amplifier, and supplied to the 76kHz VCO as a control voltage. This means that the output frequency and phase of the VCO have been phase-locked to the input pilot signal. The 38kHz sub-carrier reproduced by the PLL as stated above is delivered through the stereo switch to the stereo decoder section as a switching signal, thus driving the decoder stage. One PD-2 input is given the 19kHz resulting from the frequency division completed by the DIV-1 and DIV-2, whereas the other input gets the 19kHz output contained in the composite signal, and the output is provided with a DC output in proportion to the amplitude of the pilot signal. This DC output is furnished through the LPF-2 to the trigger amplifier which drives the stereo indicator lamp and stereo switch. Therefore, insufficient supply of the pilot signal results in failure to light the stereo indicator and to turn on the stereo switch located in the path of the 38kHz switching signal, thereby avoiding a wrong stereo operation. H213 attached on the outside of pin ⑧ is a switching transistor for automatic monaural-stereo switchover. When the intensity of an incoming signal from an FM station is weaker than a predetermined level, this H213 is turned on and pin ⑧ is grounded, thereby developing a condition for monaural reception. For a forced monaural operation, switch the MODE switch to "MONO", and H213 comes into an "On" condition with the positive bias voltage applied to the base, and pin ⑧ is grounded, thereby establishing monaural operation. The transistor H214 connected externally to pin ⑭ is intended to stop the 76kHz oscillation of the VCO which interferes an AM signal during the reception of an AM station. When the function switch is set to "AM" position, a positive bias is charged on the base of H214, H214 is turned on, and pin ⑭ is grounded. Thus, the oscillation of the VCO is stopped, ending the interference with AM reception.

3.3 Suggestion for Troubleshooting FM Tuner

3.3.1 Symptom: No FM Reception

First, turn on the Power switch and try to tune FM stations. Rotate the fly-wheel tuning knob slowly and observe the FM tuning meter. If the tuning meter deflect at several received frequencies, the tuner circuits preceding the discriminator circuit may have no failure. When no reading is obtained in the meter, check the FM local oscillator circuit, using an RF VTVM. The normal local oscillator voltage is one or two volts (rms) at the tuning capacitor, depending on the tuning capacitor position. If the local oscillator voltage is normal, then check all voltage distribution in the FM Front End and IF amplifier unit and compare them with those shown in the circuit diagram. When the tuning meter deflects but no sound is obtained, check the audio circuit, using a high sensitive oscilloscope.

3.3.2 Symptom: No Stereo Separation

First, check that the "MONO" switch is in normal out position. Connect an FM RF signal generator output modulated by a stereo modulator to the rear FM antenna terminals, and check whether the stereo beacon is turned on or not. If not turned on, check for 19kHz VCO output signal (test point ③, R304), using an oscilloscope and frequency counter.

4. AM ALIGNMENT PROCEDURES

4.1 AM IF Alignment

- (1) Connect a sweep generator to J206 and an alignment scope to the test point ③.
- (2) Rotate each core of the IF transformers L205 and L206 for maximum height and flat top symmetrical response.

4.2 AM Frequency Range and Tracking Alignment

- (1) Set an AM signal generator of 515kHz. Turn the tuning capacitor fully closed (place the tuning pointer at the low end.) and adjust the oscillator coil L204 for maximum audio output.
- (2) Set the signal generator to 1650kHz. Place the tuning pointer in the high frequency end and adjust the oscillator trimmer on the oscillator tuning capacitor for maximum audio output.
- (3) Repeat Steps (1) and (2) until no further adjustment is necessary.
- (4) Set the generator to 600kHz and tune the tuner to the same frequency and adjust the slug core of the AM ferrite rod antenna and RF coil L203 for maximum output.
- (5) Set the generator to 1400kHz and tune the tuner to the same frequency and adjust both trimming capacitors of the antenna and RF tuned circuit for maximum output.
- (6) Repeat Steps (4) and (5) until no further adjustment is necessary.

Note: During tracking alignment reduce the signal generator output as necessary to avoid AGC action.

5. FM ALIGNMENT PROCEDURES

- (1) Connect an FM signal generator (FM SG) to the FM antenna terminals and an oscilloscope and audio distortion analyzer to the output jacks on the rear panel.
- (2) Set the FM SG to 87.0MHz and provide about 3 to 5 μ V. Place the tuning pointer at the low frequency end by rotating the tuning knob and adjust the core of the oscillator coil L104 to obtain maximum audio output.
- (3) Set the FM SG to 108.5MHz and provide about 3 to 5 μ V output. Rotate the tuning knob and place the tuning pointer at the high frequency end and adjust the trimming capacitor C123 for maximum output.
- (4) Repeat Steps (2) and (3) until no further adjustment is necessary.
- (5) Set the FM SG to 90MHz and tune the tuner to the same frequency. Decrease signal generator output until the audio output level decreases with decrease of the generator output. Adjust the antenna coil L101, RF coils L102 and L103 and IF transformer L105 for minimum audio distortion.
- (6) Set the FM SG to 106MHz and tune the tuner to the same frequency. Adjust the trimming capacitors C101, C102 and C103 for minimum distortion.
- (7) Repeat Steps (5) and (6) until no further adjustment is necessary.
- (8) Adjust the secondary core (upper) of the discriminator transformer L201 so that the center tuning meter pointer indicates its center at no signal applied. Set the FM SG to 98MHz and increase its output level to 1K μ V and tune the tuner to the same frequency so that the center tuning meter pointer indicates its center. Adjust the primary core (lower) of L201 for minimum distortion.

5.1 Stereo Separation Alignment

- (1) Set an FM signal generator (FM SG) to provide 1K μ V at 98 MHz. Tune the tuner to the same frequency so that the center tuning meter pointer indicates its center. Then turn off the modulation of the FM SG, connect a frequency counter to the test point R304 (point ③) and adjust R307 so that the frequency counter may precisely read 19kHz.
- (2) Modulate the FM SG with the stereo composite signal consisting of either L or R channel (of course, the pilot signal must be included).

(3) Adjust the trimming resistor R289 for maximum and same separation in both channels.

5.2 Muting Circuit Alignment

Set an FM signal generator (FM SG) output to provide $12.5\mu\text{V}$ (IHF) at 98MHz and tune the receiver to the same frequency.

Adjust the trimming resistor R246 for the threshold level of $12.5\mu\text{V}$ (during this adjustment turn the MUTING pushswitch "on").

5.3 FM Dolby Level Adjustment

(1) Modulate an FM signal generator to 40% with a 400Hz signal and set it to 98MHz at $1\text{K}\mu\text{V}$. Precisely tune the tuner to the same frequency.

(2) Depress the FM Dolby pushswitch in. Adjust RS03 and RS04 until the outputs of both channels may become 340mV.

6. TEST EQUIPMENT REQUIRED FOR SERVICING

Table 1 lists the test equipment required for servicing the Model 112 Tuner.

Item	Manufacturer and Model No.	Use
AM Signal Generator		Signal source for AM alignment.
Test Loop		Used with AM Signal generator.
FM Signal Generator	* Less than 0.3% distortion.	Signal source for FM alignment.
Stereo Modulator	Less than 0.3% distortion.	Stereo separation alignment and trouble shooting.
Frequency Counter		MPX oscillator Adjustment (VCO).
Audio Oscillator	Weston Model CVO-100P, less than 0.02% residual distortion is required.	Sinewave and squarewaves signal source.
Oscilloscope	High sensitivity with DC horizontal and vertical amplifiers.	Waveform analysis and trouble shooting.
VTVM	With AC, DC, RF range.	Voltage measurements.
Circuit Tester		Trouble shooting.

Table 1. Test Equipment Required for Servicing

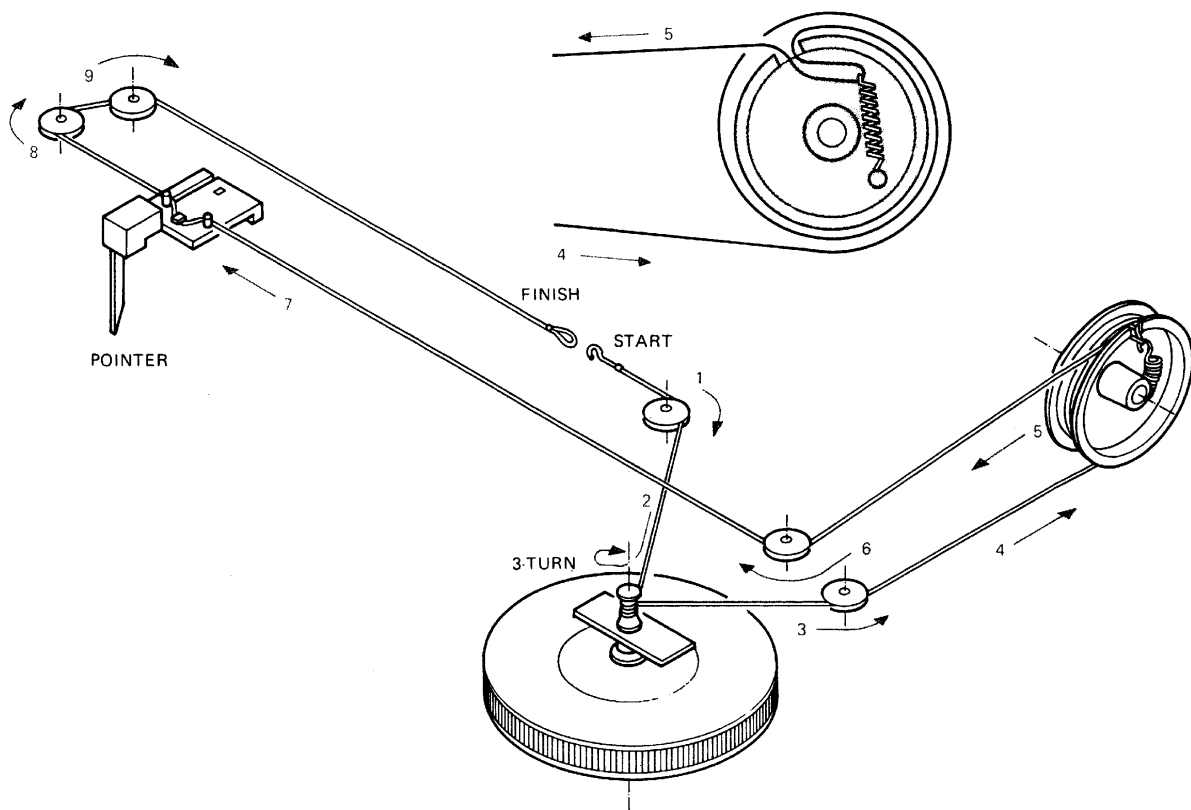


Figure 3. Dial Stringing

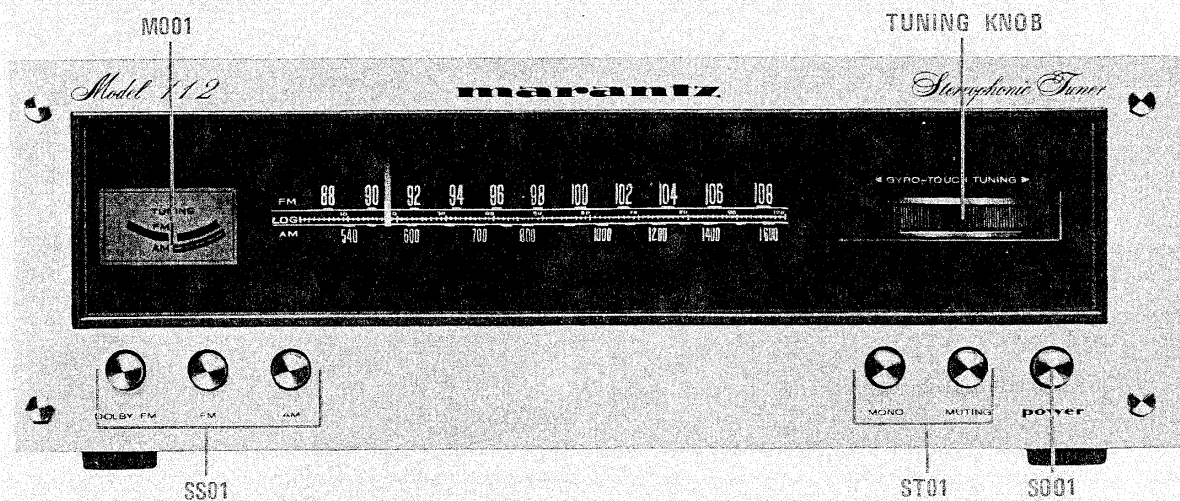


Figure 4. Front Panel Adjustment and Component Locations

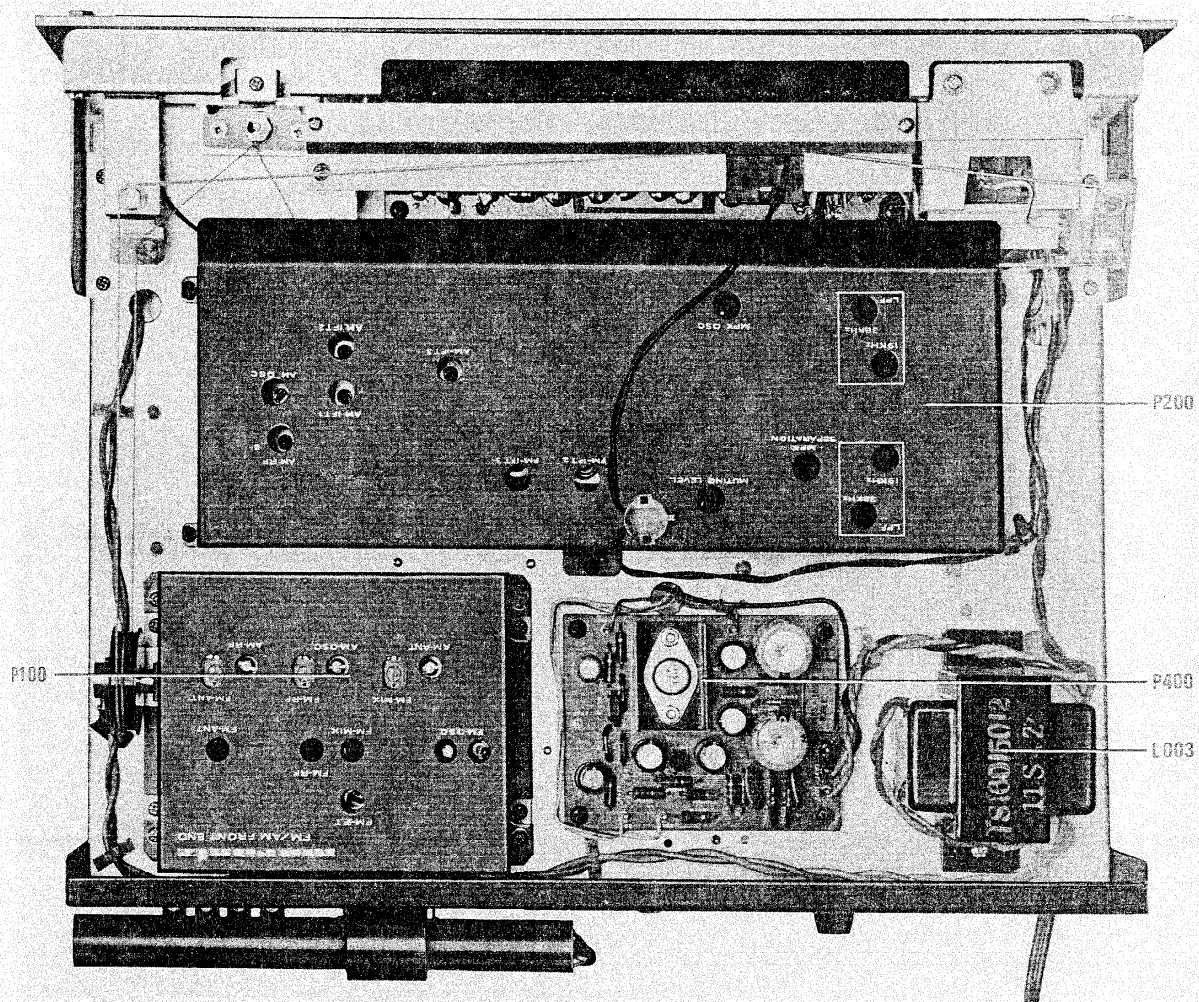


Figure 5. Main Chassis Component Locations (Top View)

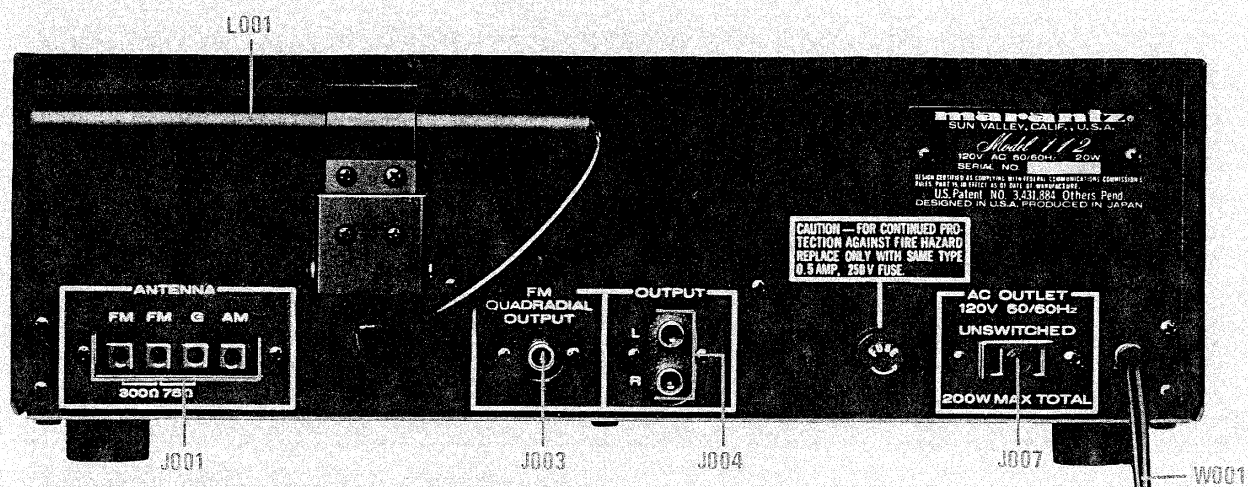


Figure 6. Rear Panel Adjustment and Component Locations

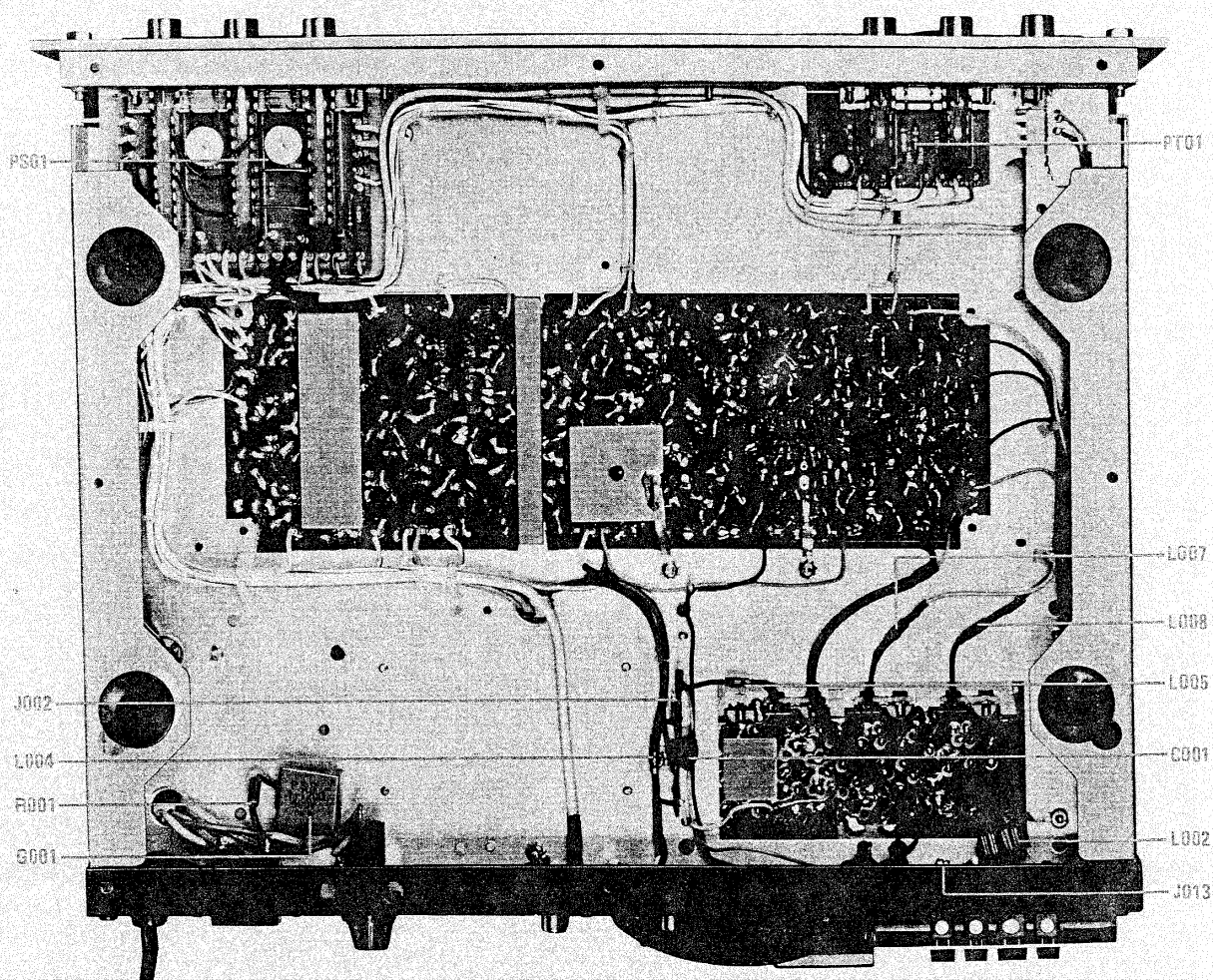


Figure 7. Main Chassis Component Locations (Bottom View)

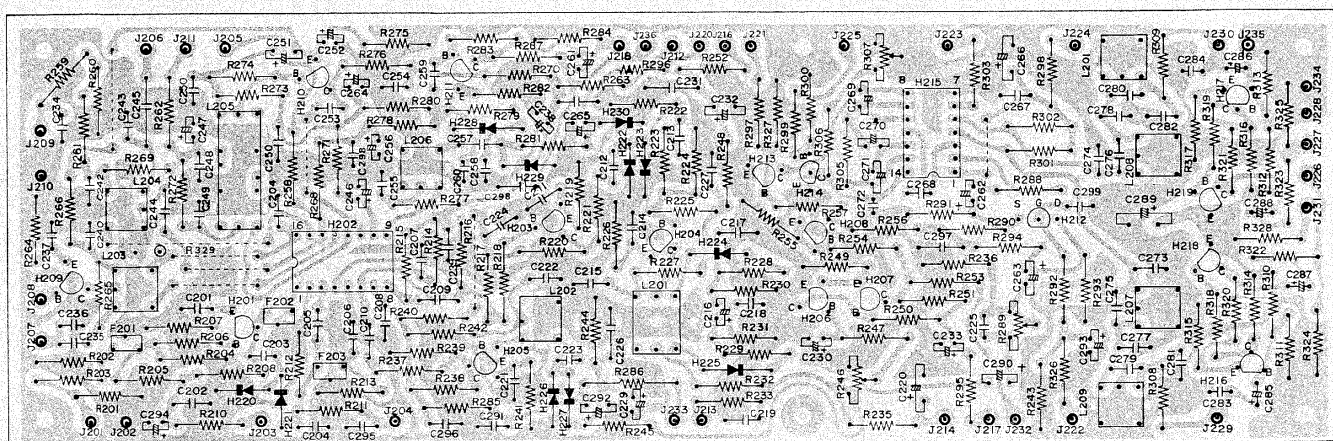


Figure 8. FM/AM Tuner Assembly P200 Component Locations

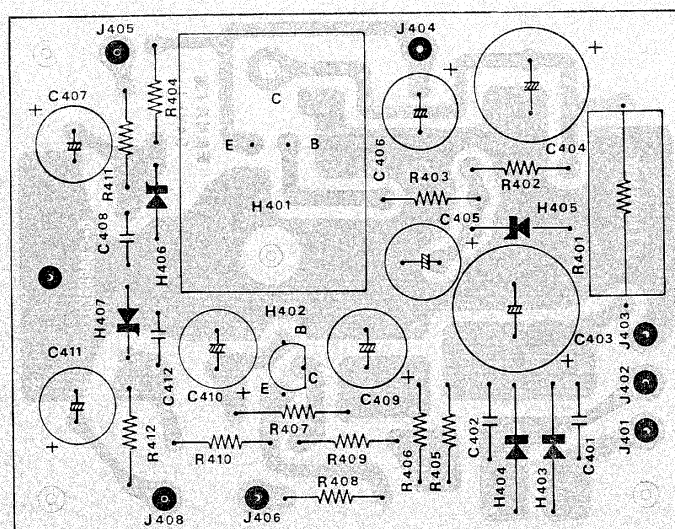


Figure 9. Power Supply Assembly P400 Component Locations

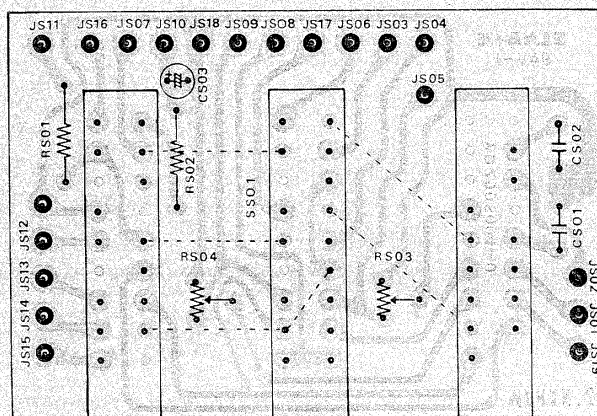
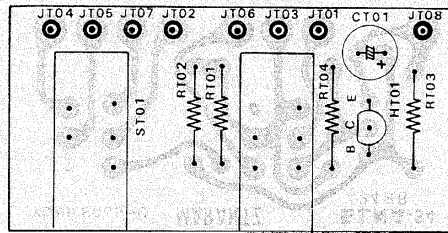


Figure 10. Selector Switch Assembly PS01 Component Locations



**Figure 11. Mode Switch Assembly PT01
Component Locations**



Figure 12. Function Lamp Assembly PY01 Component Locations



Figure 13. Dial Lamp Assembly PZ01 Component Locations

NOTE

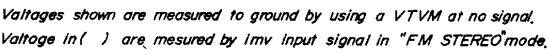


Figure 15. Schematic Diagram

7. PARTS LIST

REF. DESIG.	U	E	PART NO.	DESCRIPTION
A	1	1	290806340	Front Panel Assembly
0103	1	1	290806301	Escutcheon
0104	1	1	291240101	Frame
0105	1	1	290815801	Window
0106	6	6	288625901	Bush
0108	1	1	290805301	Cover
B	1	1	282725740	Lid Assembly, Top
0122	1	1	282725701	Lid
0123	3	3	257711807	Spacer
C		1	290816040	Rear Panel Assembly
0405		1	290816022	Bracket
0416		1	282125901	Bush
0417		2	55060305S	T R Rivet
D	1	1	290810340	Pointer Assembly
1303	1	1	290810301	Pointer
1304	1	1	290810302	Pointer
1305	1	1	290806701	Cap
M003	1	1	IN1008030	Lamp
E	1	1	282715942	Drum Assembly
1311	1	1	282715901	Drum
1312	1	1	71101569M	Spring
1313	2	2	51064019A	Screw
F	1	1	120200640	Hook Assembly
1318	1	1	72080802A	String
1319	1	1	120225801	Hook
G	1	1	290827340	Fly Wheel Assembly
0803	1	1	257727301	Fly Wheel
0804	2	2	257706302	Escutcheon
0806	1	1	290811201	Shaft
0808	1	1	53110603E	Hexagon Nut
0809	1	1	54020601E	Flat Washer
P200	1	1	YD2908002	FM/AM TUNER CIRCUIT BOARD-P200
	1		ZZ2908002	P.W. Board, FM/AM Tuner (Print Only)
		1	ZZ2908802	P.W. Board Assembly
				P200-RESISTORS
				All resistors are $\pm 5\%$ and $\frac{1}{4}W$, unless otherwise indicated.
R201	1	1	RT0533114	330 Ω
R202	1	1	RT0547114	470 Ω
R203	1	1	RT0515114	150 Ω
R204	1	1	RT0515214	1.5K Ω
R205	1	1	RT0533214	3.3K Ω
R206	1	1	RT0515114	150 Ω
R207	1	1	RT0510214	1K Ω
R208	1	1	RT0510214	1K Ω
R210	1	1	RT0510114	100 Ω
R211	1	1	RT0533314	33K Ω
R212	1	1	RT0510214	1K Ω
R213	1	1	RT0510214	1K Ω

REF. DESIG.	U	E	PART NO.	DESCRIPTION
R214	1	1	RT0510014	10Ω
R215	1	1	RT0520214	2KΩ
R216	1	1	RT0582214	8.2KΩ
R217	1	1	RT0515314	15KΩ
R218	1	1	RT0515114	150Ω
R219	1	1	RT0510214	1KΩ
R220	1	1	RT0510214	1KΩ
R221	1	1	RT0515114	150Ω
R222	1	1	RT0510414	100KΩ
R223	1	1	RT0515114	150Ω
R224	1	1	RT0582214	8.2KΩ
R225	1	1	RT0515314	15KΩ
R226	1	1	RT0510214	1KΩ
R227	1	1	RT0522114	220Ω
R228	1	1	RT0582114	820Ω
R229	1	1	RT0582114	820Ω
R230	1	1	RT0568214	6.8KΩ
R231	1	1	RT0568214	6.8KΩ
R232	1	1	RT0510114	100Ω
R233	1	1	RT0533214	3.3KΩ
R235	1	1	RT0522314	22KΩ
R236	1	1	RT0522414	220KΩ
R237	1	1	RT0527114	270Ω
R238	1	1	RT0515314	15KΩ
R239	1	1	RT0582214	8.2KΩ
R240	1	1	RT0551014	51Ω
R241	1	1	RT0510214	1KΩ
R242	1	1	RT0510114	100Ω
R243	1	1	RT0510514	1MΩ
R244	1	1	RT0522314	22KΩ
R245	1	1	RT0510214	1KΩ
R246	1	1	RA0104018	Trimming, .100KΩ (B)
R247	1	1	RT0518314	18KΩ
R248	1	1	RT0510114	100 Ω
R249	1	1	RT0547014	47Ω
R250	1	1	RT0510514	1MΩ
R251	1	1	RT0512314	12KΩ
R252	1	1	RT0510114	100Ω
R253	1	1	RT0556414	560KΩ
R254	1	1	RT0522414	220KΩ
R255	1	1	RT0510114	100Ω
R256	1	1	RT0510414	100KΩ
R257	1	1	RT0510414	100KΩ
R258	1	1	RT0515214	1.5KΩ
R259	1	1	RT0568214	6.8KΩ
R260	1	1	RT0568114	680Ω
R261	1	1	RT0547214	4.7KΩ
R262	1	1	RT0510014	10Ω
R263	1	1	RT0510014	10Ω
R264	1	1	RT0551114	510Ω
R265	1	1	RT0510414	100KΩ
R266	1	1	RT0510114	100Ω
R267	1	1	RT0510214	1KΩ
R268	1	1	RT0533214	33KΩ
R269	1	1	RT0510114	100Ω
R270	1	1	RT0547014	47Ω
R271	1	1	RT0522314	22KΩ
R272	1	1	RT0547014	47Ω
R273	1	1	RT0582314	82KΩ
R274	1	1	RT0556214	5.6KΩ
R275	1	1	RT0510214	1KΩ

REF. DESIG.	U	E	PART NO.	DESCRIPTION
R276	1	1	RT0533114	330Ω
R277	1	1	RT0547014	47Ω
R278	1	1	RT0522214	2.2KΩ
R279	1	1	RT0527214	2.7KΩ
R280	1	1	RT0522314	22KΩ
R281	1	1	RT0513314	13KΩ
R282	1	1	RT0510214	1KΩ
R283	1	1	RT0515514	1.5MΩ
R284	1	1	RT0510414	100KΩ
R285	1	1	RT0551014	51Ω
R286	1	1	RT0551014	51Ω
R287	1	1	RT0547214	4.7KΩ
R288	1	1	RT0510214	1KΩ
R289	1	1	RA0103025	Trimming, 10KΩ (B)
R290	1	1	RT0510514	1MΩ
R291	1	1	RT0556414	560KΩ
R292	1	1	RT0556414	560KΩ
R293	1	1	RT0556414	560KΩ
R294	1	1	RT0510514	1MΩ
R295	1	1	RT0510114	100Ω
R296	1	1	RT0539214	3.9KΩ
R297	1	1	RT0522414	220KΩ
R298	1	1	RT0510114	100Ω
R299	1	1	RT0522414	220KΩ
R300	1	1	RT0522414	220KΩ
R301	1	1	RT0539214	3.9KΩ
R302	1	1	RT0539214	3.9KΩ
R303	1	1	RC1010112	100Ω ±10%, ½W
R304	1	1	RT0510214	1KΩ
R305	1	1	RT0510214	1KΩ
R306	1	1	RT0516314	16KΩ
R307	1	1	RA0502020	Trimming, 5KΩ (B)
R308	1	1	RT0530314	30KΩ
R309	1	1	RT0530314	30KΩ
R310	1	1	RT0515514	1.5MΩ
R311	1	1	RT0510414	100KΩ
R312	1	1	RT0515514	1.5MΩ
R313	1	1	RT0510414	100KΩ
R314	1	1	RT0522314	22KΩ
R315	1	1	RT0562114	620Ω
R316	1	1	RT0522314	22KΩ
R317	1	1	RT0562114	620Ω
R318	1	1	RT0510114	100Ω
R319	1	1	RT0510114	100Ω
R320	1	1	RT0582214	8.2KΩ
R321	1	1	RT0582214	8.2KΩ
R322	1	1	RT0547114	470Ω
R323	1	1	RT0547114	470Ω
R324	1	1	RT0522414	220KΩ
R325	1	1	RT0522414	220KΩ
R326	1	1	RT0510114	100Ω
R327	1	1	RT0522414	220KΩ
R328	1	1	RT0515214	1.5KΩ
R329	1	1	RT0510214	1KΩ
R330	1	1	RT0527214	2.7KΩ
P200-SEMICONDUCTORS				
H201	1	1	HT308291C	Transistor, 2SC829(C)
H202	1	1	HC1000502	IC, AN217
H203	1	1	HT308291C	Transistor, 2SC829(C)
H204	1	1	HT308291C	Transistor, 2SC829(C)

REF. DESIG.	U	E	PART NO.	DESCRIPTION
H205	1	1	HT308291C	Transistor, 2SC829(C)
H206	1	1	HT308281D	Transistor, 2SC828(S)
H207	1	1	HT308281D	Transistor, 2SC828(S)
H208	1	1	HT308281D	Transistor, 2SC828(S)
H209	1	1	HT308291C	Transistor, 2SC829(C)
H210	1	1	HT303720A	Transistor, 2SC372(Y)
H211	1	1	HT306441B	Transistor, 2SC644 (S)
H212	1	1	HF200301C	FET, 2SK30 (Y)
H213	1	1	HT308281D	Transistor, 2SC828 (S)
H214	1	1	HT308281D	Transistor, 2SC828 (S)
H215	1	1	HC1000401	IC, HA1156
H216	1	1	HT313272A	Transistor, 2SC1327S or T
H217	1	1	HT313272A	Transistor, 2SC1327S or T
H218	1	1	HT104942A	Transistor, 2SA494 G or Y
H219	1	1	HT104942A	Transistor, 2SA494 G or Y
H220	1	1	HD1000105	Diode, IN60
H221	1	1	HD1000105	Diode, IN60
H222	1	1	HD2001105	Diode, IS1555
H223	1	1	HD2001105	Diode, IS1555
H224	1	1	HD1000302	Diode, 20A90M
H225	1	1	HD1000302	Diode, 20A90M
H226	1	1	HD1000105	Diode, IN60
H227	1	1	HD1000105	Diode, IN60
H228	1	1	HD1000302	Diode, 20A90M
H229	1	1	HD1000105	Diode, IN60
H230	1	1	HD2001105	Diode, IS1555
P200-CAPACITORS				
C201	1	1	DK1710301	Ceramic, 0.01μF ±20%
C202	1	1	DK1840301	Ceramic, 0.04μF +100%, -0%
C203	1	1	DD1620101	Ceramic, 200PF ±10%SL
C204	1	1	DK1710301	Ceramic, 0.01μF ±20%
C205	1	1	DK1710301	Ceramic, 0.01μF ±20%
C206	1	1	DK1710301	Ceramic, 0.01μF ±20%
C207	1	1	DK1840301	Ceramic, 0.04μF +100%, -0%
C208	1	1	DK1710301	Ceramic, 0.01μF ±20%
C209	1	1	DK1710301	Ceramic, 0.01μF ±20%
C210	1	1	DD1610101	Ceramic, 100PF ±10% SL
C211	1	1	DK1710301	Ceramic, 0.01μF ±20%
C212	1	1	DK1710301	Ceramic, 0.01μF ±20%
C213	1	1	DK1710301	Ceramic, 0.01μF ±20%
C214	1	1	DK1710301	Ceramic, 0.01μF ±20%
C215	1	1	DK1840301	Ceramic, 0.04μF +100%, -0%
C216	1	1	EA1060169	Electroly, 10μF, 16V
C217	1	1	DD1620101	Ceramic, 200PF ±10%
C218	1	1	DD1620101	Ceramic, 200PF ±10%
C219	1	1	DD1620101	Ceramic, 200PF ±10%
C220	1	1	EA4760109	Electroly, 47μF 10V
C221	1	1	DK1710301	Ceramic, 0.01μF ±20%
C222	1	1	DK1840301	Ceramic, 0.04μF +100%, -0%
C223	1	1	DD1610101	Ceramic, 100PF ±10%
C224	1	1	DK1840301	Ceramic, 0.04μF +100%, -0%
C225	1	1	DF1722201	Film, 2200PF ±20%
C226	1	1	DK1840301	Ceramic, 0.04μF +100%, -0%
C227	1	1	DK1840301	Ceramic, 0.04μF +100%, -0%
C229	1	1	EA4740509	Electroly, 0.47μF, 50V
C230	1	1	EA1050509	Electroly, 1μF, 50V
C231	1	1	DK1840301	Ceramic, 0.04μF +100%, -0%
C232	1	1	EA1070169	Electroly, 100μF, 16V
C233	1	1	EA3360259	Electroly, 33μF, 25V
C234	1	1	DF1740301	Film, 0.04μF ±20%
C235	1	1	DF1740301	Film, 0.04μF ±20%

REF. DESIG.	U	E	PART NO.	DESCRIPTION
C236	1	1	DD1105001	Ceramic, 5PF ± 0.5 PF
C237	1	1	DF1740301	Film, $0.04\mu F$ $\pm 20\%$
C238	1	1	EA1060169	Electroly, $10\mu F$, 16V
C239	1	1	DF1740301	Film, $0.04\mu F$ $\pm 20\%$
C240	1	1	DF1740301	Film, $0.04\mu F$ $\pm 20\%$
C241	1	1	DF1740301	Film, $0.04\mu F$ $\pm 20\%$
C242	1	1	DF1740301	Film, $0.04\mu F$ $\pm 20\%$
C243	1	1	DD1620001	Ceramic, 20PF $\pm 10\%$
C244	1	1	DF1722301	Film, $0.022\mu F$ $\pm 20\%$
C245	1	1	DF6545101	Film, 450PF $\pm 5\%$
C246	1	1	EA1050509	Electroly, $1\mu F$, 50V
C247	1	1	EA1060169	Electroly, $10\mu F$, 16V
C248	1	1	DF1740301	Film, $0.04\mu F$ $\pm 20\%$
C249	1	1	DF1740301	Film, $0.04\mu F$ $\pm 20\%$
C250	1	1	DF1740301	Film, $0.04\mu F$ $\pm 20\%$
C251	1	1	EA1060169	Electroly, $10\mu F$, 16V
C252	1	1	EA1060169	Electroly, $10\mu F$, 16V
C253	1	1	DF1740301	Film, $0.04\mu F$ $\pm 20\%$
C254	1	1	DF1740301	Film, $0.04\mu F$ $\pm 20\%$
C255	1	1	DF1740301	Film, $0.04\mu F$ $\pm 20\%$
C256	1	1	EA1060169	Electroly, $10\mu F$, 16V
C257	1	1	DD1620101	Ceramic, 200PF $\pm 10\%$ SL
C258	1	1	DF1747201	Film, 4700PF $\pm 20\%$
C259	1	1	DF1668301	Film, $0.068\mu F$ $\pm 10\%$
C260	1	1	DF1747201	Film, 4700PF $\pm 20\%$
C261	1	1	EA1060169	Electroly, $10\mu F$, 16V
C262	1	1	EA1060169	Electroly, $10\mu F$, 16V
C263	1	1	EA1060169	Electroly, $10\mu F$, 16V
C264	1	1	EA1050509	Electroly, $1\mu F$, 50V
C265	1	1	EA1060169	Film, $10\mu F$, 16V
C266	1	1	EA2270169	Electroly, $220\mu F$, 16V
C267	1	1	DK1840301	Ceramic, $0.04\mu F$ $+100\%$, -0%
C268	1	1	DF1747301	Film, $0.047\mu F$ $\pm 20\%$
C269	1	1	EQ2240501	Electroly, $0.22\mu F$ $\pm 20\%$
C270	1	1	EQ2240501	Electroly, $0.22\mu F$ $\pm 20\%$
C271	1	1	EQ4740501	Electroly, $0.47\mu F$ $\pm 20\%$
C272	1	1	DF5547101	Film, 470PF $\pm 5\%$
C273	1	1	DF1615205	Film, 1500PF $\pm 10\%$
C274	1	1	DF1615205	Film, 1500PF $\pm 10\%$
C275	1	1	DD1536101	Ceramic, 360PF $\pm 5\%$
C276	1	1	DD1536101	Ceramic, 360PF $\pm 5\%$
C277	1	1	DF1633205	Film, 3300PF $\pm 10\%$
C278	1	1	DF1633205	Film, 3300PF $\pm 10\%$
C279	1	1	DF1515205	Film, 1500PF $\pm 5\%$
C280	1	1	DF1515205	Film, 1500PF $\pm 5\%$
C281	1	1	DF1622205	Film, 2200PF $\pm 10\%$
C282	1	1	DF1622205	Film, 2200PF $\pm 10\%$
C283	1	1	DF1510205	Film, 1000PF $\pm 5\%$
C284	1	1	DF1510205	Film, 1000PF $\pm 5\%$
C285	1	1	EV2240351	Electroly, $0.22\mu F$ $\pm 20\%$, 35V
C286	1	1	EV2240351	Electroly, $0.22\mu F$ $\pm 20\%$, 35V
C287	1	1	EA1050509	Electroly, $1\mu F$, 50V
C288	1	1	EA1050509	Electroly, $1\mu F$, 50V
C289	1	1	EA2270359	Electroly, $220\mu F$, 35V
C290	1	1	EA1060169	Electroly, $10\mu F$, 16V
C291	1	1	DK1840301	Ceramic, $0.04\mu F$ $+100\%$, -0%
C292	1	1	EA1060169	Electroly, $10\mu F$, 16V
C293	1	1	EV1040251	Electroly, $0.1\mu F$, 25V
C294	1	1	EA1060169	Electroly, $10\mu F$, 16V
C295	1	1	DK1710301	Ceramic, $0.01\mu F$ $\pm 20\%$
C296	1	1	DK1840301	Ceramic, $0.04\mu F$ $+100\%$, -0%

REF. DESIG.	U	E	PART NO.	DESCRIPTION
C297	1	1	DK1840301	Ceramic, $0.04\mu F$ $+100\%$, -0%
C298	1	1	DK1840301	Ceramic, $0.04\mu F$ $+100\%$, -0%
C299	1	1	DD1620001	Ceramic, 20PF $\pm 10\%$
P200-MISCELLANEOUS				
F201	1	1	FF1107052	Ceramic Filter, CFS 10.7M
F202	1	1	FF1107052	Ceramic Filter, CFS 10.7M
F203	1	1	FF1107052	Ceramic Filter, CFS 10.7M
L201	1	1	LI1401623	IFT, FM
L202	1	1	LI1015602	IFT, FM
L203	1	1	LA1001017	Coil, AM RF
L204	1	1	LO1001042	Coil, AM OSC
L205	1	1	LI1028002	IFT, AM
L206	1	1	LI1001048	IFT, AM
L207	1	1	LS1029004	MPX Coil, 56mH
L208	1	1	LS1029004	MPX Coil, 56mH
L209	1	1	LS1029005	MPX Coil, 43mH
L210	1	1	LS1029005	MPX Coil, 43mH
L205	1	1	LI1028003	IFT, AM
1211	1	1	290810903	Shield
1212	1	1	290810902	Shield
J201	1	1	YP1000113	Plug
J235	1	1		
GENERAL MISCELLANEOUS				
L007	1	1	LC1332002	Choke Coil
L008	1	1	LC1332002	Choke Coil
POWER SUPPLY CIRCUIT BOARD -P400				
P400	1	1	YD2908003	P. W. Board, Power Supply (Print Only)
	1	1	ZZ2908003	P. W. Board Assembly
P400-RESISTORS				
R401	1	1	GS1010105	100Ω $\pm 10\%$, 5W
R402	1	1	RC1033212	$3.3K\Omega$ $\pm 10\%$, $\frac{1}{2}W$
R403	1	1	RC1012012	12Ω $\pm 10\%$, $\frac{1}{2}W$
R404	1	1	RC1018112	180Ω $\pm 10\%$, $\frac{1}{2}W$
R405	1	1	RC1015112	150Ω $\pm 10\%$, $\frac{1}{2}W$
R406	1	1	RC1015312	$15K\Omega$ $\pm 10\%$, $\frac{1}{2}W$
R407	1	1	RC1010312	$10K\Omega$ $\pm 10\%$, $\frac{1}{2}W$
R408	1	1	RC1010112	100Ω $\pm 10\%$, $\frac{1}{2}W$
R409	1	1	RC1012012	12Ω $\pm 10\%$, $\frac{1}{2}W$
R410	1	1	RC1047112	470Ω $\pm 10\%$, $\frac{1}{2}W$
R412	1	1	RC1010112	100Ω $\pm 10\%$, $\frac{1}{2}W$
R411	1	1	RC1033012	33Ω $\pm 10\%$, $\frac{1}{2}W$
P400-CAPACITORS				
C401	1	1	DK1810351	Ceramic, $0.01\mu F$ $+100\%$, -0% , 50V
C402	1	1	DK1810351	Ceramic, $0.01\mu F$ $+100\%$, -0% , 50V
C403	1	1	EA3370509	Electroly, $330\mu F$, 50V
C404	1	1	EA3370509	Electroly, $330\mu F$, 50V
C405	1	1	EA1070259	Electroly, $100\mu F$, 25V
C406	1	1	EA1070259	Electroly, $100\mu F$, 25V
C407	1	1	EA1070109	Electroly, $100\mu F$, 10V
C408	1	1	DK1840301	Ceramic, $0.04\mu F$ $+100\%$, -0%
C409	1	1	EA1070359	Electroly, $100\mu F$, 35V
C410	1	1	EA1070359	Electroly, $100\mu F$, 35V
C411	1	1	EA1070169	Electroly, $100\mu F$, 16V

REF. DESIG.	U	E	PART NO.	DESCRIPTION	REF. DESIG.	U	E	PART NO.	DESCRIPTION
C412	1	1	DK1840301	Cramic, 0.04 μ F +100%, -0%	PY01	1	1	YD2908006	P. W. Board, Function Lamp (Print Only)
						1	1	ZZ2908006	P. W. Board Assembly
H401	1	1	HT403154A	Transistor, 2SD315 (C,D,E,F)					PY01-MISCELLANEOUS
H402	1	1	HT313842C	Transistor, 2SC1384 R or S	MY01				
H403	1	1	HD2000501	Diode, W 06B		1	1	IN1006301	Lamp
H404	1	1	HD2000501	Diode, W 06B	MY04				
H405	1	1	HD3003209	Diode, CZ-142	MY05	1	1	IN1012011	Lamp
H406	1	1	HD3003609	Diode, WZ065					
H407	1	1	HD3002709	Diode, WZ-140	JY01				
						1	1	YP1000113	Plug
					JY06				
J401									GENERAL MISCELLANEOUS
J408	1	1	YP1000113	Plug	0726	1	1	290805150	Guide K
					0910	1	1	290826251	Pulley K
1111	1	1	273026702	Heat Sink, Power Transistor	0914	1	1	51100306A	B. H. M. Screw B 3 x 6
1112	2	2	53110303E	Hexagon Nut					
					M001	1	1	IM1104208	DC Meter, FM/AM
				GENERAL MISCELLANEOUS					
0603	1	1	290816050	Bracket K	0630	1	1	288610701	Sheet
0621	1	1	285427401	Reflector	0622	1	1	285427101	Holder
0625	1	1	51480306A	B. H. M. Screw F	0624	1	1	51570306B	P. H. Tapt Screw P 3 x 6 ST
0627	2	2	51570306B	P. H. Tapt Screw P 3 x 6 ST					
0628	2	2	54050300R	T. L. Washer OR	M002	1	1	IN1008007	Lamp
0708	1	1	287105302	Cover	J008	1	1	YJ0800019	Socket
0713	1	1	290820101	Partitioner					
0714	2	2	51570306B	P. H. Tapt Screw P 3 x 6 ST	0616	1	1	121000501	Clamper
0726	1	1	290805150	Guide K	0403	1	1	290816001	Bracket
0729	4	4	51042606A	F. H. M. Screw F 2.6 x 6	0409	1	1	289611801	Spacer
					0410	2	2	51100308S	B. H. M. Screw B 3 x 8
0730	2	2	53112603A	Hexagon Nut	0411	2	2	53110303A	Hexagon Nut
0903	1	1	290826250	Pulley K	0413	1	1	145525903	Bush
0907	2	2	51100306A	B. H. M. Screw B 3 x 6	0414	1	1	284906702	Cap
0917	2	2	127126201	Pulley	0419	2	2	51060316A	P. H. M. Screw P 3 x 16
0918	2	2	263711203	Shaft	0420	2	2	53110303A	Hexagon Nut
0610	1	1	290827401	Reflector	0426	2	2	51100306S	B. H. M. Screw B 3 x 6
0612	1	1	290827101	Holder					
0614	2	2	51100308S	B. H. M. Screw B 3 x 8	0427	2	2	53110303A	Hexagon Nut
0615	2	2	53110303A	Hexagon Nut	0429	2	2	51100306S	B. H. M. Screw B 3 x 6
0617	2	2	51570306B	P. H. Tapt Screw P 3x6 ST	0430	2	2	53110303A	Hexagon Nut
					0432	2	2	51100306S	B. H. M. Screw B 3 x 6
0618	2	2	51480306A	B. H. M. Screw F	0433	2	2	53110303A	Hexagon Nut
					0516	3	3	51100306S	B. H. M. Screw B 3 x 6
					0519	1	1	145525903	Bush
				DIAL LAMP BOARD-PZ01	G001	1	1	BF1040002	Printed Compo.
PZ01	1	1	YD2908007	P.W. Board, Dial Lamp (Print Only)	L002	1	1	LB3007526	Balun Coil
	1	1	ZZ2908007	P. W. Board Assembly	L006	1	1	LC1154004	Choke Coil, 150 μ H
				PZ01-MISCELLANEOUS	F001	1	1	FS1005009	Fuse, 0.5A 250V (UL)
MZ01					J001	1	1	YT0304009	Terminal, Ant.
					J003	1	1	YT0201009	Terminal, Quadradial Output
MZ04	1	1	IN1008007	Lamp, Dial Illumination	J004	1	1	YT0202011	Terminal, Output
					J006	1	1	YJ0800012	Socket, Fuse Holder
JZ01					J007	1	1	YJ0400048	Socket, AC Outlet
JZ04	1	1	YP1000113	Plug	J013	1	1	YL0102003	Terminal, 2P
JZ05					W001	1	1	YC0240010	AC Cord
JZ12	1	1	YJ0800017	Socket	W001	1	1	YC0190003	AC Cord
					C002	1	1	DF1756351	Film Cap., 0.056 μ F $\pm$ 20%
					L001	1	1	LF1120038	Ant. Coil, AM
				FUNCTION LAMP BOARD-PY01					
					0503	1	1	257816052	Bracket K
					0508	1	1	281927103	Holder, Ant.
					0509	2	2	51100310S	B. H. M. Screw B 3 x 10
					0510	2	2	53110303E	Hexagon Nut
					0512	2	2	51100308S	B. H. M. Screw B 3 x 8
					0513	2	2	53110303E	Hexagon Nut

REF. DESIG.	U	E	PART NO.	DESCRIPTION
0425	1	1	138200503	Clamper
1226	1	1	62030039W	Lug
R001	1		GT0522512	Resistor, 2.2M Ω $\pm$ 5%, $\frac{1}{2}$ W
0703	1	1	290830201	Dial
0707	1	1	282705302	Cover
0812	1	1	290810401	Retainer
0813	1	1	290810601	Bearing
0815	2	2	51040306E	F. H. M. Screw F 3 x 6
0827	1	1	51064019A	Screw
1116	1	1	290812002	Insulator
1117	5		54060300R	T. L. Washer IR
1118	4		51570312B	P. H. Tapt Screw P 3 x 12
W004	1		YB0007001	Wire Material
W005	1		YB0007001	Wire Material
W006	1		YB0027001	Wire Material
J009	1		YL0106004	Terminal
1121	1		285216006	Bracket
1123	3		51062606A	P. H. M. Screw P 2.6 x 6
J010	1		YJ0800009	Socket, Fuse Holder
J011	1		YJ0800009	Socket, Fuse Holder
J012	1		YJ0800009	Socket, Fuse Holder
1127	1	1	138200503	Clamper
1325	1	1	138200503	Clamper
4236	1	1	287100501	Clamper
J002	1	1	YL0104001	Termianl, Ant.
C001	1	1	DK1840301	Ceramic Cap., 0.04 μ F, +100%, -0%
L004	1	1	LC1332002	Choke Coil, 3.3 μ H
L005	1	1	LC1332002	Choke Coil, 3.3 μ H
SELECTOR SWITCH CIRCUIT BOARD				
—PS01				
PS01	1	1	YD2908004	P. W. Board, Selector Switch (Print Only)
	1		ZZ2908004	P. W. Board Assembly
	1		ZZ2908804	P. W. Board Assembly
PS01—RESISTORS				
RS01	1	1	RC1002212	2.2 Ω $\pm$ 10%, $\frac{1}{2}$ W
RS02	1	1	RT0515214	1.5K Ω $\pm$ 5%, $\frac{1}{2}$ W
RS03	1	1	RA0104018	Trimming, 100K Ω (B)
RS04	1	1	RA0104018	Trimming, 100K Ω (B)
PS01—CAPACITORS				
CS01	1		DF1522205	Film, 2200PF $\pm$ 5%, 50V
CS02	1		DF1522205	Film, 2200PF $\pm$ 5%, 50V
CS03	1	1	EM4740251	Electroly, 0.47 μ F, 25V
CS01	1		DF1510205	Film, 1000PF $\pm$ 5%
CS02	1		DF1510205	Film, 1000PF $\pm$ 5%
PS01—MISCELLANEOUS				
SS01	1	1	SP0603008	Pushswitch
JS01	1	1	YP1000113	Plug
JS20	1	1		

REF. DESIG.	U	E	PART NO.	DESCRIPTION
MODE SWITCH CIRCUIT BOARD-PT01				
PT01	1	1	YD2908005	P. W. Board, Mode Switch (Print Only)
	1	1	ZZ2908005	P. W. Board Assembly
PT01—MISCELLANEOUS				
RT01	1	1	RT0556414	Resistor, 560K Ω $\pm$ 5%, $\frac{1}{2}$ W
RT02	1	1	RT0539414	Resistor, 390K Ω $\pm$ 5%, $\frac{1}{2}$ W
RT03	1	1	RT0524314	Resistor, 24K Ω $\pm$ 5%, $\frac{1}{2}$ W
RT04	1	1	RT0510414	Resistor, 100K Ω $\pm$ 5%, $\frac{1}{2}$ W
CT01	1	1	EA4760109	Electroly Cap., 47 μ F 10V
HT01	1	1	HT3037204	Transistor, 2SC372 (Y)
ST01	1	1	SP0202014	Pushswitch
JT01	1	1		
JT08	1	1	YP1000113	Plug
GENERAL MISCELLANEOUS				
S001	1	1	SP0301003	Pushswitch
0203	4	4	293205701	Lug
0204	4	4	51490410S	B. H. M. Screw F.S.
0332	2		951061111	Label, Fuse (0.3A)
0333	1		951061103	Label, Fuse (3A)
0335	1	1	290886101	Label, Marantz
0531	6	6	51100306S	B. H. M. Screw B 3 x 6
0831	1	1	290810602	Bearing
0832	2	2	51040306E	F. H. M. Screw F 3 x 6
1003	1	1	290810550	Chassis K
1013	2	2	290810101	Support
1014	2	2	54040402N	Spring Washer
1018	2	2	51100306A	B. H. M. Screw B 3 x 6
1019	2	2	51100306A	B. H. M. Screw B 3 x 6
1020	2	2	51100306A	B. H. M. Screw B 3 x 6
1023	4	4	51570308B	P. H. Tapt Screw P 3 x 6 ST
1026	2	2	289610401	Retainer
1027	2	2	51570410B	P. H. Tapt Screw P 4 x 10 ST
1028	1	1	290812001	Insulator
1029	2	2	54040402N	Spring Washer
1103	4	4	51570306S	P. H. Tapt Screw P 3 x 6 ST
1104	2	2	51060306S	P. H. M. Screw P 3 x 6
1105	1	1	288116003	Bracket
1109	4	4	51100306S	P. H. M. Screw P 3 x 6
1122	2	2	51570306B	P. H. Tapt Screw P 3 x 6 ST
1126	4	4	288600506	Clamper
1128	1	1	288600504	Clamper
1129	1	1	51570306B	P. H. Tapt Screw P 3 x 6 ST
1131	4	4	288600506	Clamper
1132	1	1	288600504	Clamper
1135	1	1	288600506	Clamper
1203	2	2	51100304A	B. H. M. Screw B 3 x 4
1204	4	4	51570306B	P. H. Tapt Screw P 3 x 6 ST
1216	1	1	138200503	Clamper
1217	1	1	53110303A	Hexagon Nut
1218	1	1	54050300R	T. L. Washer OR
1221	1	1	138200503	Clamper
1222	1	1	51570306B	P. H. Tapt Screw P 3 x 6 ST
1223	1	1	54050300R	T. L. Washer OR
1227	1	1	51570306B	P. H. Tapt Screw P 3 x 6 ST
1231	1	1	51570306B	P. H. Tapt Screw P 3 x 6 ST
1232	1	1	54050300R	T. L. Washer OR
1332	2	2	121000501	Clamper
1333	2	2	51570306B	P. H. Tapt Screw P 3 x 6 ST
1334	2	2	54050300R	T. L. Washer OR

REF. DESIG.	U	E	PART NO.	DESCRIPTION	REF. DESIG.	U	E	PART NO.	DESCRIPTION
A001	1	1	AV0120202	FM Front End Assembly	L003	1	1	TS1601502	Power Transf.
P100	1	1	YD2908001	FM FRONT END CIRCUIT BOARD— P100	0111	4	4	52017039J	Bolt
	1	1	ZZ2908001	P. W. Board, FM Front End (Print Only)	0116	6	6	281815401	Knob
				P. W. Board Assembly	0124	4	4	51480406S	B. H. M. Screw F
				P100—RESISTORS	0131	1	1	282825702	Lid
				All resistors are $\pm 5\%$ and $\frac{1}{4}W$.	0133	8	8	51100406S	B. H. M. Screw B 4 x 6
R101	1	1	RT0510414	100K Ω	0303	1	1	290826501	Indicator, Name Plate
R102	1	1	RT0510514	1M Ω	0305	1	1	290826503	Indicator, Name Plate
R103	1	1	RT0510114	100 Ω	0312	2	2	51100305S	B. H. M. Screw B 3 x 5
R104	1	1	RT0510114	100 Ω	0316	1	1	257886101	Label, UL Caution
R105	1	1	RT0510314	10K Ω	0317	1	1	257886102	Label, Do Not Remove...
R106	1	1	RT0533214	3.3K Ω	0318	1	1	257886103	Label, See, Marking
R107	1	1	RT0522214	2.2K Ω	0320	1	1	250626506	Indicator, Do Not Use
R108	1	1	RT0510314	10K Ω	0323	1	1	951110103	Label, UL
R109	1	1	RT0510114	100 Ω	0324	1	1	951091102	Label, UL Factory Co. No.
R110	1	1	RT0510314	10K Ω	0710	1	1	287311802	Spacer
R111	1	1	RT0510314	10K Ω	0717	1	1	290826901	Protector
R112	1	1	RT0522214	2.2K Ω	0718	2	2	51570306B	P. H. Tapt Screw P 3 x 6 ST
R113	1	1	RT0510114	100 Ω	0732	1	1	290805102	Guide
				P100—CAPACITORS	0733	2	2	51102605E	B. H. M. Screw B 2.6 x 5
C101	1	1	CT1120003	Trimming, 12PF	0819	1	1	290826201	Pulley
C102	1	1	CT1120003	Trimming, 12PF	0821	2	2	59058002G	Washer
C103	1	1	CT1120003	Trimming, 12PF	0823	1	1	53110303E	Hexagon Nut
C104	1	1	CT1120003	Trimming, 12PF	0824	1	1	54040302N	Spring Washer
C108	1	1	CA4330001	Variable, AM3G, FM4G	0828	2	2	51470306A	B. H. M. Screw S
C109	1	1	DD1620001	Ceramic, 20PF $\pm 10\%$	1208	1	1	290810901	Shield
C110	1	1	DK1710201	Ceramic, 1000PF $\pm 20\%$	1209	5	5	51570306S	P. H. Tapt Screw P 3 x 6 ST
C111	1	1	DK1710301	Ceramic, 0.01 μ F $\pm 20\%$	1320	1	1	56382540G	Eyelet
C112	1	1	DK1710301	Ceramic, 0.01 μ F $\pm 20\%$	1323	1	1	290825901	Bush
C113	1	1	DD1522001	Ceramic, 22PF $\pm 5\%$	1523	4	4	952281501	Serial No. Card
C114	1	1	DD1620001	Ceramic, 20PF $\pm 10\%$	1525	4	4	952301511	Serial No. Card
C115	1	1	DD1205001	Ceramic, 5PF $\pm 0.5PF$	F001	1	1	FS1005007	Fuse, 0.5A
C116	1	1	DD1518001	Ceramic, 18PF $\pm 5\%$ SL	F001	1	1	FS1030004	Fuse, 3A
C117	1	1	DK1710201	Ceramic, 1000PF $\pm 20\%$	F002	1	1	FS1005003	Fuse, 0.5A
C118	1	1	DK1710301	Ceramic, 0.01 μ F $\pm 20\%$	F003	1	1	FS1005003	Fuse, 0.5A
C119	1	1	DD1650001	Ceramic, 50PF $\pm 10\%$	1403	1	1	290885101	Instructions, Set
C120	1	1	DK1710301	Ceramic, 0.01 μ F $\pm 20\%$	1404	1	1	290885121	Instructions, Set
C121	1	1	DD1001003	Ceramic, 1PF $\pm 0.25PF$ CH	1409	1	1	290885601	Schematic Diagram
C122	1	1	DD1615009	Ceramic, 15PF (RH)	1411	1	1	290885603	Schematic Diagram
C123	1	1	DD1610004	Ceramic, 10PF (RH)	1416	1	1	288585107	Instructions, Set Mounting
C124	1	1	DD1207005	Ceramic, 7PF $\pm 1PF$ (RH)	1417	1	1	288785108	Instructions, Accessories
C125	1	1	DD1615009	Ceramic, 15PF (RH)	1418	1	1	281885104	Instructions, Partitioner
C126	1	1	DD1610004	Ceramic, 10PF (RH)	1423	1	1	257785401	Guarantee Card
C127	1	1	DK1710301	Ceramic, 0.01 μ F $\pm 20\%$	1424	1	1	257785102	Instructions, Red Tag
C128	1	1	DK1710301	Ceramic, 0.01 μ F $\pm 20\%$	1425	1	1	257781301	Envelope
				P100—MISCELLANEOUS	1431	1	1	281881301	Envelope
L104	1	1	LO1027901	OSC Coil, FM	1503	1	1	290880101	Packing Case Inner
L105	1	1	LI1001901	IFT, FM	1504	1	1	290880111	Packing Case, Outer
H101	1	1	HF200551D	FET, 2SK55 (D)	1509	2	2	289180301	Partitioner
H102	1	1	HT305351B	Transistor, 2SC535 (B)	1512	1	1	901383033	Polyethylen Bag, Set
H103	1	1	HT304611B	Transistor, 2SC461 (B)	1514	1	1	901302501	Polyethylen Bag, Printed Matter
J101	1	1	YP1000114	Plug	1515	1	1	901302501	Polyethylen Bag, Accessories
J106	1	1			1517	1	1	102980401	Sleeve
				GENERAL MISCELLANEOUS	1518	1	1	956000004	Hang Tag
L003	1	1	TS1601501	Power Transf.	1519	1	1	281905601	Buffer
					1520	2	2	273182101	Silicagel
					1531	1	1	ZA0200007	Ext. Antenna, FM
					1532	1	1	ED0120006	Connective Cord

8. TECHNICAL SPECIFICATIONS

FM SECTION

Tuning Frequency Range	88 — 108MHz
IHFM Usable Sensitivity	2.0 μ V
IHF Selectivity	60dB
Capture Ratio	1.5dB
Image Rejection Ratio at 106MHz	70dB
Signal to Noise Ratio (Mono)	70dB
Signal to Noise Ratio (Stereo)	60dB
Total Harmonic Distortion (Mono)	0.15%
Total Harmonic Distortion (Stereo)	0.3%
Frequency Response (ref. 50 μ sec. de-emphasis)	$\pm$ 1dB, 50Hz — 15KHz $\pm$ 1dB
Stereo Separation at 1KHz	42dB

AM SECTION

Tuning Frequency Range	535 — 1605KHz
Usable Sensitivity	20 μ V
Selectivity	26dB
Image Rejection Ratio	70dB
Signal to Noise Ratio	50dB
Frequency Response (—3dB down)	50Hz — 2.5KHz
Total Harmonic Distortion	1%

GENERAL

Power Requirements	220 Volts $\sim$ 50/60Hz (This unit can be converted by a qualified technician to operate on 110/120/240 V $\sim$ 50/60Hz)
Power Consumption	20 Watts
Dimensions — Panel Width	14-11/64 inches
— Panel Height	4-23/32 inches
— Depth	11-1/32 inches
Weight — Unit alone	14.1 lbs.
— Packed for Shipment	21.6 lbs.

* These specifications and exterior designs may be changed for improvement without advance notice.

marantz

NOTE

SERVICE INFORMATION FOR EUROPEAN MODEL

The information contained here in included the rear panel and main chassis component locations, schematic diagram, voltage conversion and FTZ regulation.

For the circuit description, alignment method and repairing hints, refer to the original service manual.

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Main Chassis Component Locations (Bottom View)	26
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FTZ Regulation	29

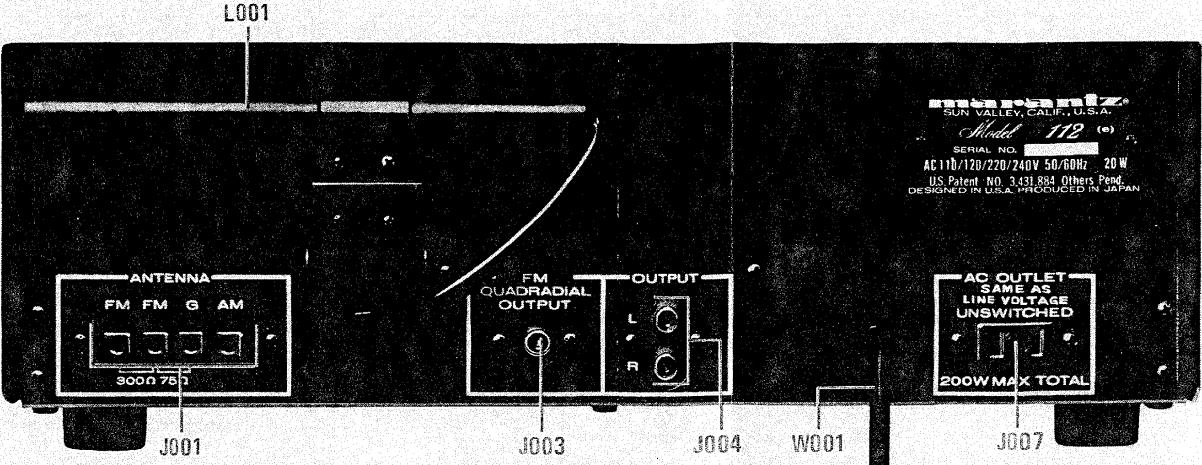


Figure 16. Rear Panel Adjustment and Component Locations

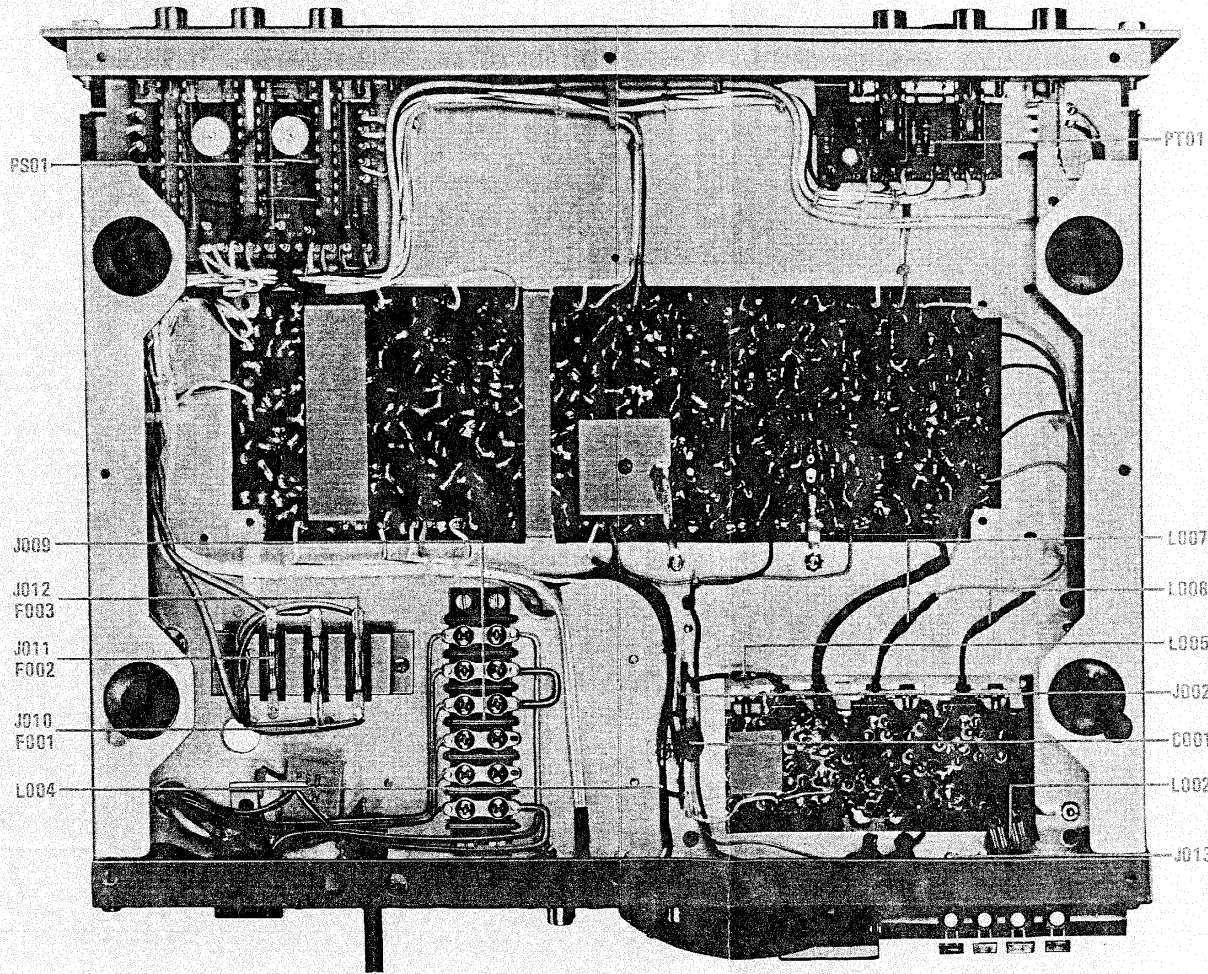
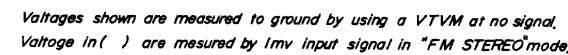


Figure 17. Main Chassis Component Locations (Bottom View)



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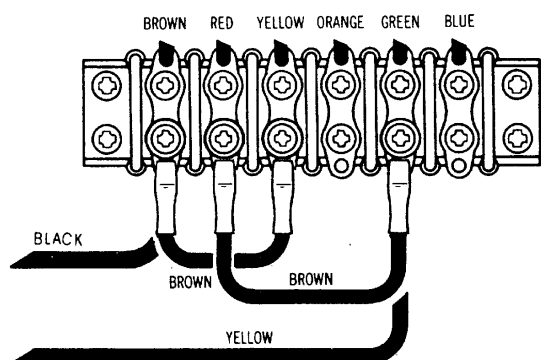
VOLTAGE CONVERSION

This model is equipped with a universal power transformer to permit operation at 110, 120, 220 and 240 V AC 50 to 60 Hz.

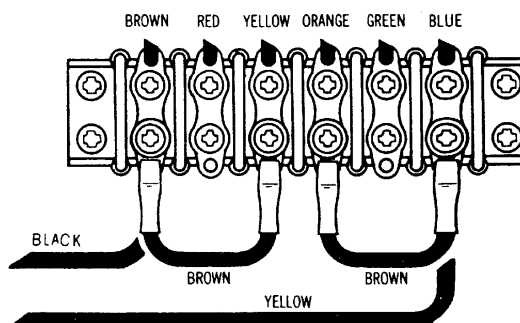
To convert the unit to the required voltage perform the following steps:

- (1) Remove the lid (top).
- (2) Change the jumper wires as illustrated below for the required AC voltage.

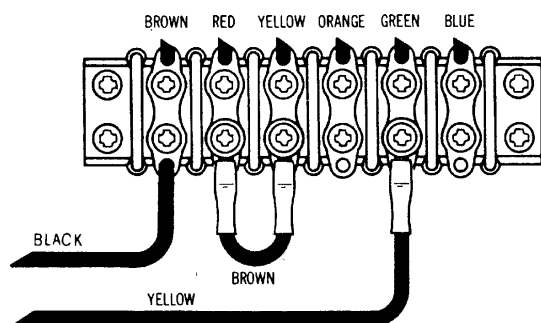
CAUTION: DISCONNECT POWER SUPPLY CORD FROM AC OUTLET BEFORE CONVERTING VOLTAGE.



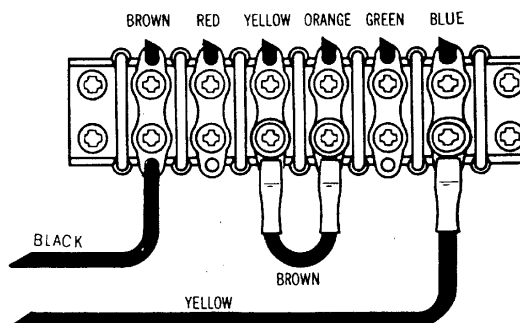
For 110V Operation



For 120V Operation



For 220V Operation



For 240V Operation

Figure 19. Voltage Conversion Chart

FTZ REGULATION

Instruction for the use in the range other than specified in FTZ codes

Achtung für die Leute, die in dem Gebiet wohnen, wo die FTZ-Bestimmungen vorherrschend sind.

Sollte das Gerät auch für Frequenzen ausserhalb des in den FTZ-Bestimmungen angegebenen Bereiches empfangsbereit sein, bitten wir, den Bereich durch Nachstellen des Kernes in der Oszillatorschule (in der Abbildung mit "FTZ" gekennzeichnet) so zu korrigieren, dass er den Bestimmungen entspricht.