SERVICE MANUAL 125

marantz

model 125

Am/Fm Stereophonic Tuner

marantz

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LIST OF ILLUSTRATIONS

INTRODUCTION

This service manual was prepared for use by Authorized Warranty Stations and contains service information for the Marantz Model 125 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 tuner operation.

The parts list contains complete parts replacement information. Most replacement parts should be ordered from the Marantz Company. However, a simple description is included for parts which can be obtained locally.

The Marants Model 125 is a high quality tuner employing some of the latest advances in tuner technology: Dual Gate FET RF amplifier and mixer, phase linear IF filters, phase locked loop multiplexing, and 3 levels of muting based on signal strength., noise level and tuning. All muting functions are performed by a muting IC which replaces the discrete components employed in other Marantz tuners and receivers. A complete description of the muting circuit will be found on pages 8 and 9.

2. AM TUNER

The AM TUNER portion of the Model 125 is composed on one IC circuit containing an RF amplifier, local oscillator, mixer, IF amplifier, detector and three transistors. Transistor H154 is a field strength indication amplifier., while transistors H152 and H153 amplify the detected audio signals.

All components except the tuning capacitor and ferrite bar antenna are mounted on the P150 circuit board, see fig. 9.

The AM signals induced in a ferrite bar antenna are applied to the input of the RF amplifier pin 12 of H151; then amplified to overcome conversion noises. This results in a good S/N ratio at the output. The tuned circuits located in both the input and output circuits of the RF amplifier assure very high image rejection and spurious signal rejection characteristics.

The amplified and selected AM signal is then applied to pin 1 of the mixer section contained in the IC. Local oscillator voltage is injected into the other input of the mixer section at pin 16. The AM signal and oscillator voltage are mixed and converted into a 455 KHz intermediate frequency which is applied to the IF transformer, L153. It consists of one ceramic filter and two tuned circuits.

The output of L153 is directed to the IF amplifier input, pin 9, through coupling capacitor C162. Here it is amplified sufficiently to drive the detector stage within the IC. The detected audio signal derived from pin 7 is filtered, then amplified by H153. The final audio output passes from the collector of H153 to the output jacks through the function switch, OUTPUT LEVEL control, R002 and output amplifiers H401 and H402.

The DC component of the detected IF signal is used as an AGC voltage to control emitter current of the RF amplifier through the AGC amplifier contained in the IC. Part of this DC component is applied to the base of the signal strength indication amplifier, H154. Output from the collector of H154 is level adjusted by R178, then applied to the signal strength meter, M002.

2.1 AM TUNER TROUBLESHOOTING

First, check for a broken AM bar antenna; then try to tune in a station while observing whether the AM signal strength meter deflects or not. If the signal strength meter indicated signal at several frequencies, it is probable no failure exists in the stages ahead of the detector circuit. To test the detector circuit, connect an oscilloscope to test point B or J161 and check for audio signal 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 to 3 volts, depending on tuning capacitor position. Because of its extremely high frequency, oscillating voltage must be measured with an FR VTVM. An ordinary AC VTVM will not provide an accurate measurement. If local oscillator voltage is normal, check for proper DC voltages in the AM circuit with a DC VTVM. Compare the measured values with those given in the schematic diagram.

2.2 AM ALIGNMENT PROCEDURE

2.21 AM IF Alignment

1. Connect a sweep generator to J153 and an alignment scope to the test point B.
2. Rotate each core of IF transformer L153 for maximum height and symmetrical response.

2.22 AM Frequency Range and Tracking Alignment

1. Set AM signal generator to 515 KHz. Turn the tuning capacitor fully closed (place the tuning pointer at the low end.) and adjust the oscillator coil L152 for maximum audio output.
2. Set the signal generator to 1650 KHz. Place the tuning pointer at the high frequency end and adjust the oscillator trimmer on the oscillator tuning capacitor for maximum audio output.
3. Repeat the step 1 and 2 until no further adjustment is necessary.
4. Set the receiver to a vacant spot around 600 KHz and tune the generator to the same frequency. Adjust the slug core of the AM ferrite rod antenna and RF coil L151 for maximum output, using the lowest workable output from the generator.
5. Set the generator to 1400 KHz and tune the receiver to the same frequency and adjust both trimming capacitors of Antenna and RF tuned circuit for maximum output.
6. Repeat the step 4 and 5 until no further adjustment is necessary.

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

3. FM TUNER

The FM tuner section of the Model 125 is divided into four functional blocks: the FM Front End, the IF Amplifier and Detector, the Muting Control and the MPX Stereo Decoding Circuit.

FM signal from the antenna (see fig.19) is directed to antenna coil L101 through attenuator switch SU01 and balun coil LU01. Then the signal is amplified by H101, a dual gate MOSFET amplifier, filtered through the triple tuned Butterworth tuned tank circuits and applied to H102,a dual-gate MOSFET mixer. Here, the FM signal is mixed with a 700mV local oscillator output from H103 to develop a 10.7MHz intermediate frequency. This output is directed through shielded cable to the IF stages on circuit board P200.

The IF board contains 9 IF amplifiers, 5 limiters, one AGC amplifier, and 4 phase linear block filters. The limiters assure excellent capture ratio and good AM supression. The phase linear filters are employed to obtain high performance of the stereo multiplex characteristics.

Part of the IF output from the Front End is applied to AGC amplifier H201. H201's output is rectified by diodes H212 and H213 then, fed back to the second gate of the MOSFET amplifier H101.

Depending on the amount of negative feedback from the AGC amplifier, voltage at the second gate of H101 will vary from +3.0VDC (no signal) to -0.5 VDC (when there is a strong 100kμV FM input).

The amplified IF frequencies are directed to the detector input. Here, the audio frequencies are detected and applied to buffer amplifier H211 impedance matching to later stages. Output from H211 splits into 3 paths: Path (a) goes to the Phase Locked Loop multiplex Decoder, IC H301; path (b) goes to noise amplifier H304 through capacitor C335 and resistor R328; and path (c) goes to the Quadradial Jack on the rear panel through resistor R347.

3.1 MULTIPLEX STEREO DECODING CIRCUIT (PW BOARD P300).

The stereo composite signal from the buffer amplifier is directed through an RC network consisting of R302 and C301 (R302 is one of the separation adjustment potentiometer).Then the stereo composite signal is applied to the input terminal (pin 2) on the MPX IC (H301), for separation into the two stereo channels.

Pin 4 of the multiplex IC is the left channel output; pin 5 is the right channel output. The decoded left and right channel audio signals are directed through low pass filters composed of L301 ~ L304; C308 ~ C317. Here, undesirable residual switching signals are eliminated. Next, the signal passes through a de-emphasis network (R312, R313, C318 and C319) to the audio signal amplifiers contained in the muting system IC H302 (pins 10, 11). The signals are amplified; then pass to J316 and J317, the multiplex board outputs. From these jacks, the audio is routed through the function switch and OUTPUT LEVEL control R002 to output amplifiers H401 and H402, where the signals are amplified and directed to the output terminals. Figure 2 is a block diagram of the Phase Locked Loop IC, H301. The input stereo composite signal input is amplified by the audio amplifier, then delivered to phase detectors PD-1 and PD-2. Part of the stereo composite signal is also applied to the stereo decoder section.

The VCO (Voltage Control Oscillator) produces a free running 76KHz square wave. Its time constant is determined by capacitor C303 and resistors R304 and R305, which are connected externally to pin 14. The 76KHz VCO output is reduced to 19KHz by the two frequency dividers, DIV-1 and DIV-2. Then this internally produced 19KHz frequency is directed back to phase detector PD-1.

This is the "loop" in phase locked loop. The PLL chip is designed so that the free running 76KHz VCO output will lock in phase with the incoming 19KHz pilot only when the 19KHz from the 2nd divider and the stereo pilot are 90° out of phase. Any other phase relationship results in a DC error voltage which is extracted by low pass filter LP-1 and applied to the control terminal of the VCO. The error voltage forces the VCO to lock phase with the incoming pilot signal.

With phase locked, the 1st frequency divider (DIV-1) will produce a properly phased 38KHz switching frequency for stereo decoding.

Phase detector PD-2, low pass filter LPF-2 and a Schmitt trigger close the stereo switch and activate the stereo beacon when phase is locked. PD-2 differs from PD-1 in this important respect: when 19KHz pilot is present, and when phase is locked, it must produce maximum positive DC voltage, rather than zero volts DC to activate the trigger. The 19KHz frequency from the 2nd divider can't be used because it is 90 degrees out of phase with respect to the incoming pilot signal during the phase lock condition. Therefore, a 3rd divider (DIV-3) is employed to develop an in-phase 19KHz signal from the 38KHz output of DIV-2.

19KHz from this 3rd divider is mixed with stereo pilot at PD-2. A low pass filter extracts the DC component which is of sufficient amplitude to activate the trigger when phase is locked. The trigger turns on the stereo beacon and closes the stereo switch. Now 38KHz can be applied to the audio signal composite for separation into the left and right stereo channels.

Switching from stereo to mono is performed by turning on transistor H306. It grounds the stereo switch (Pin 8) whenever FM signal drops below the level determined by the muting control setting. H306 is also turned on by depressing the MONO switch.

Transistor H303 controls the 76KHz VCO in the IC(Pin 14). When the FUNCTION switch is set to AM, H303 turns on, grounding out the 76KHz VCO frequency to prevent it from interfering with AM reception.

3.2 AUDIO MUTING AND STEREO MODE AUTO-SELECTION CIRCUITS

The muting circuit used for Model 125 consists of a muting system IC, noise amplifier transistor H304, Invertor transistor H305 and a gating circuit composed of transistors H308 and H309.

Three inputs control the muting function. The first is related to signal strength, the second to the noise condition at the detector and the third is derived from the DC component of the detector output. These inputs are properly matrixed and gated to provide muting free from noise and transients.

The first input is DC voltage obtained by rectifying part of the IF signal output. It is fed to pin 6 of muting IC H302 through the gating circuit (H308 and H309). Pin 6 is connected internally to the base of the muting driver transistor Q19 through the IC's "Schmitt trigger and AND" circuit.

The collector of transistor Q19 is connected to pin 5 and pin 2 of IC H302 through the Muting Level Control Switch (S002), R319 and R316. Pin 2 is connected to muting switch transistors Q23 (for L channel) and Q22 (for R channel) in the IC. The collectors of the muting switch transistors are connected to pin 1 and pin 3 respectively. These pins are connected to left and right channel ouputs of MPX stereo decoding IC(H301) through the low pass filters. The output from the MPX stereo decoding IC (H301) is also directed to input pins 10 (L channel) and 11 (R channel) of the muting system IC. These pins are connected to the IC's built-in audio signal amplifiers, where the signal is amplified 20 dB. Pin 13 and pin 14 are the left and right channel signal outputs on muting IC H302.

Normally, the IF signal output is above the muting threshold level set by the Muting Level Control Switch, S002. The DC voltage that is obtained by rectifying this IF signal sample is directed through the trigger voltage rectifying circuit (H308, H309) to pin 6, turning on transistor Q19 in the IC. When Q19 is turned On, its collector potential drops, turning off muting switch transistors Q22 and Q23. Therefore, the output of the MPX stereo decoding IC is not grounded out, but instead passes through the low pass filter and the de-emphasis circuit to pins 10 and 11 of the muting sytem IC. The signal is amplified by the audio signal amplifiers and directed to pins 14 and 13, the audio outputs.

If IF signal output drops below the muting threshold, transistor Q19 shuts OFF. Its collector voltage (voltage of pin 5) rises to the B+ voltage level (12 VDC), turning on Q22 and Q23. These transistors ground the audio output of the MPX stereo decoding IC (H301).

The second muting input-high frequency noise is derived from the output of the detector. It protects the muting circuit and MPX stereo beacon lamps from misoperation due to undesirable noises. Any high frequency noise present in the detected audio passes through a small capacitor, C335; then is amplified by noise amplifier transistor H304. Diodes H310 and H311 rectify the output of H304. This rectified output is proportional to the noise components in the detector output.

When there is excessive noise in the audio signal (such as the noise caused by tuning the unit off-station), the rectified DC output turns on transistor H305 which conducts, activating the muting circuit through pin 6. This prevents audio from reaching the audio amplifier inputs on the muting IC.

The third muting input comes from J210 and J213 of the FM discriminator. It is applied to J318 and J319 of the P300 circuit board; then to pins 8 and 9 of H302. The inputs consist of reverse polarity "S" curves from the discriminator. When an FM station is tuned in perfectly, these S curves will have a DC component of 0 volts. Whenever the station is mistuned so the DC component of either "S" curve rises above 0.25 VDC the OPTIMUM SYNCHRONIZATION DETECTOR within the muting IC turns Q19 OFF. This turns Q22 and Q23 ON, grounding the audio signal.

When the mono switch is in stereo position, pin 5 of the muting IC is connected to the base of transistor H306. Whenever signal strength drops below the threshold set by the muting control, pin 5's voltage rises, turning on H306, which defeats the stereo switch. Now, only mono FM will pass to the output Jack J005.

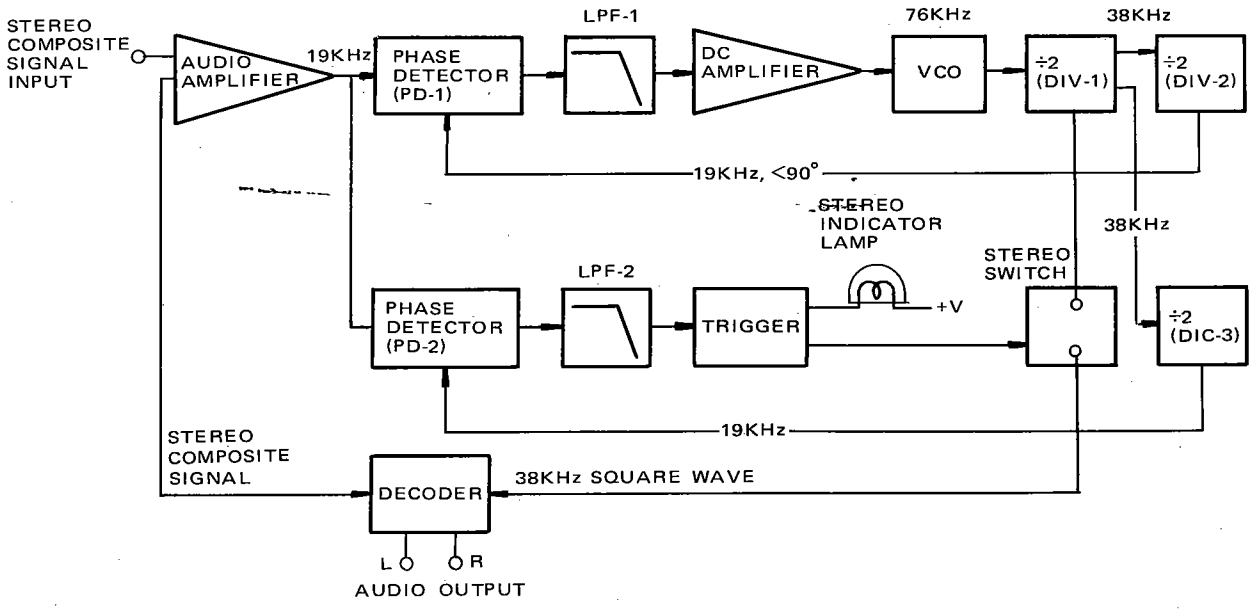


Figure 1. Block Diagram: Phase Locked LOOP IC H301

6. TEST EQUIPMENT REQUIRED FOR SERVICING

Table 1 lists the test equipment required for servicing the Model 125 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 0.2% distortion.	Signal source for FM alignment.
Stereo Modulator	Less than 0.2% 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.

Figure 2. Test Equipment Required for Servicing

SYMPTOM: TOTAL OR PARTIAL LOSS OF STEREO SEPARATION

First, measure separation. Total separation loss could be caused by:

1. Sticking Mono Control
2. Shorted Stereo-Mono Switching transistor (H306).
3. Open resistor R337.
4. Defective Muting Control Circuit Board (PW01)
5. No Vcc voltage to IC's H301, H302.
6. Defective capacitor C306.
7. Defective Selector Switch PS01.

Partial Separation Loss could be caused by misaligned spearation controls.

SEPARATION ADJUSTMENT:

1. Connect tuner to FM antenna. Tune to vacant spot between stations around 98MHz.
2. Replace antenna leads with FM signal generator leads. Inject a 1000uV FM signal modulated by 1KHz. Match FM frequencies until the tuning meter needle is centered.
3. Turn off audio modulation from the signal generator and connect a frequency counter to test point (R311). Adjust R304 until the frequency generator reads exactly 19KHz.
4. Modulate the FM signal with L channel signal only; then add 9% stereo pilot.
5. Adjust trimmer resistor R302 for maximum left-to-right channel separation.
6. Repeat steps 4 and 5 while injecting R channel signal only. Right-to-left channel separation should match left-to-right channel separation. Adjust R302 until it does.

SYMPTOM: POOR FM SENSITIVITY

First measure IHF usable sensitivity. If it is extremely poor-1000uV for example there is usually a defective component or a cold solder joint in the front end or IF section.

When usable sensitivity is only slightly below specification, the front end might be misaligned. Proper FM alignment requires a screen room and special testing equipment for optimum results. However, here is a good procedure which requires only an FM signal generator and a distortion analyzer.

SYMPTOM: EXCESSIVE DISTORTION

Measure Total Harmonic Distortion. A defective discriminator transformer or discriminator component is the chief cause of high distortion in FM tuners. Naturally, the Front End and IF semi-conductors, as well as the possibility of cold solder joints should be checked out. But check the discriminator stage first.

When THD is only slightly below specification; the front end and/or discriminator might require realignment.

SENSITIVITY AND DISTORTION – FRONT END ALIGNMENT:

1. Connect an FM antenna to the antenna inputs; a distortion analyzer to the output.
2. Tune the tuner to a vacant spot between stations at the low frequency end of the dial. Replace antenna with an FM signal generator. Adjust FM generator to same frequency, centering the tuning meter needle. Decrease signal generator output until the audio output level decreases with decreasing generator output, (Just below limiting). Modulated 100% by 400Hz audio.
3. Working from antenna to output, adjust antenna coil L101 RF coils L102, L103, L104 and IF transformer L106 for minimum distortion.
4. Tune to a vacant spot at the high frequency end of the dial. Adjust FM generator to same frequency, centering the tuning meter needle.
5. Working from antenna to output, adjust capacitors C101, C102, C103 and C104 for minimum distortion.
6. Repeat hi and low end adjustments until sensitivity and distortion are optimized.

DISTORTION – DISCRIMINATOR ALIGNMENT:

1. Connect FM signal generator to antenna inputs; a distortion analyzer to the output.
2. Tune the tuner to a vacant spot around 98MHz. With no signal applied, adjust the secondary (upper) core of discriminator transformer L201 until the tuning meter needle is centered.
3. With a 1000uV signal applied at the same frequency, and meter centered, adjust the primary core (lower) for minimum distortion.

NO FM OUTPUT

Connect unit to an antenna, audio amplifier and speakers. Switch to AM. If there is still no output, check H401 and H402, the audio pre-amps.

If There is AM Output, switch to FM and try tuning in an FM station. If the tuning meter needle won't deflect, the trouble is in the Front End (P100) or IF section (P200 Board). Check both boards for proper supply voltage and check their semi-conductors for proper DC operating voltages.

If the tuning meter will deflect when FM stations are tuned in, the trouble is in the discriminator or muting circuits. Inject a 400Hz audio at J303 in the P300 Board. If it is heard through the loud-speakers, the P300 Board is OK, and the trouble is in the discriminator circuit. Check discriminator transformer L201 and the semi-conductors.

If signal injection proves the P300 board is defective, check for proper voltage at the pins of the muting IC H302. It might be grounding audio signal constantly. If any voltage reading differs greatly from the schematic voltage, check and outboard components connected to the IC pin. If they're OK, replace the IC.

Sometimes, signal injection is the best troubleshooting approach. It requires an audio oscillator, FM signal generator and an 10.7MHz sweep generator. Test signals to be injected into the various inputs are:

Front End: 1000uV FM carrier 100% modulated by 400Hz audio at antenna inputs.

IF Amps: 10.7MHz 100% modulated by 400Hz audio at J201. (Short local oscillator output at local oscillator capacitor C115).

Discriminator: Increase 10.7MHz signal level and inject it at the base of H210.

Multiplex Section: Inject 400Hz audio at J303.

MISCELLANEOUS ADJUSTMENTS

SIGNAL STRENGTH METER ADJUSTMENT:

1. Connect an FM signal generator to the antenna inputs. Tune the tuner to a vacant spot between stations around 98MHz. Then tune the FM generator to match frequencies. Generator output should be 100,000 microvolts.
2. Adjust R340 on the multiplex board until the signal strength meter reads 90% of full scale deflection.

MUTING LEVEL/STEREO THRESHOLD LEVEL ADJUSTMENT:

1. Connect tuner to an FM antenna. Tune to vacant spot between stations around 98MHz.
2. Replace antenna with an FM generator. Modulate FM signal with 1000Hz audio, 100%. Match FM frequencies until tuning meter needle is centered. Set signal strength at 150 microvolts.
3. Switch MUTING LEVEL CONTROL on tuner to HIGH. Adjust RW03 until audio is just above muting threshold.
4. Decrease FM generator signal strength to 30 microvolts. Switch MUTING LEVEL CONTROL to MID. Adjust RW04 until audio is just above muting threshold.
5. Remove 1KHz modulation and adjust output to 12.5uV. Add 9.0% stereo pilot. Switch MUTING LEVEL CONTROL to OFF. Adjust RW05 until stereo beacon just lights up.

FM DOLBY LEVEL ADJUSTMENT:

1. Connect tuner to FM antenna. Connect AC VTVM to tuner output. Tune the tuner to vacant spot between stations around 98MHz.
2. Replace antenna with an FM signal generator. Match frequencies until tuning meter needle is centered. Inject a 1000 microvolt FM signal mono modulated 50% by 400Hz audio.
3. Depress FM DOLBY push switch. Adjust RW01 and RW02 for 580mV output at left channel and right channel tuner outputs.

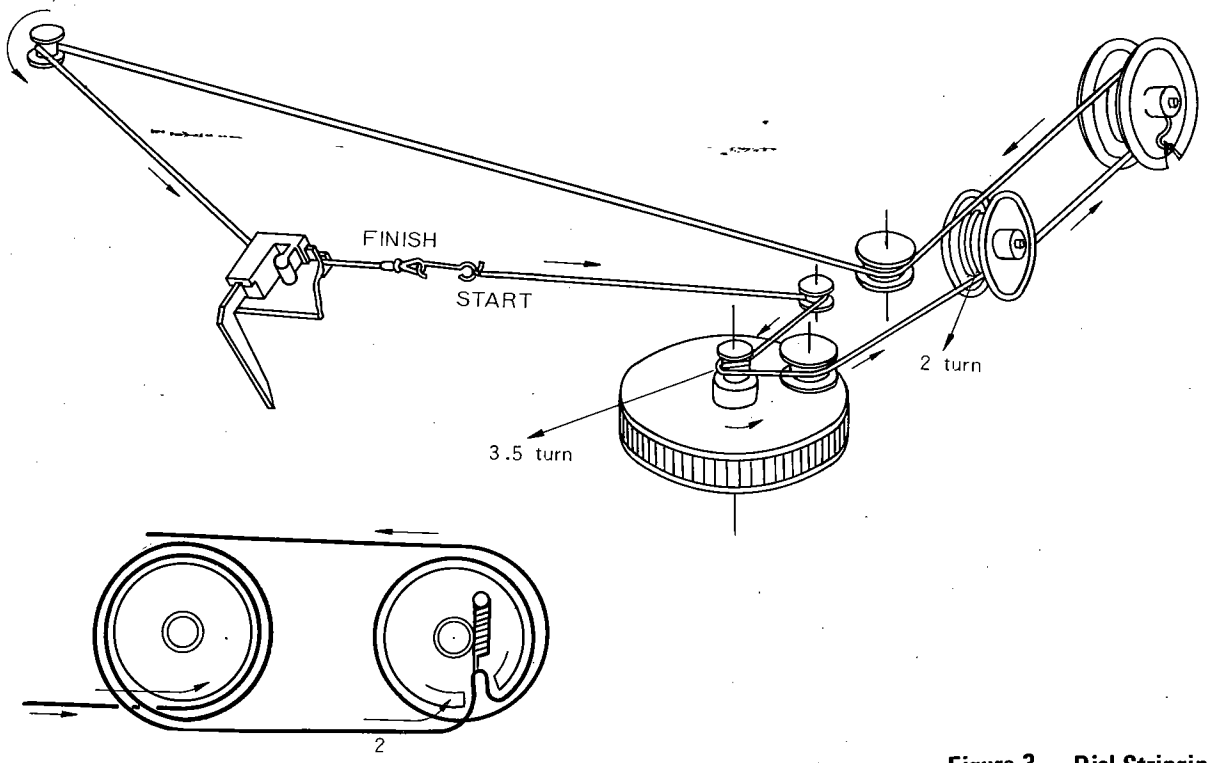


Figure 3. Dial Stringing

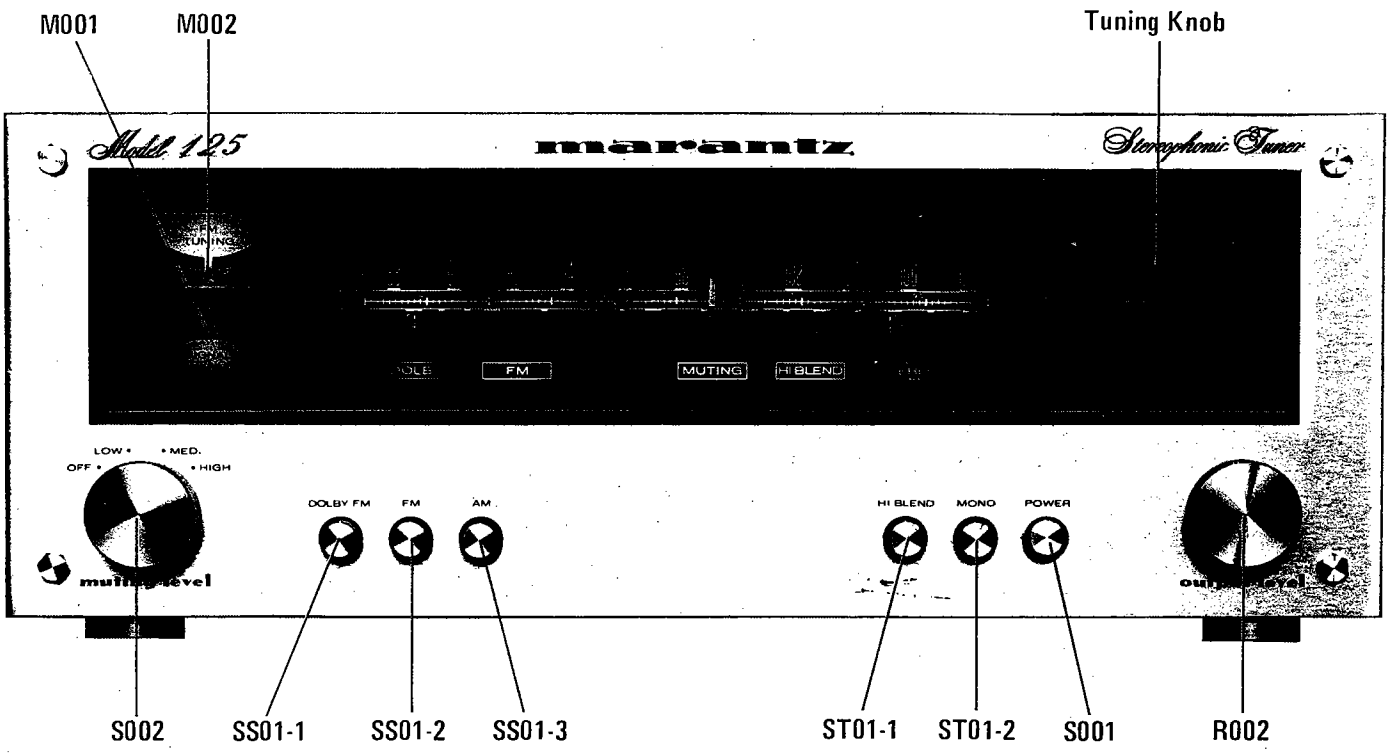


Figure 4. Front Panel Adjustment and Component Locations

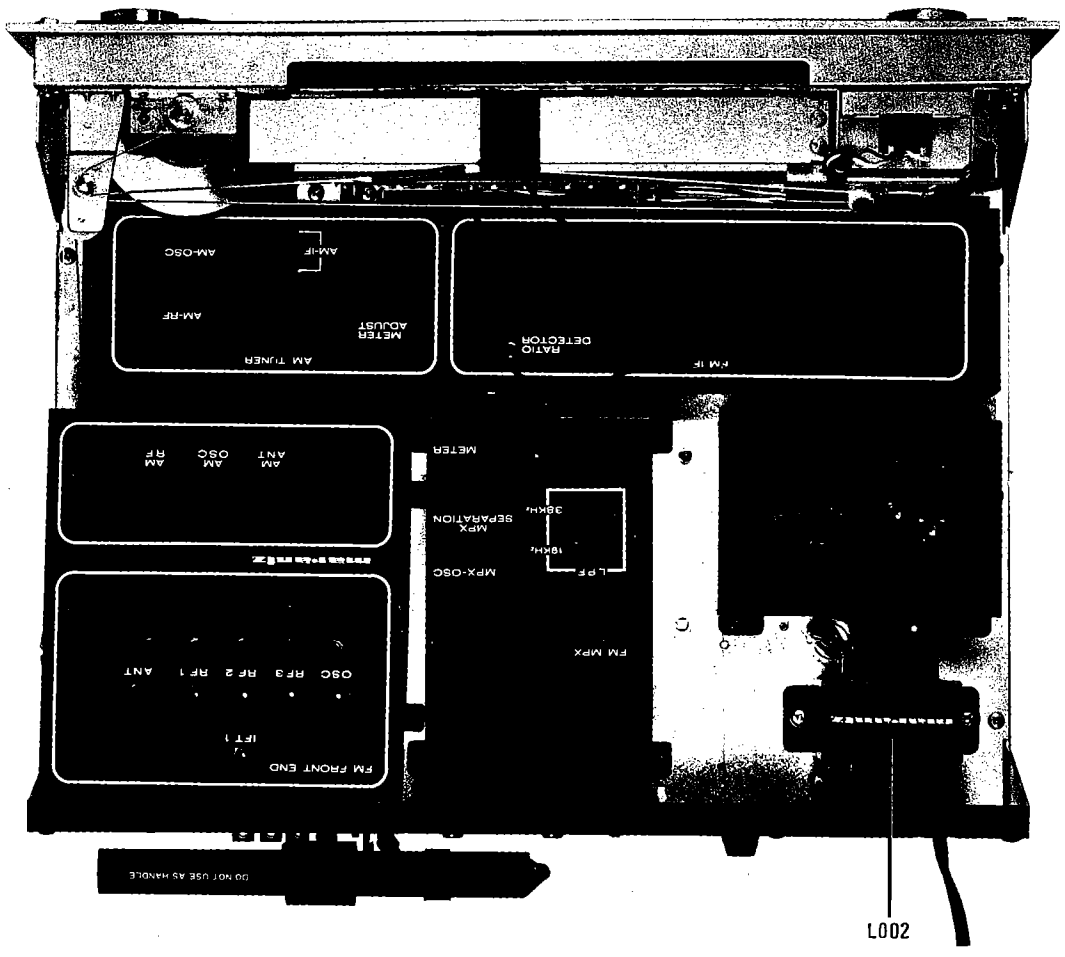


Figure 5. Main Chassis Component Locations (Top View)

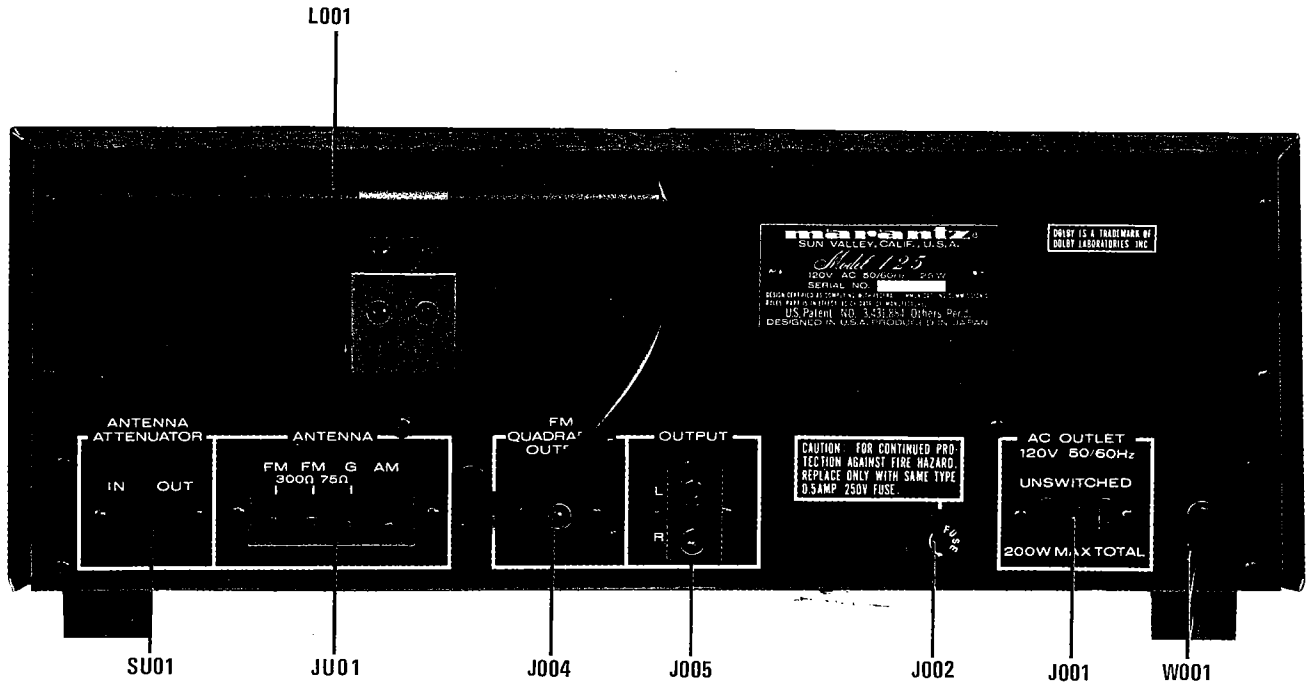


Figure 6. Rear Panel Adjustment and Component Locations

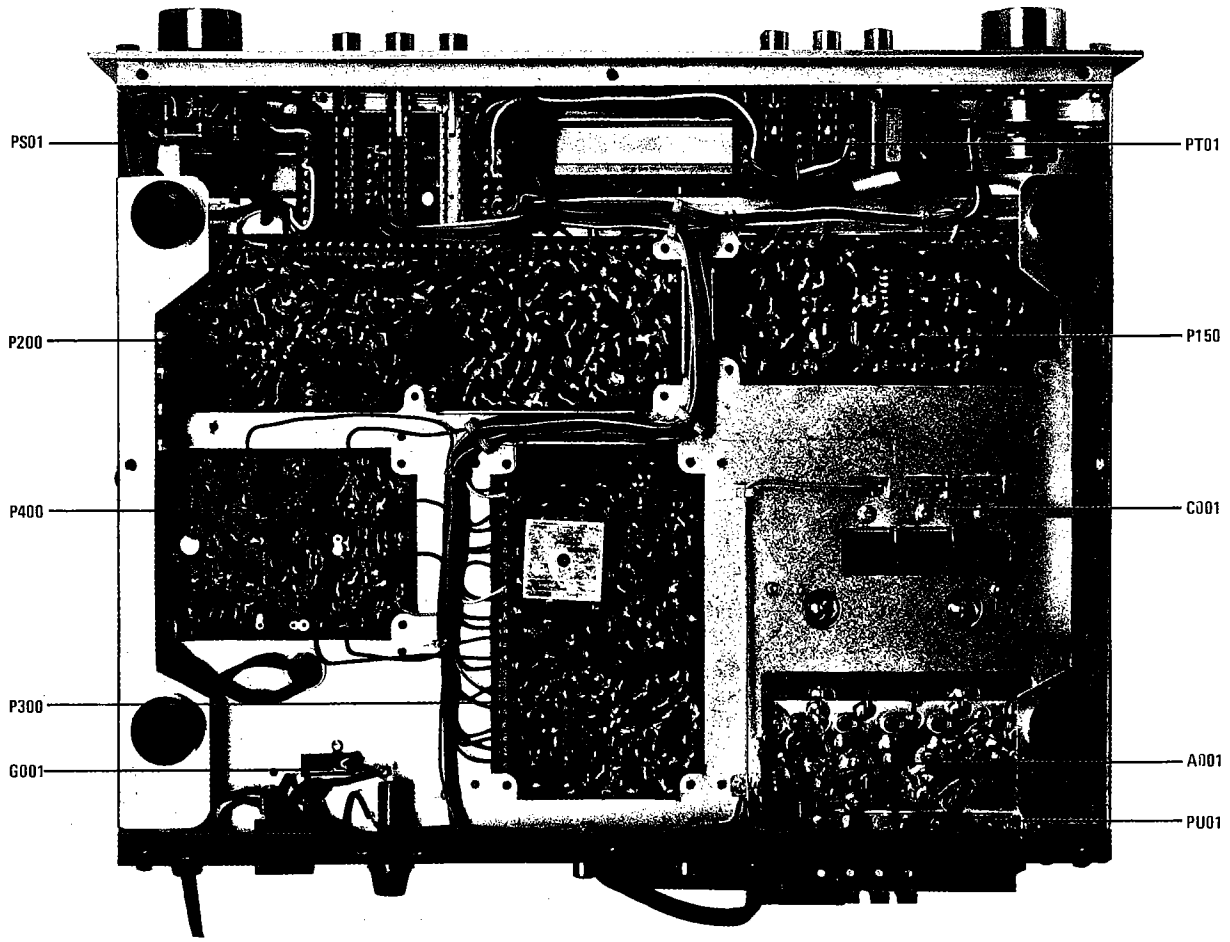


Figure 7. Main Chassis Component Locations (Bottom View)

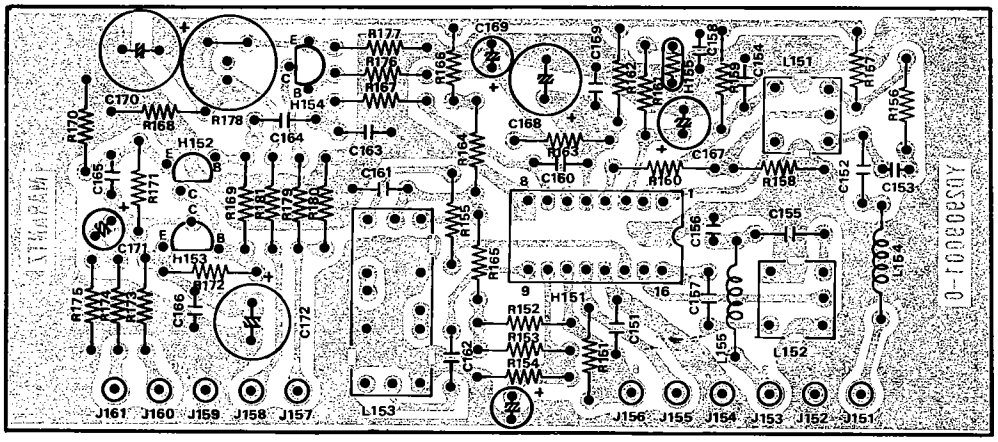


Figure 8. AM Tuner Unit Assembly P150 Component Locations

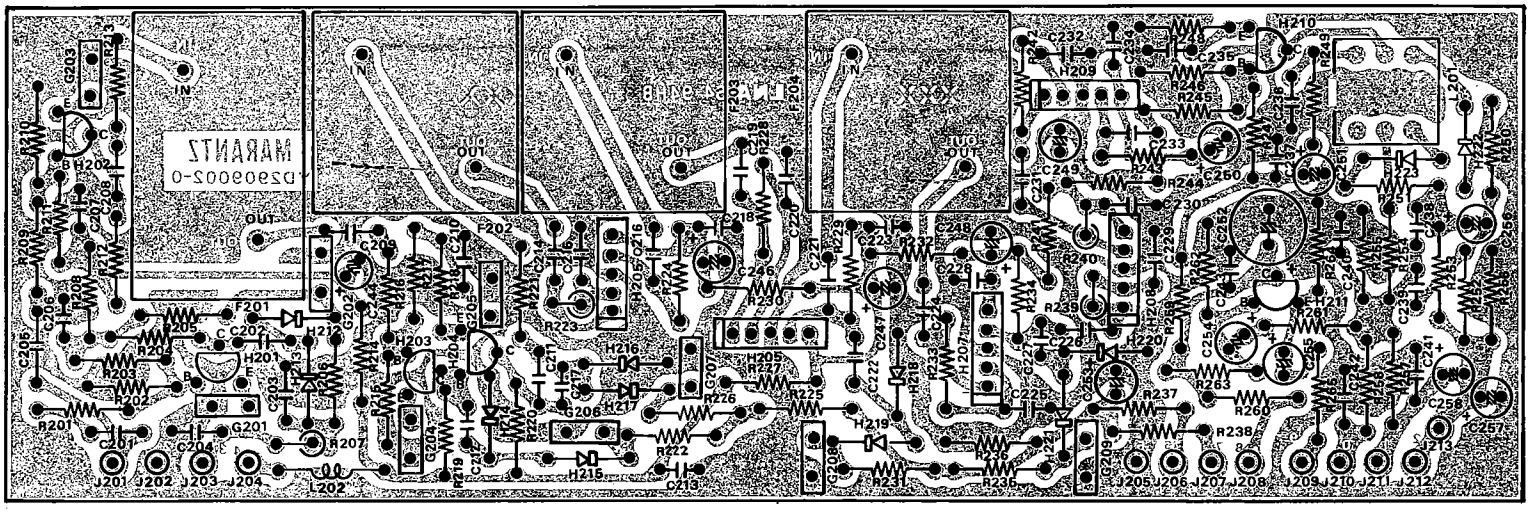


Figure 9. FM IF Amplifier Assembly P201 Component Locations

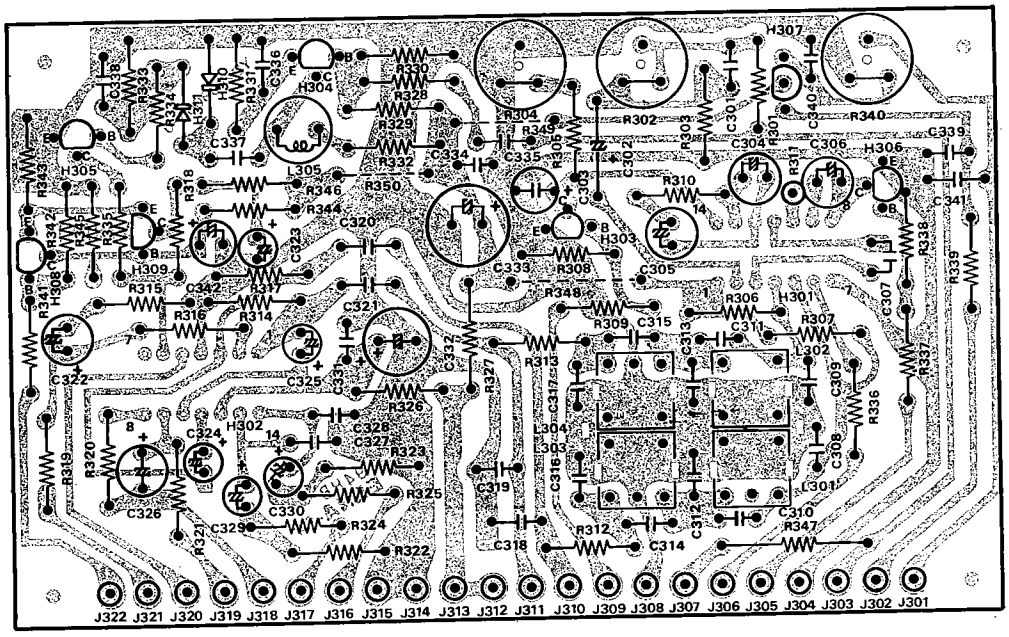


Figure 10. MPX Stereo Decoding Amplifier Assembly P300 Component Locations

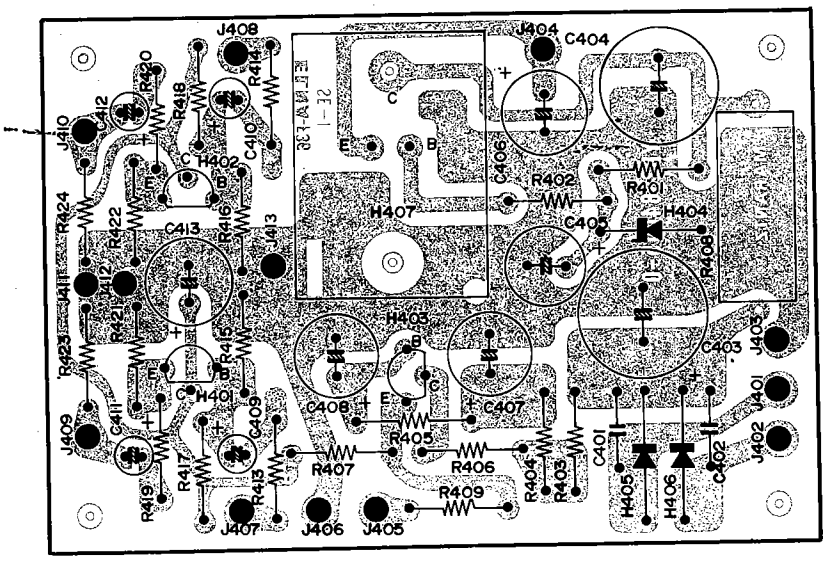


Figure 11. Power Supply Assembly P400 Component Locations

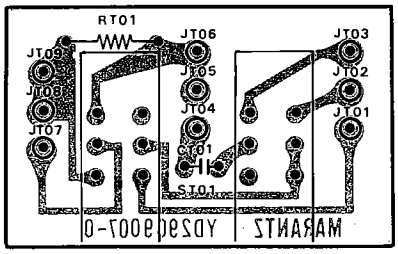


Figure 12. Mono HI Blend Assembly PTO1 Component Locations

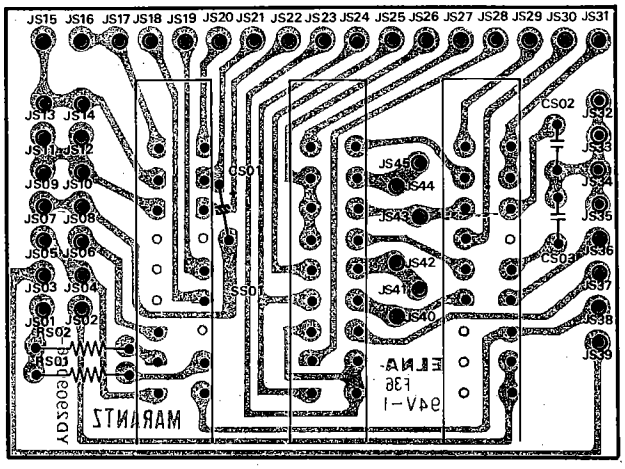


Figure 13. Selector SW Assembly PS01 Component Locations

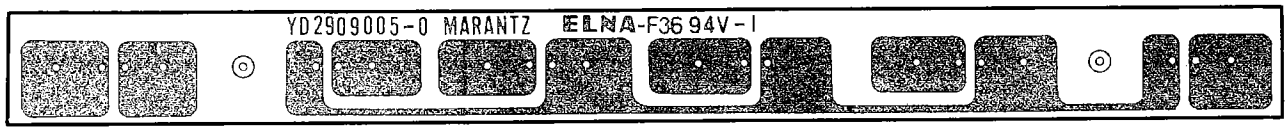


Figure 14. Indicator Lamp Assembly PY01 Component Locations

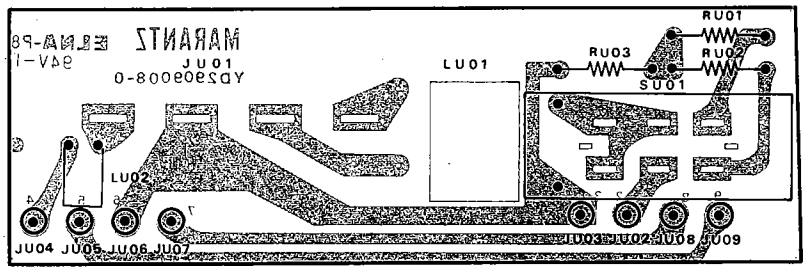


Figure 15. ANT ATT Assembly PV01 Component Locations

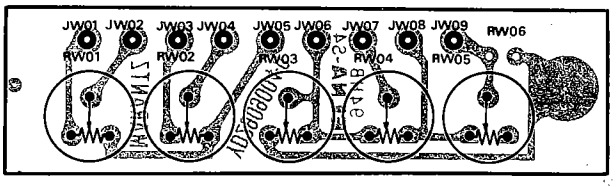


Figure 16. Trimming Resistor Assembly PW01 Component Locations

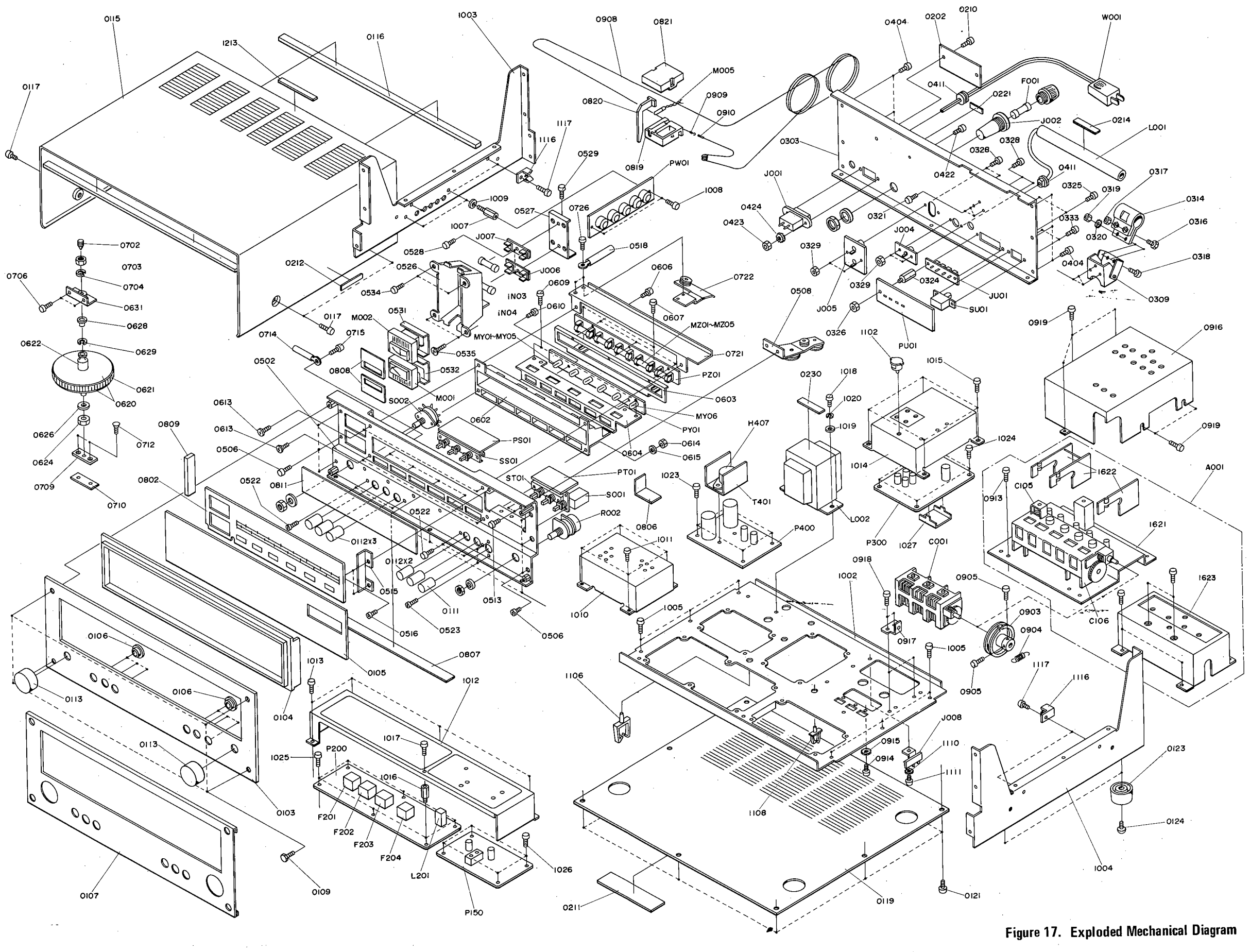
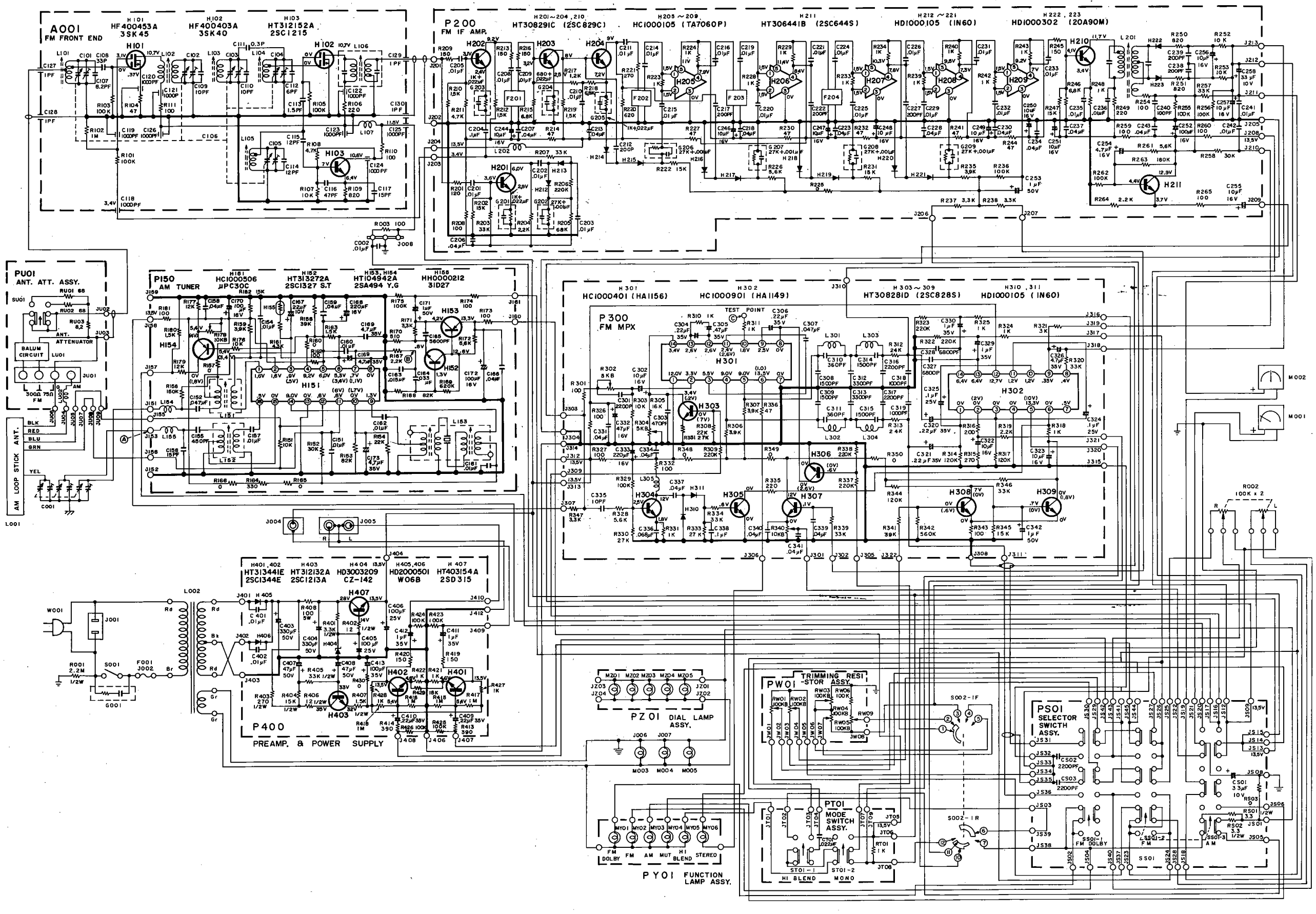


Figure 17. Exploded Mechanical Diagram



Model 125 **NOTE: This schematic diagram applied to units manufactured for the U.S.A. market.**

Figure 18. Schematic Diagram

Parts List

U: For U.S.A.
E: For Europe

REF. DESIG.	U	E	PART NO.	DESCRIPTION
A	1	1	290906340	Front Panel Assembly
0103	1	1	290906301	Escutcheon
0104	1	1	285540101	Frame
0105	1	1	288415801	Window
0106	6	6	281825905	Bush
0107	1	1	288405301	Cover
B	1	1	285227340	Fly Wheel Assembly
0620	2	2	257706302	Escutcheon
0621	1	1	257727301	Fly Wheel
0622	1	1	285211201	Shaft
0624	1	1	53110603E	Hexagon Nut
0626	1	1	54020601E	Flat Washer
C	1	1	291510341	Pointer Assembly
0819	1	1	291510301	Pointer
0820	1	1	282610301	Pointer
0821	1	1	291510302	Cover
M005	1	1	IN1008030	Lamp
D	2	2	281915943	Drum Assembly x 2
0903	2	2	281915901	Drum x 2
0904	2	2	71101689L	Spring x 2
0905	4	4	51064019A	Set Screw x 4
E	1	1	120200640	Hook Assembly
0908	1	1	72080802A	String
0909	1	1	120225801	Hook
P150	1	1	YD2909001	P.W. Board, AM TUNER
	1	1	ZZ2909001	P.W. Board Assembly
R151	1	1	RT0510314	Resistor, 10KΩ ±5% ¼W
R152	1	1	RT0530314	Resistor, 30KΩ ±5% ¼W
R153	1	1	RT0582314	Resistor, 82KΩ ±5% ¼W
R154	1	1	RT0547214	Resistor, 4.7KΩ ±5% ¼W
R156	1	1	RT0515414	Resistor, 150KΩ ±5% ¼W
R157	1	1	RC0000014	Resistor, 0Ω ±5% ¼W
R158	1	1	RT0539314	Resistor, 3.9KΩ ±5% ¼W
R159	1	1	RT0539214	Resistor, 3.9KΩ ±5% ¼W
R160	1	1	RC0000012	Resistor, 0Ω ±5% ¼W
R161	1	1	RT0543214	Resistor, 4.3KΩ ±5% ¼W
R162	1	1	RT0510114	Resistor, 100KΩ ±5% ¼W
R163	1	1	RT0515214	Resistor, 1.5KΩ ±5% ¼W
R164	1	1	RT0533114	Resistor, 330Ω ±5% ¼W
R165	1	1	RC0000014	Resistor, 0Ω ±5% ¼W
R166	1	1	RC0000014	Resistor, 0Ω ±5% ¼W
R167	1	1	RT0522214	Resistor, 2.2KΩ ±5% ¼W
R168	1	1	RT0582314	Resistor, 82KΩ ±5% ¼W
R169	1	1	RT0562414	Resistor, 620KΩ ±5% ¼W
R170	1	1	RT0551114	Resistor, 510KΩ ±5% ¼W
R171	1	1	RT0533214	Resistor, 3.3KΩ ±5% ¼W
R172	1	1	RT0556214	Resistor, 5.6KΩ ±5% ¼W
R173	1	1	RT0510114	Resistor, 100Ω ±5% ¼W
R174	1	1	RT0510114	Resistor, 100Ω ±5% ¼W
R175	1	1	RT0510414	Resistor, 100KΩ ±5% ¼W
R176	1	1	RT0510314	Resistor, 10KΩ ±5% ¼W
R177	1	1	RT0512314	Resistor, 12KΩ ±5% ¼W
R178	1	1	RA0103025	Trimming Resist, 10KΩB
R179	1	1	RT0512314	Resistor, 12KΩ ±5% ¼W
R180	1	1	RT0515214	Resistor, 1.5KΩ ±5% ¼W
R181	1	1	RT0510114	Resistor, 100KΩ ±5% ¼W
R182	1	1	RT0515214	Resistor, 1.5KΩ ±5% ¼W
C151	1	1	DK1710301	Ceramic Cap, .01μF ±20%
C152	1	1	DF1747305	Film Cap, .047μF ±20%

REF. DESIG.	U	E	PART NO.	DESCRIPTION
C153	1	1	DD1620001	Ceramic Cap, 20PF ±10%
C154	1	1	DK1710301	Ceramic Cap, .01μF ±20%
C155	1	1	DF6545101	Film Cap, 450PF ±5%
C156	1	1	DD1615001	Ceramic Cap, 15PF ±10%
C157	1	1	DK1710301	Ceramic Cap, .01μF ±20%
C158	1	1	DK1840302	Ceramic Cap, .04μF +80 −20 %
C159	1	1	DK1840302	Ceramic Cap, .04μF ±80%
C160	1	1	DK1710301	Ceramic Cap, .01μF ±20%
C161	1	1	DK1710301	Ceramic Cap, .01μF ±20%
C162	1	1	DK1710301	Ceramic Cap, .01μF ±20%
C163	1	1	DF1615305	Film Cap, .015μF ±10%
C164	1	1	DF1633305	Film Cap, .033μF ±10%
C165	1	1	DF1756205	Film Cap, 5600PF ±20%
C166	1	1	DK1840302	Film Cap, .04μF +80 −20 %
C167	1	1	EA2260169	Electroly Cap, 22μF 16V
C168	1	1	EA1070169	Electroly Cap, 100μF 16V
C169	1	1	EA4750359	Electroly Cap, 4.7μF 35V
C170	1	1	EA1070169	Electroly Cap, 100μF 16V
C171	1	1	EA1050509	Electroly Cap, 1μF 50V
C172	1	1	EA1070169	Electroly Cap, 100μF 16V
C173	1	1	EA4750359	Electroly Cap, 4.7μF 35V
H151	1	1	HC1000506	IC, μPC30C
H152	1	1	HT313272A	Transistor, 2SC1327 S.T
H153	1	1	HT104942A	Transistor, 2SA494 Y.G
H154	1	1	HT104942A	Transistor, 2SA494
H155	1	1	HH0000212	Thermistor, 31D27
L151	1	1	LA1001019	RF Coil, AM RF
L152	1	1	LO1001050	OSC Coil, AM OSC
L153	1	1	Li1028003	IFT, AM Ceramic Filt
L154	1	1	LC1332002	Choke Coil, 3.3μH
L155	1	1	LC1332002	Choke Coil, 3.3μH
J151 J161	10	10	YP1000113	Plug
				P201 FM IF BOARD
				All resistors are 5% and ¼W, unless otherwise indicated.
P201	1	1	YD2909002	P.W. Board
	1	1	ZZ2909002	P.W. Board Assembly
R201	1	1	RT0512114	120Ω
R202	1	1	RT0515314	15KΩ
R203	1	1	RT0533314	33KΩ
R204	1	1	RT0522214	2.2KΩ
R205	1	1	RT0568314	68KΩ
R206	1	1	RT0522414	220KΩ
R207	1	1	RT0533314	33KΩ
R208	1	1	RT0510114	100Ω
R209	1	1	RT0515114	150Ω
R210	1	1	RT0515214	1.5KΩ
R211	1	1	RT0547214	4.7KΩ
R212	1	1	RT0515214	1.5KΩ
R213	1	1	RT0515114	150Ω
R214	1	1	RT0547014	47Ω
R215	1	1	RT0568214	6.8KΩ
R216	1	1	RT0515114	150Ω
R217	1	1	RT0512214	1.2KΩ
R218	1	1	RT0568214	6.8KΩ
R219	1	1	RT0515214	1.5KΩ
R220	1	1	RT0562114	620Ω
R221	1	1	RT0527114	270Ω
R222	1	1	RT0515314	15KΩ
R223	1	1	RT0510214	1KΩ
R224	1	1	RT0510214	1KΩ

U: For U.S.A.
E: For Europe

REF. DESIG.	U	E	PART NO.	DESCRIPTION
R225	1	1	RC0000012	0Ω
R226	1	1	RT0556214	5.6KΩ
R227	1	1	RT0547014	47Ω
R228	1	1	RT0510214	1KΩ
R229	1	1	RT0510214	1KΩ
R230	1	1	RT0547014	47Ω
R231	1	1	RT0515314	15KΩ
R232	1	1	RT0547014	47Ω
R233	1	1	RT0510214	1KΩ
R234	1	1	RT0510214	1KΩ
R235	1	1	RT0568214	6.8 Ω
R236	1	1	RT0510414	100KΩ
R237	1	1	RT0533214	3.3KΩ
R238	1	1	RT0533214	3.3KΩ
R239	1	1	RT0510214	1KΩ
R240	1	1	RT0510214	1KΩ
R241	1	1	RT0547014	47Ω
R242	1	1	RT0510214	1KΩ
R243	1	1	RT0510214	1KΩ
R244	1	1	RT0547014	47Ω
R245	1	1	RT0515114	150Ω
R246	1	1	RT0568214	6.8KΩ
R247	1	1	RT0515314	15KΩ
R248	1	1	RT0510214	1KΩ
R249	1	1	RT0522114	220Ω
R250	1	1	RT0582114	820Ω
R251	1	1	RT0582114	820Ω
R252	1	1	RT0510314	10KΩ
R253	1	1	RT0510314	10KΩ
R254	1	1	RT0510114	100Ω
R255	1	1	RT0510414	100KΩ
R256	1	1	RT0510414	100KΩ
R257	1	1	RT0533314	33KΩ
R258	1	1	RT0530314	30KΩ
R259	1	1	RT0510114	100Ω
R260	1	1	RT0510114	100Ω
R261	1	1	RT0556214	5.6KΩ
R262	1	1	RT0510414	100KΩ
R263	1	1	RT0518414	180KΩ
R264	1	1	RT0522214	2.2KΩ
R265	1	1	RT0510114	100Ω
C201	1	1	DK1710301	Ceramic Cap, .01μF ±20%
C202	1	1	DK1710301	Ceramic Cap, .01μF ±20%
C203	1	1	DK1710301	Ceramic Cap, .01μF ±20%
C204	1	1	DK1810402	Ceramic Cap, .0μF $^{+80}_{-20}$%
C205	1	1	DK1710301	Ceramic Cap, .01μF $^{+80}_{-20}$%
C206	1	1	DK1840302	Ceramic Cap, .04μF $^{+80}_{-20}$%
C207	1	1	DK1840302	Ceramic Cap, .04μF $^{+80}_{-20}$%
C208	1	1	DK1710301	Ceramic Cap, .01μF ±20%
C209	1	1	DK1710301	Ceramic Cap, .01μF ±20%
C210	1	1	DK1710301	Ceramic Cap, .01μF ±20%
C211	1	1	DK1710301	Ceramic Cap, .01μF ±20%
C212	1	1	DD1620101	Ceramic Cap, 200PF ±10%
C213	1	1	DK1840302	Ceramic Cap, .04μF $^{+80}_{-20}$%
C214	1	1	DK1710301	Ceramic Cap, .01μF ±20%
C215	1	1	DK1710301	Ceramic Cap, .01μF ±20%
C216	1	1	DK1710301	Ceramic Cap, .01μF ±20%
C217	1	1	DD1620101	Ceramic Cap, 200PF ±10%
C218	1	1	DK1840301	Ceramic Cap, .04μF $^{+80}_{-20}$%
C219	1	1	DK1710301	Ceramic Cap, .01μF ±20%
C220	1	1	DK1710301	Ceramic Cap, .01μF ±20%
C221	1	1	DK1710301	Ceramic Cap, .01μF ±20%
C222	1	1	DD1620101	Ceramic Cap, 200P ±10%

REF. DESIG.	U	E	PART NO.	DESCRIPTION
C223	1	1	DK1840301	Ceramic Cap, .04μF $^{+80}_{-20}$%
C224	1	1	DK1710301	Ceramic Cap, .01μF ±20%
C225	1	1	DK1710301	Ceramic Cap, .01μF ±20%
C226	1	1	DK1710301	Ceramic Cap, .01μF ±20%
C227	1	1	DD1620101	Ceramic Cap, 200PF ±10%
C228	1	1	DK1840301	Ceramic Cap, .04μF $^{+80}_{-20}$%
C229	1	1	DK1710301	Ceramic Cap, .01μF ±20%
C230	1	1	DK1840301	Ceramic Cap, .04μF $^{+80}_{-20}$%
C231	1	1	DK1710301	Ceramic Cap, .01μF ±20%
C232	1	1	DK1710301	Ceramic Cap, .01μF ±20%
C233	1	1	DK1710301	Ceramic Cap, .01μF ±20%
C234	1	1	DK1840301	Ceramic Cap, .04μF $^{+80}_{-20}$%
C235	1	1	DK1710301	Ceramic Cap, .01μF ±20%
C236	1	1	DK1710301	Ceramic Cap, .01μF ±20%
C237	1	1	DK1840301	Ceramic Cap, .04μF $^{+80}_{-20}$%
C238	1	1	DK1620101	Ceramic Cap, 200PF ±10%
C239	1	1	DD1620101	Ceramic Cap, 200PF ±10%
C240	1	1	DD1610101	Ceramic Cap, 100PF ±10%
C241	1	1	DK1710301	Ceramic Cap, .01μF ±20%
C242	1	1	DK1710301	Ceramic Cap, .01μF ±20%
C243	1	1	DK1840301	Ceramic Cap, .04μF $^{+80}_{-20}$%
C244	1	1	EA1060169	Electroly Cap, 10μF 16V
C245	1	1	EA1060169	Electroly Cap, 10μF 16V
C246	1	1	EA1060169	Electroly Cap, 10μF 16V
C247	1	1	EA1060169	Electroly Cap, 10μF 16V
C248	1	1	EA1060169	Electroly Cap, 10μF 16V
C249	1	1	EA1060169	Electroly Cap, 10μF 16V
C250	1	1	EA1060169	Electroly Cap, 10μF 16V
C251	1	1	EA1060169	Electroly Cap, 10μF 16V
C252	1	1	EA1070169	Electroly Cap, 100μF 16V
C253	1	1	EA1050509	Electroly Cap, 11μF 50V
C254	1	1	EA4750359	Electroly Cap, 4.7μF 35V
C255	1	1	EA1060169	Electroly Cap, 10μF 16V
C256	1	1	EA1060169	Electroly Cap, 10μF 16V
C257	1	1	EA1060169	Electroly Cap, 10μF 16V
C258	1	1	EA3360109	Electroly Cap, 33μF 10V
H201	1	1	HT308291C	Transistor, 2SC829C
H202	1	1	HT308291C	Transistor, 2SC829C
H203	1	1	HT308291C	Transistor, 2SC829C
H204	1	1	HT308291C	Transistor, 2SC829C
H205	1	1	HC1000105	IC, TA7060P
H206	1	1	HC1000105	IC, TA7060P
H207	1	1	HC1000105	IC, TA7060P
H208	1	1	HC1000105	IC, TA7060P
H209	1	1	HC1000105	IC, TA7060P
H210	1	1	HT308291C	Transistor, 2SC829C
H211	1	1	HT306441B	Transistor, 2SC644S
H212	1	1	HD1000105	Diode, IN60
H213	1	1	HD1000105	Diode, IN60
H214	1	1	HD1000105	Diode, IN60
H215	1	1	HD1000105	Diode, IN60
H216	1	1	HD1000105	Diode, IN60
H217	1	1	HD1000105	Diode, IN60
H218	1	1	HD1000105	Diode, IN60
H219	1	1	HD1000105	Diode, IN60
H220	1	1	HD1000105	Diode, IN60
H221	1	1	HD1000105	Diode, IN60
H222	1	1	HD1000302	Diode, 20A90M
H223	1	1	HD1000302	Diode, 20A90M
G201	1	1	BF2230006	Printed Compo, 1K + 0.022μF
G202	1	1	BF1020001	Printed Compo, 27K + 0.001μF
G203	1	1	BF2230006	Printed Compo, 1K + 0.022μF
G204	1	1	BF2230007	Printed Compo, 680 + 0.022μF
G205	1	1	BF2230006	Printed Compo, 1K + 0.022μF

U: For U.S.A.
E: For Europe

REF. DESIG.	U	E	PART NO.	DESCRIPTION
G206	1	1	BF1020001	Printed Compo, 27K + 0.001μF
G207	1	1	BF1020001	Printed Compo, 27K + 0.001μF
G208	1	1	BF1020001	Printed Compo, 27K + 0.001μF
G209	1	1	BF1020001	Printed Compo, 27K + 0.001μF
F201	1	1	FF3107002	LC Filter, 10.7 MHz (6 pole)
F202	1	1	FF3107001	LC Filter, 10.7 MHz (4 pole)
F203	1	1	FF3107001	LC Filter, 10.7 MHz (4 pole)
F204	1	1	FF3107001	LC Filter, 10.7 MHz (4 pole)
L201	1	1	LI1401623	IFT, FM
L202	1	1	LC1332002	Choke Coil, 3.3μF
J201				
	13	13	YP1000113	Plug
J213				
				P300 FM MPX BOARD
				All resistors are ±5% and ¼W, unless otherwise indicated.
P300	1	1	YD2909003	P.W. Board
	1	1	ZZ2909003	P.W. Board Assembly
R351	1	1	RT0527214	2.7KΩ
R301	1	1	RT0510114	100Ω
R302	1	1	RA0502020	Trimming, 5KΩ B
R303	1	1	RT0510314	10KΩ
R304	1	1	RA0502020	Trimming, 5KΩ B
R305	1	1	RT0516314	16KΩ
R306	1	1	RT0539214	3.9KΩ
R307	1	1	RT0539214	3.9KΩ
R308	1	1	RT0522314	22KΩ
R309	1	1	RT0522414	220KΩ
R310	1	1	RT0510214	1KΩ
R311	1	1	RT0510214	1KΩ
R312	1	1	RT0530314	30KΩ
R313	1	1	RT0530314	30KΩ
R314	1	1	RT0512414	120KΩ
R315	1	1	RT0527114	270Ω
R316	1	1	RT0520114	200Ω
R317	1	1	RT0512414	120KΩ
R318	1	1	RT0510214	1KΩ
R319	1	1	RT0522214	2.2KΩ
R320	1	1	RT0533314	3.3KΩ
R321	1	1	RT0530214	3KΩ
R322	1	1	RT0522414	220KΩ
R323	1	1	RT0522414	220KΩ
R324	1	1	RT0510214	1KΩ
R325	1	1	RT0510214	1KΩ
R326	1	1	RT0510114	100Ω
R327	1	1	RT0510114	100Ω
R328	1	1	RT0556214	5.6KΩ
R329	1	1	RT0510414	100KΩ
R330	1	1	RT0527314	27KΩ
R331	1	1	RT0510214	1KΩ
R332	1	1	RT0510114	100Ω
R333	1	1	RT0527314	27KΩ
R334	1	1	RT0533314	33KΩ
R335	1	1	RT0522114	220Ω
R336	1	1	RT0547014	47Ω
R337	1	1	RT0522414	220KΩ
R338	1	1	RT0522414	220KΩ
R339	1	1	RT0533314	33KΩ
R340	1	1	RA0103025	Trimming Resist, 10KΩ B
R341	1	1	RT0539314	39KΩ

REF. DESIG.	U	E	PART NO.	DESCRIPTION
R342	1	1	RT0556414	560KΩ
R343	1	1	RT0510114	100Ω
R344	1	1	RT0512414	120KΩ
R345	1	1	RT0515314	15KΩ
R346	1	1	RT0533314	33KΩ
R347	1	1	RT0533214	3.3KΩ
R348	1	1	RC0000012	0Ω
R349	1	1	RC0000012	0Ω
R350	1	1	RC0000012	0Ω
C301	1	1	DF1622205	Film Cap, 2200PF ±10%
C302	1	1	EA1060169	Electroly Cap, 10μF 16V
C303	1	1	DF5547101	Film Cap, 470PF ±5%
C304	1	1	EQ2240501	Electroly Cap, .22μF ±20% 35V
C305	1	1	EQ4740501	Electroly Cap, .47μF ±20% 35V
C306	1	1	EQ2240501	Electroly Cap, .22μF ±20% 35V
C307	1	1	DF1747301	Film Cap, .047μF ±20%
C308	1	1	DF1515205	Film Cap, 1500PF ±5%
C309	1	1	DF1515205	Film Cap, 1500PF ±5%
C310	1	1	DD1536101	Ceramic Cap, 360PF ±5%
C311	1	1	DD1536101	Ceramic Cap, 360PF ±5%
C312	1	1	DF1533205	Film Cap, 3300PF ±5%
C313	1	1	DF1533205	Film Cap, 3300PF ±5%
C314	1	1	DF1515205	Film Cap, 1500PF ±5%
C315	1	1	DF1515205	Film Cap, 1500PF ±5%
C316	1	1	DF1522205	Film Cap, 2200PF ±5%
C317	1	1	DF1522205	Film Cap, 2200PF ±5%
C318	1	1	DF1510205	Film Cap, 1000PF ±5%
C319	1	1	DF1510205	Film Cap, 1000PF ±5%
C320	1	1	EV2240351	Film Cap, 22μF 35V
C321	1	1	EV2240351	Film Cap, 22μF 35V
C322	1	1	EA1060169	Electroly Cap, 10μF 16V
C323	1	1	EA1060169	Electroly Cap, 10μF 16V
C324	1	1	EV1040251	Electroly Cap, 1μF 25V
C325	1	1	EV1040251	Electroly Cap, 1μF 25V
C326	1	1	EA4750359	Electroly Cap, 4.7μF 35V
C327	1	1	DF1668205	Film Cap, 6800PF ±10%
C328	1	1	DF1668205	Film Cap, 6800PF ±10%
C329	1	1	EV1050352	Electroly Cap, 1μF 35V
C330	1	1	EV1050352	Electroly Cap, 1μF 35V
C331	1	1	DK1840302	Ceramic Cap, .04μF $^{+80}_{-20}$%
C332	1	1	EA4760169	Electroly Cap, 47μF 16V
C333	1	1	EA2270169	Electroly Cap, 220μF 16V
C334	1	1	DK1840302	Ceramic Cap, .04μF $^{+80}_{-20}$%
C335	1	1	DD1210001	Ceramic Cap, 10PF ±10%
C336	1	1	DF1668301	Film Cap, .068μF ±10%
C337	1	1	DF1740301	Film Cap, .04μF $^{+80}_{-20}$%
C338	1	1	DK1810402	Film Cap, .1μF $^{+80}_{-20}$%
C339	1	1	DK1840302	Ceramic Cap, .04μF $^{+80}_{-20}$%
C340	1	1	DK1840302	Ceramic Cap, .04μF $^{+80}_{-20}$%
C341	1	1	DK1840302	Ceramic Cap, .04μF $^{+80}_{-20}$%
C342	1	1	EA1050509	Electroly Cap, 1μF 50V
H301	1	1	HC1000401	IC, IC HA1156
H302	1	1	HC1000901	IC, IC HA1149
H303	1	1	HT308281D	Transistor 2SC828S
H304	1	1	HT308281D	Transistor 2SC828S
H305	1	1	HT308281D	Transistor 2SC828S
H306	1	1	HT308281D	Transistor, 2SC828S
H307	1	1	HT308281D	Transistor, 2SC828S
H308	1	1	HT308281D	Transistor, 2SC828S
H309	1	1	HT308281D	Transistor, 2SC828S
H310	1	1	HD1000105	Diode, IN60
H311	1	1	HD1000105	Diode, IN60

U: For U.S.A.
E: For Europe

REF. DESIG.	U	E	PART NO.	DESCRIPTION
L301	1	1	LS1029004	MPX Coil, 56mH
L302	1	1	LS1029004	MPX Coil, 56mH
L303	1	1	LS1029005	MPX Coil, 43mH
L304	1	1	LS1029005	MPX Coil, 43mH
L305	1	1	LC2105001	Choke Coil, 1mH
J301 ~ J322	21	21	YP1000113	Plug
1027	1	1	290910903	Shield
				P400 PCWER SUPPLY BOARD
P400	1	1	YD2884005	P.W. Board
	1	1	ZZ2909105	P.W. Board Assembly
R401	1	1	RC1033212	Resistor, 3.3KΩ ±10% ½W
R402	1	1	RC1012012	Resistor, 1ZΩ ±10% ½W
R403	1	1	RC1027112	Resistor, 270Ω ±10% ½W
R404	1	1	RC1015312	Resistor, 15KΩ ±10% ½W
R405	1	1	RC1033312	Resistor, 33KΩ ±10% ½W
R406	1	1	RC1012012	Resistor, 12Ω ±10% ½W
R407	1	1	RC1015212	Resistor, 1.5KΩ ±10% ½W
R408	1	1	GS1010105	Resistor, 100Ω ±10% 5W
R427	1	1	RT0510214	Resistor, 1KΩ ±5% ¼W
R428	1	1	RT0510214	Resistor, 1KΩ ±5% ¼W
R429	1	1	RT0515314	Resistor, 15KΩ ±5% ¼W
R430	1	1	RC0000012	Resistor, 0Ω
R413	1	1	RT0539114	Resistor, 390Ω ±5% ¼W
R414	1	1	RT0539114	Resistor, 390Ω ±5% ¼W
R415	1	1	RT0510514	Resistor, 1MΩ ±5% ¼W
R416	1	1	RT0510514	Resistor, 1MΩ ±5% ¼W
R417	1	1	RT0510514	Resistor, 1MΩ ±5% ¼W
R418	1	1	RT0510514	Resistor, 1MΩ ±5% ¼W
R419	1	1	RT0515114	Resistor, 150Ω ±5% ¼W
R420	1	1	RT0515114	Resistor, 150Ω ±5% ¼W
R421	1	1	RT0510214	Resistor, 1KΩ ±5% ¼W
R422	1	1	RT0510214	Resistor, 1KΩ ±5% ¼W
R423	1	1	RT0510414	Resistor, 100KΩ ±5% ¼W
R424	1	1	RT0510414	Resistor, 100KΩ ±5% ¼W
R425	1	1	RT0510414	Resistor, 100KΩ ±5% ¼W
R426	1	1	RT0510414	Resistor, 100KΩ ±5% ¼W
C401	1	1	DK1810351	Ceramic Cap, .01μF +100%
C402	1	1	DK1810351	Ceramic Cap, .01μF +100%
C403	1	1	EA3370509	Electroly Cap, 330μF 50V
C404	1	1	EA3370509	Electroly Cap, 330μF 50V
C405	1	1	EA1070259	Electroly Cap, 100μF 25V
C406	1	1	EA1070259	Electroly Cap, 100μF 25V
C407	1	1	EA4760509	Electroly Cap, 47μF 50V
C408	1	1	EA4760509	Electroly Cap, 47μF 50V
C409	1	1	EV2240351	Electroly Cap, .22μF 35V
C410	1	1	EV2240351	Electroly Cap, .22μF 35V
C411	1	1	EV1050352	Electroly Cap, 1μF 35V
C412	1	1	EV1050352	Electroly Cap, 1μF 35V
C413	1	1	EA1070359	Electroly Cap, 100μF 35V
H401	1	1	HT313441E	Transistor, 2SC1344(E)
H402	1	1	HT313441E	Transistor, 2SC1344(E)
H403	1	1	HT312132A	Transistor, 2SC1213A(B)(C)
H404	1	1	HD3003209	Diode, CZ-142
H405	1	1	HD2000501	Diode, W06B
H406	1	1	HD2000501	Diode, W06B
H407	1	1	HT403154A	Transistor 2SC315(C,D,E,E)
T401	1	1	273026702	Heat Sink
J401 ~ J413	11	11	YP1000113	Plug

REF. DESIG.	U	E	PART NO.	DESCRIPTION
0502	1	1	288416050	Bracket K
0508	1	1	290926250	Pulley K
0513	2	2	51100306A	B H M Screw, B 3 x 6
0515	1	1	288420101	Partitioner
0516	2	2	51570306B	P H Tapt Screw, P 3 x 6 ST
0522	4	4	51100306A	B H M Screw, B3 x 6
0523	2	2	51100306A	B H M Screw, B 3 x 6
0534	2	2	51102606A	B H M Screw, B 2.6 x 6
0535	2	2	51042606S	F H M Screw, F 2.6 x 6
0613	4	4	51042606S	F H M Screw, F 2.6 x 6
0614	2	2	53112603E	Hexagon Nut
0615	2	2	54022601E	Flat Washer P
0706	2	2	51470306A	B H M Screw S
0709	1	1	257710602	Bearing
0710	1	1	141511801	Spacer
0712	2	2	51040306A	F H M Screw, F 3 x 6
0715	4	4	51570306B	P H Tapt Screw, P 3 x 6 ST
0806	1	1	28191200S	Insulator
R002	1	1	RM0104008	Variable Resist, 100KΩx2 OUT-PUT
S002	1	1	SR0304006	Rotary Switch
S001		1	SP0101010	Push Switch,
S001	1		SP0101016	Push Switch,
				PT01 MONO HI-BLEND BOARD
PT01	1	1	YD2909007	P.W. Board, MONO H1-Blend
	1	1	ZZ2909007	P.W. Board Assembly
RT01	1	1	RT0510214	Resistor, 1KΩ ±5% ¼W
CT01	1	1	DF1622301	Film Cap, 0.022μF ±10%
ST01	1	1	SP0202008	Push Switch, MONO H1-BLEND
JT01 ~ JT08	8	8	YP1000113	Plug
				PS01 SELECTOR SW BOARD
PS01	1	1	YD2909006	P.W. Board, SELECTOR-SW
	1		ZZ2909006	P.W. Board Assembly
		1	ZZ2909806	P.W. Board Assembly
RS01	1	1	RC1003312	Resistor, 3.3Ω 10% ½W
RS02	1	1	RC1003312	Resistor, 3.3Ω 10% ½W
RS03	1	1	RC0000012	Resistor, 0 Ω
CS01	1	1	EA3360109	Electroly Cap, 33μF 10V
CS02	1		DF1522205	Film Cap, 2200PF ±5%
CS03	1		DF1522205	Film Cap, 2200PF ±5%
CS02		1	DF1510205	Film Cap, 1000PF ±5%
CS03		1	DF1510205	Film Cap, 1000PF ±5%
SS01	1	1	SP0603009	Push Switch
JS01 ~ JS45	45	45	YP1000113	Plug
1112	1	1	62030039W	Plug
0602	1	1	288427401	Reflector
0603	1	1	288427101	Holder
0604	1	1	288427102	Holder
0606	3	3	51570306B	P H Tapt Screw, P 3 x 6 ST
0607	2	2	51100306A	B H M Screw, B 3 x 6
0609	2	2	51480306A	B H M Screw F
0610	2	2	51570306B	P H Tapt Screw, P 3 x 6 ST

U: For U.S.A.
E: For Europe

REF. DESIG.	U	E	PART NO.	DESCRIPTION
				PZ01 DIAL LAMP
PZ01	1	1	YD2884003	P.W. Board
	1	1	ZZ2884003	P.W. Board Assembly
MZ01	1	1	IN1008007	Lamp, DIAL ILL
MZ02	1	1	IN1008007	Lamp, DIAL ILL
MZ03	1	1	IN1008007	Lamp, DIAL ILL
MZ04	1	1	IN1008007	Lamp, DIAL ILL
MZ05	1	1	IN1008007	Lamp, DIAL ILL
JZ01 ~ JZ04	4	4	YP1000113	Plug
JZ05	1	1	YJ0800017	Socket
JZ06	1	1	YJ0800017	Socket
JZ07	1	1	YJ0800017	Socket
JZ08	1	1	YJ0800017	Socket
JZ09	1	1	YJ0800017	Socket
JZ10	1	1	YJ0800017	Socket
JZ11	1	1	YJ0800017	Socket
JZ12	1	1	YJ0800017	Socket
JZ13	1	1	YJ0800017	Socket
JZ14	1	1	YJ0800017	Socket
				PY01 INDICATOR LAMP
PY01	1	1	YD2909005	P.W. Board
	1	1	ZZ2909005	P.W. Board Assembly
MY01	1	1	IN1006301	Lamp, FM DOLBY
MY02	1	1	IN1006301	Lamp, FM
MY03	1	1	IN1006301	Lamp, AM
MY04	1	1	IN1006301	Lamp, NUT
MY05	1	1	IN1006301	Lamp, HI BLEND
MY06	1	1	IN1012011	Lamp, STEREO
JY01 ~ JY09	9	9	YP1000113	Plug
0721	1	1	290905101	Guide
0722	1	1	290926251	Pulley K
0726	2	2	51100306A	B H M Screw, B 3 x 6
0518	1	1	121000501	Clamper
0532	1	1	288610701	Sheet
M001	1	1	IM1104210	DC Meter
0531	1	1	288610701	Sheet
M002	1	1	IM1104202	DC Meter, TUNING
0526	1	1	288427402	Reflector
0527	1	1	288427103	Holder
0528	2	2	51570306B	P H Tapt Screw, P 3 x 6 ST
0529	1	1	51100306A	B H M Screw, B 3 x 6
M003	1	1	IN1008007	Lamp
M004	1	1	IN1008007	Lamp
J006	1	1	YJ0800019	Socket
J007	1	1	YJ0800019	Socket
0714	4	4	138200503	Clamper
4136	1	1	62030039W	Lug

REF. DESIG.	U	E	PART NO.	DESCRIPTION
0631	1	1	281810650	Bearing K
0702	1	1	51640412D	Set Screw C R
0703	1	1	53110403E	Hexagon Nut
0704	1	1	54040402N	Spring Washer
0303	1		290916021	Bracket
0304	1		290916022	Bracket
0321	3	3	51100306S	B H M Screw S, B 3 x 6
0324	1	1	289210107	Support
0325	2	2	51100306S	B H M Screw, B 3 x 6
0326	1	1	53110303E	Hexagon Nut
4336	4	4	5110030459	B H M Screw, B 3
0328	4	4	51100306S	B H M Screw, B 3 x 6
0329	4	4	53110303E	Hexagon Nut
0333	2	2	51100305S	B H M Screw, B 3 x 6
0411	2		145525903	Bush
0413		1	284906702	Cap
0415		1	282125901	Bush
0416		2	53110303E	Hexagon Nut
0417		2	54050300R	T L Washer PR
0418		2	51060316A	P H M Screw, P 3 x 16
0419		2	55060305S	T R Rivet
0422	2	2	51100308S	B H M Screw, B 3 x 8
0423	2	2	53110303E	Hexagon Nut
0424	2	2	54050300R	T L Washer PR
C003		1	DF1722380	Film Cap, 0.022μF 100V
G001	1		BF1040003	Printing Compo
F001	1		FS1005009	Fuse, 250 V 0.5 A UL
J001	1	1	YJ0400048	Socket, AC OUTLET
J002	1		YJ0800012	Socket, FUSE HOLDER
J004	1	1	YT0201009	Terminal, QUAD OUTPUT
J005	1	1	YT0202011	Terminal, OUTPUT
W001	1	1	YC0240010	AC Coard
W001	1	1	YC0180006	AC Coard
JU01	1	1	JT0304009	Terminal, ANT
				PU01 ANT ATT
PU01	1	1	YD2909008	P.W. Board, ANT. BOARD
	1	1	ZZ2909008	P.W. Board Assembly
RU01	1	1	RC1068012	Resistor, 68Ω ±10% ½W
RU02	1	1	RC1068012	Resistor, 68Ω ±10% ½W
RU03	1	1	RC1008212	Resistor, 8.2Ω ±10% ½W
SU01	1	1	SS0202038	Slide Switch, FM ANT ATT
LU01	1	1	LB3007526	Balum Coil
LU02	1	1	LC1154002	Chocke Coil, 150μH
JU02 ~ JU06	5	5	YP1000113	Plug
L001	1	1	LF1120038	ANT Coil
0309	1	1	257816052	Bracet K

U: For U.S.A.
E: For Europe

REF. DESIG.	U	E	PART NO.	DESCRIPTION
0314	1	1	281927103	Holder
0322	1	1	318827102	Holder
0316	2	2	51100310S	B H M Screw, B 3 x 10
0317	2	2	53110303E	Hexagon Nut
0318	2	2	51100308S	B H M Screw, B 3 x 8
0319	2	2	53110303E	Hexagon Nut
0320	2	2	54050300R	T L Washer OR
R001	1		GT0522512	Resistor, 22MΩ ±5% ½W
4936	1		62030039W	Lug
				PW01 TRIMMING RESISTOR BOARD
PW01	1	1	YD2909004	P.W. Board
	1	1	ZZ2909004	P.W. Board Assembly
RW01	1	1	RA0104018	Trimming Resist, 100KΩ B
RW02	1	1	RA0104018	Trimming Resist, 100KΩ B
RW03	1	1	RA0104018	Trimming Resist, 100KΩ B
RW04	1	1	RA0104018	Trimming Resist, 100KΩ B
RW05	1	1	RA0104018	Trimming Resist, 100KΩ B
RW06	1	1	RT0510414	Resistor, 100KΩ ±5% ¼W
JW01 ~ JW09	9	9	YP1000113	Plug
0802	1	1	290930201	Dial
0811	1		288410701	Sheet
J008	1	1	YL0103018	Terminal
R003	1	1	RT0510114	Resistor, 100Ω ±5% ½W
C002	1	1	DK1710301	Ceramic Cap, 0.01μF ±2%
1032		2	51570312B	P H Tapt Screw, P 3 x 12 ST
1033		5	54060300R	T L Washer IR
1034		1	290916006	Bracket
J009		1	YL0106004	Terminal, AC SELECT
1029		1	285216006	Bracket
1031		3	51062606E	P H M Screw, P 2.6 x 6
J010		1	YJ0800009	Socket
J011		1	YJ0800009	Socket
J012		1	YJ0800009	Socket
0123	4	4	275905701	Leg
0124	4	4	51490410S	B H M Screw FS
0230	1	1	290886101	Label
0233		1	282726514	Indicator
0404	10	10	51100306S	B H M Screw, B 3 x 6
0506	6	6	51100406A	B H M Screw, B 4 x 6
0913	4	4	51570306B	P H Tapt Screw, P 3 x 6 ST
0914	3	3	51100305B	B H B Screw, B 3 x 5
0915	3	3	54050300R	T L Washer OR
0917	2	2	290916005	Bracket
0918	4	4	51570306B	P H Tapt Screw, P 3 x 6 ST
1002	1	1	290910501	Chassis
1003	1	1	290916001	Bracket
1004	1	1	290916002	Bracket
1005	6	6	51100306A	B H M Screw, B 3 x 6
1007	2	2	281810107	Support x 2
1008	2	2	51100305S	B H M Screw, B 3 x 5
1009	2	2	54040302A	Spring Washer

REF. DESIG.	U	E	PART NO.	DESCRIPTION
1016	1	1	289010103	Support
1018	2	2	51570408S	P H Tapt Screw, P 4 x 8 ST
1019	2	2	54020401S	Flat Washer P
1020	2	2	54040402N	Spring Washer
1023	4	4	51570306S	P H Tapt Screw, P 3 x 6 ST
1024	4	4	51570306S	P H Tapt Screw, P 3 x 6 ST
1025	6	6	51570306S	P H Tapt Screw, P 3 x 6 ST
1026	4	4	51570306S	P H Tapt Screw, P 3 x 6 ST
1030		2	51570306B	P H Tapt Screw, P 3 x 6 ST
1035		2	51570306B	P H Tapt Screw, P 3 x 6 ST
1106	1	1	288600504	Clamper
1107	2	2	288600505	Clamper
1108	4	4	288600506	Clamper
1110	1	1	51570306B	P H Tapt Screw, P 3 x 6 ST
1111	1	1	54050300R	T L Washer PR
1113	3	3	51570306B	P H Tapt Screw, P 3 x 6 ST
1116	4	4	288700501	Clamper
1117	4	4	51570305B	P H Tapt Screw, P 3 x 5 ST
A001	1	1	AV0120203	F M Front End Assembly
R101	1	1	GD0510414	Resistor, 100KΩ γ5% ¼W
R102	1	1	GD0510514	Resistor, 1MΩ ±5% ¼W
R103	1	1	GD0510414	Resistor, 100KΩ ±5% ¼W
R104	1	1	GD0547014	Resistor, 47Ω ±5% ¼W
R105	1	1	GD0510414	Resistor, 100KΩ ±5% ¼W
R106	1	1	GD0522114	Resistor, 220Ω ±5% ¼W
R107	1	1	GD0510314	Resistor, 10KΩ ±5% ¼W
R108	1	1	GD0547214	Resistor, 4.7KΩ ±5% ¼W
R109	1	1	GD0582114	Resistor, 820Ω ±5% ¼W
R110	1	1	GD0510114	Resistor, 100Ω ±5% ¼W
R111	1	1	GD0510114	Resistor, 100Ω ±5% ¼W
C101	1	1	CT1100001	Trimming Cap, 1.5~10PF NPO
C102	1	1	CT1100001	Trimming Cap, 1.5~10PF NPO
C103	1	1	CT1100001	Trimming Cap, 1.5~10PF NPO
C104	1	1	CT1100001	Trimming Cap, 1.5~10PF NPO
C105	1	1	CT1050003	Trimming Cap, 3PF~8PF
C106	1	1	CA5000002	Variable Cap
C107	1	1	DD1608201	Ceramic Cap, 8.2PF ±10%
C108	1	1	DD1633002	Ceramic Cap, 33PF ±10%
C109	1	1	DD1210006	Ceramic Cap, 10PF ±10%
C110	1	1	DD1210006	Ceramic Cap, 10PF ±10%
C111	1	1	DD8500350	Ceramic Cap, 0.3PF ±5%
C112	1	1	DD1606001	Ceramic Cap, 6PF ±10%
C113	1	1	DD8501550	Ceramic Cap, 1.5PF ±5%
C114	1	1	DD1612002	Ceramic Cap, 12PF ±10%
C115	1	1	DD1612003	Ceramic Cap, 12PF ±10%
C116	1	1	DD1647002	Ceramic Cap, 47PF
C117	1	1	DD1615003	Ceramic Cap, 15PF ±10%
C118	1	1	DC1810250	Ceramic Cap, 1000PF 500VDC $^{+100}_{-0}$
C119	1	1	DC1810250	Ceramic Cap, 1000PF 500VDC $^{+100}_{-0}$
C120	1	1	DC1810250	Ceramic Cap, 1000PF 500VDC $^{+100}_{-0}$
C121	1	1	DC1810250	Ceramic Cap, 1000PF 500VDC $^{+100}_{-0}$
C122	1	1	DC1810250	Ceramic Cap, 1000PF 500DC $^{+100}_{0}$
C123	1	1	DC1810250	Ceramic Cap, 1000PF 500DC $^{+100}_{-0}$

U: For U.S.A.
E: For Europe

REF. DESIG.	U	E	PART NO.	DESCRIPTION
C124	1	1	DC1810250	Ceramic Cap, 1000PF 500VDC $^{+100}_{-0}$
C125	1	1	DC1810250	Ceramic Cap, 1000PF 500VDC $^{+100}_{-0}$
C126	1	1	DC1810250	Ceramic Cap, 1000PF 500VDC $^{+100}_{-0}$
C127	1	1	DC1001050	Ceramic Cap, 1PF 500VDC ± 0.25PF
C128	1	1	DC1001050	Ceramic Cap, 1PF 500VDC ± 0.25PF
C129	1	1	DC1001050	Ceramic Cap, 1PF 500VDC ± 0.25PF
C130	1	1	DC1001050	Ceramic Cap, 1PF 500VDC ± 0.25PF
1621	1	1	290910911	Shield
1622	3	3	290910912	Shield
1623	1	1	290910913	Shield
H101	1	1	HF400453A	F E T, 33K45
H102	1	1	HF400403A	F E T, 33K40
H103	1	1	HT312152A	Transistor, 2SC1215
C001	1	1	CA0330003	Variable Cap
L002	1		TS1601501	Power Transf.
L002		1	TS1601502	Power Transf.
F001		1	FS1030004	Fuse, 250V 3A
F002		1	FS1005003	Fuse, 250V 0.5A
F003		1	FS1005003	Fuse, 250V 0.5A
J013		1	YL0103018	Terminal
0109	4	4	52017039J	H Head Bolt
0111	1	1	290415404	Knob
0112	5	5	281815401	Knob
0113	2	2	282815401	Knob
0115	1	1	282625701	Lid
0116	2	2	290911801	Spacer
0117	4	4	51480406S	B H M Screw F
0119	1	1	282625702	Lid
0121	8	8	51100406S	B H M Screw, B 4 x 6
0202	1		290926501	Indicator
0204		1	290926503	Indicator
0210	2	2	51100305S	B H M Screw, B 3 x 5
0211	1	1	257886101	Label, UL Caution
0212	1	1	257886102	Label, Do Not Remove ----------
0213	1	1	257886103	Label, See Marking ----------
0214	1	1	250626506	Indicator, Do Not Use As ----------
0219	1	1	951091101	Label
0221	1		951091102	Label, Factory NO
0224	1		951110103	Label, UL
0628	1	1	285011202	Shaft
0629	1	1	54040402N	Spring Washer
0706	2	2	51470306A	B H M Screw S
0807	1	1	288400701	Striv
0808	2	2	287105302	Cover
0809	1	1	288411802	Spacer
0811	1	1	288410701	Sheet
0910	1	1	56382540G	Eyelet

REF. DESIG.	U	E	PART NO.	DESCRIPTION
0916	1	1	290910904	Shield
0919	5	5	51570306S	Shield
1010	1	1	288410903	Shield
1011	4	4	51570306S	P H Tapt Screw, P 3 x 6 ST
1012	1	1	290910901	Shield
1013	4	4	51570306S	P H Tapt Screw, P 3 x 6 ST
1014	1	1	290910902	Shield
1015	4	4	51570306S	P H Tapt Screw, P 3 x 6 ST
1017	1	1	51100306S	B H M Screw, B 3 x 6
1102	1	1	290825901	Bush
1202	1		290985101	Instructions, Set
1203		1	290985102	Instructions, Set
1209	1		290985601	Schematic
1210		1	290985602	Schematic
1217	1	1	281885104	Instructions, Packing
1218	1	1	288785108	Instructions, Accessories
1219			288785110	Instructions, Accessories
1220	1	1	282685107	Instructions, Cabinet Mounting
1224	1	1	257785401	Guarantee Card
1225	1	1	257785102	Instructions, Red Tag
1226	1		257781301	Envelope
1231		1	281881301	Envelope
1302	1	1	290980101	Packing Case, Inner
1303	1	1	290980111	Packing Case, Outer
1308	1	1	288480301	Partitioner Upper
1312	1	1	901433533	Polyethylen Bag Set
1314	1	1	901302501	Polyethylen Bag Printed Material
1315	1	1	901302501	Polyethylen Bag Accessories
1317	1	1	102980401	Sleeve
1318		1	956000004	Hang Tag, Power Card
1319	2	2	273182101	Silicagel
1320	1	1	281905601	Buffer
1322	4		952281501	Serial No Card
1324		4	952301511	Serial No Card
1331	1	1	ZA0200007	Ext Antenna FM
1333	1	1	ZD0120006	Connective Cord

TECHNICAL SPECIFICATIONS

FM SECTION:

Tuning Frequency Range	88–108
IHFM Usable Sensitivity (Alternate Channel)	1.9uV
IHFM Selectivity	>80dB
Capture Ratio	1.25
Image Rejection Ratio at 106MHz	>100dB
Signal to Noise Ratio (Mono)	70dB
Signal to Noise Ratio (Stereo)	60dB
Total Harmonic Distortion (Mono)	.15%
Total Harmonic Distortion (Stereo)	.30%
Frequency Response (ref. 75u sec. de-emphasis)	±1dB
Stereo Separation at 1KHz	42dB

AM SECTION:

Tuning Frequency Range	515–1650
Usable Sensitivity	20uV
Selectivity (Alternate Channel)	>45dB
Image Rejection Ratio	>65dB
Signal to Noise Ratio	50dB
Frequency Response, –3dB down	50Hz–2.5KHz
Total Harmonic Distortion (30% Mod.)	1%

GENERAL:

Power Requirements	120V AC, 50 to 60Hz
Power Consumption	25 Watts
Dimensions Panel Width	15-3/8 inches
Panel Height	5-3/4 inches
Depth	11-7/8 inches
Weight Unit alone	17.2 lbs.
Packed for shipment	23.8 lbs.

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

SERVICE INFORMATION FOR EUROPEAN MODEL

The information contained here in includes 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.

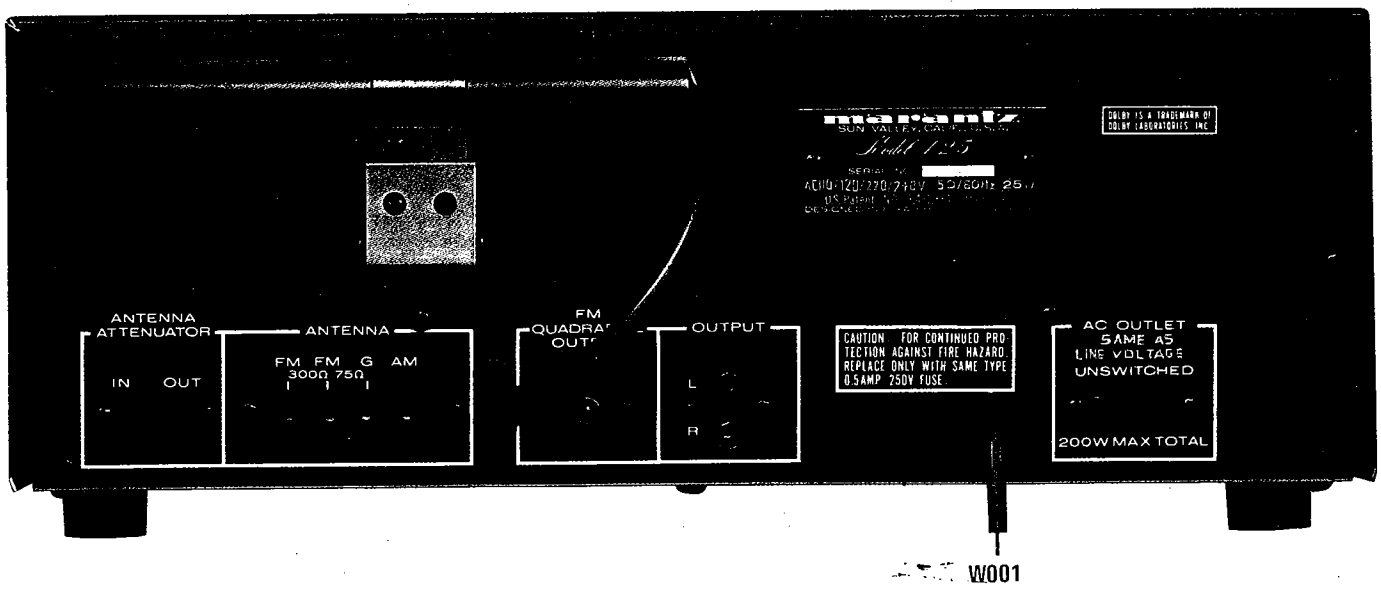


Figure 19. Rear Panel Adjustment and Component Locations

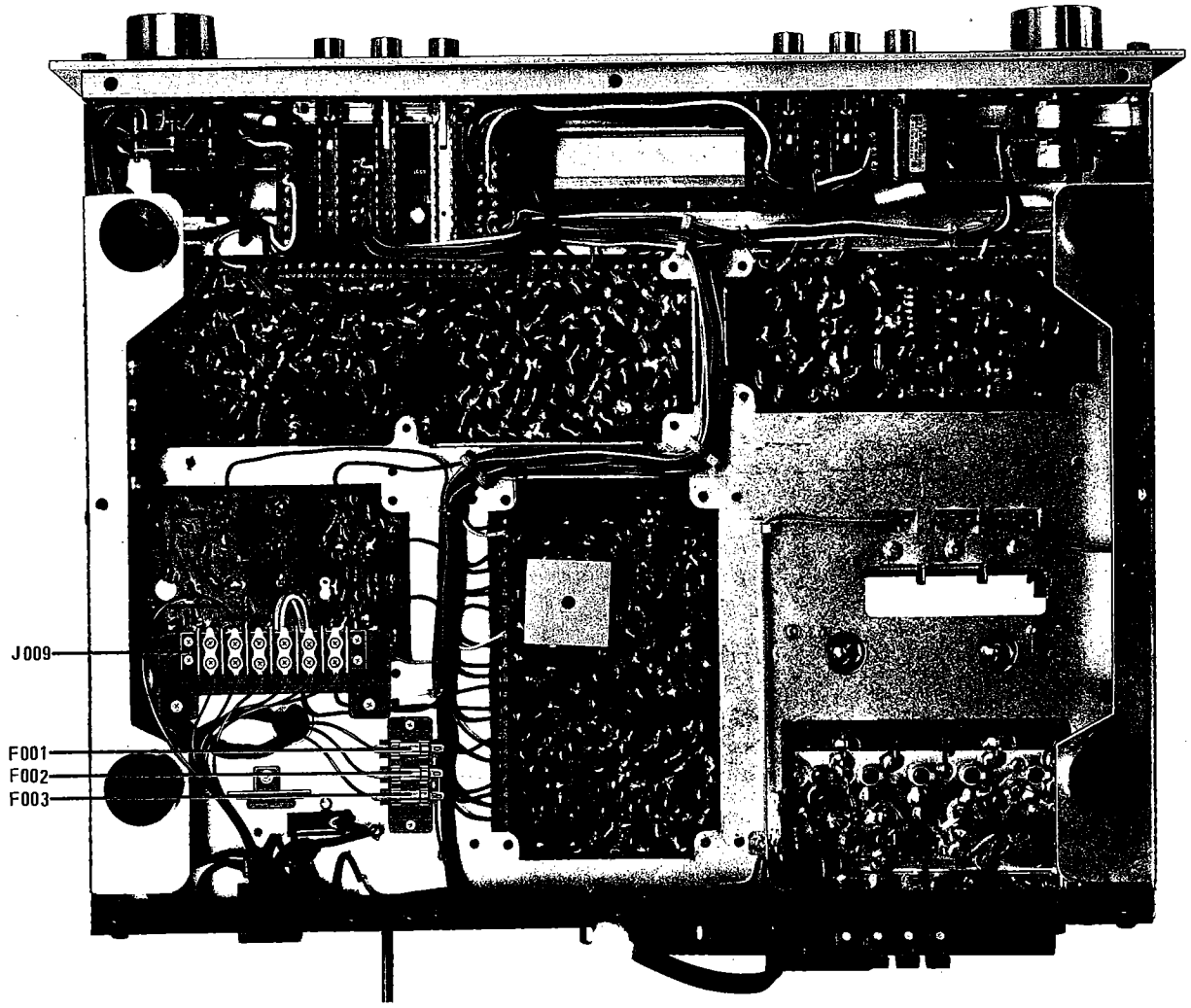
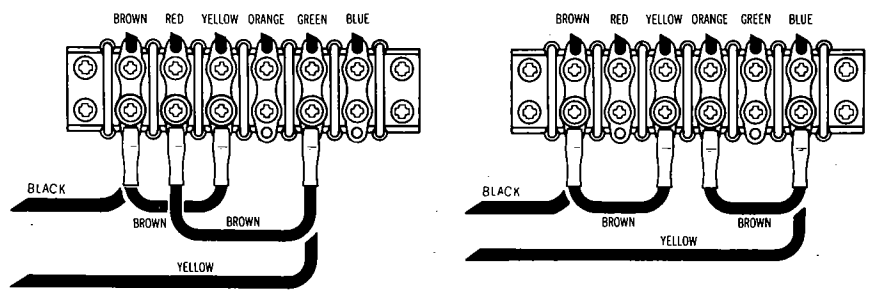


Figure 20. Main Chassis Component Locations (Bottom View)

VOLTAGE CONVERSION

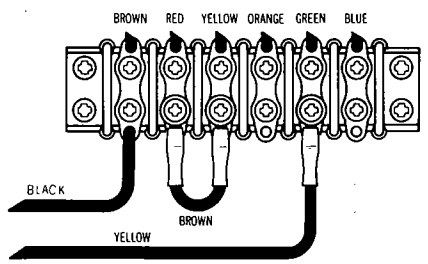
This model is equipped with a universal power transformer to permit operation at 110, 120, 220 and 240V AC 50 to 60Hz.
To convert the unit to the required voltage perform the following steps:
(1) Remove the cover.
(2) Change the jumper wires as illustrated below for the required AC voltage.

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

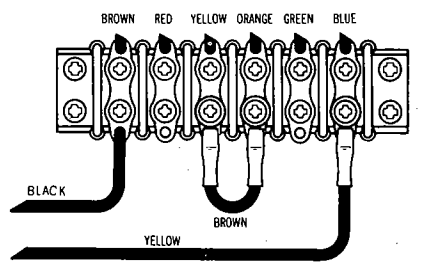


For 110V Operation

For 120V Operation



For 220V Operation



For 240V Operation

Figure 21. 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 auszerhalb des in den FTZ-Bestimmungen angegebenen Bereiches empfangebereit sein, bitten wir, den Bereich durch Nachstellen des Kernes in der Oszillatorspule (in der Abbildung mit "FTZ" gekennzeichnet) so zu korrigieren, dass er den Bestimmungen entspricht.

Model 125 **NOTE: This schematic diagram applied to units manufactured for the European market.**

Figure 22. Schematic Diagram

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