



27

marantz

model twenty seven

Stereo Receiver

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INTRODUCTION

This service manual was prepared for use by Authorized Warranty Stations and contains service data for the Marantz Model 27 Stereophonic Receiver.

Servicing information and voltage data included in this manual are intended for use by knowledgeable and experienced technicians only. All instructions should be read carefully. No attempt should be made to proceed without a good understanding of the operation of the set. A brief functional description and associated block diagram, furnished in the Operating Instruction Manual for the Model 27 Receiver, provide functional data about the set as an aid in this understanding.

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

1. SERVICE NOTES

As can be seen from the circuit diagram, the chassis of the Model 27 consists of the following units. Each unit mounted on a printed circuit board is circumscribed by a bold dotted line on the circuit diagram.

1. FM Front End and AM Front Endmounted on PC board P100
2. FM/AM IF Amplifier and FM MPX Stereo Demodulator
.....mounted on PC board P200
3. Phono Amplifiermounted on PC board P300
4. Tone Amplifiermounted on PC board P400
5. Main Amplifiermounted on PC board P500
6. Rectifiers and Regulated Power Supplymounted on PC board P600
7. Dynamic Bias Control Unitmounted on PC board P700
8. Low Filter and Loudness Control Unitmounted on PC board P800
9. Tone Control Unitmounted on PC board P900

2. AM TUNER

2.1. Circuit Description

The AM tuner consists of two units, a front end unit mounted on a part of PC board P100 and IF amplifier unit mounted on a part of PC board P200.

The front end consists of an RF amplifier and a converter. AM signals induced in a ferrite rod antenna L001 are applied to the base of RF amplifier transistor H104 and amplified to the level high enough to overcome the converter noise. The tuning circuits placed in the input and the output circuits of the RF amplifier provide very high image ratio and sufficient spurious rejection. Thus amplified and selected signal is applied to the base of converter transistor H105. The converter forms a collector-emitter self-oscillation circuit and the local oscillation signal appears at the emitter of H105. Both the signals are then mixed at the base-emitter junction and converted into 455KHz intermediate frequency. The IF signal obtained from the collector of H105 is applied to the first IF transformer L109.

Diode H106, reverse-biased by resistors R115 and R116, eliminates signal overload distortion without sacrificing any receiving sensitivity.

The IF signal output is led to the IF amplifier consisting of two stages H203 and H204, which are shared with FM IF amplifier, and are amplified to high level. The amplified IF output is applied to diode H220 to detect audio signal. Then the detected audio signal is led to output pin J204 through filtering network. The DC component of the detected IF signal is used for AGC which affects the emitter current of H203 and RF amplifier transistor H104. A part of IF signal output is also applied to diode H219 through capacitor C224 and rectified into DC current for energizing signal strength meter M001.

2.2. Suggestions for Trouble Shooting of AM Tuner

Symptom: No AM Reception

First try to tune to stations by rotating a flywheel tuning knob slowly and observe the signal strength meter whether it deflects or not. If the signal strength meter gives a deflection at several frequencies received, no failure exists in the stages at least preceding IF transformer L206. Next connect an oscilloscope to tuner output pin J204, and check audio signal. If the signal strength meter does not deflect, check the local oscillator circuit. Normal oscillation voltage at the hot end of the oscillator capacitor is 2 to 3 volts, varying with the tuning capacitor position. When measuring oscillation voltage use an RF VTVM, no circuit tester gives correct indication. If the local oscillation voltage is normal, check all voltage distributions in the tuner circuit by using a circuit tester and compare the measured values with those written in the schematic diagram.

3. FM TUNER

3.1. Circuit Description

The FM section consists of four parts, FM front end, IF amplifier, MPX stereo demodulator, and Sub-IF amplifier.

FM signals induced by an FM antenna are led to FM antenna coil L101 through antenna attenuator switch S004 and balun coil L005. The signals are then applied to an FET RF amplifier and the amplified output is applied to FET mixer H102 through a double-tuned circuit and converted into 10.7MHz IF signals. H103 is a local oscillator transistor. The undesired drain-to-gate interelectrode capacitance of RF amplifier H101 is neutralized by the secondary take up winding on L102 and capacitor C105 for maximum gain and good stability. The gate of H101 is returned to the AGC bus through R101 and a bypass capacitor C114. The AGC voltage is obtained by rectifying oscillation being produced by capacitors C117 and C118. Oscillator injection to the

source of mixer FET H102 is accomplished by C113.

The converted IF signals are led to the IF amplifier consisting of four transistor amplifier stages and an IC limiter. The FM IF amplifier shares its third and fourth stage transistors H203 and H204 with the AM IF amplifier. The fully amplified IF signal is then applied to the FM discriminator transformer L204 and demodulated into audible signal.

The demodulated audio signal is applied to the base of the 19KHz pilot signal amplifier H209. This amplifier operates as an emitter follower for audio signals and has no voltage gain. The audio output is obtained from the emitter of H209 and applied to the center tap of 38KHz tuned transformer L211 through a 67KHz SCA trapping filter consisting of L212 and C249. The audio signal is split into right and left channel circuit by the diode-switching networks, then led to the crosstalk canceling amplifiers.

When the demodulated audio signal is stereo composite signal, the 19KHz pilot signal amplifier operates as a tuned amplifier for the 19KHz pilot signal and as an emitter follower for the composite signal except 19KHz. The pilot signal, amplified by H209, is applied to H210 for further amplification. Then it is rectified by the full wave rectifier consisting of diodes H213 and H214, thus 38KHz pulsating current to drive 38KHz sub-carrier amplifier transistor H212, and 38KHz subcarrier is provided. The 38KHz sub-carrier and stereo composite signal, except 19KHz, are superimposed at the secondary coil of L211 and the composite signal is alternatively sampled by the right and left channel switching diodes at the rate of 38KHz. The sampled or separated outputs are led to the crosstalk canceling amplifier consisting of H214 and H215.

Then led to tuner output pins J205 and J206 after canceling undesirable crosstalk.

Two trapping filters are employed to trap undesirable 19KHz pilot signal and 38KHz sub-carrier components in the output circuit of H214. A circuit consisting of L213 and C259 is tuned against 19KHz and the other of L215 and C265 is against 38KHz.

The second 19KHz pilot signal amplifier H210 is so designed that the emitter circuit is electrically switched on and off by controlling the bias current of switching transistor H211. The bias current of H211 is obtained from the Sub-IF amplifier circuit consisting of transistor H206, 10.7MHz IF transformer L208 and two diodes H221 and H222. The stereo switch on the front panel is connected across the base and emitter of switching transistor H211. Therefore, when the switch is in its normal "off" position, the base and emitter are short-circuited and no emitter current flows.

Thus the emitter of the second 19KHz pilot signal amplifier is cut off and no 19KHz signal appears at the collector of H210. No stereo separation is obtained. When the stereo switch is depressed, the emitter-base short-circuit is opened and if the level of a received FM signal is higher than the pre-determined level, the DC voltage developing across R001 and R234 drives the switching transistor H211 on. Thus H210 begins to operate. Under these circumstances, the presence of a 19KHz pilot signal turns on H212 and it turns on stereo beacon switching transistor H213 turning the beacon lamp on.

The direct current voltage developed between B and diode H221 is used to drive FM tuning meter M001.

3.2. Suggestions for Trouble Shooting of FM Tuner

3.2.1. Symptom : No FM Reception

First, turn on the power switch and try to tune in to FM stations. Rotate the flywheel tuning knob slowly and observe the tuning meter. If the tuning meter deflects at several frequencies, the tuner circuit preceding the limiter circuit may have no failure.

Tune the set to a station and check the following points by using a high sensitivity oscilloscope : output of the FM discriminator test point B, the emitter of the 19KHz pilot signal amplifier H209, and Multiplex stereo output pin J205 or J206. When no reading is observed on the tuning meter, check the local oscillator circuit by using

an RF VTVM. Normal local oscillation voltage is about 2 volts at the hot end of the tank circuit. If the oscillation voltage is normal, check all voltage distributions and compare them with those shown the schematic diagram.

3.3.2. Symptom : No Stereo Separation

First, check the stereo switch is depressed, connect an FM RF signal modulated by a stereo signal to the FM antenna terminals and check whether the stereo beacon lamp is turned on or not. When the lamp is not turned on, connect an oscilloscope to the collector of H212 and observe 38KHz stereo sub-carrier is correctly generated or not.

4 . FM AND AM TUNER ALIGNMENT

The following alignment requires many precision measuring equipments shown in P.

No alignment should be performed in the field unless the service man has these equipments and enough knowledge in solid stage amplifier components, since all the units are factory aligned and not become misaligned by themselves.

4.1. AM Front End

- 1) Set an AM signal generator to 600KHz, 400Hz 30% modulation. Tune the receiver to the same frequency and adjust local oscillator coil L108 until the dial pointer coincides with the 600KHz marking on the dial.
- 2) Set the AM signal generator to 1400KHz. Tune the receiver to the same frequency and adjust trimming capacitor C129 until the dial pointer coincides with the 1400KHz marking on the dial.
- 3) Repeat procedure 1 and 2 until no further adjustment is necessary between 600KHz and 1400KHz.
- 4) Set the generator to 600KHz. Tune the receiver to the same frequency and adjust antenna coil L001 in a plastic case and RF coil L107 for maximum output.

5) Set the generator to 1400KHz. Tune the receiver to the same frequency and adjust each antenna trimming capacitor and RF trimming capacitor C121 and C126 for maximum output.

6) Repeat procedure 4 and 5 until no further improvement is obtained.

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

4.2.AM IF Amplifier

To align the AM IF amplifier, a sweep generator with 455KHz marker generator combined is necessary.

1) Connect the sweep generator across the AM local oscillator section of the tuning capacitor and common ground. Connect an oscilloscope to test point C.

2) Turn each primary and secondary core of IF transformers L109, L205, and L206 for maximum and symmetrical response with the marker pip at the top.

4.3.FM Front End

4.3.1 Local Oscillator Adjustment

1) Measuring instruments connection.

Connect an FM signal generator to the FM antenna terminals on the rear panel.

Connect a VTVM or an oscilloscope across the speaker system terminals.

2) Set the FM signal generator to 90MHz, 400Hz 100% modulation. Tune the receiver to the same frequency and adjust local oscillator coil L106 until the dial pointer coincides with the 90MHz marking on the dial.

3) Set the FM signal generator to 106MHz. Tune the receiver to the same frequency and adjust trimming capacitor C119 until the dial pointer coincides with the 106MHz marking on the dial.

4) Repeat procedure 2 and 3 until no further adjustment is necessary between 90MHz and 106MHz.

4.3.2.FM Tracking Alignment

- 1) Set an FM signal generator to provide about 5uV at 90MHz. Tune the receiver to the same frequency and turn each core of L101,L102 and L103 for maximum output.
- 2) Set the FM signal generator to 106MHz. Tune the receiver to the same frequency and adjust trimming capacitors C102, C107 and C111 for maximum output.
- 3) Repeat procedure 1 and 2 until no further improvement is obtained.

4.4.FM IF Amplifier

To align the FM IF amplifier, a high frequency sweep generator with 10.7MHz marker generator combined is required. Connect the sweep generator to the FM local oscillator section of the tuning capacitor and an oscilloscope to test point A. Turn each primary and secondary core of IF transformers L104,L201,L202 and L203 for maximum and symmetrical response with the marker pip at the top.

4.5.FM Discriminator

Connect an oscilloscope to test point B and turn the primary and the secondary cores of discriminator transformer L204 for straight and symmetrical "S" curve with 10.7MHz marker pip at the center.

More precision adjustment of discriminator requires a distortion meter. To make this precision adjustment, connect an FM signal generator having low distortion characteristics to the antenna terminals of the set. Tune the set to the FM signal and measure the distortion of audio output. Turn the primary core of the discriminator transformer so as to obtain minimum distortion.

4.6.FM Sub-IF Amplifier

To align the sub-IF amplifier, tune the receiver to an FM signal and turn the core of L208 so that the FM tuning meter reads maximum deflection.

4.7.FM Stereo Demodulator

A stereo multiplex and RF FM signal generator is required to make the separation adjustment on this circuit.

Perform the following adjustment in sequence.

- 1) Set the FM signal generator to 98MHz, 2mV output level. Tune the receiver to the same frequency. Ensure that the stereo switch is depressed for stereo operation.
- 2) Connect an oscilloscope probe to the collector of H212 and turn each core of L209, L210 and L211 for maximum 38KHz sub-carrier wave on the scope.
- 3) Turn the core of L211 again to obtain equal stereo separation in both of the right and the left channels.
- 4) Adjust trimming resistor R269 for maximum and equal stereo separation in both channels.

5 . PHONO AMPLIFIER

A phono signal applied to the phono jack, is led to the phono amplifier for the RIAA equalization and pre amplification. The phono amplifier makes use of a conventional bipolar transistor H301 and a field-effect transistor H303. The collector of H301 is direct coupled to the gate of H303 and the base bias for H301 is derived from the source circuit of H303. This configuration assures a good thermal and electrical stability. R309, R311, R307, C304 and C306 condition the feedback characteristic from the drain of H303 to the emitter of H301 for precise RIAA equalization. The RIAA equalized and amplified phono signal is led to selector switch S003-1 and S003-3.

6 . TONE AMPLIFIER

A signal from the selector switch is led through stereo switches S001-2, tape monitor switch S001-1, balance control R005 and volume control potentiometer R006 to the input pin of the tone amplifier. The tone amplifier makes use of four transistors H401, H403, H405 and H407 in a conventional negative feedback type configuration.

The tone control unit consisting of two potentiometers R941 and R942, resistors R943 and R945, and capacitors C941 and C943 is mounted on a separate PC board P940.

A bootstrap configuration is utilized with H401 to provide high input impedance. The output signal of the tone control amplifier is led to the power amplifier through low filter unit mounted on a part of PC board P800.

7. POWER AMPLIFIER

7.1. Circuit Description

7.1.1. Amplifier

The signal from the tone amplifier is applied to the inverting input (pin #2) of operational amplifier H501 through the input coupling network R553, R503, R501 and C501. This network provides a high input impedance to the amplifier and prevents any dc from appearing at the op amp input.

The output of the op amp is divided by networks C511/R521 and C509/R523, and is applied to the base of H507 and H509. H507 and H509 provide the voltage amplification necessary to drive driver (buffer) transistors H511 and H513. H511 and H513 are operated in a complimentary-symmetry configuration with their respective power transistors H002 and H004.

The output of H511 is applied to the base of H002, and that of H513 to H004. The combined operation of PNP transistors H002 and NPN transistors H004 provide a push-pull output appearing at output pin J505. This output is applied to network R609.

L003, and via headphones jack J012 contacts to the LOUDSPEAKER output terminals (J002).

To maintain good overall stability and linearity, negative feedback is utilized throughout the amplifier. This feedback is also necessary to reduce distortion to be well under the specified limits. R507, C503 and R505 condition the feedback signal for application to the non-inverting input (pin #3) of the op amp.

Except for the input, the amplifier uses direct coupling throughout. Potentiometer R509 placed across pin #1 and pin #5 of op amp H501 is for the DC balance control of the amplifier.

7.1.2. Dynamic Bias

Dynamic bias is applied to the bases of driver transistors H511 and H513. H511 and H513, in turn, determine the class of operation for the power amplifier transistors H002 and H004, thus maintaining a constant class of operation by establishing and maintaining the proper collector-to-emitter current. This dynamic bias circuit consists of adjusting resistor R551, and temperature sensitive diodes H701 and H703. The circuit provides a variable base bias for driver transistors H511 and H513 that automatically maintains the proper base voltage (bias condition) with temperature change.

Temperature sensitive biasing components of the dynamic bias circuit are thermally coupled through a heatsink to the PA transistors.

7.1.3. Amplifier Protection

Protection for the amplifier is provided by sensing-resistors R547 and R549 operating in conjunction with H503 and H505. When the output power transistors H002 and H004 are over-driven, the current through the output power transistors increase and it causes an increase in the current flow through R547 and R549. The resulting voltage drop across R547 and R549 controls the biasing of H503 and H505, resulting in clipping of any input signal of greater amplitude than the level required for predetermined power output. In the case of output short-circuit. H503 and H505 work to decrease the bias currents of H507 and H509 respectively. It results in decrease in the bias currents of H511, H002, H513 and H004. Thus a good protection is achieved for both polarities.

7.2.DC Balance And Bias Adjustment of The Main Amplifier

Connect a VTVM and a dummy load of 8ohms 50W across the speaker system output terminals for the channel being tested. Set the voltage range on VTVM to the lowest scale available, preferably 100 or 300 mV full scale deflection. First turn Bias control resistor R551 and R552 fully clockwise. Adjust DC balance control R509 until no DC voltage is obtained at the speaker terminal strip. Repeat the procedure for the other channel.

Next proceed to the Bias adjustment.

Connect the VTVM across resistor R547 or R549 and adjust bias control resistor R551 until the VTVM reads 7mV. Connecting an oscilloscope across the speaker system output terminals and an audio oscillator (1000Hz) to the AUXjack on the rear panel, ensure that no crossover distortion is observed on the scope with faint signal input from the audio oscillator. To adjust the other channel bias current, connect the VTVM across resistor R550 or R548 and adjust bias control resistor R552 for the same voltage reading.

7.3.Suggestions for Trouble Shooting of Power Amplifier

7.3.1.Excessive line consumption

- 1) Check for shorted rectifiers H001: also check C002, C003, C004 and C005.
- 2) Check for shorted transistors H511, H513, H002 and H004. Check for open control R551, and bias diode H701 and H703. Check L002 for short.

CAUTION : Because the driver and output stages are direct coupled, components may fail as a direct result of an initial component failure. If a shorted transistor, Zener diode, control, or bias diode is found, be sure to check the remaining driver and output components for short or open circuits before re-energizing the amplifier.

7.3.2.No line consumption or zero bias.

- 1) Check line cord, over current circuit breaker, transistors H002 and H004, bias diodes H701 and H703.
- 2) Check for open rectifies H001, or open L002.

7.3.3.High dc voltage at loudspeaker terminals at all times.

- 1) Check H002 and H004 for shorts.
- 2) Check for defective potentiometer R509.

7.3.4.No DC Balance.

- 1) Check op amp and Zener diodes H515 and H517.
- 2) Check R509.

8. REGULATED POWER SUPPLY

8.1. Circuit Description

The power supply unit mounted on P600 provides three different DC outputs of +25V, -11V and -2V. The +25V output is well regulated by a conventional series control type transistor regulator consisting of two transistors, H601 and H602, and a zener diode H603. This source energizes the tone amplifier and the phono amplifier.

The -11V output is regulated by a zener diode H229 mounted on P200 and this source energizes the AM and FM tuner section mounted on P100 and P200. The -2 output is used only for the stereo beacon lamp operation. +29V and -29V power source for the main amplifier is obtained by bridge connected rectifiers H001 and filtering capacitors C002 and C003. This part is not mounted on a PC board but on the chassis.

8.2. Suggestions for Trouble Shooting of Regulated Power Supply

8.2.1. Symptom : No output

Check for

- 1) Open transistor H602.
- 2) Shorted capacitors C603, C611, C610 and C604.
- 3) Open power transformer L002.
- 4) Open resistors R605, R606 and R604.

8.2.2. Symptom : Excessive output voltage

Check for

- 1) Shorted transistor H602.
- 2) Shorted resistor R602.
- 3) Open resistor R601.
- 4) Open zener diode H603.

8.2.3. Symptom : Inadequate output voltage

Check for

- 1) Open or low value capacitors C604.

- 2) Shorted capacitor C602.
- 3) Open resistor R602 and R603.
- 4) Shorted zener diode H603.

8.2.4.Excessive ripple

Check for open or low value capacitors C604, C610, C611 and C602.

8.3.Adjustment of Regulated Power Supply

Connect a DC voltmeter across +25V output pin J606 and the common ground. Adjust trimming resistor R602 for 25V reading on the meter.

9. TEST EQUIPMENTS FOR SEVICING

Item	Manufacturer and Model No.	Use
AM Signal Generator		Signal Source for AM Alignment
Test Loop		Used with AM Signal Generator
FM Signal Generator	Distortion 0.3% or less	Signal source for FM Alignment
Audio Oscillator	Residual distortion 0.02% or less	Sine wave source for modulating AM or FM Signal Generator, or trouble shooting
Stereo Modulator	Distortion 0.3% or less	Modulating FM Signal Generator for Separation Alignment and trouble shooting
Oscilloscope	High Sensitivity	Wave form analysis and trouble shooting
VTVM	With RF probe	Trouble shooting
Circuit Tester		Trouble shooting
Sweep Generator	For 455KHz and 10.7MHz	AM and FM IF alignment
8-ohm Resistors	0.5%50W (non-inductive)	Dummy Load
Line Voltmeter	0-150V AC	Line voltage monitor
Variable Autotransformer	0-140V, 10A	Primary power voltage adjuster

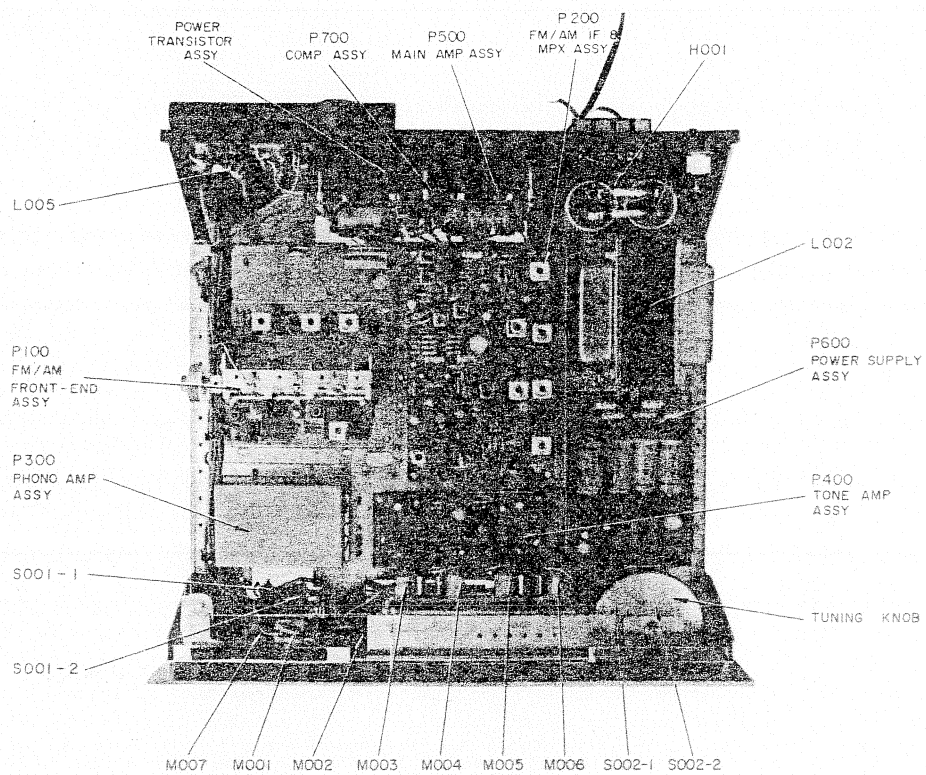


Figure 1. Main Chassis Adjustment and Component Locations

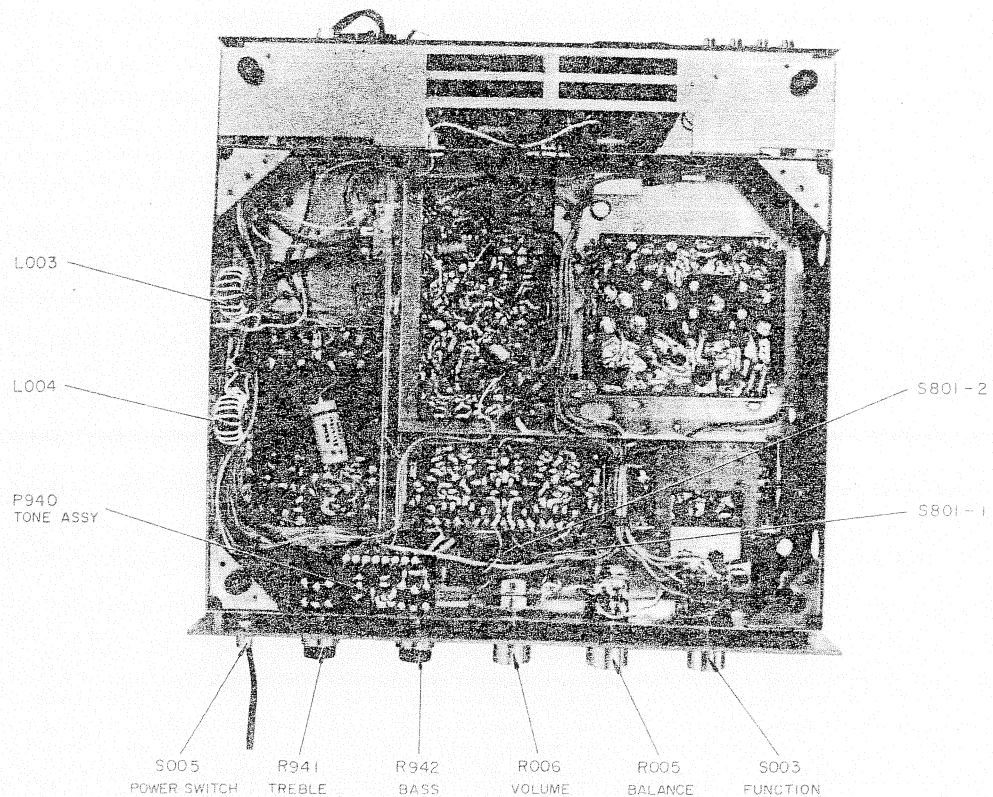


Figure 2. Main Chassis Adjustment and Component Locations

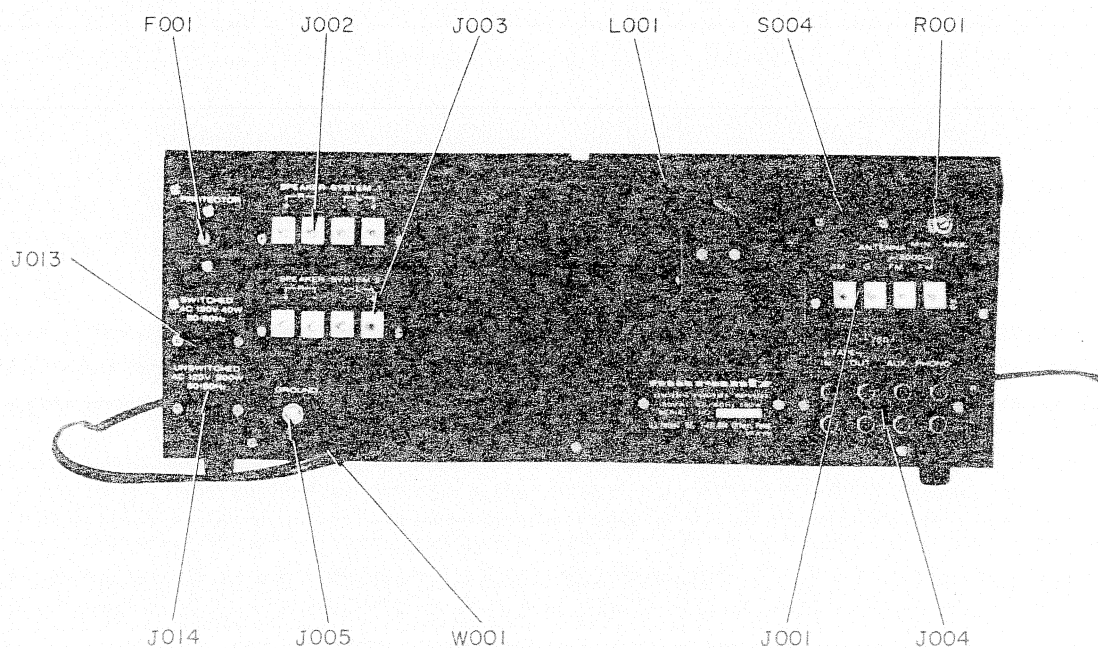


Figure 3 Rear Panel Adjustment and Component Locations

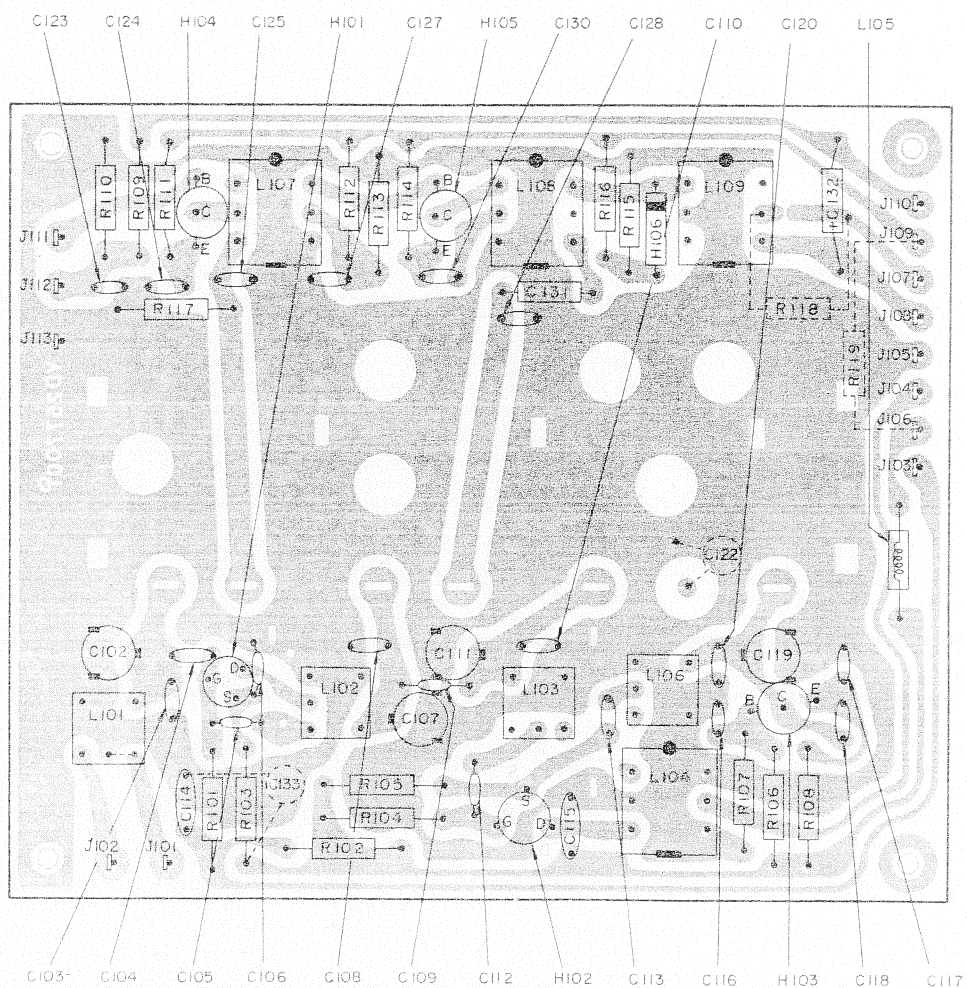


Figure 4 AM/FM Front End Circuit

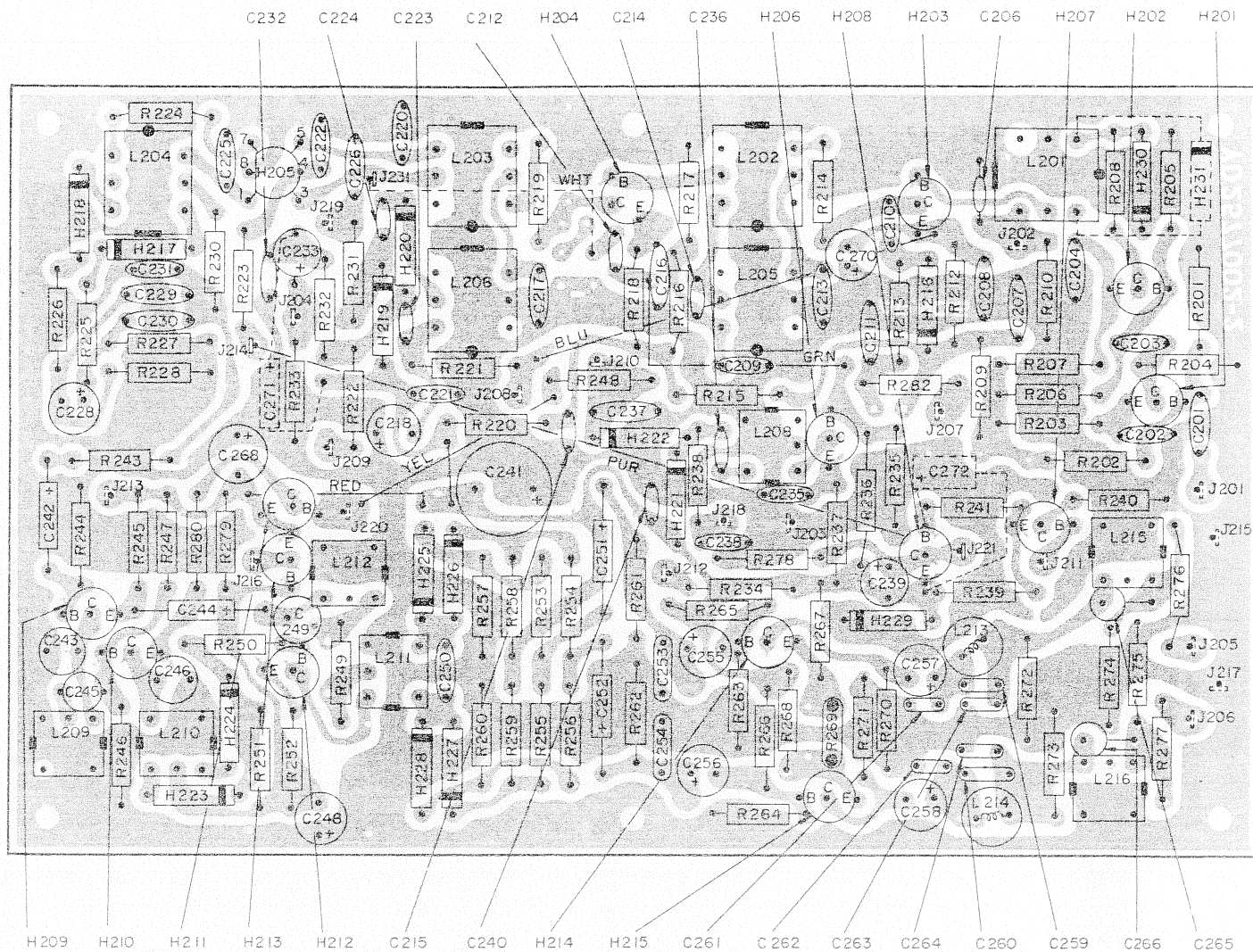


Figure 5 AM/FM/IF Amplifier and FM MPX Unit

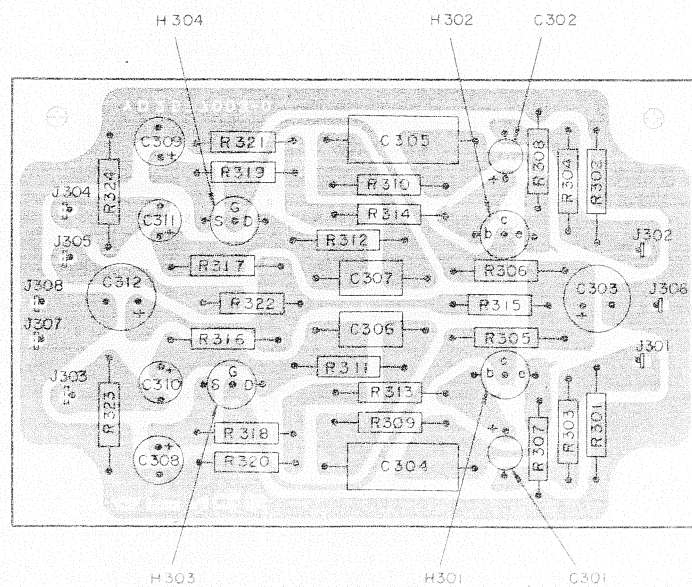


Figure 6 Equalizing Amplifier

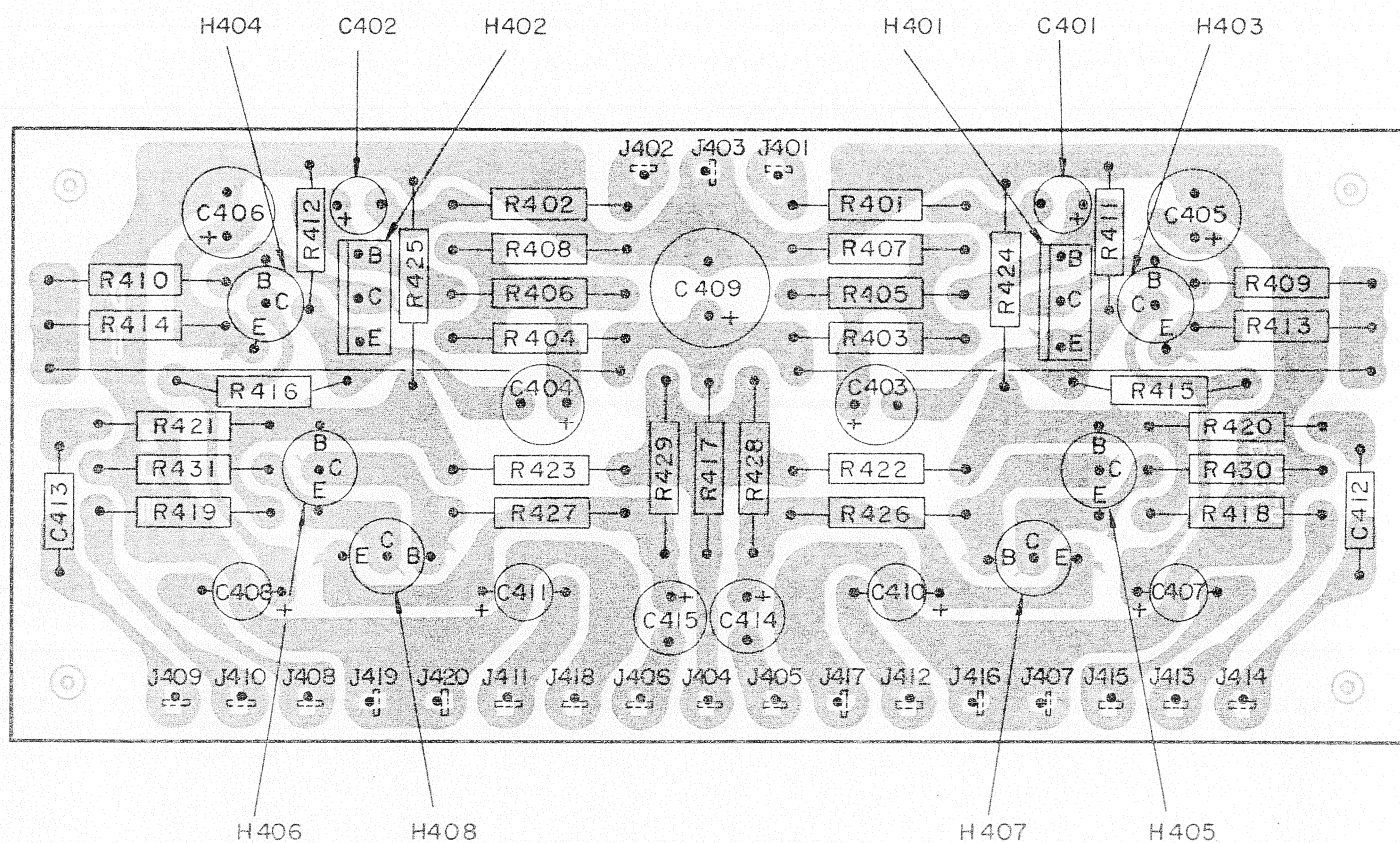


Figure 7 Pre-Amplifier

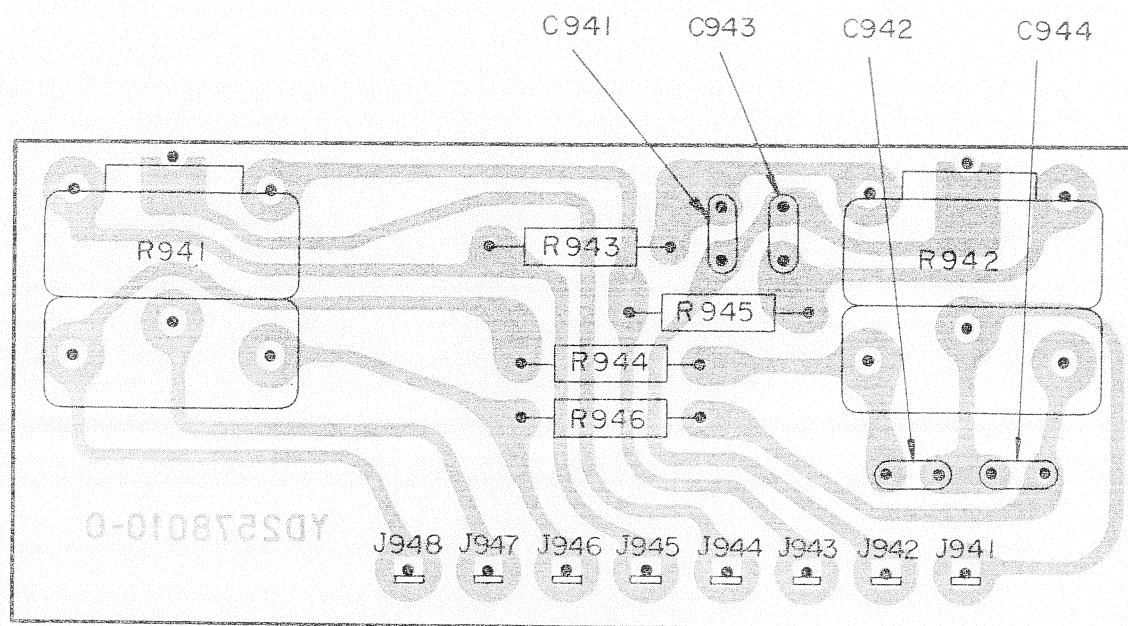


Figure 8 Tone Control Unit

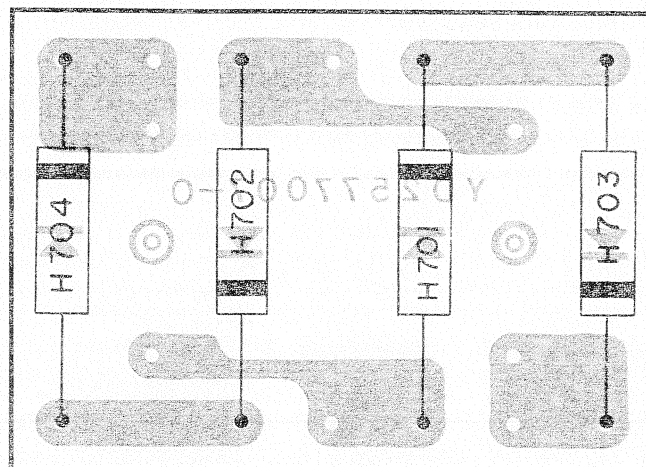


Figure 9 Temperature Sensitive Diode Unit

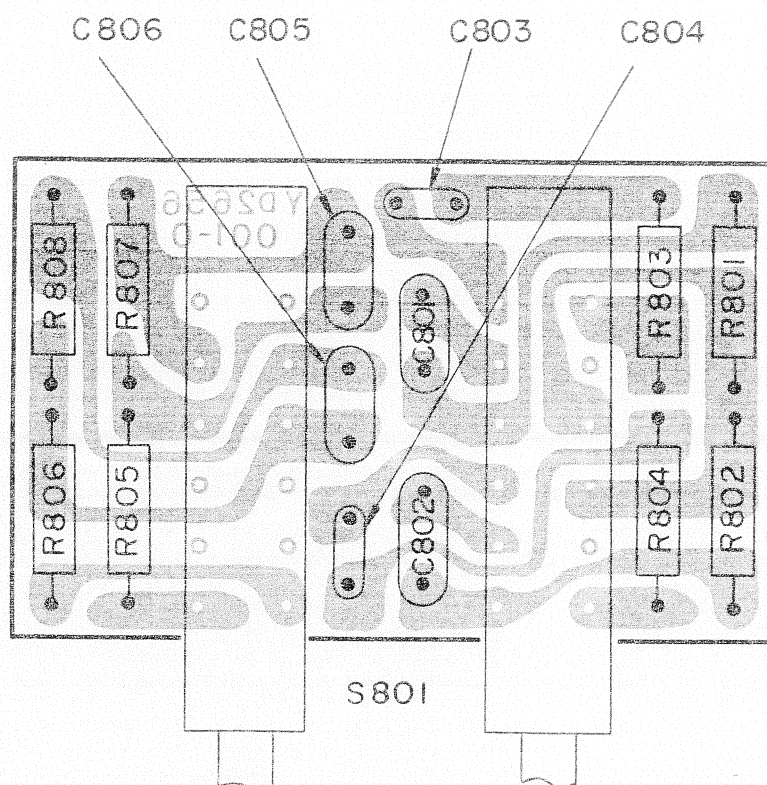


Figure 10 Loudness and Low Filter Unit

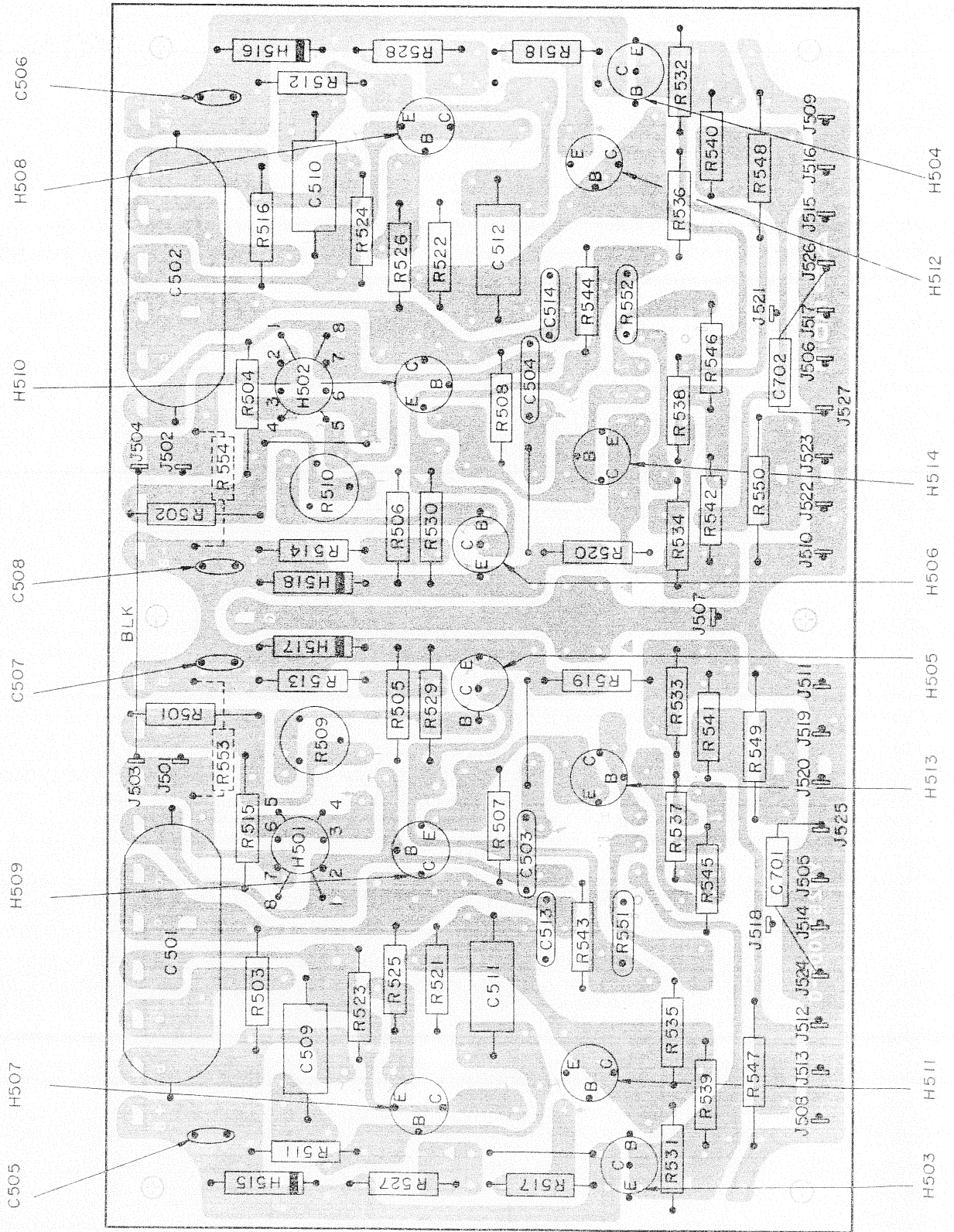


Figure 11 Main Amplifier

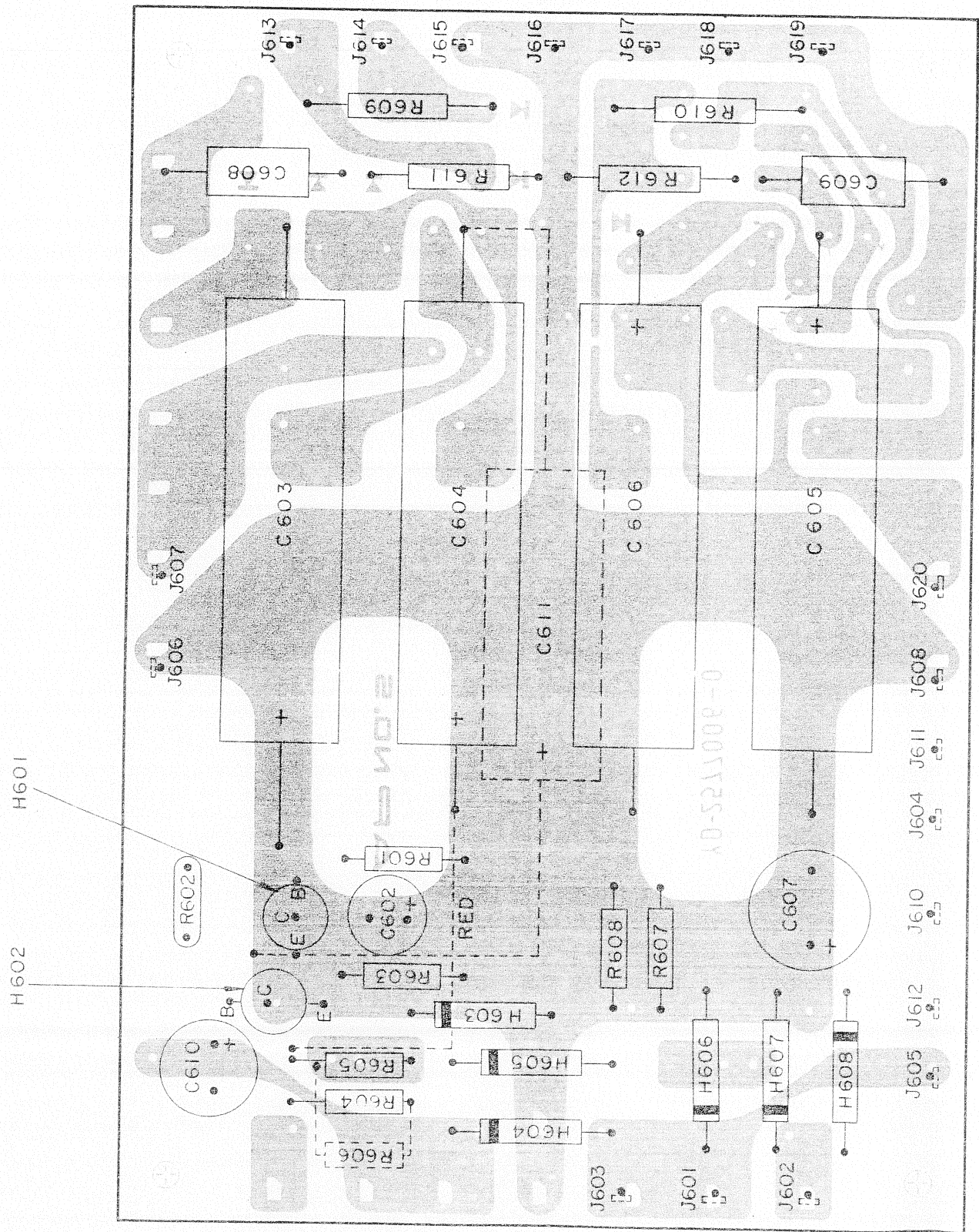


Figure 12 Power Supply Unit

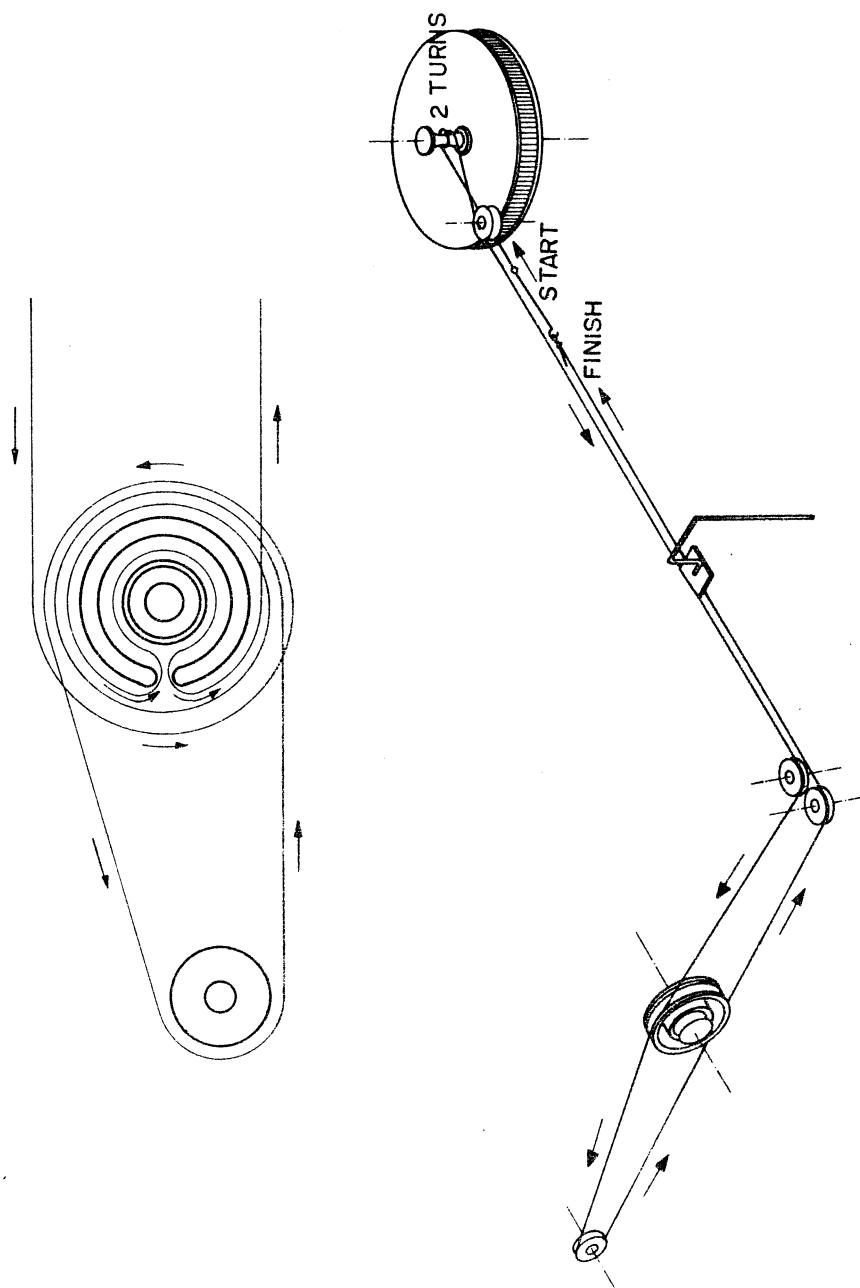


Figure 13 Dial Stringing Diagram

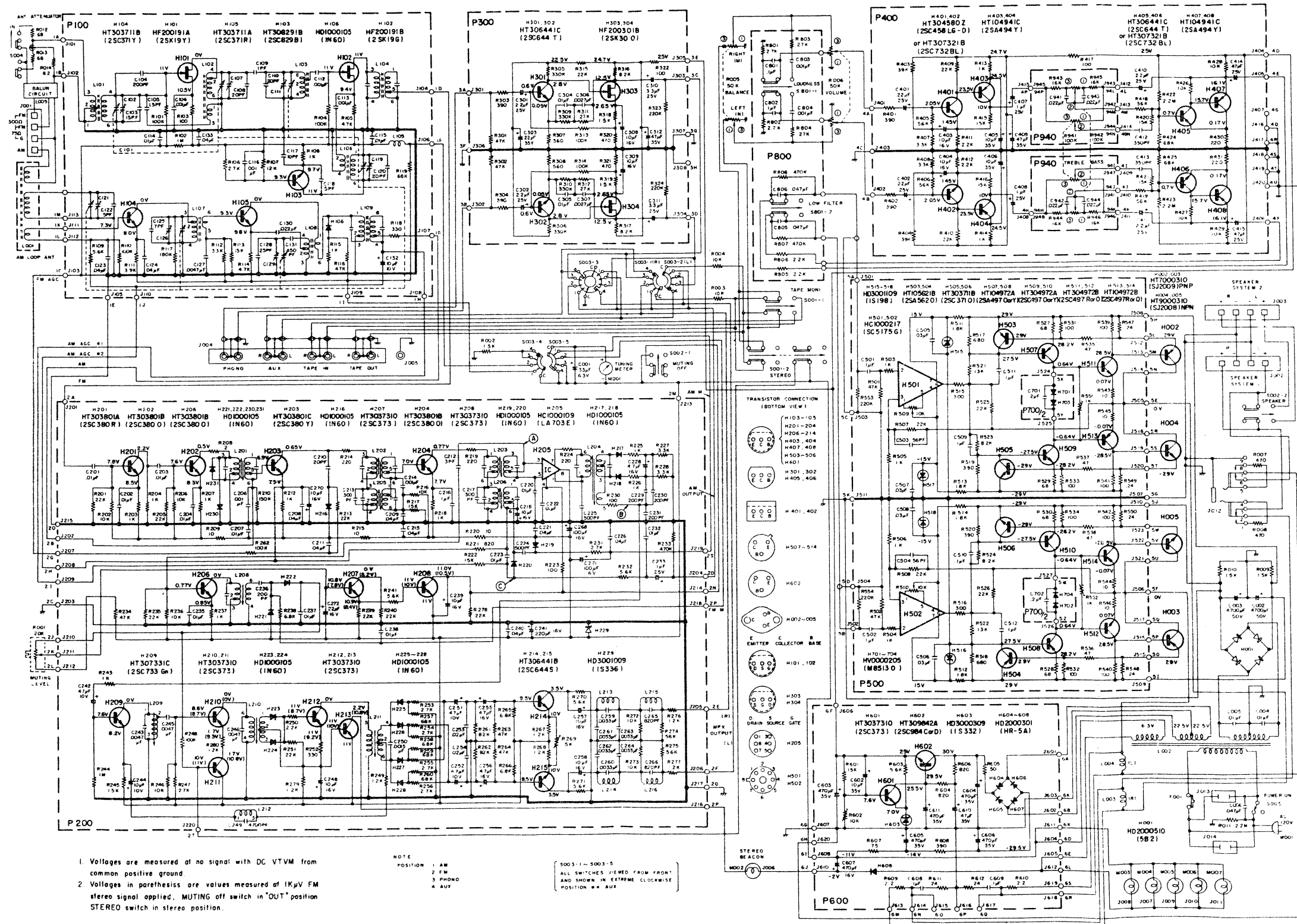


Figure 14 Schematic Diagram

PARTS LIST

REF. DESIG.	MARANTZ PART NO.	DESCRIPTION	REF. DESIG.	MARANTZ PART NO.	DESCRIPTION
A001	2565063010	Escutcheon	B059	2578112022	Shaft for Flywheel
A002	2565257012	Lid	B061	53228059E0	Muting Level Nut
A003	2656265010	Indicator	B062	5401215910	Muting Level Washer
A004	2578103012	Pointer	B064	2578101040	Support for Escutcheon
A005	2656160010	Bracket	-B067		
A008	2577063022	Escutcheon	B071	2578055010	Collar for Head Phones
A009	2477273010	Fly Wheel	-B073		
A010	2577063032	Escutcheon	B082	2656109010	Shield
A012	2578067010	Cap	B089	7140014900	Spring for Knob
-A014			B090	7140014900	Spring for Knob
A017	2578067020	Cap	B098	2506271010	Holder for Condenser
A018	2578067020	Cap	B099	2506271010	Holder for Condenser
A021	2578067030	Cap	B102	2656160040	Bracket for Meter
A022	2578067030	Cap	B013	2577005010	Coil+Chassise (K) Clemper
A026	2577067022	Cap	B104	2577005010	Coil+Chassise (K) Clamper
-A032			B110	1202258010	Hook for Dial Tuning
A501	2580401012	Frame	B111	71101239M0	Spring for Dial Tuning
A502	2556302012	Dial	B113	71400219Q0	Spring for MPX Stereo Lamp
A503	2656107012	Sheet	B114	71400229L0	Spring for MPX Stereo Lamp
A504	2577053012	MPX Lamp Cover	B115	2578259020	Bush for MPX Lamp
A506	2578154010	Knob	B121	2577160170	Bracket
-A508			B123	2656267010	Heat Sink
A511	2578154020	Knob	B124	2577160140	Bracket
A512	2578154020	Knob	B125	2577160150	Bracket
A514	2578154030	Knob	B126	2656101010	Support for Heat-Sink
A515	2578154030	Knob	-B128		
A521	2577154020	Knob	B141	1382005030	Clamper for Lead
-A527			-B155		
B533	2578120010	Head Phones Insulator	B501	2506057010	Leg
B001	2656257020	Bottom Lid	-B504		
B002	2656105012	Sub Chassis	B507	2577262010	Pulley
B003	2580105503	Main Chassis (K)	-B511		
B004	2580105013	Main Chassis (K)	B514	2577106020	Bearing for Flywheel
B005	2578160012	Bracket for Main Chassis (K)	B515	1415118010	Spacer for Flywheel
B006	2578160012	Bracket for Main Chassis (K)	B518	1455259010	Bush AC CORD
B007	2578160020	Bracket for Main Chassis (K)	B519	1455259010	Bush ANT CORD
-B010			B522	72081604A0	String
B013	2656160500	Front Bracket (K)	B524	2577118050	Spacer for light leakage
B014	2656160020	Front Bracket	B526	1493259020	Bush for Lamp
B015	2578101010	Support for Front Bracket	B533	2577118030	Spacer for Lid
B016	2578160522	Support for Front Bracket	-B535		
B020	2578160522	Bracket (K) for AM Antenna	B543	2656159010	Drum
B021	2578160052	Bracket (K) for AM Antenna	B545	2656053020	Cover for damage proof
B023	2578160062	Bracket (K) for AM Antenna	B548	2579120010	Insulator for Head Phones
B024	5502030410	S. H. Rivet for AM Antenna	B552	59114289C0	Washer for Coil
B025	5502030410	S. H. Rivet for AM Antenna	B553	59114289C0	Washer for Coil
B026	2580109010	Shield	B554	59110339H0	Washer for Coil
B027	2656160030	Bracket for P. C. Board	B555	59110339H0	Washer for Coil
B028	2656160030	Bracket for P. C. Board	B557	2577118020	Spacer for Heat-Sink
B031	2580160512	Bracket (K) for Pulley	-B560		
B032	2580160042	Bracket (K) for Pulley	D562	2577118030	Spacer for Lid
B033	2577112020	Shaft for Pulley	-D565		
B034	2577112020	Shaft for Pulley	D567	2578056010	Buffer for Meter
B035	2578109060	Shield for Tone Volume	D568	2578056010	Buffer for Meter
B041	2578160540	Bracket (K) for Pulley Spring	D001	51570306B0	P. Tapt Screw
B042	2578160080	Bracket, for Pulley Spring	-D034		
B043	2597160040	Bracket for Pulley Spring	D041	51570306B0	P. Tapt Screw
B044	2597112010	Shaft for Pulley Spring	D046		
B045	1336112010	Shaft for Pulley Spring	D047		
B048	2580051500	Guide (K) for Pointer	-D048	51570308B0	P. Tpat Screw
B049	2580051010	Guide for Pointer	D049	51570306B0	P. Tapt Screw
B050	2548112010	Shaft for Pointer	-D059		
B053	2578106500	Bearing (K) for Flywheel	D061	51570306B0	P. Tapt Screw
B054	2578104010	Retainer for Flywheel	D075		
B055	2577106010	Bearing for Flywheel	D081	51570306B0	P. Tapt Screw
B057	2580053010	Cover for Lamp	D094		
			D096	51570308B0	P. Tapt Screw
			-D101		

REF. DESIG.	MARANTZ PART NO.	DESCRIPTION
D106	51570312B0	P. Tapt Screw
-D108		
D121	51060304H9	P. H. M. Screw
-D124		
D126	51060304E0	P. H. M. Screw
-D127		
D130	51060305E9	P. H. M. Screw
-D134		
D136	51060305E9	P. H. M. Screw
-D144		
D147	51060305E9	P. H. M. Screw
-D148		
D150	51060305E9	P. H. M. Screw
-D152		
D154	51060305E9	P. H. M. Screw
D161	51060308E9	P. H. M. Screw
-D162		
D164	51060306E9	P. H. M. Screw
-D168		
D172	51060320E9	P. H. M. Screw
-D173		
D176	51060314E9	P. H. M. Screw
-D183		
D185	51062608E0	P. H. M. Screw
-D186		
D188	51060306E9	P. H. M. Screw
-D195		
D201	51100406S9	B. H. M. Screw
-D204		
D211	51060408E9	P. H. M. Screw
-D214		
D216	51060412E9	P. H. M. Screw
-D219		
D221	51060420E9	P. H. M. Screw
-D222		
D226	51122608E0	T. H. M. Screw
-D229		
D241	51140305E9	O. C. H. M. Screw
-D250		
D256	51650304D9	Set Screw H. P.
-D257		
D261	51640412D9	Set Screw C. P.
D264	51042608E0	F. H. M. Screw
-D267		
D281	64002400R0	RG Ring E
-D284		
D291	54020401S0	Flat Washer P
-D294		
D296	54020401E0	Flat Washer P
-D307		
D310	54020601E0	Flat Washer P
D312	56382040G0	Eyelet
D314	62041760W0	Lug
D321	54040402N0	Spring Washer
-D332		
D337	54040402N0	Spring Washer
D338	54040602N0	Spring Washer
D341	54040302N0	Spring Washer
-D343		
D346	54040302N0	Spring Washer
-D355		
D361	53110403E9	Hexagon Nut
-D363		
D364	53112603E0	Hexagon Nut
-D369		

REF. DESIG.	MARANTZ PART NO.	DESCRIPTION
D370	53110403E9	Hexagon Nut
D371	53110603E0	Hexagon Nut
D373	53110303E9	Hexagon Nut
-D374		
D376	53110303E9	Hexagon Nut
D377	54050300R0	T. L. Washer OR
D378	62031340W0	Lug
D381	54050300R0	T. L. Washer OR
-D385		
D386	54050400R0	T. L. Washer OR
D387	54050300R0	T. L. Washer OR
-D388		
D389	54052600R0	T. L. Washer OR
-D394		
P100	YD25770010	FM/AM Front end, P.C. Board
R101	RC10104120	100Kohm $\pm 10\%$ 1/2W, Carbon Film
R102	RC10105120	1Mohm $\pm 10\%$ 1/2W, Carbon Film
R103	RC10101120	100ohm $\pm 10\%$ 1/2W, Carbon Film
R104	RC10104120	100Kohm $\pm 10\%$ 1/2W, Carbon Film
R105	RC10472120	4.7Kohm $\pm 10\%$ 1/2W, Carbon Film
R106	RC10272120	2.7Kohm $\pm 10\%$ 1/2W, Carbon Film
R107	RC10123120	12Kohm $\pm 10\%$ 1/2W, Carbon Film
R108	RC10102120	1Kohm $\pm 10\%$ 1/2W, Carbon Film
R109	RT10562140	5.6Kohm $\pm 10\%$ 1/4W, Carbon Film
R110	RT10104140	100Kohm $\pm 10\%$ 1/4W, Carbon Film
R111	RT10392140	3.9Kohm $\pm 10\%$ 1/4W, Carbon Film
R112	RT10332140	3.3Kohm $\pm 10\%$ 1/4W, Carbon Film
R113	RT10153140	15Kohm $\pm 10\%$ 1/4W, Carbon Film
R114	RT10472140	4.7Kohm $\pm 10\%$ 1/4W, Carbon Film
R115	RT10102140	1Kohm $\pm 10\%$ 1/4W, Carbon Film
R116	RT10473140	47Kohm $\pm 10\%$ 1/4W, Carbon Film
R117	RT10184140	18Kohm $\pm 10\%$ 1/4W, Carbon Film
*C101	CA4330001C	FM 4G, AM 3G, Variable
C102	CT11000010	Trimmer
C103	DD16150010	15PF $\pm 10\%$, Cer.
C104	DD16201010	200PF $\pm 10\%$, Cer.
C105	DD10010010	1PF ± 0.25 PF, Cer.
C106	DK17102010	.001uF $\pm 20\%$, Cer.
C107	CT11000010	Trimmer
C108	DD16200010	20PF $\pm 10\%$, Cer.
C109	DD10010010	1PF ± 0.25 PF, Cer.
C110	DD16200010	20FF $\pm 10\%$, Cer.
C111	CT11000010	Trimmer
C112	DK17102010	.001uF $\pm 20\%$, Cer.
C113	DK17102010	.001uF $\pm 20\%$, Cer.
C114	DK17103010	.01uF $\pm 20\%$, Cer.
C115	DK17103010	.01uF $\pm 20\%$, Cer.
C116	DK17102010	.001uF $\pm 20\%$, Cer.
C117	DD12100060	10PF, Cer.
C118	DD11050020	5PF, Cer.
C119	CT11000010	Trimmer
C120	DD16200040	20PF N470, Cer.
C121		With VC, Trimmer
C122	DD12050010	5PF ± 1 PF, Cer.
C123	DK18403010	.04uF $\pm 100\%$, -0%, Cer.
C124	DK18403010	.04uF $\pm 100\%$, -0%, Cer.
C125	DD12070010	7PF ± 1 PF, Cer.
C126		With V. C. Trimmer
C127	DF17472010	.0047uF $\pm 20\%$, Mylar
C128	DD16250010	25PF $\pm 10\%$, Cer.
C129		With V. C. Trimmer
C130	DF17223010	.022uF $\pm 20\%$, Mylar
C131	DF65451010	450PF $\pm 5\%$, Mylar
C132	ED10601020	10uF 10V, Elect.
H101	HF200191A0	2SK19Y, Transistor
H102	HF200191B0	2SK19 (Gn), Transistor

REF. MARANTZ
DESIG. PART NO. DESCRIPTION

H103	HT308291B0	2SC829B, Transistor
H104	HT303711B0	2SC3710, Transistor
H105	HT303711A0	2SC371R, Transistor
H106	HD10001050	1N60, Diode
R118	RT10331140	330ohm $\pm 10\%$ 1/4W, Cer.
R119	RT10683140	68Kohm $\pm 10\%$ 1/4W, Cer.
L101	LA10046130	Ant. coil
L102	LA10046140	RF coil
L103	LA10046150	RF coil
L104	LI14016190	IFT
L105	LC13020010	Choke coil
L106	LO10046020	Osc. coil
L107	LA14010010	RF coil
L108	LO14010020	Osc. coil
L109	LI14010010	IFT
J101	YP10000360	Plug
J102	YP10000360	Plug
J103	YP10000360	Plug
J104	YP10000360	Plug
J105	YP10000360	Plug
J106	YP10000360	Plug
J107	YP10000360	Plug
J108	YP10000360	Plug
J109	YP10000360	Plug
J110	YP10000360	Plug
J111	YP10000360	Plug
J112	YP10000360	Plug
J113	YP10000360	Plug
P200	YD25770022	FM/AM IF-MPX P. C. Board
R201	RT10223140	22K ohm $\pm 10\%$ 1/4W, Carbon Film
R202	RT10103140	10K ohm $\pm 10\%$ 1/4W, Carbon Film
R203	RT10102140	1K ohm $\pm 10\%$ 1/4W, Carbon Film
R204	RT10102140	1K ohm $\pm 10\%$ 1/4W, Carbon Film
R205	RT10223140	22K ohm $\pm 10\%$ 1/4W, Carbon Film
R206	RT10103140	10K ohm $\pm 10\%$ 1/4W, Carbon Film
R207	RT10102140	1K ohm $\pm 10\%$ 1/4W, Carbon Film
R208	RT10020140	222 ohm $\pm 10\%$ 1/4W, Carbon Film
R209	RT10100140	10 ohm $\pm 10\%$ 1/4W, Carbon Film
R210	RT10154140	150K ohm $\pm 10\%$ 1/4W, Carbon Film
R212	RT10102140	1K ohm $\pm 10\%$ 1/4W, Carbon Film
R213	RT10223140	22K ohm $\pm 10\%$ 1/4W, Carbon Film
R214	RT10221140	220 ohm $\pm 10\%$ 1/4W, Carbon Film
R215	RT10100140	10 ohm $\pm 10\%$ 1/4W, Carbon Film
R216	RT10103140	10K ohm $\pm 10\%$ 1/4W, Carbon Film
R217	RT10153140	15K ohm $\pm 10\%$ 1/4W, Carbon Film
R218	RT10102140	1K ohm $\pm 10\%$ 1/4W, Carbon Film
R219	RT10221140	220 ohm $\pm 10\%$ 1/4W, Carbon Film
R220	RT10100140	10 ohm $\pm 10\%$ 1/4W, Carbon Film
R221	RT10821140	820 ohm $\pm 10\%$ 1/4W, Carbon Film
R222	RT10153140	15K ohm $\pm 10\%$ 1/4W, Carbon Film
R223	RT10101140	100 ohm $\pm 10\%$ 1/4W, Carbon Film
R224	RT10221140	220 ohm $\pm 10\%$ 1/4W, Carbon Film
R225	RT10102140	1K ohm $\pm 10\%$ 1/4W, Carbon Film
R226	RT10102140	1K ohm $\pm 10\%$ 1/4W, Carbon Film
R227	RT10332140	3.3K ohm $\pm 10\%$ 1/4W, Carbon Film
R228	RT10332140	3.3K ohm $\pm 10\%$ 1/4W, Carbon Film
R230	RT10101140	100 ohm $\pm 10\%$ 1/4W, Carbon Film
R231	RT10272140	2.7K ohm $\pm 10\%$ 1/4W, Carbon Film
R232	RT10562140	5.6K ohm $\pm 10\%$ 1/4W, Carbon Film
R233	RT10474140	470Kohm $\pm 10\%$ 1/4W, Carbon Film
R234	RT10473140	47K ohm $\pm 10\%$ 1/4W, Carbon Film
R235	RT10223140	22K ohm $\pm 10\%$ 1/4W, Carbon Film
T101	2577109020	Shield
-T102	RT10103140	
R236	RT10103140	10K ohm $\pm 10\%$ 1/4W, Carbon Film
R237	RT10102140	1K ohm $\pm 10\%$ 1/4W, Carbon Film

REF. MARANTZ
DESIG. PART NO. DESCRIPTION

R238	RT10682140	6.8K ohm $\pm 10\%$ 1/4W, Carbon Film
R239	RT10223140	22K ohm $\pm 10\%$ 1/4W, Carbon Film
R240	RT10223140	22K ohm $\pm 10\%$ 1/4W, Carbon Film
R241	RT10562140	5.6K ohm $\pm 10\%$ 1/4W, Carbon Film
R243	RT10102140	1K ohm $\pm 10\%$ 1/4W, Carbon Film
R244	RT10105140	1M ohm $\pm 10\%$ 1/4W, Carbon Film
R245	RT10152140	1.5K ohm $\pm 10\%$ 1/4W, Carbon Film
R246	RT10103140	10K ohm $\pm 10\%$ 1/4W, Carbon Film
R247	RT10272140	2.7K ohm $\pm 10\%$ 1/4W, Carbon Film
R248	RT10104140	100K ohm $\pm 10\%$ 1/4W, Carbon Film
R249	RT10122140	1.2K ohm $\pm 10\%$ 1/4W, Carbon Film
R250	RT10222140	2.2K ohm $\pm 10\%$ 1/4W, Carbon Film
R251	RT10223140	22K ohm $\pm 10\%$ 1/4W, Carbon Film
R252	RT10331140	330 ohm $\pm 10\%$ 1/4W, Carbon Film
R253	RT10272140	2.7K ohm $\pm 10\%$ 1/4W, Carbon Film
R254	RT10272140	2.7K ohm $\pm 10\%$ 1/4W, Carbon Film
R255	RT10272140	2.7K ohm $\pm 10\%$ 1/4W, Carbon Film
R256	RT10272140	2.7K ohm $\pm 10\%$ 1/4W, Carbon Film
R257	RT10683140	68K ohm $\pm 10\%$ 1/4W, Carbon Film
R258	RT10683140	68K ohm $\pm 10\%$ 1/4W, Carbon Film
R259	RT10683140	68K ohm $\pm 10\%$ 1/4W, Carbon Film
R260	RT10683140	68K ohm $\pm 10\%$ 1/4W, Carbon Film
R261	RT10823140	82K ohm $\pm 10\%$ 1/4W, Carbon Film
R262	RT10823140	82K ohm $\pm 10\%$ 1/4W, Carbon Film
R263	RT10473140	47K ohm $\pm 10\%$ 1/4W, Carbon Film
R264	RT10473140	47K ohm $\pm 10\%$ 1/4W, Carbon Film
R265	RT10682140	6.8K ohm $\pm 10\%$ 1/4W, Carbon Film
R266	RT10682140	6.8K ohm $\pm 10\%$ 1/4W, Carbon Film
R267	RT10122140	1.2K ohm $\pm 10\%$ 1/4W, Carbon Film
R268	RT10122140	1.2K ohm $\pm 10\%$ 1/4W, Carbon Film
R269	RA05020050	5K ohm $\pm 30\%$ (B), Semi Fixed
R270	RT10562140	5.6K ohm $\pm 10\%$ 1/4W, Carbon Film
R271	RT10562140	5.6K ohm $\pm 10\%$ 1/4W, Carbon Film
R272	RT10103140	10K ohm $\pm 10\%$ 1/4W, Carbon Film
R273	RT10103140	10K ohm $\pm 10\%$ 1/4W, Carbon Film
R274	RT10563140	56K ohm $\pm 10\%$ 1/4W, Carbon Film
R275	RT10563140	56K ohm $\pm 10\%$ 1/4W, Carbon Film
R276	RT10122140	1.2K ohm $\pm 10\%$ 1/4W, Carbon Film
R277	RT10122140	1.2K ohm $\pm 10\%$ 1/4W, Carbon Film
R278	RT10223140	22K ohm $\pm 10\%$ 1/4W, Carbon Film
R279	RT10122140	1.2K ohm $\pm 10\%$ 1/4W, Carbon Film
R280	RT10122140	1.2K ohm $\pm 10\%$ 1/4W, Carbon Film
R282	RT10104140	100K ohm $\pm 10\%$ 1/4W, Carbon Film
C201	DK17103010	.01uF $\pm 20\%$, Cer.
C202	DK17103010	.01uF $\pm 20\%$, Cer.
C203	DK17103010	.01uF $\pm 20\%$, Cer.
C204	DK17103010	.01uF $\pm 20\%$, Cer.
C206	DK17102010	.001uF $\pm 20\%$, Cer.
C207	DK17103010	.01uF $\pm 20\%$, Cer.
C208	DK18403010	.04uF +100% -0%, Cer.
C209	DK18403010	.04uF +100% -0%, Cer.
C210	DD16200010	20PF $\pm 10\%$, Cer.
C211	DK18403010	.04uF +100% -0%, Cer.
C212	DD12030010	3PF $\pm 1PF$, Cer.
C213	DD15301020	300PF $\pm 5\%$, Cer.
C214	DK17102010	.001uF $\pm 20\%$, Cer.
C215	DK18403010	.04uF +100% -0%, Cer.
C216	DK18104020	0.1uF +80% -20%, Cer.
C217	DD15301020	300PF $\pm 5\%$, Cer.
C218	EA10601620	10uF 16V, Elect.
C220	DK17103010	.01uF $\pm 20\%$, Cer.
C221	DK18403010	.04uF +100% -0%, Cer.
C222	DK17103010	.01uF $\pm 20\%$, Cer.
C223	DK17103010	.01uF $\pm 20\%$, Cer.
C224	DD16501010	500PF $\pm 10\%$, Cer.
C225	DK17103010	.01uF $\pm 20\%$, Cer.

REF. DESIG.	MARANTZ PART NO.	DESCRIPTION
C226	DK18403010	.04uF +100% -0%, Cer.
C228	EA47501620	4.7uF 16V, Elect.
C229	DD16201010	200PF $\pm 10\%$, Cer.
C230	DD16201010	200PF $\pm 10\%$, Cer.
C231	DD16201010	200PF $\pm 10\%$, Cer.
C232	DK17103010	.01uF $\pm 20\%$, Cer.
C233	EM10402510	.1uF 25V, Elect.
C235	DK17103010	.01uF $\pm 20\%$, Cer.
C236	DD16201010	200PF $\pm 10\%$, Cer.
C237	DK17103010	.01uF $\pm 20\%$, Cer.
C238	DK17103010	.01uF $\pm 20\%$, Cer.
C239	EA10601620	10uF 16V, Elect.
C240	DK18403010	.04uF +100% -0%, Cer.
C241	EA22701640	220uF 16V, Elect.
C242	ED47501020	4.7uF 10V, Elect.
C243	DF55472010	.0047uF $\pm 5\%$, Poly
C244	ED10601020	10uF 10V, Elect.
C245	DF55472010	.0047uF $\pm 5\%$, Poly
C246	DF55472010	.0047uF $\pm 5\%$, Poly
C248	EA10601620	10uF 16V, Elect.
C249	DF55472010	4700PF $\pm 5\%$, Poly
C250	DF16152010	.0015uF $\pm 10\%$, Mylar
C251	ED47501020	4.7uF 10V, Elect.
C252	ED47501020	4.7uF 10V, Elect.
C253	DF17223010	.02uF $\pm 20\%$, Mylar
C254	DF17223010	.02uF $\pm 20\%$, Mylar
C255	EA47501620	4.7uF 16V, Elect.
C256	EA47501620	4.7uF 16V, Elect.
C257	EA10601620	10uF 16V, Elect.
C258	EA10601620	10uF 16V, Elect.
C260	DF16332010	.0033uF $\pm 10\%$, Mylar
C261	DF16332010	.0033uF $\pm 10\%$, Mylar
C262	DF16332010	.0033uF $\pm 10\%$, Mylar
C263	DF16332010	.0033uF $\pm 10\%$, Mylar
C264	DF16332010	.0033uF $\pm 10\%$, Mylar
C265	DF65821010	820PF $\pm 5\%$, Mylar
C266	DF65821010	820PF $\pm 5\%$, Mylar
C268	EA10701630	100uF 16V, Elect.
C270	EA10601620	10uF 16V, Elect.
C271	ED10700620	100uF 6V, Elect.
H201	HT303801A0	2SC380 R, Transistor
H202	HT303801B0	2SC380 O, Transistor
H203	HT303801C0	2SC380 O, Transistor
H204	HT303801B0	2SC380 Y, Transistor
H205	HC10001090	LA703E JRC, IC
H206	HT303801B0	2SC380 O, Transistor
H207	HT30373100	2SC373, Transistor
C259	DF16332010	.0033uF $\pm 10\%$, Mylar
H208	HT30373100	2SC373, Transistor
H209	HT30733100	2SC733 Gn, Transistor
H210	HT30373100	2SC373, Transistor
H211	HT30373100	2SC373, Transistor
H212	HT30373100	2SC373, Transistor
H213	HT30373100	2SC373, Transistor
H214	HT306442A0	2SC644 S or T, Transistor
H215	HT306442A0	2SC644 S or T, Transistor
H216	HD10001050	1N60, Diode
H217	HD10001050	1N60, Diode
H218	HD10001050	1N60, Diode
H219	HD10001050	1N60, Diode
H220	HD10001050	1N60, Diode
H221	HD10001050	1N60, Diode
H222	HD10001050	1N60, Diode
H224	HD10001050	1N60, Diode
H225	HD10001050	1N60, Diode
H226	HD10001050	1N60, Diode

REF. DESIG.	MARANTZ PART NO.	DESCRIPTION
H227	HD10001050	1N60, Diode
H228	HD10001050	1N60, Diode
*H229	HD30010090	IS336, Diode
H230	HD10001050	1N60, Diode
L201	LI14016180	FM IFT, IFT
L202	LI14016120	FM IFT, IFT
L203	LI14016060	FM IFT, IFT
L204	LI14016043	FM IFT (Det.), IFT
L205	LI14010040	AM IFT, IFT
L206	LI14010050	AM IFT, IFT
L208	LI10156060	FM IFT, IFT
L209	LS10010010	19KC Coil, MPX Coil
L210	LS10010020	19KC Coil, MPX Coil
L211	LS10010030	38KC Coil, MPX Coil
L212	LS10010050	67KC Coil (Trap), MPX Coil
L213	LC22260010	19KC Coil (Trap), Choke Coil
L214	LC22260010	19KC Coil (Trap), Choke Coil
L215	LS10010060	38KC Coil (Trap), MPX Coil
L216	LS10010060	38KC Coil (Trap), MPX Coil
J201	YP10000360	Plug
J202	YP10000360	Plug
J203	YP10000360	Plug
J204	YP10000360	Plug
J205	YP10000360	Plug
J206	YP10000360	Plug
J207	YP10000360	Plug
J208	YP10000360	Plug
J209	YP10000360	Plug
J210	YP10000360	Plug
J211	YP10000360	Plug
J212	YP10000360	Plug
J213	YP10000360	Plug
J214	YP10000360	Plug
J215	YP10000360	Plug
J216	YP10000360	Plug
J217	YP10000360	Plug
J218	YP10000360	Plug
J219	YP10000360	Plug
J220	YP10000360	Plug
J221	YP10000360	Plug
H231	HD10001050	1N60 Diode
J231	YP10000010	Plug
W201	YW26560010	Wire Material
P300	YD25770030	Phono amp. P. C. Board
R301	RN10473140	47K ohm $\pm 10\%$ 1/4W, Carbon Film
R302	RN10473140	47K ohm $\pm 10\%$ 1/4W, Carbon Film
R303	RT10391140	390 ohm $\pm 10\%$ 1/4W, Carbon Film
R304	RT10391140	390 ohm $\pm 10\%$ 1/4W, Carbon Film
R305	RN10334140	330K ohm $\pm 10\%$ 1/4W, Carbon Film
R306	RN10334140	330K ohm $\pm 10\%$ 1/4W, Carbon Film
R307	RT10561140	560 ohm $\pm 10\%$ Carbon Film
R308	RT10561140	560 ohm $\pm 10\%$ 1/4W, Carbon Film
R309	GT05334120	330K ohm $\pm 5\%$ 1/2W, Carbon Film
R310	GT05334120	330K ohm $\pm 5\%$ 1/2W, Carbon Film
R311	GT05273120	27K ohm $\pm 5\%$ 1/2W, Carbon Film
R312	GT05273120	27K ohm $\pm 5\%$ 1/2W, Carbon Film
R313	RN10104140	100K ohm $\pm 10\%$ 1/4W, Carbon Film
R314	RN10104140	100K ohm $\pm 10\%$ 1/4W, Carbon Film
R315	RT10223140	22K ohm $\pm 10\%$ 1/4W, Carbon Film
R316	RT10822140	8.2K ohm $\pm 10\%$ 1/4W, Carbon Film
R317	RT10822140	8.2K ohm $\pm 10\%$ 1/4W, Carbon Film
R318	RT05152140	1.5K ohm $\pm 50\%$ 1/4W, Carbon Film
R319	RT05152140	1.5K ohm $\pm 50\%$ 1/4W, Carbon Film
R320	RT10471140	470 ohm $\pm 10\%$ 1/4W, Carbon Film
R321	RT10471140	470 ohm $\pm 10\%$ 1/4W, Carbon Film
R322	RT10101140	100 ohm $\pm 10\%$ 1/4W, Carbon Film

REF. DESIG.	MARANTZ PART NO.	DESCRIPTION	REF. DESIG.	MARANTZ PART NO.	DESCRIPTION
R323	RN10224140	220K ohm $\pm 10\%$ 1/4W, Carbon Film	C409	EA47603520	47uF 35V Elect.
R324	RN10224140	220K ohm $\pm 10\%$ 1/4W, Carbon Film	C410	EV22502510	2.2uF 25V +40% -20%, Elect.
C301	EV22502510	2.2uF 25V +40% -20%, Elect.	C411	EV22502510	2.2uF 25V +40% -20%, Elect.
C302	EV22502510	2.2uF 25V, +40% -20%, Elect.	C412	DF65351010	350PF $\pm 5\%$ Poly
C303	EA22603510	22uF 35V Elect.	C413	DF65351010	350PF $\pm 5\%$ Poly
C304	DF64103010	0.01uF 50V $\pm 2\%$, Mylar	C414	EV47402510	0.47uF 25V $\pm 40\%$, -20%, Elect.
C305	DF64103010	0.01uF 50V $\pm 2\%$, Mylar	C415	EV47402510	0.47uF 25V $\pm 40\%$, -20%, Elect.
C306	DF64272010	0.0027uF 50V $\pm 2\%$, Mylar	H401	HT304582A0	2SC4580LG, Transistor
C307	DF64272010	0.0027uF 50V $\pm 2\%$, Mylar	H402	HT304582A0	2SC4580LG, Transistor
C308	EA10601620	10uF 16V, Elect.	H403	HT104942A0	2SA494-Y or GR, Transistor
C309	EA10601620	10uF 16V, Elect.	H404	HT104942A0	2SA494-Y or GR, Transistor
C310	EV33502520	3.3uF 25V +40% -20%, Elect.	H405	HT306442A0	2SC644 S or T, Transistor
C311	EV33502520	3.3uF 25V +40% -20%, Elect.	H406	HT306442A0	2SC644 S or T, Transistor
C312	EA47603520	47uF 35V Elect.	H407	HT104942A0	2SA494-Y-X, Transistor
H301	HT306441C0	2SC644 (T), Transistor	J401	YP10000360	Plug
H302	HT306441C0	2SC644 (T), Transistor	J402	YP10000360	Plug
H303	HF200301C0	2SK30 (Y), Transistor	J403	YP10000360	Plug
H304	HF200301C0	2SK30 (Y), Transistor	J404	YP10000360	Plug
J301	YP10000360	Plug	J405	YP10000360	Plug
J302	YP10000360	Plug	J406	YP10000360	Plug
J303	YP10000360	Plug	J407	YP10000360	Plug
J304	YP10000360	Plug	J408	YP10000360	Plug
J305	YP10000360	Plug	J409	YP10000360	Plug
J306	YP10000360	Plug	J410	YP10000360	Plug
J307	YP10000360	Plug	J412	YP10000360	Plug
J308	YP10000360	Plug	J413	YP10000360	Plug
P400	YD25770040	Tone AMP, P. C. Board	J414	YP10000360	Plug
R401	RT10391140	390 ohm $\pm 10\%$ 1/4W, Carbon Film	J415	YP10000360	Plug
R402	RT10391140	390 ohm $\pm 10\%$ 1/4W, Carbon Film	J416	YP10000360	Plug
R403	RN10393140	39K ohm $\pm 10\%$ 1/4W, Carbon Film	J417	YP10000360	Plug
R404	RN10393140	39K ohm $\pm 10\%$ 1/4W, Carbon Film	J418	YP10000360	Plug
R405	RN10563140	56K ohm $\pm 10\%$ 1/4W, Carbon Film	J419	YP10000360	Plug
R406	RN10563140	56K ohm $\pm 10\%$ 1/4W, Carbon Film	J420	YP10000360	Plug
R407	RT10332140	3.3K ohm $\pm 10\%$ 1/4W, Carbon Film	W401	YW26560020	Wire Materials
R408	RT10332140	3.3Kohm $\pm 10\%$ 1/4W, Carbon Film	P500	YD25770050	Main Amp, P. C. Board
R409	RN10223140	22K ohm $\pm 10\%$ 1/4W, Carbon Film	R501	RN10473140	47K ohm $\pm 10\%$ 1/4W, Carbon Film
R410	RN10223140	22K ohm $\pm 10\%$ 1/4W, Carbon Film	R502	RN10473140	47K ohm $\pm 10\%$ 1/4W, Carbon Film
R411	RT10222140	2.2K ohm $\pm 10\%$ 1/4W, Carbon Film	R503	GT05102120	1K ohm $\pm 5\%$ 1/2W, Carbon Film
R412	RT10222140	2.2K ohm $\pm 10\%$ 1/4W, Carbon Film	R504	GT05102120	1K ohm $\pm 5\%$ 1/2W, Carbon Film
R413	RT10102140	1K ohm $\pm 10\%$ 1/4W, Carbon Film	R505	GT05102120	1K ohm $\pm 5\%$ 1/2W, Carbon Film
R414	RT10102140	1K ohm $\pm 10\%$ 1/4W, Carbon Film	R506	GT05102120	1K ohm $\pm 5\%$ 1/2W, Carbon Film
R415	RN10153140	15K ohm $\pm 10\%$ 1/4W, Carbon Film	R507	GT05223120	22K ohm $\pm 5\%$ 1/2W, Carbon Film
R416	RN10153140	15K ohm $\pm 10\%$ 1/4W, Carbon Film	R508	GT05223120	22K ohm $\pm 5\%$ 1/2W, Carbon Film
R417	RT10101140	100 ohm $\pm 10\%$ 1/4W, Carbon Film	R509	RA01030070	10K ohm, Semi Fix
R418	RN10563140	56K ohm $\pm 10\%$ 1/4W, Carbon Film	R510	RA01030070	10K ohm, Semi Fix
R419	RN10563140	56K ohm $\pm 10\%$ 1/4W, Carbon Film	R511	RC10182120	1.8K ohm $\pm 10\%$ 1/2W, Solid
R420	RN10153140	15K ohm $\pm 10\%$ 1/4W, Carbon Film	R512	RC10182120	1.8K ohm $\pm 10\%$ 1/2W, Solid
R421	RN10153140	15K ohm $\pm 10\%$ 1/4W, Carbon Film	R513	RC10182120	1.8K ohm $\pm 10\%$ 1/2W, Solid
R422	RN10225140	2.2M ohm $\pm 10\%$ 1/4W, Carbon Film	R514	RC10182120	1.8K ohm $\pm 10\%$ 1/2W, Solid
R423	RN10225140	2.2M ohm $\pm 10\%$ 1/4W, Carbon Film	H408	HT104942A0	2SA494-Y or Gr, Transistor
R424	RN10683140	68K ohm $\pm 10\%$ 1/4W, Carbon Film	R515	GT05471120	470 ohm $\pm 5\%$ 1/2W, Carbon Film
R425	RN10683140	68K ohm $\pm 10\%$ 1/4W, Carbon Film	R516	GT05471120	470 ohm $\pm 5\%$ 1/2W, Carbon Film
R426	RT10103140	10K ohm $\pm 10\%$ 1/4W, Carbon Film	R517	GT05681120	680 ohm $\pm 5\%$ 1/2W, Carbon Film
R427	RT10103140	10K ohm $\pm 10\%$ 1/4W, Carbon Film	R518	GT05681120	680 ohm $\pm 5\%$ 1/2W, Carbon Film
R428	RT10103140	10K ohm $\pm 10\%$ 1/4W, Carbon Film	R519	GT05391120	390 ohm $\pm 5\%$ 1/2W, Carbon Film
R429	RT10103140	10K ohm $\pm 10\%$ 1/4W, Carbon Film	R520	GT05391120	390 ohm $\pm 5\%$ 1/2W, Carbon Film
R430	RT10221140	220 ohm $\pm 10\%$ 1/4W, Carbon Film	R521	GT05133120	13K ohm $\pm 5\%$ 1/2W, Carbon Film
R431	RT10221140	220 ohm $\pm 10\%$ 1/4W, Carbon Film	R522	GT05133120	13K ohm $\pm 5\%$ 1/2W, Carbon Film
C401	DF17224020	0.22uF 50V $\pm 20\%$, Elect.	R523	GT05822120	8.2K ohm $\pm 5\%$ 1/2W, Carbon Film
C402	DF17224020	0.22uF 50V $\pm 20\%$, Elect.	R524	GT05822120	8.2K ohm $\pm 5\%$ 1/2W, Carbon Film
C403	EA10601620	10uF 16V Elect.	R525	GT05223120	22K ohm $\pm 5\%$ 1/2W, Carbon Film
C404	EA10601620	10uF 16V Elect.	R526	GT05223120	22K ohm $\pm 5\%$ 1/2W, Carbon Film
C405	EA10603510	10uF 35V, Elect.	R527	GT05680120	68 ohm $\pm 5\%$ 1/2W, Carbon Film
C406	EA10603510	10uF 35V Elect.	R528	GT05680120	68 ohm $\pm 5\%$ 1/2W, Carbon Film
C407	EV10502510	1uF 25V +40% -20%, Elect.	R529	GT05680120	68 ohm $\pm 5\%$ 1/2W, Carbon Film
C408	EV10502510	1uF 25V +40% -20%, Elect.	R530	GT05680120	68 ohm $\pm 5\%$ 1/2W, Carbon Film

REF. DESIG.	MARANTZ PART NO.	DESCRIPTION	REF. DESIG.	MARANTZ PART NO.	DESCRIPTION
R531	RC10101120	100 ohm $\pm 5\%$ 1/2W, Carbon Film	H502	HC10002170	Motorola (MC1741G), IC
R532	RC10101120	100 ohm $\pm 5\%$ 1/2W, Carbon Film	H503	HT105621B0	2SA562 O, Transistor
R533	RC10101120	100 ohm $\pm 5\%$ 1/2W, Carbon Film	H504	HT105621B0	2SA562 O, Transistor
R534	RC10101120	100 ohm $\pm 10\%$ 1/2W, Solid	H505	HT303711B0	2SC371 O, Transistor
R535	RC10470120	47 ohm $\pm 10\%$ 1/2W, Solid	H506	HT303711B0	2SC371 O, Transistor
R536	RC10470120	47 ohm $\pm 10\%$ 1/2W, Solid	H507	HT104972A0	2SA497 R, Transistor
R537	RC10470120	47 ohm $\pm 10\%$ 1/2W, Solid	H508	HT104972A0	2SA497 R, Transistor
R538	RC10470120	47 ohm $\pm 10\%$ 1/2W, Solid	H509	HT304972A0	2SC497 R, Transistor
R539	RC10101120	100 ohm $\pm 10\%$ 1/2W, Solid	H510	HT304972A0	2SC497 R, Transistor
R540	RC10101120	100 ohm $\pm 10\%$ 1/2W, Solid	H511	HT304972B0	2SC497 R or O, Transistor
R541	RC10101120	100 ohm $\pm 10\%$ 1/2W, Solid	H512	HT304972B0	2SC497 R or O, Transistor
R542	RC10101120	100 ohm $\pm 10\%$ 1/2W, Solid	H513	HT104972B0	2SA497R or O, Transistor
R543	RC10100120	10 ohm $\pm 10\%$ 1/2W, Solid	H514	HT104972B0	2SA497R or O, Transistor
R544	RC10100120	10 ohm $\pm 10\%$ 1/2W, Solid	H515	HD30011090	IS198-T14.5 400 mW, Diode
R545	RC10100120	10 ohm $\pm 10\%$ 1/2W, Solid	H516	HD30011090	IS198-T14.5 400 mW, Diode
R546	RC10100120	10 ohm $\pm 10\%$ 1/2W, Solid	H517	HD50011090	IS198-T14.5 400 mW, Diode
R547	GW10242020	0.24 ohm $\pm 10\%$ 2W, Carbon Film	H518	HD10009090	IS198-T14.5 400 mW, Diode
R548	GW10242020	0.24 ohm $\pm 10\%$ 2W, Carbon Film	*H002	HT70003100	Motorola PNP. SJ2009, Transistor
R549	GW10242020	0.24 ohm $\pm 10\%$ 2W, Carbon Film	*H003	HT70003100	Motorola PNP. SJ2009, Transistor
R550	GW10242020	0.24 ohm $\pm 10\%$ 2W, Carbon Film	*H004	HT90003100	Motorola NPN. SJ2008, Transistor
R551	RA01020010	1K ohm B, Semi Fix	*H005	HT90003100	Motorola NPN. SJ2008 Transistor
R552	RA01020010	1K ohm B, Semi Fix	P600	YD25770060	Power supply, P. C. Board
C501	DF27105500	1uF $\pm 20\%$ 100V, Mylar	R601	RC10153120	15K ohm $\pm 10\%$ 1/2W, Solid
C502	DF27105500	1uF $\pm 20\%$ 100V, Mylar	R602	RA01030010	10K ohm B, Semi Fix
C503	DF36560500	56PF $\pm 10\%$ 500V, Mica	R603	RC10562120	5.6K ohm $\pm 10\%$ 1/2W, Solid
C504	DF36560500	56PF $\pm 10\%$ 500V, Mica	R604	RC10821120	820 ohm $\pm 10\%$ 1/2W, Solid
C505	DK18303010	0.03uF +100% -0%, 50V Cer.	R605	RC10500120	50 ohm $\pm 10\%$ 1/2W, Solid
C506	DK18303010	0.03uF +100% -0%, 50V Cer.	R606	RC10821120	820 ohm $\pm 10\%$ 1/2W, Solid
C507	DK18303010	0.03uF +100% -0%, 50V Cer.	R607	RC10750120	75 ohm $\pm 10\%$ 1/2W, Solid
C508	DK18303010	0.03uF +100% -0%, 50V Cer.	R608	RC10391010	390 ohm $\pm 10\%$ 1W, Solid
C509	DF17104520	0.1uF $\pm 20\%$ 200V, Mylar	R609	GS10022020	2.2 ohm $\pm 10\%$ 2W, Carbon Film
C510	DF17104520	0.1uF $\pm 20\%$ 200V, Mylar	R610	GS10022020	2.2 ohm $\pm 10\%$ 2W, Carbon Film
C511	DF17104520	0.1uF $\pm 20\%$ 200V, Mylar	R611	GS10240020	24 ohm $\pm 10\%$ 2W, Carbon Film
C512	DF17104520	0.1uF $\pm 20\%$ 200V, Mylar	R612	GS10240020	24 ohm $\pm 10\%$ 2W, Carbon Film
C513	DD12100010	10PF ± 1 PF 50V, Cer.	C602	EA10603510	10uF 35V, Elect.
C514	DD12100010	10PF ± 1 PF 50V, Cer.	C603	ED47703510	470uF 35V, Elect.
R553	RN10224140	220K ohm $\pm 10\%$ 1/4W, Carbon Film	C604	ED47703510	470uF 35V, Elect.
R554	RN10224140	220K ohm $\pm 10\%$ 1/4W, Carbon Film	C605	ED47703510	470uF 35V, Elect.
J501	YP10000360	Plug	C606	ED47703510	470uF 35V, Elect.
J502	YP10000360	Plug	C607	EA47701620	470uF 16V, Elect.
J503	YP10000360	Plug	C608	DF17104520	0.1uF $\pm 20\%$ 150V, M. P.
J504	YP10000360	Plug	C609	DF17104520	0.1uF $\pm 20\%$ 150V, M. P.
J505	YP10000360	Plug	C610	EA47603520	47uF 35V, Elect.
J506	YP10000360	Plug	*H601	HT30373100	2SC373, Transistor
J507	YP10000360	Plug	*H602	HT309842A0	2SC984 C or D, Transistor
J508	YP10000360	Plug	H603	HD30003090	1S332, Diode
J509	YP10000360	Plug	H604	HD20003010	HR-5A, Diode
J510	YP10000360	Plug	H605	HD20003010	HR-5A, Diode
J511	YP10000360	Plug	H606	HD20003010	HR-5A, Diode
J512	YP10000360	Plug	H607	HD20003010	HR-5A, Diode
J513	YP10000360	Plug	H608	HD20003010	HR-5A, Diode
J514	YP10000360	Plug	J601	YP10000360	Plug
J515	YP10000360	Plug	J602	YP10000360	Plug
J516	YP10000360	Plug	J603	YP10000360	Plug
J517	YP10000360	Plug	J604	YP10000360	Plug
J518	YP10000360	Plug	J605	YP10000360	Plug
J519	YP10000360	Plug	J606	YP10000360	Plug
J520	YP10000360	Plug	J607	YP10000360	Plug
J521	YP10000360	Plug	J608	YP10000360	Plug
J522	YP10000360	Plug	J610	YP10000360	Plug
J523	YP10000360	Plug	J611	YP10000360	Plug
J524	YP10000360	Plug	J612	YP10000360	Plug
J525	YP10000360	Plug	J613	YP10000360	Plug
J526	YP10000360	Plug	J614	YP10000360	Plug
J527	YP10000360	Plug	J615	YP10000360	Plug
H501	HC10002170	Motorola (MC1741G), IC	J616	YP10000360	Plug

MARANTZ PART NO.

DESCRIPTION

REF. DESIG.

MARANTZ PART NO.

DESCRIPTION

YPI0000360	Plug	L004	LC21020010	Choke Coil
YPI0000360	Plug	L005	LB30075250	Balun
YPI0000360	Plug	*M001	IM11036020	DC Meter
YPI0000360	Plug	*M002	IN10080010	For Stereo Indicator, Lamp
YD25770070	Comp. circuit, P.C.Board	*M003	IN10060030	For Dial Illumination, Lamp
DF17224020	0.22uF $\pm 20\%$ 150V, Mylar	*M004	IN10060030	For Dial Illumination, Lamp
DF17224020	0.22uF $\pm 20\%$ 150V, Mylar	*M005	IN10060030	For Dial Illumination, Lamp
HV00002050	M8513 O, Varistor	*M006	IN10060030	For Dial Illumination, Lamp
HV00002050	M8513 O, Varistor	*M007	IN10080010	For Meter Illumination Lamp
HV00002050	M8513 O, Varistor	J001	YT03040030	Terminal
YD26560010	Switch, P. C. Board	-J003		
RT10272140	2.7K ohm $\pm 10\%$ 1/4W, Carbon Film	J004	YT02080020	Terminal
RT10272140	2.7K ohm $\pm 10\%$ 1/4W, Carbon Film	J005	YT01010030	Terminal
RT10273140	27K ohm $\pm 10\%$ 1/4W, Carbon Film	J006	YJ02000070	Socket
RT10273140	27K ohm $\pm 10\%$ 1/4W, Carbon Film	J007	YJ02000510	Socket
RT10222140	2.2K ohm $\pm 10\%$ 1/4W, Carbon Film	J008	YJ02000520	Socket
RT10222140	2.2K ohm $\pm 10\%$ 1/4W, Carbon Film	J009	YJ02000530	Socket
ED47703510	470uF 35V, Elect.	J010	YJ02000470	Socket
RN10474140	470K ohm $\pm 10\%$ 1/4W, Carbon Film	J011	YJ02000070	Socket
RN10474140	470K ohm $\pm 10\%$ 1/4W, Carbon Film	J012	YJ01000550	Socket
DF17104020	0.1uF $\pm 20\%$, Mylar	J013	YJ04000320	Socket
DF17104020	0.1uF $\pm 20\%$, Mylar	-J014		
DF17102010	0.001uF $\pm 20\%$, Mylar	J015	YL01030010	Terminal
DF17102010	0.001uF $\pm 20\%$, Mylar	J016	YL01030030	Terminal
DF17473010	0.047uF $\pm 20\%$, Mylar	-J017		
DF17473010	0.047uF $\pm 20\%$, Mylar	J018	YL01030010	Terminal
SP04020012	Push Switch	J021	YJ05000130	Socket
YD25780100	Tone Control, P.C.Board	-J024		
RD01040010	100K ohm (B) Treble, Variable	W001	YC02400010	For AC Source, AC Power Cord
RD01040010	100K ohm (B) Bass Variable	W002	YW26560030	Wire Materials
GT05163120	16K ohm $\pm 5\%$ 1/2W, Carbon Film	F001	FR10310010	3.15A, Circuit Breaker
		W003	YX26560010	Wire Materials
		D110	62031650W0	Lug
DF16223010	0.022uF $\pm 10\%$, Mylar	D111	54050300R0	T. L. Washer OR
		D112	53110303E9	Hexagon Nut
57219520W 0	Lug Eyelet	D114	54040302N0	Spring Washer
		D115	54040302N0	Spring Washer
RK02030160	Muting 20K (B), Variable Resist. or	D223	54040402N0	Spring Washer
RC10152120	1.5K ohm $\pm 10\%$ 1/2W, solid	D224	54040402N0	Spring Washer
RT10103140	10K ohm $\pm 10\%$ 1/4W, Carbon Film	D225	53110303E9	Hexagon Nut
RT10103140	10K ohm $\pm 10\%$ 1/4W, Carbon Film	C272	EA22601610	22uF 16V Elect.
RM05030190	Balance 50K Mn, Variable	C133	DK18403020	0.04uF $\pm 100\%$ -0% Cer.
RM05030220	Volume 50K (A) 40% Tap, Variable	R118	RT10331140	330 ohm $\pm 10\%$ 1/4W Carbon Film
RC10471120	470 ohm $\pm 10\%$ 1/2W, solid			
RC10471120	470 ohm $\pm 10\%$ 1/2W, solid	R119	RT10683140	68K ohm $\pm 10\%$ 1/4W Carbon Film
RT10152010	1.5K ohm $\pm 10\%$ 1W, Carbon Film	R553	RN10224140	220K ohm $\pm 10\%$ 1/4W Carbon Film
RT10152010	1.5K ohm $\pm 10\%$ 1W, Carbon Film			
RT10225010	2.2M ohm $\pm 10\%$ 1W, Carbon Film	R554	RN10224140	220K ohm $\pm 10\%$ 1/4W Carbon Film
RC10680120	68 ohm $\pm 5\%$ 1/2W, solid			
RC10680120	68 ohm $\pm 5\%$ 1/2W, solid			
RC10082120	8.2 ohm $\pm 5\%$ 1/2W, solid			
ED33600610	33uF 6.3V, Elect.	T501	2577267020	Heat Sink for 2SA, 2SC497
EC47805010	4700uF 50V, Elect.	-T508		
EC47805010	4700uF 50V, Elect.	T509	2577118060	Spacer for 2SA, 2SC497
DK18103510	0.01uF 250W $\pm 20\%$, MP Cap	-T516		
DK18103510	0.01uF 250W $\pm 20\%$, MP Cap	C007	DK17103010	0.01uF $\pm 20\%$ Cer.
DO07473530	0.047uF $\pm 20\%$ AC450V (UL), Oil-Paper Cap.			
HD20005100	5B2, Diode			
SP04020012	Push Switch			
SP04020012	Push Switch			
SR05040010	Function, Rotary Switch			
SS02020170	For FM Ant Attenuator, Slide Switch			
SP04010062	For AC Supply, Push Switch			
LF11400390	Ant Coil (MW)			
TS19601020	Power Transf.			
LC21020010	2uH Core FC5027001 0, Choke Coil			