

449

service
manual

28

marantz

model twenty eight

Stereophonic 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 28 Stereophonic Receiver with automatic turntable.

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 28 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.

No description for the associated Garrard synchro-Lab 55B Automatic Turntable is included in this service manual. A service manual for Garrard 55B published by the Garrard Engineering and Manufacturing Co., should be consulted to work on the automatic turntable.

1 . SERVICE NOTES

As can be seen from the circuit diagram, the chassis of the Model 28 consists of the following units. Each unit mounted on a printed circuit board is described within the square enclosed by a bold dotted line on the circuit diagram.

- 1 . FM Front End, FM IF Amplifier, FM MPX Demodulator, AM Front End,
AM IF Amplifiermounted on PC board P100
- 2 . FM Sub-IF Amplifiermounted on PC board P200
- 3 . Phono Amplifiermounted on PC board P300
- 4 . Pre Amplifier, Tone Amplifier, and Main Amplifier
.....mounted on PC board P400
- 5 . Rectifiers and Power Supply Unitmounted on PC board P500

- 6 . Bass and Treble Control Unit, Loudness Control Unit, High and Low Filters Unit and Tape Monitor Switch.....mounted on PC board P600

2 . AM TUNER

2.1.Circuit Description

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

The front end is comprised of a converter and a diode. AM signals induced in the ferrite-rod antenna L001 are roughly selected in the antenna tuning circuit. The selected signals are applied to the base of converter transistor H114 through coupling capacitor C117. The converter forms a collector base self oscillating circuit and the local oscillation signal and the receiving signal are mixed at the base-emitter junction and converted into 455KHz intermediate frequency. The IF signal obtained from the collector of H114 is applied to the first IF transformer L113.

Diode H116, reverse-biased by resistors R113 and R114, eliminated signal overload distortion without sacrificing any receiving sensitivity.

The IF signal output is led to the IF amplifier consisting of two stages H115 and H106 which are shared with FM IF amplifier and amplified to high level. The amplified IF output is applied to diode H109 to detect audio signal. Then the detected audio signal is led to output pin J118 through filtering network. The DC component of the detected IF signal is used for AGC which affects the base bias current of H115. A part of IF signal output is also applied to diode H112 through capacitor C139 and rectified into DC current for energizing the tuning meter M001.

2.2.Suggestions for Trouble Shooting of AM Tuner

Symptom : No AM Reception

First, try to tune stations by rotating the flywheel tuning knob slowly and observe the tuning meter whether it deflects or not. If the tuning meter gives a deflection at

several frequencies received, no failure exists in the stages at least preceding IF transformer L115.

Next, connect an oscilloscope to tuner output pin J118 and check audio signal.

If the tuning 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 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 shown 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 S001 and balun coil L002. The signals are then applied to an FET RF amplifier and the amplified output is applied to mixer transistor H102 through a tuning 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 C102 for maximum gain and good stability. The gate of H101 is returned to the AGC bus through R101 and a bypass capacitor C185. The AGC voltage is obtained by rectifying a part of the second stage IF amplifier. The local oscillator is a Colpitts oscillator, oscillation being produced by capacitors C114 and C113. Oscillator injection to the base of mixer transistor H102 is accomplished by C108 and C186. The converted IF signals are led to the IF amplifier unit consisting of three transistor amplifier

stages and one IC limiter. The FM IF amplifier shares its third stage transistor H106 with the AM IF amplifier. The fully amplified IF signal is then applied to FM discriminator transformer L109 and demodulated into audible signals.

The demodulated audio signals are then applied to the base of 19KHz pilot signal amplifier H117. This amplifier operates as an emitter follower for the audio signals and has no 'voltage' gain. The audio output is obtained from the emitter of H117 and applied to the center tap of 38KHz tuned transformer L119 through a 67KHz SCA trapping filter consisting of L120 and C159. The audio signals are split into right and left channel circuits 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 H117, is applied to H118 for further amplification. Then it is rectified by the full wave rectifier consisting of diodes H112 and H123, thus providing 38KHz pulsating current to drive 38KHz sub-carrier amplifier transistor H120, and 38KHz sub-carrier is obtained. The 38KHz sub-carrier and stereo composite signal, except 19KHz, are superimposed at the secondary coil of L119 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 H128 and H129. Then led to tuner output pins J112 and J114 after canceling undesirable crosstalk. A tuned circuit, L121, and C172 is filtering circuit against 38KHz.

The model 28 is equipped with sub-FM IF amplifier consisting of a transistor amplifier stage and rectifiers for stereo-monophonic automatic switching over and driving of the tuning meter. The sub-FM IF amplifier obtains its input signal from the third FM IF amplifier stage through a small coupling capacitor C136 and amplifies

it. The amplified output is applied to diodes H202 and H203 for rectification into DC. The voltage developing across H203 is supplied to tuning meter M001 through resistors R204 and R205 and rotary switch S002-3. H202 provides its DC output to the base of H119 through R143 for stereo-monophonic automatic switching over operation.

The second 19KHz pilot signal amplifier H118 is so designed that the emitter circuit is electrically switched on and off by controlling the bias current of switching transistor H119. The bias current is obtained from the sub-IF amplifier circuit consisting of transistor H201, 10.7MHz IF transformer L201 and two diodes H202 and H203. The stereo switch on the front panel is connected across the base and emitter of switching transistor H119. Therefore, when the switch is in its normal "off" position, the base and emitter is 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 H118. No stereo separation is obtained. When the stereo switch is depressed, the emitter-base short-circuit is opened and the rectified, by H202. DC current of a part of the sub-IF amplifier output flows into the base of H119. If the level of a received FM signal is higher than the pre-determined level, the DC current turns on the switching transistor H119 and H118 begins to operate. Providing the presence of 19KHz pilot signal under this circumstances, the full wave rectified DC component of the pilot signal developing across R146 provides the base bias current to tuner on 38KHz sub-carrier amplifier H120. As H120 is turned on, stereo beacon lamp switching transistor H121 whose base and emitter are connected across R169 in the emitter circuit of H120 turns on, too.

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 flywheel

tuning knob slowly and observe the FM 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, output of the 19KHz pilot signal amplifier test point H., and Multiplex stereo output pin J112 or J114. 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 1 volt at the hot end of the tank circuit. If the oscillation voltage is normal, check all voltage distributions and compare them with those shown in the schematic diagram.

3.2.2.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 test point G 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 state 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 L112 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 C183-4 mounted on the tuning capacitor 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 for maximum output.

5) Set the generator to 1400KHz. Tune the receiver to the same frequency and adjust antenna trimming capacitor C183-3 mounted on the tuning capacitor 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 L113,L114,and L115 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 L104 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 C182 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 and L102 for maximum output.

2) Set the FM signal generator to 106MHz. Tune the receiver to the same frequency and adjust trimming capacitors C183-1 and C183-2 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 test point D and an oscilloscope to test point A. Turn each primary and secondary core of IF transformers L105, L106, L107 and L108 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 L109 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 L201 so that the FM tuning meter reads maximum deflection.

4.7.FM Stereo Demoduator

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 test point G and turn each core of L117, L118 and L119 for maximum 38KHz sub-carrier wave on the scope.
- 3) Turn the core of L119 again to obtain equal stereo separation in both of the right and left channels.
- 4) Adjust trimming resistor R175 for maximum and equal stereo separation in both channels.

5 . PHONO AMPLIFIER

A phono signal from the pickup is led to the phono amplifier for the RIAA equalization and pre-amplification. The phono amplifier makes use of two transistors H301 and H303. The collector of H301 is direct coupled to the base of H303 and the base bias for H301 is derived from the emitter circuit of H303. This configuration assures a good thermal and electrical stability. R309, R311, R305, C305 and C307 condition the feedback characteristic from the collector of H303 to the emitter of H301 for precise RIAA equalization. The RIAA equalized and amplified phono signal is led to selector switch S002-1 and S002-2.

6 . PRE-AMPLIFIER AND TONE AMPLIFIER

The audio signal selected by the selector switch S002-1 is led to the pre-amplifier through stereo switch S003, tape monitor switch S601-4 and the volume control with loudness control network. The signal is applied through coupling capacitor C401 and resistor R459 to the base of H401 which is an emitter follower to achieve low driving impedance for C-R tone control network. The signal obtained from the emitter of H401 is led to the tone control network through coupling capacitor C403. After bass and treble controlled by the tone control network, the signal is applied to the two stage tone amplifier consisting of H403 and H405. Negative feedback is utilized from the collector of H405 to the emitter of H403 through C409, R413 and R411 to maintain good stability and linearity.

7 . MAIN AMPLIFIER

7.1.Circuit Description

7.1.1.Amplifier

The amplified signal obtained from the collector of H405 is applied to the base of H407 via the balance control R017 and Hi and Low filter networks. The output of H407 is applied to the base of H409. H409 provides voltage amplification necessary to drive the driver transistors H411 and H413. These two transistors are operated in a complementary-symmetry configuration with their respective power transistors H001 and H002. The output of H411 is applied to the base of H001, and that of H413 to H002. Combined operation of PNP transistor H413 and NPN transistor H411 with NPN power transistors H001 and H002 provides a single-ended push-pull output. This output is applied to loudspeaker output terminals J003 through coupling capacitor C429 and headphones jack J004. To maintain 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.

R437 and R429 condition the feedback loop gain.

7.1.2. Dynamic Bias

Dynamic bias is applied to the bases of driver transistors H411 and H413. H411 and H413 determine the class of operation for the power amplifier transistors H001 and H002, respectively, thus maintaining a constant class of operation by establishing and maintaining proper collector-to-emitter current. This dynamic bias circuit consists of adjusting resistor R457 and temperature sensitive diodes H415, H417, and H419.

The circuit provides a variable base bias for driver transistors H411 and H413 and automatically maintains proper base voltage, bias condition, with temperature change.

7.1.3. Amplifier Protection

Protection for the amplifier is provided by two varistor diodes H421 and H423.

When a grossly overloading input signal is applied across the bases of driver transistors H411 and H413, these varistor diodes effectively clip the excessive voltage and protect the driver and output transistors against damage due to the overloading input signal.

In the other case of output short-circuit, the currents through H001 and H411 increase and it results in an increase of the emitter potential of H411. On the other hand, the base potential has been forced to a fixed value by varistor diode H421. Then the base-emitter biasing of H411 is decreased and the current flows through H411 and H001 are limited in safe operating condition.

7.2. DC Balance and Bias Adjustment of the Main Amplifier

7.2.1. DC Balance Adjustment

Connect an oscilloscope and a dummy load (8 ohms) across the speaker system output terminals for the channel being tested and an audio oscillator (1000Hz) to the AUX jack on the rear panel.

Set the selector switch in the AUX, the bass, treble and balance controls flat or center position, the loudness, hi filter and low filter switches off and the volume control maximum. Turn the bias control resistor R457 fully clockwise. Adjust DC balance control R455 until equal clipping level is obtained for both polarities. Repeat the same procedure for the other channel.

Note : During DC balance adjustment, adjust the output level of the audio oscillator to show the clipping level on the scope precisely.

7.2.2. Bias Adjustment

Give no input signal and connect a VTVM across resistor R447 or R449. Adjust the bias control resistor R457 until the VTVM reads 5mV. Ensure no crossover distortion is observed on the scope with a faint signal input from an audio oscillator. To adjust the other channel, connect the VTVM across resistor R448 or R450 and adjust bias control resistor R458 for the same voltage reading.

Note : PC board P400 on which bias control resistor R457 and R458 are mounted is located in back of the power transistors.

7.3. Suggestions for Trouble Shooting of Power Amplifier

7.3 1. Excessive Line Consumption

- 1) Check for shorted rectifiers H502, H503, H504, H505, H506, H507 and H508, also check C501, C503 and C507.
- 2) Check for shorted transistors H411 and H413. Check for open control resistor R457 and bias diodes H415, H417 and H419.
- 3) Check L003 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 or open transistor, diode, or control resistor 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, and bias diodes H415, H417 and H419.
- 2) Check for open rectifiers H505, H506, H507 and H508, or open L003

8 . POWER SUPPLY UNIT

The power supply unit provides three different DC outputs of +38V, -11V and -2V.

+38V output is obtained by bridge connected rectifiers H505, H506, H507 and H508, and filtering capacitor C503. This source energizes the audio section.

Two rectifiers H503 and H504 are engaged in the rectification for -11V output. This output is well regulated by zener diode H501 and concerns with the tuner section.

The power supply unit has another DC output of -2V for stereo beacon lamp operation.

9 . TEST EQUIPMENTS FOR SERVICING

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	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	To monitor the line voltage
Variable Auto Transformer	0.....140V, 10A	To adjust the primary power voltage

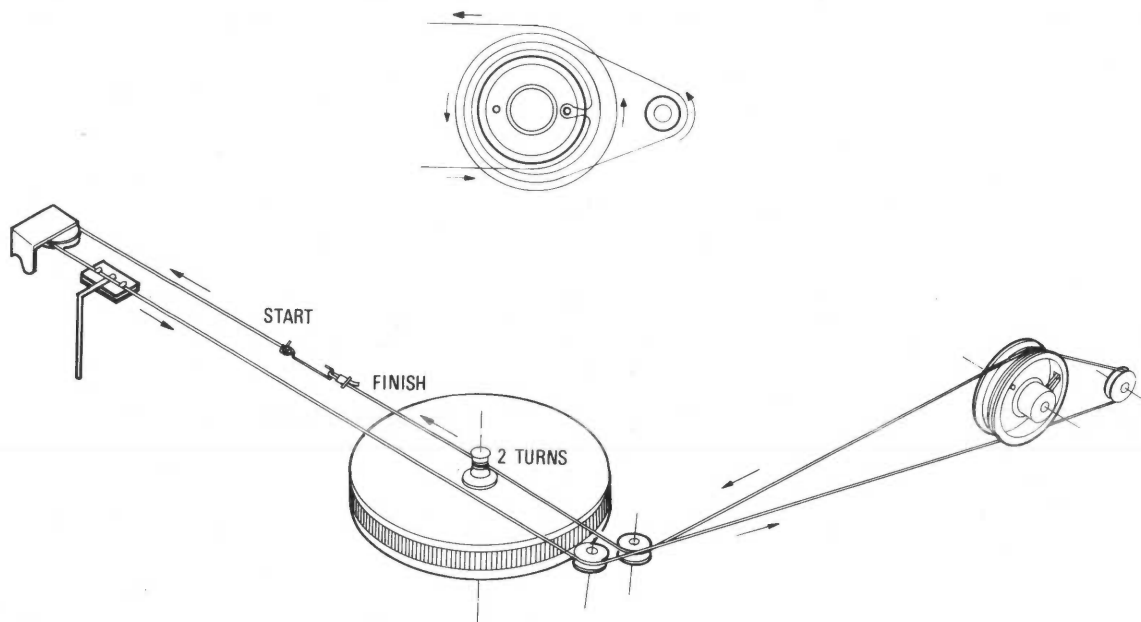


Figure 1 Dial Stringing Diagram

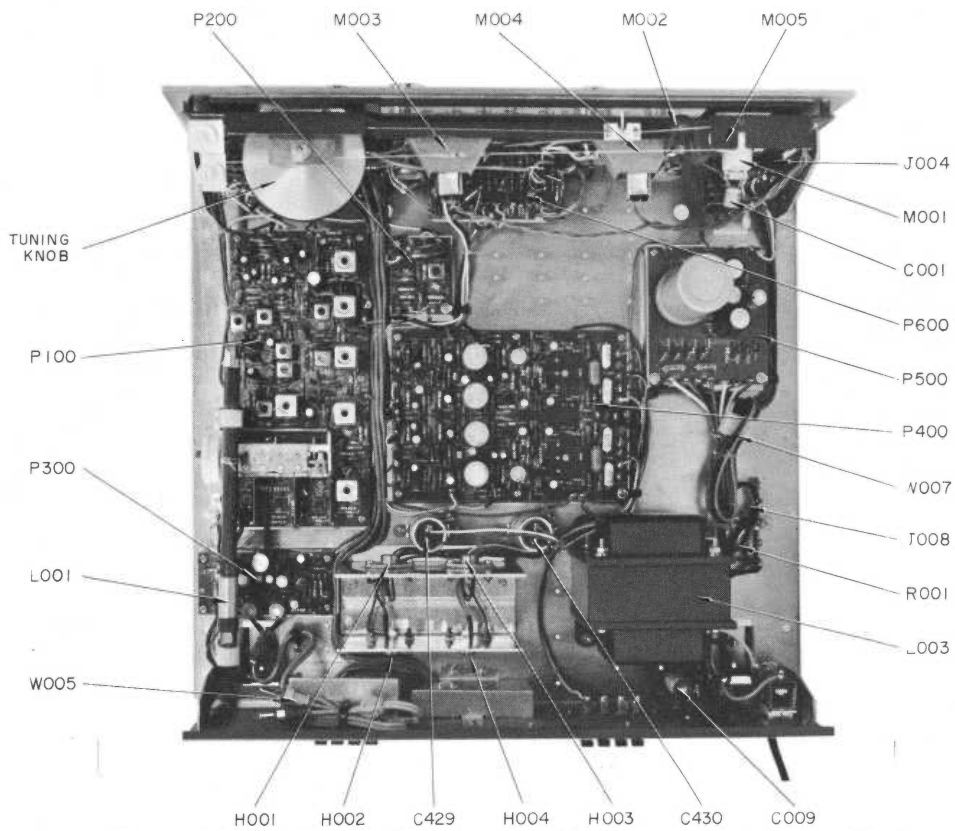


Figure 2 Main Chassis Adjustment and Component Locations (Top)

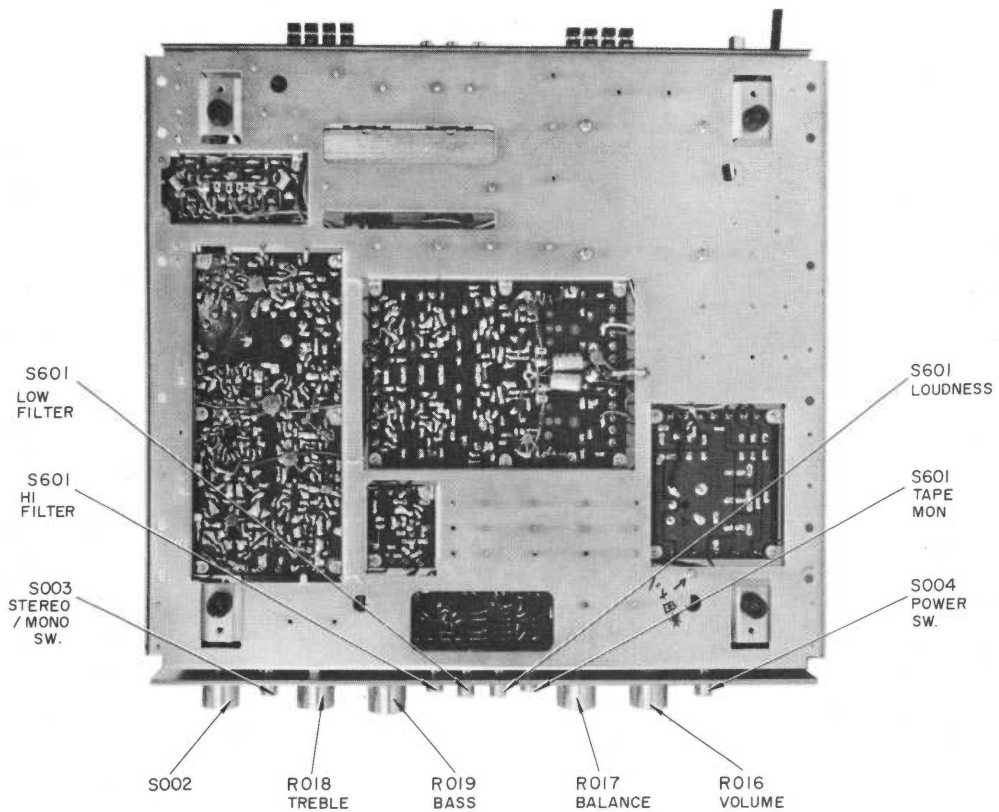


Figure 3 Main Chassis Adjustment and Component Locations (Bottom)

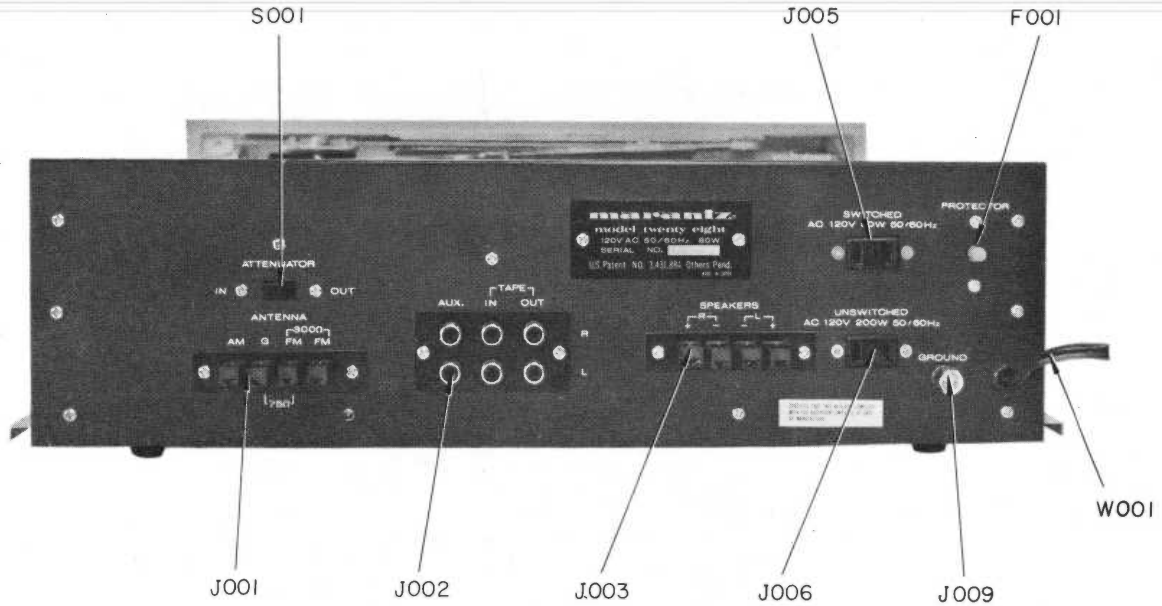


Figure 4 Rear Panel Adjustment and Component Locations

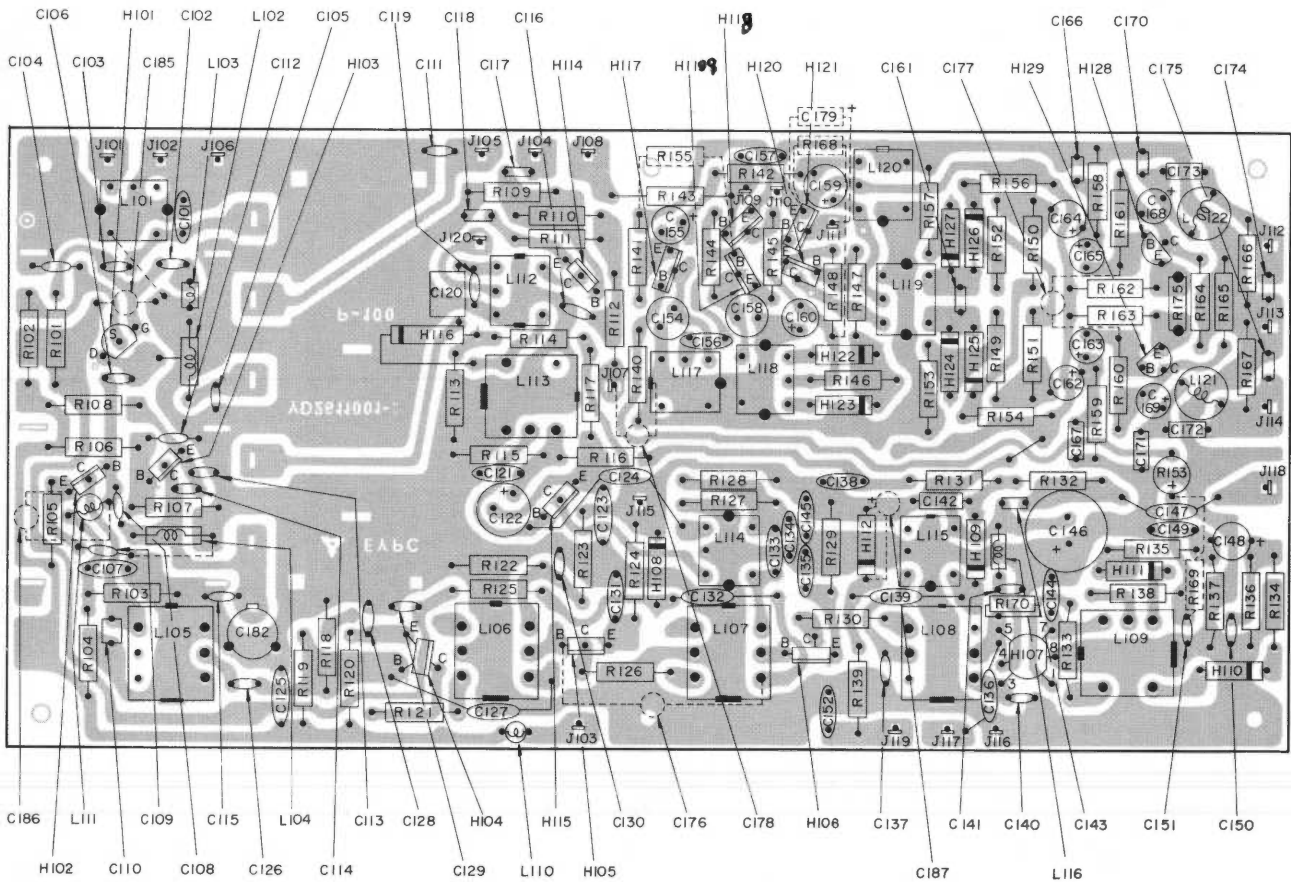


Figure 5 AM/FM/FM MPX Tuner Circuit

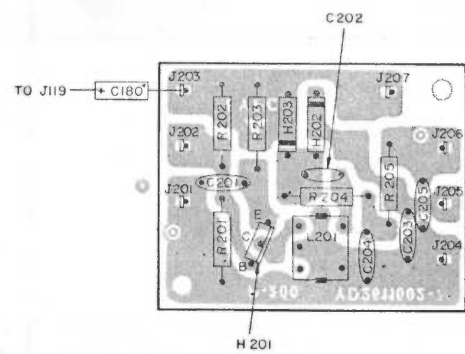


Figure 6 FM Sub IF Amplifier

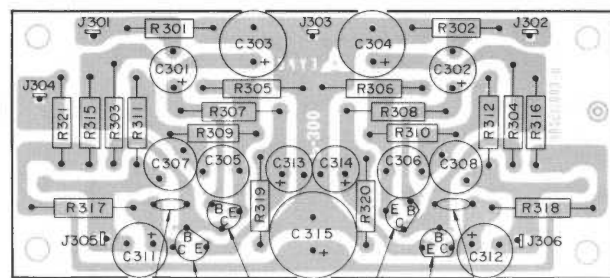


Figure 7 PONO Amplifier

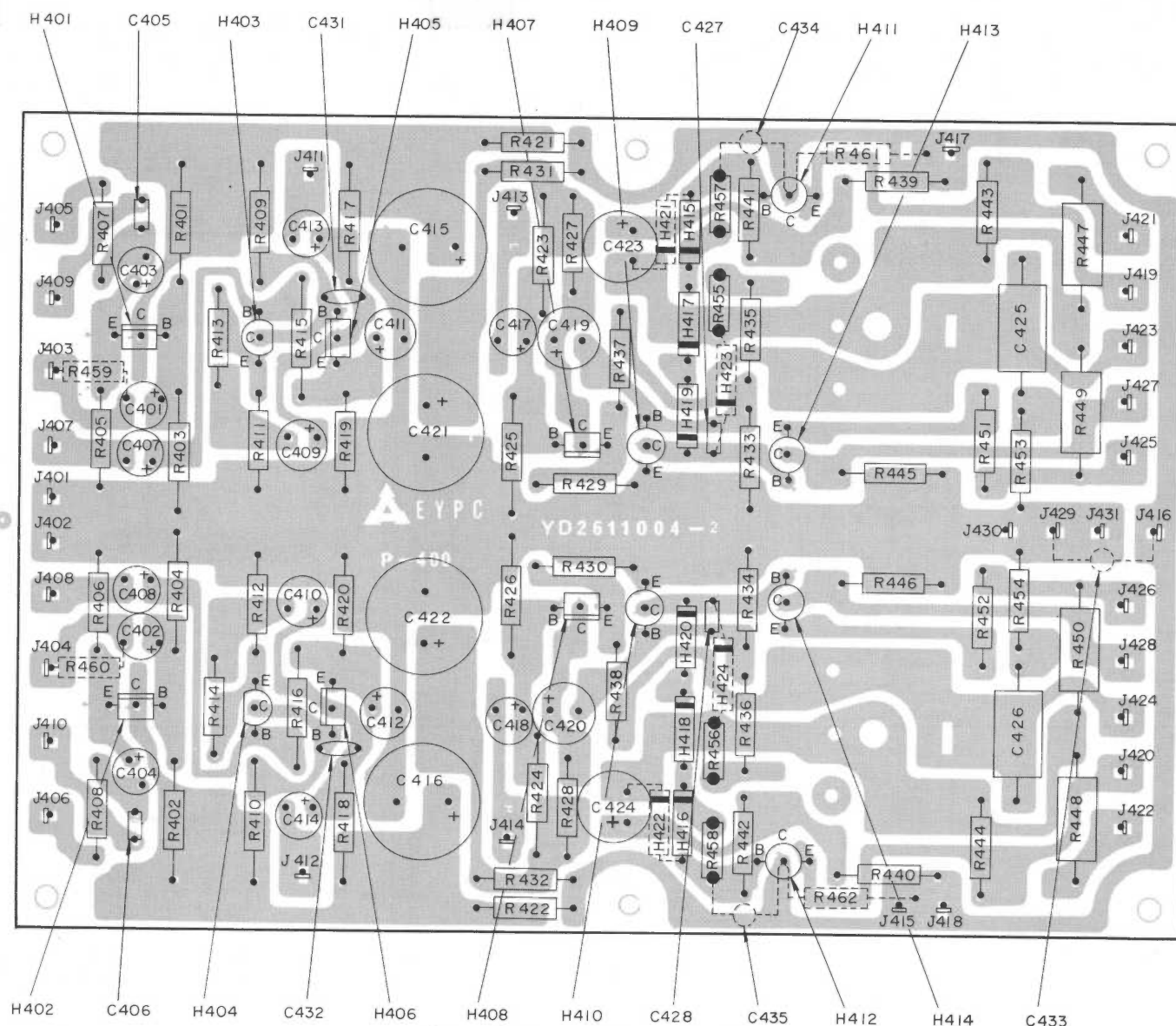


Figure 8 Pre-and Power Amplifier

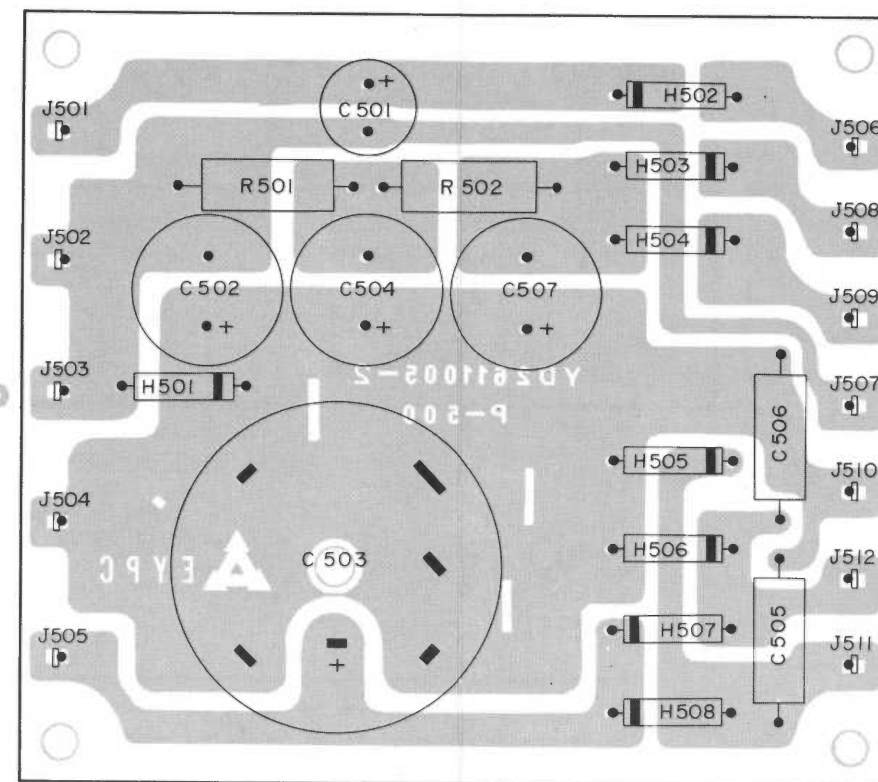


Figure 9 Power Supply Unit

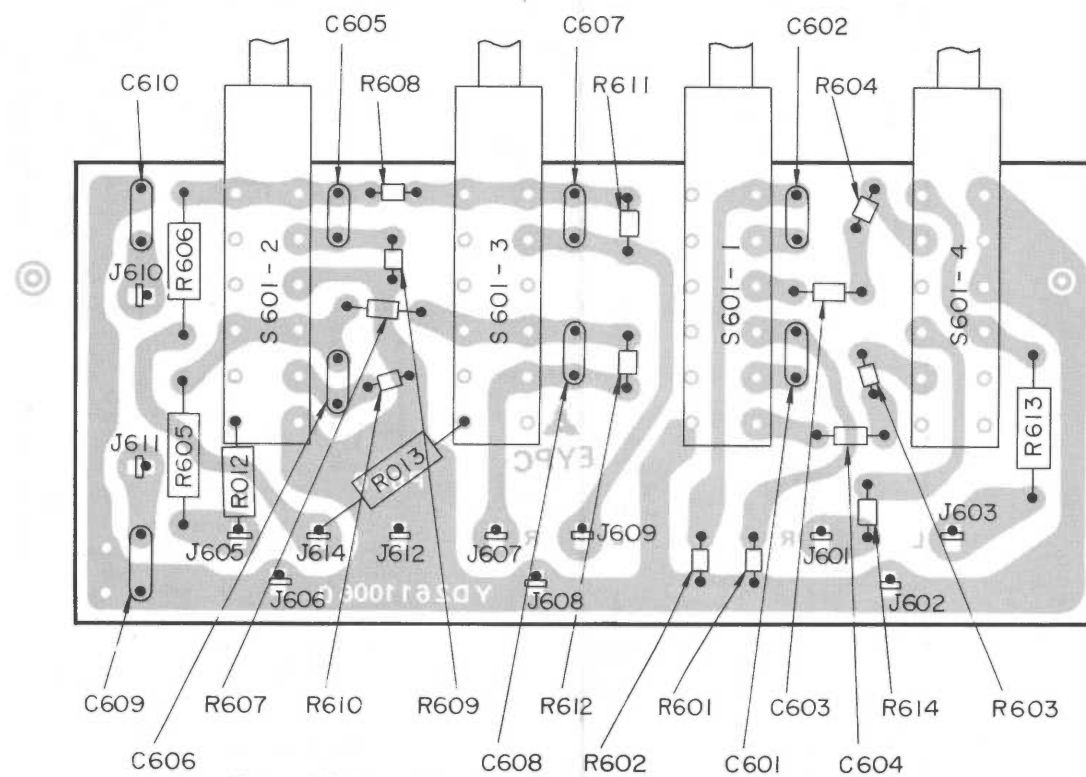
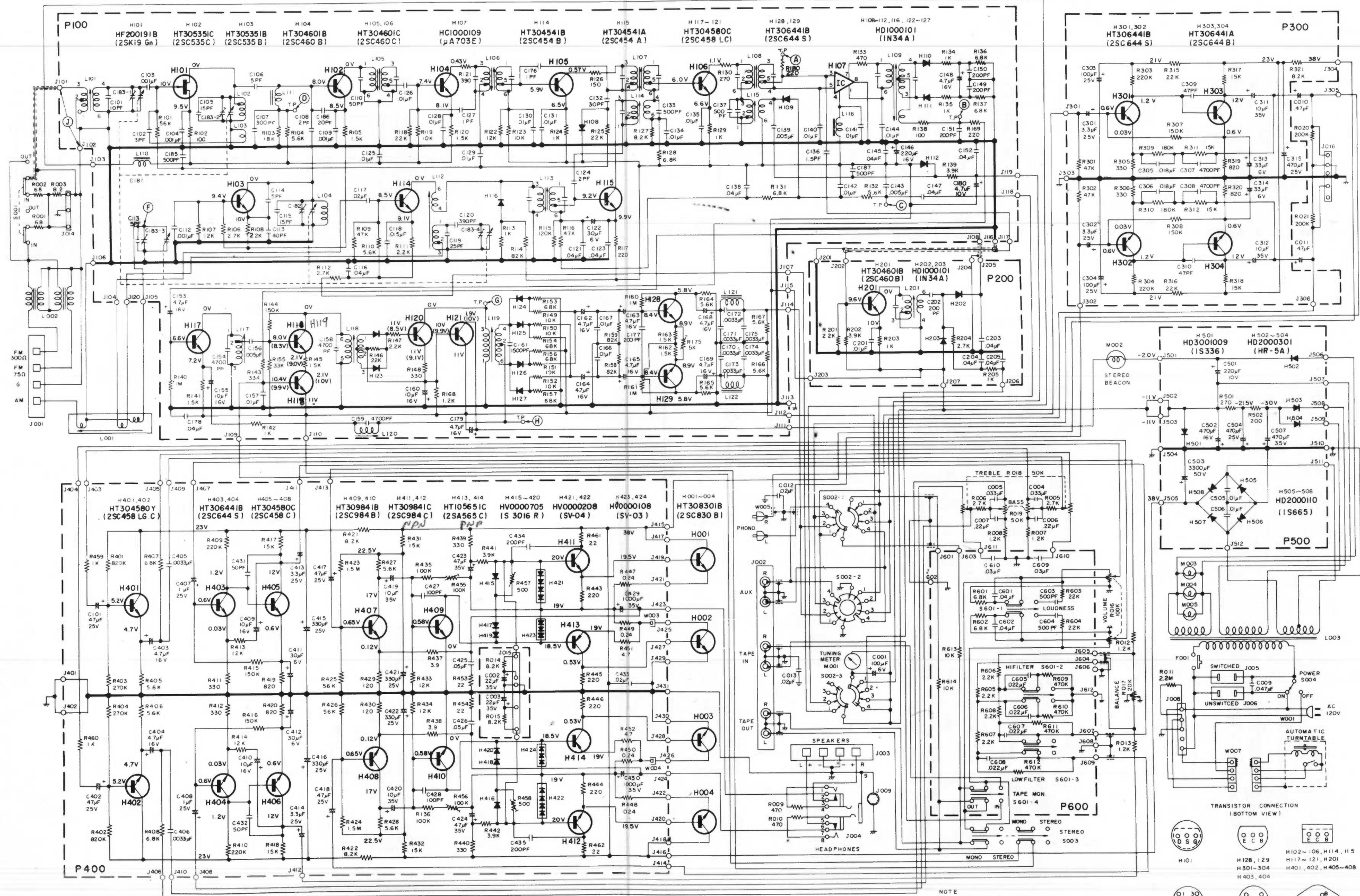


Figure 10 Tape Mon-Loudness-Low Fil-High Fil Circuit



1. Voltages are measured at no signal with DC VTVM from common positive ground.
2. Voltages in parenthesis are values measured at 1K μ V FM stereo signal applied. Stereo switch in stereo position.

S00 2-1 ~ S00 2-3
 ALL SWITCHES VIEWED FROM FRONT
 AND SHOWN IN EXTREME CLOCKWISE
 POSITION = 4 AUX

- NOTE
- S002 POSITION
1. AM
 2. FM
 3. PHONO
 4. AUX

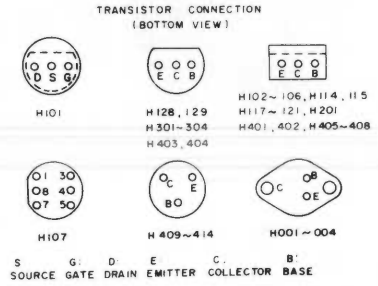


Figure 11 Schematic Diagram of Model 28

PARTS LIST

REF. DESIG.	MARANTZ PART NO.	DESCRIPTION	REF. DESIG.	MARANTZ PART NO.	DESCRIPTION
A001	2667063010	Escutcheon	B060	2577104020	Retainer, for Core
A002	2667265010	Indicator (on Back Plate)	B061	2577104020	Retainer, for Core
A003	2611103013	Pointer	B063	71400219Q0	Spring, for Stereo Lamp
A004	2577273010	Fly Wheel	B064	71101239M0	Spring, for Dial Stringing
A005	2577063022	Escutcheon (upper)	B071	2597160500	Bracket (K), for Dial Stringing
A006	2577063022	Escutcheon (bottom)	B072	2597160030	Bracket, for Dial Stringing
A007	2577067022	Small Knob Cap for Push Button	B073	2597160040	Bracket, for Dial Stringing
-A012			B074	2597112010	Shaft, for Dial Stringing
A013	2578067010	Large Knob Cap for Push Button	B075	1336112010	Shaft, for Dial Stringing
-A017			B078	1202258010	Hook, for Dial Stringing
A526	2667064504	Case (K)	B081	1382005030	Clamper, for Lead
A527	2667064014	Case	-B090		
B401	2667160020	Bracket	B094	2611118010	Spacer
B402	2667160020	Bracket	B095	2611118010	Spacer
B403	2667160030	Bracket	B501	2667053010	Cover, for damage proof
B404	2667160030	Bracket	B505	2577106020	Bearing
D401	51523109A0	R. H. Wood Screw	B506	2577053030	Cover, for Knob
-D416			B507	2577053042	Cover, for Dial Lamp
D417	51542710A0	F. H. Wood Screw	B508	2577053042	Cover, for Dial Lamp
-D424			B510	2577118030	Cover
A528	2611302012	Dial	B511	2577118040	Cover, for Fly Wheel
A529	2577053012	Stereo Lamp Cover	B512	2577118050	Cover, for Meter
A530	2577154020	Push Switch Knoab	B513	2577159020	Drum
A531	2577154020	Push Switch Knob	B514	2577262010	Pully
-A535			B515	2577262010	Pully
A541	2578154010	Large Knob	B516	2577262010	Pully
-A544			B517	1271262010	Pully, for Tension
B003	2667105503	Chassis (K)	B518	2577118030	Spacer
B004	2667105013	Chassis	-B520		
B005	2667101010	Support	B521	2506057010	Leg
B006	2667101010	Support	-B524		
B007	2667160502	Bracket for Front Panel	B525	2507120010	Insulator
B008	2667160092	Bracket	B526	2507120010	Insulator
B009	2577101020	Support	B528	1455259010	Bush for AC Cord
B010	2577101020	Support	B529	1415118010	Spacer
B011	2577112020	Shaft	B530	72081604A0	String
B014	2667160010	Bracket, for front Panel	B531	1502271010	Holder, for Core
B015	2667160040	Bracket, for right side	B532	1502271010	Holder, for Core
B016	2667160050	Bracket, for left side	B533	1785271010	Holder, for Lead
B017	2667160060	Bracket, for right side	B534	2578259020	Bush, for Stereo Lamp Cover
B018	2667160070	Bracket, for left side	B535	2706118010	Spacer
B020	2667257010	Bottom Lid	D001	51570305B0	P. H. Tapt Screw
B024	2611005010	Clamper, fitting for meter	-D020		
B031	2611160510	Bracket kits, fitting for pulley	D023	51570305B0	P. H. Tapt Screw
B032	2611160060	Bracket	-D032		
B033	2577112020	Shaft	D041	51570305B0	P. H. Tapt Screw
B034	2577112020	Shaft	-D063		
B038	2611109010	Shield, for Audio Terminal	D066	51570308B0	P. H. Tapt Screw
B039	2611109020	Shield, for Variable Condenser	-D069		
-B041			D071	51042608E0	F. H. M. Screw
B042	2611109030	Shield, for Antenna Terminal	-D074		
B043	2611267010	Heat Sink	D081	51060305E9	P. H. M. Screw
B044	2611267020	Heat Sink	-D111		
B045	2611055010	Collar, for VR	D121	51060305E9	P. H. M. Screw, for Slide Switch
B046	2611055020	Collar, for VR	D122	51060305E9	P. H. M. Screw, for Slide Switch
B047	2611055020	Collar, for fitting with ornamental plate	D123	51060312E9	P. H. M. Serew, for Power Transistor
B048	2611055020	Collar, for fitting with ornamental plate			
B051	2577160170	Bracket, for circuit breaker	D131	51060406E9	P. H. M. Screw
B052	2577112012	Shaft, for Flywheel	-D146		
B055	2577106500	Bearing kits, flywheel bearing	D150	51060408E9	P. H. M. Screw
B056	2577104010	Retainer	-D156		
B057	2577106010	Bearing	D161	51060410E9	P. H. M. Screw
			-D164		

REF. DESIG.	MARANTZ PART NO.	DESCRIPTION	REF. DESIG.	MARANTZ PART NO.	DESCRIPTION
D168	51140305E9	O. C. H. M. Screw	R125	RT10223140	22K ohm ±10% 1/4W, Carbon Film
-D175			R126	RT10151140	150 ohm ±10% 1/4W, Carbon Film
D176	53110303E9	Hexagon Nut	R127	RT10822140	8.2K ohm ±10% 1/4W, Carbon Film
-D177			R128	RT10682140	6.8K ohm ±10% 1/4W, Carbon Film
D178	53112603E0	Hexagon Nut	R129	RT10102140	1K ohm ±10% 1/4W, Carbon Film
-D181			R130	RT10271140	270 ohm ±10% 1/4W, Carbon Film
D183	53110403E9	Hexagon Nut	R131	RT10682140	6.8K ohm ±10% 1/4W, Carbon Film
-D187			R132	RT10562140	5.6K ohm ±10% 1/4W, Carbon Film
D188			R133	RT10471140	470 ohm ±10% 1/4W, Carbon Film
-D195	53110303E9	Hexagon Nut	R134	RT10102140	1K Ω ±10% 1/4W, Carbon Film
D201	51122608H0	T. H. M. Screw	R135	RT10102140	1K Ω ±10% 1/4W, Carbon Film
D202	51122608H0	T. H. M. Screw	R136	RT10682140	6.8K Ω ±10% 1/4W, Carbon Film
D203	54050300R0	T. L. Washer OR	R137	RT10682140	6.8K Ω ±10% 1/4W, Carbon Film
D204	54040602B0	Spring Washer	R138	RT10101140	100 Ω ±10% 1/4W, Carbon Film
D205	54052600R0	T. L. Washer OR	R139	RT10392140	3.9K ohm ±10% 1/4W, Carbon Film
-D208			R140	RT10105140	1M Ω ±10% 1/4W, Carbon Film
D209	54050300R0	T. L. Washer	R141	RT10152140	1.5K Ω ±10% 1/4W, Carbon Film
D210	54050400R0	T. L. Washer OR	R142	RT10102140	1K Ω ±10% 1/4W, Carbon Film
D211	54020301E0	Flat Washer P	R143	RT10333140	33K Ω ±10% 1/4W, Carbon Film
-D213			R144	RT10154140	150 ohm ±10% 1/4W, Carbon Film
D214	54040402N0	Spring Wasar	R145	RT10152140	1.5K Ω ±10% 1/4W, Carbon Film
-D222			R146	RT10223140	22K Ω ±10% 1/4W, Carbon Film
D223	62031340W0	Lug	R147	RT10222140	2.2K Ω ±10% 1/4W, Carbon Film
-D227			R148	RT10331140	330 Ω ±10% 1/4W, Carbon Film
D228	54010300E0	Flat Washer S	R149	RT10103140	10K Ω ±10% 1/4W, Carbon Film
-D235			R150	RT10103140	10K Ω ±10% 1/4W, Carbon Film
D241	62041760W0	Lug	R151	RT10103140	10K Ω ±10% 1/4W, Carbon Film
D244	54040302N	Spring Washer	R152	RT10103140	10K Ω ±10% 1/4W, Carbon Film
-D251			R153	RT10683140	68K Ω ±10% 1/4W, Carbon Film
D252	64002400R0	RG Ring E	R154	RT10683140	68K Ω ±10% 1/4W, Carbon Film
-D255			R155	RT10333140	33 K ohm ±10% 1/4W, Resistor
D256	56382040G	Eylet	R156	RT10683140	68K ohm ±10% 1/4W, Carbon Film
D257	54020301E0	Flat Washer P	R157	RT10683140	68K ohm ±10% 1/4W, Carbon Film
-D260			R158	RT10823140	82K ohm ±10% 1/4W, Carbon Film
D261	54020401E0	Flat Washer P	R159	RT10823140	82K ohm ±10% 1/4W, Carbon Film
-D272			R160	RT10105140	1M ohm ±10% 1/4W, Carbon Film
D273	51640412D9	Set Screw CP	R161	RT10105140	1M ohm ±10% 1/4W, Carbon Film
D274	51650304D9	Set Screw HP	R162	RT10152140	1.5K ohm ±10% 1/4W, Carbon Film
P100	YD26110012	FM/AM/MPX Front End, PC Board	R163	RT10152140	1.5K ohm ±10% 1/4W, Carbon Film
R101	RT10563140	56K ohm ±10% 1/4W, Carbon Film	R164	RT10562140	5.6K ohm ±10% 1/4W, Carbon Film
R102	RT10101140	100 ohm ±10% 1/4W, Carbon Film	R165	RT10562140	5.6K ohm ±10% 1/4W, Carbon Film
R103	RT10183140	18K ohm ±10% 1/4W, Carbon Film	R166	RT10562140	5.6K ohm ±10% 1/4W, Carbon Film
R104	RT10562140	5.6K ohm ±10% 1/4W, Carbon Film	R167	RT10562140	5.6K ohm ±10% 1/4W, Carbon Film
R105	RT10152140	1.5K ohm ±10% 1/4W, Carbon Film	R168	RT10122240	1.2K onm ±10% 1/4W, Carbon Film
R106	RT10272140	2.7K ohm ±10% 1/4W, Carbon Film	R169	RT10221140	220 ohm ±10% 1/4W, Carbon Film
R107	RT10123140	12K ohm ±10% 1/4W, Carbon Film	R170	RC10221120	220 ohm ±10% 1/2W, Carbon Film
R108	RT10222140	2.2K ohm ±10% 1/4W, Carbon Film	R171	RT10102140	1K ohm ±10% 1/4W, Carbon Film
R109	RT10473140	47K ohm ±10% 1/4W, Carbon Film	R175	RA05020050	5K ohm (B) ±20% Trimmer
R110	RT10562140	5.6K ohm ±10% 1/4W, Carbon Film	C101	DD12100010	10pF ±1pF, Ceramic
R111	RT10222140	2.2K ohm ±10% 1/4W, Carbon Film	C102	DD12030010	3pF ±1pF, Ceramic
R112	RT10272140	2.7K ohm ±10% 1/4W, Carbon Film	C103	DK17102010	0.001uF ±20%, Ceramic
R113	RT10102140	1K ohm ±10% 1/4W, Carbon Film	C104	DK17102010	0.001uF ±20% Ceramic
R114	RT10823140	82K ohm ±10% 1/4W, Carbon Film	C105	DD16150010	15pF ±10% Ceramic
R115	RT10124140	120K ohm ±10% 1/4W, Carbon Film	C106	DD12050010	5pF ±1pF, Ceramic
R116	RT10472140	4.7K ohm ±10% 1/4W, Carbon Film	C107	DD15301012	300pF ±5%, Ceramic
R117	RT10221140	220 ohm ±10% 1/4W, Carbon Film	C108	DD11020040	2pF ±0.5pF, Ceramic
R118	RT10223140	22K ohm ±10% 1/4W, Carbon Film	C109	DK17102010	0.001uF ±20%, Ceramic
R119	RT10103140	10K ohm ±10% 1/4W, Carbon Film	C110	DD25500010	50pF ±5%, Ceramic
R120	RT10152140	1.5K ohm ±10% 1/4W, Carbon Film	C111	DD12050010	5pF ±1PF, Ceramic
R121	RT10391140	390 ohm ±10% 1/4W, Carbon Film	C112	DK17102010	0.001uF ±20%, Ceramic
R122	RT10123140	12K ohm ±10% 1/4W, Carbon Film	C113	DD15400040	40pF ±5%, Ceramic
R123	RT10103140	10K ohm ±10% 1/4W, Carbon Film	C114	DD12070030	7pF ±10%, Ceramic
R124	RT10102140	1K ohm ±10% 1/4W, Carbon Film	C115	DD16150040	15pF ±10%, Ceramic

REF. DESIG.	MARANTZ PART NO.	DESCRIPTION	REF. DESIG.	MARANTZ PART NO.	DESCRIPTION
C116	DK18403010	0.04uF +100% -0%, Ceramic	C178	DK18403010	0.04uF +100% -0%
C117	DF17223010	0.02uF +20%, Myler	C179	EA47501610	4.7uF 16V Elect
C118	DF17153010	0.05uF ±20%, Ceramic	C180	ED47501030	4.7uF 10V Elect
C119	DD16250010	25pF ±10%, Ceramic	C181	CA32000100	FM3G AM2G, Variable
C120	DF65391010	390pF ±5%, Poly	C182	CT11000010	Trimmer
C121	DK18403020	0.04uF +100% -0%, Ceramic	C183	CT41300010	Trimmer
C122	EA33600610	6V 30uF +100% -20%, Elect.	C185	DD16501010	500pF ±10% Ceramic
C123	DK18403010	0.04uF +100% -0%, Ceramic	C186	DD16200030	20pF ±10% Ceramic
C124	DD11020010	2pF ±0.25pF, Ceramic	C187	DD16501010	500pF ±10% Ceramic
C125	DK17103010	0.01uF ±20%, Ceramic	H101	HF200191B0	2SK19GN, FET,
C126	DK17103010	0.01uF ±20%, Ceramic	H102	HT305351C0	2SC535C, Transistor
C127	DD10010010	1pF ±0.25pF, Ceramic	H103	HT305351B0	2SC535B, Transistor
C128	DK17103010	0.01uF ±20% Ceramic	H104	HT304601B0	2SC460B, Transistor
C129	DK17103010	0.01uF ±20%, Ceramic	H105	HT304601C0	2SC460C, Transistor
C130	DK17103010	0.01uF ±20%, Ceramic	H106	HT304601C0	2SC460C, Transistor
C131	DK17103010	0.01uF ±20%, Ceramic	H107	HC10001090	IC 703E, I-C
C132	DD16300010	30pF ±10%, Ceramic	H108	HD10001010	IN34A, Diode
C133	DD16501010	500pF ±10%, Ceramic	H109	HD10001010	IN34A, Diode
C134	DK17103010	0.01uF ±20%, Ceramic	H110	HD10001010	IN34A, Diode
C135	DK17103010	0.01uF ±20%, Ceramic	H111	HD10001010	IN34A, Diode
C136	DD10015010	1.5pF ±0.25pF, Ceramic	H112	HD10001010	IN34A, Diode
C137	DD15301010	300pF ±5%, Ceramic	H114	HT304540B0	2SC454L, B, Transistor
C138	DK18403010	0.04uF +100% -0%, Ceramic	H115	HT304540A0	2SC454L, A, Transistor
C139	DK17502010	0.005uF ±20%, Ceramic	H116	HD10001010	IN34A, Diode
C140	DK17103010	0.01uF ±20%, Ceramic	H117	HT304580C0	2SC458L-C, Transistor
C141	DK17103010	0.01uF ±20%, Ceramic	H118	HT304580C0	2SC458L-C, Transistor
C142	DF17103010	0.01uF ±20%, Myler	H119	HT304580C0	2SC458L-C, Transistor
C143	DF17472010	0.005uF ±20%, Myler	H120	HT304580C0	2SC458L-C, Transistor
C144	DK17103010	0.01uF ±20%, Ceramic	H121	HT304580C0	2SC458L-C, Transistor
C145	DK18403010	0.04uF +100% -0%, Ceramic	H122	HD10001010	IN34A, Diode
C146	EA22701640	16V 220uF +100% -20%, Elect.	H123	HD10001010	IN34A, Diode
C147	DK18403010	0.04uF +100% -20%, Ceramic	H124	HD10001010	IN34A, Diode
C148	EA47501620	16V 4.7uF, Elect.	H125	HD10001010	IN34A, Diode
C149	DD16201010	200pF ±20%, Ceramic.	H126	HD10001010	IN34A, Diode
C150	DD16201010	200pF ±20%, Ceramic	H127	HD10001010	IN34A, Diode
C151	DD16201010	0.04uF +100% -20%, Ceramic	H128	HT306441B0	2SC644S, Transistor
C152	DK18403010	0.04uF +100% -20%, Ceramic	H129	HT306441B0	2SC644S, Transistor
C153	EA47501620	16V 4.7uF, Elect.	L101	LA10046060	Ant. Coil, FM Ant. Coil
C154	DF55472010	4700pF ±5%, Poly	L102	LK10505060	Coil, FM RF Coil
C155	EA10601620	16V 10uF, Elect.	L103	LL23505050	Coil, FM RF Coil
C156	DK17502010	0.005uF ±20%, Ceramic	L104	LK10504040	Coil, FM OSC Coil
C157	DK17103010	0.01uF ±20%, Ceramic	L105	LI14016150	IFT, FM IFT 1
C158	DF55472010	4700pF ±5%, Poly	L106	LI14016170	IFT, FM IFT 2
C159	DF55472010	4700pF ±5%, Poly	L107	LI14016170	IFT, FM IFT 3
C160	EA10601620	16V 10uF, Elect	L108	LI14016180	IFT, FM IFT 4
C161	DF16152010	1500pF ±10%, Myler	L109	LI14016043	IFT, FM IFT 5
C162	EA47501620	16V 4.7uF, Myler	L110	LC16820010	6.3uH, Choke Coil
C163	EA47501620	16V 4.7uF, Myler	L111	LC16810010	0.68uH, Choke Coil
C164	EA47501620	16V 4.7uF, Myler	L112	LO10010340	OSC Coil, AM OSC Coil
C165	EA47501620	16V 4.7uF, Myler	L113	LI14010020	IFT, AM IFT 1
C166	DF17103010	0.01uF ±20%, Myler	L114	LI10010120	IFT, AM IFT 2
C167	DF17103010	0.01uF ±20%, Myler	L115	LI10010480	IFT, AM IFT 3
C168	EA47501610	16V 4.7uF, Elect.	L116	LC16820010	Choke Coil, 6.8uH
C169	EA47501610	16V 4.7uF, Elect.	L117	LS10010010	19KHz, MPX Coil
C170	DF16332010	0.0033uF ±10%, Myler	L118	LS10010020	19KHz, Douable, MPX Coil
C171	DF16332010	0.0033uF ±10%, Myler	L119	LS10010030	38KHz, MPX Coil
C172	DF16332010	0.0033uF ±10%, Myler	L120	LS10010050	67KHz, MPX Coil
C173	DF16332010	0.0033uF ±10%, Mzler	L121	LC22260010	22MH, Choke Coil
C174	DF16332010	0.0033uF ±10%, Myler	L122	LC22260010	22MH, Choke Coil
C175	DF16332010	0.0033uF ±10%, Myler	J101	YP10000360	Plug
C176	DD10010020	1pF ±0.25pF Ceramic	J102	YP10000360	Plug
C177	DD16201010	200pF ±20% Ceramic	J103	YP10000360	Plug

REF. DESIG.	MARANTZ PART NO.	DESCRIPTION	REF. DESIG.	MARANTZ PART NO.	DESCRIPTION
J104	YP10000360	Plug	C304	EA10702520	100uF 25V, Elect.
J105	YP10000360	Plug	C305	DF75183010	0.018uF ±5% 50V, Poly
J106	YP10000360	Plug	C306	DF75183010	0.018uF ±5% 50V, Poly
J107	YP10000360	Plug	C307	DF55472010	4700pF ±5% 50V, Poly
J108	YP10000360	Plug	C308	DF55472010	4700pF ±5% 50V, Poly
J109	YP10000360	Plug	C309	DD16470010	47pF ±10%, Ceramic
J110	YP10000360	Plug	C310	DD16470010	47pF ±10%, Ceramic
J111	YP10000360	Plug	C311	EA10603510	10uF 35V, Elect.
J112	YP10000360	Plug	C312	EA10603510	10uF 35V, Elect.
J113	YP10000360	Plug	C313	EA33600610	33uF 6V, Elect.
J114	YP10000360	Plug	C314	EA33600610	33uF 6V, Elect.
J115	YP10000360	Plug	C315	EA47702520	470uF 25V, Elect.
J116	YP10000360	Plug	J301	YP10000360	Plug
J117	YP10000360	Plug	J302	YP10000360	Plug
J118	YP10000360	Plug	J303	YP 10000360	Plug
J119	YP10000360	Plug	J304	YP10000360	Plug
J120	YP10000360	Plug	J305	YP10000360	Plug
P200	YD26110022	Meter Amp., PC Board	J306	YP10000360	Plug
H201	HT3064601B0	2SC460B, Transistor	H301	HT306441B0	2SC644 (S), Transistor
H202	HD10001010	IN34A, Diode	H302	HT306441B0	2SC644 (S), Transistor
H203	HD10001010	IN34A, Diode	H303	HT306441A0	2SC644 (R), Transistor
L201	LI10156060	10.7MHz Amp., IFT	H304	HT306441A0	2SC644 (R), Transistor
R201	RT10223140	22K ohm ±10%, Carbon Film	P400	YD26110042	PC Board
R202	RT10392140	3.9K ohm ±10%, Carbon Film	R401	RN10824140	820K ohm ±10% 1/4W, Carbon Film
R203	RT10102140	1K ohm ±10%, Carbon Film	R402	RN10824140	820K ohm ±10% 1/4W, Carbon Film
R204	RT10272140	2.7K ohm ±10%, Carbon Film	R403	RN10274140	270K ohm ±10% 1/4W, Carbon Film
R205	RT10102140	1K ohm ±10%, Carbon Film	R404	RN10274140	270K ohm ±10% 1/4W, Carbon Film
C201	DK17103010	0.01uF +20%, Ceramic	R405	RT10562140	5.6K ohm ±10% 1/4W, Carbon Film
C202	DD16201010	200pF ±20%, Ceramic	R406	RT10562140	5.6K ohm ±10% 1/4W, Carbon Film
C203	DK18403010	0.04uF +100% -0%, Ceramic	R407	RT10682140	6.8K ohm ±10% 1/4W, Carbon Film
C204	DK18403010	0.04uF +100% -0%, Ceramic	R408	RT10682140	6.8K ohm ±10% 1/4W, Carbon Film
C205	DK18403010	0.04uF +100% -0%, Ceramic	R409	RN10224140	220K ohm ±10% 1/4W, Carbon Film
J201	YP10000360	Plug	R410	RN10224140	220K ohm ±10% 1/4W, Carbon Film
J202	YP10000360	Plug	R411	RT05331140	330 ohm ± 5 % 1/4W, Carbon Film
J203	YP10000360	Plug	R412	RT05331140	330 ohm ± 5 % 1/4W, Carbon Film
J204	YP10000360	Plug	R413	RT05123140	12K ohm ± 5 % 1/4W, Carbon Film
J205	YP10000360	Plug	R414	RT05123140	12K ohm ± 5 % 1/4W, Carbon Film
J206	YP10000360	Plug	R415	RN10154140	150K ohm ±10% 1/4W, Carbon Film
J207	YP10000360	Plug	R416	RN10154140	150K ohm ±10% 1/4W, Carbon Film
P300	YD26110030	PC Board, Phono Amp.	R417	RN10153140	15K ohm ±10% 1/4W, Carbon Film
R301	RT10473140	47K ohm ±10% 1/4W, Carbon Film	R418	RN10153140	15K ohm ±10% 1/4W, Carbon Film
R302	RT10473140	47K ohm ±10%, 1/4W, Carbon Film	R419	RT10821140	820 ohm ±10% 1/4W, Carbon Film
R303	RN10224140	220K ohm ±10% 1/4W, Carbon Film	R420	RT10821140	820 ohm ±10% 1/4W, Carbon Film
R304	RN10224140	220K ohm ±10% 1/4W, Carbon Film	R421	RT10822140	8.2K ohm ±10% 1/4W, Carbon Film
R305	RT10331140	330 ohm ±10% 1/4W, Carbon Film	R422	RT10822140	8.2K ohm ±10% 1/4W, Carbon Film
R306	RT10331140	330 ohm ±10%, 1/4W, Carbon Film	R423	RN10155140	1.5M ohm ±10% 1/4W, Carbon Film
R307	RN10154140	150K ohm ±10% 1/4W, Carbon Film	R424	RN10155140	1.5M ohm ±10% 1/4W, Carbon Film
R308	RN10154140	150K ohm ±10% 1/4W, Carbon Film	R425	RN10563140	56K ohm ±10% 1/4W, Carbon Film
R309	GT05184120	180K ohm ±5% 1/2W, Carbon Film	R426	RN10563140	56K ohm ±10% 1/4W, Carbon Film
R310	GT05184120	180K ohm ±5% 1/2W, Carbon Film	R427	RT10562140	5.6K ohm ±10% 1/4W, Carbon Film
R311	GT05153120	15K ohm ±5% 1/2W, Carbon Film	R428	RT10562140	5.6K ohm ±10% 1/4W, Carbon Film
R312	GT05153120	15K ohm ±5% 1/2W, Carbon Film	R429	RT00121140	120 ohm ± 5 % 1/4W, Carbon Film
R315	RT10223140	22K ohm ±10% 1/4W, Carbon Film	R430	RT00121140	120 ohm ± 5 % 1/4W, Carbon Film
R316	RT10223140	22K ohm ±10% 1/4W, Carbon Film	R431	RT10153140	15K ohm ±10% 1/4W, Carbon Film
R317	RN10153140	15K ohm ±10% 1/4W, Carbon Film	R432	RT10153140	15K ohm ±10% 1/4W, Carbon Film
R318	RN10153140	15K ohm ±10% 1/4W, Carbon Film	R433	RT10123140	12K ohm ±10% 1/4W, Carbon Film
R319	RT10821140	820 ohm ±10% 1/4W, Carbon Film	R434	RT10123140	12K ohm ±10% 1/4W, Carbon Film
R320	RT10821140	820 ohm ±10% 1/4W, Carbon Film	R435	RT10104140	100K ohm ±10% 1/4W, Carbon Film
R321	RT10822140	8.2K ohm ±10% 1/4W, Carbon Film	R436	RT10104140	100K ohm ±10% 1/4W, Carbon Film
C301	EV33502510	3.3uF 25V, Elect.	R437	RT10392140	3.9 ohm ±10% 1/4W, Carbon Film
C302	EV33502510	3.3uF 25V, Elect.	R438	RT10392140	3.9 ohm ±10% 1/4W, Carbon Film
C303	EA10702520	100uF 25V, Elect.	R439	RC10331120	330 ohm ±10% 1/2W, Solid

REF. DESIG.	MARANTZ PART NO.	DESCRIPTION	REF. DESIG.	MARANTZ PART NO.	DESCRIPTION
R440	RC10331120	330 ohm $\pm 10\%$ 1/2W, Solid	J405	YP10000360	Plug
R441	RC10392120	3.9K ohm $\pm 10\%$ 1/2W, Solid	J406	YP10000360	Plug
R442	RC10392120	3.9K ohm $\pm 10\%$ 1/2W, Solid	J407	YP10000360	Plug
R443	RC10221120	220 ohm $\pm 10\%$ 1/2W, Solid	J408	YP10000360	Plug
R444	RC10221120	220 ohm $\pm 10\%$ 1/2W, Solid	J409	YP10000360	Plug
R445	RC10221120	220 ohm $\pm 10\%$ 1/2W, Solid	J410	YP10000360	Plug
R446	RC10221120	220 ohm $\pm 10\%$ 1/2W, Solid	J411	YP10000360	Plug
R447	GW10242020	0.24 ohm $\pm 10\%$ 2W, Solid	J412	YP10000360	Plug
R448	GW10242020	0.24 ohm $\pm 10\%$ 2W, Solid	J413	YP10000360	Plug
R449	GW10242020	0.24 ohm $\pm 10\%$ 2W, Solid	J414	YP10000360	Plug
R450	GW10242020	0.24 ohm $\pm 10\%$ 2W, Solid	J415	YP10000360	Plug
R451	RC10047120	4.7 ohm $\pm 10\%$ 1/2W, Solid	J416	YP10000360	Plug
R452	RC10047120	4.7 ohm $\pm 10\%$ 1/2W, Solid	J417	YP10000360	Plug
R453	RC10220120	22 ohm $\pm 10\%$ 1/2W, Solid	J418	YP10000360	Plug
R454	RC10220120	22 ohm $\pm 10\%$ 1/2W, Solid	J419	YP10000360	Plug
R455	RA01040060	100K ohm, Trimmer	J420	YP10000360	Plug
R456	RA01040060	100K, ohm, Trimmer	J421	YP10000360	Plug
R457	RA05010010	500 ohm $\pm 30\%$, Trimmer	J422	YP10000360	Plug
R458	RA05010010	500 ohm $\pm 30\%$, Trimmer	J423	YP10000360	Plug
R459	RT10102140	1K ohm $\pm 10\%$ 1/4W, Resistor	J424	YP10000360	Plug
R460	RT10102140	1K ohm $\pm 10\%$ 1/4W, Resistor	J425	YP10000360	Plug
R461	RC10220120	22 ohm $\pm 10\%$ 1/2W, Resistor	J426	YP10000360	Plug
R462	RC10220120	22 ohm $\pm 10\%$ 1/2W, Resistor	J427	YP10000360	Plug
C401	EV47402510	.47uF 25V, Elect.	J428	YP10000360	Plug
C402	EV47402510	.47uF 25V, Elect.	J429	YP10000360	Plug
C403	EA47501620	4.7uF 16V, Elect.	J430	YP10000360	Plug
C404	EA47501620	4.7uF 16V, Elect.	J431	YP10000360	Plug
C405	DF17332010	0.0033uF $\pm 20\%$, Myler	W003	YW26670110	Wiring material
C406	DF17332010	0.0033uF $\pm 20\%$, Myler	W004	YW26670120	Wiring material
C407	EV10502510	1uF 25V, Elect.	H401	HT304580Y0	2SC458LGC, Transistor
C408	EV10502510	1uF 25V, Elect.	H402	HT304580Y0	2SC458LGC, Transistor
C409	EA10601620	10uF 16V, Elect.	H403	HT306441B0	2SC644 (S), Transistor
C410	EA10601620	10uF 16V, Elect.	H404	RT306441B0	2SC644 (S), Transistor
C411	EA33600610	30uF 6V, Elect.	H405	HT304580C0	2SC458LC, Transistor
C412	EA33600610	30uF 6V, Elect.	H406	HT304580C0	2SC458LC, Transistor
C413	EV33502510	3.3uF 25V, Elect.	H407	HT304580C0	2SC458LC, Transistor
C414	EV33502510	3.3uF 25V, Elect.	H408	HT304580C0	2SC458LC, Transistor
C415	EA33702510	330uF 25V, Elect.	H409	HT309841B0	2SC984 (B), Transistor
C416	EA33702510	330uF 25V, Elect.	H410	HT309841B0	2SC984 (B), Transistor
C417	EV47402510	.47uF 25V, Elect.	*H411	HT309841C0	2SC984 (C), Transistor
C418	EV47402510	.47uF 25V, Elect.	*H412	HT309841C0	2SC984 (C), Transistor
C419	EA10603510	10uF 35V, Elect.	*H413	HT105651C0	2SA565 (C), Transistor
C420	EA10603510	10uF 35V, Elect.	*H414	HT105651C0	2SA565 (C), Transistor
C421	EA33702510	330uF 25V, Elect.	H415	HV00007050	S3016 (R), Varistor
C422	EA33702510	330uF 25V, Elect.	H416	HV00007050	S3016 (R), Varistor
C423	EA47603520	47uF 35V, Elect.	H417	HV00007050	S3016 (R), Varistor
C424	EA47603520	47uF 35V, Elect.	H418	HV00007050	S3016 (R), Varistor
C425	DG07503500	0.5uF $\pm 20\%$, MP	H419	HV00007050	S3016 (R), Varistor
C426	DG07503500	0.5uF $\pm 20\%$, MP	H420	HV00007050	S3016 (R), Varistor
C427	DF36101010	100pF $\pm 10\%$, Mica	H421	HV00002080	SV-04
C428	DF36101010	100pF $\pm 10\%$, Mica	H422	HV00002080	SV-04
C429	EC10803510	1000uF 35V, Elect.	H423	HV00001080	SV-03
C430	EC10803510	1000uF 35V, Elect.	H424	HV00001080	SV-03
C431	DD16500010	50pF $\pm 10\%$, Ceramic	P500	YD26110052	P. C. Board
C432	DD16500010	50pF $\pm 10\%$, Ceramic	R501	RC10271010	270 ohm $\pm 10\%$ 1W, Solid
C433	DK18203010	0.02uF $+100\%$ -20% Ceremic	R502	RC10201010	200 ohm $\pm 10\%$ 1W, Solid
C434	DD16201010	200pF $\pm 10\%$ Ceramic	C501	EA22701050	220uF 10V, Elect.
C435	DD16201010	200pF $\pm 10\%$ Ceramic	C502	EA47701620	470uF 16V, Elect.
J401	YP10000360	Plug	C503	EB33805010	3300uF 50V, Elect.
J402	YP10000360	Plug	C504	EA47702520	470uF 25V, Elect.
J403	YP10000360	Plug	C505	DG07103500	.01uF $\pm 20\%$, M. P.
J404	YP10000360	Plug	C506	DG07103500	.01uF $\pm 20\%$, M. P.

REF. MARANTZ			REF. MARANTZ		
DESIG.	PART NO.	DESCRIPTION	DESIG.	PART NO.	DESCRIPTION
C507	EA47703510	470uF 35V, Elect.	R003	RC10082120	8.2 ohm 1/2W ±5%, Resistor Solid
J501	YP10000360	Plug	R005	RT10272140	2.7Kohm 1/4W ±5%, Resistor Carbon Film
J502	YP10000360	Plug	R006	RT10272140	2.7K ohm 1/4W ±5%, Resistor Carbon Film
J503	YP10000360	Plug	R007	RT10122140	1.2K ohm 1/4W ±5%, Resistor Carbon Film
J504	YP10000360	Plug	R008	RT10122140	1.2K ohm 1/4W ±5%, Resistor Carbon Film
J505	YP10000360	Plug	R009	RC10471120	470 ohm 1/2W ±5%, Resistor Solid
J506	YP10000360	Plug	R010	RC10471120	470 ohm 1/2W ±5%, Resistor Solid
J507	YP10000360	Plug	R011	RT10225010	2.2M ohm 1W ±5%, Resistor Carbon
J508	YP10000360	Plug	R012	RT10122140	1.2K ohm ±10% 1/4W, Resistor
J509	YP10000360	Plug	R013	RT10122140	1.2K ohm ±10% 1/4W, Resistor
J510	YP10000360	Plug	R014	RT10822120	8.2K ohm ±10% 1/4W, Resistor
J511	YP10000360	Plug	R015	RC10822120	8.2K ohm ±10% 1/4W, Resistor
J512	YP10000360	Plug	*R016	RM01040020	100K ohm (A) ±20%, Variable
H501	HD30001090	1S336, Diode	*R017	RK02030010	20K ohm ±20%, Variable
H502	HD20003010	HR-5A, Diode	*R018	RM05030110	50K ohm ±20%, Variable
H503	HD20003010	HR-5A, Diode	*R019	RM05030110	50K ohm Variable
H504	HD20003010	HR-5A, Diode	R020	RN10224140	200K ohm ±10% 1/4W, Resistor
H505	HD20001100	1S665, Diode	R021	RN10224140	200K ohm ±10% 1/4W, Resistor
H506	HD20001100	1S665, Diode	C001	EA10700650	100uF 6V +100% -0%, Elect.
H507	HD20001100	1S665, Diode	C002	EA22603510	22uF 35V, Elect.
H508	HD20001100	1S665, Diode	C003	EA22603510	22uF 35V, Elect.
P600	YD26110060	P. C. Board	C004	DF17332010	0.033uF ±20%, Myler
R601	RT10682140	6.8K ±10% 1/4W, Carbon Film	C005	DF17332010	0.033uF ±20%, Myler
R602	RT10682140	6.8K ±10% 1/4W, Carbon Film	C006	DF17224020	0.22uF ±20%, Myler
R603	RT10223140	22K ±10% 1/4W, Carbon Film	C007	DF17224020	0.22uF ±20%, Myler
R604	RT10223140	22K ±10% 1/4W, Carbon Film	C009	D007473530	0.047uF ±20%,
R605	RT10222140	2.2K ±10% 1/4W, Carbon Film	C010	EM47402510	0.47uF 25V Elect
R606	RT10222140	2.2K ±10% 1/4W, Carbon Film	C011	EM47402510	0.47u F 25V Elect
R607	RT10222140	2.2K ±10% 1/4W, Carbon Film	C012	DK17103010	0.01uF ±20% Ceramic
R608	RT10222140	2.2K ±10% 1/4W, Carbon Film	C013	DK17103010	0.01u F ±20% Ceramic
R609	RN10474140	470K ±10% 1/4W, Carbon Film	J001	YT03040020	Ant. Terminal
R610	RN10474140	470K ±10% 1/4W, Carbon Film	J002	YT02060030	Audio U. S. Jack
R611	RN10474140	470K ±10% 1/4W, Carbon Film	J003	YT03040020	Output Terminal
R612	RN10474140	470K ±10% 1/4W, Carbon Film	J004	YJ01000550	Head Phone Jack
R613	RT10103140	10K ±10% 1/4W, Carbon Film	J005	YJ 04000320	AC Socket
R614	RT10103140	10K ±10% 1/4W, Carbon Film	J006	YJ04000320	AC Socket
C601	DF17403010	0.04uF ±20%, Myler	J008	YL01035001	5P Lug
C602	DF17403010	0.04uF ±20%, Myler	J009	YT01010030	G. Terminal
C603	DF65501010	500pF ±5%, Poly	J010	YJ02000100	Lamp Socket
C604	DF65501010	500pF ±5%, Poly	J011	YJ02000010	Lamp Socket
C605	DF17223010	0.022uF ±20%, Myler	J012	YJ02000090	Lamp Socket
C606	DF17233010	0.022uF ±20%, Myler	J013	YJ02000070	Stereo Lamp Socket
C607	DF17403010	0.022uF ±20%, Myler	J014	YL01030010	Ant.
C608	DF17403010	0.022uF ±20%, Myler	J015	YL01050030	Lug Audio
C609	DF17333010	0.03uF ±20%, Myler	J016	YL01050030	Lug Audio
C610	DF17333010	0.03uF ±20%, Myler	*M001	IM11024060	Tuning Meter
*S601	SP04040012	S601-1. Loudness, Push switch	*M002	IN10080010	Stereo Beacon
		S601-3, Low Fil	*M003	IN10060030	Pilot Lamp
		S601-2, Hi Fil	*M004	IN10060030	Pilot Lamp
		S601-4, Tape Mon	*M005	IN10060030	Pilot Lamp
J601	YP10000360	Plug	S001	SS02020170	FM ANT ATT Switch
J602	YP10000360	Plug	S002	SR05040010	Rotary Switch
J603	YP10000360	Plug	*S003	SP04010072	Stereo, Mono Switch
J604	YP10000360	Plug	*S004	SP04010062	Power Switch
J605	YP10000360	Plug	F001	FR10160010	Circuit Breaker
J606	YP10000360	Plug	*H001	HT308301B0	2SC830 (B), Power Tr.
J607	YP10000360	Plug	*H002	HT308301B0	2SC830 (B), Power Tr.
J608	YP10000360	Plug	*H003	HT308301B0	2SC830 (B), Power Tr.
J609	YP10000360	Plug	*H004	HT308301B0	2SC830 (B), Power Tr.
J610	YP10000360	Plug	*L001	LF11800353	AM ANT. Coil
J611	YP10000360	Plug	L002	LB30075250	FM Balun coil
J612	YP10000360	Plug	L003	TS19001022	Power Trans.
R001	RC10680120	68 ohm 1/2W ±5%, Resistor Solid	W001	YC02400010	Power Cord
R002	RC10680120	68 ohm 1/2W ±5%, Resistor Solid			

REF. MARANTZ
DESIG. PART NO.

DESCRIPTION

W002	YW26670012	Wire Materials
W005	YB00400010	Wire Materials
W006	YX26670010	Wire Materials
W007	YP10000720	Wire Materials



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