4270

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model 4270

Stereo 2+Quadradial 4 Receiver

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INTRODUCTION

This service manual was prepared for use by Authorized Warranty Stations and contains service information for Marantz Model 4270 Stereo 2 + Quadradial 4.

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

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

1. SERVICE NOTES

As can be seen from the circuit diagram, the chassis of Model 4270 consists of follwoing units. Each unit mounted on a printed circuit boards is described within the square enclosed by a bold dotted line on the circuit diagram.

1.	FM Front End	mounted on P. W. Board, P100
2.	AM Tuner Assembly	mounted on P. W. Board, P150
3.	FM IF Amplifier	mounted on P. W. Board, P200
4.	FM MPX Stereo Decoding	mounted on P. W. Board, P300
5.	Phono Amplifier	mounted on P. W. Board, P400
6.	Vari-Matrix Unit	mounted on P. W. Board, P500
7.	Dolby Unit	mounted on P. W. Board, P600
8.	Main Power Amplifier	mounted on P. W. Board, P700
9.	Power Supply	mounted on P. W. Board, P800
10.	FM Cal, FM De-Emphasis	mounted on P. W. Board, PC01
11.	Tone Amplifier	mounted on P. W. Board, PD01
12.	Buffer & Pre-Amplifier	mounted on P. W. Board, PE01
13.	Balance Control Unit	mounted on P. W. Board, PG01
14.	Hi-Filter, Loudness	mounted on P. W. Board, PH01
15.	Tone Control	mounted on P. W. Board, PJ01
16.	400Hz Tone	mounted on P. W. Board, PL01
17.	B.T.L. Phase Inverter	mounted on P. W. Board, PM01
18.	SP Protector Unit	mounted on P. W. Board, PN01
19.	Tape Mode	mounted on P. W. Board, PT01
20.	Function Lamp	mounted on P. W. Board, PY01
21.	Dial Lamp	mounted on P. W. Board, PZ01

2. AM TUNER

The AM TUNER portion of the 4270 is composed of one IC circuit (including RF amplifier, local oscillator, mixer, IF amplifier, detector, and a signal strength indication amplifier) and one transistor amplifier to amplify the detected audio signals.

All components except Tuning capacitor and ferrite bar antenna are mounted on a printed circuit board P150.

The AM signals induced in a ferrite bar antenna are applied to the input of RF amplifier (pin ①) through a capacitor of C151 and amplified to the level required for overcoming the conversion noises, thus giving good S/N performance. The tuned circuits inserted in both output and input circuit of RF amplifier assure very high image and spurious rejection performance.

Thus amplified and selected AM signals are then applied to one input of Mixer section (pin⑥) through a coupling capacitor C158. While the local oscillator voltage is injected to the other input of the section (pin ⑤) through a capacitor C157. Then both AM signals and oscillating voltage are mixed and converted into 455KHz intermediate frequency. The resulting IF signal is applied to the first IF transformer L153 consisting of one ceramic filter and two tuned circuits.

The output of L153 is led to the IF amplifier's input (pin ⑦) through a coupling capacitor C169 and amplified to the sufficient level to drive the detector. The output of IF amplifier (pin ⑧) is led to the detector's input (pin ⑫) through IF filter L154. The detected audio signal derived from pin ⑪ is filtered and amplified and final audio output is obtained from the collector of H152 and applied to the TAPE OUTPUT jacks through the function switch.

The DC component of the detected IF signal is used as a AGC voltage to control emitter current of RF and IF amplifier through the resistor R154 and R155. A part of the DC component is also applied to the signal strength indication amplifier incorporated in the IC. The output appears at pin ⑭ and is level adjusted by R152, indicated on the signal strength meter M004.

2.1 Suggestions for AM Tuner Trouble Shooting

Check for broken AM bar antenna, next try to tune station by rotating fly-wheel tuning knob slowly and observe the AM signal strength meter whether it deflects or not. If the signal strength meter gives a deflection at several frequencies received, no failure may exist in the stages at least preceding final IF transformer L154. Next connect a oscilloscope to the test point Ⓑ or J157 and check for audio signals with the tuning meter deflected. If the signal strength meter does not deflect, check the local oscillator circuit. Normal oscillating voltage at the hot end of the oscillator tuning capacitor is about 1.5 or 3 volts, varying with tuning capacitor position. When measuring oscillating voltage use a RF VTVM, no circuit tester gives correct indication. If the local oscillator voltage is normal, check all voltage distribution in the AM circuits by using a DC VTVM and compare the measured values with those given in the schematic diagram.

3. FM TUNER

The FM Tuner section of Model 4270 is divided into four functional blocks: FM Front End, IF Amplifier and Detector, Muting Control, and MPX Stereo Decoding Circuit. FM signals induced by a FM antenna are led to FM antenna coil L101 through a balun coil. These signals are then applied to the FET RF amplifier which in turn applies its output to the next FET Mixer H102 through the double tuned high selective circuits. The FET Mixer convert its input signal into 10.7MHz intermediate frequency and amplifies it at the same time. The H103 is a local oscillator and its output is injected into the source of the FET Mixer, the injection voltage is about 700mV. The 10.7MHz front end output is led to the next IF amplifier unit through a coaxial cable.

The IF amplifier unit consists of five stages of IF amplifier and one stage of AGC amplifier. Three pieces of dual elements ceramic filters are also used to obtain high selectivity, four stages of symmetrical diode limiters are also employed for the best limiting characteristics, improved capture ratio and good AM suppression.

A part of FM Front End output is applied to the AGC amplifier H201 and its rectified output is fed back to the gate of FET RF amplifier to decrease the gain with increased signal strength.

The IF signal sufficiently amplified through every stage of IF amplifier is finally applied to the detector amplifier. The detected audio output is led to the buffer amplifier H208 and its buffered output is led to; (a) noise amplifier H310 through resistor R378 and capacitor C333, (b) QUADRADIAL jack on the rear panel through resistor R379, (c) MPX stereo decoding IC(H321) through R301 and H301.

3.1 Audio Muting and Stereo Mode Auto-Selecting Circuit

The muting circuit consisting of all solid-state electrical switching has been incorporated in the Model 4270. Three inputs control the muting function. The first is related to signal strength, the second to the noise condition at the detector and the third is derived from the DC component of the detector output. These inputs are properly matrixed and gated to provide muting free from noise and transients.

The first input of DC voltage obtained by rectifying a part of IF output signal from the H205 and H206 is applied to the base of H308 and turns on it, if the IF output is greater than predetermined level (muting threshold level). When the H308 is turned on the H309 is turned off, allowing the emitter-collector resistance increasing and the collector voltage rises about 9V. The increased collector voltage increases the gate bias voltage and turns on the switching FET H301, decreasing the source-drain resistance to near zero ohm and allowing the audio signal applied to the source to flow to the pin ② of decoding IC through the source-drain path.

When the input signal is lower than predetermined level, the DC output obtained is small and can not turn on the H308, thus the H308 keeps its turn-off stage and this makes H309 turn on, decreasing the collector voltage and turning off H301. Thus no audio signals can pass through the FET. This is the fundamental principle of the muting operation but for more elaborate muting operation the second and the third inputs are necessary.

The second input is used to protect the muting operation and MPX stereo beacon lamps from misoperation due to undesirable noises. The high frequency noises included in the detected audio signals are separated by a small capacitor C333 and amplified by the noise amplifier transistor H310 and its output is rectified by the two diodes. The rectified DC output is proportional to the noise components in the audio signals.

When there are excessive noises in the audio signals such as obtained with a station incorrectly tuned in, the rectified DC output turns on the transistor H311, decreasing the emitter-collector resistance to zero. This means the collector of H309 is short-circuited to the ground, therefore the H301 is turned off and any audio signals having excessive high frequency noises can not go through the FET's source-drain path.

The transistor H317, also, turns off when transistor H309 or H311 turns on, and turns on the transistor H303 connected to pin ⑧ of the MPX stereo decoding IC. Pin ⑧ is therefore grounded equivalently to set the IC in the monaural mode of operation. This prevent misoperation due to undesirable noises when the FM tuner is out of tuning.

The third input is obtained from the FM discriminator circuit. The DC output so called "S" curve is applied to the gate of H312 through a resistor R273 and dividing network (R361 & R362). The DC output is zero with a station correctly tuned in, but will vary from negative to positive values or vice versa when the tuning point is deviated toward either plus or minus frequency from the correct tuning frequency.

When the DC output is increased to a greater level than that of predetermined, the increased source potential of H312 makes the transistor H315 turn on (this means the collector of H309 is short-circuited to the ground) ... H301 turn off, ... H317 turn off ... H303 turn on (This grounds pin ⑧ of the MPX stereo decoding IC, therefore the decoder is set in the monaural mode of operation and the stereo indicator lamp turns off). When the DC output is increased to the negative predetermined level, the decreased source potential turns off the H313 which in turn makes the H314 turn on (this means the collector of H309 is short-circuited to the ground). The subsequent changes are exactly the same as that just described above.

Thus when the tuning is shifted-or-deviated to the certain frequencies in which undesirable noisy side-audio signals are produced, both muting and MONAURAL/STEREO switching transistors H303 are operated automatically and open the circuits.

With the station correctly tuned in, the bias current of the FET H312 is adjusted so that both transistor H314 and H315 are not turned on, giving no effect on the transistor H308.

3.2 MPX Stereo Decoding Circuit

The stereo composite signal from the buffer amplifier undergoes a phase compensation by R301 and C301, is applied through the muting switching FET H301 to the input terminal, pin ②, of the MPX stereo decoding IC H321 on a PLL (Phase Locked Loop) basis, and decoded into the left and right stereo signals, which become available at pins ④ and ⑤ respectively. These decoded left and right stereo audio signals are introduced through a low pass filter compos-

ed of L301 to L304 and C311 to C320 for elimination of undesirable residual switching signal and through a de-emphasis network consisting of R325, R326, C321 and C322, into the npn-pnp direct coupled audio amplifier, where the signals are amplified to a required level for the output from J311 and J313. From these jacks, the audio signals are led to the TAPE OUTPUT jacks through the function switch. Figure 1 presents an internal block diagram showing the functions of the PLL basis MPX stereo decoding IC HA1156. The input stereo composite signal, amplified by the audio amplifier, is delivered to the phase detectors PD-1 and PD-2. A part of the stereo composite signal is also applied to the stereo decoder section. The VCO (Voltage Control Oscillator) produces a free run oscillation in the neighborhood of 76KHz with the time constant determined by a capacitor C305 and resistors R311 and R312 set on the outside of pin ⑭. The VCO output has its frequency divided into 19KHz through the two stages of the frequency divider (DIV-1 & DIV-2), and is reverted to the phase detector PD-1, which contains two input terminals designed to produce an output in proportion to the product of the two input signals. The signal applied to one of the inputs of PD-1 is the 19KHz square wave formed through frequency division of the 76KHz VCO output signal by the two stages of the frequency divider DIV-1 and DIV-2, and the 19KHz pilot signal included in the stereo composite signal as a reference signal is applied to the other input. Therefore, the output of PD-1 which has passed through the low pass filter LPF-1 provides DC output voltage in proportion to the phase variance between the two inputs. This DC output voltage is amplified by the DC amplifier, and supplied to the 76KHz VCO as a control voltage. This means that the output frequency and phase of the VCO have been phase-locked to the input pilot signal. The 38KHz sub-carrier reproduced by PLL as stated above is delivered through the stereo switch to the stereo decoder section as a switching signal, thus driving the decoder section. One of the inputs of PD-2 is given the 19KHz resulting from the frequency division completed by DIV-1 and DIV-3, whereas the other input gets the 19KHz output contained in the composite signal, and the output is provided with a DC output in proportion to the amplitude of the pilot signal. This DC output is furnished through LPF-2 to the trigger amplifier which drives the stereo indicator lamp and stereo switch. Therefore, insufficient supply of the pilot signal results in failure to light the stereo indicator and to turn on the stereo switch located in the path of the 38KHz switching signal,

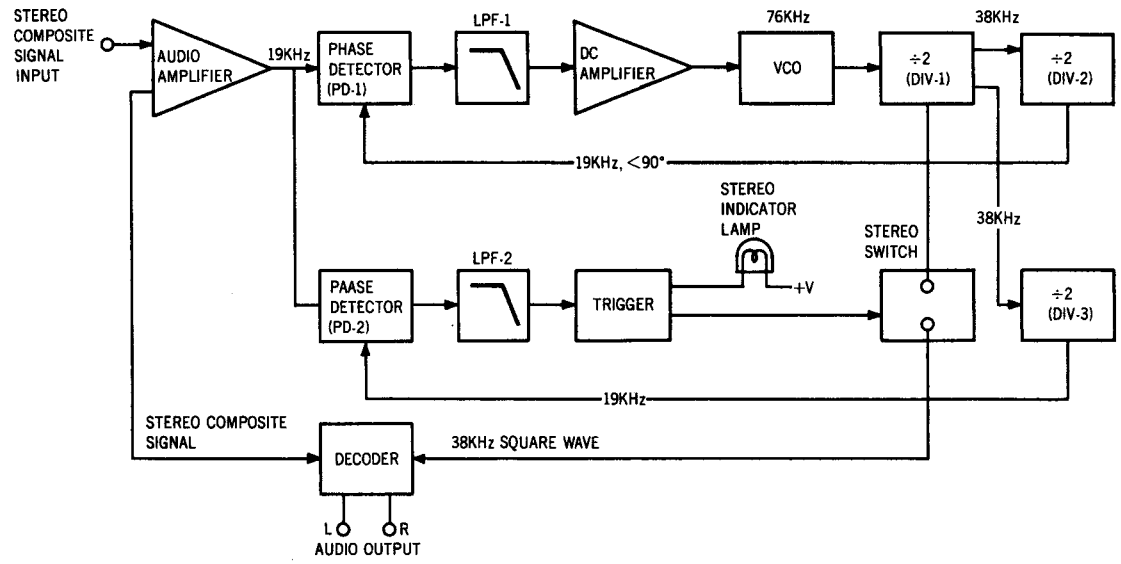


Figure 1. Block Diagram of the HA1156

thereby avoiding a wrong stereo operation. H303 attached on the outside of pin ⑧ is a switching transistor for automatic monaural-stereo switchover. When the intensity of an incoming signal from an FM station is weaker than a predetermined level, this H303 is turned on and pin ⑧ is grounded, thereby developing a condition for monaural reception. For a forced monaural operation, switch the MODE switch to "MONO," and H303 comes into an "On" condition with the positive bias voltage applied to the base, and pin ⑧ is grounded, thereby establishing monaural operation. The transistor H302 connected externally to pin ⑭ is intended to stop the 76KHz oscillation of the VCO which interferes an AM signal during the reception of an AM station. When the function switch is set to "AM" position, a positive bias is charged on the base of H302, H302 is turned on, and pin ⑭ is grounded. Thus, the oscillation of the VCO is stopped, ending the interference with AM reception.

3.3 Suggestion for Trouble Shooting of FM Tuner

3.3.1 Symptom: No FM Reception

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

3.3.2 Symptom: No Stereo Separation

First check the "MONO" switch is in normal out position. Connect a FM RF signal generator output modulated by a stereo-modulator to the rear FM ANTENNA terminals, and check the stereo beacon is turned on or not. If not turned on, check for 19KHz VCO output signal (J310), using an oscilloscope and a frequency counter.

4. PHONO AND PRE-AMPLIFIER

Signals from the PHONO jacks are applied to the phono amplifier mounted on P400. The amplified and RIAA equalized phono signals and signals from the tuner section, CD-4/AUX and TAPE MONITOR IN jacks are applied to the SELECTOR switch which, in turn, leads the selected signals to the TAPE MONITOR OUT jacks and MODE switch.

Applied to the other section of the TAPE MON switch are signals from the TAPE MONITOR IN jacks. The TAPE MON switch selects the signals from the MODE switch or those from the TAPE MONITOR IN jacks and the selected signals go to the DOLBY and MODE switches. Signals are then mode processed by the MODE switch and its associated circuit and applied to the tone control amplifier through the buffer amplifier and BALANCE and VOLUME controls. The bass mid and treble controlled signals from the tone control amplifier pass through the hi-filter before they reach the main amplifier.

4.1 Mode Switch

MODE switch S002 has positions of MONO, 2 CH, DISCRETE, VARI-MATRIX, and SQ DECODER.

In the MONO position, all input signals are mixed together and delivered to all four channels.

In the 2 CH position, each pair of input signals right-front (RF) and right-rear (RR), and left-front (LF) and left-rear (LR) are mixed together. The resultant signals (RF + RR) and (LF + LR) are delivered to the pairs of RF and RR, and LF and LR channels, respectively.

In the DISCRETE position, each channel signal is separately routed to the corresponding channel.

In the VARI-MATRIX position, 2-channel stereo input signals are converted into quadraphonic signals through the vari-matrix circuit; the input right and left channel signals are fed directly to the LF and RF channels, while the signals to the LR and RR channels are synthesized from the 2-channel input signals under the control of the DIMENSION control. The LR and RR channel signal components are controlled by the DIMENSION control as shown below.

DIMENSION Control Setting	LR Output	RR Output
Minimum (FCCW)	LF + RF	RF + LF
Center	LF	RF
Maximum (FCW)	LF – RF	RF – LF

When the DIMENSION control is set to the minimum position the LR and RR channel signals become monophonic, to the center are stereophonic, and to the maximum are out of phase, thus providing vanished sound image positioning.

In the SQ DECODER position, signal sources encoded by the CBS SQ system are ideally decoded into 4-channel signals. Required for this operation is incorporation of the SQ Adaptor, Model SQA-1, into the Model 4270.

4.2 Balance Control

Signals from the buffer amplifiers are fed into the balance control circuit, in which the signals are controlled by three balancers: FRONT L-R, REAR L-R, and FRONT-REAR. By setting the FRONT-REAR balancer to the "FRONT" side and the FRONT L-R balancer to the "L" side, for example, only the front left channel is drived.

The balance control circuit is provided with the REMOTE control switch which makes the Model RC-4 Remote Control Box operative when set to the "REMOTE" position. In the "REMOTE" position the BALANCE and VOLUME controls on the Model 4270 become ineffective since signals are led to the Model RC-4. The balance and volume level can be adjusted by the Model RC-4. Balanced and volume controlled signals are led to the tone control amplifier.

5. DOLBY UNIT

The Dolby unit built in Model 4270, which is a switchable processor, is inserted in each of both FRONT R and L channels. The attached "DOLBY PROCESSING CHART" will facilitate you to well understand the operation of the Dolby circuit.

An input signal coming to J601 is amplified by H601, and its output signal is led to the filter which cuts off the tape bias. The signal passed through the filter is further amplified and comes to the mixing circuit of resistors R623 and R625 and to the phase inverting circuit of H607 and H609. The output signal is fed out from J607.

In the recording mode of operation, the signal is fed out from J605 preceding the mixing circuit and applied at J611. The signal is then discriminated in the frequency and level by the dynamic filter consisting of H611, H613, H615 and H617, and is fed back to the mixing circuit.

In the playback mode of operation, a part of the output signal (at J607) is fed to J611 and discriminated in the frequency and level by the dynamic filter consisting of H611, H613, H615 and H617 and fed back to the mixing circuit.

6. 400Hz TONE

The 400Hz tone signal which is a 580mV, 400Hz sine wave is available at the FRONT and REAR TAPE MONITOR OUT terminals at any position of the DOLBY switch (with the exception of the RECORD II position) and the SELECTOR switch.

The output signal of the 400Hz oscillator consisting of HL01 and HL02 is fed to JL02 and JL03 through the emitter follower HL03. The output levels at JL02 and JL03 are adjusted to 580mV and approximately 50mV, respectively.

The signal fed from the Dolby P.W. Board (P600) comes to JL04 and is rectified through HL06. The rectified output at JL06 is led to the meter M004.

7. DOLBY SWITCH

This switch sets the Dolby noise-reduction circuit for record or playback and also switches the Meter Mode from AM or FM SIGNAL STRENGTH to DOLBY CAL LEVEL, or vice-versa. With the DOLBY Switch placed in "OFF" position, the Meter will be used as a SIGNAL-STRENGTH meter; in all other positions as a DOLBY CAL LEVEL meter.

7.1 Dolby FM

This position is used for listening to Dolbyized FM broadcasts. The Dolby FM level has been pre-adjusted at the factory.

7.2 Play

This position is used to play back a Dolbyized source (except FM).

7.3 Off

With this position, the Dolby circuit is by-passed and the input signals are directly applied to both TAPE MONITOR OUT jacks and amplifiers.

7.4 Record I

For making a Dolbyzied recording from an in-coming "flat" (non-Dolbyized) signal. When the MONITOR switch is in the SOURCE (out) position, the "flat" signal will be heard. When the MONITOR switch is in the TAPE (in) position, the Dolbyzied signal from the tape will be heard.

7.5 Record II

For making a "flat" (non-Dolbyized) recording from an in-coming Dolbyized signal. Regardless of the position of the MONITOR switch, a "flat" signal will be heard.

8. RECORD LEVEL (L) (R)

These knobs control the record level of the signals to be recorded through the Dolby unit. Adjust the knobs so that the Level Meter pointers of the tape recorder do not exceed the 0VU level.

9. PLAY CAL. (L) (R)

These knobs adjust the playback outputs from a tape deck to the proper Dolby level.

10. DOLBY FM PRESET LEVEL CONTROLS

These factory-adjusted controls govern FM output level to the Dolby circuit. These control are for the use of a qualified technician only.

11. 400Hz TONE SWITCH

This is used for calibration of the record input level of the tape deck. When the switch is depressed, the built-in oscillator operates and a sine wave signal output of 580mV will be applied to the four TAPE MONITOR OUT jacks.

12. FM DE-EMPHASIS SWTICH

At present both normal and Dolbyized FM broadcast programs are being transmitted with pre-emphasis time constant of 75 microsecond.

However if the Dolbyized FM broadcasting is approved by F.C.C., this pre-emphasis time constant for Dolbyized FM broadcast will be changed to 25 microsecond. The FM DEEMPHASIS switch provided on the rear of Model 4270 is used for switching the time constants. After

the permission of Dolbyized FM broadcasting, set the switch to 25μS position. This automatically change the time constant to 75μS while the DOLBY switch is placed in other than DOLBY FM positions (namely normal FM broadcast position), thus, the de-emphasis time constant for each normal and Dolbyized FM reception will be correctly set.

13. POWER AMPLIFIER

Differential amplifier consists of the transistors H701 and H703 to provide satisfactory D.C. stability.

The transistor H705 drives the inverter transistors H711 and H713 which, in turn, drive the power stage consisting of H001 and H002. Transistors H707. H709 and H720 are current limiter operating as a power transistor protection circuit.

Excessive current flow in the power output stage is detected by the resistors R742 and R744 and the resultant variation is applied to the transistors H707 and H709 and make them turned on. This decreases the base biasing current for H711 and H713. In this way the current flow in the power output stage (H001 and H002) is restricted within a safe predetermined value.

14. BTL (Balanced Transformer-Less) CONNECTION

This power amplifier is designed to operate in either 2-channel or 4-channel modes, depending on the setting of the AMPLIFIER MODE switch that incorporates phase-conversion and power switch for BTL connection.

With this switch placed in the 25Wx4 position, this unit operates as a 25W 4channel amplifier. With the switch placed in the 70Wx2 position, the unit operate as a 70W 2 channel amplifier, in which case, the power output is obtained only from FRONT SPK terminals.

15. POWER SUPPLY UNIT

The power supply unit consisting of transistors H801, H802 and H803, which operates as an automatic voltage regulator provides +35V DC to all of the audio amplifiers except power amplifiers, and H804 which operates as the voltage regulator provides +14V DC to the tuner section, and H805, H806 and H807 which operates as the speaker protector to relay circuit.

16. AUDIO TROUBLE ANALYSIS

1. Excessive line consumption	a. Check for shorted rectifiers H812 through H815. b. Check for shorted transistors H001 through H008. c. Check L007 for short.
2. No line consumption or zero bias	a. Check line cord, fuse, shorted H009 through H010. b. Check for open rectifiers H812 through H815, or open L007.
3. Excessive hum and noise level	a. Check filter capacitors C006, C007 & C705. b. Check for shorted transistor H801.
4. Parastic oscillation	a. Check for defective capacitors, C707, C708, C719, C720, C721 & C722.
5. Improper clipping	a. Check for defective resistor, R762 & R763.

17. TEST EQUIPMENT REQUIRED FOR SERVICING

Table 1 lists the test equipment required for servicing the Model 4270 Receiver.

Item	Manufacturer and Model No.	Use
AM Signal Generator		Signal source for AM alignment.
Test Loop		Used with AM Signal generator.
FM Signal Generator	Less than 0.3% distorsion.	Signal source for FM alignment.
Stereo Modulator	Less than 0.3% distorsion.	Stereo separation alignment and trouble shooting.
Frequency Counter		MPX Oscillator adjustment (VCO).
Audio Oscillator	Weston Model CVO-100P, less than 0.02% residual distortion is required.	Sinewave and squarewave signal source.
Oscilloscope	High sensitivity with DC horizontal and vertical amplifiers.	Waveform analysis and trouble shooting and ASO alignment.
VTVM	With AC, DC, RF range.	Voltage measurements.
Circuit Tester		Trouble shooting.
AC Wattmeter	Simpson, Model 390	Monitors primary power to Amplifier.
AC Ammeter	Commercial Grade (1-10A)	Monitors amplifier output under short circuit condition.
Line Voltmeter	Commercial Grade (0-150V AC)	Monitors potential of primary power to amplifier.
Variable Autotransformer (0-140V AC, 10 amps)	Powerstat, Model 116B	Adjusts level of primary power to amplifier.
Shorting Plug	Use phono plug with 600 ohm across center pin and shell.	Shorts amplifier input to eliminate noise pickup.
Output Load (8 ohms, ±1% 100W)	Commercial Grade	Provides 8-ohm load for amplifier output termination.
Output Load (4 ohms, ±1% 100W)	Commercial Grade	Provides 4-ohm load for amplifier output termination.

Table 1. Test Equipment Required for Servicing

18. AM ALIGNMENT PROCEDURE

18.1 AM IF Alignment

1. Connect a sweep generator to the J153 and an alignment scope to the test point Ⓑ.
2. Rotate each core of IF transformer L153 and L154 for maximum height and flat top symmetrical response.

18.2 AM Frequency Range and Tracking Alignment

1. Set AM signal generator to 525KHz. Turn the tuning capacitor fully closed (place the tuning pointer at the low end.) and adjust the oscillator coil L152 for maximum audio output.
2. Set the signal generator to 1650KHz. Place the tuning pointer in the high frequency end and adjust the oscillator trimmer on the oscillator tuning capacitor for maximum audio output.
3. Repeat the step 1 and 2 until no further adjustment is necessary.
4. Set the generator to 600KHz and tune the receiver to the same frequency and adjust a slug core of AM ferrite rod antenna and RF coil L151 for maximum output.
5. Set the generator to 1400KHz and tune the receiver to the same frequency and adjust both trimming capacitors of antenna and RF tuned circuit for maximum output.
6. Repeat the step 4 and 5 until no further adjustment is necessary.

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

18.3 AM Signal Strength Meter Alignment

Set an AM signal generator to 1000KHz at 74dB/m, and adjust R152 so that the signal strength meter may read 80% of the full scale.

19. FM ALIGNMENT PROCEDURE

1. Connect a FM signal generator to the FM ANTENNA terminals and a oscilloscope and an audio distortion analyzer to the TAPE OUTPUT jacks on the rear panel.
2. Set the FM SG to 87.5MHz and provide about 3 to 5μV. Place the tuning pointer at the low frequency end by rotating the tuning knob and adjust the core of oscillator coil L104 to obtain maximum audio output.
3. Set the FM SG to 108.5MHz and provide about 3 to 5μV output. Rotate the tuning knob and place the tuning pointer at the high frequency end and adjust the trimming capacitor C106 for maximum output.
4. Repeat the step 2 and 3 until no further adjustment is necessary.
5. Set the FM SG to 90MHz and tune the receiver to the same frequency. Decrease signal generator output until the audio output level decreases with the decreasing generator output. Adjust the antenna coil L101, RF coil L102 and L103 and IF transformer L105 for minimum audio distortion.
6. Set the FM SG to 106MHz and tune the receiver to the same frequency. Adjust the trimming capacitor C102, C104 and C105 for minimum distortion.
7. Adjust the secondary core (upper) of discriminator transformer L201 so that the center tuning meter pointer indicates its center at no signal applied. Set the FM SG to 98MHz and increase its output level to 1 KμV and tune the receiver to the same frequency so that the center tuning meter pointer indicates its center. Adjust the primary core (lower) of L201 for minimum distortion.
8. Set the FM SG to 98MHz at 100KμV, and adjust R374 so that the signal strength meter may read 90% of the full scale.

19.1 Stereo Separation Alignment

1. Set the FM SG to provide 1 KμV at 98MHz.Tune the receiver to the same frequency so that the center tuning meter pointer indicates its center.
2. Turn the FM SG modulation off (with the pilot signal turned off), connect a frequency counter to test point J310, and adjust R311 so that the frequency counter may precisely read 1900KHz.
3. Modulate the FM SG with stereo composite signal consisting of only subchannel signal (of course a pilot signal must be included).
4. Adjust the trimming resistor R301 for maximum and same separation in both channels.

19.2 Muting Circuit Alignment

1. Connect a VTVM across the resistor R363 and adjust the resistor R363 until the meter reads 0.75V DC at no signal.
2. Set the FM SG to provide 1 KμV at 98MHz and tune the receiver to the same frequency correctly.
3. Turn on MUTING pushswitch. Shift the FM signal generator frequency to plus and minus and note both plus and minus shifted frequencies at which undesirable audio side responses are muted out. Adjust the R363 so that the same shifted frequencies mute the undesirable side response.
4. Adjust R362 for proper frequency shift at which the muting circuit operates.

20. AUDIO ADJUSTMENT

1. Connect a VTVM to J713(+) and J724(−) and adjust the trimming resistor R766 until the VTVM reads 10mV DC. For the other channel connect the VTVM to J714 (+) and J725(−) and adjust the R767 for the same reading.
2. Connect a VTVM to J724(+) and J723(−) and adjust the trimming resistor R713 until the VTVM reads 0V DC. For the other channel connect the VTVM to J725(+) and J723(−) and adjust the R714 until the VTVM reads 0V DC.

21. AUTOMATIC VOLTAGE REGULATOR ADJUSTMENT

Connect a VTVM to J813(+) and J803(−) and adjust R807 until the VTVM reads 35V under no signal condition.

22. DOLBY ALIGNMENT PROCEDURE

Prior to the adjustment, turn the PLAY CAL and REC LEVEL controls all the way to the right and the SELECTOR switch to the CD-4/AUX position. Use the CD-4/AUX and TAPE MONITOR OUT jacks for the signal input and output.

1.

1) Set the DOLBY switch to the RECORD I position.
2) Adjust the semi-fixed resistor R653 for maximum source voltage of the field-effect transistor H611.
3) Connect J620 and J613 to the ground.
4) Apply a 5KHz sine wave so as to obtain 17.5mV at J605.
5) Record the output level at the TAPE MONITOR OUT jack with the above signal applied.
6) Adjust the semi-fixed resistor R659 so that the output level at the TAPE MONITOR OUT jack may increase 10±0.25dB when J620 is disconnected from the ground.
7) Record the above output level.
8) Adjust the semi-fixed resistor R653 so that the output level may decrease 2±0.25dB when J613 is disconnected from the ground.
9) Connect J613 to the ground again, and assure the level increase in the step (6) above. Disconnect J613.

2.

1) Set the DOLBY switch to the RECORD II position.
2) Connect J620 and J613 to the ground.
3) Apply a 5KHz sine wave so as to obtain a 44mV at J605.
4) Check to insure that the level at the TAPE MONITOR OUT jack decreases 10±0.5dB when J620 is disconnected from the ground.
5) Disconnect J620 and J613 from the ground.
6) Check to insure that the output voltage at the TAPE MONITOR OUT jack is 17.5mV (±0.5dB).

3. For the level adjustment, set the DOLBY switch and SELECTOR switch to the RECORD I and CD-4/AUX positions, respectively, and use the TAPE MONITOR OUT jack for the signal output. By setting the 400Hz TONE pushswitch "in", the 400Hz sine wave is fed out. Adjust the semi-fixed resistor RL11 for 580mV of the sine wave output voltage in both R and L channels. Then, set the DOLBY switch to the RECORD II position, and apply the 400Hz signal for 580mV of the output voltage. Adjust the semi-fixed resistors RL28 and RL29 so that the DOLBY LEVEL meter may point the Dolby level. Change over the METER switch, and perform this adjustment for both R and L channels.
   Next, adjust the semi-fixed resistor RL12 for 580mV output level when the DOLBY switch is set to the OFF position. Check the 400Hz output signal level after the adjustment of the level setting semi-fixed resistors RL11 and RL12. The output level must be precisely 580mV since it is a reference level of the Dolby circuit.

23. ALIGNMENT PROCEDURES OF DOLBY FM PRESET LEVEL CONTROLS

Connect an FM signal generator to the FM antenna. Set the signal generator for 400Hz and 50% modulation.

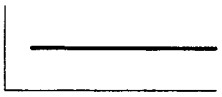
Set the FM signal generator to 98MHz and the DOLBY switch to the OFF position. Turn the Tuning knob on Model 4270 until it tunes to the 98MHz signal from the FM signal generator.

Then, set the DOLBY switch to the DOLBY FM position, and adjust the FM preset level controls RC05 and RC06 so that the DOLBY LEVEL meter may point the Dolby level. Change over the METER switch, and perform this adjustment for both R and L channels.

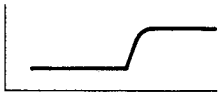
24. EXPLANATION OF THE DOLBY PROCESSING CHART

This chart shows the condition of the signals available at the speakers (SPKRS) and at the TAPE MONITOR OUT terminals as a function of different control settings.

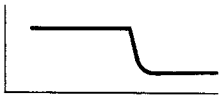
To understand the chart refer to the symbols below:



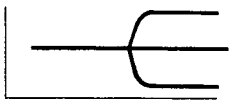
— Represents a signal which has not been applied to either Record or Playback Dolby circuits. The relative amplitudes of all audio frequencies remain unaltered at all levels.



— Represents a signal which has been processed by the Dolby Record circuit. The relative amplitude of the high frequencies is increased at low signal levels.



— Represents a signal which has been processed by the Dolby Playback circuit. The relative amplitude of the high frequencies is decreased at low signal levels.



— Represents a signal which has been processed by both the Record and the Playback Dolby circuits.

These circuits are complementary. Therefore, relative amplitudes of all audio frequencies are restored to their original values.

SIGNAL	DOLBY SW	DOLBY FM				PLAY				OFF				RECORD							
														I				II			
	TAPE MON	SOURCE		TAPE		SOURCE		TAPE		SOURCE		TAPE		SOURCE		TAPE		SOURCE		TAPE	
FM TRANSMISSION	SIGNAL AT	SPKRS	TAPE OUT	SPKRS	TAPE OUT	SPKRS	TAPE OUT	SPKRS	TAPE OUT	SPKRS	TAPE OUT	SPKRS	TAPE OUT	SPKRS	TAPE OUT	SPKRS	TAPE OUT	SPKRS	TAPE OUT	SPKRS	TAPE OUT
NORMAL FM	75																				
75 μS FM WITH DOLBY	75 +	*	*	*	*																
DOLBY FM (25 μS W/DOLBY)	25 +	**	**	**	**																
OTHER SOURCE																					

NOTE: * DE-EMPHASIS SWITCH IN THE 75 μS POSITION.
** DE-EMPHASIS SWITCH IN THE 25 μS POSITION.

Table 2. Dolby Processing Chart

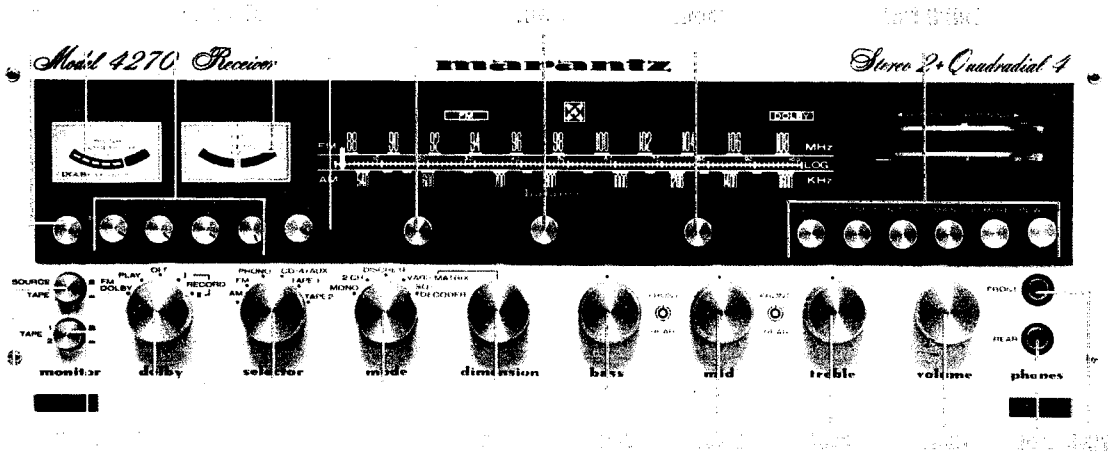


Figure 2. Front Panel Adjustments Component Locations

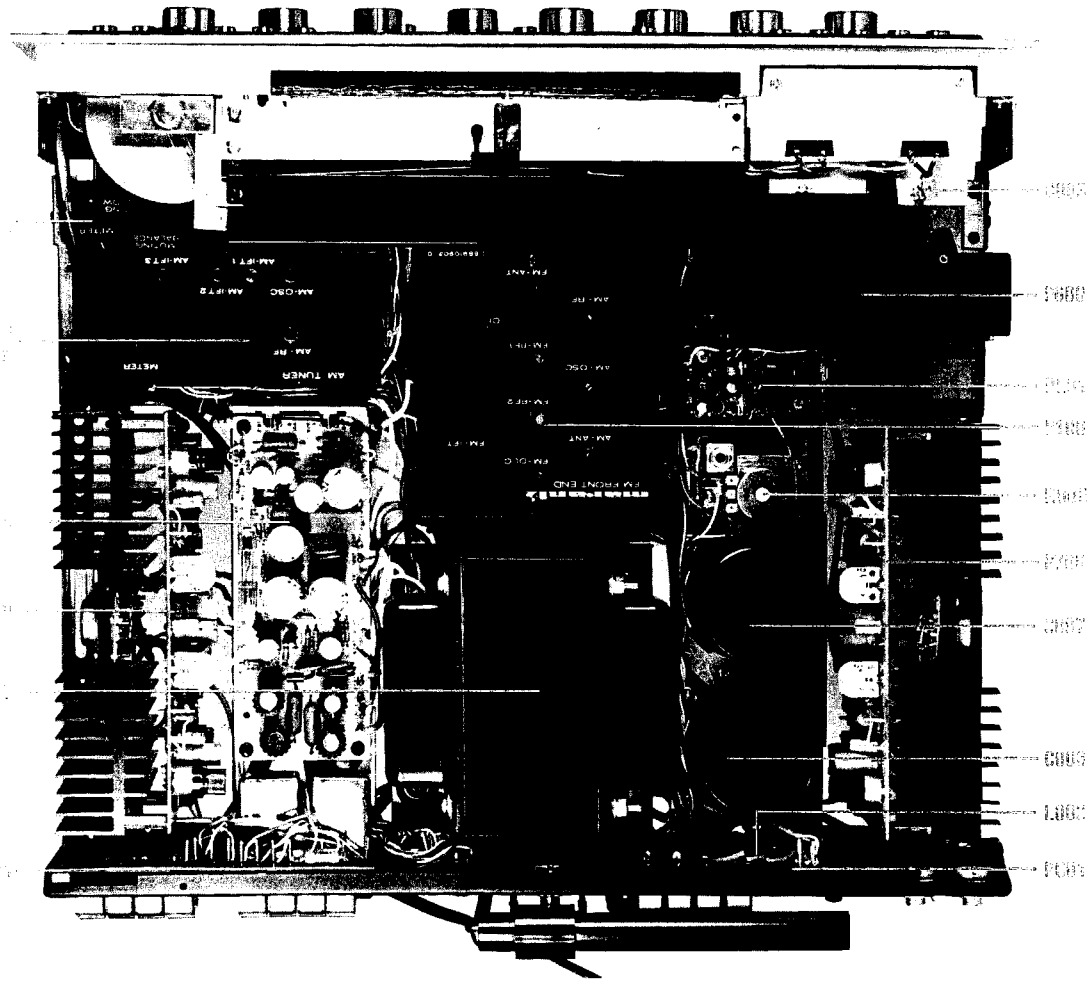


Figure 3. Main Chassis Component Locations (Top View)

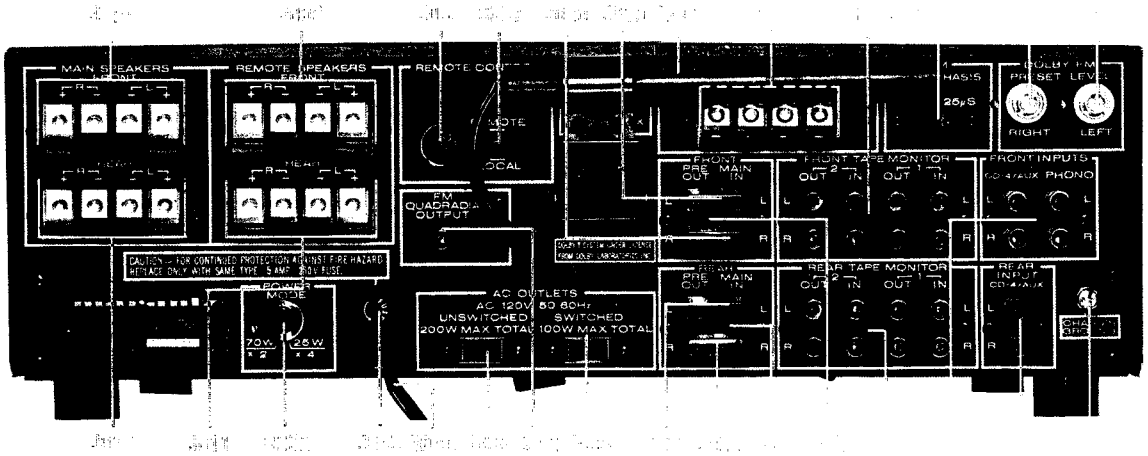


Figure 4. Rear Panel Adjustments and Component Locations

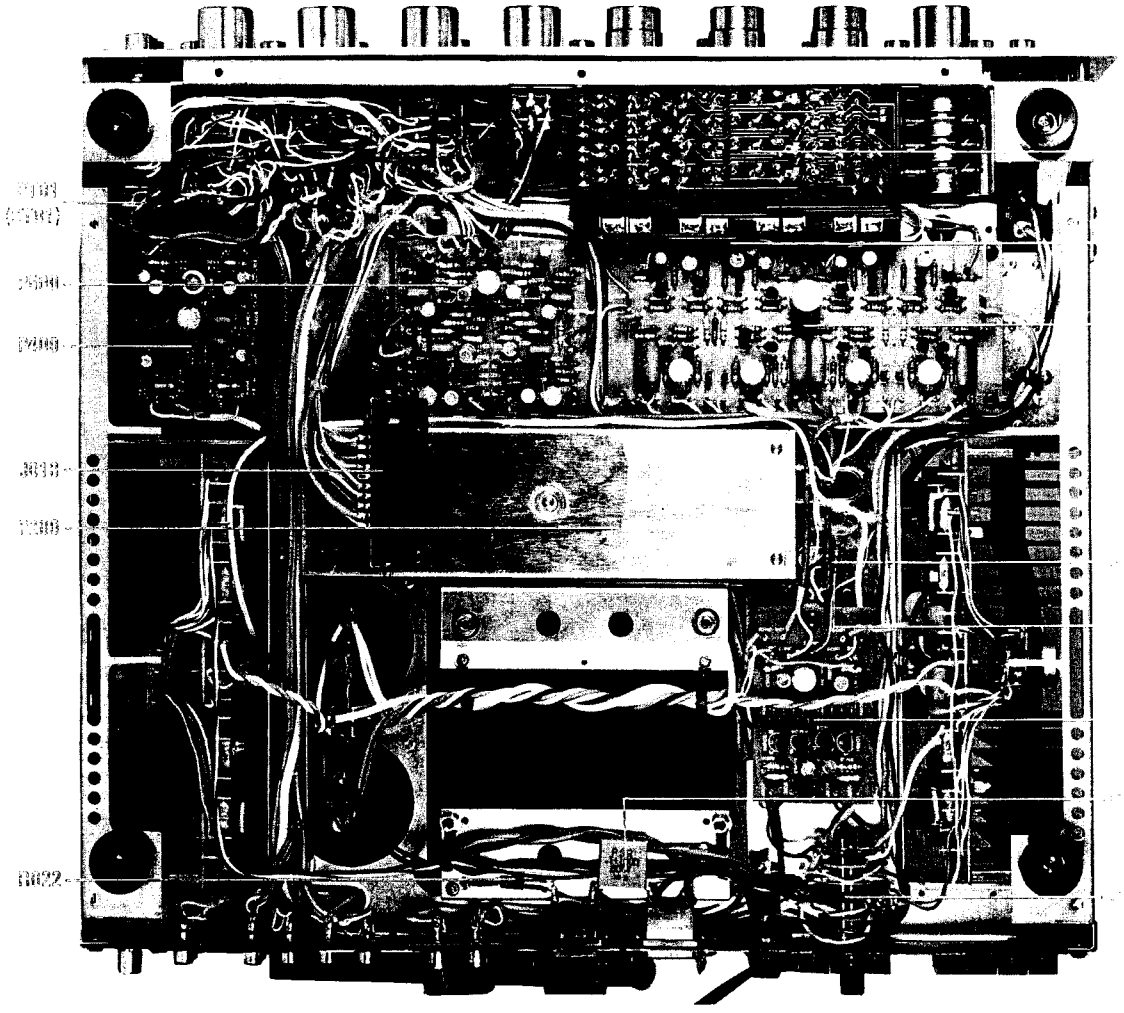


Figure 5. Main Chassis Component Locations (Bottom View)

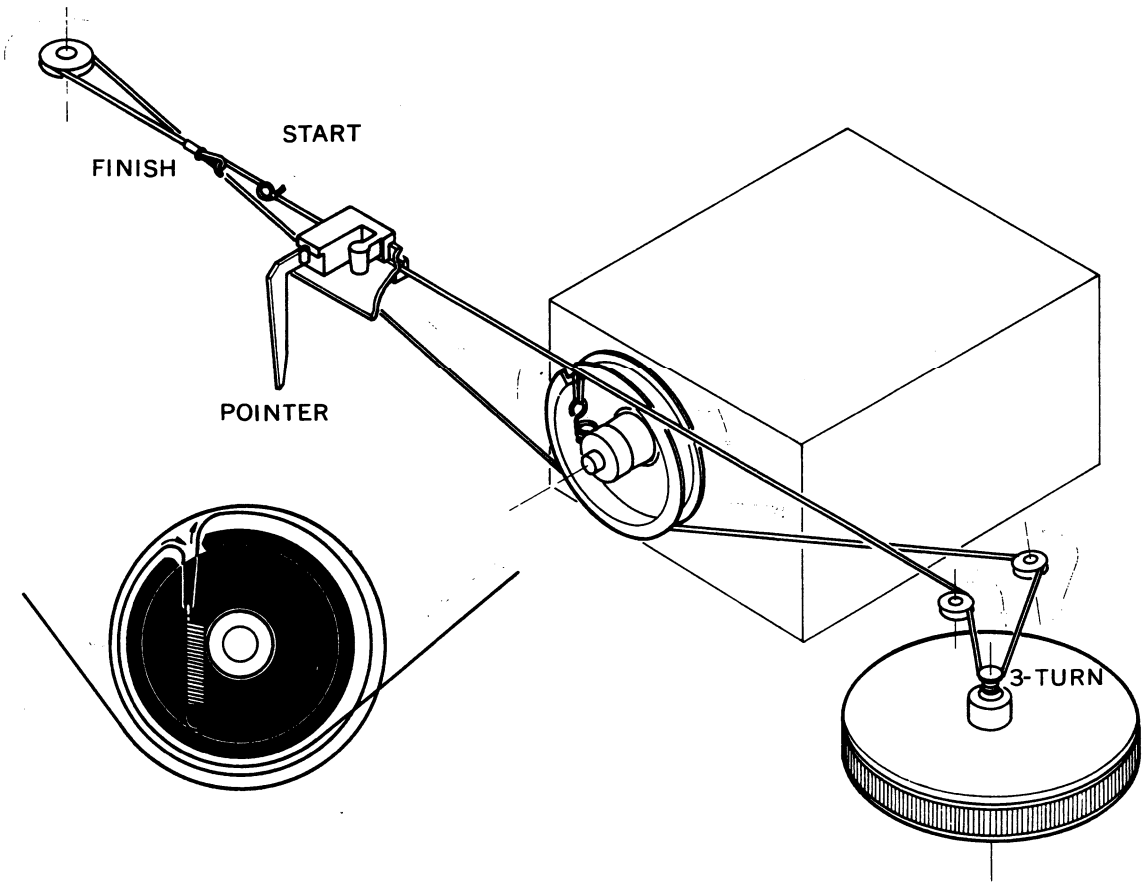


Figure 6. Dial Stringing

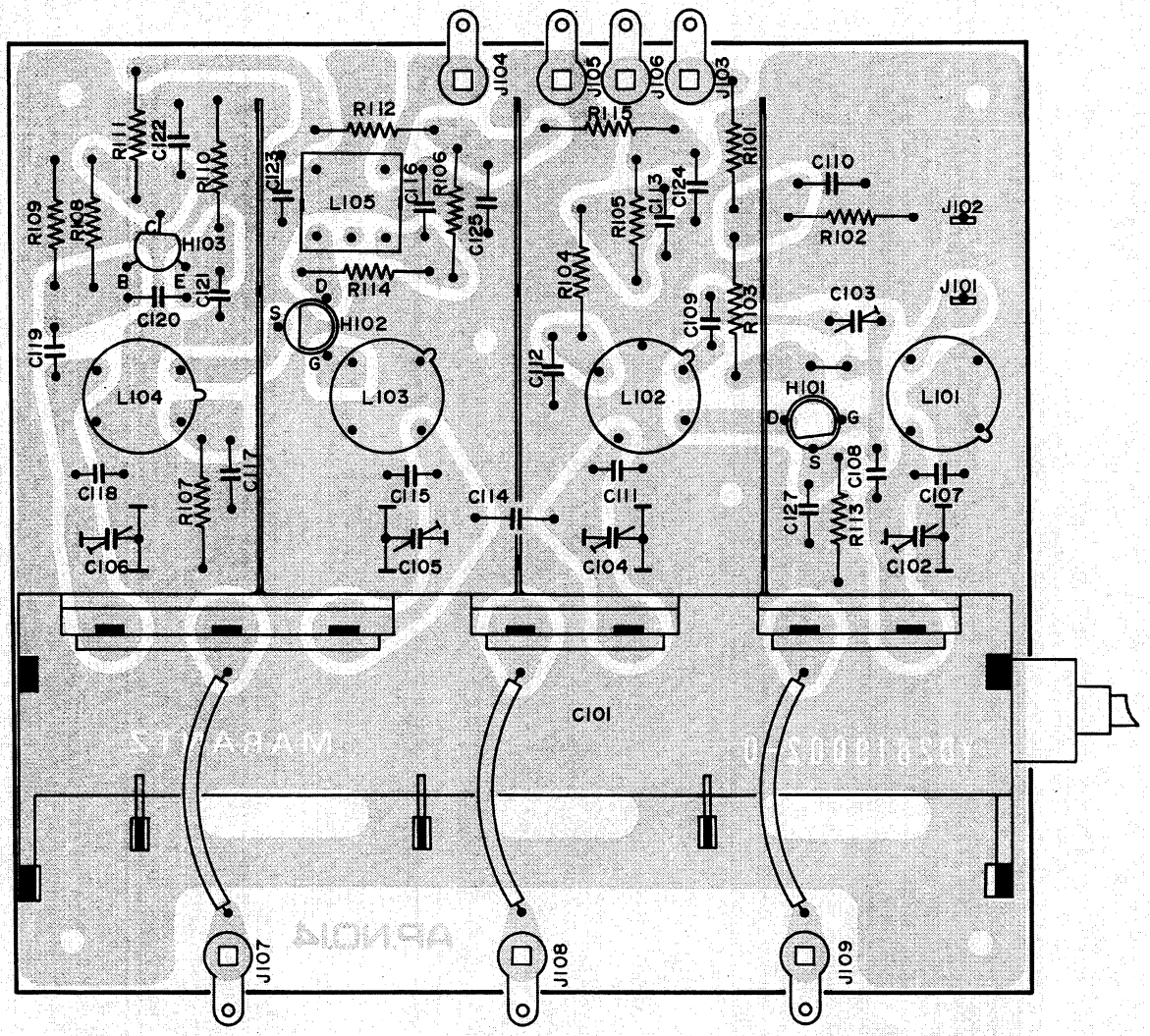


Figure 7. FM Front End Assembly P100 Component Locations

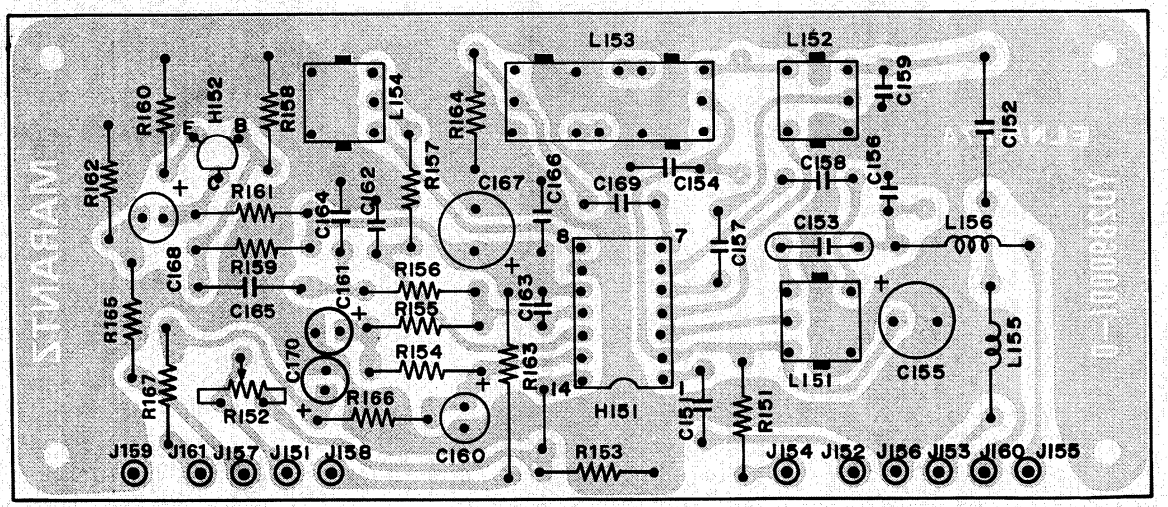


Figure 8. AM Tuner Assembly P150 Component Locations

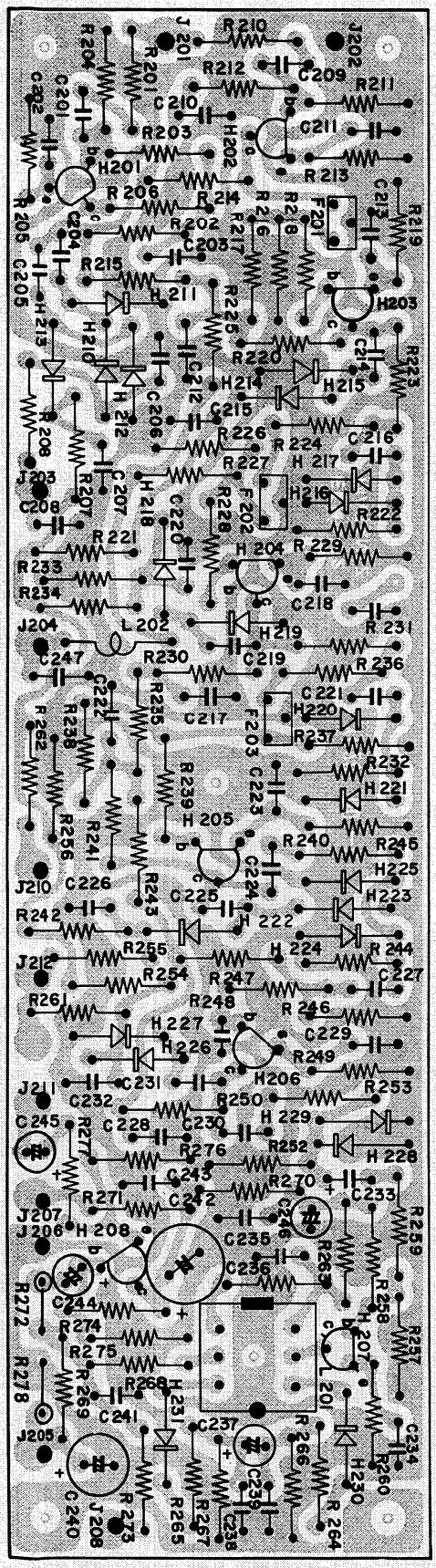


Figure 9. FM IF Amplifier Assembly P200 Component Locations

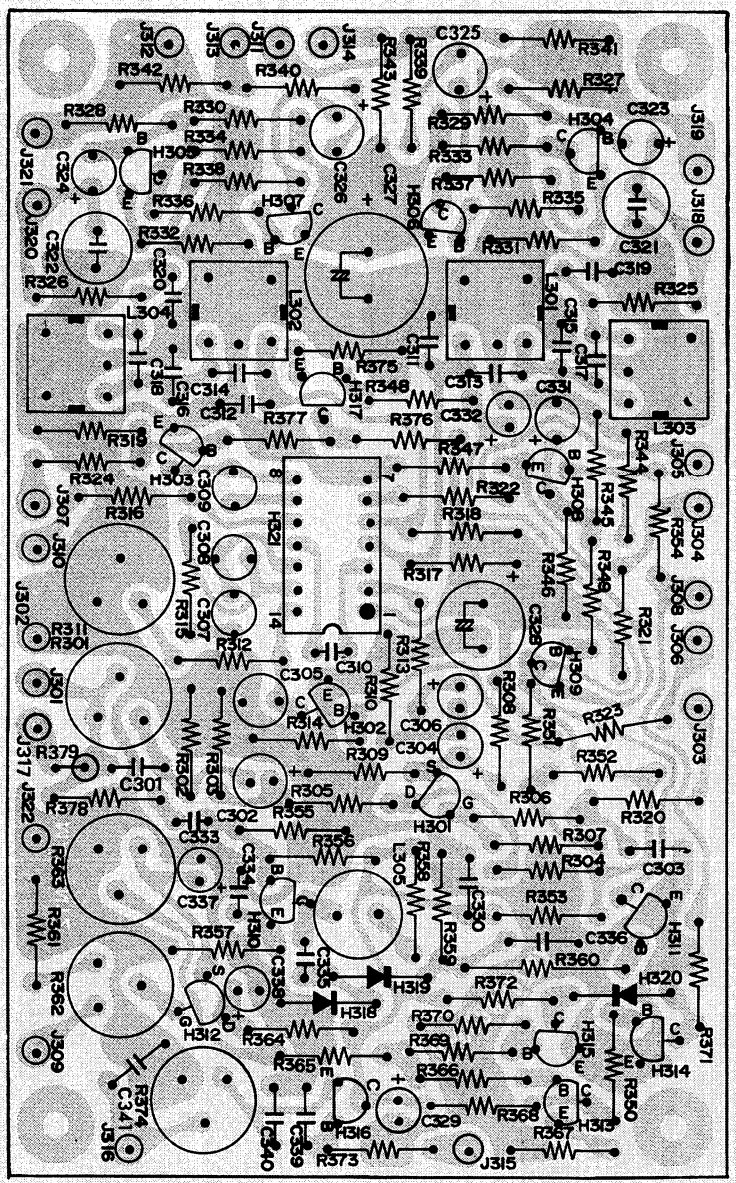


Figure 10. FM MPX Stereo Decoding Amplifier P300 Component Locations

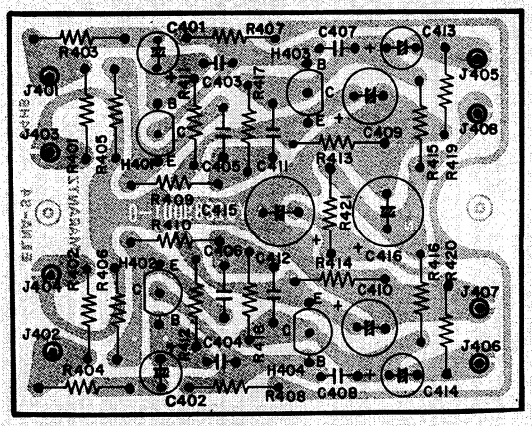


Figure 11. Phono Amplifier Assembly P400 Component Locations

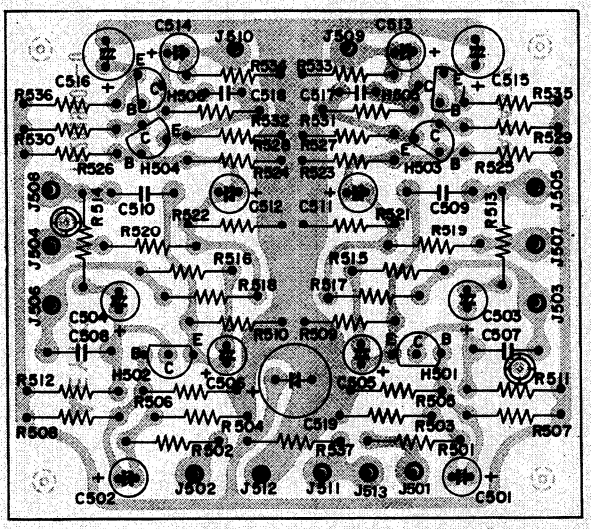


Figure 12. Vari-Matrix Unit Assembly P500 Component Locations

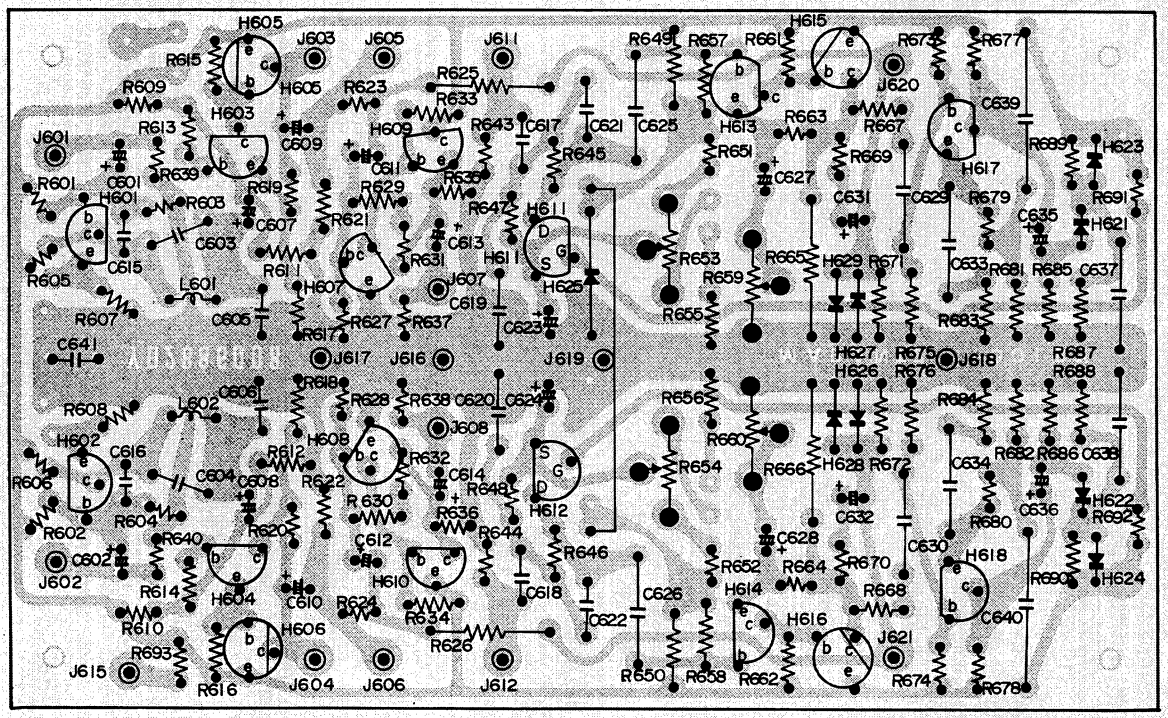


Figure 13. Dolby Unit Assembly P600 Component Locations

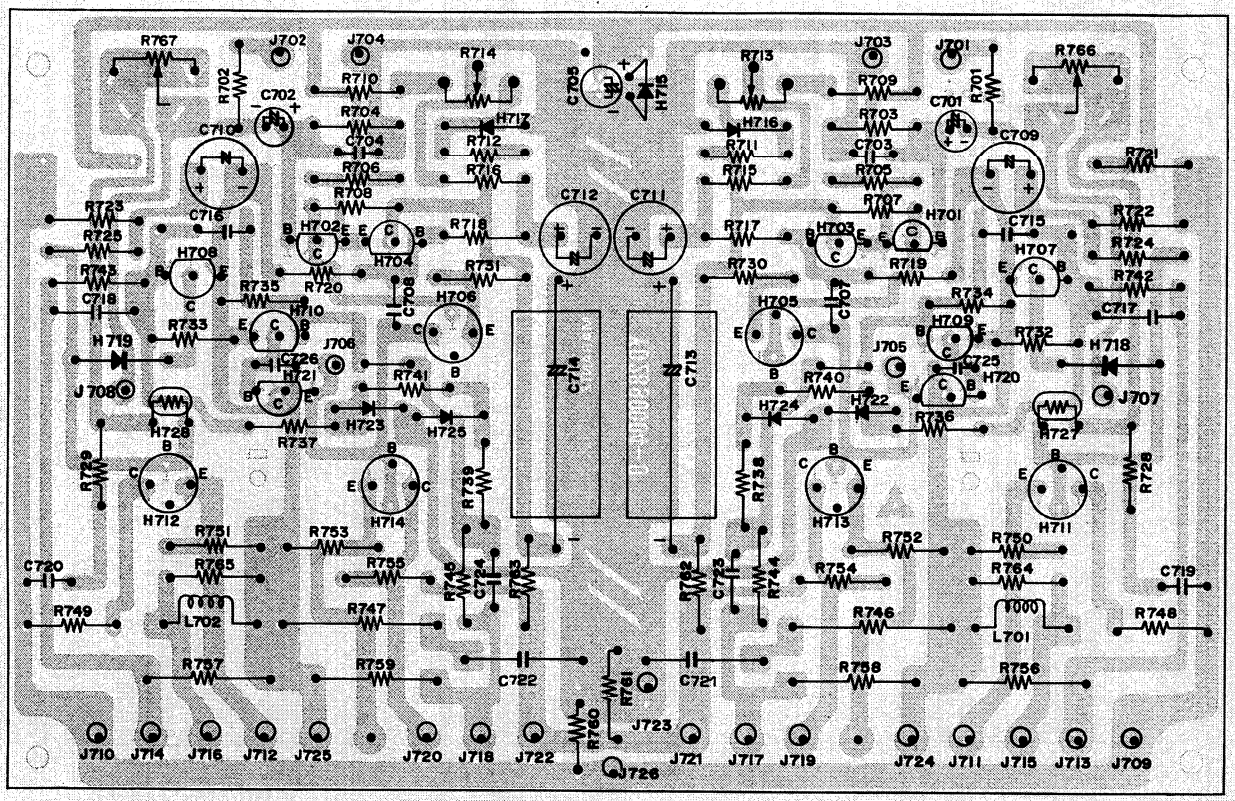


Figure 14. Main Power Amplifier Assembly P700 Component Locations

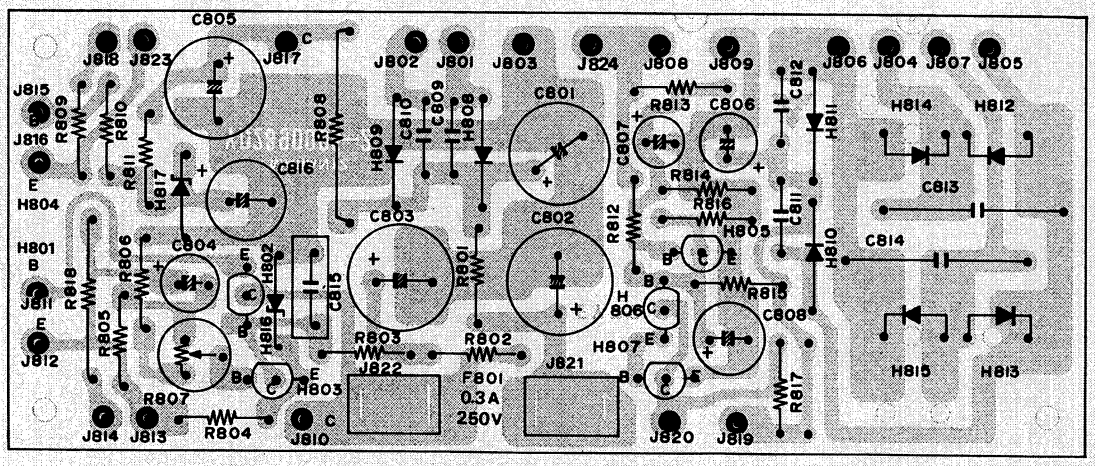


Figure 15. Power Supply Assembly P800 Component Locations

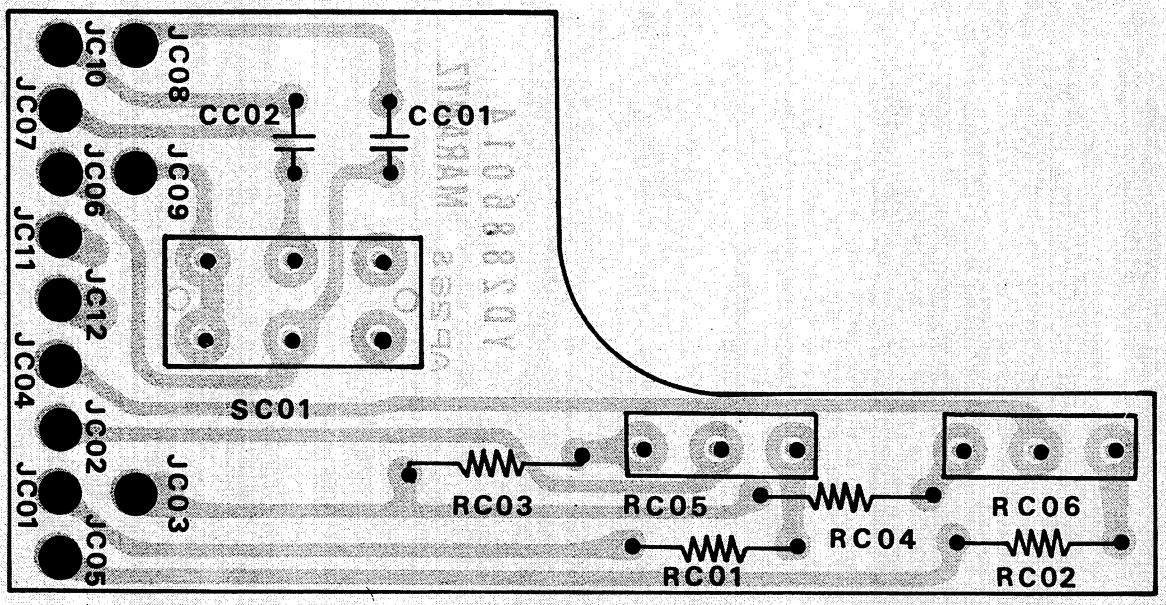


Figure 16. FM Cal, FM De-Emphasis Assembly PC01 Component Locations

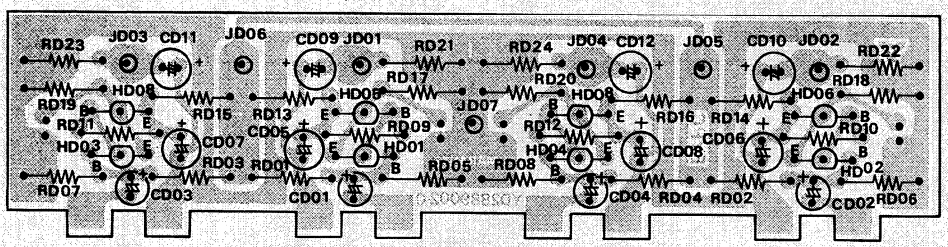


Figure 17. Tone Amplifier Assembly PD01 Component Locations

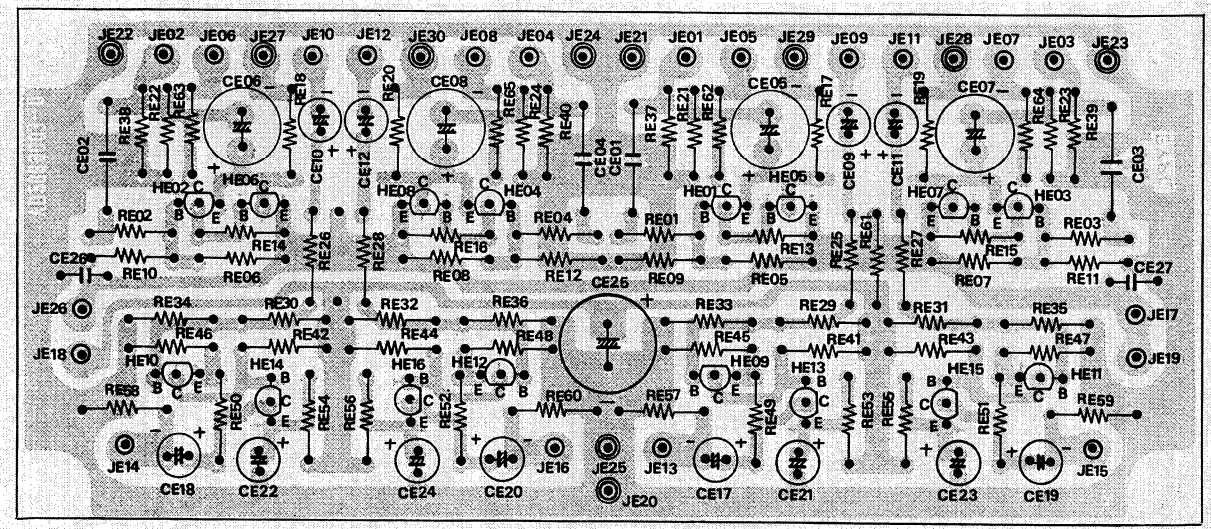


Figure 18. Buffer & Pre-Amplifier Assembly PE01 Component Locations

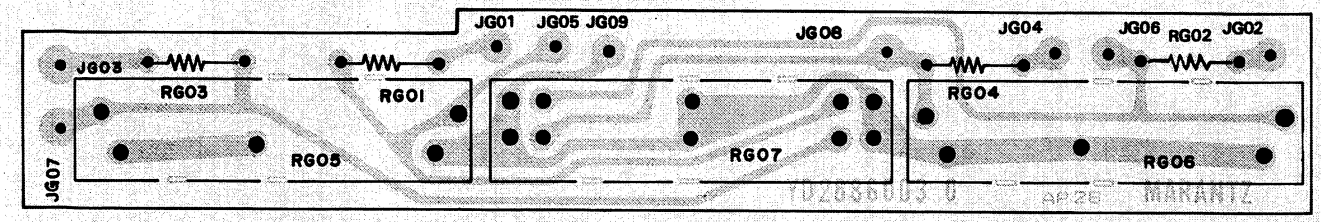


Figure 19. Balance Control Unit Assembly PG01 Component Locations

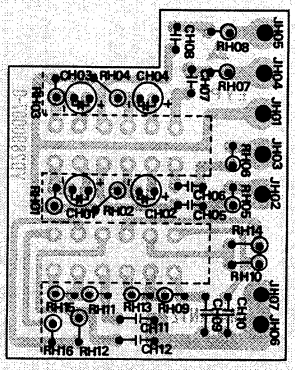


Figure 20. Hi-Filter, Loudness Assembly PH01 Component Locations

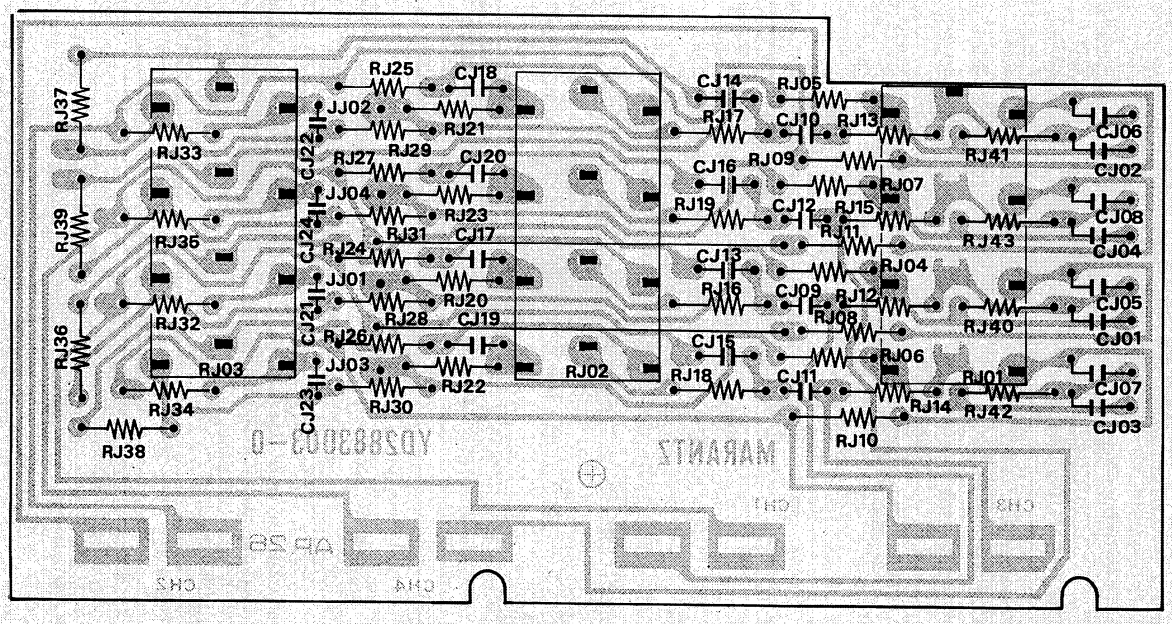


Figure 21. Tone Control Unit Assembly PJ01 Component Locations

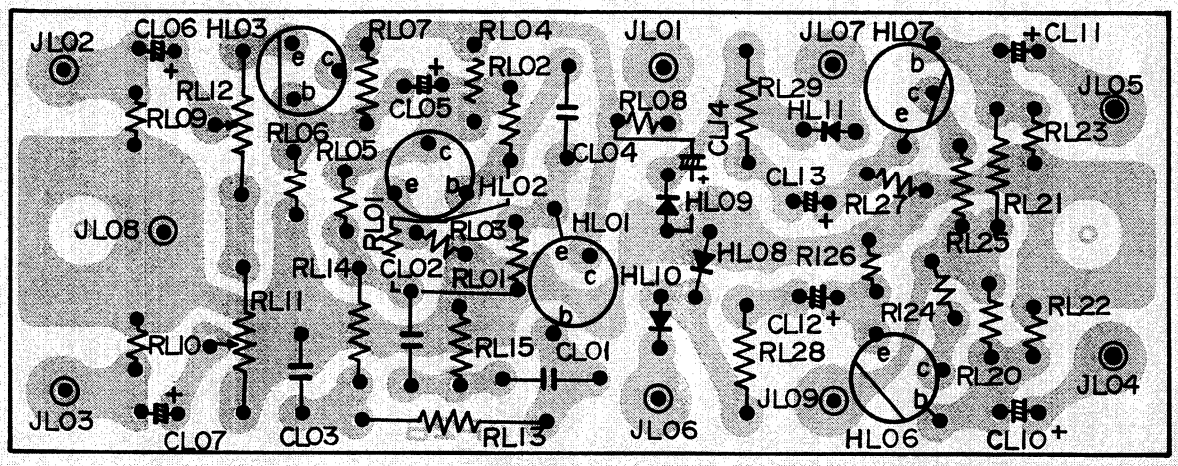


Figure 22. 400Hz Tone Assembly PL01 Component Locations

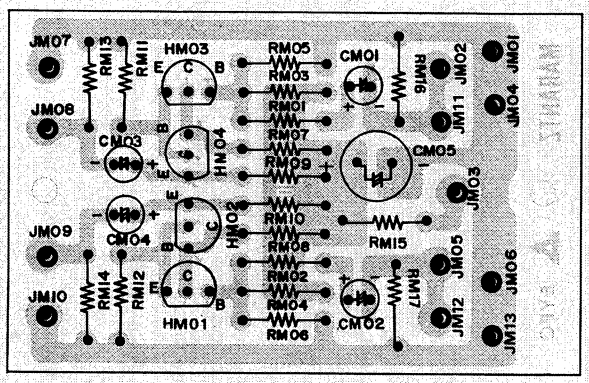


Figure 23. B.T.L. Phase Inverter Assembly PM01 Component Locations

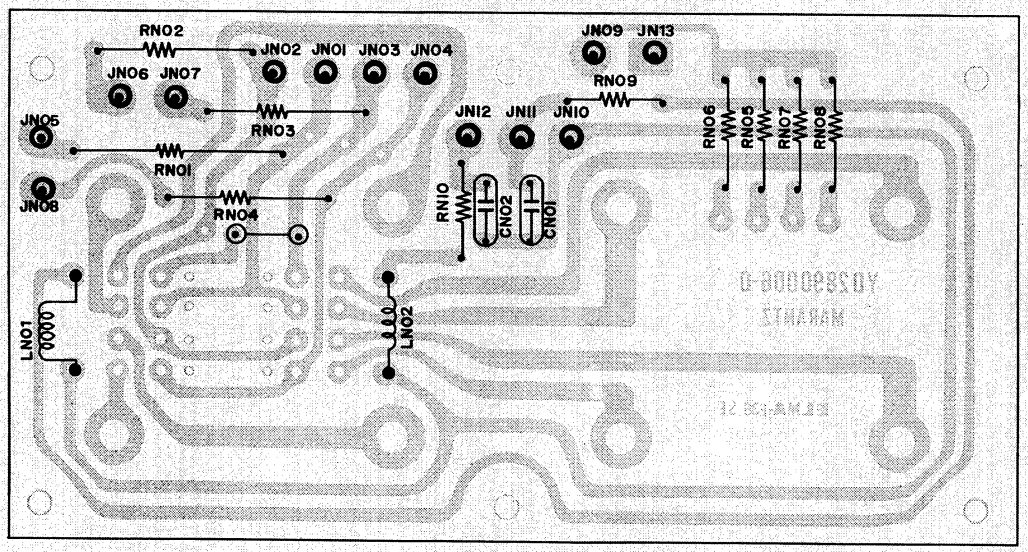


Figure 24. SP Protector Unit Assembly PN01 Component Locations

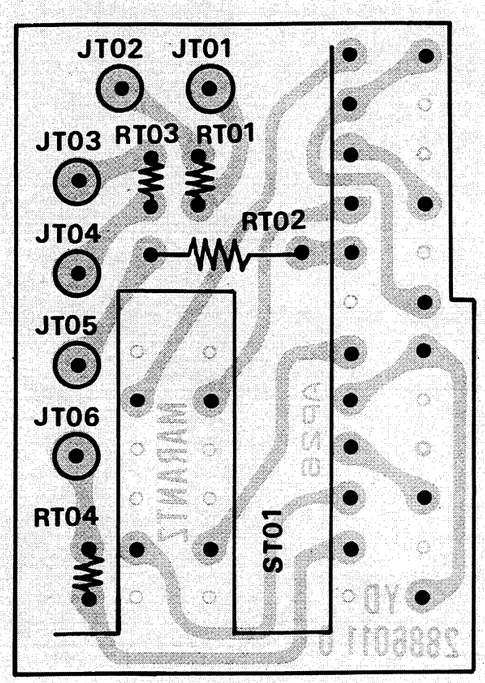


Figure 25. Tape Mode Assembly PT01 Component Locations

Figure 26. Function Lamp Assembly PY01 Component Locations

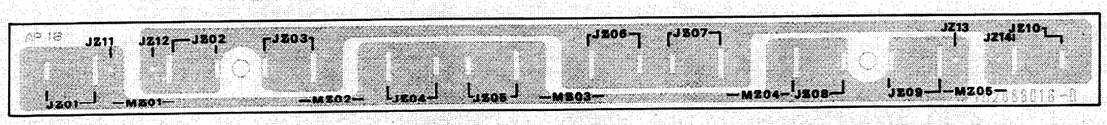


Figure 27. Dial Lamp Assembly PZ01 Component Locations

marantz

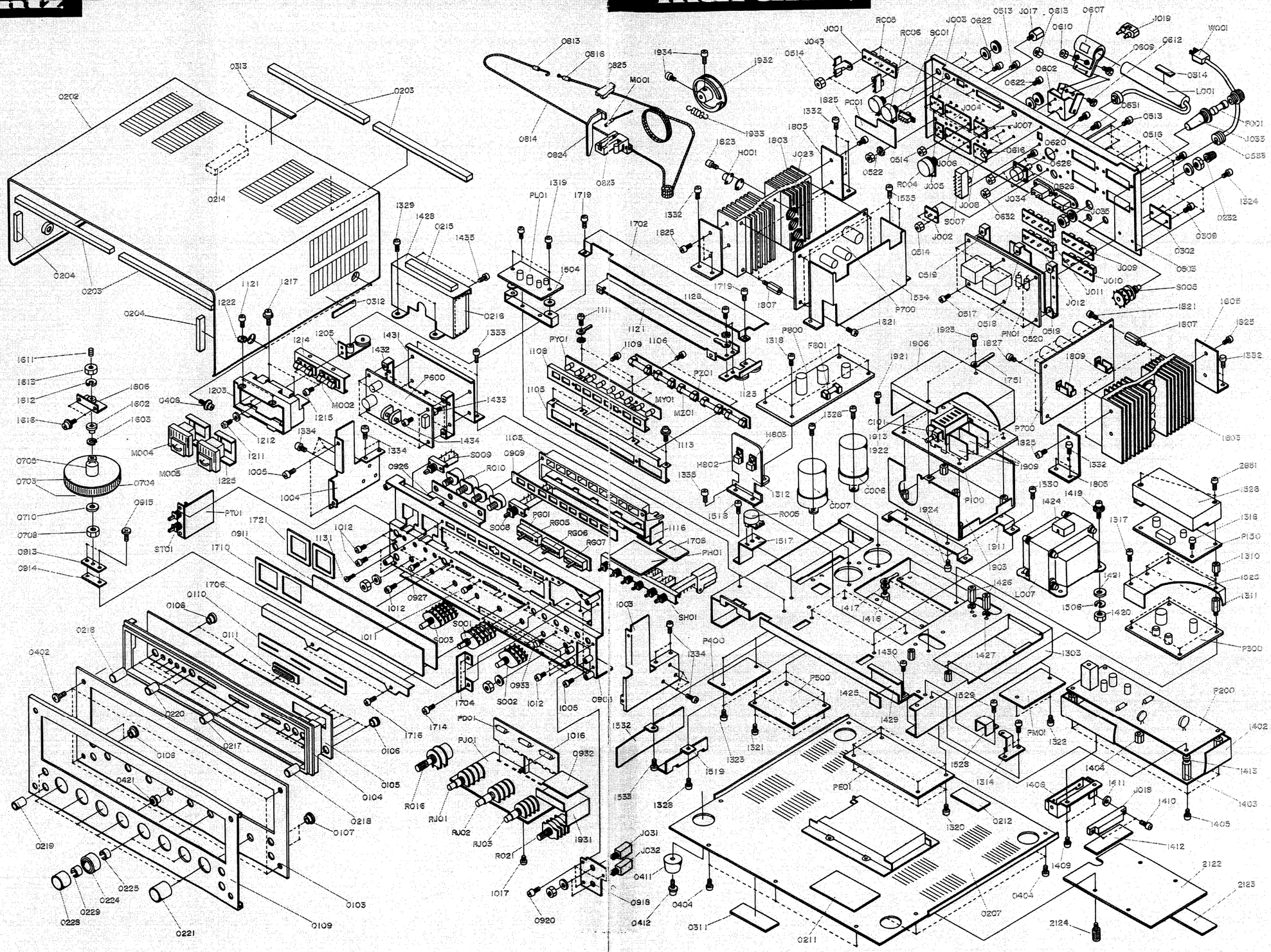


Figure 28. Exploded Mechanical Diagram

PARTS LIST

REF. DESIG.	MARANTZ PART NO.	DESCRIPTION
A	288906340	Front Panel Assembly
0103	288906301	Escutcheon
0104	285340101	Frame
0105	288615801	Window
0106	288625901	Bush x 10
0107	273125901	Bush x 2
0109	289005302	Cover
0110	289010701	Sheet
0111	285025901	Bush x 3
B	285325744	Lid Assembly
0207	285325750	Lid K
0211	289012001	Insulator
0212	288612005	Insulator
C	281815440	Knob Assembly
0224	281815404	Knob
0225	71400149Q	Spring
D	281815441	Knob Assembly
0228	281815405	Knob
0229	71400159Q	Spring
E	288916040	Rear Panel Assembly
0503	288916001	Bracket
0510	55060365S	T.R. Rivet x 4
J034	YJ0400018	Jack
J035	YJ0400018	Jack
F	285327340	Fly Wheel Assembly
0703	257706302	Escutcheon x 2
0704	257727301	Fly Wheel
0705	285311201	Shaft
0708	53110603E	Hexagon Nut
0710	54020601E	Flat Washer
G	120200640	String Assembly
0813	120225801	Hook
0814	72080802A	String
H	281810341	Pointer Assembly
0823	281810301	Pointer
0824	281810302	Pointer
0825	281805301	Cover
I	281915941	Drum Assembly
1932	281915901	Drum
1933	71101569M	Spring
1934	51064019A	Screw x 2
P100	YD2819002	P.W. Board, FM Front
	ZZ2889102	P.W. Board Ass'y
		RESISTORS
		All resistors are ±5% and ¼W.
R101	RT0556314	56KΩ
R102	RT0510514	1MΩ
R103	RT0510414	100KΩ
R104	RT0522114	220Ω
R105	RT0522114	220Ω
R106	RT0510214	1KΩ
R107	RT0547214	4.7KΩ
R108	RT0522314	22KΩ
R109	RT0522314	22KΩ
R110	RT0512214	1.2KΩ
R111	RT0510114	100Ω
R112	RT0510114	100Ω
R113	RT0510114	100Ω
R114	RT0522314	22KΩ
R115	RT0510114	100Ω
		CAPACITORS
C102	CT1100001	Trimming, 1.5～10PF NPO
C103	CT1100002	Trimming, 1.5～10PF NPO
C104	CT1100001	Trimming, 1.5～10PF NPO
C105	CT1100001	Trimming, 1.5～10PF NPO
C106	CT1100001	Trimming, 1.5～10PF NPO
C107	DD1615001	Ceramic, 15PF ± 10%
C108	DK1710201	Ceramic, 1000PF ± 20%
C109	DD1105001	Ceramic, 5PF ± 0.5PF
C110	DK1710201	Ceramic, 1000PF ± 20%
C111	DD1615001	Ceramic, 15PF ± 10%
C112	DK1710201	Ceramic, 1000PF ± 20%
C113	DK1710301	Ceramic, 0.01μF ± 20%
C114	DD1001001	Ceramic, 1.0PF ± 0.25PF
C115	DD1615001	Ceramic, 15PF ± 10%
C116	DK1710301	Ceramic, 0.01μF ± 20%
C117	DK1710301	Ceramic, 0.01μF ± 20%
C118	DD1620003	Ceramic, 20PF ± 10%
C119	DD1210006	Ceramic, 10PF ± 1PF
C120	DD1615003	Ceramic, 15PF ± 10%
C121	DD1615003	Ceramic, 15PF ± 10%
C122	DK1710301	Ceramic, 0.01μF ± 20%
C123	DK1710301	Ceramic, 0.01μF ± 20%
C124	DK1710301	Ceramic, 0.01μF ± 20%
C125	DK1710301	Ceramic, 0.01μF ± 20%
C127	DK1710301	Ceramic, 0.01μF ± 20%
		COILS & TRANSFORMER
L101	LA1202603	ANT Coil
L102	LA1202604	RF Coil
L103	LA1202605	RF Coil
L104	LO1202603	OSC Coil
L105	LI1001601	IFT
		SEMICONDUCTORS
H101	HF200191A	Transistor, 2SK19 (Y)
H102	HF200191A	Transistor, 2SK19 (Y)
H103	HT305351B	Transistor, 2SC535 (B)
		MISCELLANEOUS
J101	YP1000094	Plug
J102	YP1000094	Plug
J103 ～ J109	57271240W	Lug Eyelet
L004	LC1332002	Choke Coil, 3.3μH
1909	273010903	Sield x 3

REF. DESIG.	MARANTZ PART NO.	DESCRIPTION
P150	YD2890001	P.W. Board, AM Tuner
	ZZ2889101	P.W. Board Ass'y
		RESISTORS
		All resistors are ±5% and ¼W, unless otherwise indicated.
R151	RT0515114	150Ω
R152	RA0103025	Trimming, 10KΩ (B)
R153	RT0556214	5.6KΩ
R154	RT0510314	10KΩ
R155	RT0510314	10KΩ
R156	RT0510214	1KΩ
R157	RT0530114	300Ω
R158	RT0533314	33KΩ
R159	RT0510414	100KΩ
R160	RT0520214	2KΩ
R161	RT0515214	1.5KΩ
R162	RT0510414	100KΩ
R163	RT0510114	100Ω
R164	RT0556214	5.6KΩ
R165	RT0510114	100Ω
R166	RT0510414	100KΩ
R167	RT0512414	120KΩ
R168	RT0515214	1.5KΩ
		CAPACITORS
C151	DK1710301	Ceramic, 0.01μF ± 20%
C152	DF6545101	Film, 450PF ± 5%
C153	DF1747305	Film, 0.047μF ± 20%
C154	DK1840302	Ceramic, 0.04μF +80%, -20%
C155	EA1070169	Electroly, 100μF, 16V
C157	DK1710301	Ceramic, 0.01μF ± 20%
C158	DK1710301	Ceramic, 0.01μF ± 20%
C159	DD1620001	Ceramic, 20PF ± 10%
C160	EA1050509	Electroly, 1μF, 50V
C161	EA3350509	Electroly, 3.3μF, 50V
C162	DK1710201	Ceramic, 100PF ± 20%
C163	DF1710301	Film, 0.0 μF ± 20%
C164	DK1710301	Ceramic, 0.0 μF ± 20%
C165	DF1610405	Film, 0.1μF ± 10%
C166	DK1840302	Ceramic, 0.04μF +80%, -20%
C167	EA1070169	Electroly, 100μF, 16V
C168	EA1050509	Electroly, 1μF, 50V
C169	DK1710301	Ceramic, 0.01μF ± 20%
C170	EA1050509	Electroly, 1μF, 50V
		SEMICONDUCTORS
H151	HC1000301	IC, HA1151
H152	HT306441C	Transistor, 2SC644 (T)
		COILS & TRANSFORMERS
L151	LA1001017	RF Coil, AM
L152	LO1001048	OSC Coil, AM
L153	LI1028002	IFT, AM
L154	LI1001064	IFT, AM
L155	LC1332002	Choke Coil, 3.3μH
L156	LC1332002	Choke Coil, 3.3μH
		MISCELLANEOUS
J151 ~ J161	YP1000113	Plug
P200	YD2884006	P.W. Board, FM IF
	ZZ2884006	P.W. Board Ass'y

REF. DESIG.	MARANTZ PART NO.	DESCRIPTION
		RESISTORS
		All resistors are ±5% and ¼W, unless otherwise indicated.
R201	RT0533014	33Ω
R202	RT0510114	100Ω
R203	RT0512314	12KΩ
R204	RT0547214	4.7KΩ
R205	RT0510214	1KΩ
R206	RT0522214	2.2KΩ
R207	RT0510314	10KΩ
R208	RT0533314	33KΩ
R210	RT0533014	33Ω
R211	RT0515214	1.5KΩ
R212	RT0533214	3.3KΩ
R213	RT0547114	470Ω
R214	RT0510214	1KΩ
R215	RT0510114	100Ω
R216	RT0515214	1.5KΩ
R217	RT0533214	3.3KΩ
R218	RT0515114	150Ω
R219	RT0510214	1KΩ
R220	RT0510214	1KΩ
R221	RT0518314	18KΩ
R222	RT0510414	100KΩ
R223	RT0575014	75Ω
R224	RT0515114	150Ω
R225	RT0515114	150Ω
R226	RT0582114	820Ω
R227	RT0533214	3.3KΩ
R228	RT0515114	150Ω
R229	RT0510214	1KΩ
R230	RT0510214	1KΩ
R231	RT0515114	150Ω
R232	RT0510414	100KΩ
R233	RT0527314	27KΩ
R234	RT0522314	22KΩ
R235	RT0510114	100Ω
R236	RT0522114	220Ω
R237	RT0582214	8.2KΩ
R238	RT0515314	15KΩ
R239	RT0515114	150Ω
R240	RT0510214	1KΩ
R241	RT0510214	1KΩ
R242	RT0568314	68KΩ
R243	RT0510114	100Ω
R244	RT0510414	100KΩ
R245	RT0527114	270Ω
R246	RT0582214	8.2KΩ
R247	RT0515314	15KΩ
R248	RT0515114	150Ω
R249	RT0510214	1KΩ
R250	RT0510214	1KΩ
R252	RT0510414	100KΩ
R253	RT0515114	150Ω
R254	RT0518314	18KΩ
R255	RT0547314	47KΩ
R256	RT0512314	12KΩ
R257	RT0582214	8.2KΩ
R258	RT0515314	15KΩ
R259	RT0515114	150Ω
R260	RT0510214	1KΩ
R261	RT0522314	22KΩ
R262	RT0522314	22KΩ

REF. DESIG.	MANRATZ PART NO.	DESCRIPTION
R263	RT0522114	220Ω
R264	RT0582114	820Ω
R265	RT0582114	820Ω
R266	RT0510314	10KΩ
R267	RT0510314	10KΩ
R268	RT0510114	100Ω
R269	RT0527314	27KΩ
R270	RT0510114	100Ω
R271	RT0510114	100Ω
R272	RT0556214	5.6KΩ
R273	RT0510414	100KΩ
R274	RT0518414	180KΩ
R275	RT0510414	100KΩ
R276	RT0522214	2.2KΩ
R277	RT0510114	100Ω
		CAPACITORS
C201	DK1710301	Ceramic, 0.01μF ± 20%
C202	DK1710301	Ceramic, 0.01μF ± 20%
C203	DK1840302	Ceramic, 0.04μF +80%, -20%
C204	DK1710301	Ceramic, 0.01μF ± 20%
C205	DD1620101	Ceramic, 200PF ± 10%
C206	DK1710301	Ceramic, 0.01μF ± 20%
C207	DK1710301	Ceramic, 0.01μF ± 20%
C208	DK1810402	Ceramic, 0.1μF +80%, -20%
C209	DK1710301	Ceramic, 0.01μF ± 20%
C210	DK1840302	Ceramic, 0.04μF +80%, -20%
C211	DK1840302	Ceramic, 0.04μF +80%, -20%
C212	DK1840302	Ceramic, 0.04μF +80%, -20%
C213	DK1710301	Ceramic, 0.01μF ± 20%
C214	DD1620101	Ceramic, 200PF ± 10%
C215	DK1710301	Ceramic, 0.01μF ± 20%
C216	DK1710301	Ceramic, 0.01μF ± 20%
C217	DK1840302	Ceramic, 0.04μF +80%, -20%
C218	DK1710301	Ceramic, 0.01μF ± 20%
C219	DD1620101	Ceramic, 200PF ± 10%
C220	DK1710301	Ceramic, 0.01μF ± 20%
C221	DK1710301	Ceramic, 0.01μF ± 20%
C222	DK1840302	Ceramic, 0.04μF +80%, -20%
C223	DK1710301	Ceramic, 0.01μF ± 20%
C224	DK1710301	Ceramic, 0.01μF ± 20%
C225	DD1620101	Ceramic, 200PF ± 10%
C226	DK1710301	Ceramic, 0.01μF ± 20%
C227	DK1710301	Ceramic, 0.01μF ± 20%
C228	DK1840301	Ceramic, 0.04μF +80%, -20%
C229	DK1710301	Ceramic, 0.01μF ± 20%
C230	DK1710301	Ceramic, 0.01μF ± 20%
C231	DK1710201	Ceramic, 0.001μF ± 20%
C232	DK1810402	Ceramic, 0.1μF +80%, -20%
C233	DK1710301	Ceramic, 0.01μF ± 20%
C234	DK1710301	Ceramic, 0.01μF ± 20%
C235	DK1840302	Ceramic, 0.04μF +80%, -20%
C236	DK1710301	Ceramic, 0.01μF ± 20%
C237	EA1060169	Electroly, 10μF, 16V
C238	DD1620101	Ceramic, 200PF ± 20%
C239	DD1620101	Ceramic, 200PF ± 20%
C240	EA1070109	Electroly, 100μF, 10V
C241	DD1620101	Ceramic, 200PF ± 20%
C242	EA1070169	Electroly, 100μF, 16V
C243	DK1840302	Ceramic, 0.04μF +80%, -20%
C244	EA1050509	Electroly, 1μF, 50V
C245	EA1060169	Electroly, 10μF, 16V
C246	EA1060169	Electroly, 10μF, 16V
C247	DK1710301	Ceramic, 0.01μF ± 20%

REF. DESIG.	MARANTZ PART NO.	DESCRIPTION
C248	DD1540001	Ceramic, 40PF ± 5%
		SEMICONDUCTORS
H201	HT308291C	Transistor, 2SC829 (C)
H202	HT308291C	Transistor, 2SC829 (C)
H203	HT308291C	Transistor, 2SC829 (C)
H204	HT308291C	Transistor, 2SC829 (C)
H205	HT308291C	Transistor, 2SC829 (C)
H206	HT308291C	Transistor, 2SC829 (C)
H207	HT308291C	Transistor, 2SC829 (C)
H208	HT306441B	Transistor, 2SC644 (S)
H210	HD1000105	Diode, 1N60
H211	HD1000105	Diode, 1N60
H212	HD1000105	Diode, 1N60
H213	HD1000105	Diode, 1N60
H214	HD1000105	Diode, 1N60
H215	HD1000105	Diode, 1N60
H216	HD2001105	Diode, 1S1555
H217	HD2001105	Diode, 1S1555
H218	HD1000105	Diode, 1N60
H219	HD1000105	Diode, 1N60
H220	HD2001105	Diode, 1S1555
H221	HD2001105	Diode, 1S1555
H222	HD1000105	Diode, 1N60
H223	HD1000105	Diode, 1N60
H224	HD2001105	Diode, 1S1555
H225	HD2001105	Diode, 1S1555
H226	HD1000105	Diode, 1N60
H227	HD1000105	Diode, 1N60
H228	HD2001105	Diode, 1S1555
H229	HD2001105	Diode, 1S1555
H230	HD1000302	Diode, 20A90M
H231	HD1000302	Diode, 20A90M
		COIL & TRANSFORMER
L201	LI1401623	IFT, FM
L202	LC1332002	Choke Coil, 3.3μH
		MISCELLANEOUS
J201 ~ J211	YP1000113	Plug
F201	FF1107004	Ceramic Filter, CFS10.7M
F202	FF1107004	Ceramic Filter, CFS10.7M
F203	FF1107004	Ceramic Filter, CFS10.7M
P300	YD2890003	P.W. Board, MPX
	ZZ2889103	P.W. Board Ass'y
		RESISTORS
		All resistors are ±5% and ¼W, unless otherwise indicated.
R301	RA0202011	Trimming, 2KΩ (B)
R302	RT0522414	220KΩ
R303	RT0556314	56KΩ
R304	RT0568314	68KΩ
R305	RT0510114	100Ω
R306	RT0518414	180KΩ
R307	RT0522414	220KΩ
R308	RT0512414	120KΩ
R309	RT0510414	100KΩ
R310	RT0568214	6.8KΩ
R311	RA0502020	Trimming, 5KΩ (B)

REF. DESIG.	MARANTZ PART NO.	DESCRIPTION
R312	RT0516314	16KΩ
R313	RT0510214	1KΩ
R314	RT0522414	220KΩ
R315	RT0510214	1KΩ
R316	RT0510214	1KΩ
R317	RT0539214	3.9KΩ
R318	RT0539214	3.9KΩ
R319	RT0522414	220KΩ
R320	RT0522314	22KΩ
R321	RT0510114	100Ω
R322	RT0510014	10Ω
R323	RT0522414	220KΩ
R324	RT0522414	220KΩ
R325	RT0530314	30KΩ
R326	RT0530314	30KΩ
R327	RT0510414	100KΩ
R328	RT0510414	100KΩ
R329	RT0510514	1MΩ
R330	RT0510514	1MΩ
R331	RT0512214	1.2KΩ
R332	RT0512214	1.2KΩ
R333	RT0522314	22KΩ
R334	RT0522314	22KΩ
R335	RT0510114	100Ω
R336	RT0510114	100Ω
R337	RT0582214	8.2KΩ
R338	RT0582214	8.2KΩ
R339	RT0547114	470Ω
R340	RT0547114	470Ω
R341	RT0522414	220KΩ
R342	RT0522414	220KΩ
R343	RT0539214	3.9KΩ
R344	RT0556414	560KΩ
R345	RT0515314	15KΩ
R346	RT0512414	120KΩ
R347	RT0510114	100Ω
R348	RT0522414	220KΩ
R349	RT0556214	5.6KΩ
R350	RT0510314	10KΩ
R351	RT0510114	100Ω
R352	RT0533314	33KΩ
R353	RT0510114	100Ω
R354	RT0510414	100KΩ
R355	RT0527314	27KΩ
R356	RT0510414	100KΩ
R357	RT0510214	1KΩ
R358	RT0510114	100Ω
R359	RT0527314	27KΩ
R360	RT0533314	33KΩ
R361	RT0522414	220KΩ
R362	RA0104018	Trimming, 100KΩ (B)
R363	RA0103025	Trimming, 10KΩ (B)
R364	RT0522214	2.2KΩ
R365	RT0510114	100Ω
R366	RT0510314	10KΩ
R367	RT0510114	100Ω
R368	RT0527414	270KΩ
R369	RT0515314	15KΩ
R370	RT0512314	12KΩ
R371	RT0522114	220Ω
R372	RT0527414	270KΩ
R373	RT0533314	33KΩ
R374	RA0103025	Trimming, 10KΩ (B)

REF. DESIG.	MARANTZ PART NO.	DESCRIPTION
R375	RT0510114	100Ω
R376	RT0510414	100KΩ
R377	RT0510414	100KΩ
R378	RT0556214	5.6KΩ
R379	RT0522214	2.2KΩ
		CAPACITORS
C301	DF1622205	Film, 2200PF ±10%
C302	EA3360109	Electroly, 33μF, 10V
C303	DF1722305	Film, 0.022μF ±20%
C304	EA1060169	Electroly, 10μF, 16V
C305	DF5547101	Film, 470PF ±5%
C306	EA1060169	Electroly, 10μF, 16V
C307	EQ4740501	Electroly, 0.47μF, 50V ±20%
C308	EQ2240501	Electroly, 0.22μF, 50V ±20%
C309	EQ2240501	Electroly, 0.22μF, 50V ±20%
C310	DF1747301	Film, 0.047μF ±20%
C311	DF1515205	Film, 1500PF ±5%
C312	DF1515205	Film, 1500PF ±5%
C313	DD1536101	Ceramic, 360PF ±5%
C314	DD1536101	Ceramic, 360PF ±5%
C315	DF1533205	Film, 3300PF ±5%
C316	DF1533205	Film, 3300PF ±5%
C317	DF1515205	Film, 1500PF ±5%
C318	DF1515205	Film, 1500PF ±5%
C319	DF1522205	Film, 2200PF ±5%
C320	DF1522205	Film, 2200PF ±5%
C321	DF1510205	Film, 1000PF ±5%
C322	DF1510205	Film, 1000PF ±5%
C323	EV2240351	Electroly, 0.22μF, 35V ±20%
C324	EV2240351	Electroly, 0.22μF, 35V ±20%
C325	EV1050352	Electroly, 1μF, 35V ±20%
C326	EV1050352	Electroly, 1μF, 35V ±20%
C327	EA2270259	Electroly, 220μF, 25V
C328	EA2270169	Electroly, 220μF, 16V
C329	EA1060169	Electroly, 10μF, 16V
C330	DK1840302	Ceramic, 0.04μF +80%, -20%
C331	EA1050509	Electroly, 1μF, 50V
C332	EA1060169	Electroly, 10μF, 16V
C333	DD1210001	Ceramic, 10P ±10%
C334	DF1668301	Film, 0.068μF ±10%
C335	DF1740301	Film, 0.04μF ±20%
C336	DK1810402	Ceramic, 0.1μF +80%, -20%
C337	EA4750359	Electroly, 4.7μF, 35V
C338	EA1050509	Electroly, 1μF, 50V
C339	DK1840302	Ceramic, 0.04μF +80%, -20%
C340	DK1840302	Ceramic, 0.04μF +80%, -20%
C341	DK1840302	Ceramic, 0.04μF +80%, -20%
		SEMICONDUCTORS
H301	HF200301C	FET, 2SK30Y
H302	HT308281D	Transistor, 2SC828 (S)
H303	HT308281D	Transistor, 2SC828 (S)
H304	HT307322A	Transistor, 2SC732 (B or G)
H305	HT307322A	Transistor, 2SC732 (B or G)
H306	HT104942A	Transistor, 2SA494 (G or Y)
H307	HT104942A	Transistor, 2SA494 (G or Y)
H308	HT308281D	Transistor, 2SC828 (S)
H309	HT308281D	Transistor, 2SC828 (S)
H310	HT308281D	Transistor, 2SC828 (S)
H311	HT308281D	Transistor, 2SC828 (S)
H312	HF200300A	FET
H313	HT308281D	Transistor, 2SC828 (S)
H314	HT308281D	Transistor, 2SC828 (S)

REF. DESIG.	MARANTZ PART NO.	DESCRIPTION
H315	HT308281D	Transistor, 2SC828 (S)
H316	HT308281D	Transistor, 2SC828 (S)
H317	HT308281D	Transistor, 2SC828 (S)
H318	HD1000105	Diode, 1N60
H319	HD1000105	Diode, 1N60
H320	HD2001105	Diode, 1S1555
H321	HC1000401	IC, HA1156
		COILS
L301	LS1029004	MPX Coil, 56mH
L302	LS1029004	MPX Coil, 56mH
L303	LS1029005	MPX Coil, 43mH
L304	LS1029005	MPX Coil, 43mH
L305	LC2105001	Choke Coil, 1mH
		MISCELLANEOUS
J301 ~ J322	YP1000113	Plug
P400	YD2889001	P.W. Board, Phono EQ
	ZZ2889001	P.W. Board Ass'y
		RESISTORS All resistors are ±5% and ¼W.
R401	RT0556314	56KΩ
R402	RT0556314	56KΩ
R403	RT0539114	390Ω
R404	RT0539114	390Ω
R405	RT0539114	390Ω
R406	RT0539114	390Ω
R407	RN0568314	68KΩ
R408	RN0568314	68KΩ
R409	RT0522314	22KΩ
R410	RT0522314	22KΩ
R411	RN0527414	270KΩ
R412	RN0527414	270KΩ
R413	RT0539114	390Ω
R414	RT0539114	390Ω
R415	RT0582214	8.2KΩ
R416	RT0582214	8.2KΩ
R417	RN0533414	330KΩ
R418	RN0533414	330KΩ
R419	RT0522414	220KΩ
R420	RT0522414	220KΩ
R421	RT0518314	18KΩ
		CAPACITORS
C401	EE4750251	Electroly, 4.7μF, 25V ±20%
C402	EE4750251	Electroly, 4.7μF, 25V ±20%
C403	DD1650001	Ceramic, 50PF ±10%
C404	DD1650001	Ceramic, 50PF ±10%
C405	DF1633205	Film, 0.0033μF ±10%
C406	DF1633205	Film, 0.0033μF ±10%
C407	DD1650001	Ceramic, 50PF ±10%
C408	DD1650001	Ceramic, 50PF ±10%
C409	EA1070109	Electroly, 100μF, 10V
C410	EA1070109	Electroly, 100μF, 10V
C411	DF1610305	Film, 0.01μF ±10%
C412	DF1610305	Film, 0.01μF ±10%
C413	EE1050501	Electroly, 1μF, 50V ±20%
C414	EE1050501	Electroly, 1μF, 50V ±20%
C415	EA1070359	Electroly, 100μF, 35V

REF. DESIG.	MARANTZ PART NO.	DESCRIPTION
C416	EA4760509	Electroly, 47μF, 50V
		TRANSISTORS
H401	HT313271T	2SC1327 (T)
H402	HT313271T	2SC1327 (T)
H403	HT313271T	2SC1327 (T)
H404	HT313271T	2SC1327 (T)
		MISCELLANEOUS
J401 ~ J408	YP1000113	Plug
PE01	YD2889003	P.W. Board, Buffer & Pre.
	ZZ2889003	P.W. Board Ass'y
		RESISTORS All resistors are ±5% and ¼W, unless otherwise indicated.
RE01	RT0539114	390Ω
RE02	RT0539114	390Ω
RE03	RT0539114	390Ω
RE04	RT0539114	390Ω
RE05	RN1039414	390KΩ ±10%, ¼W
RE06	RN1039414	390KΩ ±10%, ¼W
RE07	RN1039414	390KΩ ±10%, ¼W
RE08	RN1039414	390KΩ ±10%, ¼W
RE09	RN1068414	680KΩ ±10%, ¼W
RE10	RN1068414	680KΩ ±10%, ¼W
RE11	RN1068414	680KΩ ±10%, ¼W
RE12	RN1068414	680KΩ ±10%, ¼W
RE13	RT0515314	15KΩ
RE14	RT0515314	15KΩ
RE15	RT0515314	15KΩ
RE16	RT0515314	15KΩ
RE17	GU0522212	2.2KΩ
RE18	GU0522212	2.2KΩ
RE19	GU0522212	2.2KΩ
RE20	GU0522212	2.2KΩ
RE21	RT0510414	100KΩ
RE22	RT0510414	100KΩ
RE23	RT0510414	100KΩ
RE24	RT0510414	100KΩ
RE25	RT0539114	390Ω
RE26	RT0539114	390Ω
RE27	RT0539114	390Ω
RE28	RT0539114	390Ω
RE29	RN0568414	680KΩ
RE30	RN0568414	680KΩ
RE31	RN0568414	680KΩ
RE32	RN0568414	680KΩ
RE33	RT0562314	62KΩ
RE34	RT0562314	62KΩ
RE35	RT0562314	62KΩ
RE36	RT0562314	62KΩ
RE37	RT0522414	220KΩ
RE38	RT0522414	220KΩ
RE39	RT0522414	220KΩ
RE40	RT0522414	220KΩ
RE41	RT0527314	27KΩ
RE42	RT0527314	27KΩ
RE43	RT0527314	27KΩ
RE44	RT0527314	27KΩ
RE45	RT0520214	2KΩ

REF. DESIG.	MARANTZ PART NO.	DESCRIPTION
RE46	RT0520214	2KΩ
RE47	RT0520214	2KΩ
RE48	RT0520214	2KΩ
RE49	RT0513314	13KΩ
RE50	RT0513314	13KΩ
RE51	RT0513314	13KΩ
RE52	RT0513314	13KΩ
RE53	RT0510214	1KΩ
RE54	RT0510214	1KΩ
RE55	RT0510214	1KΩ
RE56	RT0510214	1KΩ
RE57	RT0510414	100KΩ
RE58	RT0510414	100KΩ
RE59	RT0510414	100KΩ
RE60	RT0510414	100KΩ
RE61	RT0510114	100Ω
RE62	RT0547014	47Ω
RE63	RT0547014	47Ω
RE64	RT0547014	47Ω
RE65	RT0547014	47Ω
		CAPACITORS
CE01	DF1722405	Film, 0.22μF ±20%
CE02	DF1722405	Film, 0.22μF ±20%
CE03	DF1722405	Film, 0.22μF ±20%
CE04	DF1722405	Film, 0.22μF ±20%
CE05	EE2260251	Electroly, 22μF, 25V ±20%
CE06	EE2260251	Electroly, 22μF, 25V ±20%
CE07	EE2260251	Electroly, 22μF, 25V ±20%
CE08	EE2260251	Electroly, 22μF, 25V ±20%
CE09	EV1050256	Electroly, 1μF, 25V
CE10	EV1050256	Electroly, 1μF, 25V
CE11	EV1050256	Electroly, 1μF, 25V
CE12	EV1050256	Electroly, 1μF, 25V
CE17	EE3350251	Electroly, 3.3μF, 25V ±20%
CE18	EE3350251	Electroly, 3.3μF, 25V ±20%
CE19	EE3350251	Electroly, 3.3μF, 25V ±20%
CE20	EE3350251	Electroly, 3.3μF, 25V ±20%
CE21	EA1060359	Electroly, 10μF, 35V
CE22	EA1060359	Electroly, 10μF, 35V
CE23	EA1060359	Electroly, 10μF, 35V
CE24	EA1060359	Electroly, 10μF, 35V
CE25	EA2270359	Electroly, 220μF, 35V
CE26	DK1710301	Ceramic, 0.01μF ±20%
CE27	DK1710301	Ceramic, 0.01μF ±20%
		TRANSISTORS
HE01	HT313283A	2SC1328 (S, T or U)
HE02	HT313283A	2SC1328 (S, T or U)
HE03	HT313283A	2SC1328 (S, T or U)
HE04	HT313283A	2SC1328 (S, T or U)
HE05	HT107202A	2SA720 (R or S)
HE06	HT107202A	2SA720 (R or S)
HE07	HT107202A	2SA720 (R or S)
HE08	HT107202A	2SA720 (R or S)
HE09	HT313283A	2SC1328 (S, T or U)
HE10	HT313283A	2SC1328 (S, T or U)
HE11	HT313283A	2SC1328 (S, T or U)
HE12	HT313283A	2SC1328 (S, T or U)
HE13	HT107223A	2SA722 (S, T or U)
HE14	HT107223A	2SA722 (S, T or U)
HE15	HT107223A	2SA722 (S, T or U)
HE16	HT107223A	2SA722 (S, T or U)

REF. DESIG.	MARANTZ PART NO.	DESCRIPTION
		MISCELLANEOUS
JE01 ~ JE30	YP1000113	Plug
P500	YD2889004	P.W. Board, Vari-Matrix
	ZZ2889004	P.W. Board Ass'y
		RESISTORS
		All resistors are ±5% and ¼W.
R501	RT0515414	150KΩ
R502	RT0515414	150KΩ
R503	RT0556314	56KΩ
R504	RT0556314	56KΩ
R505	RT0522414	220KΩ
R506	RT0522414	220KΩ
R507	RT0533414	330KΩ
R508	RT0533414	330KΩ
R509	RT0556214	5.6KΩ
R510	RT0556214	5.6KΩ
R511	RT0556214	5.6KΩ
R512	RT0556214	5.6KΩ
R513	RT0568214	6.8KΩ
R514	RT0568214	6.8KΩ
R515	RT0568214	6.8KΩ
R516	RT0568214	6.8KΩ
R517	RT0547314	47KΩ
R518	RT0547314	47KΩ
R519	RT0547314	47KΩ
R520	RT0547314	47KΩ
R521	RT0547414	470KΩ
R522	RT0547414	470KΩ
R523	RT0568314	68KΩ
R524	RT0568314	68KΩ
R525	RT0512514	1.2MΩ
R526	RT0512514	1.2MΩ
R527	RT0510214	1KΩ
R528	RT0510214	1KΩ
R529	RT0522314	22KΩ
R530	RT0522314	22KΩ
R531	RT0515314	15KΩ
R532	RT0515314	15KΩ
R533	RT0510414	100KΩ
R534	RT0510414	100KΩ
R535	RT0510214	1KΩ
R536	RT0510214	1KΩ
R537	RT0522114	220Ω
		MISCELLANEOUS
J501 ~ J513	YP1000113	Plug
		CAPACITORS
C501	EE4740501	Electroly, 0.47μF, 50V ±20%
C502	EE4740501	Electroly, 0.47μF, 50V ±20%
C503	EE3350501	Electroly, 3.3μF, 50V ±20%
C504	EE3350501	Electroly, 3.3μF, 50V ±20%
C505	EE3350501	Electroly, 3.3μF, 50V ±20%
C506	EE3350501	Electroly, 3.3μF, 50V ±20%
C507	DF1647305	Film, 0.047μF ±10%
C508	DF1647305	Film, 0.047μF ±10%
C509	DF1647305	Film, 0.047μF ±10%
C510	DF1647305	Film, 0.047μF ±10%

REF. DESIG.	MARANTZ PART NO.	DESCRIPTION
C511	EE3350501	Electroly, 3.3μF, 50V ± 20%
C512	EE3350501	Electroly, 3.3μF, 50V ± 20%
C513	EE3350501	Electroly, 3.3μF, 50V ± 20%
C514	EE3350501	Electroly, 3.3μF, 50V ± 20%
C515	EA2260359	Electroly, 22μF, 35V
C516	EA2260359	Electroly, 22μF, 35V
C517	DD1650101	Ceramic, 500PF ± 10%
C518	DD1650101	Ceramic, 500PF ± 10%
C519	EA1070359	Electroly, 100μF, 35V
		TRANSISTORS
H501	HT313272A	2SC1327 (S or T)
H502	HT313272A	2SC1327 (S or T)
H503	HT313272A	2SC1327 (S or T)
H504	HT313272A	2SC1327 (S or T)
H505	HT106401L	2SA640 (L)
H506	HT106401L	2SA640 (L)
P600	YD2886008	P.W. Board, Dolby
	ZZ2886008	P.W. Board Ass'y
		RESISTORS
		All resistors are ±5% and ¼W, unless otherwise indicated.
R601	RT0547414	470KΩ
R602	RT0547414	470KΩ
R603	RT0510414	100KΩ
R604	RT0510414	100KΩ
R605	RT0533214	3.3KΩ
R606	RT0533214	3.3KΩ
R607	RT0562114	620Ω
R608	RT0562114	620Ω
R609	RT0539314	39KΩ
R610	RT0539314	39KΩ
R611	RT0568214	6.8KΩ
R612	RT0568214	6.8KΩ
R613	RT0510114	100Ω
R614	RT0510114	100Ω
R615	RT0522214	2.2KΩ
R616	RT0522214	2.2KΩ
R617	RT0512114	120Ω
R618	RT0512114	120Ω
R619	RT0556114	560Ω
R620	RT0556114	560Ω
R621	RT0533314	33KΩ
R622	RT0533314	33KΩ
R623	RT0515414	150KΩ
R624	RT0515414	150KΩ
R625	RT0518414	180KΩ
R626	RT0518414	180KΩ
R627	RT0527314	27KΩ
R628	RT0527314	27KΩ
R629	RT0582214	8.2KΩ
R630	RT0582214	8.2KΩ
R631	RT0515414	150KΩ
R632	RT0515414	150KΩ
R633	RT0522314	22KΩ
R634	RT0522314	22KΩ
R635	RT0527214	2.7KΩ
R636	RT0527214	2.7KΩ
R637	RT0533314	33KΩ
R638	RT0533314	33KΩ
R639	RT0547314	47KΩ
R640	RT0547314	47KΩ

REF. DESIG.	MARANTZ PART NO.	DESCRIPTION
R643	RT0527414	270KΩ
R644	RT0527414	270KΩ
R645	RT0547314	47KΩ
R646	RT0547314	47KΩ
R647	RT0533214	3.3KΩ
R648	RT0533214	3.3KΩ
R649	RT0515214	1.5KΩ
R650	RT0515214	1.5KΩ
R651	RT0522314	22KΩ
R652	RT0522314	22KΩ
R653	RA0103022	Variable, 10KΩ (B)
R654	RA0103022	Variable, 10KΩ (B)
R655	RT0527214	2.7KΩ
R656	RT0527214	2.7KΩ
R657	RT0568414	680KΩ
R658	RT0568414	680KΩ
R659	RA0102020	Variable, 1KΩ (B)
R660	RA0102020	Variable, 1KΩ (B)
R661	RT0515314	15KΩ
R662	RT0515314	15KΩ
R663	RT0582214	8.2KΩ
R664	RT0582214	8.2KΩ
R665	RT0510314	10KΩ
R666	RT0510314	10KΩ
R667	RT0582214	8.2KΩ
R668	RT0582214	8.2KΩ
R669	RT0582214	8.2KΩ
R670	RT0582214	8.2KΩ
R671	RT0533314	33KΩ
R672	RT0533314	33KΩ
R673	RT0512414	120KΩ
R674	RT0512414	120KΩ
R675	RT0547314	47KΩ
R676	RT0547314	47KΩ
R677	RT0527214	2.7KΩ
R678	RT0527214	2.7KΩ
R679	RT0510214	1KΩ
R680	RT0510214	1KΩ
R681	RT0533014	33Ω
R682	RT0533014	33Ω
R683	RT0547014	47Ω
R684	RT0547014	47Ω
R685	RT0515314	15KΩ
R686	RT0515314	15KΩ
R687	RT0527414	270KΩ
R688	RT0527414	270KΩ
R689	RT0527414	270KΩ
R690	RT0527414	270KΩ
R691	RT0522414	220KΩ
R692	RT0522414	220KΩ
R693	RC1010112	100Ω
		CAPACITORS
C601	EE3350251	Electroly, 3.3μF, 25V
C602	EE3350251	Electroly, 3.3μF, 25V
C603	DF6610101	Film, 100PF ± 10%
C604	DF6610101	Film, 100PF ± 10%
C605	DF1510205	Film, 1000PF ± 5%
C606	DF1510205	Film, 1000PF ± 5%
C607	EA1060169	Electroly, 10μF, 16V
C608	EA1060169	Electroly, 10μF, 16V
C609	EA1060169	Electroly, 10μF, 16V
C610	EA1060169	Electroly, 10μF, 16V

REF. DESIG.	MARANTZ PART NO.	DESCRIPTION
C611	EA1060169	Electroly, 10μF, 16V
C612	EA1060169	Electroly, 10μF, 16V
C613	EA1060169	Electroly, 10μF, 16V
C614	EA1060169	Electroly, 10μF, 16V
C615	DD1582001	Ceramic, 82PF ± 5%
C616	DD1582001	Ceramic, 82PF ± 5%
C617	DF1556205	Film, 5600PF ± 5%
C618	DF1556205	Film, 5600PF ± 5%
C619	DF1527305	Film, 0.027μF ± 5%
C620	DF1527305	Film, 0.027μF ± 5%
C621	DF1547205	Film, 4700PF ± 5%
C622	DF1547205	Film, 4700PF ± 5%
C623	EA1060169	Electroly, 10μF, 16V
C624	EA1060169	Electroly, 10μF, 16V
C625	DF1610405	Film, 0.1μF ± 10%
C626	DF1610405	Film, 0.1μF ± 10%
C627	EA4760109	Electroly, 47μF, 10V
C628	EA4760109	Electroly, 47μF, 10V
C629	DF1610405	Film, 0.1μF ± 10%
C630	DF1610405	Film, 0.1μF ± 10%
C631	EA1060169	Electroly, 10μF, 16V
C632	EA1060169	Electroly, 10μF, 16V
C633	DF1610405	Film, 0.1μF ± 10%
C634	DF1610405	Film, 0.1μF ± 10%
C635	EA1060169	Electroly, 10μF, 16V
C636	EA1060169	Electroly, 10μF, 16V
C637	DF1610405	Film, 0.1μF ± 10%
C638	DF1610405	Film, 0.1μF ± 10%
C639	DF1633405	Film, 0.33μF ± 10%
C640	DF1633405	Film, 0.33μF ± 10%
C641	EA2270259	Electroly, 220μF, 25V
		COILS
L601	LC2226004	Choke Coil, 22mH
L602	LC2226004	Choke Coil, 22mH
		MISCELLANEOUS
J601 ~ J608	YP1000109	Plug
J611 ~ J612	YP1000109	Plug
J615 ~ J621	YP1000109	Plug
		SEMICONDUCTORS
H601	HT306441B	Transistor, 2SC644 (S)
H602	HT306441B	Transistor, 2SC644 (S)
H603	HT306441B	Transistor, 2SC644 (S)
H604	HT306441B	Transistor, 2SC644 (S)
H605	HT104941C	Transistor, 2SA494 (Y)
H606	HT104941C	Transistor, 2SA494 (Y)
H607	HT306441B	Transistor, 2SC644 (S)
H608	HT306441B	Transistor, 2SC644 (S)
H609	HT306441B	Transistor, 2SC644 (S)
H610	HT306441B	Transistor, 2SC644 (S)
H611	HF200301E	Transistor, 2SK30 (D)
H612	HF200301E	Transistor, 2SK30 (D)
H613	HT306441B	Transistor, 2SC644 (S)
H614	HT306441B	Transistor, 2SC644 (S)
H615	HT104941C	Transistor, 2SA494 (Y)

REF. DESIG.	MARANTZ PART NO.	DESCRIPTION
H616	HT104941C	Transistor, 2SA494 (Y)
H617	HT306441B	Transistor, 2SC644 (S)
H618	HT306441B	Transistor, 2SC644 (S)
H621	HD1000105	Diode, 1N60
H622	HD1000105	Diode, 1N60
H623	HD2000121	Diode, 1S2473
H624	HD2000121	Diode, 1S2473
H625	HD3003109	Diode, WZ-081
H626	HD2000121	Diode, 1S2473
H627	HD2000121	Diode, 1S2473
H628	HD2000121	Diode, 1S2473
H629	HD2000121	Diode, 1S2473
		MISCELLANEOUS
1431	288616003	Bracket
1432	288616004	Bracket x 2
1433	515703058	P.H. Tapt Screw x 4
1434	51100304S	B.H.M. Screw x 4
3936	54050300R	T.L. Washer OR x 2
PL01	YD2886009	P.W. Board, Dolby, Tone & Meter
	ZZ2886009	P.W. Board Ass'y
		RESISTORS
		All resistors are ±5% and ¼W, unless otherwise indicated.
RL01	RT0533214	3.3KΩ
RL02	RT0547314	47KΩ
RL03	RT0510114	100Ω
RL04	RT0533214	3.3KΩ
RL05	RT0510214	1KΩ
RL06	RT0512314	12KΩ
RL07	RT0547314	47KΩ
RL08	RC1010212	1KΩ ± 10%, ½W
RL09	RT0547214	4.7KΩ
RL10	RT0510214	1KΩ
RL11	RA0501012	Trimming, 500Ω (B)
RL12	RA0502019	Trimming, 5KΩ (B)
RL13	RT0556314	56KΩ
RL14	RT0556314	56KΩ
RL15	RT0547214	4.7KΩ
RL16	RT0533314	33KΩ
RL20	RT0568414	680KΩ
RL21	RT0568414	680KΩ
RL22	RT0533414	330KΩ
RL23	RT0533414	330KΩ
RL24	RT0533214	3.3KΩ
RL25	RT0533214	3.3KΩ
RL26	RT0515214	1.5KΩ
RL27	RT0515214	1.5KΩ
RL28	RA0152004	Trimming, 1.5KΩ (B)
RL29	RA0152004	Trimming, 1.5KΩ (B)
		CAPACITORS
CL01	DF1515305	Film, 0.015μF ± 5%
CL02	DF1515305	Film, 0.015μF ± 5%
CL03	DF1668301	Film, 0.068μF ± 10%
CL04	DF1710402	Film, 0.1μF ± 20%
CL05	EA1060169	Electroly, 10μF, 16V
CL06	EA1060169	Electroly, 10μF, 16V
CL07	EA1060169	Electroly, 10μF, 16V
CL10	EA1060169	Electroly, 10μF, 16V

REF. DESIG.	MARANTZ PART NO.	DESCRIPTION
CL11	EA1060169	Electroly, 10μF, 16V
CL12	EA1060169	Electroly, 10μF, 16V
CL13	EA1060169	Electroly, 10μF, 16V
CL14	EA3360359	Electroly, 33μF, 35V
		SEMICONDUCTORS
HL01	HT307331C	Transistor, 2SC733 (GR)
HL02	HT307331C	Transistor, 2SC733 (GR)
HL03	HT307331C	Transistor, 2SC733 (GR)
HL06	HT307331C	Transistor, 2SC733 (GR)
HL07	HT307331C	Transistor, 2SC733 (GR)
HL08	HD1000105	Diode, 1N60
HL09	HD1000105	Diode, 1N60
HL10	HD1000105	Diode, 1N60
HL11	HD1000105	Diode, 1N60
		MISCELLANEOUS
JL01 ≀ JL09	YP1000113	Plug
1821	51100306S	B.H.M. Screw x 8
1827	51100204A	B.H.M. Screw x 4
P700	YD2890004	P.W. Board, Main Amp. x 2
	ZZ2889104	P.W. Board Ass'y x 2
		RESISTORS **All resistors are ±5% and ¼W, unless otherwise indicated.**
R701	RT0513214	1.3KΩ x 2
R702	RT0513214	1.3KΩ x 2
R703	RT0533314	33KΩ x 2
R704	RT0533314	33KΩ x 2
R705	RT0568214	6.8KΩ x 2
R706	RT0568214	6.8KΩ x 2
R707	RT0510214	1KΩ x 2
R708	RT0510214	1KΩ x 2
R709	RT0533314	33KΩ x 2
R710	RT0533314	33KΩ x 2
R711	RT0515314	15KΩ x 2
R712	RT0515314	15KΩ x 2
R713	RA0502017	Trimming, 5KΩ (B) x 2
R714	RA0502017	Trimming, 5KΩ (B) x 2
R715	RT0522414	220KΩ x 2
R716	RT0522414	220KΩ x 2
R717	RT0513214	1.3KΩ x 2
R718	RT0513214	1.3KΩ x 2
R719	RT0533314	33KΩ x 2
R720	RT0533314	33KΩ x 2
R721	RC1010212	1KΩ ± 10%, ½W x 2
R722	RC1018212	1.8KΩ ± 10%, ½W x 2
R723	RC1018212	1.8KΩ ± 10%, ½W x 2
R724	RC1047212	4.7KΩ ± 10%, ½W x 2
R725	RC1047212	4.7KΩ ± 10%, ½W x 2
R728	RT0512114	120Ω x 2
R729	RT0512114	120Ω x 2
R730	RC1033012	33Ω ± 10%, ½W x 2
R731	RC1033012	33Ω ± 10%, ½W x 2
R732	GF0515114	150Ω x 2

REF. DESIG.	MARANTZ PART NO.	DESCRIPTION
R733	GF0515114	150Ω x 2
R734	GF0515114	150Ω x 2
R735	GF0515114	150Ω x 2
R736	GF0510214	1KΩ x 2
R737	GF0510214	1KΩ x 2
R738	GF0510214	1KΩ x 2
R739	GF0510214	1KΩ x 2
R740	RT0520214	2KΩ x 2
R741	RT0520214	2KΩ x 2
R742	GF0510112	100Ω ± 5%, ½W x 2
R743	GF0510112	100Ω ± 5%, ½W x 2
R744	GF0510112	100Ω ± 5%, ½W x 2
R745	GF0510112	100Ω ± 5%, ½W x 2
R746	GT0510002	10Ω ± 5%, 2W x 2
R747	GT0510002	10Ω ± 5%, 2W x 2
R748	GF0510012	10Ω ± 5%, ½W x 2
R749	GF0510012	10Ω ± 5%, ½W x 2
R750	GF0522112	220Ω ± 5%, ½W x 2
R751	GF0522112	220Ω ± 5%, ½W x 2
R752	GF0510012	10Ω ± 5%, ½W x 2
R753	GF0510012	10Ω ± 5%, ½W x 2
R754	GF0522112	220Ω ± 5%, ½W x 2
R755	GF0522112	220Ω ± 5%, ½W x 2
R756	RW1000503	0.5Ω ± 10%, 3W x 2
R757	RW1000503	0.5Ω ± 10%, 3W x 2
R758	RW1000503	0.5Ω ± 10%, 3W x 2
R759	RW1000503	0.5Ω ± 10%, 3W x 2
R760	RC1039212	3.9KΩ ± 10%, ½W x 2
R761	RC1039212	3.9KΩ ± 10%, ½W x 2
R762	RC1010112	100Ω ± 10%, ½W x 2
R763	RC1010112	100Ω ± 10%, ½W x 2
R764	RC1002212	2.2Ω ± 10%, ½W x 2
R765	RC1002212	2.2Ω ± 10%, ½W x 2
R766	RA0101002	Trimming, 100Ω (B) x 2
R767	RA0101002	Trimming, 100Ω (B) x 2
		MISCELLANEOUS
J701 ≀ J726	YP1000113	Plug x 2
		CAPACITORS
C701	EE3350251	Electroly, 3.3μF, 25V x 2
C702	EE3350251	Electroly, 3.3μF, 25V x 2
C703	DD1620101	Ceramic, 200PF ± 10% x 2
C704	DD1620101	Ceramic, 200PF ± 10% x 2
C705	EA1060359	Electroly, 10μF, 35V x 2
C707	DD1003050	Ceramic, 3PF, 500V x 2
C708	DD1003050	Ceramic, 3PF, 500V x 2
C709	EA4760509	Electroly, 47μF, 50V x 2
C710	EA4760509	Electroly, 47μF, 50V x 2
C711	EE4760162	Electroly, 47μF, 16V x 2
C712	EE4760162	Electroly, 47μF, 16V x 2
C713	ED2270509	Electroly, 220μF, 50V x 2
C714	ED2270509	Electroly, 220μF, 50V x 2
C715	DF1768301	Film, 0.068μF ± 20% x 2
C716	DF1768301	Film, 0.068μF ± 20% x 2
C717	DF1710301	Film, 0.01μF ± 20% x 2
C718	DF1710301	Film, 0.01μF ± 20% x 2
C719	DK1610150	Ceramic, 100PF ± 10% x 2
C720	DK1610150	Ceramic, 100PF ± 10% x 2
C721	DF1710452	Film, 0.1μF ± 20%, 200V x 2
C722	DF1710452	Film, 0.1μF ± 20%, 200V x 2
C723	DF1710301	Film, 0.01μF ± 20% x 2

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REF. DESIG.	MARANTZ PART NO.	DESCRIPTION
C724	DF1710301	Film, 0.01μF ± 20% x 2
C725	DD1610101	Ceramic, 100PF ± 10% x 2
C726	DD1610101	Ceramic, 100PF ± 10% x 2
		SEMICONDUCTORS
H701	HT107631B	Transistor, 2SA763 (B) x 2
H702	HT107631B	Transistor, 2SA763 (B) x 2
H703	HT107631B	Transistor, 2SA763 (B) x 2
H704	HT107631B	Transistor, 2SA763 (B) x 2
H705	HT308753B	Transistor, 2SC875 (C, D, E) x 2
H706	HT308753B	Transistor, 2SC875 (C, D, E) x 2
H707	HT309451Q	Transistor, 2SC945 (Q) x 2
H708	HT309451Q	Transistor, 2SC945 (Q) x 2
H709	HT107331Q	Transistor, 2SA733 (Q) x 2
H710	HT107331Q	Transistor, 2SA733 (Q) x 2
H711	HT309601L	Transistor, 2SC960 (L) x 2
H712	HT309601L	Transistor, 2SC960 (L) x 2
H713	HT106071L	Transistor, 2SA607 (L) x 2
H714	HT106071L	Transistor, 2SA607 (L) x 2
H715	HD3003009	Diode, WZ-177 x 2
H716	HV0000312	Varistor, MV-13 x 2
H717	HV0000312	Varistor, MV-13 x 2
H718	HD2000121	Diode, 1S2473C x 2
H719	HD2000121	Diode, 1S2473C x 2
H720	HT307351C	Transistor, 2SC735 x 2
H721	HT307351C	Transistor, 2SC735 x 2
H722	HD2000221	Diode, 1S2472 x 2
H723	HD2000221	Diode, 1S2472 x 2
H724	HD2000221	Diode, 1S2472 x 2
H725	HD2000221	Diode, 1S2472 x 2
H727	HH0000812	Thermistor, 21D28 x 2
H728	HH0000812	Thermistor, 21D28 x 2
		COILS
L701	LL2391512	Choke Coil
L702	LL2391512	Choke Coil
		MISCELLANEOUS
1811	281811806	Spacer x 12
1803	289026701	Heat-Sink x 2
1805	289016003	Bracket x 4
1807	281810104	Support x 8
1823	51100314E	B.H.M. Screw x 16
1825	51380306T	R.H. Tap Screw x 8
H001 ~ H008	HT303971B	Transistor, 2SC897 (B)
J023 ~ J030	YJ0500019	Socket
H009	HV0000308	Varistor, SV-02
H010	HV0000308	Varistor, SV-02
H011	HV0000308	Varistor, SV-02
H012	HV0000308	Varistor, SV-02
1809	289026703	Heat-Sink x 4

REF. DESIG.	MARANTZ PART NO.	DESCRIPTION
PM01	YD2890008	P.W. Board, B.T.L.
	ZZ2889108	P.W. Board Ass'y
		RESISTORS
		All resistors are ±5% and ¼W.
RM01	RT0533114	330Ω
RM02	RT0533114	330Ω
RM03	RN0533414	330KΩ
RM04	RN0533414	330KΩ
RM05	RN0515414	150KΩ
RM06	RN0515414	150KΩ
RM07	RT0582314	82KΩ
RM08	RT0582314	82KΩ
RM09	RT0568214	6.8KΩ
RM10	RT0568214	6.8KΩ
RM11	RT0551214	5.1KΩ
RM12	RT0551214	5.1KΩ
RM13	RT0547414	470KΩ
RM14	RT0547414	470KΩ
RM15	RT0533114	330Ω
RM16	RT0547414	470KΩ
RM17	RT0547414	470KΩ
		ELECTROLY CAPACITORS
CM01	EE3350501	3.3μF, 50V
CM02	EE3350501	3.3μF, 50V
CM03	EE3350501	3.3μF, 50V
CM04	EE3350501	3.3μF, 50V
CM05	EA1070359	100μF, 35V
		TRANSISTORS
HM01	HT313451D	2SC1345 (D)
HM02	HT107632A	2SA763 (4, 5)
HM03	HT313451D	2SC1345 (D)
HM04	HT107632A	2SA763 (4, 5)
		MISCELLANEOUS
JM01 ~ JM13	YP1000113	Plug
5436	51100306S	B.H.M. Screw x 2
5437	62031650W	Lug x 2
P800	YD2890005	P.W. Board, Power Supply
	ZZ2889105	P.W. Board Ass'y
		RESISTORS
		All resistors are ±5% and ¼W, unless otherwise indicated.
R801	GF0510012	10Ω ± 5%, ½W
R802	RT0547214	4.7KΩ
R803	RT0547214	4.7KΩ
R804	RT0539214	3.9KΩ
R805	RT0527314	27KΩ
R806	RT0556214	5.6KΩ
R807	RA0502013	Trimming, 4.7KΩ (B)
R808	GS1015105	150Ω ± 10%, 5W
R809	RC1050012	50Ω ± 10%, ½W
R810	RT0510014	10Ω
R811	RT0533214	3.3KΩ
R812	RT0522314	22KΩ
R813	RT0510314	10KΩ

REF. DESIG.	MARANTZ PART NO.	DESCRIPTION
R814	RT0568214	6.8KΩ
R815	RT0518414	180KΩ
R816	RT0539314	39KΩ
R817	RT0547214	4.7KΩ
R818	GJ0527102	270Ω ±5%, 2W
		CAPACITORS
C801	EA4770631	Electroly, 470μF, 63V
C802	EA3370631	Electroly, 330μF, 63V
C803	EA2270509	Electroly, 220μF, 50V
C804	EA2260359	Electroly, 22μF, 35V
C805	EA3370509	Electroly, 330μF, 50V
C806	EA3360509	Electroly, 33μF, 50V
C807	EA4760169	Electroly, 47μF, 16V
C808	EA2270109	Electroly, 220μF, 10V
C809	DK1810351	Ceramic, 0.01μF, 500V
C810	DK1810351	Ceramic, 0.01μF, 500V
C811	DK1810351	Ceramic, 0.01μF, 500V
C812	DK1810351	Ceramic, 0.01μF, 500V
C813	DF2722350	Film, 0.022μF, 400V
C814	DF2722350	Film, 0.022μF, 400V
C815	DF1747305	Film, 0.047μF, 50V
C816	EA4770169	Electroly, 470μF, 16V
		SEMICONDUCTORS
H801	HT403314A	Transistor, 2SD331 (C, D, E, F)
H802	HT309452A	Transistor, 2SC945 (Q, R)
H803	HT309452A	Transistor, 2SC945 (Q, R)
H804	HT403314A	Transistor, 2SD331 (C, D, E, F)
H805	HT309452A	Transistor, 2SC945 (Q, R)
H806	HT309452A	Transistor, 2SC945 (Q, R)
H807	HT313182R	Transistor, 2SC1318 (R, S)
H808	HD2000413	Diode, SIB01-02
H809	HD2000413	Diode, SIB01-02
H810	HD2000413	Diode, SIB01-02
H811	HD2000413	Diode, SIB01-02
H812	HD2000701	Diode, U-12C
H813	HD2000601	Diode, U-11C
H814	HD2000701	Diode, U-12C
H815	HD2000601	Diode, U-11C
H816	HD3002309	Diode, WZ-071
H817	HD3002709	Diode, WZ-140
		MISCELLANEOUS
J801 ~ J820	YP1000113	Plug
J821	YJ0800017	Socket
J822	YJ0800017	Socket
J823	YP1000113	Plug
F801	FS1003002	Fuse, 0.3A
1312	289026702	Heat-Sink
0903	288616050	Bracket
0909	288612201	Sticker
0913	257710602	Bearing
0914	141511801	Spacer
0915	51040306A	F.H.M. Screw x 2
0920	51100306S	B.H.M. Screw x 3

REF. DESIG.	MARANTZ PART NO.	DESCRIPTION
0927	51100305A	B.H.M. Screw x 2
0933	51102604A	B.H.M. Screw x 2
1003	281816003	Bracket
1004	281816004	Bracket
1005	51100406A	B.H.M. Screw x 4
1011	51102605A	B.H.M. Screw x 6
1012	51060305A	B.H.M. Screw x 8
1131	51042608A	F.H.M. Screw x 2
1221	51570306B	P.H. Tapt Screw x 2
1222	54050300R	T.L. Washer OR x 2
1225	288610701	Sheet x 2
1616	51470306A	Hexagon Nut x 2
1708	281912004	Insulator
1721	287105302	Cover x 2
M004	IM1104209	DC Meter, Signal Dolby
M005	IM1104202	DC Meter, Center
C003	EA3360109	Electroly Cap., 33μF, 10V
PJ01	YD2883003	P.W. Board, Tone Volume
	ZZ2883003	P.W. Board Ass'y
		RESISTORS **All resistors are ±5% and ¼W, unless otherwise indicated.**
RJ01	RU0204001	Variable, 200KΩ (B)
RJ02	RU0204001	Variable, 200KΩ (B)
RJ03	RU0204001	Variable, 200KΩ (B)
RJ04	RT0527314	27KΩ
RJ05	RT0527314	27KΩ
RJ06	RT0527314	27KΩ
RJ07	RT0527314	27KΩ
RJ08	RT0527314	27KΩ
RJ09	RT0527314	27KΩ
RJ10	RT0527314	27KΩ
RJ11	RT0527314	27KΩ
RJ12	RT0527314	27KΩ
RJ13	RT0527314	27KΩ
RJ14	RT0527314	27KΩ
RJ15	RT0527314	27KΩ
RJ16	RT0527314	27KΩ
RJ17	RT0527314	27KΩ
RJ18	RT0527314	27KΩ
RJ19	RT0527314	27KΩ
RJ20	RT0510314	10KΩ
RJ21	RT0510314	10KΩ
RJ22	RT0510314	10KΩ
RJ23	RT0510314	10KΩ
RJ24	RT0510314	10KΩ
RJ25	RT0510314	10KΩ
RJ26	RT0510314	10KΩ
RJ27	RT0510314	10KΩ
RJ28	RT0568214	6.8KΩ
RJ29	RT0568214	6.8KΩ
RJ30	RT0568214	6.8KΩ
RJ31	RT0568214	6.8KΩ
RJ32	RT0510314	10KΩ

REF. DESIG.	MARANTZ PART NO.	DESCRIPTION
RJ33	RT0510314	10KΩ
RJ34	RT0510314	10KΩ
RJ35	RT0510314	10KΩ
RJ36	RT0562414	620KΩ
RJ37	RT0562414	620KΩ
RJ38	RT0562414	620KΩ
RJ39	RT0562414	620KΩ
RJ40	RT0547414	470KΩ
RJ41	RT0547414	470KΩ
RJ42	RT0547414	470KΩ
RJ43	RT0547414	470KΩ
		CAPACITORS
CJ01	DF1615305	Film, 0.015μF ±10%
CJ02	DF1615305	Film, 0.015μF ±10%
CJ03	DF1615305	Film, 0.015μF ±10%
CJ04	DF1615305	Film, 0.015μF ±10%
CJ05	DF1615305	Film, 0.015μF ±10%
CJ06	DF1615305	Film, 0.015μF ±10%
CJ07	DF1615305	Film, 0.015μF ±10%
CJ08	DF1615305	Film, 0.015μF ±10%
CJ09	DF1656205	Film, 5600PF ±10%
CJ10	DF1656205	Film, 5600PF ±10%
CJ11	DF1656205	Film, 5600PF ±10%
CJ12	DF1656205	Film, 5600PF ±10%
CJ13	DF1612205	Film, 1200PF ±10%
CJ14	DF1612205	Film, 1200PF ±10%
CJ15	DF1612205	Film, 1200PF ±10%
CJ16	DF1612205	Film, 1200PF ±10%
CJ17	DF1633205	Film, 3300PF ±10%
CJ18	DF1633205	Film, 3300PF ±10%
CJ19	DF1633205	Film, 3300PF ±10%
CJ20	DF1633205	Film, 3300PF ±10%
CJ21	DD1650001	Ceramic, 50PF ±10%
CJ22	DD1650001	Ceramic, 50PF ±10%
CJ23	DD1650001	Ceramic, 50PF ±10%
CJ24	DD1650001	Ceramic, 50PF ±10%
		MISCELLANEOUS
1016	288310401	Retainer
1017	51102605A	B.H.M. Screw
PD01	YD2889002	P.W. Board, Tone Amp.
	ZZ2889002	P.W. Board Ass'y
		RESISTORS
		All resistors are ±5% and ¼W, unless otherwise indicated.
RD01	RN1022514	2.2MΩ ±10%, ¼W
RD02	RN1022514	2.2MΩ ±10%, ¼W
RD03	RN1022514	2.2MΩ ±10%, ¼W
RD04	RN1022514	2.2MΩ ±10%, ¼W
RD05	RT0568314	68KΩ
RD06	RT0568314	68KΩ
RD07	RT0568314	68KΩ
RD08	RT0568314	68KΩ
RD09	RT0547314	47KΩ
RD10	RT0547314	47KΩ
RD11	RT0547314	47KΩ
RD12	RT0547314	47KΩ
RD13	RT0510314	10KΩ
RD14	RT0510314	10KΩ
RD15	RT0510314	10KΩ

REF. DESIG.	MARANTZ PART NO.	DESCRIPTION
RD16	RT0510314	10KΩ
RD17	RT0539114	390Ω
RD18	RT0539114	390Ω
RD19	RT0539114	390Ω
RD20	RT0539114	390Ω
RD21	RT0510414	100KΩ
RD22	RT0510414	100KΩ
RD23	RT0510414	100KΩ
RD24	RT0510414	100KΩ
		ELECTROLY CAPACITORS
CD01	EV1050256	1μF, 25V
CD02	EV1050256	1μF, 25V
CD03	EV1050256	1μF, 25V
CD04	EV1050256	1μF, 25V
CD05	EV3350356	3.3μF, 35V
CD06	EV3350356	3.3μF, 35V
CD07	EV3350356	3.3μF, 35V
CD08	EV3350356	3.3μF, 35V
CD09	EQ4750161	4.7μF, 16V
CD10	EQ4750161	4.7μF, 16V
CD11	EQ4750161	4.7μF, 16V
CD12	EQ4750161	4.7μF, 16V
		TRANSISTORS
HD01	HT313283A	2SC1328 (S, T or U)
HD02	HT313283A	2SC1328 (S, T or U)
HD03	HT313283A	2SC1328 (S, T or U)
HD04	HT313283A	2SC1328 (S, T or U)
HD05	HT107223A	2SA722 (S, T or U)
HD06	HT107223A	2SA722 (S, T or U)
HD07	HT107223A	2SA722 (S, T or U)
HD08	HT107223A	2SA722 (S, T or U)
		MISCELLANEOUS
JD01 ~ JD06	YP1000113	Plug
JD07	YP1000114	Plug
PH01	YD2890007	P.W. Board, Filter
	ZZ2889107	P.W. Board Ass'y
		RESISTORS
		All resistors are ±5% and ¼W.
RH01	RT0539214	3.9KΩ
RH02	RT0539214	3.9KΩ
RH03	RT0539214	3.9KΩ
RH04	RT0539214	3.9KΩ
RH05	RT0522314	22KΩ
RH06	RT0522314	22KΩ
RH07	RT0522314	22KΩ
RH08	RT0522314	22KΩ
RH09	RT0510514	1MΩ
RH10	RT0510514	1MΩ
RH11	RT0510514	1MΩ
RH12	RT0510514	1MΩ
RH13	RT0547214	4.7KΩ
RH14	RT0547214	4.7KΩ
RH15	RT0547214	4.7KΩ

REF. DESIG.	MARANTZ PART NO.	DESCRIPTION
RH16	RT0547214	4.7KΩ
		CAPACITORS
CH01	EM1040251	Electroly, 0.1μF ± 20%, 25V
CH02	EM1040251	Electroly, 0.1μF ± 20%, 25V
CH03	EM1040251	Electroly, 0.1μF ± 20%, 25V
CH04	EM1040251	Electroly, 0.1μF ± 20%, 25V
CH05	DK1668101	Ceramic, 680PF ± 10%
CH06	DK1668101	Ceramic, 680PF ± 10%
CH07	DK1668101	Ceramic, 680PF ± 10%
CH08	DK1668101	Ceramic, 680PF ± 10%
CH09	DF1682205	Film, 0.0082μF ± 10%
CH10	DF1682205	Film, 0.0082μF ± 10%
CH11	DF1682205	Film, 0.0082μF ± 10%
CH12	DF1682205	Film, 0.0082μF ± 10%
		MISCELLANEOUS
SH01	SP0406002	Pushswitch
JH01 ~ JH07	YP1000113	Plug
PT01	YD2886011	P.W. Board, Tape Switch
	ZZ2886011	P.W. Board Ass'y
		RESISTORS
RT01	RT0510214	1KΩ ± 5%, ¼W
RT02	RT0510214	1KΩ ± 5%, ¼W
RT03	RT0510214	1KΩ ± 5%, ¼W
RT04	RT0510214	1KΩ ± 5%, ¼W
		MISCELLANEOUS
ST01	SP0802001	Push Switch
JT01 ~ JT06	YP1000113	Plug
PY01	YD2888002	P.W. Board, Function Lamp
	ZZ2889202	P.W. Board Ass'y
MY01	IN1006301	Lamp, Dolby
MY02	IN1006301	Lamp, FM
MY03	IN1006301	Lamp, AM
MY04	IN1012011	Lamp, Stereo
MY05	IN1006302	Lamp, 4ch
MY06	IN1006301	Lamp, Tape-1
MY07	IN1006301	Lamp, Phono
MY08	IN1006301	Lamp, AUX
MY09	IN1006301	Lamp, Tape-2
RY01	RC1004712	Resistor, 4.7Ω ± 10%, ½W
JY01 ~ JY15	YP1000113	Plug
1108	288627101	Holder
1109	51570305B	P.H. Tapt Screw x 2
R016	RM0503050	Variable Resistor, 50KΩ (B)

REF. DESIG.	MARANTZ PART NO.	DESCRIPTION
PZ01	YD2886016	P.W. Board, Dial Lamp
	ZZ2889116	P.W. Board Ass'y
MZ01	IN1008007	Lamp, Dial Lamp
MZ02	IN1008007	Lamp, Dial Lamp
MZ03	IN1008007	Lamp, Dial Lamp
MZ04	IN1008007	Lamp, Dial Lamp
MZ05	IN1008007	Lamp, Dial Lamp
JZ01 ~ JZ10	YJ0800017	Socket
JZ11 ~ JZ14	YP1000113	Plug
1105	287127101	Holder
1106	51570305B	P.H. Tapt Screw x 2
PG01	YD2886003	P.W. Board, Balance
	ZZ2886003	P.W. Board Ass'y
		RESISTORS
RG01	RT0533214	33KΩ ± 5%, ¼W
RG02	RT0533214	33KΩ ± 5%, ¼W
RG03	RT0533214	33KΩ ± 5%, ¼W
RG04	RT0533214	33KΩ ± 5%, ¼W
RG05	RX0503006	Variable, 50KΩ (G)
RG06	RX0503006	Variable, 50KΩ (G)
RG07	RS0503017	Variable, 50KΩ (G)
JG01 ~ JG09	YP1000113	Plug
S001	SR1506004	Rotary Switch, Selector
S002	SR1205005	Rotary Switch, Mode
S003	SR2505001	Rotary Switch, Dolby
R021	RG0503002	Variable Resistor, 50KΩ (B)
R010	RK0504010	Variable Resistor, 500KΩ (B) Dolby
R011	RK0504010	Variable Resistor, 500KΩ (B) Dolby
R012	RK0504010	Variable Resistor, 500KΩ (B) Dolby
R013	RK0504010	Variable Resistor, 500KΩ (B) Dolby
0926	288616010	Bracket
S008	SP0801001	Push Switch, 400Hz TONE
0918	288612003	Insulator
J031	YJ0100084	Jack, Head Phone
J032	YJ0100084	Jack, Head Phone
R017	RJ1047001	Resistor, 47Ω ± 10%, 1W
R018	RJ1047001	Resistor, 47Ω ± 10%, 1W
R019	RJ1047001	Resistor, 47Ω ± 10%, 1W
R020	RJ1047001	Resistor, 47Ω ± 10%, 1W

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REF. DESIG.	MARANTZ PART NO.	DESCRIPTION
S009	SP0201009	Push Switch, Meter L/R
1214	288627102	Holder
1215	51570305B	P.H. Tapt Screw x 2
J036	YJ0800019	Jack, Meter Lamp
J037	YJ0800019	Jack, Meter Lamp
M002	IN1008007	Lamp, Meter
M003	IN1008007	Lamp, Meter
1203	288627401	Reflector
1205	288926251	Pulley K
1211	51100305A	B.H.M. Screw x 2
1212	54050300R	T.L. Washer OR x 2
1217	51480306A	B.H.M. Screw F x 2
R009	RT0539214	Resistor, 3.9KΩ ± 5%, ¼W
9336	62031650W	Lug
0931	285310901	Shield
0932	282112001	Insulator
1121	287105102	Guide
1123	288926250	Pulley K
1128	51100305A	B.H.M. Screw x 2
1606	285310650	Bearing K
1611	51640410D	Set Screw C.P.
1612	54040402N	Spring Washer
1613	53110403E	Hexagon Nut
1103	287127401	Reflector
1113	51480306A	B.H.M. Screw F x 2
1116	203912001	Insulator
1111	51100305A	B.H.M. Screw x 2
J018	YJ0700006	Jack, SQ Decoder
1406	285110450	Retainer K
1410	51100310S	B.H.M. Screw x 2
1411	59030805P	Fiber Washer x 2
0513	51100308S	B.H.M. Screw x 16
0514	53110303E	Hexagon Nut x 16
0516	51100306S	B.H.M. Screw x 8
0522	54050400R	T.L. Washer OR
0532	145525903	Bush
0533	145525903	Bush
0616	51100306S	B.H.M. Screw x 3
0619	53228059E	Nut x 3
0620	51100304S	B.H.M. Screw x 2
0622	51100304S	B.H.M. Screw x 2
0623	62031650W	Lug
0631	51100314S	B.H.M. Screw x 2

REF. DESIG.	MARANTZ PART NO.	DESCRIPTION
0632	53110303E	Hexagon Nut x 2
C009	DF1722380	Film Cap. 0.022μF ± 20%, 450VAC
RC05	RK0203030	Variable Resistor, 20KΩ (B)
RC06	RK0203030	Variable Resistor, 20KΩ (B)
R004	RK0203016	Variable Resistor, 20KΩ (B)
J001	YT0304003	Terminal, AM FM Ant
J002	YT0201006	Terminal, Quad Radial
J004	YT0208002	Terminal, Front Tape-1.2
J005	YT0202007	Terminal, Rear AUX
J006	YT0208002	Terminal, Rear Tape-1.2
J008	YT0204003	Terminal, Rear Preout Main In
J042	YL0103021	Terminal, AM PICK UP
J017	YT0101003	Terminal, Ground
J019	YP1000097	Plug, Preout Main In
J020	YP1000097	Plug, Preout Main In
J021	YP1000097	Plug, Preout Main In
J022	YP1000097	Plug, Preout Main In
J033	YJ0800012	Socket, Fuse Holder
J043	YL0103001	Terminal, FM Ant
S007	SS0802007	Slide Switch, Remote Control
L002	LB3007526	Balun Coil, 300Ω ↔ 75Ω
W001	YC0240010	AC Cord, Power Supply
F001	FS1050003	Fuse, 5 AUL
G001	BF1040001	Printed Compo. 120Ω + 0.1μF
L001	LF1120023	ANT Coil, AM
0602	257816052	Bracket K
0607	281927103	Holder
0609	51100310S	B.H.M. Screw x 2
0610	53110301E	Hexagon Nut x 2
0612	51100308S	B.H.M. Screw x 2
0613	53110301E	Hexagon Nut x 2
J039	YJ1100012	Jack
0626	289227103	Holder
0628	51380306P	R.H. Tap Screw x 2
1915	1382000503	Clamper
R022	RC1022512	Resistor, 2.2MΩ ± 10%, ½W
0251	62031650W	Lug
PC01	YD2886014	P.W. Board, Dolby Remote
	ZZ2889114	P.W. Board Ass'y
RC01	RT0522414	Resistor, 220KΩ ± 5%, ¼W
RC02	RT0522414	Resistor, 220KΩ ± 5%, ¼W
RC03	RT0510314	Resistor, 10KΩ ± 5%, ¼W
RC04	RT0510314	Resistor, 10KΩ ± 5%, ¼W
CC01	DF6520201	Film Cap., 2000PF ± 5%

REF. DESIG.	MARANTZ PART NO.	DESCRIPTION
CC02	DF6520201	Film Cap., 2000PF ± 5%
SC01	SS0202017	Slide Switch, 25μs ↔ 75μs
JC01 ~ JC12	YP1000113	Plug
PN01	YD2890006	P.W. Board, SP
	ZZ2890006	P.W. Board Ass'y
JN01 ~ JN12	YP1000113	Plug
		RESISTORS
RN01	RJ1010102	100Ω ± 10%, 2W
RN02	RJ1010102	100Ω ± 10%, 2W
RN03	RJ1010102	100Ω ± 10%, 2W
RN04	RJ1010102	100Ω ± 10%, 2W
RN05	RC1056212	5.6KΩ ± 10%, ½W
RN06	RC1056212	5.6KΩ ± 10%, ½W
RN07	RC1056212	5.6KΩ ± 10%, ½W
RN08	RC1056212	5.6KΩ ± 10%, ½W
RN09	RC1010012	10Ω ± 10%, ½W
RN10	RC1010012	10Ω ± 10%, ½W
HN01	HD2000321	Diode, 1S2471
HN02	HD2000321	Diode, 1S2471
LN01	LY4024003	Relay
LN02	LY4024003	Relay
J009	YT0304005	Terminal, SPK
J010	YT0304005	Terminal, SPK
J011	YT0304005	Terminal, SPK
J012	YT0304005	Terminal, SPK
0517	51100305S	B.H.M. Screw x 6
0518	289016004	Bracket
0519	289016005	Bracket x 2
0520	289012002	Insulator
S005	SR0602010	Rotary Switch, AMP Mode
J003	YT0204003	Terminal, Front Phono, AUX
C004	DK1710301	Ceramic Cap., 0.01μF ± 20%
0851	62031650W	Lug
J007	YT0204003	Terminal, Pre Out, Main In
1418	62041760W	Lug
1425	281912001	Insulator
1429	289010901	Shield
1517	288816004	Bracket
R005	RK0503009	Variable Resistor, 50KΩ (B)
J013	YL0103001	Terminal, 3P
L003	LC1332002	Choke Coil, 3.3μH

REF. DESIG.	MARANTZ PART NO.	DESCRIPTION
C001	DK1710301	Ceramic Cap., 0.01μF ± 20%
1751	138200503	Clamper x 7
0911	285610701	Sheet
1710	288930201	Dial
1423	282100501	Clamper x 3
W002	YW2889001	Wire Material
W003	YX2889001	Wire Material
W004	YW2889101	Wire Material
W005	YX2889101	Wire Material
W006	YW2886002	Wire Material
0411	275905701	Leg x 4
0412	51490410S	B.H.M. Screw FS x 4
1303	288910550	Chassis K
1310	285110101	Support x 4
1311	288810102	Support x 4
1314	288910401	Retainer
1316	51100305S	B.H.M. Screw x 2
1317	51100304S	B.H.M. Screw x 2
1318	51100306S	B.H.M. Screw x 2
1319	51100306S	B.H.M. Screw x 2
1320	51100306S	B.H.M. Screw x 4
1321	51100306S	B.H.M. Screw x 4
1322	51100306S	B.H.M. Screw x 2
1323	51100306S	B.H.M. Screw x 2
1324	51100306S	B.H.M. Screw x 6
1328	51570406B	P.H. Tapt Screw x 5
1330	51570305B	P.H. Tapt Screw x 4
1332	51570306B	P.H. Tapt Screw x 8
1333	51570305B	P.H. Tapt Screw x 2
1334	51570306B	P.H. Tapt Screw x 10
1335	51570306B	P.H. Tapt Screw x 2
1325	51100306S	B.H.M. Screw
1402	285610902	Shield
1403	285610102	Support x 3
1404	281810107	Support
1405	51060304E	P.H.M. Screw x 5
1409	51100303S	B.H.M. Screw x 2
1413	59030805P	Insulator x 2
1416	285310102	Support x 2
1417	54040402N	Spring Washer x 2
1419	51470512A	B.H.M. Screw FS x 4
1420	53110501A	Hexagon Nut x 4
1421	54020501A	Flat Washer P x 4
1422	51570406B	P.H. Tapt Screw
1424	281805601	Buffer
1426	289010101	Support x 2
1427	54040402N	Spring Washer x 2
1430	51570305B	P.H. Tapt Screw x 2
1503	138200503	Clamper x 3
1504	59030810P	Fiber Washer x 2
1507	54050300R	T.L. Washer OR x 8
1509	62031650W	Lug x 5
1511	51570306B	P.H. Tapt Screw x 10
1513	51570306B	P.H. Tapt Screw x 10
1518	51570305B	P.H. Tapt Screw x 2

REF. DESIG.	MARANTZ PART NO.	DESCRIPTION
1519	288916005	Bracket
1525	288910904	Shield
1528	288612004	Insulator
1529	51570305B	P.H. Tapt Screw x 2
1532	288910901	Shield
1533	51570406B	P.H. Tapt Screw
1534	288910902	Shield
1535	51570306B	P.H. Tapt Screw x 3
1506	54040502A	Spring Washer x 4
1903	273010950	Shield K
1911	281916008	Bracket x 2
1913	281905102	Guide
1921	51100306S	B.H.M. Screw x 5
1922	51100305E	B.H.M. Screw x 3
1924	51100305A	B.H.M. Screw x 4
C101	CA4330001	Variable Cap.
J014	YL0102003	Terminal
L007	TS6140402	Power Transformer
C006	EC1590501	Electroly Cap., 15000μF, 50V
C007	EC1590501	Electroly Cap., 15000μF, 50V
0216	288612006	Insulator x 2
0202	285325701	Lid
0203	257711803	Spacer x 4
0204	285605601	Buffer x 4
0217	285015401	Knob x 3
0218	288615403	Knob x 8
0219	281815401	Knob x 2
0220	288615401	Knob x 4
0221	281815403	Knob x 5
0232	288615402	Knob
0215	288611801	Spacer
0214	288911801	Spacer
0302	288926501	Indicator
0309	51100305S	B.H.M. Screw x 2
0311	257886101	Label, UL Caution
0312	257886102	Label, Do not remove . . .
0313	257886103	Label, See marking . . .
0314	250626506	Indicator, Do not use as . . .
0402	51122608B	T.H.M. Screw x 4
0404	51100406S	B.H.M. Screw x 9
0406	51480406S	B.H.M. Screw F x 4
0421	289205502	Collar
0816	56382540G	Eyelet
2851	51100305S	B.H.M. Screw x 2
1329	51570305B	P.H. Tapt Screw x 2
1412	203912001	Insulator
1428	288610902	Shield
1435	51100304S	B.H.M. Screw x 2
1526	288910905	Shield
1602	285011202	Shaft
1603	54040402N	Spring Washer

REF. DESIG.	MARANTZ PART NO.	DESCRIPTION
1702	286726901	Protector
1706	285326902	Protector
1716	51570305B	P.H. Tapt Screw x 2
1719	51100305S	B.H.M. Screw x 2
1704	285326901	Protector
1714	51570305B	P.H. Tapt Screw x 2
1906	288910903	Shield
1923	51100305S	B.H.M. Screw x 2
2002	288985101	Instructions
2009	288985601	Schematic Diagram
2016	281885104	Instructions
2017	281885108	Instructions
2021	257785450	Guarantee Card K
2104	288980105	Packing Case
2105	288980106	Packing Case
2107	288680302	Partitioner
2108	288680303	Partitioner
2112	901483838	Polyethylen Bag
2114	901302501	Polyethylen Bag x 2
2117	102980401	Sleeve
2119	273182101	Silicagel x 2
2120	281905601	Buffer
2122	285125703	Lid
2123	285386101	Label
2124	51216059E	Screw x 4
2131	ZA0200007	Ext Antenna
2202	952281501	Serial NO Card x 4

TECHNICAL SPECIFICATIONS

FM SECTION:

Tuning Frequency Range	88 – 108 MHz
IHFM Usable Sensitivity	2.3μV
IHF Selectivity	60 dB
Capture Ratio	1.6 dB
Image Rejection Ratio at 106 MHz	70 dB
Signal to Noise Ratio (Mono)	70 dB
Signal to Noise Ratio (Stereo)	60 dB
Total Harmonic Distortion (Mono)	0.2%
Total Harmonic Distortion (Stereo)	0.3%
Frequency Response (ref. 75μ sec. de-emphasis)	30 Hz to 15 KHz, ± 1 dB
Stereo Separation at 1 KHz	40 dB
Quadradial Output (400 Hz 75 KHz dev.)	300mV

AM SECTION:

Tuning Frequency Range	540 – 1605 KHz
Usable Sensitivity	30μV
Selectivity	26 dB
Image Rejection Ratio at 1400 KHz	70 dB
Signal to Noise Ratio	45 dB
Frequency Response (–6 dB)	50 Hz to 3.5 KHz
Total Harmonic Distortion	1%

AUDIO SECTION:

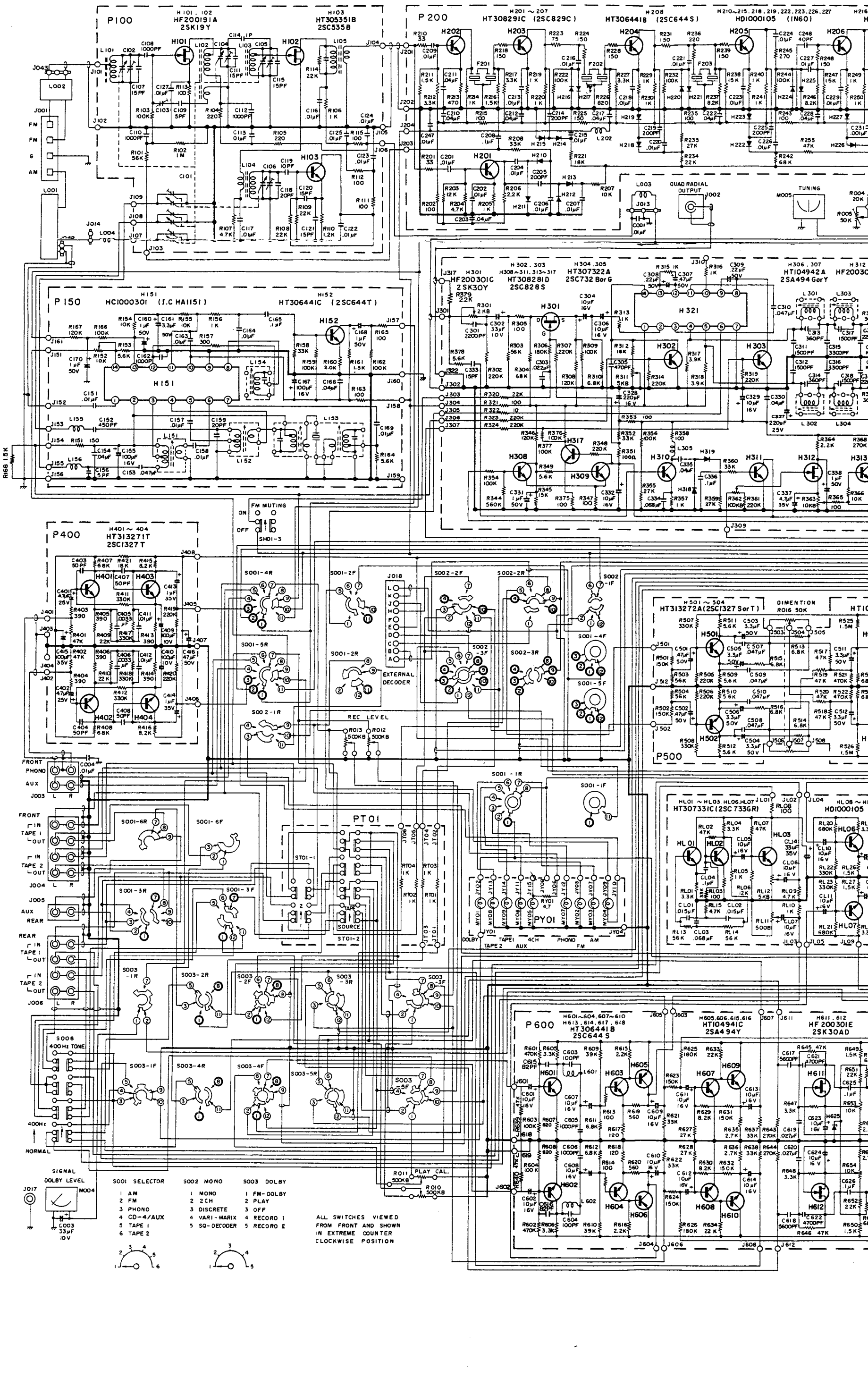
Input Impedance – Low level input	Phono 47K ohms
– High level input	100K ohms
Input Sensitivity – Phono	2.2mV for 25W output
– High level	150mV for 25W output
Frequency Response	±1.0 dB, 20 Hz to 20 KHz at 1W output
Intermodulation Distortion	Less than 0.3% at rated power output
Total Harmonic Distortion	Less than 0.3% at rated power output
Damping Factor	More than 45 at 8 ohms
Total Noise – From magnetic phono input to power amp output	Less than 2μV equivalent input noise at 8 ohms rated power output
Volume Tracking	Less than 4 dB
Rated Continuous (RMS) Output	25W at 8 ohms
all channels operating simultaneously at 40 Hz to 20 KHz for nominal harmonic distortion	25W at 4 ohms 13W at 16 ohms
Comparable Total Music Power	150W at 8 ohms

GENERAL:

Power Requirements	120V

Power Consumption	— at rated power output, all channels	400W
	— idling (no signal)	45W
Dimensions	— Panel Width	17-21/64 Inches
	— Panel Height	5-25/64 Inches
	— Depth	14-3/8 Inches
	— Width (Packed for Shipment)	22-1/4 Inches
	— Height (Packed for Shipment)	10-1/2 Inches
	— Depth (Packed for Shipment)	19-1/2 Inches
Weight	— Unit alone	40.2 lbs
	— Packed for Shipment	49.1 lbs

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



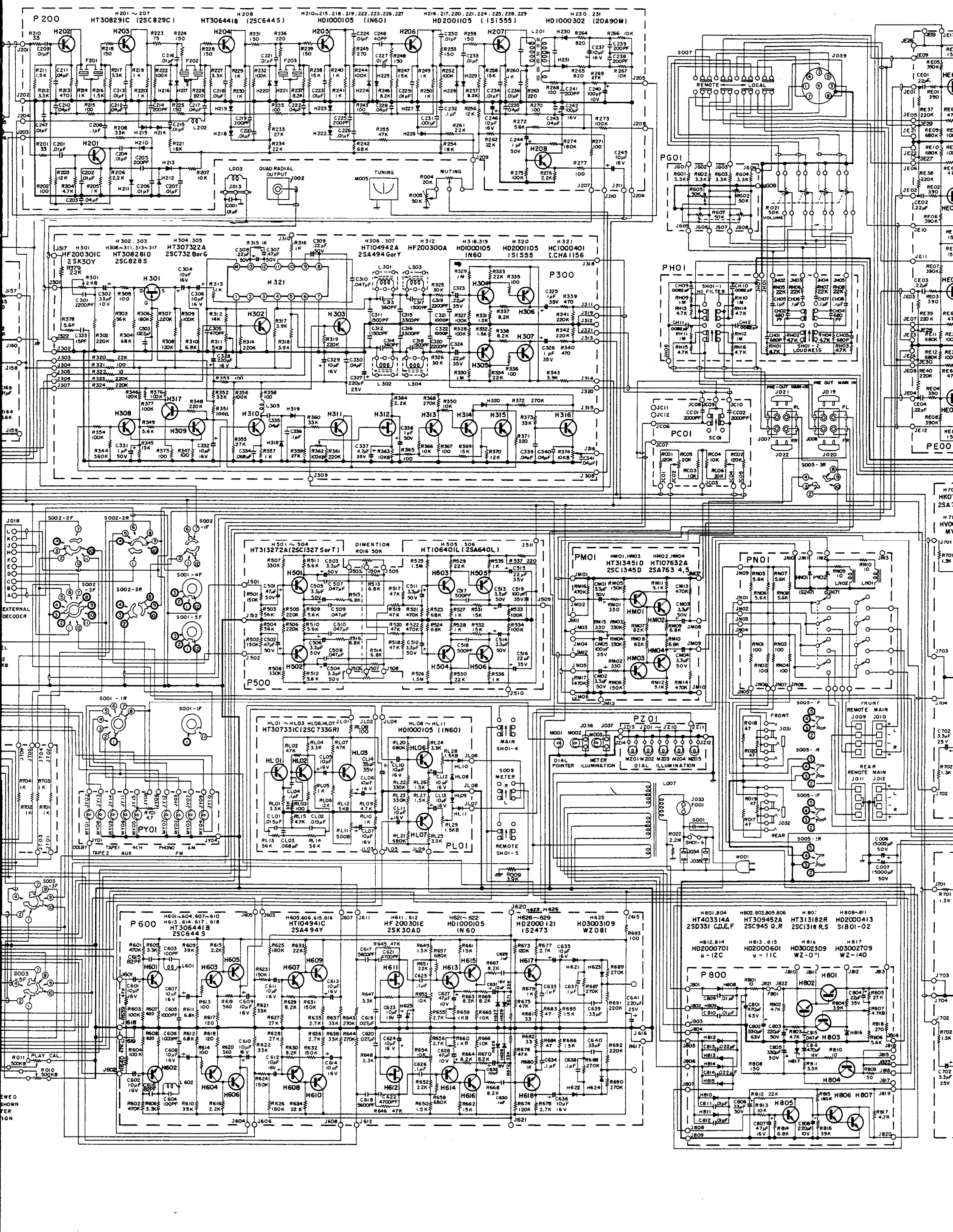


Figure 29. Schematic Diagram