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SERVICE MANUAL 1030

marantz

model 1030

console *Stereo* amplifier

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LIST OF ILLUSTRATIONS

1. INTRODUCTION

This service manual was prepared for use by Authorized Warranty Stations and contains service information for Marantz Model 1030 Stereo Console Amplifier.

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 circuits.

The part lists 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.

2. PRE-AMPLIFIER

Signals from the input jacks (TUNER, TAPE, AUX) are applied to the selector switch.

Signals from the PHONO jacks or MIC jack are applied to the other section of the selector switch, then, led to the phono-amplifier and equalized to match the RIAA curve for flat frequency response. The gain of the phono-amplifier consisting of direct coupled circuit (H901 and H903) is 38 dB.

The outputs of the phono-amplifier are led to the selector switch. The selector switch selects one of signals from PHONO, MIC, TUNER, or AUX jacks and send it to the TAPE MONITOR switch and TAPE OUT jacks. The selected signals are then applied to the balance and volume controls, then to the pre-amplifier consisting of H501, H503 and H505 through Mono switch.

The frequency response is varied by the Bass and Treble controls, and the resultant output are led to PRE OUT jacks through High-cut and Low-cut filter networks. These networks are switched in and out from the circuit by the push-switches.

3. MAIN AMPLIFIER

Transistor H701 is a pre-driver coupled to the transistor H703 through capacitor C711. Transistor H703 drives the inverter transistors H709 and H711 which, in turn, drive the power stage consisting of H001 and H002. Transistors H705 and H707 are current limitters operating as a power protection circuits.

Excessive currents flowing into the power stage are detected by the resistors R741 and R745 and the resultant variations are applied to the transistors H705 and H707 and make them turned on. This decreases the current flowing into the H709 and H711. In this way the currents flowing in the power stage (H001 and H002) are restricted within a safe value.

4. POWER SUPPLY UNIT

This power supply unit consisting of a transistor H801, which operates as a lipple filter, provides +35V DC to the Phono-amplifier and +27V DC to the Tone Amplifier.

5. TROUBLE ANALYSIS

1. Excessive line consumption	a. Check for shorted H007, H802, H803. b. Check for shorted transistor H001 through H004. Check L001 for short
2. No line consumption or zero bias	a. Check line cord, fuse, shorted H005, H006, H713, H714. b. Check for open rectifiers H007 H802, H803.
3. High hum and noise level	a. Check filter capacitors C005, C703, C704.
4. Parasitic oscillation	a. Check for defective C705, C706, C713, C714, C723, C724, C727, C728.
5. Improper clipping	a. Check for proper adjustment R723, R724.

6. POWER AMPLIFIER ADJUSTMENT

1. Connect a VTVM across the resistor R747 and adjust the trimming resistor R729 until the VTVM reads 7.5mV DC. For the other channel connect the VTVM across the R748 and adjust the R730 for the same reading.
2. Connect a oscilloscope across the speaker terminals. Apply an audio signal of 1KHz to the AUX jacks and increase the audio signal until the audio output on the scope begin to clip. Adjust the trimming resistor R723 for equal and symmetrical clipping. For the other channel adjust the R724.

7. PERFORMANCE VERIFICATION

Test Procedure

A. Test Equipment

Refer to Table 1 for required test equipment.

B. Preliminary Procedures.

1. Make the test setup shown in Figure 1 with the instrument controls set in the following positions:

Line Switch	off
Variable-line switch	variable
Watt Meter Switch	on
Variac	0 (fully CCW)
Load	8 ohms (0.5 mfd - off)
Audio Generator	Frequency 1KHz
Output	5V range
Gain Minimum	
AC Volt Meter	30V range

2. Make sure that connections between the resistive load and the system terminals of the Model 1030 have negligible resistance compared with the resistance of the load itself. Appreciable resistance in wiring adds to the total load, resulting in inaccurate measurements of output power.

3. Connect amplifier output to load and connect AC cord to line power. Connect a shorting plug to the Phono input jack of the model 1030.
4. Remove the top cover.

C. Total Hum and Noise Test

1. With shorting plugs connected to the Phono input jacks and a 8-ohm resistive load connected across the speaker system output terminals, connect a distortion analyzer across the load.

   NOTE: In this test and tests that follow, if distortion analyzer used does not contain a built-in voltmeter, a VTVM may be substituted.
2. Set the distortion analyzer controls for voltage measurements and apply power to the amplifier. Set the volume control fully CCW. Set the SELECTOR switch to PHONO.
3. If the distortion analyzer indicates more than 2.5mV, refer to the trouble analysis section of this manual.
4. Set the volume control fully CW. If the distortion analyzer indicates more than 15mV refer to the trouble analysis section of this manual.

D. Maximum Power Output

1. Connect the audio oscillator to the AUX input. Set audio oscillator frequency to 1 KHz. Set SELECTOR switch to AUX.
2. With the distortion analyzer connected across the output load (8 ohms), set the analyzer on the 30V AC scale.
3. Turn the analyzer on and increase the audio oscillator output to 180mV, and verify the analyzer indicates more than 11V.

E. Harmonic Distortion Test

1. Set the frequency of the audio oscillator and the distortion analyzer to 20 KHz.
2. Set the controls of the analyzer for voltage measurement on the 30-volt scale.
3. Adjust the audio oscillator output level until the analyzer meter indicates 11 volts.
4. Switch the distortion analyzer to Set Level – Manual mode, and adjust SENSITIVITY for full scale reading on 0-1 scale.
5. Measure the total harmonic distortion with the analyzer and verify it is less than 0.5%.

   NOTE: Any parasitic oscillation in the amplifier will be displayed on the oscilloscope when capacitance is switched into the load.
6. Switch the distortion analyzer back to SET LEVEL MANUAL.
   (Do not adjust sensitivity of analyzer.)
7. Change the frequency of the audio oscillator and distortion analyzer to 1 KHz. Adjust audio oscillator output as necessary to have a full scale reading on the 0-1 scale on the analyzer.
8. Measure the distortion, verifying it is no greater than 0.5%.
9. Repeat steps 7 and 8, changing frequency to 40Hz.
   Distortion should be no more than 0.5%.
10. Check for parasitic oscillations; there should be none.

F. Channel Separation

1. Set audio oscillator to 20 KHz. Connect oscillator to channel L AUX input only, with shorting plug (10K ohm) in channel R AUX input. Connect distortion analyzer to SPEAKER output terminals channel L.
2. Adjust oscillator output until distortion analyzer indicates 0 dB.
3. Measure channel R output. Distortion analyzer should indicate –30 dB or greater.
4. If indication is less than –30 dB, adjust input wires to preamp board until reading is –30 dB or greater.

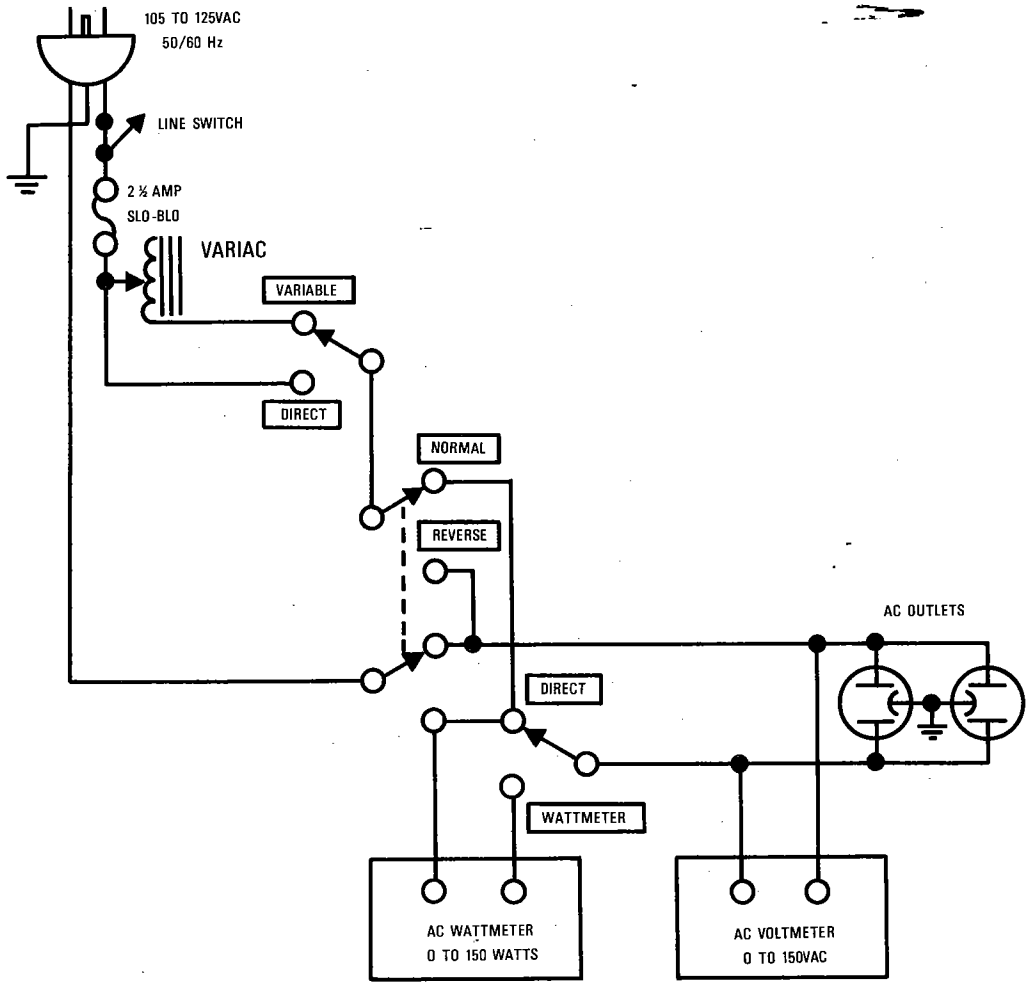


Figure 1. AC Power Control Box Simplified Schematic

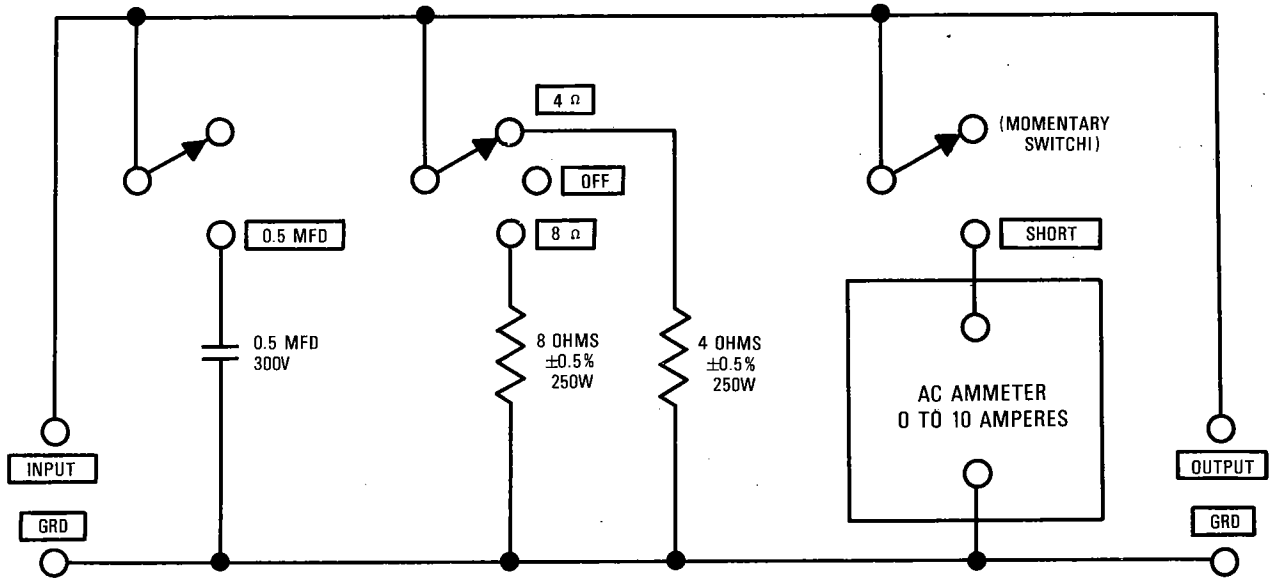


Figure 2. Amplifier Output Load Box Simplified Schematic

8. TEST EQUIPMENT REQUIRED FOR SERVICING

Table 1 lists the test equipment required for servicing the Model 1030 Stereo Console Amplifier. The wattmeter, ac voltmeter, and variac may be assembled as a test fixture as shown schematically in Figure 1, and the load resistors and ac ammeter may be assembled into a second test fixture as shown in Figure 2.

Item	Manufacturer and Model No. (or equivalent)	Use
Distortion Analyzer	Hewlett Packard, Model 331A or 333A	Measures distortion and voltage of amplifier output.
Audio Oscillator	Weston Model CVO-100P (NOTE: Less than 0.02 percent residual distortion is required.)	Sinewave and squarewave signal source.
Oscilloscope	Tektronix, Model 503; Data, Model 555	Waveform analysis and troubleshooting.
VTVM	RCA Senior Volt-Ohmyst, Model WV-98C	Voltage and resistance measurements.
AC Wattmeter	Simpson, Model 390	Monitors primary power consumption of amplifier.
AC Ammeter (0 to 10 amps)	Commercial Grade	Monitors amplifier output under short circuit condition.
Line Voltmeter (0 to 150 vac)	Commercial Grade	Monitors potential of primary power to amplifier.
Variable Autotransformer (0 to 140 vac, 10 amps)	Powerstat, Model 116B	Adjusts level of primary power to amplifier.
Shorting Plug	Use phono plug with 600 ohms across center pin and shell.	Shorts amplifier input to eliminate noise pickup.
Power Supply Bleeder Resistor (10 ohms at 1 W)	Commercial Grade	Discharges power supply filter capacitors prior to disassembly or resistance measurements.
Output Load Resistor (8Ω ± 0.5%, 250W)	Commercial Grade	Provides 8-ohm load for amplifier output termination.
Output Load Resistor (4Ω ± 0.5%, 250W)	Commercial Grade	Provides 4-ohm load for amplifier output termination.
Output Load Capacitor (0.5 mfd)	Mylar	Provides capacitive load for instability checks.
AC Power Control Box	Optional Item. Fabricate in accordance with Figure 1.	Monitors and controls primary power for amplifier.
Amplifier Output Load Box	Optional Item. Fabricate in accordance with Figure 2.	Provides various amplifier loads and can monitor shorted output.

9. VOLTAGE CONVERSION

This model is equipped with a universal power transformer to permit operation at 100, 120, 200, 220 and 240V AC 50 to 60Hz.

To convert the Model 1030 to the required voltage perform the following steps:

1. Remove the top cover.
2. Remove the Transformer Wire Connection Terminal Cover, loosen two Cover mounting screws on the rear panel. see Fig. 3.

3. Change the jumper wires as illustrated in Fig. 4 for the required AC voltage and replace the fuse as instructed.

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

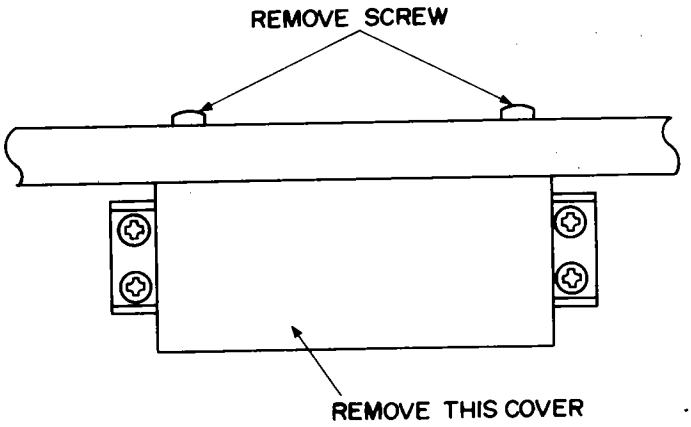
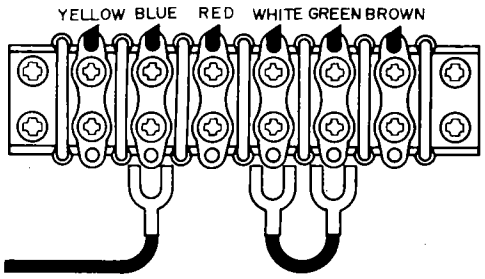
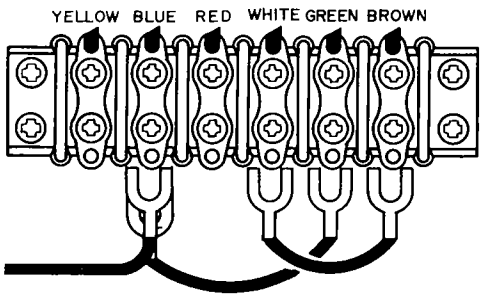


Figure 3. Remove the Terminal Cover

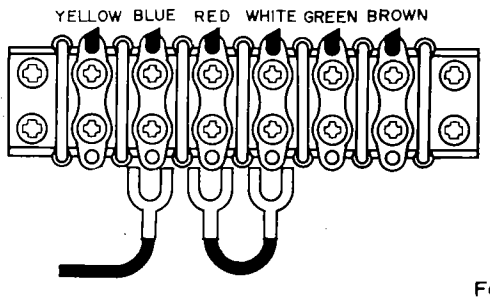
For 200V Operation
(Use 1 AFuse)



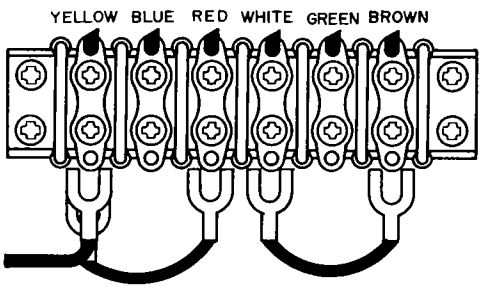
For 100 V Operation
(Use 2 AFuse)



For 220V Operation
(Use 1A Fuse)



For 120 V Operation
(Use 1.5A Fuse)



For 240V Operation
(Use 1A Fuse)

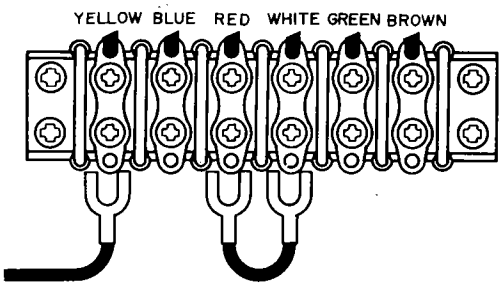


Figure 4. Voltage Conversion Chart

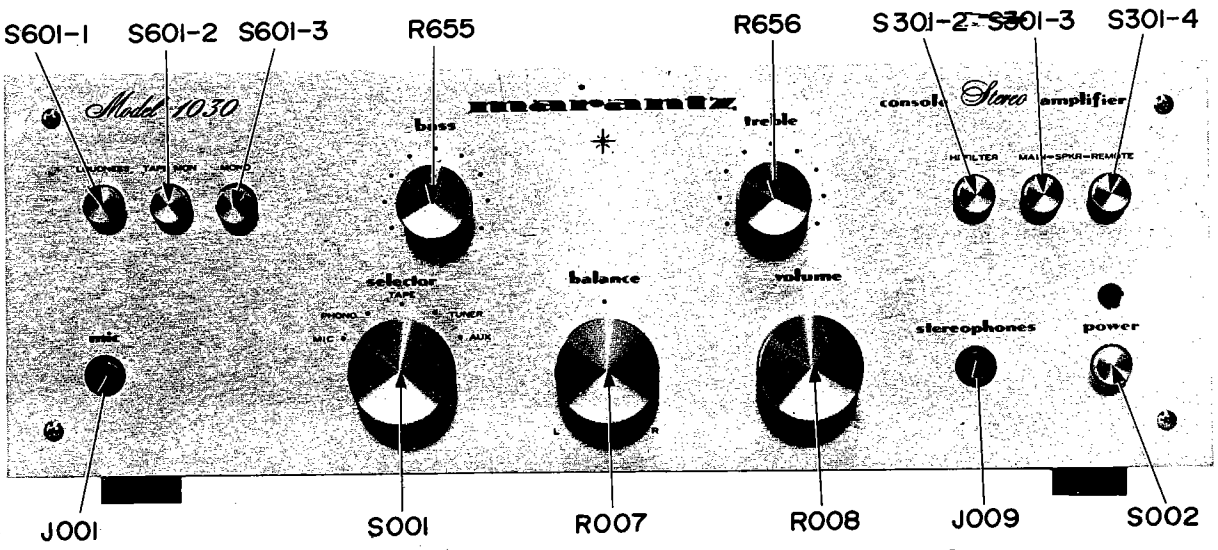


Figure 5. Front Panel Adjustment and Component Locations

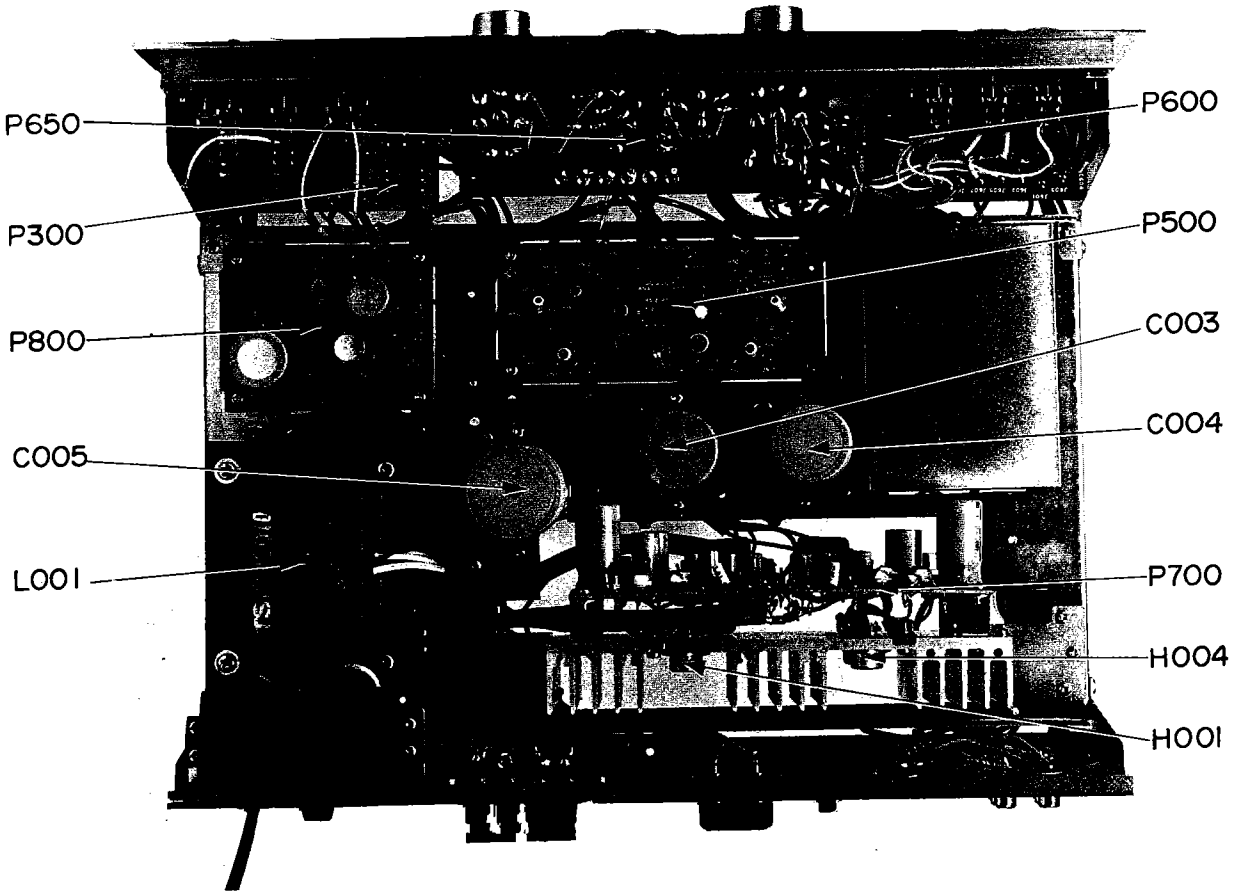


Figure 6. Main Chassis Component Locations (Top View)