2216

SERVICE MANUAL 2216

marantz

model 2216

Stereophonic Receiver

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1. INTRODUCTION

This service manual was prepared for use by Authorized Warranty Stations and contains service information for Marantz Model 2216 Stereophonic Receiver.

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

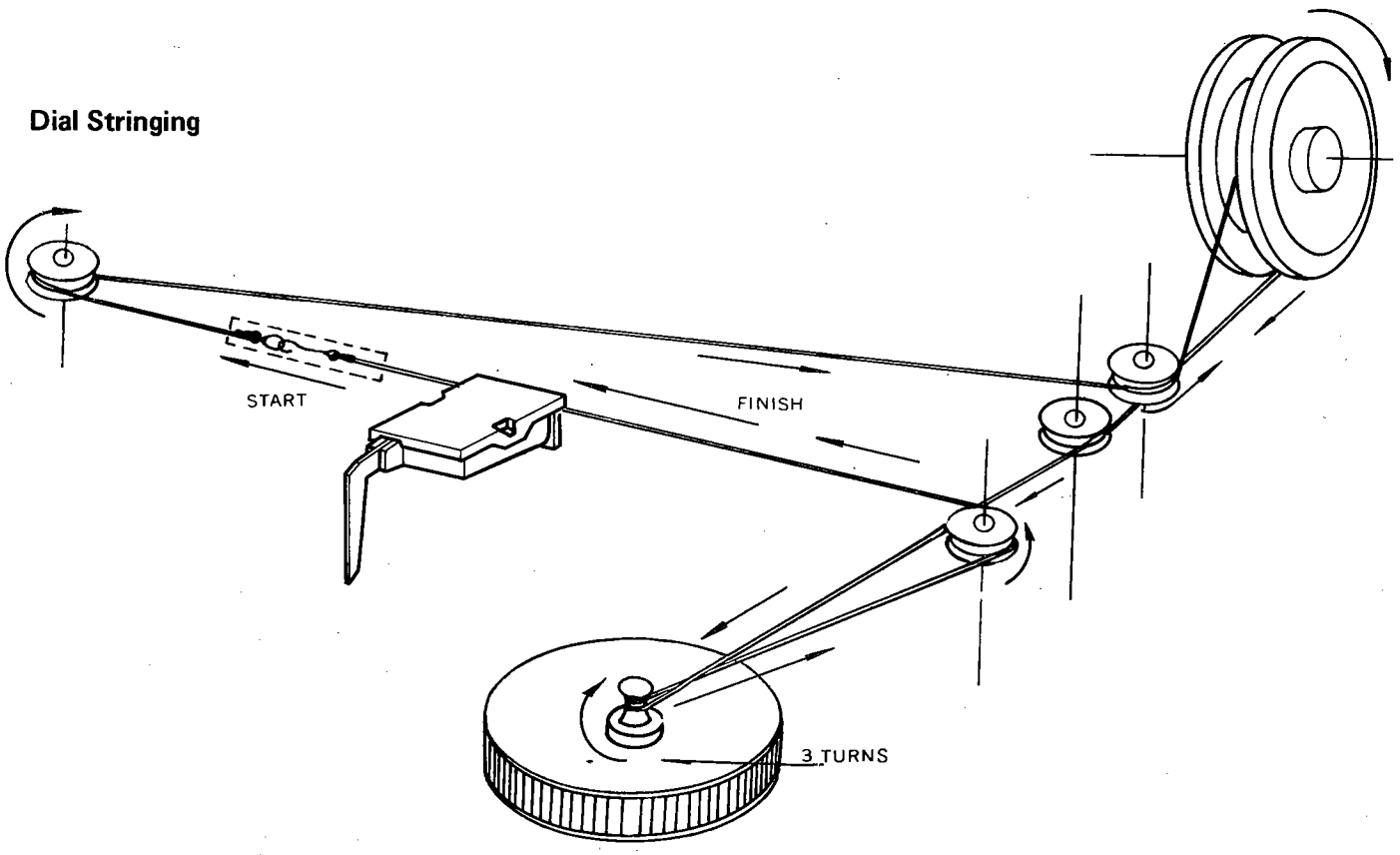
The parts list furnishes information by which replacement parts may be ordered from the Marantz Company. A simple description is included for parts which can usually be obtained through local suppliers.

2. SERVICE NOTES

As can be seen from the circuit diagram, the chassis of Model 2216 consists of the following units. Each unit mounted on a printed circuit board is described within the square enclosed by a bold dotted line on the circuit diagram.

1. FM/AM Tuner ..... mounted on P.W. Board P100
2. Phono Amplifier ..... mounted on P.W. Board P400
3. Power Amplifier ..... mounted on P.W. Board P700
4. Power Supply ..... mounted on P.W. Board P800
5. Dial Lamp ..... mounted on P.W. Board PZ01
6. Monitor, Switch ..... mounted on P.W. Board PT01
7. Muting, Switch ..... mounted on P.W. Board PH01
8. Tone Amplifier ..... mounted on P.W. Board PE01

Dial Stringing



3. TEST EQUIPMENT REQUIRED FOR SERVICING

Table 1 lists the test equipment required for servicing the Model 2216 Receiver.

Item	Manufacturer and Model No.	Use
AM Signal Generator		Signal source for AM alignment
Test Loop		Use with AM Signal Generator
FM Signal Generator MPX Signal Generator	Sound Technology Model 1000A	Signal source for FM alignment Stereo separation alignment and trouble shooting
Distortion Analyzer Audio Oscillator AC VTVM	Sound Technology Model 1700A	Distortion measurements Sinewave and squarewave signal source Voltage measurements (AC)
Oscilloscope	Tektronix Model T932 Philips Model 3232	Waveform analysis and trouble shooting and ASO alignment
Frequency Counter	Fluke Model 1900A	MPX Oscillator adjustment (VCO)
Circuit Tester		Trouble shooting
DC VTVM	Fluke Model 8000 "Digital" Simpson Model 313, Triplet Model 801	Voltage measurements (DC)
AC Wattmeter	Simpson Model 1379	Monitors primary power to amplifier
AC Ammeter	Commercial Grade (1-10A)	Monitors amplifier output under short circuit condition
Line Voltmeter	Simpson Model 1359	Monitors potencial of primary power to amplifier
Variable Autotransformer	Superior Electronic Co., Powerstat Model 116B–10A	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, 0.5%, 100W)	Commericial Grade	Provides 8-ohm load for amplifier output termination
Output Load (4 ohms, 0.5%, 100W)	Commercial Grade	Provides 4-ohm load for amplifier output termination

4. AM ALIGNMENT PROCEDURE

4.1 AM IF ALIGNMENT

1. Connect a sweep generator to the test point A or J105 and an alignment scope to J112.
2. Rotate each core of IF transformer L203 and L204 for maximum height and flat top symmetrical response.

4.2 AM FREQUENCY RANGE AND TRACKING ALIGNMENT

1. Set AM signal generator to 525 kHz. Turn the tuning capacitor fully closed (place the tuning pointer at the low end) and adjust the oscillator coil L202 for maximum audio output.

2. Set the signal generator to 1650 kHz. Place the tuning pointer in the high frequency end and adjust the oscillator trimmer on the oscillator tuning capacitor (CA-2) for maximun audio output.
3. Repeat steps 1 and 2 until no further adjustment is necessary.
4. Set the generator 600 kHz and tune the receiver to the same frequency and adjust a slug core of AM ferrite antenna for maximum output.
5. Set the generator to 1400 kHz and tune the receiver to the same frequency and adjust the trimming capacitors of Antenna (CA-1) for maximum output.
6. Repeat steps 4 and 5 until no further adjustment is necessary.

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

5. FM ALIGNMENT PROCEDURE

1. Connect an FM signal generator to the FM antenna terminals and an oscilloscope and an audio distortion analyzer to the tape output jacks on the rear panel.
2. Set the FM SG to 87.5 MHz and provide about 3 to 5 μV. Place the tuning pointer at the low frequency end by rotating the tuning knob and adjust the core of oscillator coil L103 to obtain maximum audio output.
3. Set the FM SG to 108.5 MHz and provide about 3 to 5 μV output. Rotate the tuning knob and place the tuning pointer at the high frequency end and adjust the trimming capacitor CF-3 for maximum output.
4. Repeat steps 2 and 3 until no further adjustment is necessary.
5. Set the FM SG to 90 MHz 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 IF transformer L105 for minimum audio distortion.
6. Set the FM SG to 106 MHz and tune the receiver to the same frequency. Adjust the trimming capacitor CF-1, CF-2 for minimum distortion.
7. Repeat steps 5 and 6 until no further adjustment is necessary.
8. Connect a DC VTVM with ±0.5 volt range selected to the test point E (J116) and adjust the secondary core (upper) of discriminator transformer L106 so that no voltage reading is obtained on the VTVM at no signal.
   Next set the FM SG to 98 MHz and increase the output level to 1 kμV, then tune the receiver to the same frequency so that no deflection is obtained.
   Adjust primary core (bottom) of L106 for minimum distortion, and adjust the L107 for the maximum reading on the VTVM connected to the J114.

6. STEREO SEPARATION ALIGNMENT

1. Set the FM SG to provide 1 kμV at 98 MHz. Tune the receiver to the same frequency perfectly.
2. Turn the FM SG modulation off (with the pilot signal turned off), connect a frequency counter to test point J120, and adjust R302 so that the frequency counter may precisely read 19 kHz.
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.

7. MUTING CIRCUIT ALIGNMENT

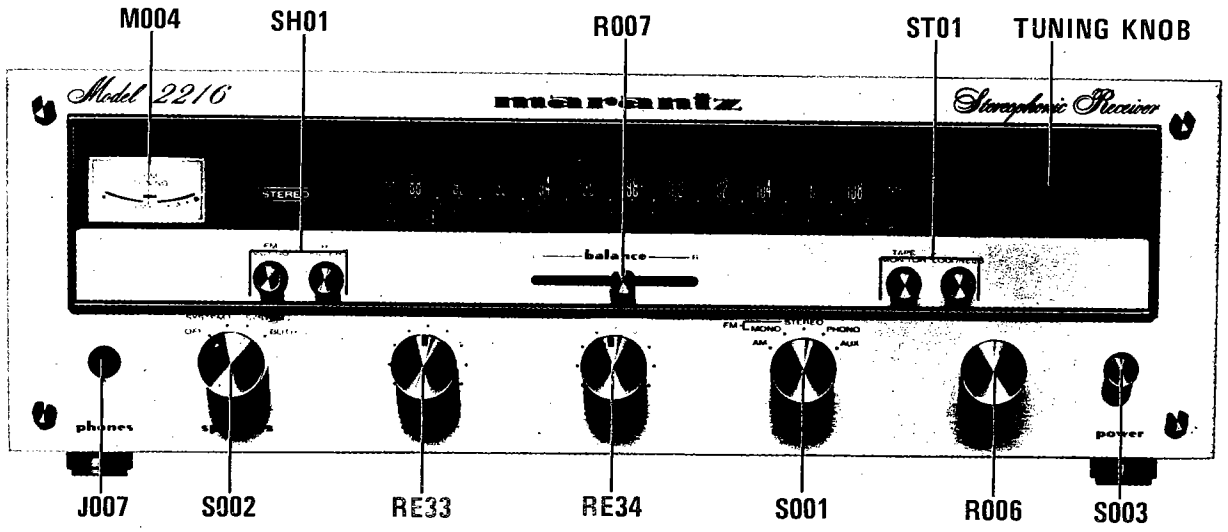
Set the FM SG output to provide 25 μV (IHF) at 98 MHz and tune the receiver to the same frequency. Adjust the trimming resistor R161 for the threshold level of 25 μV (during this adjustment turn the MUTING pushswitch "on").

8. AUDIO ADJUSTMENT

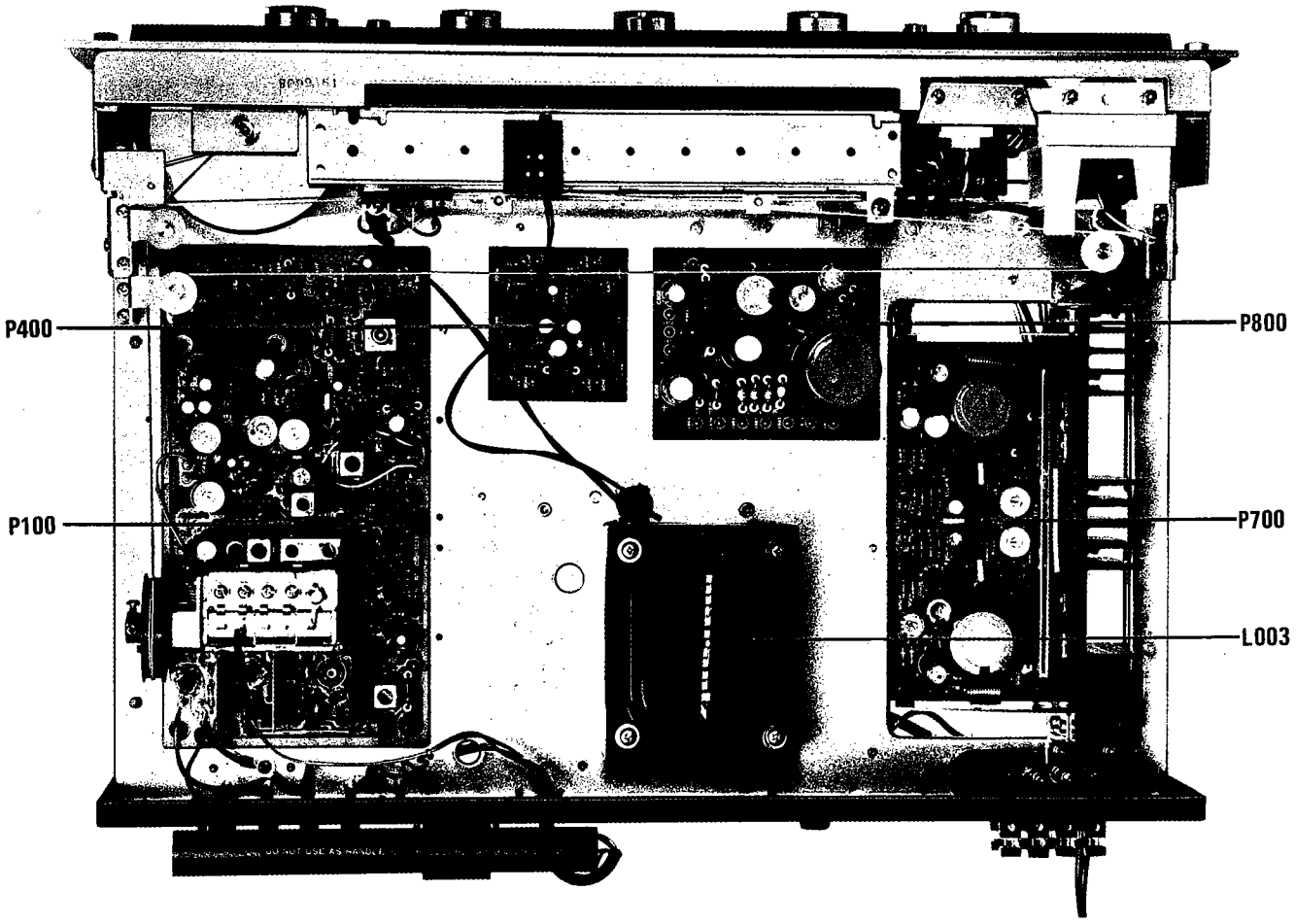
Connect a VTVM across the resistor R735 and adjust the trimming resistor R727 until the VTVM reads 4.5 mV DC. For the other channel connect the VTVM across the R736 and adjust the R728 for the same reading.

9. MAJOR COMPONENT LOCATIONS

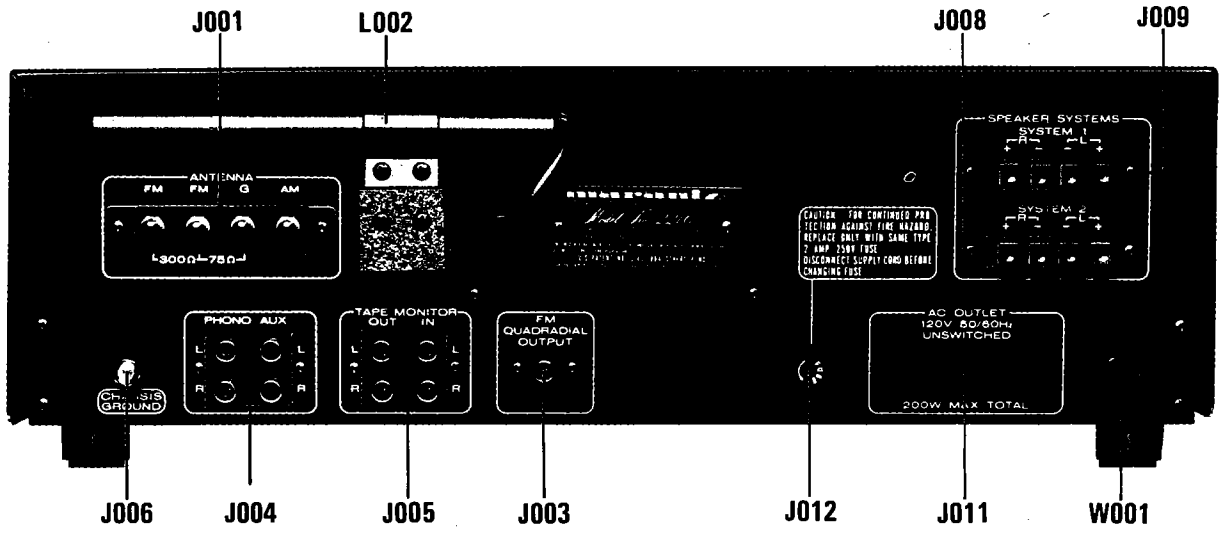
9.1 Front Panel Adjustment and Component Locations



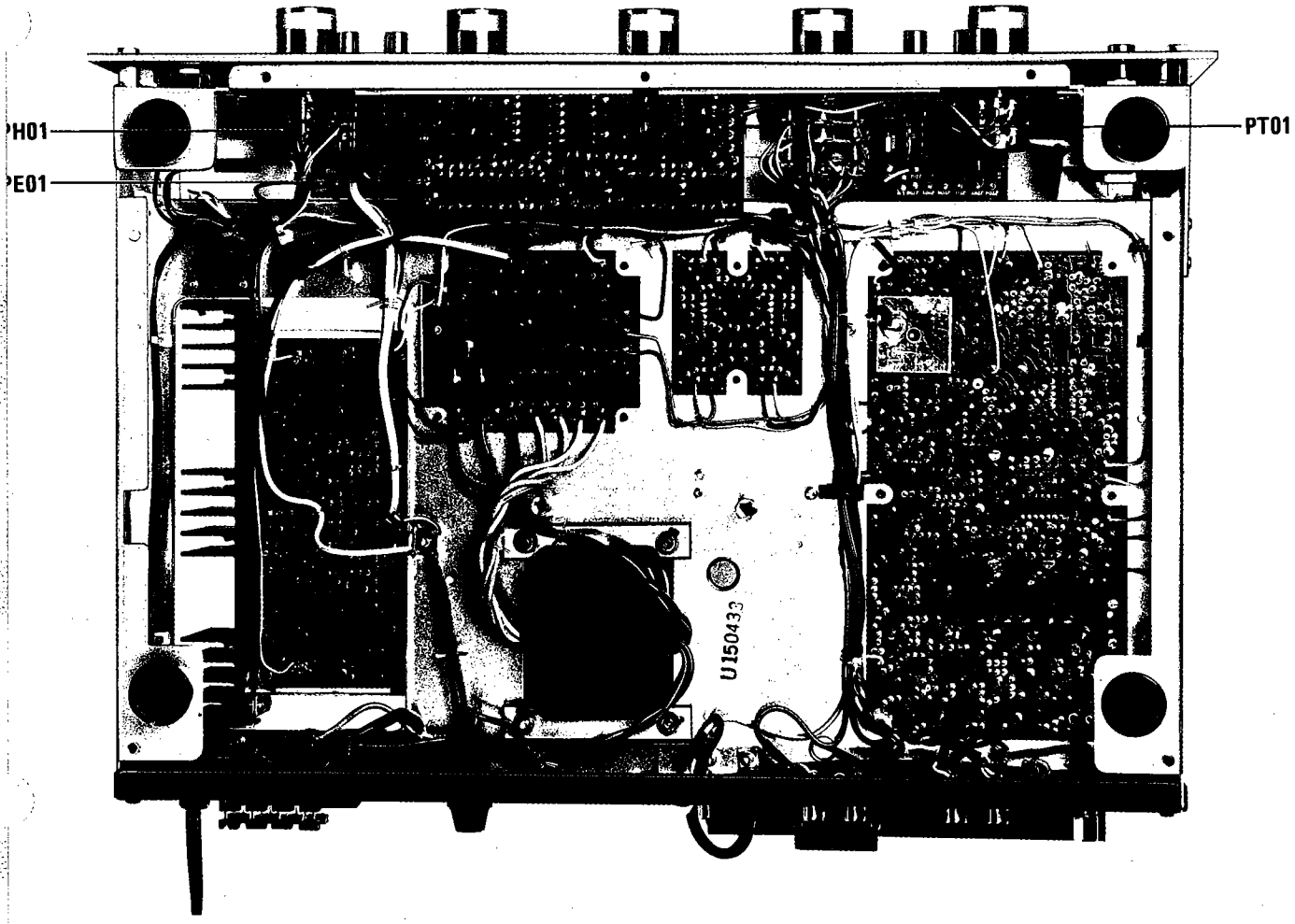
9.2 Main Chassis Component Locations (Top View)



9.3 Rear Panel Adjustment and Component Locations



9.4 Main Chassis Component Locations (Bottom View)



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10. DIAGRAM AND COMPONENT LOCATIONS

10.1 FM/AM Tuner Assembly (P100) Schematic Diagram and Component Locations