SERVICE MANUAL 2285

marantz

model 2285

Stereophonic Receiver

marantz

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INTRODUCTION

This service manual was prepared for use by Authorized Warranty Stations and contains service information for Marantz Model 2285 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.

1. P.W. BOARDS

As can be seen from the circuit diagram the chassis of Model 2285 consists of the following units. Each unit mounted on a printed circuit board is described within the square enclosed by a bold dotted line on the circuit diagram.

1. FM Front End . . . . . mounted on P.W. Board P100
2. AM Tuner . . . . . mounted on P.W. Board P150
3. FM IF . . . . . mounted on P.W. Board P200
4. Multiplex . . . . . mounted on P.W. Board P300
5. Dolby Level . . . . . mounted on P.W. Board PC01
6. Phono Amp. . . . . mounted on P.W. Board P400
7. Main Amp. . . . . mounted on P.W. Board P700
8. Power Supply . . . . . mounted on P.W. Board P800
9. Pre & Tone Amp. . . . . mounted on P.W. Board PE01
10. Dolby FM & Tape Monitor . . . . . mounted on P.W. Board PS01
11. Function Lamp . . . . . mounted on P.W. Board PY01
12. Dial Lamp . . . . . mounted on P.W. Board PZ01
13. Antenna Muting . . . . . mounted on P.W. Board PU01
14. Filter Amp. . . . . mounted on P.W. Board PH01
15. Filter & Loudness . . . . mounted on P.W. Board PT01
16. Fuse . . . . . mounted on P.W. Board PR01

2. TEST EQUIPMENT REQUIRED FOR SERVICING

This table lists the test equipment required for servicing the Model 2285 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 potential 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)	Commercial 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

3. AM ALIGNMENT PROCEDURE

3.1 AM IF ALIGNMENT

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

3.2 AM FREQUENCY RANGE AND TRACKING ALIGNMENT

1. Set AM signal generator to 515 kHz. 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 59 1650 kHz. 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 steps 1 and 2 until no further adjustment is necessary.
4. Set the generator to 600 kHz and tune the receiver to the same frequency and adjust a slug core of AM ferrite-rod antenna L001 and RF coil L151 for maximum output.
5. Set the generator to 1400 kHz and tune the receiver to the same frequency and adjust both trimming capacitors of antenna and RF tuned circuit 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.

3.3 AM SIGNAL STRENGTH METER ALIGNMENT

Set an AM signal generator to 1000 kHz at 5 kμV, and adjust R178 so that the signal strength meter may read 90% of the full scale.

4. FM ALIGNMENT PROCEDURE

4.1 FM FREQUENCY RANGE AND TRACKING ALIGNMENT

1. Connect an FM signal generator to the FM ANTENNA terminals and an oscilloscope and an audio distortion analyzer to the TAPE MONITOR OUT jacks on the rear panel.
2. Set the signal generator to 87 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 L104 to obtain maximum audio output.
3. Set the signal generator to 109 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 C106 for maximum output.
4. Repeat steps 2 and 3 until no further adjustment is necessary.
5. Set the signal generator 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 coils L102, L103 and L104 and IF transformer L106 for minimum audio distortion.
6. Set the signal generator to 106 MHz and tune the receiver to the same frequency. Adjust the trimming capacitor CF01, CF02 and CF03 for minimum distortion.
7. Repeat steps 5 and 6 until no further adjustment is necessary.
8. 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 signal generator to 98 MHz and increase its output level 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.
9. Set the signal generator to 98 MHz at 1000 kμV, and adjust R374 so that the signal strength meter may read 90% of the full scale.

4.2 STEREO SEPARATION ALIGNMENT

1. Set the FM signal generator to provide 1 kμV at 98 MHz. Tune the receiver to the same frequency so that the center tuning meter pointer indicates its center.
2. Turn the signal generator 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 19 kHz.
3. Modulate the signal generator with stereo composite signal consisting only of subchannel signal (of course a pilot signal must be included).
4. Adjust the trimming resistor R301 for maximum and same separation in both channels.

4.3 MUTING CIRCUIT ALIGNMENT

1. Connect a VTVM across the resistor R363 and adjust the it until the meter reads 0.75V DC at no signal.
2. Set the FM signal generator to provide 1 kμV at 98 MHz and tune the receiver to the same frequency correctly.
3. Depress the FM MUTING pushswitch. Shift the 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.

4.4 DOLBY FM TAPE OUTPUT SETTING

1. Set the modulation of FM signal generator to 400 Hz, 50% (±37.5 kHz Dev.).
2. Set the signal generator to provide 1 kμV at 98 MHz. Tune the receiver to the same frequency so that the center tuning meter pointer indicates its center.
3. Turn on DOLBY FM-25 μS pushswitch. Set the trimming resistors RC01 and RC02 so that the output of the TAPE MONITOR OUT jacks R and L become 580 mV at VTVM.

5. AUDIO ADJUSTMENT

1. Voltage adjustment
   Connect a DC voltmeter between pin terminal J804 and J805, and adjust the trimming resistor R806 for 35V DC.

2. Main Amplifier DC off-set alignment
   Connect a DC voltmeter with 0.5 or 1 V range between the speaker terminals and adjust the trimming resistor R726 for "zero" DC output on the meter. Repeat the same procedure for the other channel.

NOTE: During this alignment no load should be connected to the speaker terminals.

3. Idle-current adjustment
   Connect a VTVM between pin terminals J716 and J718. Next, adjust the trimming resistor R727 so the VTVM reads 20 mV DC. Repeat the same procedure for the other channel.
4. Check DC off-set voltage aligned in the procedure 2 and if any DC output is observed on the DC voltmeter, adjust the R726 again for "zero" output.
5. Phono-amplifier adjustment
   Connect an oscilloscope to the TAPE MONITOR OUT jacks and an audio signal generator to the PHONO jacks. Place the SELECTOR switch in the PHONO position. Increase 1 kHz audio signal gradually until a slight clipping on top of the sine-wave is observed on the oscilloscope. Adjust the trimming resistor R408 for equal clipping level. For the other channel adjust R409.

6. VOLTAGE CONVERSION FOR EUROPEAN MODEL

The European version of the Model 2285 is equipped with a universal power transformer that may be adjusted to operate at 110 V, 120 V, 220 V, or 240 V AC at 50 to 60 Hz. To convert the unit to a different power source voltage, reposition conversion plug as shown in Figure 1.

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

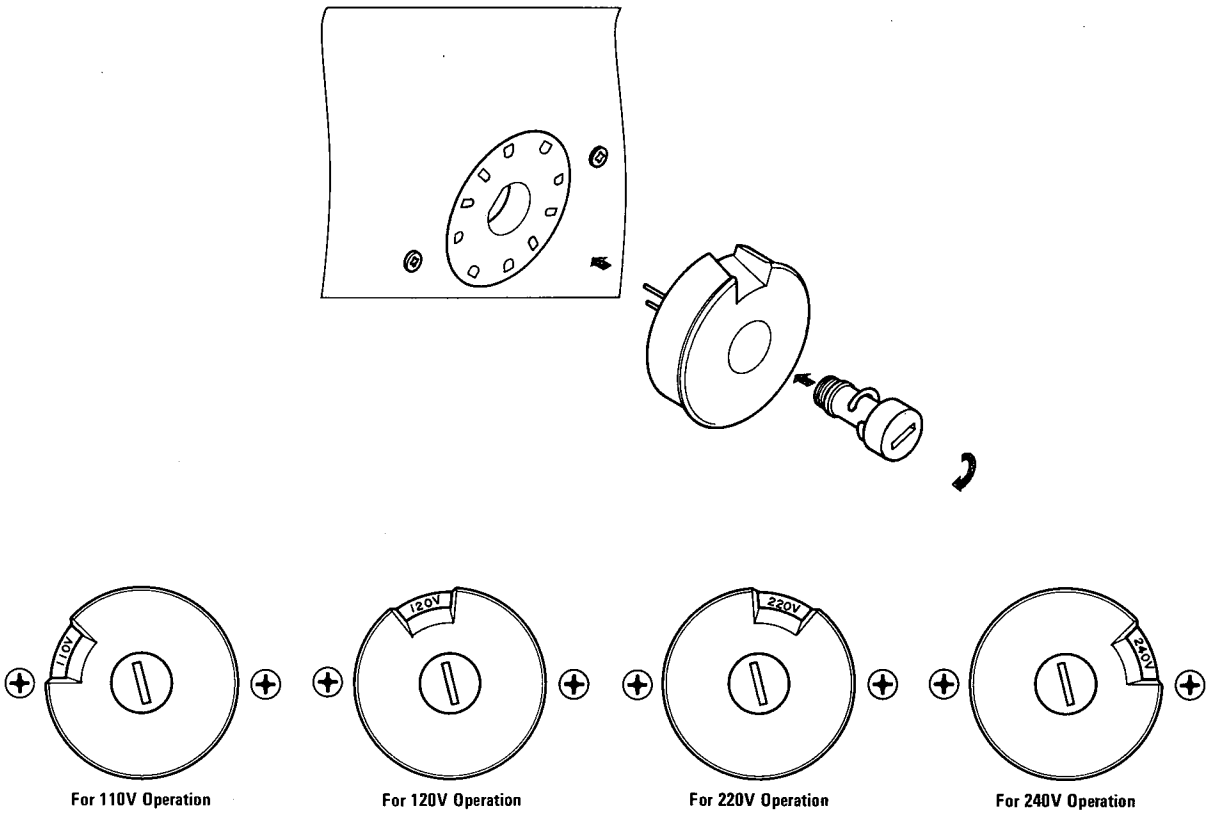

Figure 1. Voltage Conversion Chart

FTZ REGULATION

Instruction for the use in the range other than specified in FTZ codes

Achtung für die Leute, die in dem Gebiet wohnen, wo die FTZ-Bestimmungen vorherrschend sind.

Sollte das Gerät auch für Frequenzen auszerhalb des in den FTZ-Bestimmungen angegebenen Bereiches empfangebereit sein, bitten wir, den Bereich durch Nachstellen des Kernes in der Oszillatorspule (in der Abbildung mit "FTZ" gekennzeichnet) so zu korrigieren, dass er den Bestimmungen entspricht.

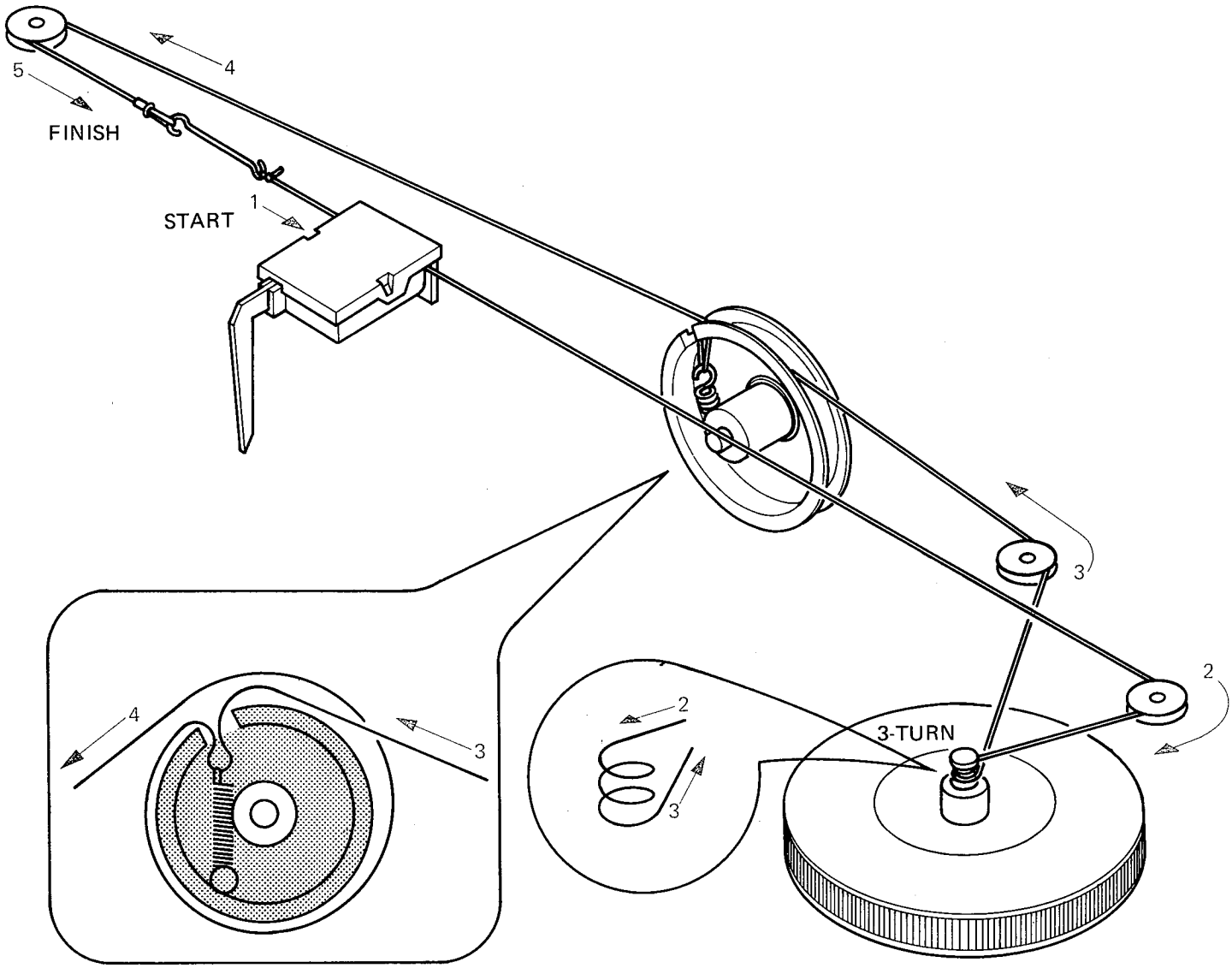

Figure 2. Dial Stringing

7. DIAGRAMS

7.1 INTER CONNECTION DIAGRAM