

SERVICE  
MANUAL 2226

**marantz**

model 2226

*Stereophonic Receiver*

## TABLE OF CONTENTS

Section	Title	Page
1.	SERVICE NOTES .....	1
2.	TEST EQUIPMENT REQUIRED FOR SERVICING .....	2
3.	AM ALIGNMENT PROCEDURE .....	2
3.1	AM IF Alignment .....	2
3.2	AM Frequency Range and Tracking Alignment .....	2
4.	FM ALIGNMENT PROCEDURE .....	2
4.1	FM Frequency Range and Tracking Alignment .....	2
4.2	Stereo Separation Alignment .....	3
4.3	Muting Threshold Adjustment .....	3
4.4	FM Dolby Level Adjustment .....	3
5.	POWER AMPLIFIER ADJUSTMENT .....	4
6.	POWER SUPPLY ADJUSTMENT .....	4
7.	VOLTAGE CONVERSION FOR EUROPEAN MODEL .....	4
8.	DIAGRAMS .....	5
8.1	Block Diagram .....	5
8.2	Inter Connection Diagram - U.S.A. & CANADA .....	7
8.3	Inter Connection Diagram - EUROPE .....	9
8.4	Schematic Diagram - U.S.A. & CANADA .....	11
8.5	Schematic Diagram - EUROPE .....	13
8.6	Tuner Board Schematic Diagram and Component Locations .....	15
8.7	FM Front End Board Schematic Diagram and Component Locations .....	19
8.8	Phono Equalizer Amp. Board Schematic Diagram and Component Locations .....	20
8.9	Main Amp. Board Schematic Diagram and Component Locations .....	22
8.10	Power Supply Board Schematic Diagram and Component Locations .....	24
8.11	Pre., Tone Amp. Board Schematic Diagram and Component Locations .....	25
8.12	Mono, Hi Filter, Tape 1 Mon., FM 25 $\mu$ S Switches Board Schematic Diagram and Component Locations .....	26
8.13	Mono, Hi Filter, Low Filter, Tape 1 Mon., Switches Board Schematic Diagram and Component Locations - EUROPE .....	26
8.14	Pops Noise Muting Board Schematic Diagram and Component Locations .....	27
8.15	Speaker Switch Board Schematic Diagram and Component Locations .....	27
8.16	Dial Lamp Board Schematic Diagram and Component Locations .....	27
9.	MAJOR COMPONENT LOCATIONS .....	28
9.1	Cabinet-Front View .....	28
9.2	Chassis-Top View .....	28
9.3	Cabinet-Rear View .....	29
9.4	Chassis-Bottom View .....	29
9.5	Cabinet-Front View - EUROPE .....	30
9.6	Chassis-Top View - EUROPE .....	30
9.7	Cabinet-Rear View - EUROPE .....	31
10.	EXPLODED VIEW .....	32
10.1	Packing Material Exploded View .....	32
10.2	Mechanical Exploded View .....	33
11.	PARTS LIST .....	35
12.	TECHNICAL SPECIFICATIONS .....	44

## INTRODUCTION

This service manual was prepared for use by Authorized Warranty Stations and contains service information for Marantz Model 2226 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 operations in 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. SERVICE NOTES

As can be seen from the circuit diagram, the chassis of Model 2226 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. Tuner . . . . . mounted on P.W. Board P200
3. Phono Equalizer Amp. . . . . mounted on P.W. Board P400
4. Main Amp. . . . . mounted on P.W. Board P700
5. Power Supply . . . . . mounted on P.W. Board P800
6. Pre & Tone Amp. . . . . mounted on P.W. Board PE01
7. Mono, Hi Filter, Tape 1 Monitor &  
FM 25 $\mu$ S Switches . . . . . mounted on P.W. Board PH01
8. Pops Noise Muting. . . . . mounted on P.W. Board PJ01
9. Speaker Switch . . . . . mounted on P.W. Board PT01
10. Dial Lamp . . . . . mounted on P.W. Board PZ01

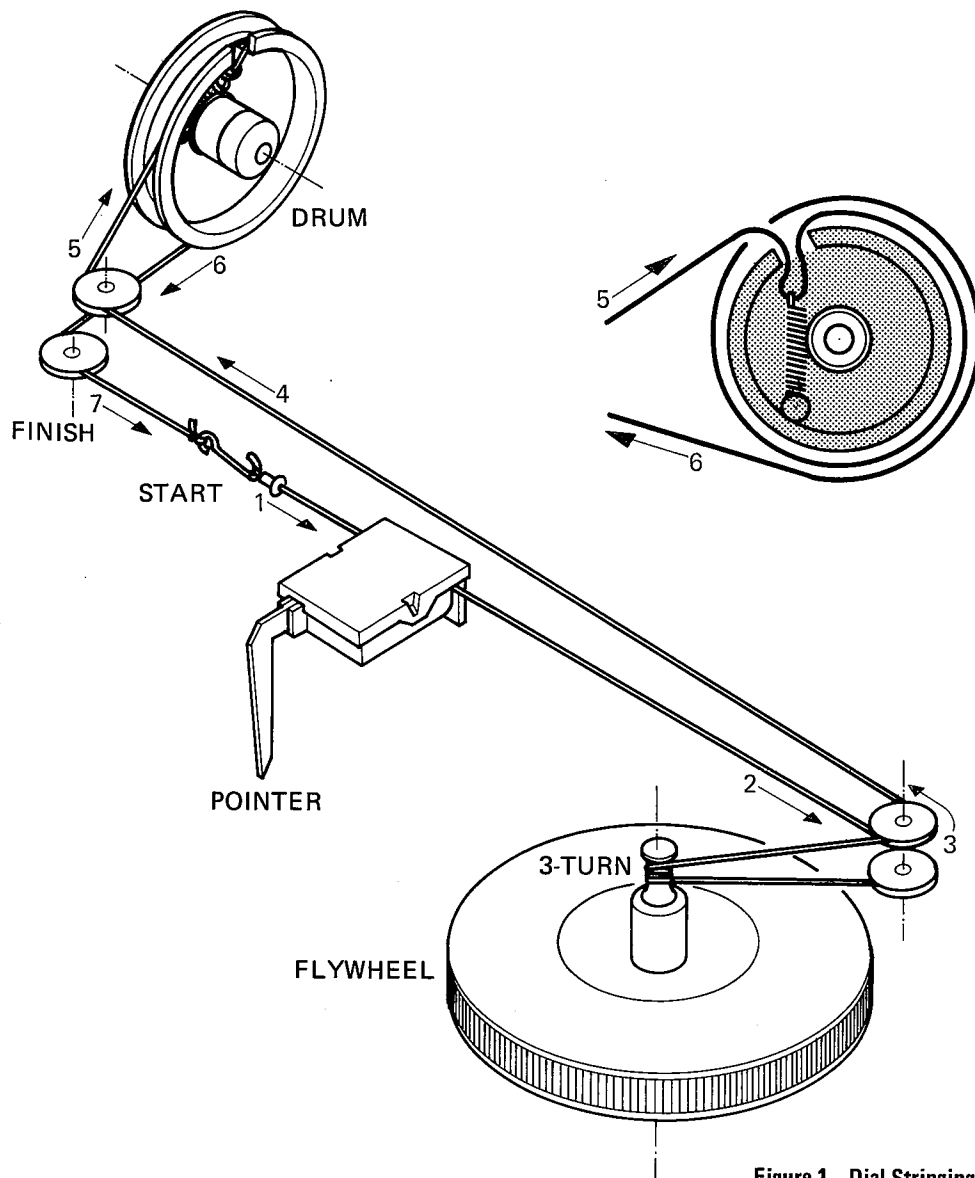


Figure 1. Dial Stringing

## 2. TEST EQUIPMENT REQUIRED FOR SERVICING

This table lists the test equipment required for servicing the Model 2226 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 L153 and an alignment scope to the resistor R162 (out side).
2. Rotate each core of IF transformers L155 and L156 for the 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 L154 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 for maximum audio output.
3. Repeat steps 1 and 2 until no further adjustment is necessary.
4. Set the generator to 600 kHz, tune the receiver to the same frequency and adjust a slug core of AM ferrite-rod antenna L001 for maximum output.

5. Set the generator to 1400 kHz and tune the receiver to the same frequency and adjust the trimming capacitor on the antenna tuning capacitor for maximum output.
6. Repeat procedures 4 and 5 until no further adjustment is necessary.

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

## 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 OUT jacks on the rear panel.
2. Set the generator to 87.4 MHz and provide about 3 to 5  $\mu$ V. Place the tuning pointer at the low frequency end by rotating the tuning knob and adjust the pitch of oscillator coil L107 to obtain maximum audio output.

3. Set the generator to 109 MHz and provide about 3 to 5  $\mu\text{V}$ . Rotate the tuning knob and place the tuning pointer at the high frequency end and adjust the trimming capacitor C121 for maximum output.
4. Repeat steps 2 and 3 until no further adjustment is necessary.
5. Set the 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 pitch of antenna coil L102 and RF coil L104 for maximum output.
6. Set the generator to 106 MHz and tune the receiver to the same frequency. Decrease the signal generator output until the audio output level decreases with the decreasing generator output. Adjust the trimming capacitors of antenna and RF tuning circuits for maximum output.
7. Repeat steps 5 and 6 until no further adjustment is necessary.
8. Adjust the primary core (lower core) of discriminator transformer L202 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  $\text{K}\mu\text{V}$  and tune the receiver to the same frequency so that the center tuning meter pointer indicates its center. Adjust the secondary core (upper core) of L202 for minimum distortion.

#### 4.2 STEREO SEPARATION ALIGNMENT

1. Set the FM signal generator to provide 1  $\text{K}\mu\text{V}$  at 98 MHz. Tune the receiver to the same frequency so that the center tuning meter pointer indicates its center. Then turn off the modulation of the generator, connect a frequency counter to test point J229 and adjust R301 so that the frequency counter may precisely read 76 kHz.
2. Modulate the generator with stereo composite signal consisting of only L or R channel (of course a pilot signal must be included).
3. Adjust the trimming resistor R317 for maximum and same separation in both channels.

#### 4.3 MUTING THRESHOLD ADJUSTMENT

1. Set the FM signal generator output to provide 12.5  $\mu\text{V}$  (IHF) at 98 MHz and tune receiver to the same frequency. Adjust the trimming resistor R212 for the threshold level of 12.5  $\mu\text{V}$ . (During this adjustment turn the FM MUTING pushswitch "on".)

#### 4.4 FM DOLBY LEVEL ADJUSTMENT

1. Set the FM signal generator to provide a 400 Hz, 50% modulated 98 MHz mono signal, at 1  $\text{K}\mu\text{V}$  output. Precisely tune the receiver to 98 MHz.
2. Depress the FM 25  $\mu\text{S}$  pushswitch, and adjust R215 until the outputs of both channels are 580 mV.

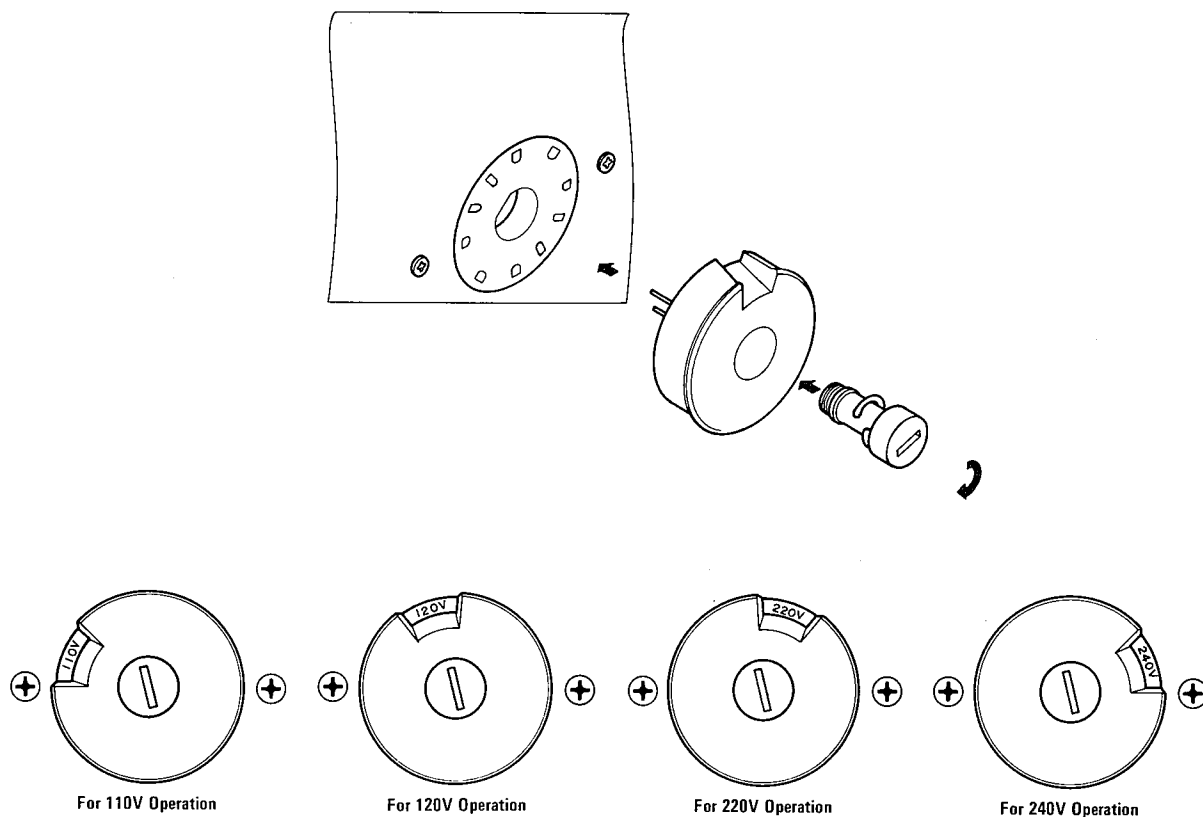


Figure 2. Voltage Conversion Chart

## 5. POWER AMPLIFIER ADJUSTMENT

Connect a VTVM between J709(+) and J711(-) and adjust the trimming resistor R763 until the VTVM reads 20 mV DC. And next, connect a VTVM between J707 and J714 (GROUND) and adjust the trimming resistor R761 until the VTVM reads 0 mV DC. Do over again. For the other channel, connect the VTVM between J720(+) and J721(-) and adjust the R764 for the same reading, and connect the VTVM between J718 and J714 and adjust the R762 for the same reading. Do over again.

## 6. POWER SUPPLY ADJUSTMENT

Connect a VTVM between J805(+) and J814(-) and adjust R808 until the VTVM reads 35.0 V under no signal condition.

## 7. VOLTAGE CONVERSION FOR EUROPEAN MODEL

The European version of the Model 2226 is equipped with a universal power transformer that may be adjusted to operate at 110V, 120V, 220V, or 240V AC at 50 to 60 Hz. To convert the unit to a different power source voltage, reposition conversion plug as shown in Figure 2.

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

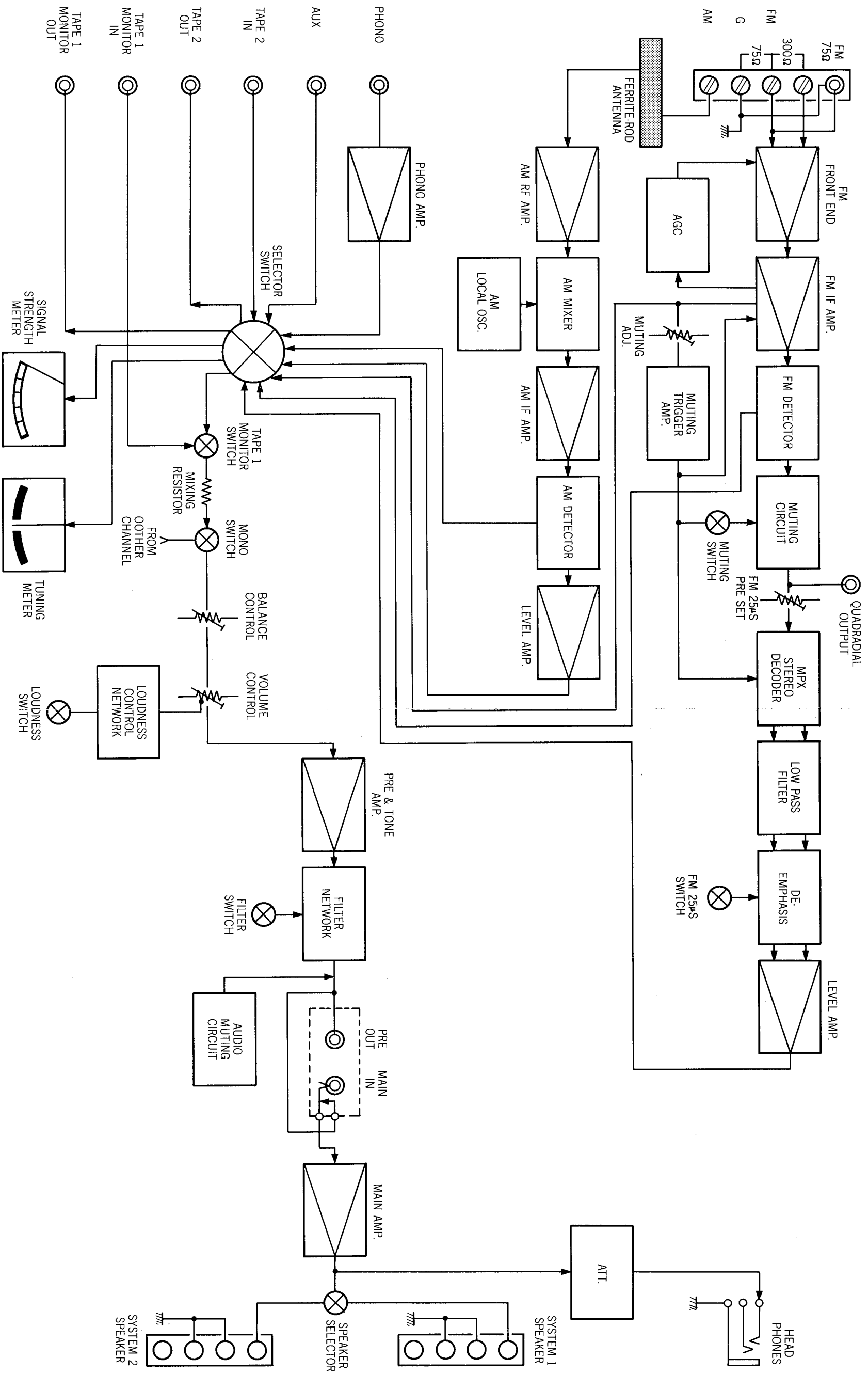
## FTZ REGULATION

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

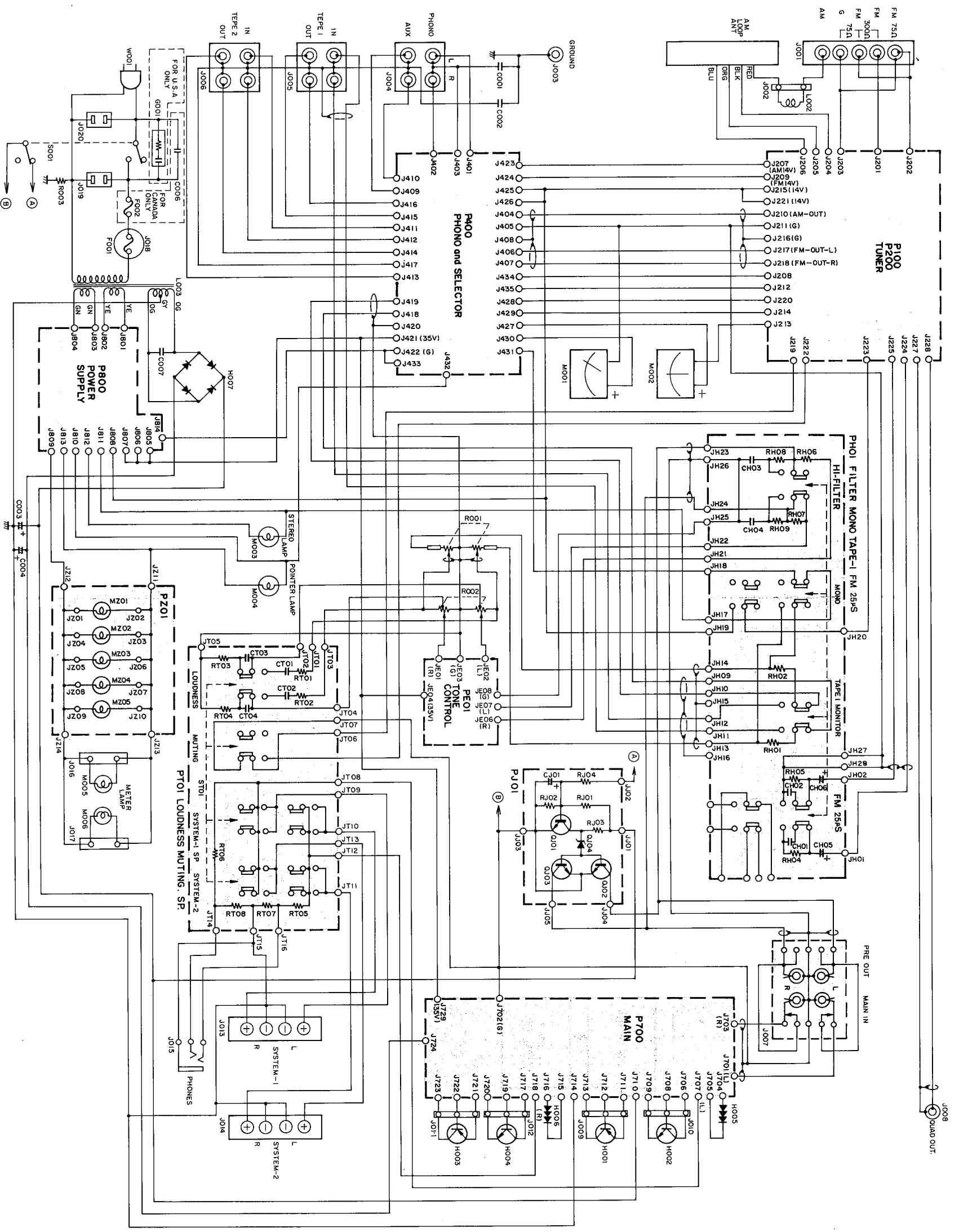
**Achtung für die Leute, die in dem Gebiet wohnen, wo die FTZ-Bestimmungen vorherrschend sind.**

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

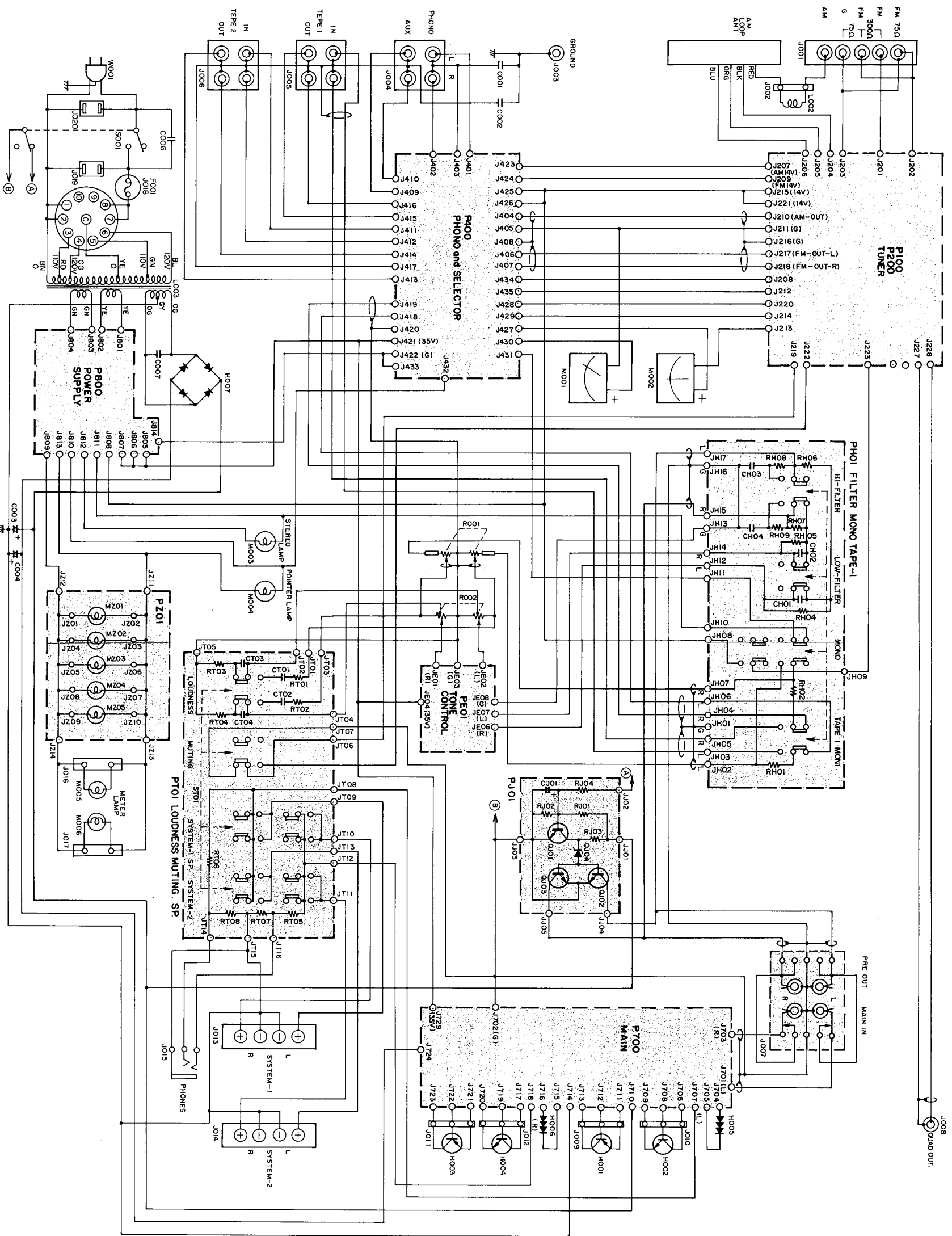
8. DIAGRAMS  
8.1 BLOCK DIAGRAM

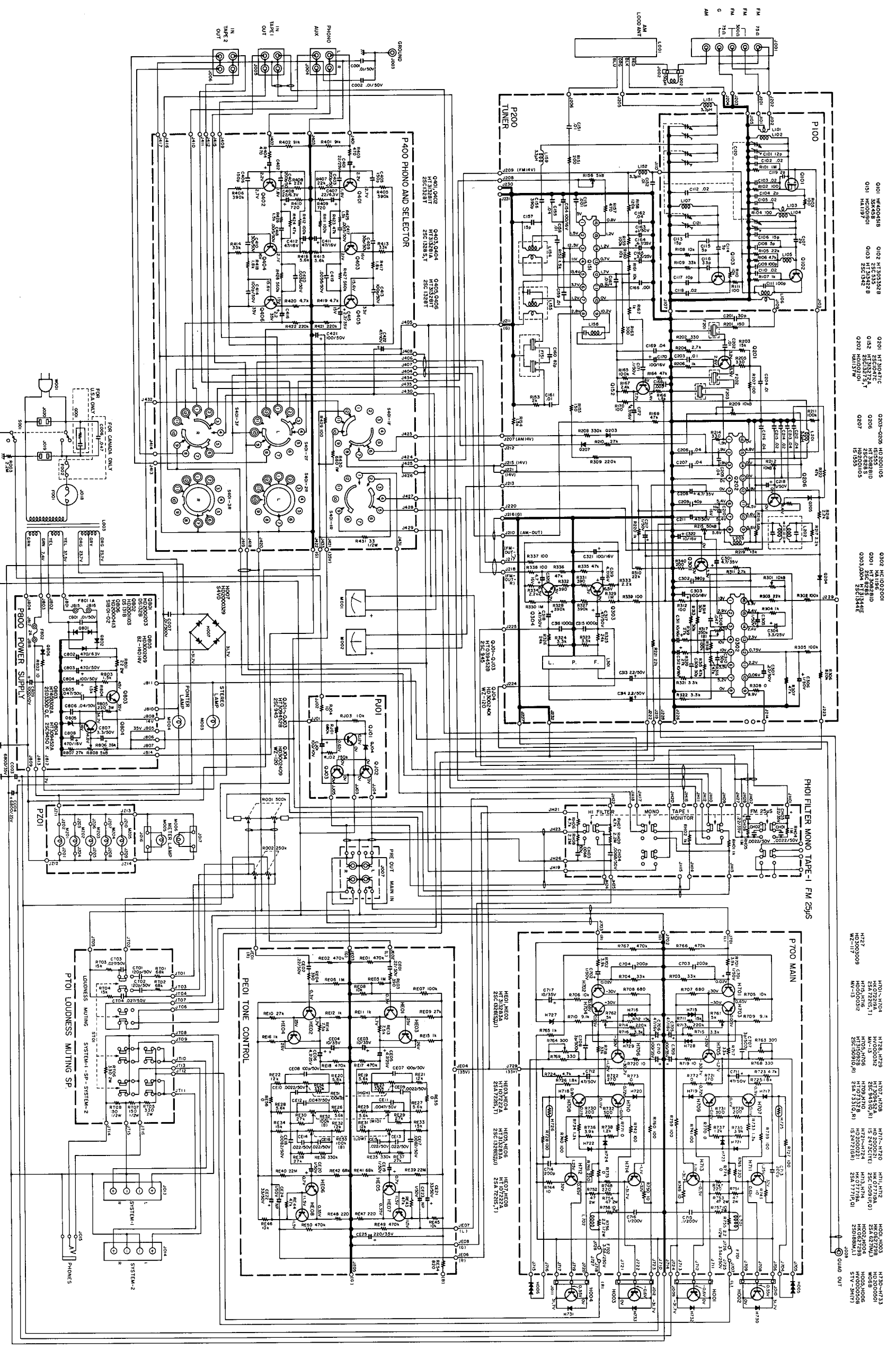


8.2 INTER CONNECTION DIAGRAM - U.S.A. & CANADA









- Q01 6X4PQ48B
- Q02 6X4PQ48B
- Q03 6X4PQ48B
- Q04 6X4PQ48B
- Q05 6X4PQ48B
- Q06 6X4PQ48B
- Q07 6X4PQ48B
- Q08 6X4PQ48B
- Q09 6X4PQ48B
- Q10 6X4PQ48B
- Q11 6X4PQ48B
- Q12 6X4PQ48B
- Q13 6X4PQ48B
- Q14 6X4PQ48B
- Q15 6X4PQ48B
- Q16 6X4PQ48B
- Q17 6X4PQ48B
- Q18 6X4PQ48B
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- Q99 6X4PQ48B
- Q100 6X4PQ48B

