

SERVICE MANUAL **2238**

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model 2238

Stereophonic Receiver

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INTRODUCTION

This service manual was prepared for use by Authorized Warranty Stations and contains service information for Marantz Model 2238 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 2238 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 μ S Switches . . . mounted on P.W. Board PH01
8. Speaker Switch mounted on P.W. Board PT01
9. Dial Lamp mounted on P.W. Board PZ01

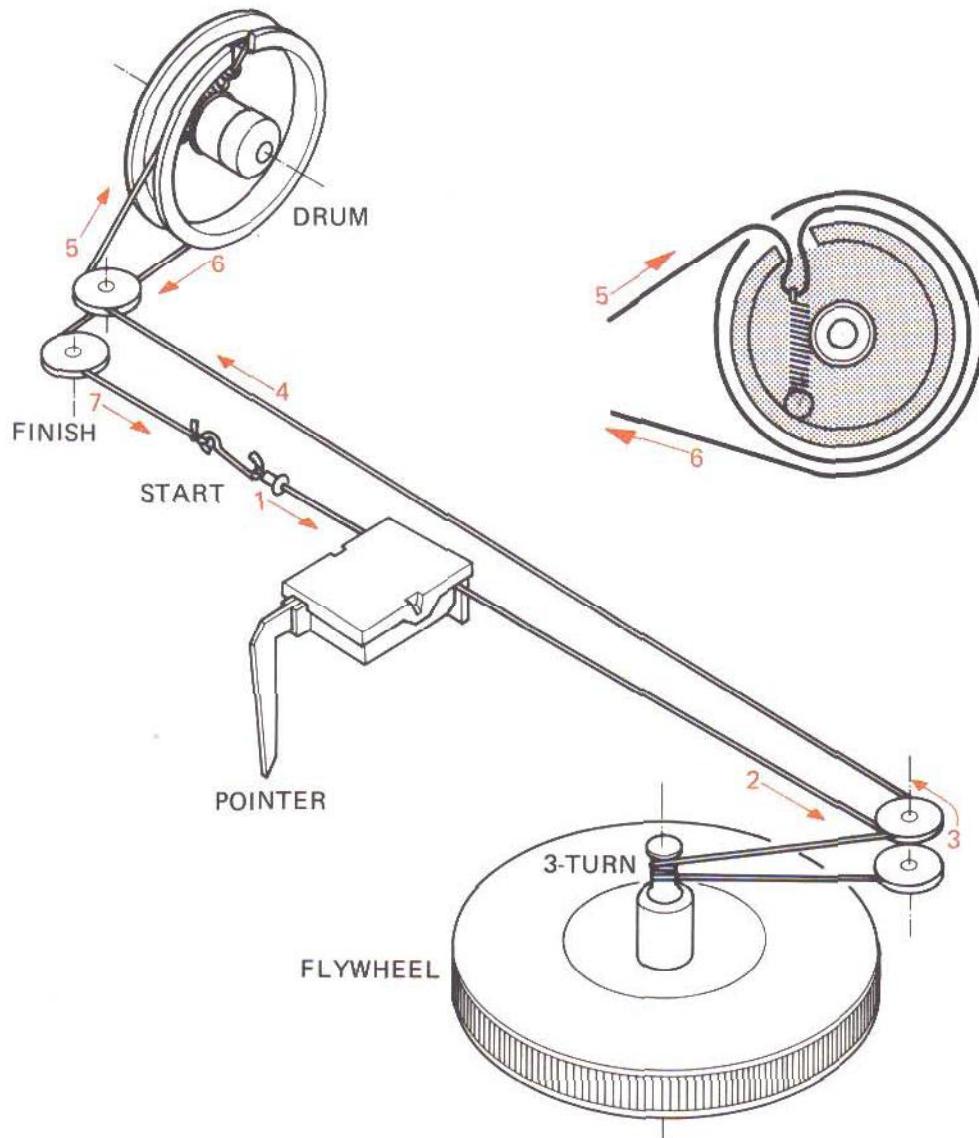


Figure 1. Dial Stringing

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2. TEST EQUIPMENT REQUIRED FOR SERVICING

This table lists the test equipment required for servicing the Model 2238 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 μ 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 μ 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 μ 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 μ 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 μ V (IHF) at 98 MHz and tune receiver to the same frequency. Adjust the trimming resistor R212 for the threshold level of 12.5 μ 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 μ V output. Precisely tune the receiver to 98 MHz.
2. Depress the FM 25 μ s pushswitch, and adjust R215 until the outputs of both channels are 580 mV.

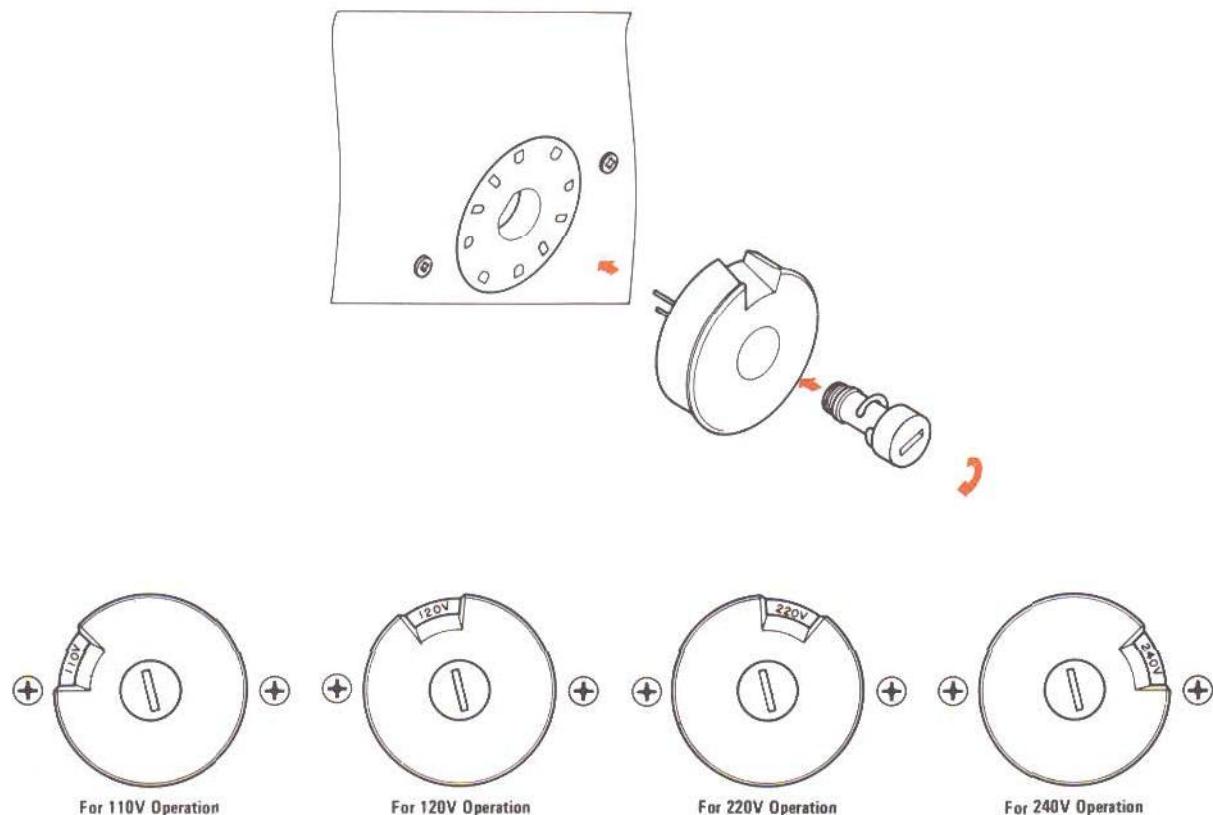


Figure 2. Voltage Conversion Chart

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5. POWER AMPLIFIER ADJUSTMENT

Connect a VTVM between J714(+) and J716(−) and adjust the trimming resistor R733 until the VTVM reads 14 mV DC. And next, connect a VTVM between J723 and J722 (GROUND) and adjust the trimming resistor R711 until the VTVM reads 0 mV DC. Do over again. For the other channel, connect the VTVM between J715(+) and J717(−) and adjust the R734 for the same reading, and connect the VTVM between J724 and J722 and adjust the R712 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

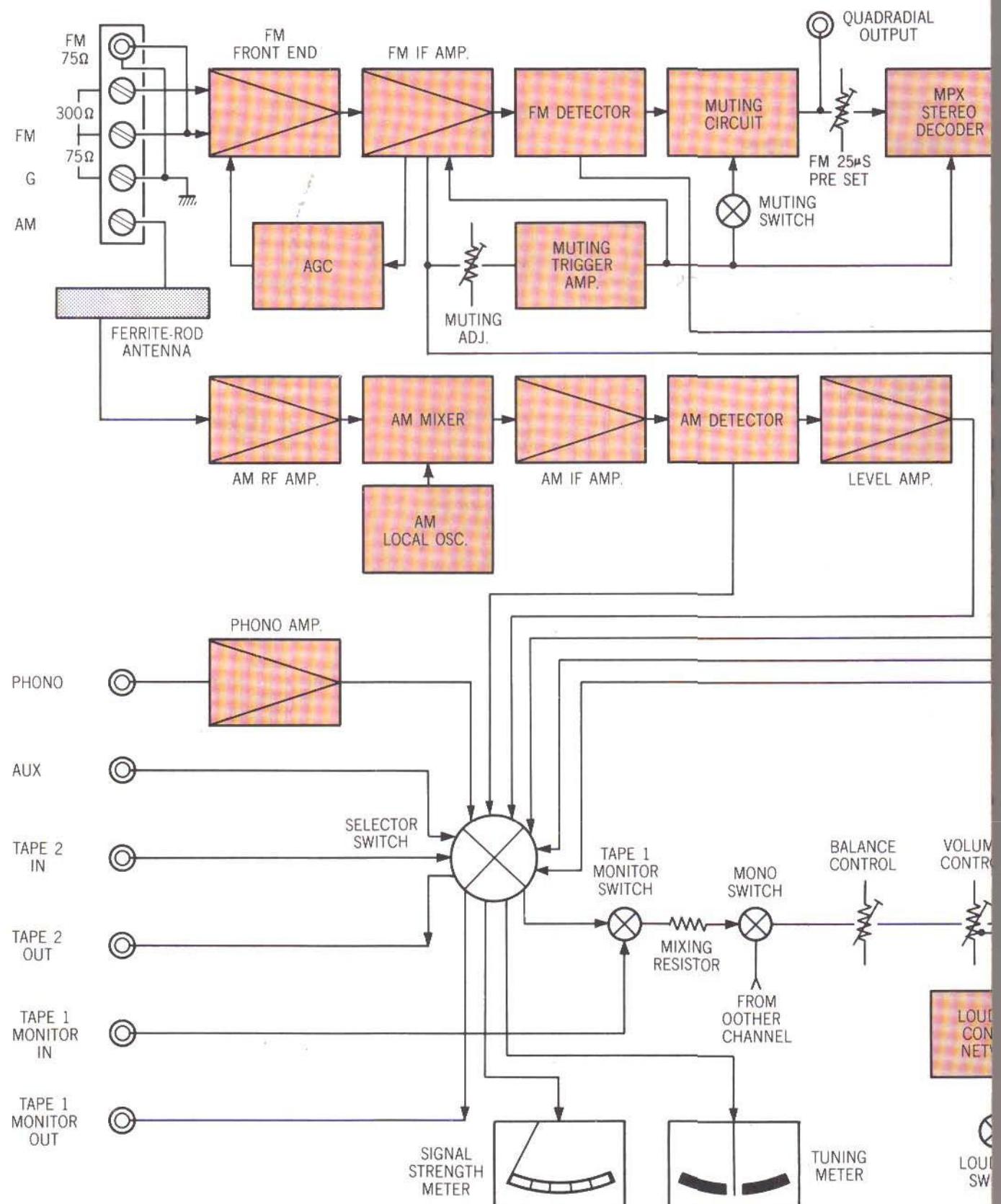
Instruction for the use in the range other than specified in FTZ codes

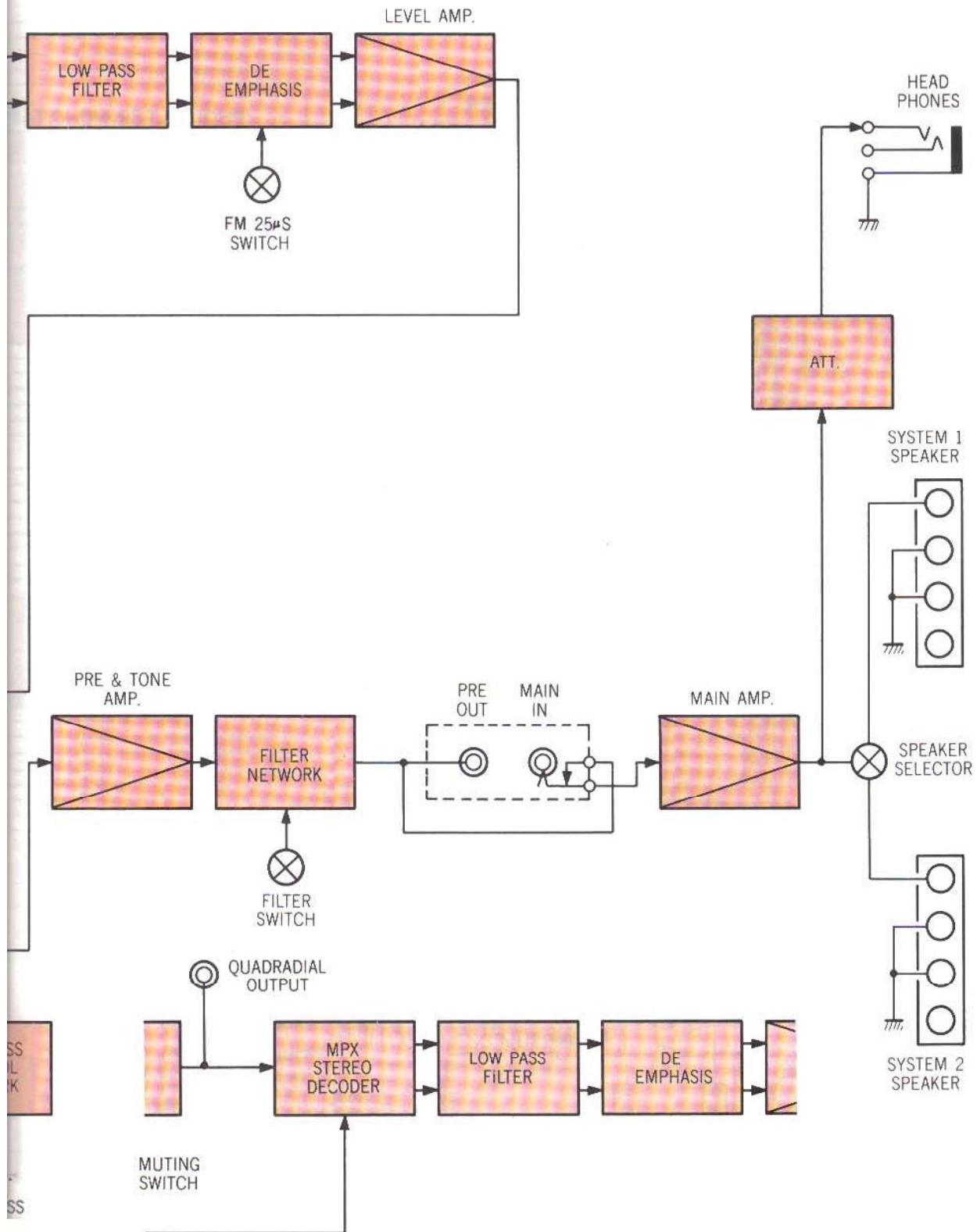
Achtung für die Leute, die in dem Gebiet wohnen, wo die FTZ-Bestimmungen vorherrschend sind.

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 Oszillatorschaltung (in der Abbildung mit "FTZ" gekennzeichnet) so zu korrigieren, dass er den Bestimmungen entspricht.

8. DIAGRAMS

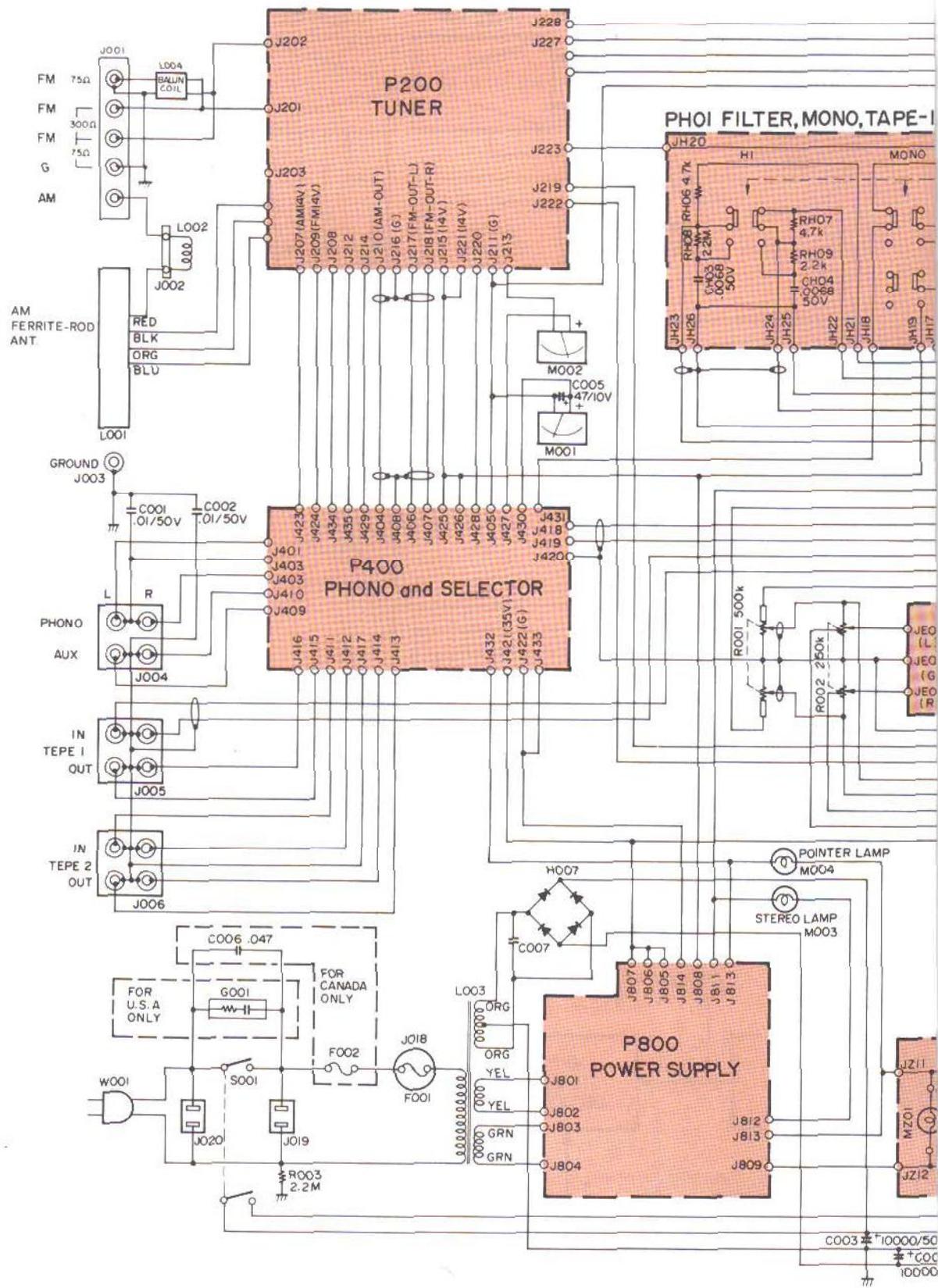
8.1 BLOCK DIAGRAM



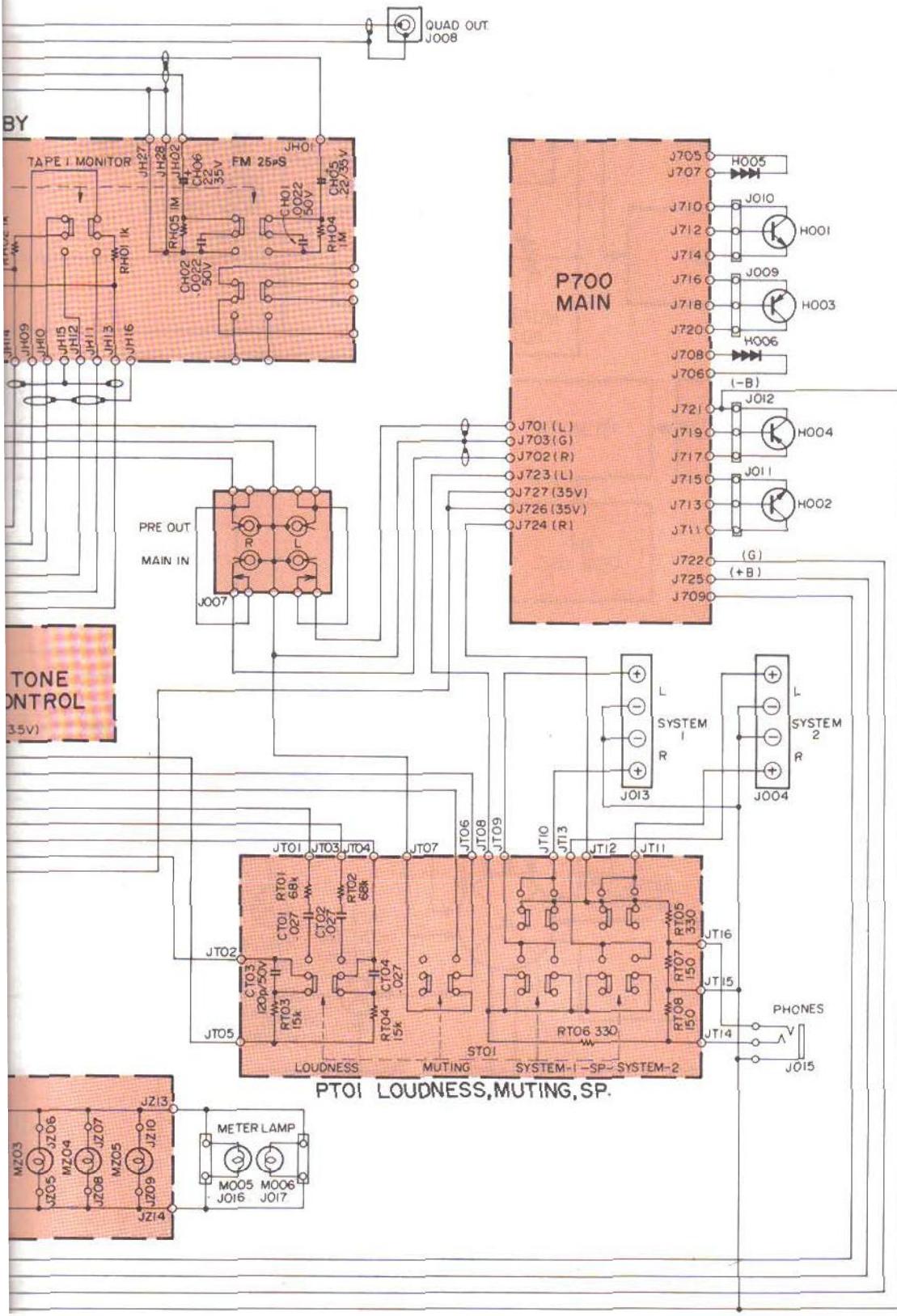


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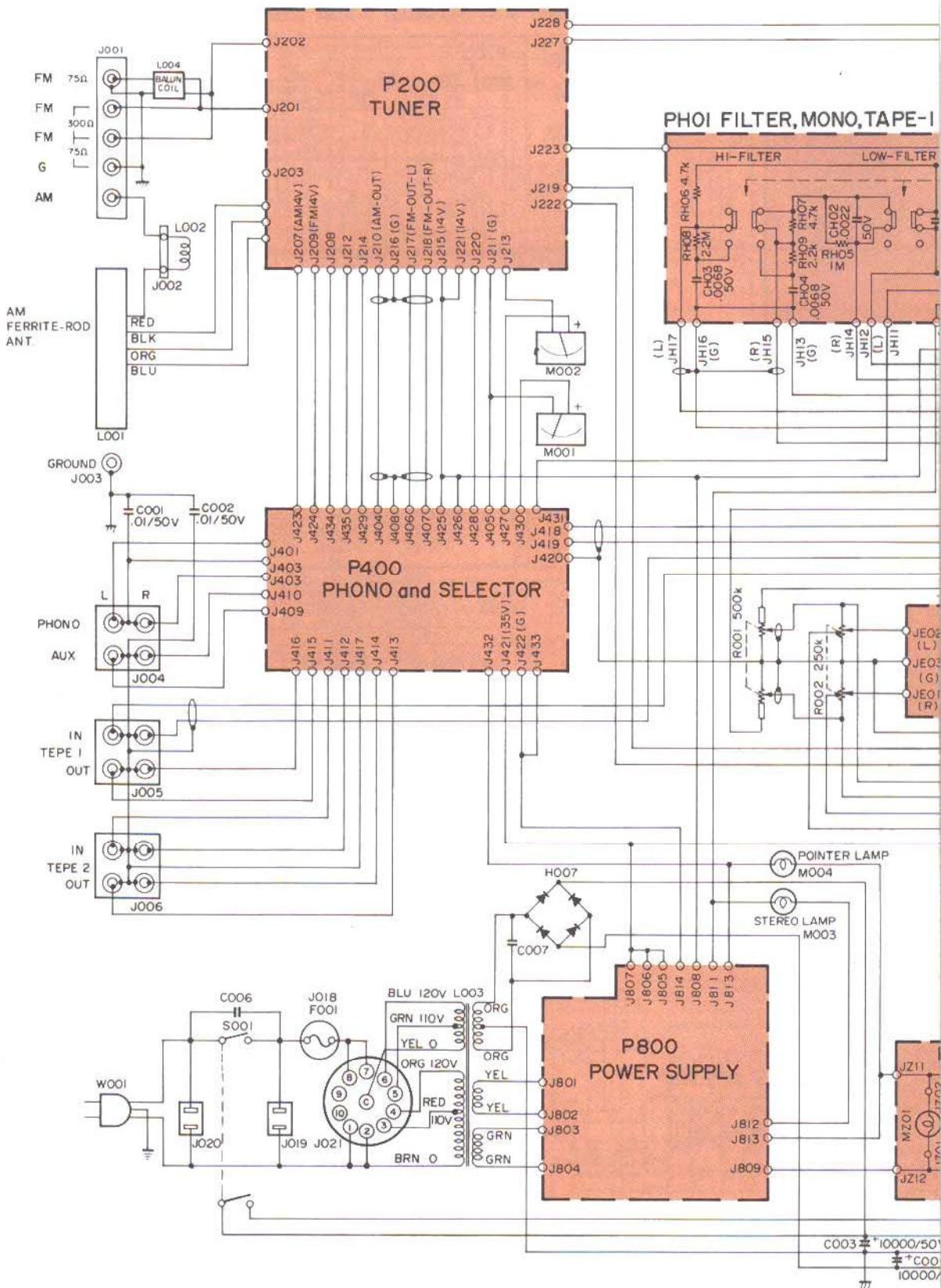
8.2 INTER CONNECTION DIAGRAM - U.S.A. & CANADA

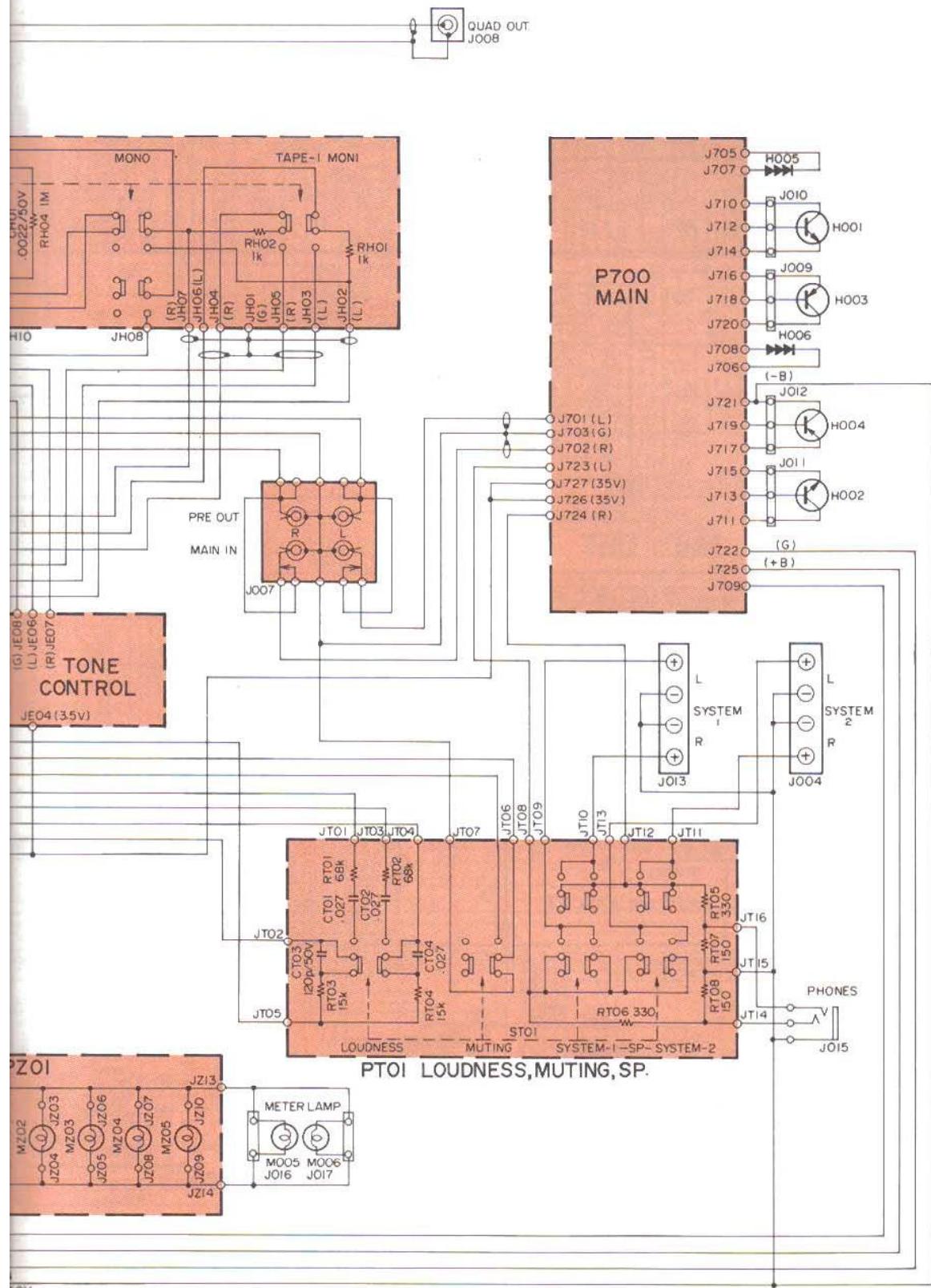


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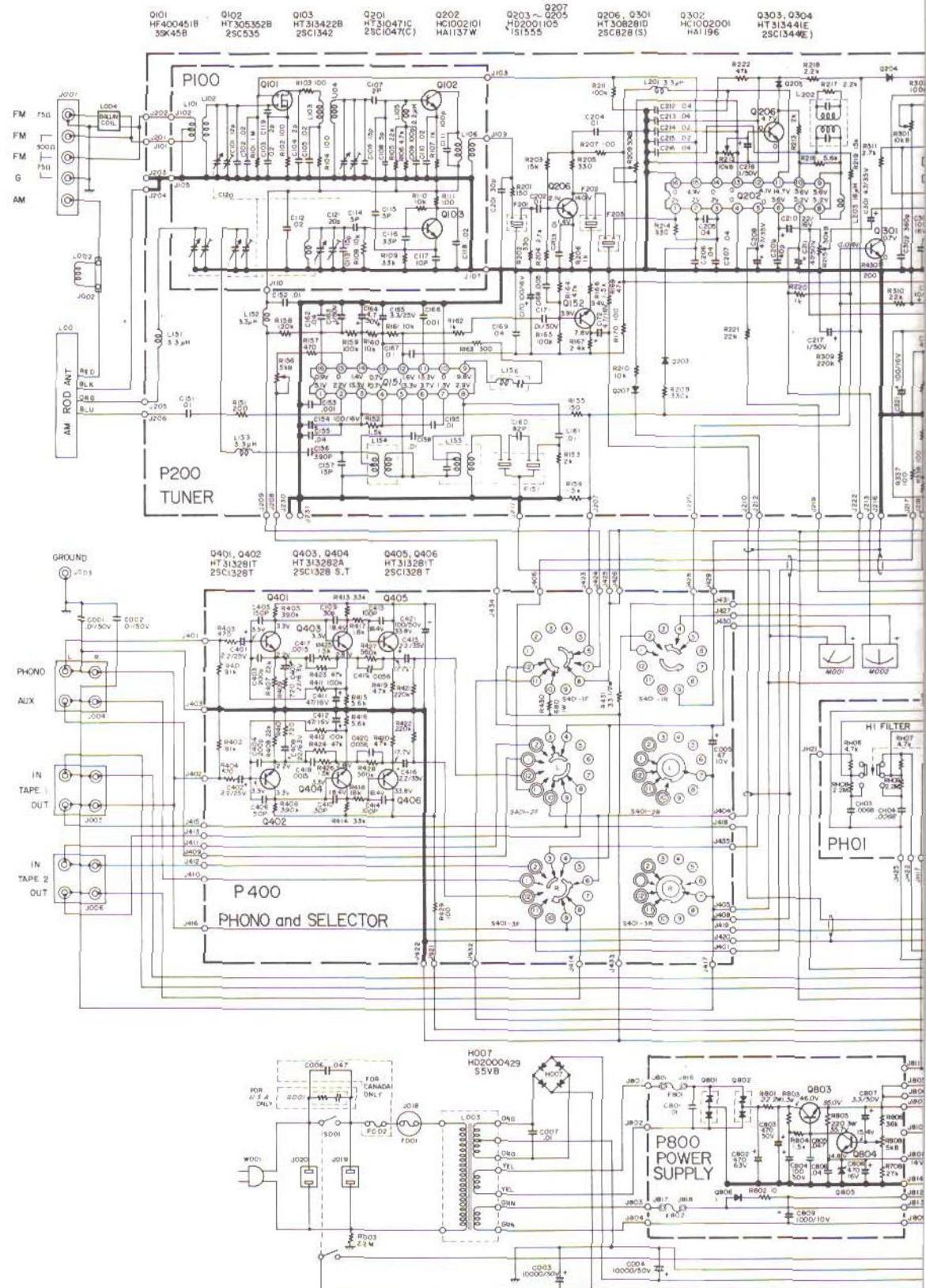
8.3 INTER CONNECTION DIAGRAM - EUROPE





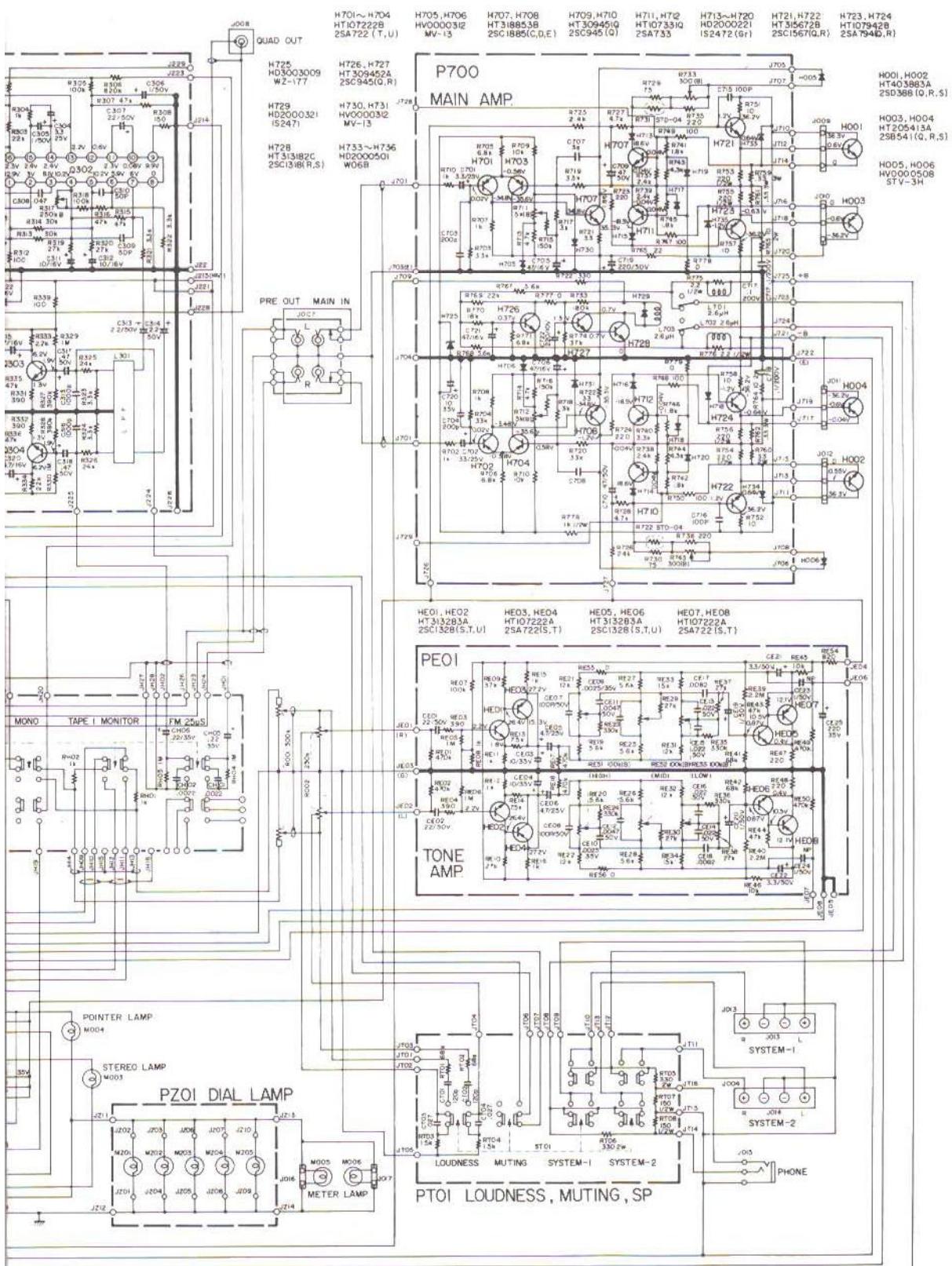
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8.4 SCHEMATIC DIAGRAM - U.S.A. & CANADA

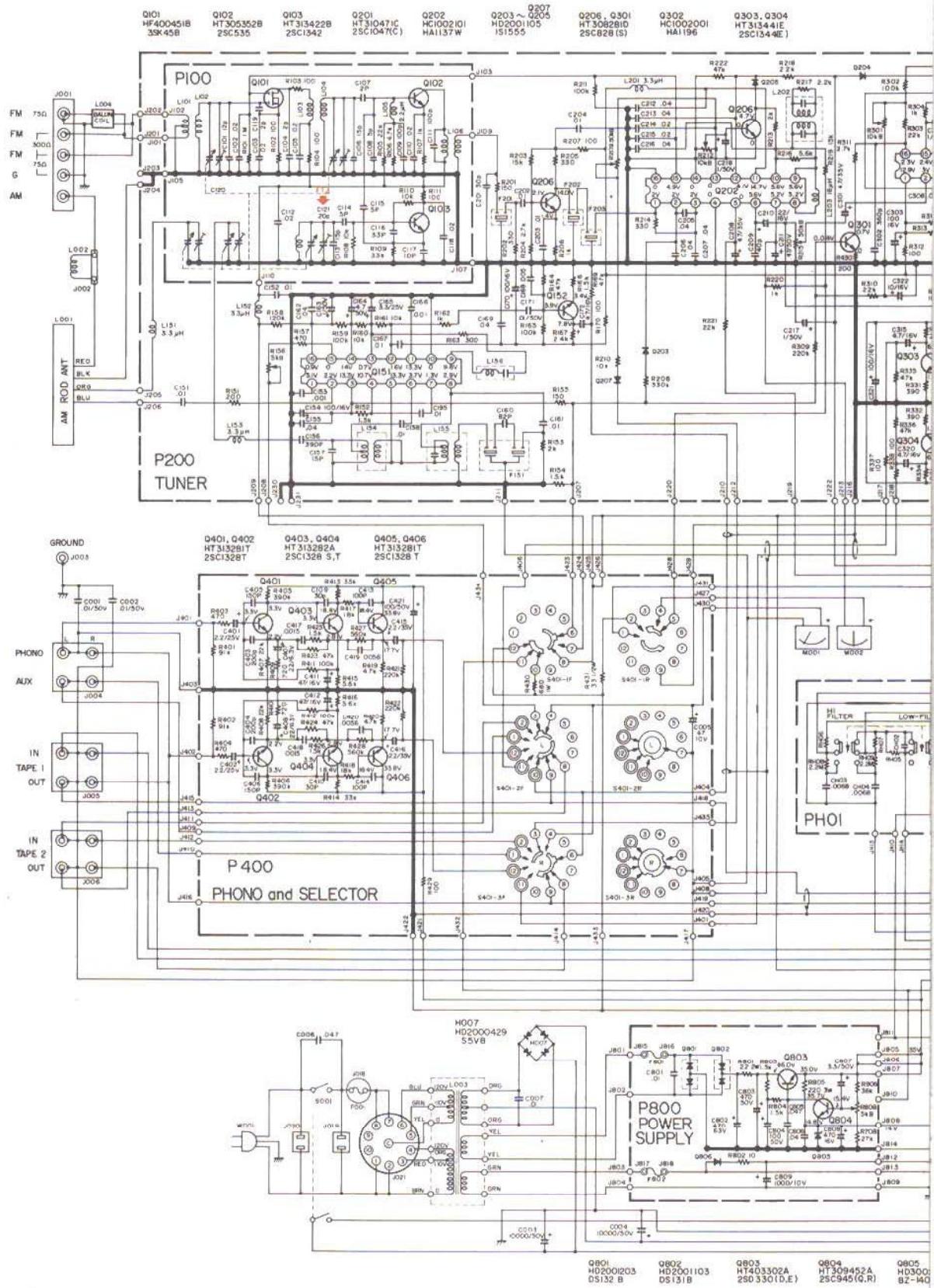


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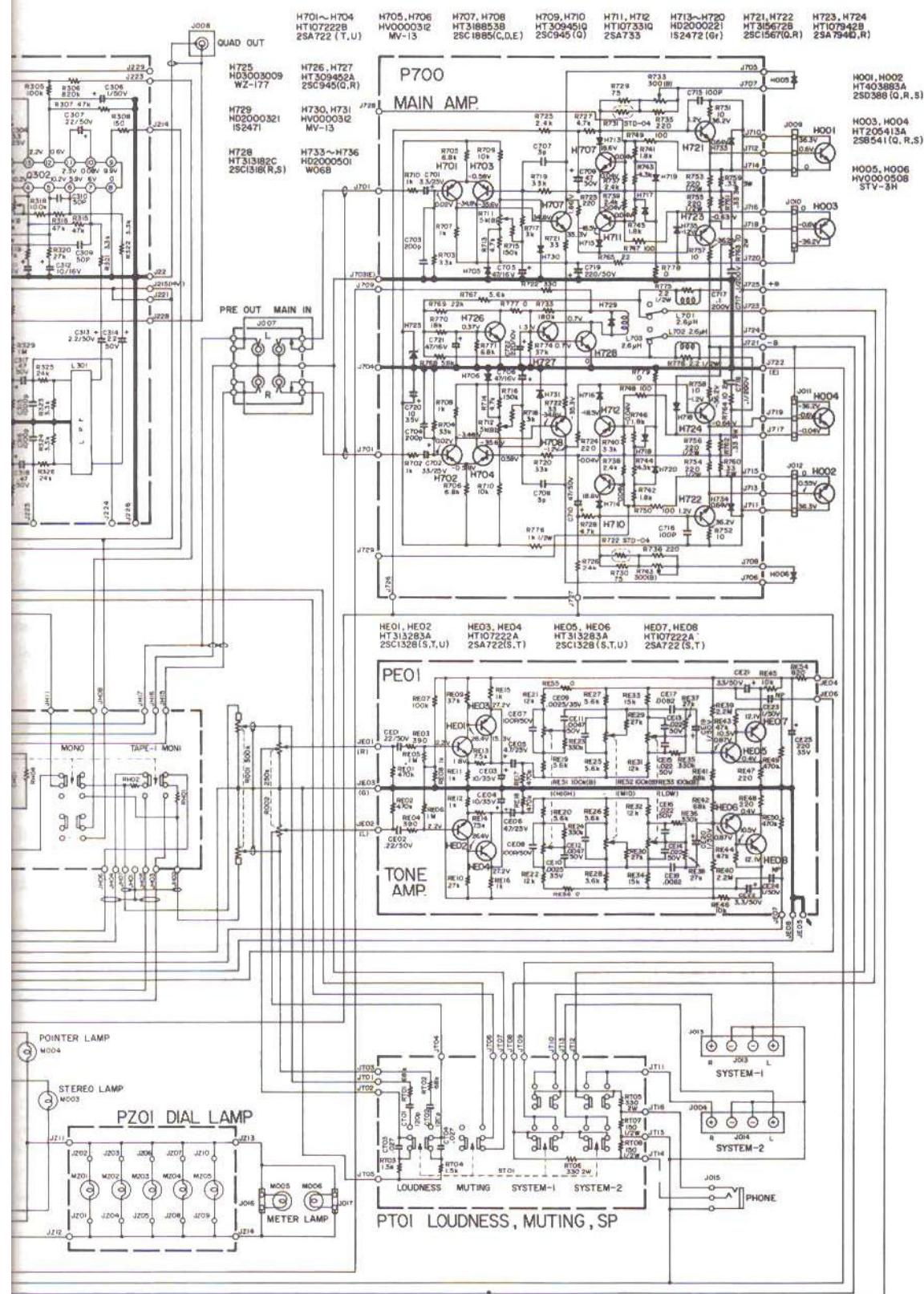
MODEL 2238



8.5 SCHEMATIC DIAGRAM - EUROPE

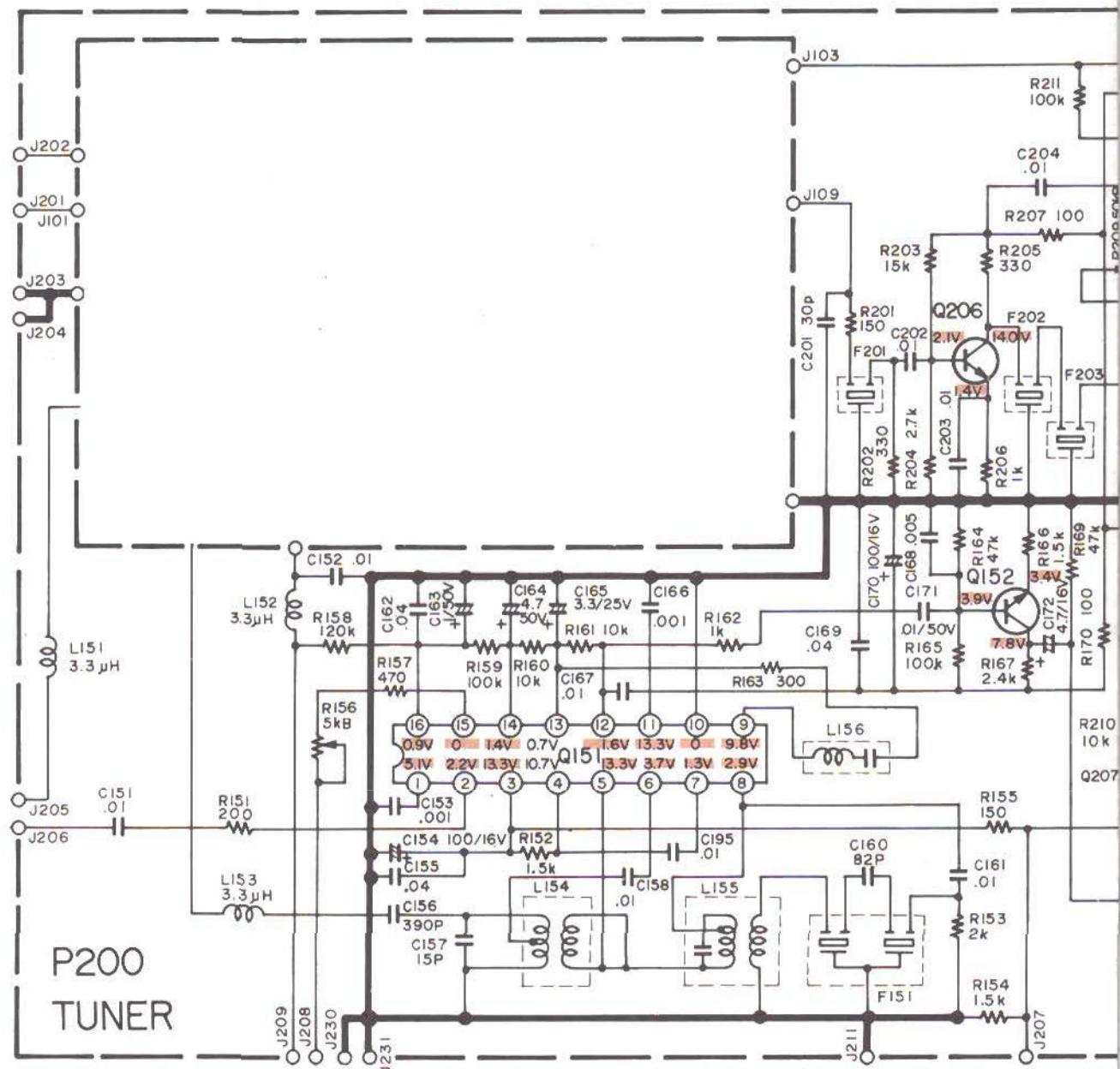


MODEL 2238

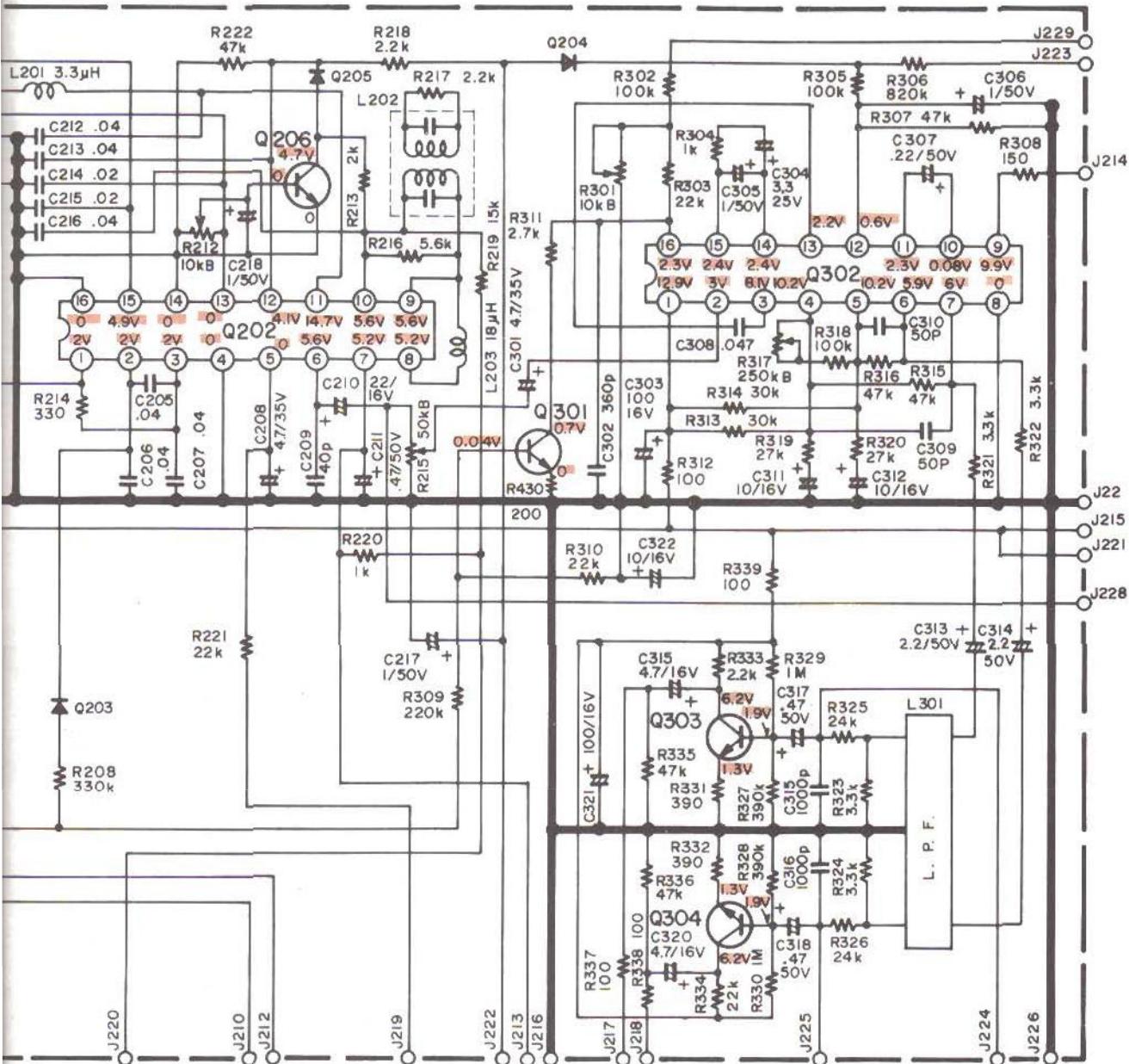


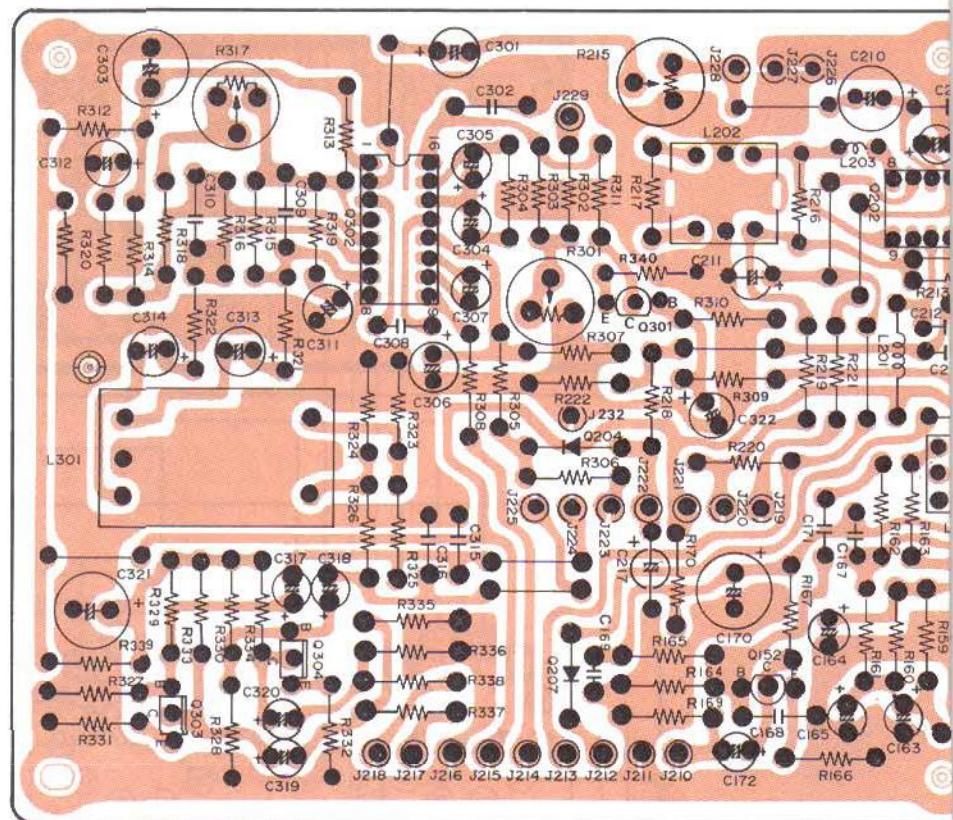
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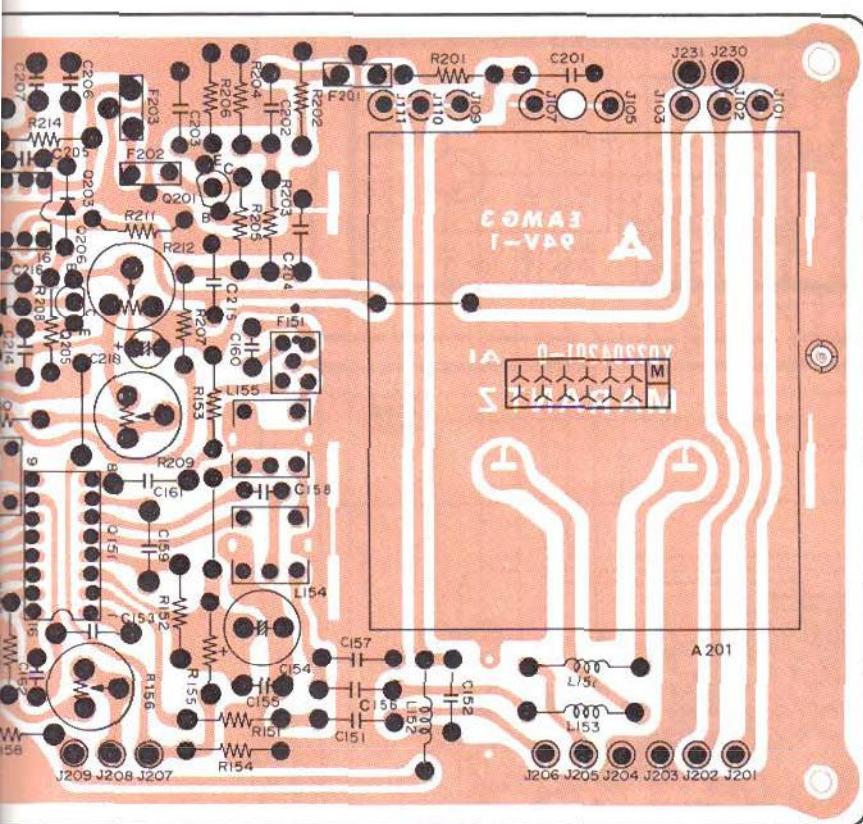
8.6 TUNER BOARD SCHEMATIC DIAGRAM AND COMPONENT LOCATIONS



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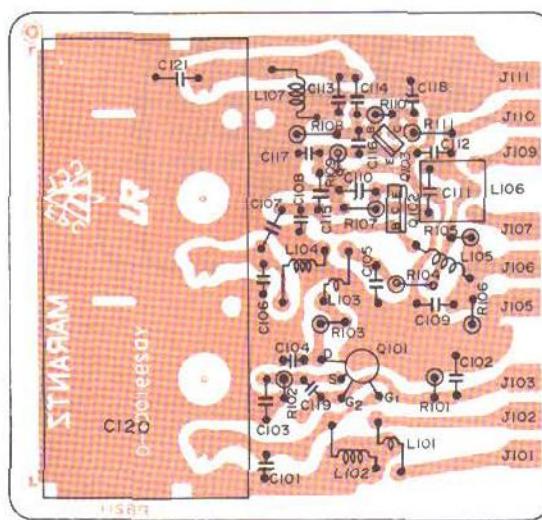
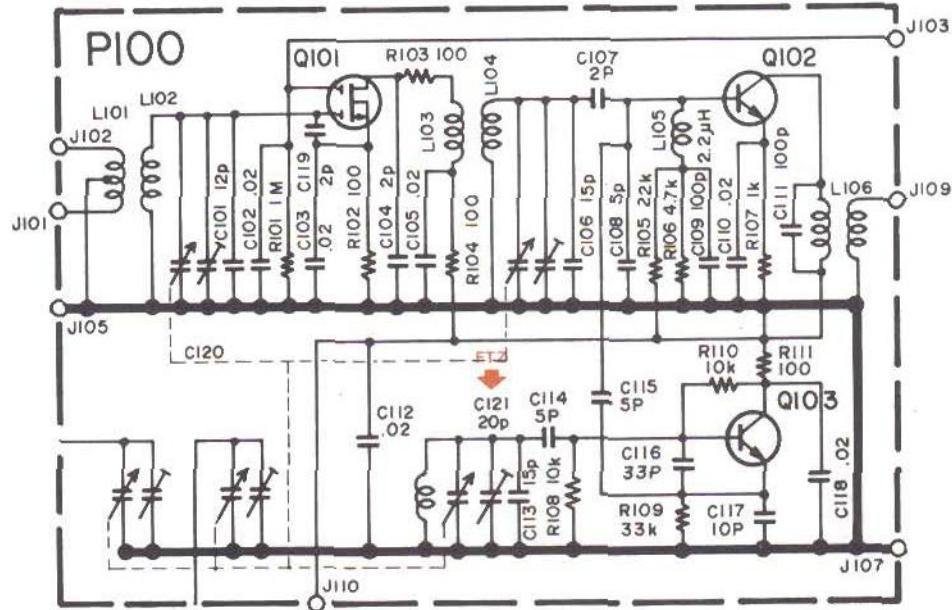






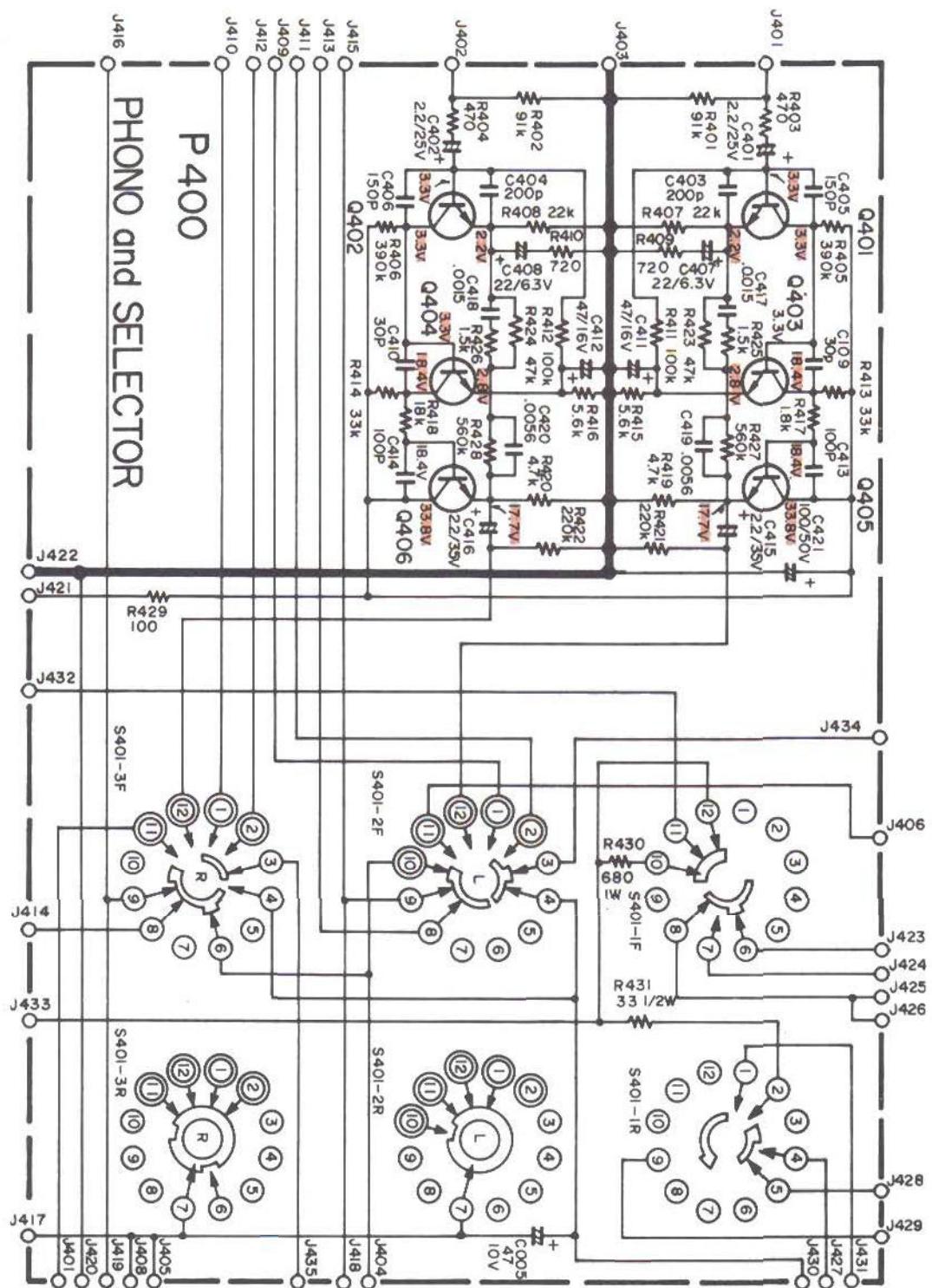
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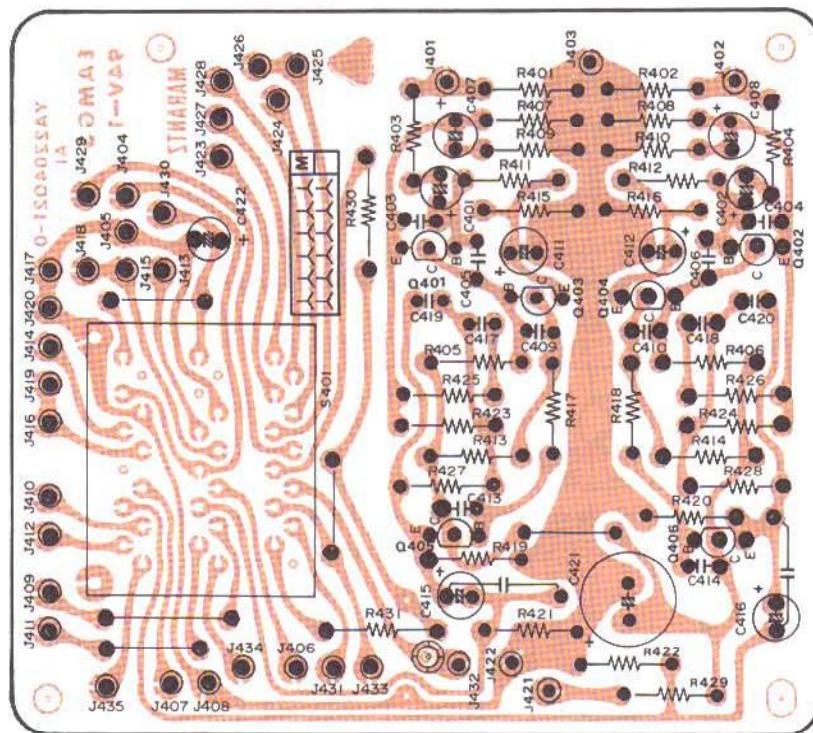
8.7 FM FRONT END BOARD SCHEMATIC DIAGRAM AND COMPONENT LOCATIONS



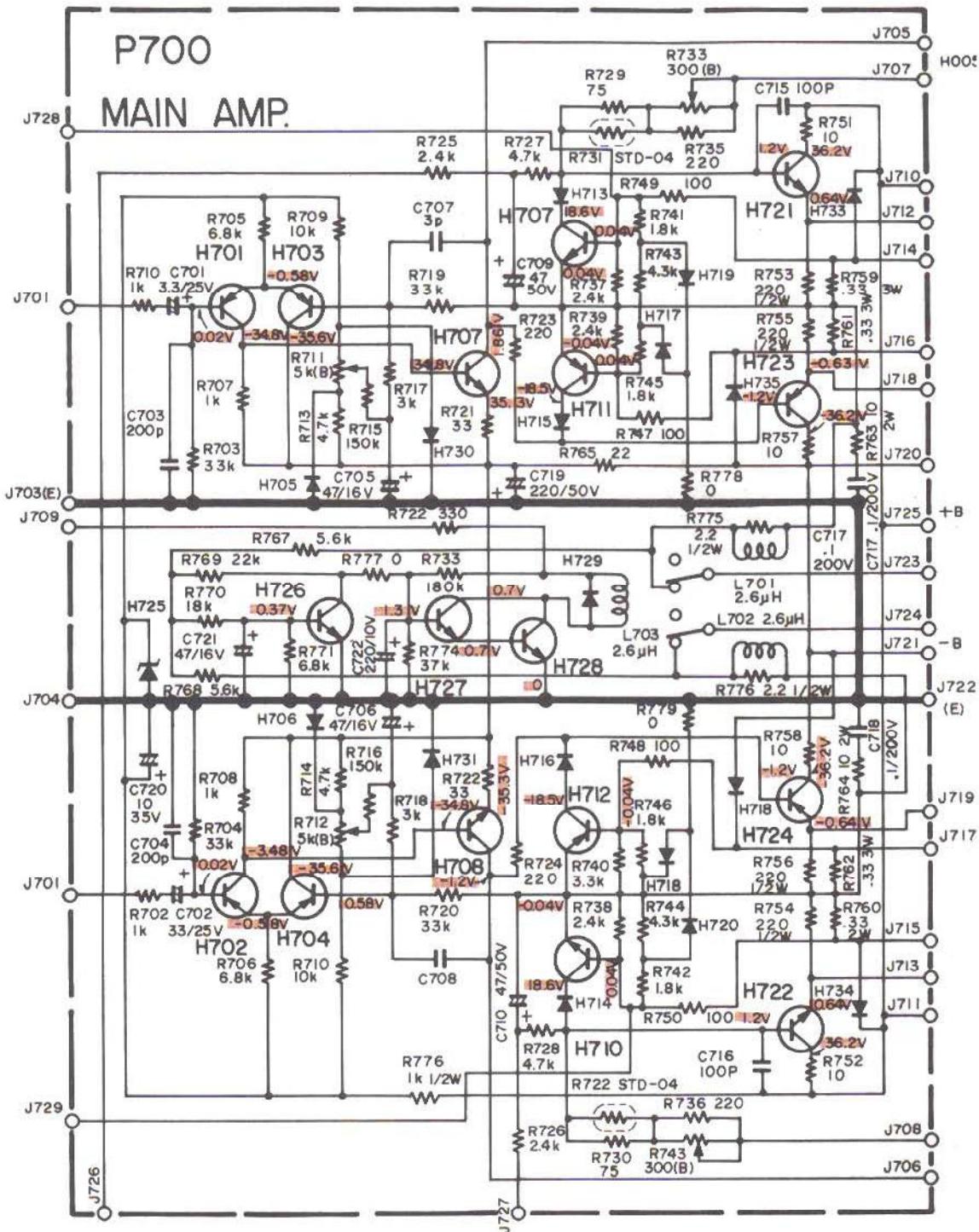
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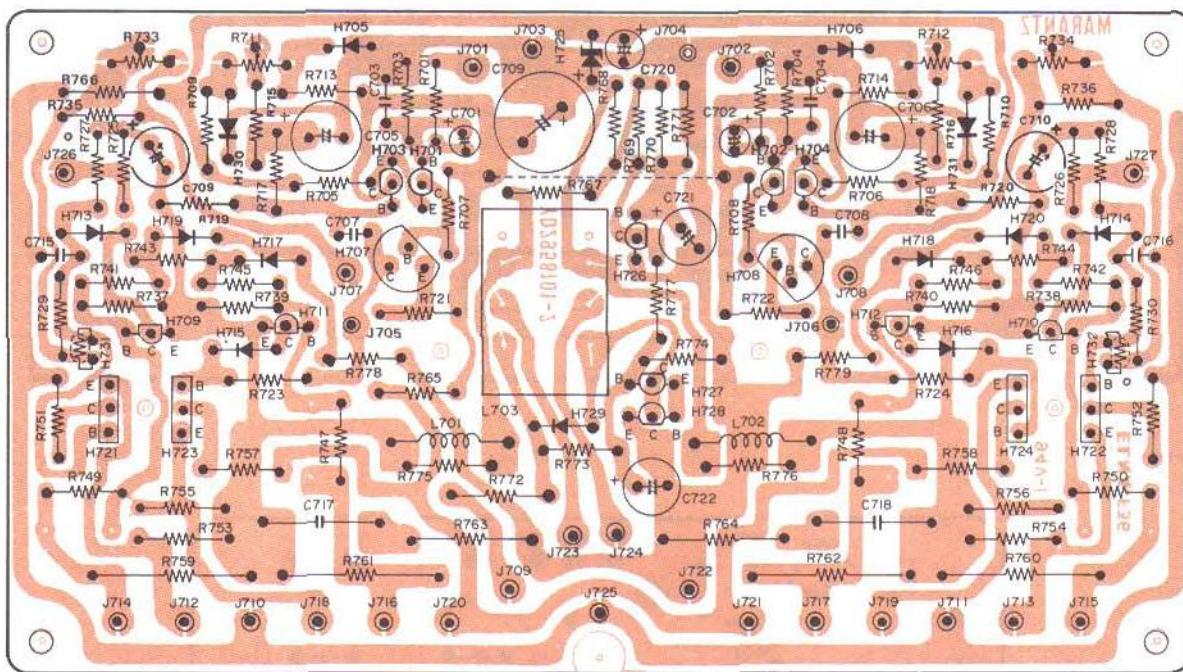
8.8 PHONO EQUALIZER AMP. BOARD SCHEMATIC DIAGRAM AND COMPONENT LOCATIONS





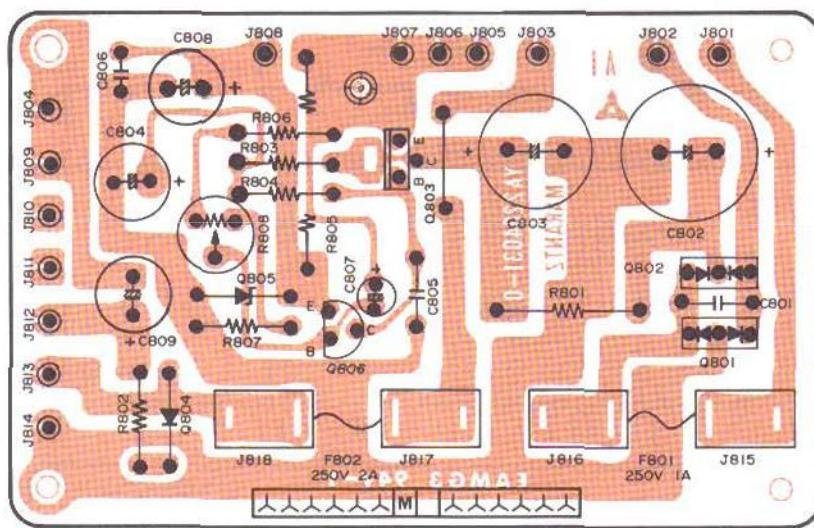
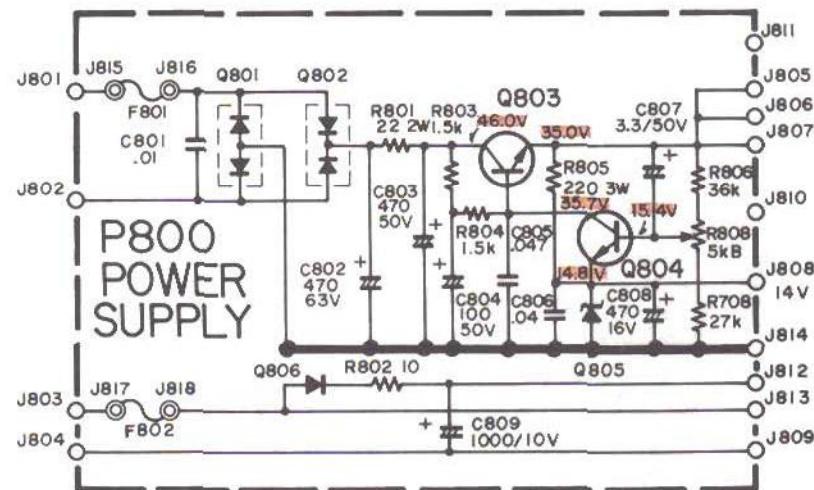
8.9 MAIN AMP. BOARD SCHEMATIC DIAGRAM AND COMPONENT LOCATIONS



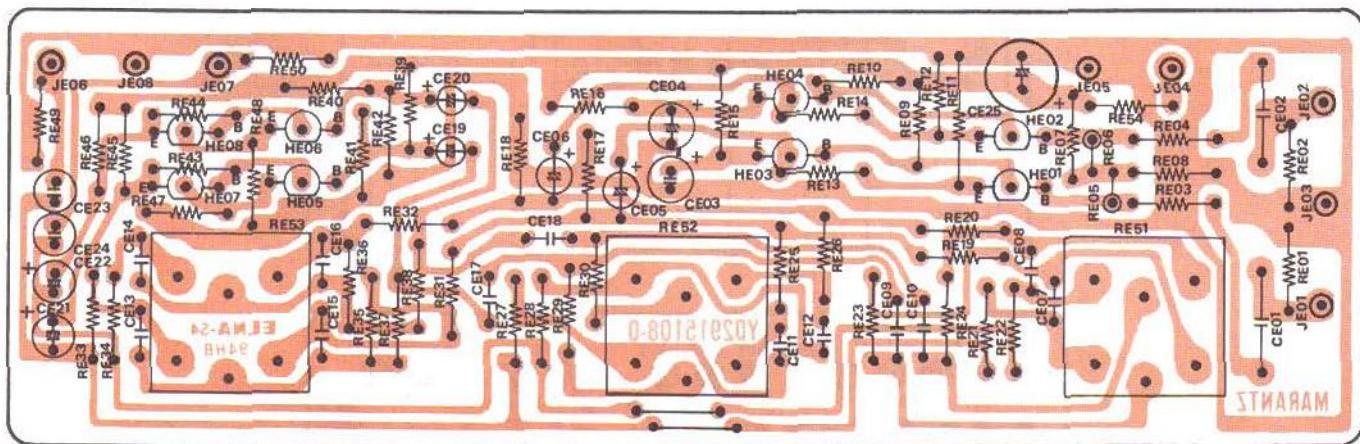
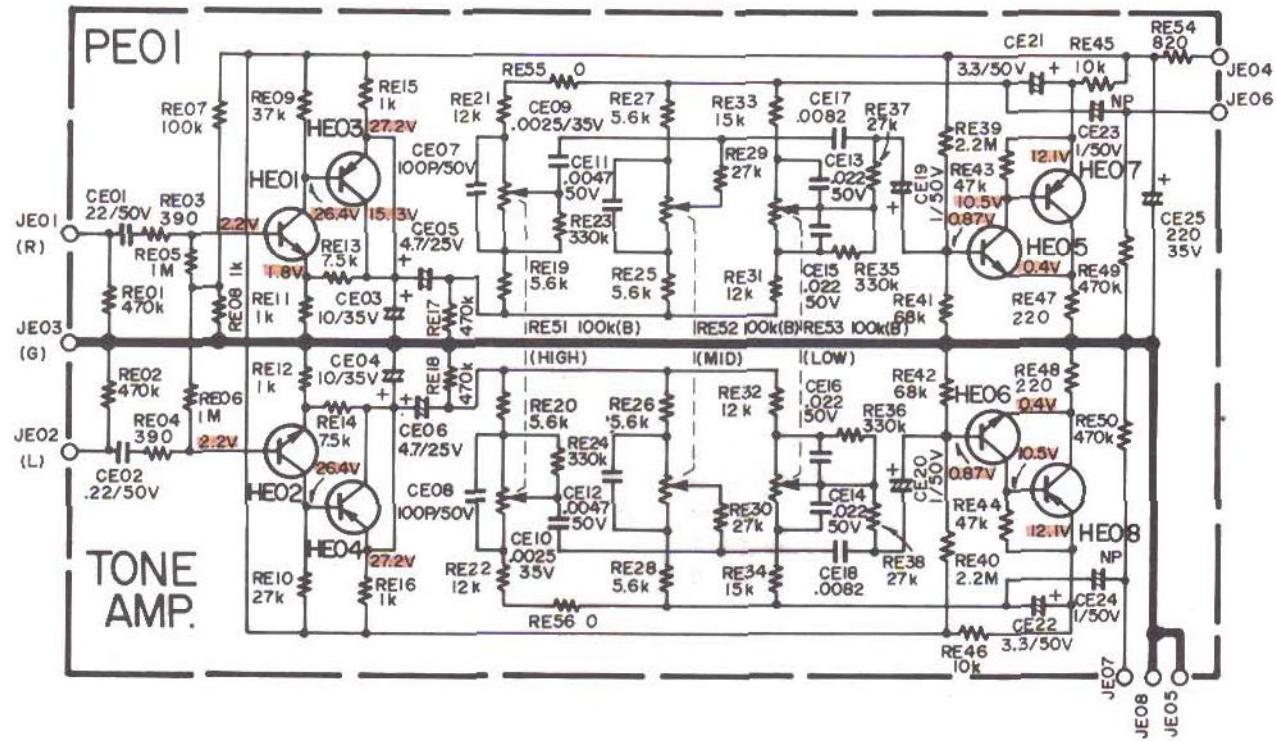


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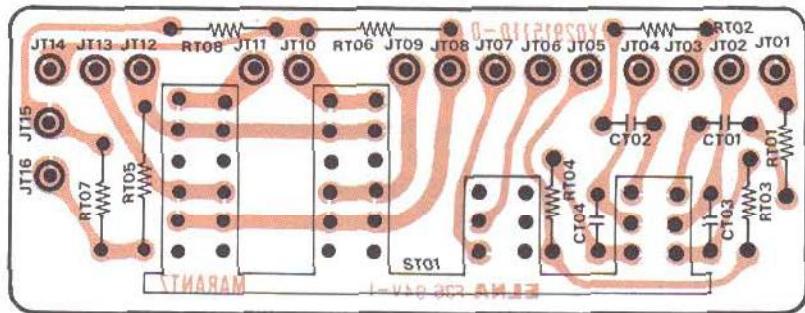
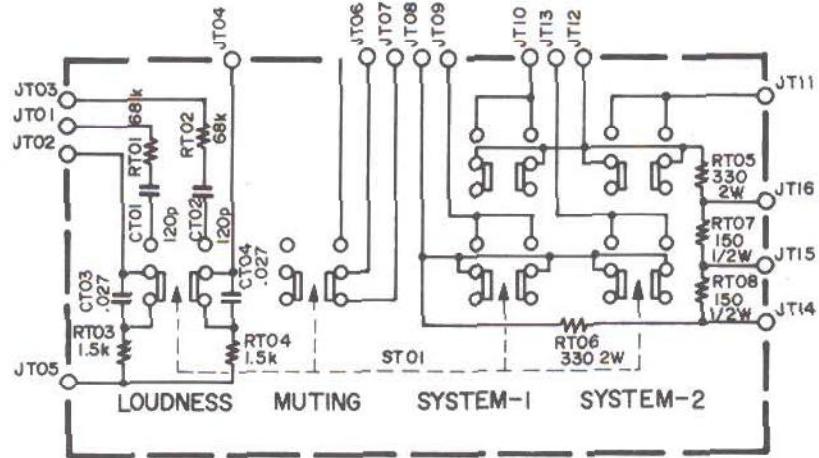
8.10 POWER SUPPLY BOARD SCHEMATIC DIAGRAM AND COMPONENT LOCATIONS



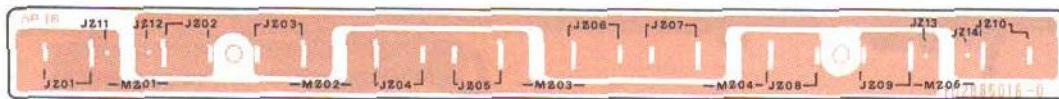
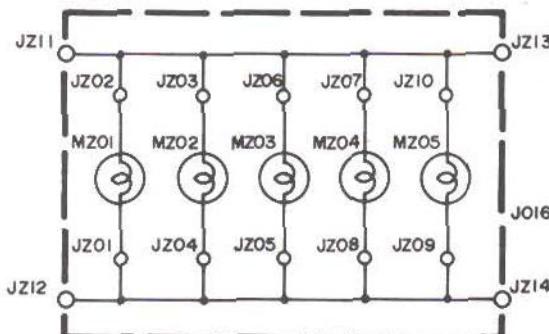
8.11 PRE, TONE AMP. BOARD SCHEMATIC DIAGRAM AND COMPONENT LOCATIONS



8.14 SPEAKER SWITCH BOARD SCHEMATIC DIAGRAM AND COMPONENT LOCATIONS



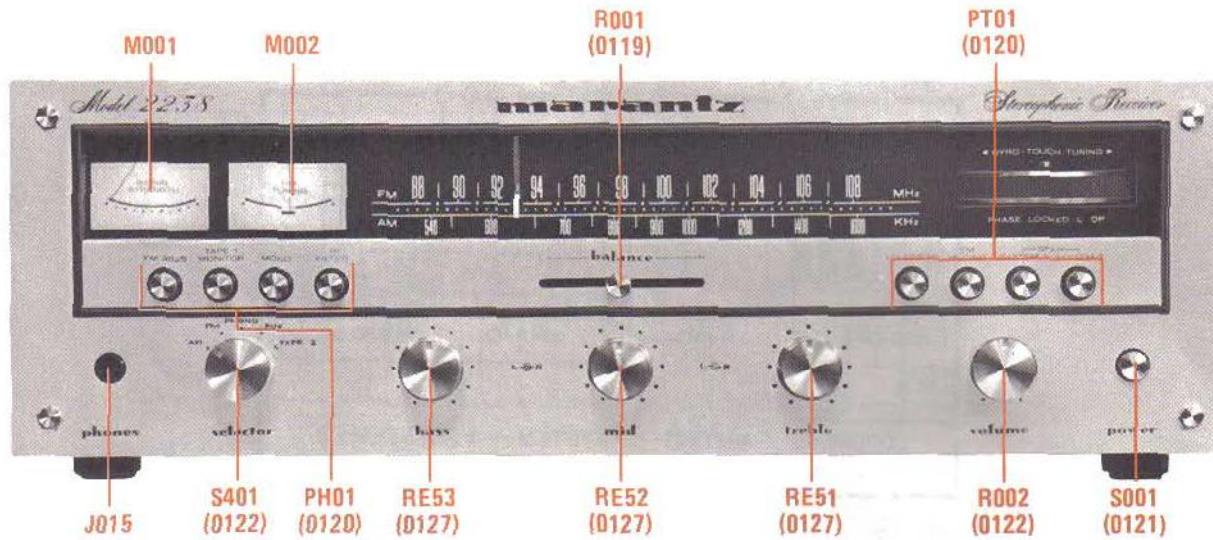
8.15 DIAL LAMP BOARD SCHEMATIC DIAGRAM AND COMPONENT LOCATIONS



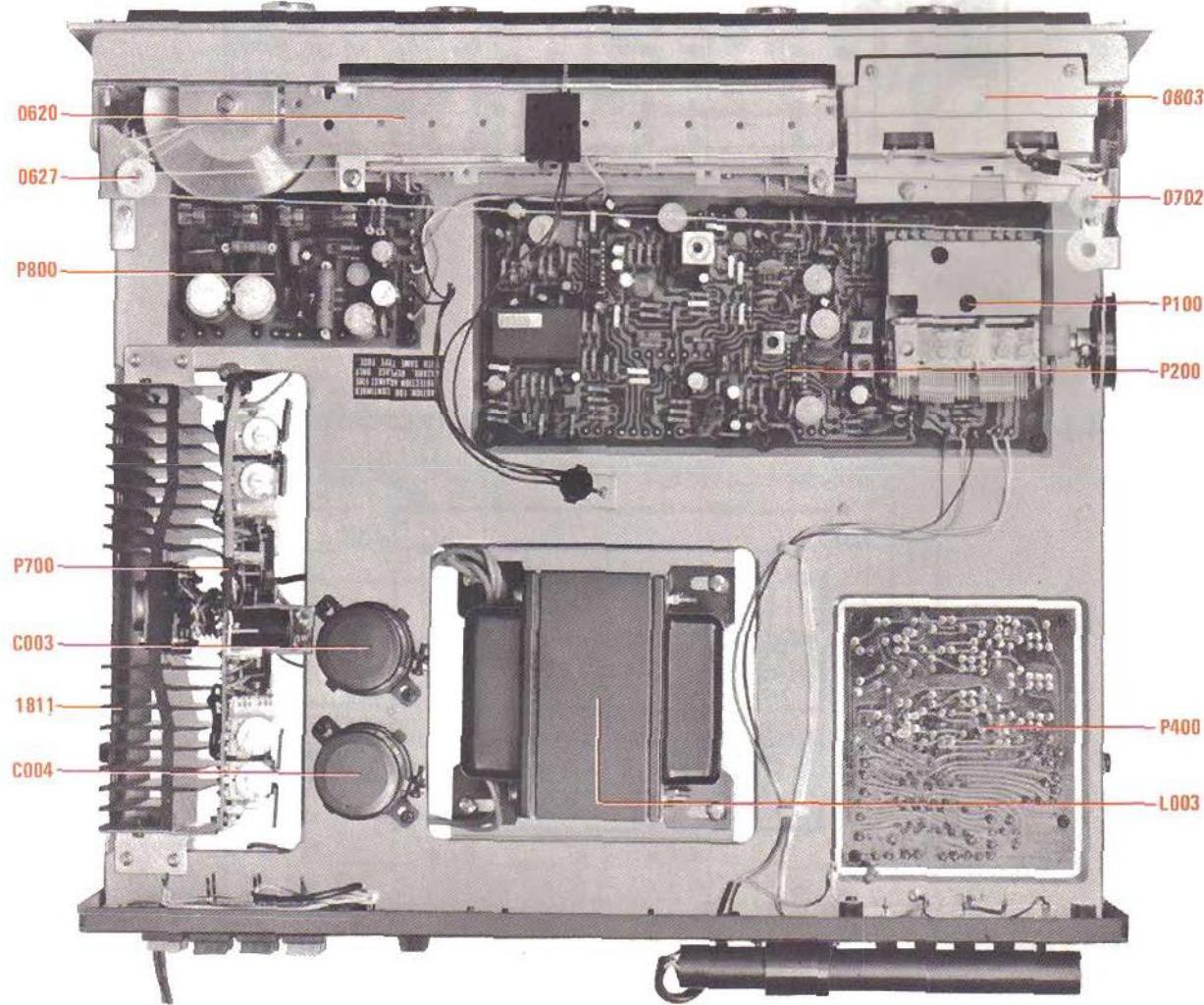
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9. MAJOR COMPONENT LOCATIONS

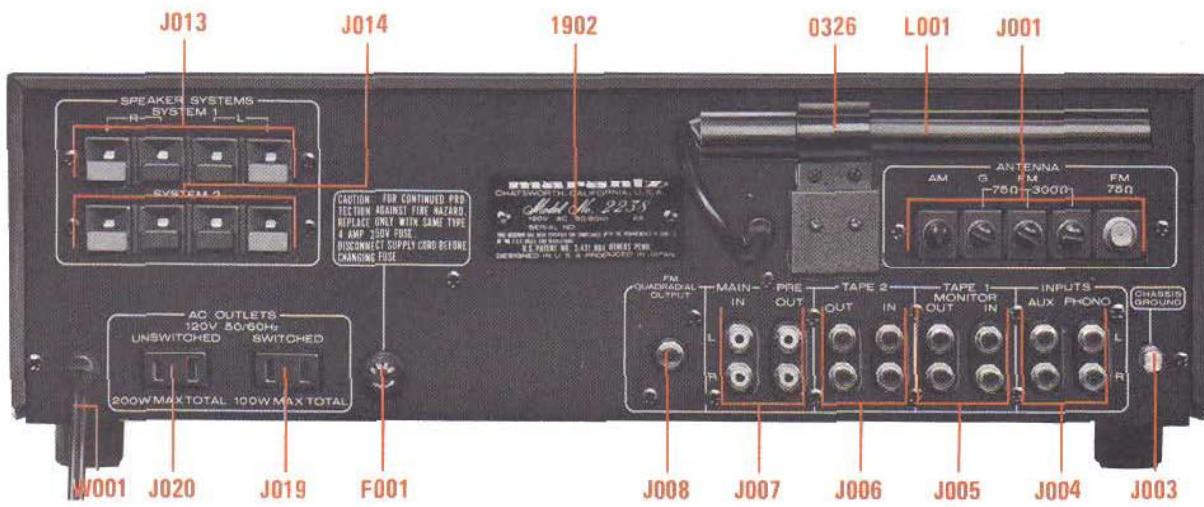
9.1 CABINET - FRONT VIEW



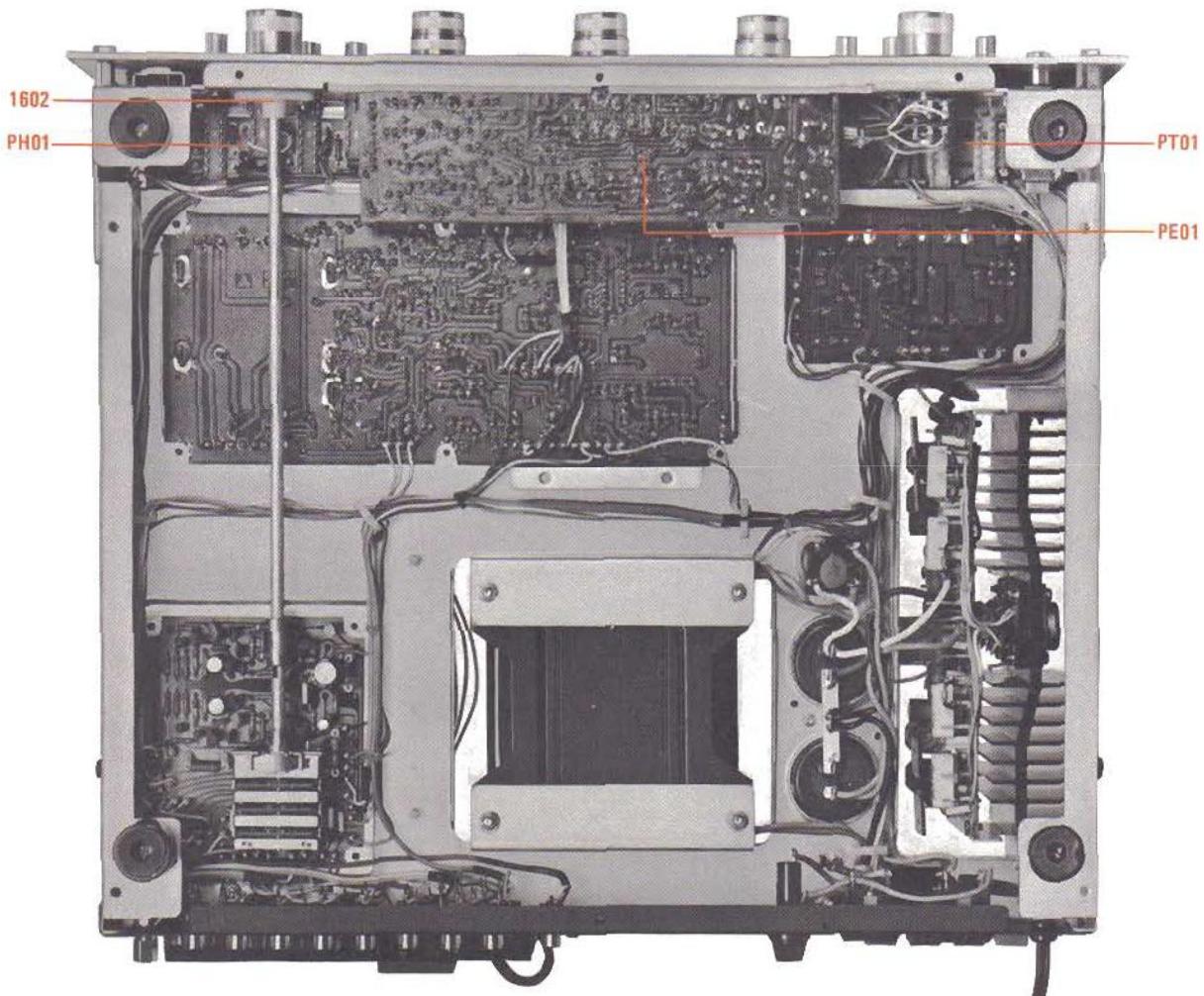
9.2 CHASSIS - TOP VIEW



9.3 CABINET - REAR VIEW

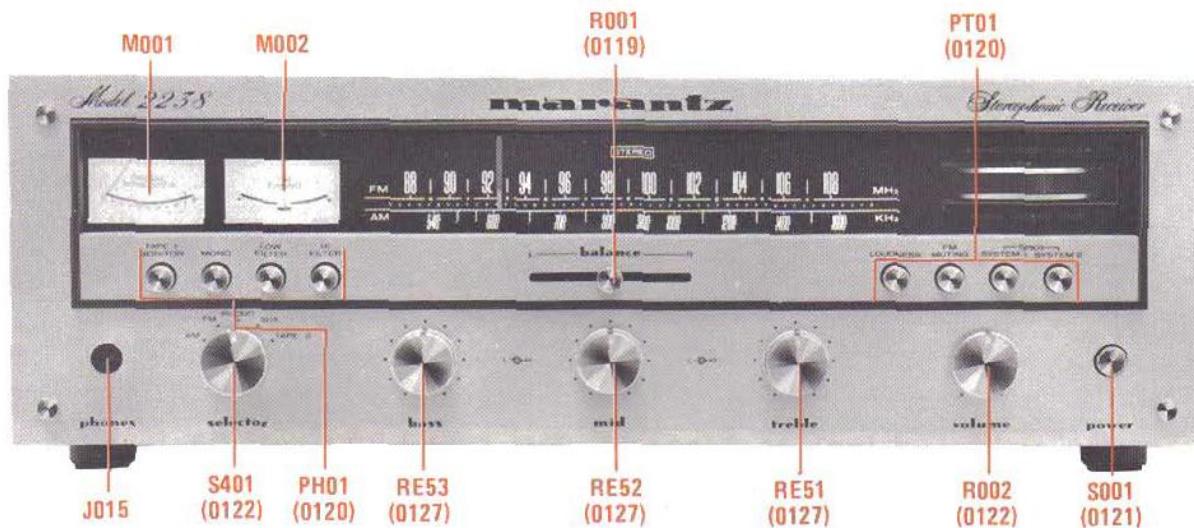


9.4 CHASSIS - BOTTOM VIEW

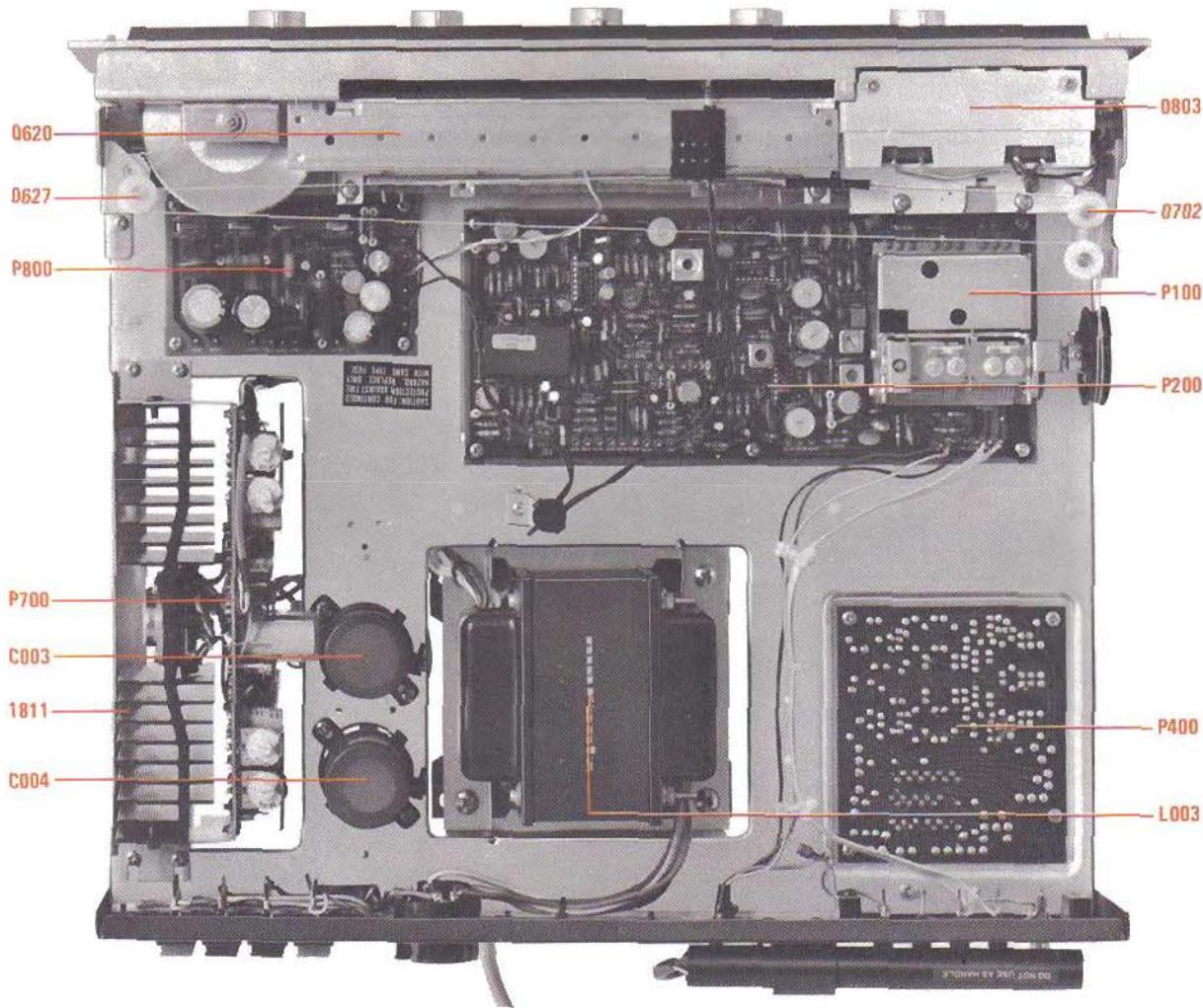


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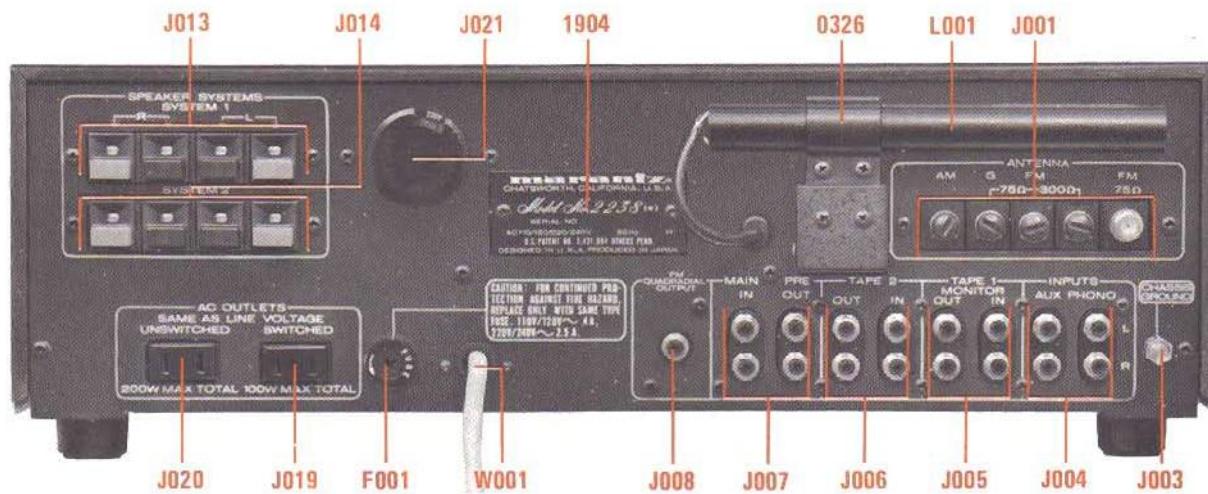
9.5 CABINET - FRONT VIEW - EUROPE



9.6 CHASSIS - TOP VIEW - EUROPE

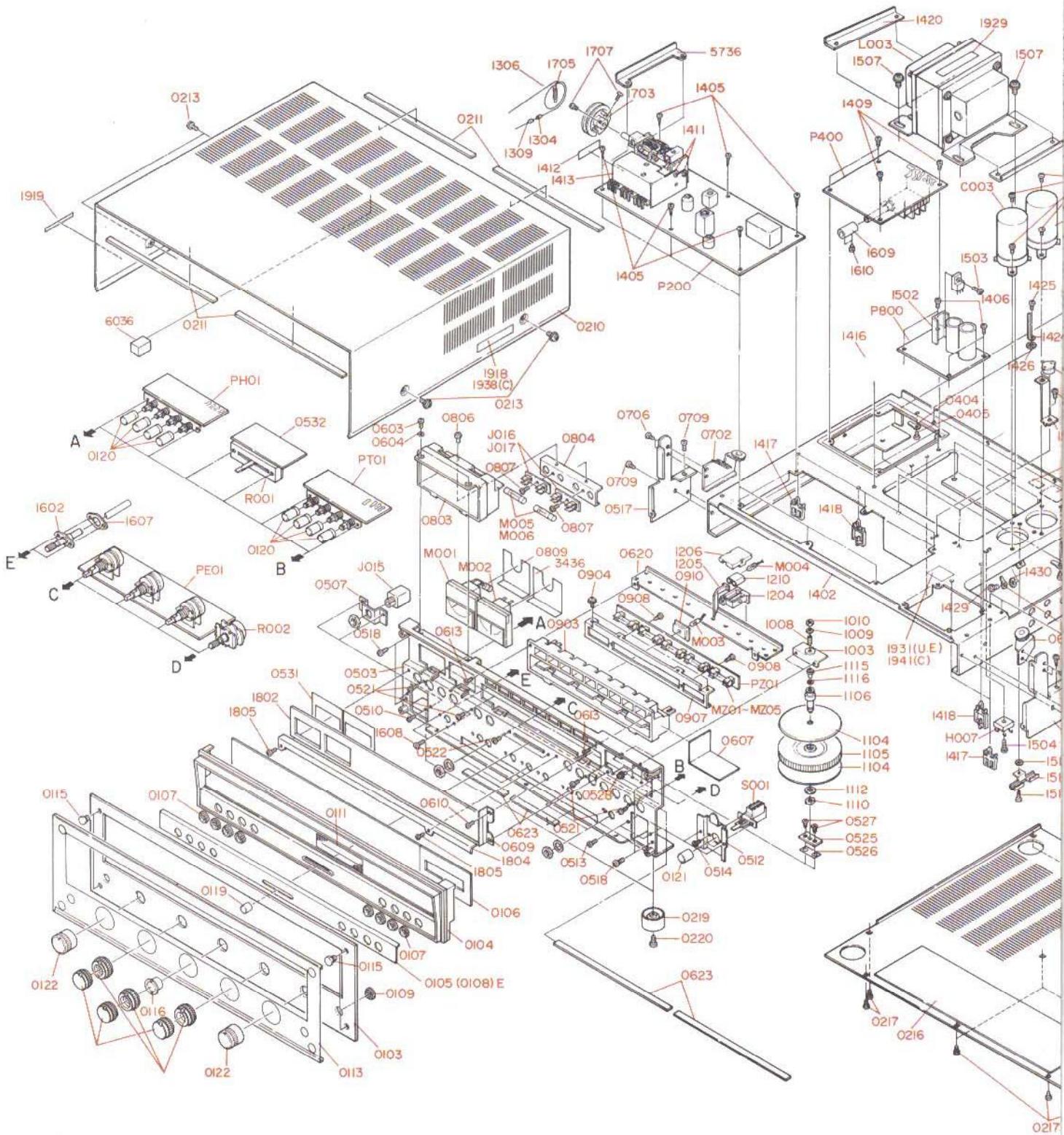


9.7 CABINET - REAR VIEW - EUROPE

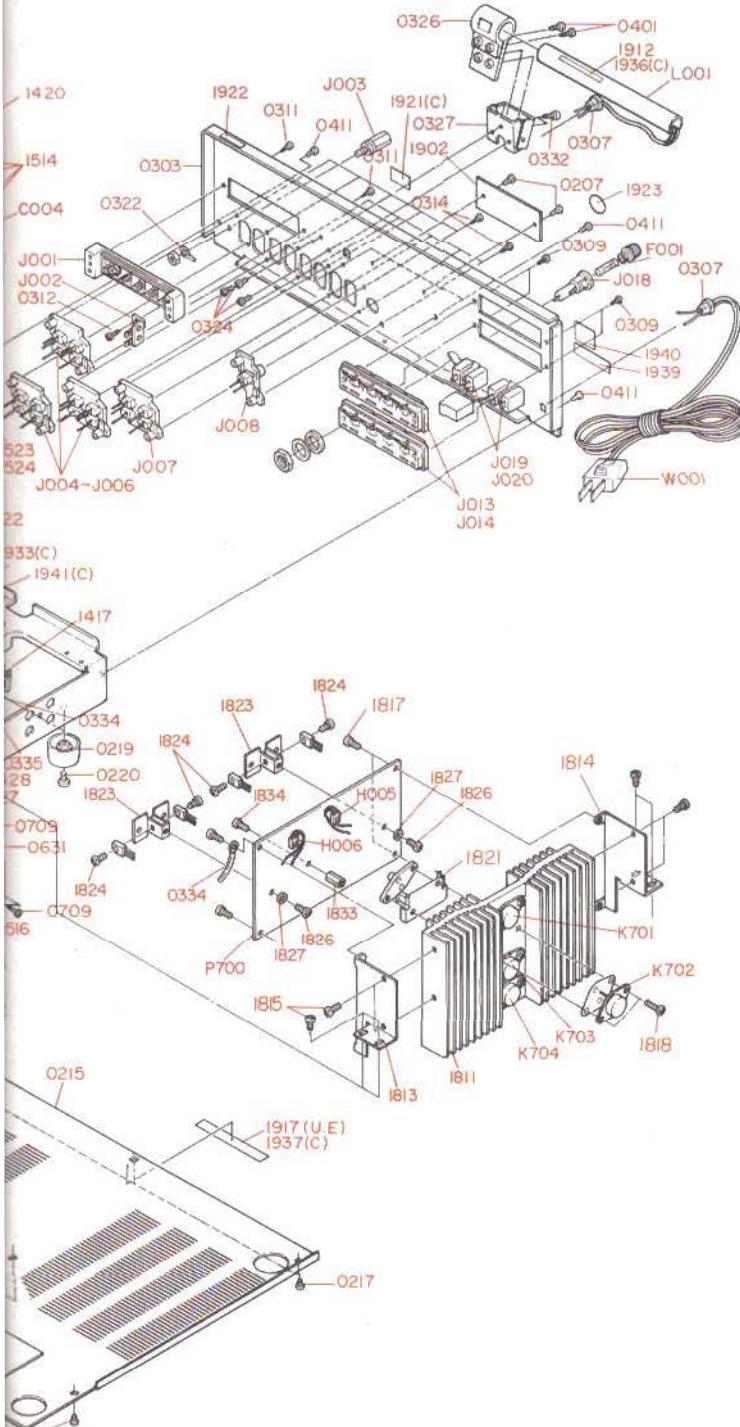


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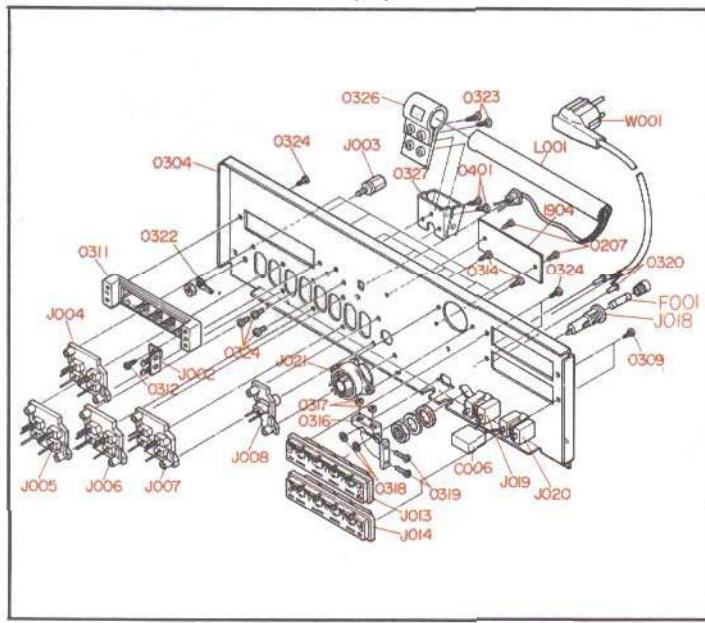
10.2 MECHANICAL EXPLODED VIEW



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11. PARTS LIST

U : For U.S.A.
 C : For Canada
 E : For Europe

REF. DESIG.	Q'TY			PART NO.	DESCRIPTION
	U	C	E		
A	1	1	1	2206063400	Front Panel Assembly
A1		1	1	2206063410	Front Panel Assembly
0103	1	1	1	2206063012	Escutcheon
0104	1	1	1	2221401012	Frame
0105	1	1	1	2204063023	Escutcheon
0106	1	1	1	2221158010	Window
0107	8	8	8	2221259012	Bushing
0108		1	1	2204063032	Escutcheon
0109	1	1	1	2886259010	Bushing
0113	1	1	1	2915053010	Cover
B	1	1	1	2916257420	Lid Assembly
0210	1	1	1	2916257010	Lid
0211	4	4	4	2577118070	Spacer
6036	1	1	1	2204056010	Buffer
C	1	1	1	2204257400	Lid Assembly
0215	1	1	1	2204257010	Lid
0216	1	1	1	2915120010	Insulator
D	1	1	1	2204159400	Drum Assembly
1703	1	1	1	2204159010	Drum
1705	1	1	1	71101689L0	Spring
1707	2	2	2	51064019A9	Set Screw
E	1	1	1	2915103400	Pointer Assembly
1204	1	1	1	2915103012	Pointer
1205	1	1	1	2818103020	Pointer
1206	1	1	1	2915103020	Pointer
1210	1	1	1	2915267030	Heatsink
M004	1	1	1	IN10080300	Lamp
F	1	1	1	1202006430	Hook Assembly
1304	1	1	1	1202258010	Hook
1306	1	1	1	72071605A0	String
G	1	1	1	2853273400	Flywheel Assembly
1104	2	2	2	2577063022	Escutcheon
1105	1	1	1	2577273010	Flywheel
1106	1	1	1	2853112010	Shaft
1110	1	1	1	53110603E9	Hexagon Nut
1112	1	1	1	54020601E0	Flat Washer
H		1	1	2206160400	Rear Panel Assembly
0304		1	1	2206160210	Bracket
0316		1	1	2821259010	Bushing
0318	2	2	2	54050300R0	T.L. Washer
0320	2	2	2	55060305S0	T.R. Rivet
0111	1	1	1	2915107010	Sheet
0115	4	4	4	5201703950	H. Head Bolt
0116	1	1	1	2916055010	Collar
0119	1	1	1	2221154112	Knob
0120	8	8	8	2221154122	Knob
0121	1	1	1	2904154140	Knob
0122	2	2	2	2221154133	Knob
0124	3	3	3	2210154022	Knob
0127	3	3	3	2210154012	Knob
0207	2	2	2	51280306U0	B.H. Tapped Screw B
0213	4	4	4	51480406S9	B.H.M. Screw F
0217	10	10	10	51280406U0	B.H. Tapped Screw B

REF. DESIG.	Q'TY			PART NO.	DESCRIPTION
	U	C	E		
0219	4	4	4	2932057010	Leg
0220	4	4	4	51570410S0	P.H. Tapped Screw, P4x10ST
0303	1	1	1	2206160013	Bracket
0307	2	2	1	1455259030	Bushing
0309	4	4	4	51280308U0	B.H. Tapped Screw B, 3x8
0311	2	2	2	51280308U0	B.H. Tapped Screw B, 3x8
0312	1	1	1	51280308U0	B.H. Tapped Screw B, 3x8
0314	10	10	10	51280308U0	B.H. Tapped Screw B, 3x8
0317			2	53110303A9	Hexagon Nut
0319			2	51060316A9	P.H.M. Screw, P3x16
0322	1	1	1	62040029W0	Lug
0324	3	3	3	51100306S9	B.H.M. Screw, B3x6
0326	1	1	1	2819271130	Holder
0327	1	1	1	2578160522	Bracket K
0332	2	2	2	51280312U0	B.H. Tapped Screw B, 3x12
0334	1	1	1	62030039W0	Lug
0335	1	1	1	51280308U0	B.H. Tapped Screw B, 3x8
0401	2	2	2	51280312U0	B.H. Tapped Screw B, 3x12
0404	1	1	1	62030039W0	Lug
0405	1	1	1	51280308B0	B.H. Tapped Screw B, 3x8
0408		2	2	51100308S9	B.H.M. Screw, B3x8
0411	4	4	4	51280308U0	B.H. Tapped Screw B, 3x8
0412	1	1	1	62030049W0	Lug
0413			1	62030049W0	Lug
0414	1	1	1	51280308B0	B.H. Tapped Screw B, 3x8
0503	1	1	1	2915160505	Bracket K
0509	1	1	1	2915160060	Bracket
0510	2	2	2	51100306A9	B.H.M. Screw, B3x6
0512	1	1	1	2206160020	Bracket
0513	2	2	2	51100306A9	B.H.M. Screw, B3x6
0514	2	2	2	51060306A9	P.H.M. Screw, P3x6
0516	1	1	1	2204160020	Bracket
0517	1	1	1	2204160030	Bracket
0518	4	4	4	51100406A9	B.H.M. Screw, B4x6
0521	4	4	4	51100306A9	B.H.M. Screw, B3x6
0522	2	2	2	51100306A9	B.H.M. Screw, B3x6
0525	1	1	1	2577106020	Bearing
0526	1	1	1	1415118010	Spacer
0527	2	2	2	51040306A9	F.H.M. Screw, F3x6
0528	2	2	2	51490308A9	B.H.M. Screw FS, 3x8
0531	2	2	2	2871053020	Cover
0532	1	1	1	2915120040	Insulator
0603	2	2	2	51600306B0	P.H. Tapped Screw, P3x6ST
0607	1	1	1	2819120050	Insulator
0609	1	1	1	2853269010	Protector
0610	2	2	2	51280306B0	B.H. Tapped Screw B, 3x6
0613	2	2	2	51042608A0	F.H.M. Screw, F2.6x8
0620	1	1	1	2871051020	Guide
0623	4	4	4	2886120020	Insulator
0627	1	1	1	2915262502	Pulley K
0631	2	2	2	51100306A9	B.H.M. Screw, B3x6
0702	1	1	1	2204262502	Pulley K
0706	2	2	2	51100306A9	B.H.M. Screw, B3x6
0709	6	6	6	51280308B0	B.H. Tapped Screw B, 3x8
0803	1	1	1	2886274012	Reflector
0804	1	1	1	2886271020	Holder
0806	2	2	2	51480306A9	B.H.M. Screw F, 3x6
0807	2	2	2	51570305B0	P.H. Tapped Screw, P3x5ST
3436	1	1	1	2886107010	Sheet
0809	1	1	1	2886107010	Sheet
0903	1	1	1	2871274110	Reflector
0904	2	2	2	51480306A9	B.H.M. Screw F, 3x6
0907	1	1	1	2871271010	Holder
0908	2	2	2	51570305B0	P.H. Tapped Screw, P3x5ST

U : For U.S.A.
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REF. DESIG.	Q'TY			PART NO.	DESCRIPTION	REF. DESIG.	Q'TY			PART NO.	DESCRIPTION
	U	C	E				U	C	E		
0910	1	1	1	2874259010	Bushing	1917	1	1	1	2578861010	Label, UL Caution
1003	1	1	1	2853106500	Bearing K	1918	1	1	1	2932861010	Label, Do not remove cover. See marking on bottom.
1008	1	1	1	51640410D9	Set Screw C.P., 4x16	1919	1		1	2818861010	Label, FTC
1009	1	1	1	54040402N0	Spring Washer	1921	1		1	9510911010	Label, LL No.
1010	1	1	1	53110403E9	Hexagon Nut	1922	1		1	9510911020	Label, UL Factory
1115	1	1	1	2850112020	Shaft	1923	1		1	9511101020	Label, UL
1116	1	1	1	54040402N0	Spring Washer	1939	1		1	2911861010	Label
1309	1	1	1	56382540G0	Eyelet	1940	1		1	2911861270	Label
1402	1	1	1	2204105013	Chassis	1929	1	1	1	2886861010	Label, Marantz
1405	6	6	6	51280308U0	B.H. Tapped Screw B, 3x8	1931	1		1	9510221010	Label, Fuse Caution
1406	4	4	4	51280306U0	B.H. Tapped Screw B, 3x6	1941	2			2911861160	Label, Fuse Caution
1407	4	4	4	51280306U0	B.H. Tapped Screw B, 3x6	1933	1		1	9510601050	Label, 5A 250V
1411	3	3	3	51100303B9	B.H.M. Screw, B3x3	2004	1		1	2577813010	Envelope, Orange
1412	1	1	1	2204109010	Shield	2005	1		1	2918813012	Envelope, Yellow
1413	1	1	1	2204053010	Cover	2006	1		1	2818813010	Envelope, Blue
5736	1	1	1	2204005030	Clamper	2011	1		1	2577851020	Instructions, Important
1416	2	2	2	2204005040	Clamper	2012	1	1	1	2818851120	Instructions, Important
1417	4	4	4	2886005020	Clamper	2016	1		1	2577854012	Guarantee Card, IBM
1418	3	3	3	2886005050	Clamper	2017	1	1	1	9630000180	Guarantee Card, IBM
1420	2	2	2	2916160070	Bracket	2021	1		1	9650000050	Service Station Card
1424	1	1	1	1382005030	Clamper	2025	1		1	2818854022	Guarantee Card
1425	1	1	1	51280306B0	B.H. Tapped Screw B, 3x6	2026	1		1	2818854040	Guarantee Card
1426	1	1	1	54050300R0	T.L. Washer OR	2032	1		1	2818851040	Instructions, Packing
1502	1	1	1	2204267020	Heatsink	2033	1	1	1	2818851140	Instructions, Packing
1503	1	1	1	51100306E9	B.H.M. Screw, B3x6	2104	1		1	2206851010	Instructions, Set
1504	1	1	1	51570312B0	P.H. Tapped Screw, P3x12ST	2106	1	1	1	2206851310	Instructions, Set
1507	4	4	4	51490514A9	B.H.M. Screw B, 5x14	2109	1		1	2886851100	Instructions, Flysheet
1511	1	1	1	2206160030	Bracket	2116	1	1	1	2206856010	Schematic Diagram
1512	1	1	1	51280306B0	B.H. Tapped Screw B, 3x6	2202	1	1	1	2206801010	Packing Case, Inner
1513	1	1	1	54050300R0	T.L. Washer OR	2203	1	1	1	2206801110	Packing Case, Outer
1514	4	4	4	51280306U0	B.H. Tapped Screw B, 3x6	6436	1		1	2206856020	Schematic Diagram
1522	1	1	1	2927160050	Bracket	2211	2	2	2	2204809010	Cushion
1523	1	1	1	2908259010	Bushing	2216	1	1	1	9014838380	Polyethylene Bag, Set
1524	1	1	1	51570306B0	P.H. Tapped Screw, P3x6ST	2218	1	1	1	9013025010	Polyethylene Bag,
1602	1	1	1	2204112503	Shaft K	2223	1	1	1	2864804010	Printed Matter
1607	1	1	1	2204005010	Clamper	2224	1		1	9560000042	Sleeve, AC Cord
1608	2	2	2	51100310A9	B.H.M. Screw, B3x10	2226	1	1	1	2731821010	Hang Tag, AC Cord
1609	1	1	1	2896125010	Joint	2228	1	1	1	2819056010	Silicagel
1610	2	2	2	51064019A9	Set Screw, 40x19.	2231	1	1	1	2918107130	Buffer, AM Antenna
1802	1	1	1	2204302012	Dial	2302	4		1	9522815010	Sheet
1804	1	1	1	2915269012	Protector	2303	4		1	9523015120	Serial No. Card
1805	2	2	2	51280306B0	B.H. Tapped Screw B, 3x6	2304	4		1	9523015110	Serial No. Card
1811	1	1	1	2890267012	Heatsink	2314	2		1	9510901020	Label
1813	1	1	1	2206104012	Retainer	2327	1	1	1	ZA02000070	Ext. FM Antenna
1814	1	1	1	2206104022	Retainer						FM FRONT END CIRCUIT
1815	4	4	4	51280306U0	B.H. Tapped Screw B, 3x6						BOARD-P100
1817	4	4	4	51100306S9	B.H.M. Screw, B3x6	P100	1	1	1	YD29910010	P.W. Board, FM Front End
1818	8	8	8	51100316E9	B.H.M. Screw, B3x16	A001	1	1	1	AV01202060	FM Front End Assembly
1821	1	1	1	2206005012	Clamper						P100-RESISTORS
1822	2	2	2	2912267022	Heatsink	R101	1	1	1	GD05105140	Fixed, 1MΩ ±5%, 1/4W
1824	4	4	4	51100306S9	B.H.M. Screw, B3x6	R102	1	1	1	GD05101140	Fixed, 100Ω ±5%, 1/4W
1826	2	2	2	51100205A0	B.H.M. Screw, B2x5	R103	1	1	1	GD05101140	Fixed, 100Ω ±5%, 1/4W
1827	2	2	2	59020604P0	Washer	R104	1	1	1	GD05101140	Fixed, 100Ω ±5%, 1/4W
1828	1	1	1	1210005010	Clamper	R105	1	1	1	GD05223140	Fixed, 22kΩ ±5%, 1/4W
1831	4	4	4	51280306B0	B.H. Tapped Screw B, 3x6	R106	1	1	1	GD05472140	Fixed, 4.7kΩ ±5%, 1/4W
1833	1	1	1	2819101010	Support						
1834	1	1	1	51100306S9	B.H.M. Screw, B3x6						
1902	1			2206265010	Indicator						
1903	1			2206265020	Indicator						
1904	1			2206265030	Indicator						
1912	1			2506265060	Label, Do not use as handle.						
1936	1			2911861170	Label, Do not use as handle.						
1937	1			2911861110	Label, UL Caution						
1938	1			2911861140	Label, Do not remove cover. See marking on bottom.						

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REF. DESIG.	Q'TY			PART NO.	DESCRIPTION		
	U	C	E				
R107	1	1	1	GD05102140	Fixed, 1kΩ ±5%, 1/4W		
R108	1	1	1	GD05103140	Fixed, 10kΩ ±5%, 1/4W		
R109	1	1	1	GD05333140	Fixed, 33kΩ ±5%, 1/4W		
R110	1	1	1	GD05103140	Fixed, 10kΩ ±5%, 1/4W		
R111	1	1	1	GD05101140	Fixed, 100Ω ±5%, 1/4W		
					P100-CAPACITORS		
C101	1	1	1	DD16120020	Ceramic, 12pF ±10%		
C102	1	1	1	DK18203030	Ceramic, 0.02μF +80%, -20%		
C103	1	1	1	DK18203030	Ceramic, 0.02μF +80%, -20%		
C104	1	1	1	DD11020010	Ceramic, 2pF ±0.5pF		
C105	1	1	1	DK18203030	Ceramic, 0.02μF +80%, -20%		
C106	1	1	1	DD16150040	Ceramic, 15pF ±10%		
C107	1	1	1	DD11020010	Ceramic, 2pF ±0.5pF		
C108	1	1	1	DD12050010	Ceramic, 5pF ±1pF		
C109	1	1	1	DD16101010	Ceramic, 100pF ±10%		
C110	1	1	1	DK18203030	Ceramic, 0.02μF +80%, -20%		
C111	1	1	1	DD16101010	Ceramic, 100pF ±10%		
C112	1	1	1	DK18203030	Ceramic, 0.02μF +80%, -20%		
C113	1	1	1	DD15150020	Ceramic, 15pF ±5%		
C114	1	1	1	DD10050030	Ceramic, 5pF ±0.25pF		
C115	1	1	1	DD12050010	Ceramic, 5pF ±1pF		
C116	1	1	1	DD16330020	Ceramic, 33pF ±10%		
C117	1	1	1	DD12100060	Ceramic, 10pF ±1pF		
C118	1	1	1	DK18203030	Ceramic, 0.02μF +80%, -20%		
C119	1	1	1	DD11020010	Ceramic, 2pF ±0.5pF		
C120	1	1	1	CA32400080	Variable		
C121	1	1	1	CT14200010	Trimming, Oscillator		
					P100-MISCELLANEOUS		
L101	1	1	1	LL24700050	Antenna Coil, FM (Primary)		
L102	1	1	1	LK12700040	Antenna Coil, FM (Secondary)		
L103	1	1	1	LL22700020	RF Coil, FM (Primary)		
L104	1	1	1	LK11700040	RF Coil, FM (Secondary)		
L105	1	1	1	LC12220010	Choke Coil, 2.2μH		
L106	1	1	1	LI10239010	IFT, FM		
L107	1	1	1	LK12500040	OSC Coil		
Q101	1	1	1	HF400451B0	FET, 3SK45B		
Q102	1	1	1	HT305352B0	Transistor, 2SC535		
Q103	1	1	1	HT313422B0	Transistor, 2SC1342		
J101	1	1	1	YP10001510	Plug		
J102	1	1	1	YP10001510	Plug		
J103	1	1	1	YP10001510	Plug		
J105	1	1	1	YP10001510	Plug		
J107	1	1	1	YP10001510	Plug		
J109	1	1	1	YP10001510	Plug		
J110	1	1	1	YP10001510	Plug		
					TUNER CIRCUIT BOARD-P200		
P200	1	1	1	YD22042010	P.W. Board, Tuner		
	1	1	1	ZZ22062010	P.W. Board Assembly		
	1	1	1	ZZ22068010	P.W. Board Assembly		
					P200-RESISTORS		
R151	1	1	1	RT05201141	Fixed, 200Ω ±5%, 1/4W		
R152	1	1	1	RT05152141	Fixed, 1.5kΩ ±5%, 1/4W		
R153	1	1	1	RT05202141	Fixed, 2kΩ ±5%, 1/4W		
R154	1	1	1	RT05152141	Fixed, 1.5kΩ ±5%, 1/4W		
R155	1	1	1	RT05151140	Fixed, 150Ω ±5%, 1/4W		
R156	1	1	1	RA05020200	Trimming, 5kΩ (B)		
R157	1	1	1	RT05471141	Fixed, 470Ω ±5%, 1/4W		
R158	1	1	1	RT05124141	Fixed, 120kΩ ±5%, 1/4W		

REF. DESIG.	Q'TY			PART NO.	DESCRIPTION		
	U	C	E				
R159	1	1	1	RT05104141	Fixed, 100kΩ ±5%, 1/4W		
R160	1	1	1	RT05103141	Fixed, 10kΩ ±5%, 1/4W		
R161	1	1	1	RT05103141	Fixed, 10kΩ ±5%, 1/4W		
R162	1	1	1	RT05102141	Fixed, 1kΩ ±5%, 1/4W		
R163	1	1	1	RT05301141	Fixed, 300Ω ±5%, 1/4W		
R164	1	1	1	RT05473141	Fixed, 47kΩ ±5%, 1/4W		
R165	1	1	1	RT05104141	Fixed, 100kΩ ±5%, 1/4W		
R166	1	1	1	RT05152141	Fixed, 1.5kΩ ±5%, 1/4W		
R167	1	1	1	RT05242141	Fixed, 2.4kΩ ±5%, 1/4W		
R169	1	1	1	RT05473141	Fixed, 47kΩ ±5%, 1/4W		
R170	1	1	1	RT05101140	Fixed, 100Ω ±5%, 1/4W		
R201	1	1	1	RT05151141	Fixed, 150Ω ±5%, 1/4W		
R202	1	1	1	RT05331141	Fixed, 330Ω ±5%, 1/4W		
R203	1	1	1	RT05153141	Fixed, 15kΩ ±5%, 1/4W		
R204	1	1	1	RT05272141	Fixed, 2.7kΩ ±5%, 1/4W		
R205	1	1	1	RT05331141	Fixed, 330Ω ±5%, 1/4W		
R206	1	1	1	RT05102141	Fixed, 1kΩ ±5%, 1/4W		
R207	1	1	1	RT05101141	Fixed, 100Ω ±5%, 1/4W		
R208	1	1	1	RT05334141	Fixed, 330kΩ ±5%, 1/4W		
R209	1	1	1	RA05030120	Trimming, 50kΩ (B)		
R210	1	1	1	RT05103141	Fixed, 10kΩ ±5%, 1/4W		
R211	1	1	1	RT05104141	Fixed, 100kΩ ±5%, 1/4W		
R212	1	1	1	RA01030250	Trimming, 10kΩ (B)		
R213	1	1	1	RT05123141	Fixed, 12kΩ ±5%, 1/4W		
R214	1	1	1	RT05331141	Fixed, 330Ω ±5%, 1/4W		
R215	1	1	1	RA05030120	Trimming, 50kΩ (B)		
R216	1	1	1	RT05562141	Fixed, 5.6kΩ ±5%, 1/4W		
R217	1	1	1	RT05222141	Fixed, 2.2kΩ ±5%, 1/4W		
R218	1	1	1	RT05222141	Fixed, 2.2kΩ ±5%, 1/4W		
R219	1	1	1	RT05153141	Fixed, 15kΩ ±5%, 1/4W		
R220	1	1	1	RT05102141	Fixed, 1kΩ ±5%, 1/4W		
R221	1	1	1	RT05223141	Fixed, 22kΩ ±5%, 1/4W		
R222	1	1	1	RT05473141	Fixed, 47kΩ ±5%, 1/4W		
R301	1	1	1	RA01030310	Trimming, 10kΩ (B)		
R302	1	1	1	RT05104141	Fixed, 100kΩ ±5%, 1/4W		
R303	1	1	1	RT05223141	Fixed, 22kΩ ±5%, 1/4W		
R304	1	1	1	RT05102141	Fixed, 1kΩ ±5%, 1/4W		
R305	1	1	1	RT05104141	Fixed, 100kΩ ±5%, 1/4W		
R306	1	1	1	RT05824141	Fixed, 820kΩ ±5%, 1/4W		
R307	1	1	1	RT05473141	Fixed, 47kΩ ±5%, 1/4W		
R308	1	1	1	RC00000120	Fixed, 0Ω, 1/4W		
R309	1	1	1	RT05224141	Fixed, 220kΩ ±5%, 1/4W		
R310	1	1	1	RT05223141	Fixed, 22kΩ ±5%, 1/4W		
R311	1	1	1	RT05272141	Fixed, 2.7kΩ ±5%, 1/4W		
R312	1	1	1	RT05101140	Fixed, 100Ω ±5%, 1/4W		
R313	1	1	1	RT05303141	Fixed, 30kΩ ±5%, 1/4W		
R314	1	1	1	RT05303141	Fixed, 30kΩ ±5%, 1/4W		
R315	1	1	1	RT05473141	Fixed, 47kΩ ±5%, 1/4W		
R316	1	1	1	RT05473141	Fixed, 47kΩ ±5%, 1/4W		
R317	1	1	1	RA02540010	Trimming, 250kΩ (B)		
R318	1	1	1	RT05104141	Fixed, 100kΩ ±5%, 1/4W		
R319	1	1	1	RT05273141	Fixed, 27kΩ ±5%, 1/4W		
R320	1	1	1	RT05273141	Fixed, 27kΩ ±5%, 1/4W		
R321	1	1	1	RT05332141	Fixed, 3.3kΩ ±5%, 1/4W		
R322	1	1	1	RT05332141	Fixed, 3.3kΩ ±5%, 1/4W		
R323	1	1	1	RT05332141	Fixed, 3.3kΩ ±5%, 1/4W		
R324	1	1	1	RT05332141	Fixed, 3.3kΩ ±5%, 1/4W		
R325	1	1	1	RT05243141	Fixed, 24kΩ ±5%, 1/4W		
R326	1	1	1	RT05243141	Fixed, 24kΩ ±5%, 1/4W		
R327	1	1	1	RT05394140	Fixed, 390kΩ ±5%, 1/4W		
R328	1	1	1	RT05394141	Fixed, 390kΩ ±5%, 1/4W		
R329	1	1	1	RT05105141	Fixed, 1MΩ ±5%, 1/4W		

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	U	C	E		
R330	1	1	1	RT05105141	Fixed, 1MΩ ±5%, 1/4W
R331	1	1	1	RT05391140	Fixed, 390Ω ±5%, 1/4W
R332	1	1	1	RT05391141	Fixed, 390Ω ±5%, 1/4W
R333	1	1	1	RT05222141	Fixed, 2.2kΩ ±5%, 1/4W
R334	1	1	1	RT05222141	Fixed, 2.2kΩ ±5%, 1/4W
R335	1	1	1	RT05473141	Fixed, 47kΩ ±5%, 1/4W
R336	1	1	1	RT05473141	Fixed, 47kΩ ±5%, 1/4W
R337	1	1	1	RT05101141	Fixed, 100Ω ±5%, 1/4W
R338	1	1	1	RT05101141	Fixed, 100Ω ±5%, 1/4W
R339	1	1	1	RT05101140	Fixed, 100Ω ±5%, 1/4W
R340	1	1	1	RT05201141	Fixed, 200Ω ±5%, 1/4W
P100-CAPACITORS					
C151	1	1	1	DK17103040	Ceramic, 0.01μF ±20%
C152	1	1	1	DK17103040	Ceramic, 0.01μF ±20%
C153	1	1	1	DK17102010	Ceramic, 0.001μF ±20%
C154	1	1	1	EA10701690	Electrolytic, 100μF, 16V
C155	1	1	1	DK18403020	Ceramic, 0.04μF +80%,-20%
C156	1	1	1	DF65391010	Film, 390pF ±5%
C157	1	1	1	DD16150070	Ceramic, 15pF ±10%
C158	1	1	1	DK17103040	Ceramic, 0.01μF ±20%
C159	1	1	1	DK17103010	Ceramic, 0.01μF ±20%
C160	1	1	1	DD15820010	Ceramic, 82pF ±5%
C161	1	1	1	DK17103040	Ceramic, 0.01μF ±20%
C162	1	1	1	DK18403020	Ceramic, 0.04μF +80%,-20%
C163	1	1	1	EA10505090	Electrolytic, 1μF, 50V
C164	1	1	1	EA47503590	Electrolytic, 4.7μF, 35V
C165	1	1	1	EA33502590	Electrolytic, 3.3μF, 25V
C166	1	1	1	DK17102010	Ceramic, 0.001μF ±20%
C167	1	1	1	DK17103040	Ceramic, 0.01μF ±20%
C168	1	1	1	DK17502010	Ceramic, 0.005μF ±20%
C169	1	1	1	DK18403020	Ceramic, 0.04μF +80%,-20%
C170	1	1	1	EA10701690	Electrolytic, 100μF, 16V
C171	1	1	1	DF16104010	Film, 0.1μF, 50V
C172	1	1	1	EV47501660	Electrolytic, 4.7μF, 16V
C201	1	1	1	DD15300010	Ceramic, 30pF ±5%
C202	1	1	1	DK17103040	Ceramic, 0.01μF ±20%
C203	1	1	1	DK17103040	Ceramic, 0.01μF ±20%
C204	1	1	1	DK17103040	Ceramic, 0.01μF ±20%
C205	1	1	1	DK18403020	Ceramic, 0.04μF +80%,-20%
C206	1	1	1	DK18403020	Ceramic, 0.04μF +80%,-20%
C207	1	1	1	DK18403020	Ceramic, 0.04μF +80%,-20%
C208	1	1	1	EA47503590	Electrolytic, 4.7μF, 35V
C209	1	1	1	DD15400040	Ceramic, 40pF ±5%
C210	1	1	1	EA22601690	Electrolytic, 22μF, 16V
C211	1	1	1	EA47405010	Electrolytic, 0.47μF, 50V
C212	1	1	1	DK18403010	Ceramic, 0.04μF +100%,-0%
C213	1	1	1	DK18403010	Ceramic, 0.04μF +100%,-0%
C214	1	1	1	DK18203020	Ceramic, 0.02μF +100%,-0%
C215	1	1	1	DK18203020	Ceramic, 0.02μF +100%,-0%
C216	1	1	1	DK18403010	Ceramic, 0.04μF +100%,-0%
C217	1	1	1	EA10505090	Electrolytic, 1μF, 50V
C218	1	1	1	EA10505090	Electrolytic, 1μF, 50V
C301	1	1	1	EA47503590	Electrolytic, 4.7μF, 35V
C302	1	1	1	DF65361500	Film, 360pF ±5%
C303	1	1	1	EA10701690	Electrolytic, 100μF, 16V
C304	1	1	1	EE33502510	Electrolytic, 3.3μF, 25V
C305	1	1	1	EE10505010	Electrolytic, 1μF, 50V
C306	1	1	1	EA10505090	Electrolytic, 1μF, 50V
C307	1	1	1	EQ22405010	Electrolytic, 0.22μF, 50V
C308	1	1	1	DF17473010	Film, 0.047μF
C309	1	1	1	DD15500050	Ceramic, 50pF ±5%
C310	1	1	1	DD15500050	Ceramic, 50pF ±5%

REF. DESIG.	Q'TY			PART NO.	DESCRIPTION
	U	C	E		
C311	1	1	1	EA10601690	Electrolytic, 10μF, 16V
C312	1	1	1	EA10601690	Electrolytic, 10μF, 16V
C313	1	1	1	EA22505090	Electrolytic, 2.2μF, 50V
C314	1	1	1	EA22505090	Electrolytic, 2.2μF, 50V
C315	1	1		DF15102050	Film, 1000pF ±5%
C316	1	1		DF15102050	Film, 1000pF ±5%
C315			1	DF15222050	Film, 0.0022μF ±5%
C316			1	DF15222050	Film, 0.0022μF ±5%
C317	1	1	1	EA47405010	Electrolytic, 0.47μF, 50V
C318	1	1	1	EA47405010	Electrolytic, 0.47μF, 50V
C319	1	1	1	EV47501660	Electrolytic, 4.7μF, 16V
C320	1	1	1	EV47501660	Electrolytic, 4.7μF, 16V
C321	1	1	1	EA10701690	Electrolytic, 100μF, 16V
C322	1	1	1	EE10601620	Electrolytic, 10μF, 16V
P200-COILS, TRANSFORMERS & FILTER					
L151	1	1	1	LC13320020	Choke Coil, 3.3μH
L152	1	1	1	LC13320020	Choke Coil, 3.3μH
L153	1	1	1	LC13320020	Choke Coil, 3.3μH
L154	1	1	1	LO10010480	AM OSC
L155	1	1	1	LI10015010	AM IFT
L156	1	1	1	LI10015060	AM IFT
L201	1	1	1	LC13320020	Choke Coil, 3.3μH
L202	1	1	1	LI14019010	FM IFT
L203	1	1	1	LC11830010	Choke Coil, 18μH
L301	1	1	1	LS35025010	Low Pass Filter, FB3605
P200-SEMICONDUCTORS					
Q151	1	1	1	HC10019010	IC, HA1197
Q152	1	1	1	HT313272A0	Transistor, 2SC1327 S or T
Q201	1	1	1	HT310471C0	Transistor, 2SC1047 C
Q202	1	1	1	HC10021010	IC, HA1137 W
Q203	1	1	1	HD20011050	Diode, 1S1555
Q204	1	1	1	HD20011050	Diode, 1S1555
Q205	1	1	1	HD20011050	Diode, 1S1555
Q206	1	1	1	HT308281D0	Transistor, 2SC828 S
Q207	1	1	1	HD20011050	Diode, 1S1555
Q301	1	1	1	HT308281D0	Transistor, 2SC828 S
Q302	1	1	1	HC10020010	IC, HA1196
Q303	1	1	1	HT313441E0	Transistor, 2SC1344 E
Q304	1	1	1	HT313441E0	Transistor, 2SC1344 E
P200-MISCELLANEOUS					
P208	8	8	8	2933118020	Spacer, R155, R170, R312, R339
F151	1	1	1	FF10045160	Ceramic Filter, AM
F201	1	1	1	FF11070050	Ceramic Filter, FM
F202	1	1	1	FF11070050	Ceramic Filter, FM
F203	1	1	1	FF11070050	Ceramic Filter, FM
J201	1	1	1	YP10001130	Plug
J232	1	1	1		
EQUALIZER AMP. CIRCUIT BOARD-P400					
P400	1	1	1	YA22040210	P.W. Board, Equalizer Amp.
	1	1	1	ZZ22040210	P.W. Board Assembly
P400-RESISTORS					
R401	1	1	1	RT05913141	Fixed, 91kΩ ±5%, 1/4W
R402	1	1	1	RT05913141	Fixed, 91kΩ ±5%, 1/4W
R403	1	1	1	RT05471141	Fixed, 470Ω ±5%, 1/4W

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REF. DESIG.	Q'TY			PART NO.	DESCRIPTION	REF. DESIG.	Q'TY			PART NO.	DESCRIPTION
	U	C	E				U	C	E		
R404	1	1	1	RT05471141	Fixed, 470Ω ±5%, 1/4W	Q406	1	1	1	HT313281T0	Transistor, 2SC1328 T
R405	1	1	1	RN05394140	Fixed, 390kΩ ±5%, 1/4W	S401	1	1	1	SR10050120	Rotary Switch, Selector
R406	1	1	1	RN05394140	Fixed, 390kΩ ±5%, 1/4W	P408	6	6	6	2933118020	Spacer, R429~R431 (10mm)
R407	1	1	1	RT05223141	Fixed, 22kΩ ±5%, 1/4W	J401	35	35	35	YP10001131	Plug
R408	1	1	1	RT05223141	Fixed, 22kΩ ±5%, 1/4W	J435					
R409	1	1	1	RT05681141	Fixed, 680Ω ±5%, 1/4W						
R410	1	1	1	RT05681141	Fixed, 680Ω ±5%, 1/4W						
R411	1	1	1	RN05104140	Fixed, 100kΩ ±5%, 1/4W						
R412	1	1	1	RN05104140	Fixed, 100kΩ ±5%, 1/4W						
R413	1	1	1	RT05303141	Fixed, 30kΩ ±5%, 1/4W						
R414	1	1	1	RT05303141	Fixed, 30kΩ ±5%, 1/4W						
R415	1	1	1	RT05562141	Fixed, 5.6kΩ ±5%, 1/4W						
R416	1	1	1	RT05562141	Fixed, 5.6kΩ ±5%, 1/4W						
R417	1	1	1	RT05182141	Fixed, 1.8kΩ ±5%, 1/4W						
R418	1	1	1	RT05182141	Fixed, 1.8kΩ ±5%, 1/4W						
R419	1	1	1	RT05472141	Fixed, 4.7kΩ ±5%, 1/4W						
R420	1	1	1	RT05472141	Fixed, 4.7kΩ ±5%, 1/4W						
R421	1	1	1	RT05224141	Fixed, 220kΩ ±5%, 1/4W						
R422	1	1	1	RT05224141	Fixed, 220kΩ ±5%, 1/4W						
R423	1	1	1	RT05473141	Fixed, 47kΩ ±5%, 1/4W						
R424	1	1	1	RT05473141	Fixed, 47kΩ ±5%, 1/4W						
R425	1	1	1	RT05152141	Fixed, 1.5kΩ ±5%, 1/4W						
R426	1	1	1	RT05152141	Fixed, 1.5kΩ ±5%, 1/4W						
R427	1	1	1	RN05564140	Fixed, 560kΩ ±5%, 1/4W						
R428	1	1	1	RN05564140	Fixed, 560kΩ ±5%, 1/4W						
R429	1	1	1	RT05101140	Fixed, 100Ω ±5%, 1/4W						
R430	1	1	1	GJ05681010	Fixed, 680Ω ±5%, 1W						
R431	1	1	1	GF05330120	Fixed, 33Ω ±5%, 1/4W						
R400	1	1	1	RC00000120	Fixed, 0Ω, 1/4W						
P400-CAPACITORS											
C401	1	1	1	EV22502560	Electrolytic, 2.2μF ±20%, 25V	R701	1	1	1	RT05102140	Fixed, 1.0kΩ ±5%, 1/4W
C402	1	1	1	EV22502560	Electrolytic, 2.2μF ±20%, 25V	R702	1	1	1	RT05102140	Fixed, 1.0kΩ ±5%, 1/4W
C403	1	1	1	DD15201010	Ceramic, 200pF ±10%, 50V	R703	1	1	1	RT05333140	Fixed, 33kΩ ±5%, 1/4W
C404	1	1	1	DD15201010	Ceramic, 200pF ±10%, 50V	R704	1	1	1	RT05333140	Fixed, 33kΩ ±5%, 1/4W
C405	1	1	1	DD16151010	Ceramic, 150pF ±10%, 50V	R705	1	1	1	RT05682140	Fixed, 6.8kΩ ±5%, 1/4W
C406	1	1	1	DD16151010	Ceramic, 150pF ±10%, 50V	R706	1	1	1	RT05682140	Fixed, 6.8kΩ ±5%, 1/4W
C407	1	1	1	EV22600660	Electrolytic, 22μF ±20%, 6.3V	R707	1	1	1	RT05102140	Fixed, 1kΩ ±5%, 1/4W
C408	1	1	1	EV22600660	Electrolytic, 22μF ±20%, 6.3V	R708	1	1	1	RT05102140	Fixed, 1kΩ ±5%, 1/4W
C409	1	1	1	DD16300010	Ceramic, 30pF ±10%, 50V	R709	1	1	1	RT05103140	Fixed, 10kΩ ±5%, 1/4W
C410	1	1	1	DD16300010	Ceramic, 30pF ±10%, 50V	R710	1	1	1	RT05103140	Fixed, 10kΩ ±5%, 1/4W
C411	1	1	1	EA47601690	Electrolytic, 47μF +100%, -10%, 16V	R711	1	1	1	RA05020170	Trimming, 5kΩ (B)
C412	1	1	1	EA47601690	Electrolytic, 47μF +100%, -10%, 16V	R712	1	1	1	RA05020170	Trimming, 5kΩ (B)
C413	1	1	1	DD16101010	Ceramic, 100pF ±10%, 50V	R713	1	1	1	RT05472140	Fixed, 4.7kΩ ±5%, 1/4W
C414	1	1	1	DD16101010	Ceramic, 100pF ±10%, 50V	R714	1	1	1	RT05472140	Fixed, 4.7kΩ ±5%, 1/4W
C415	1	1	1	EE22503510	Electrolytic, 2.2μF ±20%, 35V	R715	1	1	1	RT05154140	Fixed, 150kΩ ±5%, 1/4W
C416	1	1	1	EE22503510	Electrolytic, 2.2μF ±20%, 35V	R716	1	1	1	RT05154140	Fixed, 150kΩ ±5%, 1/4W
C417	1	1	1	DF15152010	Film, 0.0015μF ±20%, 50V	R717	1	1	1	RT05302140	Fixed, 3.0kΩ ±5%, 1/4W
C418	1	1	1	DF15152010	Film, 0.0015μF ±20%, 50V	R718	1	1	1	RT05302140	Fixed, 3.0kΩ ±5%, 1/4W
C419	1	1	1	DF15562010	Film, 0.0056μF ±50%, 50V	R719	1	1	1	RT05333140	Fixed, 33kΩ ±5%, 1/4W
C420	1	1	1	DF15562010	Film, 0.0056μF ±50%, 50V	R720	1	1	1	RT05333140	Fixed, 33kΩ ±5%, 1/4W
C411	1	1	1	EA47601690	Electrolytic, 47μF +100%, -10%, 16V	R721	1	1	1	GF05330140	Fixed, 33Ω ±5%, 1/4W
C412	1	1	1	EA47601690	Electrolytic, 47μF +100%, -10%, 16V	R722	1	1	1	GF05330140	Fixed, 33Ω ±5%, 1/4W
C413	1	1	1	DD16101010	Ceramic, 100pF ±10%, 50V	R723	1	1	1	GF05221140	Fixed, 220Ω ±5%, 1/4W
C414	1	1	1	DD16101010	Ceramic, 100pF ±10%, 50V	R724	1	1	1	GF05221140	Fixed, 220Ω ±5%, 1/4W
C415	1	1	1	EE22503510	Electrolytic, 2.2μF ±20%, 35V	R725	1	1	1	RT05242140	Fixed, 2.4kΩ ±5%, 1/4W
C416	1	1	1	EE22503510	Electrolytic, 2.2μF ±20%, 35V	R726	1	1	1	RT05242140	Fixed, 2.4kΩ ±5%, 1/4W
C417	1	1	1	DF15152010	Film, 0.0015μF ±20%, 50V	R727	1	1	1	RT05472140	Fixed, 4.7kΩ ±5%, 1/4W
C418	1	1	1	DF15152010	Film, 0.0015μF ±20%, 50V	R728	1	1	1	RT05472140	Fixed, 4.7kΩ ±5%, 1/4W
C419	1	1	1	DF15562010	Film, 0.0056μF ±50%, 50V	R729	1	1	1	RT05750140	Fixed, 75Ω ±5%, 1/4W
C420	1	1	1	DF15562010	Film, 0.0056μF ±50%, 50V	R730	1	1	1	RT05750140	Fixed, 75Ω ±5%, 1/4W
C421	1	1	1	EA10705090	Electrolytic, 100μF +100%, -10%, 50V	R731	1	1	1	HH000003030	Thermistor, STD-04
C422	1	1	1	EA47601090	Electrolytic, 47μF +100%, -10%, 10V	R732	1	1	1	HH000003030	Thermistor, STD-04
P400-MISCELLANEOUS											
Q401	1	1	1	HT313281T0	Transistor, 2SC1328 T	R733	1	1	1	RA03010020	Trimming, 300Ω (B)
Q402	1	1	1	HT313281T0	Transistor, 2SC1328 T	R734	1	1	1	RA03010020	Trimming, 300Ω (B)
Q403	1	1	1	HT313282A0	Transistor, 2SC1328 S or T	R735	1	1	1	RT05221140	Fixed, 220Ω ±5%, 1/4W
Q404	1	1	1	HT313282A0	Transistor, 2SC1328 S or T	R736	1	1	1	RT05221140	Fixed, 220Ω ±5%, 1/4W
Q405	1	1	1	HT313281T0	Transistor, 2SC1328 T	R737	1	1	1	GF05242140	Fixed, 2.4kΩ ±5%, 1/4W
						R738	1	1	1	GF05242140	Fixed, 2.4kΩ ±5%, 1/4W
						R739	1	1	1	GF05332140	Fixed, 3.3kΩ ±5%, 1/4W
						R740	1	1	1	GF05332140	Fixed, 3.3kΩ ±5%, 1/4W
						R741	1	1	1	GF05182140	Fixed, 1.8kΩ ±5%, 1/4W
						R742	1	1	1	GF05182140	Fixed, 1.8kΩ ±5%, 1/4W
						R743	1	1	1	GF05432140	Fixed, 4.3kΩ ±5%, 1/4W
						R744	1	1	1	GF05432140	Fixed, 4.3kΩ ±5%, 1/4W
						R745	1	1	1	GF05182140	Fixed, 1.8kΩ ±5%, 1/4W
						R746	1	1	1	GF05182140	Fixed, 1.8kΩ ±5%, 1/4W
						R747	1	1	1	GF05101140	Fixed, 100Ω ±5%, 1/4W

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REF. DESIG.	Q'TY			PART NO.	DESCRIPTION
	U	C	E		
R748	1	1	1	GF05101140	Fixed, 100Ω ±5%, 1/4W
R749	1	1	1	GF05101140	Fixed, 100Ω ±5%, 1/4W
R750	1	1	1	GF05101140	Fixed, 100Ω ±5%, 1/4W
R751	1	1	1	GF05100140	Fixed, 10Ω ±5%, 1/4W
R752	1	1	1	GF05100140	Fixed, 10Ω ±5%, 1/4W
R753	1	1	1	GF05221120	Fixed, 220Ω ±5%, 1/4W
R754	1	1	1	GF05221120	Fixed, 220Ω ±5%, 1/4W
R755	1	1	1	GF05221120	Fixed, 220Ω ±5%, 1/4W
R756	1	1	1	GF05221120	Fixed, 220Ω ±5%, 1/4W
R757	1	1	1	GF05100140	Fixed, 10Ω ±5%, 1/4W
R758	1	1	1	GF05100140	Fixed, 10Ω ±5%, 1/4W
R759	1	1	1	GW10332030	Fixed, 0.33Ω ±10%, 3W
R760	1	1	1	GW10332030	Fixed, 0.33Ω ±10%, 3W
R761	1	1	1	GW10332030	Fixed, 0.33Ω ±10%, 3W
R762	1	1	1	GW10332030	Fixed, 0.33Ω ±10%, 3W
R763	1	1	1	GJ05100020	Fixed, 10Ω ±5%, 2W
R764	1	1	1	GJ05100020	Fixed, 10Ω ±5%, 2W
R765	1	1	1	GF05220140	Fixed, 22Ω ±5%, 1/4W
R766	1	1	1	GF05102120	Fixed, 1kΩ ±5%, 1/4W
R767	1	1	1	RC10562120	Fixed, 5.6kΩ ±10%, 1/4W
R768	1	1	1	RC10562120	Fixed, 5.6kΩ ±10%, 1/4W
R769	1	1	1	RT05223140	Fixed, 22kΩ ±5%, 1/4W
R770	1	1	1	RT05183140	Fixed, 18kΩ ±5%, 1/4W
R771	1	1	1	RT05682140	Fixed, 6.8kΩ ±5%, 1/4W
R772	1	1	1	GJ05331010	Fixed, 330Ω ±5%, 1W
R773	1	1	1	RT05184140	Fixed, 180kΩ ±5%, 1/4W
R774	1	1	1	RT05393140	Fixed, 39kΩ ±5%, 1/4W
R775	1	1	1	RC10022120	Fixed, 2.2Ω ±10%, 1/4W
R776	1	1	1	RC10022120	Fixed, 2.2Ω ±10%, 1/4W
R777	1	1	1	RC00000120	Fixed, 0Ω, 1/4W
R778	1	1	1	RC00000120	Fixed, 0Ω, 1/4W
R779	1	1	1	RC00000120	Fixed, 0Ω, 1/4W
P700-CAPACITORS					
C701	1	1	1	EE33502510	Electrolytic, 3.3μF ±20%, 25V
C702	1	1	1	EE33502510	Electrolytic, 3.3μF ±20%, 25V
C703	1	1	1	DD16201010	Ceramic, 200pF, 50V
C704	1	1	1	DD16201010	Ceramic, 200pF, 50V
C705	1	1	1	EE47601620	Electrolytic, 47μF ±20%, 16V
C706	1	1	1	EE47601620	Electrolytic, 47μF ±20%, 16V
C707	1	1	1	DD10030500	Ceramic, 3pF, 500V
C708	1	1	1	DD10030500	Ceramic, 3pF, 500V
C709	1	1	1	EA47605090	Electrolytic, 47μF +100%, -10%, 50V
C710	1	1	1	EA47605090	Electrolytic, 47μF +100%, -10%, 50V
C715	1	1	1	DK16101500	Ceramic, 100pF
C716	1	1	1	DK16101500	Ceramic, 100pF
C717	1	1	1	DF17104520	Film, 0.1μF, 200V
C718	1	1	1	DF17104520	Film, 0.1μF, 200V
C719	1	1	1	EA22705090	Electrolytic, 220μF +100%, -10%, 50V
C720	1	1	1	EA10603590	Electrolytic, 10μF +100%, -10%, 35V
C721	1	1	1	EA47601690	Electrolytic, 47μF +100%, -10%, 16V
C722	1	1	1	EA22701090	Electrolytic, 220μF +100%, -10%, 10V
P700-SEMICONDUCTORS					
H701	1	1	1	HT107222B0	Transistor, 2SA722 T or U
H702	1	1	1	HT107222B0	Transistor, 2SA722 T or U
H703	1	1	1	HT107222B0	Transistor, 2SA722 T or U
H704	1	1	1	HT107222B0	Transistor, 2SA722 T or U
H705	1	1	1	HV00003120	Varistor, MV-13

REF. DESIG.	Q'TY			PART NO.	DESCRIPTION
	U	C	E		
H706	1	1	1	HV00003120	Varistor, MV-13
H707	1	1	1	HT318853B0	Transistor, 2SC1885 C, D or E
H708	1	1	1	HT318853B0	Transistor, 2SC1885 C, D or E
H709	1	1	1	HT309451Q0	Transistor, 2SC945 Q
H710	1	1	1	HT309451Q0	Transistor, 2SC945 Q
H711	1	1	1	HT107331Q0	Transistor, 2SA733 Q
H712	1	1	1	HT107331Q0	Transistor, 2SA733 Q
H713	1	1	1	HD20002210	Diode, 1S2472 (Gr)
H714	1	1	1	HD20002210	Diode, 1S2472 (Gr)
H715	1	1	1	HD20002210	Diode, 1S2472 (Gr)
H716	1	1	1	HD20002210	Diode, 1S2472 (Gr)
H717	1	1	1	HD20002210	Diode, 1S2472 (Gr)
H718	1	1	1	HD20002210	Diode, 1S2472 (Gr)
H719	1	1	1	HD20002210	Diode, 1S2472 (Gr)
H720	1	1	1	HD20002210	Diode, 1S2472 (Gr)
H721	1	1	1	HT315672B0	Transistor, 2SC1567 Q or R
H722	1	1	1	HT315672B0	Transistor, 2SC1567 Q or R
H723	1	1	1	HT107942B0	Transistor, 2SA794 Q or R
H724	1	1	1	HT107942B0	Transistor, 2SA794 Q or R
H725	1	1	1	HD30030090	Diode, WZ-177
H726	1	1	1	HT309452A0	Transistor, 2SC945 Q or R
H727	1	1	1	HT309452A0	Transistor, 2SC945 Q or R
H728	1	1	1	HT313182C0	Transistor, 2SC1318 R or S
H729	1	1	1	HD20003210	Diode, 1S2471
H730	1	1	1	HV00003120	Varistor, MV-13
H731	1	1	1	HV00003120	Varistor, MV-13
H733	1	1	1	HD20005010	Diode, W06B
H734	1	1	1	HD20005010	Diode, W06B
H735	1	1	1	HD20005010	Diode, W06B
H736	1	1	1	HD20005010	Diode, W06B
P700-MISCELLANEOUS					
L701	1	1	1	LC22620010	Coil, 2.6μH
L702	1	1	1	LC22620010	Coil, 2.6μH
L703	1	1	1	LY20240090	Relay
P707	26	26	26	3444118050	Spacer, R723, R724, R735~R742, R745, R746, R765
P708	22	22	22	2933118020	Spacer, R753~R756, R759~R764, R772
J701	?	29	29	YP10001130	Plug
POWER SUPPLY CIRCUIT BOARD-P800					
P800	1	1	1	YA22040310	P.W. Board, Power Supply
	1	1	1	ZZ22040310	P.W. Board Assembly
P800-RESISTORS					
R801	1	1	1	GJ05220020	Fixed, 22Ω ±5%, 2W
R802	1	1	1	GF05100140	Fixed, 10Ω ±5%, 1/4W
R803	1	1	1	RT05152141	Fixed, 1.5kΩ ±5%, 1/4W
R804	1	1	1	RT05152141	Fixed, 1.5kΩ ±5%, 1/4W
R805	1	1	1	GJ05221030	Fixed, 220Ω ±5%, 3W
R806	1	1	1	RT05363141	Fixed, 36kΩ ±5%, 1/4W
R807	1	1	1	RT05273141	Fixed, 27kΩ ±5%, 1/4W
R808	1	1	1	RA05020130	Trimming, 5kΩ (B)
P800-CAPACITORS					
C801	1	1	1	DK18103510	Ceramic, 0.01μF, 500V
C802	1	1	1	EA47706310	Electrolytic, 470μF, 63V

U : For U.S.A.
 C : For Canada
 E : For Europe

REF. DESIG.	Q'TY			PART NO.	DESCRIPTION
	U	C	E		
C803	1	1	1	EA47705090	Electrolytic, 470μF, 50V
C804	1	1	1	EA10705090	Electrolytic, 100μF, 50V
C805	1	1	1	DF17473050	Film, 0.047μF, 50V
C806	1	1	1	DK18403020	Ceramic, 0.04μF, 50V
C807	1	1	1	EA33505090	Electrolytic, 3.3μF, 50V
C808	1	1	1	EA47701690	Electrolytic, 470μF, 16V
C809	1	1	1	EA10801090	Electrolytic, 1000μF, 10V
P800-SEMICONDUCTORS					
Q801	1	1	1	HD20012030	Diode, DS132 B
Q802	1	1	1	HD20011030	Diode, DS131 B
Q803	1	1	1	HT403302A0	Transistor, 2SD330 D or E
Q804	1	1	1	HT309452A0	Transistor, 2SC945 Q or R
Q805	1	1	1	HD30021090	Diode, BZ-140 14V
Q806	1	1	1	HD20004130	Diode, SIB01-02
P800-MISCELLANEOUS					
J801	?	14	14	YJ10001140	Plug
J814					
J815	?	4	4	YJ08000210	Socket, Fuse
J818					
F801	1	1		FS10100080	Fuse, MGC 1A (30 mm)
F802	1	1		FS10200060	Fuse, MGC 2A (30 mm)
F801		1		FS10100900	Fuse, SLA 1A (20 mm)
F802		1		FS10200900	Fuse, SLA 2A (20 mm)
P803	10	10	10	2933118020	Spacer, R801, R802, R805, Q806, Q801, Q802
PRE & TONE AMP. CIRCUIT BOARD-PE01					
PE01	1	1	1	YD29151082	P.W. Board, Pre & Tone Amp.
	1	1	1	ZZ22041082	P.W. Board Assembly
PE01-RESISTORS					
RE01	1	1	1	RT05474140	Fixed, 470kΩ ±5%, 1/4W
RE02	1	1	1	RT05474140	Fixed, 470kΩ ±5%, 1/4W
RE03	1	1	1	RT05391140	Fixed, 390Ω ±5%, 1/4W
RE04	1	1	1	RT05391140	Fixed, 390Ω ±5%, 1/4W
RE05	1	1	1	RN05105140	Fixed, 1MΩ ±5%, 1/4W
RE06	1	1	1	RN05105140	Fixed, 1MΩ ±5%, 1/4W
RE07	1	1	1	RN05104140	Fixed, 100kΩ ±5%, 1/4W
RE08	1	1	1	RT05103140	Fixed, 10kΩ ±5%, 1/4W
RE09	1	1	1	RT05273140	Fixed, 27kΩ ±5%, 1/4W
RE10	1	1	1	RT05273140	Fixed, 27kΩ ±5%, 1/4W
RE11	1	1	1	RT05102140	Fixed, 1kΩ ±5%, 1/4W
RE12	1	1	1	RT05102140	Fixed, 1kΩ ±5%, 1/4W
RE13	1	1	1	RT05752140	Fixed, 7.5kΩ ±5%, 1/4W
RE14	1	1	1	RT05752140	Fixed, 7.5kΩ ±5%, 1/4W
RE15	1	1	1	RT05102140	Fixed, 1kΩ ±5%, 1/4W
RE16	1	1	1	RT05102140	Fixed, 1kΩ ±5%, 1/4W
RE17	1	1	1	RT05474140	Fixed, 470kΩ ±5%, 1/4W
RE18	1	1	1	RT05474140	Fixed, 470kΩ ±5%, 1/4W
RE19	1	1	1	RT05562140	Fixed, 5.6kΩ ±5%, 1/4W
RE20	1	1	1	RT05562140	Fixed, 5.6kΩ ±5%, 1/4W
RE21	1	1	1	RT05123140	Fixed, 12kΩ ±5%, 1/4W
RE22	1	1	1	RT05123140	Fixed, 12kΩ ±5%, 1/4W
RE23	1	1	1	RT05334140	Fixed, 330kΩ ±5%, 1/4W
RE24	1	1	1	RT05334140	Fixed, 330kΩ ±5%, 1/4W
RE25	1	1	1	RT05562140	Fixed, 5.6kΩ ±5%, 1/4W
RE26	1	1	1	RT05562140	Fixed, 5.6kΩ ±5%, 1/4W
RE27	1	1	1	RT05562140	Fixed, 5.6kΩ ±5%, 1/4W

REF. DESIG.	Q'TY			PART NO.	DESCRIPTION
	U	C	E		
RE28	1	1	1	RT05562140	Fixed, 5.6kΩ ±5%, 1/4W
RE29	1	1	1	RT05273140	Fixed, 27kΩ ±5%, 1/4W
RE30	1	1	1	RT05273140	Fixed, 27kΩ ±5%, 1/4W
RE31	1	1	1	RT05123140	Fixed, 12kΩ ±5%, 1/4W
RE32	1	1	1	RT05123140	Fixed, 12kΩ ±5%, 1/4W
RE33	1	1	1	RT05153140	Fixed, 15kΩ ±5%, 1/4W
RE34	1	1	1	RT05153140	Fixed, 15kΩ ±5%, 1/4W
RE35	1	1	1	RT05334140	Fixed, 330kΩ ±5%, 1/4W
RE36	1	1	1	RT05334140	Fixed, 330kΩ ±5%, 1/4W
RE37	1	1	1	RT05273140	Fixed, 27kΩ ±5%, 1/4W
RE38	1	1	1	RT05273140	Fixed, 27kΩ ±5%, 1/4W
RE39	1	1	1	RT05225140	Fixed, 2.2MΩ ±5%, 1/4W
RE40	1	1	1	RT05225140	Fixed, 2.2MΩ ±5%, 1/4W
RE41	1	1	1	RT05683140	Fixed, 68kΩ ±5%, 1/4W
RE42	1	1	1	RT05683140	Fixed, 68kΩ ±5%, 1/4W
RE43	1	1	1	RT05473140	Fixed, 47kΩ ±5%, 1/4W
RE44	1	1	1	RT05473140	Fixed, 47kΩ ±5%, 1/4W
RE45	1	1	1	RT05103140	Fixed, 10kΩ ±5%, 1/4W
RE46	1	1	1	RT05103140	Fixed, 10kΩ ±5%, 1/4W
RE47	1	1	1	RT05221140	Fixed, 220Ω ±5%, 1/4W
RE48	1	1	1	RT05221140	Fixed, 220Ω ±5%, 1/4W
RE49	1	1	1	RT05474140	Fixed, 470kΩ ±5%, 1/4W
RE50	1	1	1	RT05474140	Fixed, 470kΩ ±5%, 1/4W
RE51	1	1	1	RD01040052	Variable, Treble, 100kΩ (B)
RE52	1	1	1	RD01040052	Variable, Mid, 100kΩ (B)
RE53	1	1	1	RD01040052	Variable, Bass, 100kΩ (B)
RE54	1	1	1	RT05821140	Fixed, 820Ω ±5%, 1/4W
RE55	1	1	1	RC00000120	Fixed, 0Ω, 1/4W
RE56	1	1	1	RC00000120	Fixed, 0Ω, 1/4W
PE01-CAPACITORS					
CE01	1	1	1	DF17224050	Film, 0.22μF ±20%, 50V
CE02	1	1	1	DF17224050	Film, 0.22μF ±20%, 50V
CE03	1	1	1	EA10603590	Electrolytic, 10μF +100%, -10%, 35V
CE04	1	1	1	EA10603590	Electrolytic, 10μF +100%, -10%, 35V
CE05	1	1	1	EE47502510	Electrolytic, 4.7μF ±20%, 25V
CE06	1	1	1	EE47502510	Electrolytic, 4.7μF ±20%, 25V
CE07	1	1	1	DD16101010	Ceramic, 100pF ±10%, 50V
CE08	1	1	1	DD16101010	Ceramic, 100pF ±10%, 50V
CE09	1	1	1	DF16222050	Film, 0.0022μF ±10%, 50V
CE10	1	1	1	DF16122650	Film, 0.0022μF ±10%, 50V
CE11	1	1	1	DF16472050	Film, 0.0047μF ±10%, 50V
CE12	1	1	1	DF16472050	Film, 0.0047μF ±10%, 50V
CE13	1	1	1	DF16223050	Film, 0.022μF ±10%, 50V
CE14	1	1	1	DF16223050	Film, 0.022μF ±10%, 50V
CE15	1	1	1	DF16223050	Film, 0.022μF ±10%, 50V
CE16	1	1	1	DF16223050	Film, 0.022μF ±10%, 50V
CE17	1	1	1	DF16822050	Film, 0.0082μF ±10%, 50V
CE18	1	1	1	DF16822050	Film, 0.0082μF ±10%, 50V
CE19	1	1	1	EE10505010	Electrolytic, 1μF ±20%, 50V
CE20	1	1	1	EE10505010	Electrolytic, 1μF ±20%, 50V
CE21	1	1	1	EE33505010	Electrolytic, 3.3μF ±20%, 50V
CE22	1	1	1	EE33505010	Electrolytic, 3.3μF ±20%, 50V
CE23	1	1	1	EQ10505010	Electrolytic, 1μF ±30%, 50V
CE24	1	1	1	EQ10505010	Electrolytic, 1μF ±30%, 50V
CE25	1	1	1	EA22703590	Electrolytic, 220μF +100%, -10%, 35V
PE01-MISCELLANEOUS					
HE01	1	1	1	HT313283A0	Transistor, 2SC1328 S, T or U
HE02	1	1	1	HT313283A0	Transistor, 2SC1328 S, T or U
HE03	1	1	1	HT107222A0	Transistor, 2SA722 S or T

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REF. DESIG.	Q'TY			PART NO.	DESCRIPTION
	U	C	E		
HE04	1	1	1	HT107222A0	Transistor, 2SA722 S or T
HE05	1	1	1	HT313283A0	Transistor, 2SC1328 S, T or U
HE06	1	1	1	HT313283A0	Transistor, 2SC1328 S, T or U
HE07	1	1	1	HT107222A0	Transistor, 2SA722 S or T
HE08	1	1	1	HT107222A0	Transistor, 2SA722 S or T
PE08	2	2	2	2933118020	Spacer, RE54
JE01	8	8	8	YP10001130	Plug
FILTER & DOLBY CIRCUIT BOARD-PH01					
PH01	1	1		YD29151090	P.W. Board, Filter & Dolby
	1	1		ZZ22041090	P.W. Board Assembly
	1			YD29150050	P.W. Board, Low & Hi Filter
	1			ZZ22048050	P.W. Board Assembly
RH01	1	1		RT05102140	Resistor, Fixed, 1kΩ ±5%, 1/4W
RH02	1	1		RT05102140	Resistor, Fixed, 1kΩ ±5%, 1/4W
RH04	1	1		RT05105140	Resistor, Fixed, 1MΩ ±5%, 1/4W
RH05	1	1		RT05105140	Resistor, Fixed, 1MΩ ±5%, 1/4W
RH06	1	1		RT05472140	Resistor, Fixed, 4.7kΩ ±5%, 1/4W
RH07	1	1		RT05472140	Resistor, Fixed, 4.7kΩ ±5%, 1/4W
RH08	1	1		RT05225140	Resistor, Fixed, 2.2MΩ ±5%, 1/4W
RH09	1	1		RT05225140	Resistor, Fixed, 2.2MΩ ±5%, 1/4W
CH01	1	1		DF15222050	Capacitor, Film, 0.0022μF ±10%, 50V
CH02	1	1		DF15222050	Capacitor, Film, 0.0022μF ±10%, 50V
CH03	1	1		DF16682050	Capacitor, Film, 0.0068μF ±10%, 50V
CH04	1	1		DF16682050	Capacitor, Film, 0.0068μF ±10%, 50V
CH05	1	1		EV22403510	Capacitor, Electrolytic, 0.22μF ±20%, 35V
CH06	1	1		EV22403510	Capacitor, Electrolytic, 0.22μF ±20%, 35V
SH01	1	1		SP04040140	Pushswitch
JH01	1	1		YP10001200	Plug
JH02	1	1		YP10001200	Plug
JH09					
JH28	20	20		YP10001200	Plug
LOW & HIGH FILTERS CIRCUIT BOARD-PH01					
PH01	1			YD29150050	P.W. Board, Low & Hi Filters
	1			ZZ22048090	P.W. Board Assembly
PH01-MISCELLANEOUS					
RH01	1			RT05102140	Resistor, Fixed, 1kΩ ±5%, 1/4W
RH02	1			RT05102140	Resistor, Fixed, 1kΩ ±5%, 1/4W
RH06	1			RT05472140	Resistor, Fixed, 4.7kΩ ±5%, 1/4W
RH07	1			RT05472140	Resistor, Fixed, 4.7kΩ ±5%, 1/4W
RH08	1			RT05225140	Resistor, Fixed, 2.2MΩ ±5%, 1/4W

REF. DESIG.	Q'TY			PART NO.	DESCRIPTION	
	U	C	E			
RH09				RT05225140	Resistor, Fixed, 2.2MΩ ±5%, 1/4W	
CH01				DF16333050	Capacitor, Film, 0.033μF ±10%, 50V	
CH02				DF16333050	Capacitor, Film, 0.033μF ±10%, 50V	
CH03				DF16682050	Capacitor, Film, 0.0068μF ±10%, 50V	
CH04				DF16682050	Capacitor, Film, 0.0068μF ±10%, 50V	
SH01				SP04040130	Pushswitch	
JH01				YP10001200	Plug	
JH17						
PT01	1	1	1	YD29151100	SPEAKER SWITCH CIRCUIT BOARD-PT01	
	1	1	1	ZZ22043100	P.W. Board, Speaker Switch	
					P.W. Board Assembly	
PT01-MISCELLANEOUS						
RT01	1	1	1	RT05683140	Resistor, Fixed, 68kΩ ±5%, 1/4W	
RT02	1	1	1	RT05683140	Resistor, Fixed, 68kΩ ±5%, 1/4W	
RT03	1	1	1	RT05153140	Resistor, Fixed, 15kΩ ±5%, 1/4W	
RT04	1	1	1	RT05153140	Resistor, Fixed, 15kΩ ±5%, 1/4W	
RT05	1	1	1	GJ05331020	Resistor, Fixed, 330Ω ±5%, 2W	
RT06	1	1	1	GJ05331020	Resistor, Fixed, 330Ω ±5%, 2W	
RT07	1	1	1	GU05151120	Resistor, Fixed, 150Ω ±5%, 1/4W	
RT08	1	1	1	GU05151120	Resistor, Fixed, 150Ω ±5%, 1/4W	
CT01	1	1	1	DD16121010	Capacitor, Ceramic, 120pF ±10%, 50V	
CT02	1	1	1	DD16121010	Capacitor, Ceramic, 120pF ±10%, 50V	
CT03	1	1	1	DF16273050	Capacitor, Film, 0.027μF ±10%, 50V	
CT04	1	1	1	DF16273050	Capacitor, Film, 0.027μF ±10%, 50V	
ST01	1	1	1	SP04040110	Pushswitch	
PT07	4	4	4	3444118050	Spacer, RT05, RT06	
JT01						
JT16	16	16	16	YP10001200	Plug	
PZ01	1	1	1	YD28860160	DIAL LAMP CIRCUIT BOARD-PZ01	
	1	1	1	ZZ22041160	P.W. Board, Dial Lamp	
					P.W. Board Assembly	
PZ01-MISCELLANEOUS						
MZ01						
MZ05	5	5	5	IN10080070	Lamp	
JZ01						
JZ10	10	10	10	YJ08000170	Socket	
JZ11						
JZ14	4	4	4	YP10001200	Plug	

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REF. DESIG.	Q'TY			PART NO.	DESCRIPTION
	U	C	E		
GENERAL MISCELLANEOUS					
M001	1	1	1	IM11042270	DC Meter, Signal Strength
M002	1	1	1	IM11042240	DC Meter, Tuning
M003	1	1	1	IN10080340	Lamp, Stereo Indicator
M005	1	1	1	IN10080070	Lamp, Meter Indicator
M006	1	1	1	IN10080070	Lamp, Meter Indicator
L001	1	1	1	LF11200460	Antenna Coil, AM
L002	1	1	1	LC11540020	Choke Coil
L003	1	1		TS19609010	Power Transformer
L003			1	TS19609020	Power Transformer
S001	1	1	1	SP02010150	Power Switch
C001	1	1	1	DK18103010	Capacitor, Ceramic, 0.01μF, 50V
C002	1	1	1	DK18103010	Capacitor, Ceramic, 0.01μF, 50V
C003	1	1	1	EC10905020	Capacitor, Electrolytic, 10000μF, 50V
C004	1	1	1	EC10905020	Capacitor, Electrolytic, 10000μF, 50V
C006	1			DF17473590	Capacitor, Film, 0.047μF
C006		1		DF17223800	Capacitor, Film, 0.02μF, 1000V
C007	1	1	1	DK18103510	Capacitor, Ceramic, 0.01μF, 500V
G001	1			BF10400040	Printed Comp.
R001	1	1	1	RS05040050	Resistor, Variable, Balance, 500kΩ
R002	1	1	1	RM02540220	Resistor, Variable, Volume, 250kΩ
R003	1	1		RC10225120	Resistor, Fixed, 2.2MΩ ±10%, ½W
H007	1	1	1	HD20004290	Diode, S5VB
J001	1	1	1	BY04050010	Terminal, Antenna
J002	1	1	1	YL01020030	Terminal, 2P Lug
J003	1	1	1	YT01010050	Terminal, Ground
J004	1	1	1	YT02040140	Terminal, Phono/Aux
J005	1	1	1	YT02040140	Terminal, Tape 1
J006	1	1	1	YT02040140	Terminal, Tape 2
J007	1	1	1	YT02040170	Terminal, Pre Out/Main In
J008	1	1	1	YT02010130	Terminal, Quadradial Output
J009	1	1	1	YJ05000220	Socket, Transistor
J010	1	1	1	YJ05000220	Socket, Transistor
J011	1	1	1	YJ05000220	Socket, Transistor
J012	1	1	1	YJ05000220	Socket, Transistor
J013	1	1	1	YT03040160	Terminal, Speaker (System 1)
J014	1	1	1	YT03040160	Terminal, Speaker (System 2)
J015	1	1	1	YJ01000980	Jack, Headphones
J016	1	1	1	YJ08000190	Socket, Meter Lamp Holder
J017	1	1	1	YJ08000190	Socket, Meter Lamp Holder
J018	1	1		YJ08000120	Socket, Fuse Holder
J018		1		YJ08000220	Socket, Fuse Holder
J019	1	1	1	YJ04000570	Socket, AC Outlet (Switched)
J020	1	1	1	YJ04000570	Socket, AC Outlet (Unswitched)
J021		1		BY03110010	Terminal, Voltage Conversion
H001	1	1	1	HT403883A0	Transistor, 2SD388 S, R or Q
H002	1	1	1	HT403883A0	Transistor, 2SD388 S, R or Q
H003	1	1	1	HT205413A0	Transistor, 2SB541 S, R or Q
H004	1	1	1	HT205413A0	Transistor, 2SB541 S, R or Q
H005	1	1	1	HV00005080	Varistor, STV-3H

REF. DESIG.	Q'TY			PART NO.	DESCRIPTION
	U	C	E		
H006	1	1	1	HV00005080	Varistor, STV-3H
W001	1	1		YC02400220	AC Cord, UL
W001			1	YC01900030	AC Cord
F001			1	FS10250900	Fuse, 2.5A SGA (20 mm)
F001	1	1		FS10400050	Fuse, 4A MGC (30 mm)
F002		1		FS20500900	Fuse, 5A
2121	1	1	1	2991109010	Shield, HB112
2122	1	1	1	2991053110	Cover, VB116



12. TECHNICAL SPECIFICATIONS

AMPLIFIER SECTION:

Rated Power Output, Minimum Continuous Average Power per Channel, both Channels Driven	38 W
Power Band	20 Hz to 20 kHz
Total Harmonic Distortion	0.1%
Load Impedance	8 ohms
Maximum Power Output, DIN 45500 (Less than 1% THD, 10 min. test at 1 kHz)	42 W
Power Bandwidth at 1% THD, DIN 45500	10 Hz to 70 kHz
I.M. Distortion (I.H.F. method, 60 Hz and 7 kHz mixed 4:1 at rated power output)	0.1%
Damping Factor	45
Sensitivity (at MAIN IN)	1.5 V
Impedance (at MAIN IN)	30 kohms
Frequency Response for Power Amp Only (at 1 W output, 20 Hz to 20 kHz)	±0.25 dB

PREAMPLIFIER SECTION:

Phono

Input Overload at 1 kHz	100 mV
Equivalent Input Noise	1.5 µV
Dynamic Range (Dynamic Range is the ratio of input overload to equivalent input noise.)	96 dB
Input Sensitivity	1.8 mV
Input Impedance	47 kohms
Frequency Response, RIAA 20 Hz to 20 kHz	±1.0 dB
Signal-to-Noise Ratio (at rated output and 7.75 mV input)	75 dB
Signal-to-Noise Ratio, unweighted (DIN 45500)	47 dB
High Level (Aux and Tape)	
Input Sensitivity	180 mV
Input Impedance	85 kohms
Frequency Response (includes power amp)	15 Hz to 60 kHz, ±1.5 dB
Signal-to-Noise Ratio (ref. to rated output and 775 mV input)	87 dB
Output Levels	
Tape Out (ref. 7.75 mV at Phono inputs)	775 mV
Pre-Out (ref. 180 mV at Aux inputs) (ref. 500 mV at Aux inputs, main amp disconnected)	1.5 V 4.2 V
Output Impedance	
Tape Out	600 ohms
Pre-Out	900 ohms

FM TUNER SECTION:

Sensitivity

IHF Usable	10.8 dBf (1.9 µV)
IHF 50 dB Quieting (mono)	17.3 dBf (4.0 µV)
(Stereo)	37.2 dBf (40 µV)
DIN Sensitivity (Mono, 26 dB S/N, 300 ohm input)	1.6 µV
(Stereo, 46 dB S/N, 300 ohm input)	80 µV

Quieting Slope (Mono)

RF Input for 30 dB Quieting	9.8 dBf (1.7 µV)
Quieting at: 20 dBf (5.5 µV)	51 dB
25 dBf (10 µV)	58 dB
40 dBf (55 µV)	65 dB
65 dBf (1000 µV)	72 dB

Quieting Slope (Stereo)

Quieting at: 30 dBf (17 µV)	40 dB
40 dBf (55 µV)	50 dB
50 dBf (173 µV)	56 dB
65 dBf (1000 µV)	62 dB

Distortion (Mono)		
at 50 dB Quieting, 1000 Hz	.....	0.6%
at 65 dBf (1000 μ V), 1000 Hz	.....	0.15%
Distortion (Stereo)		
at 50 dB Quieting, 1000 Hz	.....	0.6%
at 65 dBf (1000 μ V), 1000 Hz	.....	0.3%
Hum and Noise		
at 65 dBf (1000 μ V)		
Mono	.....	70 dB
Stereo	.....	62 dB
Frequency Response		
30 Hz to 15 kHz		
Mono	.....	+0.2, -2.0 dB
Stereo	.....	\pm2.0 dB
Capture Ratio		
at 45 dBf (100 μ V)	.....	1.5 dB
at 65 dBf (1000 μ V)	.....	1.0 dB
Alternate Channel Selectivity	.....	70 dB
Spurious Response Rejection	.....	90 dB
Image Response Rejection	.....	60 dB
I.F. Rejection (Balanced)	.....	90 dB
A.M. Suppression	.....	50 dB
Stereo Separation		
100 Hz	.....	42 dB
1000 Hz	.....	45 dB
10 kHz	.....	32 dB
Subcarrier Rejection	.....	60 dB

AM TUNER SECTION:

IHF Usable Sensitivity	.....	20 μ V
Distortion (THD), 30% Modulation	.....	0.6%
Signal-to-Noise Ratio	.....	49 dB
Frequency Response (\pm 3 dB)	.....	40 Hz to 2.3 kHz
Alternate Channel Selectivity	.....	46 dB
Image Rejection	.....	45 dB
Spurious Response Rejection	.....	50 dB
I.F. Rejection	.....	40 dB

GENERAL:

Power Requirements	.....	120 V AC, 60 Hz (U.S.A. and Canadian Versions) 220 V AC, 50 Hz (European Version)
(This unit can be converted by a qualified technician to operate on 110/120/240 V AC, 50/60 Hz.)		
Power Consumption at rated output, both channels operating	.....	170 W
Idling Power (Volume Control at zero)	.....	30 W
Semiconductor Complement:		
Integrated Circuits	.....	3
Transistors	.....	45
Diodes	.....	29
Field Effect Transistors	.....	1
Dimensions:		
Panel Width	.....	440 mm (17-5/16 inches)
Panel Height	.....	137 mm (5-3/8 inches)
Depth	.....	365 mm (14-3/8 inches)
Weight:		
Unit alone	12 kg (26.4 lbs)
Packed for shipment	15 kg (33 lbs)

model 2238



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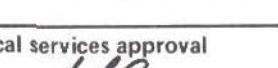
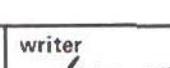
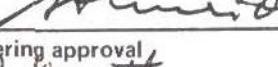
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SERVICE BULLETIN

model number 2238	bulletin number
for serial numbers ALL	M-2238-1
subject	
SERVICE MANUAL CORRECTION	
technical services approval 	writer 
engineering approval 	date 6-1-77

OBJECTIVE

This bulletin is issued to inform you of a misprint in the Marantz Model 2238 Service Manual.

APPLICATION

Incorporate this change into your Service Manual as soon as possible to ensure correct service information.

PROCEDURE

- A. Refer to the Service Manual, pages 12, 14, and 22, Schematic Diagrams and change the Ref. Desig. H707 to H709 of the transistor on the P700, Main Amp PC Board as shown by the illustration below.

