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SERVICE MANUAL 2020/2050

marantz

model 2020/2050

Stereophonic Tuner

MARANTZ DESIGN AND SERVICE

Using superior design and selected high grade components, MARANTZ Company has created the ultimate in stereo sound. Only original MARANTZ parts can insure that your MARANTZ product will continue to perform to the specifications for which it is famous.

Parts for your MARANTZ stereo are generally available within 72 hours throughout the nation via a toll-free line to our National Parts Depot in California. The sales professionals who take your call immediately refer to their own desk top computer terminal and can quickly determine the availability and price information you require. If for some reason, your order should exceed our available stock, we usually can instantly provide an alternate replacement part or current delivery information. When the order is placed and confirmed, the computer simultaneously generates "hard copy" orders at the distribution center. As hard copies come directly from the computer to the national parts depot, your requested stock is assembled and prepared for shipment and placed on the first available carrier for delivery to you.

ORDERING PARTS

Phone orders will eliminate mail delays, and we encourage the use of this method. If you order by mail, use MARANTZ parts order forms which are available from our National Parts Depot located at the following address:

SUPERSCOPE NATIONAL PARTS DEPARTMENT
20525 Nordhoff Street
Chatsworth, California 91311
Phone: 1-800-423-5108
1-213-998-9333

The following information must be supplied to eliminate delays in processing your order:

1. Complete address.
2. Complete part numbers.
3. Complete description of parts.
4. Model number for which part is required (indicate MARANTZ).
5. Account number (for account customers only).

Direct consumers will be provided with the current retail prive quotation on available parts in order to advise them of the cost of the parts and shipping.

OVERSEAS PARTS ORDERING

Parts may also be ordered from the following overseas addresses:

CANADA

Superscope Canada, Ltd.
3710 Nashua Drive
Mississauga
Ontario, Canada L4V1M5

AUSTRALIA

Superscope (Australasia) Pty., Ltd.
32 Cross Street (P.O. Box 604)
Brookvale 2100 N.S.W.
Australia

JAPAN

Marantz Japan, Inc.
3622 Kamitsuruma
Sagamihara Shi
Kanagawa, Japan

EUROPE

Superscope Europe, S.A.
Avenue Leopold III, 2
7120 Peronnes-Lez-Binche
Belgium

Marantz France
Rue Louis Armand 9
92600 Asnieres
Hauts-de-Seine
France

Marantz Audio U.K. Ltd.
London Road, 203
Staines
Middlesex
England

Superscope GmbH
Max-Planck-Strass 22
D-6072 Dreieich
West Germany

All of the above locations are fully equipped to take care of your total service needs. Because various countries have differing configuration requirements, it is necessary that you contact the service facility in your particular country. In the event that there is no service location listed for your country, please contact the nearest facility for the necessary assistance.

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We sound better.

TABLE OF CONTENTS

1. INTRODUCTION

This service manual was prepared for use by Authorized Warranty Stations and contains service information for Marantz Model 2020, 2050 AM/FM Stereophonic Tuner. 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 Tuner.
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. P.W. BOARDS

As can be seen from the circuit diagram, the chassis of Model 2020, 2050 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. **Tuner . . . . . mounted on P.W. Board P100**
2. **Power Supply . . . . . mounted on P.W. Board P800**
3. **Switch . . . . . mounted on P.W. Board PS00**
4. **Function Led. . . . . mounted on P.W. Board PY00**
5. **Stereo Led. . . . . mounted on P.W. Board PZ00**

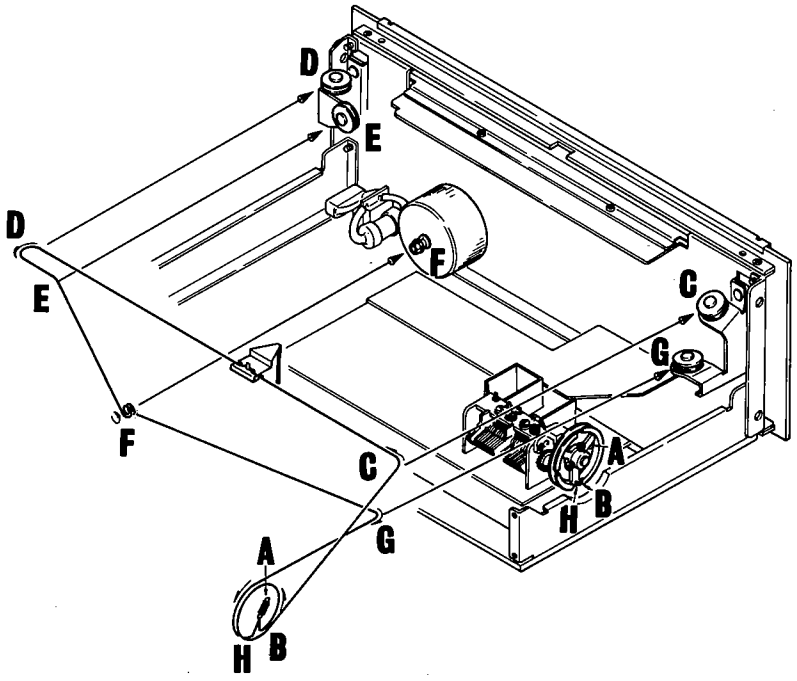


Figure 1. Dial Stringing

3. TEST EQUIPMENT REQUIRED FOR SERVICING

This table lists the test equipment required for servicing the Model 2020/2050 Tuner.

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
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 tuner
Line Voltmeter	Simpson Model 1359	Monitors potential of primary power to tuner
Variable Autotransformer	Superior Electronic Co., Powerstat Model 116B-10A	Adjusts level of primary power to tuner

4. ALIGNMENT PROCEDURES

A dummy resistor of 47 kohms must be connected across the tuner output terminals before alignment.

4.1 FM Alignment procedures (Selector switch in the "FM" position)

1. FM IF Alignment

Step	Signal Source Connection	Signal Frequency	Indicator Connection	Set Dial Pointer to:	Adjust:
1	Sweep generator to point Ⓑ through 5pF capacitor	10.7 MHz marker at 10.6, 10.7 and 10.8 MHz	Oscilloscope to point Ⓒ	Quiet point on band.	L104 for maximum and symmetric response.
2			Oscilloscope to point Ⓓ		L201 for straight and Symmetric "S" curve response.
3	Repeat steps 1 and 2.				

2. FM RF Alignment

Step	Signal Source Connection	Signal Frequency	Indicator Connection	Set Dial Pointer to:	Adjust:
1	RF generator to FM antenna terminals Ⓐ through matching network (300 ohms, baianced) (Maintain RF level below limt.)	87.4 MHz	VTVM to L or R channel output (W002)	87.4 MHz with tuning gang ciosed.	L103 for maximum output.
2		109 MHz		109 MHz with tuning gang open.	C119 for maximum output.
3		90 MHz		90 MHz	L101, L102 for maximum output.
4		106 MHz		106 MHz	ANT. RF. TRIM. CAP. for maximum output.
5	Repeat steps 1 to 4.				
6	Check overall response curve and repeat above steps as necessary to obtain maximum sensitivity.				
7	No connection	No signal			L201 Primary core (bottom) center tuning meter pointer indicates its center.
8	RF generator 1 mV output to FM antenna terminals Ⓐ through matching network (300 ohms, balanced)	98 MHz	Distortion meter to Ⓓ	98 MHz	L201 Secondary core (upper) for minimum distortion.
9					
10		98 MHz		98 MHz	R232 So that signal Strength meter M001 may read 85%

4.2 Muting Circuit Alignment

Step	Signal Source Connection	Signal Frequency	Indicator Connection	Set Dial Pointer to:	Adjust:
1	RF generator 12.5μV output to FM antenna terminals Ⓐ through matching network (300 ohms, balanced)	98 MHz	VTVM to R or L channel output (W 002)	98 MHz	R233 for 12.5μV threshold level. (During this adjustment turn the muting pushswitch "ON".)

4.3 Multiplex Alignment Procedures (Selector switch in the "FM" position)

Step	Signal Source Connection	Signal Frequency	Indicator Connection	Set Dial Pointer to:	Adjust:
1	RF generator to FM antenna terminals Ⓐ through matching network (300 ohms, balanced), with 1mV FM stereo simulator RF level and 100% modulation (pilot 9%)	No Modulation	Frequency counter to point Ⓔ (J140)	98 MHz	R326 so that Frequency counter may precisely read 19 kHz
2		Stereo, left (1,000 Hz)	VTVM to right channel output (W002, white)		R316 for maximum output and same separation in both channels.
3		Stereo, right (1,000 Hz)	VTVM to left channel output (W 002, Red)		
4	Repeat steps 2 and 3.				

4.4 AM Alignment Procedures (Selector switch in the "AM" position)

1. AM IF Alignment

Step	Signal Source Connection	Signal Frequency	Indicator Connection	Set Dial Pointer to:	Adjust:
1	No connection	No signal	———	———	R228 so that signal strength meter M001 may read 0%
2	Sweep generator to point Ⓕ	455 kHz marker	Oscilloscope to point Ⓖ (J141)	Quiet point on band.	L154 for maximum and symmetric response.

2. AM RF Alignment

Step	Signal Source Connection	Signal Frequency	Indicator Connection	Set Dial Pointer to:	Adjust:
1	RF generator to AM antenna terminals through IHF dummy	515 kHz	VTVM to L or R channel output (W002)	515 kHz with tuning gang closed.	L153 for maximum output.
2		1,650 kHz		1,650 kHz with tuning gang open.	OSC. TRIM. CAP. for maximum output.
3		600 kHz		600 kHz	L001 for maximum output.
4		1,400 kHz		1,400 kHz	ANT. TRIM. CAP. for maximum output.
5	Repeat steps 1 to 4 as necessary to obtain maximum sensitivity.				

5. VOLTAGE CONVERSION

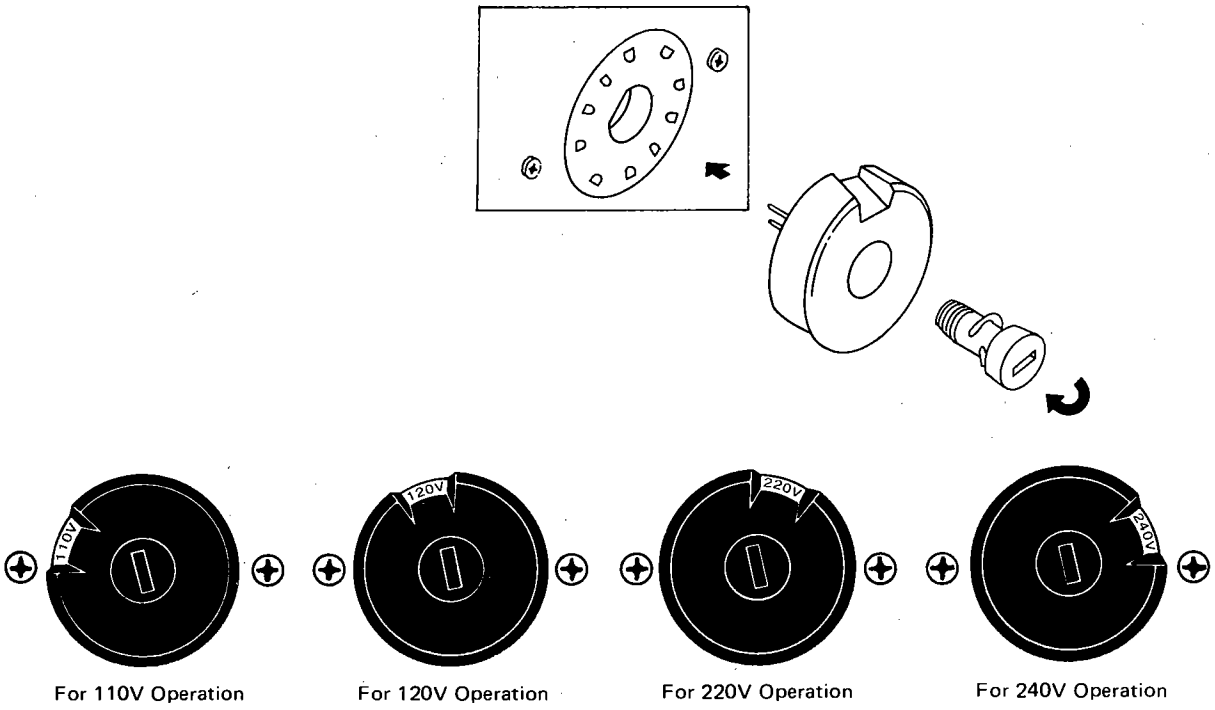
• EUROPEAN MODEL ONLY

The Model 2020, 2050 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 2.

CAUTION

DISCONNECT POWER SUPPLY CORD FROM AC OUTLET BEFORE CONVERTING VOLTAGE.

Figure 2. Voltage Conversion Chart



For 110V Operation | For 120V Operation | For 220V Operation | For 240V Operation

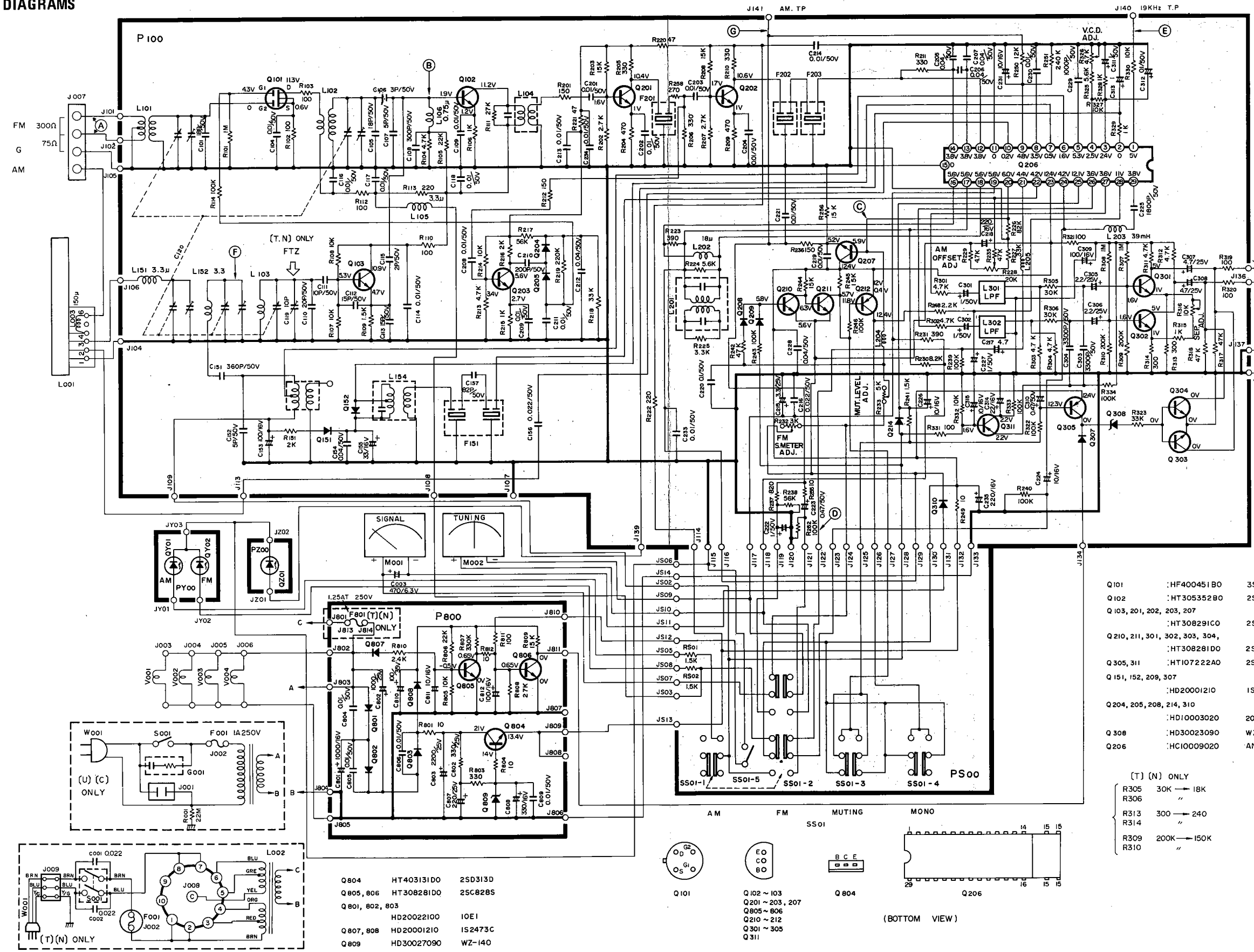
FTZ REGULATION

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 des 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.

6. SCHEMATIC DIAGRAMS



Q804	HT403131D0	2SD313D
Q805, 806	HT308281D0	2SC828S
Q801, 802, 803	HD20022100	10E1
Q807, 808	HD20001210	1S2473C
Q809	HD30027090	WZ-140

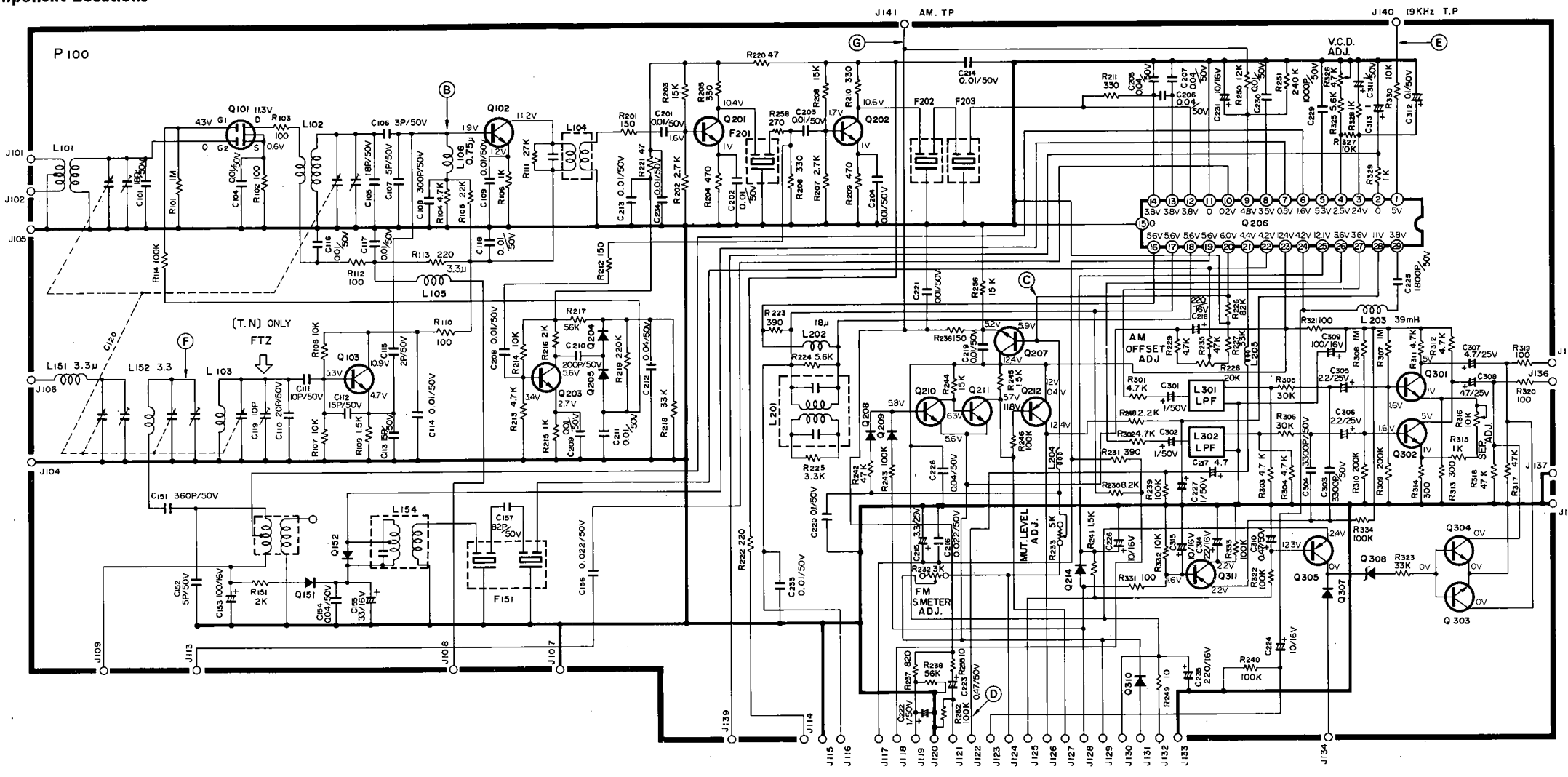
Q101	:HF400451B0	3SK45B
Q102	:HT305352B0	2SC535B OR C
Q103, 201, 202, 203, 207	:HT308291C0	2SC829C
Q210, 211, 301, 302, 303, 304,	:HT308281D0	2SC828S
Q305, 311	:HT107222A0	2SA722 SORT
Q151, 152, 209, 307	:HD20001210	1S2473C
Q204, 205, 208, 214, 310	:HD10003020	20A90M
Q308	:HD30023090	WZ-071
Q206	:HC10009020	AN7000

(T) (N) ONLY

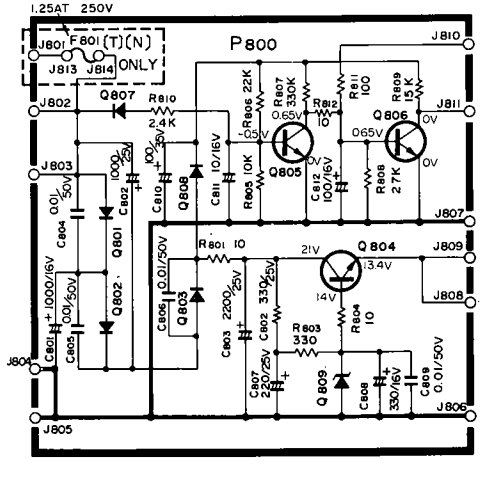
R305	30K → 18K	
R306	〃	
R313	300 → 240	
R314	〃	
R309	200K → 150K	
R310	〃	

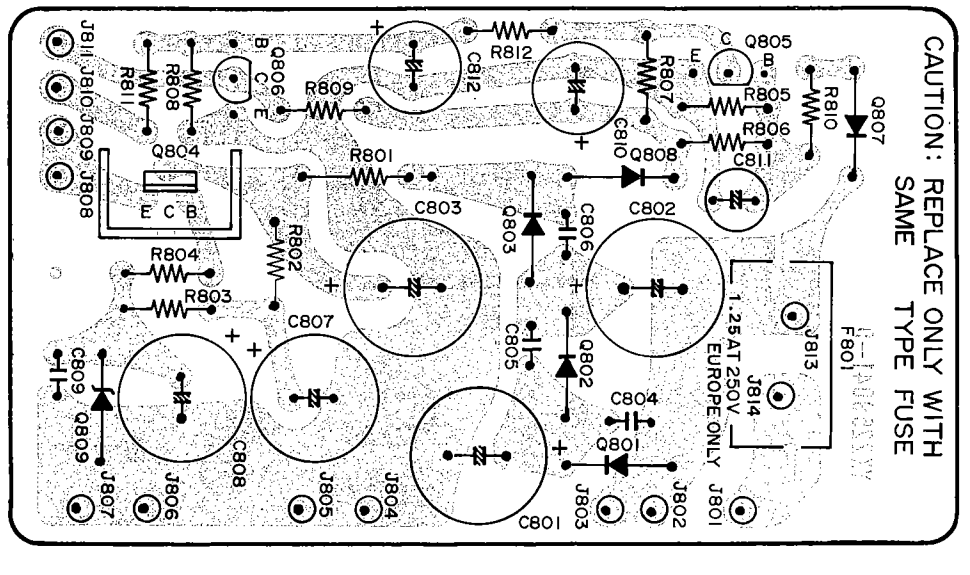
7. DIAGRAM AND COMPONENT LOCATIONS

7.1 Tuner Assembly (P100) Schematic Diagram and Component Locations

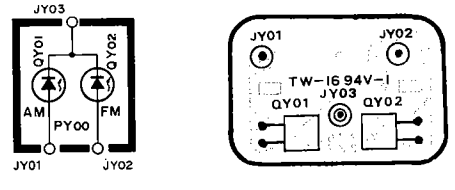


7.2 Power Supply Assembly (P800) Schematic Diagram and Component Locations

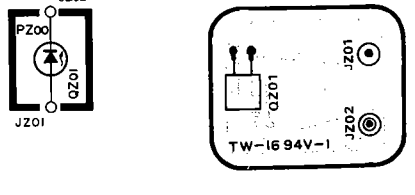




7.3 Function Led. Assembly (PY00) Schematic Diagram and Component Locations



7.4 Stereo Led. Assembly (PZ00) Schematic Diagram and Component Locations



7.5 Switch Assembly (PS00) Schematic Diagram and Component Locations