

2330

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**SERVICE
MANUAL**

400

marantz

model 2330

Stereophonic Receiver

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INTRODUCTION

This service manual was prepared for use by Authorized Warranty Stations and contains service information for the Marantz Model 2330 Stereophonic Receiver.

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

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

1. P.W. BOARDS

As can be seen from the circuit diagram, the chassis of the Model 2330 consists of the following units. Each unit mounted on a printed circuit board is drawn within bold dotted-line block on the circuit diagram.

1. FM Front End Mounted on P.W. Board P100
2. AM Tuner Mounted on P.W. Board P150

3. FM IF Amplifier Mounted on P.W. Board P200
4. MPX Stereo Decoding Amplifier
 Mounted on P.W. Board P300
5. Phono Amplifier Mounted on P.W. Board P400
6. Dolby FM Decoder Mounted on P.W. Board P600
7. Main Amplifier Mounted on P.W. Board P700
8. Power Supply and Protection Relay Circuit
 Mounted on P.W. Board P800
9. Pre and Tone Amplifier. Mounted on P.W. Board PE01
10. Buffer Amplifier Mounted on P.W. Board PH01
11. Function Lamp Mounted on P.W. Board PY01
12. Dial Lamp Mounted on P.W. Board PZ01
13. Hi/Low Filters, Loudness and Speaker Switches
 Mounted on P.W. Board PU01
14. Tape Copy, MPX Noise Filter, Multipath and
 FM Muting Switches Mounted on P.W. Board PT01
15. FM Balun and Muting Level
 Mounted on P.W. Board PC01
16. Fuse Mounted on P.W. Board PR01

2. TEST EQUIPMENT REQUIRED FOR SERVICING

Table 1 lists the test equipment required for servicing the Model 2330 Stereophonic 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

Table 1. Test Equipment Required for Servicing

3. AM ALIGNMENT PROCEDURES

3.1 AM IF ALIGNMENT

1. Connect a sweep generator to the J153 and an alignment scope to R167.
2. Rotate each core of IF transformer L153 for maximum height and flat top symmetrical response.

3.2 AM FREQUENCY RANGE AND TRACKING ALIGNMENT

1. Set AM signal generator to 515 kHz. Turn the tuning capacitor fully closed (place the tuning pointer at the low end) and adjust the oscillator coil L152 for maximum audio output.
2. Set the signal generator 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 above until no further adjustment is necessary.
4. Set the generator to 600 kHz and tune the receiver to the same frequency and adjust a slug core of AM ferrite-rod antenna L001 and RF coil L151 for maximum output.
5. Set the generator to 1400 kHz and tune the receiver to the same frequency and adjust both trimming capacitors of antenna and RF tuned circuit for maximum output.
6. Repeat steps 4 and 5 until no further adjustment is necessary.

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

3.3 AM SIGNAL STRENGTH METER ALIGNMENT

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

4. FM ALIGNMENT PROCEDURES

4.1 FM FREQUENCY RANGE AND TRACKING ALIGNMENT

1. Connect an FM signal generator to the FM ANTENNA terminals and an oscilloscope and an audio distortion analyzer to the TAPE MONITOR OUT jacks on the rear panel.
2. Set the signal generator to 87.4 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 core of oscillator coil L105 to obtain maximum audio output.
3. Set the signal generator to 109 MHz and provide about 3 to 5 μ V output. Rotate the tuning knob and place the tuning pointer at the high frequency end and adjust the trimming capacitor CF04 for maximum output.
4. Repeat steps 2 and 3 above until no further adjustment is necessary.
5. Set the signal generator to 90 MHz and tune the receiver to the same frequency. Decrease signal generator output until the audio output level decreases with the decreasing generator output. Adjust the antenna coil L101, RF coils L102, L103 and L104 and IF transformer L106 for minimum audio distortion.

6. Set the signal generator to 106 MHz and tune the receiver to the same frequency. Adjust the trimming capacitor CF01, CF02 and CF03 for minimum distortion.
7. Repeat steps 5 and 6 above until no further adjustment is necessary.
8. Adjust the secondary core (upper) of discriminator transformer L201 until the center tuning meter pointer indicates its center with no signal applied. Set the FM signal generator to 98 MHz and increase its output level to 1 k μ V and tune the receiver to the same frequency so that the center tuning meter pointer indicates its center. Adjust the primary core (lower) of L201 for minimum distortion.
9. Set the signal generator to 98 MHz at 100 k μ V, and adjust R374 so that the signal strength meter may read 90% of the full scale.

4.2 STEREO SEPARATION ALIGNMENT

1. Set the FM signal generator to provide 1 k μ V at 98 MHz. Tune the receiver to the same frequency so that the center tuning meter pointer indicates its center.
2. Turn the signal generator modulation off (with the pilot signal turned off), connect a frequency counter to test point J310, and adjust R311 until the frequency counter may precisely read 19 kHz.
3. Modulate the signal generator with stereo composite signal consisting only of subchannel signal (of course, a pilot signal must be included).
4. Adjust the trimming resistor R301 for maximum and same separation in both channels.

4.3 MUTING CIRCUIT ALIGNMENT

1. Connect a VTVM across the resistor R363 and adjust the it until the meter reads 0.75 V DC at no signal.
2. Set the FM signal generator to provide 1 k μ V at 98 MHz and tune the receiver to the same frequency correctly.
3. Depress the FM MUTING pushswitch. Shift the signal generator frequency to higher and lower and note both higher and lower shifted frequencies at which undesirable audio side responses are muted out. Adjust the R363 so that the same shifted frequencies mute the undesirable side response.
4. Adjust R362 for proper frequency shift at which the muting circuit operates.

5. DOLBY FM DECODER CIRCUIT ALIGNMENT

The left and right channels each has a Dolby FM decoder circuit which runs in receiving an Dolby FM broadcast. When the SELECTOR switch is at the DOLBY FM position, the FM Tuner outputs come from J602 (L) and J605 (R) to the decoder circuit (Q601, Q602), the outputs of which are fed out of J601 (L) and J606 (R). The +B source is supplied to J603. For aligning, apply a 1 mV, 1 kHz-, 50%-modulated FM signal to the Model 2330 and adjust R603 (L) and R604 (R) until the levels at the TAPE MONITOR OUT jacks become 580 mV in the Dolby FM mode of operation

6. AUDIO ADJUSTMENT

6.1 AUTOMATIC VOLTAGE REGULATOR ADJUSTMENT

Connect a DC voltmeter between pin terminals J804 and J805, and adjust the trimming resistor R809 for 35V DC.

6.2 MAIN AMPLIFIER DC OFF-SET ALIGNMENT

Connect a DC voltmeter with 0.5 or 1 V range between the speaker terminals and adjust the trimming resistor R727 for "zero" DC output on the meter. Repeat the same procedure for the other channel.

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

6.3 IDLE-CURRENT ADJUSTMENT

Connect a VTVM between pin terminals J716 and J717 or J718. Next, rotate the trimming resistor R726 fully counterclockwise, then rotate it clockwise until the VTVM reads 13.5 mV DC (25 mA). Repeat the same procedure for the other channel.

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

6.4 MAIN AMPLIFIER DC OFF-SET RE-ALIGNMENT

Check DC off-set voltage aligned in the procedure 2 and if any DC output is observed on the DC voltmeter, adjust the R727 again for "zero" output.

6.5 PHONO AMPLIFIER ADJUSTMENT

Connect an oscilloscope to the TAPE MONITOR OUT jacks and an audio signal generator to the PHONO jacks.

Place the SELECTOR switch in the PHONO position. Increase 1 kHz audio signal level gradually until a slight clipping on top of the sine-wave is observed on the oscilloscope. Adjust the trimming resistor R408 for equal clipping level. For the other channel adjust R409.

7. VOLTAGE CONVERSION FOR EUROPEAN MODEL

The European version of the Model 2330 is equipped with a universal power transformer that may be adjusted to operate at 110 V, 120 V, 220 V, or 240 V AC at 50 to 60 Hz. To convert the unit to a different power source voltage, reposition conversion plug as shown in Figure 1.

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

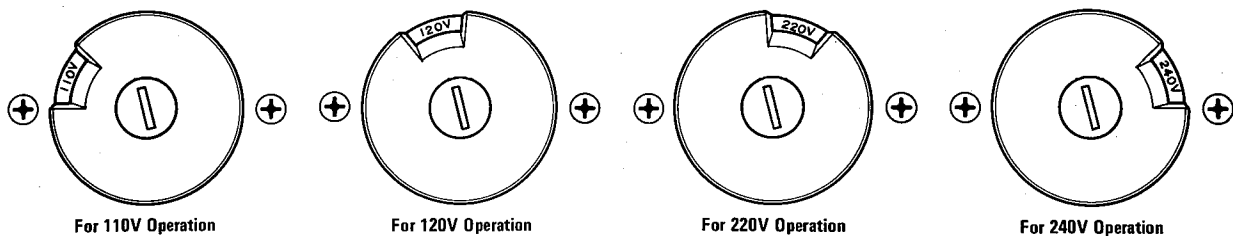
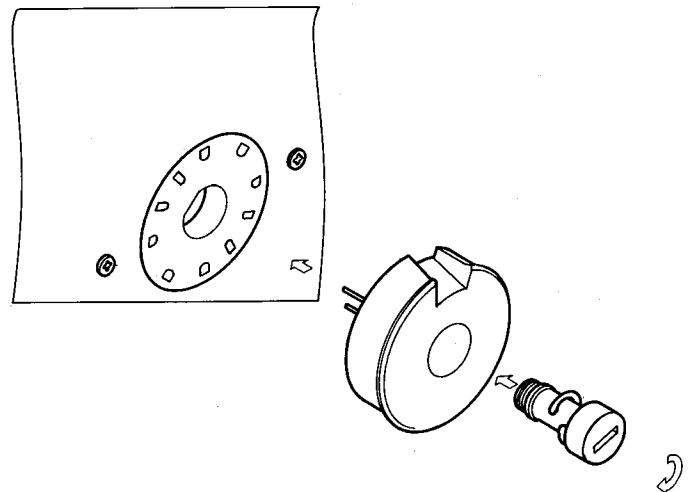


Figure 1. Voltage Conversion Chart

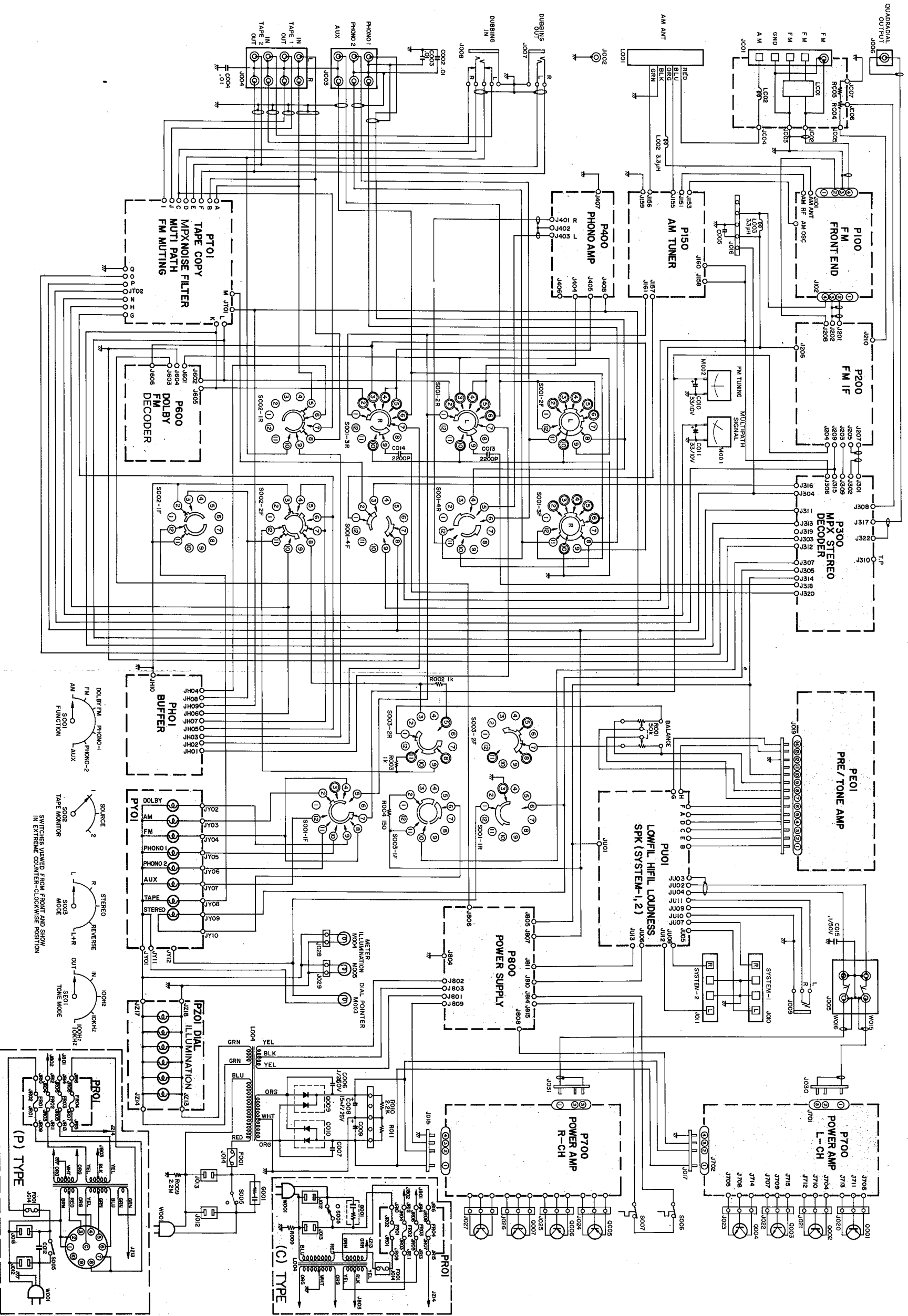
FTZ REGULATION

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

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

Sollte das Gerät auch für Frequenzen ausserhalb des in den FTZ-Bestimmungen angegebenen Bereiches empfangsbereit 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 CONNECTION DIAGRAM - U.S.A. & CANADA



8.2 CONNECTION DIAGRAM - EUROPE

