

SERVICE **PM310**
MANUAL

marantz

model PM310

Stereophonic Amplifier

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 price 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

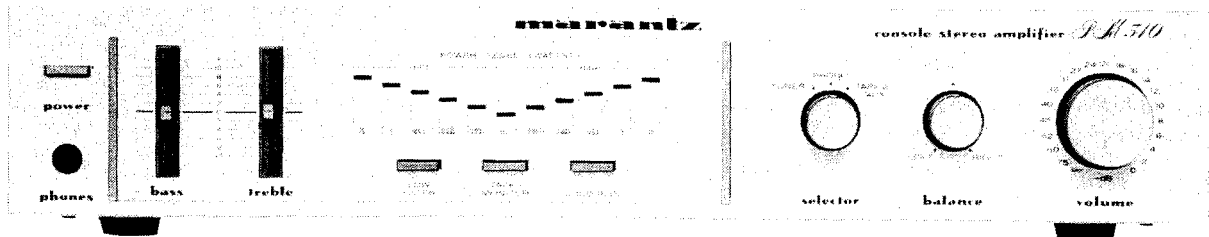
All of the above locations are fully equipped to take care of your total service needs. Because various countries have differing configuration requirements, it is necessary that you contact the service facility in your particular country. In the event that there is no service location listed for your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

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We sound better.

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MODEL PM-310 STEREO AMPLIFIER



1. INTRODUCTION

This service manual was prepared for use by Authorized Warranty Stations and contains service information for the Marantz PM 310 Stereo Console Amplifier. Servicing information and voltage data included in this manual are intended for use by knowledgeable and experienced personnel only. All instructions should be read carefully. No attempt should be made to proceed without a good understanding of circuitry operation.

The parts list furnishes complete ordering information. Most replacement parts should be ordered from the Marantz Company. However, a simple description is included for parts which can be obtained locally.

2. PRE-AMPLIFIER

Signals from the TUNER and AUX terminals are taken to the SELECTOR SWITCH (SS02).

Signals from the PHONO terminals pass through the phono amplifier (Q401) where they are amplified by 35.5 dB and at the same time undergo RIAA equalization, before going to the SELECTOR SWITCH (SS02). After being selected by the SELECTOR SWITCH, the incoming signals are taken to the TAPE MONITOR switch and TAPE OUT terminals.

Signals which enter from the TAPE IN terminals are taken to the TAPE MONITOR SWITCH.

Signals which are selected by the TAPE MONITOR SWITCH are taken to the BALANCE and VOLUME potentiometers, and then enter the main amplifier.

3. MAIN AMPLIFIER

The main amplifier contains an 6 dB/OCT type high pass filter network which can be switched in and out of circuit by means of the LOW FILTER switch.

The main amplifier has a gain of 38.5 dB, and the tone control circuit is included in the feedback circuit to control BASS and TREBLE.

4. TROUBLESHOOTING ANALYSIS

1. Excessive line consumption
 - a. Check for shorted Q801.
 - b. Check for shorted transistor Q729, through Q732.
 - c. Check for open Q709, Q710, R725, R726.
2. No line consumption or zero bias voltage
 - a. Check line cord, fuse, check for shorted Q709, Q710, R725, R726.
 - b. Check for open rectifiers Q801 or open L001.
3. High hum and noise level
 - a. Check filter capacitors C808, C809, C801, C803.
 - b. Check TR Q807, Q808.

5. POWER AMPLIFIER ADJUSTMENT

ADJUSTMENT OF IDLING CURRENT

Connect a DC voltmeter to between emitters Q729 and Q731. Adjust R725 until 11 mV is reached. Likewise, adjust Q730, Q732 and R726.

6. POWER LED METER ADJUSTMENT

Adjust the Speaker Terminal to @1 kHz at rated OUTPUT (12.6V). Adjust the RX07 so that 20W LED lights up. Adjust the RX08 for another channel.

7. TEST EQUIPMENT REQUIRED FOR SERVICING

Table 1 lists the test equipment required for servicing the PM 310 Stereo Console Amplifier. The wattmeter, AC voltmeter, and variable autotransformer may be assembled as a test fixture as shown schematically in Figure 1. The load resistors and AC ammeter may be assembled into a second test fixture as shown in Figure 2.

| | |
|--------------------------|----------------------|
| Line Switch | OFF |
| Variable-line switch | Variable |
| Wattmeter Switch | ON |
| Variable Autotransformer | 0 V (fully CCW) |
| Load | 8 ohms (0.5 mfd—OFF) |
| Audio Generator | 1 kHz |
| Output | 5 V range |
| Gain | Minimum |
| AC Voltmeter | 30 V range |

8. PERFORMANCE VERIFICATION

TEST PROCEDURE

A. TEST EQUIPMENT

Refer to Table 1 for required test equipment.

B. PRELIMINARY PROCEDURES

1. Make the test setup shown in Figure 1 with the instrument controls set in the following positions:

2. Make sure that connections between the resistive load and the system terminals of the PM 310 have negligible resistance when compared with the resistance of the load itself. Appreciable resistance in wiring adds to the total load, resulting in inaccurate measurements of output power.
3. Connect amplifier output to load and connect AC cord to line power. Connect shorting plugs to the Phono input jacks of the PM 310.

Table 1. Test Equipment Required for Servicing

| Item | Manufacturer and Model No. | Use |
|---------------------------------------------------------|--------------------------------------------------------------------|-----------------------------------------------------------------------------------------------|
| Distortion Analyzer Audio Oscillator AC Voltmeter | Sound Technology Model 1700B | 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 |
| Circuit Tester | | Trouble shooting |
| DC Voltmeter | 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 ~ 10 A) | Monitors amplifier output under short circuit condition |
| Line Voltmeter | Simpson Model 1359 | Monitors potential of primary power to amplifier |
| Variable Autotransformer | Superior Electronic Co., Powerstet 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, $\pm 0.5\%$ 100 W) | Commercial Grade | Provides 8-ohm load for amplifier output termination |
| Output Load (4 ohms, $\pm 0.5\%$ 100 W) | Commercial Grade | Provides 4-ohm load for amplifier output termination |
| Output Load Capacitor (0.5 mfd) | Mylar | Provides capacitive load for instability checks |
| AC Power Control Box | Optional Item. Fabricate in accordance with Figure 1 | Monitors and controls primary power for amplifier |
| Amplifier Output Load Box | Optional Item. Fabricate in accordance with Figure 2 | Provides various amplifier loads and can monitor shorted output |

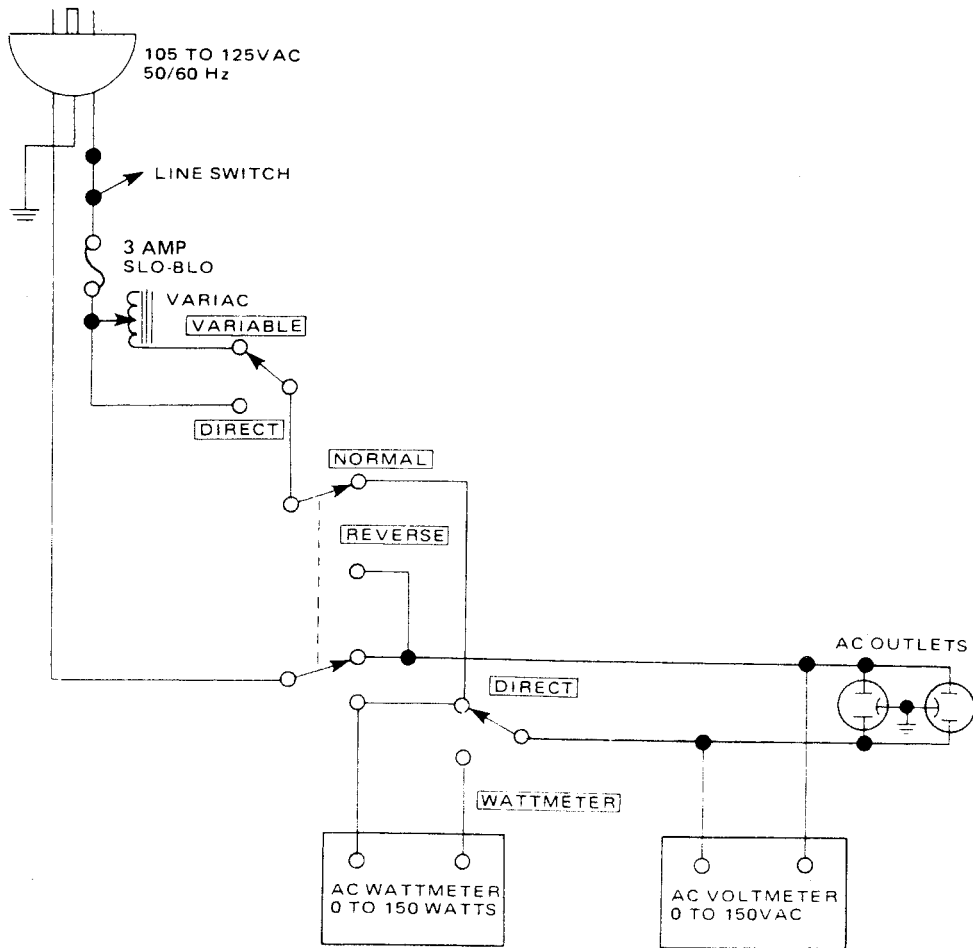


Figure 1. AC Power Control Box Simplified Schematic

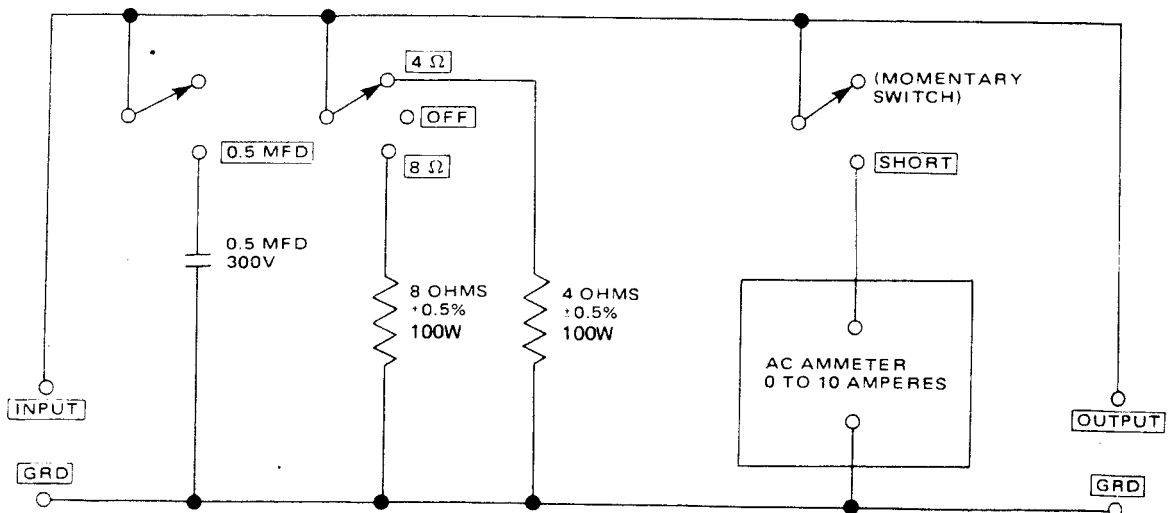


Figure 2. Amplifier Output Load Box Simplified Schematic

C. TOTAL HUM AND NOISE TEST

1. With shorting plugs connected to the Phono input jacks and an 8 ohm resistive load connected across the speaker system output terminals, connect a distortion analyzer across the load.

NOTE:

If the distortion analyzer does not contain a built-in voltmeter, an AC VTVM may be substituted.

2. Set the distortion analyzer controls for voltage measurements and apply power to the amplifier. Set the volume control fully CCW. Set the SELECTOR switch to PHONO.
3. If the distortion analyzer indicates more than 2.0 mV refer to the trouble analysis section of this manual.
4. Set the volume control fully CW. If the distortion analyzer indicates more than 20 mV, refer to the trouble analysis section of this manual.

D. MAXIMUM POWER OUTPUT

1. Connect the audio oscillator to the AUX input. Set audio oscillator frequency to 1 kHz. Set SELECTOR switch to AUX.
2. With the distortion analyzer connected across the output load (8-ohm), set the analyzer on the 30 VAC scale.
3. Turn the analyzer on and increase the audio oscillator output to 150 mV. The AC VTVM should read 12.6 VAC or more.

E. HARMONIC DISTORTION TEST

1. Set the frequency of the audio oscillator and the distortion analyzer to 20 kHz.
2. Set the controls of the analyzer for voltage measurement on the 30 volt scale.
3. Adjust the audio oscillator output level until the analyzer meter indicates 12.6 VAC.
4. Switch the distortion analyzer to Set Level and adjust SENSITIVITY for full scale reading on 0 ~ 1% scale.
5. Measure the total harmonic distortion with the analyzer and verify it is less than 0.3%.

NOTE:

Any parasitic oscillation in the amplifier will be displayed on the oscilloscope when capacitance is switched into the load.

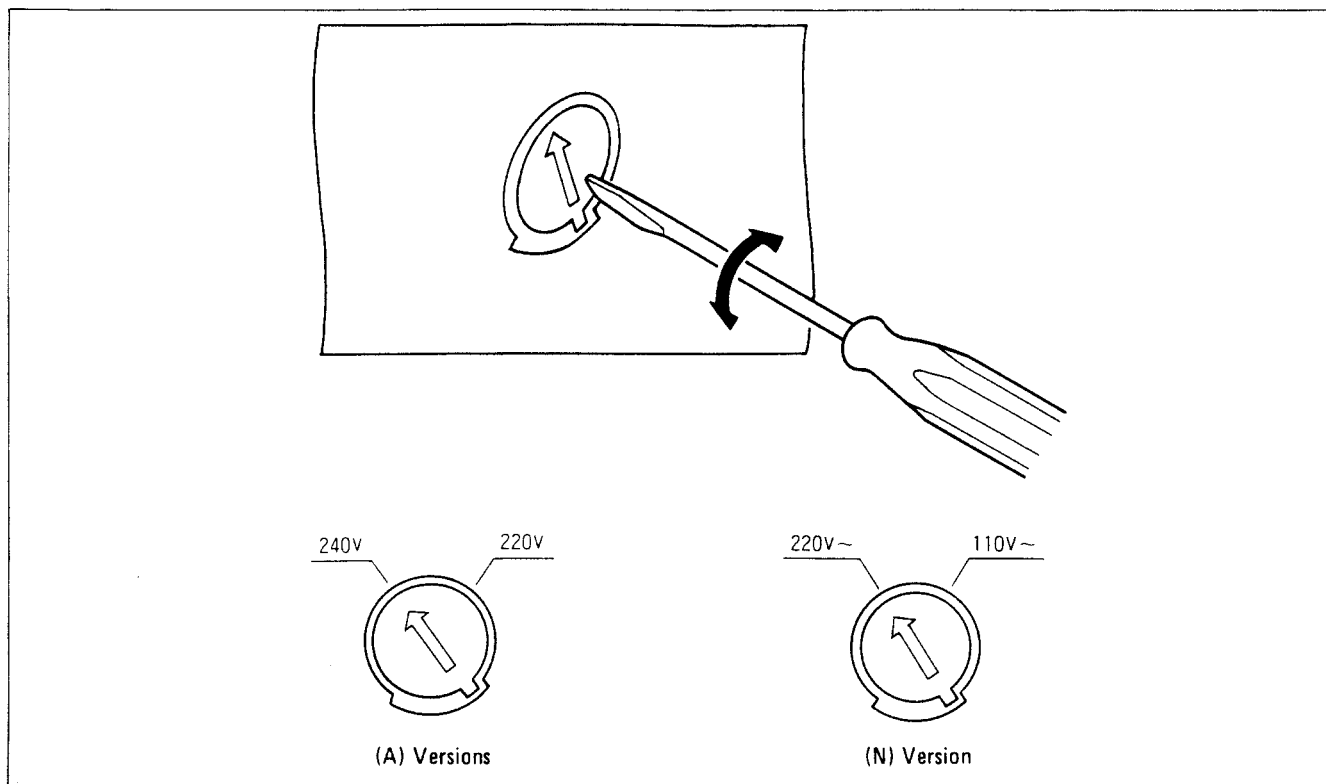
6. Switch the distortion analyzer back to SET LEVEL. (Do not readjust sensitivity of analyzer.)
7. Change the frequency of the audio oscillator and distortion analyzer to 1 kHz. Adjust audio oscillator output for a full scale reading on the 0 ~ 1% scale.
8. Measure the distortion, verifying it is no greater than 0.3%.
9. Repeat steps 7 and 8, changing frequency to 20 Hz. Distortion should be no more than 0.3%.
10. Check for parasitic oscillation; there should be none.

9. VOLTAGE CONVERSION

To convert the unit to a different power source voltage, change the position as illustrated in the drawing below.

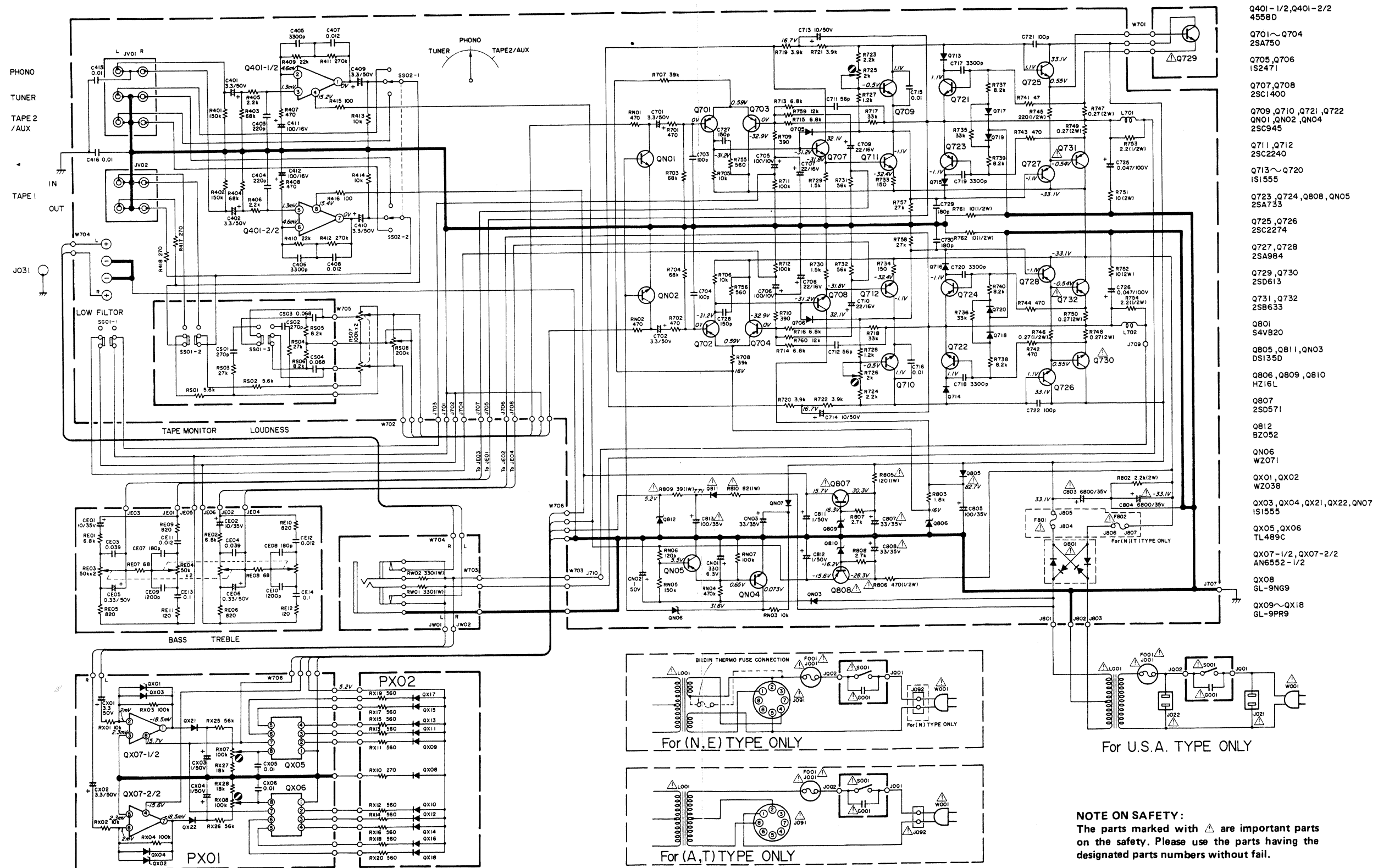
**CAUTION: DISCONNECT POWER SUPPLY CORD FROM AC OUTLET BEFORE CONVERTING VOLTAGE.
PLEASE DO NOT DISASSEMBLE THE VOLTAGE SELECTOR ABSOLUTELY.**

Voltage Conversion Chart



Note on safety: The parts marked with \triangle are important parts on the safety. Please use the parts having the designated parts number without fail.

10. SCHEMATIC DIAGRAM

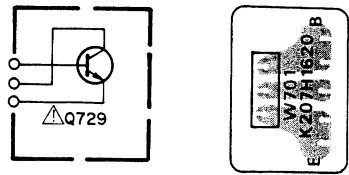


- Q401-1/2, Q401-2/2
4558D
- Q701~Q704
2SA750
- Q705, Q706
1S2471
- Q707, Q708
2SC1400
- Q709, Q710, Q721, Q722
QN01, QN02, QN04
2SC945
- Q711, Q712
2SC2240
- Q713~Q720
1S1555
- Q723, Q724, Q808, QN05
2SA733
- Q725, Q726
2SC2274
- Q727, Q728
2SA984
- Q729, Q730
2SD613
- Q731, Q732
2SB633
- Q801
S4V820
- Q805, Q811, QN03
DS135D
- Q806, Q809, Q810
HZ16L
- Q807
2SD571
- Q812
BZ052
- QN06
WZ071
- QX01, QX02
WZ038
- QX03, QX04, QX21, QX22, QN07
1S1555
- QX05, QX06
TL489C
- QX07-1/2, QX07-2/2
AN6552-1/2
- QX08
GL-9NG9
- QX09~QX18
GL-9PR9

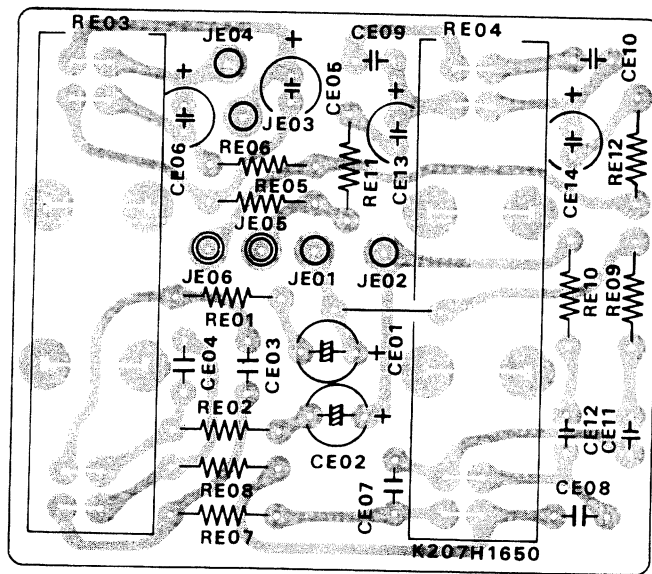
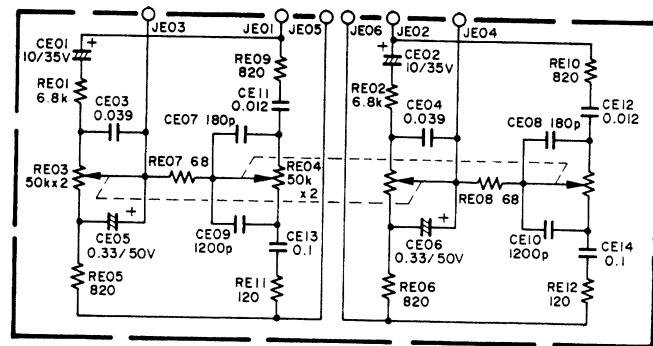
Components and wiring are subject to change for modification without notice.

11. DIAGRAM AND COMPONENT LOCATIONS

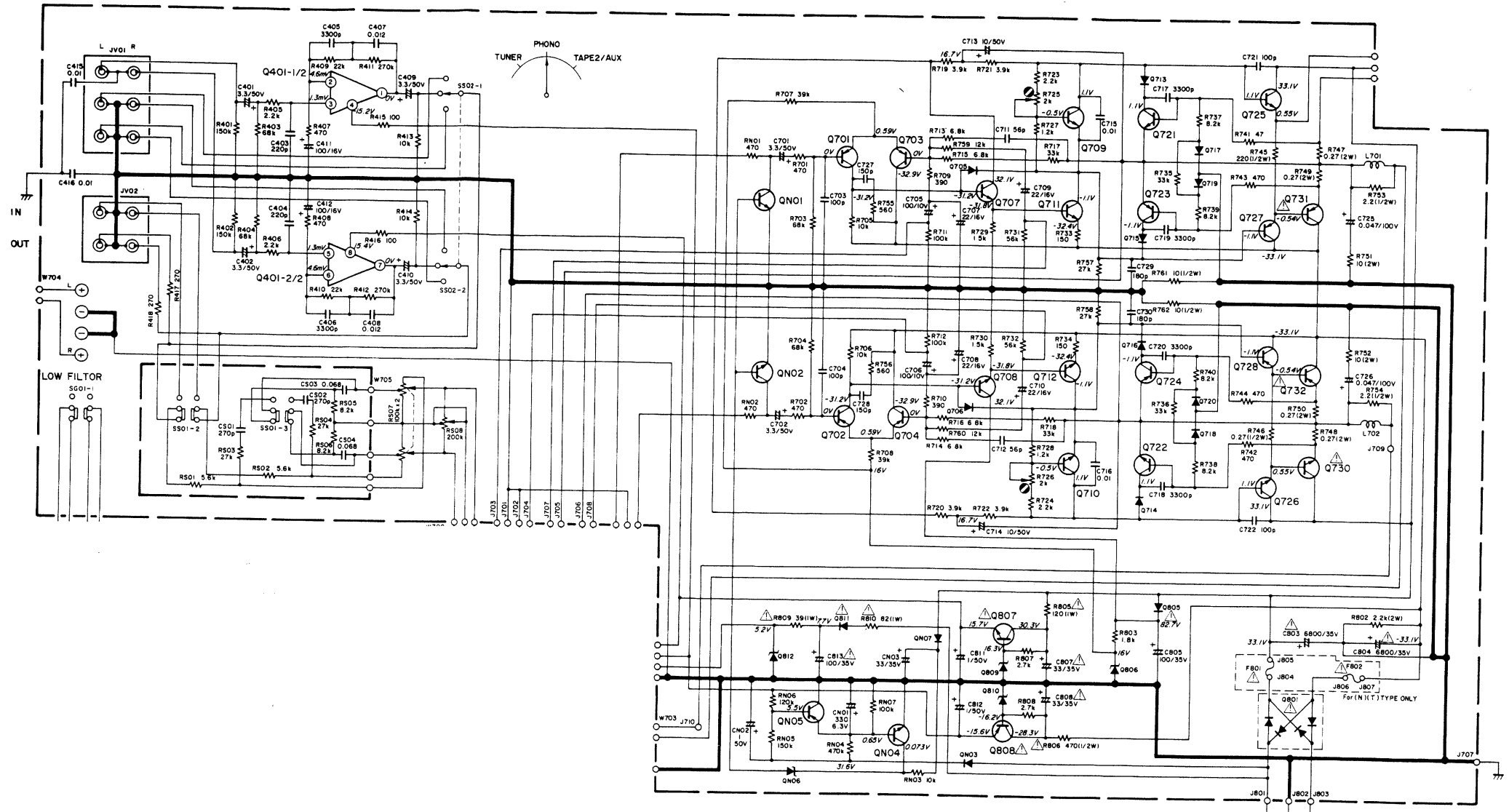
11.2 Power TR. Assembly (P701) Schematic Diagram and Component Locations



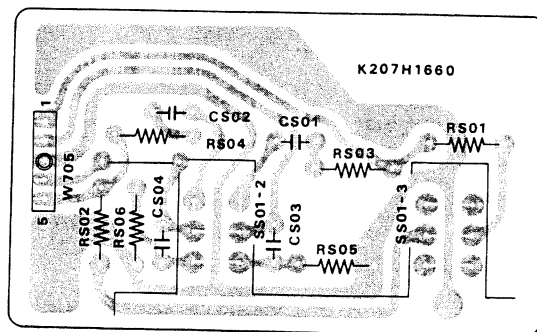
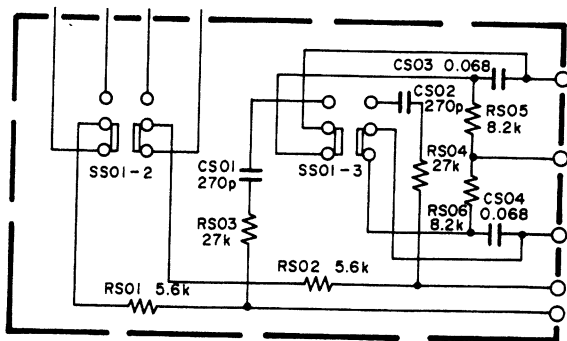
11.3 Tone Control Assembly (PE00) Schematic Diagram and Component Locations



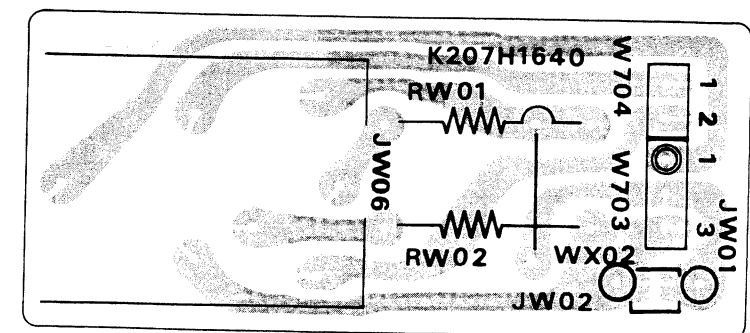
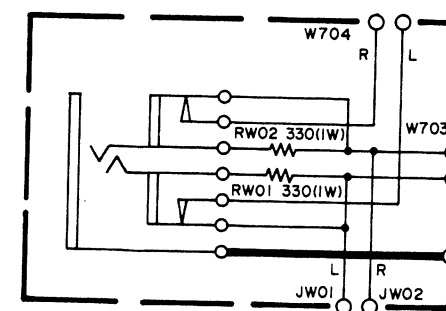
11.1 Main Assembly (P700) Schematic Diagram and Component Locations



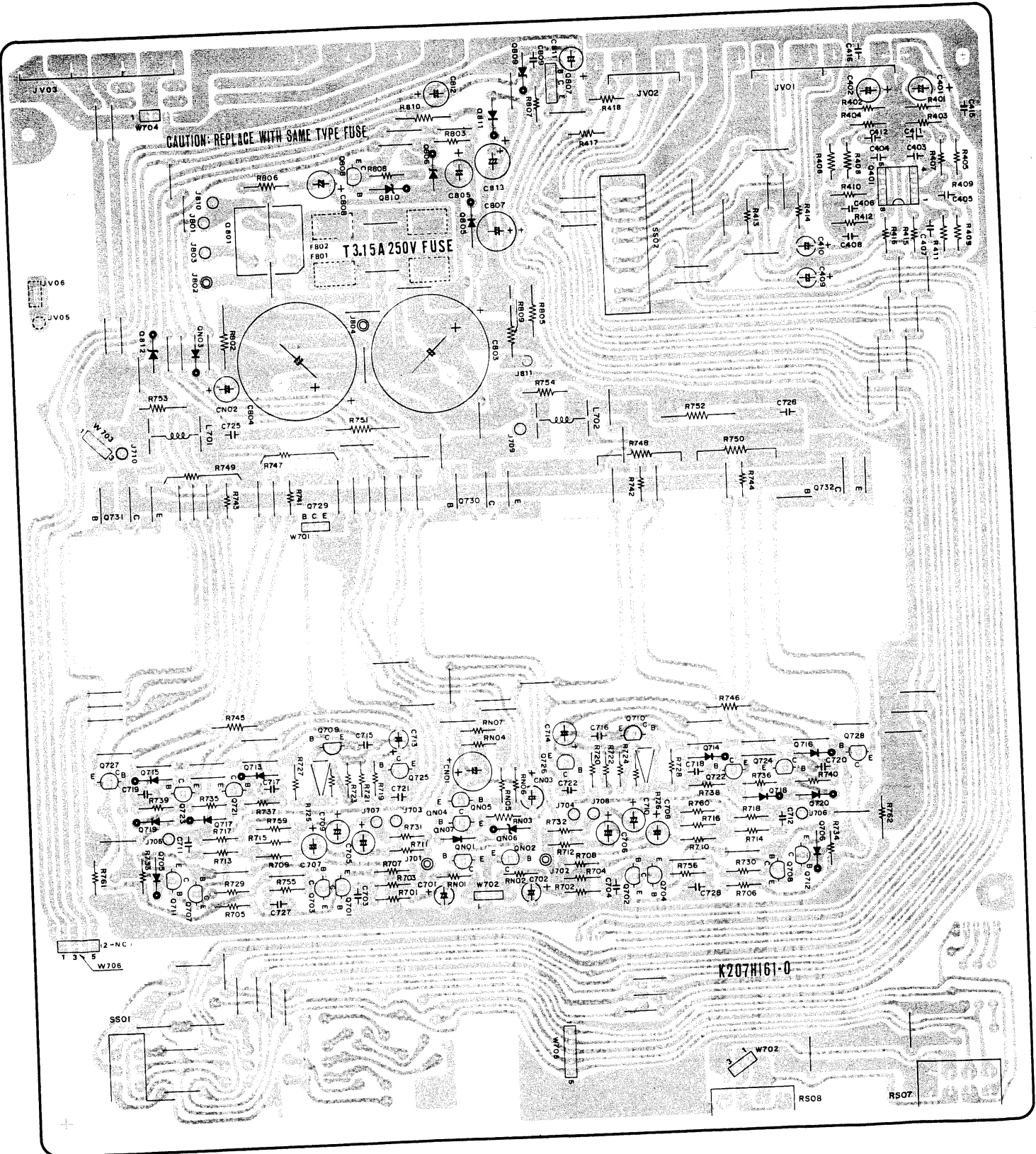
11.4 Switch/VR. Assembly (PS00) Schematic Diagram and Component Locations

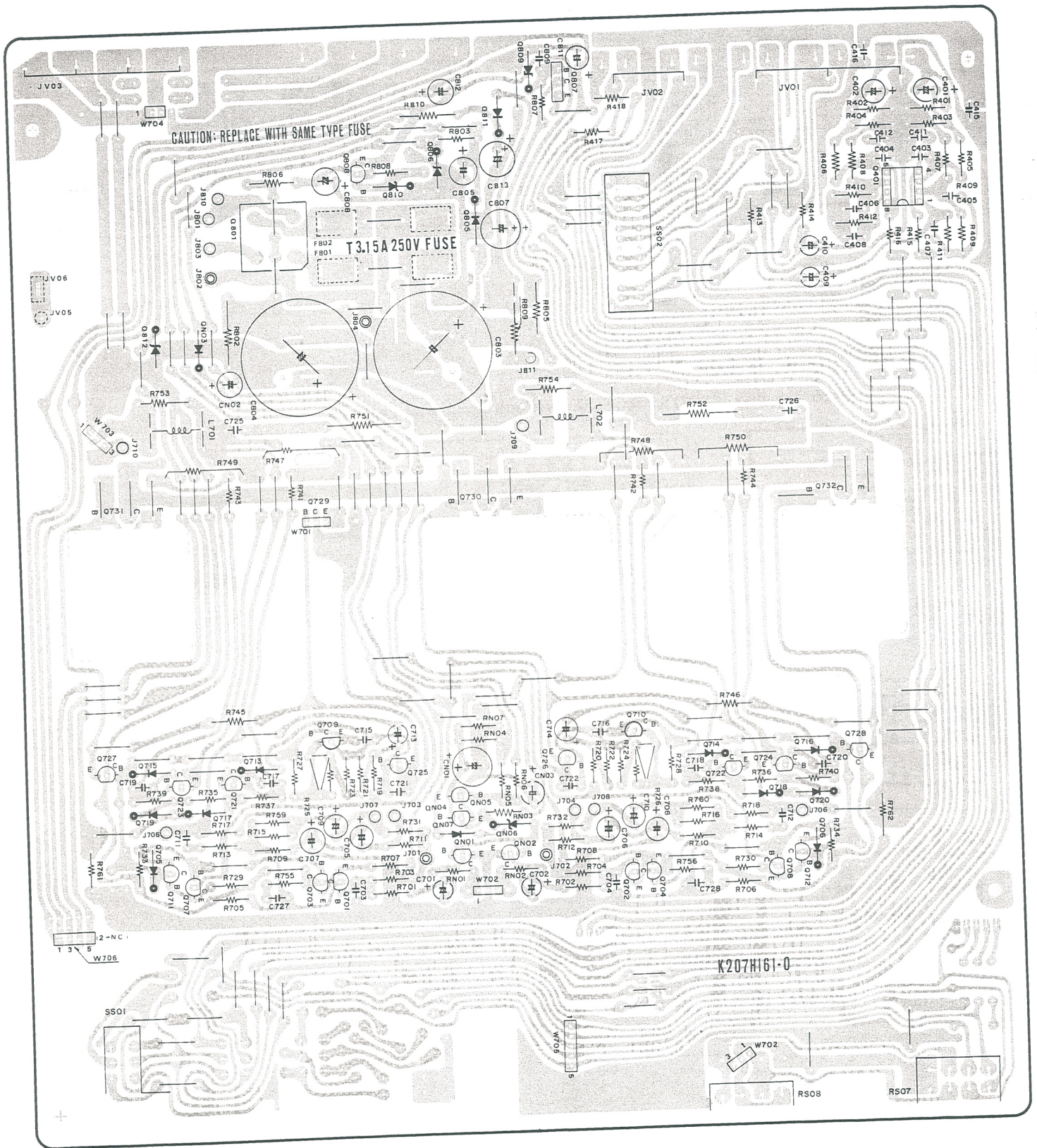


11.5 Phone Assembly (PW00) Schematic Diagram and Component Locations



X





CAUTION - REPLACE WITH SAME TYPE FUSE

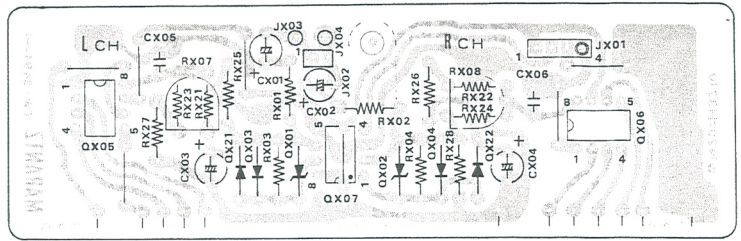
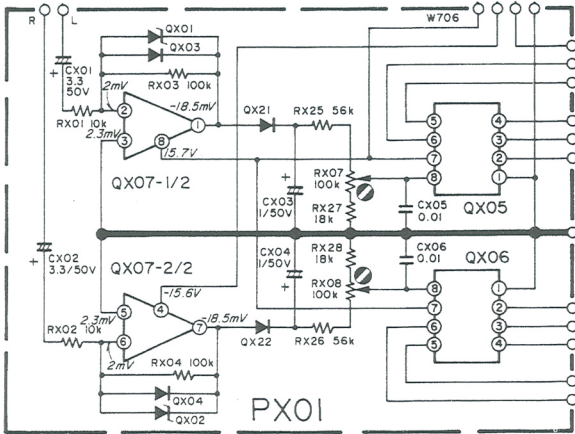
T3.15A 250V FUSE

K207H161-0

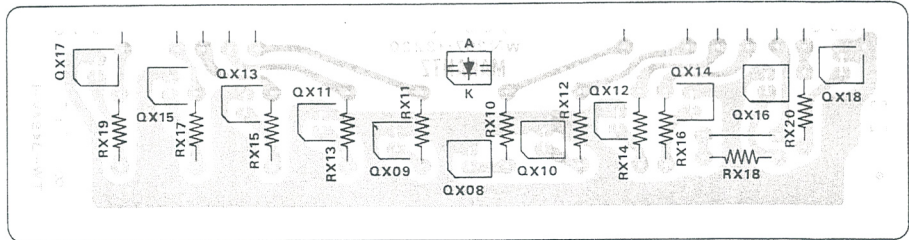
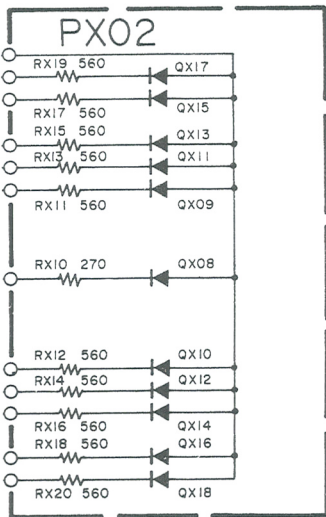
RS08

RS07

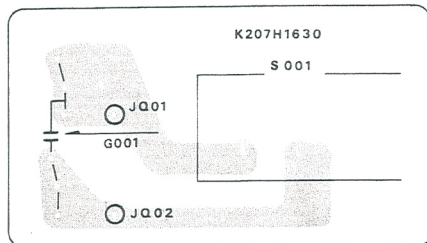
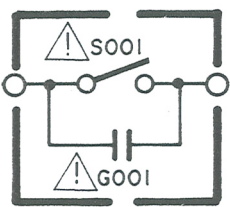
11.6 Led Level Meter Drive Assembly (PX01) Schematic Diagram and Component Locations



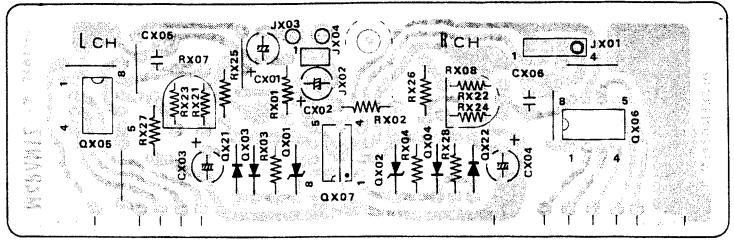
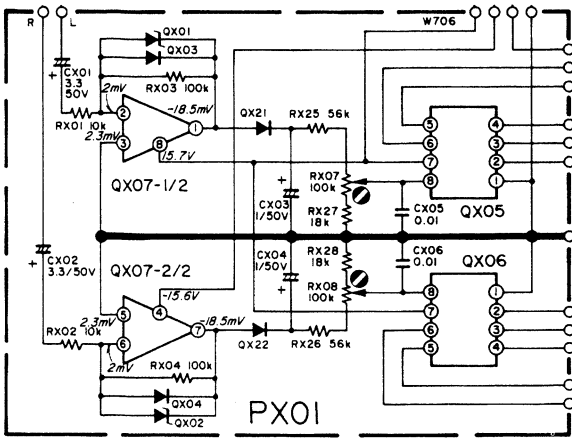
11.7 Led Level Meter Assembly (PX02) Schematic Diagram and Component Locations



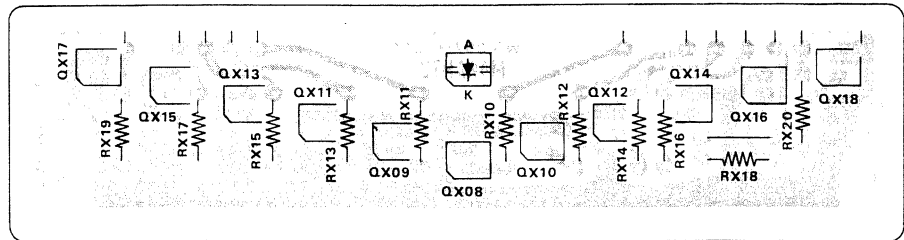
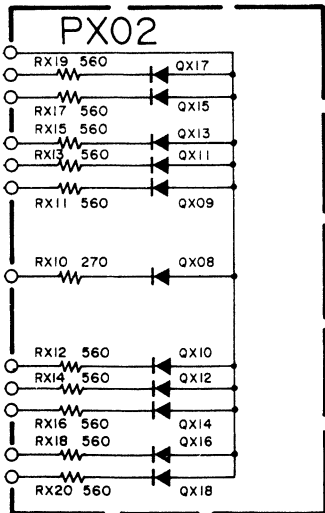
11.8 Power Switch Assembly (P001) Schematic Diagram and Component Locations



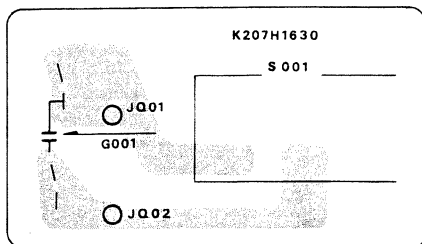
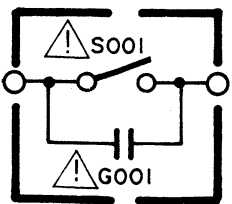
11.6 Led Level Meter Drive Assembly (PX01) Schematic Diagram and Component Locations



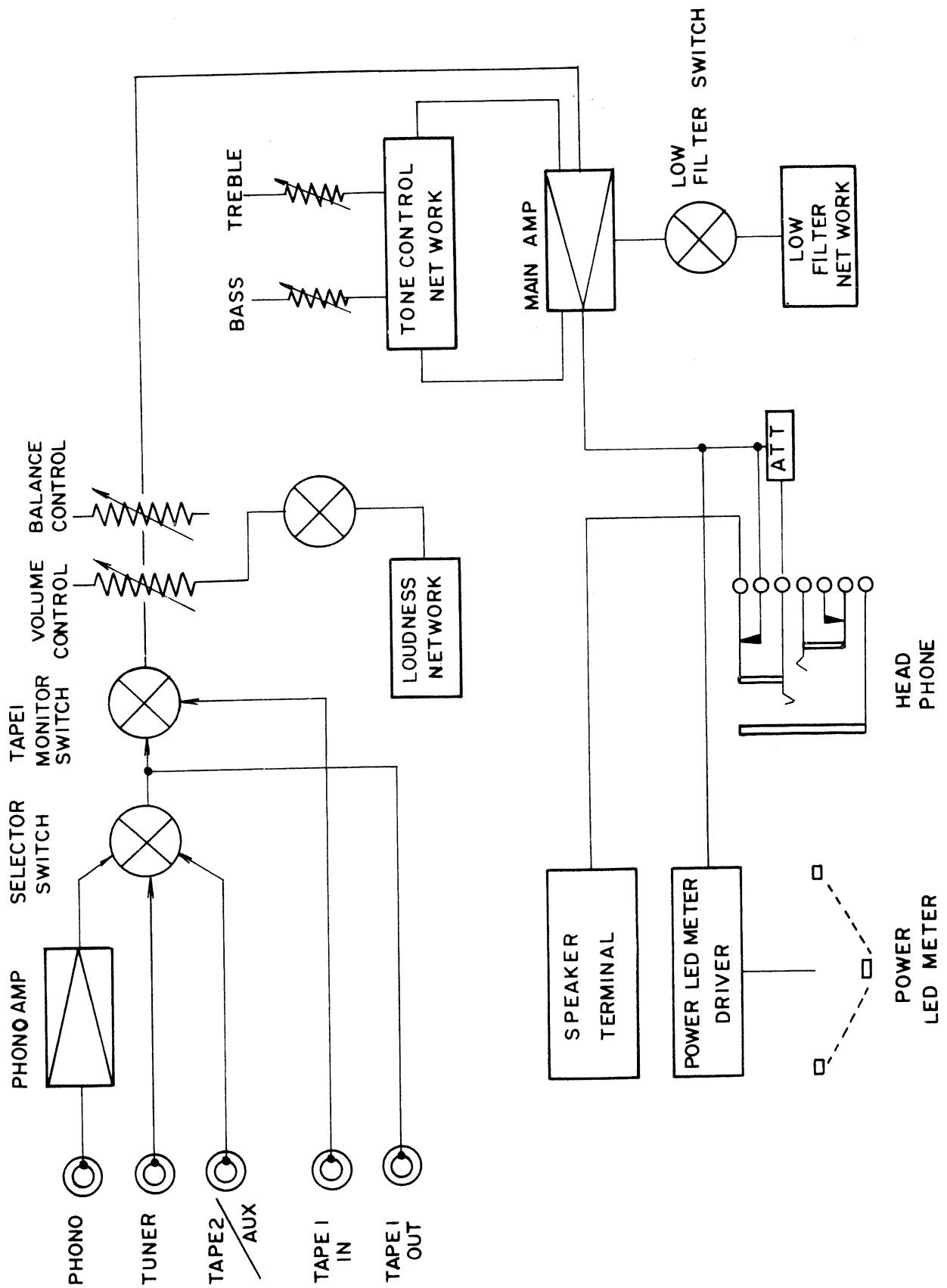
11.7 Led Level Meter Assembly (PX02) Schematic Diagram and Component Locations



11.8 Power Switch Assembly (P001) Schematic Diagram and Component Locations

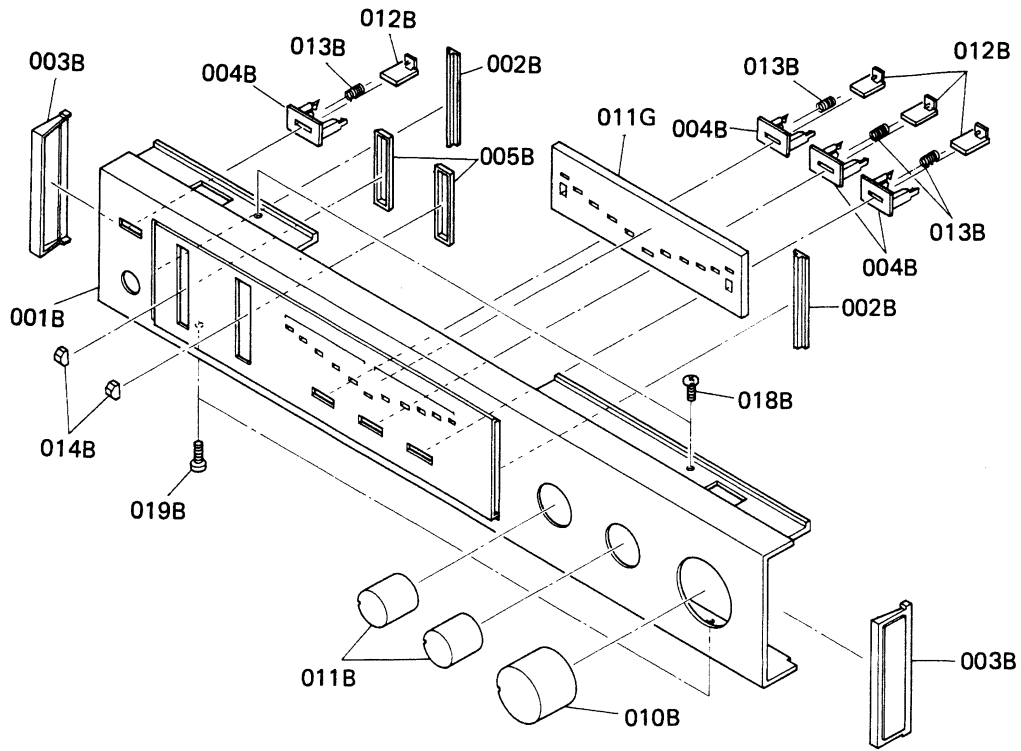


12. BLOCK DIAGRAM



13. EXPLODED VIEW AND PARTS LIST

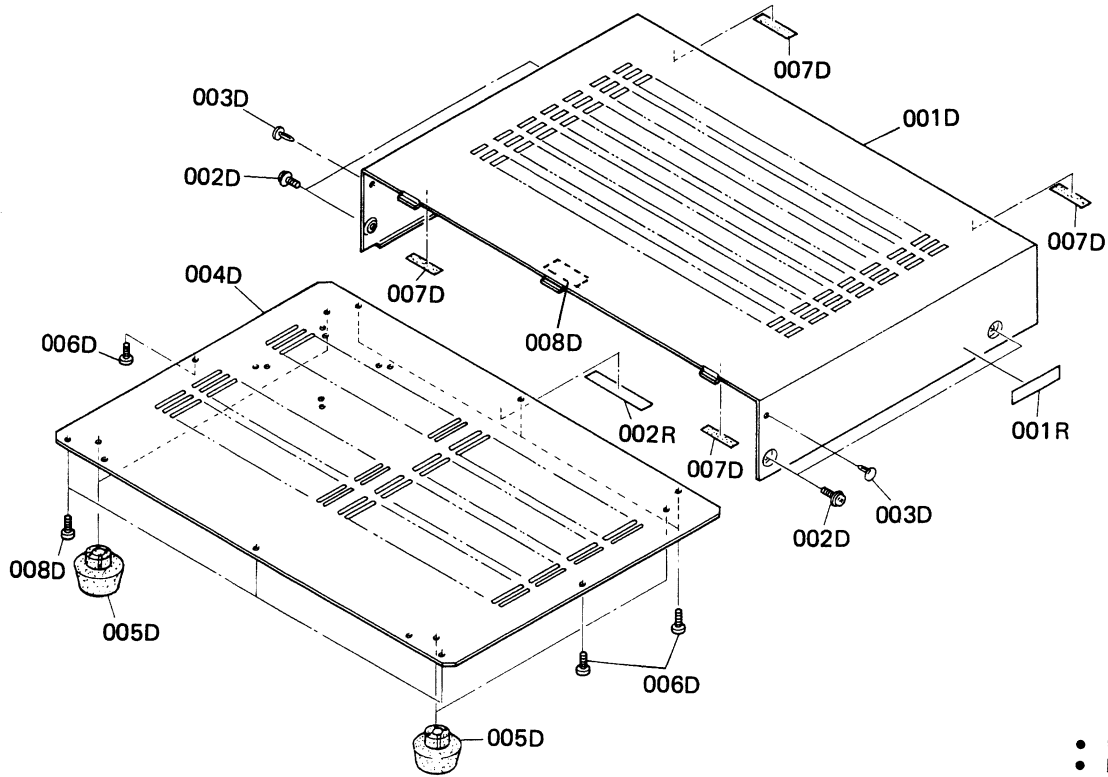
[C01-99] Front Panel



- U for U.S.A.
- N for Europe
- A for Australia

| REF. DESIG. | QTY | | | PART NO. | DESCRIPTION | REF. DESIG. | QTY | | | PART NO. | DESCRIPTION |
|-------------|-----|---|---|------------|----------------------|-------------|-----|---|---|------------|--------------------------|
| | U | N | A | | | | U | N | A | | |
| A | 1 | 1 | 1 | 207H063400 | Front Panel Assembly | 010B | 1 | 1 | 1 | 208H154010 | Knob |
| 001B | 1 | 1 | 1 | 207H063010 | Escutcheon | 011B | 2 | 2 | 2 | 208H154020 | Knob |
| 002B | 2 | 2 | 2 | 403H063020 | Escutcheon | 014B | 2 | 2 | 2 | 208H154050 | Knob |
| 003B | 2 | 2 | 2 | 403H067010 | Cap | 018B | 2 | 2 | 2 | 51300306B0 | B.H. Tapped Screw B3 x 6 |
| 004B | 4 | 4 | 4 | 403H259010 | Bushing | 019B | 2 | 2 | 2 | 51300306B0 | B.H. Tapped Screw B3 x 6 |
| 005B | 2 | 2 | 2 | 001H259110 | Bushing | | | | | | |
| 012B | 4 | 4 | 4 | 403H154010 | Knob | | | | | | |
| 013B | 4 | 4 | 4 | 403H115010 | Spring | | | | | | |
| 011G | 1 | 1 | 1 | 208H118010 | Spacer | | | | | | |

[C02-99] Lid (Top and Bottom Cover)

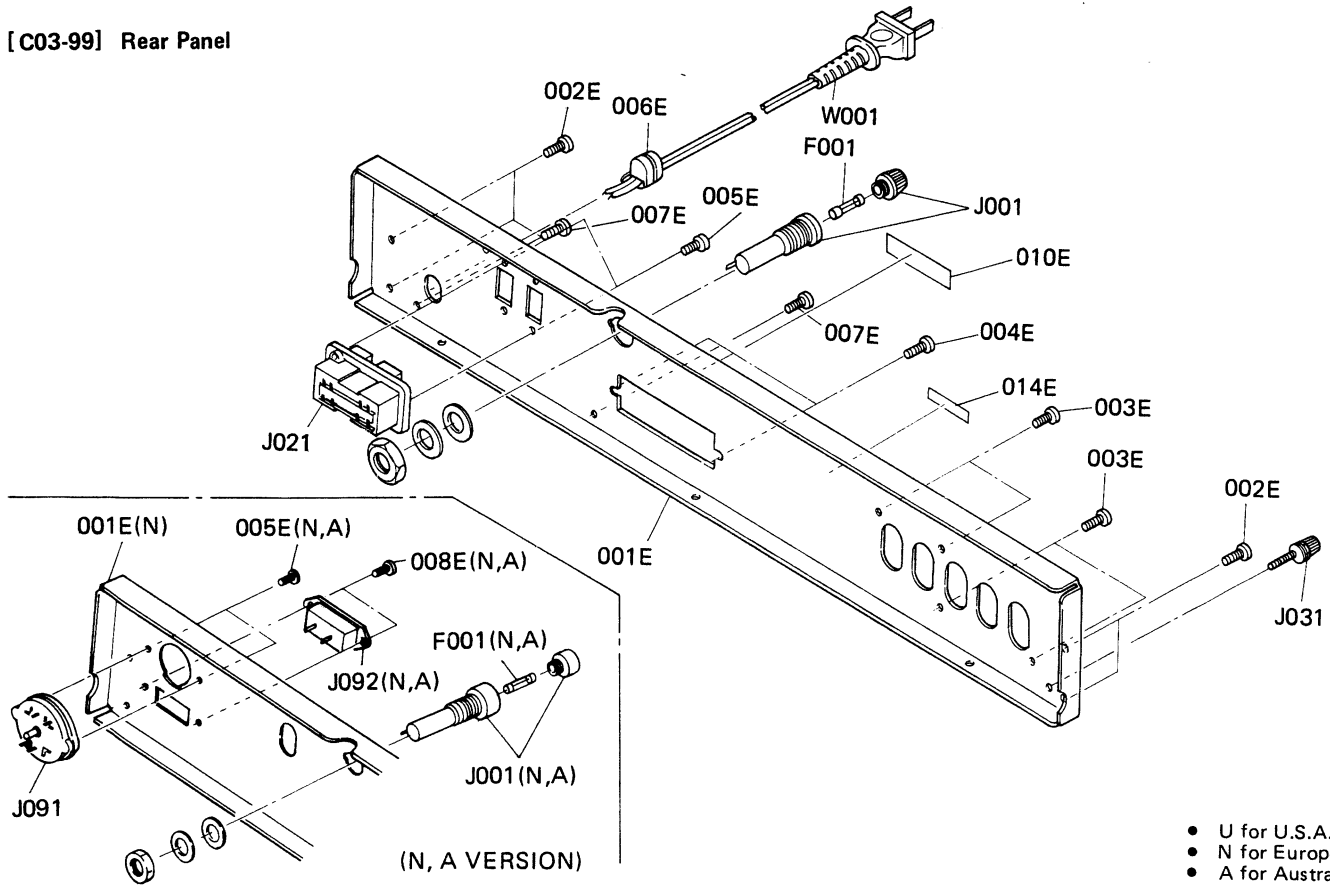


- U for U.S.A.
- N for Europe
- A for Australia

| REF. DESIG. | Q'TY | | | PART NO. | DESCRIPTION |
|-------------|------|---|---|------------|--------------------------|
| | U | N | A | | |
| 001D | 1 | 1 | 1 | 208H257010 | Lid, Top Cover |
| 002D | 4 | 4 | 4 | 51260408U0 | B.T. Screw B4 x 8 |
| 003D | 2 | 2 | 2 | 2991259010 | Bushing |
| 004D | 1 | 1 | 1 | 208H257020 | Lid, Bottom Cover |
| 005D | 4 | 4 | 4 | 403H057010 | Leg |
| 006D | 8 | 8 | 8 | 51280308B0 | B.H. Tapped Screw B3 x 8 |
| 007D | 4 | 4 | 4 | 2965118010 | Spacer |
| 008D | 1 | 1 | 1 | 208H056010 | Buffer |

| REF. DESIG. | Q'TY | | | PART NO. | DESCRIPTION |
|-------------|------|---|---|------------|-------------|
| | U | N | A | | |
| 001R | 1 | 1 | 1 | 2932861010 | Label |
| 002R | 1 | 1 | 1 | 2578861010 | Label |

[C03-99] Rear Panel

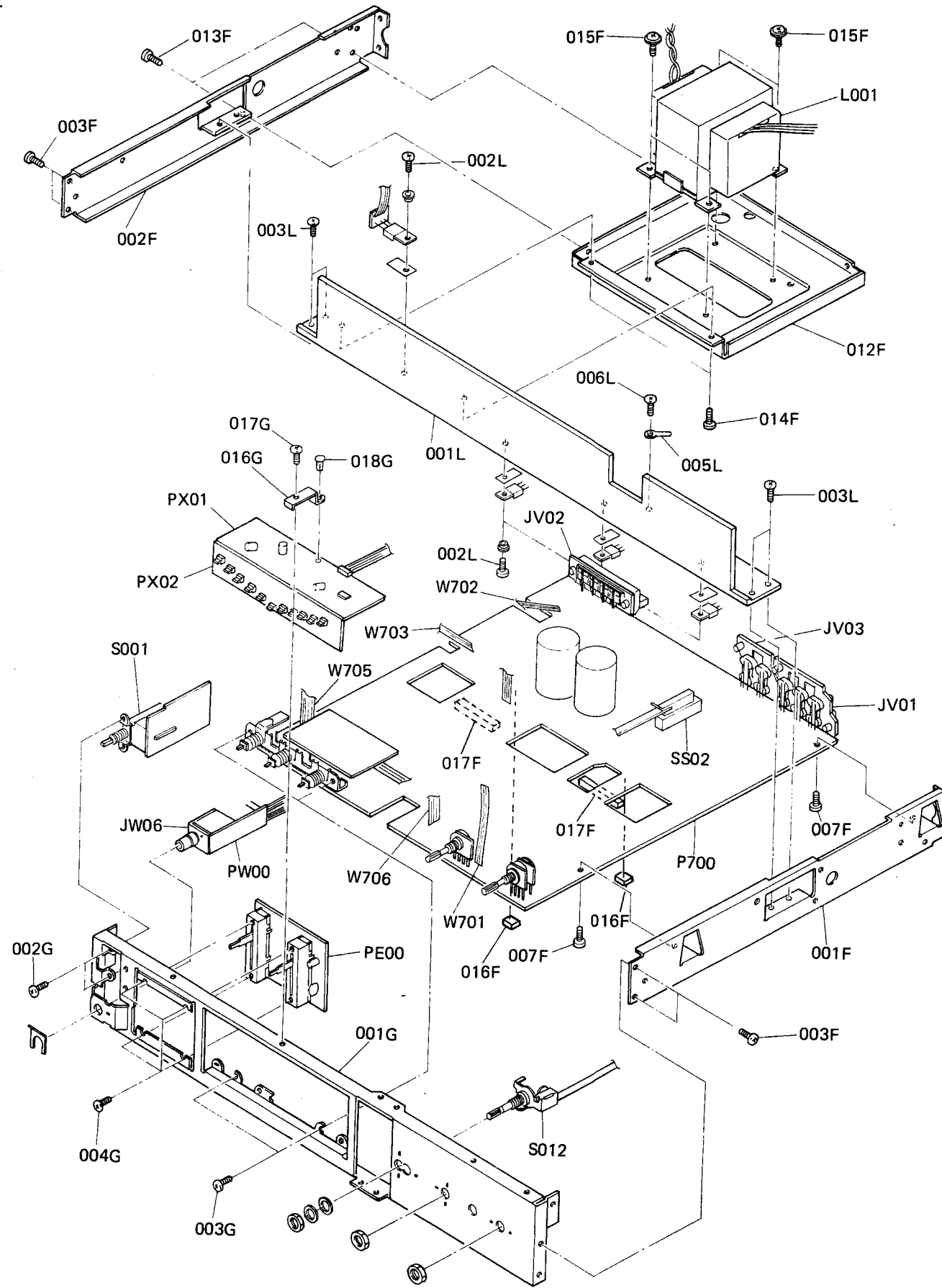


| REF. DESIG. | QTY | | | PART NO. | DESCRIPTION |
|-------------|-----|---|---|------------|--------------------------|
| | U | N | A | | |
| 001E | | 1 | | 207H160230 | Bracket, Rear Panel |
| 001E | | | 1 | 207H160240 | Bracket, Rear Panel |
| 001E | 1 | | | 207H160210 | Bracket, Rear Panel |
| 002E | 4 | 4 | 4 | 51280308U0 | B.H. Tapped Screw B3 x 8 |
| 003E | 4 | 4 | 4 | 51280308U0 | B.H. Tapped Screw B3 x 8 |
| 004E | 2 | 2 | 2 | 51280308U0 | B.H. Tapped Screw B3 x 8 |
| 005E | 2 | 2 | 2 | 51280308U0 | B.H. Tapped Screw B3 x 8 |
| 006E | | 1 | | 1455259030 | Bushing |
| 007E | 2 | 2 | 2 | 51280308U0 | B.H. Tapped Screw B3 x 8 |
| 008E | | 2 | 2 | 51280308U0 | B.H. Tapped Screw B3 x 8 |
| 010E | 1 | 1 | 1 | 2112265010 | Indicator |
| 014E | | 1 | | 4581861010 | Label |
| △ F001 | | 1 | 1 | FS10063800 | Fuse 630mm AT |
| △ F001 | 1 | | | FS10150500 | Fuse 1.5A |

| REF. DESIG. | QTY | | | PART NO. | DESCRIPTION |
|-------------|-----|---|---|------------|-----------------------------|
| | U | N | A | | |
| △ J001 | | 1 | 1 | YJ08000290 | Jack |
| △ J001 | 1 | | | YJ08000310 | Jack |
| △ J021 | | 1 | | YJ04000740 | Jack, AC Outlet |
| △ J091 | | 1 | | BY05030040 | Voltage Selector (220/240V) |
| △ J091 | | 1 | | BY05060040 | Voltage Selector (110/220V) |
| △ J092 | | 1 | 1 | YB04000590 | Plug, Inlet |
| J031 | 1 | 1 | 1 | YL03010250 | Terminal, Ground |
| △ W001 | | | 1 | ZC02006030 | A.C. Power Cord |
| △ W001 | | | 1 | ZC01805030 | A.C. Power Cord |
| △ W001 | 1 | | | ZC01900070 | A.C. Power Cord |
| JW06 | 1 | 1 | 1 | YJ01001420 | Jack, Head Phone |

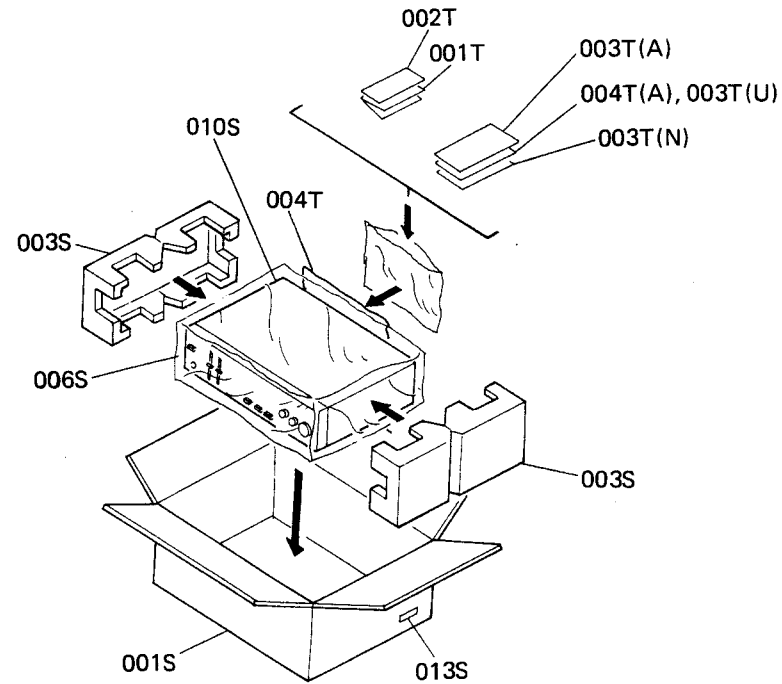
[P01-99] Front Chassis and General Parts

• U for U.S.A.
• N for Europe
• A for Australia



| REF. DESIG. | QTY | | | PART NO. | DESCRIPTION |
|-------------|-----|---|---|------------|--------------------------|
| | U | N | A | | |
| 001F | 1 | 1 | 1 | 208H126010 | Stay, Right |
| 002F | 1 | 1 | 1 | 208H126020 | Stay, Left |
| 003F | 4 | 4 | 4 | 51280308B0 | B.H. Tapped Screw B3 x 8 |
| 007F | 2 | 2 | 2 | 51260308B0 | B.T. Screw B3 x 8 |
| 012F | 1 | 1 | 1 | 208H004010 | Table |
| 013F | 2 | 2 | 2 | 51280308B0 | B.H. Tapped Screw B3 x 8 |
| 014F | 2 | 2 | 2 | 51260308B0 | B.T. Screw B3 x 8 |
| 015F | 4 | 4 | 4 | 51260408B0 | B.T. Screw B4 x 8 |
| 016F | 2 | 2 | 2 | 2147056010 | Buffer |
| 017F | 2 | 2 | 2 | 208H118020 | Spacer |
| 001G | 1 | 1 | 1 | 208H160010 | Bracket, Front Chassis |
| 002G | 2 | 2 | 2 | 51100306A9 | B.H.M. Screw B3 x 6 |
| 003G | 2 | 2 | 2 | 51100306A9 | B.H.M. Screw B3 x 6 |
| 004G | 4 | 4 | 4 | 51100205A0 | B.H.M. Screw B2 x 5 |
| 016G | 1 | 1 | 1 | 208H160030 | Bracket, Power LED PWB |
| 017G | 1 | 1 | 1 | 51280308B0 | B.H. Tapped Screw B3 x 8 |
| 018G | 1 | 1 | 1 | 2276005050 | Clamper |
| 001L | 1 | 1 | 1 | 207H267010 | Heatsink |
| 002L | 4 | 4 | 4 | 51280308B0 | B.H. Tapped Screw B3 x 8 |
| 003L | 4 | 4 | 4 | 51280308B0 | B.H. Tapped Screw B3 x 8 |
| 005L | 1 | 1 | 1 | 62030039W0 | Lug |
| 006L | 1 | 1 | 1 | 51280308B0 | B.H. Tapped Screw B3 x 8 |

| REF. DESIG. | QTY | | | PART NO. | DESCRIPTION |
|-------------|-----|---|---|------------|---------------------|
| | U | N | A | | |
| △G001 | | | 1 | DK18103850 | Ceramic Cap. 0.01μF |
| △G001 | | 1 | | DK18103840 | Ceramic Cap. 0.01μF |
| △G001 | 1 | | | DK18103530 | Ceramic Cap. 0.01μF |
| △L001 | | | 1 | TS16624030 | Power Transformer |
| △L001 | | 1 | | TS16624010 | Power Transformer |
| △L001 | 1 | | | TS16623010 | Power Transformer |
| △S001 | | 1 | 1 | SP01010390 | Push Switch, Power |
| △S001 | 1 | | | SP01010420 | Push Switch, Power |
| JW06 | 1 | 1 | 1 | YJ01001420 | Jack, Head Phone |
| S012 | 1 | 1 | 1 | SR00030050 | Rotary Switch |
| SS02 | 1 | 1 | 1 | SS04040040 | Slide Switch |
| W701 | 1 | 1 | 1 | YU03220240 | Jumper Lead, 3P |
| W702 | 1 | 1 | 1 | YU03120260 | Jumper Lead, 3P |
| W703 | 1 | 1 | 1 | YU03300240 | Jumper Lead, 3P |
| W704 | 1 | 1 | 1 | YU02400240 | Jumper Lead, 2P |
| W705 | 1 | 1 | 1 | YU05090260 | Jumper Lead, 5P |
| W706 | 1 | 1 | 1 | YU04100260 | Jumper Lead, 4P |



- U for U.S.A.
- N for Europe
- A for Australia

| REF. DESIG. | Q'TY | | | PART NO. | DESCRIPTION | REF. DESIG. | Q'TY | | | PART NO. | DESCRIPTION |
|-------------|------|---|---|------------|--------------------|-------------|------|---|------------|-----------------|-------------|
| | U | N | A | | | | U | N | A | | |
| 001S | | 1 | 1 | 207H801020 | Packing Case | 001T | 1 | 1 | 207H851010 | Instruction | |
| 001S | 1 | | | 207H801010 | Packing Case | 001T | 1 | 1 | 207H851310 | Instruction | |
| 003S | 2 | 2 | 2 | 001H809010 | Cushion | 002T | 1 | 1 | 207H851020 | Instruction | |
| 006S | 1 | 1 | 1 | 9090909040 | Polyethylene Sheet | 002T | | 1 | 207H851320 | Instruction | |
| 010S | 1 | 1 | 1 | 2918107350 | Sheet | 003T | | 1 | 2205851040 | Instruction | |
| 013S | | | 2 | 9526019030 | Serial No. Card | 003T | 1 | | 207H856010 | Circuit Diagram | |
| 013S | | 2 | | 9526019060 | Serial No. Card | 003T | 1 | | 2818854020 | Guarantee Card | |
| 013S | 2 | | | 9526019010 | Serial No. Card | 004T | | 1 | 9631000090 | Guarantee Card | |
| 019S | | 1 | | 2731821010 | Silicagel | 004T | 1 | | 2918107390 | Sheet | |

14. ELECTRICAL PARTS LIST

- U for U.S.A.
- N for Europe
- A for Australia

| REF. DESIG. | Q'TY | | | PART NO. | DESCRIPTION | REF. DESIG. | Q'TY | | | PART NO. | DESCRIPTION |
|-------------|------|---|------------|--------------------------|--------------------------------------------------|-------------|------|---|------------|------------|--------------------|
| | U | N | A | | | | U | N | A | | |
| P001 | 1 | 1 | 1 | YK207H1630 | P001-POWER SW CIRCUIT BOARD | C717 | 1 | 1 | 1 | DF17332350 | Film 3300pF ±20% |
| | 1 | 1 | 1 | ZZ207H1630 | P.W. Board, Power SW | C718 | 1 | 1 | 1 | DF17332350 | Film 3300pF ±20% |
| G001 | | | 1 | DK18103850 | P.W. Board Assembly | C719 | 1 | 1 | 1 | DF17332350 | Film 3300pF ±20% |
| | | | 1 | DK18103840 | P001-CAPACITOR | C720 | 1 | 1 | 1 | DF17332350 | Film 3300pF ±20% |
| | | | 1 | DK18103830 | Ceramic 0.01μF | C721 | 1 | 1 | 1 | DK16101550 | Ceramic 100pF ±10% |
| S001 | | | 1 | SP01010390 | Ceramic 100pF ±10% | C722 | 1 | 1 | 1 | DK16101550 | Ceramic 100pF ±10% |
| | | | 1 | SP01010420 | Ceramic 0.01μF | C725 | 1 | 1 | 1 | DF16473540 | Film 0.047μF ±10% |
| P700 | | | 1 | YK207H1610 | P001-SWITCH | C726 | 1 | 1 | 1 | DF16473540 | Film 0.047μF ±10% |
| | | | 1 | ZZ207H1610 | Push Switch, Power | C727 | 1 | 1 | 1 | DD15151370 | Ceramic 150pF ±5% |
| | | | 1 | ZZ207H8610 | Push Switch, Power | C728 | 1 | 1 | 1 | DD15151370 | Ceramic 150pF ±5% |
| C401 | | | 1 | EA33505030 | P700-MAIN AMP CIRCUIT BOARD | △C803 | 1 | 1 | 1 | EB68803520 | Elect 6800μF 35V |
| | | | 1 | EA33505030 | P.W. Board, Main Amp | △C804 | 1 | 1 | 1 | EB68803520 | Elect 6800μF 35V |
| | | | 1 | DK16221300 | P.W. Board Assembly | C805 | 1 | 1 | 1 | EA10703530 | Elect 100μF 35V |
| | | | 1 | DK16221300 | P.W. Board Assembly | △C807 | 1 | 1 | 1 | EA33603530 | Elect 33μF 35V |
| | | | 1 | DF16332300 | P700-CAPACITORS | △C808 | 1 | 1 | 1 | EA33603530 | Elect 33μF 35V |
| | | | 1 | DF16332300 | Elect 3.3μF 50V | C811 | 1 | 1 | 1 | EA10505030 | Elect 1μF 50V |
| | | | 1 | DF16123300 | Elect 3.3μF 50V | C812 | 1 | 1 | 1 | EA10505030 | Elect 1μF 50V |
| | | | 1 | DF16123300 | Film 0.012μF ±10% | CN01 | 1 | 1 | 1 | EA33700630 | Elect 330μF 6.3V |
| | | | 1 | DF16123300 | Film 0.012μF ±10% | CN02 | 1 | 1 | 1 | EA10505030 | Elect 1μF 50V |
| | | | 1 | EA33505030 | Elect 3.3μF 50V | CN03 | 1 | 1 | 1 | EA33603530 | Elect 33μF 35V |
| | | 1 | EA33505030 | Elect 3.3μF 50V | P700-RESISTORS (All Resistors are ±5% and ¼W) | | | | | | |
| | | 1 | EA10701630 | Elect 100μF 16V | | | | | | | |
| | | 1 | EA10701630 | Elect 100μF 16V | | | | | | | |
| | | 1 | DK18103300 | Ceramic 0.01μF +80% -20% | | | | | | | |
| | | 1 | DK18103300 | Ceramic 0.01μF | | | | | | | |
| | | 1 | EA33505030 | Elect 3.3μF | | | | | | | |
| | | 1 | EA33505030 | Elect 3.3μF | | | | | | | |
| | | 1 | DK16101300 | Ceramic 100pF | | | | | | | |
| | | 1 | DK16101300 | Ceramic 100pF ±10% | | | | | | | |
| | | 1 | EA10701030 | Elect 1000μF 10V | | | | | | | |
| | | 1 | EA10701030 | Elect 1000μF 10V | | | | | | | |
| | | 1 | EA22601630 | Elect 22μF 16V | R401 | 1 | 1 | 1 | GD05154140 | 150kΩ | |
| | | 1 | EA22601630 | Elect 22μF 16V | R402 | 1 | 1 | 1 | GD05154140 | 150kΩ | |
| | | 1 | EA22601630 | Elect 22μF 16V | R403 | 1 | 1 | 1 | GD05683140 | 68kΩ | |
| | | 1 | EA22601630 | Elect 22μF 16V | R404 | 1 | 1 | 1 | GD05683140 | 68kΩ | |
| | | 1 | DD15560370 | Ceramic 56pF ±5% | R405 | 1 | 1 | 1 | GD05222140 | 2.2kΩ | |
| | | 1 | DD15560370 | Ceramic 56pF ±5% | R406 | 1 | 1 | 1 | GD05222140 | 2.2kΩ | |
| | | 1 | EA10605030 | Elect 10μF 50V | R407 | 1 | 1 | 1 | GD05471140 | 470Ω | |
| | | 1 | EA10605030 | Elect 10μF 50V | R408 | 1 | 1 | 1 | GD05471140 | 470Ω | |
| | | 1 | DK17103300 | Ceramic 0.01μF ±20% | R409 | 1 | 1 | 1 | GD05223140 | 22kΩ | |
| | | 1 | DK17103300 | Ceramic 0.01μF ±20% | R410 | 1 | 1 | 1 | GD05223140 | 22kΩ | |
| | | 1 | EA22601630 | Elect 22μF 16V | R411 | 1 | 1 | 1 | GD05274140 | 270kΩ | |
| | | 1 | EA22601630 | Elect 22μF 16V | R412 | 1 | 1 | 1 | GD05274140 | 270kΩ | |
| | | 1 | EA22601630 | Elect 22μF 16V | R413 | 1 | 1 | 1 | GD05103140 | 10kΩ | |
| | | 1 | EA22601630 | Elect 22μF 16V | R414 | 1 | 1 | 1 | GD05103140 | 10kΩ | |
| | | 1 | DD15560370 | Ceramic 56pF ±5% | R415 | 1 | 1 | 1 | GG05101140 | 100Ω | |
| | | 1 | DD15560370 | Ceramic 56pF ±5% | R416 | 1 | 1 | 1 | GG05101140 | 100Ω | |
| | | 1 | EA10605030 | Elect 10μF 50V | R417 | 1 | 1 | 1 | GD05271140 | 270Ω | |
| | | 1 | EA10605030 | Elect 10μF 50V | R418 | 1 | 1 | 1 | GD05271140 | 270Ω | |
| | | 1 | DK17103300 | Ceramic 0.01μF ±20% | R701 | 1 | 1 | 1 | GD05471140 | 470Ω | |
| | | 1 | DK17103300 | Ceramic 0.01μF ±20% | R702 | 1 | 1 | 1 | GD05471140 | 470Ω | |
| | | 1 | EA22601630 | Elect 22μF 16V | R703 | 1 | 1 | 1 | GD05683140 | 68kΩ | |
| | | 1 | EA22601630 | Elect 22μF 16V | R704 | 1 | 1 | 1 | GD05683140 | 68kΩ | |
| | | 1 | EA22601630 | Elect 22μF 16V | R705 | 1 | 1 | 1 | GD05103140 | 10kΩ | |
| | | 1 | EA22601630 | Elect 22μF 16V | R706 | 1 | 1 | 1 | GD05103140 | 10kΩ | |
| | | 1 | DD15560370 | Ceramic 56pF ±5% | R707 | 1 | 1 | 1 | GD05393140 | 39kΩ | |
| | | 1 | DD15560370 | Ceramic 56pF ±5% | R708 | 1 | 1 | 1 | GD05393140 | 39kΩ | |
| | | 1 | EA10605030 | Elect 10μF 50V | R709 | 1 | 1 | 1 | GD05391140 | 390Ω | |
| | | 1 | EA10605030 | Elect 10μF 50V | R710 | 1 | 1 | 1 | GD05391140 | 390Ω | |
| | | 1 | DK17103300 | Ceramic 0.01μF ±20% | R711 | 1 | 1 | 1 | GD05104140 | 100kΩ | |
| | | 1 | DK17103300 | Ceramic 0.01μF ±20% | R712 | 1 | 1 | 1 | GD05104140 | 100kΩ | |

- U for U.S.A.
- N for Europe
- A for Australia

| REF. DESIG. | QTY | | | PART NO. | DESCRIPTION |
|-------------|-----|---|---|------------|------------------|
| | U | N | A | | |
| R713 | 1 | 1 | 1 | GD05682140 | 6.8kΩ |
| R714 | 1 | 1 | 1 | GD05682140 | 6.8kΩ |
| R715 | 1 | 1 | 1 | GD05682140 | 6.8kΩ |
| R716 | 1 | 1 | 1 | GD05682140 | 6.8kΩ |
| R717 | 1 | 1 | 1 | GD05333140 | 33 kΩ |
| R718 | 1 | 1 | 1 | GD05333140 | 33 kΩ |
| R719 | 1 | 1 | 1 | GD05392140 | 3.9kΩ |
| R720 | 1 | 1 | 1 | GD05392140 | 3.9kΩ |
| R721 | 1 | 1 | 1 | GD05392140 | 3.9kΩ |
| R722 | 1 | 1 | 1 | GD05392140 | 3.9kΩ |
| R723 | 1 | 1 | 1 | GD05222140 | 2.2kΩ |
| R724 | 1 | 1 | 1 | GD05222140 | 2.2kΩ |
| R725 | 1 | 1 | 1 | RD02020180 | Trimming (B) 2kΩ |
| R726 | 1 | 1 | 1 | RD02020180 | Trimming (B) 2kΩ |
| R727 | 1 | 1 | 1 | GD05122140 | 1.2kΩ |
| R728 | 1 | 1 | 1 | GD05122140 | 1.2kΩ |
| R729 | 1 | 1 | 1 | GD05152140 | 1.5kΩ |
| R730 | 1 | 1 | 1 | GD05152140 | 1.5kΩ |
| R731 | 1 | 1 | 1 | GD05563140 | 56kΩ |
| R732 | 1 | 1 | 1 | GD05563140 | 56kΩ |
| R733 | 1 | 1 | 1 | GD05151140 | 150Ω |
| R734 | 1 | 1 | 1 | GD05151140 | 150Ω |
| R735 | 1 | 1 | 1 | GD05333140 | 33kΩ |
| R736 | 1 | 1 | 1 | GD05333140 | 33kΩ |
| R737 | 1 | 1 | 1 | GD05822140 | 8.2kΩ |
| R738 | 1 | 1 | 1 | GD05822140 | 8.2kΩ |
| R739 | 1 | 1 | 1 | GD05822140 | 8.2kΩ |
| R740 | 1 | 1 | 1 | GD05822140 | 8.2kΩ |
| R741 | 1 | 1 | 1 | GD05471140 | 470Ω |
| R742 | 1 | 1 | 1 | GD05471140 | 470Ω |
| R743 | 1 | 1 | 1 | GD05471140 | 470Ω |
| R744 | 1 | 1 | 1 | GD05471140 | 470Ω |
| R745 | 1 | 1 | 1 | GG05221120 | 220Ω ½W |
| R746 | 1 | 1 | 1 | GG05221120 | 220Ω ½W |
| R747 | 1 | 1 | 1 | GB05272020 | 0.27Ω 2W |
| R748 | 1 | 1 | 1 | GB05272020 | 0.27Ω 2W |
| R749 | 1 | 1 | 1 | GB05272020 | 0.27Ω 2W |
| R750 | 1 | 1 | 1 | GB05272020 | 0.27Ω 2W |
| R751 | 1 | 1 | 1 | GA05100020 | 10Ω 2W |
| R752 | 1 | 1 | 1 | GA05100020 | 10Ω 2W |
| R753 | 1 | 1 | 1 | GG05022120 | 2.2 ½W |
| R754 | 1 | 1 | 1 | GG05022120 | 2.2 ½W |
| R755 | 1 | 1 | 1 | GD05561140 | 560Ω |
| R756 | 1 | 1 | 1 | GD05561140 | 560Ω |
| R757 | 1 | 1 | 1 | GD05273140 | 27kΩ |
| R758 | 1 | 1 | 1 | GD05273140 | 27kΩ |
| R759 | 1 | 1 | 1 | GD05123140 | 12kΩ |
| R760 | 1 | 1 | 1 | GD05123140 | 12kΩ |
| R761 | 1 | 1 | 1 | GG05100120 | 10Ω ½W |
| R762 | 1 | 1 | 1 | GG05100120 | 10Ω ½W |

| REF. DESIG. | QTY | | | PART NO. | DESCRIPTION |
|----------------------------|-----|---|---|------------|-----------------------------|
| | U | N | A | | |
| R802 | 1 | 1 | 1 | GA05222020 | 2.2kΩ |
| R803 | 1 | 1 | 1 | GD05182140 | 1.8kΩ |
| △R805 | 1 | 1 | 1 | GA05121010 | 120Ω 1W |
| △R806 | 1 | 1 | 1 | GG05471120 | 470Ω ½W |
| R807 | 1 | 1 | 1 | GD05272140 | 2.7kΩ |
| R808 | 1 | 1 | 1 | GD05272140 | 2.7kΩ |
| △R809 | 1 | 1 | 1 | GA05820030 | 82Ω 3W |
| △R810 | 1 | 1 | 1 | GA05390010 | 39Ω 1W |
| RN01 | 1 | 1 | 1 | GD05471140 | 470Ω |
| RN02 | 1 | 1 | 1 | GD05471140 | 470Ω |
| RN03 | 1 | 1 | 1 | GD05103140 | 10kΩ |
| RN04 | 1 | 1 | 1 | GD05474140 | 470kΩ |
| RN05 | 1 | 1 | 1 | GD05154140 | 150kΩ |
| RN06 | 1 | 1 | 1 | GD05124140 | 120kΩ |
| RN07 | 1 | 1 | 1 | GD05104140 | 100kΩ |
| P700-SEMICONDUCTORS | | | | | |
| Q401 | 1 | 1 | 1 | HC10003090 | IC 4558D |
| Q701 | 1 | 1 | 1 | HT107502C0 | Transistor 2SA750 E or F |
| Q702 | 1 | 1 | 1 | HT107502C0 | Transistor 2SA750 E or F |
| Q703 | 1 | 1 | 1 | HT107502C0 | Transistor 2SA750 E or F |
| Q704 | 1 | 1 | 1 | HT107502C0 | Transistor 2SA750 E or F |
| Q705 | 1 | 1 | 1 | HD20003210 | Diode IS2471 |
| Q706 | 1 | 1 | 1 | HD20003210 | Diode IS2471 |
| Q707 | 1 | 1 | 1 | HT314001E0 | Transistor 2SC1400 (E) |
| Q708 | 1 | 1 | 1 | HT314001E0 | Transistor 2SC1400 (E) |
| Q709 | 1 | 1 | 1 | HT309452B0 | Transistor 2SC945 P or Q |
| Q710 | 1 | 1 | 1 | HT309452B0 | Transistor 2SC945 P or Q |
| Q711 | 1 | 1 | 1 | HT322402A0 | Transistor 2SC2240 GR or BL |
| Q712 | 1 | 1 | 1 | HT322402A0 | Transistor 2SC2240 GR or BL |
| Q713 | 1 | 1 | 1 | HD20001210 | Diode IS2473 |
| Q714 | 1 | 1 | 1 | HD20001210 | Diode IS2473 |
| Q715 | 1 | 1 | 1 | HD20001210 | Diode IS2473 |
| Q716 | 1 | 1 | 1 | HD20001210 | Diode IS2473 |
| Q717 | 1 | 1 | 1 | HD20001210 | Diode IS2473 |
| Q718 | 1 | 1 | 1 | HD20001210 | Diode IS2473 |
| Q719 | 1 | 1 | 1 | HD20001210 | Diode IS2473 |
| Q720 | 1 | 1 | 1 | HD20001210 | Diode IS2473 |
| Q721 | 1 | 1 | 1 | HT309452B0 | Transistor 2SC945 P or Q |
| Q722 | 1 | 1 | 1 | HT309452B0 | Transistor 2SC945 P or Q |
| Q723 | 1 | 1 | 1 | HT107332A0 | Transistor 2SC733 P or Q |
| Q724 | 1 | 1 | 1 | HT107332A0 | Transistor 2SC733 P or Q |
| Q725 | 1 | 1 | 1 | HT322742B0 | Transistor 2SC2274 E or F |
| Q726 | 1 | 1 | 1 | HT322742B0 | Transistor 2SC2274 E or F |
| Q727 | 1 | 1 | 1 | HT109842B0 | Transistor 2SA984 E or F |
| Q728 | 1 | 1 | 1 | HT109842B0 | Transistor 2SA984 E or F |
| △Q729 | 1 | 1 | 1 | HT406133B0 | Transistor 2SD613 DE or F |
| △Q730 | 1 | 1 | 1 | HT406133B0 | Transistor 2SD613 DE or F |
| △Q731 | 1 | 1 | 1 | HT206333B0 | Transistor 2SB633 DE or F |
| △Q732 | 1 | 1 | 1 | HT206333B0 | Transistor 2SB633 DE or F |
| △Q801 | 1 | 1 | 1 | HD20008290 | Diode S4VB20 |
| △Q805 | 1 | 1 | 1 | HD20015030 | Diode DS135D |
| Q806 | 1 | 1 | 1 | HD30014010 | Zener HZ16L |
| △Q807 | 1 | 1 | 1 | HT405712B0 | Transistor 2SD571 |
| △Q808 | 1 | 1 | 1 | HT107332A0 | Transistor 2SA733 P or Q |
| Q809 | 1 | 1 | 1 | HD30014010 | Zener HZ16L |
| Q810 | 1 | 1 | 1 | HD30014010 | Zener HZ16L |
| Q812 | 1 | 1 | 1 | HD30042090 | Zener BZ052 |

- U for U.S.A.
- N for Europe
- A for Australia

| REF. DESIG. | QTY | | | PART NO. | DESCRIPTION |
|----------------------------------------|-----|---|---|------------|---------------------------|
| | U | N | A | | |
| QN01 | 1 | 1 | 1 | HT309452B0 | Transistor 2SC945 P or Q |
| QN02 | 1 | 1 | 1 | HT309452B0 | Transistor 2SC945 P or Q |
| QN03 | 1 | 1 | 1 | HD20015030 | Diode DS135D |
| QN04 | 1 | 1 | 1 | HT309452B0 | Transistor 2SC945 P or Q |
| QN05 | 1 | 1 | 1 | HT107332A0 | Transistor 2SA733 P or Q |
| QN06 | 1 | 1 | 1 | HD30023090 | Zener WZ071 |
| P700-MISCELLANEOUS | | | | | |
| L701 | 1 | 1 | 1 | LL23905120 | Choke Coil |
| L702 | 1 | 1 | 1 | LL23905120 | Choke Coil |
| △F801 | 1 | | | FS10315800 | Fuse |
| △F802 | 1 | | | FS10315800 | Fuse |
| RS07 | 1 | 1 | 1 | RM01040400 | Variable Resistor 100kΩx2 |
| RS08 | 1 | 1 | 1 | RK02040110 | Variable Resistor 200kΩ |
| SS02 | 1 | 1 | 1 | SS04040040 | Slide Switch |
| JV01 | 1 | 1 | 1 | YT02060130 | Terminal |
| JV02 | 1 | 1 | 1 | YT02040260 | Terminal |
| JV03 | 1 | 1 | 1 | YT03040190 | Terminal |
| P701-POWER TR. CIRCUIT BOARD | | | | | |
| P701 | 1 | 1 | 1 | YK207H1620 | P.W. Board, Power TR. |
| | 1 | 1 | 1 | ZZ207H1620 | P.W. Board Assembly |
| P701-TRANSISTOR | | | | | |
| Q729 | 1 | 1 | 1 | HT406133B0 | Transistor 2SD613 DE or F |
| PE00-TONE CONTROL CIRCUIT BOARD | | | | | |
| PE00 | 1 | 1 | 1 | YK207H1650 | P.W. Board, Tone Control |
| | 1 | 1 | 1 | ZZ207H1650 | P.W. Board Assembly |
| PE00-CAPACITORS | | | | | |
| CE01 | 1 | 1 | 1 | EA10603530 | Elect 10μF 35V |
| CE02 | 1 | 1 | 1 | EA10603530 | Elect 10μF 35V |
| CE03 | 1 | 1 | 1 | DF16393300 | Film 0.039μF ±10% |
| CE04 | 1 | 1 | 1 | DF16393300 | Elect 0.039μF ±10% |
| CE05 | 1 | 1 | 1 | EA33405030 | Elect 0.33μF 50V |
| CE06 | 1 | 1 | 1 | EA33405030 | Elect 0.33μF 50V |
| CE07 | 1 | 1 | 1 | DK16181300 | Ceramic 180pF ±10% |
| CE08 | 1 | 1 | 1 | DK16181300 | Ceramic 180pF ±10% |
| CE09 | 1 | 1 | 1 | DF16122300 | Film 1200pF ±10% |
| CE10 | 1 | 1 | 1 | DF16122300 | Film 1200pF ±10% |
| CE11 | 1 | 1 | 1 | DF16123300 | Film 0.012μF ±10% |
| CE12 | 1 | 1 | 1 | DF16123300 | Film 0.012μF ±10% |
| CE13 | 1 | 1 | 1 | EA10405030 | Elect 0.1μF 50V |
| CE14 | 1 | 1 | 1 | EA10405030 | Elect 0.1μF 50V |

| REF. DESIG. | QTY | | | PART NO. | DESCRIPTION |
|---------------------------------------------------------|-----|---|---|-------------|-----------------------------------|
| | U | N | A | | |
| PE00-RESISTORS (All Resistors are ±5% and ¼W) | | | | | |
| RE01 | 1 | 1 | 1 | GD05682140 | 6.8k |
| RE02 | 1 | 1 | 1 | GD05682140 | 6.8k |
| RE03 | 1 | 1 | 1 | RS05030350 | Variable 50kΩx2 |
| RE04 | 1 | 1 | 1 | RS05030350 | Variable 50kΩx2 |
| RE05 | 1 | 1 | 1 | GD05821140 | 820Ω |
| RE06 | 1 | 1 | 1 | GD05821140 | 820Ω |
| RE07 | 1 | 1 | 1 | GD05680140 | 68Ω |
| RE08 | 1 | 1 | 1 | GD05680140 | 68Ω |
| RE09 | 1 | 1 | 1 | GD05821140 | 820Ω |
| RE10 | 1 | 1 | 1 | GD05821140 | 820Ω |
| RE11 | 1 | 1 | 1 | GD05121140 | 120Ω |
| RE12 | 1 | 1 | 1 | GD05121140 | 120Ω |
| PS00-SW/VR ASS'Y CIRCUIT BOARD | | | | | |
| PS00 | 1 | 1 | 1 | YK207H1660 | P.W. Board, SW/VR Ass'y |
| | 1 | 1 | 1 | ZZ207H1660 | P.W. Board Assembly |
| PS00-CAPACITORS | | | | | |
| CS01 | 1 | 1 | 1 | DK16271300 | Ceramic 270pF ±10% |
| CS02 | 1 | 1 | 1 | DK16271300 | Ceramic 270pF ±10% |
| CS03 | 1 | 1 | 1 | DF16683300 | Film 0.068μF ±10% |
| CS04 | 1 | 1 | 1 | DF16683300 | Film 0.068μF ±10% |
| PS00-RESISTORS (All Resistors are ±5% and ¼W) | | | | | |
| RS01 | 1 | 1 | 1 | GD05472140 | 4.7kΩ |
| RS02 | 1 | 1 | 1 | GD05472140 | 4.7kΩ |
| RS03 | 1 | 1 | 1 | GD05273140 | 27kΩ |
| RS04 | 1 | 1 | 1 | GD05273140 | 27kΩ |
| RS05 | 1 | 1 | 1 | GD05822140 | 8.2kΩ |
| RS06 | 1 | 1 | 1 | GD05822140 | 8.2kΩ |
| PS00-SWITCH | | | | | |
| SS01 | 1 | 1 | 1 | SP020301100 | Push Switch |
| PW00-PHONE ASS'Y CIRCUIT BOARD | | | | | |
| PW00 | 1 | 1 | 1 | YK207H1640 | P.W. Board, Phone Ass'y |
| | 1 | 1 | 1 | ZZ207H1640 | P.W. Board Assembly |
| RW01 | 1 | 1 | 1 | GA05331010 | Resistor 330Ω ±5% 1W |
| RW02 | 1 | 1 | 1 | GA05331010 | Resistor 330Ω ±5% 1W |
| JW06 | 1 | 1 | 1 | YJ01001420 | Head Phone Jack |
| PX01-LED LEVEL METER DRIVE CIRCUIT BOARD | | | | | |
| PX01 | 1 | 1 | 1 | WN207H3210 | P.W. Board, LED Level Meter Drive |
| | | | | ZZ207H3210 | P.W. Board Assembly |
| PX01-CAPACITORS | | | | | |
| CX01 | 1 | 1 | 1 | EA33505030 | Elect 3.3μF 50V |
| CX02 | 1 | 1 | 1 | EA33505030 | Elect 3.3μF 50V |
| CX03 | 1 | 1 | 1 | EA10505030 | Elect 1μF 50V |
| CX04 | 1 | 1 | 1 | EA10505030 | Elect 1μF 50V |
| CX05 | 1 | 1 | 1 | DF16103300 | Film 0.01μF ±10% |
| CX06 | 1 | 1 | 1 | DF16103300 | Film 0.01μF ±10% |

- U for U.S.A.
- N for Europe
- A for Australia

| REF. DESIG. | QTY | | | PART No. | DESCRIPTION |
|----------------------------------------------------------------------------|-----|---|---|------------|-----------------------------|
| | U | N | A | | |
| PX01-RESISTORS (All Resistors are $\pm 5\%$ and $\frac{1}{4}W$) | | | | | |
| RX01 | 1 | 1 | 1 | GD05103140 | 10k Ω |
| RX02 | 1 | 1 | 1 | GD05103140 | 10k Ω |
| RX03 | 1 | 1 | 1 | GD05104140 | 100k Ω |
| RX04 | 1 | 1 | 1 | GD05104140 | 100k Ω |
| RX07 | 1 | 1 | 1 | RA02030060 | Trimming 20k Ω |
| RX08 | 1 | 1 | 1 | RA02030060 | Trimming 20k Ω |
| RX25 | 1 | 1 | 1 | GD05563140 | 56k Ω |
| RX26 | 1 | 1 | 1 | GD05563140 | 56k Ω |
| RX27 | 1 | 1 | 1 | GD05183140 | 18k Ω |
| RX28 | 1 | 1 | 1 | GD05183140 | 18k Ω |
| PX01-SEMICONDUCTORS | | | | | |
| QX01 | 1 | 1 | 1 | HD30076090 | Zener WZ038 |
| QX02 | 1 | 1 | 1 | HD30076090 | Zener WZ038 |
| QX03 | 1 | 1 | 1 | HD20001210 | Diode IS2473 |
| QX04 | 1 | 1 | 1 | HD20001210 | Diode IS2473 |
| QX05 | 1 | 1 | 1 | HC10008370 | IC TL489C |
| QX06 | 1 | 1 | 1 | HC10008370 | IC TL489C |
| QX07 | 1 | 1 | 1 | HC10019020 | IC AN6552 |
| QX21 | 1 | 1 | 1 | HD20001210 | Diode IS2473 |
| QX22 | 1 | 1 | 1 | HD20001210 | Diode IS2473 |
| PX01-MISCELLANEOUS | | | | | |
| JX01 | 1 | 1 | 1 | YJ07000750 | Jack |
| PX02-LED LEVEL METER CIRCUIT BOARD | | | | | |
| PX02 | 1 | 1 | 1 | WN207H3220 | P.W. Board, LED Level Meter |
| | 1 | 1 | 1 | ZZ207H3220 | P.W. Board Assembly |
| PX02-RESISTORS (All Resistors are $\pm 5\%$ and $\frac{1}{4}W$) | | | | | |
| RX10 | 1 | 1 | 1 | GD05271140 | 270 Ω |
| RX11 | 1 | 1 | 1 | GD05561140 | 560 Ω |
| RX12 | 1 | 1 | 1 | GD05561140 | 560 Ω |
| RX13 | 1 | 1 | 1 | GD05561140 | 560 Ω |
| RX14 | 1 | 1 | 1 | GD05561140 | 560 Ω |
| RX15 | 1 | 1 | 1 | GD05561140 | 560 Ω |
| RX16 | 1 | 1 | 1 | GD05561140 | 560 Ω |
| RX17 | 1 | 1 | 1 | GD05561140 | 560 Ω |
| RX18 | 1 | 1 | 1 | GD05561140 | 560 Ω |
| RX19 | 1 | 1 | 1 | GD05561140 | 560 Ω |
| RX20 | 1 | 1 | 1 | GD05561140 | 560 Ω |
| PX02-SEMICONDUCTORS | | | | | |
| QX08 | 1 | 1 | 1 | HI10006320 | L.E.D. GL-9NG9 |
| QX09 | 1 | 1 | 1 | HI10007320 | L.E.D. GL-9PR9 |
| QX10 | 1 | 1 | 1 | HI10007320 | L.E.D. GL-9PR9 |
| QX11 | 1 | 1 | 1 | HI10007320 | L.E.D. GL-9PR9 |
| QX12 | 1 | 1 | 1 | HI10007320 | L.E.D. GL-9PR9 |
| QX13 | 1 | 1 | 1 | HI10007320 | L.E.D. GL-9PR9 |
| QX14 | 1 | 1 | 1 | HI10007320 | L.E.D. GL-9PR9 |
| QX15 | 1 | 1 | 1 | HI10007320 | L.E.D. GL-9PR9 |
| QX16 | 1 | 1 | 1 | HI10007320 | L.E.D. GL-9PR9 |
| QX17 | 1 | 1 | 1 | HI10007320 | L.E.D. GL-9PR9 |
| QX18 | 1 | 1 | 1 | HI10007320 | L.E.D. GL-9PR9 |

| | |
|----------|---------------------|
| (W01-99) | Assembly and Wiring |
| (T01-99) | Adjustment |
| (X01-00) | Correction |

15. TECHNICAL SPECIFICATIONS

AUDIO SECTION

| | |
|----------------------------------------------------------------------------------------------|----------------|
| POWER OUTPUT, DIN, 8 OHM, PER CHANNEL | 28W |
| POWER OUTPUT, RMS 1 kHz, 8 OHM, PER CHANNE | 25W |
| TOTAL HARMONIC DISTORTION AT RATED POWER OUTPUT | 0.3% |
| I.M. DISTORTION AT RATED POWER OUTPUT (250 Hz AND 8 kHz MIXED, AMPLITUDE RATIO 4:1) | 0.3% |
| POWER BANDWIDTH | 10 Hz ~ 30 kHz |
| DAMPING FACTOR 8 OHM | 50 |

Frequency Response

| | |
|--------------------|----------------|
| Phono (RIAA) | ±1.0 dB |
| Aux (±1 dB) | 15 Hz ~ 50 kHz |

Signal-to-Noise Ratio (IHF-A Network)

| | |
|------------------|-------|
| Phono (MM) | 74 dB |
| Aux | 96 dB |

Input Terminals

| | |
|------------------------------|-----------|
| Phono: Input Impedance | 47 k ohms |
| Input Capacitance | 250 pF |
| Overload Margin | 33 dB |
| Input sensitivity | 2.8 mV |
| Aux: Input Impedance | 25 k ohms |
| Input Sensitivity | 150 mV |

Phono Equivalent Input Noise

Phono Dynamic Range (Ratio of input overload to equivalent input noise)

Channel Balance (0 to -40 dB/40 Hz ~ 16 kHz)

| | |
|-------------|------------------|
| Phono | Less than 2.0 dB |
| Aux | Less than 2.0 dB |

Output Voltage, 1 kHz

| | |
|----------------|--------|
| Tape Out | 415 mV |
|----------------|--------|

Output Impedance, 1 kHz

| | |
|----------------|----------|
| Tape Out | 220 ohms |
|----------------|----------|

GENERAL

Power Requirements

(N version is featuring an external voltage selector for use on 110V. Other versions can be converted by a qualified technician to operate on 240V.)

Power Consumption at Rated Output, both Channels Driven

Idling Power

Semiconductor Complement

| | |
|---------------------------|----|
| Transistors | 29 |
| Diodes | 22 |
| Integrated Circuits | 4 |

Dimensions

| | |
|--------------------|--------|
| Panel Width | 416 mm |
| Panel Height | 73 mm |
| Depth | 302 mm |

Weight

| | |
|------------------|--------|
| Unit Alone | 4.8 kg |
|------------------|--------|

Specifications and appearance are subject to change for modification without notice.