

72

**SERVICE  
MANUAL PM250/PM400**

**marantz**

**model PM250/PM400**

*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 Perennes-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

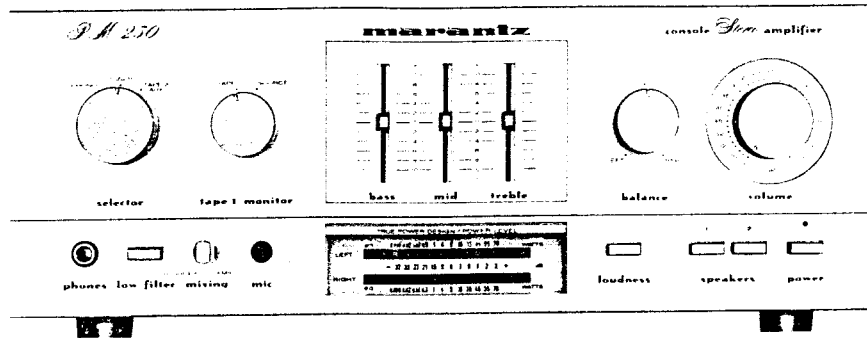
Superscope GmbH  
Max-Planck-Strasse 22  
D-6072 Dreieich 1  
West Germany

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.

**marantz.**  
We sound better.

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## 1. INTRODUCTION

This service manual was prepared for use by Authorized Warranty Stations and contains service information for the Marantz PM250/PM400 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 (SV01).

Signals from the PHONO terminals pass through the phono amplifier (Q401, Q403) where they are amplified by 36 dB and at the same time undergo RIAA equalization, before going to the SELECTOR SWITCH (SV01). (In the case of the PM400, signals coming in from the PHONO 1 and PHONO 2 terminals are selected by means of the SELECTOR SWITCH and then taken to the PHONO amplifier).

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 MONO SWITCH BALANCE and VOLUME potentiometers, and then enter the pre-amplifier (QE01 and QE03). The preamplifier has a gain of 22 dB. The signals from the preamplifier enter TONE AMP (QF01 and QF03) and the frequency response is controlled by the BASS, MID and TREBLE controls. After passing through the TONE preamplifier, the signals enter the main amplifier.

## TROUBLESHOOTING ANALYSIS

1. Excessive line consumption
  - a. Check for shorted Q806 through Q809.
  - b. Check for shorted transistor Q715, through Q718.
  - c. Check for open Q709, Q710, R717, R718.
2. No line consumption or zero bias voltage
  - a. Check line cord, fuse, check for shorted Q709, Q710, Q717, Q718.
  - b. Check for open rectifiers Q806 through Q809 or open L001.
3. High hum and noise level
  - a. Check filter capacitors C808, C809, C801, C803, Q801.

## 4. POWER AMPLIFIER ADJUSTMENT

### ADJUSTMENT OF IDLING CURRENT

Connect a DC voltmeter to between emitters Q715 and Q717. Adjust R717 until 11 mV is reached. Likewise, adjust Q716, Q718 and R718.

## 5. POWER METER ADJUSTMENT

Connect the speaker terminal output to the rated output voltage (15.5 V, 1 kHz), and then so adjust by RX07 (LCH) that the POWER METER registers 25W PM250/35W PM400. Adjust in the same manner by RX08 (RCH).

## 6. TEST EQUIPMENT REQUIRED FOR SERVICING

Table 1 lists the test equipment required for servicing the PM250/PM400 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

## 7. 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 PM250/PM400 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 PM250/PM400.

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

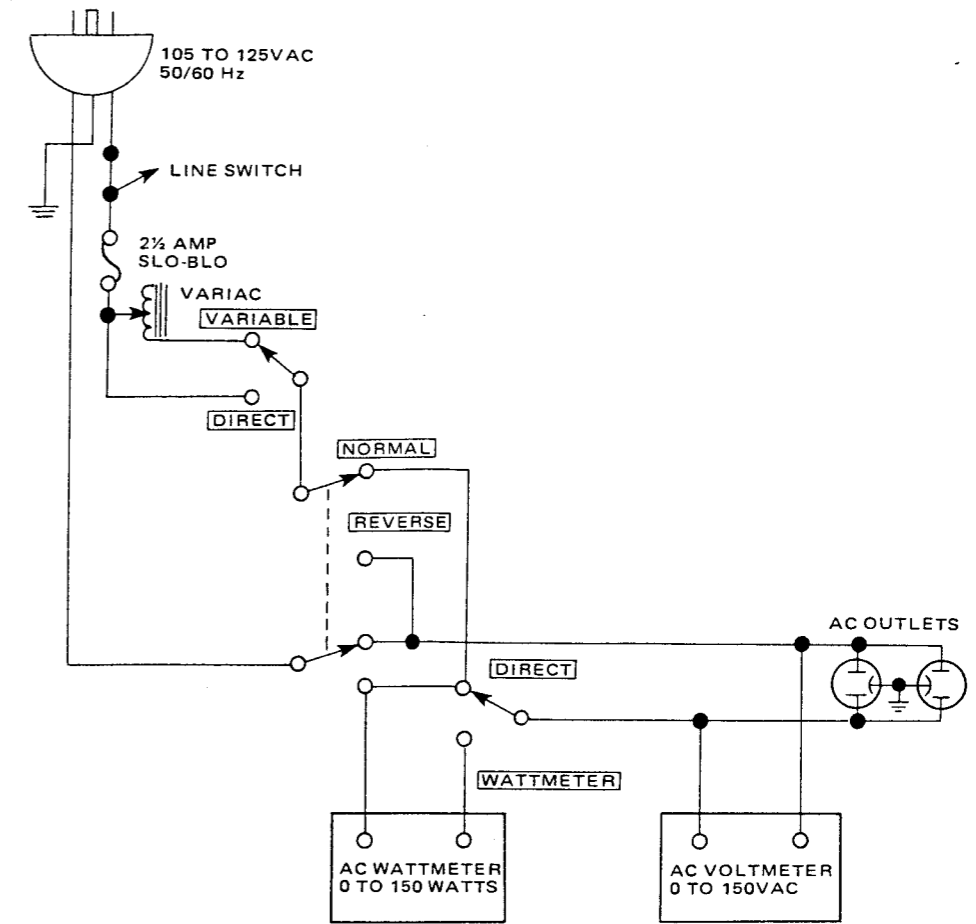


Figure 1. AC Power Control Box Simplified Schematic

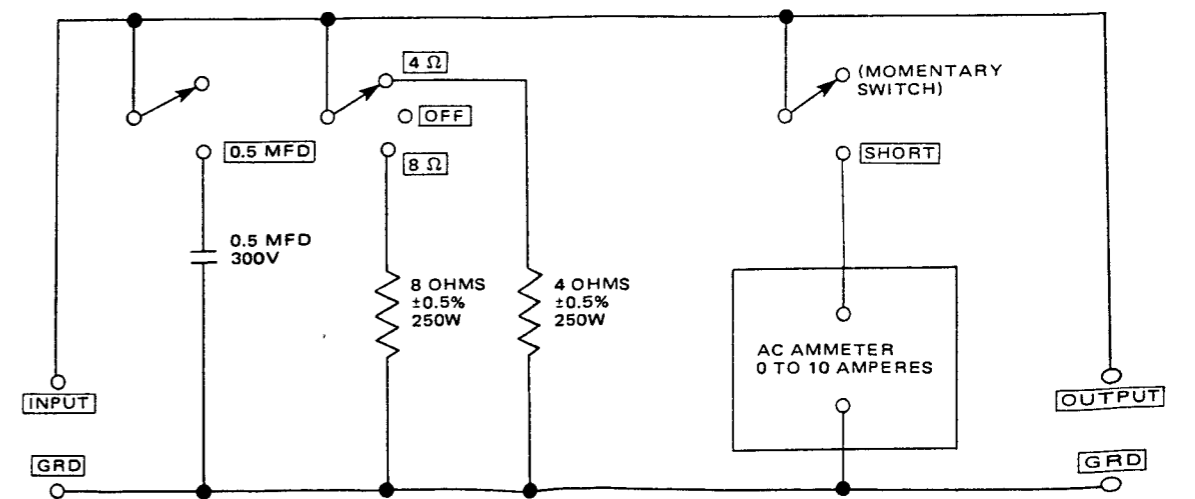


Figure 2. Amplifier Output Load Box Simplified Schematic

### 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 17 VAC (14.1 VAC For Model PM250 only) 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 17 VAC. (14.1 VAC For Model PM250 only)
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 0.05%.

**NOTE:**

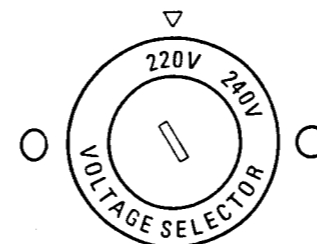
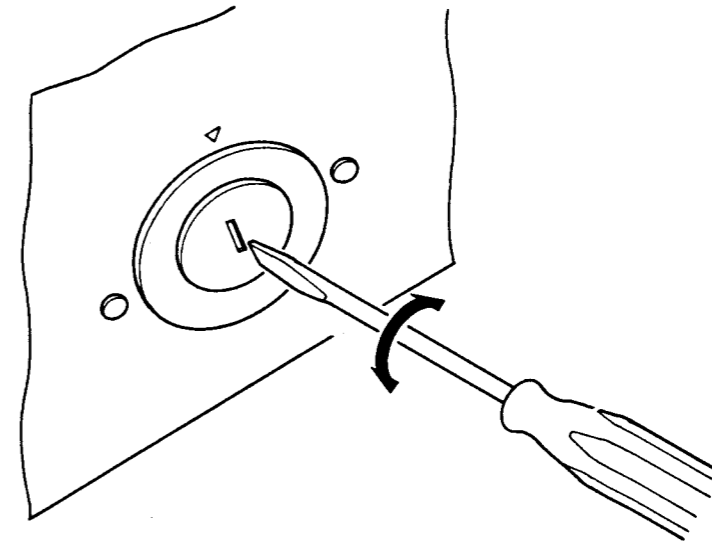
Any parasitic oscillation in the amplifier will be displayed on the oscilloscope when capacitance is switched into the load.

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 0.05%.
9. Repeat steps 7 and 8, changing frequency to 20 Hz. Distortion should be no more than 0.05%.
10. Check for parasitic oscillation; there should be none.

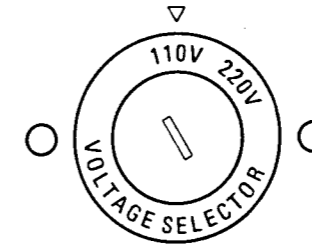
### 8. VOLTAGE CONVERSION

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

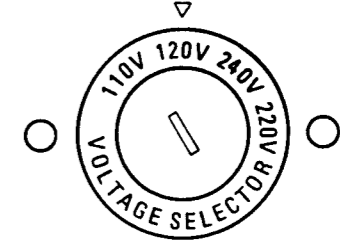
**CAUTION: DISCONNECT POWER SUPPLY CORD FROM AC OUTLET BEFORE CONVERTING VOLTAGE. PLEASE DO NOT DISASSEMBLE THE VOLTAGE SELECTOR ABSOLUTELY.**



(T) (A) Versions



(N) Version

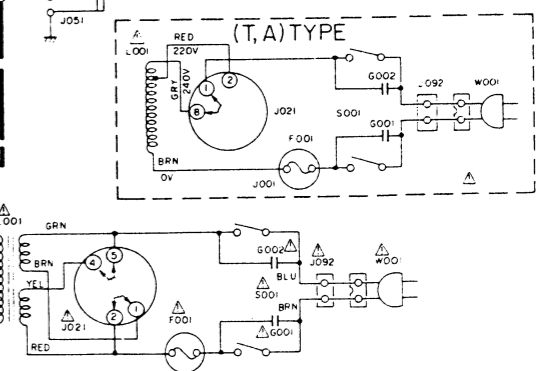
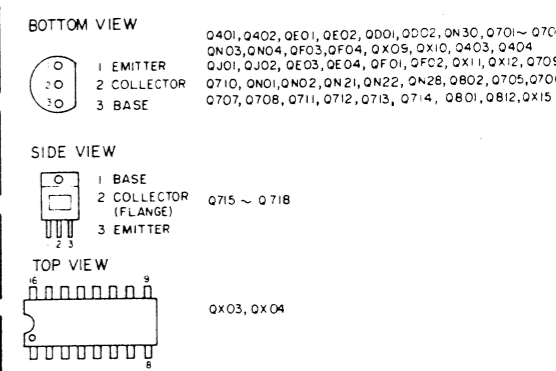
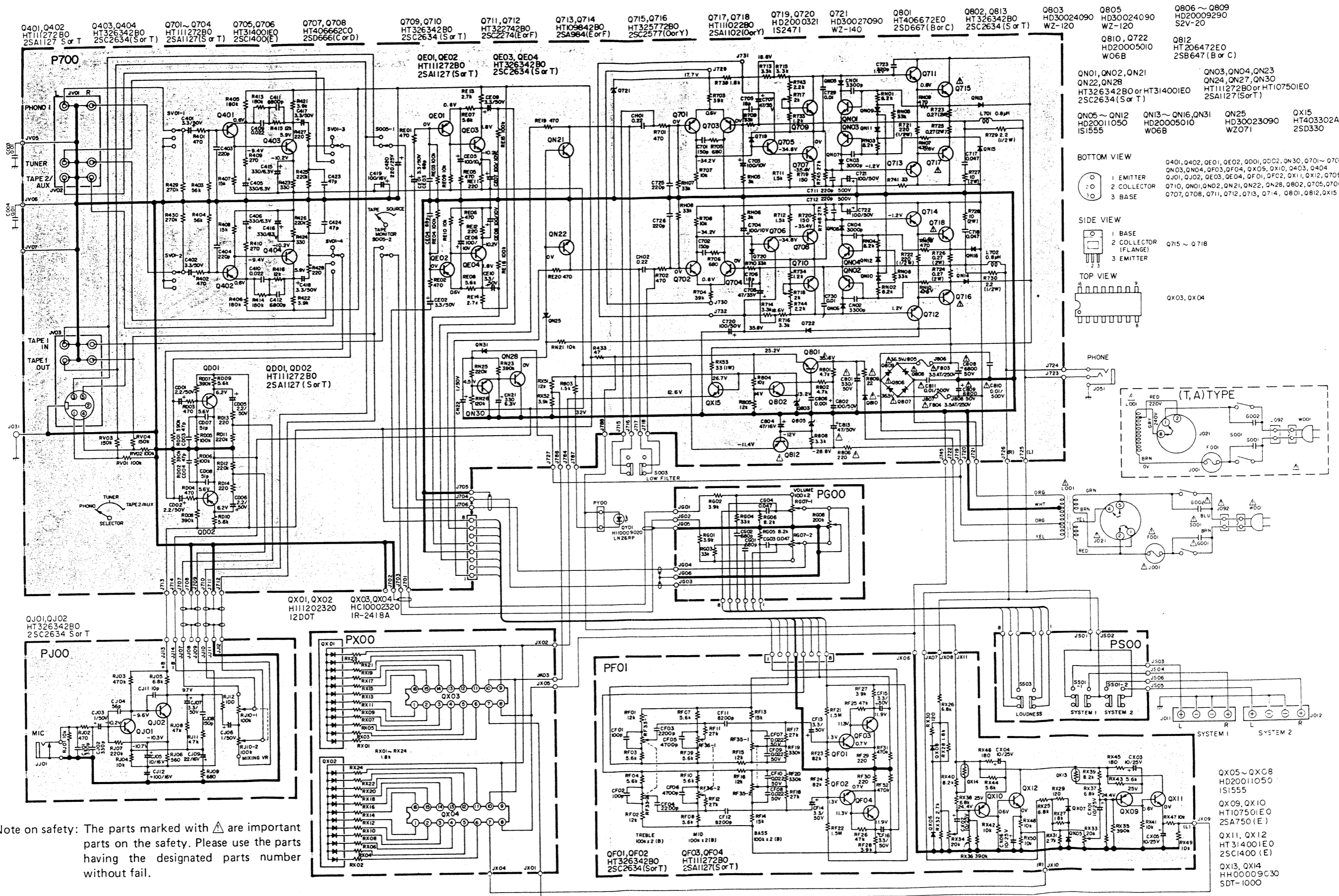


(P) Version

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.

9. SCHEMATIC DIAGRAM (PM250 and PM400)

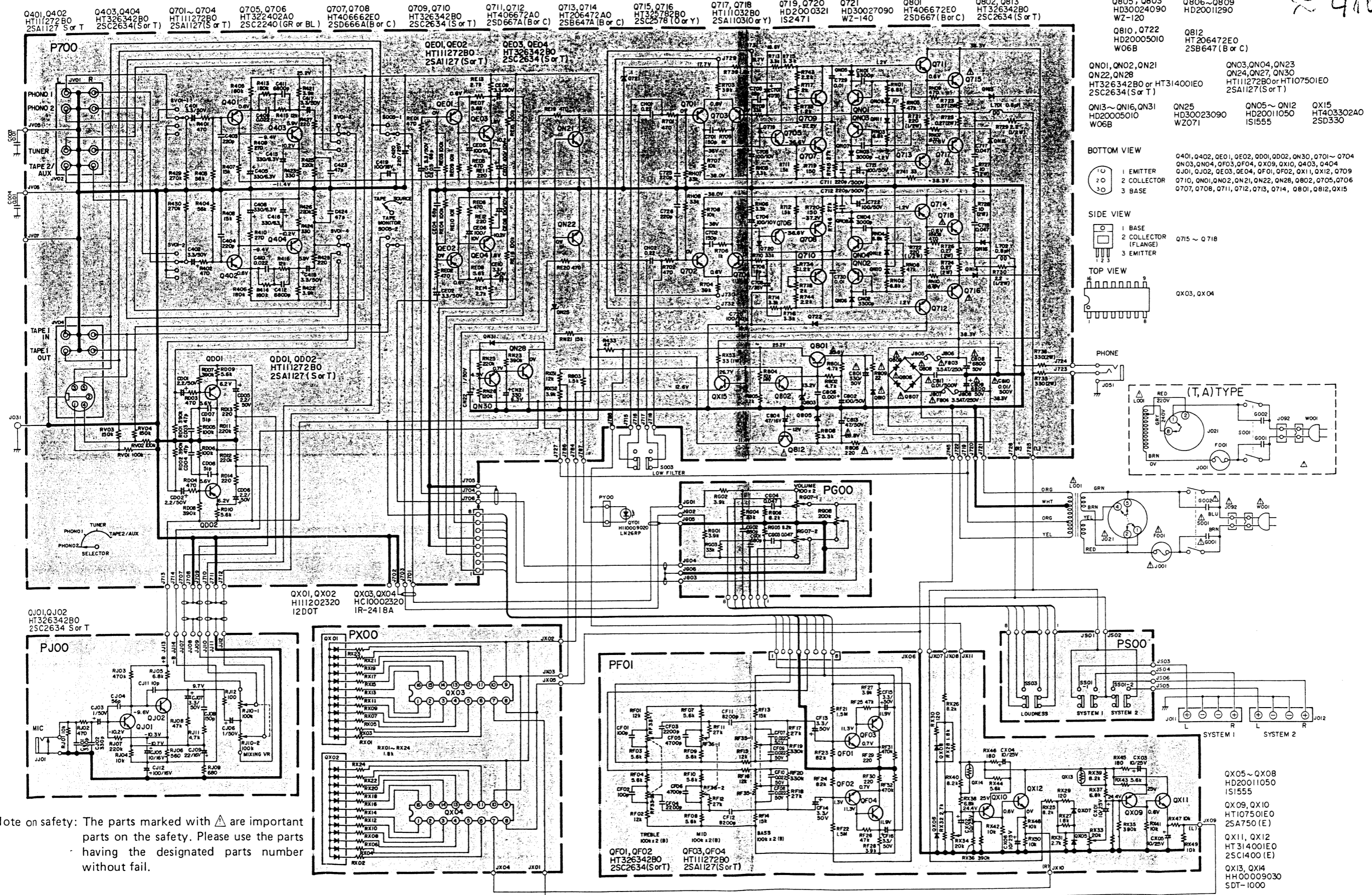
Model PM250



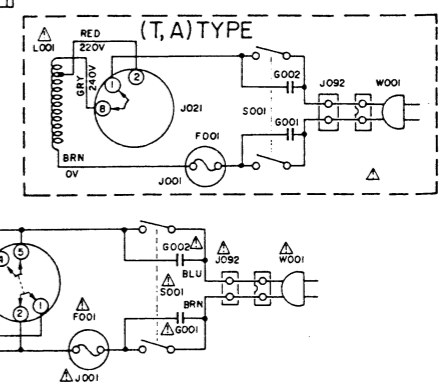


# Model PM400

~ 410



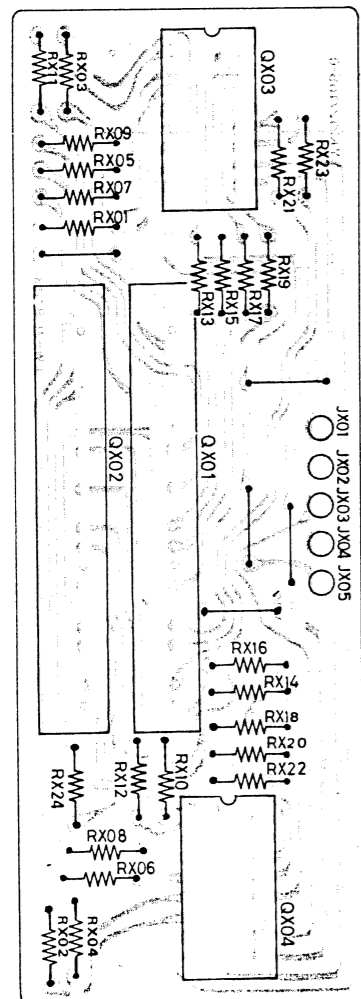
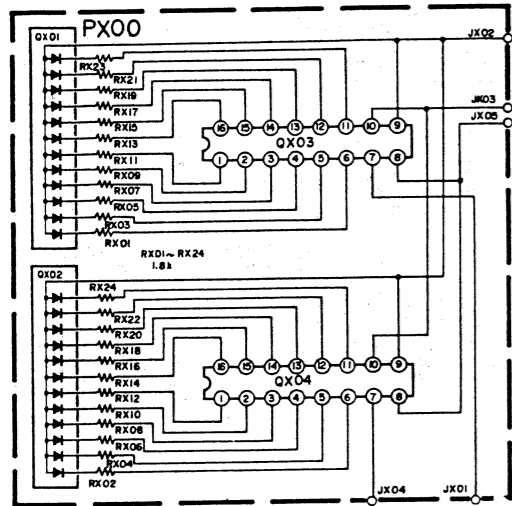
- Q401, Q402 HT11272B0 2SA1127 (S or T)  
 Q403, Q404 HT326342B0 2SC2634 (S or T)  
 Q701~Q704 HT111272B0 2SA1127 (S or T)  
 Q705, Q706 HT322402A0 2SC2240 (GR or BL)  
 Q707, Q708 HT406662E0 2SD666A (B or C)  
 Q709, Q710 HT326342B0 2SC2634 (S or T)  
 Q711, Q712 HT406672A0 2SD667A (B or C)  
 Q713, Q714 HT206472A0 2SB647A (B or C)  
 Q715, Q716 HT326342B0 2SC2634 (S or T)  
 Q717, Q718 HT111032B0 2SA1103 (S or Y)  
 Q719, Q720 HD2000321 IS2471  
 Q721 HD30027090 WZ-140  
 Q801 HT406672E0 2SD667 (B or C)  
 Q802, Q813 HT326342B0 2SC2634 (S or T)  
 Q805, Q803 HD30024090 WZ-120  
 Q806~Q809 HD20011290  
 Q810, Q722 HD20005010 W06B  
 Q812 HT206472E0 2SB647 (B or C)  
 QN01, QN02, QN21 QN22, QN28 HT326342B0 or HT31400IE0 2SC2634 (S or T)  
 QN03~QN16, QN31 HD20005010 W06B  
 QN25 HD30023090 WZ071  
 QN05~QN12 QX15 HD20011050 IS1555 HT403302A0 2SD330
- BOTTOM VIEW**  
 1 EMITTER  
 2 COLLECTOR  
 3 BASE
- SIDE VIEW**  
 1 BASE  
 2 COLLECTOR (FLANGE)  
 3 EMITTER
- TOP VIEW**  
 QX03, QX04



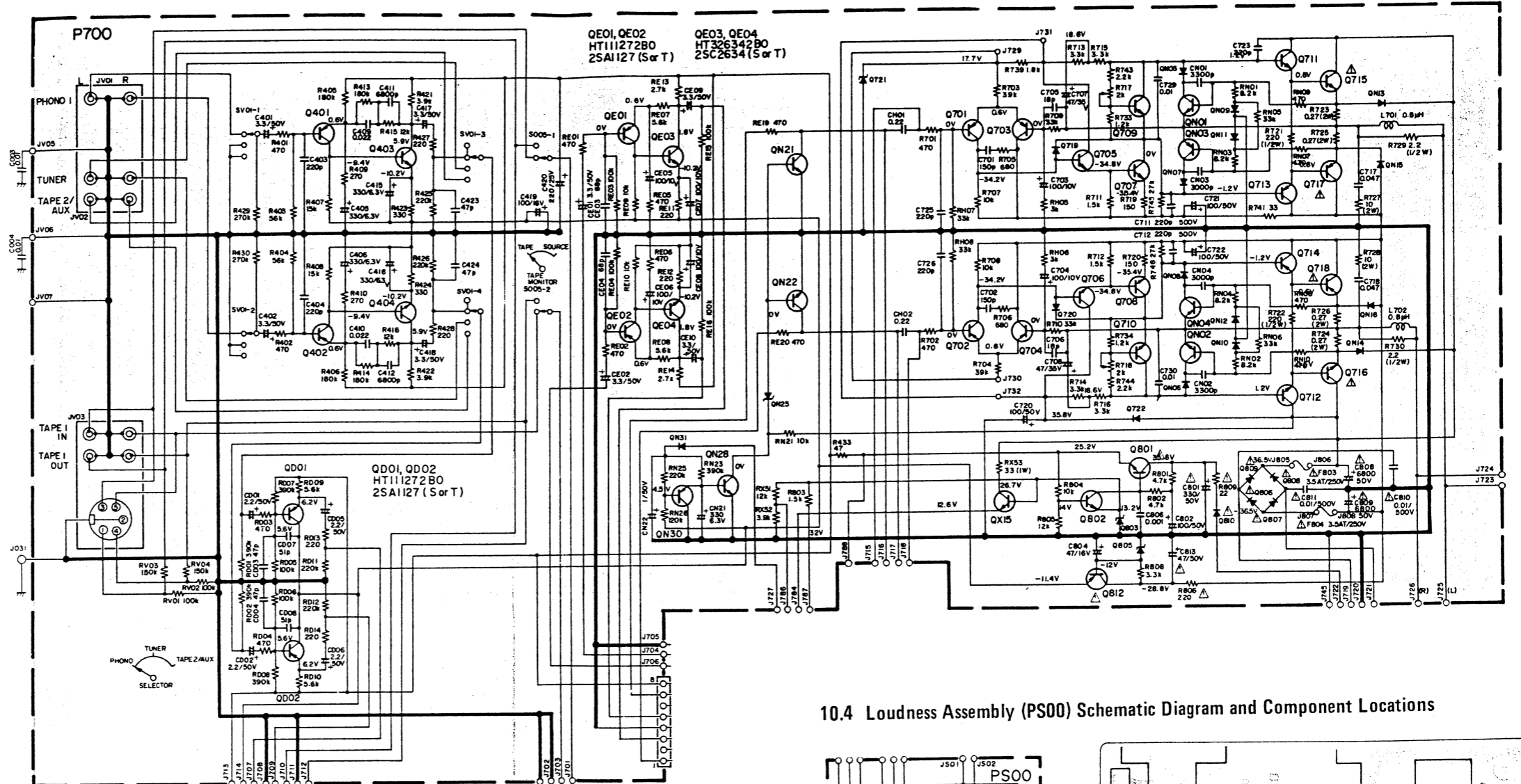
Note on safety: The parts marked with  $\Delta$  are important parts on the safety. Please use the parts having the designated parts number without fail.

10. DIAGRAM AND COMPONENT LOCATIONS

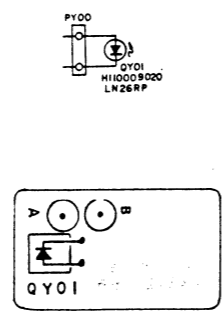
10.1 LED Power Meter Assembly (PX00) Schematic Diagram and Component Locations



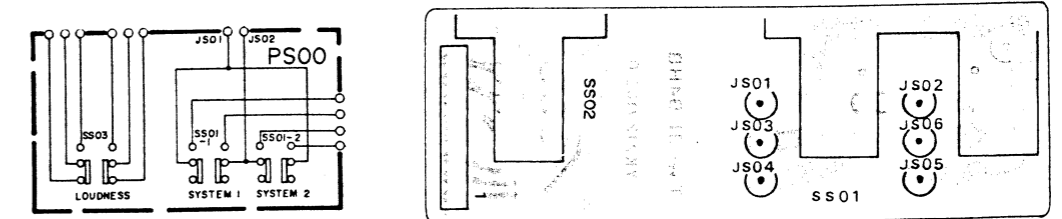
10.2 Main Assembly (P700) Schematic Diagram and Component Locations



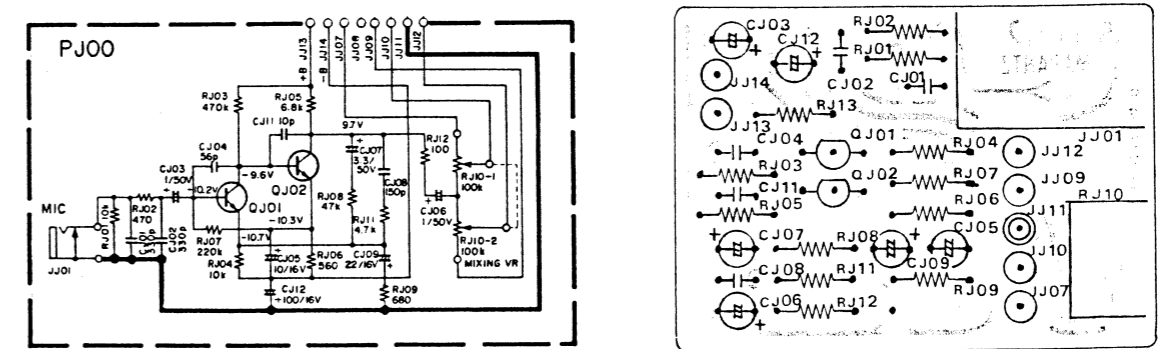
10.3 LED Lamp Assembly (PY00) Schematic Diagram and Component Locations



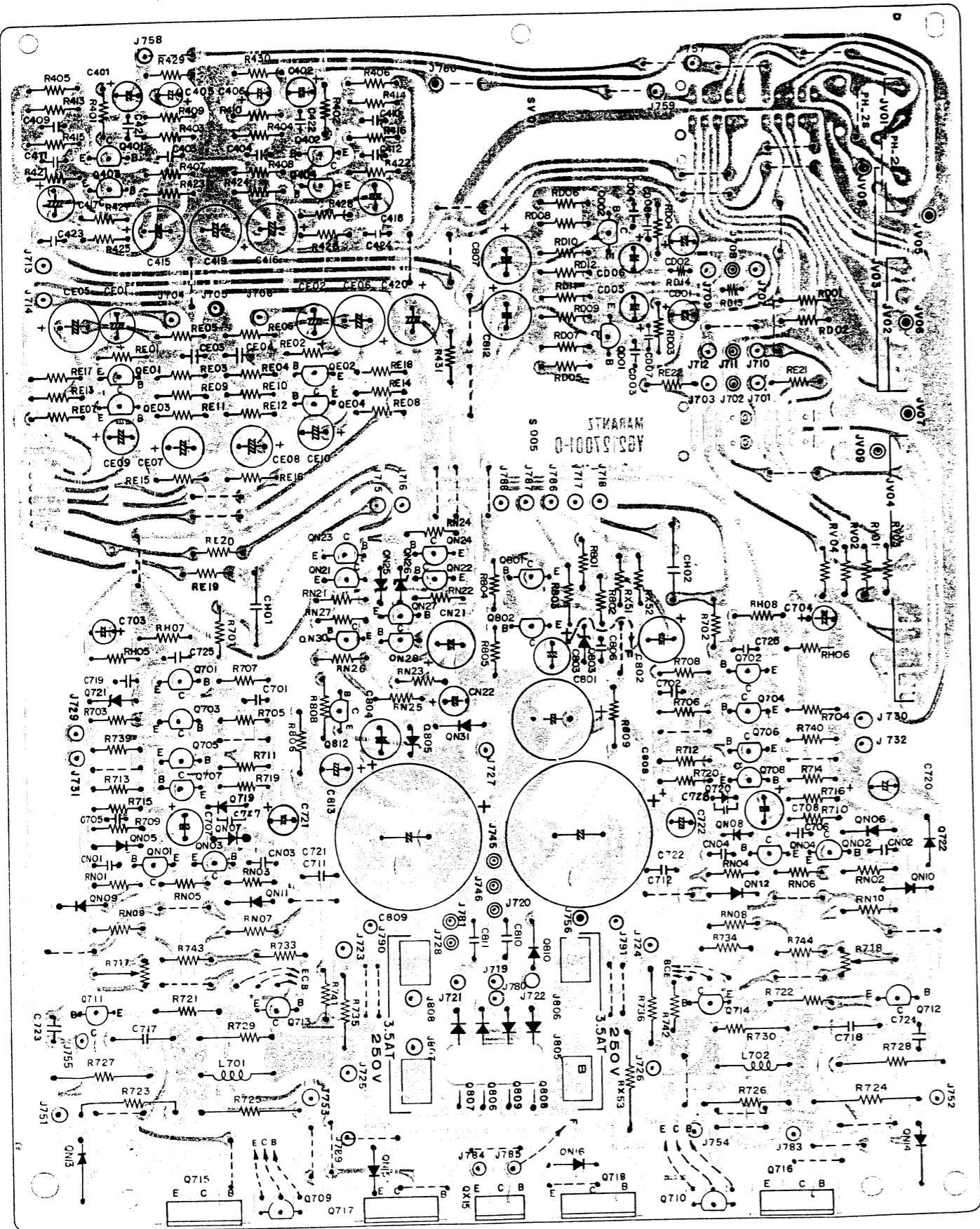
10.4 Loudness Assembly (PS00) Schematic Diagram and Component Locations



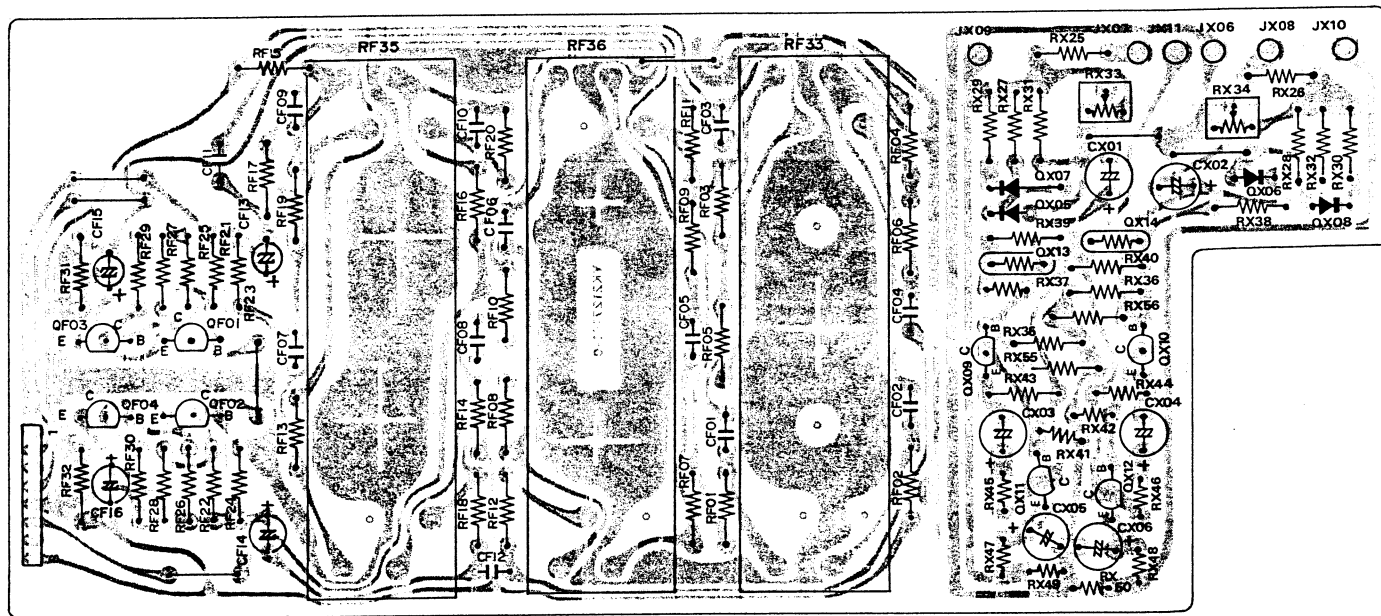
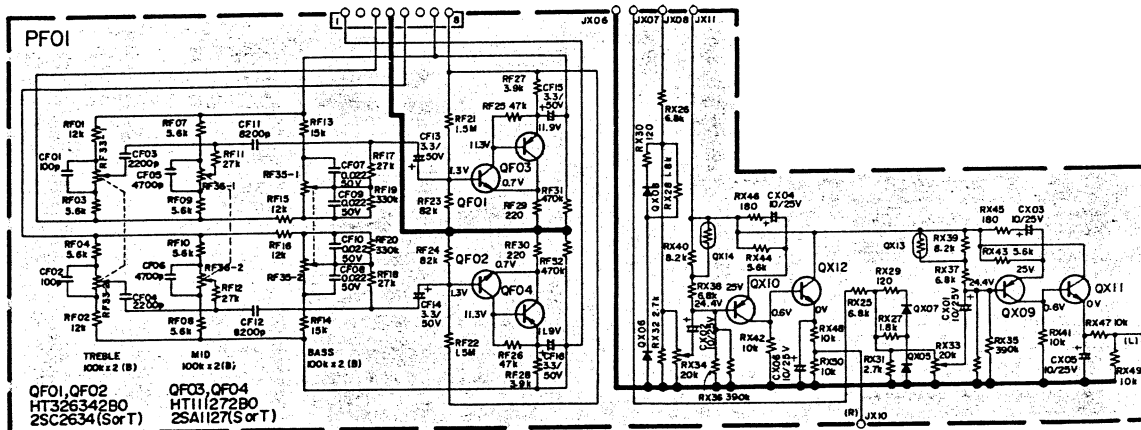
10.5 Microphone Amp. Assembly (PJ00) Schematic Diagram and Component Locations



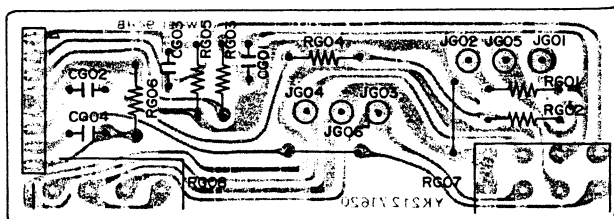
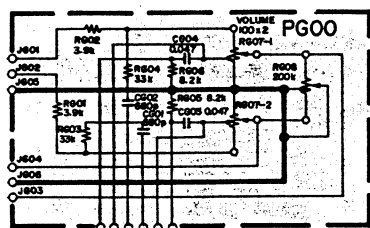
X



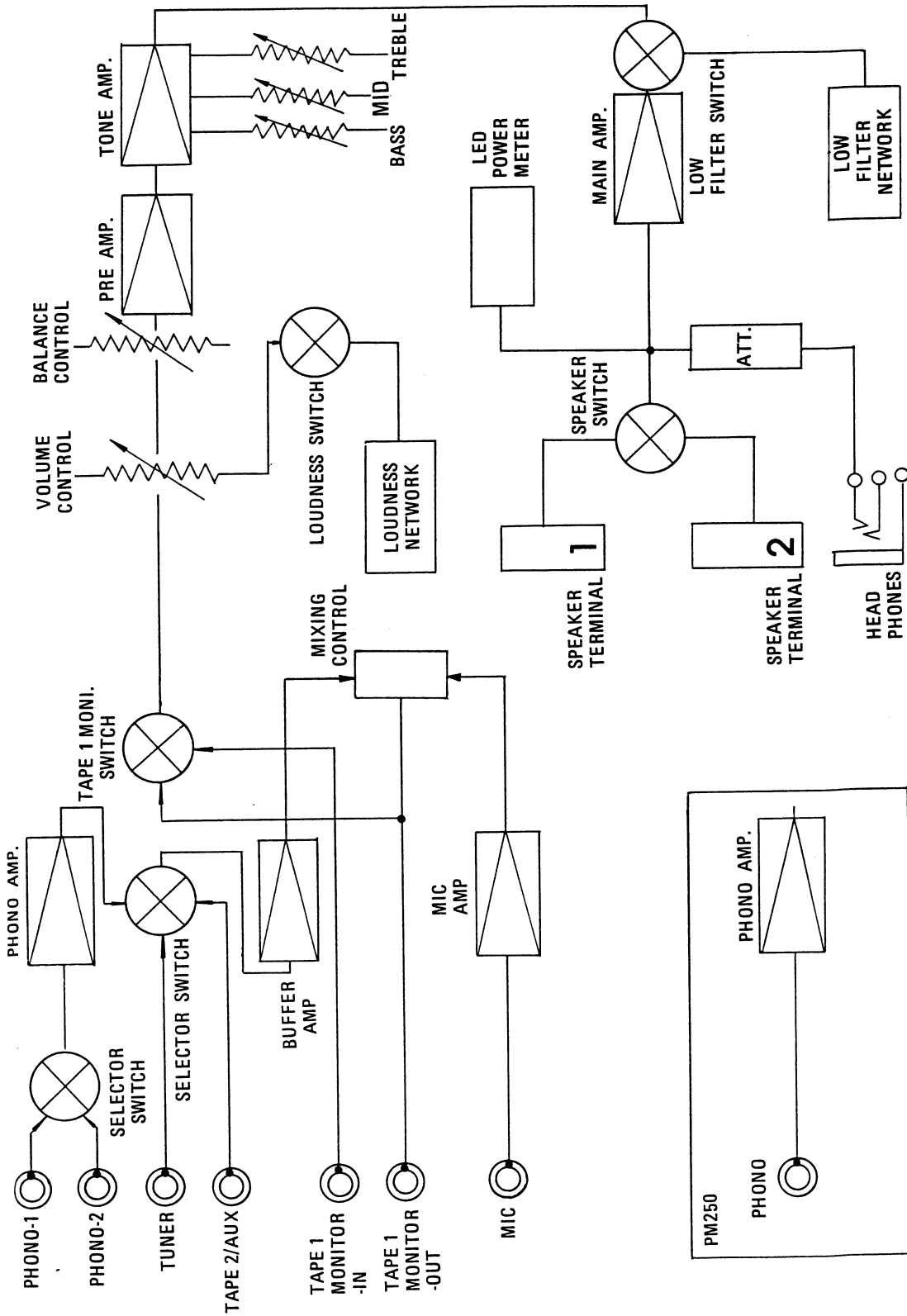
### 10.6 Tone Assembly (PF00) Schematic Diagram and Component Locations



### 10.7 Volume Assembly (PG00) Schematic Diagram and Component Locations

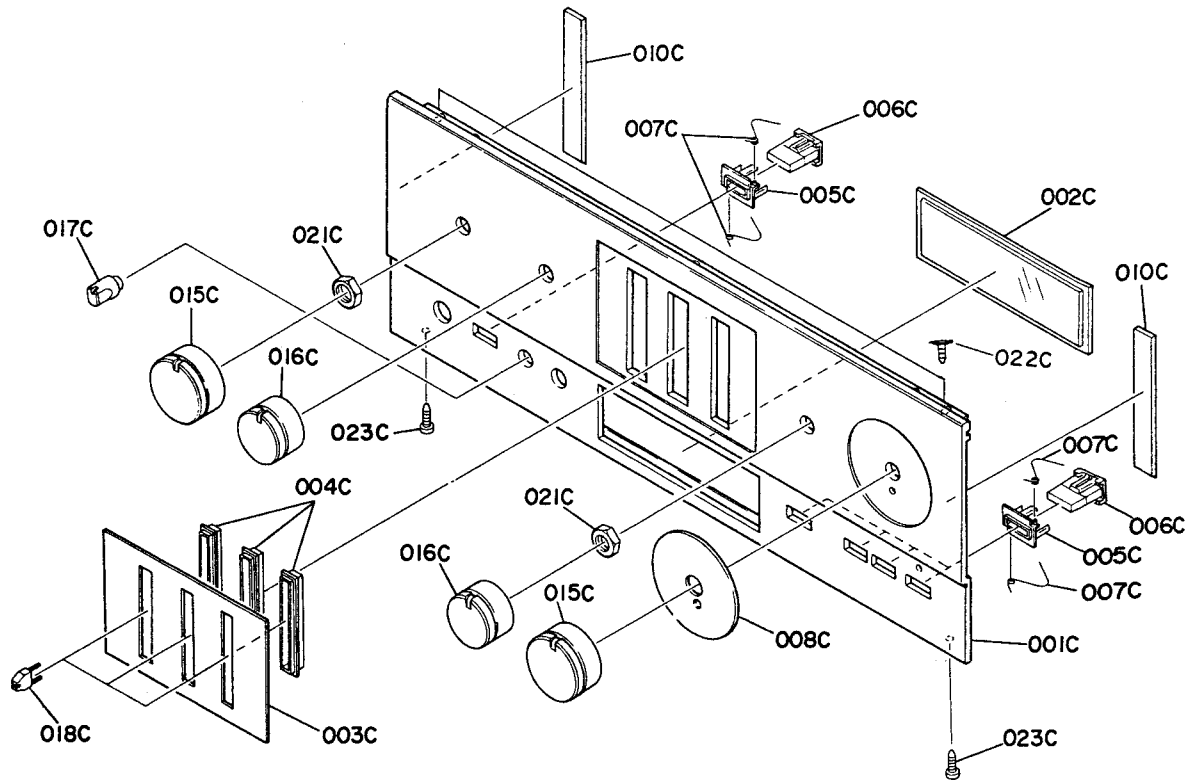


# 11. BLOCK DIAGRAM



## 12. EXPLODED VIEW AND PARTS LIST

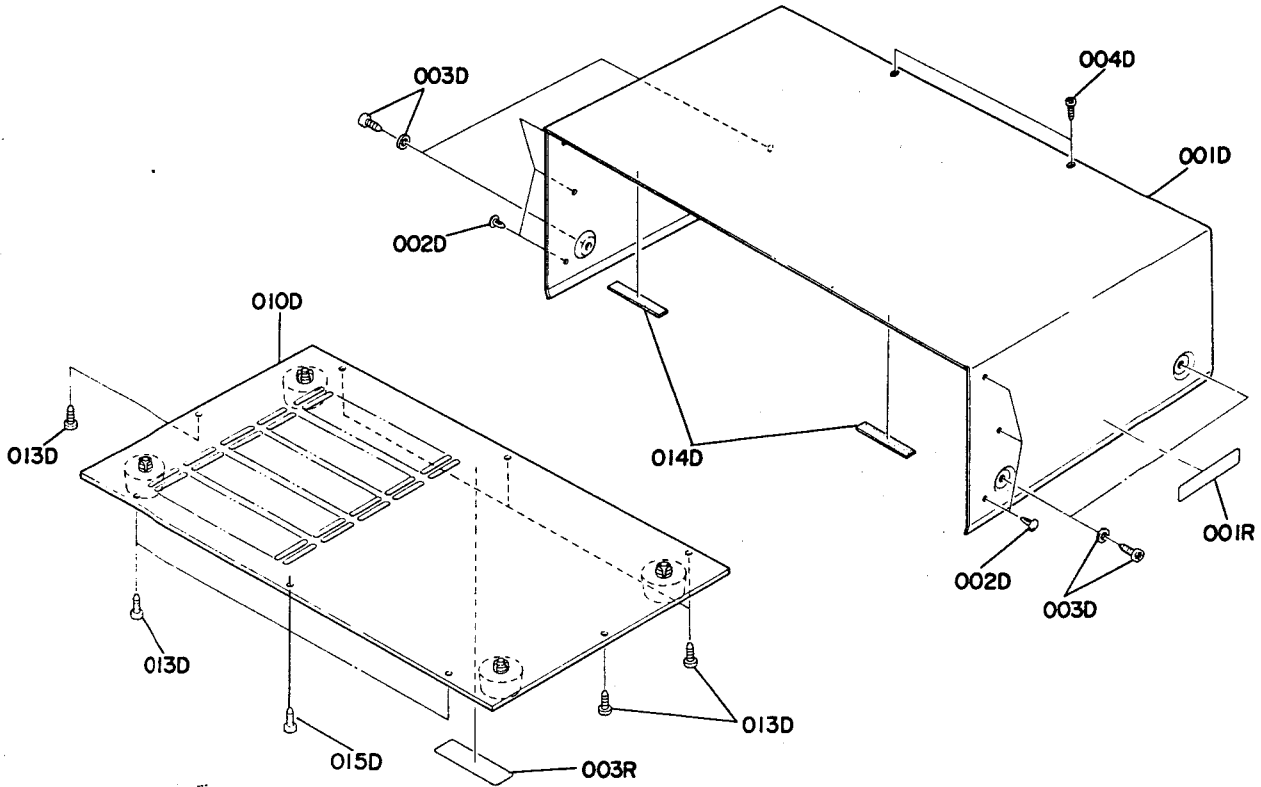
### • [C01-99] Front panel



REF. DESIG.	QTY N	PART NO.	DESCRIPTION
			<b>(PM400, ONLY)</b>
A	1	2129063400	Front Panel Assembly
001C	1	2129063010	Escutcheon
002C	1	2129158020	Window
003C	1	2129063020	Escutcheon
004C	3	2129259020	Bushing
005C	5	2127259010	Bushing
008C	1	2129063030	Escutcheon
010C	2	2128118010	Spacer
			<b>(PM250, ONLY)</b>
A	1	2127063400	Front Panel Assembly
001C	1	2127063010	Escutcheon
002C	1	2129158010	Window
003C	1	2129063020	Escutcheon
004C	3	2129259020	Bushing
005C	5	2127259010	Bushing
008C	1	2129063030	Escutcheon
010C	2	2128118010	Spacer

REF. DESIG.	QTY N	PART NO.	DESCRIPTION
006C	5	2127154010	Knob
007C	10	2127115010	Spring
015C	2	2129154010	Knob
016C	2	2129154020	Knob
017C	1	4276154010	Knob
018C	3	2129154040	Knob
021C	2	53118169A0	Hexagon Nut
022C	2	51340308A0	F.H. Tapped Screw B3 x 8
023C	2	51280308B0	B.H. Tapped Screw B3 x 8

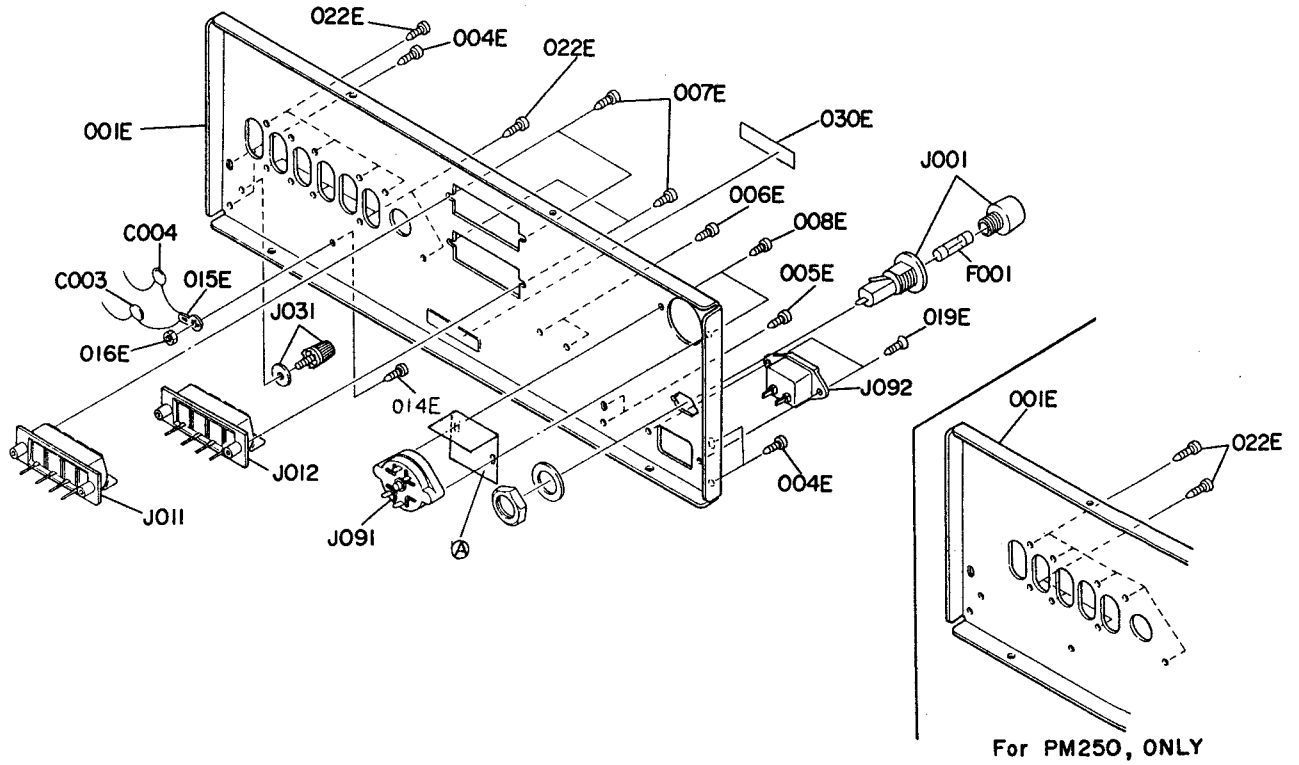
• [C0299] Top cover



REF. DESIG.	QTY	PART NO.	DESCRIPTION
	N		
001D	1	2128257010	Lid, Top Cover
002D	6	2991259010	Bushing
003D	4	51260408U0	F. Washer Screw F4 x 8
004D	2	51280308U0	B.H. Tapped Screw B3 x 8

REF. DESIG.	QTY	PART NO.	DESCRIPTION
	N		
010D	1	2128257500	Lid, Bottom Cover Assembly
013D	7	51280410U0	B.H. Tapped Screw B4 x 10
014D	2	2965118010	Spacer
015D	1	51280408U0	B.H. Tapped Screw B4 x 8

• [C03-99] Rear panel

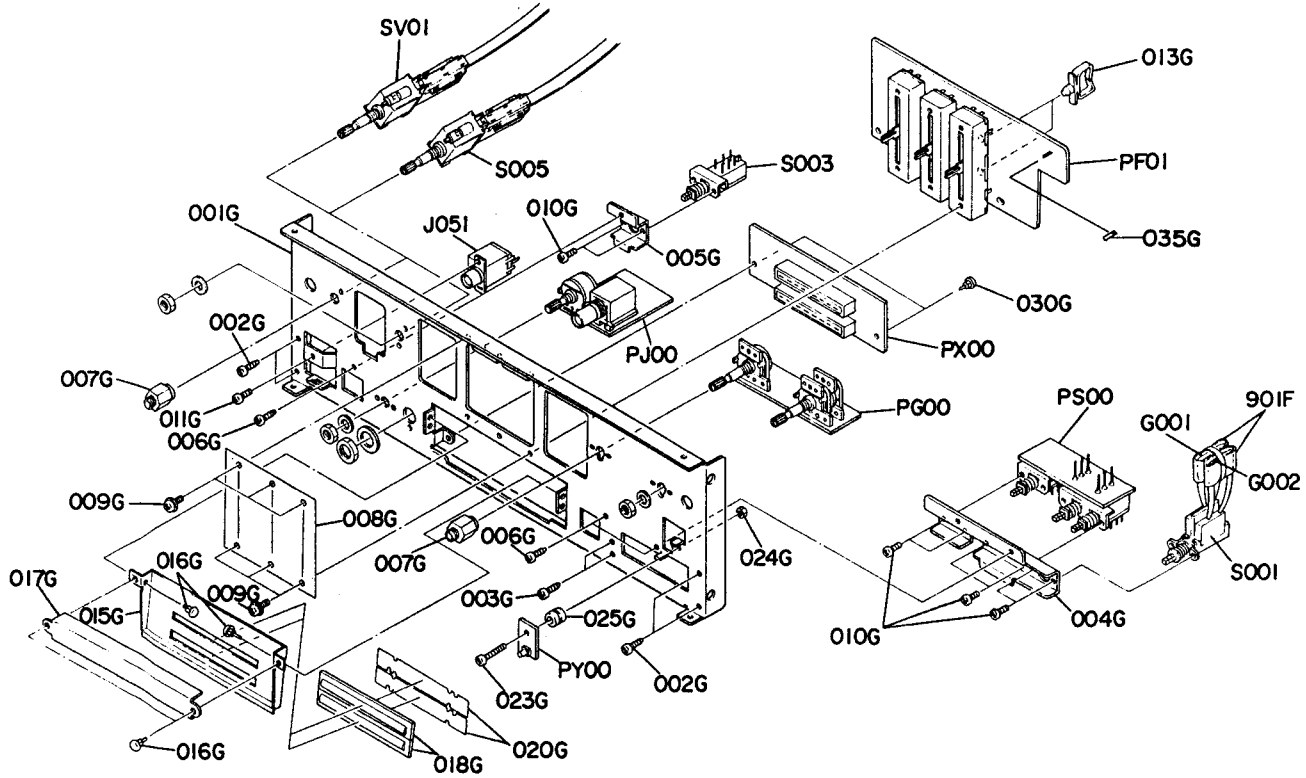


REF. DESIG.	Q'TY N	PART NO.	DESCRIPTION
001E	1	2129160210	Bracket, Rear Panel (PM400, ONLY)
001E	1	2127160210	Bracket, Rear Panel (PM250, ONLY)
004E	4	51280308U0	B.H. Tapped Screw B3 x 8
005E	2	51280308U0	B.H. Tapped Screw B3 x 8
006E	2	51280308U0	B.H. Tapped Screw B3 x 8
007E	4	51280308U0	B.H. Tapped Screw B3 x 8
008E	2	51280308U0	B.H. Tapped Screw B3 x 8
014E	1	51100306S9	B.H.M. Screw B3 x 6
015E	1	62030049W0	Lug
016E	1	53110303A9	Hexagon Nut
019E	2	51420308T0	O.C.H. Tapped Screw 3 x 8
022E	10	51280308U0	B.H. Tapped Screw (PM400, ONLY)
022E	8	51280308U0	B.H. Tapped Screw (PM250, ONLY)
030E	1	2112265010	Indicator
(A)	1	2129120010	Insulator

REF. DESIG.	Q'TY N	PART NO.	DESCRIPTION
C003	1	DK18103310	Ceramic Cap. 0.01 $\mu$ F +80% - 20%
C004	1	DK18103310	Ceramic Cap. 0.01 $\mu$ F +80% -20%
$\Delta$ F001	1	FS10080800	Fuse 800mAT (PM400, ONLY)
$\Delta$ F001	1	FS10063800	Fuse 630mAT (PM250, ONLY)
$\Delta$ J001	1	YJ08000290	Jack, Fuse Holder
J011	1	YT03040170	Terminal, Speaker
J012	1	YT03040170	Terminal, Speaker
J031	1	YL03010240	Terminal, Ground
$\Delta$ J091	1	BY05060010	Voltage Selector (110/220)
$\Delta$ J092	1	YP04000590	Plug, A.C. Inlet



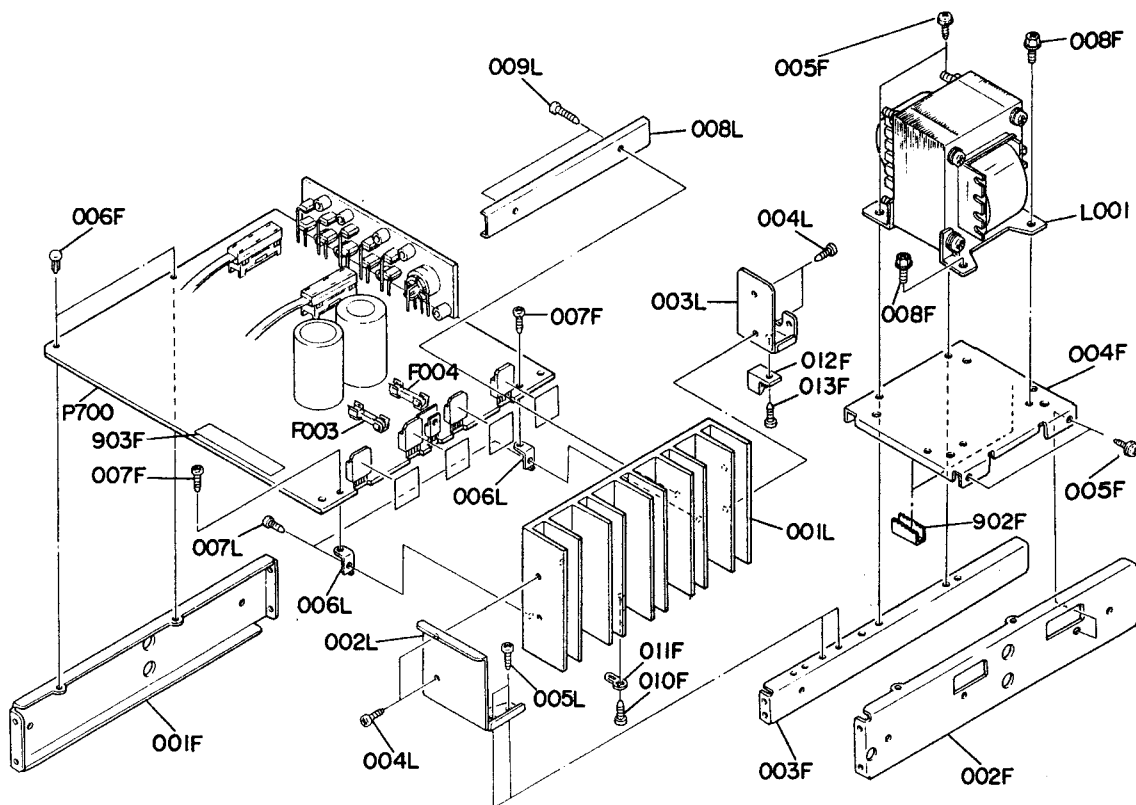
• [P01-99] Chassis and General parts



REF. DESIG.	QTY N	PART NO.	DESCRIPTION
001G	1	2129160010	Bracket, Front Chassis
002G	4	51280308B0	B.H. Tapped Screw B3 x 8
003G	2	51280308B0	B.H. Tapped Screw B3 x 8
004G	1	2129160020	Bracket
005G	1	2129160030	Bracket
006G	3	51280308B0	B.H. Tapped Screw B3 x 8
007G	2	2129114010	Stopper
008G	1	2129303020	Mask
009G	6	51480306S9	F. Washer Screw F3 x 6
010G	8	51100306A9	B.H.M. Screw B3 x 6
011G	1	51100306A9	B.H.M. Screw B3 x 6
013G	2	2129005010	Clamper
015G	1	2129302010	Dial, (PM400, ONLY)
015G	1	2127302010	Dial, (PM250, ONLY)
016G	4	2912259020	Bushing
017G	1	2129303010	Mask
018G	2	2127355010	Lens
020G	2	2129303030	Mask
023G	1	51570315B0	P. Taptite Screw B3 x 15
024G	1	53110303A9	Hexagon Nut
025G	1	4367259020	Bushing
030G	2	2276005050	Clamper
035G	1	2884053020	Cover

REF. DESIG.	QTY N	PART NO.	DESCRIPTION
901F	2	2926120010	Insulator
ΔG001	1	DF17223800	Film Cap. 0.022μF ±20%
ΔG002	1	DF17223800	Film Cap. 0.022μF ±20%
J051	1	YJ01001200	Jack, Headphone
ΔS001	1	SP02010440	Push Switch, Power
S003	1	SP02010260	Push Switch, Low Filter
S005	1	SR04020180	Rotary Switch
SV01	1	SR04040170	Rotary Switch, (PM400, ONLY)
SV01	1	SR04030250	Rotary Switch, (PM250, ONLY)

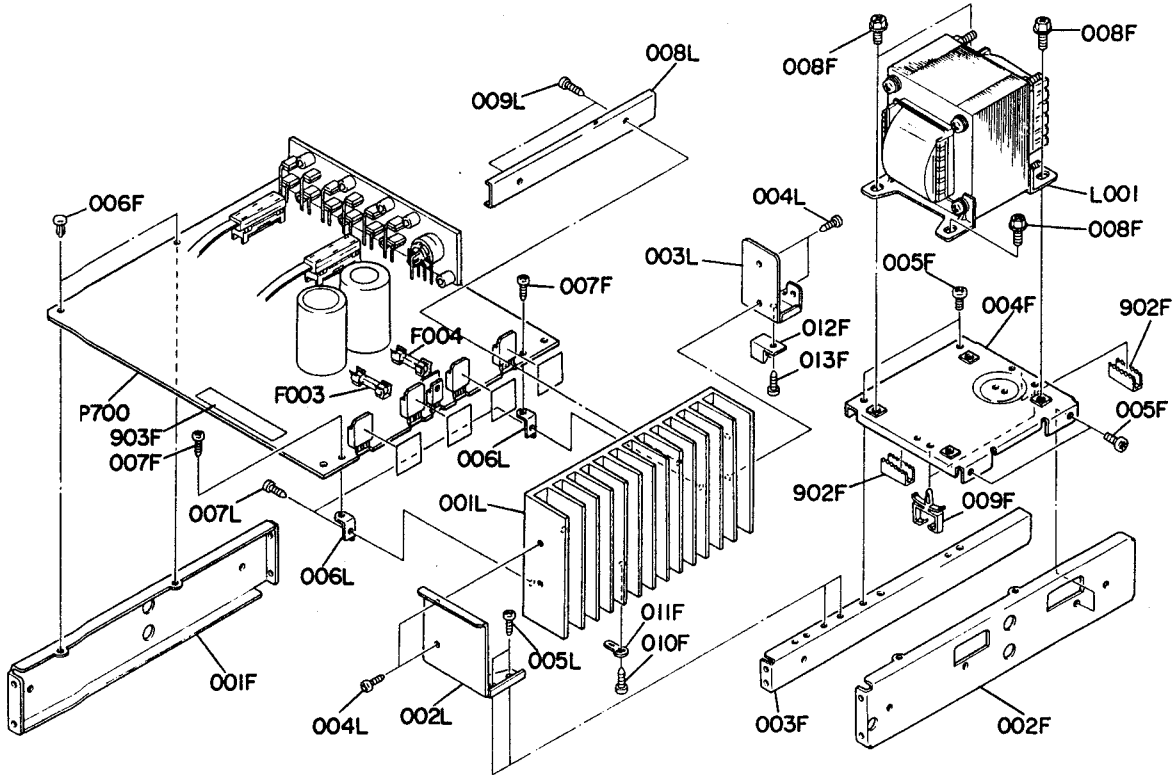
• [P02-99] Main P.W. Board and General parts (PM250 ONLY)



REF. DESIG.	Q'TY N	PART NO.	DESCRIPTION
			(PM250, ONLY)
001F	1	2258126010	Stay, (L)
002F	1	2258126022	Stay, (R)
003F	1	2258126033	Stay, Center
004F	1	2127160010	Bracket
006F	2	2276005050	Clamper
007F	2	51280308B0	F. Washer Screw F3 x 8
008F	2	52040410A0	H. Head Bolt, S.F
010F	1	51280308B0	B.H. Tapped Screw B3 x 8
011F	1	62030049W0	Lug
012F	1	2887005012	Clamper
013F	1	51280308B0	B.H. Tapped Screw B3 x 8
902F	2	2218259020	Bushing
903F	1	2205861010	Label
005F	4	51280410B0	F. Washer Screw F4 x 10

REF. DESIG.	Q'TY N	PART NO.	DESCRIPTION
001L	1	2127267010	Heatsink
002L	1	2127160020	Bracket
003L	1	2258160050	Bracket
004L	4	51280308B0	B.H. Tapped Screw B3 x 8
005L	2	51280308B0	B.H. Tapped Screw B3 x 8
006L	2	2231160040	Bracket
007L	2	51280308B0	B.H. Tapped Screw B3 x 8
008L	1	2258005013	Clamper
009L	2	51280314B0	B.H. Tapped Screw B3 x 14
△L001	1	TS17615020	Power Transformer
P700	1	YG21270010	P.W. Board, Main
	1	Z221278010	P.W. Board Assembly
△F003	1	FS10350800	Fuse 3.5AT
△F004	1	FS10350800	Fuse 3.5AT

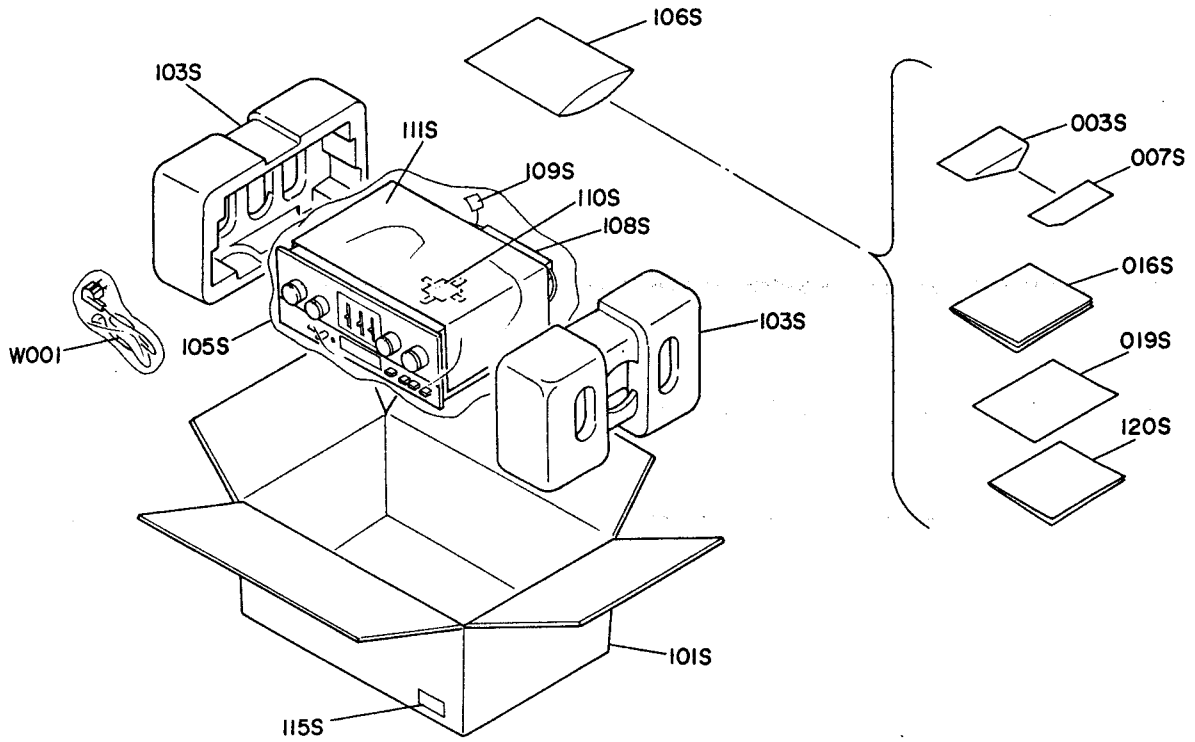
• [P02-99] Main P.W. Board and General parts (PM400 ONLY)



REF. DESIG.	Q'TY N	PART NO.	DESCRIPTION
			(MP400, ONLY)
001F	1	2258126010	Stay, (L)
002F	1	2258126022	Stay, (R)
003F	1	2258126033	Stay, Center
004F	1	2127160010	Bracket
005F	4	51280408B0	B.H. Tapped Screw B3 x 8
006F	2	2276005050	Clamper
007F	2	51280308B0	F. Washer Screw F3 x 8
008F	4	52040510A0	H. Head Bolt, S.F
009F	2	2886005030	Clamper
010F	1	51280308B0	B.H. Tapped Screw B3 x 8
011F	1	62030049W0	Lug
012F	1	2887005012	Clamper
013F	1	51280308B0	B.H. Tapped Screw B3 x 8
902F	2	2218259020	Bushing
903F	1	2205861010	Label

REF. DESIG.	Q'TY N	PART NO.	DESCRIPTION
001L	1	2274267012	Heatsink
002L	1	2127160020	Bracket
003L	1	2258160050	Bracket
004L	4	51280308B0	B.H. Tapped Screw B3 x 8
005L	2	51280308B0	B.H. Tapped Screw B3 x 8
006L	2	2231160040	Bracket
007L	2	51280308B0	B.H. Tapped Screw B3 x 8
008L	1	2258005013	Clamper
009L	2	51280314B0	B.H. Tapped Screw B3 x 14
△L001	1	TS18613010	Power Transformer
P700	1	YG21270010	P.W. Board, Main
	1	ZZ21277010	P.W. Board Assembly
△F003	1	FS10350800	Fuse 3.5AT
△F004	1	FS10350800	Fuse 3.5AT

• [H01-99] Packing Materials



REF. DESIG.	Q'TY	PART NO.	DESCRIPTION
	N		
003S	1	2818813010	Envelope
007S	1	9630000180	Guarantee Card
016S	1	2127851310	Instructions
019S	1	2129851030	Instructions (PM400, ONLY)
019S	1	2127851030	Instructions (PM250, ONLY)
101S	1	2129801010	Packing Case (PM400, ONLY)
101S	1	2127801010	Packing Case (PM250, ONLY)
103S	2	4214809013	Cushion
105S	1	9014335330	Polyethy Bag
106S	1	9013025010	Polyethy Bag

REF. DESIG.	Q'TY	PART NO.	DESCRIPTION
	N		
108S	1	2864804010	Sleeve
109S	1	9560000043	Hang Tag
110S	1	2731821010	Silicagel
111S	1	2918107160	Sheet
115S	3	9526019060	Serial NO. Card
120S	1	2129856010	Circuit Diagram (PM400, ONLY)
120S	1	2127856010	Circuit Diagram (PM250, ONLY)
ΔW001	1	ZC01805020	A.C. Power Cord

### 13. ELECTRICAL PARTS LIST

REF. DESIG.	Q'TY	PART NO.	DESCRIPTION		
	N				
P700	1	YG21270010	<b>P700-MAIN CIRCUIT BOARD</b>		
	1	ZZ21277010	P.W. Board, Main <b>(PM400, ONLY)</b>		
	1	ZZ21278010	P.W. Board Assembly <b>(PM250, ONLY)</b>		
			<b>P700-CAPACITORS</b>		
CD01	1	EA22505090	Elect	2.2 $\mu$ F	50V
CD02	1	EA22505090	Elect	2.2 $\mu$ F	50V
CD03	1	DD15470370	Ceramic	47pF $\pm$ 5%	
CD04	1	DD15470370	Ceramic	47pF $\pm$ 5%	
CD05	1	EA22505090	Elect	2.2 $\mu$ F	50V
CD06	1	EA22505090	Elect	2.2 $\mu$ F	50V
CD07	1	DD15510310	Ceramic	51pF $\pm$ 5%	
CD08	1	DD15510310	Ceramic	51pF $\pm$ 5%	
CE01	1	EA33505030	Elect	3.3 $\mu$ F	50V
CE02	1	EA33505030	Elect	3.3 $\mu$ F	50V
CE03	1	DD15221370	Ceramic	220pF $\pm$ 5%	
CE04	1	DD15221370	Ceramic	220pF $\pm$ 5%	
CE05	1	EA10701030	Elect	100 $\mu$ F	10V
CE06	1	EA10701030	Elect	100 $\mu$ F	10V
CE08	1	EA10701030	Elect	100 $\mu$ F	10V
CE09	1	EA33505030	Elect	3.3 $\mu$ F	50V
CE10	1	EA33505030	Elect	3.3 $\mu$ F	50V
CH01	1	DF16224350	Film	0.22 $\mu$ F $\pm$ 10%	
CH02	1	DF16224350	Film	0.22 $\mu$ F $\pm$ 10%	
CN01	1	DF16332350	Film	3300pF $\pm$ 10%	
CN02	1	DF16332350	Film	3300pF $\pm$ 10%	
CN03	1	DF16332350	Film	3300pF $\pm$ 10%	
CN04	1	DF16332350	Film	3300pF $\pm$ 10%	
CN21	1	EA33700690	Elect	330 $\mu$ F	6.3V
CN22	1	EA10505030	Elect	1 $\mu$ F	50V
C401	1	EA33505030	Elect	3.3 $\mu$ F	50V
C402	1	EA33505030	Elect	3.3 $\mu$ F	50V
C403	1	DD15820370	Ceramic	82pF $\pm$ 5%	
C404	1	DD15820370	Ceramic	82pF $\pm$ 5%	
C405	1	EA33700690	Elect	330 $\mu$ F	6.3V
C406	1	EA33700690	Elect	330 $\mu$ F	6.3V
C409	1	DF15223350	Film	0.022 $\mu$ F $\pm$ 5%	
C410	1	DF15223350	Film	0.022 $\mu$ F $\pm$ 5%	
C411	1	DF15562350	Film	5600pF $\pm$ 5%	
C412	1	DF15562350	Film	5600pF $\pm$ 5%	
C415	1	EA33700690	Elect	330 $\mu$ F	6.3V
C416	1	EA33700690	Elect	330 $\mu$ F	6.3V
C417	1	EA33505030	Elect	3.3 $\mu$ F	50V
C418	1	EA33505030	Elect	3.3 $\mu$ F	50V
C419	1	EA10701630	Elect	100 $\mu$ F	16V
C420	1	EA10703590	Elect	100 $\mu$ F	35V
C421	1	DD15560370	Ceramic	56pF $\pm$ 5%	
C422	1	DD15560370	Ceramic	56pF $\pm$ 5%	
C423	1	DK16392300	Ceramic	3900pF $\pm$ 10%	
C424	1	DK16392300	Ceramic	3900pF $\pm$ 10%	
C729	1	DK18103300	Seramic	0.01 $\mu$ F	
C730	1	DK18103300	Seramic	0.01 $\mu$ F	

REF. DESIG.	Q'TY	PART NO.	DESCRIPTION		
	N				
C701	1	DD15151370	Ceramic	150pF $\pm$ 5%	
C702	1	DD15151370	Ceramic	150pF $\pm$ 5%	
C703	1	EA10701030	Elect	100 $\mu$ F	10V
C704	1	EA10701030	Elect	100 $\mu$ F	10V
C705	1	DD15180370	Ceramic	18pF $\pm$ 5%	
C706	1	DD15180370	Ceramic	18pF $\pm$ 5%	
C707	1	EA47603590	Elect	47 $\mu$ F	35V
C708	1	EA47603590	Elect	47 $\mu$ F	35V
C711	1	DK16221510	Ceramic	220pF $\pm$ 10%	
C712	1	DK16221510	Ceramic	220pF $\pm$ 10%	
C717	1	DF16473540	Film	0.047 $\mu$ F $\pm$ 10%	
C718	1	DF16473540	Film	0.047 $\mu$ F $\pm$ 10%	
C720	1	EA10705090	Elect	100 $\mu$ F	50V
C721	1	EA10705090	Elect	100 $\mu$ F	50V
C722	1	EA10705090	Elect	100 $\mu$ F	50V
C801	1	EA47705090	Elect	470 $\mu$ F	50V
C802	1	EA10701630	Elect	100 $\mu$ F	16V
C804	1	EA47601630	Elect	47 $\mu$ F	16V
C805	1	EA33505030	Elect	3.3 $\mu$ F	50V
C806	1	DF17102350	Film	0.001 $\mu$ F $\pm$ 20%	
C807	1	EA47603590	Elect	47 $\mu$ F	35V
ΔC808	1	EB68805020	Elect	6800 $\mu$ F	50V
ΔC809	1	EB68805020	Elect	6800 $\mu$ F	50V
ΔC810	1	DK18103510	Ceramic	0.01 $\mu$ F	
ΔC811	1	DK18103510	Ceramic	0.01 $\mu$ F	
C812	1	EA10701630	Elect	100 $\mu$ F	16V
C813	1	EA47605090	Elect	47 $\mu$ F	50V
C803	1	EA22601630	(PM250, ONLY) Elect	22 $\mu$ F	16V
			<b>P700-RESISTORS</b> (All Resistors are $\pm$ 5% and $\frac{1}{4}$ W)		
RD01	1	GD05393140		39K $\Omega$	
RD02	1	GD05393140		39K $\Omega$	
RD03	1	GD05471140		470 $\Omega$	
RD04	1	GD05471140		470 $\Omega$	
RD05	1	GD05104140		100K $\Omega$	
RD06	1	GD05104140		100K $\Omega$	
RD07	1	GD05364140		360K $\Omega$	
RD08	1	GD05364140		360K $\Omega$	
RD09	1	GD05562140		5.6K $\Omega$	
RD10	1	GD05562140		5.6K $\Omega$	
RD11	1	GD05224140		220K $\Omega$	
RD12	1	GD05224140		220K $\Omega$	
RD13	1	GD05221140		220 $\Omega$	
RD14	1	GD05221140		220 $\Omega$	
RE01	1	GD05471140		470 $\Omega$	
RE02	1	GD05471140		470 $\Omega$	
RE03	1	GD05104140		100K $\Omega$	
RE04	1	GD05104140		100K $\Omega$	
RE05	1	GD05471140		470 $\Omega$	
RE06	1	GD05471140		470 $\Omega$	

REF. DESIG.	Q'TY	PART NO.	DESCRIPTION	
	N			
RE07	1	GD05562140	5.6K $\Omega$	(PM400, ONLY)
RE08	1	GD05562140	5.6K $\Omega$	(PM400, ONLY)
RE09	1	GD05103140	10K $\Omega$	
RE10	1	GD05103140	10K $\Omega$	
RE11	1	GD05221140	220 $\Omega$	
RE12	1	GD05221140	220 $\Omega$	
RE13	1	GD05272140	2.7K $\Omega$	
RE14	1	GD05272140	2.7K $\Omega$	
RE15	1	GD05104140	100K $\Omega$	
RE16	1	GD05104140	100K $\Omega$	
RH05	1	GD05302140	3K $\Omega$	
RH06	1	GD05302140	3K $\Omega$	
RH07	1	GD05333140	33K $\Omega$	
RH08	1	GD05333140	33K $\Omega$	
			(PM400, ONLY)	
RN01	1	GD05682140	6.8K $\Omega$	
RN02	1	GD05682140	6.8K $\Omega$	
RN03	1	GD05682140	6.8K $\Omega$	
RN04	1	GD05682140	6.8K $\Omega$	
RN05	1	GD05473140	47K $\Omega$	
RN06	1	GD05473140	47K $\Omega$	
			(PM250, ONLY)	
RN01	1	GD05822140	8.2K $\Omega$	
RN02	1	GD05822140	8.2K $\Omega$	
RN03	1	GD05822140	8.2K $\Omega$	
RN04	1	GD05822140	8.2K $\Omega$	
RN05	1	GD05333140	33K $\Omega$	
RN06	1	GD05333140	33K $\Omega$	
RN07	1	GG05471140	470 $\Omega$	
RN08	1	GG05471140	470 $\Omega$	
RN09	1	GG05471140	470 $\Omega$	
RN10	1	GG05471140	470 $\Omega$	
RN21	1	GD05153140	15K $\Omega$	(PM400, ONLY)
RN21	1	GD05103140	10K $\Omega$	(PM250, ONLY)
RN22	1	GD05682140	6.8K $\Omega$	
RN23	1	GD05394140	390K $\Omega$	
RN24	1	GD05224140	220K $\Omega$	
RN25	1	GD05224140	220K $\Omega$	
RN26	1	GD05124140	120K $\Omega$	
RV01	1	GD05104140	100K $\Omega$	
RV02	1	GD05104140	100K $\Omega$	
RV03	1	GD05154140	150K $\Omega$	
RV04	1	GD05154140	150K $\Omega$	
RX51	1	GD05123140	12K $\Omega$	
RX52	1	GD05272140	2.7K $\Omega$	
RX53	1	GA05330010	33 $\Omega$	1W
R401	1	GD05471140	470 $\Omega$	
R402	1	GD05471140	470 $\Omega$	
R403	1	GD05563140	56K $\Omega$	
R404	1	GD05563140	56K $\Omega$	
R405	1	GD05184140	180K $\Omega$	
R406	1	GD05184140	180K $\Omega$	
R407	1	GD05153140	15K $\Omega$	
R408	1	GD05153140	15K $\Omega$	
R409	1	GD05271140	270 $\Omega$	
R410	1	GD05271140	270 $\Omega$	
R413	1	GD05154140	150K $\Omega$	
R414	1	GD05154140	150K $\Omega$	
R415	1	GD05123140	12K $\Omega$	
R416	1	GD05123140	12K $\Omega$	
R421	1	GD05392140	3.9K $\Omega$	
R422	1	GD05392140	3.9K $\Omega$	
R423	1	GD05331140	330 $\Omega$	

REF. DESIG.	Q'TY	PART NO.	DESCRIPTION	
	N			
R424	1	GD05331140	330 $\Omega$	
R425	1	GD05224140	220K $\Omega$	
R426	1	GD05224140	220K $\Omega$	
R427	1	GD05221140	220 $\Omega$	
R428	1	GD05221140	220 $\Omega$	
R429	1	GD05274140	270K $\Omega$	
R430	1	GD05274140	270K $\Omega$	
R431	1	GG05201140	220 $\Omega$	
R432	1	75061001P0	Jumper	
R701	1	GD05471140	470 $\Omega$	
R702	1	GD05471140	470 $\Omega$	
R703	1	GD05393140	39K $\Omega$	
R704	1	GD05393140	39K $\Omega$	
R705	1	GD05102140	1K $\Omega$	
R706	1	GD05102140	1K $\Omega$	
R707	1	GD05103140	10K $\Omega$	
R708	1	GD05103140	10K $\Omega$	
R709	1	GD05333140	33K $\Omega$	
R710	1	GD05333140	33K $\Omega$	
R711	1	GG05152140	1.5K $\Omega$	
R712	1	GG05152140	1.5K $\Omega$	
R713	1	GG05332140	3.3K $\Omega$	
R714	1	GG05332140	3.3K $\Omega$	
R715	1	GG05332140	3.3K $\Omega$	
R716	1	GG05332140	3.3K $\Omega$	
R717	1	RA02020180	2K $\Omega$ (B) Trimming	
R718	1	RA02020180	2K $\Omega$ (B) Trimming	
R719	1	GG05151140	150 $\Omega$	
R720	1	GG05151140	150 $\Omega$	
R721	1	GG05221120	220 $\Omega$	
R722	1	GG05221120	220 $\Omega$	
R723	1	GB05272020	0.27 $\Omega$	2W
R724	1	GB05272020	0.27 $\Omega$	2W
R725	1	GB05272020	0.27 $\Omega$	2W
R726	1	GB05272020	0.27 $\Omega$	2W
R727	1	GA05100020	10 $\Omega$	2W
R728	1	GA05100020	10 $\Omega$	2W
R729	1	RC10022120	2.2 $\Omega$	$\pm 10\%$ $\frac{1}{2}W$
R730	1	RC10022120	2.2 $\Omega$	$\pm 10\%$ $\frac{1}{2}W$
R733	1	GD05122140	1.2K $\Omega$	
R734	1	GD05122140	1.2K $\Omega$	
R735	1	GA05331020	330 $\Omega$	2W (PM400, ONLY)
R736	1	GA05331020	330 $\Omega$	2W (PM400, ONLY)
R739	1	GG05182140	1.8K $\Omega$	
R741	1	GG05330140	330 $\Omega$	
R742	1	GG05330140	330 $\Omega$	
R743	1	GD05222140	2.2K $\Omega$	
R744	1	GD05222140	2.2K $\Omega$	
R801	1	GG05472140	4.7K $\Omega$	
R802	1	GG05472140	4.7K $\Omega$	
R803	1	GG05152120	1.5K $\Omega$	$\frac{1}{2}W$
R804	1	GD05103140	10K $\Omega$	
R805	1	GD05123140	12K $\Omega$	
R806	1	RF05221140	220 $\Omega$	Fusible
R808	1	GG05332120	3.3K $\Omega$	$\frac{1}{2}W$
R809	1	RF05220120	22 $\Omega$	$\frac{1}{2}W$ Fusible
R745	1	GD05273140	27K $\Omega$	
R746	1	GD05273140	27K $\Omega$	

REF. DESIG.	Q'TY N	PART NO.	DESCRIPTION	
<b>P700-SEMICONDUCTORS</b>				
QD01	1	HT111272B0	Transistor	2SA1127(S or T)
QD02	1	HT111272B0	Transistor	2SA1127(S or T)
QE01	1	HT111272B0	Transistor	2SA1127(S or T)
QE02	1	HT111272B0	Transistor	2SA1127(S or T)
QE03	1	HT326342B0	Transistor	2SC2634(S or T)
QE04	1	HT326342B0	Transistor	2SC2634(S or T)
QN01*	1	HT326342B0	Transistor	2SC2634(S or T)
QN02*	1	HT326342B0	Transistor	2SC2634(S or T)
QN03*	1	HT111272B0	Transistor	2SA1127(S or T)
QN04*	1	HT111272B0	Transistor	2SA1127(S or T)
QN05	1	HD20011050	Diode	1S1555
QN06	1	HD20011050	Diode	1S1555
QN07	1	HD20011050	Diode	1S1555
QN08	1	HD20011050	Diode	1S1555
QN09	1	HD20011050	Diode	1S1555
QN10	1	HD20011050	Diode	1S1555
QN11	1	HD20011050	Diode	1S1555
QN12	1	HD20011050	Diode	1S1555
QN13	1	HD20005010	Diode	W06B
QN14	1	HD20005010	Diode	W06B
QN15	1	HD20005010	Diode	W06B
QN16	1	HD20005010	Diode	W06B
QN21*	1	HT326342B0	Transistor	2SC2634(S or T)
QN22*	1	HT326342B0	Transistor	2SC2634(S or T)
QN23*	1	HT111272B0	Transistor	2SA1127(S or T)
QN24*	1	HT111272B0	Transistor	2SA1127(S or T)
QN25	1	HD30023090	Zener	WZ071
QN26	1	HD30023090	Zener	WZ071
QN27	1	HT111272B0	Transistor	2SA1127(S or T)
QN28*	1	HT326342B0	Transistor	2SC2634(S or T)
QN29	1	HD20001210	Diode	1S2473 (PM400, ONLY)
QN29	1	75060501P0	Jumper	(PM250, ONLY)
QN30*	1	HT111272B0	Transistor	2SA1127(S or T)
QN31	1	HD20005010	Diode	W06B
QX15	1	HT403302A0	Transistor	2SD330
Q401	1	HT111272B0	Transistor	2SA1127(S or T)
Q402	1	HT111272B0	Transistor	2SA1127(S or T)
Q403	1	HT326342B0	Transistor	2SC2634(S or T)
Q404	1	HT326342B0	Transistor	2SC2634(S or T)
Q701	1	HT111272B0	Transistor	2SA1127(S or T)
Q702	1	HT111272B0	Transistor	2SA1127(S or T)
Q703	1	HT111272B0	Transistor	2SA1127(S or T)
Q704	1	HT111272B0	Transistor	2SA1127(S or T)
Q709	1	HT326342B0	Transistor	2SC2634(S or T)
Q710	1	HT326342B0	Transistor	2SC2634(S or T)
Q719	1	HD20003210	Diode	1S2471
Q720	1	HD20003210	Diode	1S2471
Q721	1	HD30030090	Zener	WZ-177
Q722	1	HD20005010	Diode	W06B
<b>Note: * are exchangeable.</b>				
QN01	1	HT314001E0	Transistor	2SC1400
QN02	1	HT314001E0	Transistor	2SC1400
QN21	1	HT314001E0	Transistor	2SC1400
QN22	1	HT314001E0	Transistor	2SC1400
QN28	1	HT314001E0	Transistor	2SC1400
QN03	1	HT107501E0	Transistor	2SA750
QN04	1	HT107501E0	Transistor	2SA750
QN23	1	HT107501E0	Transistor	2SA750
QN24	1	HT107501E0	Transistor	2SA750
QN30	1	HT107501E0	Transistor	2SA750

REF. DESIG.	Q'TY N	PART NO.	DESCRIPTION	
<b>(PM400, ONLY)</b>				
Q705	1	HT322402A0	Transistor	2SC2240(GR or BL)
Q706	1	HT322402A0	Transistor	2SC2240(GR or BL)
Q707	1	HT406662E0	Transistor	2SD666A(B or C)
Q708	1	HT406662E0	Transistor	2SD666A(B or C)
Q711	1	HT406672A0	Transistor	2SD667A(B or C)
Q712	1	HT406672A0	Transistor	2SD667A(B or C)
Q713	1	HT206472A0	Transistor	2SB647A(B or C)
Q714	1	HT206472A0	Transistor	2SB647A(B or C)
ΔQ715	1	HT325782B0	Transistor	2SC2578(O or Y)
ΔQ716	1	HT325782B0	Transistor	2SC2578(O or Y)
ΔQ717	1	HT111032B0	Transistor	2SA1103(O or Y)
ΔQ718	1	HT111032B0	Transistor	2SA1103(O or Y)
<b>(PM250, ONLY)</b>				
Q705	1	HT314001E0	Transistor	2SC1400(E)
Q706	1	HT314001E0	Transistor	2SC1400(E)
Q707	1	HT406662C0	Transistor	2SD666(C or D)
Q708	1	HT406662C0	Transistor	2SD666(C or D)
Q711	1	HT322742B0	Transistor	2SC2274(E or F)
Q712	1	HT322742B0	Transistor	2SC2274(E or F)
Q713	1	HT109842B0	Transistor	2SA984(E or F)
Q714	1	HT109842B0	Transistor	2SA984(E or F)
ΔQ715	1	HT325772B0	Transistor	2SC2577(O or Y)
ΔQ716	1	HT325772B0	Transistor	2SC2577(O or Y)
ΔQ717	1	HT111022B0	Transistor	2SA1102(O or Y)
ΔQ718	1	HT111022B0	Transistor	2SA1102(O or Y)
Q801	1	HT406672E0	Transistor	2SD667(B or C)
Q802	1	HT326342B0	Transistor	2SC2634(S or T)
Q805	1	HD30024090	Zener	WZ-120
Q810	1	HD20005010	Diode	W06B
Q812	1	HT206472E0	Transistor	2SB647(B or C)
Q813	1	HT326342B0	Transistor	2SC2634(S or T)
<b>(PM400, ONLY)</b>				
Q803	1	HD30009010	Zener	Low Noise
Q806	1	HD20011290	Diode	
Q807	1	HD20011290	Diode	
Q808	1	HD20011290	Diode	
Q809	1	HD20011290	Diode	
<b>(PM250, ONLY)</b>				
Q803	1	HD30024090	Zener	WZ-120
ΔQ806	1	HD20009290	Diode	S2V-20
ΔQ807	1	HD20009290	Diode	S2V-20
ΔQ808	1	HD20009290	Diode	S2V-20
ΔQ809	1	HD20009290	Diode	S2V-20
<b>P700-MISCELLANEOUS</b>				
JV01	1	YT02040280	Terminal	(PM400, ONLY)
JV02	1	YT02040280	Terminal	(PM400, ONLY)
JV03	1	YT02060140	Terminal	(PM250, ONLY)
JV04	1	YT02050010	Terminal	
J805	1	YJ08000270	Jack,	Fuse Holder
J806	1	YJ08000270	Jack,	Fuse Holder
J807	1	YJ08000270	Jack,	Fuse Holder
J808	1	YJ08000270	Jack,	Fuse Holder
L701	1	LL23915120	Choke Coil	
L702	1	LL23915120	Choke Coil	
S005	1	SR04020180	Rotary Switch	
SV01	1	SR04040170	Rotary Switch	(PM400, ONLY)
SV01	1	SR04030250	Rotary Switch	(PM250, ONLY)

REF. DESIG.	Q'TY N	PART NO.	DESCRIPTION
			<b>PF01-TONE AMP. CIRCUIT BOARD</b>
PF01	1	YK21271610	P.W. Board, Tone Amp.
	1	ZZ21278610	P.W. Board Assembly
			<b>PF01-CAPACITORS</b>
CF01	1	DD15101300	Ceramic 100pF ±5%
CF02	1	DD15101300	Ceramic 100pF ±5%
CF03	1	DF16222350	Film 2200pF ±10%
CF04	1	DF16222350	Film 2200pF ±10%
CF05	1	DF16472350	Film 4700pF ±10%
CF06	1	DF16472350	Film 4700pF ±10%
CF07	1	DF16223350	Film 0.022μF ±10%
CF08	1	DF16223350	Film 0.022μF ±10%
CF09	1	DF16223350	Film 0.022μF ±10%
CF10	1	DF16223350	Film 0.022μF ±10%
CF11	1	DF16822350	Film 8200pF ±10%
CF12	1	DF16822350	Film 8200pF ±10%
CF13	1	EA33505030	Elect 3.3μF 50V
CF14	1	EA33505030	Elect 3.3μF 50V
CF15	1	EA33505030	Elect 3.3μF 50V
CF16	1	EA33505030	Elect 3.3μF 50V
CX01	1	EA10602590	Elect 10μF 25V
CX02	1	EA10602590	Elect 10μF 25V
CX03	1	EA10602590	Elect 10μF 25V
CX04	1	EA10602590	Elect 10μF 25V
CX05	1	EA10602590	Elect 10μF 25V
CX06	1	EA10602590	Elect 10μF 25V
			<b>PF01-RESISTORS</b> (All Resistors are ±5% and ¼W)
RF01	1	GD05123140	12KΩ
RF02	1	GD05123140	12KΩ
RF03	1	GD05562140	5.6KΩ
RF04	1	GD05562140	5.6KΩ
RF05	1	GD05334140	330KΩ
RF06	1	GD05334140	330KΩ
RF07	1	GD05562140	5.6KΩ
RF08	1	GD05562140	5.6KΩ
RF09	1	GD05562140	5.6KΩ
RF10	1	GD05562140	5.6KΩ
RF11	1	GD05273140	27KΩ
RF12	1	GD05273140	27KΩ
RF13	1	GD05153140	15KΩ
RF14	1	GD05153140	15KΩ
RF15	1	GD05123140	12KΩ
RF16	1	GD05123140	12KΩ
RF17	1	GD05273140	27KΩ
RF18	1	GD05273140	27KΩ
RF19	1	GD05334140	330KΩ
RF20	1	GD05334140	330KΩ
RF21	1	GD05155140	1.5MΩ
RF22	1	GD05155140	1.5MΩ
RF23	1	GD05683140	68KΩ
RF24	1	GD05683140	68KΩ
RF25	1	GD05473140	47KΩ
RF26	1	GD05473140	47KΩ
RF27	1	GD05472140	4.7KΩ
RF28	1	GD05472140	4.7KΩ
RF29	1	GD05221140	220Ω
RF30	1	GD05221140	220Ω

REF. DESIG.	Q'TY N	PART NO.	DESCRIPTION
RF31	1	GD05474140	470KΩ
RF32	1	GD05474140	470KΩ
RF33	1	RS01040130	100KΩ(B) x 2 Variable
RF34	1	RS01040130	100KΩ(B) x 2 Variable
RF35	1	RS01040130	100KΩ(B) x 2 Variable
RX25	1	GD05822140	8.2KΩ
RX26	1	GD05822140	8.2KΩ
RX27	1	GD05182140	1.8KΩ
RX28	1	GD05182140	1.8KΩ
RX29	1	GD05121140	120Ω
RX30	1	GD05121140	120Ω
RX31	1	GD05272140	2.7KΩ
RX32	1	GD05272140	2.7KΩ
RX33	1	RA02030140	20KΩ(B) Trimming
RX34	1	RA02030140	20KΩ(B) Trimming
RX35	1	GD05394140	390KΩ
RX36	1	GD05394140	390KΩ
RX37	1	GD05682140	6.8KΩ
RX38	1	GD05682140	6.8KΩ
RX39	1	GD05822140	8.2KΩ
RX40	1	GD05822140	8.2KΩ
RX41	1	GD05103140	10KΩ
RX42	1	GD05103140	10KΩ
RX43	1	GD05562140	5.6KΩ
RX44	1	GD05562140	5.6KΩ
RX45	1	GD05181140	180Ω
RX46	1	GD05181140	180Ω
RX47	1	GD05103140	10KΩ
RX48	1	GD05103140	10KΩ
RX49	1	GD05103140	10KΩ
RX50	1	GD05103140	10KΩ
			<b>PX00-SEMICONDUCTORS</b>
QF01	1	HT326342B0	Transistor 2SC2634(S or T)
QF02	1	HT326342B0	Transistor 2SC2634(S or T)
QF03	1	HT111272B0	Transistor 2SA1127(S or T)
QF04	1	HT111272B0	Transistor 2SA1127(S or T)
QX05	1	HD20011050	Diode 1S1555
QX06	1	HD20011050	Diode 1S1555
QX07	1	HD20011050	Diode 1S1555
QX08	1	HD20011050	Diode 1S1555
QX09	1	HT107501E0	Transistor 2SA750(E)
QX10	1	HT107501E0	Transistor 2SA750(E)
QX11	1	HT314001E0	Transistor 2SC1400(E)
QX12	1	HT314001E0	Transistor 2SC1400(E)
QX13	1	HH00009030	Thermistor SDT-1000
QX14	1	HH00009030	Thermistor SDT-1000
			<b>PG00-VOLUME CONTROL CIRCUIT BOARD</b>
PG00	1	YK21271620	P.W. Board, Volume Control
	1	ZZ21278620	P.W. Board Assembly
			<b>PG00-CAPACITORS</b>
CG01	1	DK16681300	Ceramic 680pF ±10%
CG02	1	DK16681300	Ceramic 680pF ±10%
CG03	1	DF16473350	Film 0.047μF ±10%
CG04	1	DF16473350	Film 0.047μF ±10%



REF. DESIG.	Q'TY		PART NO.	DESCRIPTION
		N		
				<b>PG00-RESISTORS</b> (All Resistors are ±5% and ¼W)
RG01	1		GD05392140	3.9KΩ
RG02	1		GD05392140	3.9KΩ
RG03	1		GD05333140	33KΩ
RG04	1		GD05333140	33KΩ
RG05	1		GD05822140	8.2KΩ
RG06	1		GD05822140	8.2KΩ
RG07	1		RM01040270	100KΩ Variable
RG08	1		RK02040080	200KΩ Variable
				<b>PJ00-MIC AMP. CIRCUIT BOARD</b>
PJ00	1		YK21271640	P.W. Board, Mic Amp.
	1		ZZ21278640	P.W. Board Assembly
				<b>PJ00-CAPACITORS</b>
CJ01	1		DD15331370	Ceramic 330pF ±5%
CJ02	1		DD15331370	Ceramic 330pF ±5%
CJ03	1		EA10505030	Elect 1μF 50V
CJ04	1		DD15560370	Ceramic 56pF ±5%
CJ05	1		EA10601630	Elect 10μF 16V
CJ06	1		EA10505030	Elect 1μF 50V
CJ07	1		EA33505030	Elect 3.3μF 50V
CJ08	1		DD15151370	Ceramic 150pF ±5%
CJ09	1		EA22601630	Elect 22μF 16V
CJ10	1		DK18103300	Ceramic 0.01μF +100%-0
CJ11	1		DD11100370	Ceramic 10pF ±0.5pF
CJ12	1		EA10701630	Elect 100μF 16V
				<b>PJ00-RESISTORS</b> (All Resistors are ±5% and ¼W)
RJ01	1		GD05103140	10KΩ
RJ02	1		GD05471140	470Ω
RJ03	1		GD05474140	470KΩ
RJ04	1		GD05103140	10KΩ
RJ05	1		GD05682140	6.8KΩ
RJ06	1		GD05561140	560Ω
RJ07	1		GD05224140	220KΩ
RJ08	1		GD05473140	47KΩ
RJ09	1		GD05681140	680KΩ
RJ10	1		RM01040280	100KΩ(B) x 2 Variable
RJ11	1		GD05472140	4.7KΩ
RJ12	1		GD05101140	100Ω
				<b>PJ00-SEMICONDUCTORS</b>
QJ01	1		HT326342B0	Transistor 2SC2634(S or T)
QJ02	1		HT326342B0	Transistor 2SC2634(S or T)
				<b>PJ00-JACK</b>
JJ01	1		YJ01001340	Jack, Mic
				<b>PS00-LOUDNESS CIRCUIT BOARD</b>
PS00	1		YK21271630	P.W. Board, Loudness
	1		ZZ21278630	P.W. Board Assembly
				<b>PS00-SWITCHES</b>
SS01	1		SP02020420	Push Switch, Spk. System 1, 2
SS02	1		SP02010260	Push Switch, Loudness

REF. DESIG.	Q'TY		PART NO.	DESCRIPTION
		N		
				<b>PX00-LED CIRCUIT BOARD</b>
PX00	1		YK21271650	P.W. Board, Led
	1		ZZ21278650	P.W. Board Assembly
				<b>PX00-RESISTORS</b> (All Resistors are ±5% and ¼W)
RX01	1		GD05182140	1.8KΩ
RX02	1		GD05182140	1.8KΩ
RX03	1		GD05182140	1.8KΩ
RX04	1		GD05182140	1.8KΩ
RX05	1		GD05182140	1.8KΩ
RX06	1		GD05182140	1.8KΩ
RX07	1		GD05182140	1.8KΩ
RX08	1		GD05182140	1.8KΩ
RX09	1		GD05182140	1.8KΩ
RX10	1		GD05182140	1.8KΩ
RX11	1		GD05182140	1.8KΩ
RX12	1		GD05182140	1.8KΩ
RX13	1		GD05182140	1.8KΩ
RX14	1		GD05182140	1.8KΩ
RX15	1		GD05182140	1.8KΩ
RX16	1		GD05182140	1.8KΩ
RX17	1		GD05182140	1.8KΩ
RX18	1		GD05182140	1.8KΩ
RX19	1		GD05182140	1.8KΩ
RX20	1		GD05182140	1.8KΩ
RX21	1		GD05182140	1.8KΩ
RX22	1		GD05182140	1.8KΩ
RX23	1		GD05182140	1.8KΩ
RX24	1		GD05182140	1.8KΩ
				<b>PX00-SEMICONDUCTORS</b>
QX01	1		HI11202320	L.E.D. 12DOT
QX02	1		HI11202320	L.E.D. 12DOT
QX03	1		HC10002320	IC IR-2418A
QX04	1		HC10002320	IC IR-2418A
				<b>PY00-PILOT LAMP CIRCUIT BOARD</b>
PY00	1		YK21271660	P.W. Board, Pilot Lamp
	1		ZZ21278660	P.W. Board Assembly
QY01	1		HI10009020	L.E.D. LN26RP

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

## 14. TECHNICAL SPECIFICATIONS

MODEL PM250

### AUDIO SECTION

POWER OUTPUT, DIN, 4 OHM, PER CHANNEL .....	50W
POWER OUTPUT, FTC AMERICAN STANDARDS, 4 OHM, PER CHANNEL .....	32W
TOTAL HARMONIC DISTORTION AT RATED POWER OUTPUT .....	0.1%
I.M. DISTORTION AT RATED POWER OUTPUT (250 Hz AND 8 kHz MIXED, AMPLITUDE RATIO 4:1) .....	0.1%
POWER OUTPUT, DIN, 8 OHM, PER CHANNEL .....	39W
POWER OUTPUT, FTC AMERICAN STANDARDS, 8 OHM, PER CHANNEL .....	25W
TOTAL HARMONIC DISTORTION AT RATED POWER OUTPUT .....	0.05%
I.M. DISTORTION AT RATED POWER OUTPUT (250 Hz AND 8 kHz MIXED, AMPLITUDE RATIO 4:1) .....	0.05%
POWER BANDWIDTH .....	20 Hz ~ 50 kHz
DAMPING FACTOR 8 OHM .....	100

### Frequency Response

Phono (RIAA) .....	±0.5 dB
Aux (±1 dB) .....	20 Hz ~ 50 kHz

### Input Terminals

Phono: Input Impedance .....	47 k ohms
Input Capacitance .....	250 pF
Input Sensitivity .....	2.8 mV
Overload Margin .....	35 dB
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) .....	109 dB
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### Channel Balance (0 to -40 dB/40 Hz ~ 16 kHz)

Phono .....	3.0 dB
Aux .....	3.0 dB

### Interchannel Crosstalk

Phono, 1 kHz .....	47 dB
Aux, 1 kHz .....	62 dB
Tape, 1 kHz .....	62 dB

### Intersource Crosstalk (Worst Point), 1 kHz

Output Voltage, 1 kHz .....	415 mV
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### Output Voltage, 1 kHz

Tape Out .....	415 mV
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### Output Impedance, 1 kHz

Tape Out .....	220 ohms
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### GENERAL

Power Requirements .....	220 V AC, 50 Hz
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(E and N versions are featuring an external voltage selector for use on 110 V.)

Power Consumption at Rated Output, both Channels Driven .....	140 ± 20W
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Idling Power .....	18W ± 5W
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### Semiconductor Complement

Transistors .....	47
Diodes .....	29
Integrated Circuits .....	2

### Dimensions

Panel Width .....	416 mm (16-3/8 inches)
Panel Height .....	146 mm ( 5-3/4 inches)
Depth .....	243 mm ( 9-9/16 inches)

### Weight

Unit Alone .....	6.5 kg (14.3 lbs)
Packed for Shipment .....	8.0 kg (17.6 lbs)

**AUDIO SECTION**

POWER OUTPUT, DIN, 4 OHM, PER CHANNEL .....	66W
POWER OUTPUT, FTC AMERICAN STANDARDS, 4 OHM, PER CHANNEL .....	45W
TOTAL HARMONIC DISTORTION AT RATED POWER OUTPUT .....	0.1%
I.M. DISTORTION AT RATED POWER OUTPUT (250 Hz AND 8 kHz MIXED, AMPLITUDE RATIO 4:1) .....	0.1%
POWER OUTPUT, DIN, 8 OHM, PER CHANNEL .....	54W
POWER OUTPUT, FTC AMERICAN STANDARDS, 8 OHM, PER CHANNEL .....	36W
TOTAL HARMONIC DISTORTION AT RATED POWER OUTPUT .....	0.05%
I.M. DISTORTION AT RATED POWER OUTPUT (250 Hz AND 8 kHz MIXED, AMPLITUDE RATIO 4:1) .....	0.05%
POWER BANDWIDTH .....	15 Hz ~ 60 kHz
DAMPING FACTOR 8 OHM .....	100

Frequency Response

Phono (RIAA) .....	±0.5 dB
Aux (±1 dB) .....	20 Hz ~ 50 kHz

Input Terminals

Phono: Input Impedance .....	47 k ohms
Input Capacitance .....	250 pF
Input Sensitivity .....	2.8 mV
Overload Margin .....	35 dB
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) .....	109 dB
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Channel Balance (0 to -40 dB/40 Hz ~ 16 kHz)

Phono .....	3.0 dB
Aux .....	3.0 dB

Interchannel Crosstalk

Phono, 1 kHz .....	47 dB
Aux, 1 kHz .....	62 dB
Tape, 1 kHz .....	62 dB

Intersource Crosstalk (Worst Point), 1 kHz

.....	55 dB
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Output Voltage, 1 kHz

Tape Out .....	415 mV
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Output Impedance, 1 kHz

Tape Out .....	220 ohms
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**GENERAL**

Power Requirements .....	220 V AC, 50 Hz
(E and N versions are featuring an external voltage selector for use on 110 V.)	

Power Consumption at Rated Output, both Channels Driven .....	160W ± 20W
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Idling Power .....	14W ± 5W
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Semiconductor Complement

Transistors .....	47
Diodes .....	29
Integrated Circuits .....	2

Dimensions

Panel Width .....	416 mm (16-3/8 inches)
Panel Height .....	146 mm ( 5-3/4 inches)
Depth .....	243 mm ( 9-9/16 inches)

Weight

Unit Alone .....	7.0 kg (15.4 lbs)
Packed for Shipment .....	8.5 kg (18.7 lbs)