MARANTZ PM250/400/410

MODEL

SERVICE MANUAL

MARANTZ DESIGN AND SERVICE

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

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

ORDERING PARTS

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

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

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

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

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

OVERSEAS PARTS ORDERING

Parts may also be ordered from the following overseas addresses:

CANADA

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

AUSTRALIA

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

JAPAN

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

EUROPE

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

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

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

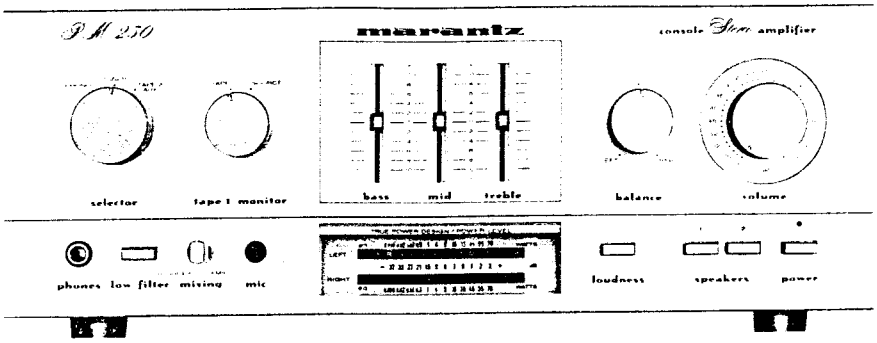
Superscope GmbH
Max-Planck-Strasse 22
D-6072 Dreieich 1
West Germany

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.

TABLE OF CONTENTS

SECTION		PAGE
1.	INTRODUCTION	1
2.	PRE-AMPLIFIER	1
3.	MAIN AMPLIFIER	1
4.	TROUBLESHOOTING ANALYSIS	1
5.	POWER AMPLIFIER ADJUSTMENT	1
6.	TEST EQUIPMENT REQUIRED FOR SERVICING	2
7.	PERFORMANCE VERIFICATION	2
8.	VOLTAGE CONVERSION	5
9.	SCHEMATIC DIAGRAM (PM250 and PM400)	6. 8
10.	DIAGRAM AND COMPONENT LOCATIONS	10
10.1	LED Power Meter Assembly (PX00) Schematic Diagram and Component Locations	10
10.2	Main Assembly (P700) Schematic Diagram and Component Locations	10
10.3	LED Lamp Assembly (PY00) Schematic Diagram and Component Locations	10
10.4	Loudness Assembly (PS00) Schematic Diagram and Component Locations	11
10.5	Microphone AMP. Assembly (PJ00) Schematic Diagram and Component Locations	12
10.6	Tone Assembly (PF00) Schematic Diagram and Component Locations	13
10.7	Volume Assembly (PG00) Schematic Diagram and Component Locations	13
11.	BLOCK DIAGRAM	14
12.	EXPLODED VIEW AND PARTS LIST	15
13.	ELECTRICAL PARTS LIST	22
14.	TECHNICAL SPECIFICATIONS	27



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 fo the SELECTOR SWITCH and then taken 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 preamplifier (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.

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:

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

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, ±0.5% 100 W)	Commercial Grade	Provides 8-ohm load for amplifier output termination
Output Load (4 ohms, ±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

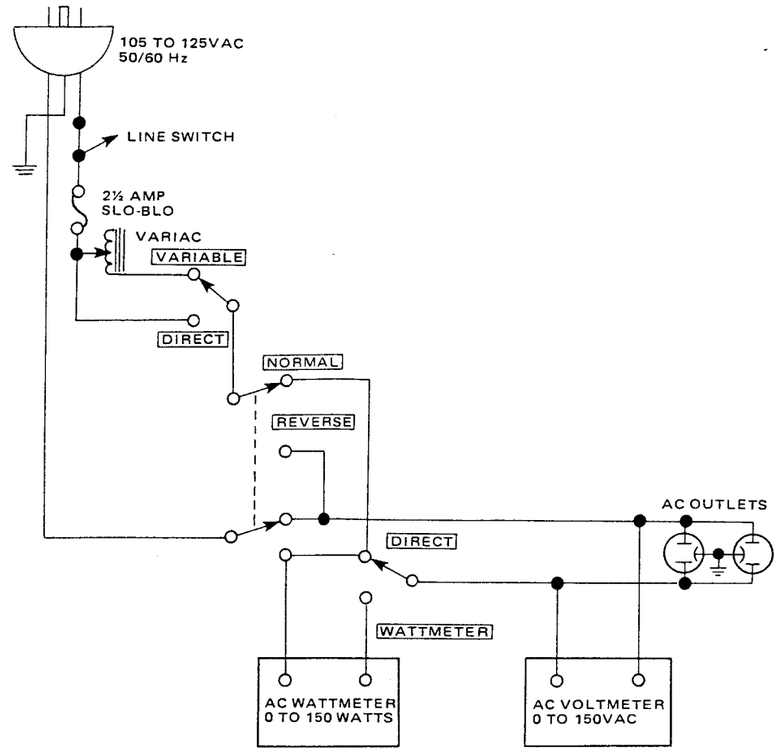


Figure 1. AC Power Control Box Simplified Schematic

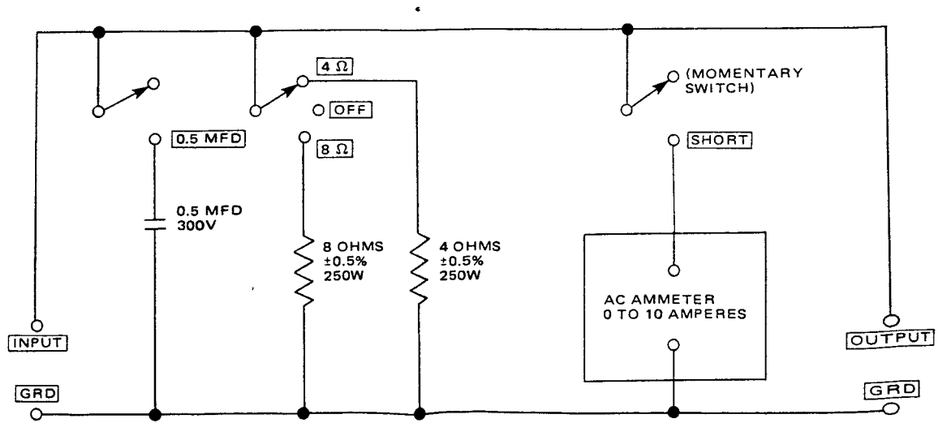


Figure 2. Amplifier Output Load Box Simplified Schematic

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 voltge 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 harmenic distortion with the analyzer and verify it is less than 0.05%.

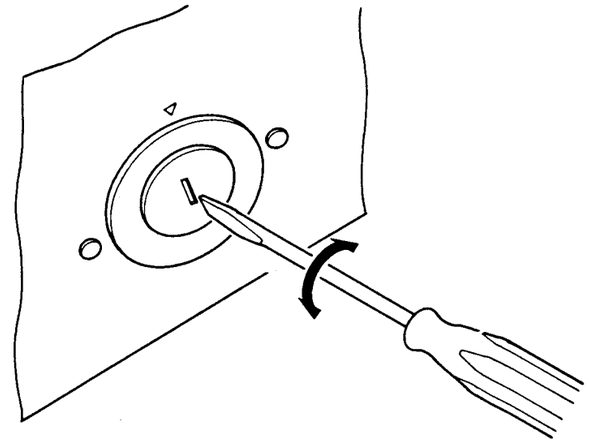
> **NOTE:**
>
> Any parasitic oscillation in the amplifier will be displayed on the oscilloscope when capacitance is switched into the load.

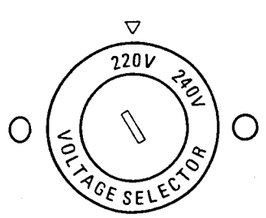
6. Switch the distortion analyzer back to SET LEVEL. (Do not readjust sensitivity of analyzer.)
7. Change the frequency of the audio oscillator and distortion analyzer to 1 kHz. Adjust audio oscillator output for a full scale reading on the 0 ~ 1% scale.
8. Measure the distortion, verifying it is no 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

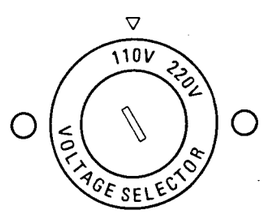
To convert the unit to a different power source voltage, change the position as illustrated in the drawing below.

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

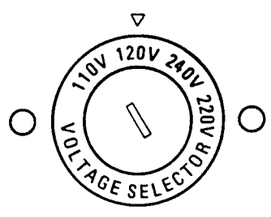




(T) (A) Versions



(N) Version

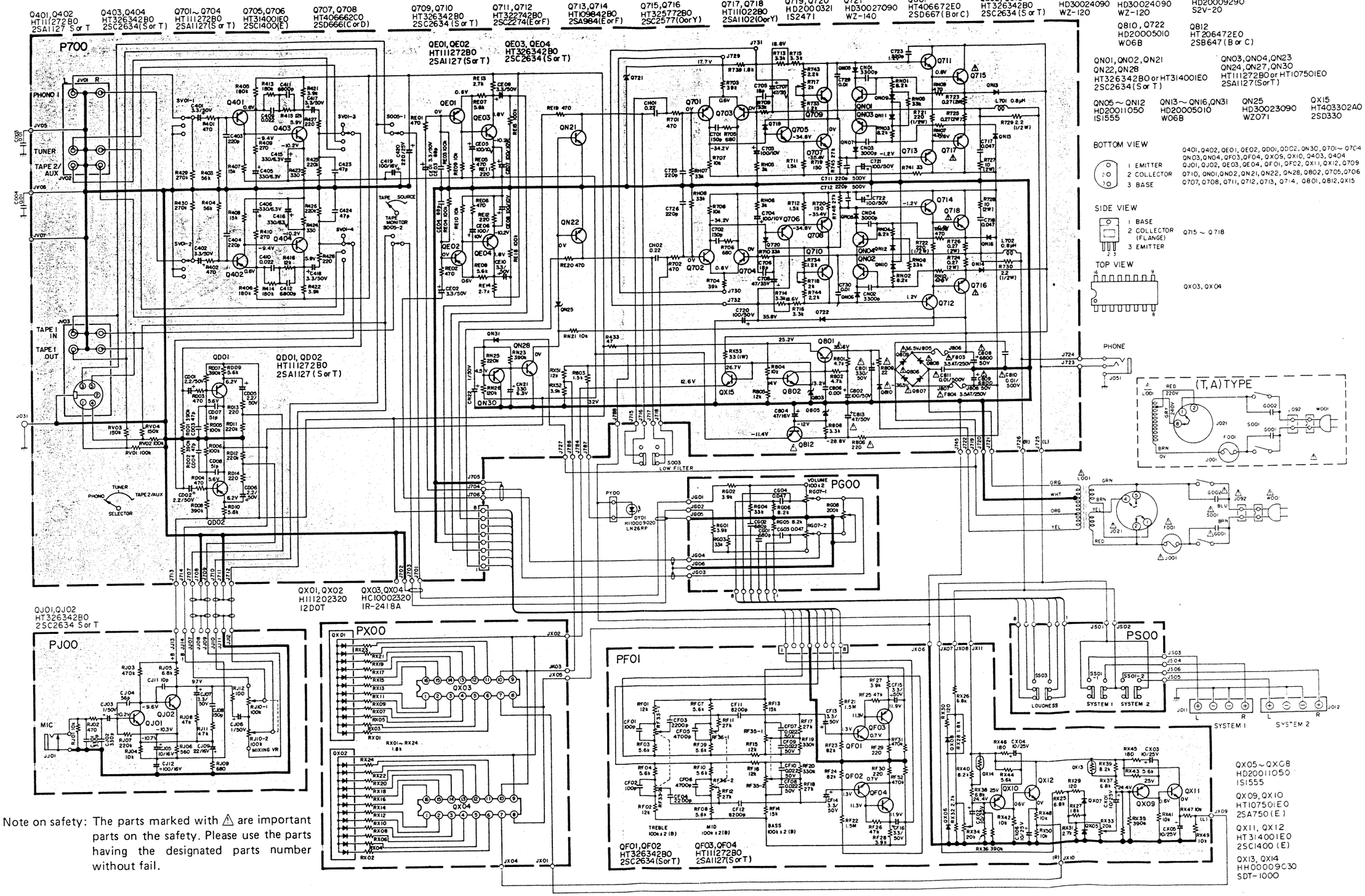


(P) Version

Note on safety: The parts marked with ⚠ 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



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

Model PM400

≈ 410

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, QN04, QN23
QN24, QN27, QN30
HT111272B0 or HT10750IE0
2SA1127(S or T)

QN13~QN16, QN31
HD20005010
W06B

QN25
HD30023090
WZ071

QN05~QN12
HD20011050
IS1555

QX15
HT403302A0
2SD330

BOTTOM VIEW

1 EMITTER
2 COLLECTOR
3 BASE

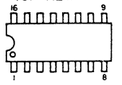
Q401, Q402, QE01, QE02, QD01, QD02, QN30, Q701~Q704
QN03, QN04, QF03, QF04, QX09, QX10, Q403, Q404
QJ01, QJ02, QE03, QE04, QF01, QF02, QX11, QX12, Q709
Q710, QN01, QN02, QN21, QN22, QN28, Q802, Q705, Q706
Q707, Q708, Q711, Q712, Q713, Q714, Q801, Q812, QX15

SIDE VIEW

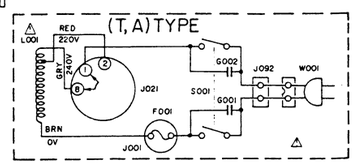
1 BASE
2 COLLECTOR (FLANGE)
3 EMITTER

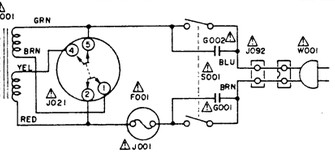
Q715 ~ Q718

TOP VIEW



QX03, QX04





QX05~QX08
HD20011050
IS1555

QX09, QX10
HT10750IE0
2SA750(E)

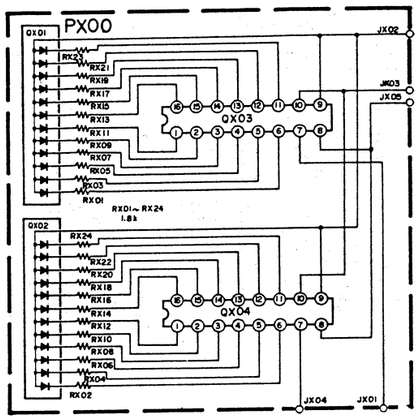
QX11, QX12
HT31400IE0
2SC1400(E)

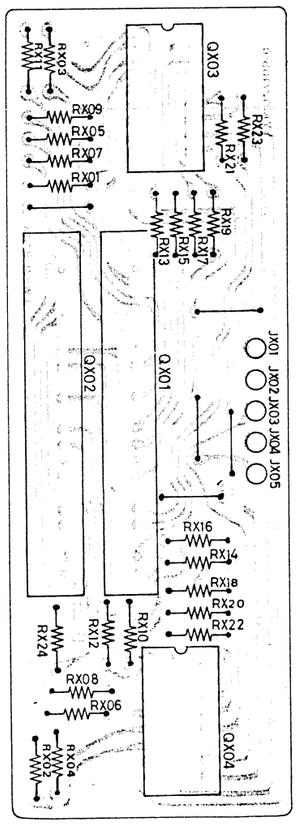
QX13, QX14
HH00009030
SDT-1000

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

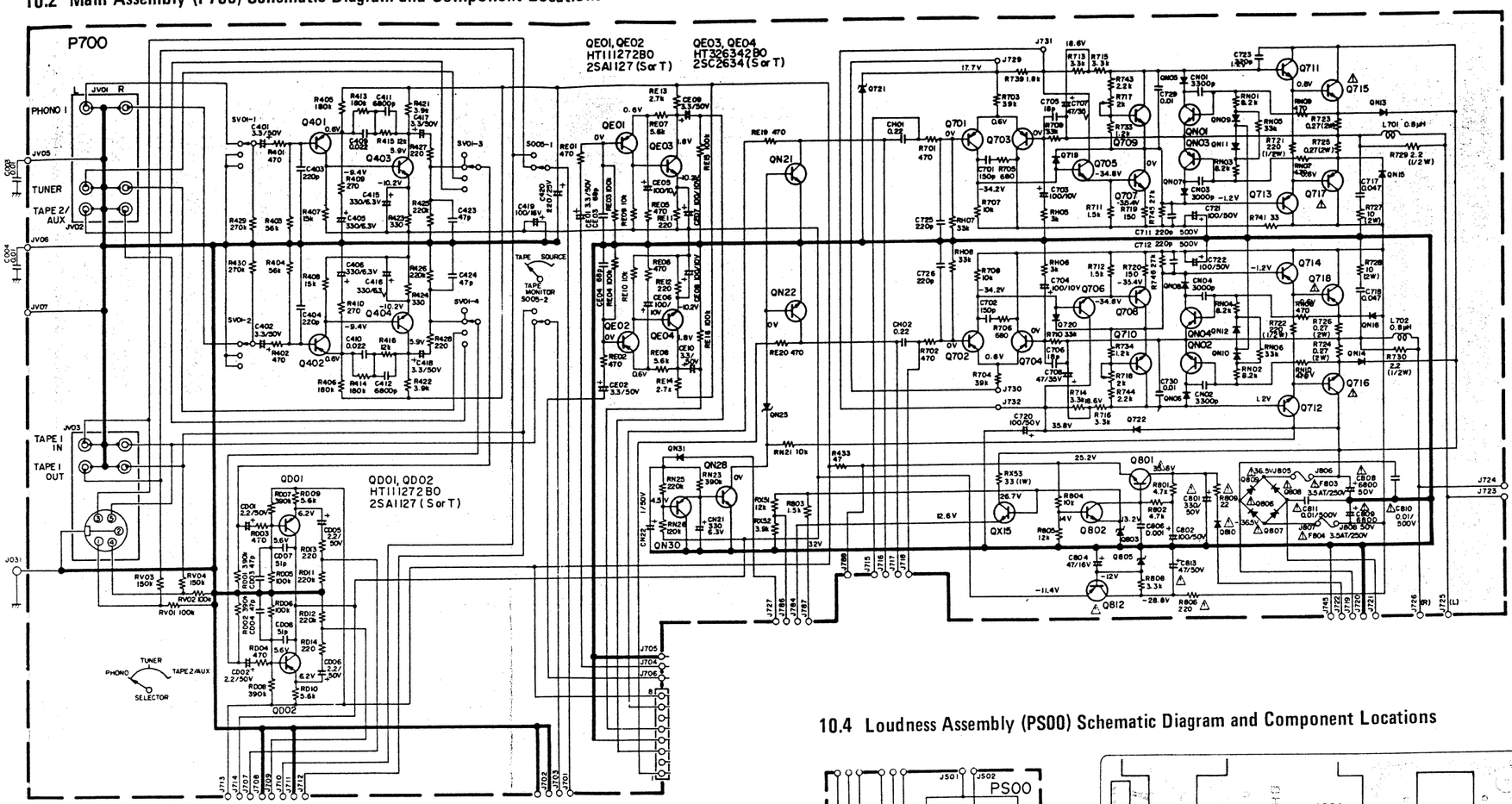
10. DIAGRAM AND COMPONENT LOCATIONS

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

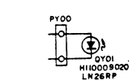


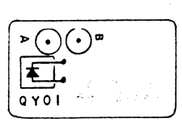


10.2 Main Assembly (P700) Schematic Diagram and Component Locations

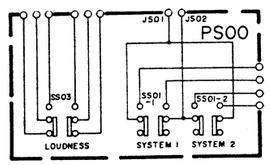


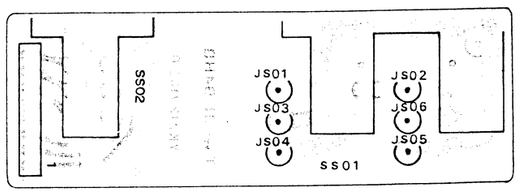
10.3 LED Lamp Assembly (PY00) Schematic Diagram and Component Locations



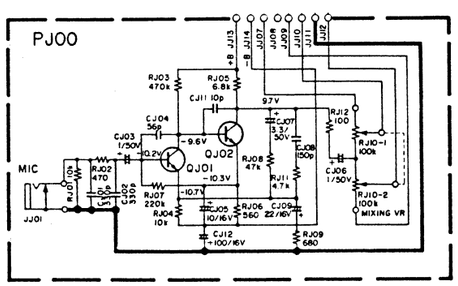


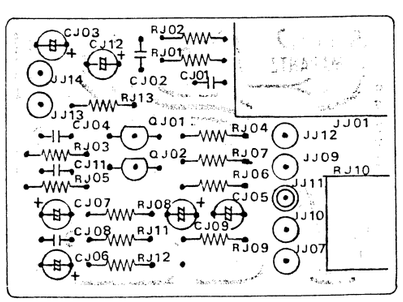
10.4 Loudness Assembly (PS00) Schematic Diagram and Component Locations

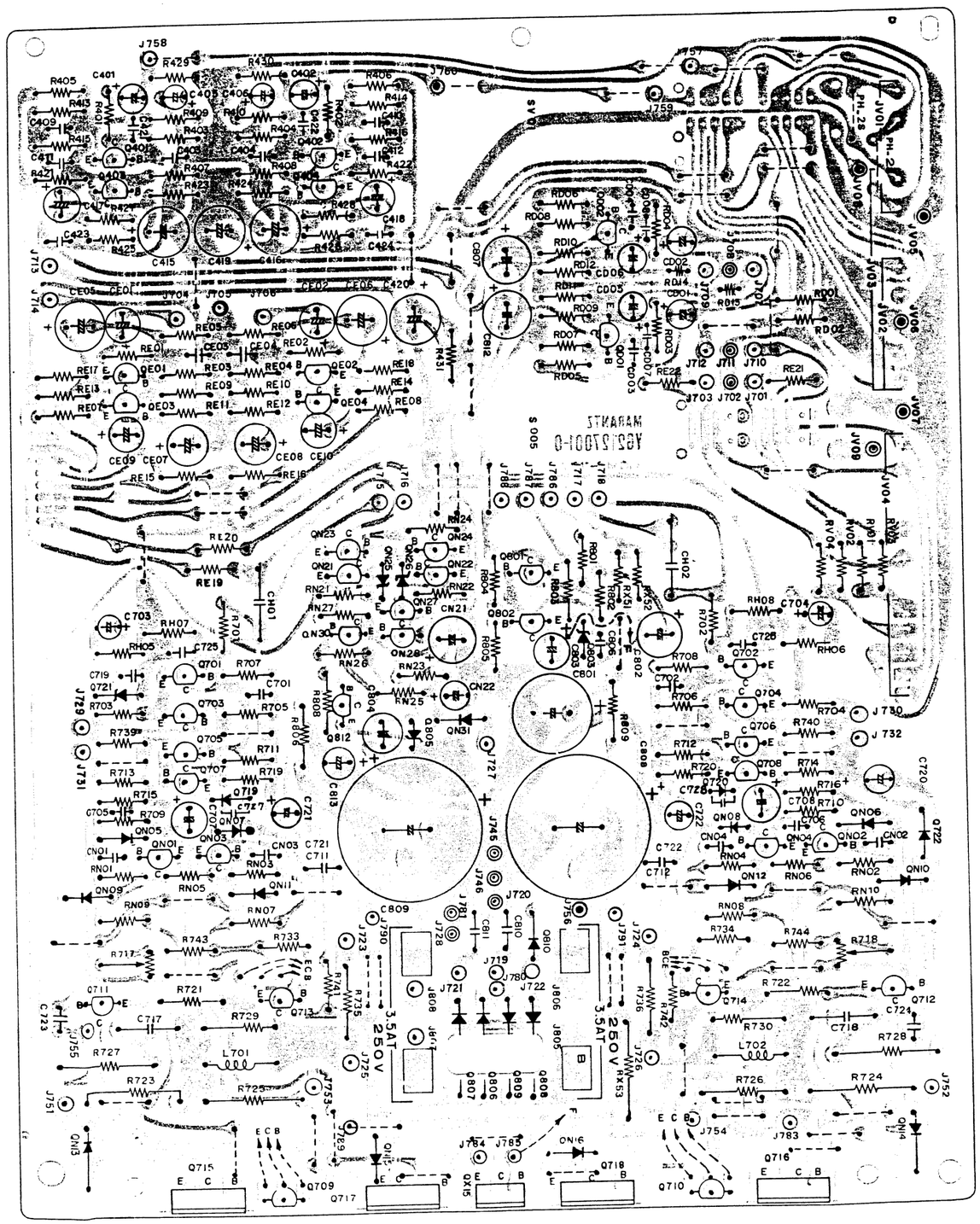




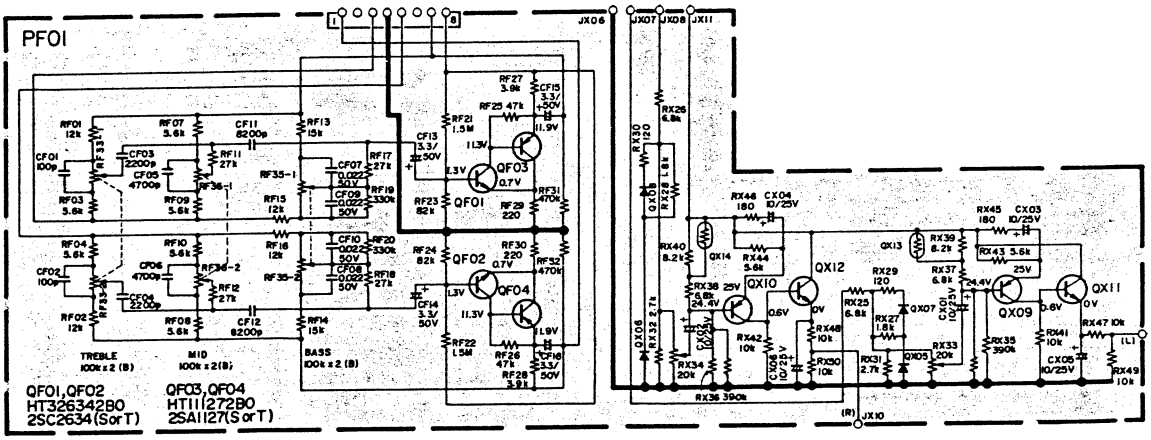
10.5 Microphone Amp. Assembly (PJ00) Schematic Diagram and Component Locations

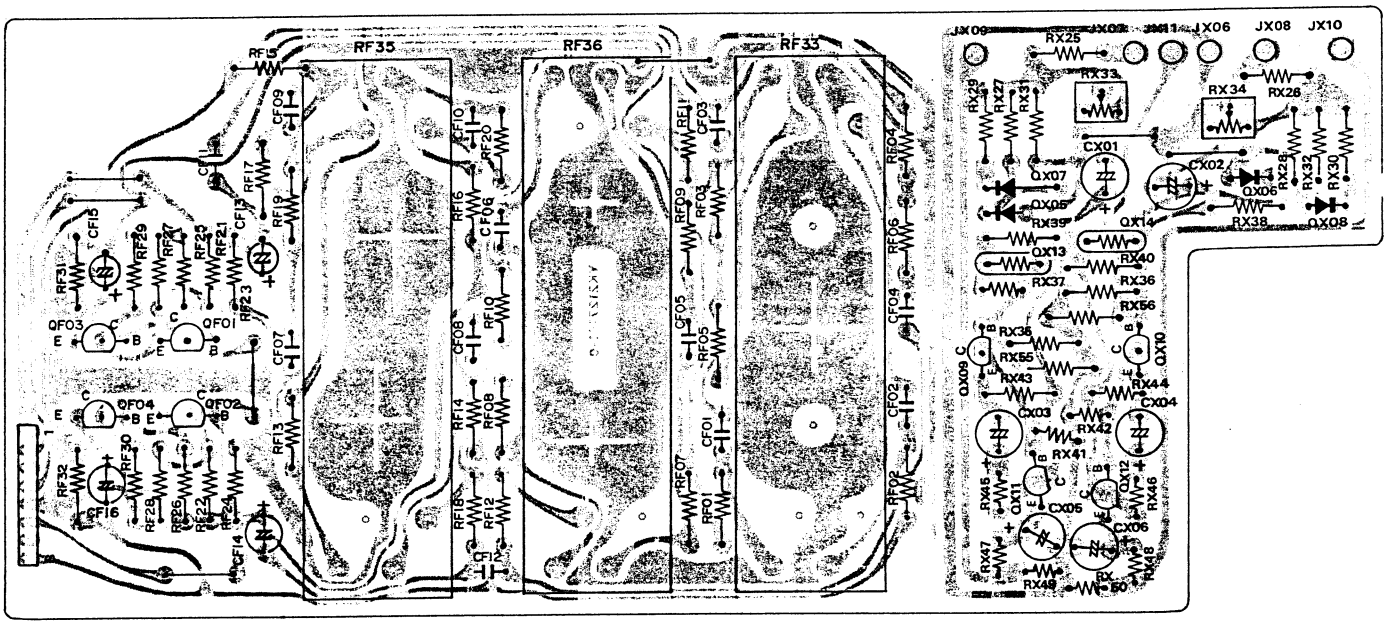




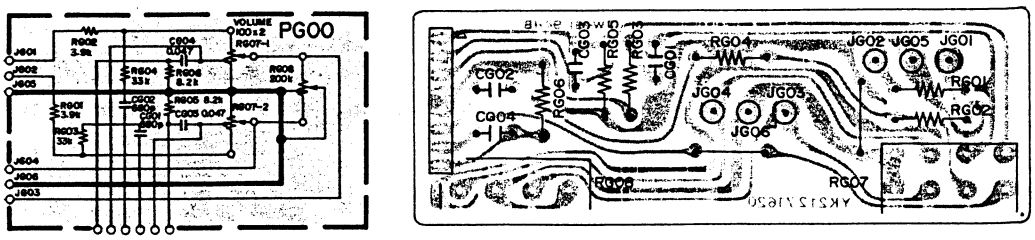

J758
R429
R430
C401
C402
R405
R406
J760
J757
J759
C403
C405
C406
R409
R410
R414
R416
R403
R404
C412
C404
R408
R422
R407
R423
R424
R426
C418
C423
R425
C415
C419
C416
C420
J713
J714
J704
J705
J706
CE05
CE01
CE02
CE06
RE05
RE06
RE01
CE03
CE04
RE02
R431
QE01
QE02
RE17
RE18
RE03
RE04
RE09
RE10
RE14
RE11
RE12
QE03
QE04
RE07
RE08
CE09
CE07
CE08
CE10
RE15
RE16
RE20
RE19
CH01
R707
C703
RH07
RH05
C725
Q701
R707
C701
C719
Q721
R703
Q703
R705
R739
Q705
R711
R713
Q707
R719
R715
C705
R709
C707
Q719
C727
C721
Q707
QN05
QN01
QN03
CN01
CN03
C721
C711
RN01
RN03
RN05
QN09
QN11
RN09
RN07
R743
R733
R717
R721
R729
Q711
C717
C723
J755
R727
L701
R723
R725
J751
J753
J725
J723
J790
3.5AT
250V
C809
J728
J721
J722
J808
J807
J806
J805
Q807
Q806
Q809
Q808
J726
RX53
J791
J724
R736
R742
R734
R744
R718
R722
Q714
Q712
R730
C718
C724
L702
R728
R726
R724
J752
J754
J783
Q716
QN14
QN13
Q715
Q709
Q717
Q710
J784
J785
QN16
Q718
QX15
J727
J745
J746
J720
J781
C811
C810
Q810
J719
J780
R724
RN24
QN23
QN24
QN21
QN22
QN25
QN26
QN27
QN28
CN21
RN21
RN27
QN30
RN26
RN23
CN22
RN25
QN31
Q804
Q805
Q812
C813
R808
R806
J729
J731
Q721
Q801
R804
R805
Q802
R801
R803
R802
RX51
RX52
C805
C803
C801
C802
CH02
R702
RH08
C704
C728
RH06
Q702
R708
C702
R706
Q704
R704
J730
J732
R740
R712
Q706
R720
Q708
C728
C720
R714
R716
C708
R710
C706
QN06
QN08
QN04
QN02
CN04
CN02
Q722
C722
C712
RN04
RN06
QN12
RN02
QN10
RN10
RN08
C809
R808
R809
C808
J722
J756
J791
J724
R736
R742
R734
R744
R718
R722
Q714
Q712
R730
C718
C724
L702
R728
R726
R724
J752
J754
J783
Q716
QN14
J784
J785
QN16
Q718
Q710

10.6 Tone Assembly (PF00) Schematic Diagram and Component Locations

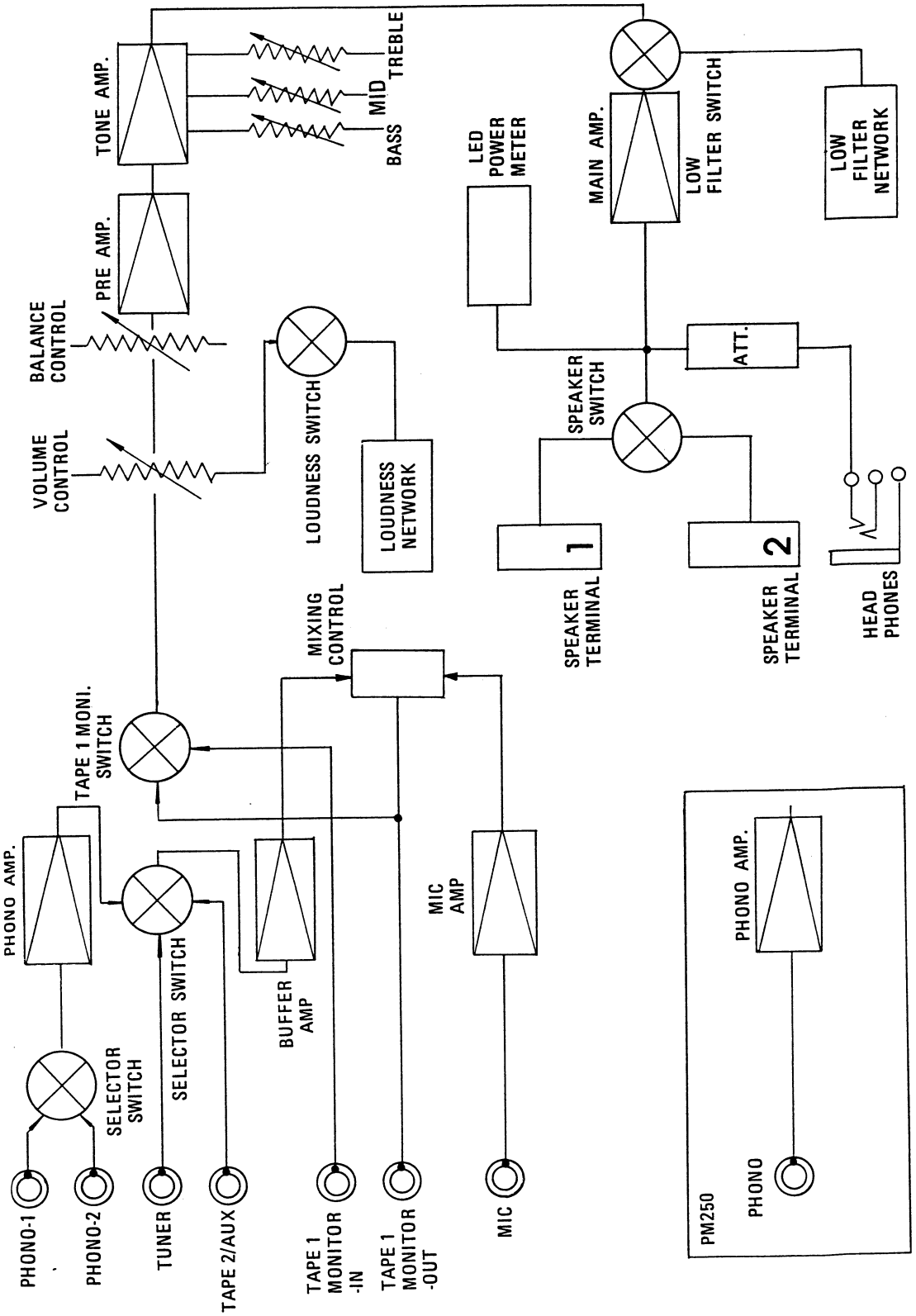




10.7 Volume Assembly (PG00) Schematic Diagram and Component Locations

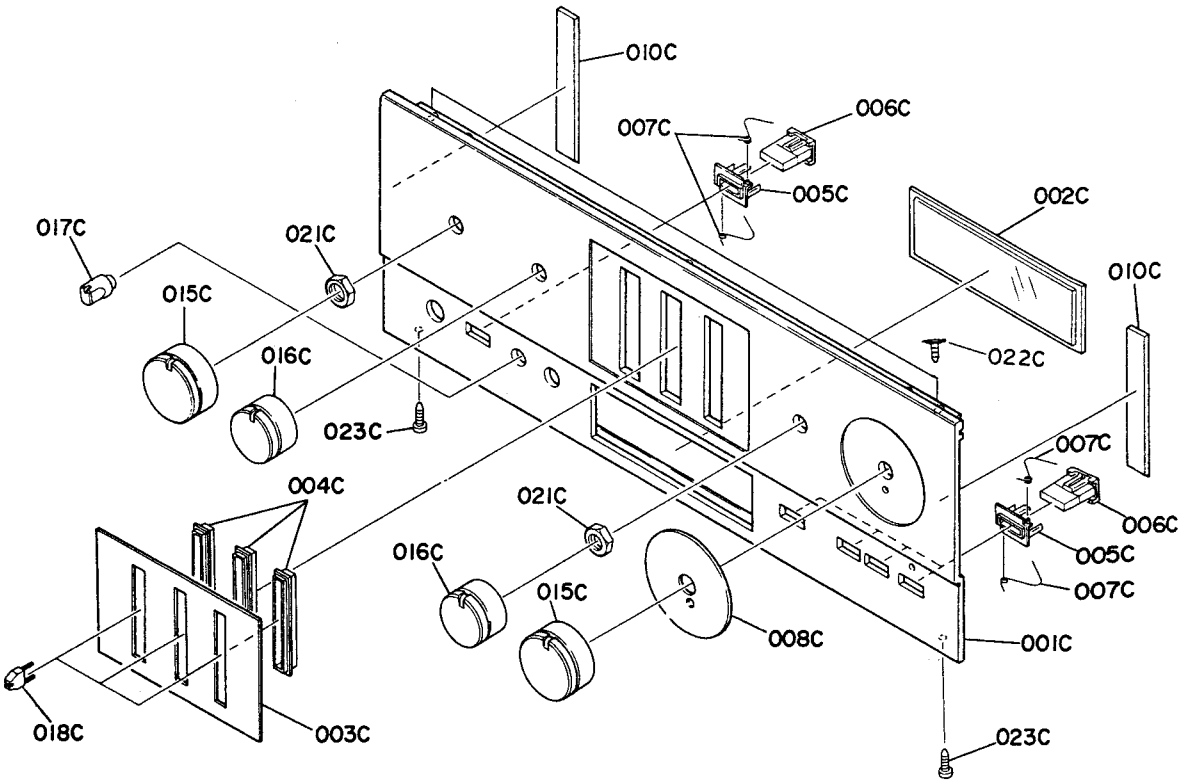


11. BLOCK DIAGRAM



12. EXPLOCED VIEW AND PARTS LIST

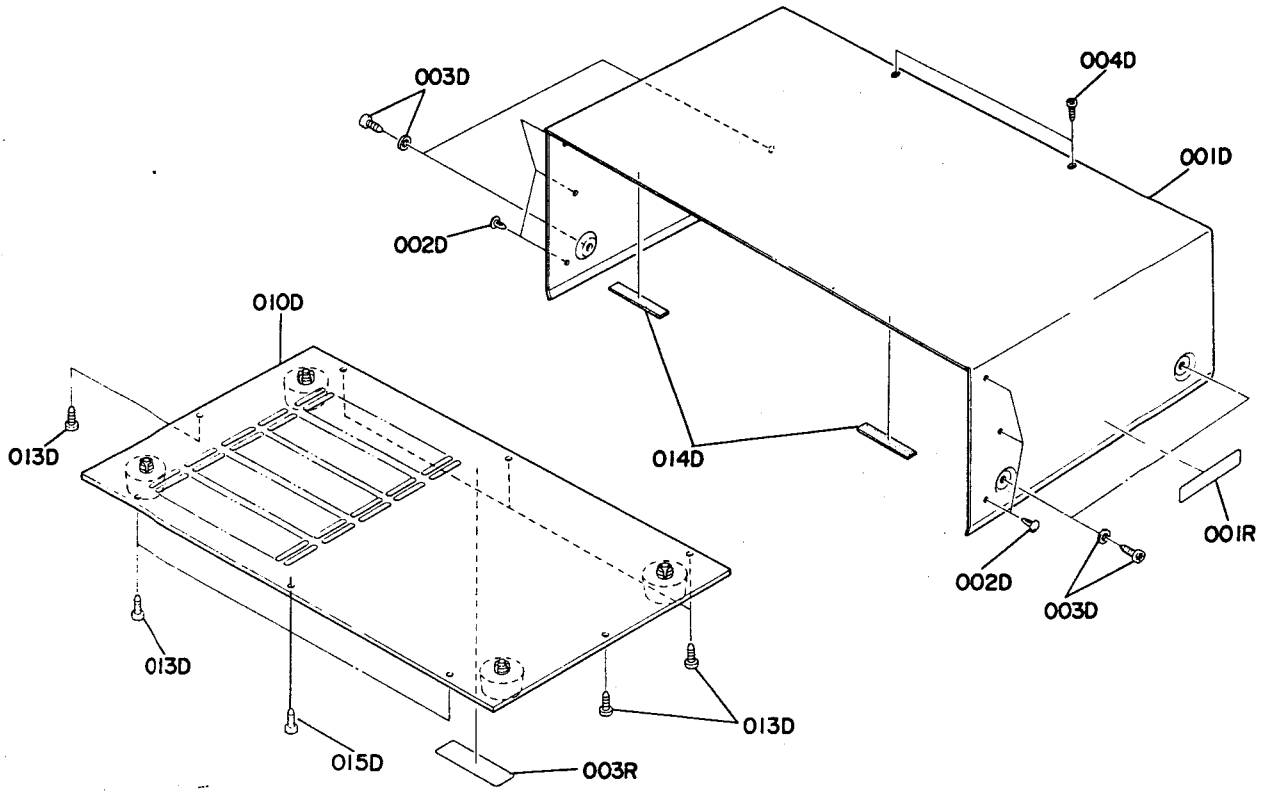
- **[C01-99] Front panel**



REF. DESIG.	Q'TY N	PART NO.	DESCRIPTION
			(PM400, ONLY)
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
			(PM250, ONLY)
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.	Q'TY 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

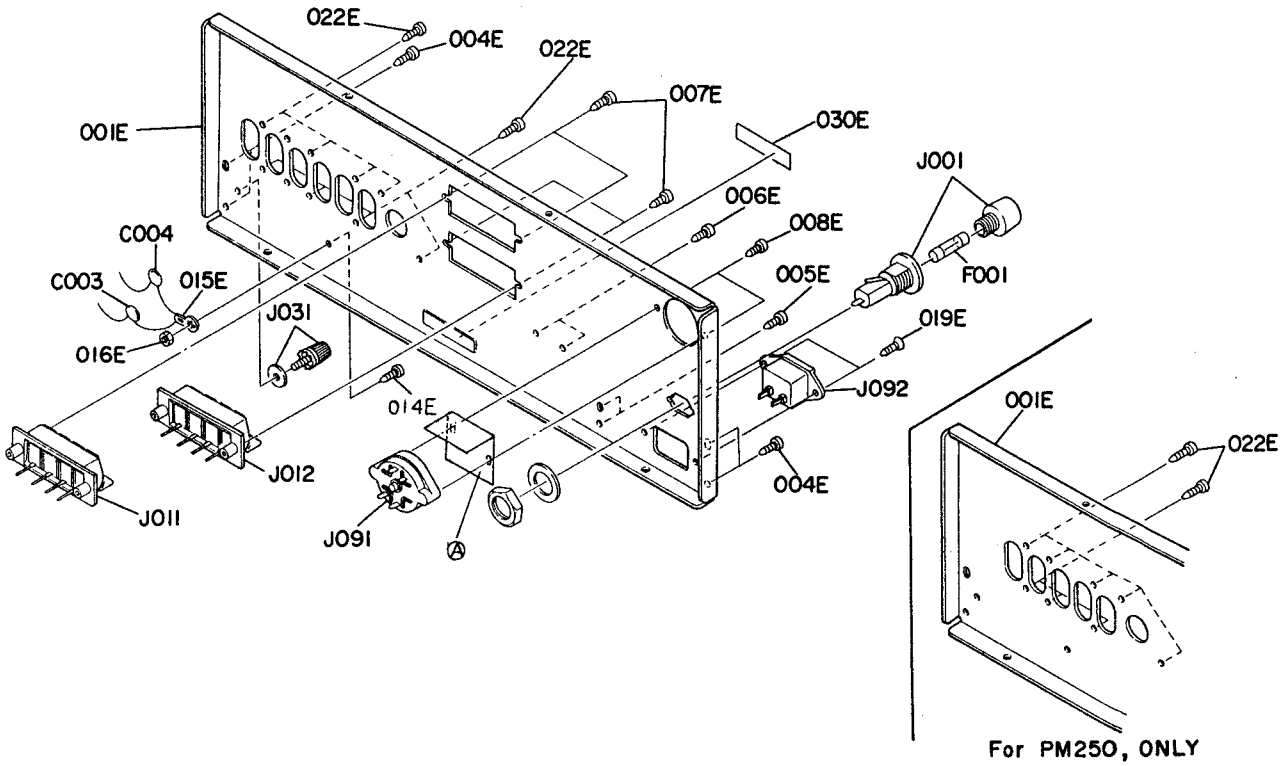
[C02-99] Top cover



REF. DESIG.	Q'TY N	PART NO.	DESCRIPTION
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.	Q'TY N	PART NO.	DESCRIPTION
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

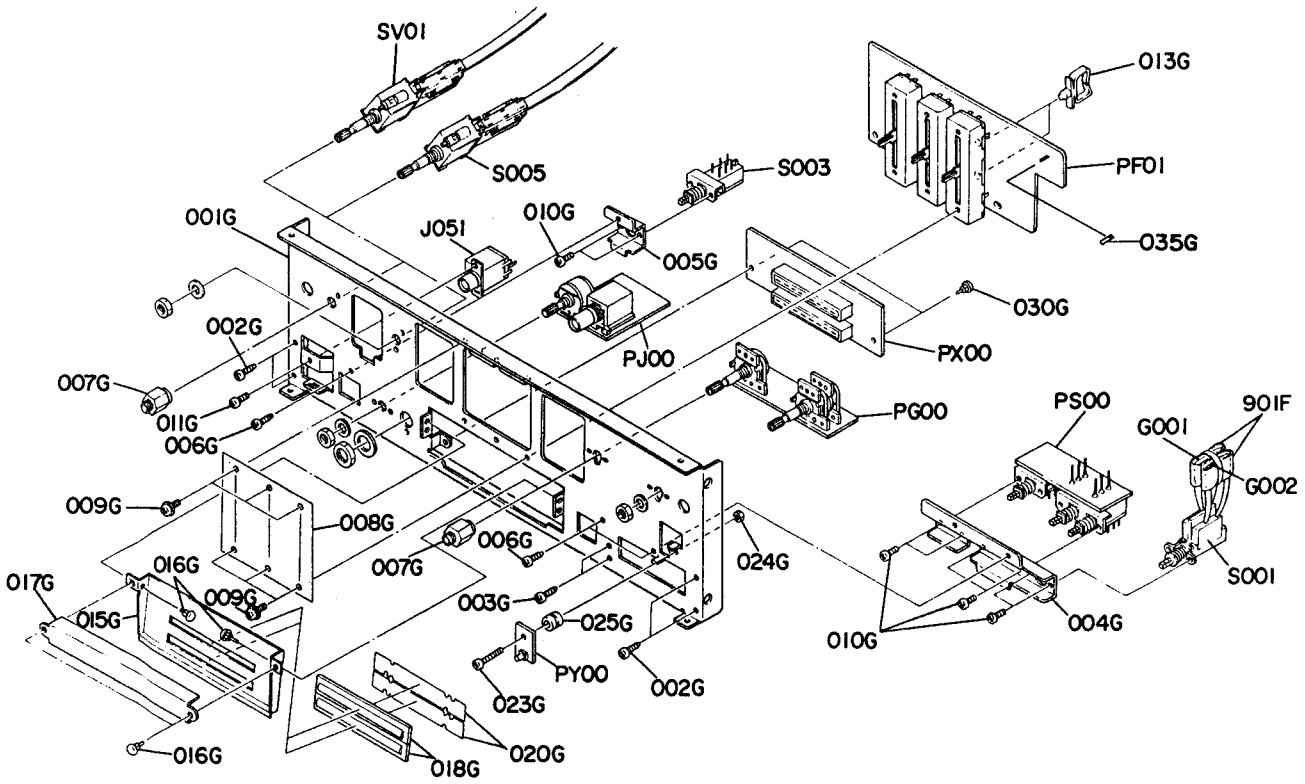
• [C03-99] Rear panel



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
Ⓐ	1	2129120010	Insulator

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

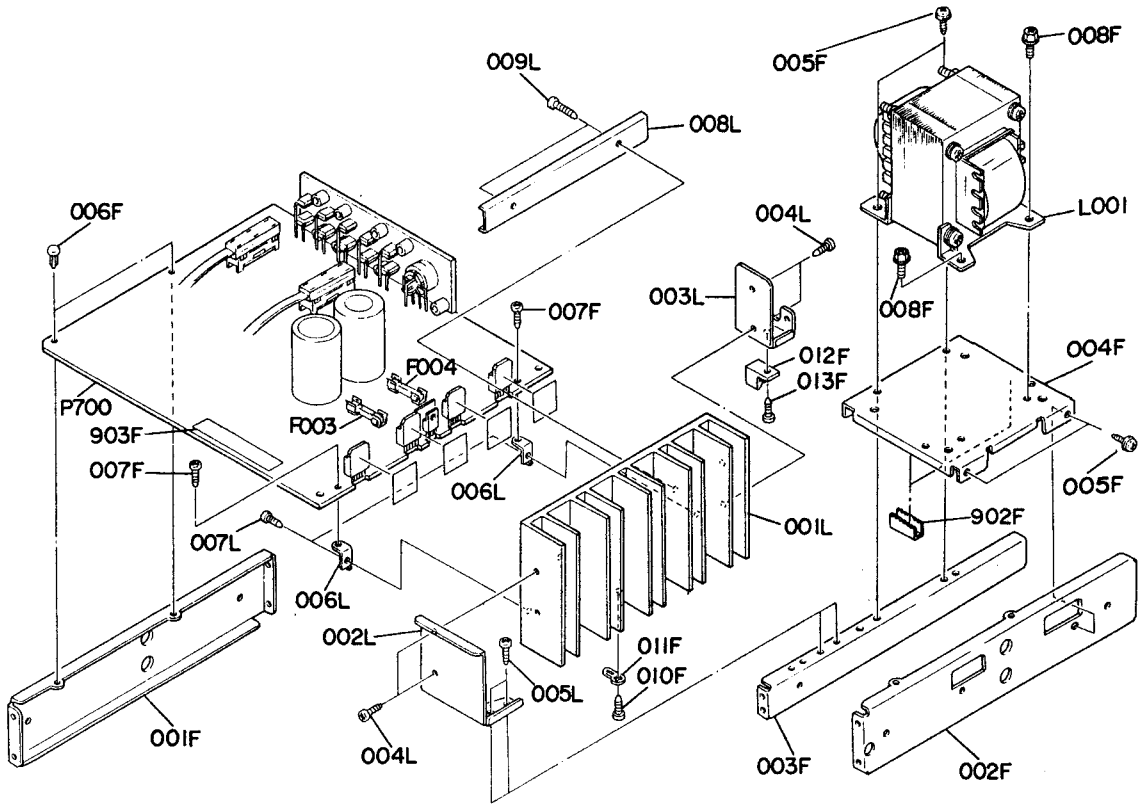
• [P01-99] Chassis and General parts



REF. DESIG.	Q'TY N	PART NO.	DESCRIPTION
001G	1	2129160010	Bracket, Front Chassis
002G	4	5128030880	B.H. Tapped Screw B3 x 8
003G	2	5128030880	B.H. Tapped Screw B3 x 8
004G	1	2129160020	Bracket
005G	1	2129160030	Bracket
006G	3	5128030880	B.H. Tapped Screw B3 x 8
007G	2	2129114010	Stopper
008G	1	2129303020	Mask
009G	6	5148030659	F. Washer Screw F3 x 6
010G	8	5110030649	B.H.M. Screw B3 x 6
011G	1	5110030649	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	5157031580	P. Taptite Screw B3 x 15
024G	1	5311030349	Hexagon Nut
025G	1	4367259020	Bushing
030G	2	2276005050	Clamper
035G	1	2884053020	Cover

REF. DESIG.	Q'TY N	PART NO.	DESCRIPTION
901F	2	2926120010	Insulator
⚠G001	1	DF17223800	Film Cap. 0.022μF ±20%
⚠G002	1	DF17223800	Film Cap. 0.022μF ±20%
J051	1	YJ01001200	Jack, Headphone
⚠S001	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)

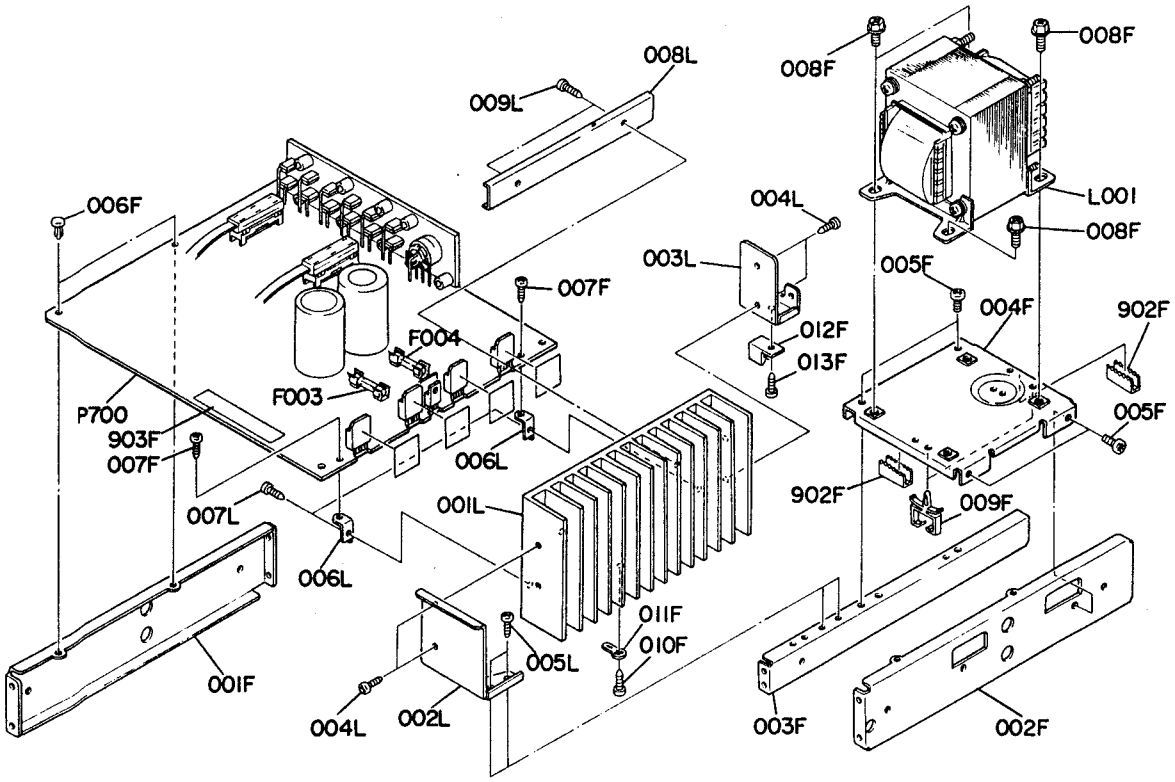
• [P02-99] Main P.W. Board and General parts (PM250 ONLY)



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	5128030880	F. Washer Screw F3 x 8
008F	2	52040410A0	H. Head Bolt, S.F
010F	1	5128030880	B.H. Tapped Screw B3 x 8
011F	1	62030049W0	Lug
012F	1	2887005012	Clamper
013F	1	5128030880	B.H. Tapped Screw B3 x 8
902F	2	2218259020	Bushing
903F	1	2205861010	Label
005F	4	5128041080	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	5128030880	B.H. Tapped Screw B3 x 8
005L	2	5128030880	B.H. Tapped Screw B3 x 8
006L	2	2231160040	Bracket
007L	2	5128030880	B.H. Tapped Screw B3 x 8
008L	1	2258005013	Clamper
009L	2	5128031480	B.H. Tapped Screw B3 x 14
⚠L001	1	TS17615020	Power Transformer
P700	1	YG21270010	P.W. Board, Main
	1	ZZ21278010	P.W. Board Assembly
⚠F003	1	FS10350800	Fuse 3.5AT
⚠F004	1	FS10350800	Fuse 3.5AT

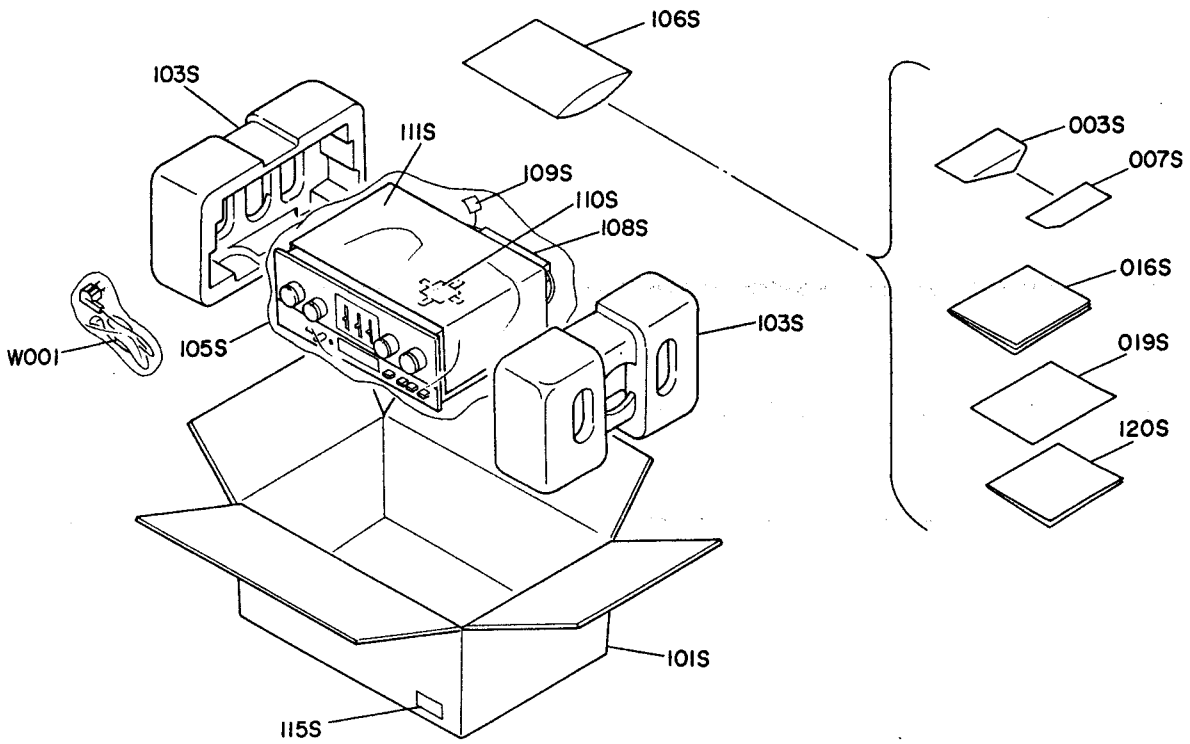
• [P02-99] Main P.W. Board and General parts (PM400 ONLY)



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
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 N	PART NO.	DESCRIPTION
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 N	PART NO.	DESCRIPTION
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)
⚠W001	1	ZC01805020	A.C. Power Cord

13. ELECTRICAL PARTS LIST

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

REF. DESIG.	Q'TY N	PART NO.	DESCRIPTION
C701	1	DD15151370	Ceramic 150pF ±5%
C702	1	DD15151370	Ceramic 150pF ±5%
C703	1	EA10701030	Elect 100μF 10V
C704	1	EA10701030	Elect 100μF 10V
C705	1	DD15180370	Ceramic 18pF ±5%
C706	1	DD15180370	Ceramic 18pF ±5%
C707	1	EA47603590	Elect 47μF 35V
C708	1	EA47603590	Elect 47μF 35V
C711	1	DK16221510	Ceramic 220pF ±10%
C712	1	DK16221510	Ceramic 220pF ±10%
C717	1	DF16473540	Film 0.047μF ±10%
C718	1	DF16473540	Film 0.047μF ±10%
C720	1	EA10705090	Elect 100μF 50V
C721	1	EA10705090	Elect 100μF 50V
C722	1	EA10705090	Elect 100μF 50V
C801	1	EA47705090	Elect 470μF 50V
C802	1	EA10701630	Elect 100μF 16V
C804	1	EA47601630	Elect 47μF 16V
C805	1	EA33505030	Elect 3.3μF 50V
C806	1	DF17102350	Film 0.001μF ±20%
C807	1	EA47603590	Elect 47μF 35V
⚠C808	1	EB68805020	Elect 6800μF 50V
⚠C809	1	EB68805020	Elect 6800μF 50V
⚠C810	1	DK18103510	Ceramic 0.01μF
⚠C811	1	DK18103510	Ceramic 0.01μF
C812	1	EA10701630	Elect 100μF 16V
C813	1	EA47605090	Elect 47μF 50V
			(PM250, ONLY)
C803	1	EA22601630	Elect 22μF 16V
			P700-RESISTORS (All Resistors are ±5% and ¼W)
RD01	1	GD05393140	39KΩ
RD02	1	GD05393140	39KΩ
RD03	1	GD05471140	470Ω
RD04	1	GD05471140	470Ω
RD05	1	GD05104140	100KΩ
RD06	1	GD05104140	100KΩ
RD07	1	GD05364140	360KΩ
RD08	1	GD05364140	360KΩ
RD09	1	GD05562140	5.6KΩ
RD10	1	GD05562140	5.6KΩ
RD11	1	GD05224140	220KΩ
RD12	1	GD05224140	220KΩ
RD13	1	GD05221140	220Ω
RD14	1	GD05221140	220Ω
RE01	1	GD05471140	470Ω
RE02	1	GD05471140	470Ω
RE03	1	GD05104140	100KΩ
RE04	1	GD05104140	100KΩ
RE05	1	GD05471140	470Ω
RE06	1	GD05471140	470Ω

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

REF. DESIG.	Q'TY N	PART NO.	DESCRIPTION
R424	1	GD05331140	330Ω
R425	1	GD05224140	220KΩ
R426	1	GD05224140	220KΩ
R427	1	GD05221140	220Ω
R428	1	GD05221140	220Ω
R429	1	GD05274140	270KΩ
R430	1	GD05274140	270KΩ
R431	1	GG05201140	220Ω
R432	1	75061001P0	Jumper
R701	1	GD05471140	470Ω
R702	1	GD05471140	470Ω
R703	1	GD05393140	39KΩ
R704	1	GD05393140	39KΩ
R705	1	GD05102140	1KΩ
R706	1	GD05102140	1KΩ
R707	1	GD05103140	10KΩ
R708	1	GD05103140	10KΩ
R709	1	GD05333140	33KΩ
R710	1	GD05333140	33KΩ
R711	1	GG05152140	1.5KΩ
R712	1	GG05152140	1.5KΩ
R713	1	GG05332140	3.3KΩ
R714	1	GG05332140	3.3KΩ
R715	1	GG05332140	3.3KΩ
R716	1	GG05332140	3.3KΩ
R717	1	RA02020180	2KΩ (B) Trimming
R718	1	RA02020180	2KΩ (B) Trimming
R719	1	GG05151140	150Ω
R720	1	GG05151140	150Ω
R721	1	GG05221120	220Ω
R722	1	GG05221120	220Ω
R723	1	GB05272020	0.27Ω 2W
R724	1	GB05272020	0.27Ω 2W
R725	1	GB05272020	0.27Ω 2W
R726	1	GB05272020	0.27Ω 2W
R727	1	GA05100020	10Ω 2W
R728	1	GA05100020	10Ω 2W
R729	1	RC10022120	2.2Ω ±10% ½W
R730	1	RC10022120	2.2Ω ±10% ½W
R733	1	GD05122140	1.2KΩ
R734	1	GD05122140	1.2KΩ
R735	1	GA05331020	330Ω 2W (PM400, ONLY)
R736	1	GA05331020	330Ω 2W (PM400, ONLY)
R739	1	GG05182140	1.8KΩ
R741	1	GG05330140	330Ω
R742	1	GG05330140	330Ω
R743	1	GD05222140	2.2KΩ
R744	1	GD05222140	2.2KΩ
R801	1	GG05472140	4.7KΩ
R802	1	GG05472140	4.7KΩ
R803	1	GG05152120	1.5KΩ ½W
R804	1	GD05103140	10KΩ
R805	1	GD05123140	12KΩ
R806	1	RF05221140	220Ω Fusible
R808	1	GG05332120	3.3KΩ ½W
R809	1	RF05220120	22Ω ½W Fusible
R745	1	GD05273140	27KΩ
R746	1	GD05273140	27KΩ

REF. DESIG.	Q'TY N	PART NO.	DESCRIPTION
			P700-SEMICONDUCTORS
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
			Note: * are exchangeable.
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
			(PM400, ONLY)
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)
⚠Q715	1	HT325782B0	Transistor 2SC2578(O or Y)
⚠Q716	1	HT325782B0	Transistor 2SC2578(O or Y)
⚠Q717	1	HT111032B0	Transistor 2SA1103(O or Y)
⚠Q718	1	HT111032B0	Transistor 2SA1103(O or Y)
			(PM250, ONLY)
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)
⚠Q715	1	HT325772B0	Transistor 2SC2577(O or Y)
⚠Q716	1	HT325772B0	Transistor 2SC2577(O or Y)
⚠Q717	1	HT111022B0	Transistor 2SA1102(O or Y)
⚠Q718	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)
			(PM400, ONLY)
Q803	1	HD30009010	Zener Low Noise
Q806	1	HD20011290	Diode
Q807	1	HD20011290	Diode
Q808	1	HD20011290	Diode
Q809	1	HD20011290	Diode
			(PM250, ONLY)
Q803	1	HD30024090	Zener WZ-120
⚠Q806	1	HD20009290	Diode S2V-20
⚠Q807	1	HD20009290	Diode S2V-20
⚠Q808	1	HD20009290	Diode S2V-20
⚠Q809	1	HD20009290	Diode S2V-20
			P700-MISCELLANEOUS
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
			PF01-TONE AMP. CIRCUIT BOARD
PF01	1	YK21271610	P.W. Board, Tone Amp.
	1	ZZ21278610	P.W. Board Assembly
			PF01-CAPACITORS
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
			PF01-RESISTORS (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
			PX00-SEMICONDUCTORS
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
			PG00-VOLUME CONTROL CIRCUIT BOARD
PG00	1	YK21271620	P.W. Board, Volume Control
	1	ZZ21278620	P.W. Board Assembly
			PG00-CAPACITORS
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 N	PART NO.	DESCRIPTION
			PG00-RESISTORS
			(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
			PJ00-MIC AMP. CIRCUIT BOARD
PJ00	1	YK21271640	P.W. Board, Mic Amp.
	1	ZZ21278640	P.W. Board Assembly
			PJ00-CAPACITORS
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
			PJ00-RESISTORS
			(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
			PJ00-SEMICONDUCTORS
QJ01	1	HT326342B0	Transistor 2SC2634(S or T)
QJ02	1	HT326342B0	Transistor 2SC2634(S or T)
			PJ00-JACK
JJ01	1	YJ01001340	Jack, Mic
			PS00-LOUDNESS CIRCUIT BOARD
PS00	1	YK21271630	P.W. Board, Loudness
	1	ZZ21278630	P.W. Board Assembly
			PS00-SWITCHES
SS01	1	SP02020420	Push Switch, Spk. System 1, 2
SS02	1	SP02010260	Push Switch, Loudness

REF. DESIG.	Q'TY N	PART NO.	DESCRIPTION
			PX00-LED CIRCUIT BOARD
PX00	1	YK21271650	P.W. Board, Led
	1	ZZ21278650	P.W. Board Assembly
			PX00-RESISTORS
			(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
			PX00-SEMICONDUCTORS
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
			PY00-PILOT LAMP CIRCUIT BOARD
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 OUTPOT **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 ..... 0.5 μV
Phono Dynamic Range (Ratio of input overload to equivalent input noise) ..... 109 dB
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
Output Voltage, 1 kHz
Tape Out ..... 415 mV
Output Impedance, 1 kHz
Tape Out ..... 220 ohms

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 ..... 140 ± 20W
Idling Power ..... 18W ± 5W
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 OUTPOT	**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	0.5 μV
Phono Dynamic Range (Ratio of input overload to equivalent input noise)	109 dB
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
Output Voltage, 1 kHz	
Tape Out	415 mV
Output Impedance, 1 kHz	
Tape Out	220 ohms

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
Idling Power	14W ± 5W
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)