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SERVICE MANUAL

PM420

marantz®

model PM420

Stereo Pre Main Amplifier

77

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.

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The following information must be supplied to eliminate delays in processing your order:
1. Complete address
2. Complete part numbers and quanties required
3. Description of parts
4. Model number for which part is required
5. Way of shipment
6. Signature: any order form or telex must be signed otherwise such part order will be considered as null and void.

TECHNICAL ASSISTANCE

Should you require any other technical support, do not hesitate to contact the Technical Department of P.M.A.
MARANTZ INTERNATIONAL
Quality & Service Dept.
80, Rue des Deux Gares,
B-1070 Brussels
Belgium
Phone: 02/525.70.22 or 525.70.23
Telefax: 02/525.6160
Telex: 23550 OR
61511 (PHEMB) routing: BELDMZT

PARTS ORDERING

Parts may be ordered at the following addresses:

AUSTRIA
HORNYPHON
Vertriebsgesellschaft GmbH
Wienerbergstrasse 1
A 1101 Wien
Austria
Telex: 132.332

AUSTRALIA
MARANTZ AUSTRALIA
PTY., Ltd.
19 Chard Road
Brookvale, NSW 2100
Australia
Telex: 24121

BELGIUM
SVD DIVISION MARANTZ
Industrialaan 1
1720 Groot-Bijgaarden
Belgium
Telex: 24466

CHILE
MARANTZ
DIVISION OF PHILIPS S.A.
AV. Santa Maria, 0760
Casilla 2687
Santiago
Telex: 240.239

DENMARK
MARANTZ
DIVISION OF PHILIPS
SERVICE A/S
Prags Boulevard 80
Postbox 1919
DK-2300 København S
Denmark
Telex: 31201

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MARANTZ
DIVISION OF OY PHILIPS Ab
Kaivokatu 8
00100 Helsinki
Finland
Telex: 124811

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MARANTZ FRANCE
4 Rue Bernard Palissy
92600 Asnières
France
Telex: 611651

GERMANY
MARANTZ GERMANY GmbH
Max-Planck-Strasse 22
6072 Dreieich 1
Germany
Telex: 529821

THE NETHERLANDS
Elpro b.v.
De Limiet 3
4131 NR Vianen
The Netherlands
Telex: 47679

NORWAY
MARANTZ
DIVISION OF PHILIPS A/S
Sandstuveien 40
Oslo 6
Norway
Telex: 72640

GREAT BRITAIN
MARANTZ AUDIO U.K. Ltd
Unit 15/16
Saxon Way Industrial Estate
Moor Lane
Harmondsworth UB7 OLW
Great Britain
Telex: 935196

GREECE
SHERTON ELECTRONICS S.A.
P.O.Box 21025
Hippocratus Street 188
Athens 11471
Greece
Telex: 216.795

JAPAN
MARANTZ JAPAN, Inc.
35-1, 7-chome, Sagamiono
Sagamihara-shi, Kanagawa
Japan

KUWAIT
AL ALAMIAH ELECTRONICS
Ussama Building
Fahd al Saleem Street
P.O.Box 23781
Safat-Kuwait
Telex: 22694

ITALY
MARANTZ ITALIANA S.P.A.
Via Chiese, 74
20126 Milano
Italy

SAUDI ARABIA
AL ALAMIAH ELECTRONICS
P.O.Box 5954
University Street
Riyadh 11432
Saudi Arabia
Telex: 201530

SOUTH AFRICA
MARANTZ
DIVISION OF PHILIPS S.A.
Rainer House
Ove Street, 10
Doornfontein
Johannesburg
Telex: 483.456

SPAIN
PHONO S.A.
Ignacio Iglesias 10
Badalona (Barcelona)
Spain
Telex: 59355

SWEDEN
MARANTZ
DIVISION OF PHILIPS
Försäljning AB
Tegeluddsvägen 1
S-115 84 Stockholm
Sweden
Telex: 14060

SWITZERLAND
DYNAVOX ELECTRONICS
Route de Villars 105
1701 Fribourg
Switzerland
Telex: 942377

TURKEY
DOGRUOL Ltd.
I.M.C.
6 Blok N°6310
Unkapani
Istanbul
Turkey
Telex: 22085

MALTA
CACHIA & GALEA
Republic Street, 68D
Valetta
Telex: 1682

U.S.A.
MARANTZ COMPANY, Inc.
National Service Department
P.O.Box 577
Chatsworth, CA 91311
U.S.A.

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.

In case of difficulties, do not hesitate to contact the Technical Department at abovementioned address.

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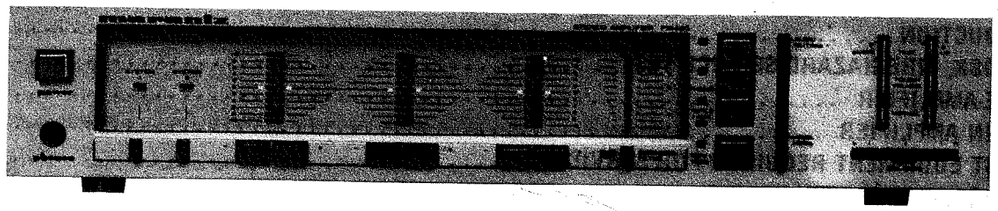
MODEL PM420 STEREOPHONIC AMPLIFIER



INTRODUCTION

This service manual was prepared for use by Authorized Warranty Stations and contains service information for the Marantz Model PM420 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.

1. SHOCK, FIRE HAZARD SERVICE TEST

CAUTION: After servicing this appliance and prior to returning to customer, measure the resistance between either primary AC cord connector pins (with unit NOT connected to AC mains and its Power switch ON), and the face or front Panel of product and controls and chassis bottom.

Any resistance measurement less than 1 Megohms should cause unit to be repaired or corrected before AC power is applied, and verfied before return to user/customer.

Ref. UL Standard NO. 1270. Para. 66. 3. D (Mandatory Test after servicing Electrical Appliances, effective 7-1-83).

2. PRE-AMPLIFIER

The SELECTOR switch and the TAPE MONITOR switch are comprized of electronic switches.
Signals from the TUNER and AUX terminals are taken to the SELECTOR SWITCH (QS01).
Signals from the PHONO terminals pass through the phono amplifier (Q401) where they are amplified by 36dB and at the same time undergo RIAA equalization, before going to the SELECTOR SWITCH (QS01).
After being selected by the SELECTOR SWITCH, the incoming signals are taken to the TAPE MONITOR SWITCH and TAPE OUT terminals.
Signals which enter from the TAPE IN terminals are taken to the TAPE MONITOR SWITCH.
Signals which are selected by the TAPE MONITOR SWITCH are taken to the BALANCE and the motor-driven VOLUME control potentiometer, and then enter the pre-amplifier (QE01). The pre-amplifier has a gain of 17.5dB and a high pass filter of 6dB/OCT switched in to the circuit by the SUBSONIC FILTER switch. The signals from the pre-amplifier enter TONE AMP (QE02) and the frequency response is controlled by the BASS, MID and TREBLE controls.
After passing through the pre-amplifier, the singls enter the main amplifier.

3. MAIN AMPLIFIER

The main amplifier contains a 6dB/OCT type high pass filter network which can be switched in and out of circuit by means of the SUBSONIC FILTER switch. Therefore, filtering effect of 12dB/OCT will be obtained in total including that of the pre-amplifier stage. The main amplifier has also a resistor network which can be switched in the amplifier input stage by means of the AUDIO MUTING switch and attenuates signals by 26dB.

4. TEST EQUIPMENT REQUIRED FOR SERVICING

Table 1 lists the test equipment required for servicing the Model PM420 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.

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5. 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	0V (fully CCW)
Load	8 ohms (0.5mfd-OFF)
Audio Generator	1kHz
Output	5V range
Gain	Minimum
AC Voltmeter	30V range

2. Make sure that connections between the resistive load and the system terminals of the Model PM420 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 Model PM420.

Table 1. Test Equipment Required for Servicing

Item	Manufacturer and Model No.	Use
Distortion Analyzer Audio Oscillator AC Voltmeter	Sound Technology Model 1700B	Distortion Measurements Sinewave and squarewave signal source voltage measurements (AC)
Oscilloscope	Tektronix Model T932 Philips Model 3232	Waveform analysis and trouble shooting and ASO alignment
Circuit Tester		Trouble shooting
DC Voltmeter	Fluke Model 8000 "Digital" Simpson Model 313, Triplet Model 801	Voltage measurements (DC)
AC Wattmeter	Simpson Model 1379	Monitors primary power to amplifier
AC Ammeter	Commercial Grade (1 ~ 10 A)	Monitors amplifier output under short circuit condition
Line Voltmeter	Simpson Model 1359	Monitors potential of primary power to amplifier
Variable Autotransformer	Seperior Electronic Co., Powerstet Model 116B-10A	Adjust level of primary power to amplifier
Shorting Plug	Use phono plug with 600 ohm across center pin and shell	Shorts amplifier input to eliminate noise Pickup
Output Load (8 ohms, ±0.5% 100W)	Commercial Grade	Provides 8-ohm load for amplifier output termination
Output Load (4 ohms, ±0.5% 100W)	Commercial Grade	Provides 4-ohm load for amplifier output termination
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

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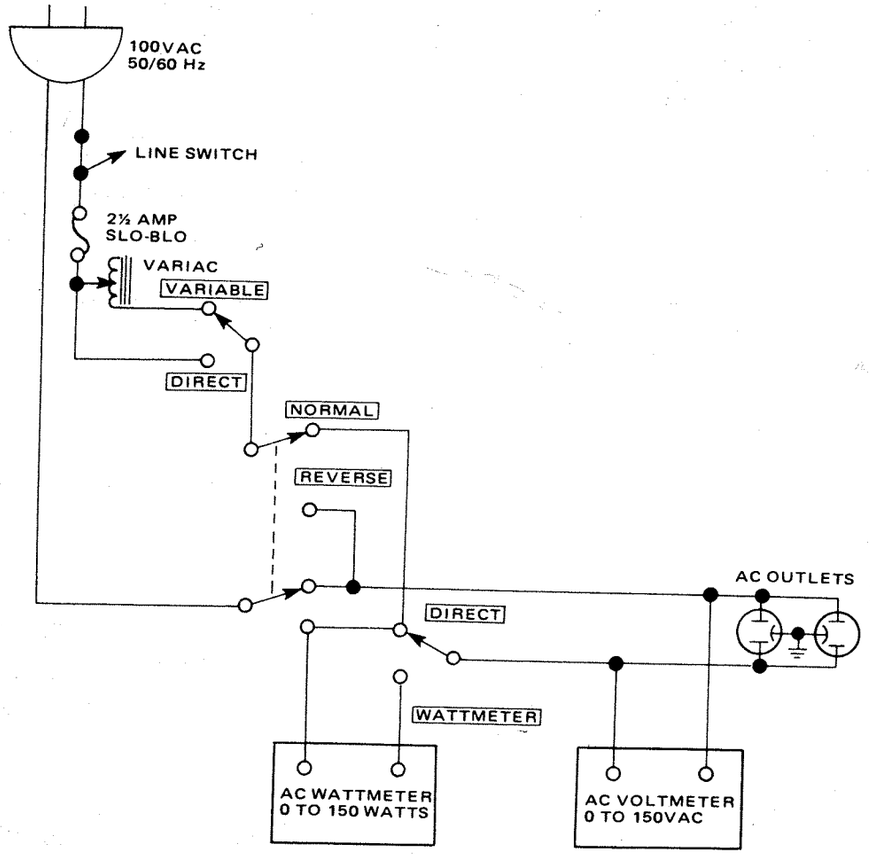

Figure1. AC Power Control Box Simplified Schematic

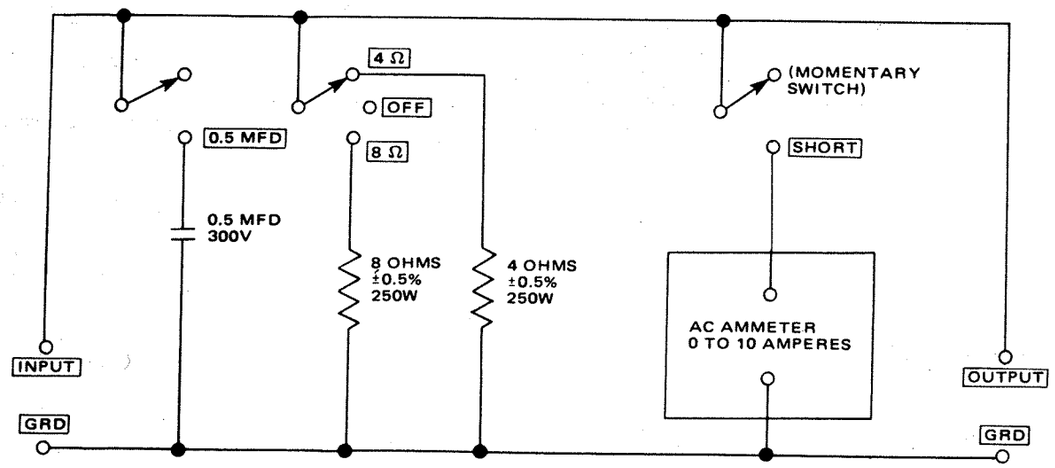

FIGURE 2. Amplifier Output Load Box Simplified Schematic

M5909

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 Voltmeter 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 2.0mV refer to the trouble analysis section of this manual. Check capacitors, C801, C802, C803 and C804 and transistors, Q801, Q802, Q803 and Q804.
4. Set the volume control fully CW. If the distortion analyzer indicates more than 20mV, refer to the trouble analysis section of this manual. Check capacitors, C801, C802, C803 and C804 and transistors, Q801, Q802, Q803 and Q804.

D. MAXIMUM POWER OUTPUT

1. Connect the audio oscillator to the AUX input. Set audio oscillator frequency to 1kHz. Set SELECTOR switch to AUX.
2. With the distortion analyzer connected across the output load (8-ohm), set the analyzer on the 30VAC scale.
3. Turn the analyzer on and increase the audio oscillator output to 150mV. The AC Voltmeter should read 16V AC or more.

E. HARMONIC DISTORTION TEST

1. Set the frequency of the audio oscillator and the distortion analyzer to 20kHz.
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 16VAC.
4. Switch the distortion analyzer to Set Level and adjust SENSITIVITY for full scale reading on 0 ~ 0.3% 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 1kHz. 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 20Hz. Distortion should be no more than 0.05%.
10. Check for parasitic oscillation; there should be none.

Note on safety:

Symbol ⚠ Fire or electrical shock hazard. Only original parts should be used to replace any part marked with symbol ⚠. Any other component substitution (other than original type), may increase risk of fire or electrical shock hazard.

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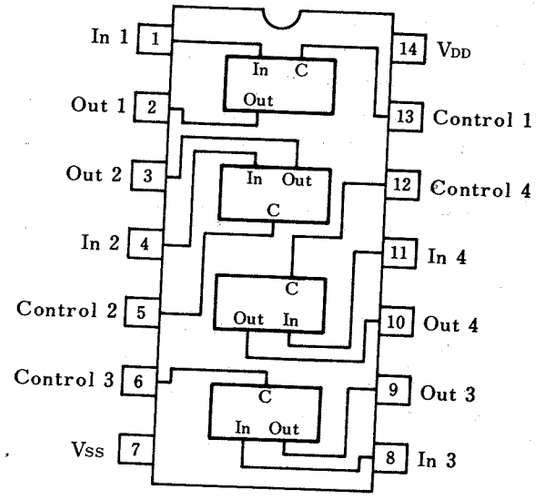
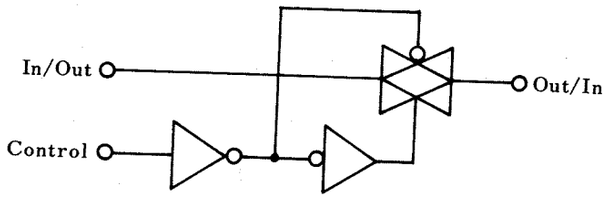
LC4066B (QS02)

- Pin Terminal Diagram



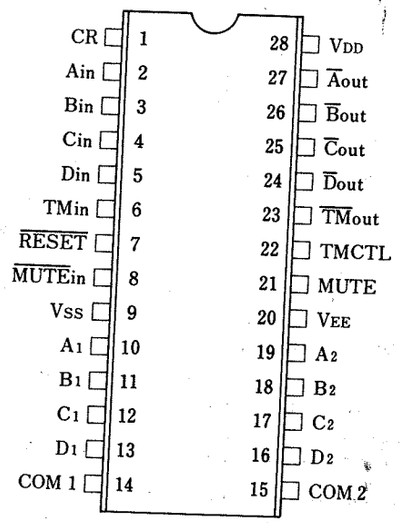
Top View

- Block Diagram of Inside IC (1/4)



LC7815 (QS01)

- Pin Terminal Diagram



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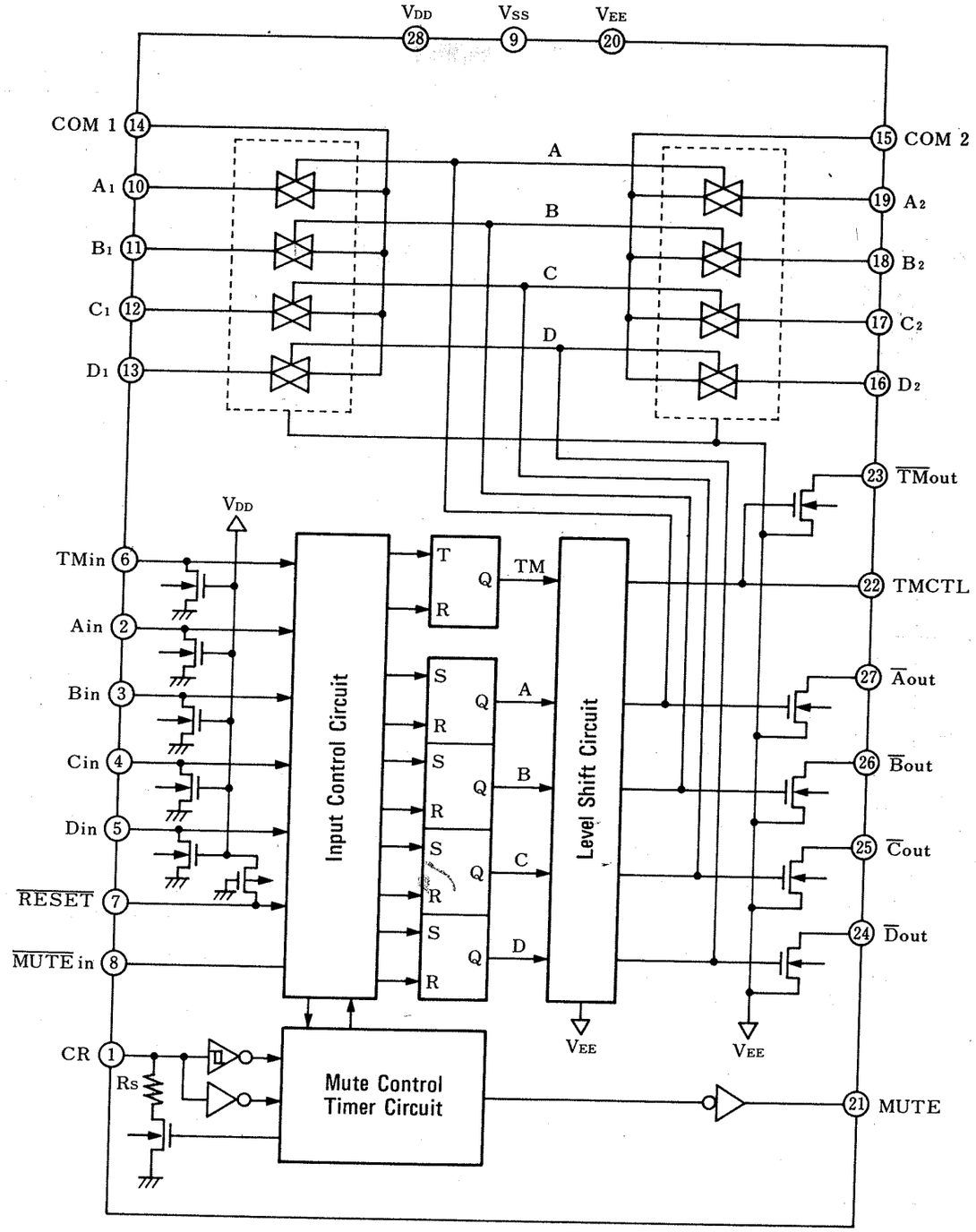
- Block Diagram of Inside IC

LC7815(QS01)



(DIP28S)

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● Terminal Description

Name	No.	Description
V_{DD} V_{SS} V_{EE}	28 9 20	Power supply terminal ⊕ When using one power supply: $V_{SS} = V_{EE} = GND$ ⊕⊖ When using two power supplies: $V_{SS} = GND$, $V_{EE} = \ominus V$
Ain, Bin Cin, Din	2, 3 4, 5	★ Designated input terminal to make each analog switch turn ON ★ Priority level when pushed simultaneously (Ain > Bin > Cin > Din) ★ Pulse noise erroneous operation prevention (Pulse width discrimination by mute delay time)
$\overline{A}$out, $\overline{B}$out $\overline{C}$out, $\overline{D}$out	27, 26 25, 24	★ LED driver output indicating ON state corresponding to each analog switch. ★ N channel open drain (source connected to V_{EE}).
A1, B1 C1, D1 A2, B2 C2, D2 COM1 COM2	10, 11 12, 13 19, 18 17, 16 14 15	★ A ~ D : Audio signal input terminals ★ COM : Audio signal output terminals ★ Input signals (A ~ D) are switched over with a disignated input applied as shown in Table below:
TMin	6	★ Tape monitor mode ON/OFF designation input terminal ★ Provides OFF with monitor mode ON or ON with monitor mode OFF by detecting rising edge of input signal.
TMCTL	22	★ Output terminal that controls external analog switch (LC4066B) for tape monitor. ★ N channel transistor source of complimentary buffer output is connected to V_{EE}.
$\overline{TM}$out	23	★ Terminal used for both output which controls external analog switch (LC4066B) for tape monitor and LED driver which indicates tape monitor state. ★ $\overline{TM}$ out is a inverted polarity output of TMCTL.
$\overline{MUTE}$in	8	★ Input terminal that forcefully triggers audio muting control signal (MUTE) externally. ★ MUTE output becomes "H" when fixed to "L".
MUTE	21	★ Audio muting control signal output terminal ★ When switching function or being applied with $\overline{MUTE}$in input provides pulse output, pulse width of which is determined by external components connected to CR terminal.
CR	1	★ Terminal for CR time constant that determines time period of audio muting control signal. ★ Time difference (mute delay) from rising of muting signal to switching timing of analog switch is determined by C·Rs time constant during TR turned on.
$\overline{RESET}$	7	★ Input terminal that makes all analog switches off or tape monitor flip-flop reset. ("L" level active)

COM Output		An	Bn	Cn	Dn
Designated input	Ain	1	0	0	0
	Bin	*	1	0	0
	Cin	*	*	1	0
	Cin	*	*	*	1

* Don't care

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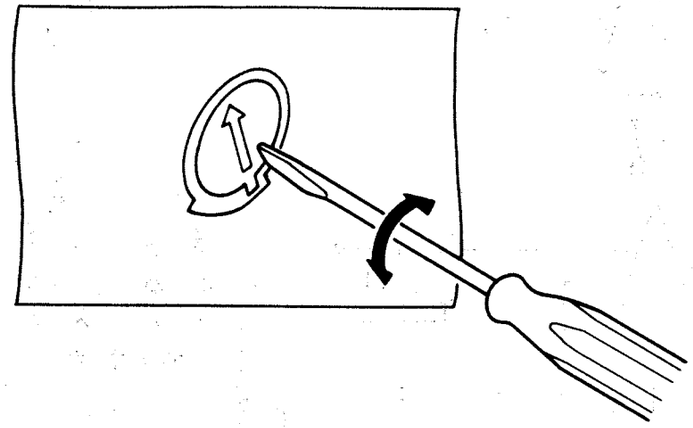
6. VOLTAGE CONVERSION

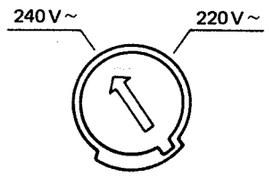
● EUROPEAN MODEL ONLY

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

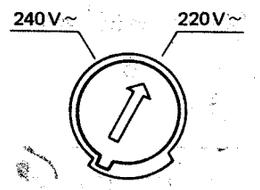
CAUTION
DISCONNECT POWER SUPPLY CORD FROM AC OUTLET BEFORE CONVERTING VOLTAGE.

Voltage Conversion Chart

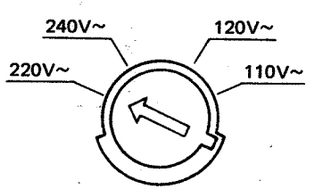




(A) Version
(T)



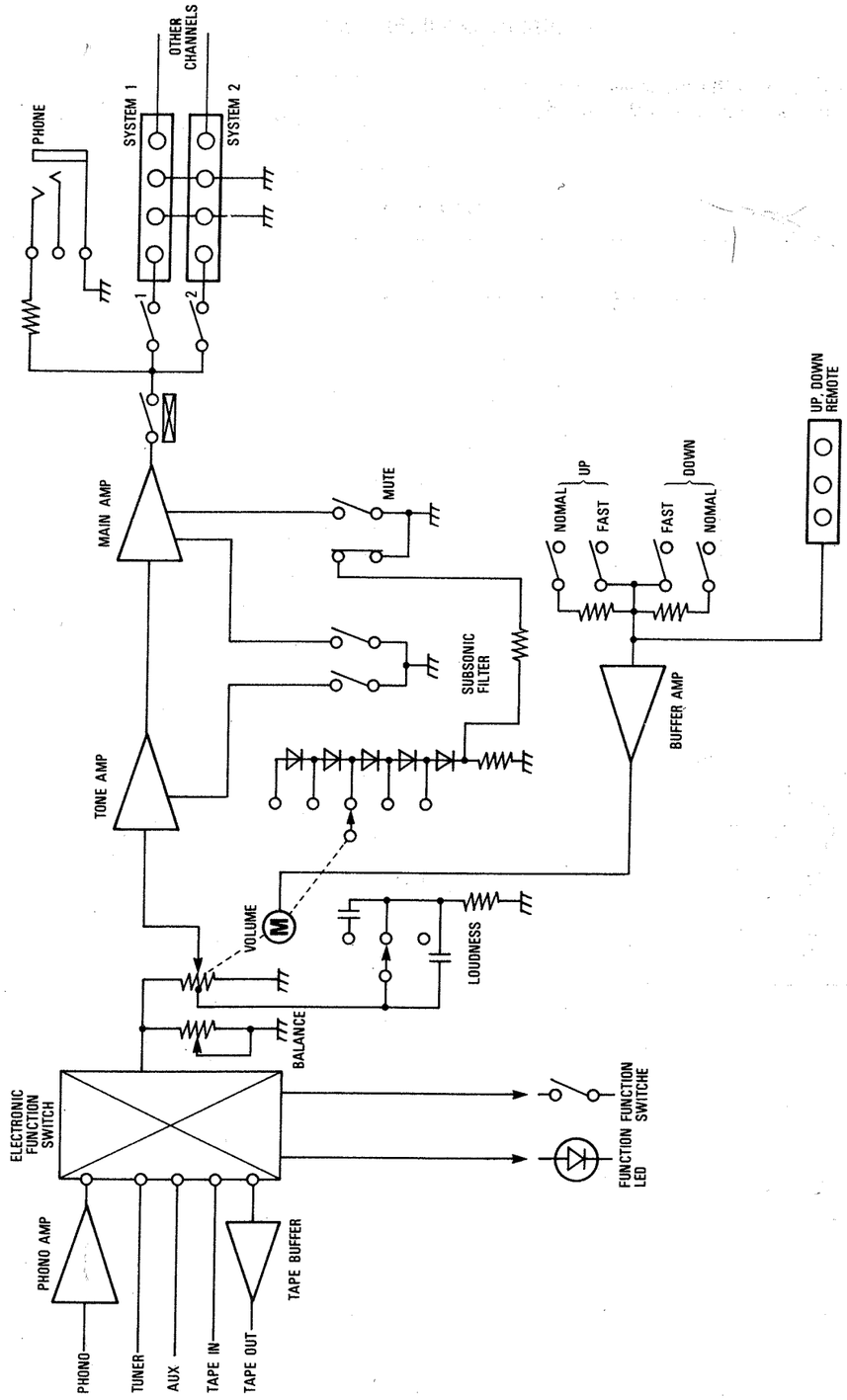
(N) Version



(E) Version

M5914

7. BLOCK DIAGRAM



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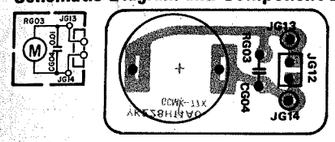
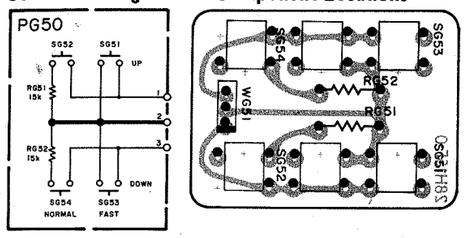
8. DIAGRAM AND COMPONENT LOCATIONS

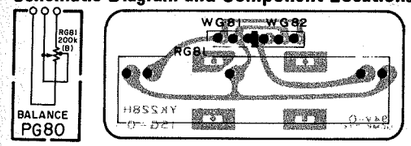
8.1 Volume Assembly (PG00)
Schematic Diagram and Component Locations



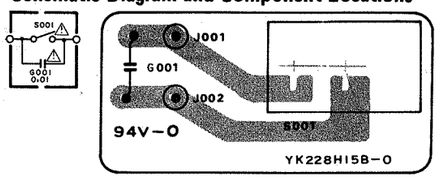
8.3 Volume UP/DOWN SW. Assembly (PG50)
Schematic Diagram and Component Locations



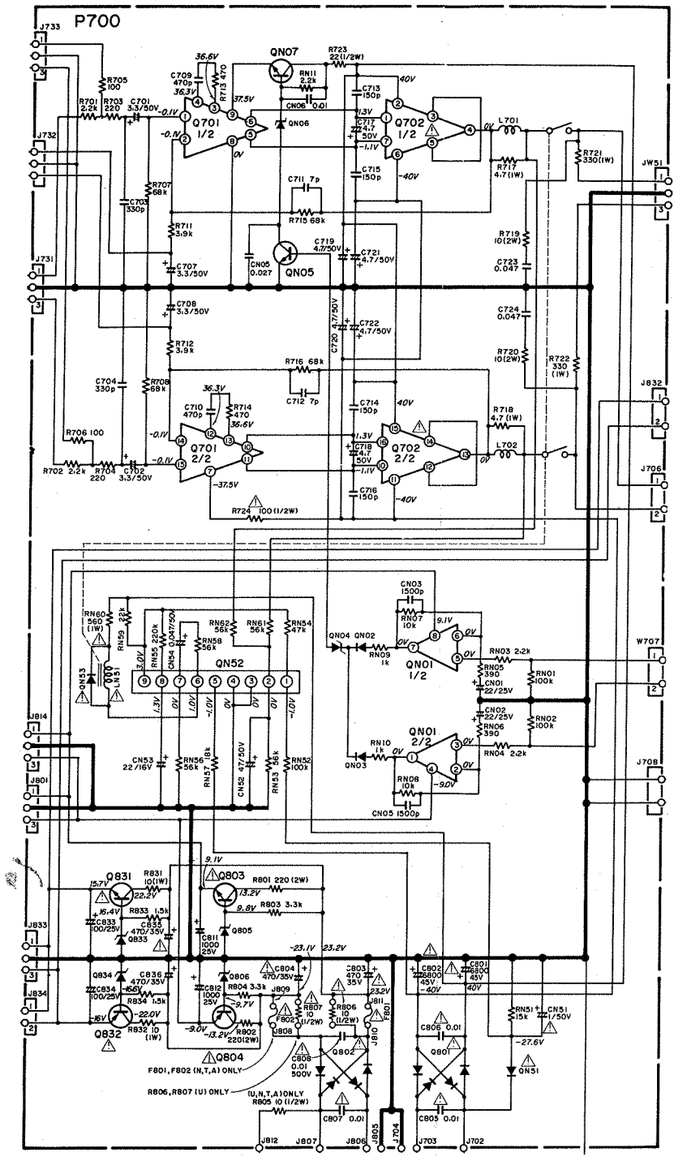
8.4 Balance VR. Assembly (PG80)
Schematic Diagram and Component Locations



8.5 Power SW. Assembly (P000)
Schematic Diagram and Component Locations



8.2 Main Amp. & Power Supply Assembly (P700) Schematic Diagram and



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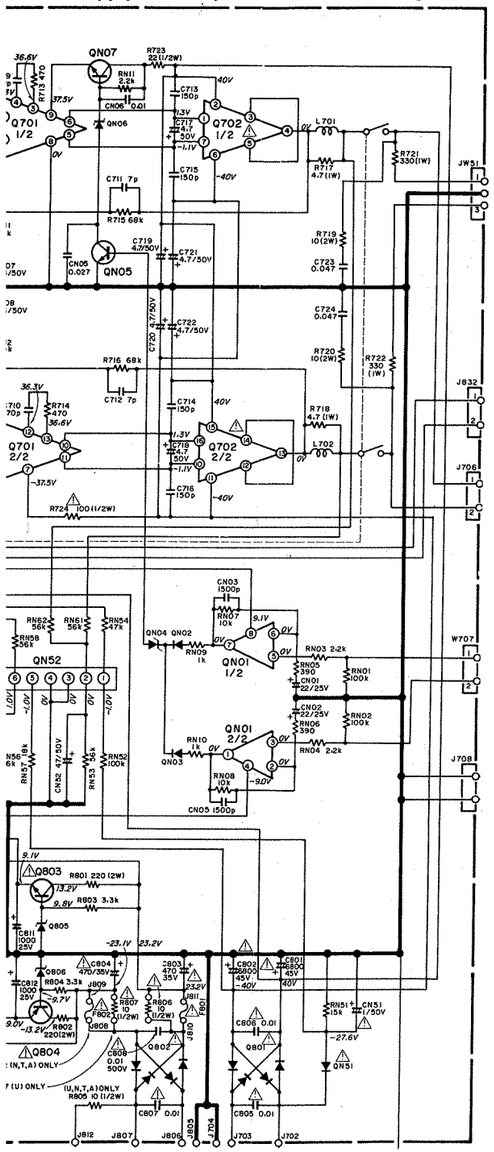
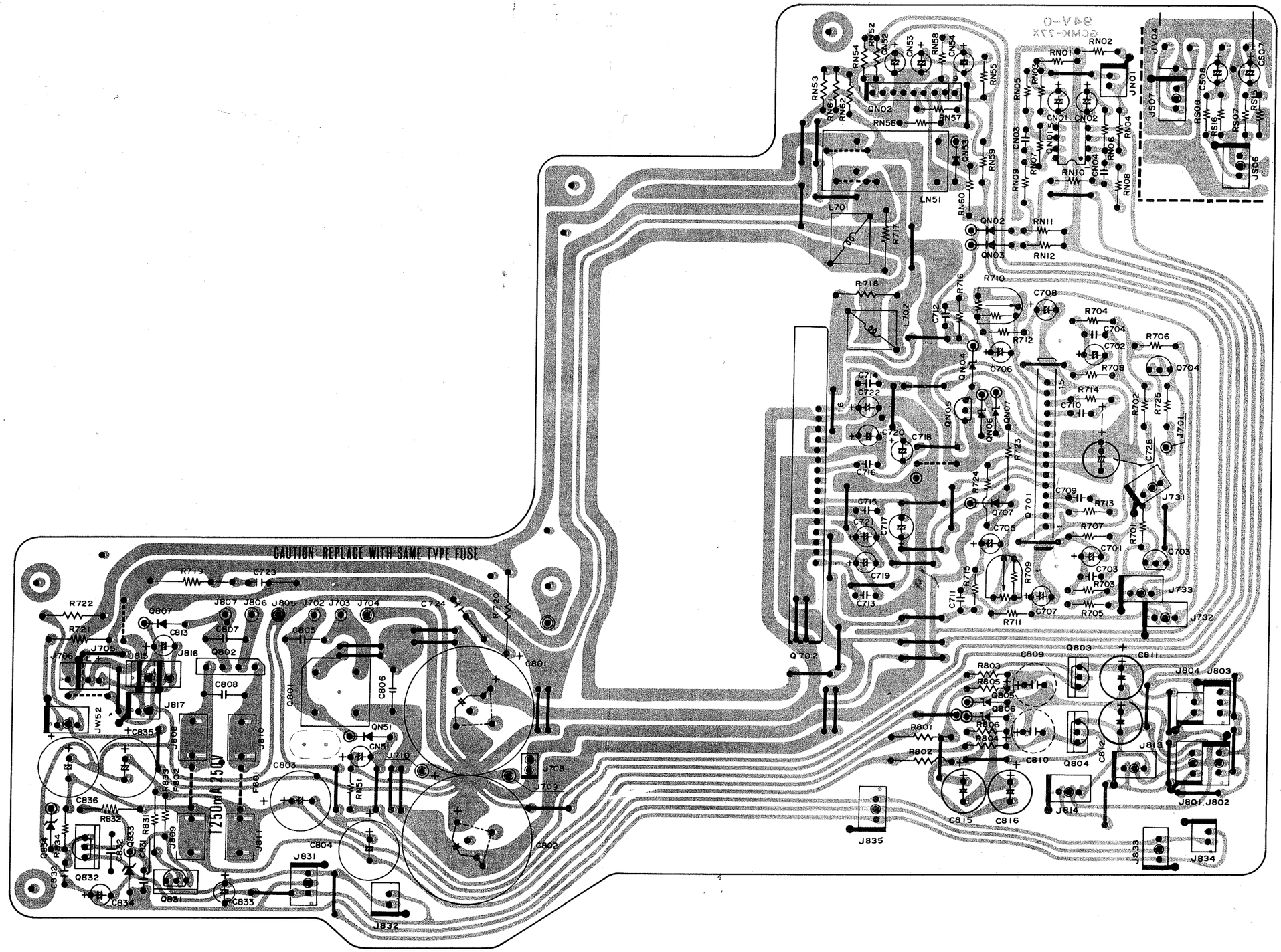
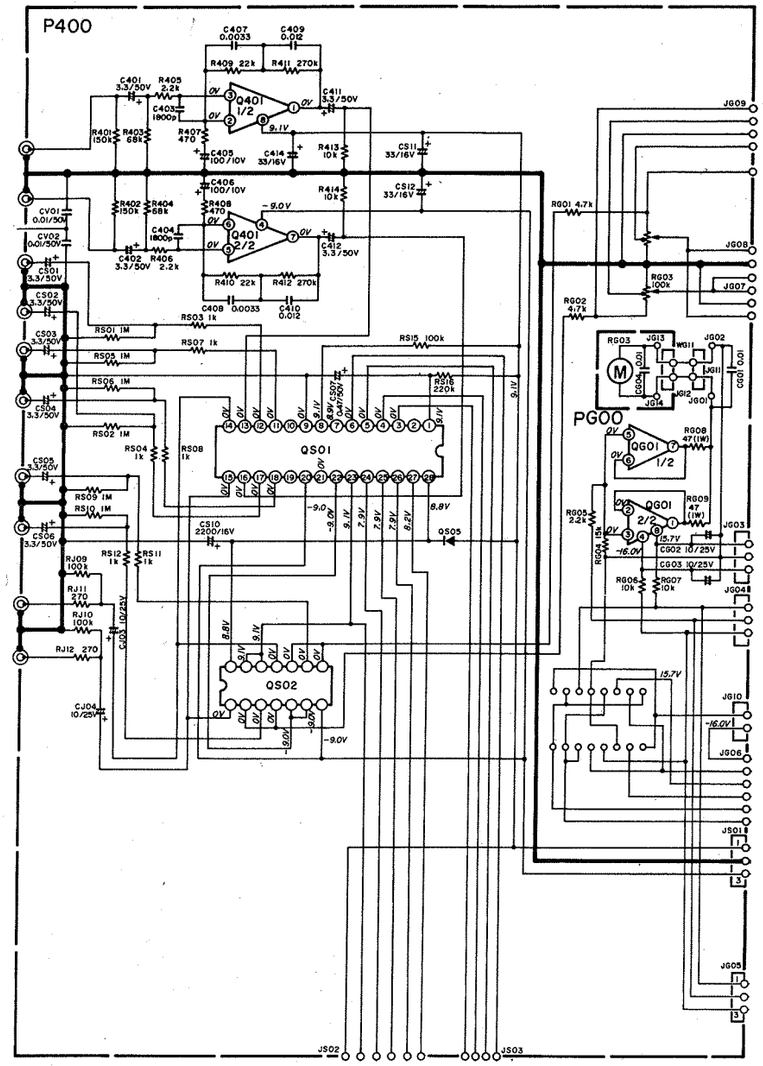
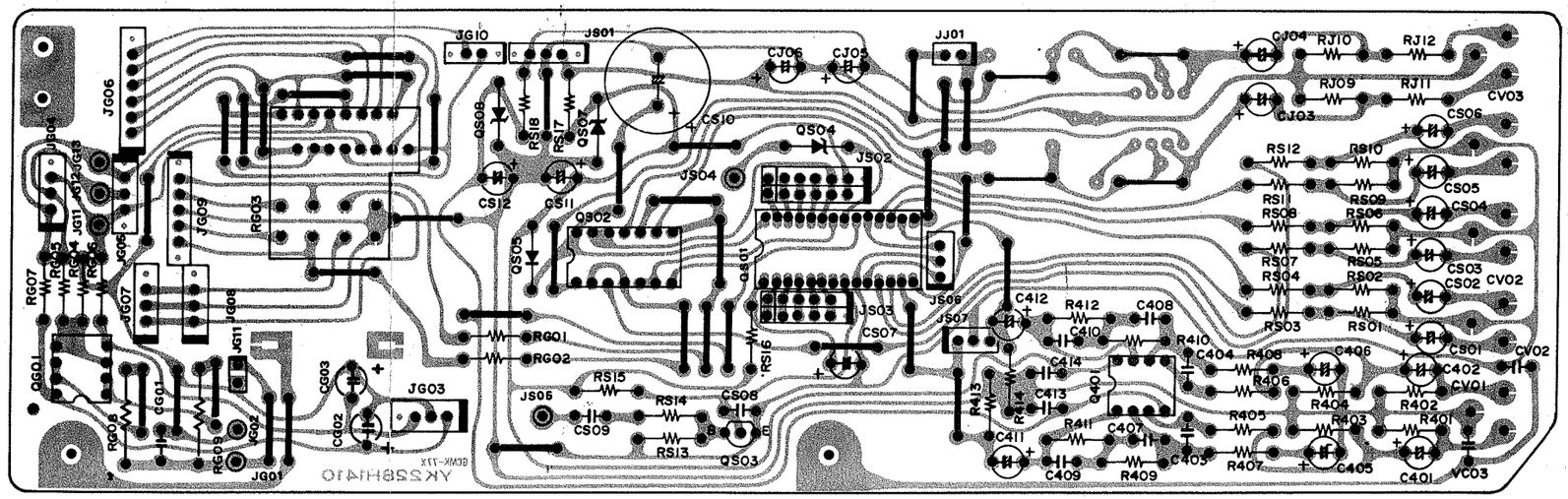
Power Supply Assembly (P700) Schematic Diagram and Component Locations



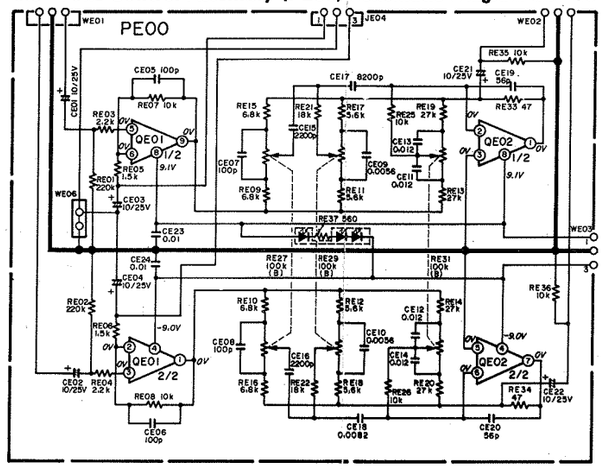


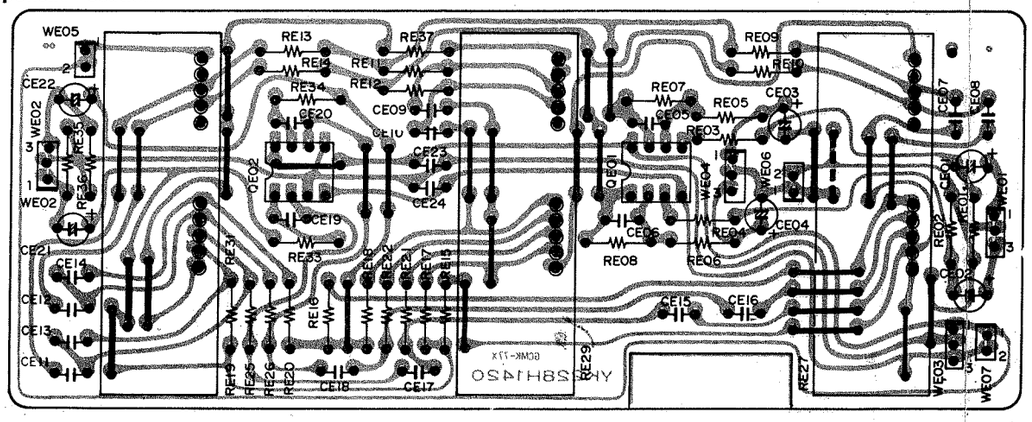
8.6 Phono Amp. Assembly (P400) Schematic Diagram and Component Locations



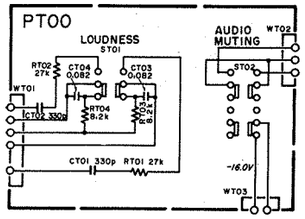


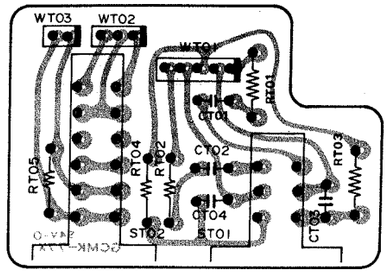
8.8 Tone Control Assembly (PE00) Schematic Diagram and Component Locations



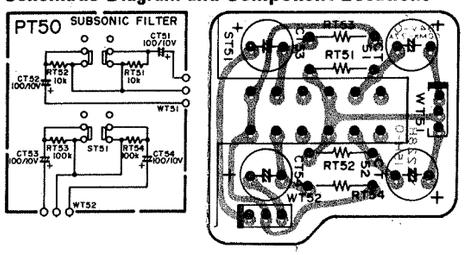


8.7 Loudness Assembly (PT00) Schematic Diagram and Component Locations

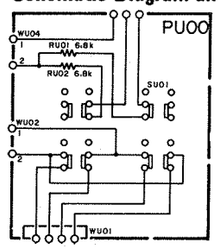


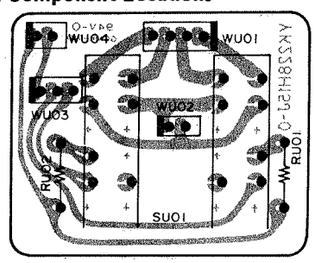


8.9 Subsonic Filter Assembly (PT50) Schematic Diagram and Component Locations

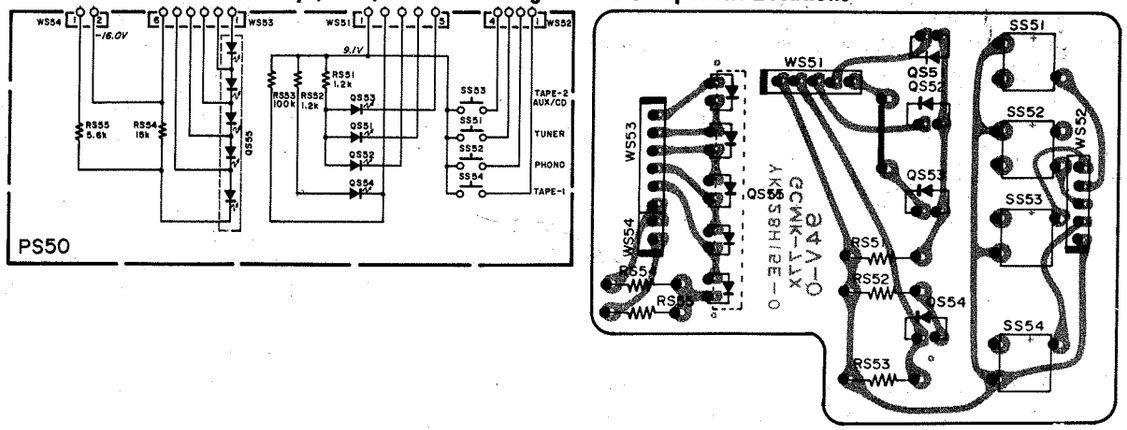


8.10 Speaker SW. Assembly (PU00) Schematic Diagram and Component Locations

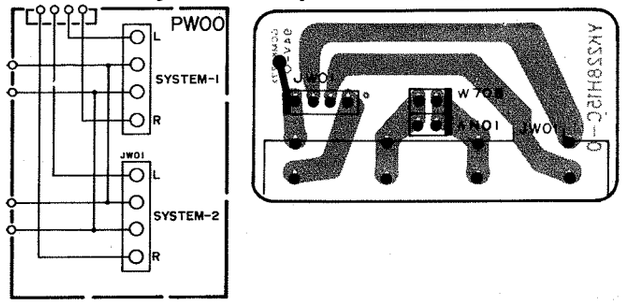




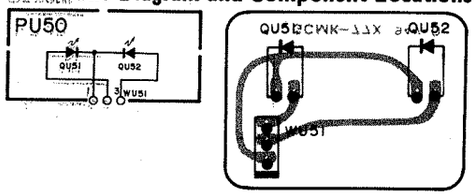
8.11 Function SW. Assembly (PS50) Schematic Diagram and Component Locations



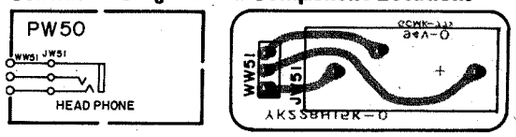
8.12 Speaker Terminal Assembly (PW00) Schematic Diagram and Component Locations



8.13 Speaker LED Assembly (PU50) Schematic Diagram and Component Locations



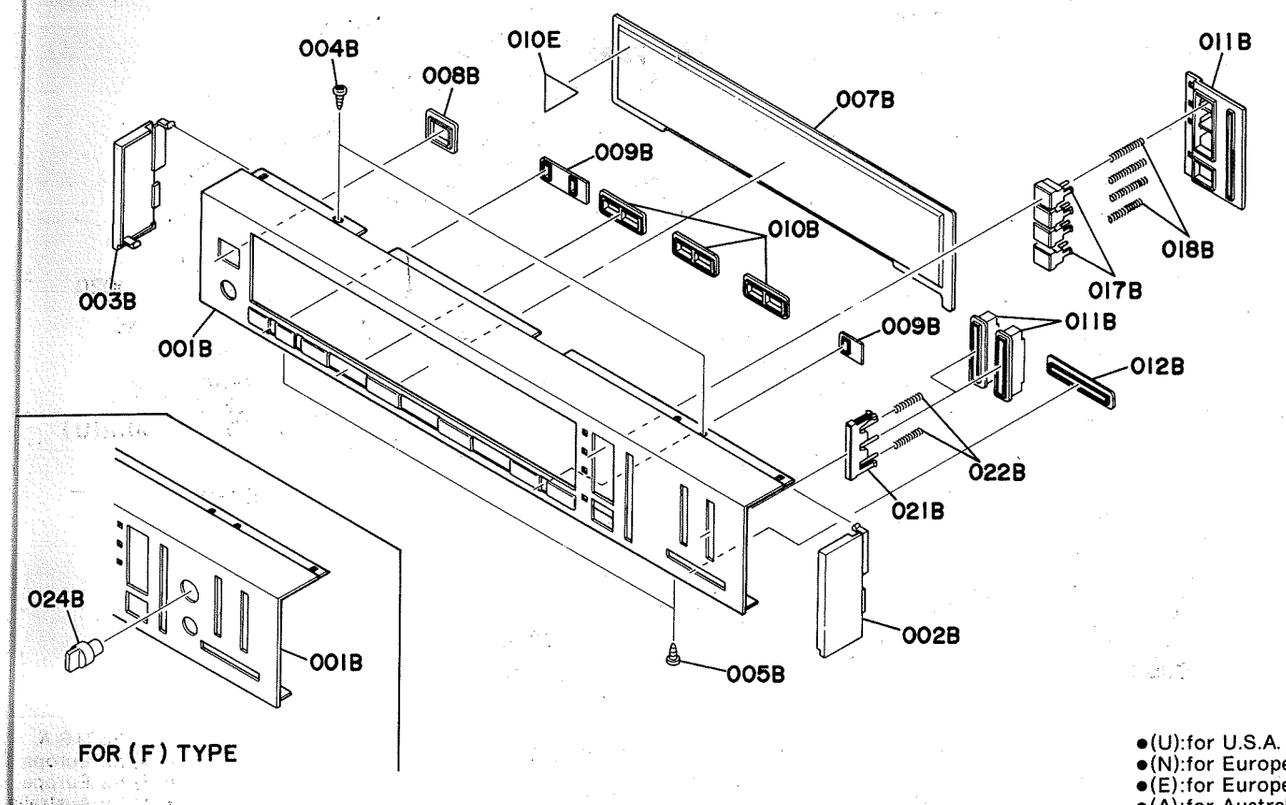
8.14 Headphone Assembly (PW50) Schematic Diagram and Component Locations



M5917

. EXPLODED VIEW AND PARTS LIST

[C01-99] Front Panel



- ●(U):for U.S.A.
- ●(N):for Europe
- ●(E):for Europe
- ●(A):for Australia
- ●(F):for Japan

REF. DESIG.	Q'TY U	N	E	A	F	PART NO.	DESCRIPTION
A	1	1	1	1		228H063400	Front Panel Assembly
A1					1	228H063410	Front Panel Assembly
001B	1	1	1	1		228H063020	Escutcheon, Front Panel
001B					1	228H063010	Escutcheon, Front Panel
002B	1	1	1	1	1	228H067010	Cap, Right Side
003B	1	1	1	1	1	228H067020	Cap, Left Side
007B	1	1	1	1	1	228H158010	Window
008B	1	1	1	1	1	415H259010	Bushing, Power Switch
009B	1	1	1	1	1	228H259020	Bushing, SPK/Subsonic
010B	3	3	3	3	3	228H259030	Bushing, Tone Control
011B	1	1	1	1	1	228H259010	Bushing, Function/Vol.
012B	1	1	1	1	1	228H259040	Bushing, Slide Vol.
017B	4	4	4	4	4	420H154010	Knob, Function Sw.
018B	4	4	4	4	4	416H115010	Spring
021B	2	2	2	2	2	416H154030	Knob, Volum
022B	4	4	4	4	4	416H115020	Spring

REF. DESIG.	Q'TY U	N	E	A	F	PART NO.	DESCRIPTION
004B	2	2	2	2	2	51280308B0	B.H. Tapped Screw B3 x 8
005B	2	2	2	2	2	51280308B0	B.H. Tapped Screw B3 x 8
024B					1	124T154010	Knob, Mixing
010E	1					105H861010	Label

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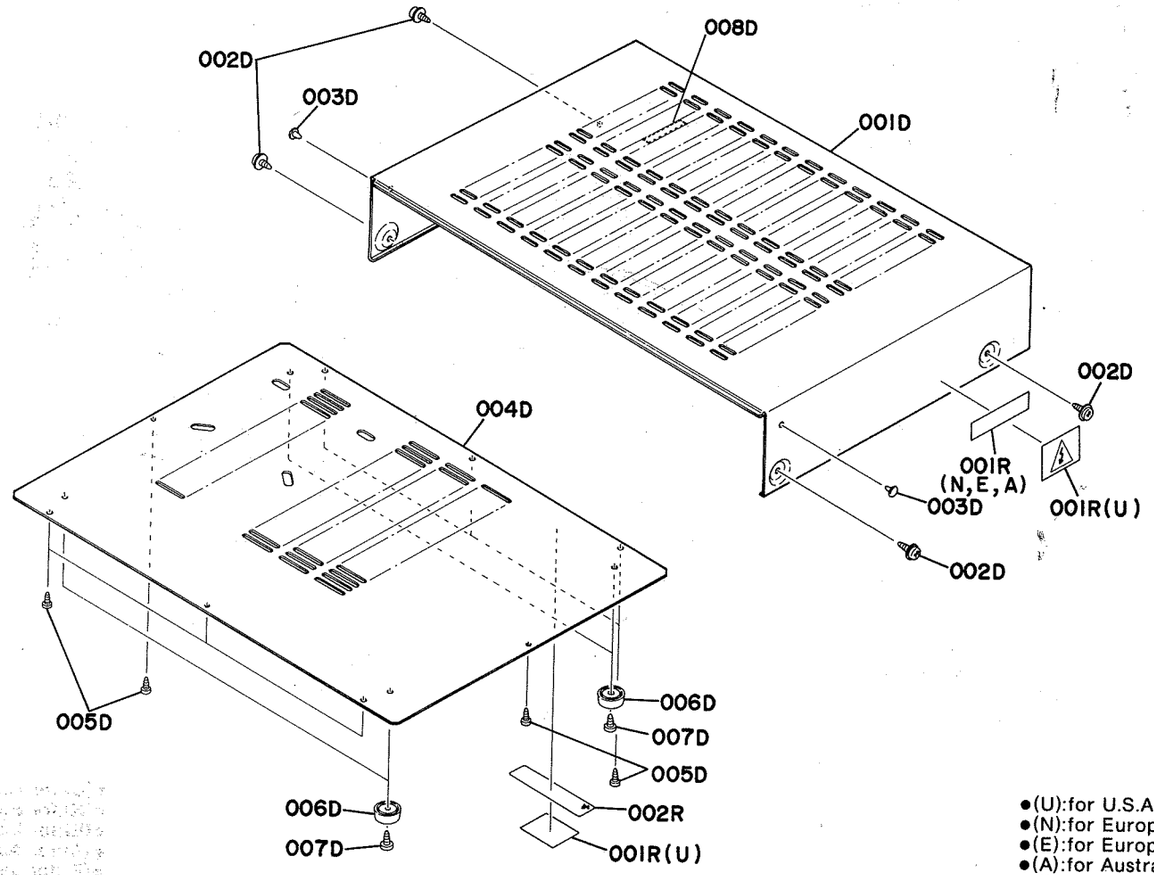
[C02-99] Lid (Top and Bottom Cover)



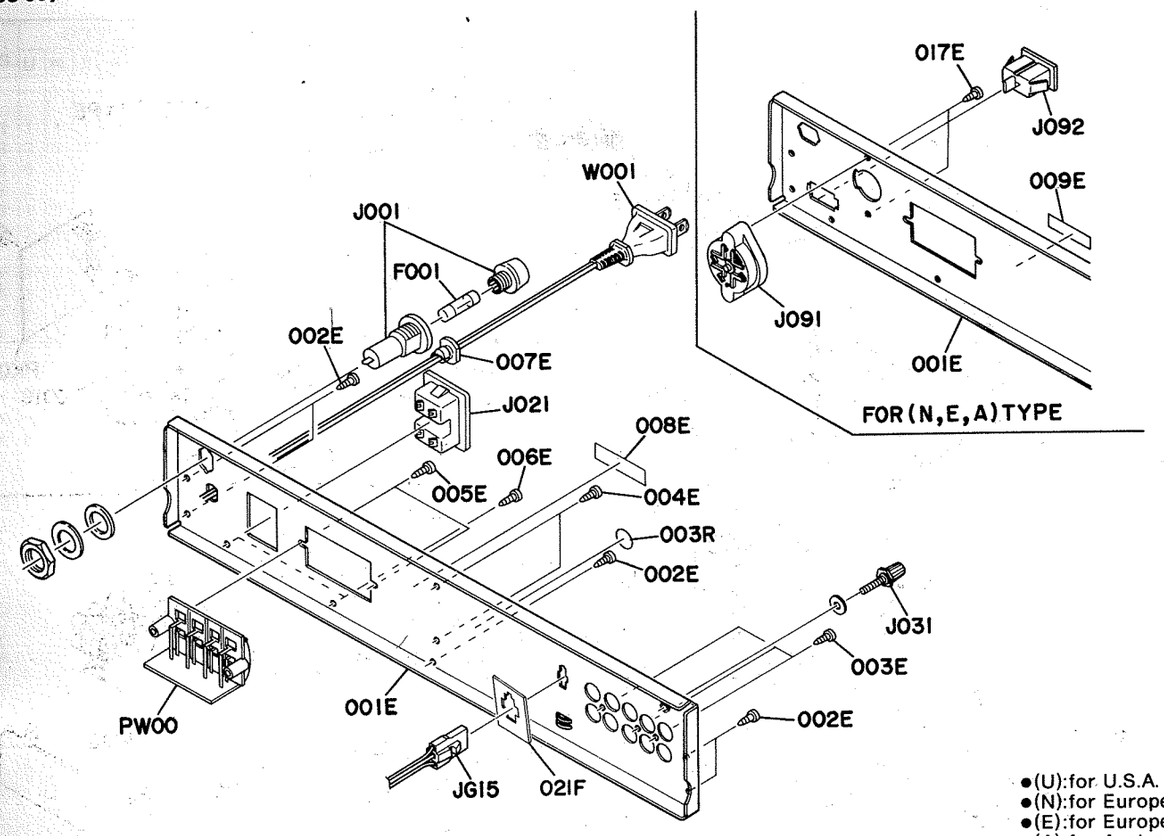
●(U):for U.S.A.
●(N):for Europe
●(E):for Europe
●(A):for Australia
●(F):for Japan

REF. DESIG.	Q'TY U	N	E	A	F	PART NO.	DESCRIPTION
001D	1	1	1	1	1	228H257010	Lid, Top Cover
002D	4					51260408Z0	B.T. Screw B4 x 8
002D		4	4	4	4	51260408U0	B.T. Screw B4 x 8
003D	2	2	2	2	2	2991259110	Bushing
004D	1	1	1	1	1	228H257020	Lid, Bottom Cover
005D	8	8	8	8	8	51280308B0	B.H. Tapped Screw B3 x 8
006D	4	4	4	4	4	416H057010	Leg
007D	4	4	4	4	4	51280408U0	B.H. Tapped Screw B4 x 8
008D	1	1	1	1	1	2481118010	Spacer

REF. DESIG.	Q'TY U	N	E	A	F	PART NO.	DESCRIPTION
001R	2					117H861010	Label
001R		1	1	1		2932861110	Label
002R		1	1	1		2578861010	Label

M5919

[C03-99] Rear Panel

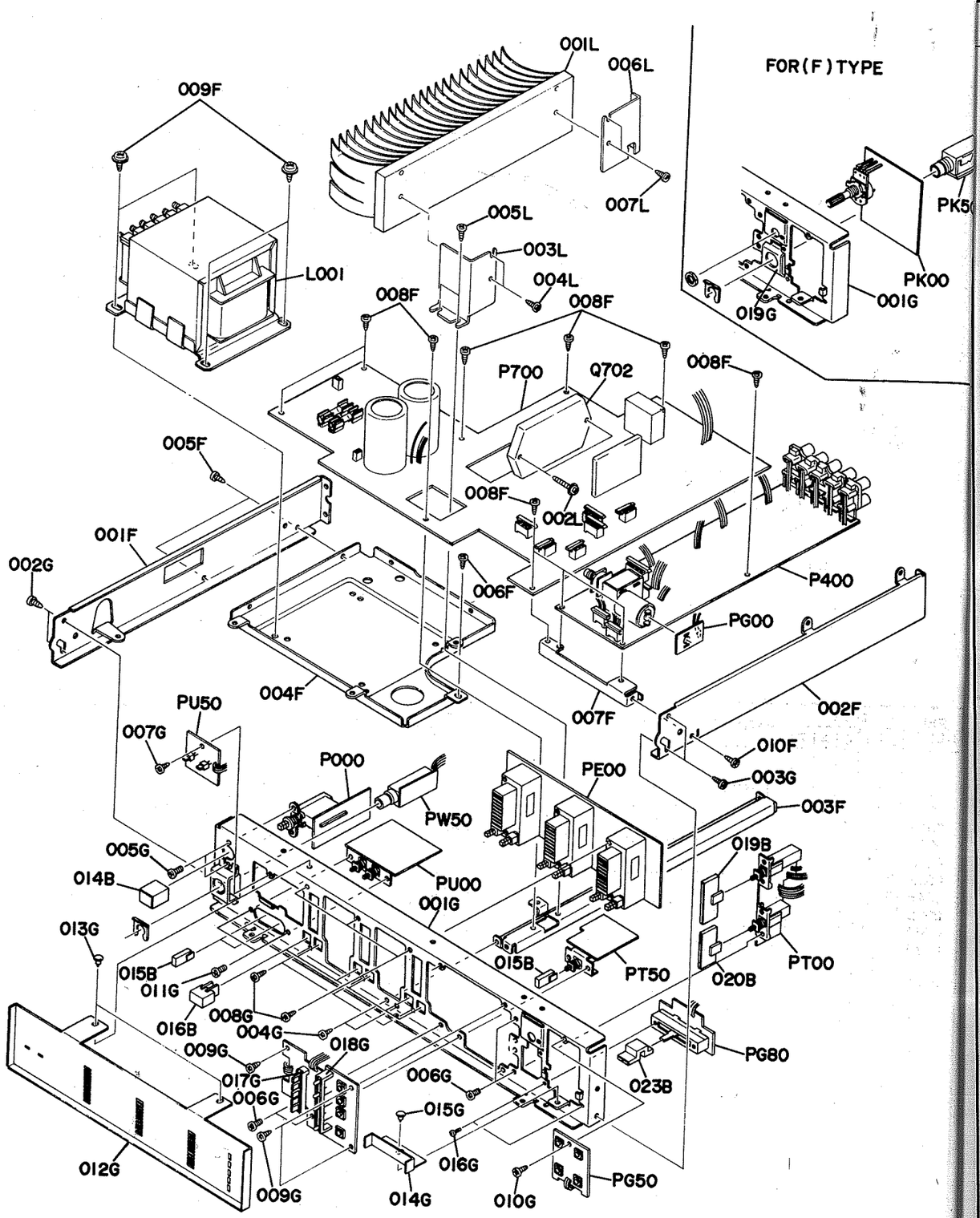


●(U):for U.S.A.
●(N):for Europe
●(E):for Europe
●(A):for Australia
●(F):for Japan

REF. DESIG.	Q'TY U	N	E	A	F	PART NO.	DESCRIPTION
001E	1					228H160210	Bracket, Rear Panel
001E		1		1		228H160220	Bracket, Rear Panel
001E			1			228H160240	Bracket, Rear Panel
001E					1	228H160230	Bracket, Rear Panel
002E	5	5	5	5	5	51280308B0	B.H. Tapped Screw B3 x 8
003E	3	3	3	3	3	51280308B0	B.H. Tapped Screw B3 x 8
004E	2	2	2	2	2	51280308B0	B.H. Tapped Screw B3 x 8
005E	2	2	2	2	2	51280308B0	B.H. Tapped Screw B3 x 8
006E	2	2	2	2	2	51280308B0	B.H. Tapped Screw B3 x 8
007E	1				1	1455259090	Bushing, AC Power Cord
008E	1	1	1	1	1	2112265010	Indicator
009E		1		1		4581861010	Label
017E		2	2	2		51280308B0	B.H. Tapped Screw B3 x 8
003R	1					9511101070	Label UL
021F	1	1	1	1	1	228H118030	Spacer

REF. DESIG.	Q'TY U	N	E	A	F	PART NO.	DESCRIPTION
⚠F001	1					FS10250500	Fuse 2.5A 250V
⚠F001		1		1		FS10080800	Fuse T800mA 250V
⚠F001			1			FS10150900	Fuse 1.5A
⚠F001					1	FS10250600	Fuse 2.5A 250V
⚠J001	1				1	YJ08000340	Jack, Fuse Holder
⚠J001		1	1	1		YJ08000290	Jack, Fuse Holder
⚠J021	1					YJ04001020	Jack, AC Outlet
⚠J021					1	YJ04001010	Jack, AC Outlet
J031	1	1	1	1	1	YL03010250	Terminal, GND
⚠J091		1		1		BY05030040	Voltage Selector
⚠J091			1			BY05080040	Voltage Selector
⚠J092		1	1	1		YP04000580	Plug, AC Inlet
JG15	1	1	1	1	1	YB00300590	Connective Cord, (3P)
⚠W001	1					YC01800260	A.C. Power Cord
⚠W001					1	YC01800190	A.C. Power Cord

M5920



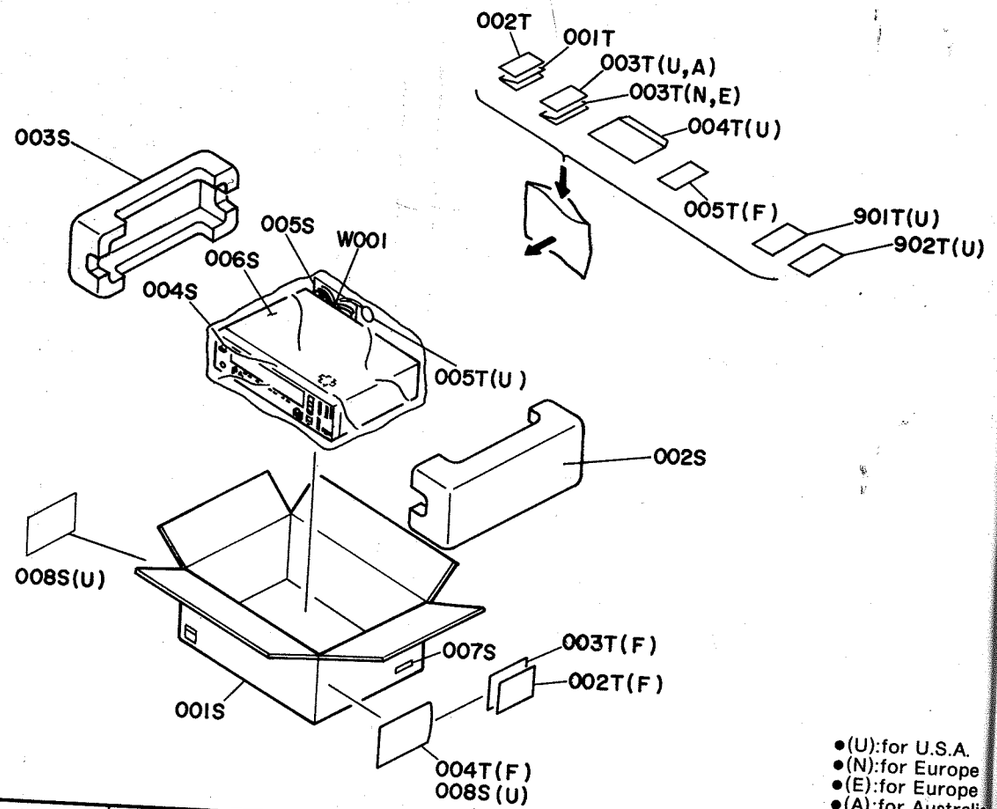
●(U):for U.S.A.
●(N):for Europe
●(E):for Europe
●(A):for Australia
●(F):for Japan

REF. DESIG.	Q'TY U	N	E	A	F	PART NO.	DESCRIPTION	
014B	1	1	1	1	1	415H154010	Knob, Power	
015B	3	3	3	3	3	228H154020	Knob, SPK./Subsonic	
016B	6	6	6	6	6	229H154010	Knob, Tone Control	
019B	1	1	1	1	1	228H154010	Knob, Muting	
020B	1	1	1	1	1	415H154020	Knob, Loudness	
023B	1	1	1	1	1	228H154030	Knob, Balance	
001F	1	1	1	1	1	228H126010	Stay, Left	
002F	1	1	1	1	1	228H126020	Stay, Right	
003F	1	1	1	1	1	228H126030	Stay, Center	
004F	1	1	1	1	1	228H004010	Table, Transformer	
005F	2	2	2	2	2	51280308B0	B.H. Tapped Screw	B3 x 8
006F	1	1	1	1	1	51280308B0	B.H. Tapped Screw	B3 x 8
007F	1	1	1	1	1	228H160050	Bracket	
008F	10	10	10	10	10	51280308B0	B.H. Tapped Screw	B3 x 8
009F	4	4	4	4	4	51260408B0	B.T. Screw	B4 x 8
010F	1	1	1	1	1	51280308B0	B.H. Tapped Screw	B3 x 8
001G	1	1	1	1		228H160010	Bracket, Front Chassis	
001G					1	228H160110	Bracket, Front Chassis	
002G	2	2	2	2	2	51280308B0	B.H. Tapped Screw	B3 x 8
003G	2	2	2	2	2	51280308B0	B.H. Tapped Screw	B3 x 8
004G	2	2	2	2	2	51280308B0	B.H. Tapped Screw	B3 x 8
005G	2	2	2	2	2	51100306A9	B.H.M. Screw	B3 x 6
006G	4	4	4	4	4	51100306A9	B.H.M. Screw	B3 x 6
007G	1	1	1	1	1	51280308B0	B.H. Tapped Screw	B3 x 8
008G	6	6	6	6	6	51280308B0	B.H. Tapped Screw	B3 x 8
009G	3	3	3	3	3	51280308B0	B.H. Tapped Screw	B3 x 8
010G	1	1	1	1	1	51280308B0	B.H. Tapped Screw	B3 x 8
011G	2	2	2	2	2	51100306A9	B.H.M. Screw	B3 x 6
012G	1	1	1	1	1	228H302010	Dial	
013G	2	2	2	2	2	2912259020	Bushing	
014G	1	1	1	1	1	228H303010	Mask	
015G	1	1	1	1	1	2912259020	Bushing	
016G	2	2	2	2	2	51100204A0	B.H.M. Screw	B2 x 4
017G	1	1	1	1	1	228H118010	Spacer	
018G	1	1	1	1	1	228H118020	Spacer	
019G					1	2127118020	Spacer	

REF. DESIG.	Q'TY U	N	E	A	F	PART NO.	DESCRIPTION	
001L	1	1	1	1	1	228H267010	Heatsink	
002L	2	2	2	2	2	51780315B0	Fin Neck B.T. Screw	B3 x 15
003L	1	1	1	1	1	228H160030	Bracket	
004L	2	2	2	2	2	51280308B0	B.H. Tapped Screw	B3 x 8
005L	2	2	2	2	2	51280308B0	B.H. Tapped Screw	B3 x 8
006L	1	1	1	1	1	228H160040	Bracket	
007L	2	2	2	2	2	51280308B0	B.H. Tapped Screw	B3 x 8
⚠L001	1					TS17623060	Power Transformer	
⚠L001		1		1		TS17623070	Power Transformer	
⚠L001			1			TS17623080	Power Transformer	
⚠L001					1	TS17623050	Power Transformer	
⚠Q702	1	1	1	1	1	HC10088030	IC	STK2230

M5921 M5922

• [H01-99] Packing Materials



●(U):for U.S.A.
●(N):for Europe
●(E):for Europe
●(A):for Australia
●(F):for Japan

REF. DESIG.	Q'TY U	N	E	A	F	PART NO.	DESCRIPTION
001S	1					228H801090	Packing Case
001S		1	1	1		228H801020	Packing Case
001S					1	228H801030	Packing Case
002S	1	1	1	1	1	222H809010	Cushion, Right
003S	1	1	1	1	1	222H809020	Cushion, Left
004S	1	1	1	1	1	9090909030	Polyethylene Sheet
005S	1				1	2918107370	Sheet
006S	1	1	1	1	1	2918107350	Sheet
007S	2					9526019010	Serial No. Card
007S		4	4			9526019060	Serial No. Card
007S				4		9526019030	Serial No. Card
007S					4	9526019040	Serial No. Card
008S	2					9510901020	Label

REF. DESIG.	Q'TY U	N	E	A	F	PART NO.	DESCRIPTION
001T	1					228H851210	Instructions
001T		1	1	1		228H851310	Instructions
001T					1	229H851110	Instructions
002T	1					229H851220	Instructions, Spec
002T		1	1	1		229H851320	Instructions, Spec
002T					1	9631000110	Guarantee Card
003T	1					103H854010	Guarantee Card
003T		1	1			228H856010	Circuit Diagram
003T				1		9631000090	Guarantee Card
003T					1	2976851040	Instructions
004T	1					2225813010	Envelope
004T					1	2976813020	Envelope
005T	1					9560000100	Hang Tag
005T					1	9650000030	S. Station Card
⚠W001		1	1			ZC01805010	A.C. Power Cord
⚠W001				1		ZC02006020	A.C. Power Cord
901T	1					2818854040	Guarantee Card (Canada)
902T	1					9650000050	S. Station Card (Canada)

M5923

M5924

10. ELECTRICAL PARTS LIST

●(U):for U.S.A.
●(N):for Europe
●(E):for Europe
●(A):for Australia
●(F):for Japan

REF. DESIG.	Q'TY U	N	E	A	F	PART NO.	DESCRIPTION
							P400-PHONO AMP. CIRCUIT BOARD
P400	1	1	1	1	1	YK228H1410	P.W. Board, Phono Amp.
	1	1	1	1		ZZ228H1410	P.W. Board Assembly
							P400-CAPACITORS
C401	1	1	1	1	1	EA33505030	Elect 3.3μF 50V
C402	1	1	1	1	1	EA33505030	Elect 3.3μF 50V
C403	1	1	1	1	1	DK16182300	Ceramic 1800pF ±10%
C404	1	1	1	1	1	DK16182300	Ceramic 1800pF ±10%
C405	1	1	1	1	1	EA10701030	Elect 100μF 10V
C406	1	1	1	1	1	EA10701030	Elect 100μF 10V
C407	1	1	1	1	1	DF16332300	Film 3300pF ±10%
C408	1	1	1	1	1	DF16332300	Film 3300pF ±10%
C409	1	1	1	1	1	DF16123300	Film 0.012μF ±10%
C410	1	1	1	1	1	DF16123300	Film 0.012μF ±10%
C411	1	1	1	1	1	EA33505030	Elect 3.3μF 50V
C412	1	1	1	1	1	EA33505030	Elect 3.3μF 50V
C414	1	1	1	1	1	EA33601630	Elect 33μF 16V
CG01	1	1	1	1	1	DF16103300	Film 0.01μF ±10%
CG02	1	1	1	1	1	EA10602530	Elect 10μF 25V
CG03	1	1	1	1	1	EA10602530	Elect 10μF 25V
CJ01					1	DD15330300	Ceramic 33pF ±5%
CJ02					1	DD15330300	Ceramic 33pF ±5%
CJ03	1	1	1	1	1	EA10602530	Elect 10μF 25V
CJ04	1	1	1	1	1	EA10602530	Elect 10μF 25V
CS01	1	1	1	1	1	EA10602530	Elect 10μF 25V
CS02	1	1	1	1	1	EA10602530	Elect 10μF 25V
CS03	1	1	1	1	1	EA10602530	Elect 10μF 25V
CS04	1	1	1	1	1	EA10602530	Elect 10μF 25V
CS05	1	1	1	1	1	EA10602530	Elect 10μF 25V
CS06	1	1	1	1	1	EA10602530	Elect 10μF 25V
CS07	1	1	1	1	1	EA47405030	Elect 0.47μF 25V
CS08	1	1	1	1	1	DF16103300	Film 0.01μF ±10%
CS09	1	1	1	1	1	DF16333300	Film 0.033μF ±10%
CS10	1	1	1	1	1	EA22801630	Elect 2200μF 16V
CS11	1	1	1	1	1	EA33601630	Elect 33μF 16V
CS12	1	1	1	1	1	EA33601630	Elect 33μF 16V
CV01	1	1	1	1	1	DK17103300	Ceramic 0.01μF ±20%
CV02	1	1	1	1	1	DK17103300	Ceramic 0.01μF ±20%
							P400-RESISTORS (All Resistors are ±5% & ¼W)
R401	1	1	1	1	1	GD05154140	150KΩ
R402	1	1	1	1	1	GD05154140	150KΩ
R403	1	1	1	1	1	GD05683140	68KΩ
R404	1	1	1	1	1	GD05683140	68KΩ
R405	1	1	1	1	1	GD05222140	2.2KΩ
R406	1	1	1	1	1	GD05222140	2.2KΩ
R407	1	1	1	1	1	GD05471140	470Ω
R408	1	1	1	1	1	GD05471140	470Ω
R409	1	1	1	1	1	GD05223140	22KΩ
R410	1	1	1	1	1	GD05223140	22KΩ
R411	1	1	1	1	1	GD05274140	270KΩ
R412	1	1	1	1	1	GD05274140	270KΩ
R413	1	1	1	1	1	GD05103140	10KΩ
R414	1	1	1	1	1	GD05103140	10KΩ

REF. DESIG.	Q'TY U	N	E	A	F	PART NO.	DESCRIPTION
RG01	1	1	1	1	1	GD05472140	4.7KΩ
RG02	1	1	1	1	1	GD05472140	4.7KΩ
RG04	1	1	1	1	1	GD05822140	8.2KΩ
RG05	1	1	1	1	1	GD05222140	2.2KΩ
RG06	1	1	1	1	1	GD05103140	10KΩ
RG07	1	1	1	1	1	GD05103140	10KΩ
RG08	1	1	1	1	1	GA05470010	47Ω 1W
RG09	1	1	1	1	1	GA05470010	47Ω 1W
RJ01					1	GD05333140	33KΩ
RJ02					1	GD05333140	33KΩ
RJ03					1	GD05104140	100KΩ
RJ04					1	GD05104140	100KΩ
RJ05					1	GD05103140	10KΩ
RJ06					1	GD05103140	10KΩ
RJ07					1	GD05104140	100KΩ
RJ08					1	GD05104140	100KΩ
RJ09	1	1	1	1	1	GD05104140	100KΩ
RJ10	1	1	1	1	1	GD05104140	100KΩ
RJ11	1	1	1	1	1	GD05271140	270Ω
RJ12	1	1	1	1	1	GD05271140	270Ω
RS01	1	1	1	1	1	GD05105140	1MΩ
RS02	1	1	1	1	1	GD05105140	1MΩ
RS03	1	1	1	1	1	GD05102140	1KΩ
RS04	1	1	1	1	1	GD05102140	1KΩ
RS05	1	1	1	1	1	GD05105140	1MΩ
RS06	1	1	1	1	1	GD05105140	1MΩ
RS07	1	1	1	1	1	GD05102140	1KΩ
RS08	1	1	1	1	1	GD05102140	1KΩ
RS09	1	1	1	1	1	GD05105140	1MΩ
RS10	1	1	1	1	1	GD05105140	1MΩ
RS11	1	1	1	1	1	GD05102140	1KΩ
RS12	1	1	1	1	1	GD05102140	1KΩ
RS13	1	1	1	1	1	GD05103140	10KΩ
RS14	1	1	1	1	1	GD05103140	10KΩ
RS15	1	1	1	1	1	GD05104140	100KΩ
RS16	1	1	1	1	1	GD05224140	220KΩ
							P400-SEMICONDUCTORS
Q401	1	1	1	1	1	HC10008090	IC NJM4558(DD)
QG01	1	1	1	1	1	HC10016090	IC NJM4556
QJ01					1	HC10007090	IC NJM4560(D)
QS01	1	1	1	1	1	HC10085030	IC LC7815
QS02	1	1	1	1	1	HC406603B0	IC LC4066
QS03	1	1	1	1	1	HT309452B0	Transistor 2SC945(P or Q)
QS04	1	1	1	1	1	HD30023090	Zener WZ071
QS05	1	1	1	1	1	HD20011050	Diode 1S1555
							P400-MISCELLANEOUS
JJ01	1	1	1	1	1	YJ07000850	Jack, (2P)
JG03	1	1	1	1	1	YJ07000860	Jack, (3P)
JG04	1	1	1	1	1	YJ07000860	Jack, (3P)
JG05	1	1	1	1	1	YJ07000860	Jack, (3P)
JG06	1	1	1	1	1	YJ07000890	Jack, (6P)
JG07	1	1	1	1	1	YJ07000860	Jack, (3P)
JG08	1	1	1	1	1	YJ07000860	Jack, (3P)
JG10	1	1	1	1	1	YJ07000880	Jack, (5P)
JG10	1	1	1	1	1	YJ07000850	Jack, (2P)

REF. DESIG.	Q'TY U	N	E	A	F	PART NO.	DESCRIPTION
JS01	1	1	1	1	1	YJ07000860	Jack, (3P)
JS02	1	1	1	1	1	YJ07000880	Jack, (5P)
JS03	1	1	1	1	1	YJ07000870	Jack, (4P)
JV01	1					YT02020290	Terminal, RCA Pin (2P)
JV01		1	1	1	1	YT02020280	Terminal, RCA Pin (2P)
JV02	1					YT02040480	Terminal, RCA Pin (2P)
JV02		1	1	1	1	YT02040470	Terminal, RCA Pin (2P)
JV03	1					YT02040480	Terminal, RCA Pin (2P)
JV03		1	1	1	1	YT02040470	Terminal, RCA Pin (2P)
WG02	1	1	1	1	1	YU02380260	Jumper Lead, (2P)
WG11	1	1	1	1	1	YU02080260	Jumper Lead, (2P)
							P700-MAIN AMP. & POWER SUPPLY CIRCUIT BOARD
P700	1	1	1	1	1	YK228H15A0	P.W. Board, Main Amp. & Power Supply
	1					ZZ228H15A0	P.W. Board Assembly
		1		1		ZZ228H85A0	P.W. Board Assembly
			1			ZZ228H75A0	P.W. Board Assembly
							P700-CAPACITORS
C701	1	1	1	1	1	EA33505030	Elect 3.3μF 50V
C702	1	1	1	1	1	EA33505030	Elect 3.3μF 50V
C703	1	1	1	1	1	DK16331300	Ceramic 330pF ±10%
C704	1	1	1	1	1	DK16331300	Ceramic 330pF ±10%
C707	1	1	1	1	1	EA33505030	Elect 3.3μF 50V
C708	1	1	1	1	1	EA33505030	Elect 3.3μF 50V
C709	1	1	1	1	1	DK16471300	Ceramic 470pF ±10%
C710	1	1	1	1	1	DK16471300	Ceramic 470pF ±10%
C711	1	1	1	1	1	DD11070300	Ceramic 7pF ±0.5pF
C712	1	1	1	1	1	DD11070300	Ceramic 7pF ±0.5pF
C713	1	1	1	1	1	DK16151300	Ceramic 150pF ±10%
C714	1	1	1	1	1	DK16151300	Ceramic 150pF ±10%
C715	1	1	1	1	1	DK16151300	Ceramic 150pF ±10%
C716	1	1	1	1	1	DK16151300	Ceramic 150pF ±10%
C717	1	1	1	1	1	EA47405030	Elect 0.47μF 50V
C718	1	1	1	1	1	EA47405030	Elect 0.47μF 50V
C719	1	1	1	1	1	EA47505030	Elect 4.7μF 50V
C720	1	1	1	1	1	EA47505030	Elect 4.7μF 50V
C721	1	1	1	1	1	EA47505030	Elect 4.7μF 50V
C722	1	1	1	1	1	EA47505030	Elect 4.7μF 50V
C723	1	1	1	1	1	DF16473540	Film 0.047μF ±10%
C724	1	1	1	1	1	DF16473540	Film 0.047μF ±10%
C725	1	1	1	1	1	EA22605030	Elect 22μF 50V
C726	1	1	1	1	1	EA22605030	Elect 22μF 50V
⚠C801	1	1	1	1	1	EB68804520	Elect 6800μF 45V
⚠C802	1	1	1	1	1	EB68804520	Elect 6800μF 45V
⚠C803	1	1	1	1	1	EA47703530	Elect 470μF 35V
⚠C804	1	1	1	1	1	EA47703530	Elect 470μF 35V
⚠C805	1	1	1	1	1	DK18103510	Ceramic 0.01μF
⚠C806	1	1	1	1	1	DK18103510	Ceramic 0.01μF
⚠C807	1	1	1	1	1	DK18103510	Ceramic 0.01μF
⚠C808	1	1	1	1	1	DK18103510	Ceramic 0.01μF
C811	1	1	1	1	1	EA10702530	Elect 100μF 25V
C812	1	1	1	1	1	EA10702530	Elect 100μF 25V

REF. DESIG.	Q'TY U	N	E	A	F	PART NO.	DESCRIPTION
C813	1	1	1	1	1	EA47605030	Elect 47μF 50
C833	1	1	1	1	1	EA10702530	Elect 100μF 25
C834	1	1	1	1	1	EA10702530	Elect 100μF 25
⚠C835	1	1	1	1		EA47703530	Elect 470μF 35
⚠C836	1	1	1	1		EA47703530	Elect 470μF 35
CN01	1	1	1	1		EA22602530	Elect 22μF 25
CN02	1	1	1	1		EA22602530	Elect 22μF 25
CN03	1	1	1	1		DF16102300	Film 0.001μF ±10%
CN04	1	1	1	1		DF16102300	Film 0.001μF ±10%
⚠CN51	1	1	1	1	1	EA10505030	Elect 1μF 50
CN52	1	1	1	1	1	EA47605030	Elect 47μF 50
CN53	1	1	1	1	1	EA22602530	Elect 22μF 25
CN54	1	1	1	1	1	EA47305030	Elect 0.047μF 50
							P700-RESISTORS (All Resistors are ±5% & ¼W)
R701	1	1	1	1	1	GD05222140	2.2KΩ
R702	1	1	1	1	1	GD05222140	2.2KΩ
R703	1	1	1	1	1	GD05221140	220Ω
R704	1	1	1	1	1	GD05221140	220Ω
R705	1	1	1	1	1	GD05221140	220Ω
R706	1	1	1	1	1	GD05221140	220Ω
R707	1	1	1	1	1	GD05683140	68KΩ
R708	1	1	1	1	1	GD05683140	68KΩ
R711	1	1	1	1	1	GD05392140	3.9KΩ
R712	1	1	1	1	1	GD05392140	3.9KΩ
R713	1	1	1	1	1	GD05471140	470Ω
R714	1	1	1	1	1	GD05471140	470Ω
R715	1	1	1	1	1	GD05683140	68KΩ
R716	1	1	1	1	1	GD05683140	68KΩ
R717	1	1	1	1	1	GA05047010	4.7Ω 1W
R718	1	1	1	1	1	GA05047010	4.7Ω 1W
R719	1	1	1	1	1	GA05047020	4.7Ω 2W
R720	1	1	1	1	1	GA05047020	4.7Ω 2W
R721	1	1	1	1	1	GA05331020	330Ω 2W
R722	1	1	1	1	1	GA05331020	330Ω 2W
⚠R723	1	1	1	1	1	GA05101010	100Ω 1W
⚠R724	1	1	1	1	1	GA05101010	100Ω 1W
R725	1	1	1	1	1	GD05102140	1KΩ
R801	1	1	1	1	1	GA05181010	180Ω 1W
R802	1	1	1	1	1	GA05181010	180Ω 1W
R803	1	1	1	1	1	GD05332140	3.3KΩ
R804	1	1	1	1	1	GD05332140	3.3KΩ
R831	1	1	1	1	1	GD05270010	27Ω 1W
R832	1	1	1	1	1	GD05270010	27Ω 1W
R833	1	1	1	1	1	GD05152140	1.5KΩ
R834	1	1	1	1	1	GD05152140	1.5KΩ
RN01	1	1	1	1		GD05104140	100KΩ
RN02	1	1	1	1		GD05104140	100KΩ
RN03	1	1	1	1		GD05222140	2.2KΩ
RN04	1	1	1	1		GD05222140	2.2KΩ
RN05	1	1	1	1		GD05331140	330Ω
RN06	1	1	1	1		GD05331140	330Ω
RN07	1	1	1	1		GD05103140	10KΩ
RN08	1	1	1	1		GD05103140	10KΩ
RN09	1	1	1	1		GD05102140	1KΩ
RN10	1	1	1	1		GD05102140	1KΩ
RN11	1	1	1	1		GD05332140	3.3KΩ
RN12	1	1	1	1		GD05332140	3.3KΩ

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●(U):for U.S.A.
●(N):for Europe
●(E):for Europe
●(A):for Australia
●(F):for Japan

REF. DESIG.	Q'TY U	N	E	A	F	PART NO.	DESCRIPTION
RN51	1	1	1	1	1	GD05153140	15KΩ
RN52	1	1	1	1	1	GD05104140	100KΩ
RN53	1	1	1	1	1	GD05563140	56KΩ
RN54	1	1	1	1	1	GD05473140	47KΩ
RN55	1	1	1	1	1	GD05224140	220KΩ
RN56	1	1	1	1	1	GD05333140	33KΩ
RN57	1	1	1	1	1	GD05183140	18KΩ
RN58	1	1	1	1	1	GD05563140	56KΩ
RN59	1	1	1	1	1	GD05223140	22KΩ
⚠RN60	1	1	1	1	1	GG05561120	560Ω ½W
RN61	1	1	1	1	1	GD05563140	56KΩ
RN62	1	1	1	1	1	GD05563140	56KΩ
RN63	1	1	1	1		GG05221120	220Ω ½W
							P700-SEMICONDUCTORS
Q701	1	1	1	1	1	HC10087030	IC STK3042-2
⚠Q702	1	1	1	1	1	HC10088030	IC STK2230
Q703	1	1	1	1	1	HT309452B0	Transistor 2SC945(P or Q)
Q704	1	1	1	1	1	HT309452B0	Transistor 2SC945(P or Q)
Q705	1	1	1	1	1	HD30070090	Zener WZ270
Q706	1	1	1	1	1	HT309452B0	Transistor 2SC945(P or Q)
Q707	1	1	1	1	1	HD20015030	Diode DS135D
⚠Q801	1	1	1	1	1	HD20008290	Diode S4VB20
⚠Q802	1	1	1	1	1	HD20021290	Diode S1VB20
⚠Q803	1	1	1	1	1	HT406672F0	Transistor 2SD667(C or D)
⚠Q804	1	1	1	1	1	HT206472F0	Transistor 2SB647(C or D)
Q805	1	1	1	1	1	HD30022010	Diode HZ9L
Q806	1	1	1	1	1	HD30022010	Diode HZ9L
Q807	1	1	1	1	1	HD20015030	Diode DS135D
⚠Q831	1	1	1	1	1	HT406672F0	Transistor 2SD667 (C or D)
⚠Q832	1	1	1	1	1	HT206472F0	Transistor 2SB647 (C or D)
Q833	1	1	1	1	1	HD30014010	Zener HZ16L
Q834	1	1	1	1	1	HD30014010	Zener HZ16L
QN01	1	1	1	1		HC10007090	IC NJM4560D
QN02	1	1	1	1		HD20011050	Diode 1S1555
QN03	1	1	1	1		HD20011050	Diode 1S1555
QN04	1	1	1	1		HD30076090	Zener WZ038
QN05	1	1	1	1		HT323091F0	Transistor 2SC2309(F)
QN06	1	1	1	1		HD30041090	Zener BZ210
⚠QN51	1	1	1	1	1	HD20015030	Diode DS135D
QN52	1	1	1	1	1	HC10042050	IC TA7317
⚠QN53	1	1	1	1	1	HD20015030	Diode DS135D
							P700-MISCELLANEOUS
⚠F801	1					FS10020500	Fuse 200mA 250V
⚠F801		1		1		FS10025800	Fuse T250mA 250V
⚠F802	1					FS10020500	Fuse 200mA 250V
⚠F802		1		1		FS10025800	Fuse T250mA 250V
J731	1	1	1	1	1	YJ07000860	Jack, (3P)
J732	1	1	1	1	1	YJ07000860	Jack, (3P)
J733	1	1	1	1	1	YJ07000860	Jack, (3P)
J802	1	1	1	1	1	YJ07000860	Jack, (3P)
J808 ～ J811	4				4	YJ08000170	Jack, Fuse Clip
J808 ～ J811		4	4	4		YJ08000270	Jack, Fuse Clip
J814	1	1	1	1	1	YJ07000860	Jack, (3P)
L701	1	1	1	1	1	LL23905120	Coil 1μH
L702	1	1	1	1	1	LL23905120	Coil 1μH
LN51	1	1	1	1	1	LY20240190	Lelay, DC24V
WN01	1	1	1	1		YU02280260	Jumper Lead, (2P)

REF. DESIG.	Q'TY U	N	E	A	F	PART NO.	DESCRIPTION
W702	1	1	1	1	1	YU03120260	Jumper Lead, (3P)
W703	1	1	1	1	1	YU03180260	Jumper Lead, (3P)
W705	1	1	1	1	1	YU02120260	Jumper Lead, (2P)
W708	1	1	1	1	1	YU02260240	Jumper Lead, (2P)
W801	1	1	1	1	1	YU03080260	Jumper Lead, (3P)
							PE00-TONE CONTROL CIRCUIT BOARD
PE00	1	1	1	1	1	YK228H1420	P.W. Board, Tone Control
	1	1	1	1		ZZ228H1420	P.W. Board Assembly
							PE00-CAPACITORS
CE01	1	1	1	1	1	EA10602530	Elect 10μF 25V
CE02	1	1	1	1	1	EA10602530	Elect 10μF 25V
CE03	1	1	1	1	1	EA10602530	Elect 10μF 25V
CE04	1	1	1	1	1	EA10602530	Elect 10μF 25V
CE05	1	1	1	1	1	DK16101300	Ceramic 100pF ±10%
CE06	1	1	1	1	1	DK16101300	Ceramic 100pF ±10%
CE07	1	1	1	1	1	DK16101300	Ceramic 100pF ±10%
CE08	1	1	1	1	1	DK16101300	Ceramic 100pF ±10%
CE09	1	1	1	1	1	DF16562300	Film 5600pF ±10%
CE10	1	1	1	1	1	DF16562300	Film 5600pF ±10%
CE11	1	1	1	1	1	DF16123300	Film 0.012μF ±10%
CE12	1	1	1	1	1	DF16123300	Film 0.012μF ±10%
CE13	1	1	1	1	1	DF16123300	Film 0.012μF ±10%
CE14	1	1	1	1	1	DF16123300	Film 0.012μF ±10%
CE15	1	1	1	1	1	DF16222300	Film 2200pF ±10%
CE16	1	1	1	1	1	DF16222300	Film 2200pF ±10%
CE17	1	1	1	1	1	DF16822300	Film 8200pF ±10%
CE18	1	1	1	1	1	DF16822300	Film 8200pF ±10%
CE19	1	1	1	1	1	DD15560370	Ceramic 56pF ±5%
CE20	1	1	1	1	1	DD15560370	Ceramic 56pF ±5%
CE21	1	1	1	1	1	EA10602530	Elect 10μF 25V
CE22	1	1	1	1	1	EA10602530	Elect 10μF 25V
CE23	1	1	1	1	1	DF16103300	Film 0.01μF ±10%
CE24	1	1	1	1	1	DF16103300	Film 0.01μF ±10%
							PE00-RESISTORS (All Resistors are ±5% & ¼W)
RE01	1	1	1	1	1	GD05224140	220KΩ
RE02	1	1	1	1	1	GD05224140	220KΩ
RE03	1	1	1	1	1	GD05222140	2.2KΩ
RE04	1	1	1	1	1	GD05222140	2.2KΩ
RE05	1	1	1	1	1	GD05152140	1.5KΩ
RE06	1	1	1	1	1	GD05152140	1.5KΩ
RE07	1	1	1	1	1	GD05103140	10KΩ
RE08	1	1	1	1	1	GD05103140	10KΩ
RE09	1	1	1	1	1	GD05682140	6.8KΩ
RE10	1	1	1	1	1	GD05682140	6.8KΩ
RE11	1	1	1	1	1	GD05562140	5.6KΩ
RE12	1	1	1	1	1	GD05562140	5.6KΩ
RE13	1	1	1	1	1	GD05273140	27KΩ
RE14	1	1	1	1	1	GD05273140	27KΩ
RE15	1	1	1	1	1	GD05682140	6.8KΩ
RE16	1	1	1	1	1	GD05682140	6.8KΩ
RE17	1	1	1	1	1	GD05562140	5.6KΩ
RE18	1	1	1	1	1	GD05562140	5.6KΩ
RE19	1	1	1	1	1	GD05273140	27KΩ
RE20	1	1	1	1	1	GD05273140	27KΩ

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REF. DESIG.	Q'TY U	N	E	A	F	PART NO.	DESCRIPTION
RE21	1	1	1	1	1	GD05183140	18KΩ
RE22	1	1	1	1	1	GD05183140	18KΩ
RE25	1	1	1	1	1	GD05103140	10KΩ
RE26	1	1	1	1	1	GD05103140	10KΩ
RE27	1	1	1	1	1	RY01040040	100KΩ(B), Variable
RE29	1	1	1	1	1	RY01040040	100KΩ(B), Variable
RE31	1	1	1	1	1	RY01040040	100KΩ(B), Variable
RE33	1	1	1	1	1	GD05470140	47Ω
RE34	1	1	1	1	1	GD05470140	47Ω
RE35	1	1	1	1	1	GD05103140	10KΩ
RE36	1	1	1	1	1	GD05103140	10KΩ
RE37	1	1	1	1	1	GD05561140	560Ω
							PE00-SEMICONDUCTORS
QE01	1	1	1	1	1	HC10007090	IC NJM4560D
QE02	1	1	1	1	1	HC10007090	IC NJM4560D
							PE00-MISCELLANEOUS
WE01	1	1	1	1	1	YU03200260	Jumper Lead, (3P)
WE02	1	1	1	1	1	YU03380260	Jumper Lead, (3P)
WE03	1	1	1	1	1	YU03180260	Jumper Lead, (3P)
WE04	1	1	1	1	1	YU03180260	Jumper Lead, (3P)
WE05	1	1	1	1	1	YU02160260	Jumper Lead, (2P)
							PG00-VOLUME CIRCUIT BOARD
PG00	1	1	1	1	1	YK228H14A0	P.W. Board, Volume
	1	1	1	1		ZZ228H14A0	P.W. Board Assembly
CG04	1	1	1	1	1	DF16103300	Film Cap. 0.01μF ±10%
RG03	1	1	1	1	1	RY11040010	Variable Resistor 100KΩ
WG51	1	1	1	1	1	YU03100260	Jumper Lead, (3P)
							PG50-VOLUME UP DOWN SW. CIRCUIT BOARD
PG50	1	1	1	1	1	YK228H15F0	P.W. Board, Volume Up Down SW.
	1	1	1	1		ZZ228H15F0	P.W. Board Assembly
RG51	1	1	1	1	1	GD05153140	Resistor 15KΩ ±5% ¼W
RG52	1	1	1	1	1	GD05153140	Resistor 15KΩ ±5% ¼W
SG51	1	1	1	1	1	SP01010580	Push Switch
SG52	1	1	1	1	1	SP01010580	Push Switch
SG53	1	1	1	1	1	SP01010580	Push Switch
SG54	1	1	1	1	1	SP01010580	Push Switch
							PG80-BALANCE VR. CIRCUIT BOARD
PG80	1	1	1	1	1	YK228H15G0	P.W. Board, Balance VR.
	1	1	1	1		ZZ228H15G0	P.W. Board Assembly
RG81	1	1	1	1	1	RX02040020	Variable Resistor 200KΩ(B)
WG81	1	1	1	1	1	YU03100260	Jumper Lead, (3P)

●(U):for U.S.A.
●(N):for Europe
●(E):for Europe
●(A):for Australi
●(F):for Japan

REF. DESIG.	Q'TY U	N	E	A	F	PART NO.	DESCRIPTION
							PK00-MIC AMP. CIRCUIT BOARD
PK00				1		YK228H1430	P.W. Board, Mic Amp.
							PK00-CAPACITORS
CK01			1			EA33505030	Elect 3.3μF 50V
CK02			1			EA47505030	Elect 4.7μF 50V
CK03			1			DK16331300	Ceramic 330pF ±10%
CK05			1			DF16123300	Film 0.012μF ±10%
CK06			1			DF16102300	Film 0.001μF ±10%
CK07			1			EA33505030	Elect 3.3μF 50V
CK08			1			DK16331300	Ceramic 330pF ±10%
CK09			1			DK16331300	Ceramic 330pF ±10%
CK12			1			EA10602530	Ceramic 10μF 25V
CK13			1			EA10602530	Ceramic 10μF 25V
							PK00-RESISTORS (All Resistors are ±5% & ¼W)
RK01			1			GD05223140	22KΩ
RK02			1			GD05223140	22KΩ
RK03			1			GD05222140	2.2KΩ
RK04			1			GD05821140	820Ω
RK05			1			GD05103140	10KΩ
RK06			1			GD05122140	1.2KΩ
RK07			1			GD05682140	6.8KΩ
RK08			1			GD05821140	820Ω
RK09			1			GD05103140	10KΩ
RK10			1			RK01040200	100KΩ, Variable
RK15			1			GD05103140	10KΩ
RK16			1			GD05223140	22KΩ
							PK00-SEMICONDUCTORS
QK01			1			HC10008090	IC NJM4558(DD)
QK02			1			HC10007090	IC NJM4560(D)
							PK00-MISCELLANEOUS
WK01				1		YU03120260	Jumper Lead, (3P)
WK02				1		YU02200260	Jumper Lead, (2P)
WK03				1		YU02200260	Jumper Lead, (2P)
WK05				1		YU03180260	Jumper Lead, (3P)
							PK50-MIC JACK CIRCUIT BOARD
PK50				1		YK228H1440	P.W. Board, Mic Jack
JK51				1		YJ01001780	Jack, Mic
							PO00-POWER SWITCH CIRCUIT BOARD
PO00	1	1	1	1	1	YK228H15B0	P.W. Board, Power Switch
	1					ZZ228H15B0	P.W. Board Assembly
		1				ZZ228H85B0	P.W. Board Assembly
			1	1		ZZ228H75B0	P.W. Board Assembly
⚠G001	1					DK18103530	Ceramic Cap. 0.01μF 250V
⚠G001		1				DK18103840	Ceramic Cap. 0.01μF 250V
⚠G001			1	1	1	DK18103850	Ceramic Cap. 0.01μF 250V
⚠S001	1					SP01010420	Push Switch, Power
⚠S001		1	1	1		SP01010390	Push Switch, Power
⚠S001					1	SP01010430	Push Switch, Power

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REF. DESIG.	Q'TY U	N	E	A	F	PART NO.	DESCRIPTION
							PS50-FUNCTION SWITCH CIRCUIT BOARD
PS50	1	1	1	1	1	YK228H15E0	P.W. Board, Function Switch
	1	1	1	1		ZZ228H15E0	P.W. Board Assembly
							PS50-RESISTORS
RS51	1	1	1	1	1	GD05182140	1.8KΩ ±5% ¼W
RS52	1	1	1	1	1	GD05182140	1.8KΩ ±5% ¼W
RS53	1	1	1	1	1	GD05104140	100KΩ ±5% ¼W
RS54	1	1	1	1	1	GD05104140	100KΩ ±5% ¼W
RS55	1	1	1	1	1	GD05562140	5.6KΩ ±5% ¼W
							PS50-SEMICONDUCTORS
QS51	1	1	1	1	1	HI10022020	L.E.D. LN28RP
QS52	1	1	1	1	1	HI10022020	L.E.D. LN28RP
QS53	1	1	1	1	1	HI10022020	L.E.D. LN28RP
QS54	1	1	1	1		HI10022020	L.E.D. LN28RP
QS54					1	HI10035020	L.E.D. LN38GP
QS55	1	1	1	1	1	HI10034020	L.E.D. LN05202P x 5
							PS50-MISCELLANEOUS
SS51	1	1	1	1	1	SP01010580	Push Switch
SS52	1	1	1	1	1	SP01010580	Push Switch
SS53	1	1	1	1	1	SP01010580	Push Switch
SS54	1	1	1	1	1	SP01010580	Push Switch
WS51	1	1	1	1	1	YU05260260	Jumper Lead, (5P)
WS52	1	1	1	1	1	YU04260260	Jumper Lead, (4P)
WS53	1	1	1	1	1	YU06200260	Jumper Lead, (6P)
							PT00-LOUDNESS CIRCUIT BOARD
PT00	1	1	1	1	1	YK228H15D0	P.W. Board, Loudness
	1	1	1	1		ZZ228H15D0	P.W. Board Assembly
							PT00-CAPACITOR
CT01	1	1	1	1	1	DK16331300	Ceramic 330pF ±10%
CT02	1	1	1	1	1	DK16331300	Ceramic 330pF ±10%
CT03	1	1	1	1	1	DF16823300	Film 0.068μF ±10%
CT04	1	1	1	1	1	DF16823300	Film 0.068μF ±10%
							PT00-RESISTORS
RT01	1	1	1	1	1	GD05273140	27KΩ ±5% ¼W
RT02	1	1	1	1	1	GD05273140	27KΩ ±5% ¼W
RT03	1	1	1	1	1	GD05822140	8.2KΩ ±5% ¼W
RT04	1	1	1	1	1	GD05822140	8.2KΩ ±5% ¼W
							PT00-MISCELLANEOUS
ST01	1	1	1	1	1	SP02010550	Push Switch, Loudness
ST02	1	1	1	1	1	SP04010410	Push Switch, Muting
WT01	1	1	1	1	1	YU05090260	Jumper Lead, (5P)
WT02	1	1	1	1	1	YU03180260	Jumper Lead, (3P)
WT03	1	1	1	1	1	YU03180260	Jumper Lead, (3P)
							PT50-SUBSONIC FILTER CIRCUIT BOARD
PT50	1	1	1	1	1	YK228H15H0	P.W. Board, Subsonic Filter
	1	1	1	1		ZZ228H15H0	P.W. Board Assembly

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

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●(U):for U.S.A
●(N):Europ
●(E):Europ
●(A):Austr
●(F):Japan

REF. DESIG.	Q'TY U	N	E	A	F	PART NO.	DESCRIPTION
							PT50-CAPACITORS
CT51	1	1	1	1	1	EA10701030	Elect 100μF 1
CT52	1	1	1	1	1	EA10701030	Elect 100μF 1
CT53	1	1	1	1	1	EA10701030	Elect 100μF 1
CT54	1	1	1	1	1	EA10701030	Elect 100μF 1
							PT50-RESISTORS
RT51	1	1	1	1	1	GD05103140	10KΩ ±5% ¼
RT52	1	1	1	1	1	GD05103140	10KΩ ±5% ¼
RT53	1	1	1	1	1	GD05104140	100KΩ ±5% ¼
RT54	1	1	1	1	1	GD05104140	100KΩ ±5% ¼
							PT50-MISCELLANEOUS
ST51	1	1	1	1	1	SP04010410	Push Switch
JT52	1	1	1	1	1	YJ07000860	Jack, (3P)
							PU00-SPEAKER SW. CIRCUIT BOARD
PU00	1	1	1	1	1	YK228H15J0	P.W. Board, Speaker SW.
	1	1	1	1		ZZ228H15J0	P.W. Board Assembly
RU01	1	1	1	1	1	GD05392140	Resistor 3.9KΩ ±5% ¼W
RU02	1	1	1	1	1	GD05392140	Resistor 3.9KΩ ±5% ¼W
SU01	1	1	1	1	1	SP04020350	Push Switch, 4-2
WU01	1	1	1	1	1	YU04320240	Jumper Lead, (4P)
WU02	1	1	1	1	1	YU02180260	Jumper Lead, (2P)
WU04	1	1	1	1	1	YU02140260	Jumper Lead, (2P)
							PU50-SPEAKER LED CIRCUIT BOARD
PU50	1	1	1	1	1	YK228H15I0	P.W. Board, Speaker LED
	1	1	1	1	1	ZZ228H15I0	P.W. Board Assembly
QU51	1	1	1	1	1	HI10030020	L.E.D. LN224RP
QU52	1	1	1	1	1	HI10030020	L.E.D. LN224RP
WU51	1	1	1	1	1	YU03120260	Jumper Lead, (3P)
							PW00-SPEAKER TERMINAL CIRCUIT BOARD
PW00	1	1	1	1	1	YK228H15C0	P.W. Board, Speaker Terminal
	1	1	1	1		ZZ228H15C0	P.W. Board Assembly
JW01	1	1	1	1	1	YT03080020	Terminal, (8P)
							PW50-HEADPHONE CIRCUIT BOARD
PW50	1	1	1	1	1	YK228H15K0	P.W. Board, Headphone
	1	1	1	1		ZZ228H15K0	P.W. Board Assembly
JW51	1	1	1	1	1	YJ01001790	Jack, Headphone
JW52	1	1	1	1	1	YJ07000860	Jack, (3P)
WW51	1	1	1	1	1	YU03120260	Jumper Lead, (3P)

Note on safety:

Symbol ⚠ Fire or electrical shock hazard. Only original parts should be used to replace any part marked with symbol ⚠. Any other component substitution (other than original type), may increase risk of fire or electrical shock hazard.

11. TECHNICAL SPECIFICATIONS

AUDIO SECTION

POWER OUTPUT PER CHANNEL

DIN 4 OHMS 1kHz	48W
RMS 4 OHMS 1kHz	44W
DIN 8 OHMS 1kHz	43W
RMS 8 OHMS 1kHz	40W
TOTAL HARMONIC DISTORTION AT RMS 8 OHMS	0.05%
I. M. DISTORTION	0.05%
DAMPING FACTOR 8 OHMS (1kHz)	40

MM CARTRIDGE INPUT

Frequency Response (RIAA)	±0.5dB
Signal-to-Noise Ratio	81dB
Input Impedance	47k ohms
Input Capacitance	100pF
Input Sensitivity	2.5mV
Equivalent Input Noise	1.0μV
Dynamic Range	100dB

AUX. INPUT

Input Impedance	27k ohms
Input Sensitivity	150mV
Frequency Response	10Hz – 30kHz
Signal-to-Noise Ratio	90dB

OUTPUT VOLTAGE

Tape Out	380mV

OUTPUT IMPEDANCE

Tape Out	325 ohms

GENERAL

Power Requirement	
N version	220/240V AC, 50/60Hz
T version	220/240V AC, 50/60Hz
E version	110/120/220/240V AC, 50/60Hz
Power Consumption at Rated Output, both Channels Driven	145W
Dimensions	
Panel Width	416mm
Panel Height	73mm
Depth	300mm
Weight	
Unit Alone	5.8kg

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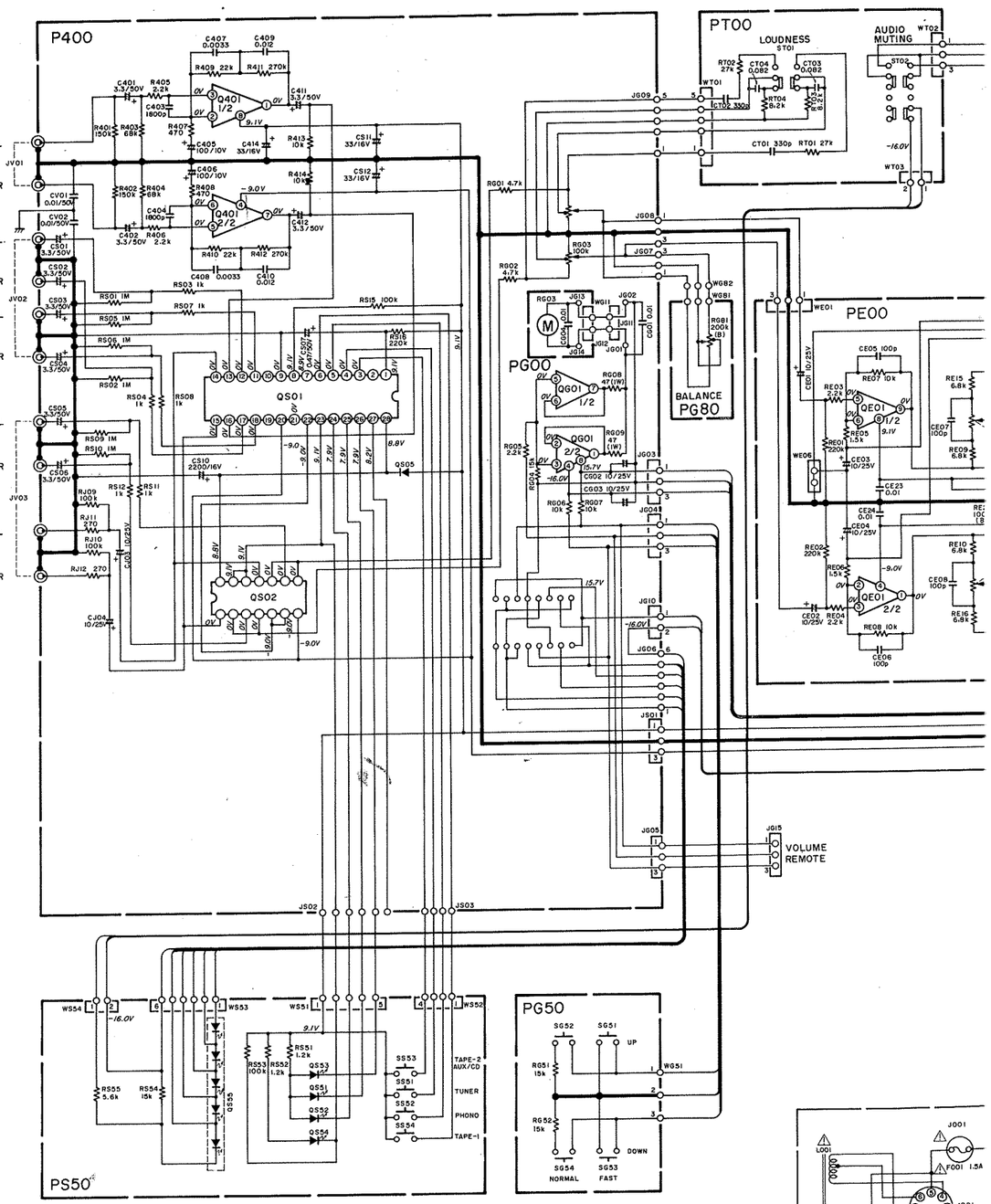
12. SCHEMATIC DIAGRAM

Q401 NJM4558(DD) HC10008090	Q701 STK3042-2 HC10087030	Q702 STK2230 HC10088030	Q801 S4VB20 200V 2.6A HD20008290	Q802 S1VB20 HD20021290	Q803, Q831 2SD667(C,D) HT406672F0	Q804, Q832 2SB647(C,D) HT206472F0	Q805, Q806 HZ9L HD30022010	QN07 2SC945(P,Q) HT30945280	Q833, Q834 HZ12L HD30009010	QN01 NJM4 HC100



Note on safety:

Symbol ⚠. Fire or electrical shock hazard. Only original parts should be used to replace any part marked with symbol ⚠. Any other component substitution (other than original type), may increase risk of fire or electrical shock hazard.

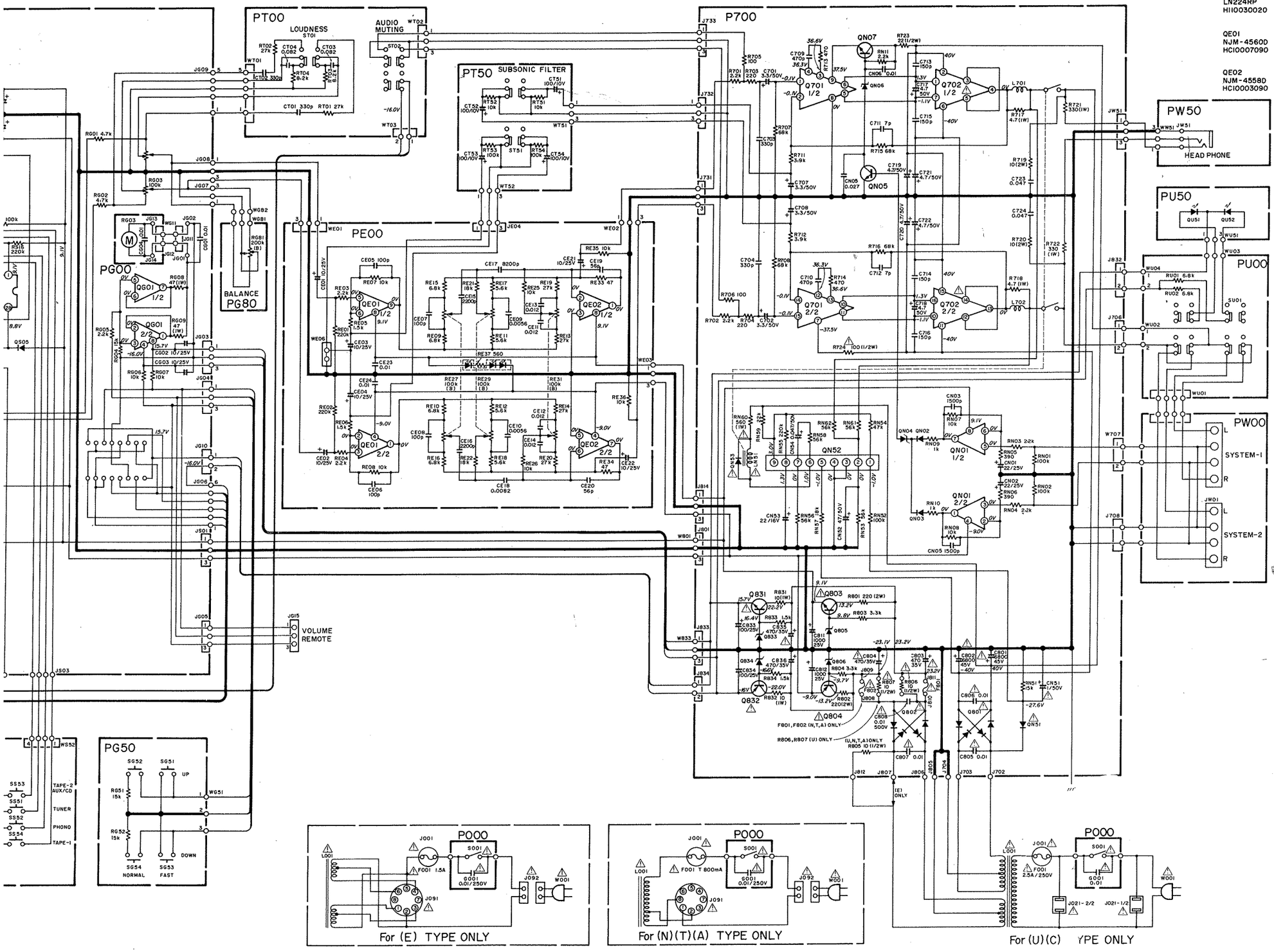
Model PM420

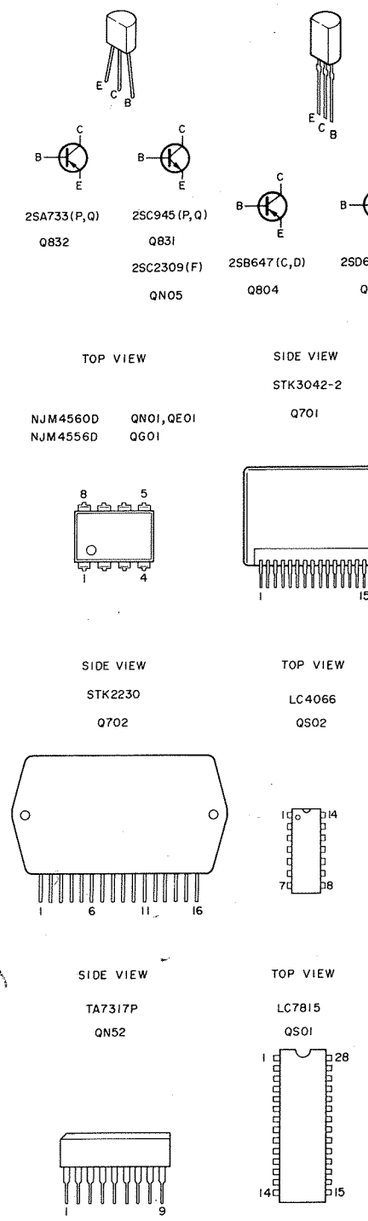
Q802	Q803, Q831	Q804, Q832	Q805, Q806	QN07	Q833, Q834	QN01	QN02, QN03, QS05	QN04	QN05	QN06	QN51, QN53	QN52	QS01	QS02	QS51~QS54	QS55	QG01
SIVB20	2SD667(C,D)	2SB647(C,D)	HZ9L	2SC945(P,Q)	HZ12L	NJM4560D	IS1555	WZ038	2SC2309(F)	HZ22L-2	DS135D	TA7317	LC7815	LC4066	LN28RP 3R	LN05202P X5	NJM-4556
HD20021290	HT406672F0	HT206472F0	HD30022010	HT309452B0	HD30009010	HC10007090	HD20011050	HD30076090	HT323091F0	HD30031010	HD20015030	HC10042050	HC10085030	HC40660380	HI10022020	HI10034020	HC10016090

QU51, QU52 LN224RP HI10030020

QE01 NJM-4560D HC10007090

QE02 NJM-4558D HC10003090





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

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