480

SERVICE MANUAL

PM-50

4822 725 50885

marantz®

model PM-50

Integrated Amplifier

MARANTZ DESIGN AND SERVICE

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

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Telex: 35000 PHTC NL routing IND NLMTFAT

ORDERING PARTS:

Parts can be ordered either by mail or by telex. In both cases, correct part number has to be specified.
The following information must be supplied to eliminate delays in processing your order:

1. Complete address
2. Complete part numbers and quantities 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.

PARTS ORDERING

Parts may be ordered at the following addresses:

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A 1101 Wien
Austria
Telex: 132.332

BELGIUM
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Industrialaan 1
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Telex: 24466

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DIVISION OF PHILIPS S.A.
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Telex: 240.239

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MARANTZ
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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
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DIVISION OF PHILIPS A/S
Sandstuveien 40
0680 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

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Via Chiese, 74
20126 Milano
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AL ALAMIAH ELECTRONICS
P.O.Box 5954
University Street
Riyadh 11432
Saudi Arabia
Telex: 401530

SOUTH AFRICA
MARANTZ
DIVISION OF PHILIPS S.A.
Main Road Martindale
P.O. Box. 58088
Newville 21114
South Africa

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

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

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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

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Divisao philips S.A. service
Outurela-carnaxide
2795 LinDA-A-VELHA
Telex: 43906

MC-Service

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.

MODEL PM-50 INTEGRATED AMPLIFIER

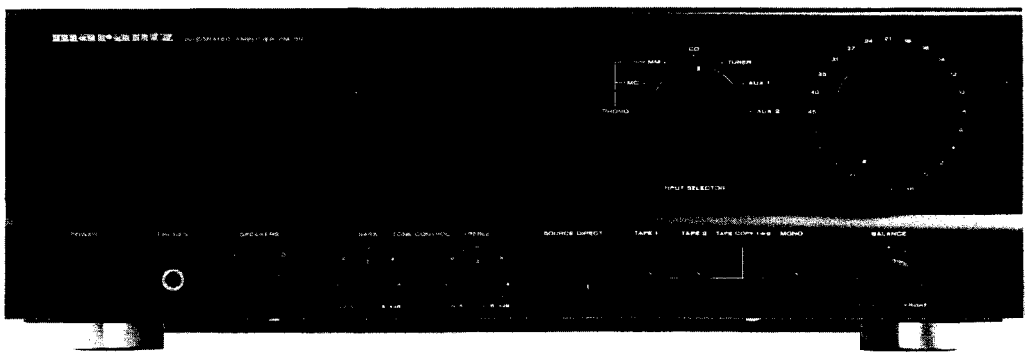


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TECHNICAL SPECIFICATIONS (DIN)

Power Amplifier Section

IHF Dynamic Power		
2 ohms		: 240W
4 ohms		: 150W
8 ohms		: 95W
Power Output Per Channel		
DIN 4 ohms	1 kHz 1% THD	: 120W
RMS 4 ohms	1 kHz 0.06% THD	: 105W
DIN 8 ohms	1 kHz 1% THD	: 75W
RMS 8 ohms	1 kHz 0.06% THD	: 70W
FTC 4 ohms	20–20 kHz 0.06% THD	: 95W
FTC 8 ohms	20–20 kHz 0.03% THD	: 70W
Total Harmonic Distortion at 8 ohms		: 0.008%
I.M. Distortion at 8 ohms		: 0.008%
Damping Factor		: 100
Slew Rate		: 70 V/μs

Phono Amplifier Section

MM Cartridge Input		
Frequency Difference		: ±0.5 dB
Signal to Noise Ratio (A weighted)		: 86 dB
Input Sensitivity		: 2.5 mm
Input Impedance		: 47k Ohms
MC Cartridge Input		
Input Sensitivity		: 0.25 mV
Input Impedance		: 100 Ohms

Hight Level Section

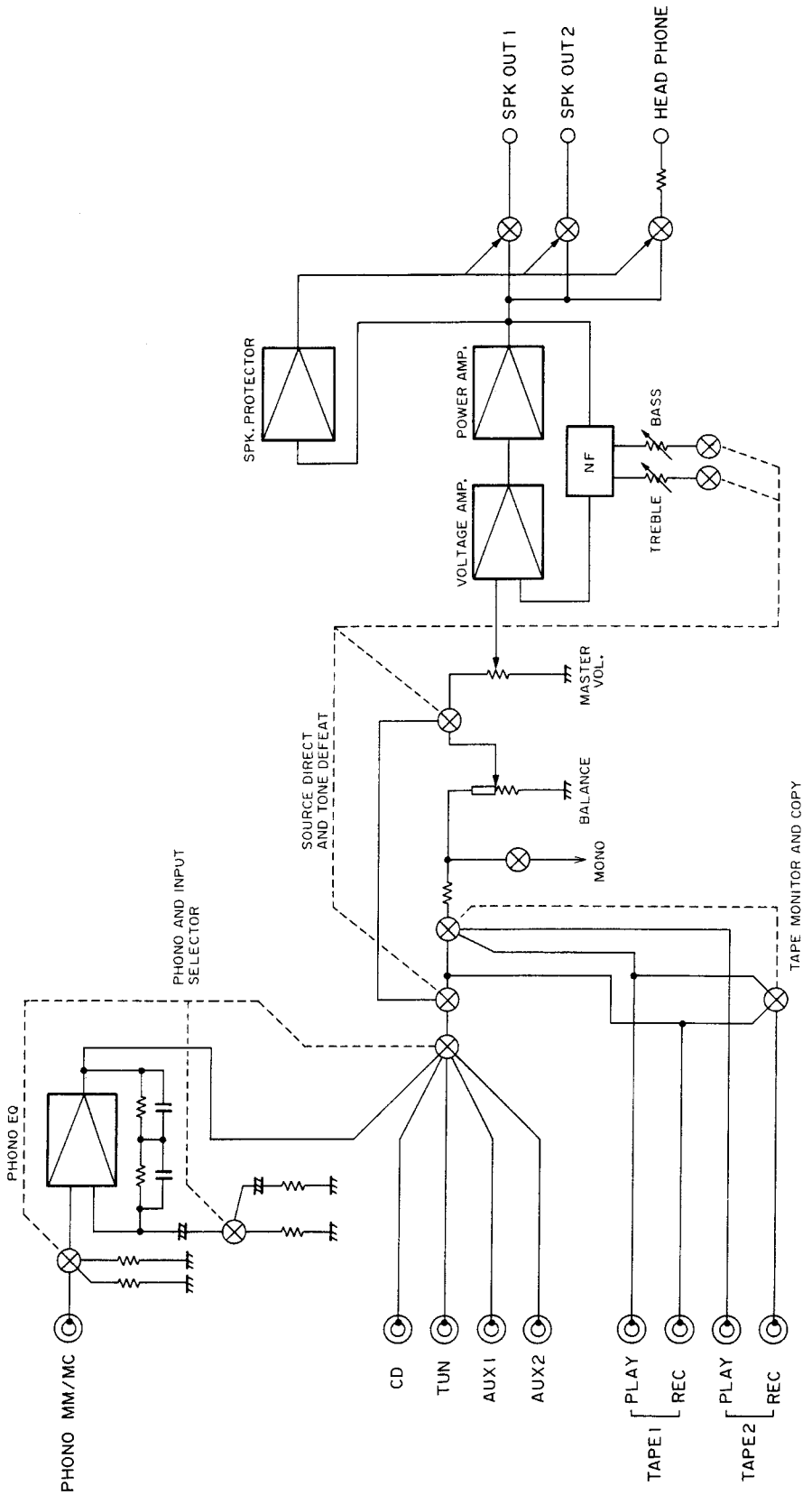
Frequency Response		: 10–70 kHz
Signal to Noise Ratio (A weighted)		: 86 dB
Input Sensitivity		: 150 mV
Input Impedance		: 33k Ohms
Tape Output Level [Phono (MM) 5 mV 1 kHz Input]		: 300 mV
Tape Output Impedance (Phono)		: 220 Ohms
Tone Control Action	100 Hz	: ±6 dB
	10 kHz	: ±6 dB
Channel Separation	(CD Input at 1 kHz)	: 75 dB
	(CD Input at 10 kHz)	: 65 dB

General

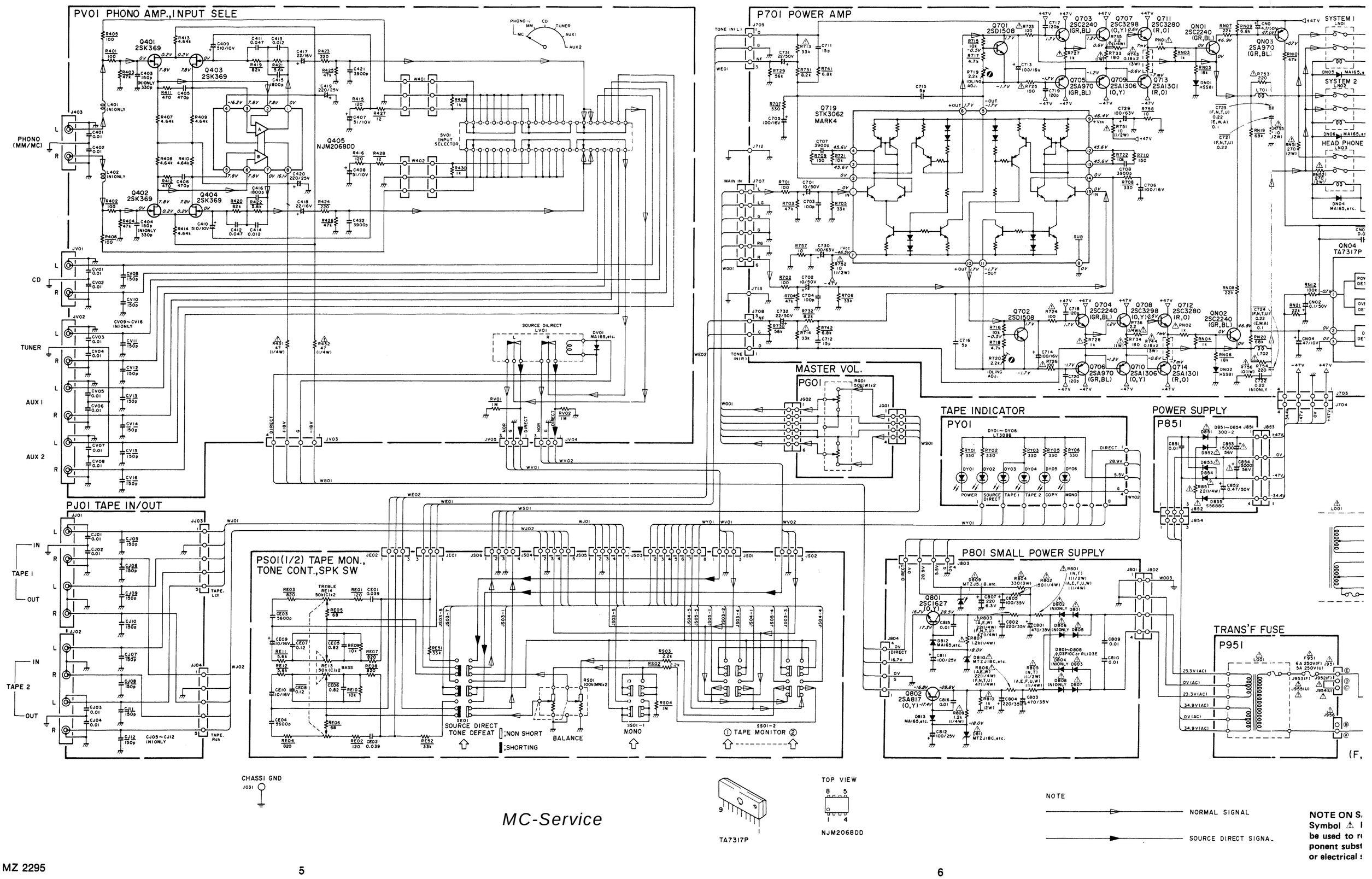
Power Requirements	
2 Voltage version	: 220V/240V
4 Voltage version	: 110V–240V
Power Consumption (Rated Power)	
AB Class Moode	: 300W
A Class Moode	: –
Dimensions	
Panel Width	: 420 mm
Panel Height	: 132 mm
Depth	: 334 mm
Weight	
Unit alone	: 10 kg

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

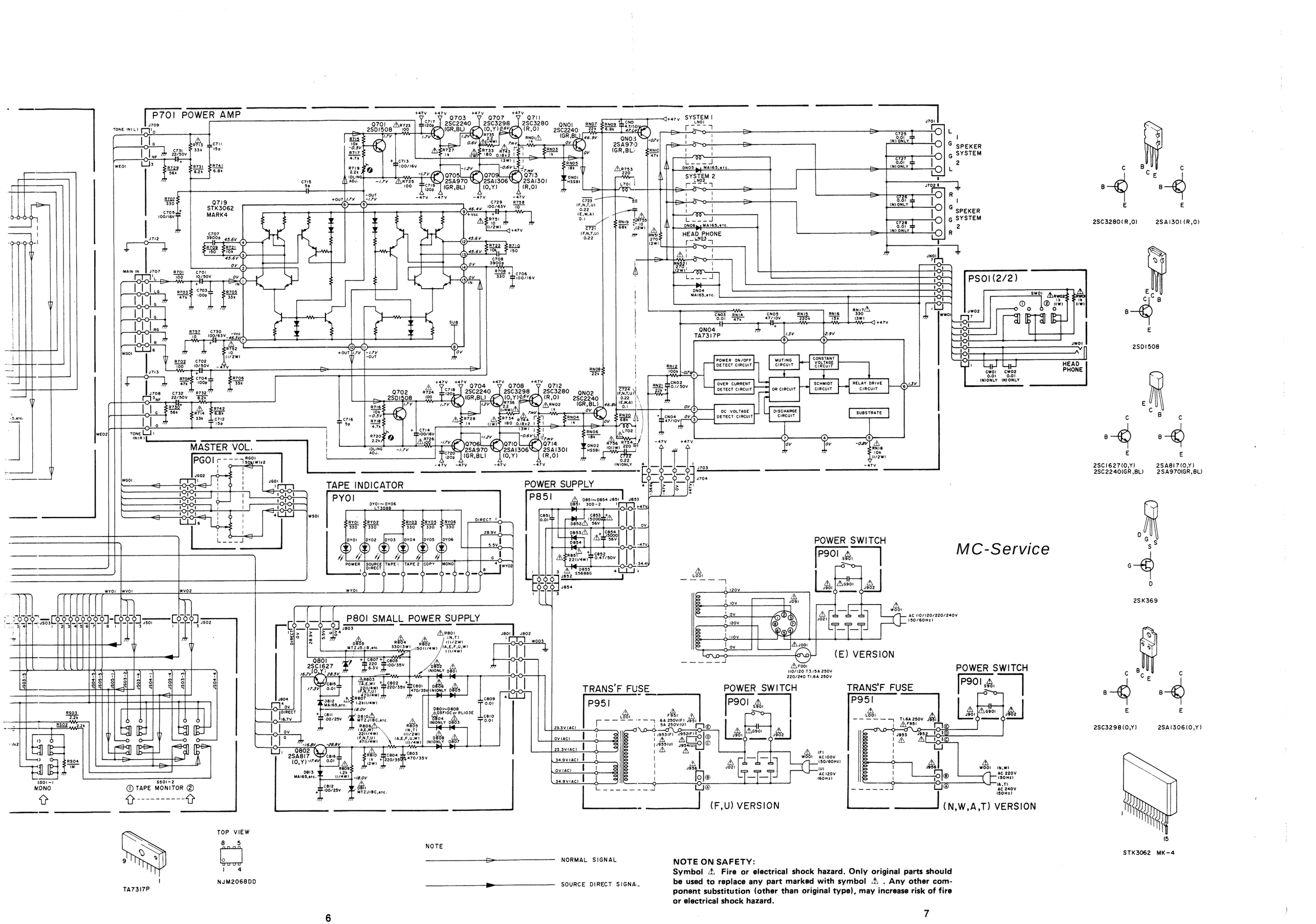
1. BLOCK DIAGRAM



2. SCHEMATIC DIAGRAM



MC-Service



2SC3280(R,0) 2SA1301(R,0)

2SD1508

2SC1627(0,Y) 2SC2240(GR,BL) 2SA817(0,Y) 2SA970(GR,BL)

2SK369

2SC3298(0,Y) 2SA1306(0,Y)

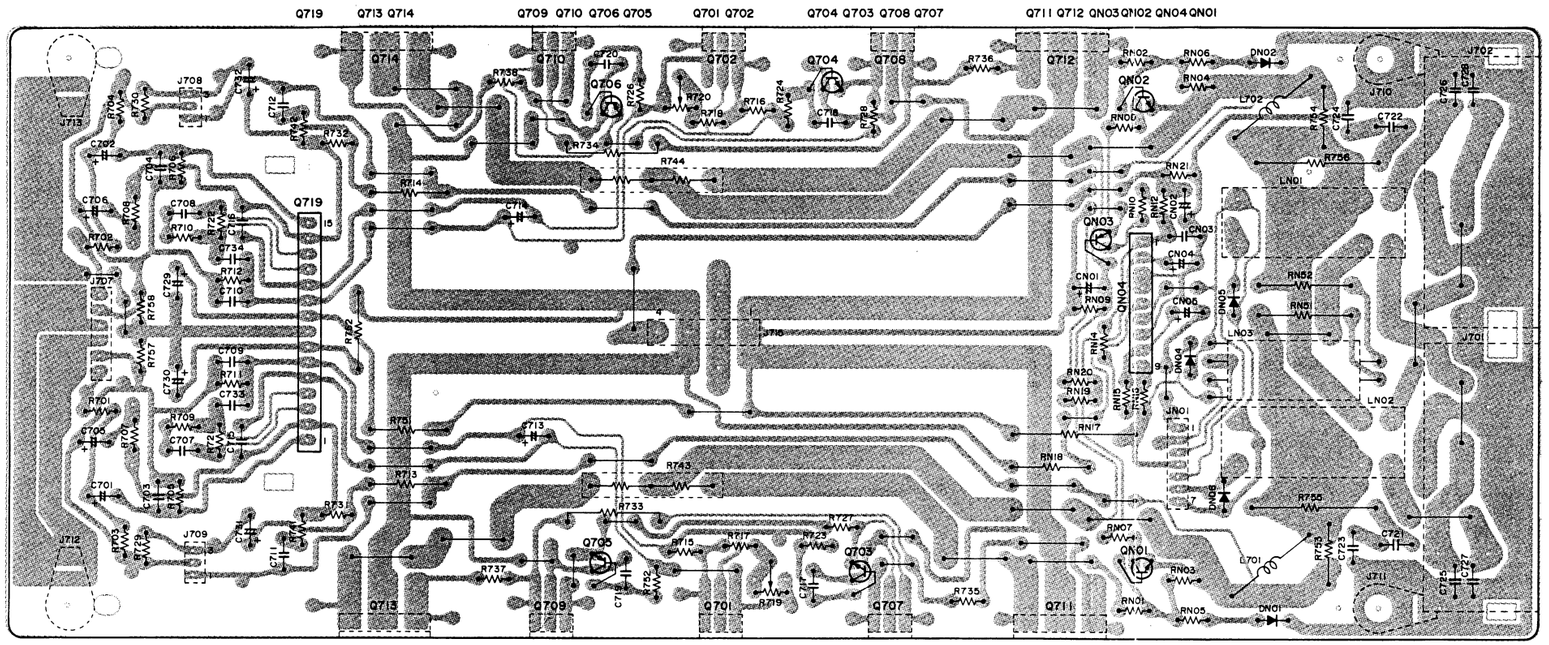
STK3062 MK-4

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.

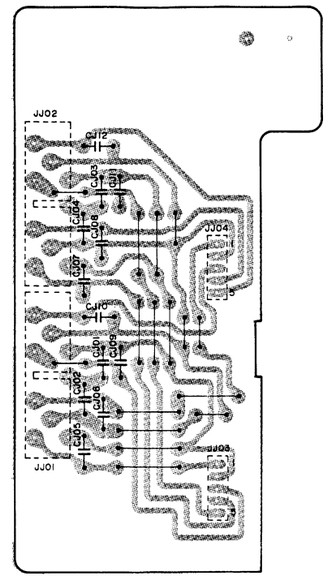
MC-Service

3. PARTS LOCATIONS (Pattern Side)

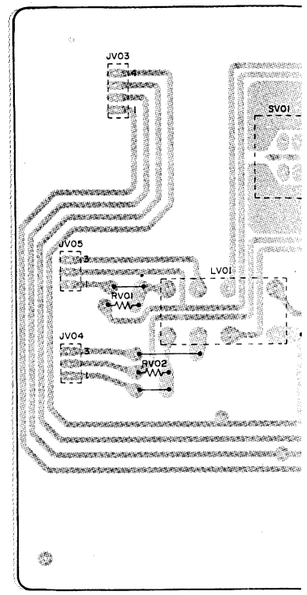
P701 Power Amp.



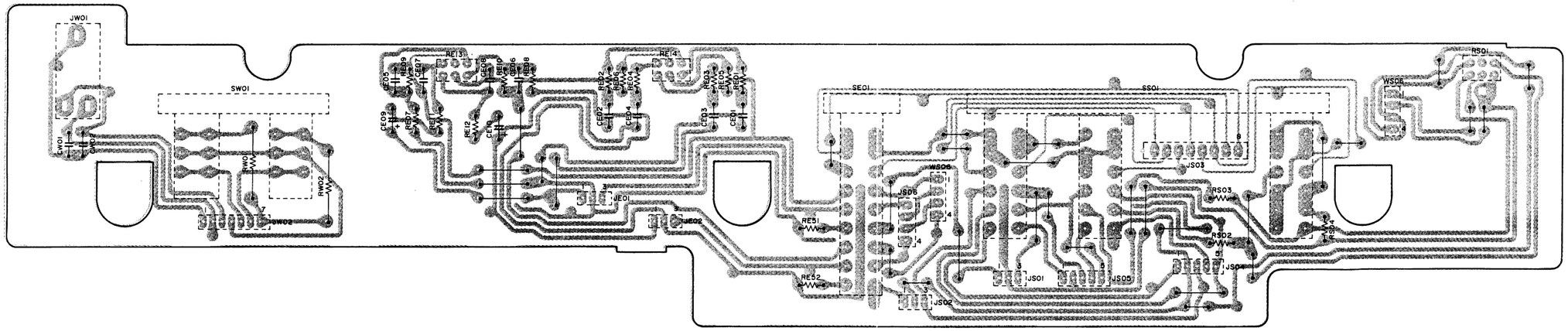
PJ01 Tape IN/OUT



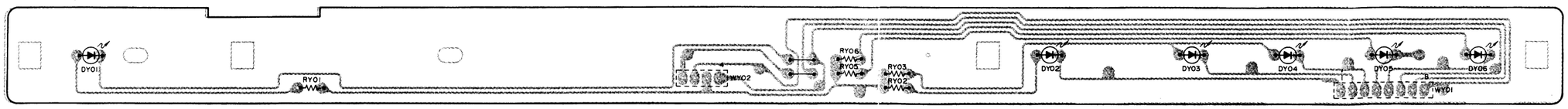
PV01 Phono Amp./Input Select



PS01 Tape Moni./Tone Cont./SPK. SW

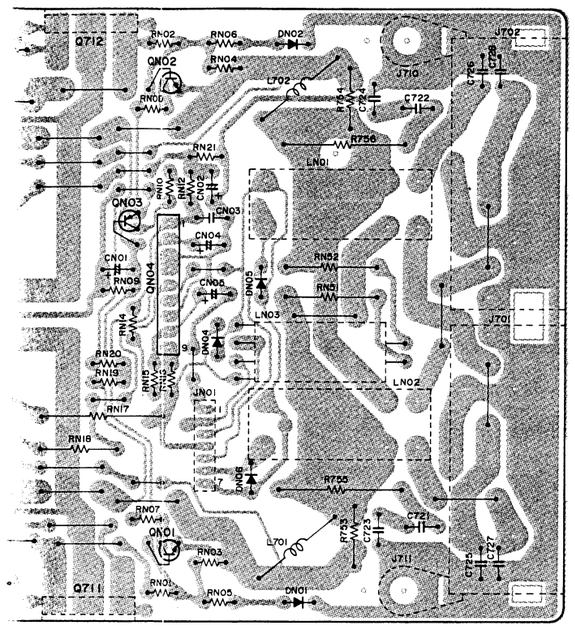


PY01 Tape Indicator

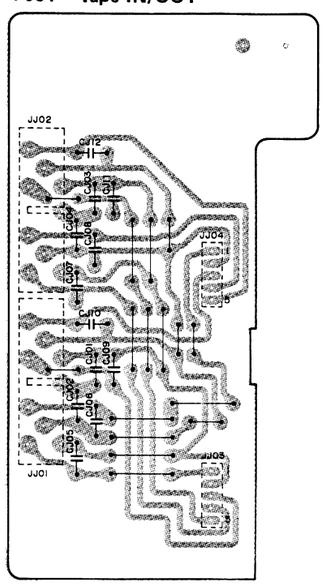


P851 Power Supply

Q711 Q712 QN03 QN02 QN04 QN01



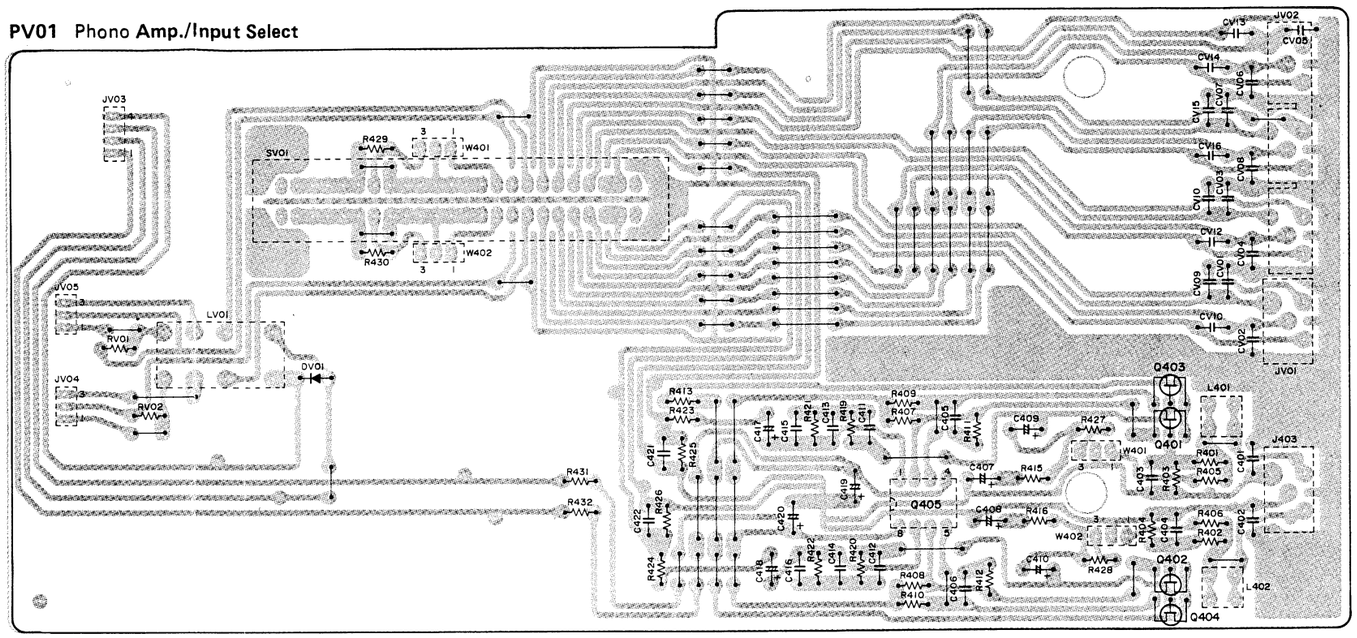
PJ01 Tape IN/OUT



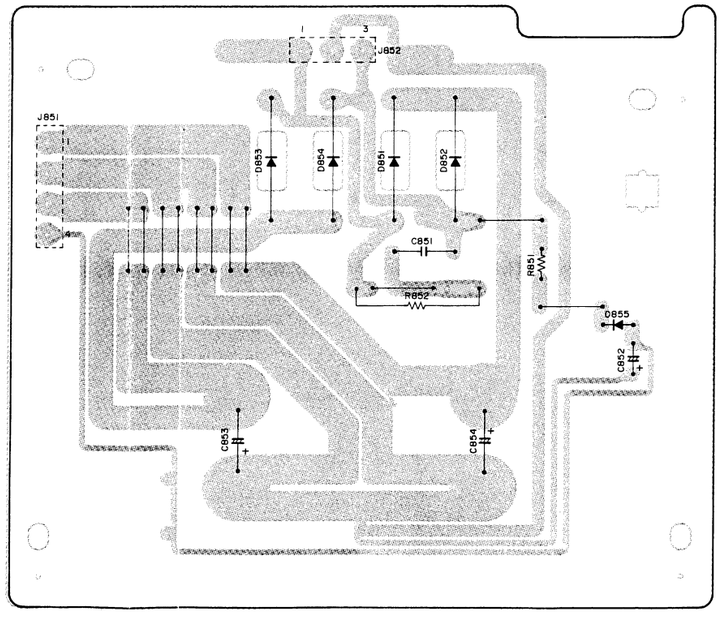
PV01 Phono Amp./Input Select

Q405

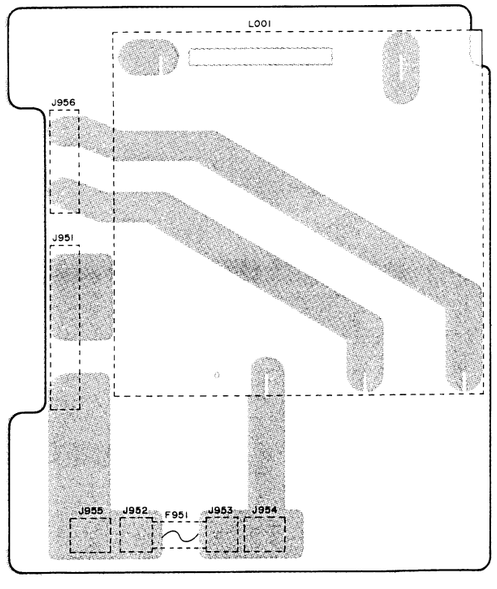
Q401~Q404

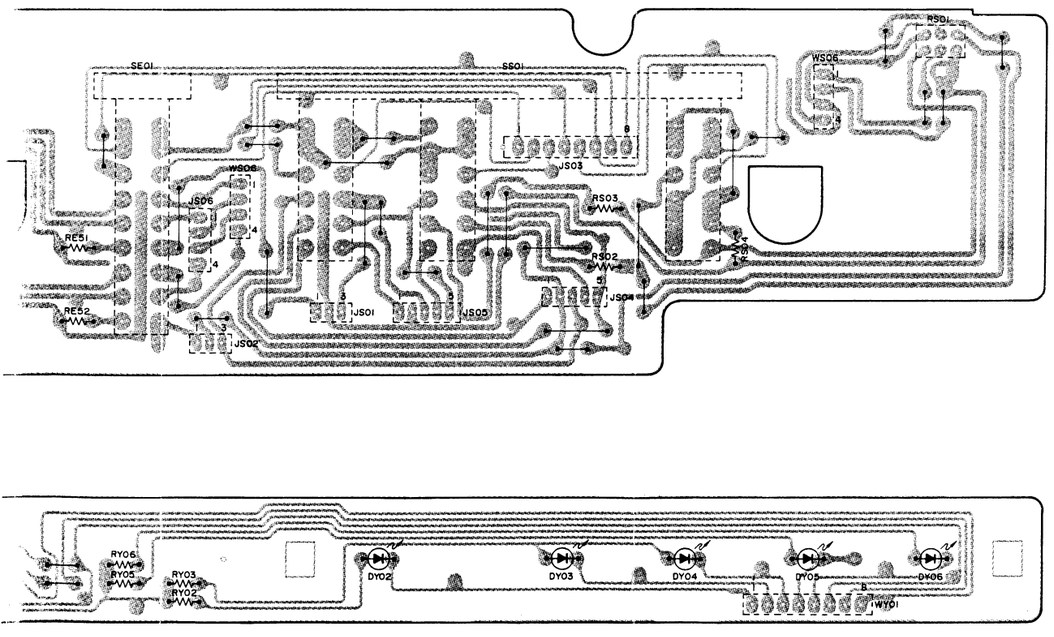


P851 Power Supply

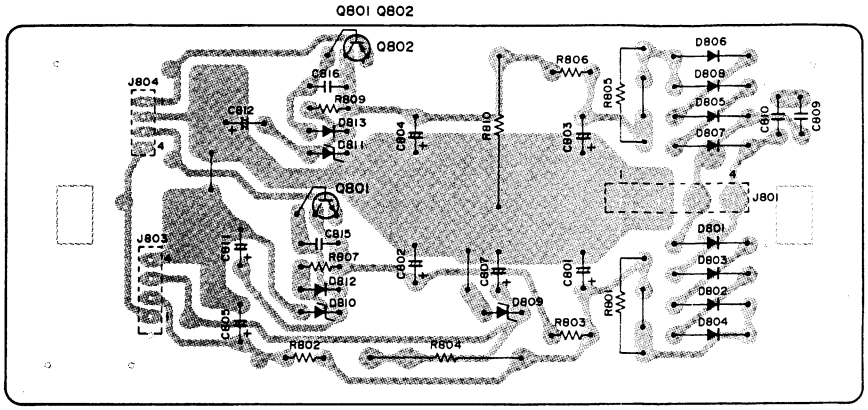


P951 Transformer/Fuse

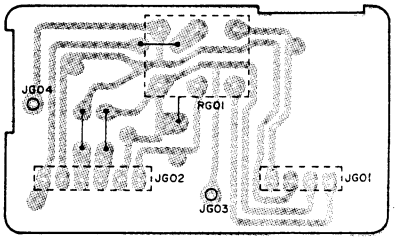




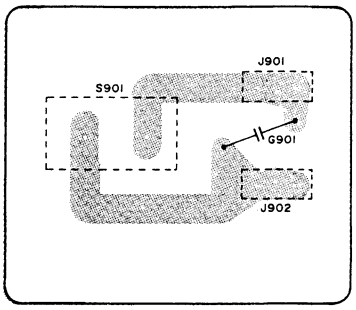
P801 Small Power Supply



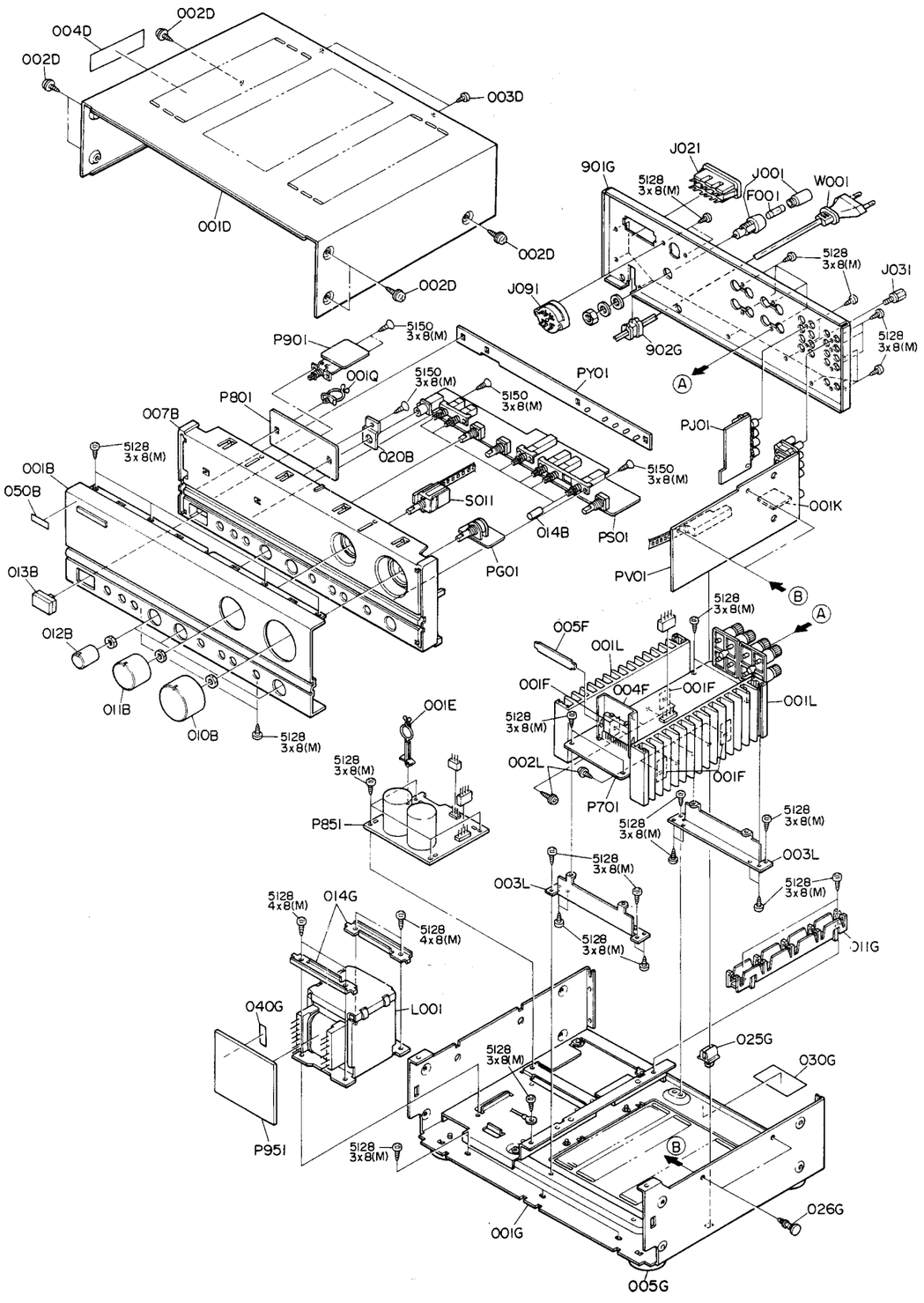
PG01 Master Volume



P901 Power Switch



4. EXPLODED VIEW AND PARTS LIST



REF. DESIG.	PART NO.	DESCRIPTION
001B	4822 425 40173	Front Panel Assembly (BLK)
	4822 425 40174	Front Panel Assembly (GLD)
010B	4822 413 41544	Knob, Volume (BLK)
	4822 413 41542	Knob, Volume (GLD)
011B	4822 413 41545	Knob, Selector (BLK)
	4822 413 41582	Knob, Selector (GLD)
012B	4822 413 31551	Knob, Tone Control (BLK)
	4822 411 10051	Knob, Tone Control (GLD)
013B	4822 410 60194	Button, Power (BLK)
	4822 410 60358	Button, Power (GLD)
014B	4822 410 60343	Button, Speaker (BLK)
	4822 410 60334	Button, Speaker (GLD)
001F	4822 466 92249	Insulator
005F	4822 492 63973	Spring (Q719)
005G	4822 462 41477	Leg
902G	4822 532 60948	Bushing, AC Cord
⚠ F001	4822 253 30027	Fuse, T3.15A 250V [E]
⚠ F002	4822 253 30191	Fuse, T1.6A 250V [E]
⚠ J001	4822 256 30233	Jack, Fuse Holder [E]
⚠ J021	4822 264 30266	Jack, AC Outlet [E]
J031	4822 290 40297	Terminal, GND
⚠ J091	4822 272 10227	Voltage Selector [E]
⚠ L001	4822 146 21457	Power Transformer [A N, T, W]
	4822 146 21471	Power Transformer [E]
S011	4822 273 10194	Rotary Switch, Selector
001T	4822 736 20422	User Manual

5. IDLING CURRENT ADJUSTMENT

(1) Before switching the power ON, set the Master Volume control to the minimum position and the Balance and Tone controls to the center positions. Also set semi-fixed resistors R719 (L CH) and R720 (L CH) on PCB P701 to the center positions.

(2) Each of the cement resistors R743 (L CH) and R744 (R CH) on the PCB P701 is provided with three test points. Connect a digital voltmeter, set for the DC voltage input, to the test points at the two extremities of the three test points of R743 or R744.

(3) After the setup above, switch the power ON and adjust semi-fixed resistor R719 (L CH) or R720 (R CH) on PCB P701 according to the digital voltmeter reading. The target setting value is 14 mV (38.9 mA) for both the L CH and R CH.

Please refer to the table below.

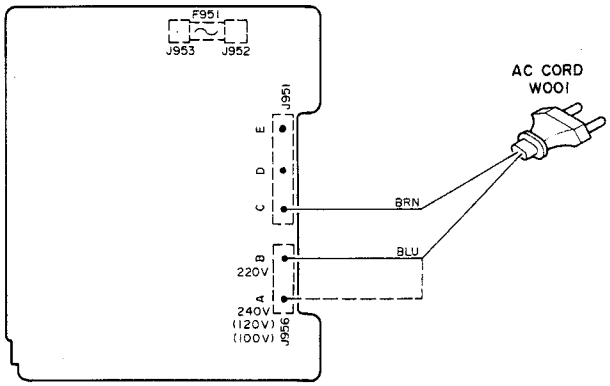
Elapsed time after power ON	Idling current setting value
30 sec. – 1 min.	13 mV
1 min. – 2 min.	14 mV
2 min. – 4 min.	14.5 mV
More than 4 min.	14 mV

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.

6. HOW TO CHANGE THE SUPPLY VOLTAGE (A/N/T/W Versions)

With the PM-50 A and T Versions, the rated supply voltage of 240V can he changed to 220V. In the same way, the 220V rated supply voltage of the PM-50 N and W Versions can be changed to 240V.

Refer to the following diagram for the voltage change procedure.

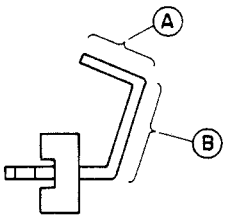


Soldered surface of P951

After binding solder around the terminal, bundle the brown wire and blue wire together and tighten them with a tightener.

- **Note on Terminals J951 and J956**

Wrapping terminals J951 and J956 on the P951 PC board are critical components for the safety. Please observe the following caution when working these terminals.



Terminal side view

Wrapping shall be performed within range A .
When binding up solder, apply solder within range B .

7. TEST EQUIPMENT REQUIRED FOR SERVICING

This table lists the test equipment required for servicing the Model PM-55 Stereo Amplifier.

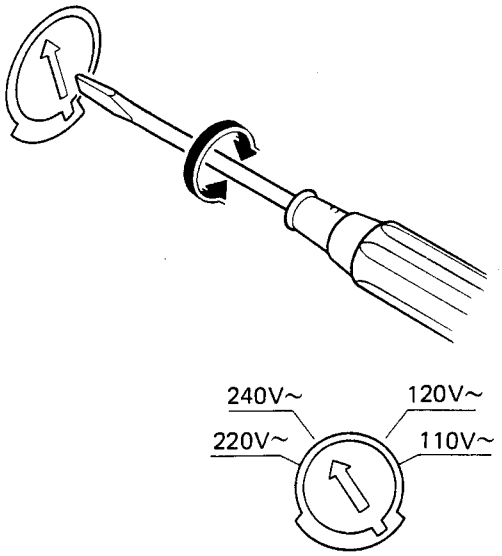
Item	Use
Distortion Analyzer	Distortion measurements
Audio Oscillator	Sinewave and squarewave signal source
ACVTVM	Voltage measurements (AC)
Oscilloscope	Waveform analysis and trouble shooting and ASO aignment
Circuit Tester	Trouble shooting
DCVTVM	Voltage measurements (DC)
AC Wattmeter	Monitors primary power to amplifier
Line Voltmeter	Monitors potential of primary power to amplifier
Variable Autotransformer	Adjust level of primery power to amplifier
Shorting Plug	Shorts amplifier input to eliminate noise pickup

8. VOLTAGE CONVERSION

- **EUROPEAN MODEL ONLY**

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

VOLTAGE SELECTOR



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

9. ELECTLICAL PARTS LIST

ASSIGNMENT OF COMMON PARTS CODES.

RESISTOR

R***: (1) GD05 --- 140, Carbon film fixed resistor, ±5%, 1/4W
R***: (2) GD05 --- 160, Carbon film fixed resistor, ±5%, 1/6W
① — Resistance value

Examples
① Resistance value

0.1Ω...001	10Ω...100	1kΩ...102	100kΩ...104
0.5Ω...005	18Ω...180	2.7kΩ...272	680kΩ...684
1Ω...010	100Ω...101	10kΩ...103	1MΩ...105
6.8Ω...068	390Ω...391	22kΩ...223	4.7MΩ...475

(Note) Please distinguish 1/4W from 1/6W by the shape of parts used actually.

C***: CERAMIC CAP.
(1) DD1 ---370, Ceramic condenser
Disc type
①② Temp. coeff. P350 ~ N1000, 50V
Capacity value
Tolerance

Examples
① Tolerance (Capacity deviation)
±0.25pF...0
±0.5pF...1
±5%...5
* Tolerance of COMMON PARTS handled here are as follows:
0.5pF ~ 5pF...±0.25pF
6pF ~ 10pF...±0.5pF
12pF ~ 560pF...±5%
② Capacity value

0.5pF...005	3pF...030	100pF...101
1pF...010	10pF...100	220pF...221
1.5pF...015	47pF...470	560pF...561

C***: CERAMIC CAP.
(1) DK16 ---300, High dielectric constant ceramic condenser
Disc type
① Temp. chara. 2B4, 50V
Capacity value

Example
② Capacity value

100pF...101	1000pF...102
470pF...471	2200pF...222

10000pF...103

C***: ELECTROLY CAP. (⇌), FILM CAP. (⇋)
(1) EA ------ 10, Electrolytic condenser
One-way lead type, Tolerance ±20%
①②
Dielectric strength
Capacity value

Examples
① Capacity value

0.1μF...104	4.7μF...475	100μF...107
0.33μF...334	10μF...106	330μF...337
1μF...105	22μF...226	1100μF...108
		2200μF...228

② Working voltage

6.3V...006	25V...025
10V...010	35V...035
16V...016	50V...050

(2) DF15 ---350, Plastic film condenser
One-way type, Mylar ±5% 50V
①
Capacity value

Examples
① Capacity value

0.001μF (1000pF)...102	0.1μF...104
0.0018μF.....182	0.56μF...564
0.01μF.....103	1μF...105
0.015μF.....153	

REF. DESIG.	PART NO.	DESCRIPTION
		PG01-MASTER VOLUME CIRCUIT BOARD
RG01	4822 101 30653	Variable Resistor 50KΩ(W)x2
		PJ01-TAPE IN/OUT CIRCUIT BOARD
CJ01 ~ CJ04	4822 122 32486	Ceramic Cap. 0.01μF +80% −20%
JJ01	4822 266 30284	Terminal, 4P; RCA Jack
JJ02	4822 266 30284	Terminal, 4P; RCA Jack
		PS01-TAPE MONI./TONE CONT./SPK. SW CIRCUIT BOARD
		PS01-CAPACITORS
CE01	4822 121 43133	Film 0.039μF ±5%
CE02	4822 121 43133	Film 0.039μF ±5%
CE03	4822 121 51389	Film 5600pF ±5%
CE04	4822 121 51389	Film 5600pF ±5%
CE09	4822 124 90352	Elect 10μF 16V
CE10	4822 124 90352	Elect 10μF 16V
CW01	4822 122 32486	Ceramic 0.01μF +80% −20%[N]
CW02	4822 122 32486	Ceramic 0.01μF +80% −20%[N]
		PS01-RESISTORS
RE13	4822 101 30654	50KΩ(C)x2, Variable; BUSS
RE14	4822 101 30654	50KΩ(C)x2, Variable; Treble
RS01	4822 101 30652	100KΩ(MN)x2, Variable; Balance
⚠ RW01	4822 116 60331	1KΩ ±5% 1W
⚠ RW02	4822 116 60331	1KΩ ±5% 1W
		PS01-MISCELLANEOUS
JW01	4822 267 31126	Jack, Headphone (BLK)
	4822 267 31119	Jack, Headphone (GLD)
SE01	4822 276 12658	Push Switch, Direct/Tone Defeat
SS01	4822 276 12657	Push Switch, Mono/Tape Monitor
SW01	4822 276 12428	Push Switch
		PV01-PHONO AMP./INPUT SELECT CIRCUIT BOARD
		PV01-CAPACITORS
C401	4822 122 32486	Ceramic 0.01μF +80% −20%
C402	4822 122 32486	Ceramic 0.01μF +80% −20%
C403	4822 121 51037	Film 150pF ±5%[A,E,T,W]
C404	4822 121 51037	Film 150pF ±5%[A,E,T,W]
C405	4822 121 41518	Film 470pF ±5%
C406	4822 121 41518	Film 470pF ±5%
C407	4822 124 22278	Elect 51μF 10V
C408	4822 124 22278	Elect 51μF 10V
C409	4822 124 22279	Elect 510μF 10V
C410	4822 124 22279	Elect 510μF 10V

REF. DESIG.	PART NO.	DESCRIPTION
C411	4822 121 42764	Film 0.047µF ±5%
C412	4822 121 42764	Film 0.047µF ±5%
C413	4822 121 42755	Film 0.012µF ±5%
C414	4822 121 42755	Film 0.012µF ±5%
C415	4822 121 42758	Film 1800pF ±5%
C416	4822 121 42758	Film 1800pF ±5%
C417	4822 124 90358	Elect 22µF 16V
C418	4822 124 90358	Elect 22µF 16V
C419	4822 124 90365	Elect 220µF 25V
C420	4822 124 90365	Elect 220µF 25V
C421	4822 121 42763	Film 3900pF ±5%
C422	4822 121 42763	Film 3900pF ±5%
CV01 ~ CV08	4822 122 32486	Ceramic 0.01µF +80% −20%
		PV01-RESISTORS
R407	4822 116 53691	4.64KΩ ±1% 1/6W
R408	4822 116 53691	4.64KΩ ±1% 1/6W
R409	4822 116 53691	4.64KΩ ±1% 1/6W
R410	4822 116 53691	4.64KΩ ±1% 1/6W
R413	4822 116 53691	4.64KΩ ±1% 1/6W
R414	4822 116 53691	4.64KΩ ±1% 1/6W
⚠ R431	4822 111 90731	47Ω ±2% ¼W, Fuse
⚠ R432	4822 111 90731	47Ω ±2% ¼W, Fuse
		PV01-SEMICONDUCTORS
DV01	4822 130 33305	Diode MA165, etc.
Q401	4822 130 42839	F.E.T. 2SK369(BL)
Q402	4822 130 42839	F.E.T. 2SK369(BL)
Q403	4822 130 42839	F.E.T. 2SK369(BL)
Q404	4822 130 42839	F.E.T. 2SK369(BL)
Q405	4822 209 73064	IC NJM2068DD
		PV01-MISCELLANEOUS
J403	4822 266 30282	Terminal, 2P; RCA Jack
JV01	4822 266 30282	Terminal, 2P; RCA Jack
JV02	4822 266 30285	Terminal, 6P; RCA Jack
L401	4822 156 11019	Choke Coil, 320µH [N]
L402	4822 156 11019	Choke Coil, 320µH [N]
LV01	4822 280 20195	Relay
SV01	4822 277 21352	Slide Switch
		PY01-TAPE INDICATOR CIRCUIT BOARD
DY01 ~ DY06	4822 130 80326	L.E.D. LT3D8B
		P701-POWER AMP. CIRCUIT BOARD
		P701-CAPACITORS
CN01	4822 124 22274	Elect 4.7µF 50V
CN02	4822 124 90351	Elect 0.1µF 50V
CN04	4822 124 22275	Elect 47µF 10V
CN05	4822 124 22275	Elect 47µF 10V

REF. DESIG.	PART NO.	DESCRIPTION
C701	4822 124 23082	Elect 10µF 50V
C702	4822 124 23082	Elect 10µF 50V
C703	4822 121 51008	Film 100pF ±5%
C704	4822 121 51008	Film 100pF ±5%
C705	4822 124 90354	Elect 100µF 16V
C706	4822 124 90354	Elect 100µF 16V
C707	4822 121 42763	Film 3900pF ±5%
C708	4822 121 42763	Film 3900pF ±5%
C711	4822 121 43129	Film 15pF ±10%
C712	4822 121 43129	Film 15pF ±10%
C713	4822 124 90354	Elect 100µF 16V
C714	4822 124 90354	Elect 100µF 16V
C715	4822 121 43127	Film 5pF ±10%
C716	4822 121 43127	Film 5pF ±10%
C717	4822 121 43126	Film 120pF ±5%
C718	4822 121 43126	Film 120pF ±5%
C719	4822 121 43126	Film 120pF ±5%
C720	4822 121 43126	Film 120pF ±5%
C725	4822 122 32486	Ceramic 0.01µF +80% −20% [N]
C726	4822 122 32486	Ceramic 0.01µF +80% −20% [N]
C727	4822 122 32486	Ceramic 0.01µF +80% −20% [N]
C728	4822 122 32486	Ceramic 0.01µF +80% −20% [N]
C729	4822 124 22572	Elect 100µF 63V
C730	4822 124 22572	Elect 100µF 63V
C731	4822 124 90362	Elect 22µF 50V
C732	4822 124 90362	Elect 22µF 50V
		P701-RESISTORS
⚠ RN01	4822 111 91257	1KΩ ±5% 1/6W
⚠ RN02	4822 111 91257	1KΩ ±5% 1/6W
⚠ RN17	4822 116 80648	330Ω ±5% 3W, Metal
⚠ RN18	4822 116 52452	10KΩ ±5% ½W
⚠ RN51	4822 116 60455	270Ω ±5% 2W
⚠ RN52	4822 116 60455	270Ω ±5% 2W
⚠ R713	4822 116 80647	33KΩ ±5% ½W
⚠ R714	4822 116 80647	33KΩ ±5% ½W
R719	4822 100 20681	2.2KΩ, Trimming
R720	4822 100 20681	2.2KΩ, Trimming
⚠ R723	4822 111 91285	100Ω ±5% 1/6W
⚠ R724	4822 111 91285	100Ω ±5% 1/6W
⚠ R725	4822 111 91285	100Ω ±5% 1/6W
⚠ R726	4822 111 91285	100Ω ±5% 1/6W
⚠ R727	4822 111 91257	1KΩ ±5% 1/6W
⚠ R728	4822 111 91257	1KΩ ±5% 1/6W
⚠ R733	4822 116 60342	180Ω ±5% 1W
⚠ R734	4822 116 60342	180Ω ±5% 1W
⚠ R735	4822 116 52348	2.2Ω ±5% ¼W
⚠ R736	4822 116 52348	2.2Ω ±5% ¼W
⚠ R743	4822 116 82049	0.18Ω×2 ±10% 3W
⚠ R744	4822 116 82049	0.18Ω×2 ±10% 3W
⚠ R751	4822 116 60313	10Ω ±5% ½W, Fusible
⚠ R752	4822 116 60313	10Ω ±5% ½W, Fusible
⚠ R753	4822 111 91405	220Ω ±5% 1/6W
⚠ R754	4822 111 91405	220Ω ±5% 1/6W
⚠ R755	4822 111 90726	10Ω ±5% 2W
⚠ R756	4822 111 90726	10Ω ±5% 2W
		P701-SEMICONDUCTORS
DN01	4822 130 80837	Diode HSS81
DN02	4822 130 80837	Diode HSS81
DN04	4822 130 33305	Diode MA165, etc.
DN05	4822 130 33305	Diode MA165, etc.
DN06	4822 130 33305	Diode MA165, etc.

REF. DESIG.	PART NO.	DESCRIPTION
QN01	4822 130 43233	Transistor 2SC2240(GR, BL)
QN02	4822 130 43233	Transistor 2SC2240(GR, BL)
QN03	4822 130 42951	Transistor 2SA970(GR, BL)
QN04	4822 209 83312	IC TA7317P
Q701	4822 130 60526	Transistor 2SD1508
Q702	4822 130 60526	Transistor 2SD1508
Q703	4822 130 43233	Transistor 2SC2240(GR, BL)
Q704	4822 130 43233	Transistor 2SC2240(GR, BL)
Q705	4822 130 42951	Transistor 2SA970(GR, BL)
Q706	4822 130 42951	Transistor 2SA970(GR, BL)
Q707	4822 130 60525	Transistor 2SC3298(O, Y)
Q708	4822 130 60525	Transistor 2SC3298(O, Y)
Q709	4822 130 60524	Transistor 2SA1306(O, Y)
Q710	4822 130 60524	Transistor 2SA1306(O, Y)
Q711	4822 130 60116	Transistor 2SC3280(R, O)
Q712	4822 130 60116	Transistor 2SC3280(R, O)
Q713	4822 130 60109	Transistor 2SA1301(R, O)
Q714	4822 130 60109	Transistor 2SA1301(R, O)
Q719	4822 209 73065	IC STK3062 MARK4
		P701-MISCELLANEOUS
J701	4822 290 60837	Terminal, Speaker [A, E, T, W]
	4822 290 60841	Terminal, Speaker [N]
J702	4822 290 60836	Terminal, Speaker [A, E, T, W]
	4822 290 60839	Terminal, Speaker [N]
LN01	4822 280 20197	Relay
LN02	4822 280 20197	Relay
LN03	4822 280 20196	Relay
L701	4822 157 51739	Coil, Speaker
L702	4822 157 51739	Coil, Speaker
		P801-SMALL POWER SUPPLY CIRCUIT BOARD
		P801-CAPACITORS
C801	4822 124 41541	Elect 470μF 35V
C802	4822 124 41538	Elect 220μF 35V
C803	4822 124 41541	Elect 470μF 35V
C804	4822 124 41538	Elect 220μF 35V
C805	4822 124 41536	Elect 100μF 35V
C807	4822 124 41537	Elect 220μF 6.3V
C809	4822 122 32486	Ceramic 0.01μF +80% −20%
C810	4822 122 32486	Ceramic 0.01μF +80% −20% [N,T]
C811	4822 124 41535	Elect 100μF 25V
C812	4822 124 41535	Elect 100μF 25V
C815	4822 122 32486	Ceramic 0.01μF +80% −20%
C816	4822 122 32486	Ceramic 0.01μF +80% −20%
		P801-RESISTORS
⚠ R801	4822 116 52976	1Ω ±5% ¼W [A, E, W]
	4822 116 60306	1Ω ±5% ½W, Fusible[N,T]
⚠ R802	4822 116 82051	150Ω ±2% ¼W, Fuse
⚠ R803	4822 116 53479	22Ω ±5% ¼W [A, E, W]
	4822 111 90731	47Ω ±2% ¼W, Fuse [N, T]
⚠ R804	4822 116 80648	330Ω ±5% 3W, Metal
⚠ R805	4822 116 52976	1Ω ±5% ¼W, [A, E, W]
	4822 116 60306	1Ω ±5% ½W, Fusible[N,T]
⚠ R806	4822 116 53479	22Ω ±5% ¼W
	4822 111 90731	47Ω ±2% ¼W, Fuse [N, T]
⚠ R807	4822 111 91423	1.2KΩ ±5% ¼W
⚠ R809	4822 111 91423	1.2KΩ ±5% ¼W
⚠ R810	4822 116 60332	1KΩ ±5% 2W

REF. DESIG.	PART NO.	DESCRIPTION
		P801-SEMICONDUCTORS
⚠ D801	4822 130 32508	Diode DSF10C, etc.
⚠ D802	4822 130 32508	Diode DSF10C, etc. [N, T]
⚠ D803	4822 130 32508	Diode DSF10C, etc.
⚠ D804	4822 130 32508	Diode DSF10C, etc. [N, T]
⚠ D805	4822 130 32508	Diode DSF10C, etc.
⚠ D806	4822 130 32508	Diode DSF10C, etc. [N, T]
⚠ D807	4822 130 32508	Diode DSF10C, etc.
⚠ D808	4822 130 32508	Diode DSF10C, etc. [N, T]
⚠ D809	4822 130 80317	Zener MTZJ5.1B, etc.
⚠ D810	4822 130 80838	Zener MTZJ18C, etc.
⚠ D811	4822 130 80838	Zener MTZJ18C, etc.
D812	4822 130 33305	Diode MA165, etc.
D813	4822 130 33305	Diode MA165, etc.
Q801	4822 130 60696	Transistor 2SC1627(O, Y)
Q802	4822 130 60693	Transistor 2SA817(O, Y)
		P851-POWER SUPPLY CIRCUIT BOARD
C851	4822 122 30043	Ceramic Cap. 0.01μF +80% −20%
C852	4822 124 22273	Elect Cap. 0.47μF 50V
⚠ C853	4822 124 23081	Elect Cap. 15000μF 56V
⚠ C854	4822 124 23081	Elect Cap. 15000μF 56V
⚠ R851	4822 113 90119	Fuse Resistor 22Ω ±2% ¼W
⚠ D851	4822 130 33864	Diode 30D-2
⚠ D852	4822 130 33864	Diode 30D-2
⚠ D853	4822 130 33864	Diode 30D-2
⚠ D854	4822 130 33864	Diode 30D-2
⚠ D855	4822 130 80839	Diode S5688G
		P901-POWER SWITCH CIRCUIT BOARD
⚠ G901	4822 122 33276	Ceramic Cap. 0.01μF ±20%
⚠ S901	4822 276 11798	Push Switch, Power
		P951-TRANSFORMER/FUSE CIRCUIT BOARD [A, N, T, W]
⚠ F951	4822 253 30191	Fuse T1.6A 250V
⚠ L001	4822 146 21457	Power Transformer

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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